APPENDIX 2.1: CROSS SECTION PHOTOS

Photo 1. 20040514-BJ1-DS

Photo 2. 20040514-BJ1-LEP

Photo 3. 20040514-BJ1-REP

Photo 4. 20040514-BJ1-US

Photo 5. 20040514-BJ2-DS

Photo 6. 20040514-BJ2-LEP

Photo 7. 20040514-BJ2-REP

Photo 8. 20040514-BJ2-US

Photo 9. 20040514-BJ3-DS

Photo 10. 20040514-BJ3-LEP

Photo 11. 20040514-BJ3-REP

Photo 12. 20040514-BJ3-US

Photo 13. 20040514-BJ4-DS

Photo 14. 20040513-BJ4-LEP

Photo 15. 20040513-BJ4-REP

Photo 16. 20040513-BJ4-US

Photo 17. 20040514-BJ5-DS

Photo 18. 20040514-BJ5-LEP

Photo 19. 20040514-BJ5-REP

Photo 20. 20040514-BJ5-US

Photo 21. 2004-0514-BJ6-DS

Photo 22. 2004014-BJ6-LEP

Photo 23. 20040514-BJ6-REP

Photo 24. 20040514-BJ6-US

Photo 1. 20040511-RR1-DS

Photo 2. 20040511-RR1-LEP

Photo 3. 20040511-RR1-REP

Photo 4. 20040511-RR1-US

Photo 5. 20040511-RR2-DS

Photo 6. 20040511-RR2-LEP

Photo 7. 20040511-RR2-REP

Photo 8. 20040511-RR2-US

Photo 9. 20040510-RR3-DS

Photo 10. 20040510-RR3-LEP

Photo 11. 20040510-RR3-REP

Photo 12. 20040510-RR3-US

Photo 13. 20040510-RR4-DS

Photo 14. 20040510-RR4-LEP

Photo 15. 20040510-RR4-REP

Photo 16. 20040510-RR4-US

Photo 17. 20040510-RR5-DS

Photo 18. 20040510-RR5-LEP

Photo 19. 20040510-RR5-REP

Photo 20. 20040510-RR5-US

Photo 21. 20040510-RR6-DS

Photo 22. 20040510-RR6-LEP

Photo 23. 20040510-RR6-REP

Photo 24. 20040510-RR6-US

Photo 25. 20040510-RRsidechannel

Photo 1 . 20040512-NC1-DS

Photo 2. 20040512-NC1-LEP

Photo 3. 20040512-NC1-REP

Photo 4. 20040512-NC1-US

Photo 5. 20040512-NC2-DS

Photo 6. 20040512-NC2-LEP

Photo 7. 20040512-NC2-REP

Photo 8. 20040512-NC2-US

Photo 9. 20040512-NC3-DS

Photo 10. 20040512-NC3-LEP

Photo 11. 20040512-NC3-REP

Photo 12. 20040512-NC3-US

Photo 13. 20040512-NC4-DS

Photo 14. 20040512-NC4-LEP

Photo 15. 20040512-NC4-REP

Photo 16. 20040512-NC4-US

Photo 17. 20040512-NC5-DS

Photo 18. 20040512-NC5-LEP

Photo 19. 20040512-NC5-REP

Photo 20. 20040512-NC5-US

Photo 21. 20040511-NC6-DS

Photo 22. 20040511-NC6-LEP

Photo 23. 20040511-NC6-REP

Photo 24. 20040511-NC6-US

Photo 1 . 20040512-NC1-DS

Photo 2. 20040512-NC1-LEP

Photo 3. 20040512-NC1-REP

Photo 4. 20040512-NC1-US

Photo 5. 20040512-NC2-DS

Photo 6. 20040512-NC2-LEP

Photo 7. 20040512-NC2-REP

Photo 8. 20040512-NC2-US

Photo 9. 20040512-NC3-DS

Photo 10. 20040512-NC3-LEP

Photo 11. 20040512-NC3-REP

Photo 12. 20040512-NC3-US

Photo 13. 20040512-NC4-DS

Photo 14. 20040512-NC4-LEP

Photo 15. 20040512-NC4-REP

Photo 16. 20040512-NC4-US

Photo 17. 20040512-NC5-DS

Photo 18. 20040512-NC5-LEP

Photo 19. 20040512-NC5-REP

Photo 20. 20040512-NC5-US

Photo 21. 20040511-NC6-DS

Photo 22. 20040511-NC6-LEP

Photo 23. 20040511-NC6-REP

Photo 24. 20040511-NC6-US

Photo 1 . 20040517-CA1-DS

Photo 2. 20040517-CA1-LEP

Photo 3. 20040517-CA1-REP

Photo 4. 20040517-CA1-US

Photo 5. 20040517-CA2-DS

Photo 6. 20040517-CA2-LEP

Photo 7. 20040517-CA2-REP

Photo 8. 20040517-CA2-US

Photo 9. 20040518-CA3-LEP

Photo 10. 20040518-CA3-REP

Photo 11. 20040518-CA3-US

Photo 12. 20040518-CA4-DS

Photo 13. 20040518-CA4-LEP

Photo 14. 20040517-CA4-REP

Photo 15. 20040518-CA4-US

Photo 16. 20040518-CA5-DS

Photo 17. 20040518-CA5-LEP

Photo 18. 20040518-CA5-REP

Photo 19. 20040518-CA5-US

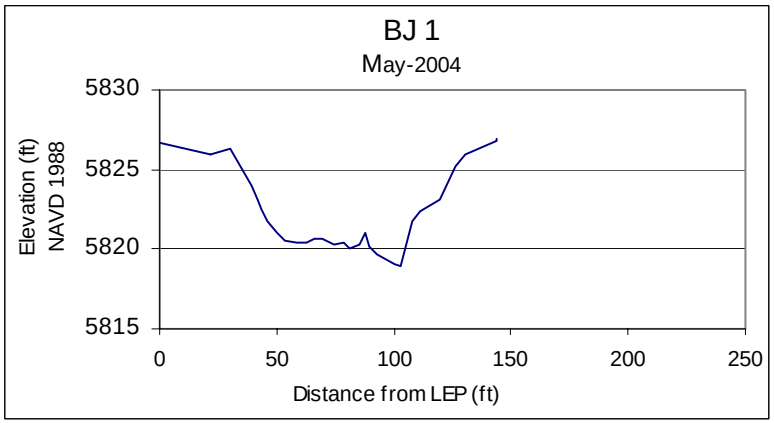
Photo 20. 20040517-CA6-DS

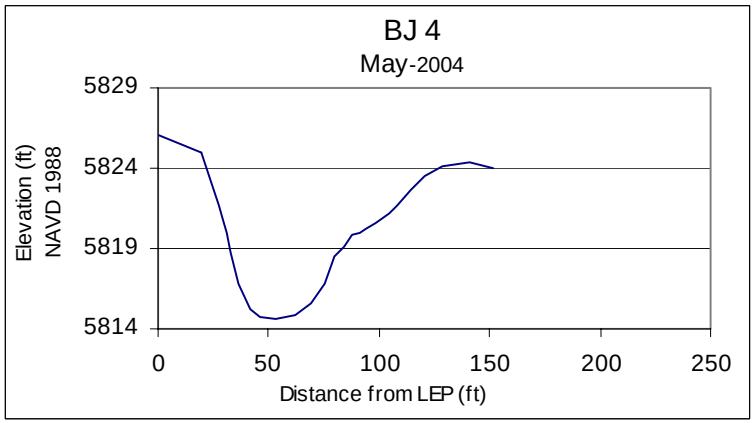
Photo 21. 20040517-CA6-LEP

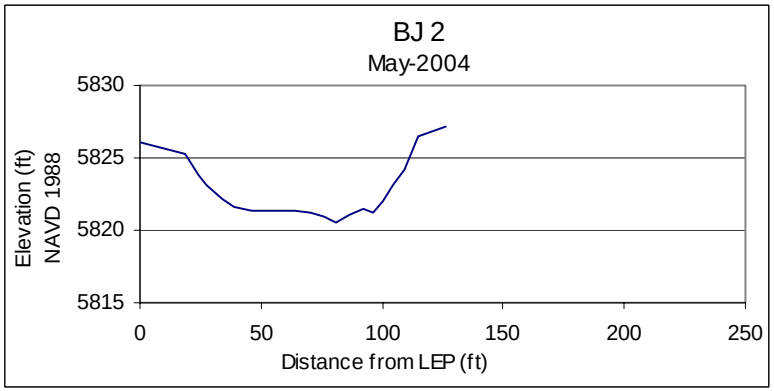
Photo 22. 20040517-CA6-REP

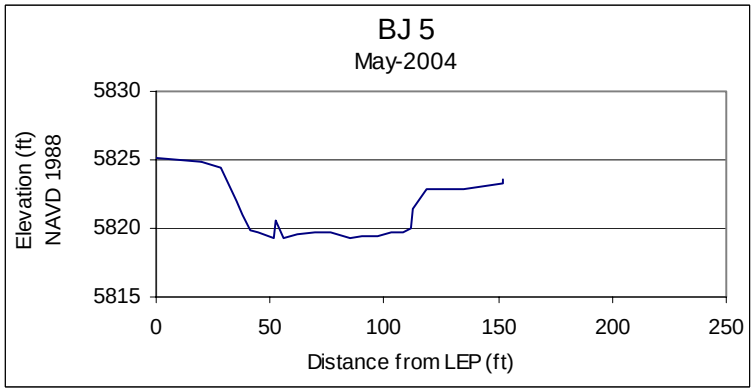
Photo 23. 20040517-CA6-US

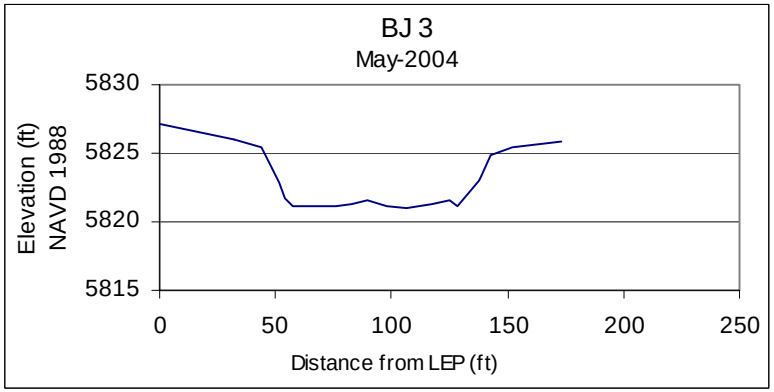
APPENDIX 2.2A: CROSS SECTION PLOTS

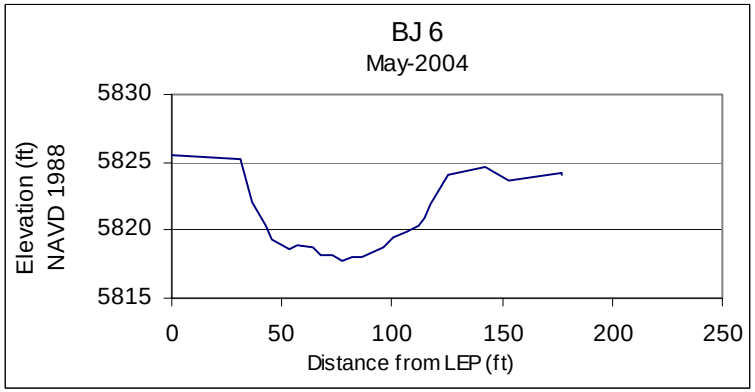

BJ 1
May-2004
Elevation (ft) NAVD 1988
5830
5825
5820
5815
0
50
100
150
200
250
Distance from LEP (ft)

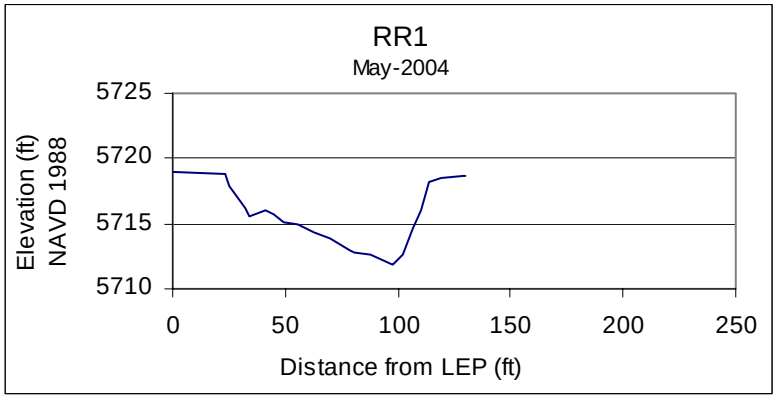

BJ 4
May-2004
Elevation (ft) NAVD 1988
5829
5824
5819
5814
0
50
100
150
200
250
Distance from LEP (ft)

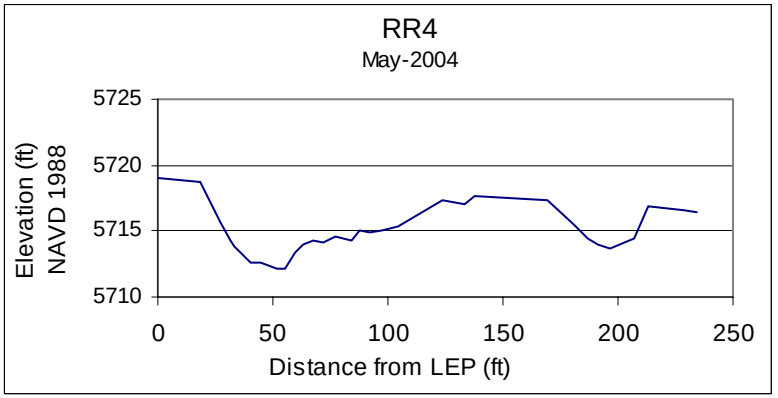

BJ 2
May-2004
Elevation (ft) NAVD 1988
5830
5825
5820
5815
0
50
100
150
200
250
Distance from LEP (ft)

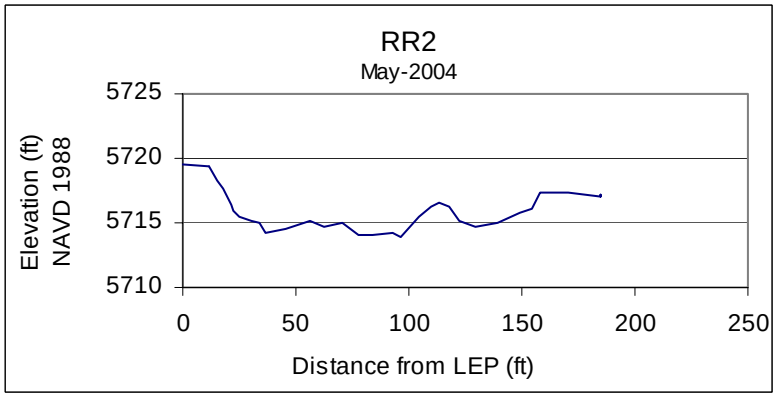

BJ 5
May-2004
Elevation (ft) NAVD 1988
5830
5825
5820
5815
0
50
100
150
200
250
Distance from LEP (ft)

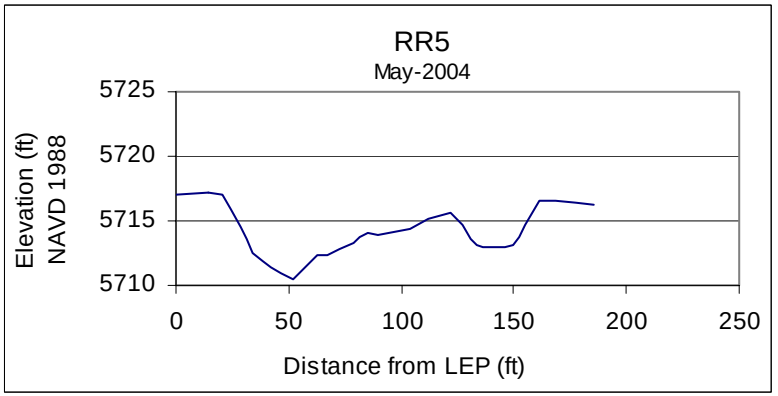

BJ 3
May-2004
Elevation (ft) NAVD 1988
5830
5825
5820
5815
0
50
100
150
200
250
Distance from LEP (ft)

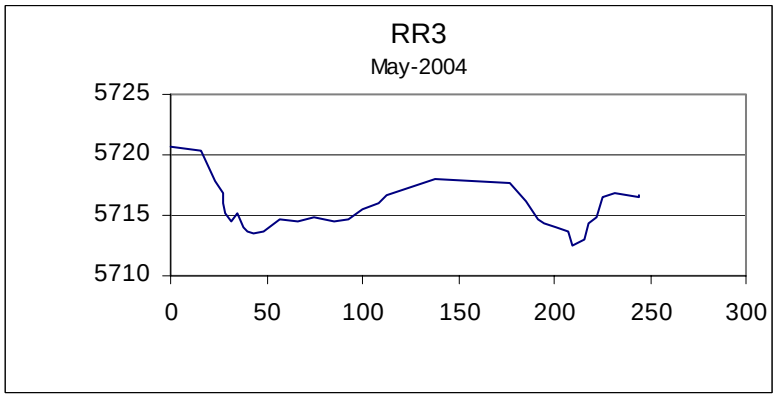

BJ 6
May-2004
Elevation (ft) NAVD 1988
5830
5825
5820
5815
0
50
100
150
200
250
Distance from LEP (ft)

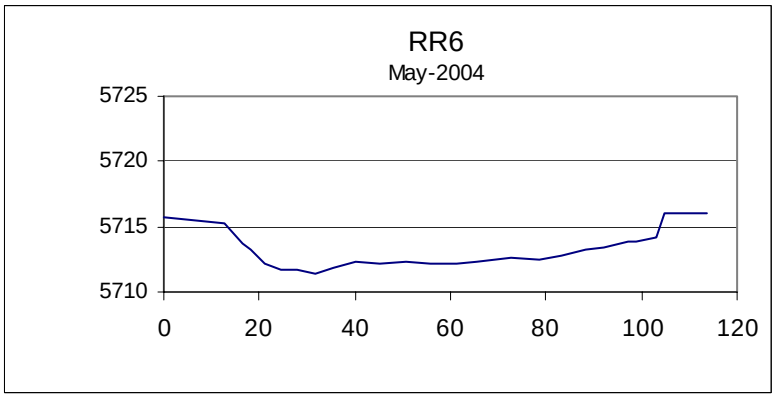

RR1
May-2004
Elevation (ft) NAVD 1988
5725
5720
5715
5710
0
50
100
150
200
250
Distance from LEP (ft)

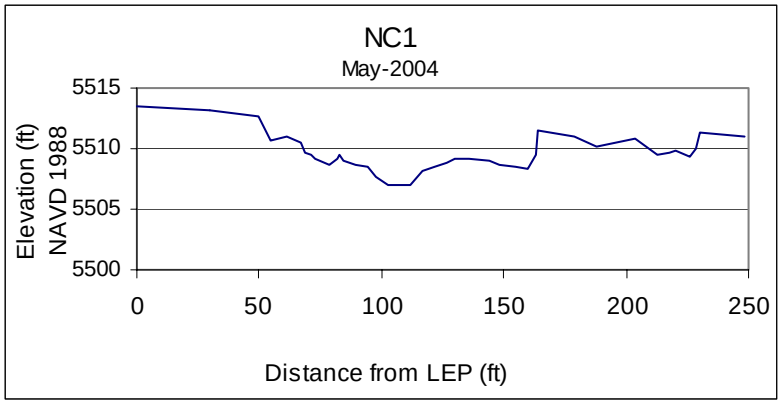

RR4
May-2004
Elevation (ft) NAVD 1988
5725
5720
5715
5710
0
50
100
150
200
250
Distance from LEP (ft)

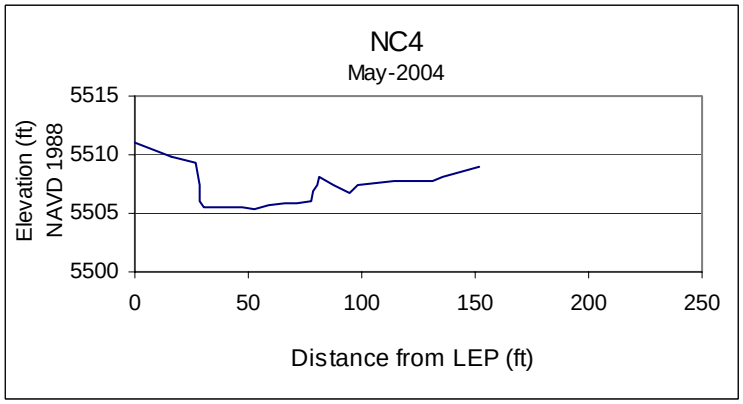

RR2
May-2004
Elevation (ft) NAVD 1988
5725
5720
5715
5710
0
50
100
150
200
250
Distance from LEP (ft)

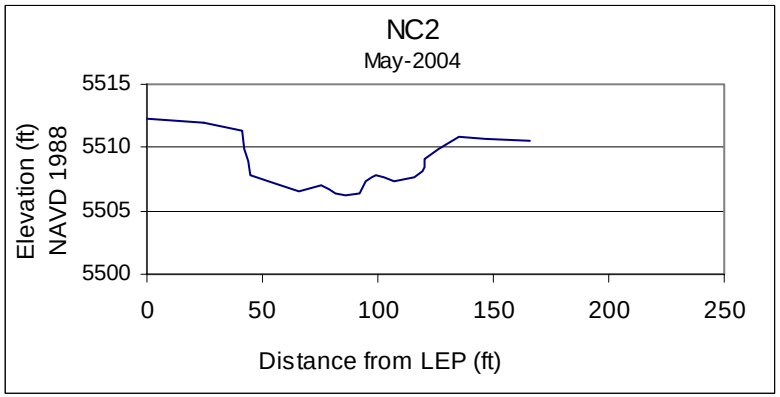

RR5
May-2004
Elevation (ft) NAVD 1988
5725
5720
5715
5710
0
50
100
150
200
250
Distance from LEP (ft)

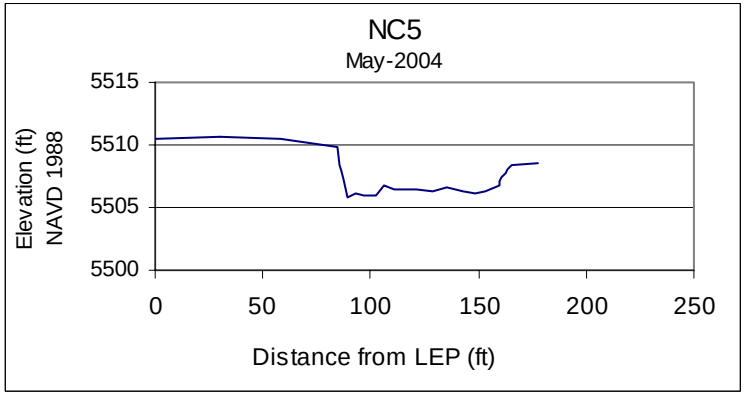

RR3
May-2004
5725
5720
5715
5710
0
50
100
150
200
250
300

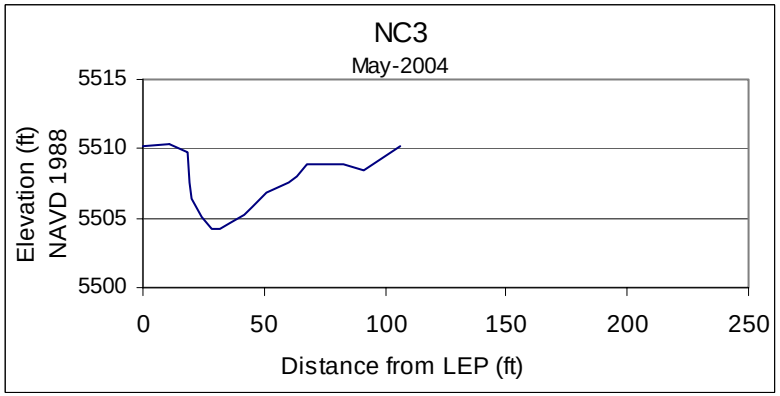

RR6
May-2004
5725
5720
5715
5710
0
20
40
60
80
100
120

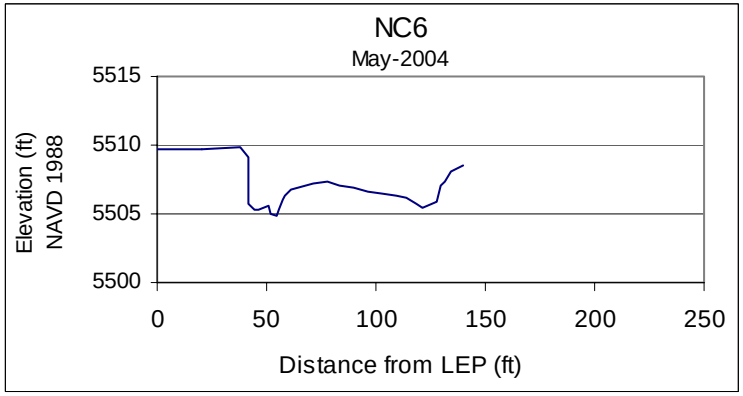

NC1
May-2004
Elevation (ft) NAVD 1988
5515
5510
5505
5500
0
50
100
150
200
250
Distance from LEP (ft)

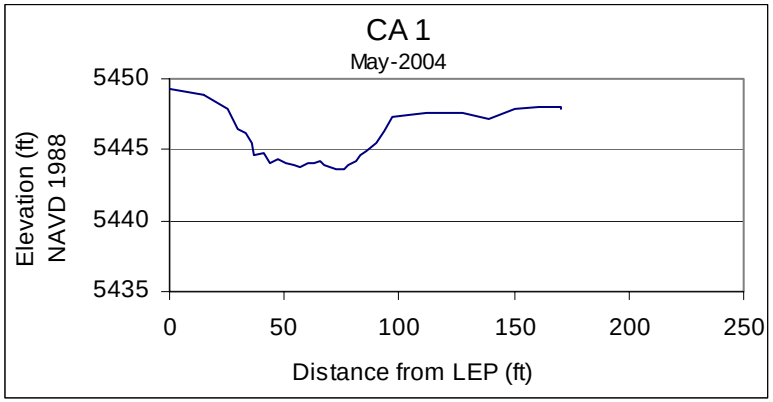

NC4
May-2004
Elevation (ft) NAVD 1988
5515
5510
5505
5500
0
50
100
150
200
250
Distance from LEP (ft)

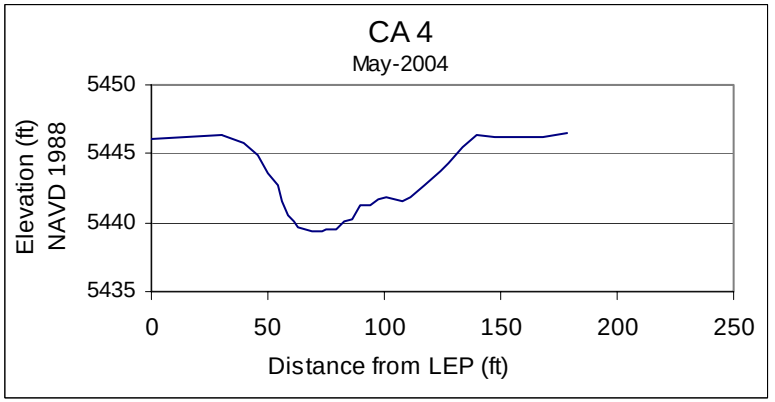

NC2
May-2004
Elevation (ft) NAVD 1988
5515
5510
5505
5500
0
50
100
150
200
250
Distance from LEP (ft)

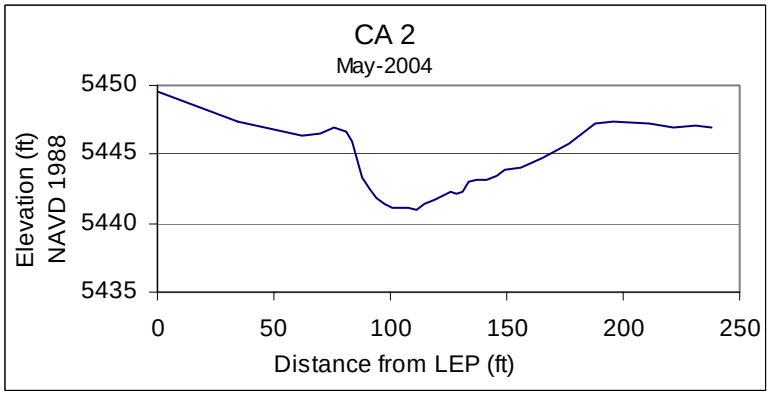

NC5
May-2004
Elevation (ft) NAVD 1988
5515
5510
5505
5500
0
50
100
150
200
250
Distance from LEP (ft)

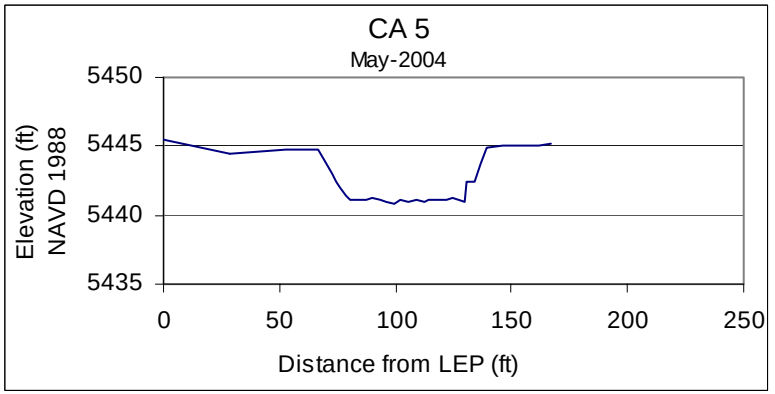

NC3
May-2004
Elevation (ft) NAVD 1988
5515
5510
5505
5500
0
50
100
150
200
250
Distance from LEP (ft)

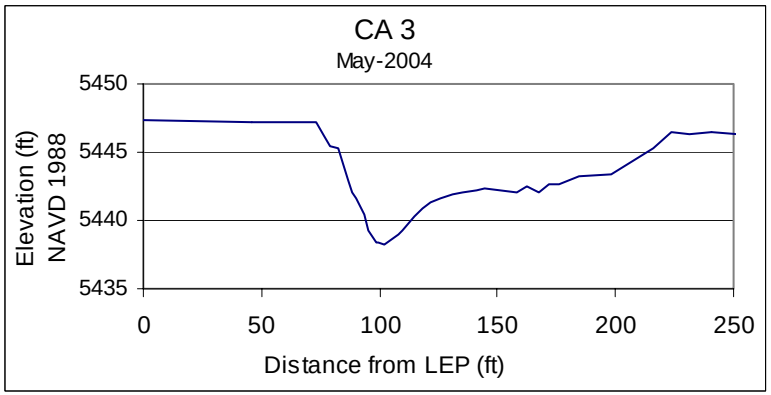

NC6
May-2004
Elevation (ft) NAVD 1988
5515
5510
5505
5500
0
50
100
150
200
250
Distance from LEP (ft)

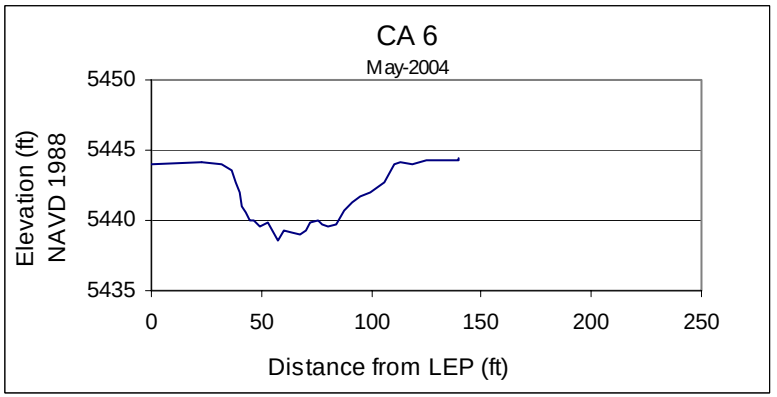

CA 1
May-2004
Elevation (ft) NAVD 1988
5450
5445
5440
5435
0
50
100
150
200
250
Distance from LEP (ft)


CA 4
May-2004
Elevation (ft) NAVD 1988
5450
5445
5440
5435
0
50
100
150
200
250
Distance from LEP (ft)


CA 2
May-2004
Elevation (ft) NAVD 1988
5450
5445
5440
5435
0
50
100
150
200
250
Distance from LEP (ft)


CA 5
May-2004
Elevation (ft) NAVD 1988
5450
5445
5440
5435
0
50
100
150
200
250
Distance from LEP (ft)


CA 3
May-2004
Elevation (ft) NAVD 1988
5450
5445
5440
5435
0
50
100
150
200
250
Distance from LEP (ft)


CA 6
May-2004
Elevation (ft) NAVD 1988
5450
5445
5440
5435
0
50
100
150
200
250
Distance from LEP (ft)

APPENDIX 2.2B: CROSS SECTION DATA

Below Jordanelle (BJ) - Cross Section Data

Point	Northing	Easting	Dist	Elev	Desc
1	7381916.43	1658896.14	0.00	5826.72	LEP1
31	7381895.12	1658893.20	21.51	5825.97	tree
30	7381886.25	1658891.98	30.47	5826.32	tree
29	7381877.82	1658890.83	38.97	5823.95	lb
28	7381874.79	1658890.39	42.03	5823.09	lew
27	7381873.73	1658890.20	43.11	5822.55	ic
26	7381870.75	1658889.79	46.12	5821.73	ic
25	7381866.94	1658889.25	49.97	5820.99	ic
24	7381863.02	1658888.81	53.91	5820.52	ic
23	7381858.59	1658888.16	58.39	5820.36	ic
22	7381854.00	1658887.53	63.02	5820.39	ic
21	7381850.60	1658886.98	66.46	5820.60	ic
20	7381847.78	1658886.69	69.30	5820.67	ic
19	7381842.45	1658886.02	74.66	5820.30	ic
18	7381838.16	1658885.44	79.00	5820.35	ic
17	7381835.81	1658885.02	81.39	5820.10	ic
16	7381832.32	1658884.54	84.90	5820.26	ic
15	7381829.46	1658884.15	87.79	5821.01	ic
14	7381827.42	1658883.86	89.85	5820.20	ic
13	7381824.28	1658883.43	93.02	5819.63	ic
11	7381816.84	1658882.40	100.53	5819.01	ic
10	7381814.39	1658882.01	103.01	5818.92	ic
9	7381809.91	1658881.37	107.54	5821.73	ic
8	7381806.33	1658880.96	111.14	5822.42	ic
7	7381798.14	1658879.35	119.48	5823.09	rew
5	7381791.35	1658878.89	126.26	5825.15	trb
4	7381787.47	1658878.36	130.18	5825.98	veg
34	7381773.90	1658876.52	143.87	5826.79	REP1
33	7381773.90	1658876.52	143.87	5826.79	REP1
32	7381773.88	1658876.53	143.89	5826.80	REP1
3	7381773.84	1658876.48	143.93	5826.79	REP1
2	7381773.81	1658876.47	143.97	5826.95	REP1

Below Jordanelle (BJ) - Cross Section Data

Point	Northing	Easting	Dist	Elev	Desc
1	7381902.34	1658922.77	0.00	5826.10	LEP2
24	7381883.95	1658922.73	18.40	5825.24	veg
23	7381878.26	1658922.75	24.08	5823.83	lb
22	7381875.22	1658922.74	27.13	5823.17	lew
21	7381868.61	1658922.73	33.74	5822.19	ic
20	7381863.24	1658922.71	39.11	5821.62	ic
19	7381856.36	1658922.70	45.98	5821.32	ic
18	7381850.76	1658922.65	51.58	5821.40	ic
17	7381845.47	1658922.69	56.87	5821.38	ic
16	7381838.52	1658922.67	63.82	5821.34	ic
15	7381831.66	1658922.69	70.69	5821.19	ic
14	7381826.27	1658922.70	76.08	5820.88	ic
13	7381821.64	1658922.64	80.70	5820.51	ic
12	7381815.60	1658922.62	86.74	5821.10	ic
11	7381810.06	1658922.53	92.28	5821.52	ic
10	7381805.75	1658922.63	96.59	5821.23	ic
9	7381802.14	1658922.63	100.20	5821.98	ic
8	7381797.94	1658922.58	104.40	5823.06	rew
7	7381793.35	1658922.48	109.00	5824.13	rb
6	7381787.34	1658922.61	115.01	5826.52	rb
2	7381775.95	1658922.59	126.40	5827.12	REP2
3	7381775.86	1658922.59	126.48	5827.21	bs1
4	7381775.86	1658922.59	126.48	5827.21	bs2
5	7381775.86	1658922.59	126.48	5827.21	bs3
25	7381775.84	1658922.59	126.50	5827.21	REP2

Below Jordanelle (BJ) - Cross Section Data

Point	Northing	Easting	Dist	Elev	Desc
1	7381919.15	1658985.32	0.00	5827.16	LEP3
23	7381887.04	1658982.47	32.24	5825.95	veg
22	7381875.24	1658981.48	44.08	5825.38	tlb
21	7381871.04	1658980.99	48.31	5823.99	veg
20	7381867.77	1658980.83	51.58	5822.82	lew
19	7381865.58	1658980.62	53.78	5821.70	ic
18	7381861.58	1658980.20	57.80	5821.08	ic
17	7381853.23	1658979.55	66.17	5821.21	ic
16	7381843.27	1658978.68	76.17	5821.19	ic
15	7381836.40	1658978.08	83.07	5821.27	ic
14	7381830.15	1658977.54	89.35	5821.54	ic
13	7381821.84	1658976.66	97.70	5821.12	ic
12	7381813.22	1658976.05	106.34	5821.05	ic
11	7381801.92	1658975.07	117.68	5821.22	ic
10	7381794.99	1658974.46	124.64	5821.63	ic
9	7381791.62	1658974.17	128.02	5821.12	ic
8	7381786.23	1658973.69	133.43	5822.11	ic
7	7381782.40	1658973.36	137.27	5822.98	rew
6	7381780.78	1658973.22	138.90	5823.22	rb
5	7381777.00	1658972.89	142.70	5824.79	tbank
4	7381767.87	1658972.09	151.86	5825.38	veg
24	7381746.97	1658970.24	172.84	5825.80	REP3
2	7381746.96	1658970.27	172.85	5825.81	REP3
3	7381746.93	1658970.26	172.88	5825.81	rep3

Below Jordanelle (BJ) - Cross Section Data

Point	Northing	Easting	Dist	Elev	Desc
1	7381845.69	1659164.06	0.00	5826.05	LEP4
29	7381830.27	1659152.42	19.32	5824.97	tlb
28	7381825.77	1659149.02	24.96	5822.81	lb
27	7381824.05	1659147.71	27.12	5821.72	lew
26	7381822.24	1659146.35	29.38	5820.77	ic
25	7381820.85	1659145.30	31.12	5819.98	ic
24	7381819.19	1659144.05	33.21	5818.75	ic
23	7381816.75	1659141.64	36.61	5816.81	ic
22	7381812.44	1659138.95	41.67	5815.26	ic
21	7381809.10	1659136.38	45.88	5814.75	ic
20	7381803.12	1659131.60	53.53	5814.64	ic
19	7381795.85	1659126.43	62.45	5814.80	ic
18	7381790.88	1659122.47	68.80	5815.56	ic
17	7381785.75	1659119.07	74.94	5816.80	ic
16	7381781.97	1659115.94	79.85	5818.46	ic
15	7381780.72	1659115.00	81.41	5818.73	ic
14	7381778.14	1659113.05	84.65	5819.16	ic
13	7381775.37	1659110.96	88.12	5819.84	ic
12	7381772.98	1659109.15	91.11	5820.02	ic
11	7381770.41	1659107.22	94.33	5820.22	ic
10	7381766.87	1659104.54	98.77	5820.57	ic
9	7381762.17	1659100.99	104.66	5821.21	ic
8	7381759.33	1659098.85	108.22	5821.74	rew
7	7381754.62	1659095.29	114.12	5822.71	rb
6	7381749.15	1659091.16	120.97	5823.50	rb
5	7381743.21	1659086.67	128.42	5824.07	trb
4	7381733.25	1659079.15	140.90	5824.35	veg
31	7381724.84	1659072.80	151.44	5823.98	REP4
3	7381724.73	1659072.72	151.58	5823.99	REP4

Below Jordanelle (BJ) - Cross Section Data

Point	Northing	Easting	Dist	Elev	Desc
1	7381705.53	1659257.40	0.00	5825.09	LEP5
25	7381691.24	1659243.57	19.88	5824.92	veg
24	7381685.35	1659237.85	28.09	5824.36	tlb
23	7381680.24	1659232.91	35.20	5821.98	lb
22	7381678.24	1659230.97	37.99	5821.05	lew
21	7381675.64	1659228.46	41.60	5819.86	ic
20	7381673.34	1659226.23	44.80	5819.71	ic
19	7381668.49	1659221.53	51.55	5819.31	ic
18	7381667.80	1659220.86	52.52	5820.50	ic
17	7381665.39	1659218.52	55.88	5819.22	ic
16	7381661.25	1659214.52	61.64	5819.57	ic
15	7381655.79	1659209.23	69.24	5819.67	ic
14	7381650.69	1659204.29	76.33	5819.69	ic
13	7381644.66	1659198.46	84.73	5819.30	ic
12	7381640.66	1659194.58	90.30	5819.46	ic
11	7381636.09	1659190.15	96.66	5819.42	ic
10	7381631.39	1659185.60	103.20	5819.70	ic
9	7381628.06	1659182.37	107.84	5819.67	ic
8	7381625.20	1659179.61	111.82	5820.06	ic
7	7381624.79	1659179.21	112.40	5821.37	rew
6	7381620.63	1659175.18	118.18	5822.86	trb
5	7381608.58	1659163.51	134.96	5822.91	veg
26	7381596.58	1659151.89	151.66	5823.32	rep5
2	7381596.52	1659151.82	151.75	5823.56	REP5

Below Jordanelle (BJ) - Cross Section Data

Point	Northing	Easting	Dist	Elev	Desc
1	7381637.75	1659331.36	0.00	5825.55	LEP6
25	7381620.64	1659305.30	31.18	5825.18	tlb
24	7381617.57	1659300.56	36.82	5822.10	lb
23	7381614.29	1659295.55	42.81	5820.30	lew
22	7381613.12	1659293.60	45.08	5819.29	ic
21	7381608.40	1659286.34	53.74	5818.64	ic
20	7381606.72	1659283.88	56.72	5818.91	ic
19	7381602.98	1659278.07	63.63	5818.70	ic
18	7381600.83	1659274.86	67.50	5818.17	ic
17	7381597.71	1659270.23	73.07	5818.11	ic
16	7381595.48	1659266.69	77.26	5817.81	ic
15	7381592.89	1659262.95	81.81	5817.98	ic
14	7381590.25	1659258.95	86.60	5817.97	ic
13	7381585.36	1659251.12	95.83	5818.79	ic
12	7381582.71	1659247.38	100.41	5819.45	ic
11	7381579.60	1659242.34	106.34	5819.90	ic
10	7381576.37	1659237.71	111.98	5820.35	rew
9	7381574.96	1659235.60	114.51	5820.88	rb
8	7381573.28	1659232.77	117.80	5821.92	rb
7	7381569.26	1659226.58	125.18	5824.03	trb
6	7381559.88	1659212.62	142.00	5824.64	veg
5	7381554.19	1659203.37	152.86	5823.62	veg
2	7381540.83	1659183.31	176.96	5824.20	REP6
4	7381540.83	1659183.31	176.96	5824.07	bs2

River Road (RR) - Cross Section Data

Point	Northing	Easting	Dist	Elev	Desc
1	7372987.21	1658569.52	0.00	5718.97	LEP1
23	7372974.44	1658550.32	2.26	5718.75	tlb
22	7372973.19	1658548.44	0.00	5717.84	lb
21	7372969.39	1658542.73	6.86	5716.15	lew
20	7372968.22	1658540.97	8.97	5715.58	ic
19	7372964.50	1658535.38	15.68	5716.08	ic
18	7372962.19	1658531.91	19.85	5715.72	ic
17	7372959.92	1658528.50	23.95	5715.10	ic
16	7372956.37	1658523.17	30.35	5714.97	ic
15	7372952.24	1658516.97	37.80	5714.30	ic
14	7372948.27	1658511.00	44.97	5713.81	ic
13	7372943.35	1658503.61	53.85	5712.88	ic
12	7372942.37	1658502.13	55.62	5712.75	ic
11	7372938.53	1658496.37	62.55	5712.57	ic
10	7372933.23	1658488.40	72.12	5711.90	ic
9	7372930.74	1658484.66	76.61	5712.65	ic
8	7372928.20	1658480.84	81.20	5714.71	ic
7	7372926.33	1658478.04	84.57	5716.09	rew
6	7372924.13	1658474.73	88.54	5718.23	trb
5	7372921.17	1658470.29	93.88	5718.57	veg
24	7372915.48	1658461.73	104.16	5718.60	REP1
2	7372915.44	1658461.67	104.22	5718.68	REP1

River Road (RR) - Cross Section Data

Point	Northing	Easting	Dist	Elev	Desc
1	7372899.93	1658694.98	0.00	5719.60	LEP2
32	7372889.63	1658688.91	2.96	5719.42	tlb
31	7372887.08	1658687.41	0.00	5718.28	lb
30	7372884.54	1658685.91	2.95	5717.59	lb
29	7372881.61	1658684.18	6.35	5716.47	lb
28	7372880.51	1658683.53	7.63	5716.00	lew
27	7372878.64	1658682.43	9.80	5715.42	ic
26	7372873.94	1658679.65	15.26	5715.12	ic
25	7372870.82	1658677.81	18.88	5714.97	ic
24	7372868.02	1658676.16	22.13	5714.26	ic
23	7372860.86	1658671.94	30.45	5714.47	ic
22	7372851.84	1658666.62	40.91	5715.08	ic
21	7372846.37	1658663.40	47.26	5714.74	ic
20	7372838.93	1658659.01	55.91	5714.95	ic
19	7372832.77	1658655.37	63.05	5714.10	ic
18	7372827.98	1658652.55	68.61	5714.01	ic
17	7372819.88	1658647.77	78.02	5714.24	ic
16	7372816.81	1658645.96	81.58	5713.92	ic
15	7372809.71	1658641.77	89.83	5715.53	ic
14	7372804.99	1658638.99	95.30	5716.24	ws
13	7372802.15	1658637.31	98.61	5716.61	is
12	7372798.71	1658635.28	102.60	5716.19	ws
11	7372794.42	1658632.75	107.58	5715.22	ic
10	7372788.20	1658629.09	114.79	5714.76	ic
9	7372779.69	1658624.07	124.68	5715.06	ic
8	7372771.82	1658619.42	133.82	5715.78	ic
7	7372766.99	1658616.58	139.43	5716.17	rew
6	7372764.07	1658614.85	142.82	5717.27	trb
5	7372753.40	1658608.57	155.20	5717.35	veg
4	7372740.77	1658601.12	169.86	5717.08	REP2
2	7372740.77	1658601.11	169.87	5717.15	REP2
33	7372740.76	1658601.11	169.88	5717.08	REP2
3	7372740.74	1658601.10	169.90	5717.08	REP2

River Road (RR) - Cross Section Data

Point	Northing	Easting	Dist	Elev	Desc
1	7372882.87	1658810.17	0.00	5720.63	LEP3
41	7372869.94	1658801.20	7.66	5720.27	tlb
40	7372863.65	1658796.83	0.00	5717.78	lb
39	7372860.74	1658794.81	3.54	5716.81	lb
38	7372860.15	1658794.40	4.26	5715.94	lew
37	7372859.18	1658793.73	5.45	5715.12	ic
36	7372856.61	1658791.95	8.57	5714.47	ic
35	7372854.43	1658790.43	11.22	5715.22	ic
34	7372852.15	1658788.85	14.01	5713.92	ic
33	7372850.11	1658787.44	16.49	5713.74	ic
32	7372847.32	1658785.50	19.88	5713.46	ic
31	7372842.92	1658782.45	25.24	5713.63	ic
30	7372836.57	1658778.04	32.97	5714.67	ic
29	7372828.52	1658772.45	42.76	5714.53	ic
28	7372821.53	1658767.60	51.27	5714.79	ic
27	7372812.98	1658761.67	61.68	5714.56	ic
26	7372806.43	1658757.12	69.65	5714.73	ic
25	7372800.37	1658752.92	77.03	5715.43	ic
24	7372794.22	1658748.65	84.51	5715.98	ws
23	7372789.97	1658745.70	89.69	5716.69	is
22	7372769.31	1658731.37	114.83	5717.96	is
21	7372737.36	1658709.19	153.73	5717.68	is
20	7372730.42	1658704.38	162.17	5716.16	is
19	7372725.48	1658700.95	168.19	5714.68	ws
18	7372722.66	1658698.99	171.62	5714.30	ic
17	7372718.02	1658695.77	177.27	5713.96	ic
16	7372712.62	1658692.02	183.84	5713.64	ic
15	7372710.36	1658690.45	186.59	5712.53	ic
14	7372705.18	1658686.86	192.89	5713.02	ic
13	7372703.69	1658685.83	194.71	5714.41	ic
12	7372699.99	1658683.25	199.22	5714.91	rew
11	7372697.44	1658681.49	202.32	5716.47	trb
10	7372692.46	1658678.03	208.38	5716.86	veg
9	7372682.63	1658671.21	220.34	5716.54	REP3
42	7372682.62	1658671.20	220.36	5716.52	REP3
2	7372682.60	1658671.18	220.39	5716.60	REP3

River Road (RR) - Cross Section Data

Point	Northing	Easting	Dist	Elev	Desc
1	7372779.83	1658925.04	0.00	5719.00	LEP4
32	7372770.42	1658909.15	8.69	5718.74	tlb
31	7372765.99	1658901.67	0.00	5715.70	lb
30	7372763.72	1658897.83	4.46	5714.24	lew
29	7372762.69	1658896.10	6.47	5713.87	ic
28	7372759.30	1658890.37	13.14	5712.60	ic
27	7372756.83	1658886.19	17.99	5712.65	ic
26	7372753.36	1658880.33	24.80	5712.20	ic
25	7372751.89	1658877.84	27.69	5712.15	ic
24	7372749.50	1658873.81	32.37	5713.30	ic
23	7372747.87	1658871.05	35.58	5713.95	ic
22	7372745.41	1658866.90	40.40	5714.31	ic
21	7372743.37	1658863.46	44.40	5714.19	ic
20	7372740.40	1658858.44	50.24	5714.57	ic
19	7372736.94	1658852.59	57.04	5714.35	ic
18	7372734.98	1658849.28	60.88	5715.02	ic
17	7372733.06	1658846.05	64.64	5714.96	ic
16	7372730.01	1658840.88	70.64	5715.11	ws
15	7372726.67	1658835.25	77.19	5715.40	is
14	7372716.65	1658818.31	96.87	5717.33	is
13	7372711.69	1658809.95	106.59	5716.97	is
12	7372709.67	1658806.53	110.57	5717.60	is
11	7372693.62	1658779.42	142.07	5717.32	is
10	7372687.88	1658769.72	153.34	5715.46	is
9	7372684.46	1658763.95	160.04	5714.41	ws
8	7372682.38	1658760.43	164.14	5713.96	ic
7	7372679.75	1658755.99	169.29	5713.65	ic
6	7372674.16	1658746.55	180.27	5714.44	rew
5	7372671.46	1658741.99	185.57	5716.89	trb
4	7372663.30	1658728.20	201.58	5716.59	rb
33	7372660.31	1658723.16	207.44	5716.39	REP4
3	7372660.31	1658723.16	207.44	5716.39	REP4
2	7372660.29	1658723.12	207.49	5716.39	REP4

River Road (RR) - Cross Section Data

Point	Northing	Easting	Dist	Elev	Desc
1	7372657.18	1658939.83	0.00	5717.07	LEP5
36	7372654.81	1658925.45	6.04	5717.20	lb
35	7372653.83	1658919.49	0.00	5717.07	tlb
34	7372653.25	1658915.94	3.60	5715.88	lb
33	7372652.59	1658911.96	7.62	5714.60	lb
32	7372652.14	1658909.18	10.44	5713.63	lew
31	7372651.67	1658906.36	13.31	5712.53	ic
30	7372650.98	1658902.19	17.53	5711.90	ic
29	7372650.40	1658898.63	21.14	5711.46	ic
28	7372649.55	1658893.48	26.36	5711.00	ic
27	7372648.79	1658888.84	31.06	5710.51	ic
26	7372647.73	1658882.47	37.52	5711.51	ic
25	7372647.00	1658878.03	42.02	5712.29	ic
24	7372646.24	1658873.40	46.70	5712.34	ic
23	7372645.43	1658868.46	51.71	5712.88	ic
22	7372644.42	1658862.35	57.91	5713.27	ic
21	7372643.91	1658859.22	61.08	5713.69	ws
20	7372643.28	1658855.42	64.93	5714.04	is
19	7372642.56	1658851.06	69.34	5713.92	is
18	7372640.31	1658837.38	83.21	5714.41	is
17	7372639.01	1658829.46	91.24	5715.15	is
16	7372637.44	1658819.93	100.90	5715.62	is
15	7372636.47	1658814.07	106.84	5714.73	is
14	7372635.86	1658810.33	110.63	5713.65	ws
13	7372635.54	1658808.39	112.60	5713.08	ic
12	7372635.02	1658805.23	115.80	5712.99	ic
11	7372634.23	1658800.43	120.66	5712.98	ic
10	7372633.48	1658795.92	125.24	5712.94	ic
9	7372632.83	1658791.96	129.24	5713.18	ic
8	7372632.38	1658789.23	132.01	5713.71	rew
7	7372631.97	1658786.76	134.52	5714.71	rb
6	7372630.94	1658780.50	140.86	5716.60	trb
5	7372629.78	1658773.46	148.00	5716.58	veg
4	7372628.34	1658764.68	156.90	5716.34	veg
37	7372627.01	1658756.64	165.04	5716.27	REP5

River Road (RR) - Cross Section Data

Point	Northing	Easting	Dist	Elev	Desc
1	7372543.43	1658868.30	0.00	5715.78	LEP6
27	7372549.11	1658857.15	3.86	5715.27	tlb
26	7372550.87	1658853.71	0.00	5713.78	lb
25	7372551.70	1658852.09	1.82	5713.31	lew
24	7372553.10	1658849.34	4.91	5712.12	ic
23	7372554.50	1658846.59	8.00	5711.70	ic
22	7372556.00	1658843.64	11.31	5711.64	ic
21	7372557.77	1658840.17	15.20	5711.39	ic
20	7372559.55	1658836.68	19.11	5711.91	ic
19	7372561.65	1658832.56	23.74	5712.29	ic
18	7372563.91	1658828.13	28.72	5712.14	ic
17	7372566.40	1658823.25	34.19	5712.39	ic
16	7372568.76	1658818.62	39.39	5712.22	ic
15	7372571.32	1658813.60	45.03	5712.10	ic
14	7372573.25	1658809.81	49.28	5712.25	ic
13	7372576.53	1658803.37	56.51	5712.58	ic
12	7372579.18	1658798.17	62.35	5712.46	ic
11	7372581.33	1658793.96	67.07	5712.77	ic
10	7372583.46	1658789.67	71.86	5713.29	ic
9	7372585.23	1658786.15	75.80	5713.47	rew
8	7372587.52	1658781.61	80.88	5713.82	eveg-bar
7	7372588.42	1658780.21	82.54	5713.80	veg
6	7372590.40	1658776.30	86.92	5714.23	rb
5	7372591.35	1658774.92	88.59	5715.97	trb
28	7372594.99	1658767.16	97.15	5716.02	REP6
2	7372595.04	1658767.06	97.27	5716.09	REP6

Never Channelized (NC) - Cross Section Data

Point	Northing	Easting	Dist	Elev	Desc
1	7355452.12	1654251.22	0.00	5513.55	LEP1
43	7355426.45	1654236.79	29.45	5513.17	veg
42	7355408.53	1654226.72	50.00	5512.65	tlb
41	7355404.30	1654224.34	54.86	5510.68	lb
40	7355398.45	1654221.05	61.57	5510.96	lb
39	7355393.35	1654218.18	67.42	5510.51	lb
38	7355392.11	1654217.50	68.83	5509.70	lb
37	7355390.13	1654216.38	71.10	5509.44	lb
36	7355388.47	1654215.45	73.02	5509.24	lew
35	7355383.80	1654212.90	78.34	5508.66	isc
34	7355380.95	1654211.30	81.60	5509.14	veg
33	7355380.24	1654210.91	82.41	5509.53	ws
32	7355378.57	1654209.87	84.38	5508.99	ws
31	7355373.95	1654207.29	89.66	5508.63	isc
30	7355369.81	1654204.95	94.42	5508.43	ic
29	7355366.78	1654203.26	97.89	5507.65	ic
28	7355362.47	1654200.82	102.85	5507.07	ic
27	7355358.70	1654198.70	107.17	5506.98	ic
26	7355354.82	1654196.33	111.72	5507.02	ic
25	7355350.53	1654194.47	116.37	5508.17	ic
24	7355345.88	1654191.49	121.88	5508.51	ic
23	7355342.07	1654189.35	126.25	5508.89	ic
22	7355338.52	1654187.35	130.32	5509.10	ic
21	7355333.90	1654184.75	135.62	5509.13	ic
20	7355326.70	1654180.71	143.88	5508.98	ic
19	7355323.22	1654178.75	147.88	5508.72	ic
18	7355317.29	1654175.42	154.67	5508.54	ic
17	7355313.04	1654173.03	159.55	5508.33	ic
16	7355309.79	1654171.20	163.28	5509.56	rew
15	7355309.06	1654170.79	164.12	5511.56	trb
14	7355296.30	1654163.61	178.76	5510.96	veg
13	7355288.23	1654159.13	187.99	5510.13	veg
12	7355274.58	1654151.45	203.65	5510.87	veg
11	7355266.93	1654147.16	212.42	5509.48	veg
10	7355262.61	1654144.67	217.40	5509.69	veg
9	7355260.07	1654143.24	220.33	5509.80	veg
8	7355255.02	1654140.40	226.12	5509.27	veg
7	7355252.88	1654139.20	228.57	5509.94	veg
6	7355251.81	1654138.60	229.80	5511.29	veg
2	7355235.53	1654129.34	248.52	5511.07	REP1

Never Channelized (NC) - Cross Section Data

Point	Northing	Easting	Dist	Elev	Desc
3	7355385.92	1654309.68	0.00	5512.25	bs1
28	7355385.91	1654309.66	0.02	5512.25	bs2
2	7355385.86	1654309.63	0.00	5512.21	LEP2
4	7355366.21	1654294.60	24.82	5512.04	veg
5	7355352.97	1654284.57	41.43	5511.40	tlb
6	7355352.19	1654283.89	42.45	5509.96	lb
7	7355351.01	1654283.00	43.93	5508.97	lb
8	7355350.41	1654282.50	44.72	5507.87	lew
9	7355341.89	1654275.97	55.45	5507.19	ic
10	7355333.64	1654269.71	65.81	5506.62	ic
11	7355326.05	1654263.84	75.40	5507.06	ic
12	7355322.94	1654261.51	79.29	5506.70	ic
13	7355321.11	1654260.19	81.54	5506.40	ic
14	7355317.59	1654257.38	86.05	5506.19	ic
15	7355312.80	1654253.67	92.11	5506.45	ic
16	7355310.60	1654252.11	94.80	5507.33	ic
17	7355308.49	1654250.40	97.51	5507.59	ic
18	7355307.11	1654249.42	99.21	5507.88	ic
19	7355304.68	1654247.48	102.31	5507.68	ic
20	7355300.70	1654244.41	107.34	5507.38	ic
21	7355294.28	1654239.51	115.42	5507.67	ic
22	7355291.12	1654237.11	119.39	5508.07	ic
23	7355290.80	1654236.88	119.78	5508.48	rew
24	7355290.31	1654236.51	120.39	5509.12	trb
25	7355285.57	1654232.89	126.36	5509.92	rb
26	7355278.90	1654227.79	134.75	5510.79	veg
27	7355269.40	1654220.51	146.72	5510.64	veg
1	7355254.31	1654208.95	165.73	5510.58	REP2

Never Channelized (NC) - Cross Section Data

Point	Northing	Easting	Dist	Elev	Desc
3	7355224.12	1654362.63		5510.34	bs1
4	7355224.11	1654362.61		5510.34	bs2
5	7355224.11	1654362.61		5510.33	bs3
22	7355224.11	1654362.60	106.43	5510.33	bs4
1	7355224.06	1654362.42	0.00	5510.16	LEP3
6	7355221.27	1654352.48	10.54	5510.37	lb
7	7355219.14	1654344.93	18.39	5509.74	toplb
8	7355218.75	1654343.77	19.61	5507.60	lew
9	7355218.73	1654343.52	19.86	5506.39	ic
10	7355217.49	1654339.08	24.47	5505.14	ic
11	7355216.46	1654335.39	28.30	5504.22	ic
12	7355215.48	1654331.86	31.96	5504.23	ic
13	7355214.36	1654327.93	36.05	5504.59	ic
14	7355212.93	1654322.59	41.58	5505.21	ic
15	7355211.78	1654318.82	45.51	5505.87	ic
16	7355210.25	1654313.16	51.38	5506.78	ic
17	7355207.87	1654304.69	60.18	5507.57	rew
18	7355206.91	1654301.35	63.65	5508.06	rb
19	7355205.86	1654297.58	67.57	5508.92	toprb
20	7355201.83	1654283.15	82.55	5508.84	veg
21	7355199.62	1654275.27	90.73	5508.39	veg
2	7355195.38	1654260.12	106.47	5510.19	REP3

Never Channelized (NC) - Cross Section Data

Point	Northing	Easting	Dist	Elev	Desc
1	7355097.82	1654381.85	0.00	5511.12	LEP4
26	7355095.92	1654366.14	15.82	5509.84	veg
25	7355094.60	1654355.31	26.74	5509.29	tlb
24	7355094.43	1654353.87	28.18	5507.42	lew
23	7355094.42	1654353.71	28.34	5506.05	ic
22	7355094.21	1654352.06	30.01	5505.57	ic
21	7355093.81	1654348.60	33.49	5505.48	ic
20	7355092.96	1654341.80	40.34	5505.57	ic
19	7355092.15	1654335.15	47.04	5505.43	ic
18	7355091.44	1654329.22	53.01	5505.31	ic
17	7355090.80	1654323.55	58.71	5505.62	ic
16	7355089.96	1654316.62	65.70	5505.82	ic
15	7355089.15	1654310.80	71.57	5505.87	ic
14	7355088.51	1654305.10	77.31	5506.04	ic
13	7355088.40	1654304.19	78.23	5506.89	ic
12	7355088.09	1654301.69	80.75	5507.43	rew
11	7355088.04	1654301.27	81.16	5508.11	toprb
10	7355087.31	1654295.23	87.25	5507.41	ws
9	7355086.41	1654287.80	94.73	5506.74	ic
8	7355085.91	1654284.02	98.55	5507.39	ws
7	7355084.08	1654268.41	114.26	5507.81	veg
6	7355082.09	1654251.99	130.80	5507.70	veg
5	7355081.50	1654247.08	135.75	5508.08	veg
2	7355079.58	1654231.56	151.39	5508.96	REP4
28	7355079.55	1654231.47	151.48	5508.94	REP4

Never Channelized (NC) - Cross Section Data

Point	Northing	Easting	Dist	Elev	Desc
1	7355007.48	1654441.82	0.00	5510.56	LEP5
29	7355010.97	1654411.56	30.46	5510.59	veg
28	7355014.14	1654384.06	58.14	5510.53	veg
27	7355017.14	1654357.43	84.93	5509.87	toplb
26	7355017.36	1654356.99	85.40	5508.32	lb
25	7355017.45	1654355.86	86.53	5507.92	lb
24	7355017.50	1654355.39	87.00	5507.30	lew
23	7355017.61	1654353.15	89.25	5505.81	ic
22	7355018.11	1654349.83	92.60	5506.10	ic
21	7355018.63	1654345.67	96.80	5506.00	ic
20	7355019.13	1654340.22	102.26	5506.02	ic
19	7355019.68	1654336.54	105.98	5506.75	ic
18	7355020.14	1654331.29	111.25	5506.43	ic
17	7355020.62	1654327.01	115.55	5506.53	ic
16	7355021.37	1654321.02	121.59	5506.43	ic
15	7355022.17	1654313.72	128.93	5506.36	ic
14	7355023.06	1654307.54	135.18	5506.56	ic
13	7355023.86	1654299.88	142.87	5506.26	ic
12	7355024.50	1654294.72	148.07	5506.16	ic
11	7355025.14	1654289.18	153.66	5506.28	ic
10	7355025.77	1654283.53	159.34	5506.71	ic
9	7355025.82	1654283.12	159.75	5507.17	rew
8	7355025.98	1654282.17	160.71	5507.50	rb
7	7355026.29	1654280.21	162.70	5507.70	rb
6	7355026.32	1654279.57	163.34	5508.08	rb
5	7355026.37	1654277.66	165.24	5508.39	rb
2	7355027.75	1654265.66	177.32	5508.54	REP5
30	7355027.78	1654265.64	177.34	5508.59	bs3

Never Channelized (NC) - Cross Section Data

Point	Northing	Easting	Dist	Elev	Desc
1	7354957.72	1654396.24	0.00	5509.65	LEP6
31	7354963.94	1654376.99	20.23	5509.67	lb
30	7354969.29	1654360.44	37.62	5509.79	lb
29	7354970.46	1654356.72	41.52	5509.16	toplb
27	7354970.64	1654356.22	42.06	5505.70	ic
28	7354970.67	1654356.16	42.13	5506.35	lew
26	7354971.43	1654353.77	44.63	5505.27	ic
25	7354972.07	1654351.80	46.70	5505.35	ic
24	7354973.27	1654348.09	50.60	5505.54	ic
23	7354973.86	1654346.52	52.27	5505.03	ic
22	7354974.35	1654344.67	54.19	5504.92	ic
21	7354974.91	1654343.06	55.89	5505.24	ic
20	7354975.44	1654341.43	57.61	5506.08	ws
19	7354975.78	1654340.39	58.69	5506.33	bar
18	7354976.55	1654337.86	61.35	5506.79	bar
17	7354979.55	1654328.81	70.87	5507.18	bar
16	7354981.58	1654322.57	77.44	5507.28	bar
15	7354983.41	1654316.65	83.63	5507.10	bar
14	7354985.25	1654310.94	89.63	5506.92	ic
13	7354987.11	1654305.01	95.85	5506.63	ic
12	7354989.30	1654298.89	102.35	5506.48	ic
11	7354991.21	1654292.42	109.09	5506.26	ic
10	7354992.67	1654288.06	113.68	5506.13	ic
9	7354994.25	1654283.28	118.72	5505.77	ic
8	7354995.18	1654280.86	121.31	5505.49	ic
7	7354997.19	1654274.27	128.20	5505.84	ic
6	7354997.44	1654273.30	129.20	5507.06	rew
5	7354998.01	1654271.55	131.04	5507.42	rb
4	7354998.91	1654268.75	133.98	5508.13	rb
3	7355000.59	1654263.56	139.44	5508.57	BS1
32	7355000.60	1654263.54	139.46	5508.56	bs2
2	7355000.60	1654263.53	139.46	5508.56	REP6

Casperville (CA) - Cross Section Data

Point	Northing	Easting	Dist	Elev	Desc
1	7347294.53	1652090.69	0.00	5449.24	LEP1
35	7347284.28	1652080.09	14.74	5448.91	veg
34	7347277.16	1652072.64	25.04	5447.85	tlb
33	7347273.88	1652069.24	29.77	5446.49	lb
32	7347271.61	1652066.88	33.04	5446.20	lb
31	7347269.61	1652064.80	35.92	5445.44	lew
30	7347269.13	1652064.35	36.59	5444.68	ic
29	7347266.13	1652061.18	40.95	5444.74	ic
28	7347263.84	1652059.01	44.10	5444.07	ic
27	7347262.00	1652056.89	46.91	5444.28	ic
26	7347259.50	1652054.30	50.50	5444.07	ic
25	7347257.01	1652052.00	53.89	5443.98	ic
24	7347255.34	1652049.85	56.60	5443.78	ic
23	7347252.74	1652047.20	60.30	5444.06	ic
22	7347250.65	1652045.10	63.27	5444.01	ic
21	7347248.93	1652043.63	65.52	5444.21	ic
20	7347247.64	1652041.97	67.61	5443.92	ic
19	7347245.82	1652040.08	70.24	5443.70	ic
18	7347244.14	1652038.34	72.66	5443.58	ic
17	7347241.99	1652036.10	75.76	5443.57	ic
16	7347240.38	1652034.43	78.09	5443.97	ic
15	7347238.37	1652032.34	80.98	5444.27	ic
14	7347236.70	1652030.61	83.38	5444.65	ic
13	7347235.17	1652029.02	85.59	5444.97	ic
12	7347232.21	1652025.94	89.87	5445.41	rew
11	7347229.94	1652023.59	93.13	5446.32	rb
10	7347227.26	1652020.80	97.00	5447.30	rb
9	7347222.22	1652015.57	104.26	5447.52	trb
8	7347216.79	1652009.92	112.10	5447.54	veg
7	7347206.03	1651998.74	127.62	5447.60	veg
6	7347197.84	1651990.24	139.42	5447.23	veg
5	7347189.99	1651982.08	150.74	5447.81	veg
4	7347182.70	1651974.50	161.26	5448.05	veg
2	7347176.23	1651967.77	170.59	5447.95	REP1
36	7347176.17	1651967.71	170.68	5447.95	REP1

Casperville (CA) - Cross Section Data

Point	Northing	Easting	Dist	Elev	Desc
1	7347149.96	1652238.21	0.00	5449.50	LEP2
37	7347136.51	1652206.36	34.58	5447.43	veg
36	7347125.89	1652181.18	61.90	5446.40	veg
35	7347122.78	1652174.09	69.65	5446.54	veg
34	7347120.29	1652168.23	76.01	5446.94	veg
33	7347118.36	1652163.45	81.17	5446.69	tlb
32	7347117.56	1652161.30	83.46	5445.99	lb
31	7347116.45	1652158.97	86.04	5444.32	lb
30	7347115.65	1652157.09	88.08	5443.34	lew
29	7347114.30	1652153.90	91.55	5442.38	ic
28	7347113.24	1652151.38	94.28	5441.79	ic
27	7347112.09	1652148.51	97.38	5441.37	ic
26	7347110.82	1652145.51	100.63	5441.12	ic
25	7347109.19	1652141.80	104.68	5441.15	ic
24	7347107.81	1652139.04	107.76	5441.09	ic
23	7347106.57	1652135.60	111.42	5440.90	ic
22	7347105.20	1652132.62	114.69	5441.35	ic
21	7347103.59	1652128.56	119.05	5441.69	ic
20	7347102.33	1652125.60	122.27	5441.97	ic
19	7347101.04	1652122.22	125.89	5442.23	ic
18	7347100.16	1652120.13	128.15	5442.20	ic
17	7347098.87	1652117.41	131.16	5442.35	ic
16	7347097.81	1652114.90	133.89	5443.00	ic
15	7347096.46	1652111.71	137.35	5443.10	ic
14	7347094.92	1652108.08	141.30	5443.10	ic
13	7347093.35	1652104.36	145.33	5443.38	rew
12	7347091.74	1652100.55	149.47	5443.92	rb
11	7347088.90	1652094.45	156.19	5443.99	rb
10	7347085.58	1652085.98	165.29	5444.72	rb
9	7347081.18	1652075.59	176.57	5445.78	rb
8	7347076.79	1652065.21	187.84	5447.26	trb
7	7347073.68	1652057.84	195.84	5447.45	veg
6	7347067.84	1652044.05	210.82	5447.30	veg
5	7347063.64	1652034.12	221.60	5446.98	veg
4	7347059.92	1652025.31	231.16	5447.10	veg
38	7347057.45	1652019.41	237.56	5446.97	REP2
2	7347057.43	1652019.44	237.54	5446.99	REP2
3	7347057.41	1652019.38	237.60	5446.98	REP2

Casperville (CA) - Cross Section Data

Point	Northing	Easting	Dist	Elev	Desc	
1	7346931.72	1652242.212	0	5447.418	LEP3	
39	7346941.543	1652197.356	45.92	5447.144	veg	
38	7346947.289	1652170.455	73.43	5447.141	veg	
37	7346947.877	1652167.745	76.20	5446.107	lb	
36	7346948.53	1652164.735	79.28	5445.507	lb	
35	7346949.247	1652161.433	82.66	5445.287	lb	
34	7346950.125	1652157.85	86.35	5442.883	lb	
33	7346950.535	1652155.97	88.27	5442.125	lew	
32	7346950.971	1652153.969	90.32	5441.665	ic	
31	7346951.662	1652150.804	93.56	5440.489	ic	
30	7346952.106	1652148.765	95.64	5439.319	ic	
29	7346953.07	1652145.751	98.80	5438.37	ic	
28	7346953.214	1652144.923	99.64	5438.341	ic	
27	7346953.636	1652142.769	101.83	5438.171	ic	
26	7346954.938	1652136.795	107.94	5438.902	ic	
25	7346955.106	1652134.697	110.03	5439.254	ic	
24	7346956.147	1652129.91	114.93	5440.243	ic	
23	7346956.084	1652130.203	114.63	5440.245	ic	
22	7346956.783	1652126.987	117.92	5440.868	ic	
21	7346957.578	1652123.334	121.66	5441.257	ic	
20	7346958.503	1652119.08	126.01	5441.59	ic	
19	7346959.507	1652114.66	130.54	5441.915	ic	
18	7346960.504	1652110.08	135.23	5442.102	ic	
17	7346961.766	1652104.291	141.16	5442.201	ic	
16	7346962.567	1652100.613	144.92	5442.343	ic	
15	7346965.44	1652087.425	158.42	5442.066	ic	
14	7346966.273	1652083.603	162.33	5442.564	ic	
13	7346967.361	1652078.609	167.44	5442.096	ic	
12	7346968.3	1652074.299	171.85	5442.593	ic	
11	7346969.147	1652070.409	175.83	5442.639	rew	
10	7346971.069	1652061.585	184.86	5443.236	bar	
9	7346973.917	1652048.53	198.23	5443.311	bar	
8	7346977.712	1652031.329	215.84	5445.261	rb	
7	7346979.363	1652023.829	223.52	5446.442	rb	
6	7346981.013	1652016.226	231.30	5446.359	veg	
5	7346982.922	1652007.472	240.26	5446.443	veg	
4	7346985.36	1651996.294	251.70	5446.392	veg	
2	7346987.158	1651988.058	260.13	5446.652	REP3	backsight
40	7346987.182	1651987.972	260.22	5446.6589	REP3	close

Casperville (CA) - Cross Section Data

Point	Northing	Easting	Dist	Elev	Desc
1	7346795.35	1652049.10	0.00	5446.13	LEP4
32	7346817.43	1652028.80	29.99	5446.30	veg
31	7346824.50	1652022.12	39.71	5445.83	veg
30	7346829.18	1652017.84	46.06	5444.91	lb
29	7346832.14	1652014.96	50.18	5443.61	lb
28	7346835.24	1652012.41	54.20	5442.70	lew
27	7346836.94	1652010.97	56.43	5441.63	ic
26	7346838.67	1652009.39	58.76	5440.55	ic
25	7346840.27	1652007.77	61.04	5440.16	ic
24	7346841.66	1652006.55	62.89	5439.71	ic
23	7346845.87	1652002.68	68.60	5439.44	ic
22	7346849.16	1651999.66	73.07	5439.36	ic
21	7346850.76	1651998.18	75.25	5439.57	ic
20	7346853.74	1651995.35	79.36	5439.54	ic
19	7346856.12	1651993.26	82.52	5440.08	ic
18	7346858.79	1651990.81	86.15	5440.23	ic
17	7346861.46	1651988.52	89.66	5441.20	ic
16	7346864.39	1651985.66	93.75	5441.32	ic
15	7346866.95	1651983.31	97.23	5441.75	ic
14	7346870.01	1651980.64	101.29	5441.81	ic
13	7346874.71	1651976.18	107.77	5441.60	ic
12	7346877.33	1651973.78	111.32	5441.91	ic
11	7346881.83	1651969.84	117.30	5442.70	rew
10	7346887.03	1651964.87	124.49	5443.69	rb
9	7346889.05	1651963.01	127.24	5444.30	rb
8	7346893.84	1651958.26	133.98	5445.54	rb
7	7346898.41	1651954.50	139.89	5446.30	rb
6	7346904.02	1651949.25	147.57	5446.25	veg
5	7346910.47	1651943.32	156.33	5446.26	veg
4	7346918.82	1651935.65	167.67	5446.27	veg
33	7346926.81	1651928.24	178.57	5446.47	rEP4
2	7346926.86	1651928.27	178.59	5446.47	rEP4

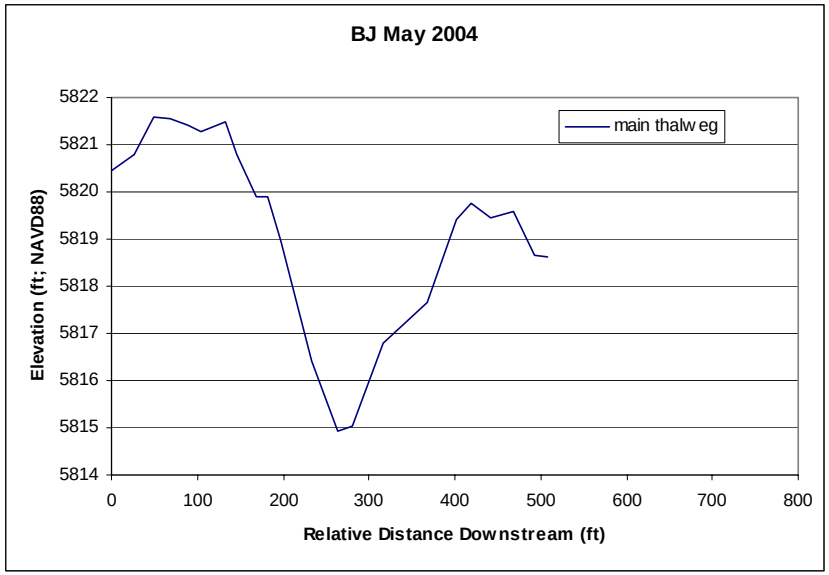
Casperville (CA) - Cross Section Data

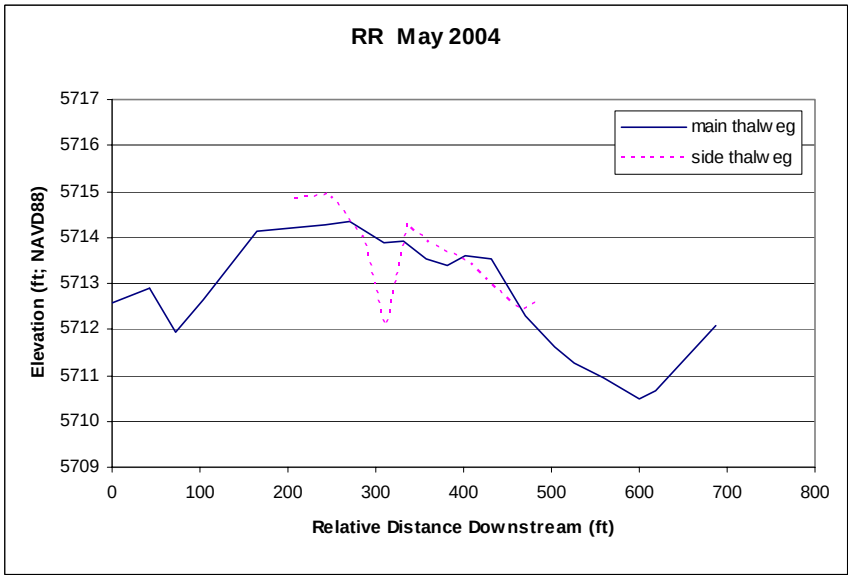
Point	Northing	Easting	Dist	Elev	Desc
1	7346732.81	1651974.42	0.00	5445.51	LEP5
36	7346747.86	1651950.39	28.35	5444.52	veg
35	7346760.56	1651929.74	52.59	5444.76	veg
34	7346767.97	1651918.19	66.31	5444.70	lb
33	7346769.67	1651915.47	69.52	5444.05	lb
32	7346771.40	1651912.71	72.78	5442.99	lb
31	7346772.07	1651911.33	74.31	5442.38	lew
30	7346773.23	1651909.78	76.24	5441.99	ic
29	7346774.53	1651907.71	78.68	5441.37	ic
28	7346775.54	1651906.09	80.59	5441.09	ic
27	7346776.98	1651903.79	83.30	5441.13	ic
26	7346778.98	1651900.59	87.08	5441.13	ic
25	7346780.39	1651898.33	89.74	5441.19	ic
24	7346782.29	1651895.30	93.32	5441.05	ic
23	7346783.88	1651892.75	96.32	5441.03	ic
22	7346785.49	1651890.06	99.46	5440.87	ic
21	7346787.08	1651887.63	102.36	5441.07	ic
20	7346788.63	1651885.15	105.28	5441.02	ic
19	7346790.43	1651882.28	108.67	5441.11	ic
18	7346792.29	1651879.30	112.19	5441.04	ic
17	7346793.57	1651877.25	114.61	5441.06	ic
16	7346794.75	1651875.36	116.83	5441.06	ic
15	7346796.31	1651872.87	119.77	5441.07	ic
14	7346797.56	1651870.87	122.13	5441.12	ic
13	7346799.01	1651868.56	124.85	5441.30	ic
12	7346800.43	1651866.29	127.53	5441.05	ic
11	7346801.56	1651864.48	129.67	5440.96	ic
10	7346802.21	1651863.25	131.05	5442.38	ic
9	7346803.75	1651860.98	133.79	5442.44	rew
8	7346805.13	1651858.77	136.40	5443.69	rb
7	7346806.47	1651856.62	138.94	5444.94	trb
6	7346810.17	1651850.70	145.92	5444.99	veg
5	7346814.41	1651843.93	153.90	5445.07	veg
4	7346818.62	1651837.20	161.84	5445.02	veg
2	7346821.18	1651833.11	166.67	5445.13	rEP5
3	7346821.21	1651833.05	166.74	5445.14	rep5
37	7346821.24	1651833.01	166.78	5445.16	rep5

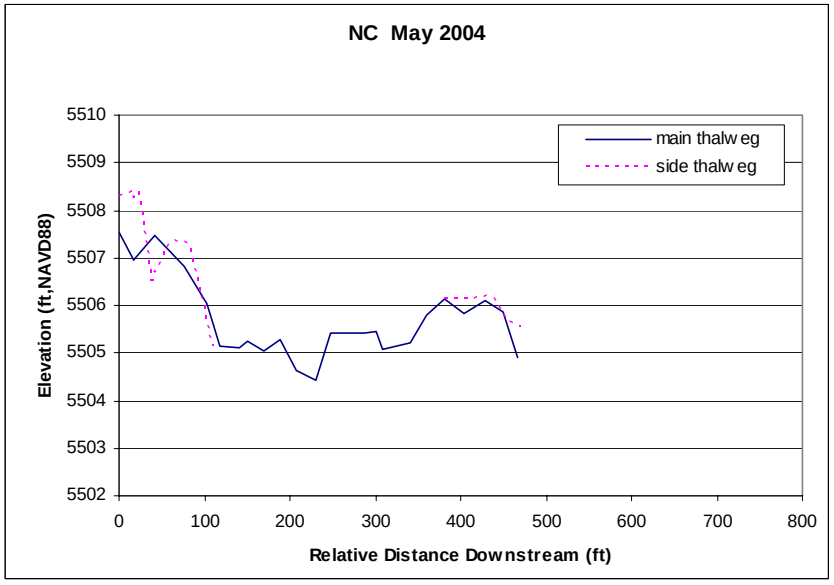
Casperville (CA) - Cross Section Data

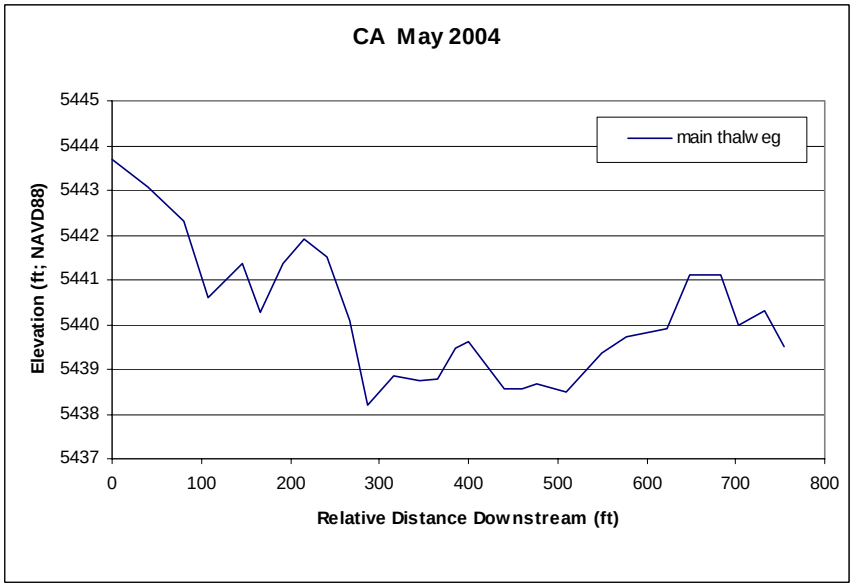
Point	Northing	Easting	Dist	Elev	Desc
1	7346664.24	1651887.86	0.00	5443.96	LEP6
35	7346678.53	1651870.54	22.45	5444.18	veg
34	7346684.45	1651863.32	31.79	5444.01	tlb
33	7346687.20	1651860.04	36.07	5443.53	lb
32	7346688.75	1651858.16	38.50	5442.78	lb
31	7346689.75	1651856.87	40.13	5442.03	lb
30	7346690.51	1651856.03	41.26	5440.97	lew
29	7346691.53	1651854.79	42.87	5440.61	ic
28	7346692.44	1651853.58	44.38	5440.04	ic
27	7346693.92	1651851.72	46.76	5439.98	ic
26	7346695.64	1651849.82	49.32	5439.54	ic
25	7346697.81	1651847.41	52.56	5439.83	ic
24	7346701.02	1651843.37	57.72	5438.62	ic
23	7346702.78	1651841.16	60.55	5439.29	ic
22	7346705.12	1651838.50	64.09	5439.20	ic
21	7346707.13	1651835.89	67.38	5438.93	ic
20	7346708.79	1651833.94	69.94	5439.26	ic
19	7346710.26	1651832.11	72.28	5439.84	ic
18	7346712.19	1651829.78	75.31	5440.04	ic
17	7346713.65	1651828.01	77.60	5439.75	ic
16	7346715.62	1651825.68	80.66	5439.56	ic
15	7346717.47	1651823.43	83.57	5439.76	ic
14	7346719.85	1651820.43	87.40	5440.79	rew
13	7346722.38	1651817.37	91.37	5441.26	bar
12	7346724.77	1651814.46	95.14	5441.73	bar
11	7346727.36	1651811.33	99.20	5442.00	rb
10	7346731.51	1651806.30	105.72	5442.70	rb
9	7346734.36	1651802.85	110.19	5443.94	trb
8	7346736.32	1651800.47	113.27	5444.16	veg
7	7346739.56	1651796.54	118.37	5444.04	veg
6	7346743.82	1651791.42	125.03	5444.25	veg
5	7346747.45	1651787.08	130.69	5444.35	veg
2	7346753.01	1651780.30	139.45	5444.32	REP6
4	7346753.02	1651780.24	139.51	5444.38	REP6
36	7346753.04	1651780.26	139.51	5444.38	rep6
3	7346753.06	1651780.24	139.53	5444.39	REP6

APPENDIX 2.3A: LONGITUDINAL PROFILES


BJ May 2004
Elevation (ft; NAVD88)
5822
5821
5820
5819
5818
5817
5816
5815
5814
0
100
200
300
400
500
600
700
800
Relative Distance Downstream (ft)
main thalweg


RR May 2004
Elevation (ft; NAVD88)
5717
5716
5715
5714
5713
5712
5711
5710
5709
0
100
200
300
400
500
600
700
800
Relative Distance Downstream (ft)
main thalweg
side thalweg


NC May 2004
Elevation (ft,NAVD88)
5510
5509
5508
5507
5506
5505
5504
5503
5502
0
100
200
300
400
500
600
700
800
Relative Distance Downstream (ft)
main thalweg
side thalweg


CA May 2004
Elevation (ft; NAVD88)
5445
5444
5443
5442
5441
5440
5439
5438
5437
0
100
200
300
400
500
600
700
800
Relative Distance Downstream (ft)
main thalweg

APPENDIX 2.3B: LONGITUDINAL DATA

BJ longitudinal profile May 2004

PT	ORIGPT	NORTHING	EASTING	DESC_	FILE	N_UTM27	E_UTM27	Distance (ft)	Elevation (ft, NAVD88)
1031	32	7381856.484	1658888	tw	BJ4 20040513c.txt	4492580.442	463376.6163	0	5820.436
1032	33	7381848.778	1658915	tw	BJ4 20040513c.txt	4492578.049	463384.5686	27.25698921	5820.809
1033	34	7381843.156	1658935	tw	BJ4 20040513c.txt	4492576.3	463390.843	48.63545408	5821.573
1034	35	7381835.755	1658952	tw	BJ4 20040513c.txt	4492574.016	463396.077	67.37945691	5821.538
1035	36	7381829.873	1658973	tw	BJ4 20040513c.txt	4492572.187	463402.4119	89.02016392	5821.424
1036	37	7381825.582	1658988	tw	BJ4 20040513c.txt	4492570.854	463406.9306	104.4834565	5821.271
1037	38	7381821.289	1659016	tw	BJ4 20040513c.txt	4492569.498	463415.4525	132.805707	5821.485
1038	39	7381821.603	1659030	tw	BJ4 20040513c.txt	4492569.57	463419.6417	146.5572924	5820.777
1039	40	7381821.335	1659052	tw	BJ4 20040513c.txt	4492569.451	463426.3111	168.4509327	5819.898
1041	42	7381815.602	1659064	tw	BJ4 20040513c.txt	4492567.683	463430.0252	181.9516371	5819.895
1042	43	7381817.426	1659079	tw	BJ4 20040513c.txt	4492568.213	463434.5347	196.8546789	5818.963
1043	44	7381821.121	1659116	tw	BJ4 20040513c.txt	4492569.276	463445.7607	233.8645918	5816.414
1044	45	7381808.795	1659143	tw	BJ4 20040513c.txt	4492565.473	463453.9932	263.6278671	5814.947
1046	47	7381792.658	1659145	tw	BJ4 20040513c.txt	4492560.552	463454.7382	279.9630787	5815.042
1045	46	7381755.356	1659146	tw	BJ4 20040513c.txt	4492549.185	463455.0019	317.2806522	5816.81
1048	49	7381711.112	1659171	tw	BJ4 20040513c.txt	4492535.662	463462.4283	367.9168118	5817.65
1050	51	7381687.813	1659196	tw	BJ4 20040513c.txt	4492528.52	463470.0708	402.2496021	5819.403
1051	52	7381671.919	1659202	tw	BJ4 20040513c.txt	4492523.666	463471.9422	419.3220807	5819.751
1052	53	7381653.427	1659216	tw	BJ4 20040513c.txt	4492518.008	463476.1	442.3670708	5819.462
1053	54	7381633.402	1659233	tw	BJ4 20040513c.txt	4492511.878	463481.1277	468.3880639	5819.584
1054	55	7381615.144	1659249	tw	BJ4 20040513c.txt	4492506.287	463486.1493	493.0548423	5818.647
1055	56	7381603.636	1659259	tw	BJ4 20040513c.txt	4492502.763	463489.1992	508.3505881	5818.632

RR longitudinal profile May 2004

ORIG_PT	NEW_PT	DESC_	ORIGFILE	NEW_N	NEW_E	N_UTM27	E_UTM27	Distance (ft)	Elevation (ft, NAVD88)
43	1093	tw	RR3 051004c.txt	7372937.181	1658494.307	4489863.521	463241.0848	0	5712.58
44	1094	tw	RR3 051004c.txt	7372899.65	1658513.704	4489852.052	463246.9295	42.24712499	5712.885
45	1095	tw	RR3 051004c.txt	7372876.304	1658533.475	4489844.905	463252.9127	72.84006792	5711.921
46	1096	tw	RR3 051004c.txt	7372854.132	1658554.012	4489838.114	463259.1313	103.0620128	5712.635
47	1097	tw	RR3 051004c.txt	7372852.778	1658615.843	4489837.595	463277.9672	164.9078363	5714.145
48	1098	tw	RR3 051004c.txt	7372855.217	1658693.822	4489838.204	463301.7296	242.92497	5714.258
49	1099	tw	RR3 051004c.txt	7372849.299	1658721.097	4489836.354	463310.0293	270.8346162	5714.338
50	1100	tw	RR3 051004c.txt	7372845.528	1658758.418	4489835.141	463321.3934	308.3456477	5713.886
51	1101	tw	RR3 051004c.txt	7372844.003	1658780.729	4489834.638	463328.1884	330.7087053	5713.928
52	1102	tw	RR3 051004c.txt	7372835.473	1658806.692	4489831.994	463336.0838	358.0370471	5713.515
53	1103	tw	RR3 051004c.txt	7372823.219	1658825.638	4489828.228	463341.8349	380.6005449	5713.383
54	1104	tw	RR3 051004c.txt	7372810.522	1658843.498	4489824.328	463347.2543	402.5138607	5713.589
55	1105	tw	RR3 051004c.txt	7372794.881	1658868.735	4489819.519	463354.9163	432.2047187	5713.524
56	1106	tw	RR3 051004c.txt	7372759.004	1658882.152	4489808.565	463358.9418	470.5084394	5712.28
57	1107	tw	RR3 051004c.txt	7372727.546	1658889.884	4489798.967	463361.243	502.9027227	5711.626
58	1108	tw	RR3 051004c.txt	7372705.074	1658889.046	4489792.121	463360.9487	525.3903421	5711.265
59	1109	tw	RR3 051004c.txt	7372672.008	1658890.48	4489782.044	463361.3283	558.4874222	5710.959
60	1110	tw	RR3 051004c.txt	7372631.274	1658895.416	4489769.624	463362.7615	599.5193958	5710.486
61	1111	tw	RR3 051004c.txt	7372616.138	1658884.356	4489765.032	463359.3655	618.2656513	5710.668
62	1112	tw	RR3 051004c.txt	7372564.255	1658840.425	4489749.299	463345.8909	686.2493144	5712.089
63	1113	tw2	RR3 051004c.txt	7372610.11	1658816.298	4489763.312	463338.6196	482.2904119	5712.628
64	1114	tw2	RR3 051004c.txt	7372622.519	1658806.28	4489767.11	463335.5889	466.3422582	5712.42
65	1115	tw2	RR3 051004c.txt	7372645.622	1658790.219	4489774.177	463330.7356	438.2050172	5712.902
66	1116	tw2	RR3 051004c.txt	7372668.047	1658770.732	4489781.043	463324.8374	408.4960322	5713.443
67	1117	tw2	RR3 051004c.txt	7372691.737	1658734.139	4489788.324	463313.7295	364.9040174	5713.901
68	1118	tw2	RR3 051004c.txt	7372704.193	1658707.548	4489792.165	463305.6496	335.5402095	5714.327
69	1119	tw2	RR3 051004c.txt	7372710.814	1658684.964	4489794.222	463298.7803	312.0056668	5712.062
70	1120	tw2	RR3 051004c.txt	7372725.025	1658666.64	4489798.583	463293.2221	288.8168442	5713.965
71	1121	tw2	RR3 051004c.txt	7372752.007	1658636.534	4489806.856	463284.0964	248.3891363	5714.978
72	1122	tw2	RR3 051004c.txt	7372797.777	1658620.83	4489820.829	463279.3912	200	5714.835

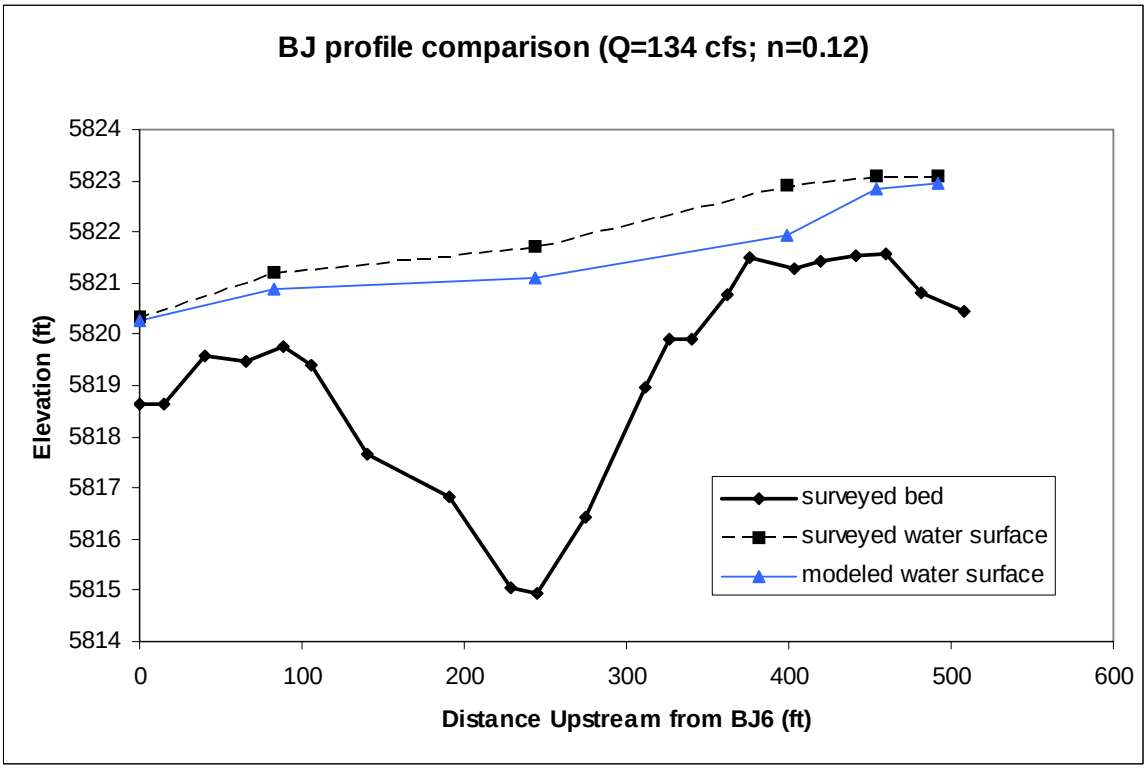
NC longitudinal profile May 2004

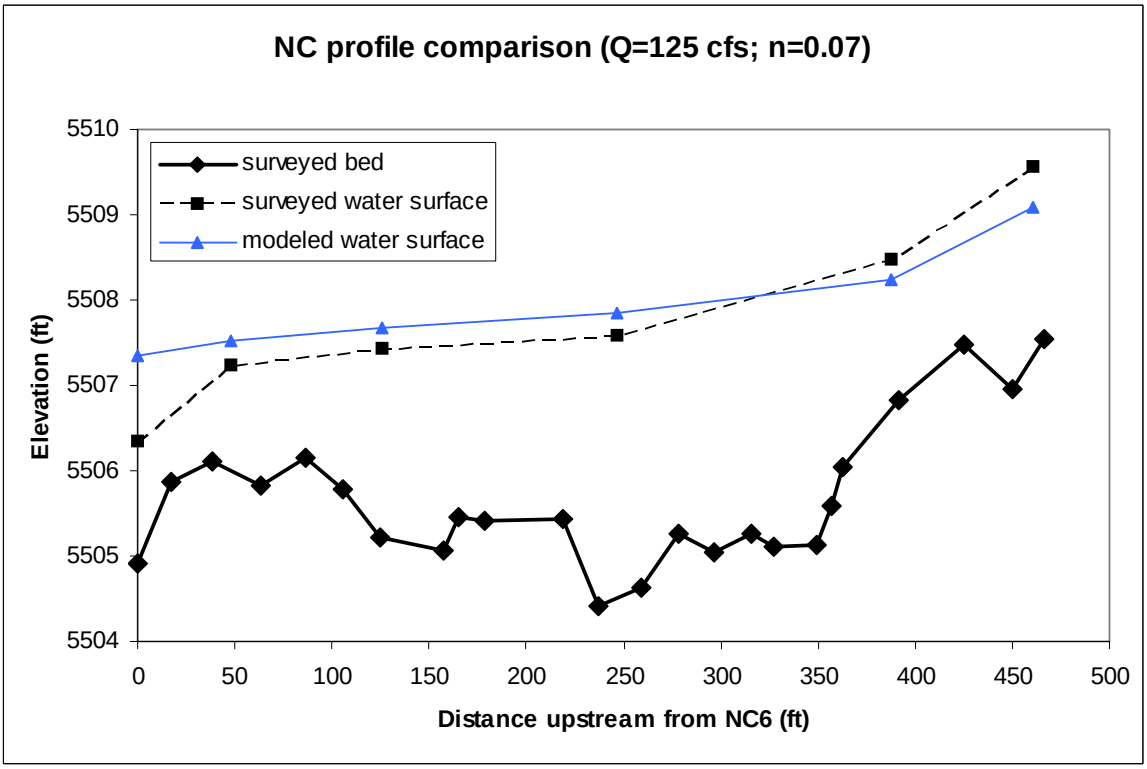
NEW_PT	ORIG_PT	NEW_N	NEW_E	DESC_	ORIGFILE	N_UTM27	E_UTM27	Distance (ft)	Elevation (ft, NAVD88)
197	49	7355358.821	1654179.486	tw1	nc2	4484514.992	461895.9895	0	5507.544
200	52	7355359.319	1654195.928	tw1	nc2	4484515.115	461900.9998	16.44954005	5506.951
202	54	7355351.106	1654220.154	tw1	nc2	4484512.571	461908.3666	42.02985368	5507.473
204	56	7355330.344	1654246.508	tw1	nc2	4484506.2	461916.3601	75.5797264	5506.826
206	58	7355314.13	1654269.392	tw1	nc2	4484501.22	461923.3041	103.625604	5506.039
208	60	7355310.081	1654273.838	tw1	nc2	4484499.979	461924.6517	109.6390321	5505.591
289	38	7355302.087	1654274.99	tw	nc3	4484497.541	461924.9888	117.7156118	5505.13
297	46	7355291.207	1654294.46	tw	nc3	4484494.192	461930.902	140.0193178	5505.11
296	45	7355282.265	1654301.08	tw	nc3	4484491.456	461932.9035	151.145133	5505.259
295	44	7355266.937	1654312.199	tw	nc3	4484486.767	461936.2646	170.081335	5505.048
294	43	7355253.71	1654325.194	tw	nc3	4484482.715	461940.2009	188.6238147	5505.267
293	42	7355235.713	1654331.788	tw	nc3	4484477.22	461942.1787	207.7907874	5504.638
292	41	7355213.878	1654336.082	tw	nc3	4484470.559	461943.4492	230.0440043	5504.419
291	40	7355196.716	1654340.381	tw	nc3	4484465.323	461944.7292	247.7362525	5505.429
290	39	7355156.591	1654345.241	tw	nc3	4484453.089	461946.1404	288.1545061	5505.41
432	51	7355144.157	1654340.326	tw	nc6	4484449.309	461944.6214	301.5246811	5505.459
433	52	7355136.215	1654341.104	tw	nc6	4484446.887	461944.8446	309.5046967	5505.074
434	53	7355104.013	1654340.838	tw	nc6	4484437.076	461944.7078	341.7077953	5505.219
435	54	7355084.89	1654339.385	tw	nc6	4484431.252	461944.2319	360.8859166	5505.787
436	55	7355065.417	1654336.239	tw	nc6	4484425.324	461943.2397	380.6114089	5506.152
437	56	7355042.539	1654339.706	tw	nc6	4484418.347	461944.2563	403.7506174	5505.818
439	58	7355018.111	1654343.355	tw	nc6	4484410.898	461945.3257	428.4496536	5506.103
441	60	7354997.529	1654348.839	tw	nc6	4484404.618	461946.9609	449.7497235	5505.876
443	62	7354981.361	1654354.402	tw	nc6	4484399.682	461948.6278	466.8480039	5504.903
196	48	7355318.812	1654169.456	tw2	nc2	4484502.818	461892.8642	0	5508.304
198	50	7355313.306	1654184.735	tw2	nc2	4484501.114	461897.5098	16.240809	5508.39
199	51	7355313.496	1654185.531	tw2	nc2	4484501.171	461897.7527	17.05917078	5508.273
201	53	7355311.065	1654189.946	tw2	nc2	4484500.423	461899.0936	22.09920907	5508.408
203	55	7355306.242	1654204.213	tw2	nc2	4484498.929	461903.432	37.15937567	5506.527
205	57	7355300.538	1654228.272	tw2	nc2	4484497.149	461910.7523	61.88529521	5507.355
207	59	7355299.78	1654248.902	tw2	nc2	4484496.883	461917.0365	82.52921596	5507.298
289	38	7355302.087	1654274.99	tw	nc3	4484497.541	461924.9888	108.719023	5505.13
436	55	7355065.417	1654336.239	tw	nc6	4484425.324	461943.2397	380.6	5506.152
438	57	7355042.524	1654317.706	tw2	nc6	4484418.381	461937.5534	410.0543976	5506.149
440	59	7355024.485	1654298.843	tw2	nc6	4484412.917	461931.7751	436.1545564	5506.222
442	61	7355011.217	1654286.866	tw2	nc6	4484408.895	461928.103	454.0287935	5505.706
444	63	7354995.984	1654278.677	tw2	nc6	4484404.267	461925.5816	471.3234173	5505.562

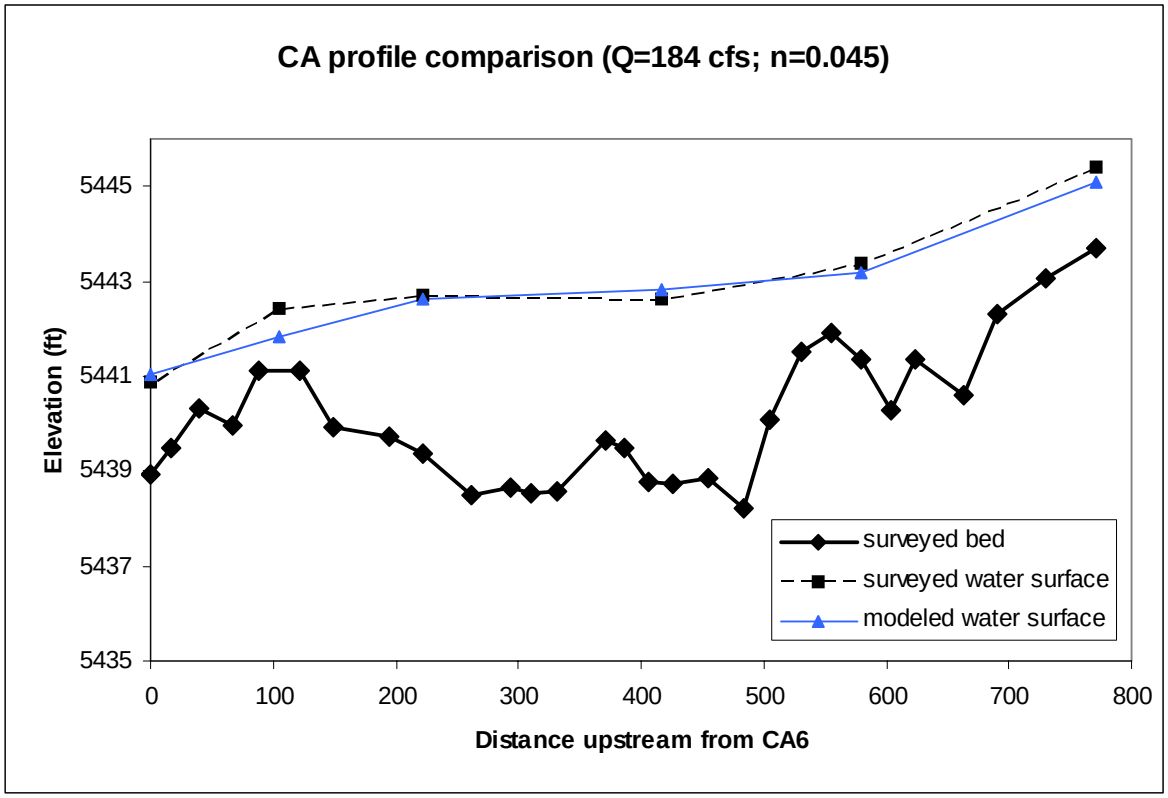
CA longitudinal profile May 2004

PT	ORIGPT	NORTHING	EASTING	DESCRIPTION	FILE	N_UTM27	E_UTM27	Distance (ft)	Elevation (ft, NAVD88)
1004	4	7347263.616	1652049.965	tw	CA05182004-map.txt	4482052.12	461233.1833	0	5443.68
1005	5	7347229.1	1652070.872	tw	CA05182004-map.txt	4482041.567	461239.4938	40.35414359	5443.076
1006	6	7347197.528	1652096.767	tw	CA05182004-map.txt	4482031.903	461247.329	81.18724547	5442.303
1007	7	7347187.047	1652122.142	tw	CA05182004-map.txt	4482028.666	461255.0421	108.6416073	5440.614
1008	8	7347150.028	1652131.586	tw	CA05182004-map.txt	4482017.371	461257.8557	146.8462602	5441.366
1009	9	7347130.004	1652133.418	tw	CA05182004-map.txt	4482011.267	461258.3794	166.9538906	5440.287
1010	10	7347106.541	1652141.756	tw	CA05182004-map.txt	4482004.103	461260.8794	191.8543848	5441.358
1011	11	7347083.127	1652142.093	tw	CA05182004-map.txt	4481996.969	461260.9417	215.2708099	5441.916
1012	12	7347058.644	1652150.046	tw	CA05182004-map.txt	4481989.495	461263.3226	241.0131388	5441.526
1013	13	7347033.278	1652154.498	tw	CA05182004-map.txt	4481981.759	461264.6354	266.766862	5440.1
1014	14	7347013.847	1652159.101	tw	CA05182004-map.txt	4481975.831	461266.0043	286.7356219	5438.202
1015	15	7346984.314	1652155.88	tw	CA05182004-map.txt	4481966.838	461264.9721	316.4437509	5438.853
1016	16	7346956.744	1652148.838	tw	CA05182004-map.txt	4481958.45	461262.7791	344.8988851	5438.733
1018	18	7346937.687	1652144.018	tw	CA05182004-map.txt	4481952.652	461261.2777	364.5559869	5438.781
1017	17	7346917.837	1652137.73	tw	CA05182004-map.txt	4481946.614	461259.3277	385.3781252	5439.468
1019	19	7346904.757	1652132.163	tw	CA05182004-map.txt	4481942.639	461257.609	399.5935355	5439.63
1020	20	7346876.528	1652103.125	tw	CA05182004-map.txt	4481934.087	461248.7132	440.0914599	5438.562
1021	21	7346867.874	1652083.989	tw	CA05182004-map.txt	4481931.483	461242.868	461.093322	5438.546
1022	22	7346860.017	1652069.81	tw	CA05182004-map.txt	4481929.114	461238.5345	477.3037042	5438.67
1023	23	7346855.95	1652038.452	tw	CA05182004-map.txt	4481927.929	461228.9734	508.9243407	5438.487
1024	24	7346845.801	1651998.879	tw	CA05182004-map.txt	4481924.904	461216.899	549.7780374	5439.358
1025	25	7346837.844	1651973.061	tw	CA05182004-map.txt	4481922.524	461209.0191	576.7943838	5439.722
1026	26	7346815.742	1651933.621	tw	CA05182004-map.txt	4481915.858	461196.9646	622.0051347	5439.905
1027	27	7346801.979	1651910.043	tw	CA05182004-map.txt	4481911.705	461189.7572	649.3060917	5441.108
1028	28	7346777.108	1651888.257	tw	CA05182004-map.txt	4481904.165	461183.0767	682.369613	5441.102
1029	29	7346760.931	1651874.062	tw	CA05182004-map.txt	4481899.26	461178.724	703.8915403	5439.978
1030	30	7346736.719	1651860.672	tw	CA05182004-map.txt	4481891.906	461174.6026	731.5594466	5440.326
1031	31	7346716.777	1651848.967	tw	CA05182004-map.txt	4481885.85	461171.002	754.6828199	5439.492

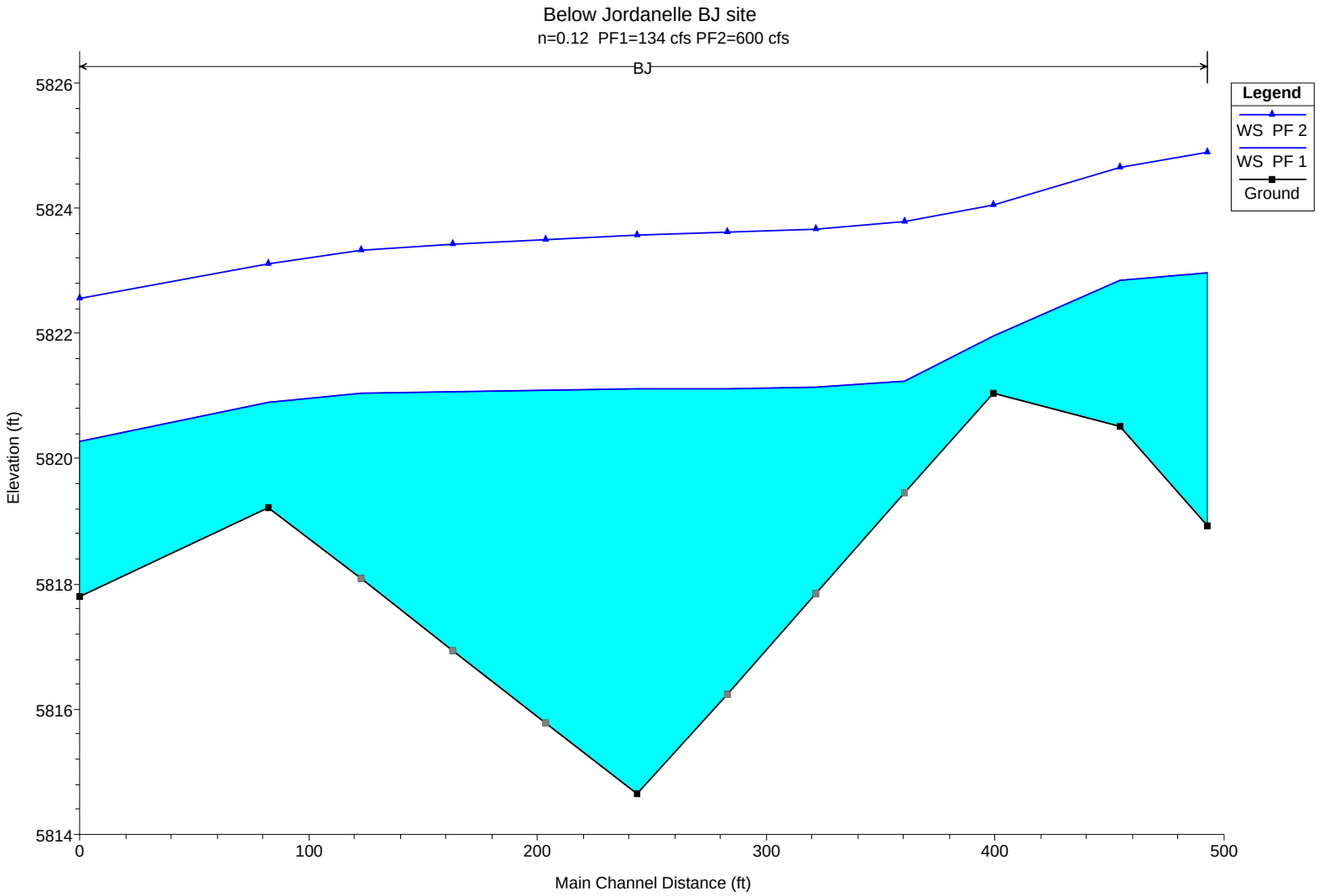
APPENDIX 2.4: PROFILE COMPARISONS


BJ profile comparison (Q=134 cfs; n=0.12)
Elevation (ft)
5824
5823
5822
5821
5820
5819
5818
5817
5816
5815
5814
0
100
200
300
400
500
600
Distance Upstream from BJ6 (ft)
surveyed bed
surveyed water surface
modeled water surface


NC profile comparison (Q=125 cfs; n=0.07)
Elevation (ft)
5510
5509
5508
5507
5506
5505
5504
0
50
100
150
200
250
300
350
400
450
500
Distance upstream from NC6 (ft)
surveyed bed
surveyed water surface
modeled water surface

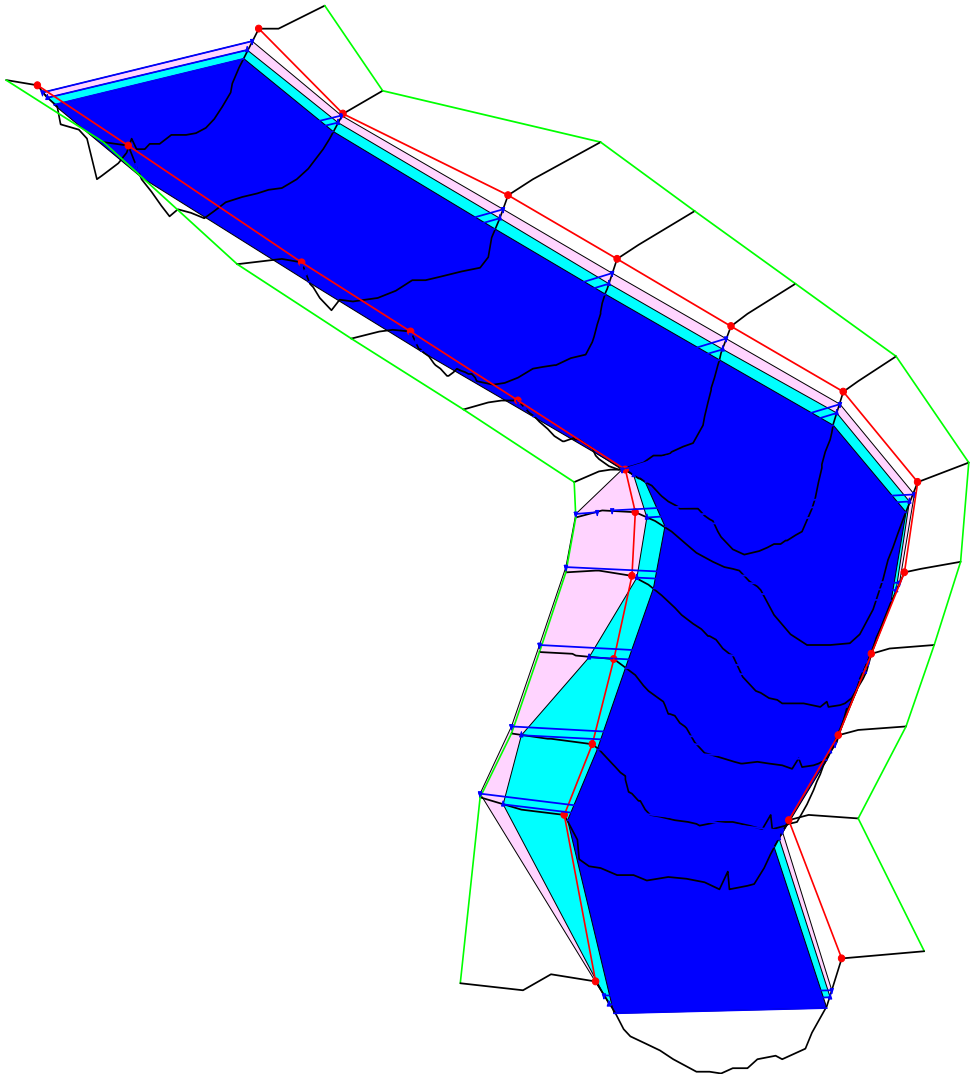

CA profile comparison (Q=184 cfs; n=0.045)
Elevation (ft)
5445
5443
5441
5439
5437
5435
0
100
200
300
400
500
600
700
800
Distance upstream from CA6
surveyed bed
surveyed water surface
modeled water surface

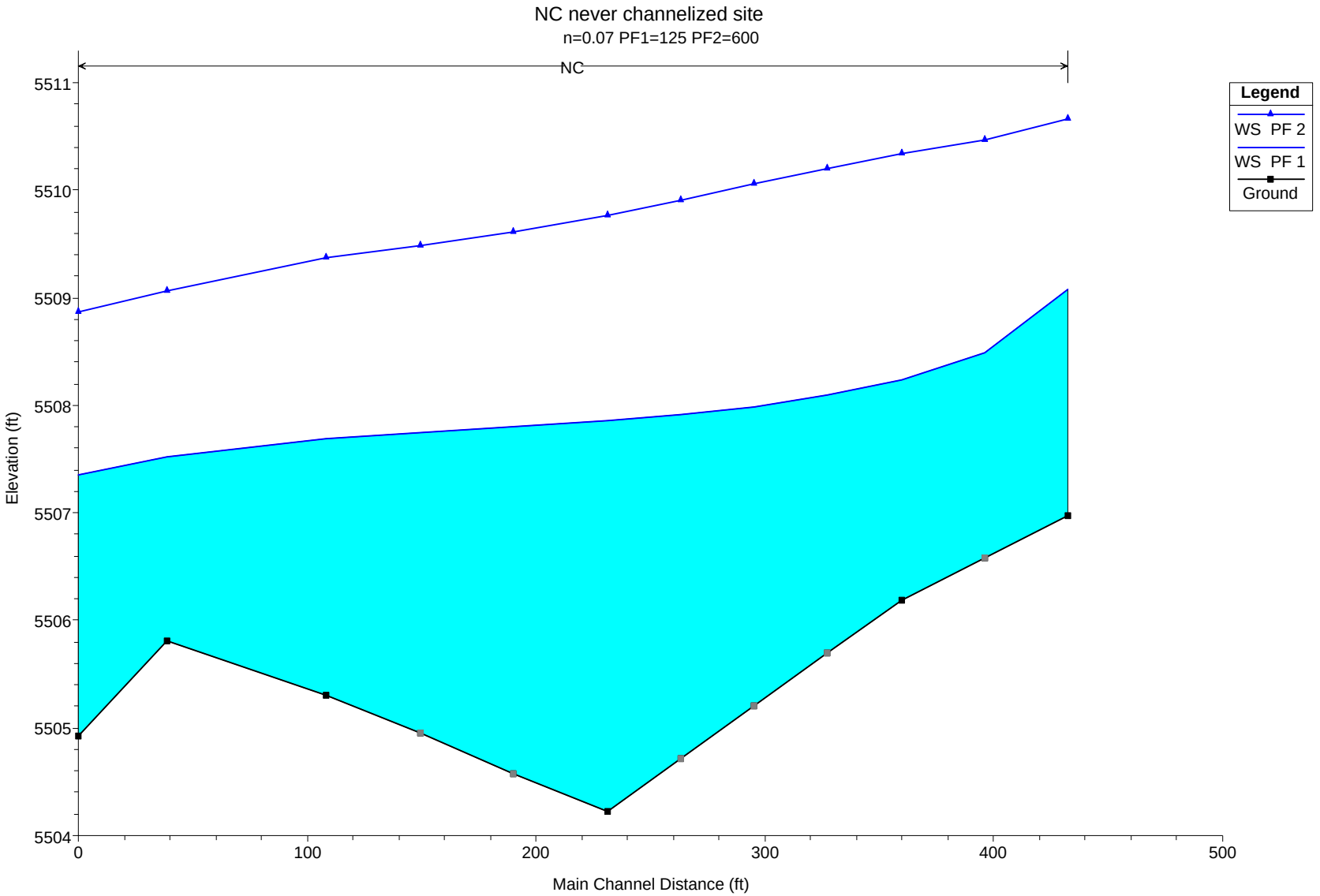
APPENDIX 2.5: HEC-RAS OUTPUT PLOTS


Below Jordanelle BJ site
n=0.12 PF1=134 cfs PF2=600 cfs
BJ
Legend
WS PF 2
WS PF 1
Ground
Elevation (ft)
5826
5824
5822
5820
5818
5816
5814
0
100
200
300
400
500
Main Channel Distance (ft)

Below Jordanelle BJ site

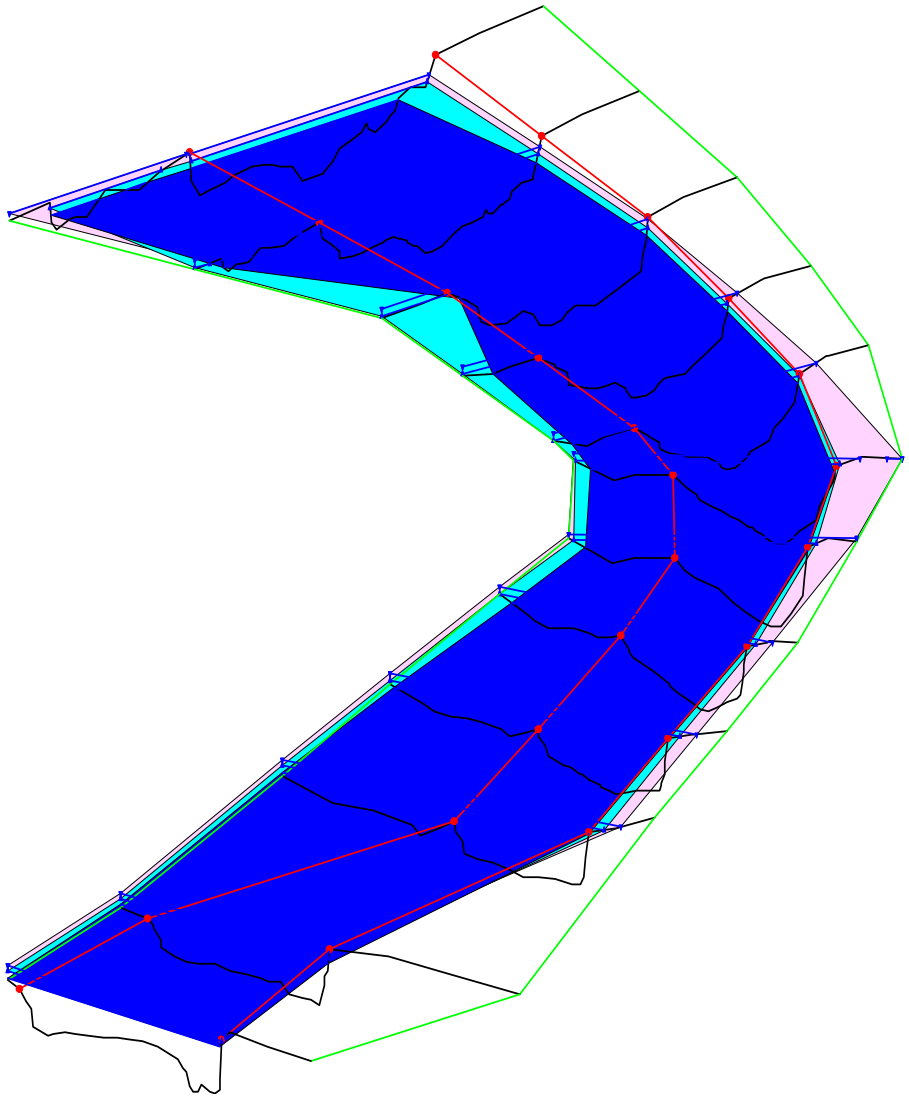
n=0.06 PF1=900 PF2=1200 PF3=1500

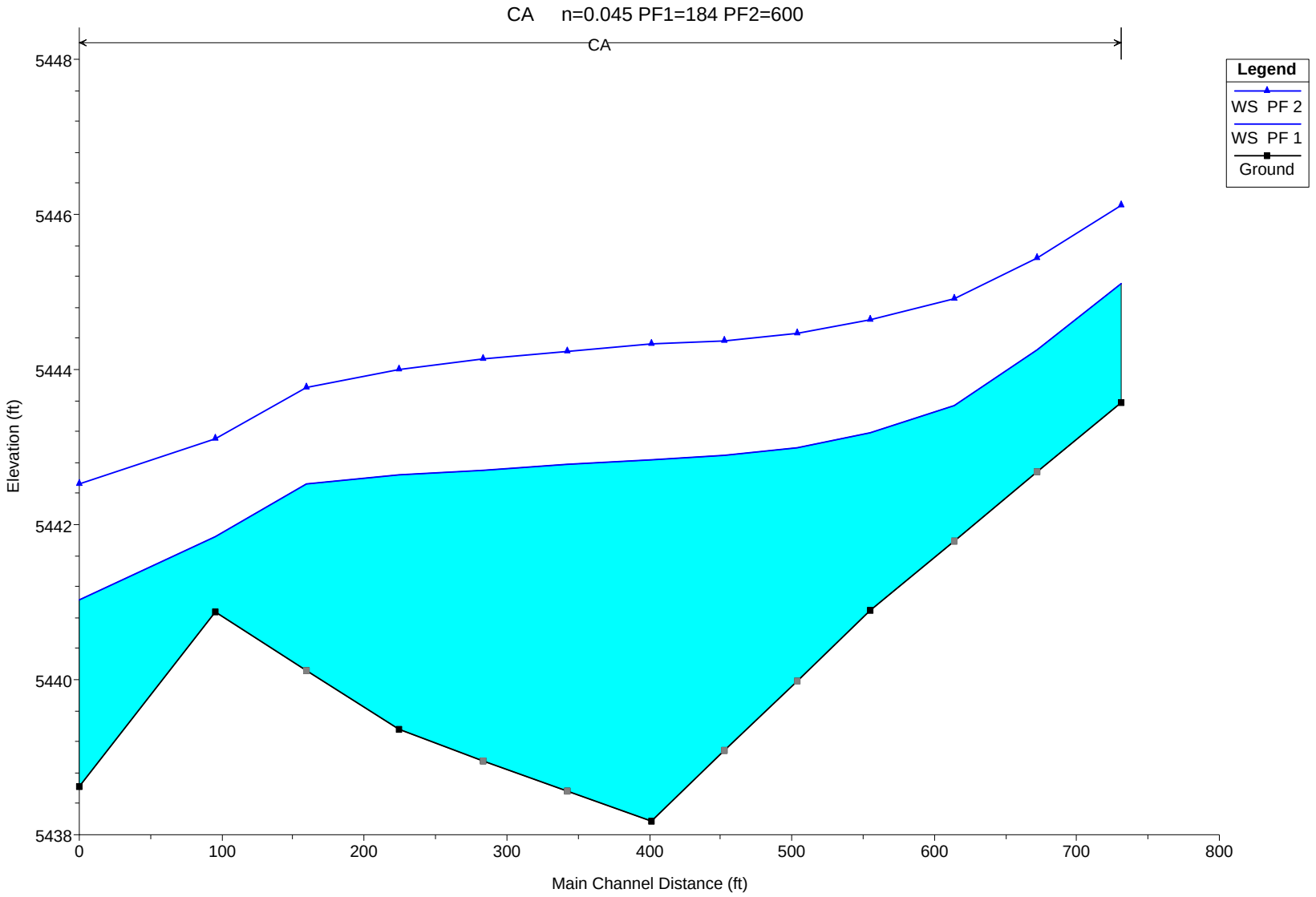



NC never channelized site
n=0.07 PF1=125 PF2=600
NC
Legend
WS PF 2
WS PF 1
Ground
Elevation (ft)
5511
5510
5509
5508
5507
5506
5505
5504
0
100
200
300
400
500
Main Channel Distance (ft)

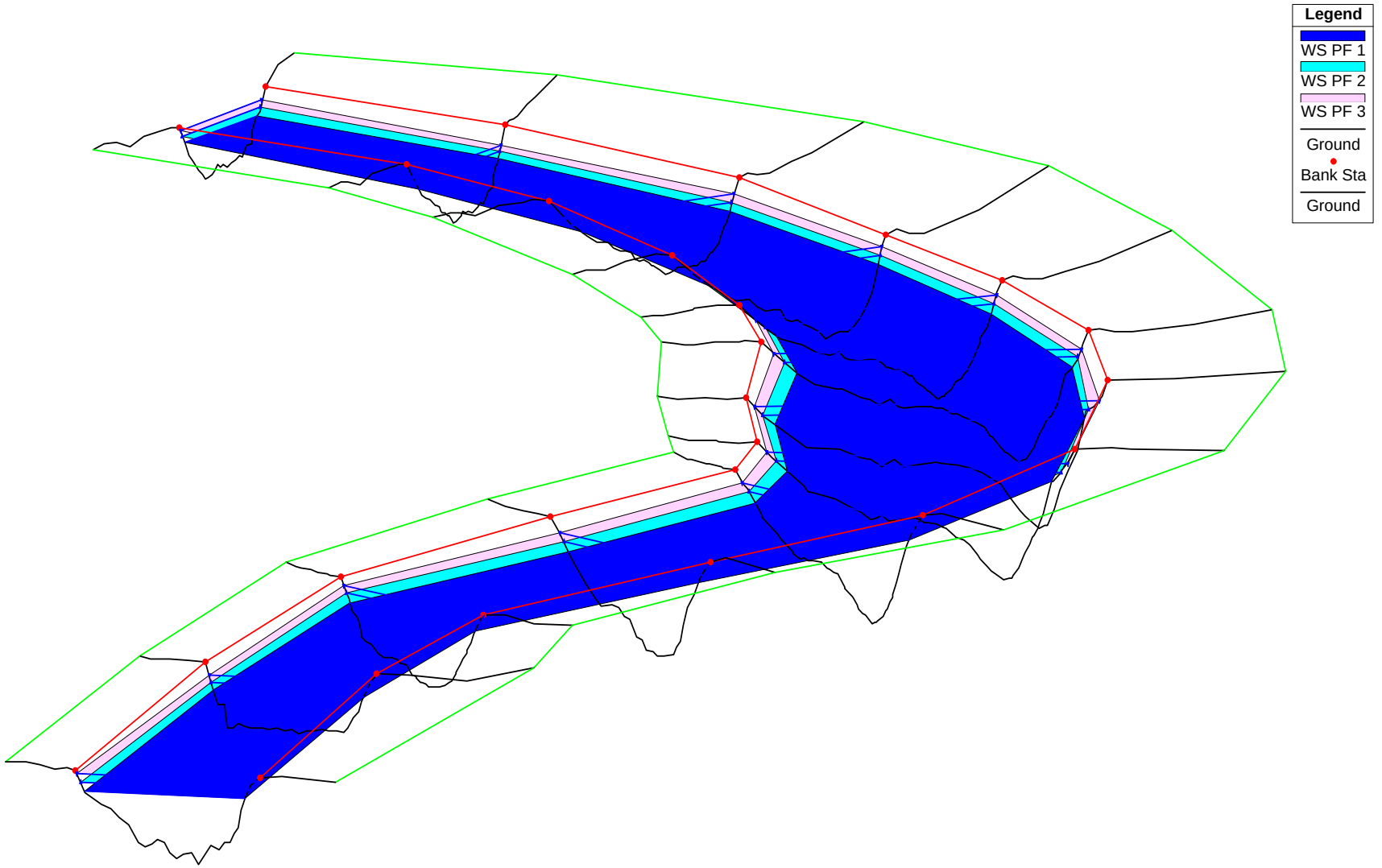
NC never channelized site

n=0.04 PF1=900 PF2=1200 PF3=1500

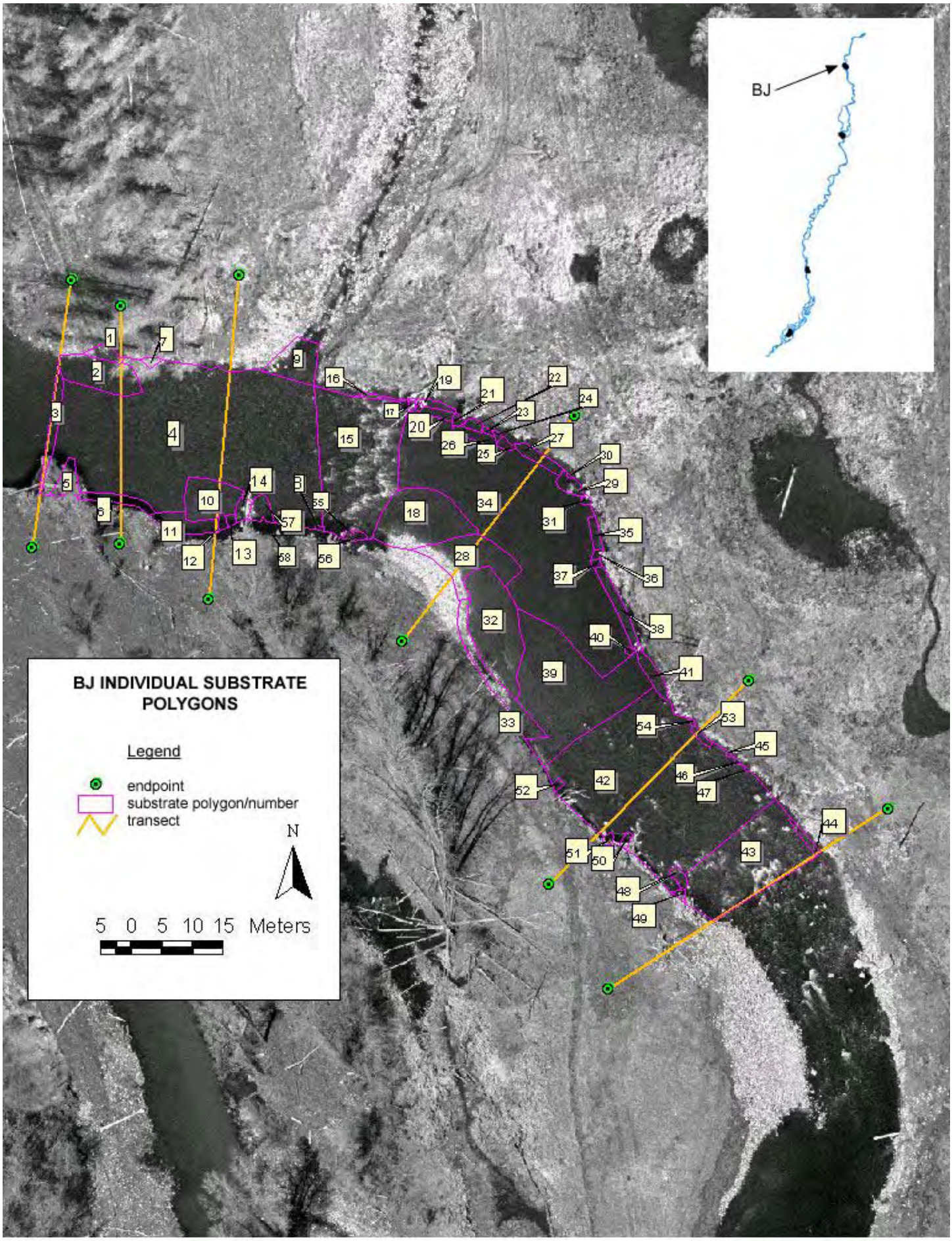


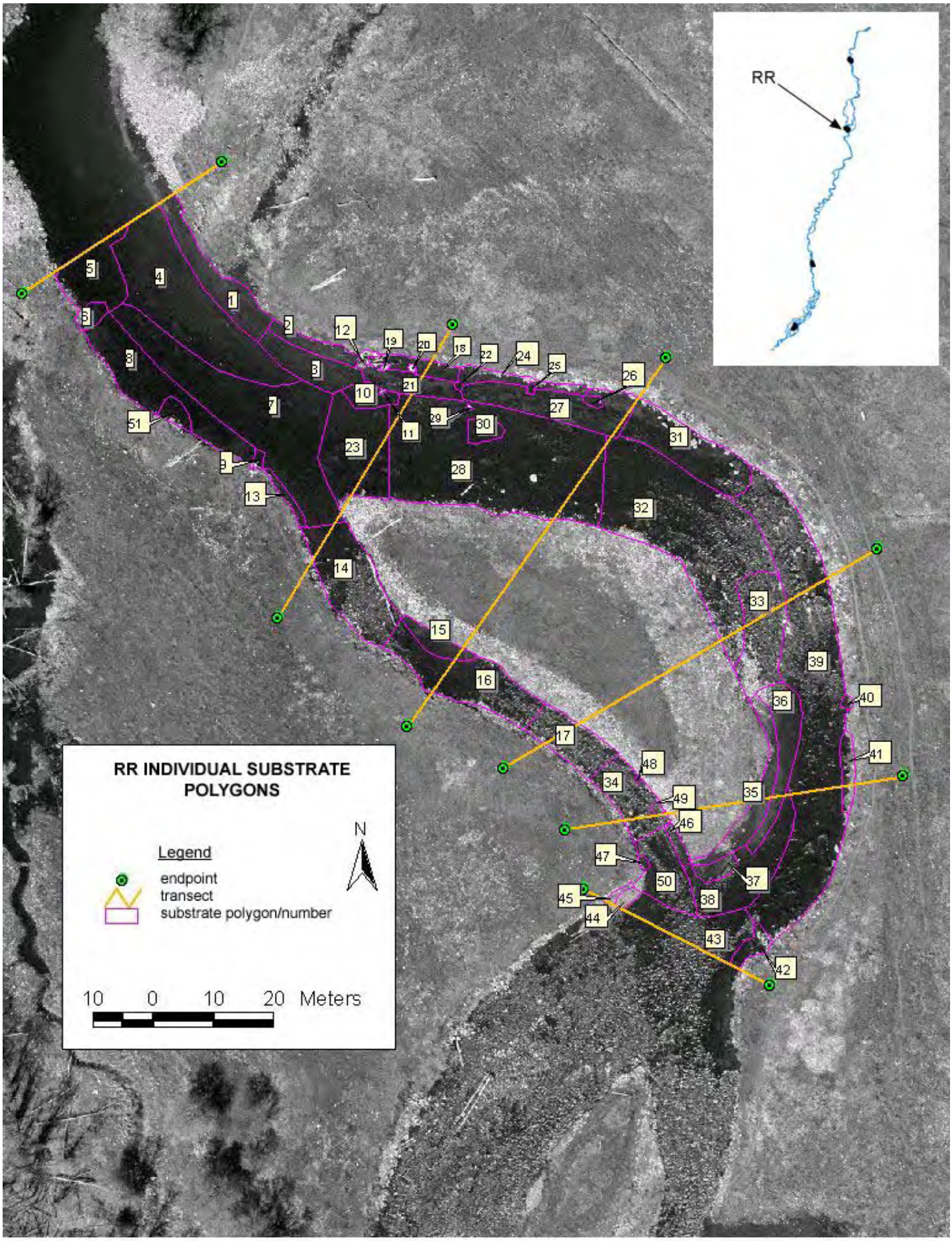

CA n=0.045 PF1=184 PF2=600
CA
Legend
WS PF 2
WS PF 1
Ground
Elevation (ft)
5448
5446
5444
5442
5440
5438
0
100
200
300
400
500
600
700
800
Main Channel Distance (ft)

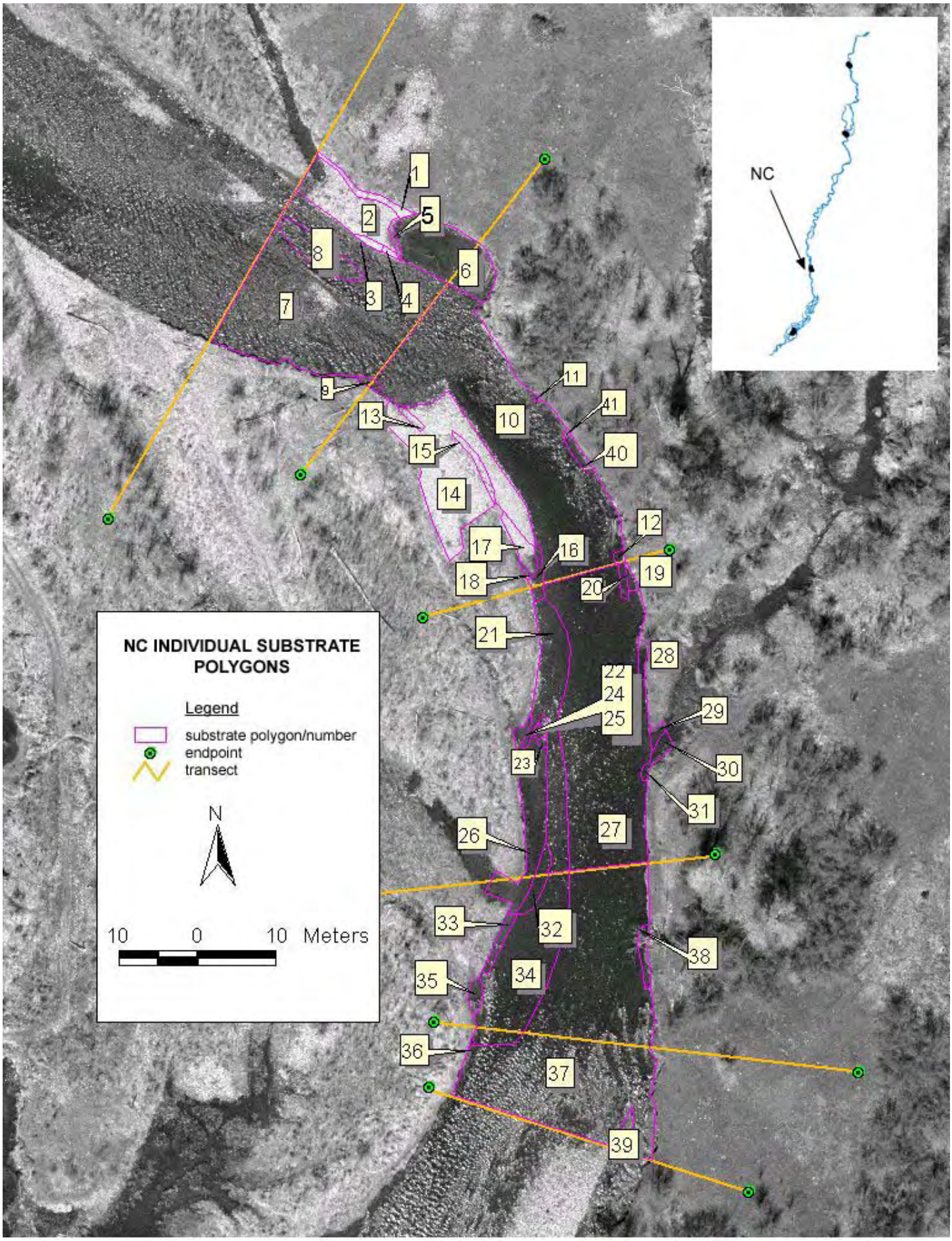
CA n=0.035 PF1=900 PF2=1200 PF3=1500

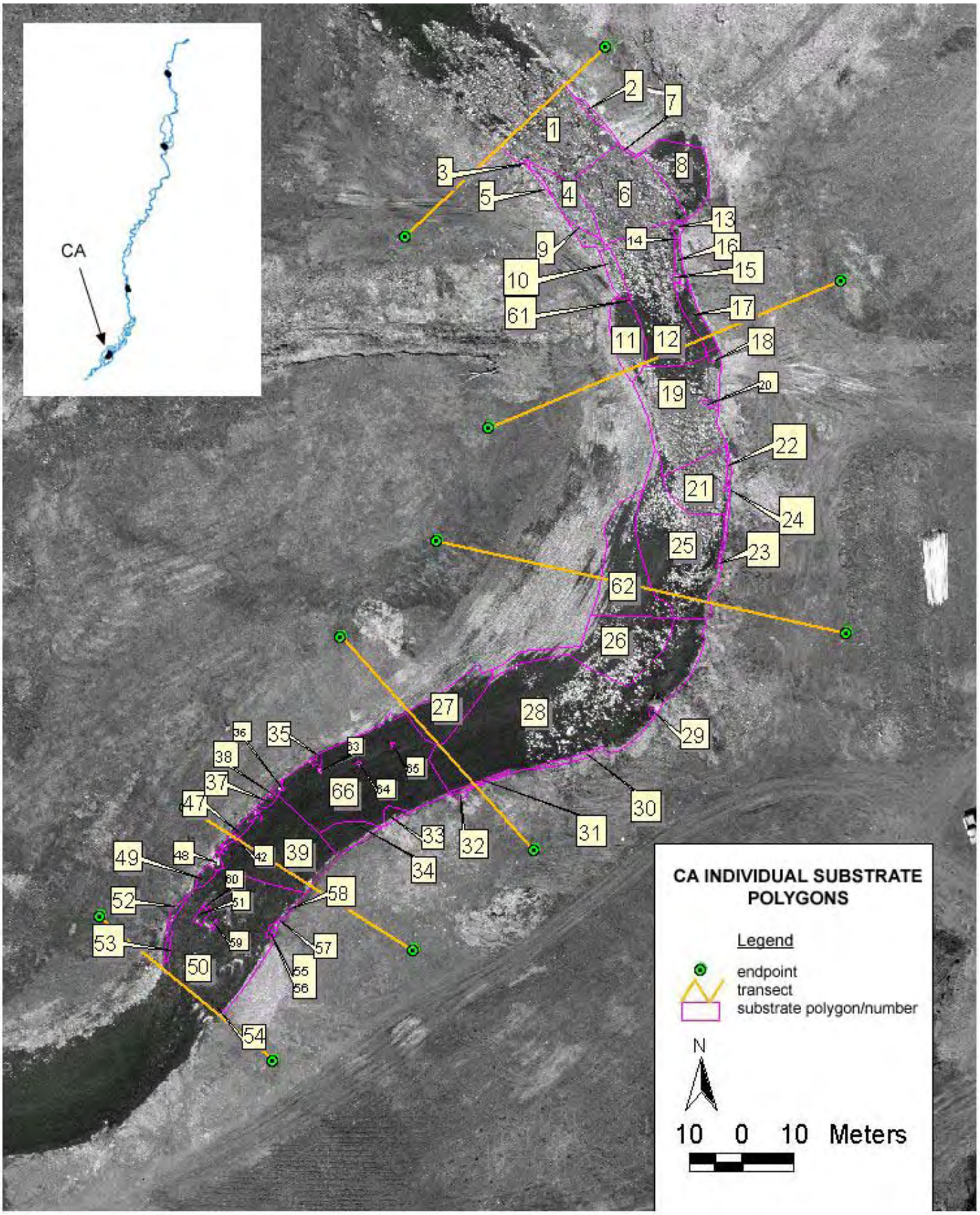


APPENDIX 3.1A: SUBSTRATE MAPS


BJ
BJ INDIVIDUAL SUBSTRATE POLYGONS
Legend
endpoint
substrate polygon/number
transect
N
5 0 5 10 15 Meters


RR
RR INDIVIDUAL SUBSTRATE POLYGONS
Legend
endpoint
transect
substrate polygon/number
N
10 0 10 20 Meters


NC
NC INDIVIDUAL SUBSTRATE POLYGONS
Legend
substrate polygon/number
endpoint
transect
N
10 0 10 Meters
1
2
5
8
6
7
3
4
9
11
41
13
10
15
40
14
12
17
16
18
19
20
21
28
22
24
25
29
23
30
31
26
27
33
32
38
35
34
36
37
39


CA
CA INDIVIDUAL SUBSTRATE POLYGONS
Legend
endpoint
transect
substrate polygon/number
N
10 0 10 Meters

APPENDIX 3.1B: SUBSTRATE POLYGON ATTRIBUTE TABLES

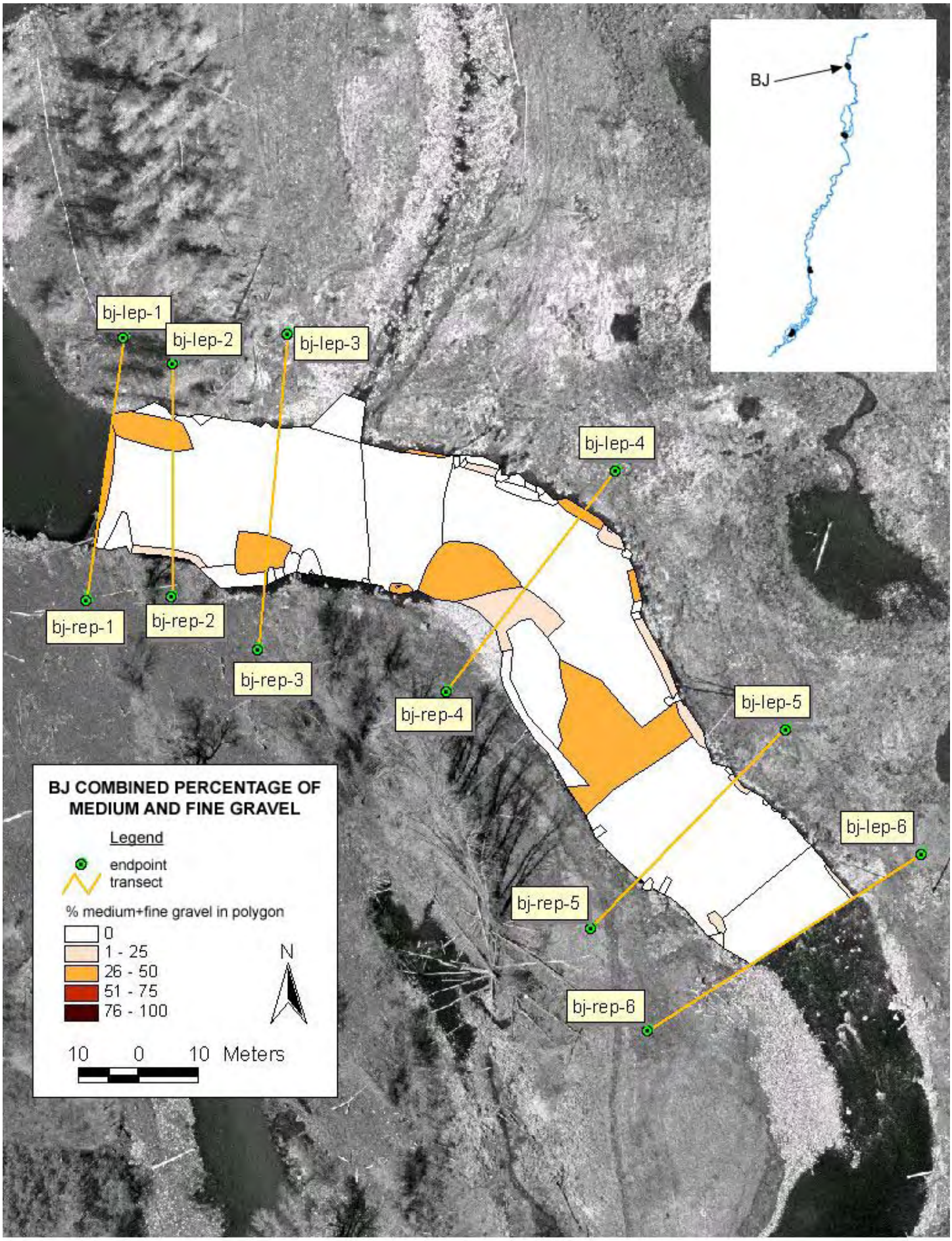
BJ													
POLYGON					PERCENTAGES								
NUMBER	Area m2	Substype	Notes	Majortype	B	C	LG	MG	FG	SA	SI	unknown	grass
1	9.7	7SI3C		silt		30					70		
2	60.7	3C2.5LG2MG1.5B1FG	PC2 in this patch	gravel	15	30	25	20	10				
3	20.0	3C3LG3MG1B	some minor FG also	gravel	10	30	30	30					
4	850.3	5.5C2.5LG2B	mix of C SB LG minor MG	cobble	20	55	25						
5	16.8	7B3C		boulder	70	30							
6	15.4	4C4LG1.5MG0.5SI		gravel		40	40	15			5		
7	3.6	10B		boulder	100								
8	0.9	10SI		silt							100		
9	43.5	10SI		silt							100		
10	50.8	4.5LG4MG1.5C		gravel		15	45	40					
11	28.2	4SI3C3LG		silt		30	30				40		
12	3.3	7SI3C		silt		30					70		
13	2.8	4SI3C3LG		silt		30	30				40		
14	7.6	10B	log over boulders here	boulder	100								
15	276.2	4C3.5B2.5LG		cobble	35	40	25						
16	4.2	3C3LG3MG1B		gravel	10	30	30	30					
17	2.7	10B	log between/on these bldrs	boulder	100								
18	115.4	3.3C3.3LG3.3MG		gravel		33	33	33					
19	7.6	10SI		silt							100		
20	6.5	4SI2.5MG2LG1.5C		gravel		15	20	25			40		
21	2.7	10B	log between/on these bldrs	boulder	100								
22	4.7	10SI		silt							100		
23	1.7	4LG3.5C2.5SI		gravel		35	40				25		
24	1.5	10B		boulder	100								
25	3.9	3C3LG2B2SI		cobble-gravel	20	30	30				20		
26	11.1	?B?	boulders present; too deep	unknown								100	
27	14.0	3.5LG3MG2.5C1FG		gravel		25	35	30	10				
28	80.4	5SI2C1.5LG1.5MG		silt		20	15	15			50		
29	10.0	3.25LG2.75SI2.25C1.75MG	submerged log	gravel		22.5	32.5	17.5			27.5		
30	0.4	10B		boulder	100								
31	1.9	10B		boulder	100								
32	128.0	5SA5SI	eddy	sand-silt						50	50		
33	46.9	5SI3C2LG		silt		30	20				50		
34	630.5	???	deep pool; some C B SI	unknown								100	
35	7.2	3.3C3.3LG3.3MG		gravel		33	33	33					
36	2.6	10SI		silt							100		
37	1.8	10B		boulder	100								
38	19.6	4C4LG2MG		gravel		40	40	20					
39	270.8	3.3C3.3LG3.3MG	PC5 in shallow part this patch	gravel		33	33	33					
40	2.6	10B		boulder	100								
41	14.3	5LG2MG2SI1C		gravel		10	50	20			20		
42	619.6	5.5C2.5B2LG		cobble	25	55	20						
43	205.5	4C3.5B2.5LG		cobble	35	40	25						
44	5.4	4C3.5LG2.5MG		gravel		40	35	25					
45	0.6	10SI		silt							100		
46	0.4	10SI		silt							100		
47	0.2	10SI		silt							100		
48	5.8	5C3LG2MG	small patch w/smaller gravel	cobble-gravel		50	30	20					
49	2.9	10B		boulder	100								
50	3.1	10B	log on top of these bldrs	boulder	100								
51	2.5	10B		boulder	100								
52	2.4	10B	log on dst. side	boulder	100								
53	3.9	5C2.5LG2.5MG	photo BJ1	cobble-gravel		50	25	25					
54	0.9	10SI		silt							100		
55	0.2	10B		boulder	100								
56	5.2	4LG4MG1.5C0.5SI		gravel		15	40	40			5		
57	12.5	6SI4C		silt		40					60		
58	0.4	10B		boulder	100								

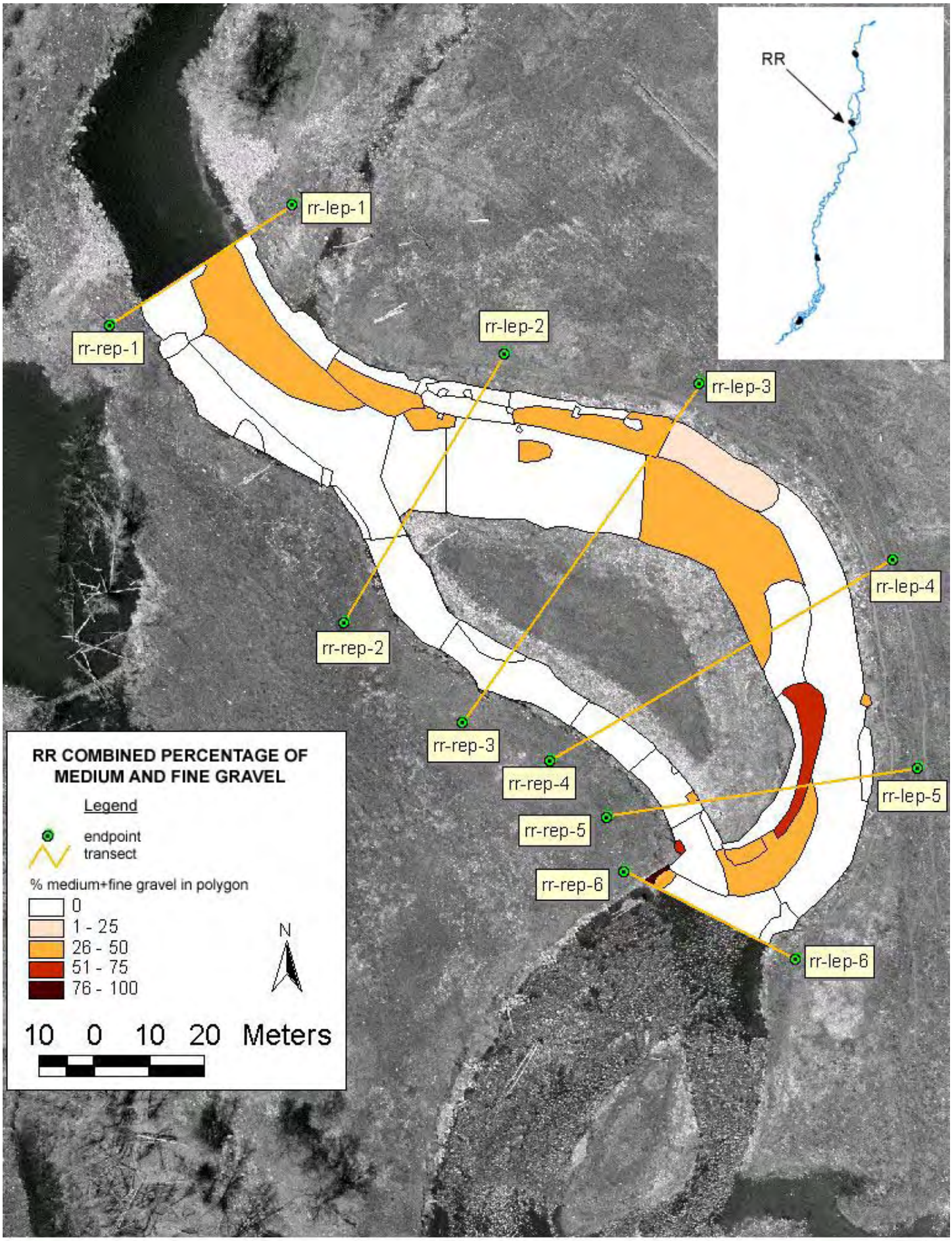
RR													
POLYGON					PERCENTAGES								
NUMBER	Area m2	substype	notes	majortype	B	C	LG	MG	FG	SA	SI	unknown	grass
1	103.181	9.5SI 0.5C		sand/silt		5					95		
2	34.15	10SI		sand/silt							100		
3	75.829	5SI 5MG		gravel-sand/silt				50			50		
4	321.495	4.5MG 3C 2.5SI		gravel		30		45			25		
5	91.413	9C 1B		cobble	10	90							
6	16.749	5B 5C		boulder-cobble	50	50							
7	389.617	8.5C 1.5SI		cobble		85					15		
8	166.54	5C 4SI 1B		cobble	10	50					40		
9	4.804	10B		boulder	100								
10	27.212	3.5LG 3.5MG 3C		gravel		30	35	35					
11	0.712	10B		boulder	100								
12	5.937	10B		boulder	100								
13	13.119	8SI 2C		sand/silt		20					80		
14	169.661	10C		cobble		100							
15	31.353	5SA 5SI		sand/silt						50	50		
16	163.836	5C 5LG		cobble-gravel		50	50						
17	86.022	6C 4LG		cobble		60	40						
18	32.999	10SI		sand/silt							100		
19	1.623	10B		boulder	100								
20	1.618	10B		boulder	100								
21	52.717	4C 4SI 2B		cobble-sand/silt	20	40					40		
22	1.327	10B		boulder	100								
23	164.186	10C		cobble		100							
24	37.182	9SI 1C		sand/silt		10					90		
25	2.225	10B		boulder	100								
26	5.445	10B		boulder	100								
27	129.103	3.3C 3.3MG 3.3SA		cobble-gravel-sand		33		33		33			
28	575.881	7C 3LG		cobble		70	30						
29	0.725	10B		boulder	100								
30	19.756	4C 3LG 3MG		gravel		40	30	30					
31	145.595	4C 2B 2MG 2SA		cobble	20	40		20		20			
32	463.593	4C 3LG 3MG		gravel		40	30	30					
33	132.031	8.5C 1.5B		cobble	15	85							
34	82.668	7C 2.5LG 0.5B		cobble	5	70	25						
35	77.167	10SA		sand/silt						100			
36	88.637	6.2MG 2.2SA 1.7MC		gravel		17		62		22			
37	20.03	4.3SA 3.3MG 2.3C		sand/silt		23		33		43			
38	127.864	3.5LG 3.5MG 3C		gravel		30	35	35					
39	622.891	5C 5B		boulder-cobble	50	50							
40	3.364	6LG 4MG	scallop in bank	gravel			60	40					
41	26.285	6SA 4B		sand/silt	40					60			
42	22.5	5B 5C		boulder-cobble	50	50							
43	107.269	7C 3LG		cobble		70	30						
44	8.789	6LG 4MG		gravel			60	40					
45	4.825	10MG		gravel				100					
46	11.582	5C 5SA		cobble-sand/silt		50				50			
47	3.379	6MG 4LG		gravel			40	60					
48	1.085	10SA		sand/silt						100			
49	3.068	4MG 4SA 2C		gravel-sand/silt		20		40		40			
50	84.671	7C 3LG		cobble		70	30						
51	17.96	5B 5C		boulder-cobble	50	50							

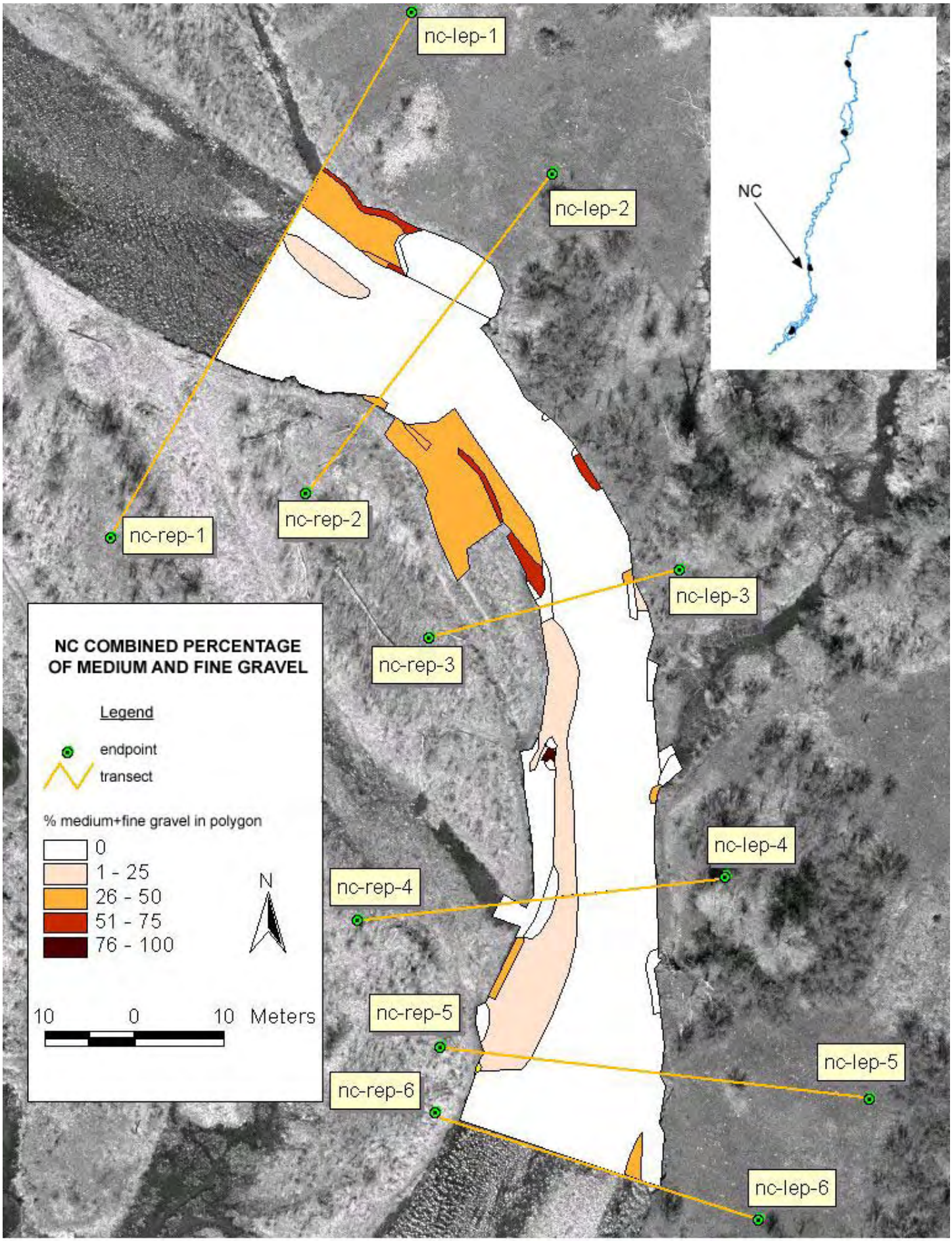
NC												
POLYGON					PERCENTAGES							
NUMBER	Area m2	Substype	Notes	majortype	B	C	LG	MG	FG	SA	SI	grass
1	10.4	4.5MG3LG1SA1.5FG		gravel	0	0	30	45	15	10		
2	62	3.5LG3.5MG3C	photo NC3_ 051404	gravel	0	30	35	35				
3	2.714	3SA2.5LG2.5MG2FG		gravel	0		25	25	20	30		
4	1.446	5MG3LG1FG1SA		gravel	0		30	50	10	10		
5	3.07	grass	GRASS	grass	0							100
6	81.818	10SI	silt backwater	silt	0						100	
7	362.479	5C5LG		cobble-gravel	0	50	50					
8	31.533	6LG2C2MG		gravel	0	20	60	20				
9	2.813	5MG3LG2C		gravel	0	20	30	50				
10	408.847	5C5LG		cobble-gravel	0	50	50					
11	0.502	10SI		silt	0						100	
12	1.955	4LG2.5MG2.5FG1C		gravel	0	10	40	25	25			
13	3.25	2.5LG2.5MG2SA1.5C1.5FG		gravel	0	15	25	25	15	20		
14	166.173	3.5LG3.5MG3C		gravel	0	30	35	35				
15	7.534	3.5MG3.5FG2LG1SA		gravel	0		20	35	35	10		
16	8.423	5.5LG3.5SI1C		gravel	0	10	55				35	
17	12.53	3MG3FG2.5LG1.5C		gravel	0	15	25	30	30			
18	1.427	10SI		silt	0						100	
19	2.967	6LG2C2MG		gravel	0	20	60	20				
20	4.169	10SI	around/below log	silt	0						100	
21	99.585	7LG2C1MG		gravel	0	20	70	10				
22	1.405	grass	grass patch	grass	0							100
23	1.34	grass	grass patch	grass	0							100
24	0.111	10SI		silt	0						100	
25	1.826	7MG1.5FG1.5LG		gravel	0	15		70	15			
26	70.125	10SI		silt	0						100	
27	374.997	5C5LG		cobble-gravel	0	50	50					
28	5.087	10SI		silt	0						100	
29	3.579	6LG3SI1C		gravel	0	10	60				30	
30	6.208	10SI		silt	0						100	
31	1.864	4LG4MG2C		gravel	0	20	40	40				
32	13.287	6LG4SI		gravel	0		60				40	
33	8.121	6SI4MG		silt	0			40			60	
34	139.464	7LG2C1MG		gravel	0	20	70	10				
35	6.024	10SI		silt	0						100	
36	0.563	10SI		silt	0						100	
37	520.81	5C5LG		cobble-gravel	0	50	50					
38	8.349	7.5SI2.5LG	downstream fr log	silt	0		25				75	
39	7.753	5LG5MG		gravel	0		50	50				
40	5.445	6MG4LG		gravel	0		40	60				
41	0.67	10SI	Bank slump	silt	0						100	

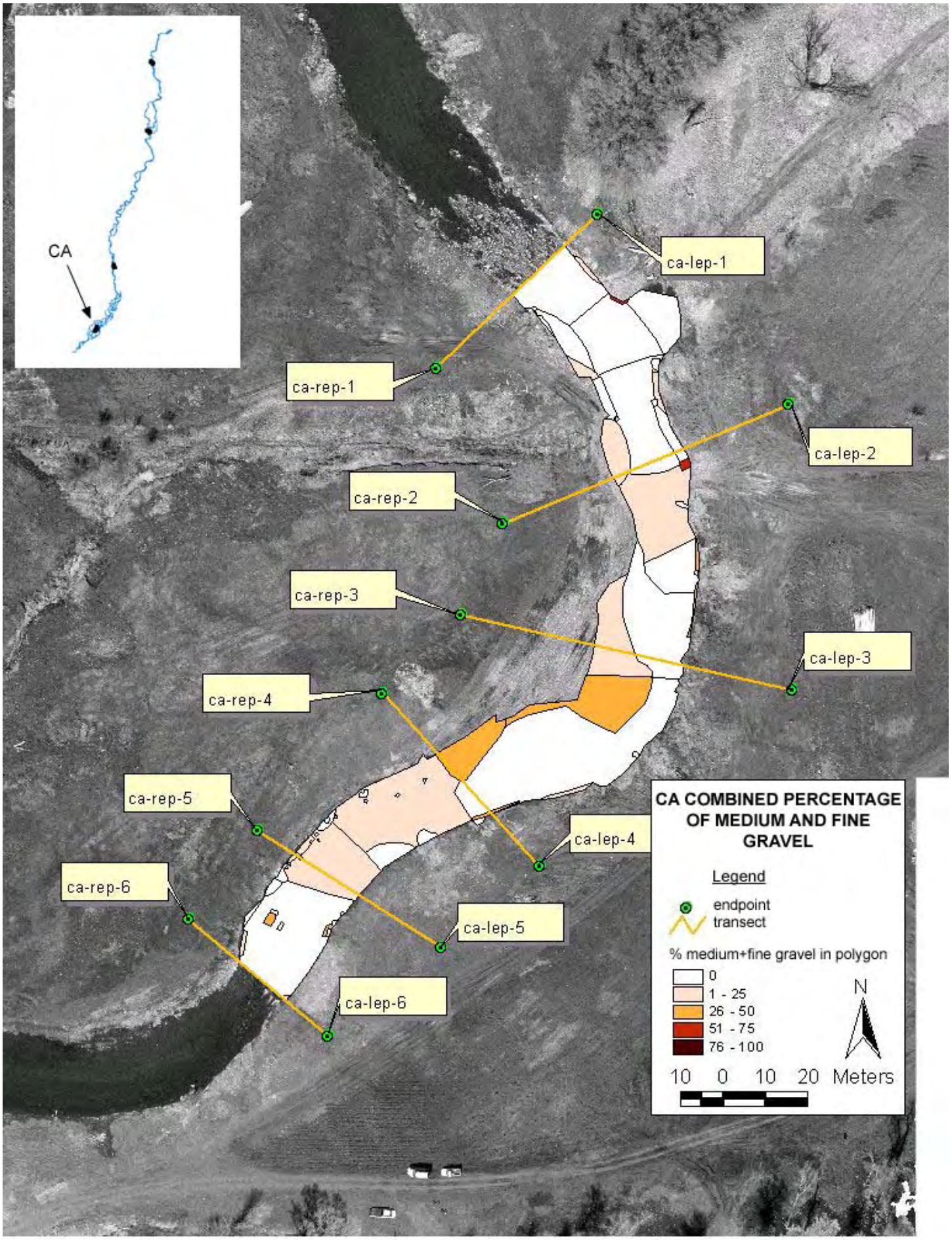
CA													
POLYGON					PERCENTAGES								
NUMBER	Area m2	Substype	Notes	Majortype	B	C	LG	MG	FG	SA	SI	unknown	grass
0	0.036	6SI1C1LG1MG1FG	sliver polygon	silt		10	10	10	10		60		
1	207.158	7.5C 1.5B 1 LG		cobble	15	75	10						
2	9.577	4C 3SI 2LG 1MG		cobble		40	20	10			30		
3	0.717	10B		boulder	100								
4	58.546	7.5C 2.5LG		cobble		75	25						
5	3.99	7.5C 2.5SI		cobble		75					25		
6	230.021	8C 2B		cobble	20	80							
7	2.698	3.3LG 3.3MG 3.3FG		gravel			33	33	33				
8	110.663	10SI		silt							100		
9	15.438	3SI 2.3C 2.3LG 2.3MG		gravel		23	23	23			30		
10	23.448	6C 4SI		cobble		60					40		
11	72.434	5.5SI 2LG 1.5C 1MG		silt		15	20	10			55		
12	265.284	? 5C 5LG ?	turbid&deep; feels like C&LG	unknown								100	
13	4.223	10B		boulder	100								
14	0.864	10SI		silt							100		
15	1.847	10B		boulder	100								
16	12.401	5C 3LG 2MG		cobble-gravel		50	30	20					
17	32.814	5SI 2.5C 2.5LG		silt		25	25				50		
18	5.117	4LG 3MG 3FG		gravel			40	30	30				
19	258.653	4C 3.5LG 2.5MG		gravel		40	35	25					
20	2.985	10B		boulder	100								
21	107.721	? 5C 5LG ?	turbid&deep; feels like C&LG	unknown								100	
22	5.118	2.5C2.5LG2.5MG2.5FG		gravel		25	25	25	25				
23	7.152	3C2.3LG2.3MG2.3FG		gravel		30	23	23	23				
24	0.908	grass (sod) clump		grass									100
25	312.592	10SI	?deep& turbid pool	silt							100		
26	202.409	3SI2C2LG1.5MG1.5FG	SI w/"fingers" of coarser sed	gravel		20	20	15	15		30		
27	108.592	5SI 2FG 1C 1LG 1MG	SI w/"fingers" of coarser sed	silt		10	10	10	20		50		
28	747.483	? 10SI ?	deep&turbid; feels like all SI	unknown								100	
29	1.639	10B		boulder	100								
30	9.706	4SI 2.5C 2.5LG 1MG		silt		25	25	10			40		
31	6.645	4SI1.5C 1.5LG1.5MG1.		gravel		15	15	15	15		40		
32	2.967	10SI		silt							100		
33	9.984	6B 2.5C 1.5LG		boulder	60	25	15						
34	40.547	10SI		silt							100		
35	2.381	10B		boulder	100								
36	0.303	10B		boulder	100								
37	7.223	5C 5SI		cobble-silt		50					50		
38	1.232	10B		boulder	100								
39	229.866	5C 2.5LG 2.5MG		cobble-gravel		50	25	25					
40	0.324	10B		boulder	100								
41	0.163	10B		boulder	100								
42	0.598	10B		boulder	100								
43	0.285	10B		boulder	100								
44	0.809	10B		boulder	100								
45	0.437	10B		boulder	100								
46	0.196	10B		boulder	100								
47	10.534	6SI 2C 1MG 1FG		silt		20		10	10		60		
48	5.289	10B		boulder	100								
49	8.438	10SI		silt							100		
50	400.132	4.5C 4LG 1.5B		cobble	15	45	40						
51	5.732	3.3C 3.3LG 3.3MG		gravel		33	33	33					
52	5.346	10SI		silt							100		
53	4.971	3SI 2.5LG 2.5MG 2C		gravel		20	25	25			30		
54	1.22	4LG 3.5C 2.5MG		gravel		35	40	25					
55	2.951	5MG 4LG 1C		gravel		10	40	50					
56	1.238	10SI		silt							100		
57	0.972	10SI		silt							100		
58	0.56	10SI		silt							100		
59	1.162	10SI		silt							100		
60	1.144	10B		boulder	100								
61	0.739	10B		boulder	100								
62	177.818	6SI1.5C1LG1MG0.5FG		silt		15	10	10	5		60		
63	0.57	10B		boulder	100								
64	0.646	10B		boulder	100								
65	0.586	10B		boulder	100								
66	419.824	6SI1C1LG1MG1FG	deep? mapped by feel	silt		10	10	10	10		60		

APPENDIX 3.2: SUBSTRATE TYPE (PERCENT GRAVEL IN EACH POLYGON)

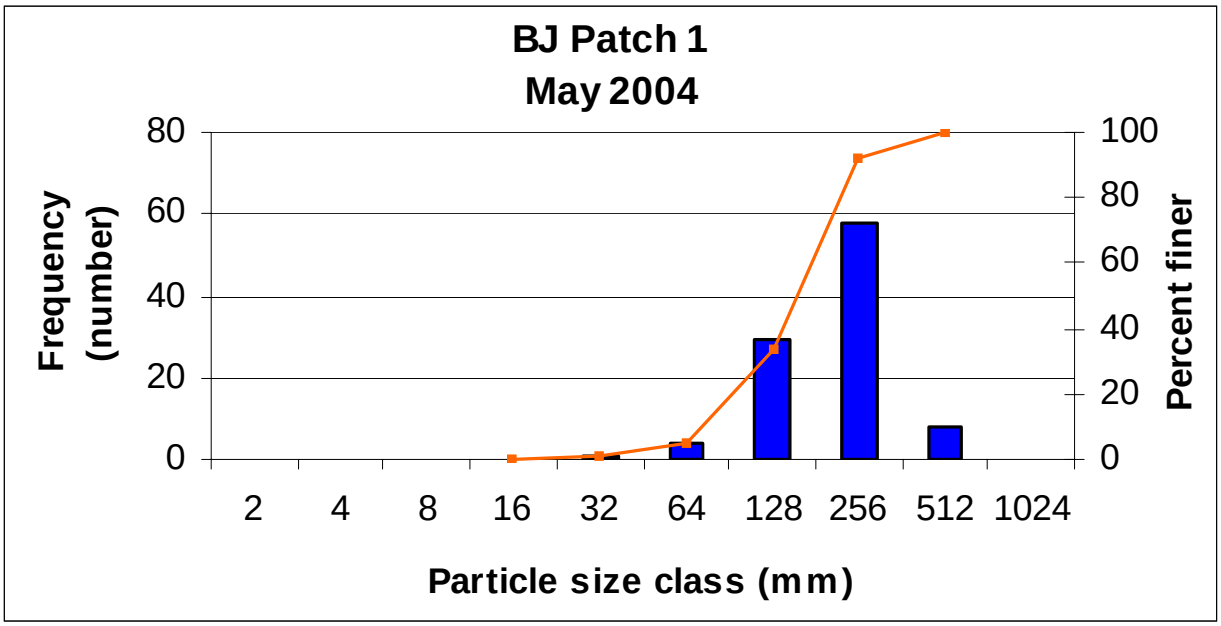

BJ
bj-lep-1
bj-lep-2
bj-lep-3
bj-lep-4
bj-lep-5
bj-lep-6
bj-rep-1
bj-rep-2
bj-rep-3
bj-rep-4
bj-rep-5
bj-rep-6
BJ COMBINED PERCENTAGE OF MEDIUM AND FINE GRAVEL
Legend
endpoint
transect
% medium+fine gravel in polygon
0
1 - 25
26 - 50
51 - 75
76 - 100
N
10 0 10 Meters

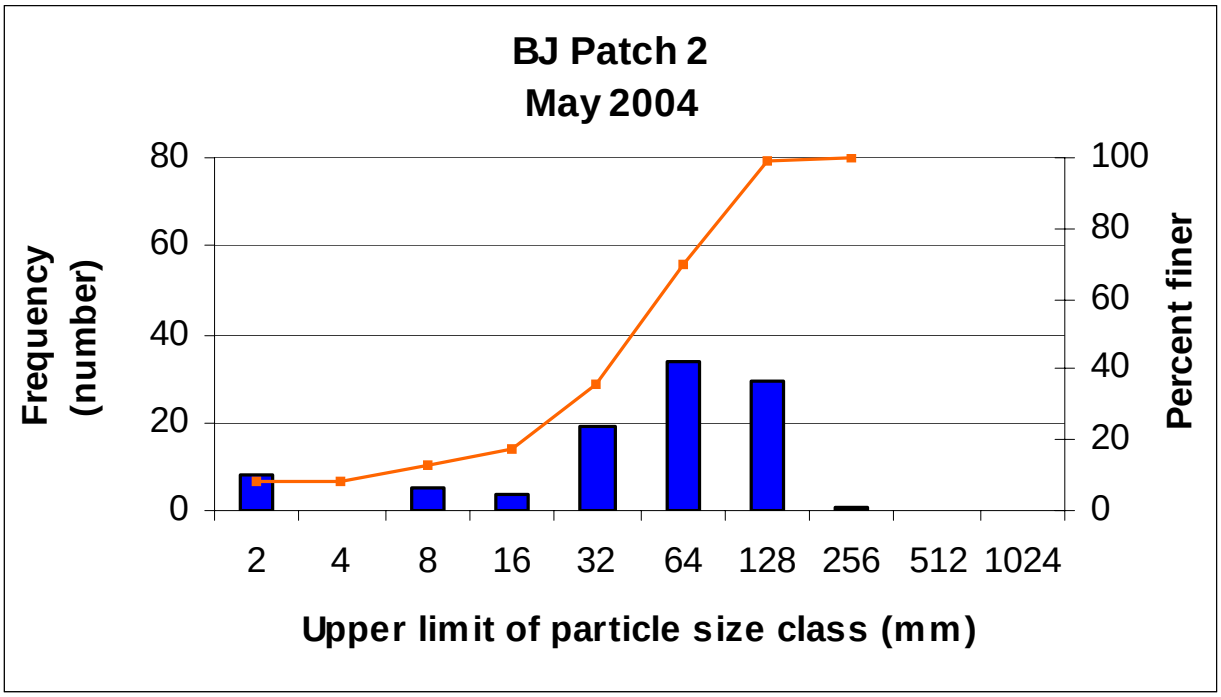

RR
rr-lep-1
rr-rep-1
rr-lep-2
rr-lep-3
rr-lep-4
rr-rep-2
rr-rep-3
rr-rep-4
rr-lep-5
rr-rep-5
rr-rep-6
rr-lep-6
RR COMBINED PERCENTAGE OF MEDIUM AND FINE GRAVEL
Legend
endpoint
transect
% medium+fine gravel in polygon
0
1 - 25
26 - 50
51 - 75
76 - 100
N
10 0 10 20 Meters

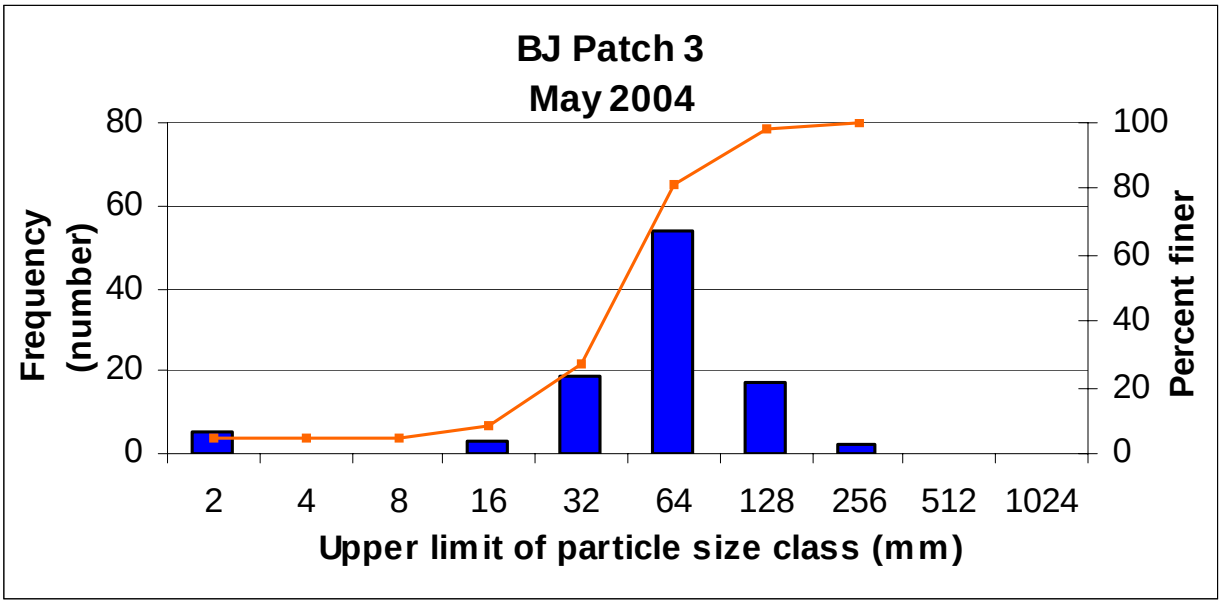

nc-lep-1
nc-lep-2
nc-rep-1
nc-rep-2
nc-lep-3
nc-rep-3
nc-lep-4
nc-rep-4
nc-rep-5
nc-lep-5
nc-rep-6
nc-lep-6
NC
NC COMBINED PERCENTAGE OF MEDIUM AND FINE GRAVEL
Legend
endpoint
transect
% medium+fine gravel in polygon
0
1 - 25
26 - 50
51 - 75
76 - 100
N
10 0 10 Meters

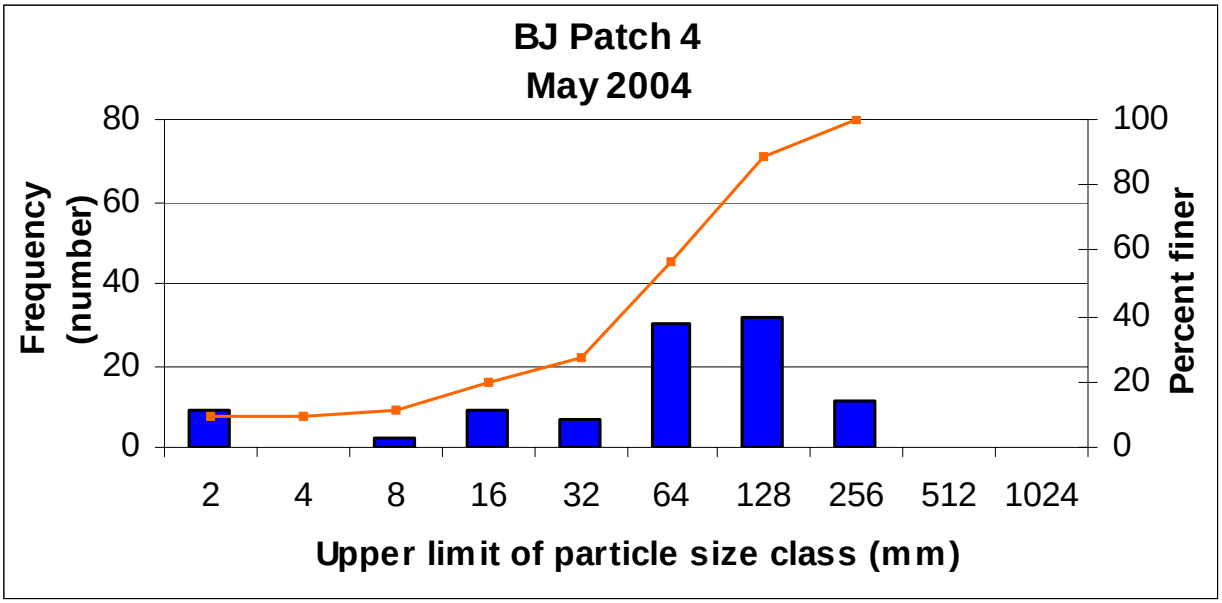

CA
ca-lep-1
ca-rep-1
ca-lep-2
ca-rep-2
ca-rep-3
ca-lep-3
ca-rep-4
ca-rep-5
ca-lep-4
ca-rep-6
ca-lep-5
ca-lep-6
CA COMBINED PERCENTAGE OF MEDIUM AND FINE GRAVEL
Legend
endpoint
transect
% medium+fine gravel in polygon
0
1 - 25
26 - 50
51 - 75
76 - 100
N
10 0 10 20 Meters

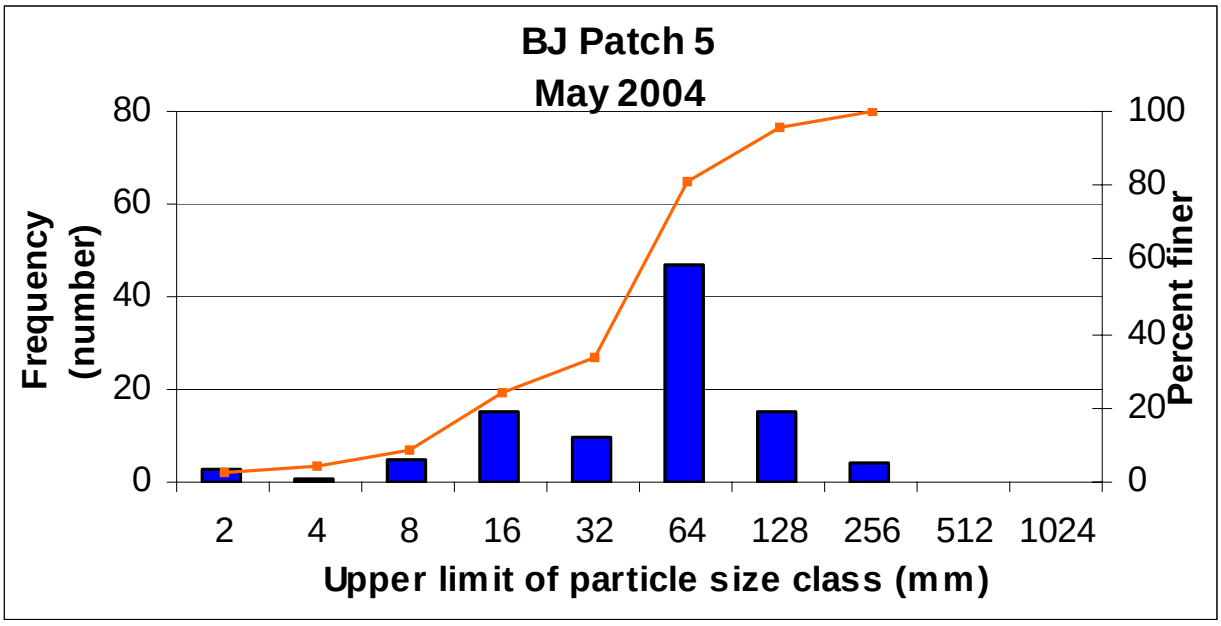
APPENDIX 3.3: PEBBLE COUNT RESULTS

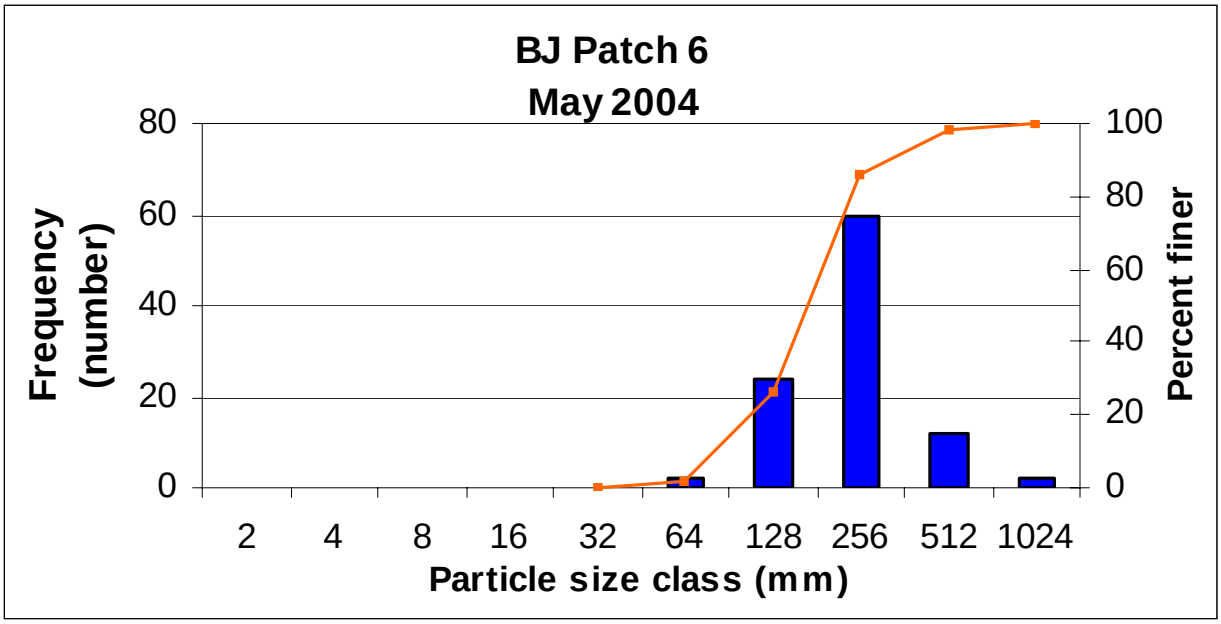

BJ Patch 1
May 2004
Frequency (number)
Percent finer
0
20
40
60
80
100
2
4
8
16
32
64
128
256
512
1024
Particle size class (mm)

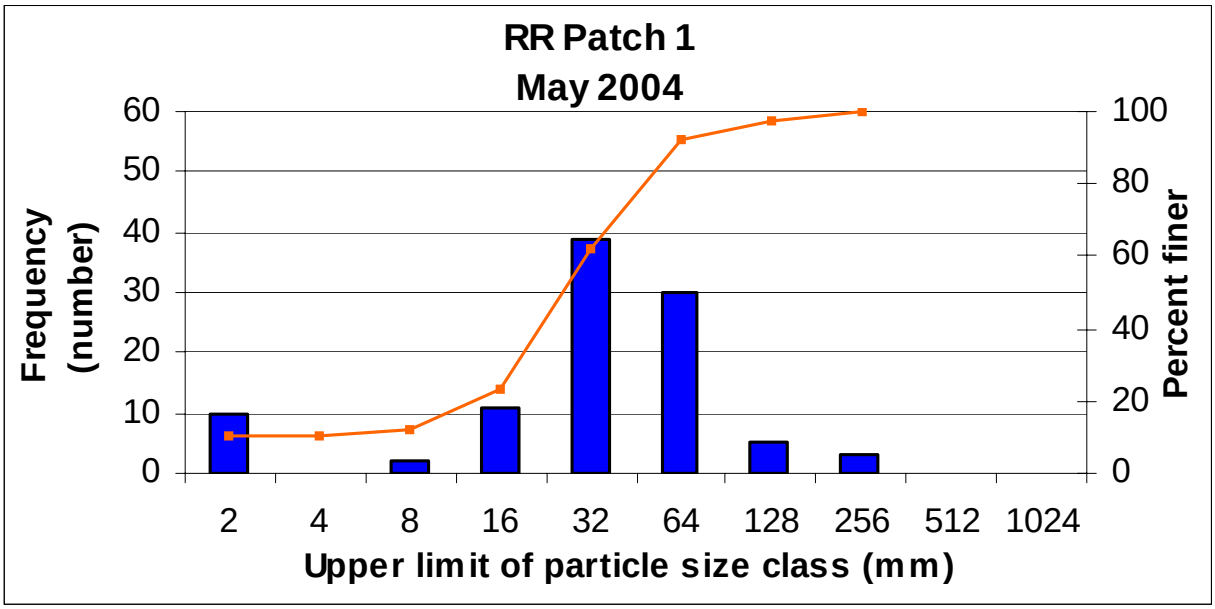

BJ Patch 2
May 2004
Frequency (number)
Percent finer
0
20
40
60
80
100
2
4
8
16
32
64
128
256
512
1024
Upper limit of particle size class (mm)

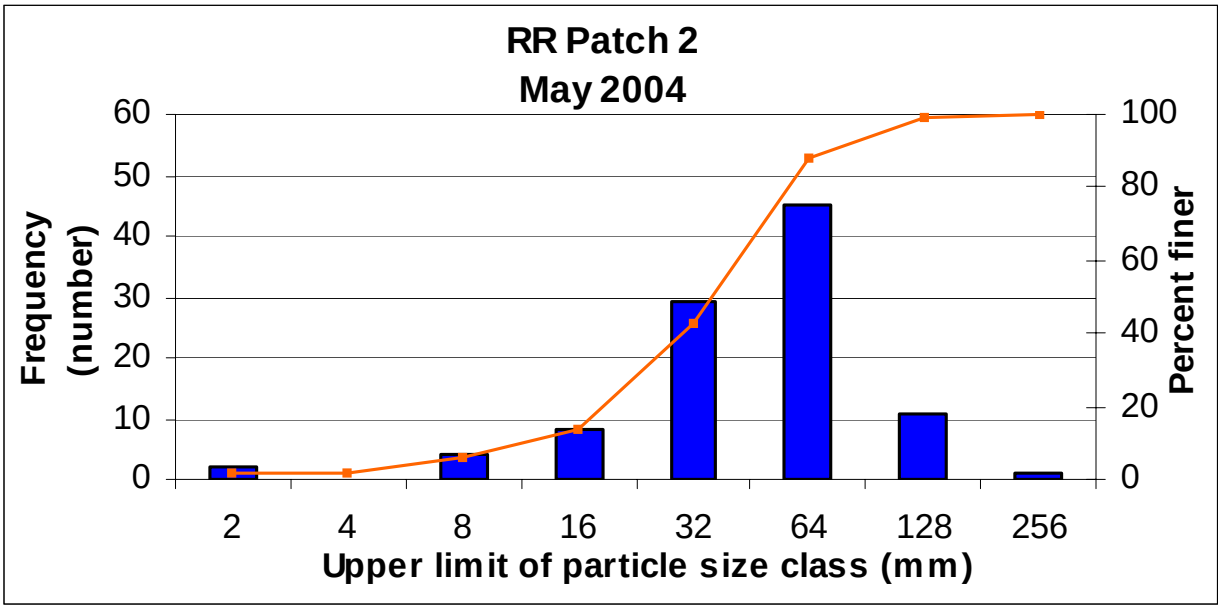

BJ Patch 3
May 2004
Frequency (number)
Percent finer
0
20
40
60
80
100
2
4
8
16
32
64
128
256
512
1024
Upper limit of particle size class (mm)

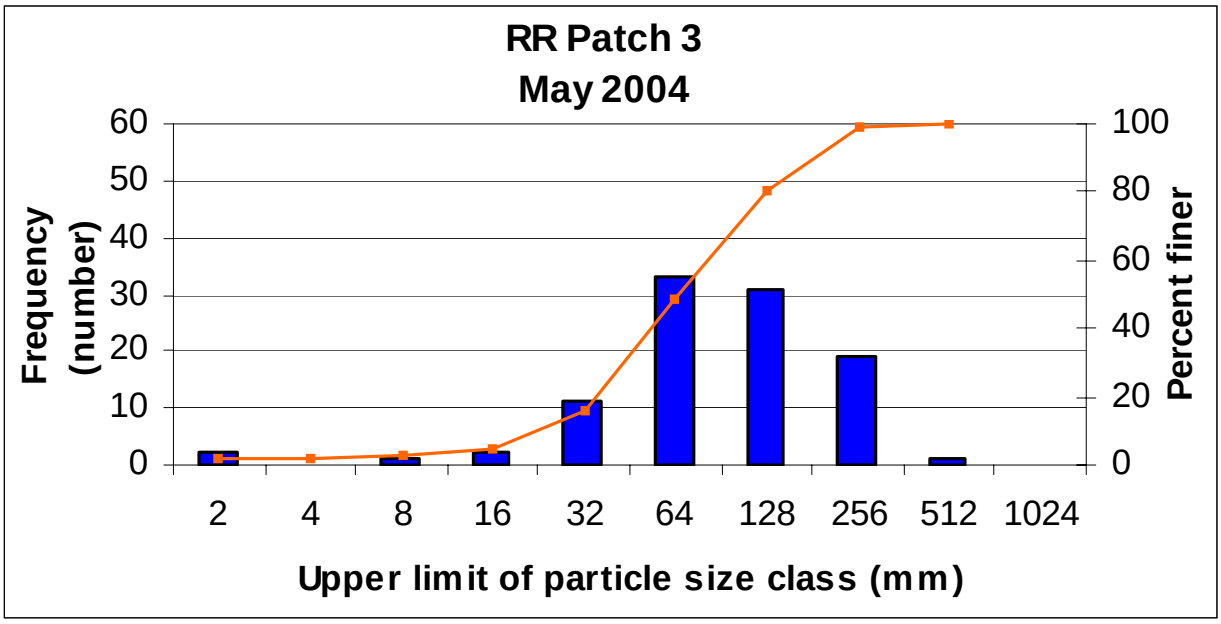

BJ Patch 4
May 2004
Frequency (number)
Percent finer
0
20
40
60
80
100
2
4
8
16
32
64
128
256
512
1024
Upper limit of particle size class (mm)

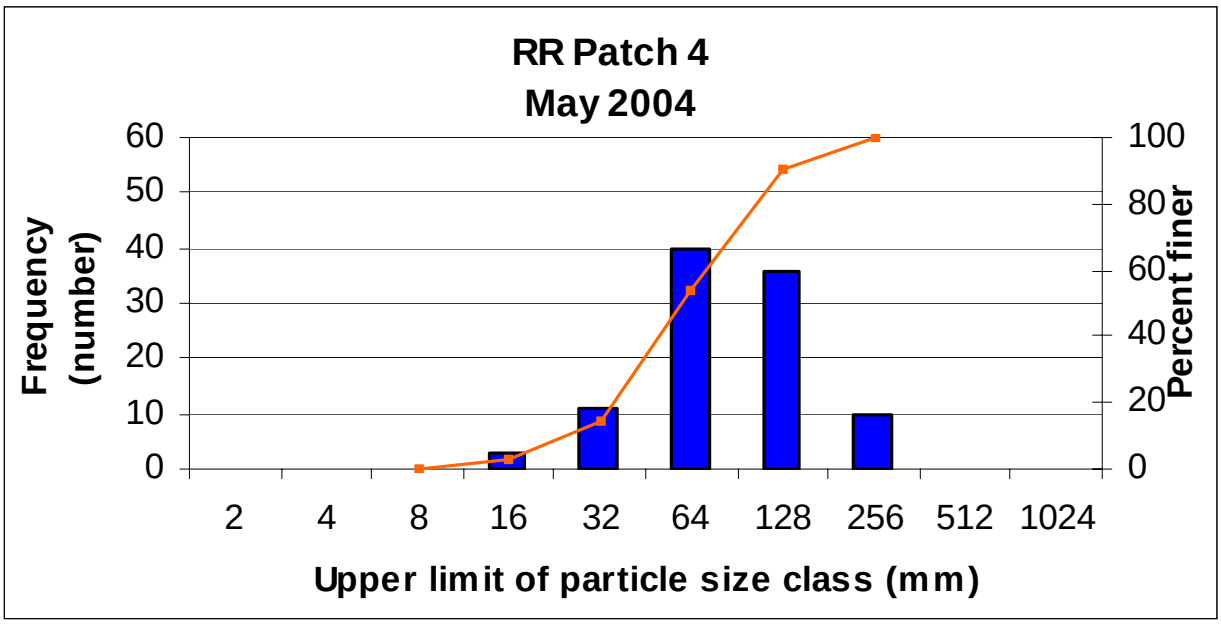

BJ Patch 5
May 2004
Frequency (number)
Percent finer
0
20
40
60
80
100
2
4
8
16
32
64
128
256
512
1024
Upper limit of particle size class (mm)

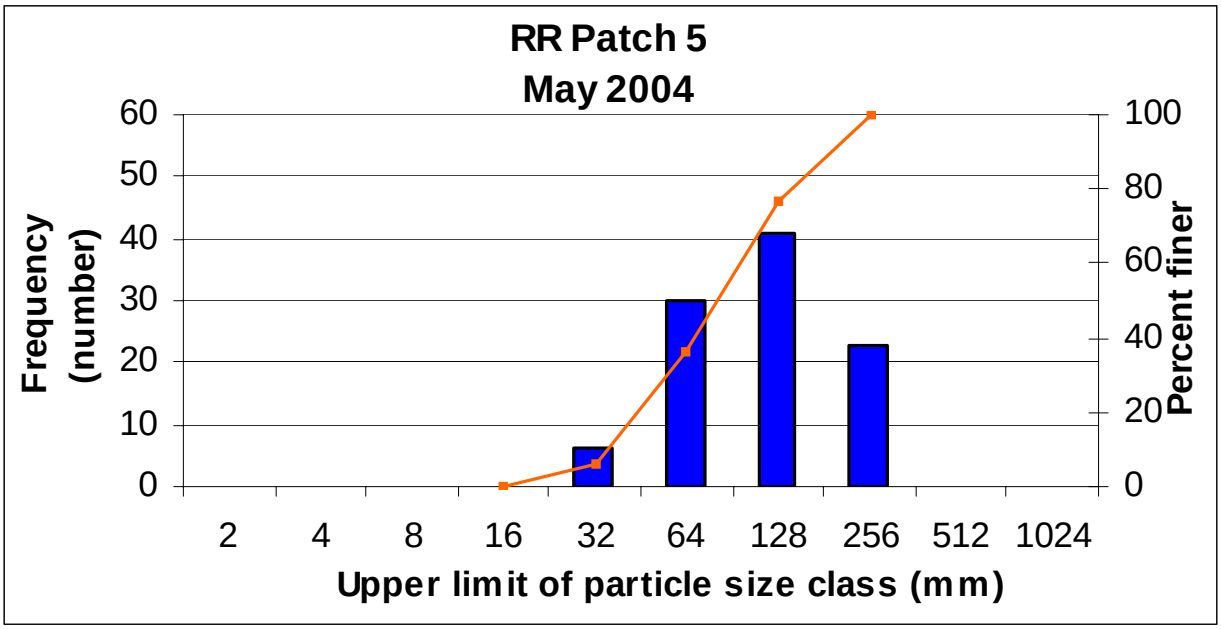

BJ Patch 6
May 2004
Frequency (number)
Percent finer
0
20
40
60
80
100
2
4
8
16
32
64
128
256
512
1024
Particle size class (mm)

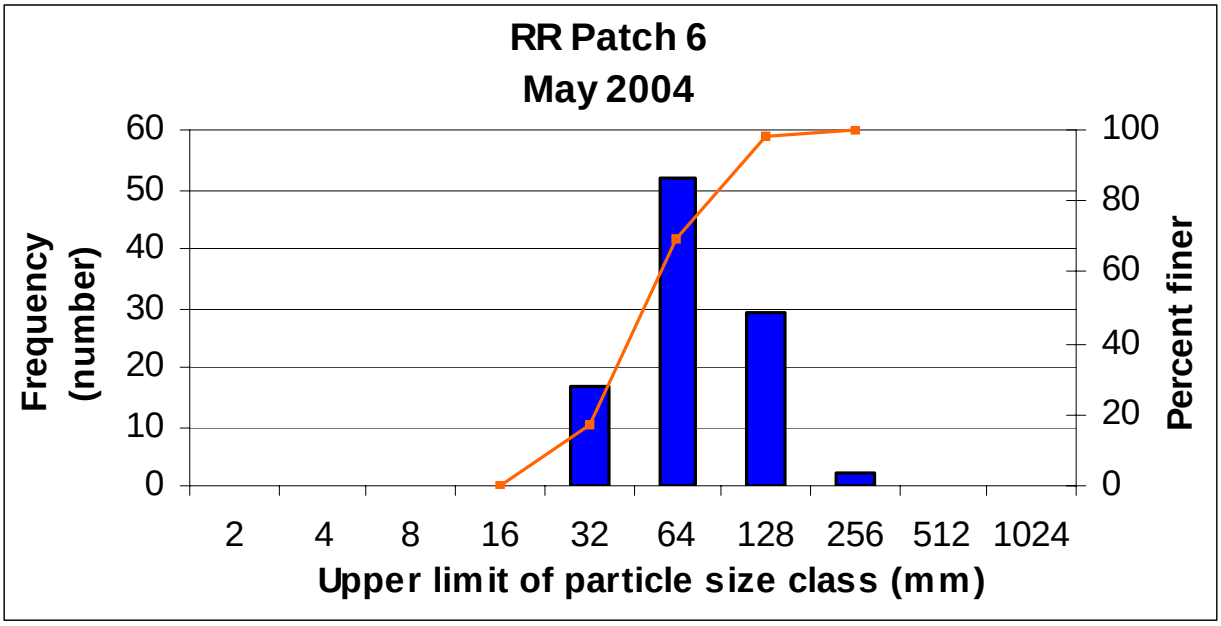

RR Patch 1
May 2004
Frequency (number)
Percent finer
60
50
40
30
20
10
0
100
80
60
40
20
0
2
4
8
16
32
64
128
256
512
1024
Upper limit of particle size class (mm)

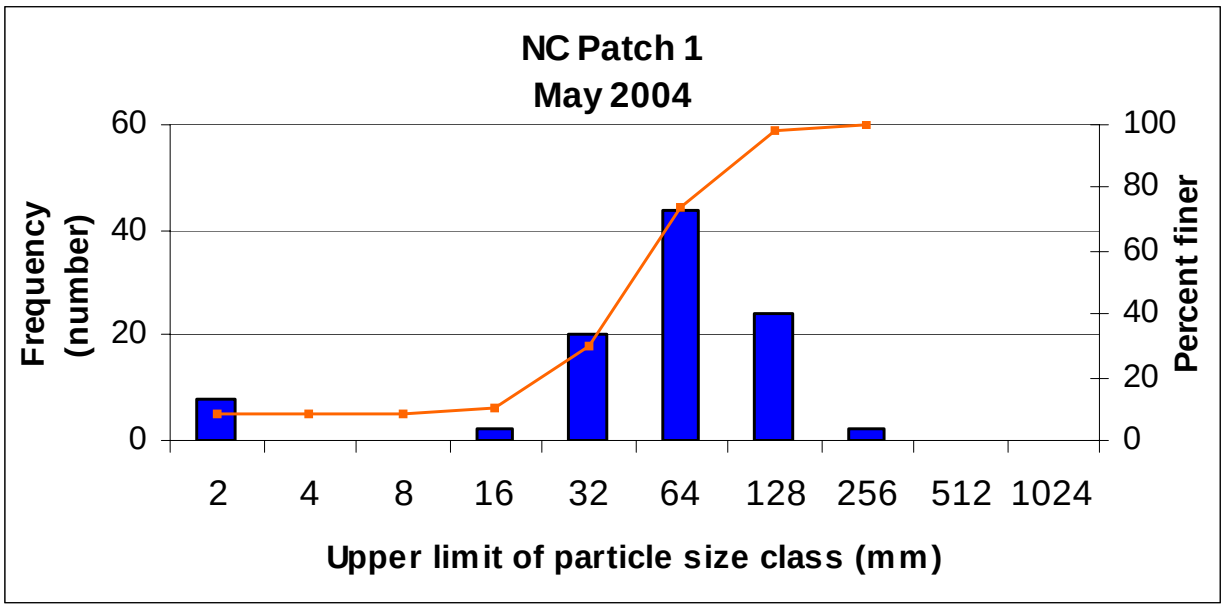

RR Patch 2
May 2004
Frequency (number)
Percent finer
60
50
40
30
20
10
0
100
80
60
40
20
0
2
4
8
16
32
64
128
256
Upper limit of particle size class (mm)

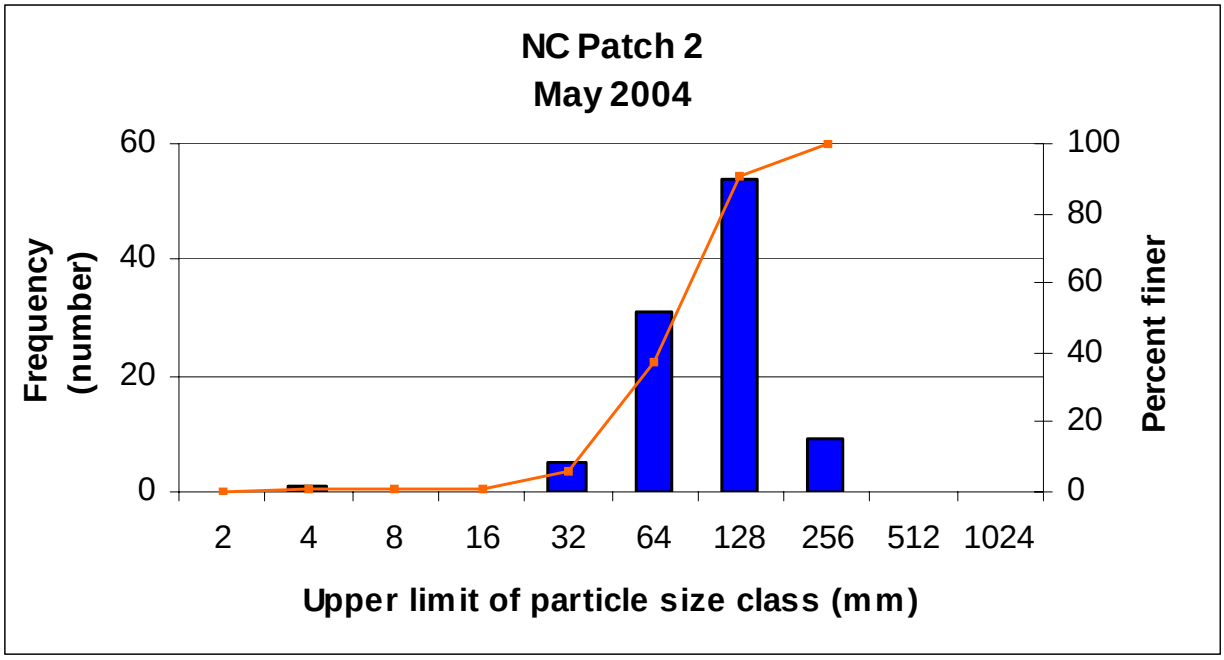

RR Patch 3
May 2004
Frequency (number)
Percent finer
60
50
40
30
20
10
0
100
80
60
40
20
0
2
4
8
16
32
64
128
256
512
1024
Upper limit of particle size class (mm)

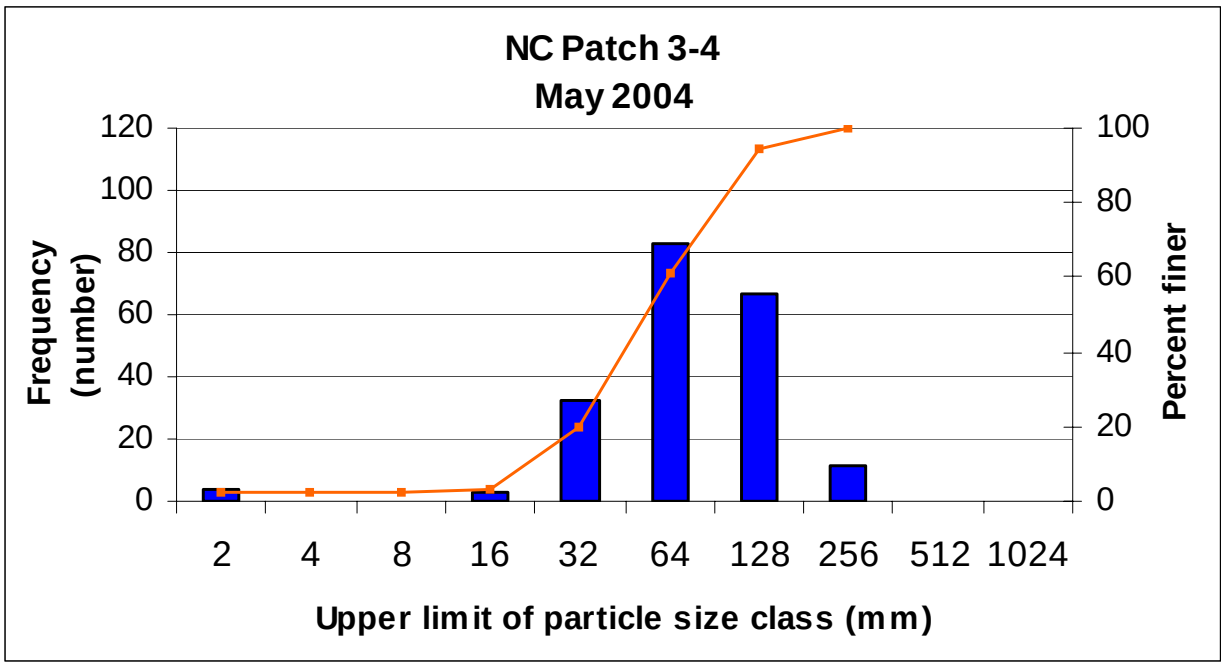

RR Patch 4
May 2004
Frequency (number)
Percent finer
60
50
40
30
20
10
0
100
80
60
40
20
0
2
4
8
16
32
64
128
256
512
1024
Upper limit of particle size class (mm)

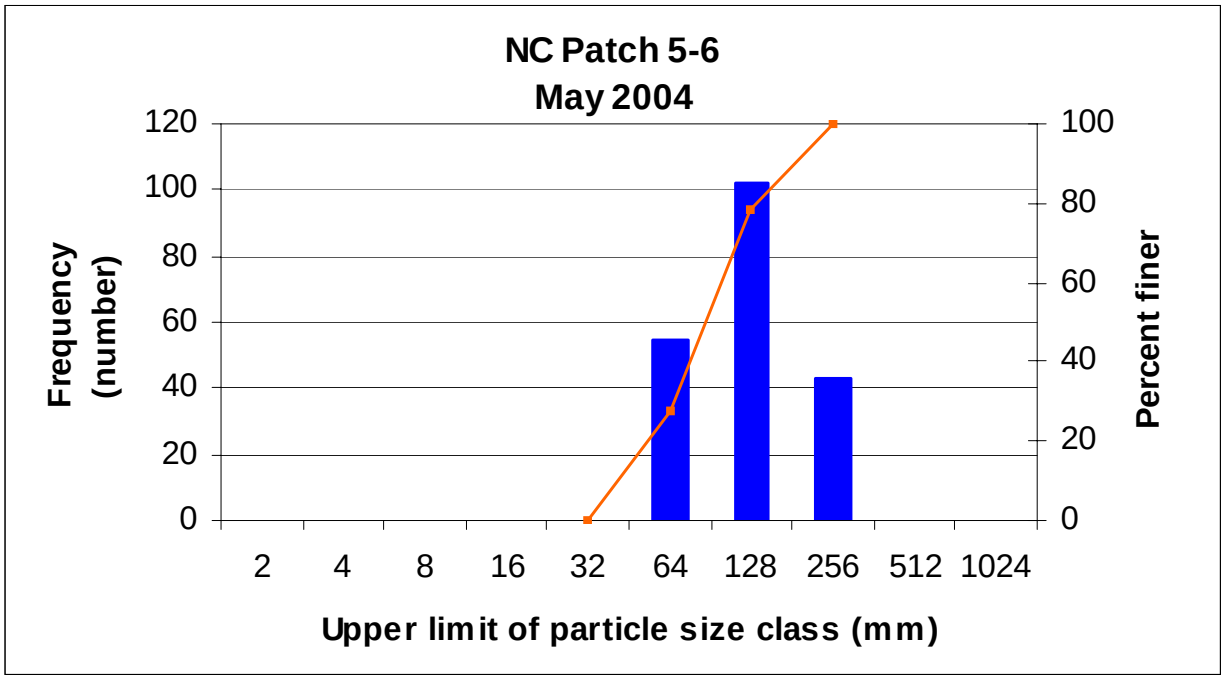

RR Patch 5
May 2004
Frequency (number)
Percent finer
60
50
40
30
20
10
0
100
80
60
40
20
0
2
4
8
16
32
64
128
256
512
1024
Upper limit of particle size class (mm)

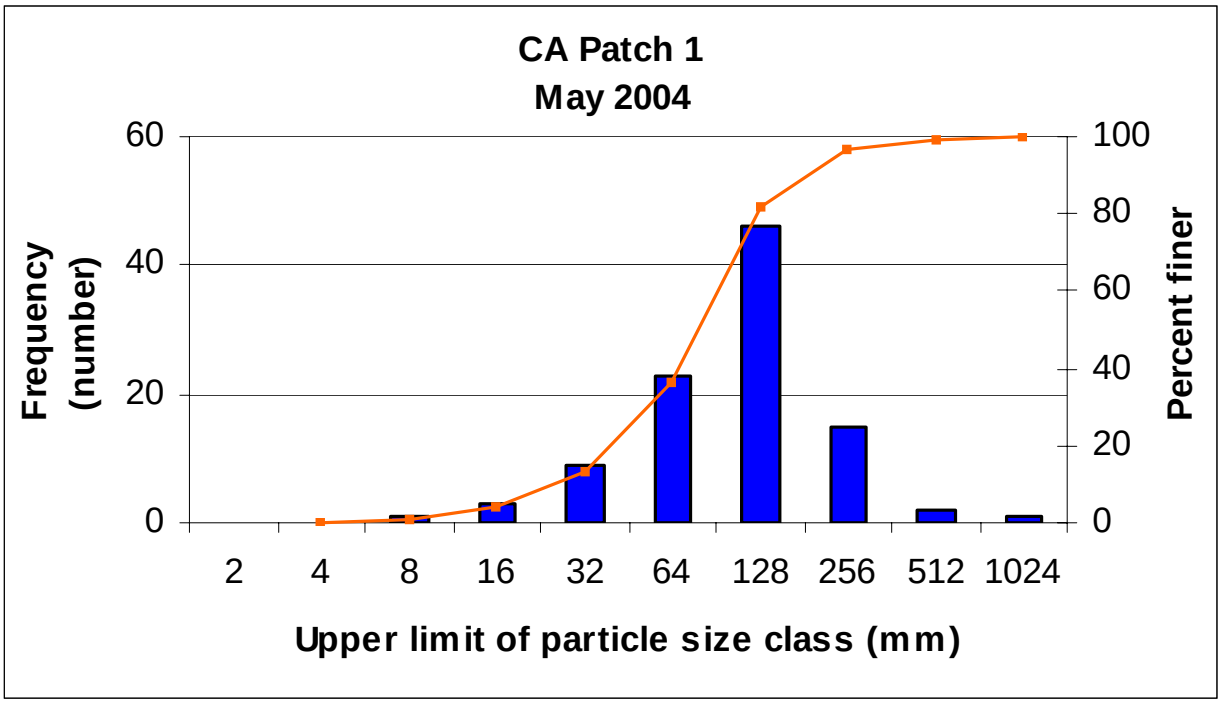

RR Patch 6
May 2004
Frequency (number)
Percent finer
60
50
40
30
20
10
0
100
80
60
40
20
0
2
4
8
16
32
64
128
256
512
1024
Upper limit of particle size class (mm)

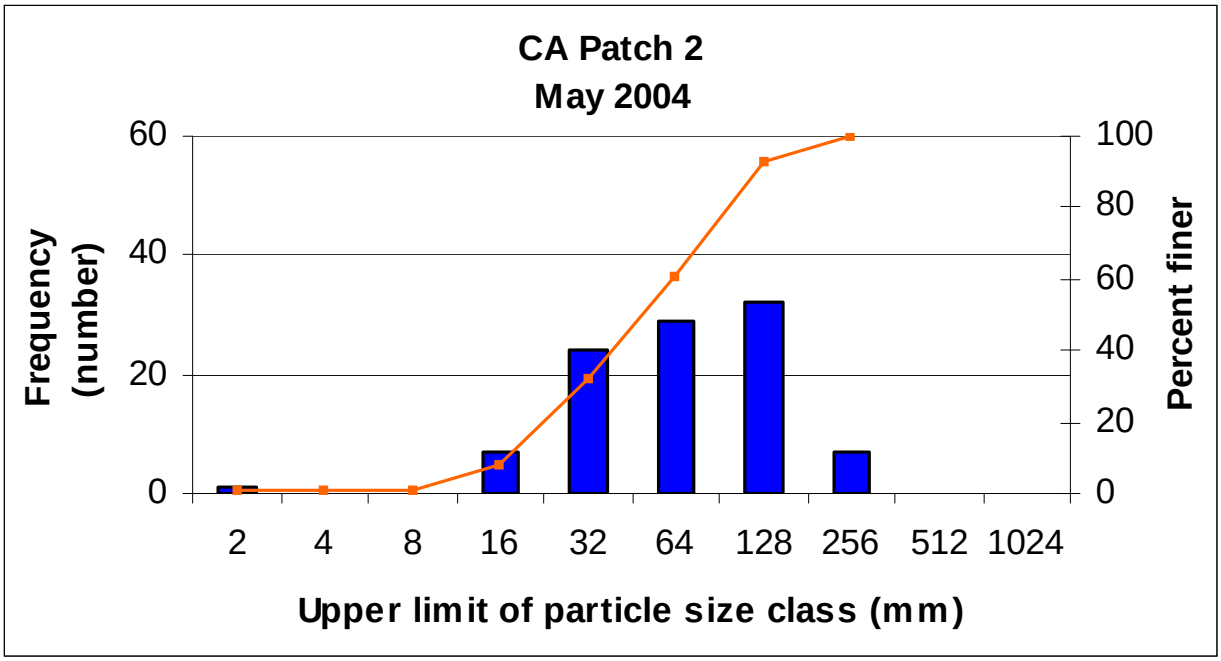

NC Patch 1
May 2004
Frequency (number)
Percent finer
60
40
20
0
100
80
60
40
20
0
2
4
8
16
32
64
128
256
512
1024
Upper limit of particle size class (mm)

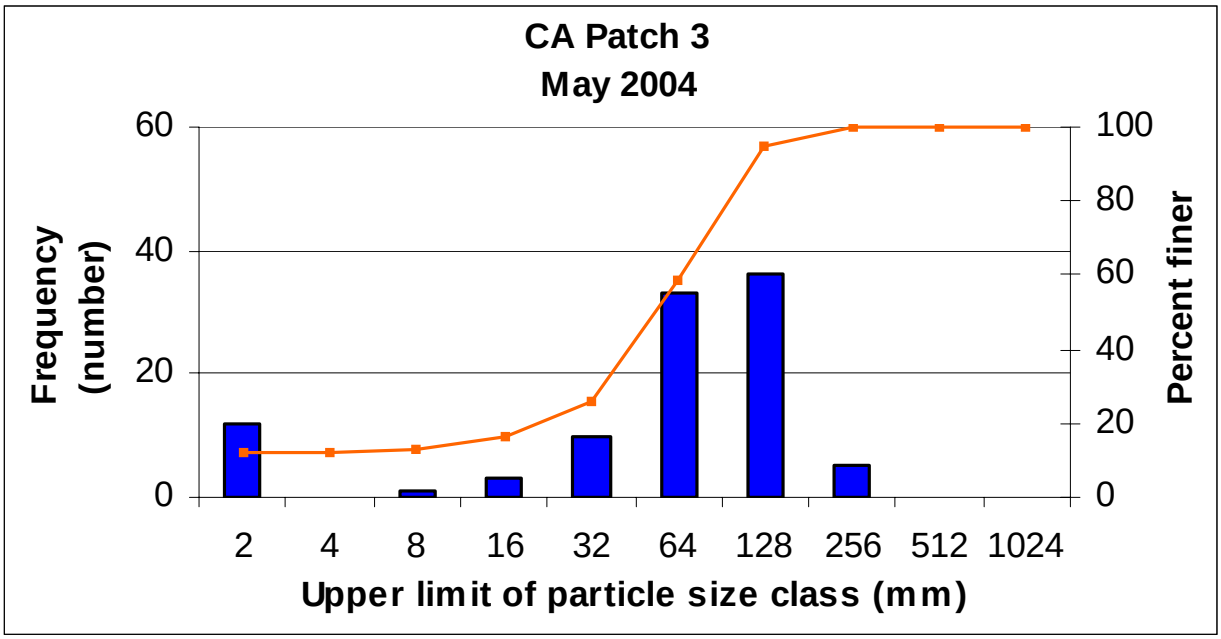

NC Patch 2
May 2004
Frequency (number)
Percent finer
60
40
20
0
100
80
60
40
20
0
2
4
8
16
32
64
128
256
512
1024
Upper limit of particle size class (mm)

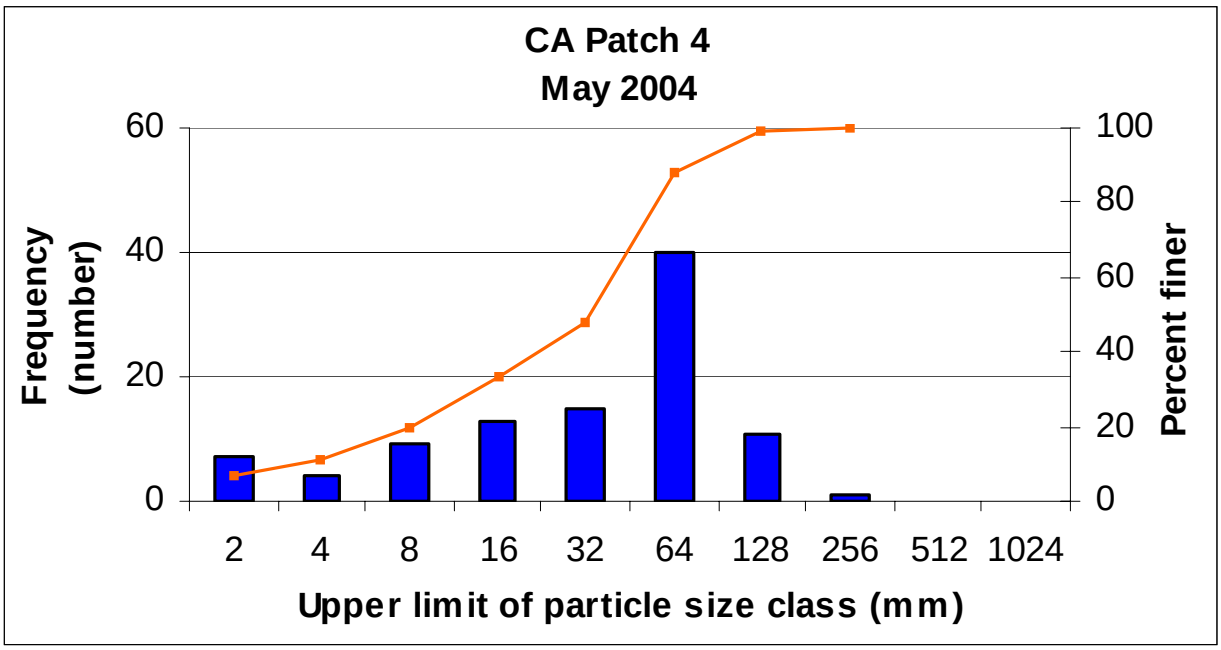

NC Patch 3-4
May 2004
Frequency (number)
Percent finer
120
100
80
60
40
20
0
100
80
60
40
20
0
2
4
8
16
32
64
128
256
512
1024
Upper limit of particle size class (mm)

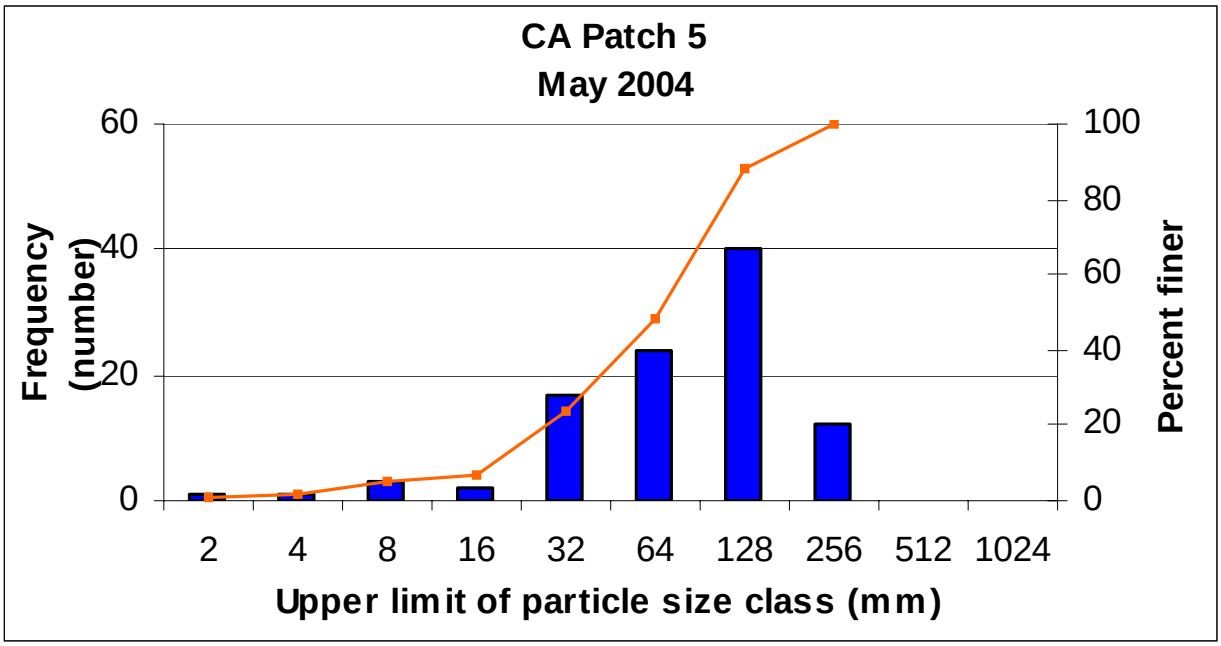

NC Patch 5-6
May 2004
Frequency (number)
Percent finer
120
100
80
60
40
20
0
100
80
60
40
20
0
2
4
8
16
32
64
128
256
512
1024
Upper limit of particle size class (mm)

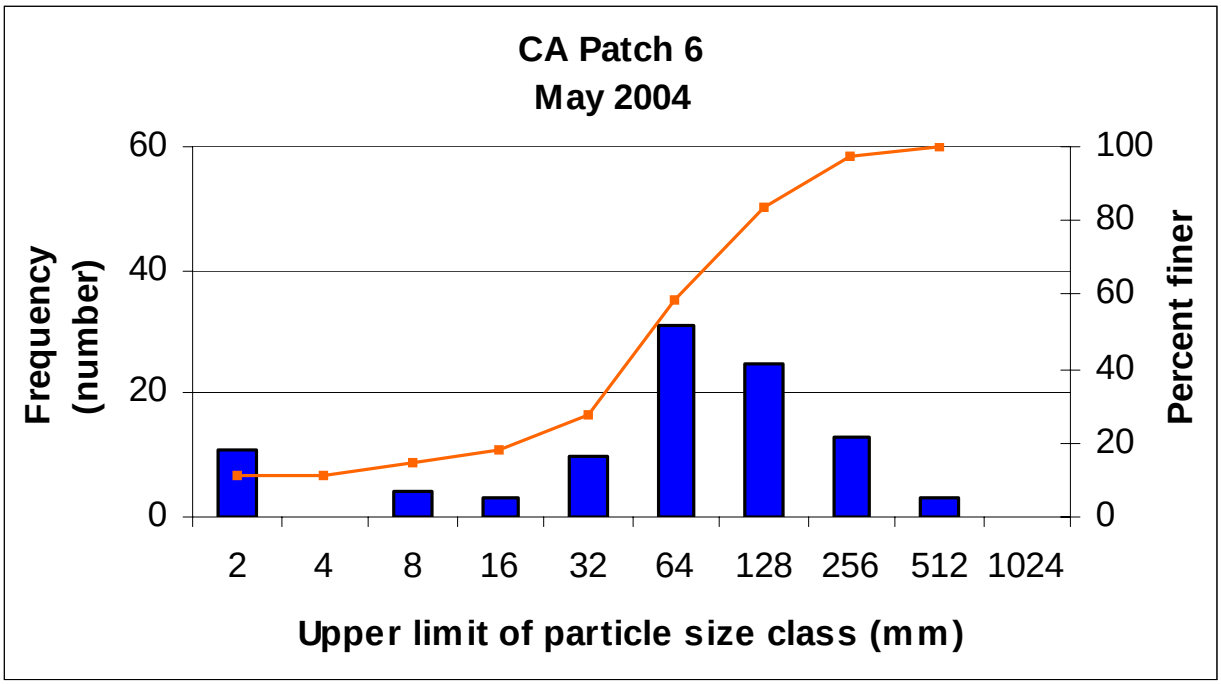

CA Patch 1
May 2004
Frequency (number)
Percent finer
60
40
20
0
100
80
60
40
20
0
2
4
8
16
32
64
128
256
512
1024
Upper limit of particle size class (mm)


CA Patch 2
May 2004
Frequency (number)
Percent finer
60
40
20
0
100
80
60
40
20
0
2
4
8
16
32
64
128
256
512
1024
Upper limit of particle size class (mm)


CA Patch 3
May 2004
Frequency (number)
Percent finer
60
40
20
0
100
80
60
40
20
0
2
4
8
16
32
64
128
256
512
1024
Upper limit of particle size class (mm)


CA Patch 4
May 2004
Frequency (number)
Percent finer
60
40
20
0
100
80
60
40
20
0
2
4
8
16
32
64
128
256
512
1024
Upper limit of particle size class (mm)


CA Patch 5
May 2004
Frequency (number)
Percent finer
60
40
20
0
100
80
60
40
20
0
2
4
8
16
32
64
128
256
512
1024
Upper limit of particle size class (mm)


CA Patch 6
May 2004
Frequency (number)
Percent finer
60
40
20
0
100
80
60
40
20
0
2
4
8
16
32
64
128
256
512
1024
Upper limit of particle size class (mm)

APPENDIX 4.1: SEDIMENT TRANSPORT MONITORING SITE PHOTOS

Upper Left: White Bridge (WB) Monitoring Site
Lower Left: Eroding Side Hill Below Jordanelle Dam

Upper Right: Limited Gravel Sources Exist Below Jordanelle Dam
Lower Right: Super Stable Bed and Banks Armored with Large Material

Upper Left: River Road Bridge (RR) Monitoring Site

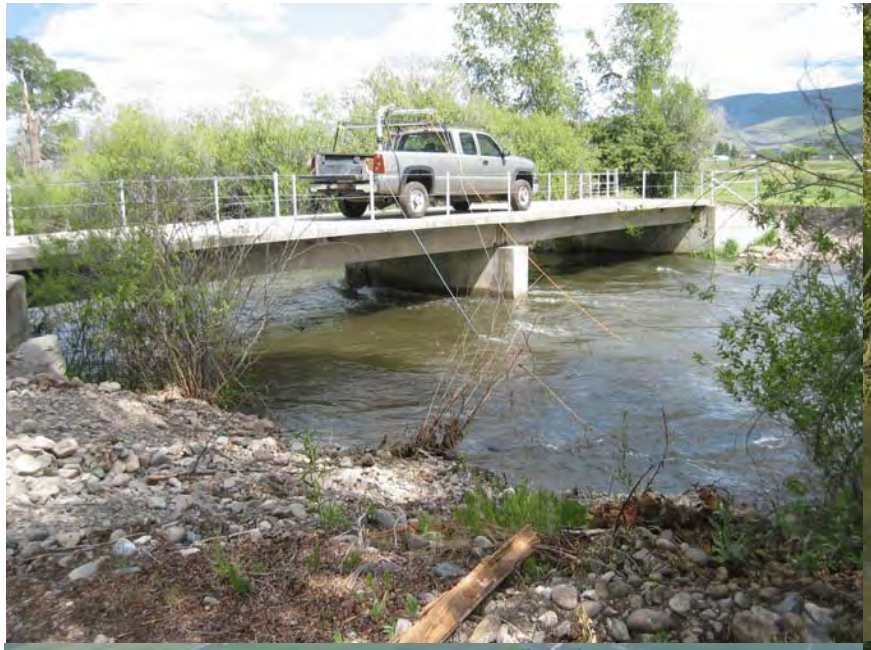
Upper Right: Downstream of RR Bridge (Concrete Seal causing Laminar Flow)

Lower Left: Restored Reach Near I-40 Between RR and WB Monitoring Sites

Lower Right: Some Banks of the Restored Reaches Likely Supply Some Sediment to the River, Especially When High Flows Recede

Upper Left: Midway Bridge (MID) Monitoring Site
Lower Left: Never channelized reach of the middle Provo River

Upper Right: Upstream of MID Bridge
Lower Right: Diversion structure just upstream of MID Bridge



Upper Left: The old Winterton Bridge used for the Charleston (CA) Monitoring Site

Upper Right: Upstream of CA Bridge

Lower Left: Newly restored reach upstream of CA Monitoring Site

Lower Right: Downstream of CA Bridge

APPENDIX 4.2: SUSPENDED SEDIMENTS AND BEDLOAD RESULTS

Appendix 4.2

Table 1. Suspended Sediment Sample Results

Site	Date	Streamflow (cfs)	Suspended Sediment Loads (tons/day)
WB	5/17/2004	130	0.70
	5/19/2004	407	4.94
	5/20/2004	731	20.70
	5/21/2004	982	41.05
	5/22/2004	1300	29.80
	5/23/2004	1510	57.01
	5/24/2004	1550	41.80
	5/24/2004	1390	22.49
	5/25/2004	1060	4.29
	5/27/2004	990	5.34
	5/29/2004	842	11.35
	5/31/2004	738	2.99
	6/2/2004	638	11.18
	6/4/2004	519	2.10
	6/7/2004	384	3.62
	6/9/2004	322	1.30
RR	5/17/2004	130	1.93
	5/19/2004	401	28.66
	5/20/2004	723	64.35
	5/21/2004	998	80.75
	5/22/2004	1320	89.00
	5/23/2004	1510	223.99
	5/24/2004	1570	101.62
	5/24/2004	1320	60.52
	5/25/2004	1090	20.58
	5/27/2004	958	14.21
	5/29/2004	842	17.03
	5/31/2004	753	8.12
	6/2/2004	625	7.59
	6/4/2004	532	6.46
	6/7/2004	378	1.02
	6/9/2004	322	1.30

Site	Date	Streamflow (cfs)	Suspended Sediment Loads (tons/day)
MID	5/17/2004	127	0.86
	5/19/2004	395	94.81
	5/20/2004	724	74.20
	5/21/2004	977	167.32
	5/22/2004	1290	186.13
	5/23/2004	1580	394.17
	5/24/2004	1600	155.35
	5/24/2004	1340	83.12
	5/25/2004	1050	25.49
	5/27/2004	947	20.43
	5/29/2004	833	16.85
	5/31/2004	724	15.62
	6/2/2004	621	17.59
	6/4/2004	515	2.78
	6/7/2004	416	3.93
	6/9/2004	326	1.76
CA	5/17/2004	174	11.73
	5/20/2004	784	1135.46
	5/20/2004	790	605.10
	5/21/2004	1060	806.19
	5/22/2004	1450	613.97
	5/23/2004	1730	1017.15
	5/24/2004	1650	233.63
	5/25/2004	1420	166.59
	5/25/2004	1120	86.09
	5/27/2004	978	18.46
	5/29/2004	866	35.03
	5/31/2004	738	21.89
	6/2/2004	632	17.90
	6/4/2004	531	15.04
	6/7/2004	461	7.46
	6/9/2004	347	2.34

Table 2. Bedload Sample Results

Site	Date	Streamflow (cfs)	Total Bedload (tons/day)	Gravel (tons/day)	Sand (tons/day)
WB	5/20/2004	731	0.35		0.35
	5/21/2004	982	2.00		2.00
	5/22/2004	1330	2.47		2.47
	5/23/2004	1520	4.09		4.09
	5/24/2004	1560	14.94	0.15	14.79
	5/24/2004	1320	12.25	0.03	12.23
	5/25/2004	1080	0.72		0.72
	5/27/2004	982	0.28		0.28
	5/29/2004	834	0.33		0.33
	5/31/2004	760	*		
	6/17/2003	1388	5.95		5.95
	6/17/2003	1388	6.93		6.93
	6/17/2003	1422	4.93	0.01	4.92
	6/17/2003	1405	4.76		4.76
	6/18/2003	1430	2.07		2.07
	6/18/2003	1388	0.71		0.71
	6/18/2003	1273	2.00		2.00
	6/18/2003	1355	0.88		0.88

Site	Date	Streamflow (cfs)	Total Bedload (tons/day)	Gravel (tons/day)	Sand (tons/day)
RR	5/20/2004	738	0.43	0.01	0.43
	5/21/2004	982	0.76		0.76
	5/22/2004	1280	0.81	0.03	0.79
	5/23/2004	1500	3.54	0.04	
	5/24/2004	1550	16.89	2.23	14.65
	5/24/2004	1360	2.34		2.34
	5/25/2004	1060	5.04		5.04
	5/27/2004	982	2.34	0.01	2.33
	5/29/2004	842	0.10		0.10
	5/31/2004	760	0.70		0.70
	6/16/2003	537	0.08		0.08
	6/16/2003	558	0.27	0.04	0.23
	6/16/2003	568	0.32	0.01	0.31
	6/16/2003	580	0.34		0.34
	6/16/2003	634	0.37		0.37
	6/16/2003	719	1.16		1.16
	6/16/2003	849	0.30	0.03	0.27
	6/16/2003	920	1.01		1.01
	6/16/2003	1023	0.09	0.04	0.05
	6/16/2003	1144	1.60	0.03	1.58
	6/16/2003	1209	0.12		0.12
	6/16/2003	1273	1.03	0.01	1.02
	6/17/2003	1388	2.23	0.05	2.18
	6/17/2003	1388	3.09	0.08	3.01
	6/17/2003	1388	1.29	0.03	1.27
	6/17/2003	1422	1.71	0.01	1.69
	6/18/2003	1422	1.69	0.01	1.68
	6/18/2003	1396	1.82	0.12	1.71
	6/18/2003	1355	1.90		1.90
	5/20/2002	408	0.12		0.12
	5/21/2002	800	3.30	0.06	3.24
	5/22/2002	1250	3.36	1.63	1.73

Site	Date	Streamflow (cfs)	Total Bedload (tons/day)	Gravel (tons/day)	Sand (tons/day)
MID	5/20/2004	724	0.30		0.30
	5/21/2004	977	0.37		0.37
	5/22/2004	1300	56.21	54.84	1.37
	5/23/2004	1500	**		
	5/24/2004	1600	148.23	137.49	10.74
	5/24/2004	1340	181.02	174.39	6.64
	5/25/2004	1050	19.32	18.05	1.27
	5/27/2004	947	9.93	9.26	0.67
	5/29/2004	833	6.62	6.25	0.37
	5/31/2004	724	0.24		0.24
	6/2/2004	616	0.14		0.14
	6/17/2003	1388	4.97***		1.55
	6/17/2003	1388	5.75***		5.40
	6/17/2003	1395	6.85***		6.65
	6/17/2003	1395	4.53***		4.52
	6/18/2003	1409	10.82***		8.28
	6/18/2003	1409	24.15***		9.92
CA	5/20/2004	790	1.12		1.12
	5/21/2004	1070	1.38		1.38
	5/22/2004	1450	2.33		2.33
	5/23/2004	1740	2.44		2.44
	5/24/2004	1610	18.79	1.50	17.29
	5/25/2004	1410	14.99	6.74	8.26
	5/25/2004	1120	5.90	0.48	5.42
	5/27/2004	978	7.54		7.54
	5/29/2004	866	3.88		3.88
	5/31/2004	738	2.16		2.16
	6/2/2004	632	1.70		1.70
	6/17/2003	1405	10.24		10.24
	6/17/2003	1396	9.25		9.25
	6/17/2003	1372	9.81	0.10	9.71
	6/17/2003	1372	7.57	0.01	7.56
	6/18/2003	1346	23.64	11.22	12.42
	6/18/2003	1404	40.06	26.47	13.58
	5/20/2002	357	0.06		0.06
	5/21/2002	854	0.25		0.25
	5/22/2002	1342	1.35	0.43	0.91

* This Memorial Day sample was full of unnatural white silica sand. There were many fishermen in the river for the holiday and the likely source of the silica sand is a broken sandbag along the banks of the river.

** Bag malfunctions occurred during this sample.

*** A 3-inch bedload sampler was used prior to 2004. Further analysis shows that the sampler size has no affect on collecting sand and small gravel but has a significant affect on collecting medium and coarse gravel. Inefficiencies of the 3-inch sampler are obvious since the diameter of some of the gravel collected in 2004 with the 6-inch sampler was greater than 3 inches.

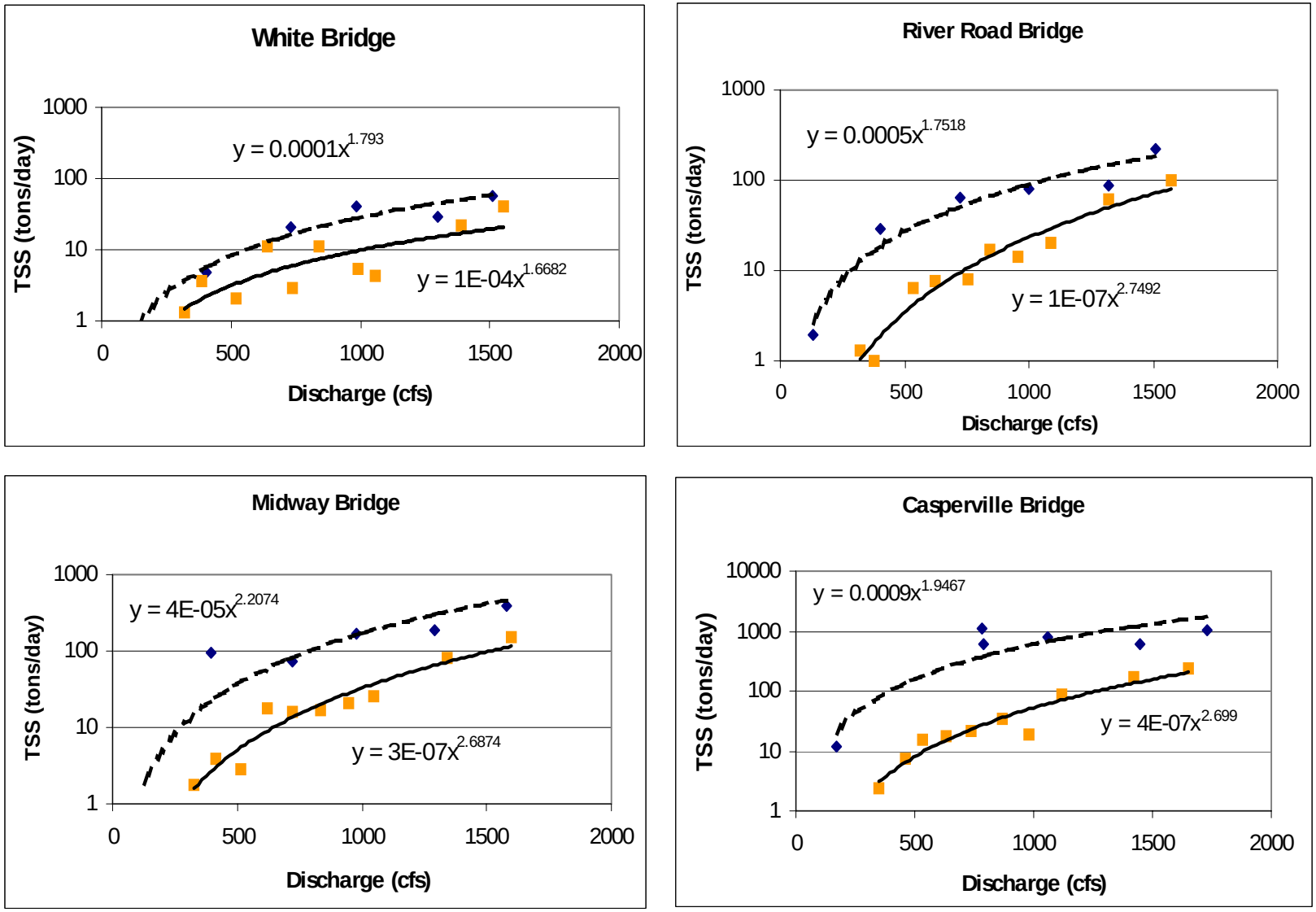


Figure 1. Suspended sediment rating curves for the four middle Provo River monitoring sites. Rising limb flow/TSS load correlations are shown with diamond markers and falling limb correlations are shown with square markers. Trend lines and equations are power functions.

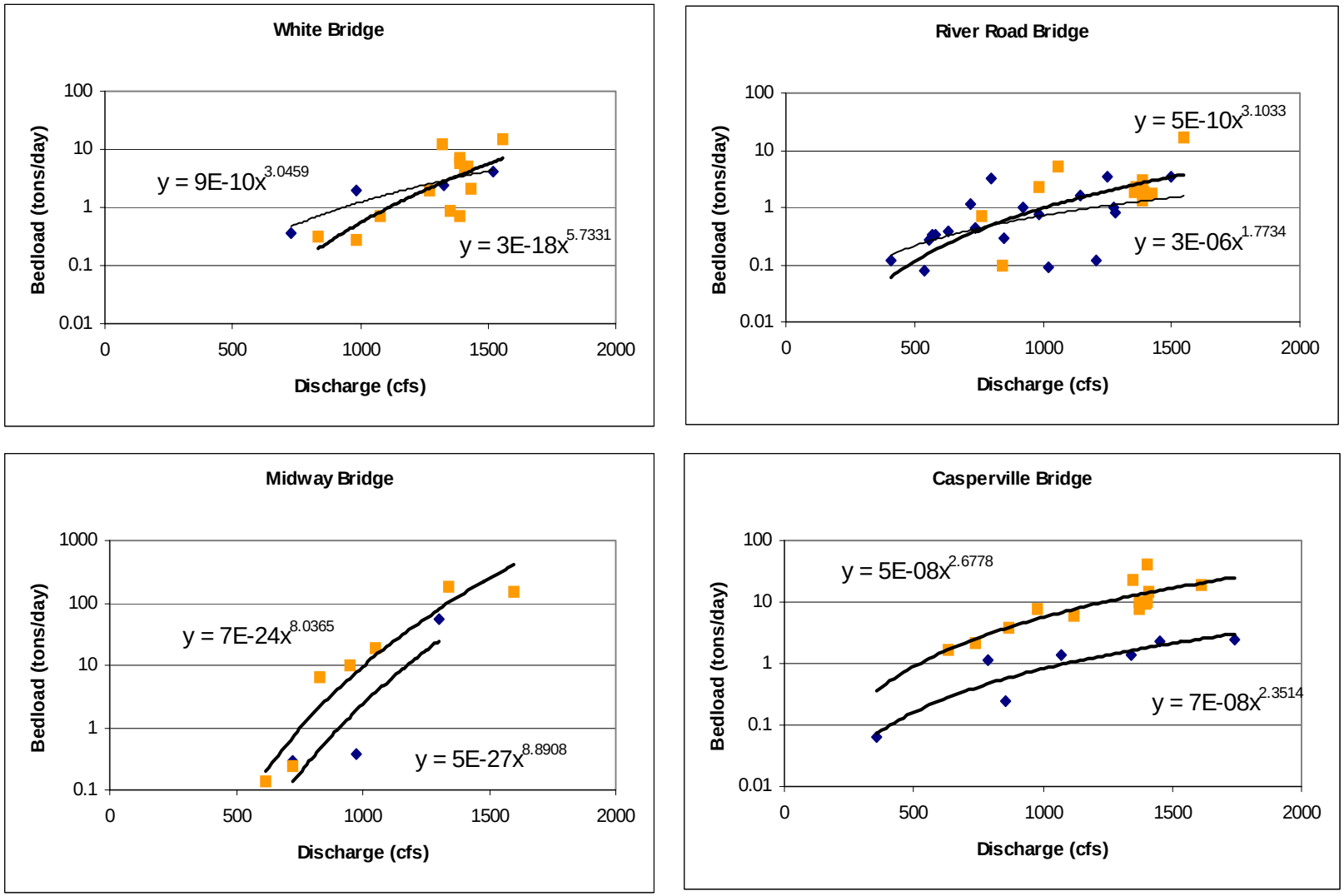


Figure 2. Bedload rating curves for the four middle Provo River monitoring sites. Rising limb flow/Bedload correlations are shown with diamond markers and falling limb correlations are shown with square markers. Trend lines and equations are power functions. The CA Bridge is the only monitoring site with a clear separation between rising and falling limb correlations.

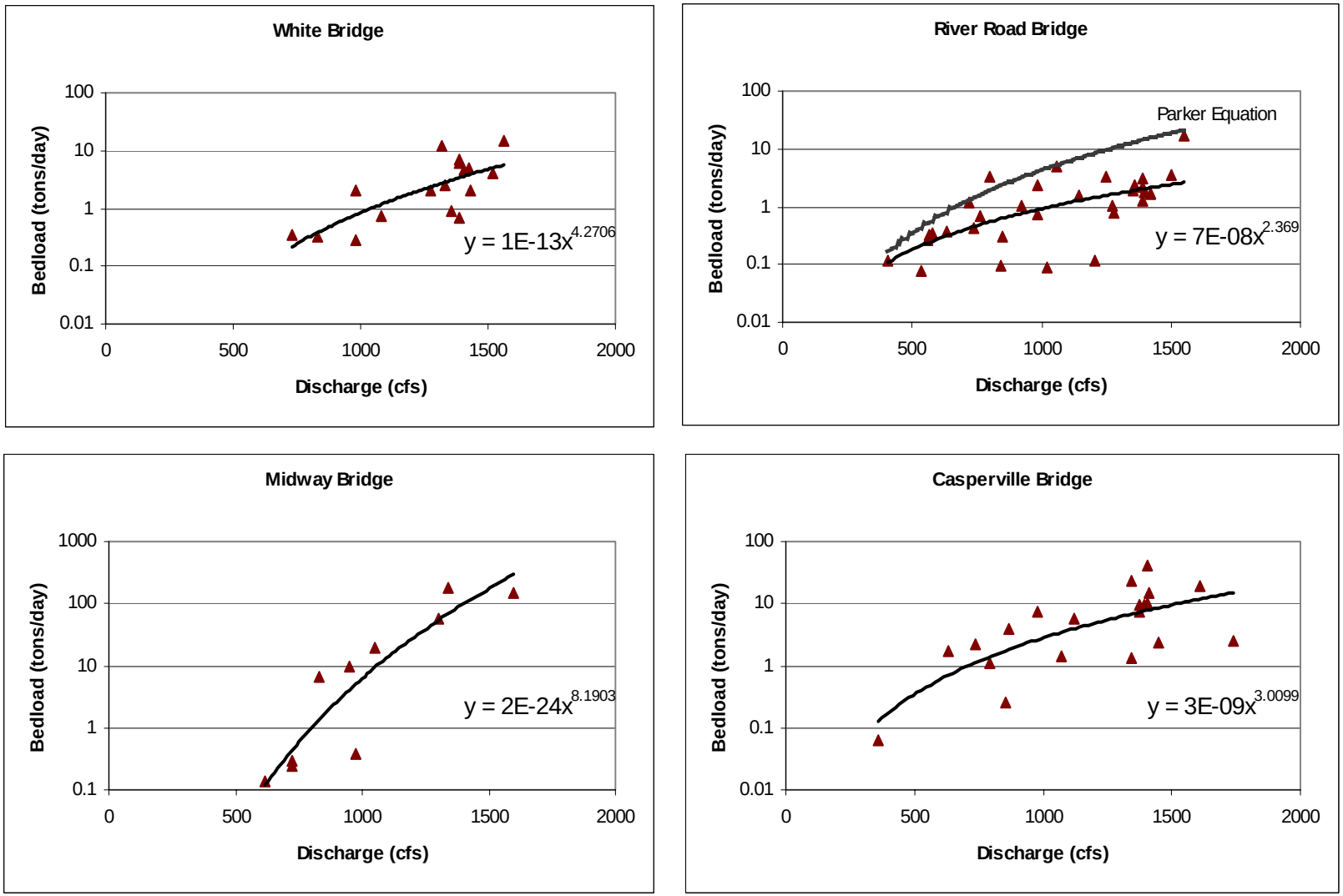


Figure 3. Bedload rating curves for the four middle Provo River monitoring sites. Applicable data collected in 2002 and 2003 for the Provo River Flow Study (Olsen et al, 2004) were combined with the 2004 baseline data to develop these rating curves. Trend lines and equations are power functions. The Parker (1990) bedload transport equation is shown at the RR Bridge monitoring site to illustrate potential loads based on channel substrate and shear stress equations just above the RR Bridge compared to actual transport rates measured at the RR Bridge, given severe upstream supply limitations.

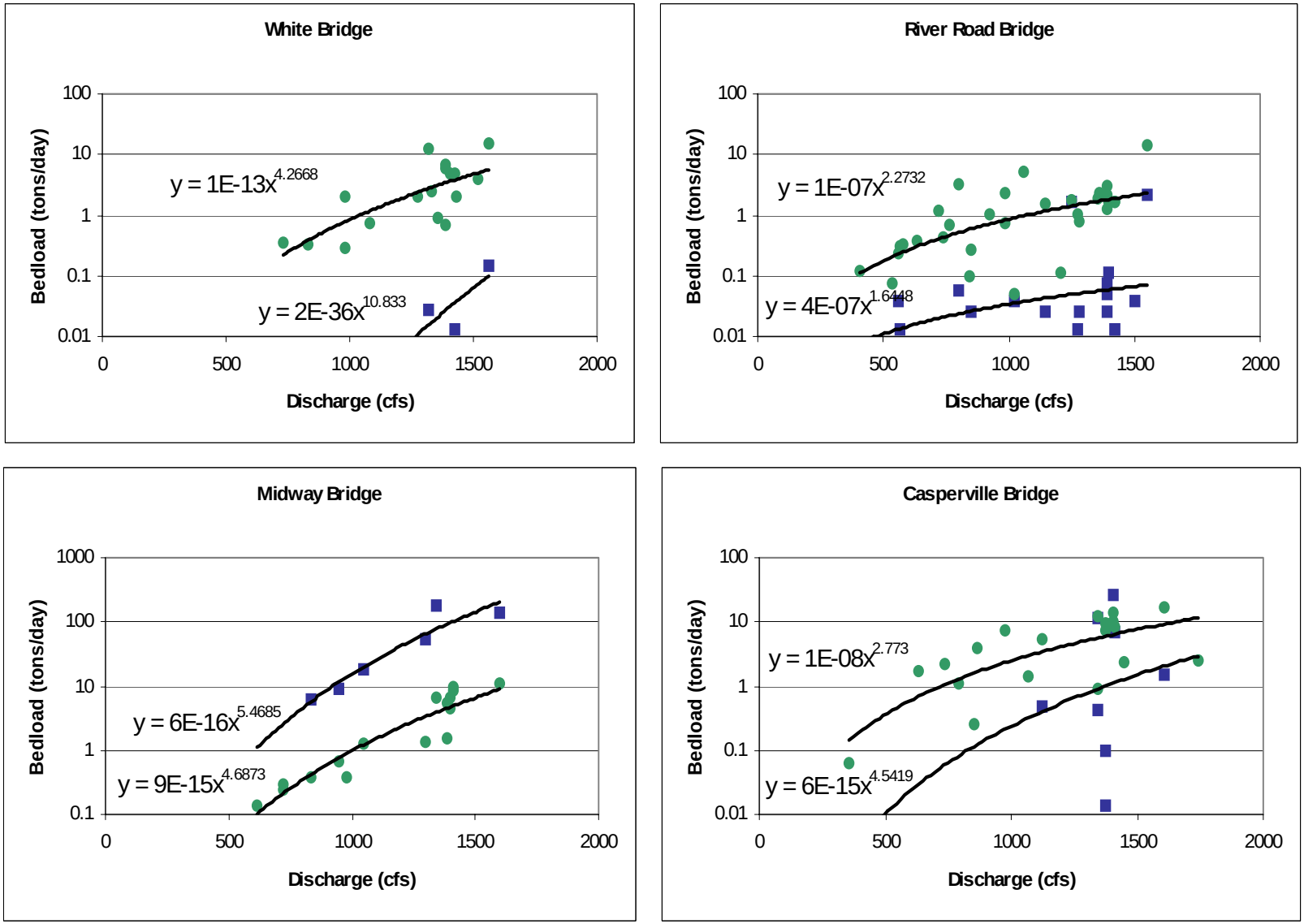


Figure 4. Sand (green circles) and gravel (blue squares) rating curves for the four middle Provo River monitoring sites. All applicable data collected in 2002 and 2003 for the Provo River Flow Study (Olsen et al, 2004) were combined with the 2004 baseline data to develop rating curves based on three years of data. Trend lines and equations are power functions. Notice all sites are dominated by sand transport except MID where enormous gravel supplies are being eroded in the never channelized reach.

731 cubic feet per second

982 cubic feet per second

1330 cubic feet per second

1520 cubic feet per second

1560 cubic feet per second

1320 cubic feet per second (1 of 3)

1320 cubic feet per second (2 of 3)

1320 cubic feet per second (3 of 3)

1080 cubic feet per second

982 cubic feet per second

834 cubic feet per second

760 cubic feet per second

738 cubic feet per second

982 cubic feet per second

1280 cubic feet per second

1500 cubic feet per second

1550 cubic feet per second (1 of 3)

1550 cubic feet per second (2 of 3)

1550 cubic feet per second (3 of 3)

1360 cubic feet per second

1060 cubic feet per second

982 cubic feet per second

842 cubic feet per second

760 cubic feet per second

724 cubic feet per second

977 cubic feet per second

1300 cubic feet per second (1 of 4)

1300 cubic feet per second (2 of 4)

1300 cubic feet per second (3 of 4)

1300 cubic feet per second (4 of 4)

1600 cubic feet per second (1 of 5)

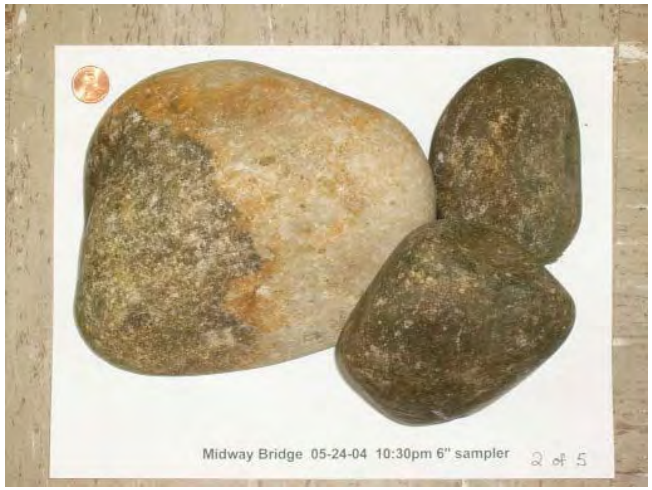
1600 cubic feet per second (2 of 5)

1600 cubic feet per second (3 of 5)

1600 cubic feet per second (4 of 5)

1600 cubic feet per second (5 of 5)

1340 cubic feet per second (1 of 5)



1340 cubic feet per second (2 of 5)

1340 cubic feet per second (3 of 5)

1340 cubic feet per second (4 of 5)

1340 cubic feet per second (5 of 5)

1050 cubic feet per second (1 of 2)

1050 cubic feet per second (2 of 2)

947 cubic feet per second

833 cubic feet per second

724 cubic feet per second

616 cubic feet per second

790 cubic feet per second

1070 cubic feet per second

1450 cubic feet per second

1740 cubic feet per second

1610 cubic feet per second (1 of 3 pictures)

1610 cubic feet per second (2 of 3 pictures)

1610 cubic feet per second (3 of 3 pictures)

1410 cubic feet per second (1 of 2 pictures)

1410 cubic feet per second (2 of 2 pictures)

1120 cubic feet per second

978 cubic feet per second

866 cubic feet per second

738 cubic feet per second

632 cubic feet per second

APPENDIX 5.1: MACROINVERTEBRATE TAXA RESULTS

Table 1. Taxa of macroinvertebrates collected in each sample at each site in May 200

	Stream	Provo River, Summit County, UT	Provo River, Summit County, UT	Provo River, Summit County, UT	Provo River, Summit County, UT	Provo River, near Midway	Provo River, near Midway	Provo River, near Midway	Provo River, near Midway	Provo River, Summit County, UT	Provo River, Summit County, UT	Provo River, Summit County, UT	Provo River, Summit County, UT	Provo River, Summit County, UT	Provo River, Summit County, UT	Provo River, Summit County, UT	Provo River, Summit County, UT
	Site	Casperville Road Site (CA)	Casperville Road Site (CA)	Casperville Road Site (CA)	Casperville Road Site (CA)	Never Channelized Site (NC)	Never Channelized Site (NC)	Never Channelized Site (NC)	Never Channelized Site (NC)	River Road Site (RR)	River Road Site (RR)	River Road Site (RR)	River Road Site (RR)	Below Jordanelle Site (BJ)	Below Jordanelle Site (BJ)	Below Jordanelle Site (BJ)	Below Jordanelle Site (BJ)
	Rep	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
	Date	05-14-2004	05-14-2004	05-14-2004	05-14-2004	05-13-2004	05-13-2004	05-13-2004	05-13-2004	05-13-2004	05-13-2004	05-13-2004	05-13-2004	05-13-2004	05-13-2004	05-13-2004	05-13-2004
	Percent Subsampled	25.00	12.50	100.00	3.13	25.00	42.74	12.50	4.17	22.94	20.83	12.50	2.08	41.67	41.67	56.18	4.76
	Device	Hess	Hess	Hess	D-frame	Hess	Hess	Hess	D-frame	Hess	Hess	Hess	D-frame	Hess	Hess	Hess	D-frame
	Habitat	In mid-depth riffle	Riffle btw CS2 & CS3	Just upstrm of LEP2	6riffle, 1sc inlet,	Shallow closer to sh	Mid-channel btw CS5&	Mid strm @ CS6	5rif, 6run, 3pool, 1	Btw CS3&4 in main ch	Btw CS3&4 shlw riffl	Shlw riffle nr mid-c	1scpool, 2scrif, 1sc	1scpool, 2scrif, 1sc		15-20' into chann. f	2snag, 1bw, 6pool, 1
	EcoAnalysts Sample ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Ephemeroptera	Baetis tricaudatus	242	64	153	74	116	11	17	58	53	74	39	142	150	170	166	85
	Diphetor hageni	1	0	0	1	2	3	4	4	1	0	2	10	0	0	0	0
	Drunella grandis	0	0	0	0	0	0	1	1	2	3	4	0	5	3	2	0
	Epeorus albertae	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
	Epeorus sp.	0	0	0	0	0	0	1	1	2	5	1	1	4	14	5	0
	Ephemerella inermis/infrequens	0	0	0	0	3	11	10	17	35	56	23	17	134	81	168	74
	Heptageniidae	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Leptophlebiidae	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0
	Paraleptophlebia sp.	0	0	0	0	2	0	0	2	1	4	0	1	14	37	21	1
	Rhithrogena sp.	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0
Plecoptera	Claassenia sabulosa	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
	Doroneuria sp.	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
	Hesperoperla pacifica	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
	Isoperla sp.	0	0	0	0	5	8	10	29	1	3	0	0	1	4	5	0
	Perlodidae	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0
	Pteronarcella sp.	0	0	0	0	0	0	0	0	0	3	0	1	0	0	0	0
Hemiptera	Corixidae	0	0	0	4	0	0	0	1	0	0	0	0	0	0	0	0
Coleoptera	Optioservus sp.	2	2	0	0	11	19	13	11	6	1	0	1	2	0	0	0
Diptera-Chironomidae	Chironomidae	99	81	60	160	183	139	172	210	362	311	383	278	91	102	67	182
Diptera	Antocha sp.	1	0	0	0	0	2	0	0	7	2	10	0	4	2	4	0
	Atherix sp.	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
	Bezzia/Palpomyia sp.	0	0	0	1	1	1	1	0	0	0	0	1	0	0	0	2
	Ceratopogoninae	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0
	Chelifera/Metachela sp.	0	0	0	0	0	0	0	0	2	1	1	1	3	2	7	3
	Culicoides sp.	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
	Diptera	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
	Dixa sp.	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Limnophila sp.	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
	Neoplasta sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	2
	Simulium sp.	28	14	3	1	0	0	0	0	0	2	0	3	2	5	0	6
	Tipula sp.	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2
Trichoptera	Amiocentrus aspilus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	Arctopsyche grandis	0	0	0	0	0	0	0	1	1	1	0	0	1	0	0	0
	Brachycentrus americanus	0	0	0	0	1	1	0	3	5	28	14	8	93	73	34	5
	Brachycentrus echo	0	0	0	0	0	0	0	0	0	0	0	0	4	3	1	0
	Cheumatopsyche sp.	0	0	0	0	1	4	0	1	0	0	0	0	0	0	0	0
	Glossosoma sp.	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	Helicopsyche sp.	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0
	Hydropsyche sp.	0	0	0	0	10	10	9	6	9	4	1	0	12	4	1	1
	Lepidostoma sp.	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	5
	Limnephilidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	Oecetis disjuncta	0	0	0	0	1	2	2	0	1	0	0	0	0	0	0	0
	Rhyacophila brunnea gr.	0	0	0	0	0	0	0	0	1	0	0	0	1	2	3	2
	Rhyacophila coloradensis gr.	2	0	0	0	0	0	0	0	0	1	1	1	3	4	1	1
Gastropoda	Gastropoda	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
	Gyraulus sp.	0	0	0	0	0	0	0	0	3	8	2	1	0	0	0	0
	Lymnaeidae	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0
	Physa (Physella) sp.	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	0
Bivalvia	Pisidium sp.	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0
	Sphaeriidae	0	1	0	0	1	0	0	1	1	0	1	1	0	0	0	0
Annelida	Helobdella stagnalis	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
	Oligochaeta	157	357	121	237	160	342	284	132	7	0	20	56	8	7	0	69
Acari	Acari	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Atractides sp.	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0
	Lebertia sp.	0	0	0	0	1	1	0	1	0	0	0	1	1	1	1	1
	Sperchon sp.	0	0	0	0	0	0	0	3	3	3	0	0	2	1	5	5
Crustacea	Amphipoda	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	Caecidotea sp.	7	7	5	19	2	1	0	17	0	0	0	4	0	3	0	8
	Ostracoda	0	1	0	2	0	0	1	11	2	6	1	8	1	12	8	42
Other Organisms	Nematoda	47	6	2	0	8	31	4	10	3	0	2	2	11	1	7	0
	Turbellaria	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
		588	534	345	503	513	592	533	527	508	518	506	540	549	535	516	500

Table 2. Metrics generated for each sample from data collected in May 200

Stream	**Provo River, Summit County, UT**	**Provo River, Summit County, UT**	**Provo River, Summit County, UT**	**Provo River, Summit County, UT**	**Provo River, near Midway**	**Provo River, near Midway**	**Provo River, near Midway**	**Provo River, near Midway**	**Provo River, Summit County, UT**	**Provo River, Summit County, UT**	**Provo River, Summit County, UT**	**Provo River, Summit County, UT**	**Provo River, Summit County, UT**	**Provo River, Summit County, UT**	**Provo River, Summit County, UT**	**Provo River, Summit County, UT**
Site	**Casperville Road Site (CA)**	**Casperville Road Site (CA)**	**Casperville Road Site (CA)**	**Casperville Road Site (CA)**	**Never Channelized Site (NC)**	**Never Channelized Site (NC)**	**Never Channelized Site (NC)**	**Never Channelized Site (NC)**	**River Road Site (RR)**	**River Road Site (RR)**	**River Road Site (RR)**	**River Road Site (RR)**	**Below Jordanelle Site (BJ)**	**Below Jordanelle Site (BJ)**	**Below Jordanelle Site (BJ)**	**Below Jordanelle Site (BJ)**
Rep	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**
Date	**05-14-2004**	**05-14-2004**	**05-14-2004**	**05-14-2004**	**05-13-2004**	**05-13-2004**	**05-13-2004**	**05-13-2004**	**05-13-2004**	**05-13-2004**	**05-13-2004**	**05-13-2004**	**05-13-2004**	**05-13-2004**	**05-13-2004**	**05-13-2004**
Percent Subsampled	**25.00**	**12.50**	**100.00**	**3.13**	**25.00**	**42.74**	**12.50**	**4.17**	**22.94**	**20.83**	**12.50**	**2.08**	**41.67**	**41.67**	**56.18**	**4.76**
Device	**Hess**	**Hess**	**Hess**	**D-frame**	**Hess**	**Hess**	**Hess**	**D-frame**	**Hess**	**Hess**	**Hess**	**D-frame**	**Hess**	**Hess**	**Hess**	**D-frame**
Habitat	**In mid-depth riffle**	**Riffle btw CS2 & CS3**	**Just upstrm of LEP2**	**6riffle, 1sc inlet,**	**Shallow closer to sh**	**Mid-channel btw CS5&**	**Mid strm @ CS6**	**5rif, 6run, 3pool, 1**	**Btw CS3&4 in main ch**	**Btw CS3&4 shlw riffl**	**Shlw riffle nr mid-c**	**1scpool, 2scrif, 1sc**	**1scpool, 2scrif, 1sc**	**15-20' into chann. f**	**2snag, 1bw, 6pool, 1**	
EcoAnalysts Sample ID	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Abundance Measures																
Corrected Abundance	2352.00	4272.00	345.00	16096.00	2052.00	1385.28	4264.00	12648.00	2214.88	2486.40	4048.00	25920.00	1317.60	1284.00	918.48	10500.00
EPT Abundance	984.00	512.00	153.00	2432.00	580.00	128.70	456.00	2976.00	488.32	873.60	688.00	8688.00	1015.20	952.80	726.24	3696.00
Dominance Measures																
1st Dominant Taxon	Baetis tricaudatus	Oligochaeta	Baetis tricaudatus	Oligochaeta	Chironomidae	Oligochaeta	Oligochaeta	Chironomidae	Chironomidae	Chironomidae	Chironomidae	Chironomidae	Baetis tricaudatus	Baetis tricaudatus	Ephemerella inermis/infrequens	Chironomidae
1st Dominant Abundance	968.00	2856.00	153.00	7584.00	732.00	800.28	2272.00	5040.00	1578.32	1492.80	3064.00	13344.00	360.00	408.00	299.04	3822.00
2nd Dominant Taxon	Oligochaeta	Chironomidae	Oligochaeta	Chironomidae	Oligochaeta	Chironomidae	Chironomidae	Oligochaeta	Baetis tricaudatus	Baetis tricaudatus	Baetis tricaudatus	Baetis tricaudatus	Ephemerella inermis/infrequens	Chironomidae	Baetis tricaudatus	Baetis tricaudatus
2nd Dominant Abundance	628.00	648.00	121.00	5120.00	640.00	325.26	1376.00	3168.00	231.08	355.20	312.00	6816.00	321.60	244.80	295.48	1785.00
3rd Dominant Taxon	Chironomidae	Baetis tricaudatus	Chironomidae	Baetis tricaudatus	Baetis tricaudatus	Nematoda	Baetis tricaudatus	Baetis tricaudatus	Ephemerella inermis/infrequens	Ephemerella inermis/infrequens	Ephemerella inermis/infrequens	Oligochaeta	Brachycentrus americanus	Ephemerella inermis/infrequens	Chironomidae	Ephemerella inermis/infrequens
3rd Dominant Abundance	396.00	512.00	60.00	2368.00	464.00	72.54	136.00	1392.00	152.60	268.80	184.00	2688.00	223.20	194.40	119.26	1554.00
% 1 Dominant Taxon	41.16	66.85	44.35	47.12	35.67	57.77	53.28	39.85	71.26	60.04	75.69	51.48	27.32	31.78	32.56	36.40
% 2 Dominant Taxa	67.86	82.02	79.42	78.93	66.86	81.25	85.55	64.90	81.69	74.32	83.40	77.78	51.73	50.84	64.73	53.40
% 3 Dominant Taxa	84.69	94.01	96.81	93.64	89.47	86.49	88.74	75.90	88.58	85.14	87.94	88.15	68.67	65.98	77.71	68.20
Richness Measures																
Species Richness	12.00	10.00	7.00	11.00	21.00	20.00	17.00	26.00	22.00	20.00	17.00	22.00	24.00	24.00	21.00	23.00
EPT Richness	4.00	1.00	1.00	3.00	12.00	11.00	10.00	11.00	12.00	11.00	9.00	8.00	13.00	12.00	12.00	10.00
Ephemeroptera Richness	3.00	1.00	1.00	2.00	6.00	4.00	6.00	6.00	5.00	5.00	5.00	5.00	5.00	5.00	6.00	3.00
Plecoptera Richness	0.00	0.00	0.00	1.00	2.00	2.00	1.00	2.00	1.00	2.00	0.00	1.00	1.00	2.00	1.00	0.00
Trichoptera Richness	1.00	0.00	0.00	0.00	4.00	5.00	3.00	3.00	5.00	4.00	4.00	2.00	7.00	5.00	5.00	7.00
Chironomidae Richness	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Oligochaeta Richness	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00
Non-Chiro. Non-Olig. Richness	10.00	8.00	5.00	9.00	19.00	18.00	15.00	24.00	20.00	19.00	15.00	20.00	22.00	22.00	20.00	21.00
Rhyacophila Richness	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00
Community Composition																
% Ephemeroptera	41.50	11.99	44.35	14.91	24.56	4.39	6.57	15.75	18.50	27.41	13.64	31.67	55.92	57.01	70.35	32.00
% Plecoptera	0.00	0.00	0.00	0.20	1.17	1.69	1.88	5.88	0.20	1.16	0.00	0.19	0.18	1.12	0.97	0.00
% Trichoptera	0.34	0.00	0.00	0.00	2.53	3.21	2.25	1.90	3.35	6.56	3.36	1.67	20.95	16.07	7.75	3.20
% EPT	41.84	11.99	44.35	15.11	28.27	9.29	10.69	23.53	22.05	35.14	17.00	33.52	77.05	74.21	79.07	35.20
% Coleoptera	0.34	0.37	0.00	0.00	2.14	3.21	2.44	2.09	1.18	0.19	0.00	0.19	0.36	0.00	0.00	0.00
% Diptera	21.94	17.79	18.26	32.80	36.06	23.99	32.65	40.04	73.03	61.00	77.87	52.59	18.21	21.12	16.47	39.40
% Oligochaeta	26.70	66.85	35.07	47.12	31.19	57.77	53.28	25.05	1.38	0.00	3.95	10.37	1.46	1.31	0.00	13.80
% Baetidae	41.33	11.99	44.35	14.91	23.00	2.36	3.94	11.76	10.63	14.29	8.10	28.15	27.32	31.78	32.17	17.00
% Brachycentridae	0.00	0.00	0.00	0.00	0.19	0.17	0.00	0.57	0.98	5.41	2.77	1.48	17.67	14.21	6.78	1.20
% Chironomidae	16.84	15.17	17.39	31.81	35.67	23.48	32.27	39.85	71.26	60.04	75.69	51.48	16.58	19.07	12.98	36.40
% Ephemerellidae	0.00	0.00	0.00	0.00	0.58	1.86	2.06	3.42	7.28	11.39	5.34	3.15	25.32	15.70	32.95	14.80
% Hydropsychidae	0.00	0.00	0.00	0.00	2.14	2.36	1.69	1.33	1.97	0.97	0.20	0.00	2.37	0.75	0.19	0.20
% Odonata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
% Perlidae	0.00	0.00	0.00	0.00	0.19	0.00	0.00	0.38	0.00	0.00	0.00	0.00	0.00	0.37	0.00	0.00
% Pteronarcyidae	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.58	0.00	0.19	0.00	0.00	0.00	0.00
% Simuliidae	4.76	2.62	0.87	0.20	0.00	0.00	0.00	0.00	0.00	0.39	0.00	0.56	0.36	0.93	0.00	1.20
Functional Group Composition																
% Filterers	4.76	2.81	0.87	0.20	2.53	2.53	1.69	2.09	3.15	7.14	3.16	2.22	19.67	15.33	6.78	2.40
% Gatherers	86.39	95.51	98.55	98.01	90.64	84.29	90.06	82.35	85.24	76.64	89.92	92.41	48.82	62.24	51.55	77.40
% Predators	8.33	1.31	0.58	0.99	3.31	7.43	2.81	8.92	1.57	1.35	0.59	1.11	3.64	2.99	5.62	3.00
% Scrapers	0.51	0.37	0.00	0.00	2.73	3.55	3.00	2.85	2.56	3.28	1.58	0.74	2.00	3.18	1.94	0.00
% Shredders	0.00	0.00	0.00	0.00	0.58	1.86	1.88	3.23	6.89	11.39	4.55	3.33	24.59	15.33	32.56	16.60
% Piercer-Herbivores	0.00	0.00	0.00	0.80	0.00	0.00	0.00	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
% Unclassified	0.00	0.00	0.00	0.00	0.19	0.34	0.56	0.38	0.59	0.19	0.20	0.19	1.28	0.93	1.55	0.60
Filterer Richness	1.00	2.00	1.00	1.00	4.00	3.00	1.00	4.00	4.00	5.00	3.00	3.00	4.00	3.00	2.00	3.00
Gatherer Richness	7.00	5.00	5.00	6.00	6.00	7.00	6.00	7.00	7.00	5.00	6.00	7.00	6.00	7.00	5.00	6.00
Predator Richness	2.00	2.00	1.00	3.00	6.00	6.00	3.00	7.00	4.00	3.00	2.00	5.00	7.00	8.00	7.00	8.00
Scraper Richness	2.00	1.00	0.00	0.00	3.00	2.00	4.00	5.00	4.00	4.00	4.00	4.00	3.00	2.00	4.00	0.00
Shredder Richness	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	2.00	1.00	2.00	2.00	2.00	1.00	5.00
Piercer-Herbivore Richness	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unclassified	0.00	0.00	0.00	0.00	1.00	1.00	2.00	1.00	2.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00
Diversity/Evenness Measures																
Shannon-Weaver H' (log 10)	0.65	0.46	0.51	0.55	0.68	0.61	0.57	0.83	0.53	0.63	0.45	0.63	0.85	0.89	0.80	0.83
Shannon-Weaver H' (log 2)	2.16	1.54	1.70	1.83	2.25	2.02	1.88	2.75	1.75	2.09	1.51	2.11	2.83	2.95	2.67	2.75
Shannon-Weaver H' (log e)	1.50	1.07	1.18	1.27	1.56	1.40	1.31	1.90	1.21	1.45	1.04	1.46	1.96	2.04	1.85	1.91
Margalef's Richness	1.42	1.08	1.03	1.03	2.62	2.63	1.91	2.65	2.73	2.43	1.93	2.07	3.20	3.21	2.93	2.38
Pielou's J'	0.60	0.46	0.61	0.53	0.51	0.47	0.46	0.58	0.39	0.48	0.37	0.47	0.62	0.64	0.61	0.61
Simpson's Heterogeneity	0.72	0.51	0.65	0.65	0.72	0.61	0.61	0.76	0.48	0.60	0.42	0.65	0.81	0.82	0.77	0.79
Biotic Indices																
% Indiv. w/ HBI Value	100.00	100.00	100.00	99.60	99.42	99.16	99.25	98.86	98.82	99.23	99.80	99.44	98.00	98.69	95.93	97.40
Hilsenhoff Biotic Index	5.57	7.09	5.82	6.74	5.99	6.83	6.76	5.87	5.29	4.78	5.44	5.44	3.06	3.43	2.96	5.20
% Indiv. w/ MTI Value	56.29	17.79	47.25	20.08	31.97	17.40	13.13	31.31	25.59	36.87	19.96	35.93	77.23	69.16	77.33	38.20
Metals Tolerance Index	4.96	4.98	5.00	4.94	4.74	4.45	4.04	4.21	4.08	3.90	3.89	4.49	3.99	4.04	3.90	4.01
% Indiv. w/ FSBI Value	47.11	14.98	45.22	15.11	30.21	11.66	12.20	25.81	24.41	35.52	18.97	34.07	77.60	75.33	79.65	35.40
Fine Sediment Biotic Index	26.00	11.00	8.00	12.00	48.00	38.00	36.00	60.00	64.00	62.00	54.00	38.00	67.00	72.00	59.00	38.00
FSBI - average	2.17	1.10	1.14	1.09	2.29	1.90	2.12	2.31	2.91	3.10	3.18	1.73	2.79	3.00	2.81	1.65
FSBI - weighted average	4.76	4.60	4.96	4.96	4.68	3.78	3.97	4.08	4.77	4.93	5.23	4.88	5.04	4.88	4.60	4.53
% Indiv. w/ TPM Value	63.95	30.15	62.61	47.91	64.13	34.12	42.40	59.77	94.88	93.82	94.47	85.37	90.89	83.93	86.63	72.40
Temp. Pref. Metric - average	3.17	1.80	2.14	2.45	2.10	2.10	1.71	1.73	2.32	2.90	2.88	2.05	2.75	2.50	2.62	2.39
TPM - weighted average	5.00	4.98	5.00	4.94	4.84	4.63	4.77	4.88	4.98	5.09	5.02	5.00	5.20	5.18	5.39	5.22
DEQ MBI	2.40	1.37	2.08	1.80	2.71	2.08	2.03	2.80	2.21	2.55	1.85	2.49	3.83	3.73	3.68	2.92
Karr BIBI Metrics																
Long-Lived Taxa Richness	1.00	2.00	0.00	1.00	3.00	1.00	1.00	5.00	3.00	4.00	1.00	3.00	2.00	3.00	0.00	1.00
Clinger Richness	7.00	4.00	2.00	4.00	10.00	11.00	9.00	11.00	13.00	13.00	10.00	10.00	12.00	11.00	10.00	7.00
% Clingers	47.11	15.17	45.22	15.31	29.04	10.81	10.88	22.20	18.11	26.06	14.82	31.30	50.64	52.90	43.02	20.20
Intolerant Taxa Richness	2.00	0.00	0.00	1.00	6.00	5.00	5.00	7.00	8.00	8.00	6.00	5.00	10.00	9.00	9.00	7.00
% Tolerant taxa	6.97	8.54	36.52	1.63	7.89	24.76	6.68	1.28	0.54	0.56	0.57	0.27	0.68	1.71	1.09	1.13
UIN	**449-1**	**449-2**	**449-3**	**449-4**	**449-5**	**449-6**	**449-7**	**449-8**	**449-9**	**449-10**	**449-11**	**449-12**	**449-13**	**449-14**	**449-15**	**449-16**

Table 3. Taxa of macroinvertebrates collected in each sample at each site in September 20(

	Stream	Caspervill Rd.-Provo River	Caspervill Rd.-Provo River	Caspervill Rd.-Provo River	Caspervill Rd.-Provo River	Never channelized-Provo Rv. nr Midway	Never channelized-Provo Rv. nr Midway	Never channelized-Provo Rv. nr Midway	Never channelized-Provo Rv. nr Midway	River Rd.-Provo River	River Rd.-Provo River	River Rd.-Provo River	River Rd.-Provo River	Below Jordanell-Provo River	Below Jordanell-Provo River	Below Jordanell-Provo River	Below Jordanell-Provo River
	Site	**CA**	**CA**	**CA**	**CA**	**NC**	**NC**	**NC**	**NC**	**RR**	**RR**	**RR**	**RR**	**BJ**	**BJ**	**BJ**	**BJ**
	Rep	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**
	Date	**09-29-2004**	**09-29-2004**	**09-29-2004**	**09-29-2004**	**09-28-2004**	**09-28-2004**	**09-28-2004**	**09-28-2004**	**09-28-2004**	**09-28-2004**	**09-28-2004**	**09-28-2004**	**09-28-2004**	**09-28-2004**	**09-28-2004**	**09-28-2004**
	Percent Subsampled	**25.00**	**11.47**	**14.58**	**5.21**	**20.83**	**6.25**	**15.63**	**8.33**	**3.65**	**31.25**	**10.42**	**3.13**	**18.76**	**25.00**	**31.25**	**4.69**
	EcoAnalysts Sample ID	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Ephemeroptera	Baetis tricaudatus	157	154	117	235	116	67	162	139	175	97	11	78	401	318	295	145
	Callibaetis sp.	0	0	0	2	0	0	0	1	0	0	0	3	0	0	0	0
	Diphetor hageni	0	0	0	0	1	13	3	0	26	1	18	1	1	0	0	0
	Drunella grandis	0	1	0	0	0	0	0	0	0	1	1	0	1	1	1	1
	Epeorus sp.	0	2	1	1	0	0	0	0	3	0	3	0	1	0	0	0
	Ephemerella inermis/infrequens	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
	Ephemerella sp.	0	38	0	0	0	1	0	0	6	0	0	8	0	23	0	0
	Ephemerellidae	15	0	4	7	0	0	1	2	0	3	8	0	21	0	4	0
	Heptageniidae	0	0	2	0	0	1	0	1	2	0	1	0	0	0	0	0
	Paraleptophlebia sp.	5	16	10	3	1	0	2	2	9	1	9	0	0	0	0	0
	Tricorythodes sp.	3	0	0	0	16	10	9	11	2	1	11	4	0	0	0	0
Plecoptera	Claassenia sabulosa	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	Hesperoperla pacifica	0	0	0	0	0	0	0	0	1	0	0	0	1	0	3	1
	Malenka sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	Perlidae	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
	Perlodidae	20	29	32	12	8	13	17	16	3	5	1	0	0	0	1	1
	Pteronarcella sp.	0	0	0	2	0	0	0	0	1	2	0	0	0	0	0	0
	Skwala sp.	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
Hemiptera	Corixidae	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Coleoptera	Haliplidae	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0
	Optioservus sp.	75	67	81	26	184	44	87	45	28	3	5	4	0	0	2	0
Diptera-Chironomidae	Chironomidae	119	100	173	76	118	251	147	117	224	292	373	228	59	102	63	154
Diptera	Antocha sp.	0	0	0	0	0	1	0	0	1	2	0	1	0	0	0	2
	Atherix sp.	1	4	1	2	0	0	0	0	0	0	0	0	1	0	0	0
	Bezzia/Palpomyia sp.	1	0	0	1	0	0	1	6	0	0	0	2	0	0	0	6
	Ceratopogoninae	0	0	0	0	0	2	0	0	0	0	0	4	0	0	0	0
	Chelifera/Metachela sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
	Empididae	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	Hemerodromia sp.	0	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0
	Neoplasta sp.	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2
	Probezzia sp.	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0
	Simulium sp.	17	38	0	27	0	0	2	6	3	3	1	6	13	7	18	2
	Stilobezzia sp.	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	Tabanidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
	Tipula sp.	0	0	0	0	0	0	0	0	0	0	0	2	0	0	1	7
	Tipulidae	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Trichoptera	Arctopsyche grandis	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	1
	Brachycentridae	0	0	0	0	0	1	2	2	0	0	0	0	0	0	0	0
	Brachycentrus americanus	0	0	0	0	0	0	0	0	0	9	0	5	33	34	33	0
	Brachycentrus echo	0	0	0	0	0	0	0	0	0	50	12	0	0	0	4	0
	Brachycentrus occidentalis	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	Brachycentrus sp.	7	5	1	11	3	0	7	0	22	0	0	125	1	0	0	1
	Cheumatopsyche sp.	0	0	3	0	1	2	5	0	0	0	0	0	0	0	0	0
	Culoptila sp.	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
	Glossosoma sp.	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0
	Glossosomatidae	0	0	0	0	0	0	0	0	1	3	0	0	0	0	0	0
	Helicopsyche sp.	0	0	0	2	1	0	3	0	0	0	0	0	0	0	0	0
	Hydropsyche sp.	40	67	78	58	14	21	68	50	9	12	0	3	10	12	7	2
	Hydroptila sp.	0	0	0	0	0	0	0	0	0	0	1	4	0	0	0	0
	Hydroptilidae	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	Lepidostoma sp.	2	1	0	0	0	1	3	0	0	0	0	0	0	0	0	0
	Ochrotrichia sp.	1	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0
	Oecetis disjuncta	4	1	0	4	1	0	1	1	0	0	0	0	0	0	0	0
	Protoptila sp.	2	0	0	0	1	0	5	1	0	0	0	0	0	0	0	0
	Rhyacophila brunnea gr.	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	3
	Rhyacophila coloradensis gr.	0	0	0	0	1	0	0	0	1	0	0	0	2	1	0	0
	Rhyacophila sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	Trichoptera	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Gastropoda	Gyraulus sp.	0	0	0	0	0	0	0	0	0	4	5	9	0	0	0	5
	Hydrobiidae	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Lymnaeidae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
	Physa (Physella) sp.	1	0	0	8	3	0	2	0	0	3	0	2	1	0	1	12
Bivalvia	Pisidium sp.	0	0	0	0	0	0	0	5	0	3	0	0	0	0	0	13
Annelida	Erpobdellidae	0	0	0	1	4	0	0	1	0	1	0	0	0	0	0	0
	Helobdella stagnalis	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	4
	Oligochaeta	27	18	4	13	46	84	53	103	10	25	62	41	23	20	37	94
Acari	Acari	15	7	9	7	8	5	5	12	15	18	12	6	4	6	4	14
Crustacea	Caecidotea sp.	17	4	23	45	4	1	3	19	0	0	0	3	0	1	11	26
	Gammarus sp.	0	1	0	7	0	0	0	0	0	0	0	0	0	0	0	0
	Hyalella sp.	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	Ostracoda	1	1	0	5	2	0	1	1	0	4	2	12	0	2	3	16
Other Organisms	Hydra sp.	0	0	0	0	0	0	0	0	0	1	1	0	7	0	0	0
	Nematoda	6	5	1	1	9	0	12	3	4	7	7	8	0	11	58	2
	Polycelis sp.	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
	Turbellaria	3	1	0	1	0	0	3	0	0	0	0	0	0	0	1	0
		544	**563**	**545**	**560**	**547**	**520**	**605**	**553**	**550**	**552**	**546**	**566**	**580**	**540**	**548**	**535**

Table 4. Metrics generated for each sample from data collected in September 2004.

Stream	**Caspervill Rd.-Provo River**	**Caspervill Rd.-Provo River**	**Caspervill Rd.-Provo River**	**Caspervill Rd.-Provo River**	**Never channelized-Provo Rv. nr Midway**	**Never channelized-Provo Rv. nr Midway**	**Never channelized-Provo Rv. nr Midway**	**Never channelized-Provo Rv. nr Midway**	**River Rd.-Provo River**	**River Rd.-Provo River**	**River Rd.-Provo River**	**River Rd.-Provo River**	**Below Jordanell-Provo River**	**Below Jordanell-Provo River**	**Below Jordanell-Provo River**	**Below Jordanell-Provo River**
Site	**CA**	**CA**	**CA**	**CA**	**NC**	**NC**	**NC**	**NC**	**RR**	**RR**	**RR**	**RR**	**BJ**	**BJ**	**BJ**	**BJ**
Rep	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**
Date	**09-29-2004**	**09-29-2004**	**09-29-2004**	**09-29-2004**	**09-28-2004**	**09-28-2004**	**09-28-2004**	**09-28-2004**	**09-28-2004**	**09-28-2004**	**09-28-2004**	**09-28-2004**	**09-28-2004**	**09-28-2004**	**09-28-2004**	**09-28-2004**
Percent Subsampled	**25.00**	**11.47**	**14.58**	**5.21**	**20.83**	**6.25**	**15.63**	**8.33**	**3.65**	**31.25**	**10.42**	**3.13**	**18.76**	**25.00**	**31.25**	**4.69**
EcoAnalysts Sample ID	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Abundance Measures																
Corrected Abundance	2176.00	4909.36	3738.70	10752.00	2625.60	8320.00	3872.00	6636.00	15086.50	1766.40	5241.60	18112.00	3091.40	2160.00	1753.60	11411.55
EPT Abundance	1044.00	2755.52	1721.86	6508.80	796.80	2112.00	1849.60	2736.00	7241.52	595.20	729.60	7520.00	2515.76	1556.00	1116.80	3562.11
Dominance Measures																
1st Dominant Taxon	Baetis tricaudatus	Baetis tricaudatus	Chironomidae	Baetis tricaudatus	Optioservus sp.	Chironomidae	Baetis tricaudatus	Baetis tricaudatus	Chironomidae	Chironomidae	Chironomidae	Chironomidae	Baetis tricaudatus	Baetis tricaudatus	Baetis tricaudatus	Chironomidae
1st Dominant Abundance	628.00	1342.88	1186.78	4512.00	883.20	4016.00	1036.80	1668.00	6144.32	934.40	3580.80	7296.00	2137.33	1272.00	944.00	3284.82
2nd Dominant Taxon	Chironomidae	Chironomidae	Baetis tricaudatus	Chironomidae	Chironomidae	Oligochaeta	Chironomidae	Chironomidae	Baetis tricaudatus	Baetis tricaudatus	Oligochaeta	Brachycentrus sp.	Chironomidae	Chironomidae	Chironomidae	Baetis tricaudatus
2nd Dominant Abundance	476.00	872.00	802.62	1459.20	566.40	1344.00	940.80	1404.00	4800.25	310.40	595.20	4000.00	314.47	408.00	201.60	3092.85
3rd Dominant Taxon	Optioservus sp.	Optioservus sp.	Optioservus sp.	Hydropsyche sp.	Baetis tricaudatus	Baetis tricaudatus	Optioservus sp.	Oligochaeta	Optioservus sp.	Brachycentrus echo	Diphetor hageni	Baetis tricaudatus	Brachycentrus americanus	Brachycentrus americanus	Nematoda	Oligochaeta
3rd Dominant Abundance	300.00	584.24	555.66	1113.60	556.80	1072.00	556.80	1236.00	768.04	160.00	172.80	2496.00	175.89	136.00	185.60	2005.02
% 1 Dominant Taxon	28.86	27.35	31.74	41.96	33.64	48.27	26.78	25.14	40.73	52.90	68.32	40.28	69.14	58.89	53.83	28.79
% 2 Dominant Taxa	50.74	45.12	53.21	55.54	55.21	64.42	51.07	46.29	72.55	70.47	79.67	62.37	79.31	77.78	65.33	55.89
% 3 Dominant Taxa	64.52	57.02	68.07	65.89	76.42	77.31	65.45	64.92	77.64	79.53	82.97	76.15	85.00	84.07	75.91	73.46
Richness Measures																
Species Richness	24.00	23.00	19.00	28.00	24.00	19.00	26.00	27.00	24.00	26.00	22.00	26.00	17.00	15.00	20.00	28.00
EPT Richness	12.00	11.00	10.00	13.00	14.00	12.00	15.00	13.00	16.00	13.00	11.00	11.00	10.00	6.00	9.00	11.00
Ephemeroptera Richness	4.00	5.00	5.00	5.00	4.00	5.00	5.00	6.00	7.00	6.00	8.00	5.00	5.00	3.00	3.00	3.00
Plecoptera Richness	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	3.00	2.00	1.00	1.00	1.00	0.00	3.00	2.00
Trichoptera Richness	7.00	5.00	4.00	6.00	8.00	5.00	9.00	6.00	6.00	5.00	2.00	5.00	4.00	3.00	3.00	6.00
Chironomidae Richness	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Oligochaeta Richness	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Non-Chiro. Non-Olig. Richness	22.00	21.00	17.00	26.00	22.00	17.00	24.00	25.00	22.00	24.00	20.00	24.00	15.00	13.00	18.00	26.00
Rhyacophila Richness	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	2.00	0.00	0.00	0.00	2.00	1.00	0.00	2.00
Community Composition																
% Ephemeroptera	33.09	37.48	24.59	44.29	24.50	17.69	29.26	28.21	40.55	18.84	11.36	16.61	73.28	63.33	54.74	29.16
% Plecoptera	3.68	5.15	5.87	2.50	1.65	2.69	2.81	2.89	0.91	1.27	0.18	0.35	0.17	0.00	0.91	0.37
% Trichoptera	11.21	13.50	15.60	13.75	4.20	5.00	15.70	10.13	6.55	13.59	2.38	24.56	7.93	8.70	8.03	1.68
% EPT	47.98	56.13	46.06	60.54	30.35	25.38	47.77	41.23	48.00	33.70	13.92	41.52	81.38	72.04	63.69	31.21
% Coleoptera	13.79	11.90	14.86	4.64	33.64	8.46	14.38	9.04	5.09	0.54	0.92	0.71	0.00	0.00	0.36	0.00
% Diptera	25.37	25.22	32.29	18.93	22.12	48.85	24.79	23.33	41.64	53.80	68.86	43.46	12.59	20.37	14.96	32.90
% Oligochaeta	4.96	3.20	0.73	2.32	8.41	16.15	8.76	18.63	1.82	4.53	11.36	7.24	3.97	3.70	6.75	17.57
% Baetidae	28.86	27.35	21.47	42.32	21.39	15.38	27.27	25.32	36.55	17.75	5.31	14.49	69.31	58.89	53.83	27.10
% Brachycentridae	1.29	1.24	0.18	2.14	0.55	0.19	1.49	0.36	4.00	10.69	2.20	22.97	5.69	6.30	6.75	0.19
% Chironomidae	21.88	17.76	31.74	13.57	21.57	48.27	24.30	21.16	40.73	52.90	68.32	40.28	10.17	18.89	11.50	28.79
% Ephemerellidae	2.76	6.93	0.73	1.25	0.00	0.19	0.17	0.36	1.09	0.72	1.65	1.41	3.79	4.44	0.91	2.06
% Hydropsychidae	7.35	11.90	14.86	10.36	2.74	4.42	12.07	9.04	2.00	2.17	0.00	0.88	1.72	2.22	1.28	0.56
% Odonata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
% Perlidae	0.00	0.00	0.00	0.00	0.18	0.19	0.00	0.00	0.18	0.00	0.00	0.00	0.17	0.00	0.55	0.19
% Pteronarcyidae	0.00	0.00	0.00	0.36	0.00	0.00	0.00	0.00	0.18	0.36	0.00	0.00	0.00	0.00	0.00	0.00
% Simuliidae	3.13	6.75	0.00	4.82	0.00	0.00	0.33	1.08	0.55	0.54	0.18	1.06	2.24	1.30	3.28	0.37
Functional Group Composition																
% Filterers	11.76	19.89	15.05	17.32	3.29	4.62	13.88	11.39	6.55	4.89	0.18	24.91	9.66	9.81	10.58	3.55
% Gatherers	63.42	58.97	61.28	70.54	55.58	82.31	62.98	71.43	82.36	77.17	90.48	66.96	87.07	86.30	75.36	81.68
% Predators	8.46	8.17	8.26	4.46	6.22	4.04	6.28	7.23	4.73	5.80	4.03	4.42	2.76	3.52	12.23	6.92
% Scrapers	14.34	12.61	15.41	6.61	34.73	8.65	16.20	8.68	6.18	2.72	2.75	2.65	0.52	0.19	0.73	4.49
% Shredders	0.37	0.18	0.00	0.36	0.00	0.19	0.50	0.90	0.18	0.36	0.18	0.35	0.00	0.00	0.36	3.18
% Piercer-Herbivores	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.00	0.18	0.71	0.00	0.00	0.00	0.19
% Unclassified	0.74	0.18	0.00	0.71	0.18	0.19	0.17	0.18	0.00	9.06	2.20	0.00	0.00	0.19	0.73	0.00
Filterer Richness	3.00	4.00	3.00	4.00	3.00	3.00	5.00	4.00	4.00	4.00	1.00	5.00	3.00	3.00	3.00	5.00
Gatherer Richness	9.00	8.00	7.00	11.00	8.00	8.00	9.00	9.00	8.00	9.00	8.00	10.00	5.00	6.00	6.00	6.00
Predator Richness	6.00	5.00	6.00	7.00	7.00	4.00	5.00	7.00	7.00	5.00	5.00	6.00	6.00	4.00	5.00	10.00
Scraper Richness	3.00	4.00	3.00	4.00	5.00	2.00	5.00	4.00	4.00	6.00	5.00	3.00	3.00	1.00	3.00	4.00
Shredder Richness	1.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	2.00	2.00
Piercer-Herbivore Richness	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00
Unclassified	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00
Diversity/Evenness Measures																
Shannon-Weaver H' (log 10)	0.97	0.97	0.83	0.92	0.83	0.74	0.91	0.95	0.77	0.75	0.59	0.84	0.54	0.61	0.73	0.91
Shannon-Weaver H' (log 2)	3.21	3.21	2.77	3.04	2.75	2.44	3.04	3.14	2.56	2.48	1.96	2.80	1.79	2.03	2.41	3.03
Shannon-Weaver H' (log e)	2.23	2.22	1.92	2.11	1.90	1.69	2.11	2.18	1.77	1.72	1.36	1.94	1.24	1.41	1.67	2.10
Margalef's Richness	2.99	2.59	2.19	2.91	2.92	1.99	3.03	2.95	2.39	3.34	2.45	2.55	1.99	1.82	2.54	2.89
Pielou's J'	0.70	0.71	0.65	0.63	0.60	0.57	0.65	0.66	0.56	0.53	0.44	0.60	0.44	0.52	0.56	0.63
Simpson's Heterogeneity	0.84	0.85	0.80	0.78	0.79	0.71	0.83	0.84	0.72	0.68	0.52	0.76	0.50	0.61	0.68	0.81
Biotic Indices																
% Indiv. w/ HBI Value	99.08	99.82	100.00	99.11	99.82	99.81	99.67	98.73	99.82	90.94	97.62	99.12	100.00	99.81	99.27	98.50
Hilsenhoff Biotic Index	4.86	4.46	4.99	4.92	5.22	5.73	5.04	5.53	4.83	5.46	5.93	4.65	4.13	4.30	4.55	5.81
% Indiv. w/ MTI Value	62.50	62.88	58.53	76.25	67.09	32.31	61.65	52.80	49.64	30.62	13.92	25.97	82.24	72.41	79.56	46.17
Metals Tolerance Index	4.93	4.92	4.96	4.86	4.89	4.58	4.83	4.91	4.49	4.72	3.49	4.56	4.84	4.89	4.89	4.61
% Indiv. w/ FSBI Value	56.07	69.98	53.76	65.00	62.34	30.58	57.02	45.93	52.55	23.73	10.99	43.29	80.17	73.33	65.88	32.90
Fine Sediment Biotic Index	34.00	53.00	40.00	42.00	46.00	33.00	34.00	27.00	72.00	52.00	39.00	68.00	59.00	35.00	42.00	64.00
FSBI - average	1.42	2.30	2.11	1.50	1.92	1.74	1.31	1.00	3.00	2.00	1.77	2.62	3.47	2.33	2.10	2.29
FSBI - weighted average	4.36	4.29	4.32	4.73	3.86	4.26	4.41	4.53	4.69	5.05	3.95	5.43	5.09	5.08	5.08	4.90
% Indiv. w/ TPM Value	83.82	89.88	90.28	81.79	84.83	81.73	84.46	70.34	92.36	78.80	78.94	83.22	93.79	92.22	78.10	60.37
Temp. Pref. Metric - average	2.04	2.35	2.26	1.82	2.29	2.63	1.96	1.89	3.83	2.77	2.27	2.12	3.53	2.80	2.75	2.25
TPM - weighted average	4.58	4.62	4.38	4.59	4.06	4.59	4.26	4.43	4.78	4.95	4.85	4.93	5.03	5.03	4.97	5.04
DEQ MBI	3.52	3.60	3.22	3.47	3.43	2.64	3.62	3.42	3.25	2.80	2.11	3.12	2.83	2.73	2.94	3.13
Karr BIBI Metrics																
Long-Lived Taxa Richness	2.00	2.00	2.00	3.00	1.00	2.00	1.00	3.00	4.00	3.00	1.00	3.00	2.00	0.00	3.00	4.00
Clinger Richness	13.00	13.00	11.00	14.00	15.00	13.00	16.00	15.00	19.00	16.00	13.00	15.00	12.00	8.00	11.00	15.00
% Clingers	66.36	73.18	60.73	70.36	65.27	34.62	62.48	52.98	54.91	29.89	14.29	45.58	84.31	74.44	67.34	34.77
Intolerant Taxa Richness	6.00	8.00	5.00	6.00	7.00	4.00	8.00	7.00	10.00	7.00	5.00	5.00	7.00	4.00	6.00	8.00
% Tolerant taxa	2.13	0.47	0.72	0.70	2.25	1.02	1.53	1.92	0.07	2.30	1.35	0.39	0.78	1.07	2.99	1.39
UIN	**450-1**	**450-2**	**450-3**	**450-4**	**450-5**	**450-6**	**450-7**	**450-8**	**450-9**	**450-10**	**450-11**	**450-12**	**450-13**	**450-14**	**450-15**	**450-16**