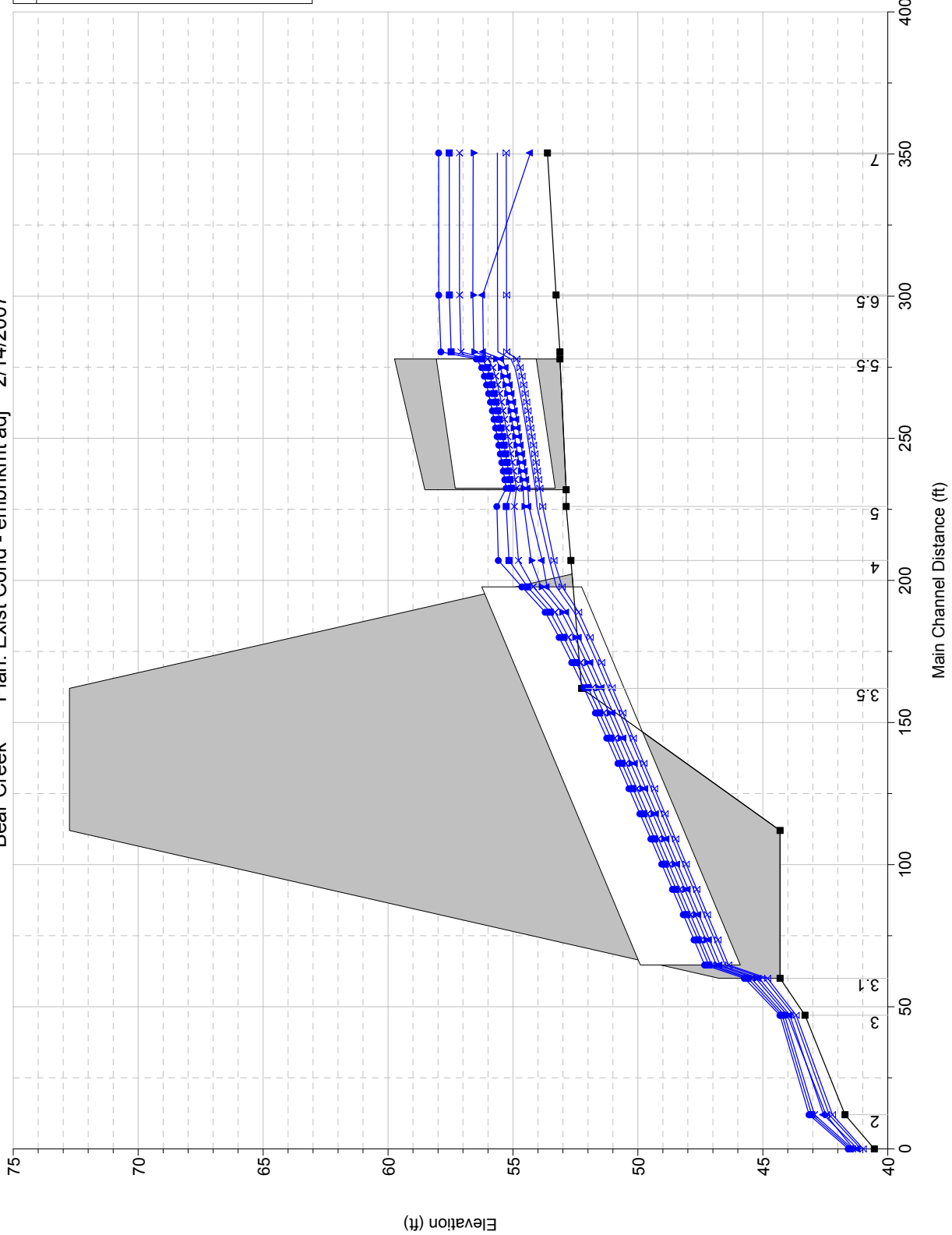


App 3 - Hydraulic analysis

App 3.1 - Hydraulic analysis "Bear" Creek

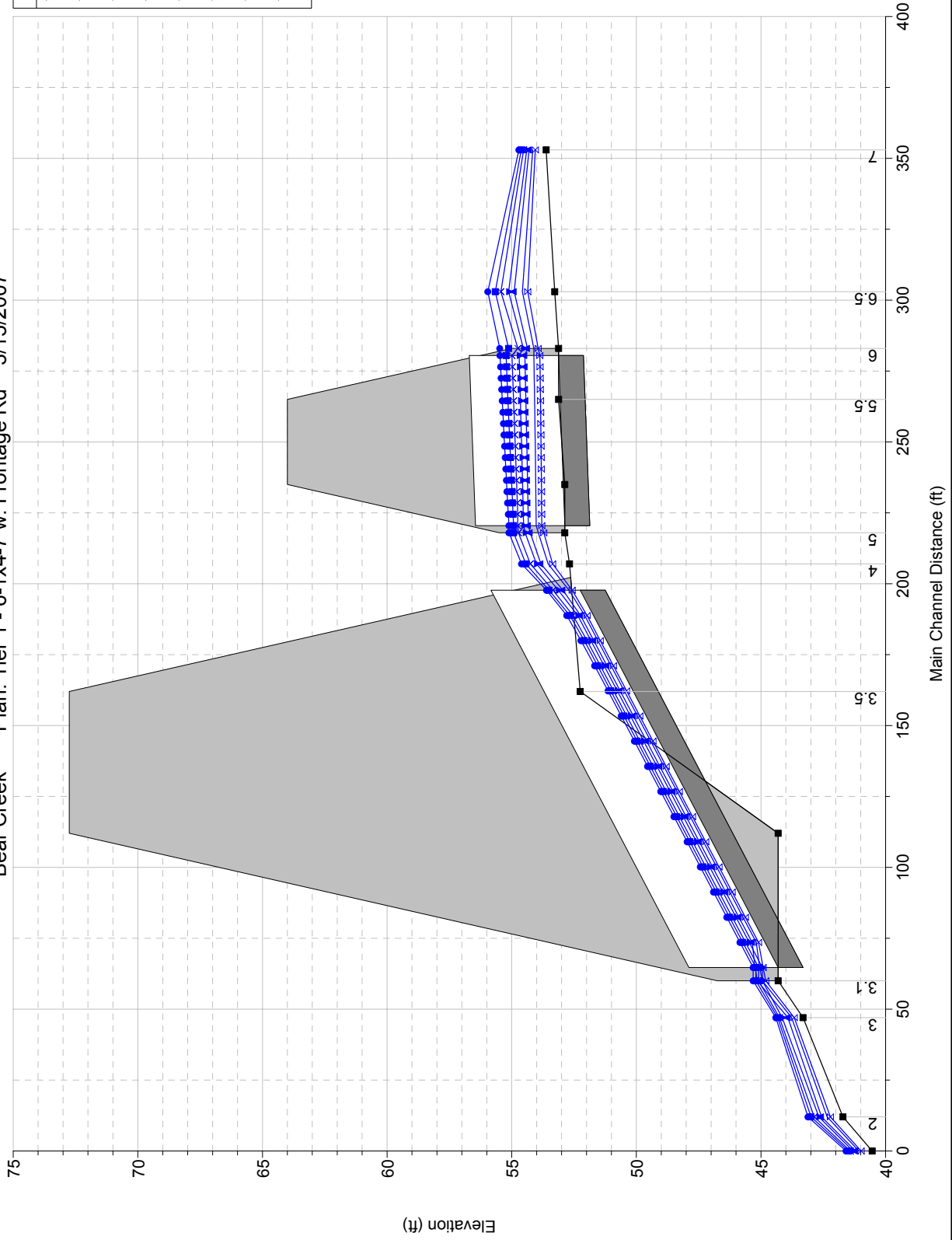
Bear Creek Plan: Exist Cond - embnkmnt adj 2/14/2007

Legend	
●	WS Q100
■	WS Q50
×	WS Q25
▲	WS Q10
▼	WS Q5
■	WS Q2
⊠	WS Cfish
■	Ground

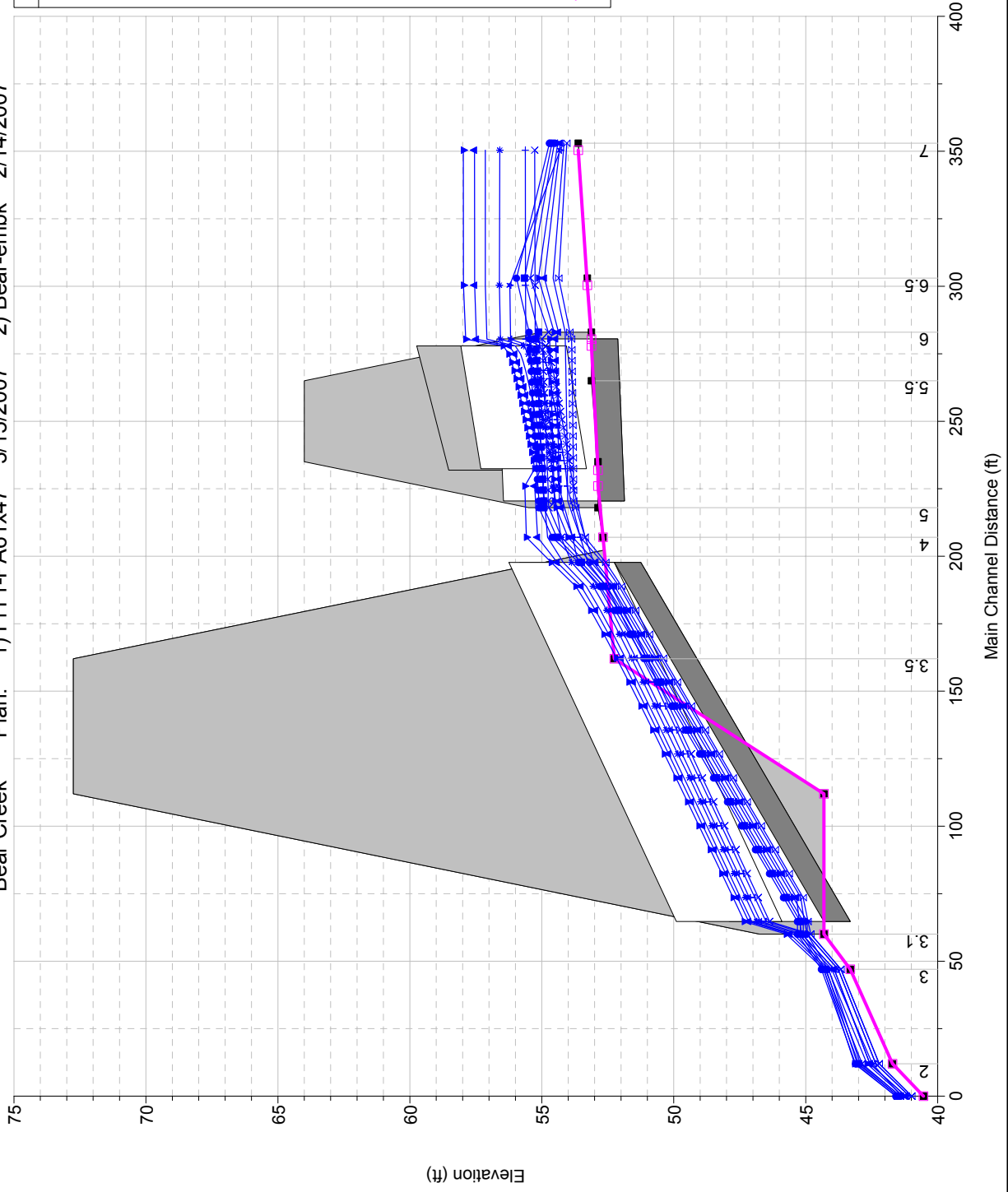


Bear Creek Plan: Tier 1 - 6-1x4-7 w. Frontage Rd 3/15/2007

Legend	
●	WS Q100
■	WS Q50
×	WS Q25
▲	WS Q10
▲	WS Q5
■	WS Q2
×	WS Cfish
■	Ground



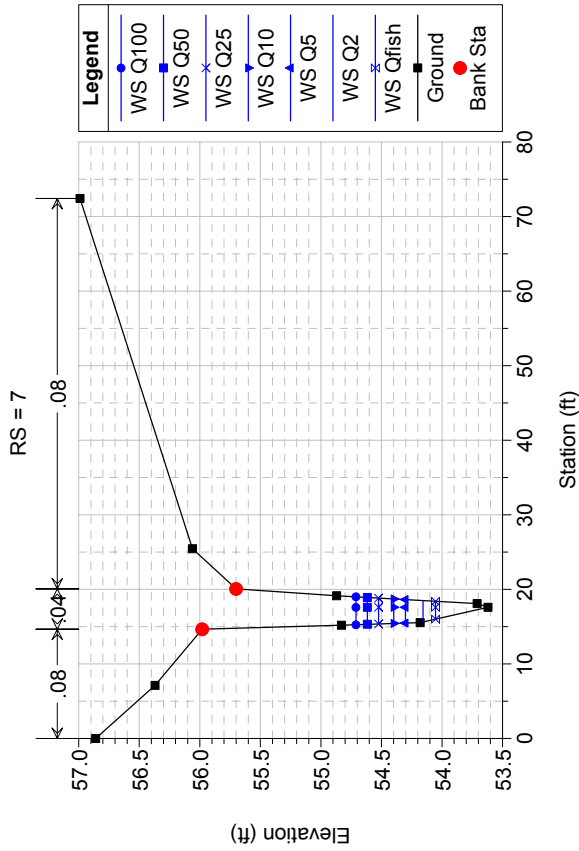
Bear Creek Plan: 1) FrT1-PA61x47 3/15/2007 2) Bear-embk 2/14/2007



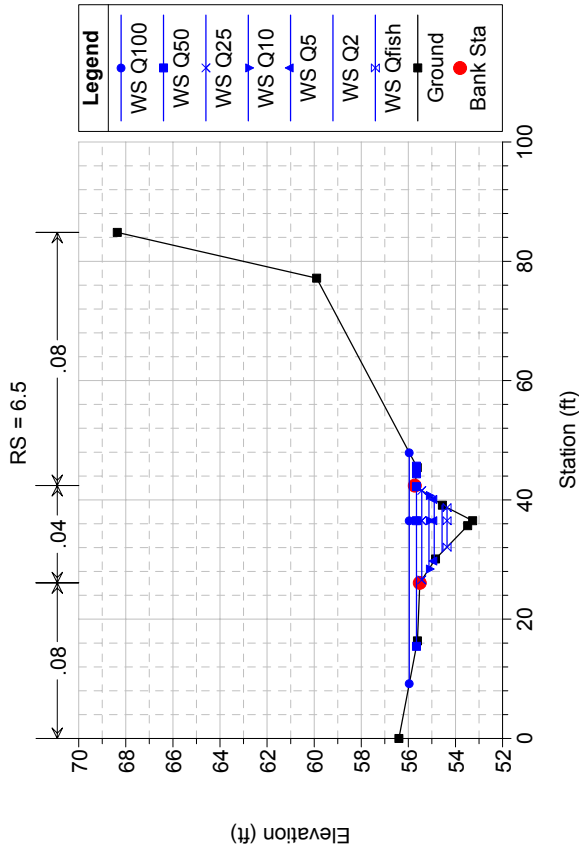
Legend

- WS Q100 - FrT1-PA61x47
- WS Q100 - Bear-embk
- WS Q50 - FrT1-PA61x47
- WS Q50 - Bear-embk
- WS Q25 - FrT1-PA61x47
- WS Q25 - Bear-embk
- WS Q10 - FrT1-PA61x47
- WS Q10 - Bear-embk
- WS Q5 - FrT1-PA61x47
- WS Q5 - Bear-embk
- WS Q2 - FrT1-PA61x47
- WS Q2 - Bear-embk
- WS Qfish - FrT1-PA61x47
- WS Qfish - Bear-embk
- Ground
- Ground

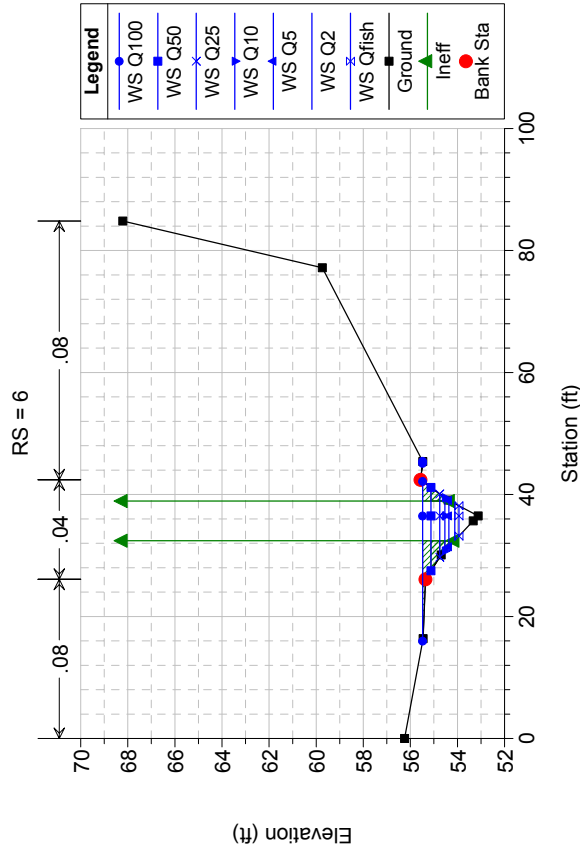
Bear Creek Plan: Tier 1 - 6-1x4-7 w. Frontage Rd 3/15/2007



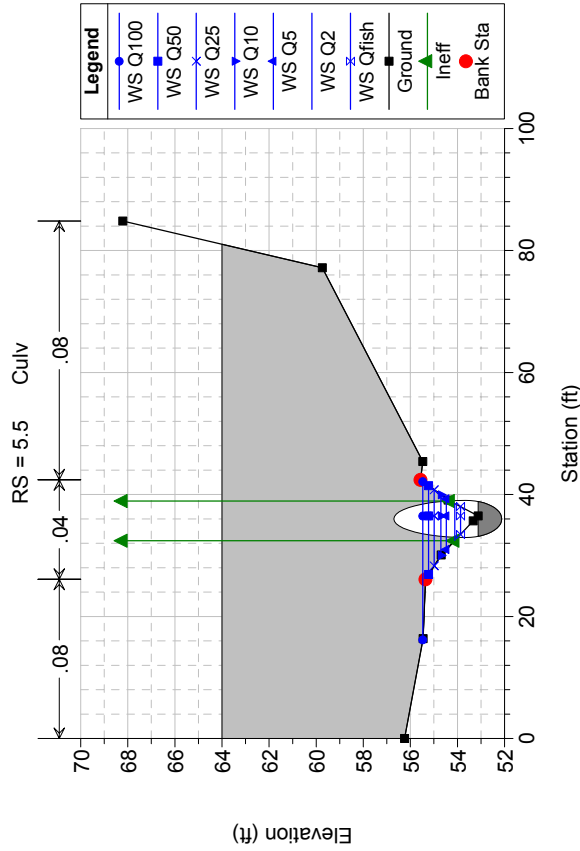
Bear Creek Plan: Tier 1 - 6-1x4-7 w. Frontage Rd 3/15/2007



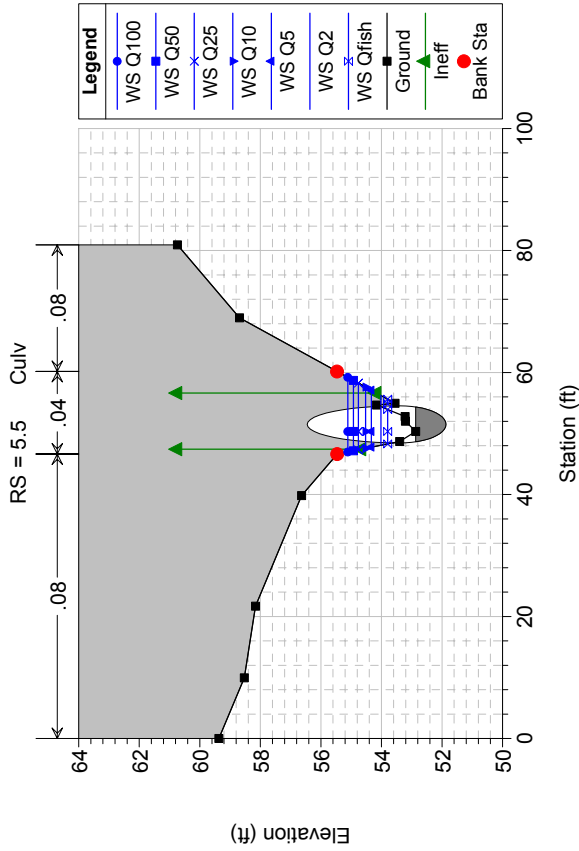
Bear Creek Plan: Tier 1 - 6-1x4-7 w. Frontage Rd 3/15/2007



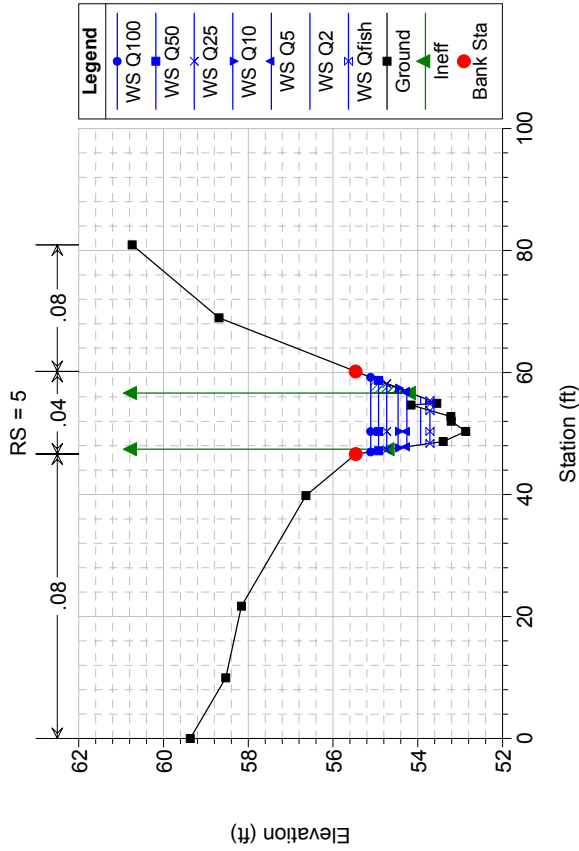
Bear Creek Plan: Tier 1 - 6-1x4-7 w. Frontage Rd 3/15/2007



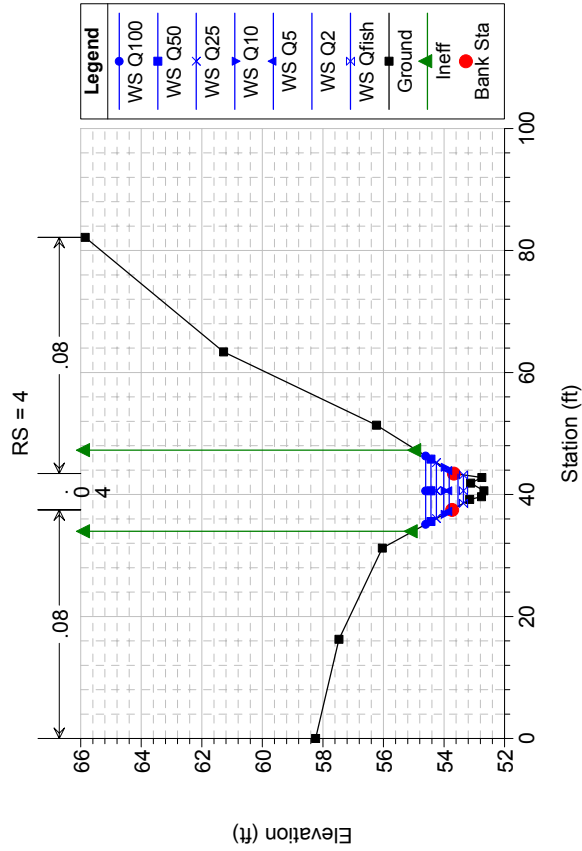
Bear Creek Plan: Tier 1 - 6-1x4-7 w. Frontage Rd 3/15/2007



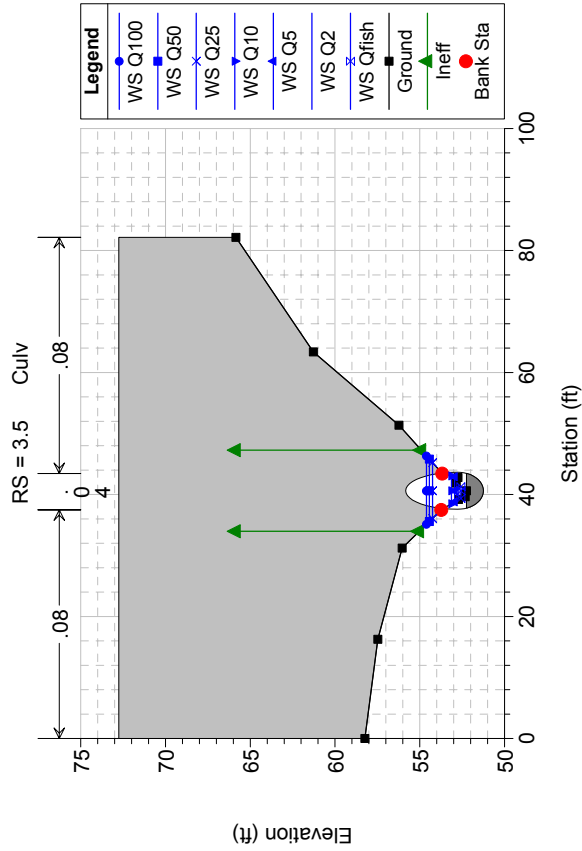
Bear Creek Plan: Tier 1 - 6-1x4-7 w. Frontage Rd 3/15/2007



Bear Creek Plan: Tier 1 - 6-1x4-7 w. Frontage Rd 3/15/2007

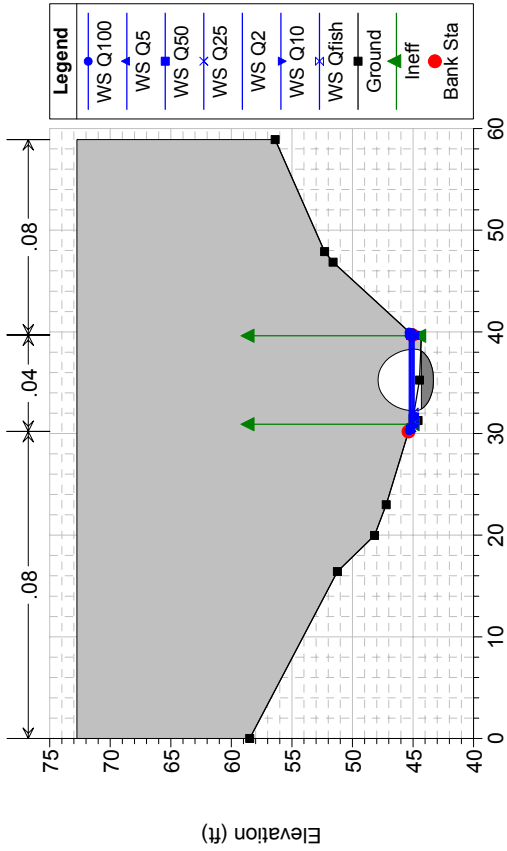


Bear Creek Plan: Tier 1 - 6-1x4-7 w. Frontage Rd 3/15/2007



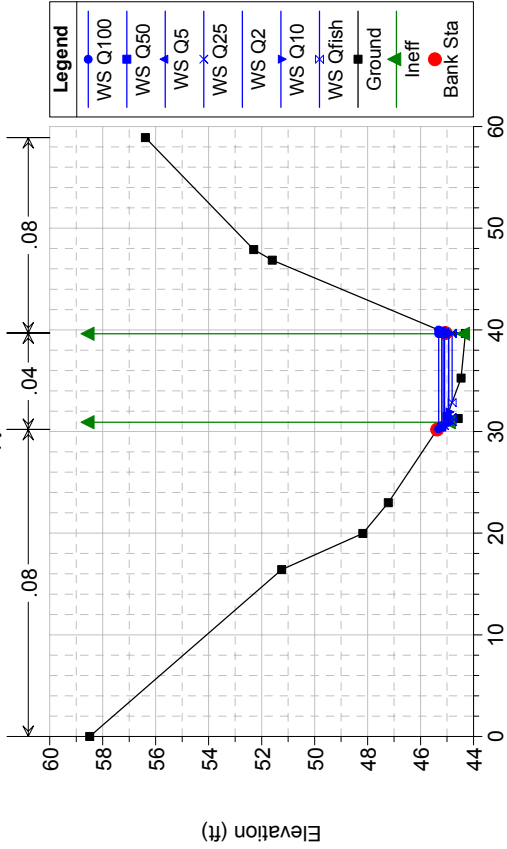
Bear Creek Plan: Tier 1 - 6-1x4-7 w. Frontage Rd 3/15/2007

RS = 3.5 Culv



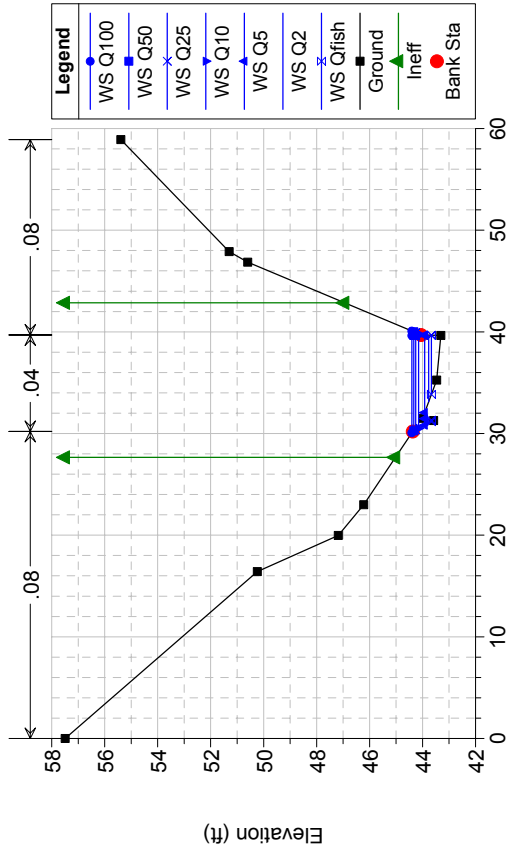
Bear Creek Plan: Tier 1 - 6-1x4-7 w. Frontage Rd 3/15/2007

RS = 3.1 copy of three raised 1'



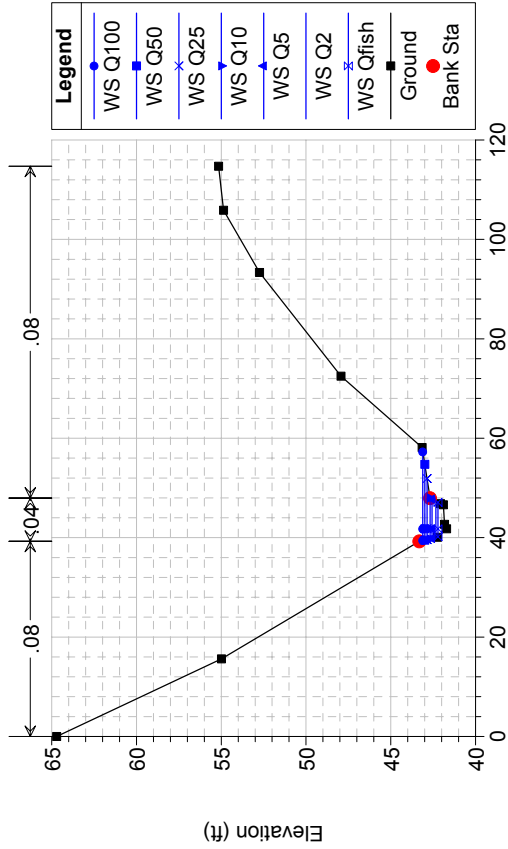
Bear Creek Plan: Tier 1 - 6-1x4-7 w. Frontage Rd 3/15/2007

RS = 3

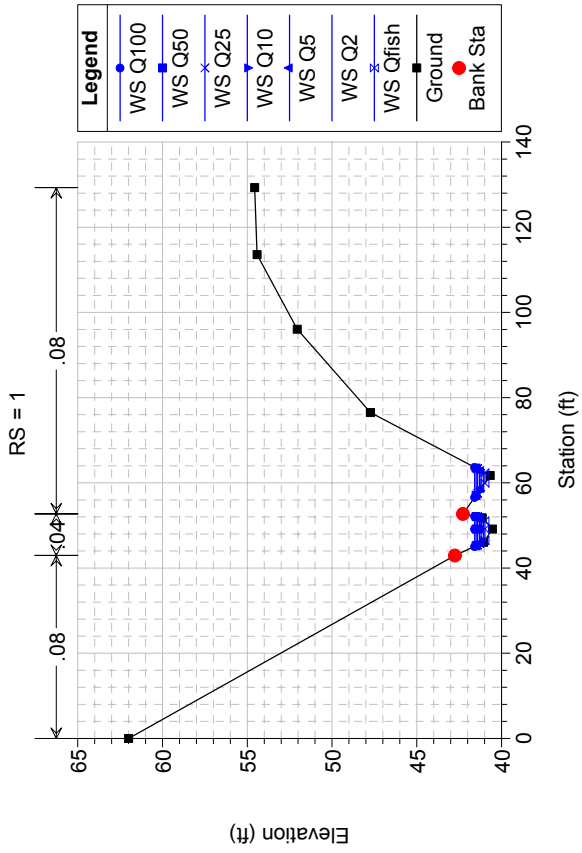


Bear Creek Plan: Tier 1 - 6-1x4-7 w. Frontage Rd 3/15/2007

RS = 2



Bear Creek Plan: Tier 1 - 6-1x4-7 w. Frontage Rd 3/15/2007



HEC-RAS Plan: FT1-PA61x47 River: Indian Creek Reach: 1

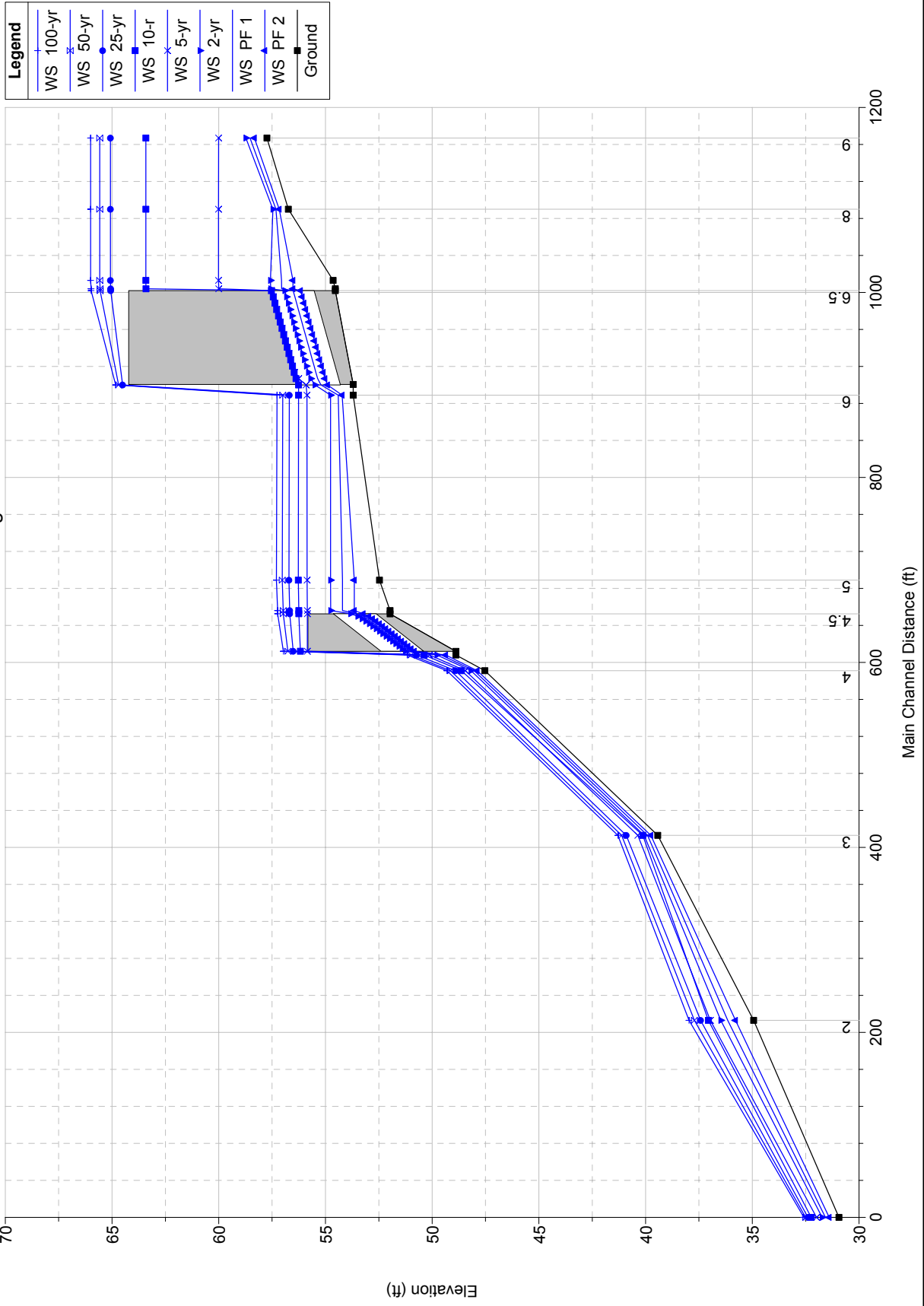
Reach	River Sta	Profile	Q Total (cfs)	Cum Ch Len (ft)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Chan (lb/sq ft)
1	1	Q2	12.00		40.54	41.07	41.26	41.72	0.201064	6.87	2.12	8.63	2.33	3.33
1	1	Q5	22.00		40.54	41.21	41.46	42.09	0.187122	8.14	3.37	10.22	2.35	4.21
1	1	Q10	30.00		40.54	41.31	41.60	42.28	0.161598	8.59	4.44	11.25	2.25	4.40
1	1	Q25	42.00		40.54	41.42	41.76	42.58	0.157270	9.47	5.74	12.39	2.27	5.06
1	1	Q50	52.00		40.54	41.50	41.89	42.79	0.153218	10.02	6.79	13.24	2.27	5.47
1	1	Q100	63.00		40.54	41.59	42.00	42.98	0.146676	10.46	7.98	14.14	2.25	5.77
1	1	Ofish	7.20		40.54	40.99	41.13	41.50	0.204321	6.09	1.41	7.07	2.28	2.79
1	2	Q2	12.00	12.00	41.71	42.34	42.34	42.57	0.033025	3.77	3.18	7.34	1.01	0.86
1	2	Q5	22.00	12.00	41.71	42.57	42.88	42.88	0.029957	4.50	4.89	7.92	1.01	1.09
1	2	Q10	30.00	12.00	41.71	42.68	42.72	43.10	0.033678	5.18	5.79	8.23	1.09	1.39
1	2	Q25	42.00	12.00	41.71	42.86	42.94	43.37	0.031275	5.73	7.65	12.29	1.08	1.59
1	2	Q50	52.00	12.00	41.71	42.99	43.12	43.56	0.029745	6.07	9.48	15.26	1.07	1.71
1	2	Q100	63.00	12.00	41.71	43.11	43.26	43.74	0.029716	6.46	11.40	17.86	1.09	1.88
1	2	Ofish	7.20	12.00	41.71	42.21	42.21	42.37	0.034892	3.22	2.24	6.90	1.00	0.69
1	3	Q2	12.00	47.00	43.31	43.77	43.94	44.31	0.143723	5.88	2.04	6.92	1.91	2.42
1	3	Q5	22.00	47.00	43.31	43.92	44.15	44.67	0.144954	6.95	3.16	8.26	1.98	3.12
1	3	Q10	30.00	47.00	43.31	44.15	44.28	44.66	0.060279	5.76	5.21	9.30	1.35	1.89
1	3	Q25	42.00	47.00	43.31	44.26	44.45	44.96	0.066141	6.73	6.26	9.57	1.45	2.44
1	3	Q50	52.00	47.00	43.31	44.33	44.59	45.21	0.072895	7.51	6.96	9.75	1.55	2.95
1	3	Q100	63.00	47.00	43.31	44.40	44.72	45.47	0.078939	8.29	7.66	10.01	1.63	3.49
1	3	Ofish	7.20	47.00	43.31	43.67	43.80	44.10	0.156920	5.26	1.37	5.98	1.94	2.09
1	3.1	Q2	12.00	60.00	44.31	44.94	44.94	45.15	0.033685	3.61	3.32	8.48	1.00	0.81
1	3.1	Q5	22.00	60.00	44.31	45.15	45.44	45.44	0.029079	4.31	5.10	9.30	0.99	1.02
1	3.1	Q10	30.00	60.00	44.31	44.94	45.28	46.22	0.214105	9.08	3.30	8.46	0.97	5.13
1	3.1	Q25	42.00	60.00	44.31	45.09	45.47	46.38	0.147785	9.10	4.62	9.16	0.94	4.69
1	3.1	Q50	52.00	60.00	44.31	45.20	45.60	46.56	0.121008	9.33	5.57	9.43	0.93	4.63
1	3.1	Q100	63.00	60.00	44.31	45.31	45.74	46.76	0.104800	9.65	6.53	9.70	0.92	4.70
1	3.1	Ofish	7.20	60.00	44.31	44.81	44.81	44.96	0.034764	3.15	2.28	7.27	0.99	0.67
1	3.5	Culvert												
1	4	Q2	12.00	207.00	52.68	53.54	53.54	53.81	0.035099	4.21	2.85	5.28	1.01	1.03
1	4	Q5	22.00	207.00	52.68	53.83	53.83	54.19	0.029819	4.87	4.56	6.69	0.99	1.23
1	4	Q10	30.00	207.00	52.68	54.01	54.01	54.45	0.026957	5.34	5.85	7.73	0.97	1.38
1	4	Q25	42.00	207.00	52.68	54.25	54.25	54.77	0.023633	5.83	7.91	9.15	0.94	1.52
1	4	Q50	52.00	207.00	52.68	54.43	54.43	55.00	0.021735	6.15	9.67	10.21	0.93	1.62
1	4	Q100	63.00	207.00	52.68	54.61	54.61	55.23	0.020658	6.50	11.53	11.21	0.92	1.73
1	4	Ofish	7.20	207.00	52.68	53.36	53.36	53.57	0.036437	3.67	1.96	4.64	0.99	0.85
1	5	Q2	12.00	218.00	52.87	53.93	53.93	54.06	0.013717	2.83	4.24	7.28	0.65	0.45
1	5	Q5	22.00	218.00	52.87	54.26	54.41	54.41	0.012023	3.19	6.90	9.06	0.63	0.52
1	5	Q10	30.00	218.00	52.87	54.46	54.65	54.65	0.010528	3.43	8.75	9.83	0.61	0.56

HEC-RAS Plan: FT1-PA61x47 River: Indian Creek Reach: 1 (Continued)

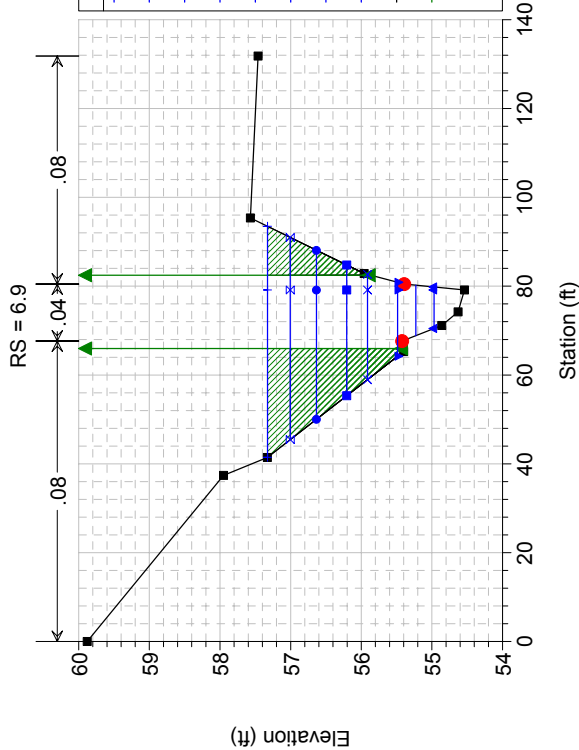
Reach	River Sta	Profile	Q Total (cfs)	Cum Ch Len (ft)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Chan (lb/sq ft)
1	5	Q25	42.00	218.00	52.87	54.73	54.11	54.95	0.009362	3.75	11.21	10.84	0.60	0.62
1	5	Q50	52.00	218.00	52.87	54.93	54.37	55.17	0.008811	4.01	12.98	11.55	0.59	0.68
1	5	Q100	63.00	218.00	52.87	55.11	54.53	55.40	0.008645	4.29	14.70	12.25	0.60	0.74
1	5	Ofish	7.20	218.00	52.87	53.71	53.94	53.82	0.014499	2.58	2.80	5.91	0.66	0.40
1	5.5	Culvert												
1	6	Q2	12.00	283.00	53.12	54.11	54.11	54.36	0.032087	4.01	3.00	6.06	1.00	0.94
1	6	Q5	22.00	283.00	53.12	54.37	54.37	54.72	0.028492	4.78	4.60	7.62	1.00	1.19
1	6	Q10	30.00	283.00	53.12	54.53	54.53	54.97	0.026278	5.29	5.68	8.74	1.00	1.35
1	6	Q25	42.00	283.00	53.12	54.75	54.75	55.30	0.024415	5.92	7.10	10.37	1.00	1.57
1	6	Q50	52.00	283.00	53.12	55.13	54.91	55.59	0.013998	5.45	9.54	13.67	0.79	1.21
1	6	Q100	63.00	283.00	53.12	55.48	55.09	55.92	0.010016	5.33	11.83	26.54	0.70	1.07
1	6	Ofish	7.20	283.00	53.12	53.94	53.94	54.13	0.033188	3.57	2.02	4.97	0.99	0.79
1	6.5	Q2	12.00	303.00	53.27	54.57	54.26	54.66	0.007726	2.35	5.11	7.94	0.52	0.29
1	6.5	Q5	22.00	303.00	53.27	54.90	54.53	55.02	0.007834	2.70	8.13	10.35	0.54	0.36
1	6.5	Q10	30.00	303.00	53.27	55.13	54.70	55.25	0.007390	2.81	10.67	12.32	0.53	0.38
1	6.5	Q25	42.00	303.00	53.27	55.43	54.91	55.56	0.006247	2.83	14.84	15.00	0.50	0.37
1	6.5	Q50	52.00	303.00	53.27	55.66	55.06	55.78	0.005101	2.81	19.36	28.07	0.46	0.35
1	6.5	Q100	63.00	303.00	53.27	55.96	55.20	56.06	0.003181	2.58	29.66	38.68	0.38	0.27
1	6.5	Ofish	7.20	303.00	53.27	54.36	54.08	54.42	0.007282	2.02	3.56	6.61	0.49	0.23
1	7	Q2	12.00	353.00	53.62	54.16	54.66	57.17	0.791311	13.94	0.86	2.87	4.48	13.53
1	7	Q5	22.00	353.00	53.62	54.30	55.03	58.73	0.790102	16.88	1.30	3.15	4.62	18.02
1	7	Q10	30.00	353.00	53.62	54.40	55.27	59.78	0.790347	18.62	1.61	3.29	4.69	20.89
1	7	Q25	42.00	353.00	53.62	54.52	55.57	61.14	0.790551	20.64	2.03	3.47	4.75	24.39
1	7	Q50	52.00	353.00	53.62	54.62	55.80	62.13	0.790784	22.00	2.36	3.60	4.79	26.83
1	7	Q100	63.00	353.00	53.62	54.71	56.08	63.11	0.790097	23.26	2.71	3.74	4.82	29.16
1	7	Ofish	7.20	353.00	53.62	54.05	54.44	56.38	0.790720	12.24	0.59	2.39	4.35	11.13

App 3.2 - Hydraulic analysis "Ball Field" Creek

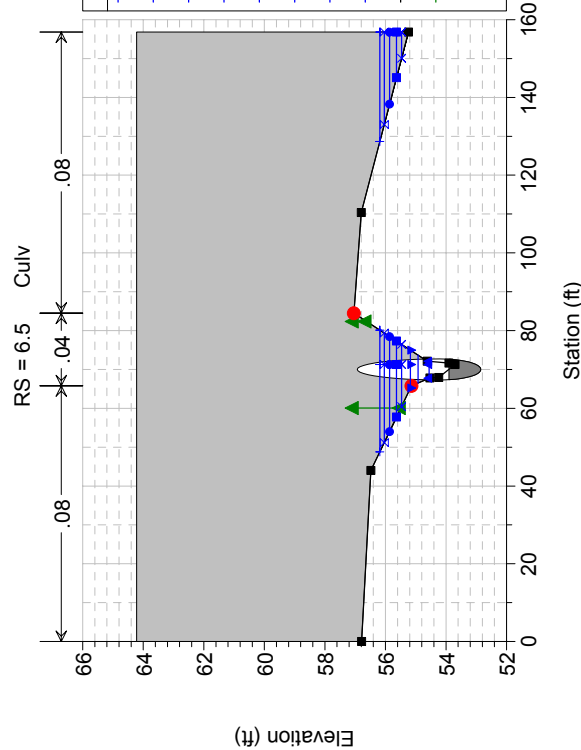
Ball Field Creek Plan: Ballfield - Existing 3/15/2007



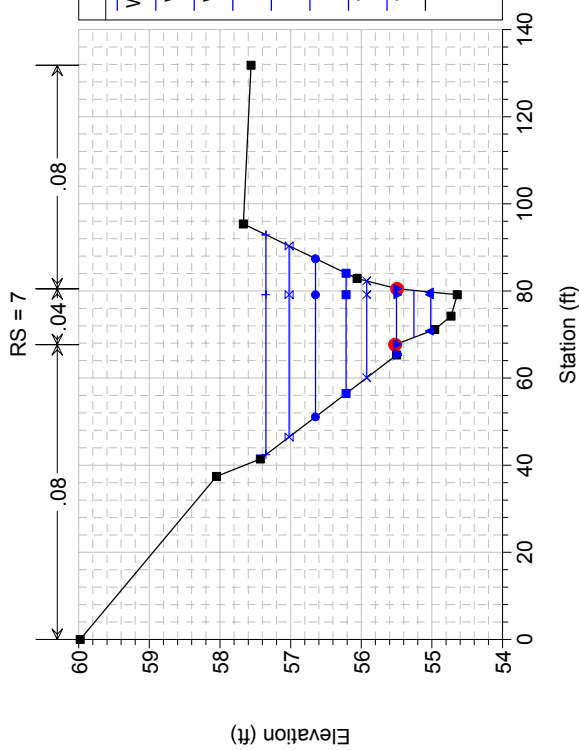
Ball Field Creek Plan: Ballfield - PA 5.42x4.08 3/17/2007



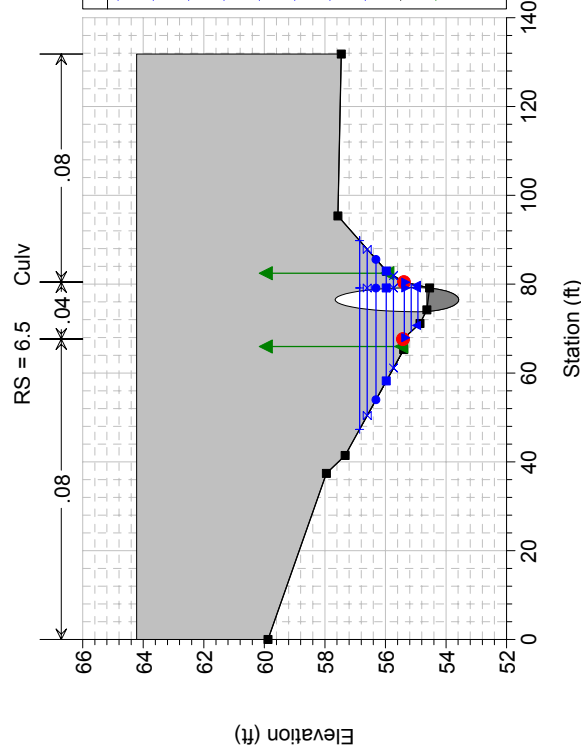
Ball Field Creek Plan: Ballfield - PA 5.42x4.08 3/17/2007



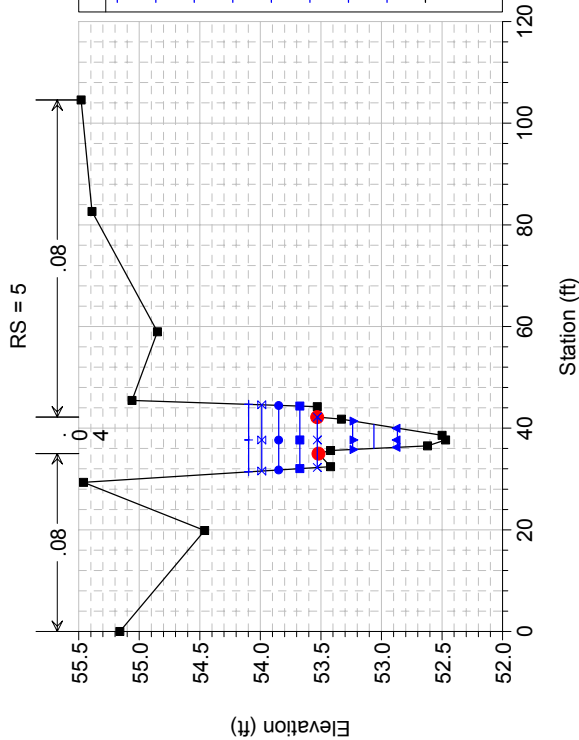
Ball Field Creek Plan: Ballfield - PA 5.42x4.08 3/17/2007



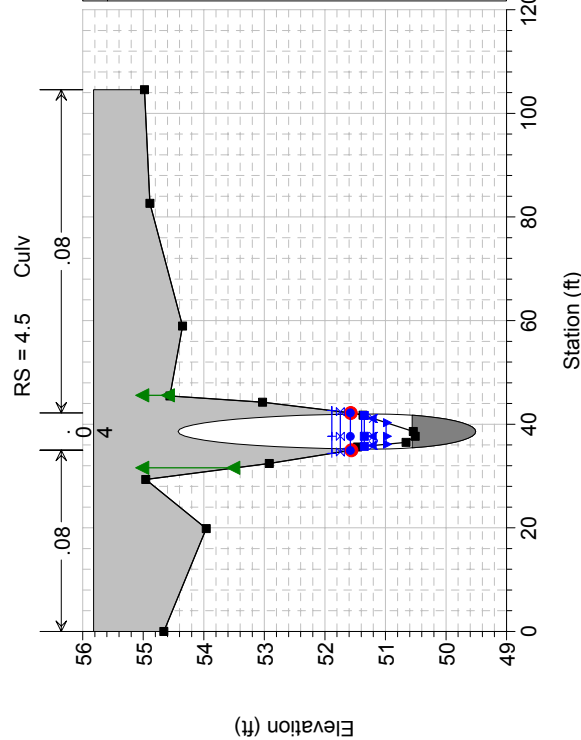
Ball Field Creek Plan: Ballfield - PA 5.42x4.08 3/17/2007



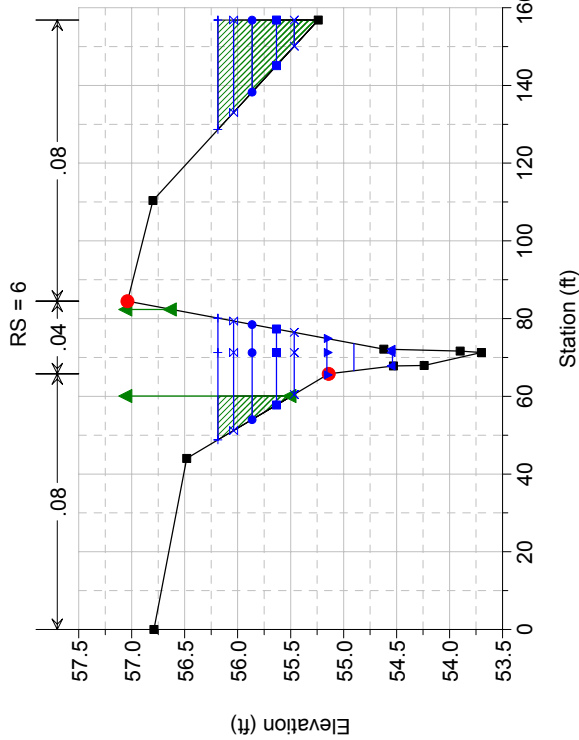
Ball Field Creek Plan: Ballfield - PA 5.42x4.08 3/17/2007



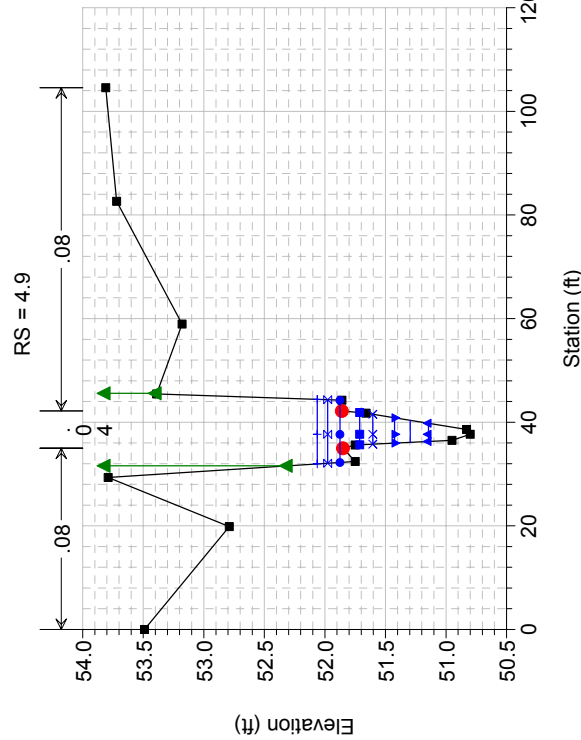
Ball Field Creek Plan: Ballfield - PA 5.42x4.08 3/17/2007



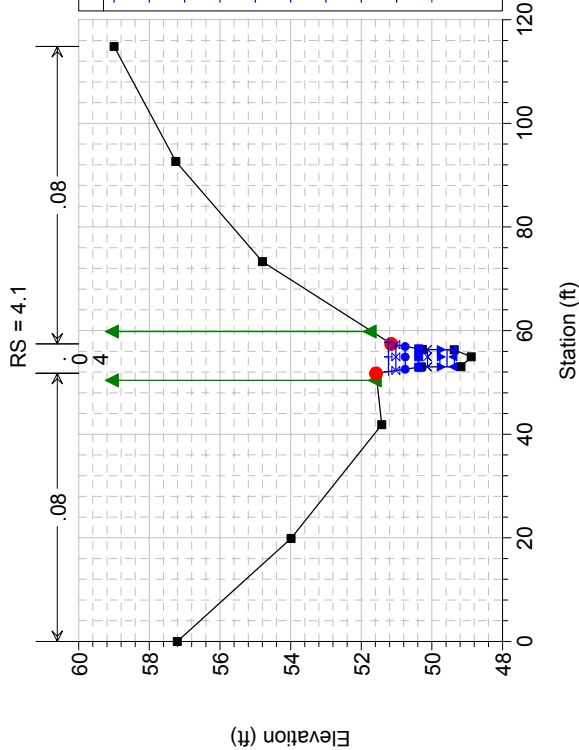
Ball Field Creek Plan: Ballfield - PA 5.42x4.08 3/17/2007



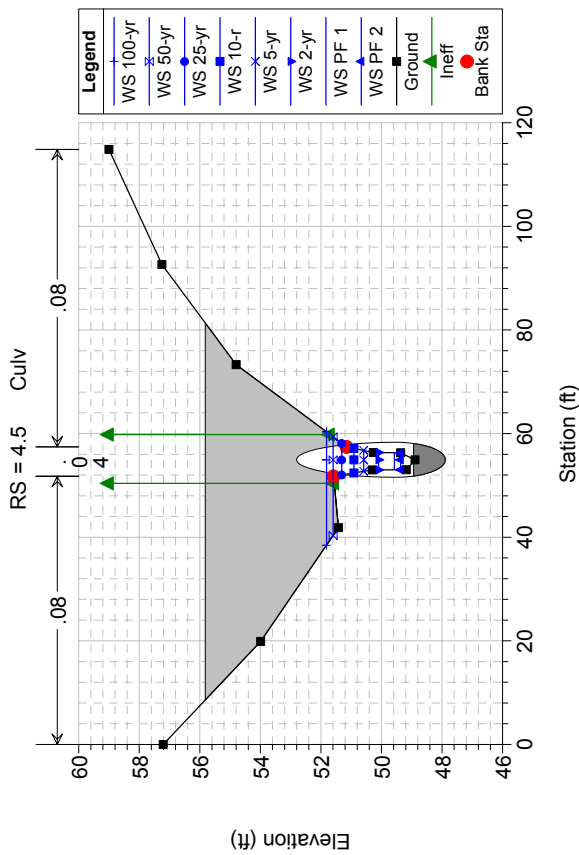
Ball Field Creek Plan: Ballfield - PA 5.42x4.08 3/17/2007



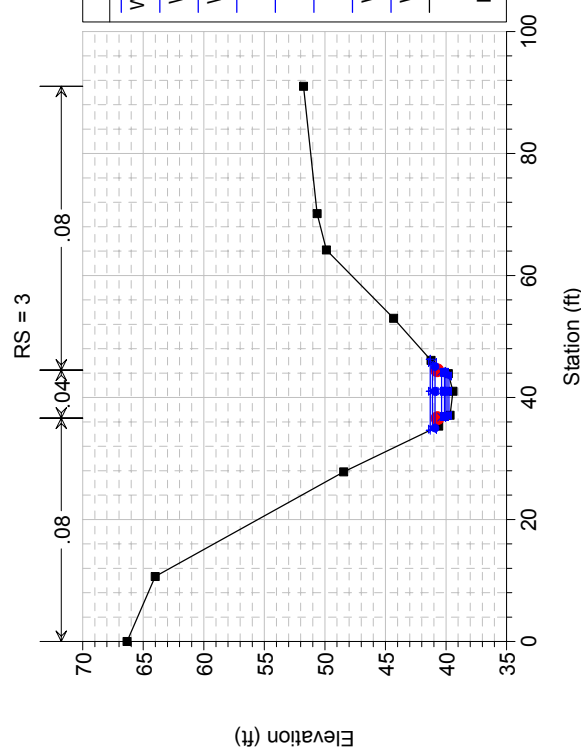
Ball Field Creek Plan: Ballfield - PA 5.42x4.08 3/17/2007



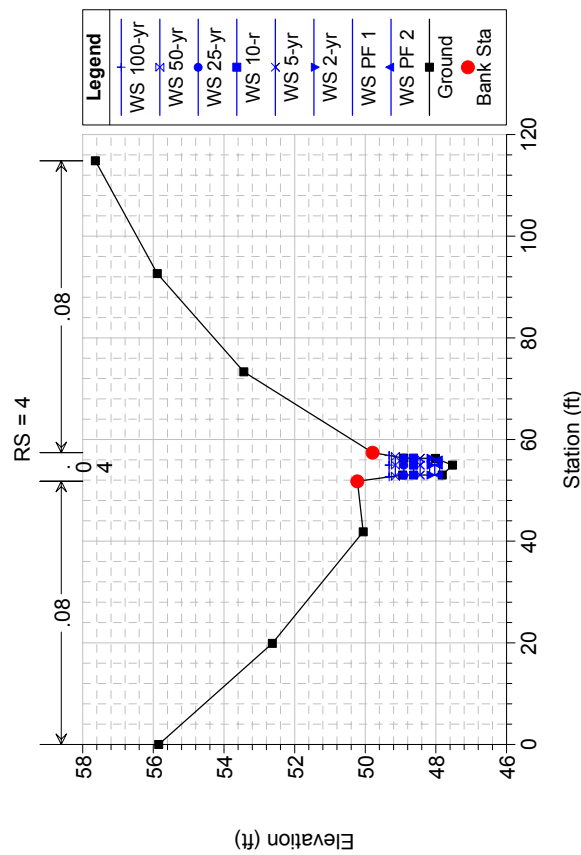
Ball Field Creek Plan: Ballfield - PA 5.42x4.08 3/17/2007



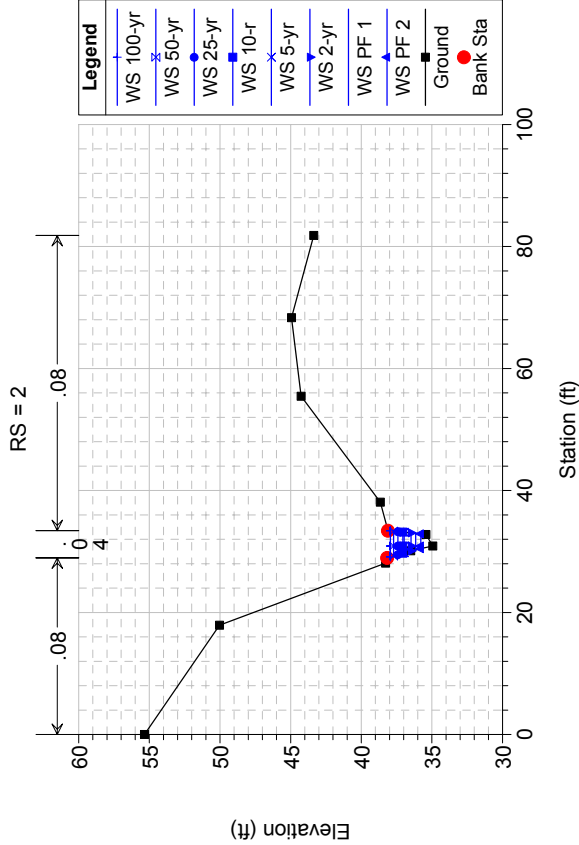
Ball Field Creek Plan: Ballfield - PA 5.42x4.08 3/17/2007



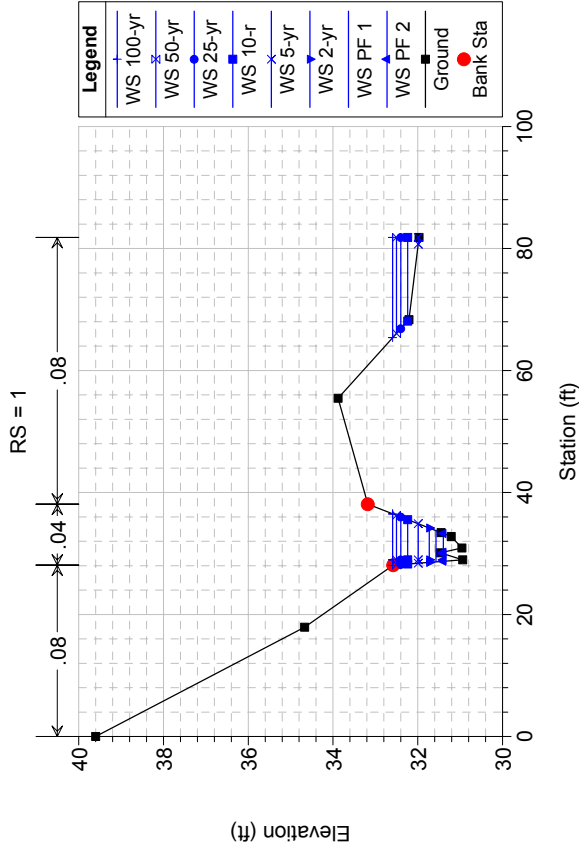
Ball Field Creek Plan: Ballfield - PA 5.42x4.08 3/17/2007



Ball Field Creek Plan: Ballfield - PA 5.42x4.08 3/17/2007



Ball Field Creek Plan: Ballfield - PA 5.42x4.08 3/17/2007



HEC-RAS Plan: BF-PA5x4 River: Ball Field Creek Reach: 1

Reach	River Sta	Profile	Q Total (cfs)	Cum Ch Len (ft)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Chan (lb/sq ft)
1	1	PF 1	6.60		30.94	31.57	31.57	31.76	0.038788	3.46	1.91	5.12	1.00	0.79
1	1	PF 2	3.00		30.94	31.40	31.40	31.52	0.043235	2.81	1.07	4.29	1.00	0.59
1	1	2-yr	11.00		30.94	31.73	31.73	31.98	0.036615	4.01	2.74	5.63	1.01	0.97
1	1	5-yr	20.00		30.94	31.99	31.99	32.32	0.032436	4.62	4.33	7.56	1.00	1.16
1	1	10-r	27.00		30.94	32.24	32.24	32.50	0.020458	4.22	8.06	20.97	0.82	0.91
1	1	25-yr	38.00		30.94	32.40	32.40	32.68	0.020416	4.54	11.62	22.75	1.01	0.83
1	1	50-yr	48.00		30.94	32.50	32.50	32.82	0.021978	4.91	13.99	23.86	0.87	1.16
1	1	100-yr	57.00		30.94	32.59	32.59	32.93	0.022507	5.15	16.15	24.88	0.89	1.25
1	2	PF 1	6.60	213.00	34.94	36.15	35.84	36.28	0.013340	2.91	2.27	2.68	0.56	0.47
1	2	PF 2	3.00	213.00	34.94	35.79		35.87	0.011802	2.23	1.35	2.42	0.53	0.30
1	2	2-yr	11.00	213.00	34.94	36.48		36.66	0.014672	3.44	3.19	2.93	0.58	0.61
1	2	5-yr	20.00	213.00	34.94	36.97		37.24	0.017278	4.23	4.73	3.37	0.63	0.87
1	2	10-r	27.00	213.00	34.94	37.06		37.50	0.026614	5.36	5.04	3.45	0.78	1.38
1	2	25-yr	38.00	213.00	34.94	37.41		37.97	0.029507	6.04	6.30	3.77	0.82	1.69
1	2	50-yr	48.00	213.00	34.94	37.72		38.35	0.029675	6.39	7.52	4.06	0.83	1.85
1	2	100-yr	57.00	213.00	34.94	37.94		38.65	0.030891	6.75	8.45	4.26	0.84	2.03
1	3	PF 1	6.60	413.00	39.43	39.91		40.04	0.028467	2.90	2.28	7.00	0.90	0.56
1	3	PF 2	3.00	413.00	39.43	39.76		39.85	0.040445	2.44	1.23	6.47	0.99	0.47
1	3	2-yr	11.00	413.00	39.43	40.07		40.23	0.022072	3.23	3.41	7.18	0.83	0.62
1	3	5-yr	20.00	413.00	39.43	40.36		40.56	0.015940	3.60	5.56	7.50	0.74	0.67
1	3	10-r	27.00	413.00	39.43	40.13		40.90	0.091602	7.04	3.84	7.24	1.70	2.83
1	3	25-yr	38.00	413.00	39.43	40.91		41.14	0.009707	3.85	10.24	10.08	0.61	0.65
1	3	50-yr	48.00	413.00	39.43	41.12		41.38	0.008988	4.12	12.46	10.95	0.60	0.71
1	3	100-yr	57.00	413.00	39.43	41.30		41.58	0.008364	4.30	14.54	11.63	0.59	0.74
1	4	PF 1	6.60	591.00	47.53	48.04		48.64	0.146864	6.25	1.06	3.28	1.94	2.67
1	4	PF 2	3.00	591.00	47.53	47.89		48.27	0.157327	4.95	0.61	2.95	1.93	1.91
1	4	2-yr	11.00	591.00	47.53	48.18		48.98	0.131651	7.20	1.53	3.30	1.86	3.21
1	4	5-yr	20.00	591.00	47.53	48.45		49.51	0.112727	8.29	2.41	3.32	1.71	3.82
1	4	10-r	27.00	591.00	47.53	48.63		49.86	0.106368	8.90	3.04	3.34	1.64	4.18
1	4	25-yr	38.00	591.00	47.53	48.91		50.34	0.100933	9.62	3.95	3.36	1.56	4.63
1	4	50-yr	48.00	591.00	47.53	49.15		50.69	0.098092	9.97	4.81	3.85	1.57	4.86
1	4	100-yr	57.00	591.00	47.53	49.33		50.97	0.097042	10.29	5.54	4.24	1.59	5.08
1	4.1	PF 1	6.60	608.00	48.89	49.57		49.82	0.038030	4.01	1.64	3.30	1.00	0.98
1	4.1	PF 2	3.00	608.00	48.89	49.37		49.52	0.040813	3.13	0.96	3.28	1.02	0.69
1	4.1	2-yr	11.00	608.00	48.89	49.78		50.13	0.038164	4.74	2.32	3.32	1.00	1.26
1	4.1	5-yr	20.00	608.00	48.89	50.12		50.64	0.040036	5.76	3.47	3.35	1.00	1.71
1	4.1	10-r	27.00	608.00	48.89	50.38		50.98	0.040577	6.24	4.33	3.56	1.00	1.93
1	4.1	25-yr	38.00	608.00	48.89	50.75		51.41	0.037810	6.52	5.83	4.36	1.00	2.02
1	4.1	50-yr	48.00	608.00	48.89	51.02		51.73	0.036661	6.79	7.07	4.98	1.00	2.13
1	4.1	100-yr	57.00	608.00	48.89	51.23		51.99	0.034789	6.98	8.18	5.68	0.99	2.19

HEC-RAS Plan: BF-PA5x4 River: Ball Field Creek Reach: 1 (Continued)

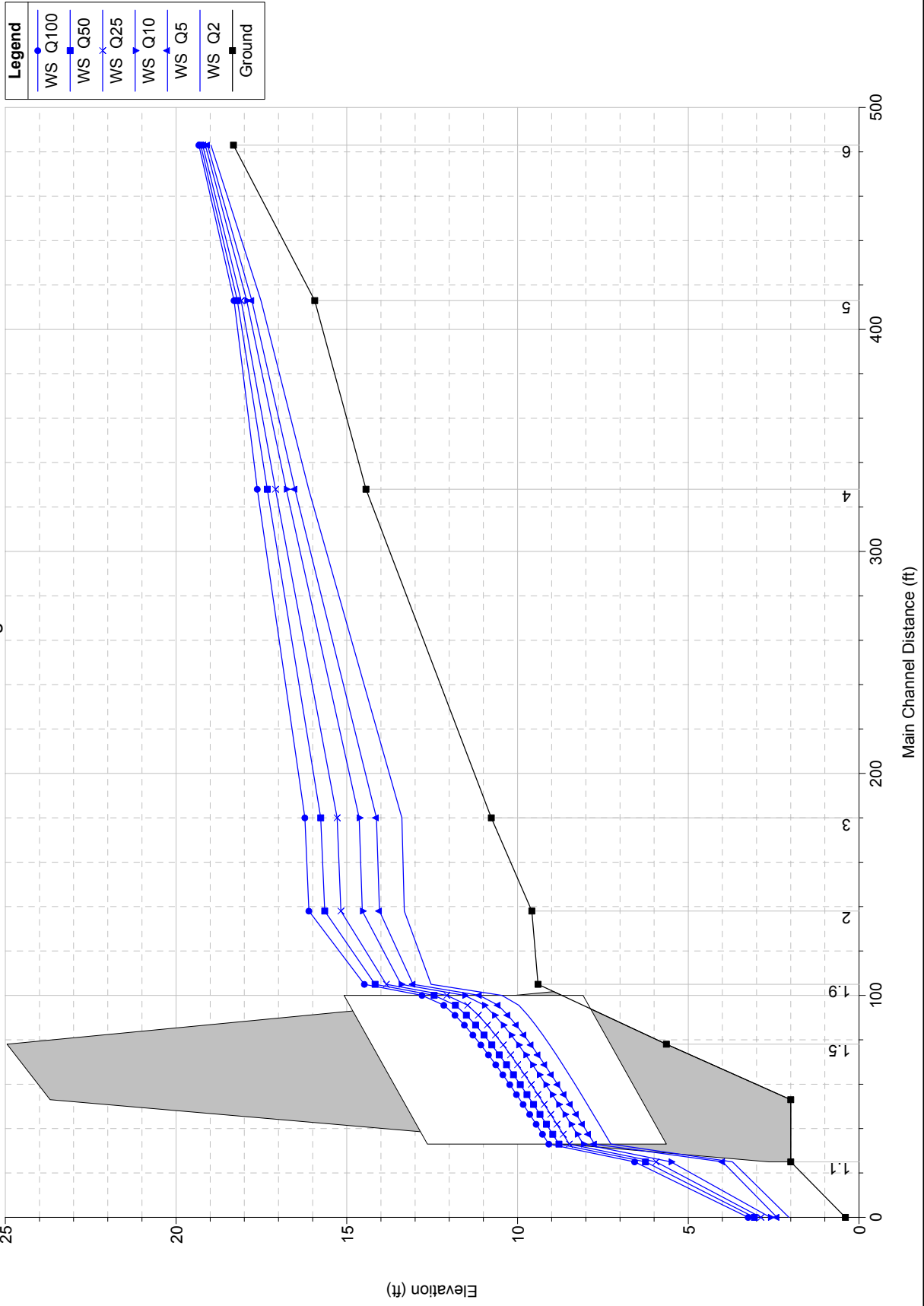
Reach	River Sta	Profile	Q Total (cfs)	Cum Ch Len (ft)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Chan (lb/sq ft)
1	4.5		Culvert											
1	4.9	PF 1	6.60	656.00	50.80	51.30	51.40	51.64	0.073362	4.68	1.41	4.25	1.43	1.45
1	4.9	PF 2	3.00	656.00	50.80	51.14	51.20	51.35	0.068734	3.63	0.83	3.50	1.32	0.98
1	4.9	2-yr	11.00	656.00	50.80	51.42	51.57	51.89	0.077278	5.50	2.00	4.89	1.51	1.87
1	4.9	5-yr	20.00	656.00	50.80	51.60	51.86	52.31	0.087566	6.76	2.96	5.78	1.66	2.64
1	4.9	10-r	27.00	656.00	50.80	51.71	52.01	52.58	0.090971	7.47	3.62	6.23	1.73	3.09
1	4.9	25-yr	38.00	656.00	50.80	51.88	52.18	52.87	0.089672	8.03	4.94	12.01	1.75	3.43
1	4.9	50-yr	48.00	656.00	50.80	51.98	52.33	53.10	0.084935	8.61	6.18	12.25	1.75	3.76
1	4.9	100-yr	57.00	656.00	50.80	52.06	52.43	53.28	0.080906	9.03	7.24	12.44	1.73	3.99
1	5	PF 1	6.60	689.00	52.47	53.06	53.06	53.26	0.034805	3.58	1.85	4.73	1.01	0.81
1	5	PF 2	3.00	689.00	52.47	52.87	52.87	53.00	0.037841	2.94	1.02	3.77	1.00	0.61
1	5	2-yr	11.00	689.00	52.47	53.24	53.24	53.49	0.032128	3.99	2.76	5.60	1.00	0.93
1	5	5-yr	20.00	689.00	52.47	53.53	53.53	53.82	0.026972	4.34	4.76	9.93	0.96	1.01
1	5	10-r	27.00	689.00	52.47	53.67	53.67	54.00	0.023693	4.66	6.51	12.31	0.93	1.09
1	5	25-yr	38.00	689.00	52.47	53.85	53.85	54.24	0.022424	5.18	8.69	12.71	0.93	1.26
1	5	50-yr	48.00	689.00	52.47	53.99	53.99	54.43	0.021687	5.58	10.49	13.03	0.94	1.39
1	5	100-yr	57.00	689.00	52.47	54.10	54.10	54.59	0.021642	5.93	11.91	13.28	0.95	1.53
1	6	PF 1	6.60	889.00	53.70	54.90	54.90	54.94	0.003637	1.52	4.34	7.02	0.34	0.13
1	6	PF 2	3.00	889.00	53.70	54.54	54.54	54.56	0.003252	1.29	2.33	4.29	0.31	0.10
1	6	2-yr	11.00	889.00	53.70	55.16	55.20	55.20	0.003843	1.72	6.40	9.39	0.36	0.15
1	6	5-yr	20.00	889.00	53.70	55.47	55.53	55.53	0.004094	2.08	10.32	22.72	0.39	0.21
1	6	10-r	27.00	889.00	53.70	55.63	55.71	55.71	0.004305	2.29	13.13	31.31	0.41	0.25
1	6	25-yr	38.00	889.00	53.70	55.86	55.86	55.96	0.004365	2.52	17.21	43.00	0.42	0.28
1	6	50-yr	48.00	889.00	53.70	56.04	56.04	56.14	0.004406	2.68	20.52	51.99	0.43	0.31
1	6	100-yr	57.00	889.00	53.70	56.19	56.30	56.30	0.004368	2.79	23.41	59.53	0.43	0.33
1	6.5		Culvert											
1	6.9	PF 1	6.60	1004.00	54.54	55.23	54.92	55.25	0.002922	1.21	5.44	11.37	0.31	0.09
1	6.9	PF 2	3.00	1004.00	54.54	54.97	54.80	54.99	0.004375	1.08	2.78	9.37	0.35	0.08
1	6.9	2-yr	11.00	1004.00	54.54	55.49	55.03	55.51	0.002064	1.27	8.76	16.65	0.27	0.08
1	6.9	5-yr	20.00	1004.00	54.54	55.91	55.20	55.94	0.001261	1.38	15.51	23.71	0.23	0.08
1	6.9	10-r	27.00	1004.00	54.54	56.21	55.32	56.24	0.001010	1.45	20.34	29.43	0.22	0.09
1	6.9	25-yr	38.00	1004.00	54.54	56.63	55.46	56.67	0.000787	1.53	27.42	38.07	0.20	0.09
1	6.9	50-yr	48.00	1004.00	54.54	57.00	55.58	57.04	0.000663	1.59	33.53	45.52	0.19	0.09
1	6.9	100-yr	57.00	1004.00	54.54	57.33	55.68	57.37	0.000583	1.63	38.86	52.02	0.18	0.09
1	7	PF 1	6.60	1013.00	54.64	55.25	55.25	55.29	0.004668	1.42	4.63	10.80	0.38	0.12
1	7	PF 2	3.00	1013.00	54.64	55.02	55.02	55.04	0.007927	1.32	2.28	8.94	0.46	0.12
1	7	2-yr	11.00	1013.00	54.64	55.50	55.54	55.54	0.003172	1.46	7.56	13.13	0.33	0.11
1	7	5-yr	20.00	1013.00	54.64	55.92	55.96	55.96	0.001634	1.49	15.41	22.22	0.26	0.10
1	7	10-r	27.00	1013.00	54.64	56.21	56.21	56.25	0.001174	1.49	22.65	27.61	0.23	0.09

HEC-RAS Plan: BF-PA5x4 River: Ball Field Creek Reach: 1 (Continued)

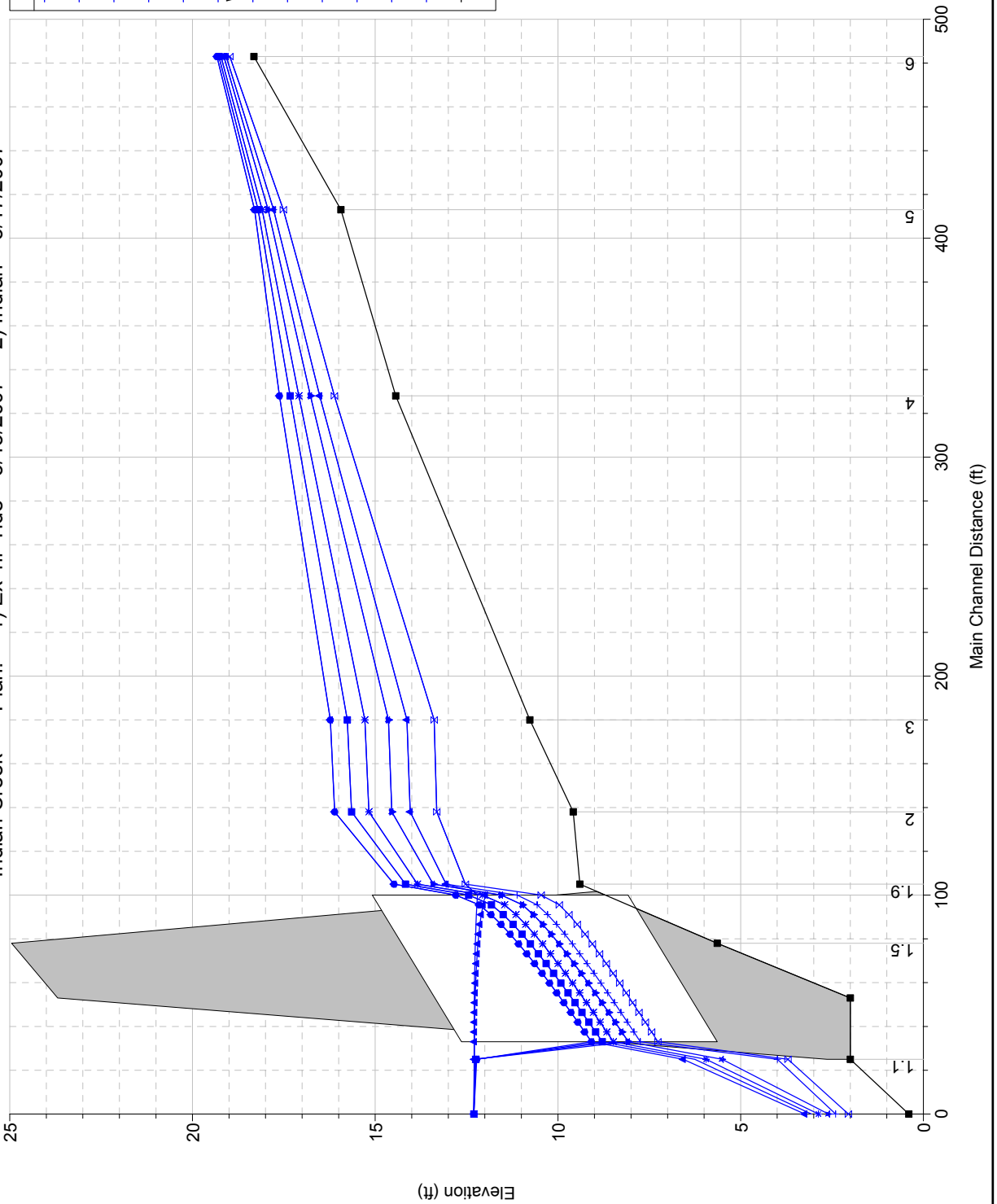
Reach	River Sta	Profile	Q Total (cfs)	Cum Ch Len (ft)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Chan (lb/sq ft)
1	7	25-yr	38.00	1013.00	54.64	56.65	57.32	56.68	0.000776	1.47	36.48	36.32	0.20	0.08
1	7	50-yr	48.00	1013.00	54.64	57.02	57.46	57.05	0.000568	1.43	51.50	43.86	0.17	0.07
1	7	100-yr	57.00	1013.00	54.64	57.35	57.70	57.37	0.000443	1.39	66.92	50.44	0.16	0.07
1	7.5													
		Culvert												
1	8	PF 1	6.60	1090.00	56.74	57.32	57.32	57.49	0.035983	3.34	1.97	5.82	1.01	0.73
1	8	PF 2	3.00	1090.00	56.74	57.17	57.17	57.28	0.041634	2.69	1.12	5.21	1.02	0.55
1	8	2-yr	11.00	1090.00	56.74	57.46	57.46	57.70	0.032670	3.90	2.82	5.98	1.00	0.90
1	8	5-yr	20.00	1090.00	56.74	57.70	57.70	58.04	0.030055	4.68	4.28	6.24	0.99	1.16
1	8	10-r	27.00	1090.00	56.74	57.86	57.86	58.27	0.029268	5.13	5.27	6.41	1.00	1.32
1	8	25-yr	38.00	1090.00	56.74	58.08	58.08	58.58	0.028613	5.66	6.72	6.76	1.00	1.53
1	8	50-yr	48.00	1090.00	56.74	58.27	58.27	58.82	0.027716	5.96	8.05	7.26	1.00	1.64
1	8	100-yr	57.00	1090.00	56.74	58.42	58.42	59.02	0.027301	6.21	9.17	7.66	1.00	1.74
1	9	PF 1	6.60	1190.00	57.74	58.59	58.32	58.64	0.005551	1.84	3.60	6.12	0.42	0.19
1	9	PF 2	3.00	1190.00	57.74	58.37	58.17	58.39	0.004967	1.34	2.24	5.87	0.38	0.11
1	9	2-yr	11.00	1190.00	57.74	58.81	58.46	58.88	0.005915	2.23	4.93	6.35	0.45	0.25
1	9	5-yr	20.00	1190.00	57.74	59.15	58.70	59.27	0.006490	2.77	7.22	6.95	0.48	0.36
1	9	10-r	27.00	1190.00	57.74	59.38	58.86	59.52	0.006742	3.05	8.86	7.55	0.50	0.42
1	9	25-yr	38.00	1190.00	57.74	59.67	59.08	59.85	0.006911	3.39	11.87	28.71	0.51	0.50
1	9	50-yr	48.00	1190.00	57.74	59.86	59.27	60.05	0.006622	3.58	18.06	40.20	0.51	0.53
1	9	100-yr	57.00	1190.00	57.74	60.00	59.42	60.18	0.006133	3.65	24.51	51.19	0.50	0.54

App 3.3 - Hydraulic analysis Indian Creek

Indian Creek Plan: Existing Conditions 3/17/2007

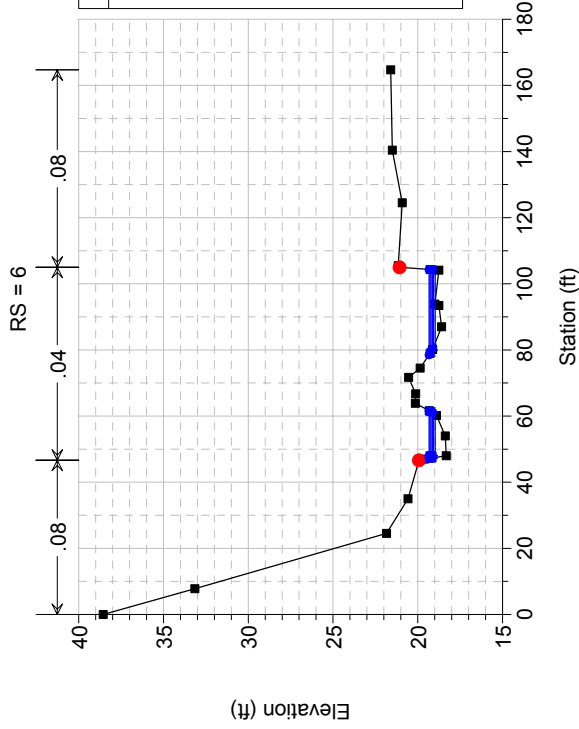


Indian Creek Plan: 1) Ex-'hi' Tide 3/13/2007 2) Indian 3/17/2007

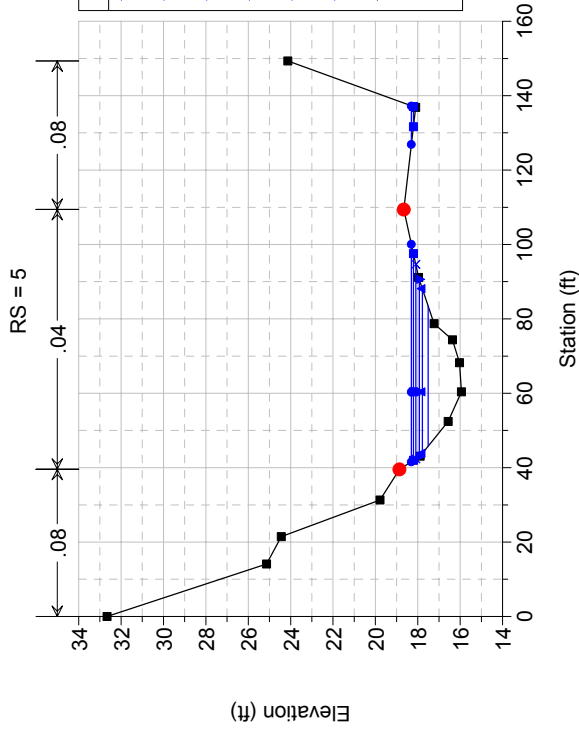


Legend	
WS Q2 - Ex-'hi' Tide	▲
WS Q5 - Ex-'hi' Tide	▼
WS Q10 - Ex-'hi' Tide	✕
WS Q25 - Ex-'hi' Tide	✕
WS Q50 - Ex-'hi' Tide	■
WS Q100 - Ex-'hi' Tide	●
WS Q100 - Indian	▲
WS Q50 - Indian	▲
WS Q25 - Indian	✕
WS Q10 - Indian	✕
WS Q5 - Indian	▲
WS Q2 - Indian	✕
Ground	■

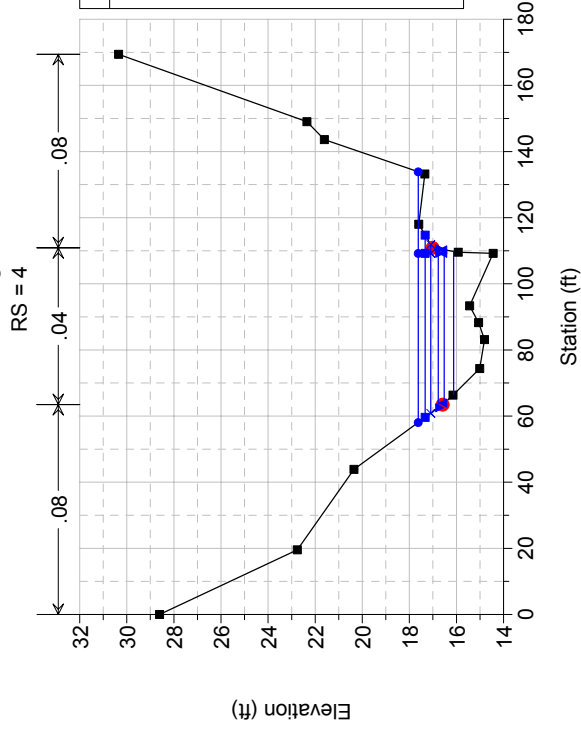
Indian Creek Plan: Existing Conditions 3/17/2007



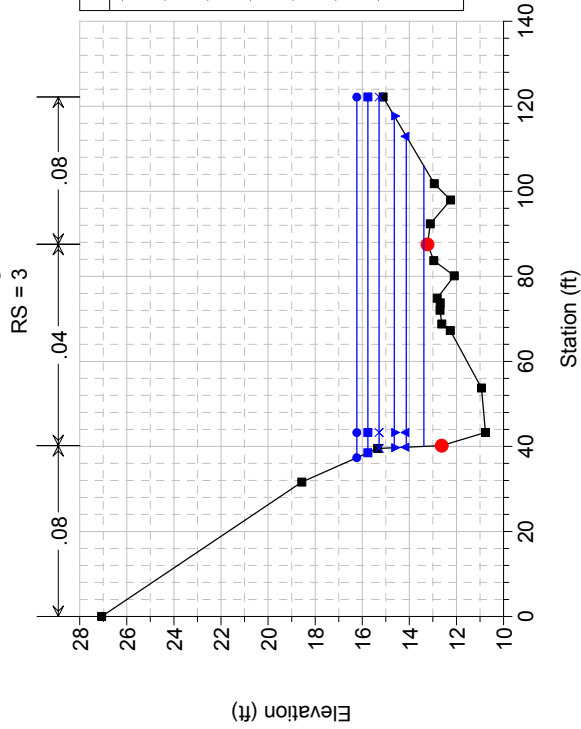
Indian Creek Plan: Existing Conditions 3/17/2007



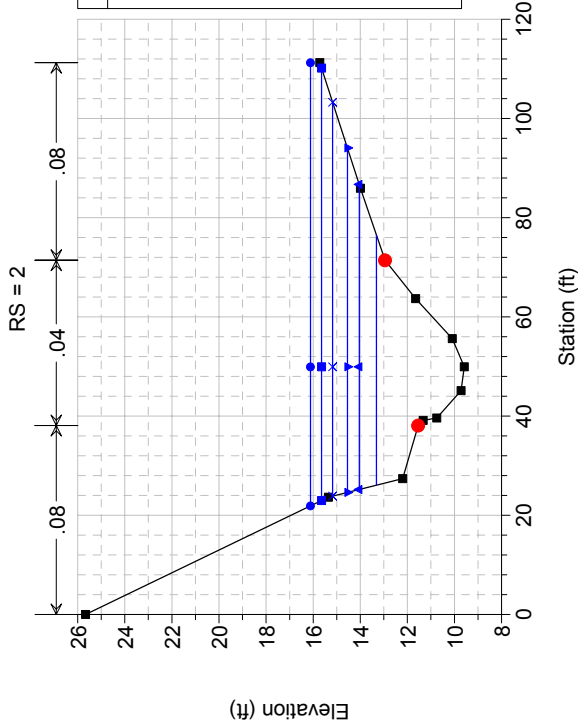
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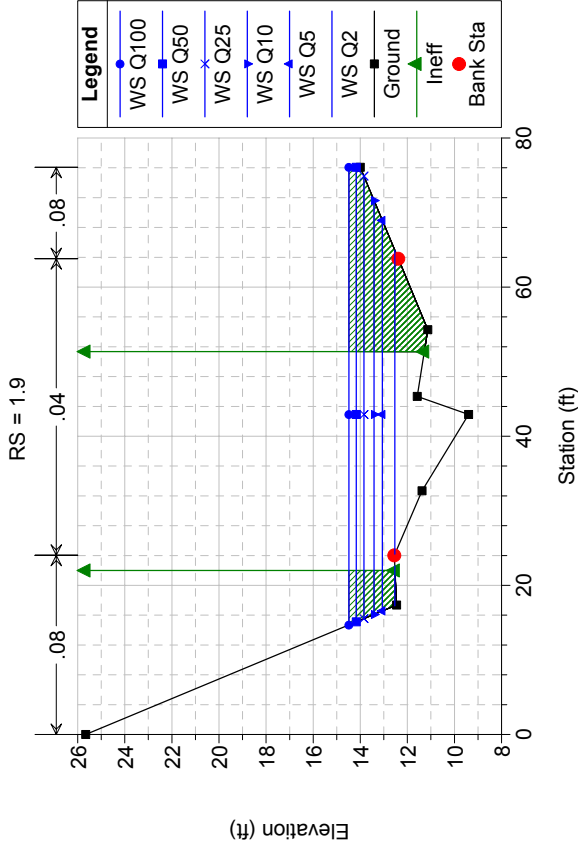
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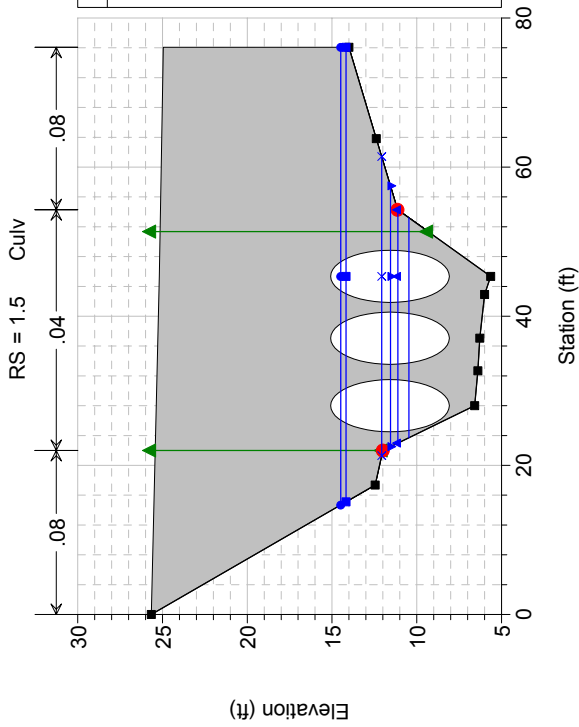
Indian Creek Plan: Existing Conditions 3/17/2007



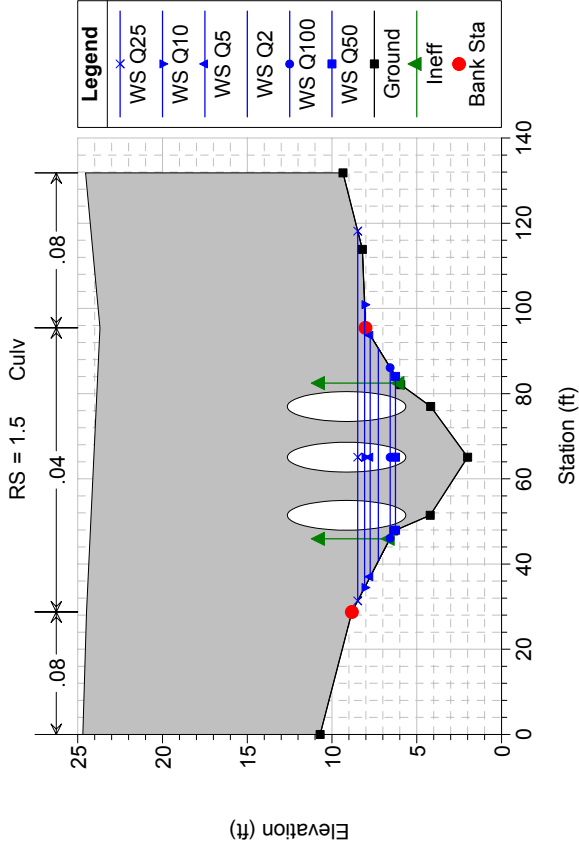
Indian Creek Plan: Existing Conditions 3/17/2007



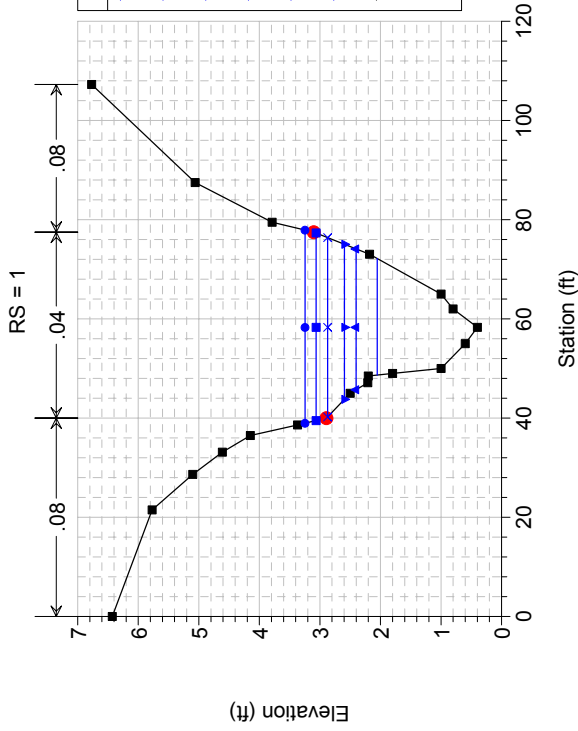
Indian Creek Plan: Existing Conditions 3/17/2007



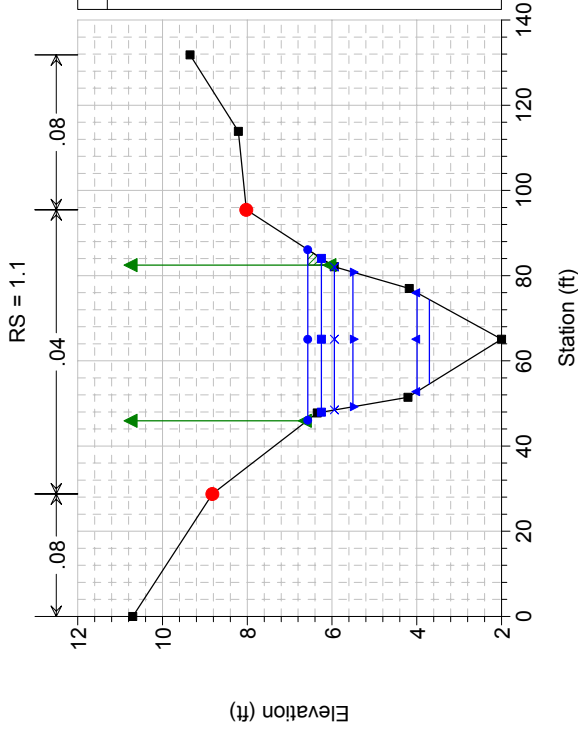
Indian Creek Plan: Existing Conditions 3/17/2007



Indian Creek Plan: Existing Conditions 3/17/2007



Indian Creek Plan: Existing Conditions 3/17/2007



HEC-RAS Plan: Indian River: Indian Creek Reach: Indian Creek

Reach	River Sta	Profile	Q Total (cfs)	Cum Ch Len (ft)	Min Ch El (ft)	W. S. Elev (ft)	Crit W. S. (ft)	E. G. Elev (ft)	E. G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Chan (lb/sq ft)
Indian Creek	1	Q2	259.00		0.40	2.05	2.62	3.76	0.076707	10.49	24.68	23.47	1.80	4.93
Indian Creek	1	Q5	414.00		0.40	2.40	3.12	4.75	0.089386	12.28	33.70	28.38	1.99	6.49
Indian Creek	1	Q10	534.00		0.40	2.60	3.42	5.44	0.099889	13.53	39.47	31.27	2.12	7.72
Indian Creek	1	Q25	697.00		0.40	2.87	3.79	6.04	0.101519	14.28	48.81	36.17	2.17	8.40
Indian Creek	1	Q50	828.00		0.40	3.06	4.05	6.48	0.095668	14.84	55.84	37.81	2.14	8.76
Indian Creek	1	Q100	962.00		0.40	3.24	4.32	6.91	0.088387	15.36	62.82	38.94	2.09	9.05
Indian Creek	1.1	Q2	259.00	25.00	2.00	3.70	4.59	7.36	0.215319	15.34	16.88	19.81	1.00	11.29
Indian Creek	1.1	Q5	414.00	25.00	2.00	3.99	5.14	8.98	0.238084	17.91	23.11	23.18	0.99	14.60
Indian Creek	1.1	Q10	534.00	25.00	2.00	5.51	5.51	6.54	0.018982	8.16	65.46	31.58	1.00	2.38
Indian Creek	1.1	Q25	697.00	25.00	2.00	5.94	5.94	7.13	0.018291	8.74	79.73	33.59	1.00	2.62
Indian Creek	1.1	Q50	828.00	25.00	2.00	6.25	6.25	7.56	0.017731	9.17	90.28	36.09	1.00	2.79
Indian Creek	1.1	Q100	962.00	25.00	2.00	6.57	6.57	7.97	0.017336	9.47	101.55	40.03	1.00	2.92
Indian Creek	1.5													
			Culvert											
Indian Creek	1.9	Q2	259.00	105.00	9.40	12.53	12.53	13.24	0.022003	6.75	38.36	46.07	1.00	1.86
Indian Creek	1.9	Q5	414.00	105.00	9.40	13.06	13.06	14.00	0.019317	7.80	53.89	52.38	0.99	2.24
Indian Creek	1.9	Q10	534.00	105.00	9.40	13.41	13.41	14.52	0.018264	8.49	64.24	55.52	0.99	2.51
Indian Creek	1.9	Q25	697.00	105.00	9.40	13.84	13.84	15.17	0.017378	9.29	76.88	59.35	0.99	2.83
Indian Creek	1.9	Q50	828.00	105.00	9.40	14.17	14.17	15.65	0.016677	9.82	86.54	60.97	0.99	3.05
Indian Creek	1.9	Q100	962.00	105.00	9.40	14.49	14.49	16.12	0.016201	10.33	95.71	61.38	0.99	3.26
Indian Creek	2	Q2	259.00		9.58	13.31		13.44	0.001758	2.87	102.12	50.45	0.32	0.27
Indian Creek	2	Q5	414.00		9.58	14.04		14.22	0.001837	3.47	142.96	61.52	0.34	0.37
Indian Creek	2	Q10	534.00		9.58	14.55		14.75	0.001825	3.80	175.77	69.45	0.34	0.42
Indian Creek	2	Q25	697.00		9.58	15.17		15.41	0.001759	4.13	222.56	79.40	0.35	0.47
Indian Creek	2	Q50	828.00		9.58	15.65		15.90	0.001695	4.34	261.79	87.18	0.35	0.51
Indian Creek	2	Q100	962.00		9.58	16.11		16.38	0.001603	4.49	303.06	89.34	0.34	0.52
Indian Creek	3	Q2	259.00	180.00	10.77	13.39	12.82	13.58	0.005497	3.56	79.71	65.98	0.51	0.50
Indian Creek	3	Q5	414.00	180.00	10.77	14.13	13.24	14.33	0.003379	3.65	131.48	73.13	0.43	0.46
Indian Creek	3	Q10	534.00	180.00	10.77	14.64	13.47	14.84	0.002722	3.76	169.89	78.01	0.40	0.46
Indian Creek	3	Q25	697.00	180.00	10.77	15.28	13.75	15.49	0.002179	3.87	222.00	82.66	0.37	0.45
Indian Creek	3	Q50	828.00	180.00	10.77	15.76	13.98	15.98	0.001896	3.94	261.96	83.70	0.35	0.45
Indian Creek	3	Q100	962.00	180.00	10.77	16.23	14.17	16.45	0.001698	4.03	301.09	84.84	0.34	0.45
Indian Creek	4	Q2	259.00	328.00	14.44	16.12	16.12	16.65	0.024758	5.83	44.43	43.23	1.01	1.54
Indian Creek	4	Q5	414.00	328.00	14.44	16.52	16.52	17.20	0.022519	6.64	62.34	46.38	1.01	1.83
Indian Creek	4	Q10	534.00	328.00	14.44	16.77	16.77	17.57	0.021398	7.19	74.34	48.11	1.01	2.03
Indian Creek	4	Q25	697.00	328.00	14.44	17.09	17.09	18.03	0.019846	7.79	90.05	51.04	1.00	2.25
Indian Creek	4	Q50	828.00	328.00	14.44	17.33	17.33	18.37	0.018772	8.21	102.69	55.14	0.99	2.40
Indian Creek	4	Q100	962.00	328.00	14.44	17.62	17.61	18.69	0.016316	8.34	121.88	75.82	0.95	2.37
Indian Creek	5	Q2	259.00	413.00	15.94	17.51	17.69	18.27	0.036733	7.00	37.00	37.75	1.25	2.24
Indian Creek	5	Q5	414.00	413.00	15.94	17.78	18.14	18.94	0.048606	8.62	48.02	44.23	1.46	3.28

HEC-RAS Plan: Indian River: Indian Creek Reach: Indian Creek (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Cum Ch Len (ft)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Chan (lb/sq ft)
Indian Creek	5	Q10	534.00	413.00	15.94	17.93	18.44	19.40	0.057531	9.75	54.79	47.65	1.60	4.11
Indian Creek	5	Q25	697.00	413.00	15.94	18.09	18.74	19.99	0.069494	11.05	63.05	52.30	1.77	5.20
Indian Creek	5	Q50	828.00	413.00	15.94	18.21	18.93	20.44	0.078644	11.99	69.31	60.99	1.90	6.06
Indian Creek	5	Q100	962.00	413.00	15.94	18.30	19.09	20.88	0.087708	12.89	75.58	68.80	2.01	6.94
Indian Creek	6	Q2	259.00	483.00	18.32	18.98	19.84	29.40	2.601606	25.90	10.00	34.60	8.49	46.17
Indian Creek	6	Q5	414.00	483.00	18.32	19.08	20.26	33.43	2.602426	30.40	13.62	36.97	8.83	58.70
Indian Creek	6	Q10	534.00	483.00	18.32	19.14	20.52	36.32	2.601072	33.26	16.05	38.00	9.02	67.18
Indian Creek	6	Q25	697.00	483.00	18.32	19.22	20.79	40.05	2.603978	36.62	19.03	38.94	9.23	77.64
Indian Creek	6	Q50	828.00	483.00	18.32	19.28	20.98	42.80	2.600175	38.92	21.27	39.63	9.36	85.01
Indian Creek	6	Q100	962.00	483.00	18.32	19.33	21.23	45.48	2.600551	41.04	23.44	40.28	9.48	92.05

Seward Highway; Indian Creek - Pebble Count

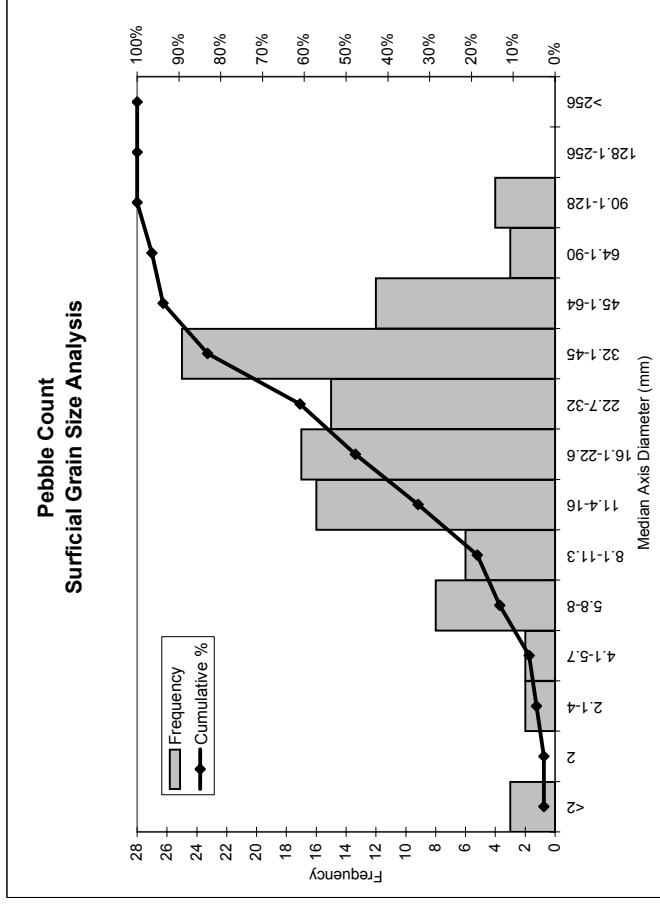


Sediment Grain Size Analysis

gravel bar at bridge	Identifier	8/3/06	Date
	Personnel	GK, MS	
	Stream	Indian Creek	
		n/a	Approximate Depth of Flow at Thalweg (ft)
gravel bar above water			Longitudinal Description (Pool, Riffle, Bend, Crossing)
surficial material			Sample Type: Armor Layer or Subarmor

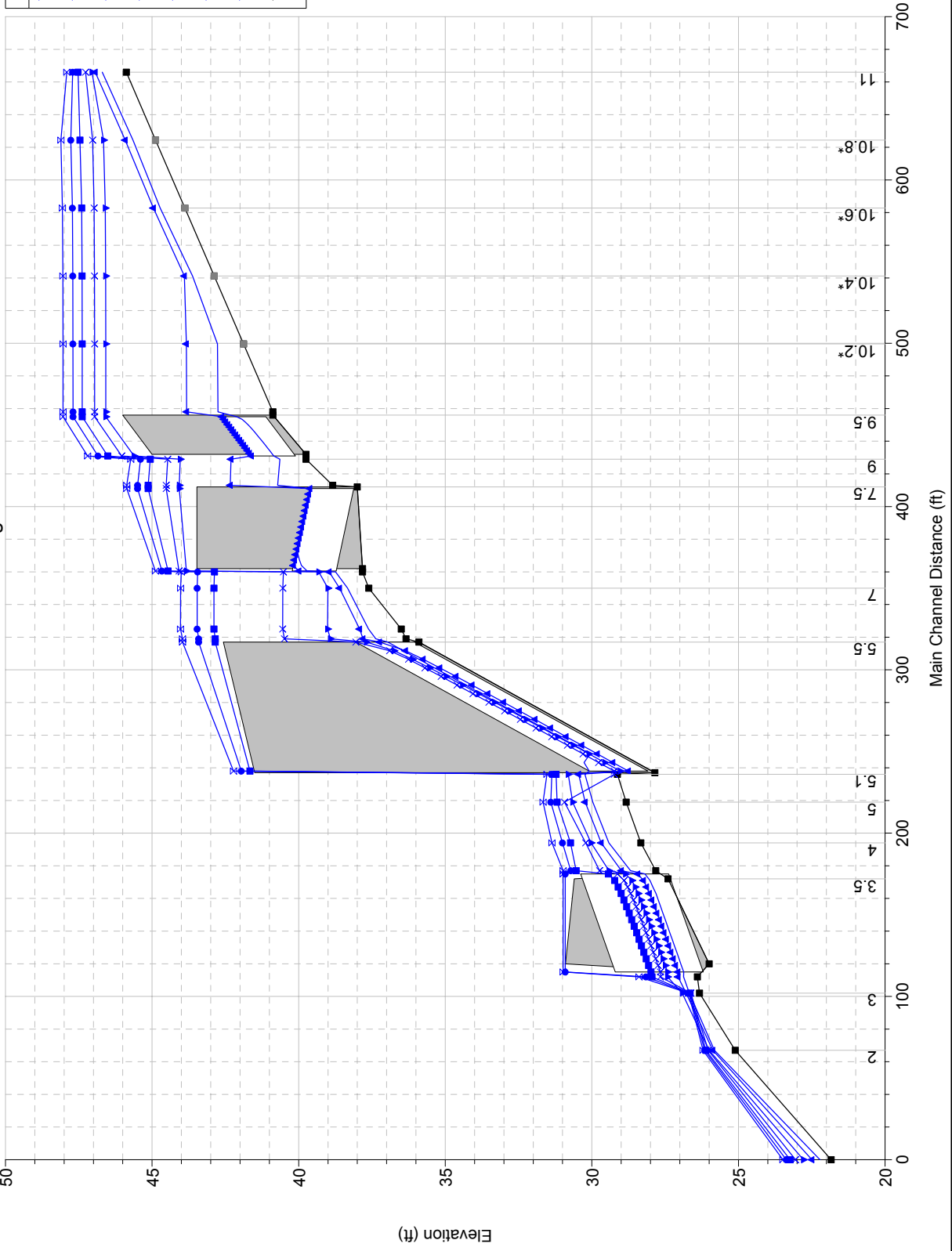


Notes:
 gravel bar at hwy bridge
 View Looking downstream



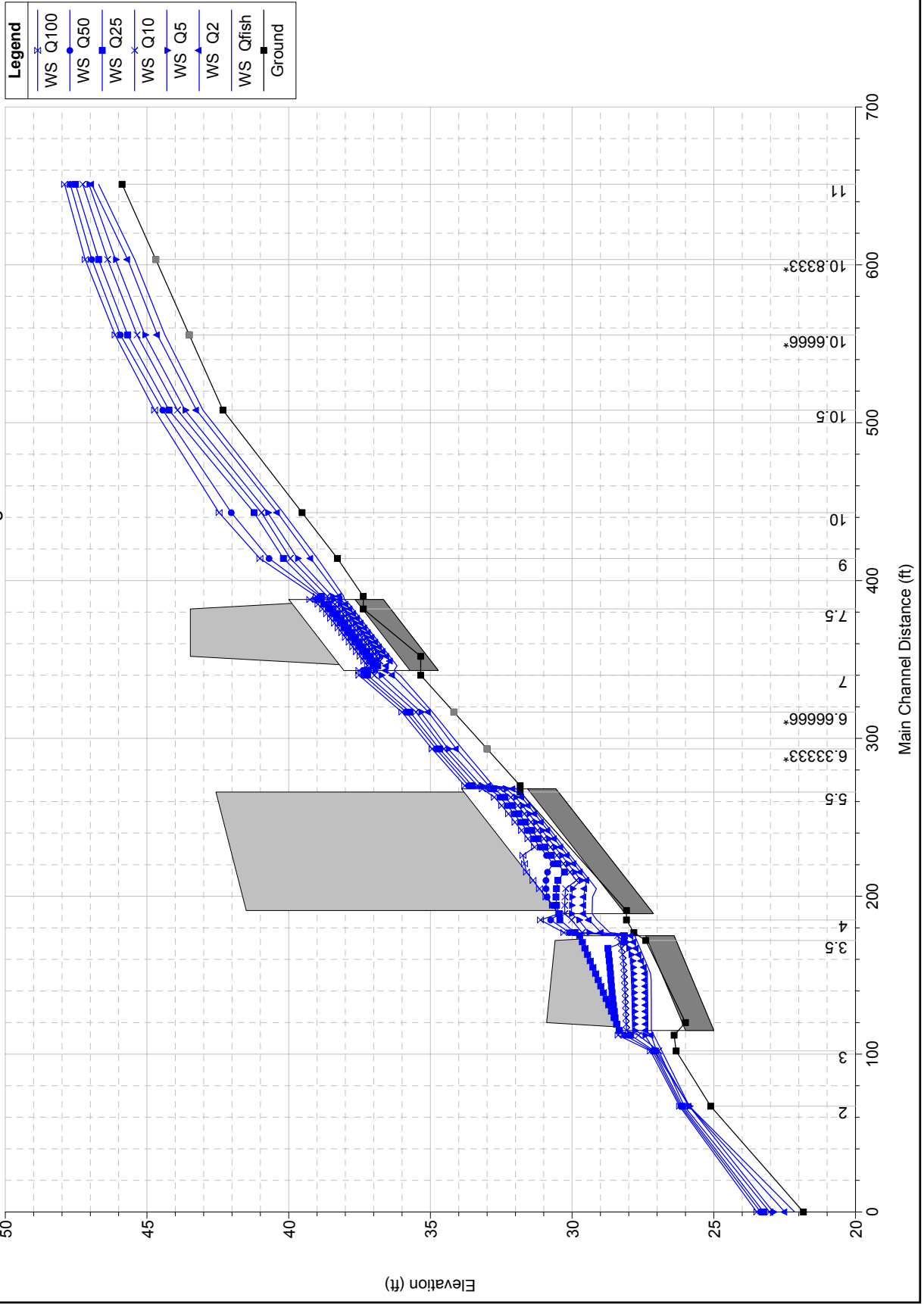
App 3.4 - Hydraulic analysis "Subdivision" Creek

Subdivision Creek Plan: Existing Conditions 3/17/2007



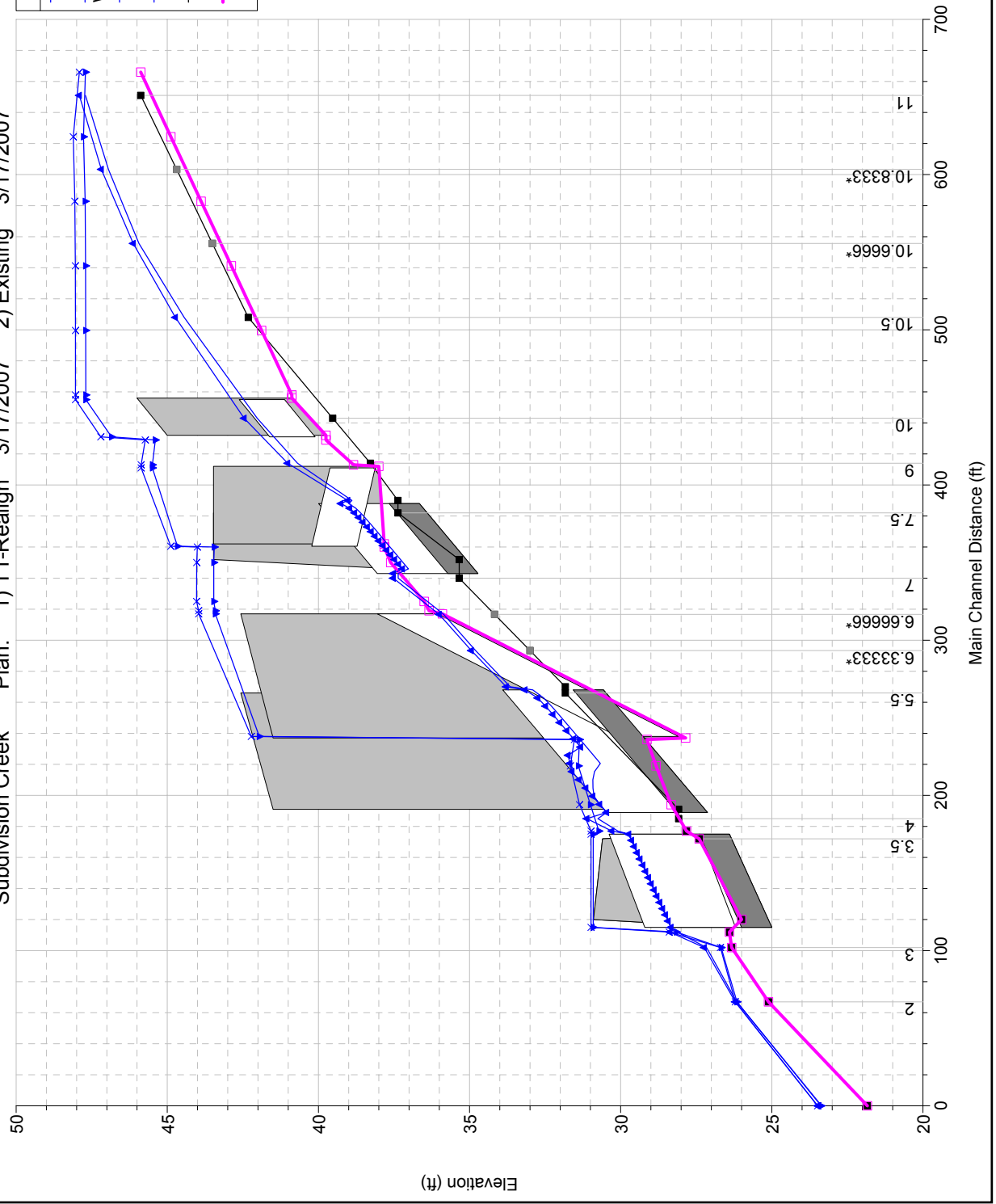
Legend	
WS Q100	*
WS Q50	●
WS Q25	■
WS Q10	×
WS Q5	▲
WS Q2	▼
WS Qfish	◆
Ground	■

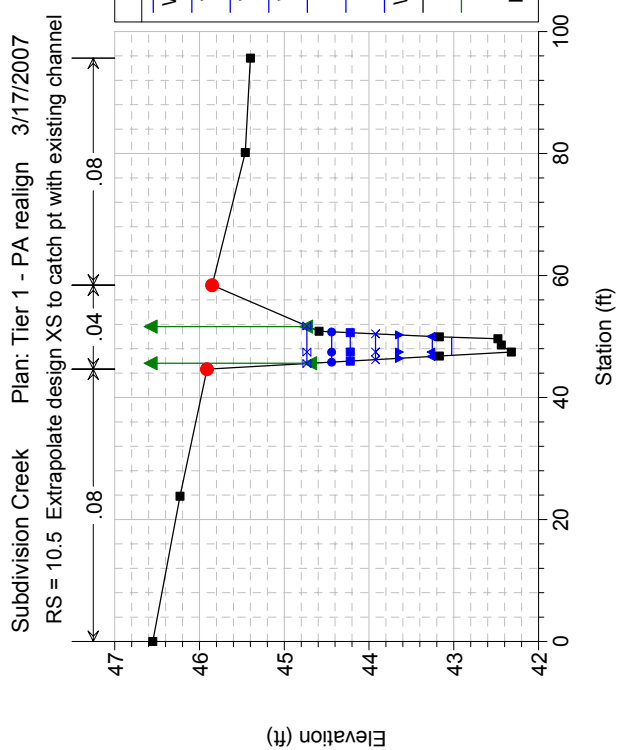
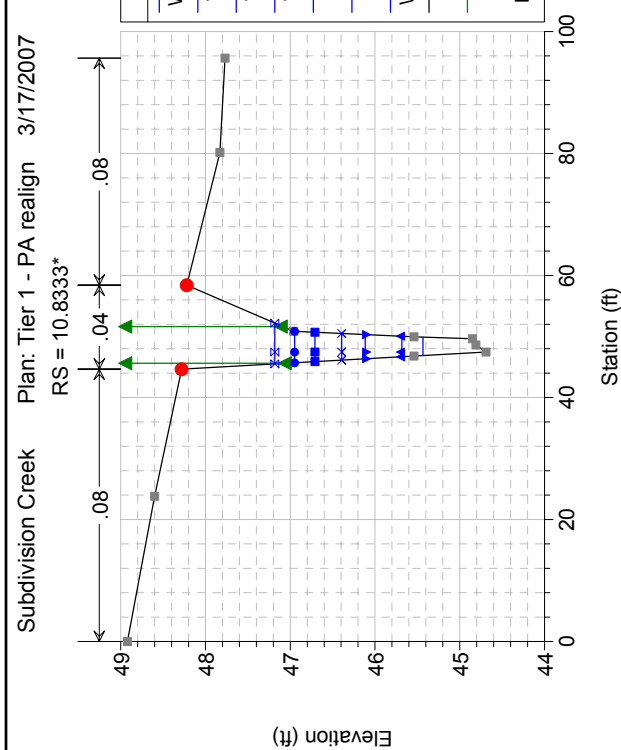
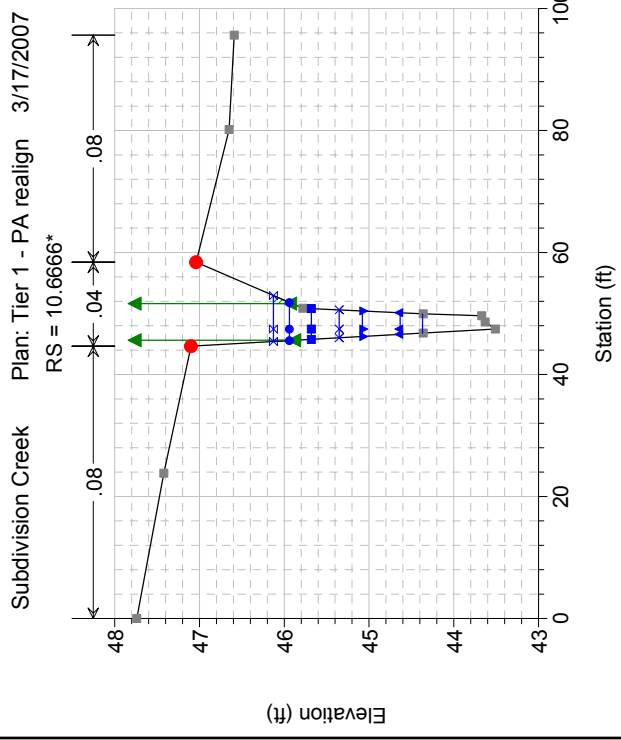
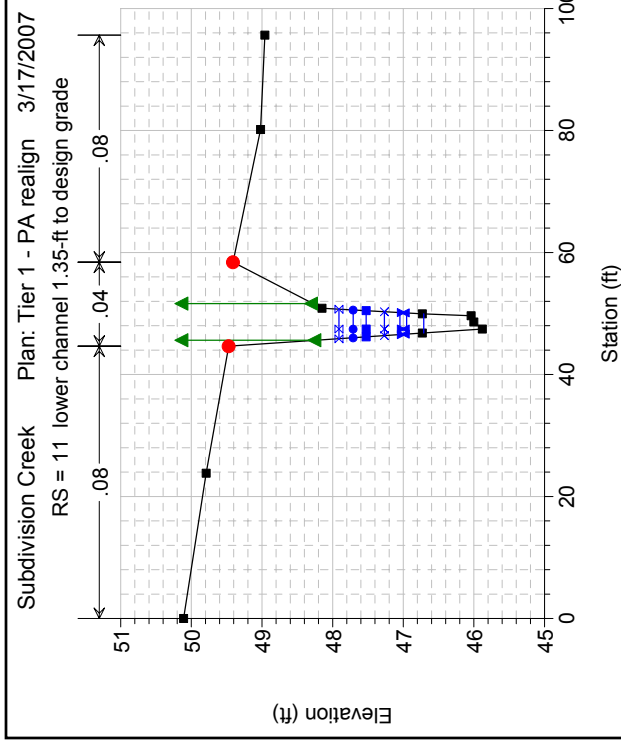
Subdivision Creek Plan: Tier 1 - PA realign 3/17/2007

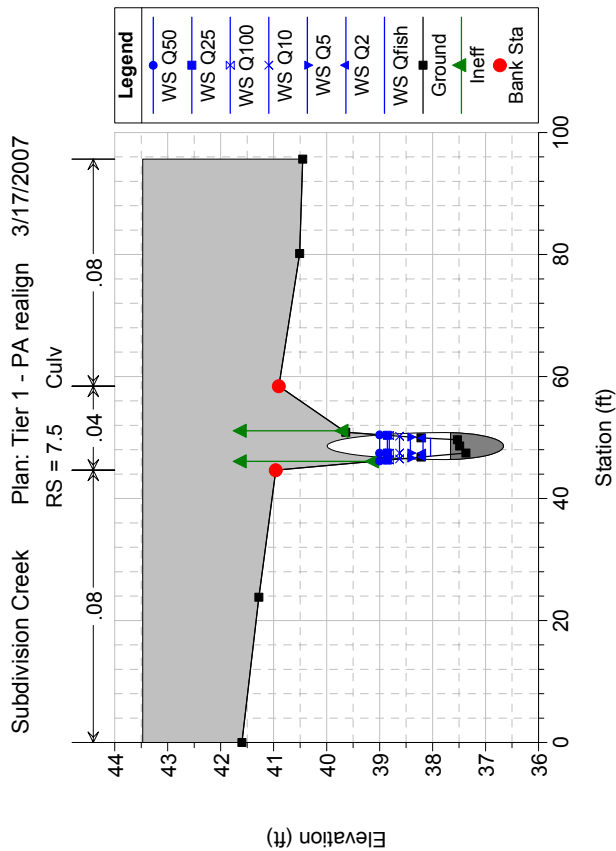
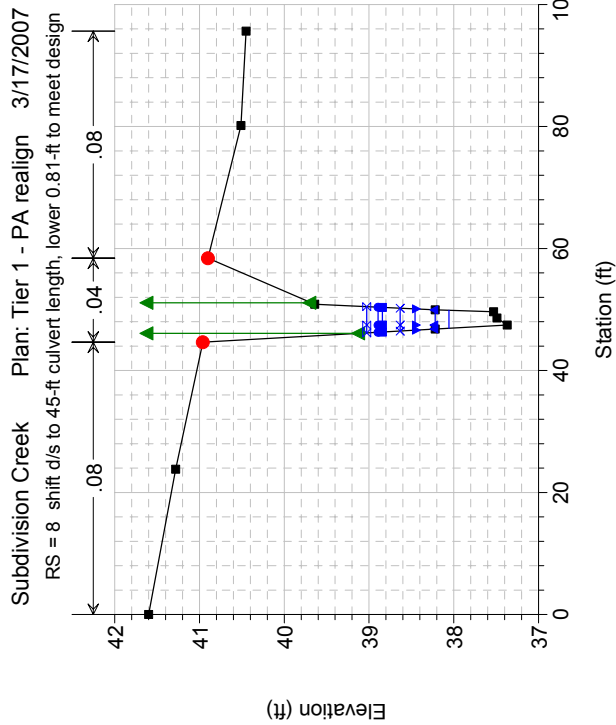
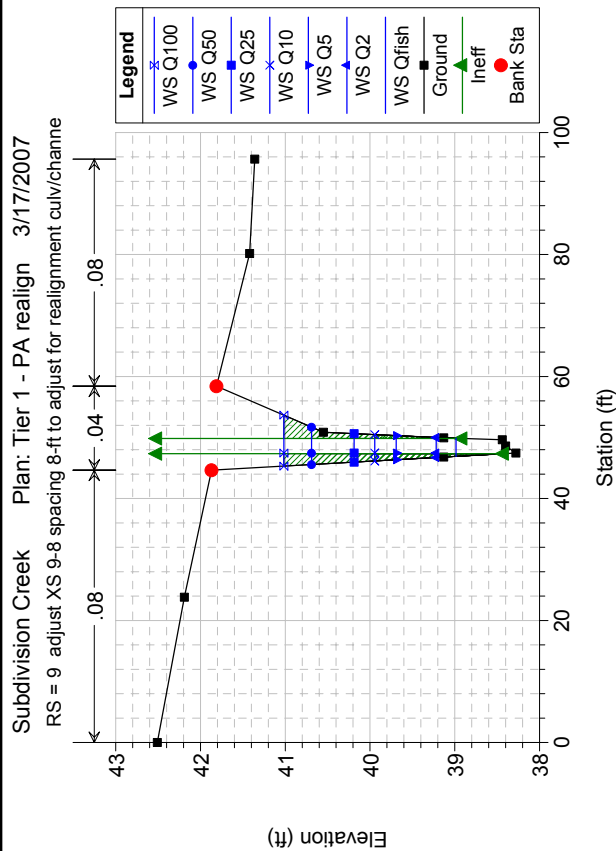
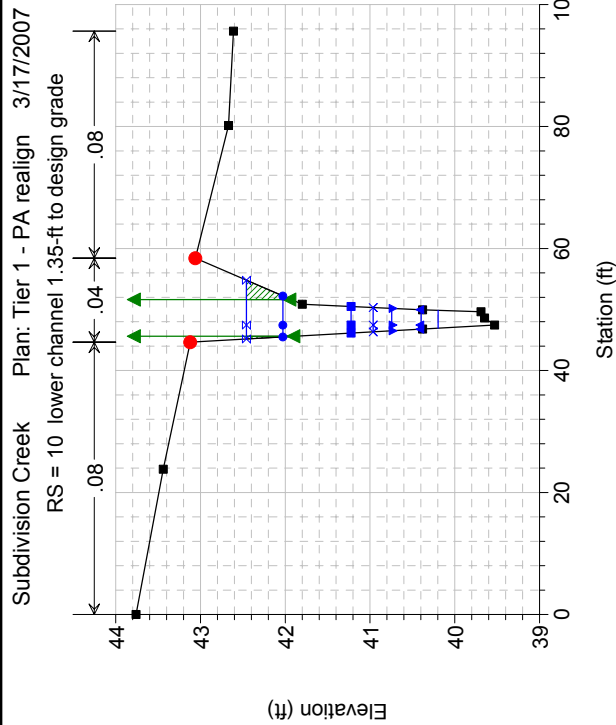


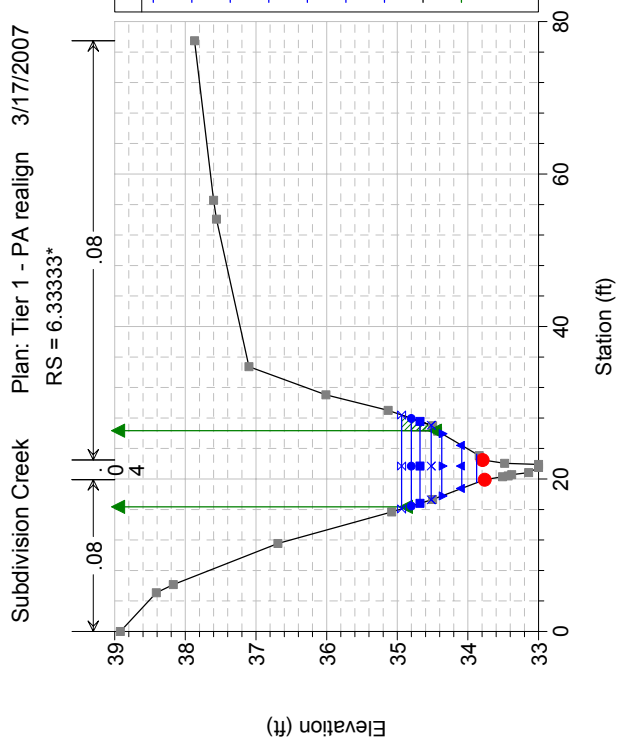
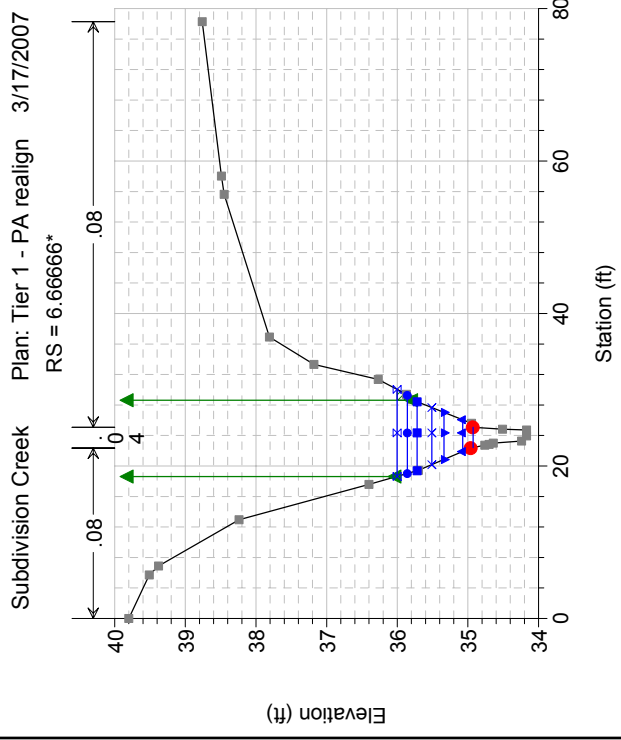
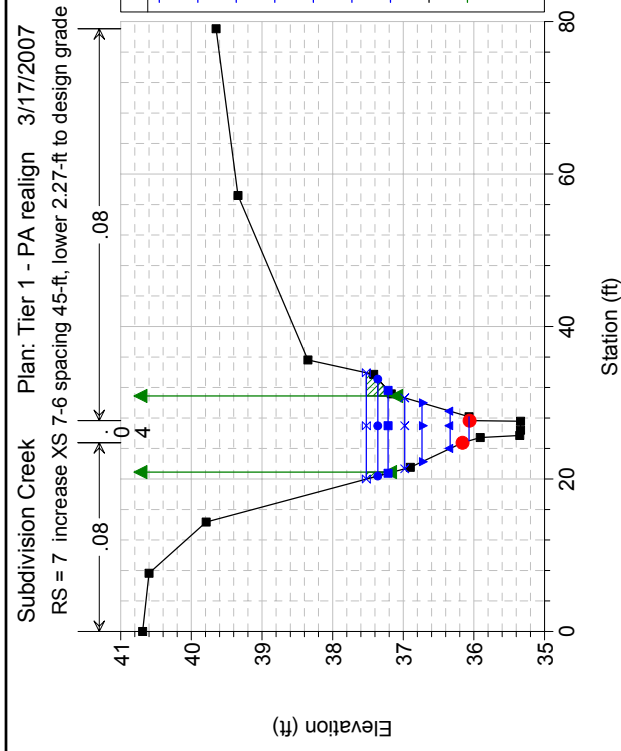
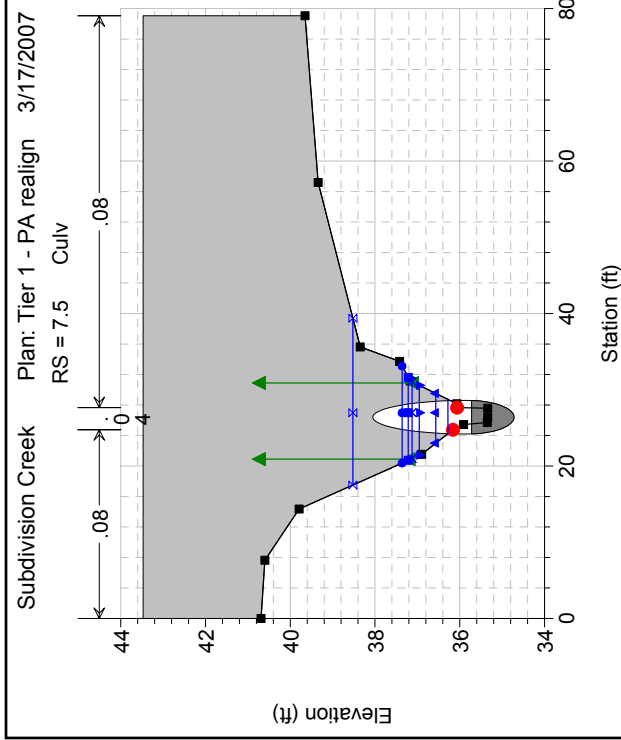
Subdivision Creek Plan: 1) T1-Realign 3/17/2007 2) Existing 3/17/2007

Legend	
WS Q100 - Existing	Blue line with 'x' markers
WS Q100 - T1-Realign	Blue line with triangle markers
WS Q50 - Existing	Blue line with inverted triangle markers
WS Q50 - T1-Realign	Blue line with square markers
Ground	Black line with square markers
Ground	Pink line with square markers

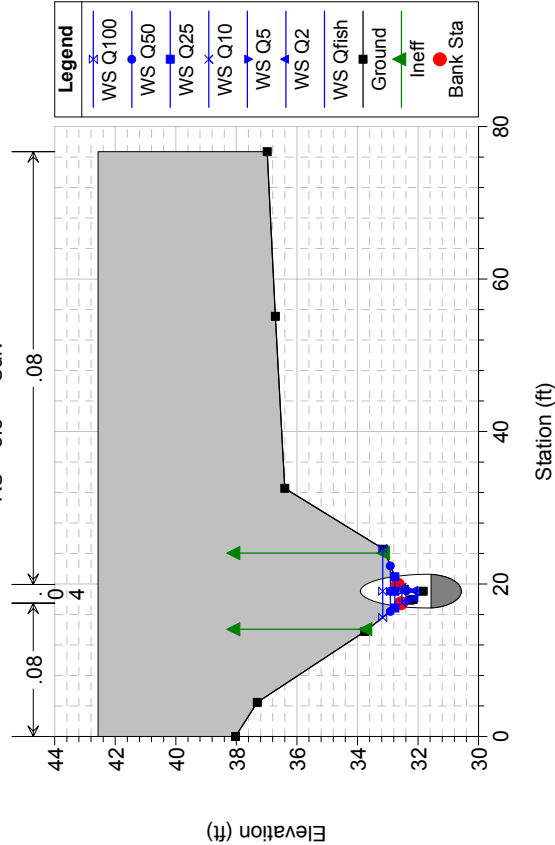




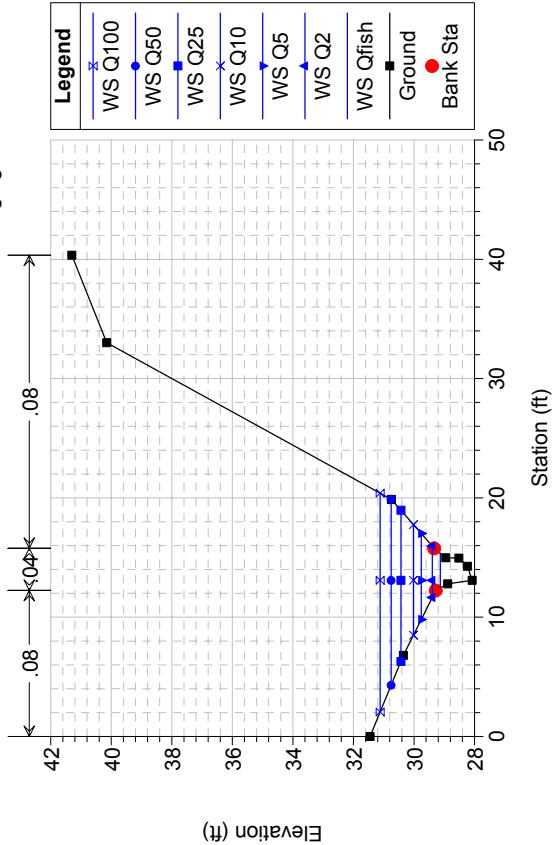




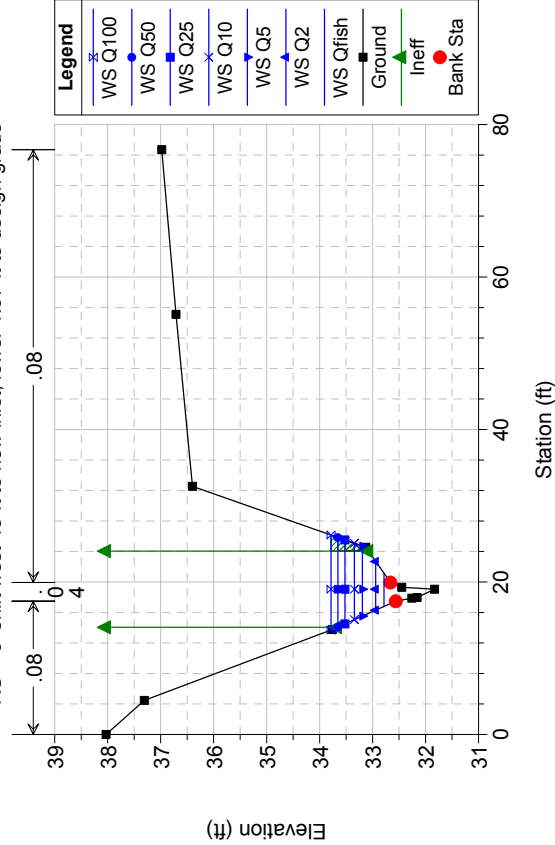
Subdivision Creek Plan: Tier 1 - PA realign 3/17/2007
RS = 5.5 Culv



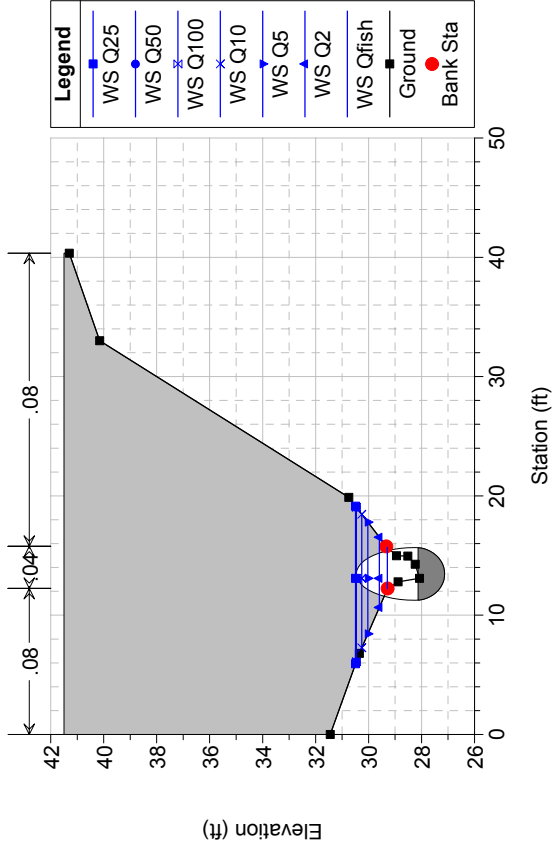
Subdivision Creek Plan: Tier 1 - PA realign 3/17/2007
RS = 4 shift d/s 9-ft to new outlet, lower 0.25-ft to design grade



Subdivision Creek Plan: Tier 1 - PA realign 3/17/2007
RS = 6 shift west 45-ft to new inlet, lower 4.67-ft to design grade

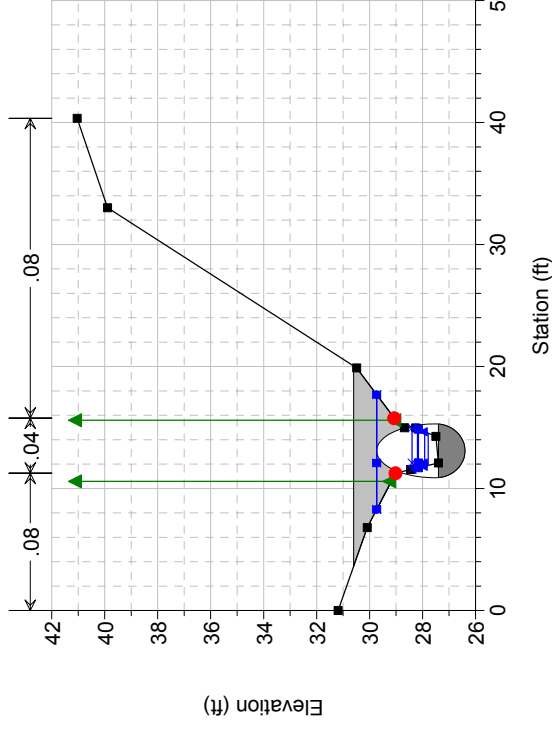


Subdivision Creek Plan: Tier 1 - PA realign 3/17/2007
RS = 5.5 Culv



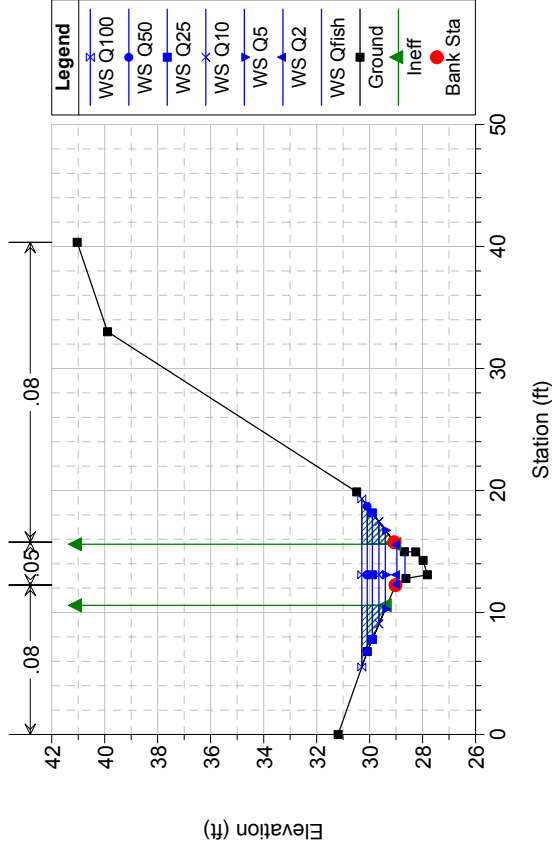
Subdivision Creek Plan: Tier 1 - PA realign 3/17/2007

RS = 3.5 Culiv



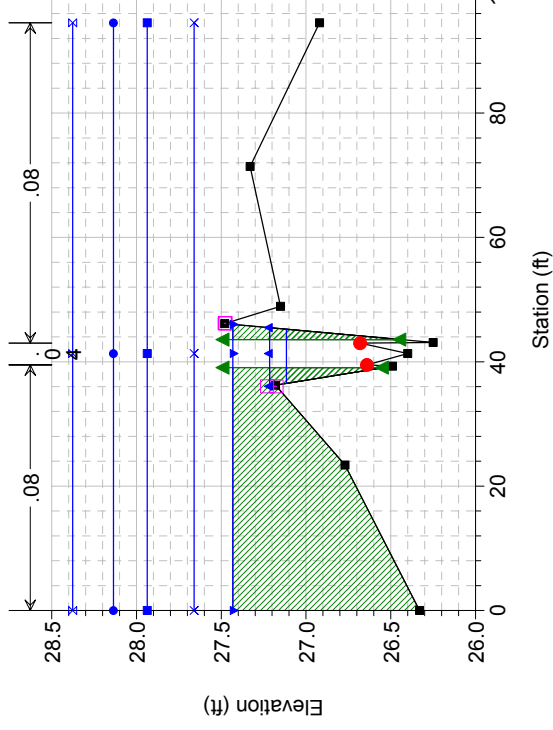
Subdivision Creek Plan: Tier 1 - PA realign 3/17/2007

RS = 3.9



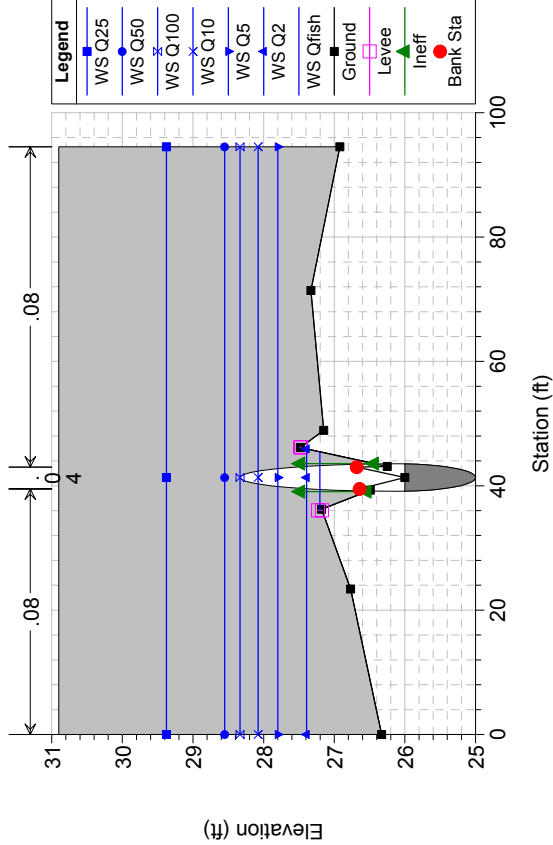
Subdivision Creek Plan: Tier 1 - PA realign 3/17/2007

RS = 3.1



Subdivision Creek Plan: Tier 1 - PA realign 3/17/2007

RS = 3.5 Culiv



HEC-RAS Plan: T1-Realign River, Subdivision Reach: Subdivision

Reach	River Sta	Profile	Q Total (cfs)	Cum Ch Len (ft)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Chan (lb/sq ft)
Subdivision	1	Qfish	6.60		21.84	22.15	22.39	23.02	0.272062	7.48	0.88	3.36	2.58	4.08
Subdivision	1	Q2	11.00		21.84	22.49	22.58	22.88	0.056010	4.98	2.21	4.51	1.25	1.49
Subdivision	1	Q5	21.00		21.84	22.90	22.90	23.26	0.032265	4.78	4.39	6.20	1.00	1.22
Subdivision	1	Q10	29.00		21.84	23.03	23.15	23.51	0.037157	5.54	5.35	10.31	1.09	1.58
Subdivision	1	Q25	40.00		21.84	23.24	23.39	23.74	0.030802	5.78	8.77	22.52	1.02	1.61
Subdivision	1	Q50	49.00		21.84	23.35	23.58	23.87	0.029937	6.06	11.65	29.05	1.02	1.71
Subdivision	1	Q100	60.00		21.84	23.48	23.68	23.98	0.027387	6.17	15.89	36.61	0.98	1.72
Subdivision	2	Qfish	6.60	67.00	25.11	25.86	25.86	25.90	0.016225	2.20	6.00	31.54	0.63	0.32
Subdivision	2	Q2	11.00	67.00	25.11	25.87	25.87	25.97	0.038093	3.44	6.48	35.35	0.97	0.78
Subdivision	2	Q5	21.00	67.00	25.11	25.87	25.99	26.26	0.154155	6.82	6.17	32.98	1.94	3.08
Subdivision	2	Q10	29.00	67.00	25.11	26.04	26.04	26.17	0.041566	4.41	13.61	44.65	1.06	1.15
Subdivision	2	Q25	40.00	67.00	25.11	26.10	26.11	26.27	0.046111	5.00	16.45	46.41	1.14	1.43
Subdivision	2	Q50	49.00	67.00	25.11	26.16	26.16	26.33	0.044734	5.23	19.14	48.02	1.14	1.52
Subdivision	2	Q100	60.00	67.00	25.11	26.21	26.21	26.41	0.048427	5.70	21.42	49.34	1.20	1.76
Subdivision	3	Qfish	6.60	102.00	26.33	26.83	26.84	27.02	0.040912	3.87	2.33	7.26	1.12	0.94
Subdivision	3	Q2	11.00	102.00	26.33	27.02	27.03	27.21	0.026461	4.06	4.54	17.85	0.96	0.91
Subdivision	3	Q5	21.00	102.00	26.33	27.08	27.10	27.55	0.059299	6.55	5.89	22.54	1.46	2.28
Subdivision	3	Q10	29.00	102.00	26.33	26.94	27.10	28.94	0.323937	12.89	3.38	13.12	3.27	9.63
Subdivision	3	Q25	40.00	102.00	26.33	27.10	27.10	27.17	0.017921	3.67	23.31	61.78	0.81	0.71
Subdivision	3	Q50	49.00	102.00	26.33	27.16	27.10	27.24	0.018553	3.96	27.31	73.46	0.83	0.80
Subdivision	3	Q100	60.00	102.00	26.33	27.23	27.10	27.32	0.017688	4.14	33.39	87.94	0.83	0.85
Subdivision	3.1	Qfish	6.60	112.00	26.40	27.12	26.94	27.22	0.011481	2.77	2.73	8.72	0.64	0.42
Subdivision	3.1	Q2	11.00	112.00	26.40	27.21	27.11	27.43	0.019122	3.96	3.17	9.43	0.84	0.81
Subdivision	3.1	Q5	21.00	112.00	26.40	27.43	27.43	27.90	0.028208	5.78	4.15	46.02	1.07	1.57
Subdivision	3.1	Q10	29.00	112.00	26.40	27.66	27.66	28.23	0.025630	6.40	5.17	94.51	1.06	1.79
Subdivision	3.1	Q25	40.00	112.00	26.40	27.94	27.94	28.65	0.023630	7.12	6.42	94.51	1.06	2.05
Subdivision	3.1	Q50	49.00	112.00	26.40	28.14	28.14	28.96	0.022912	7.65	7.31	94.51	1.06	2.27
Subdivision	3.1	Q100	60.00	112.00	26.40	28.38	28.38	29.31	0.021613	8.16	8.40	94.51	1.06	2.46
Subdivision	3.5	Culvert												
Subdivision	3.9	Qfish	6.60	177.00	27.82	28.67	28.68	29.00	0.074902	4.66	1.42	2.24	1.03	2.03
Subdivision	3.9	Q2	11.00	177.00	27.82	28.97	28.99	29.34	0.067092	4.88	2.25	3.25	1.03	2.11
Subdivision	3.9	Q5	21.00	177.00	27.82	29.41	29.42	29.87	0.046093	5.54	4.07	6.45	0.93	2.33
Subdivision	3.9	Q10	29.00	177.00	27.82	29.65	29.65	30.19	0.042365	6.05	5.27	8.38	0.92	2.60
Subdivision	3.9	Q25	40.00	177.00	27.82	29.90	29.92	30.57	0.042885	6.82	6.52	10.38	0.95	3.12
Subdivision	3.9	Q50	49.00	177.00	27.82	30.09	30.11	30.85	0.042244	7.31	7.49	11.92	0.96	3.45
Subdivision	3.9	Q100	60.00	177.00	27.82	30.29	30.32	31.17	0.042576	7.88	8.51	13.77	0.98	3.87
Subdivision	4	Qfish	6.60	185.00	28.08	29.13	28.94	29.31	0.022591	3.41	1.93	2.89	0.74	0.67
Subdivision	4	Q2	11.00	185.00	28.08	29.40	29.25	29.63	0.022162	3.89	2.86	4.31	0.77	0.82
Subdivision	4	Q5	21.00	185.00	28.08	29.76	29.67	30.12	0.021446	4.91	4.95	7.21	0.80	1.15
Subdivision	4	Q10	29.00	185.00	28.08	30.02	29.93	30.41	0.018930	5.27	7.07	9.26	0.78	1.24
Subdivision	4	Q25	40.00	185.00	28.08	30.43	30.41	30.76	0.012328	5.05	11.62	12.68	0.66	1.04
Subdivision	4	Q50	49.00	185.00	28.08	30.75	30.75	31.03	0.008879	4.77	16.16	15.59	0.57	0.88

HEC-RAS Plan: T1--Realign River: Subdivision (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Cum Ch Len (ft)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude #	Chl (lb/sq ft)
Subdivision	4	Q100	60.00	185.00	28.08	31.12		31.33	0.006292	4.46	22.34	18.35		0.49
Subdivision	5.5	Culvert												
Subdivision	6	Qfish	6.60	270.00	31.83	32.79	32.87	33.13	0.048807	4.75	1.52	4.37		1.12
Subdivision	6	Q2	11.00	270.00	31.83	32.94	33.12	33.44	0.058882	5.88	2.35	6.38		1.23
Subdivision	6	Q5	21.00	270.00	31.83	33.19	33.40	33.87	0.054937	7.25	4.30	9.18		1.30
Subdivision	6	Q10	29.00	270.00	31.83	33.34	33.58	34.11	0.054803	7.98	5.62	10.01		1.33
Subdivision	6	Q25	40.00	270.00	31.83	33.52	33.79	34.38	0.053636	8.73	7.30	11.02		1.35
Subdivision	6	Q50	49.00	270.00	31.83	33.65	33.93	34.58	0.052881	9.24	8.57	11.74		1.36
Subdivision	6	Q100	60.00	270.00	31.83	33.78	34.08	34.81	0.053479	9.85	9.88	12.45		1.39
Subdivision	6.33333*	Qfish	6.60	293.33	33.00	33.88	33.91	34.18	0.041147	4.45	1.54	3.75		1.04
Subdivision	6.33333*	Q2	11.00	293.33	33.00	34.09	34.17	34.48	0.036579	5.18	2.52	5.63		1.03
Subdivision	6.33333*	Q5	21.00	293.33	33.00	34.37	34.55	34.95	0.038938	6.56	4.48	8.17		1.12
Subdivision	6.33333*	Q10	29.00	293.33	33.00	34.52	34.73	35.23	0.041975	7.44	5.79	9.79		1.19
Subdivision	6.33333*	Q25	40.00	293.33	33.00	34.68	34.93	35.53	0.045816	8.44	7.27	10.75		1.27
Subdivision	6.33333*	Q50	49.00	293.33	33.00	34.80	35.07	35.75	0.047039	9.05	8.44	11.48		1.30
Subdivision	6.33333*	Q100	60.00	293.33	33.00	34.94	35.24	35.98	0.047404	9.63	9.83	12.31		1.33
Subdivision	6.66666*	Qfish	6.60	316.66	34.17	34.93	34.98	35.27	0.051741	4.66	1.41	2.67		1.13
Subdivision	6.66666*	Q2	11.00	316.66	34.17	35.07	35.24	35.62	0.062763	5.98	1.94	4.18		1.29
Subdivision	6.66666*	Q5	21.00	316.66	34.17	35.34	35.63	36.20	0.066307	7.70	3.32	6.19		1.41
Subdivision	6.66666*	Q10	29.00	316.66	34.17	35.51	35.87	36.52	0.065146	8.54	4.48	7.48		1.44
Subdivision	6.66666*	Q25	40.00	316.66	34.17	35.72	36.08	36.84	0.060624	9.25	6.21	9.04		1.43
Subdivision	6.66666*	Q50	49.00	316.66	34.17	35.86	36.22	37.03	0.058340	9.70	7.51	10.27		1.42
Subdivision	6.66666*	Q100	60.00	316.66	34.17	36.00	36.38	37.25	0.056886	10.21	8.93	11.42		1.43
Subdivision	7	Qfish	6.60	339.99	35.34	36.07	36.07	36.35	0.042122	4.28	1.54	3.16		0.99
Subdivision	7	Q2	11.00	339.99	35.34	36.34	36.34	36.66	0.031900	4.65	2.60	4.90		0.92
Subdivision	7	Q5	21.00	339.99	35.34	36.73	36.73	37.13	0.024809	5.37	5.12	7.72		0.87
Subdivision	7	Q10	29.00	339.99	35.34	36.98	36.98	37.40	0.021955	5.72	7.20	9.30		0.84
Subdivision	7	Q25	40.00	339.99	35.34	37.22	37.22	37.69	0.021316	6.24	9.52	10.88		0.85
Subdivision	7	Q50	49.00	339.99	35.34	37.36	37.36	37.89	0.022083	6.71	10.97	12.72		0.88
Subdivision	7	Q100	60.00	339.99	35.34	37.52	37.52	38.11	0.022736	7.21	12.60	13.94		0.90
Subdivision	7.5	Culvert												
Subdivision	8	Qfish	6.60	389.99	37.37	38.06	38.07	38.35	0.042715	4.31	1.53	2.96		1.06
Subdivision	8	Q2	11.00	389.99	37.37	38.22	38.30	38.68	0.052588	5.43	2.03	3.16		1.19
Subdivision	8	Q5	21.00	389.99	37.37	38.46	38.71	39.32	0.077335	7.45	2.82	3.50		1.46
Subdivision	8	Q10	29.00	389.99	37.37	38.63	38.97	39.73	0.084234	8.39	3.46	3.75		1.54
Subdivision	8	Q25	40.00	389.99	37.37	38.84	39.26	40.20	0.090267	9.37	4.27	4.05		1.61
Subdivision	8	Q50	49.00	389.99	37.37	38.89	39.46	40.75	0.118911	10.93	4.48	4.12		1.85
Subdivision	8	Q100	60.00	389.99	37.37	39.03	39.72	41.22	0.129384	11.89	5.05	4.31		1.94
Subdivision	9	Qfish	6.60	413.99	38.28	38.98	39.00	39.30	0.036770	4.53	1.46	2.98		1.04
Subdivision	9	Q2	11.00	413.99	38.28	39.22	39.25	39.67	0.033098	5.38	2.04	3.29		1.05

HEC-RAS Plan: T1-Reachign River: Subdivision (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Cum Ch Len (ft)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl	Shear Chan (lb/sq ft)
Subdivision	9	Q5	21.00	413.99	38.28	39.69	39.70	40.35	0.026475	6.52	3.22	3.96	1.01	1.85
Subdivision	9	Q10	29.00	413.99	38.28	39.94	40.02	40.82	0.027752	7.52	3.86	4.32	1.07	2.32
Subdivision	9	Q25	40.00	413.99	38.28	40.19	40.40	41.43	0.032413	8.96	4.46	4.67	1.18	3.14
Subdivision	9	Q50	49.00	413.99	38.28	40.69	40.69	41.83	0.021272	8.57	5.72	6.13	1.00	2.64
Subdivision	9	Q100	60.00	413.99	38.28	41.02	41.02	42.32	0.020441	9.18	6.54	8.34	1.00	2.90
Subdivision	10	Qfish	6.60	442.99	39.53	40.20	40.23	40.51	0.047759	4.48	1.47	2.93	1.11	1.22
Subdivision	10	Q2	11.00	442.99	39.53	40.40	40.46	40.83	0.049162	5.28	2.08	3.18	1.15	1.57
Subdivision	10	Q5	21.00	442.99	39.53	40.74	40.87	41.38	0.051169	6.41	3.28	3.68	1.20	2.13
Subdivision	10	Q10	29.00	442.99	39.53	40.96	41.13	41.73	0.052413	7.05	4.12	3.99	1.22	2.47
Subdivision	10	Q25	40.00	442.99	39.53	41.22	41.43	42.14	0.052877	7.68	5.21	4.37	1.24	2.82
Subdivision	10	Q50	49.00	442.99	39.53	42.03	41.65	42.46	0.017663	5.28	9.27	6.73	0.75	1.22
Subdivision	10	Q100	60.00	442.99	39.53	42.46	41.94	42.86	0.011682	5.06	11.86	9.64	0.63	1.03
Subdivision	10.5	Qfish	6.60	507.99	42.32	43.02	43.02	43.29	0.038546	4.16	1.59	2.98	1.01	1.04
Subdivision	10.5	Q2	11.00	507.99	42.32	43.25	43.25	43.61	0.037356	4.78	2.30	3.28	1.01	1.27
Subdivision	10.5	Q5	21.00	507.99	42.32	43.66	43.66	44.15	0.035583	5.61	3.74	3.86	1.00	1.59
Subdivision	10.5	Q10	29.00	507.99	42.32	43.92	43.92	44.49	0.034265	6.02	4.82	4.24	1.00	1.75
Subdivision	10.5	Q25	40.00	507.99	42.32	44.22	44.22	44.88	0.033858	6.51	6.15	4.66	1.00	1.96
Subdivision	10.5	Q50	49.00	507.99	42.32	44.44	44.44	45.16	0.033288	6.81	7.20	4.97	1.00	2.09
Subdivision	10.5	Q100	60.00	507.99	42.32	44.73	44.73	45.46	0.031981	6.85	8.76	6.15	1.00	2.09
Subdivision	10.6666*	Qfish	6.60	555.66	43.51	44.37	44.21	44.53	0.018369	3.21	2.06	3.17	0.70	0.58
Subdivision	10.6666*	Q2	11.00	555.66	43.51	44.63	44.44	44.85	0.018769	3.73	2.95	3.55	0.72	0.74
Subdivision	10.6666*	Q5	21.00	555.66	43.51	45.08	45.08	45.39	0.019526	4.50	4.67	4.19	0.75	0.98
Subdivision	10.6666*	Q10	29.00	555.66	43.51	45.35	45.35	45.73	0.020097	4.94	5.87	4.58	0.77	1.14
Subdivision	10.6666*	Q25	40.00	555.66	43.51	45.68	45.68	46.13	0.020240	5.37	7.45	5.05	0.78	1.29
Subdivision	10.6666*	Q50	49.00	555.66	43.51	45.94	45.63	46.41	0.020564	5.53	8.86	6.26	0.80	1.36
Subdivision	10.6666*	Q100	60.00	555.66	43.51	46.13	45.92	46.69	0.020651	6.00	9.99	7.54	0.82	1.54
Subdivision	10.8333*	Qfish	6.60	603.33	44.69	45.44	45.39	45.67	0.031147	3.86	1.71	3.03	0.91	0.88
Subdivision	10.8333*	Q2	11.00	603.33	44.69	45.68	45.62	45.98	0.029627	4.40	2.50	3.36	0.90	1.06
Subdivision	10.8333*	Q5	21.00	603.33	44.69	46.12	46.03	46.53	0.028033	5.14	4.09	3.98	0.89	1.31
Subdivision	10.8333*	Q10	29.00	603.33	44.69	46.39	46.29	46.87	0.027185	5.53	5.25	4.38	0.89	1.45
Subdivision	10.8333*	Q25	40.00	603.33	44.69	46.71	46.59	47.26	0.026856	5.97	6.70	4.83	0.89	1.63
Subdivision	10.8333*	Q50	49.00	603.33	44.69	48.95	48.81	47.55	0.025970	6.20	7.90	5.17	0.88	1.71
Subdivision	10.8333*	Q100	60.00	603.33	44.69	47.18	47.10	47.84	0.026810	6.49	9.24	6.69	0.92	1.85
Subdivision	11	Qfish	6.60	651.00	45.88	46.71	46.58	46.88	0.020877	3.36	1.97	3.13	0.75	0.64
Subdivision	11	Q2	11.00	651.00	45.88	46.95	46.81	47.20	0.022232	3.97	2.77	3.48	0.78	0.84
Subdivision	11	Q5	21.00	651.00	45.88	47.05	47.22	47.76	0.059008	6.75	3.11	3.62	1.28	2.38
Subdivision	11	Q10	29.00	651.00	45.88	47.27	47.48	48.11	0.059010	7.36	3.94	3.93	1.30	2.71
Subdivision	11	Q25	40.00	651.00	45.88	47.53	47.78	48.52	0.059012	8.00	5.00	4.30	1.31	3.08
Subdivision	11	Q50	49.00	651.00	45.88	47.71	48.00	48.81	0.059014	8.43	5.81	4.56	1.32	3.33
Subdivision	11	Q100	60.00	651.00	45.88	47.91	48.29	49.13	0.058989	8.87	6.76	4.85	1.32	3.59