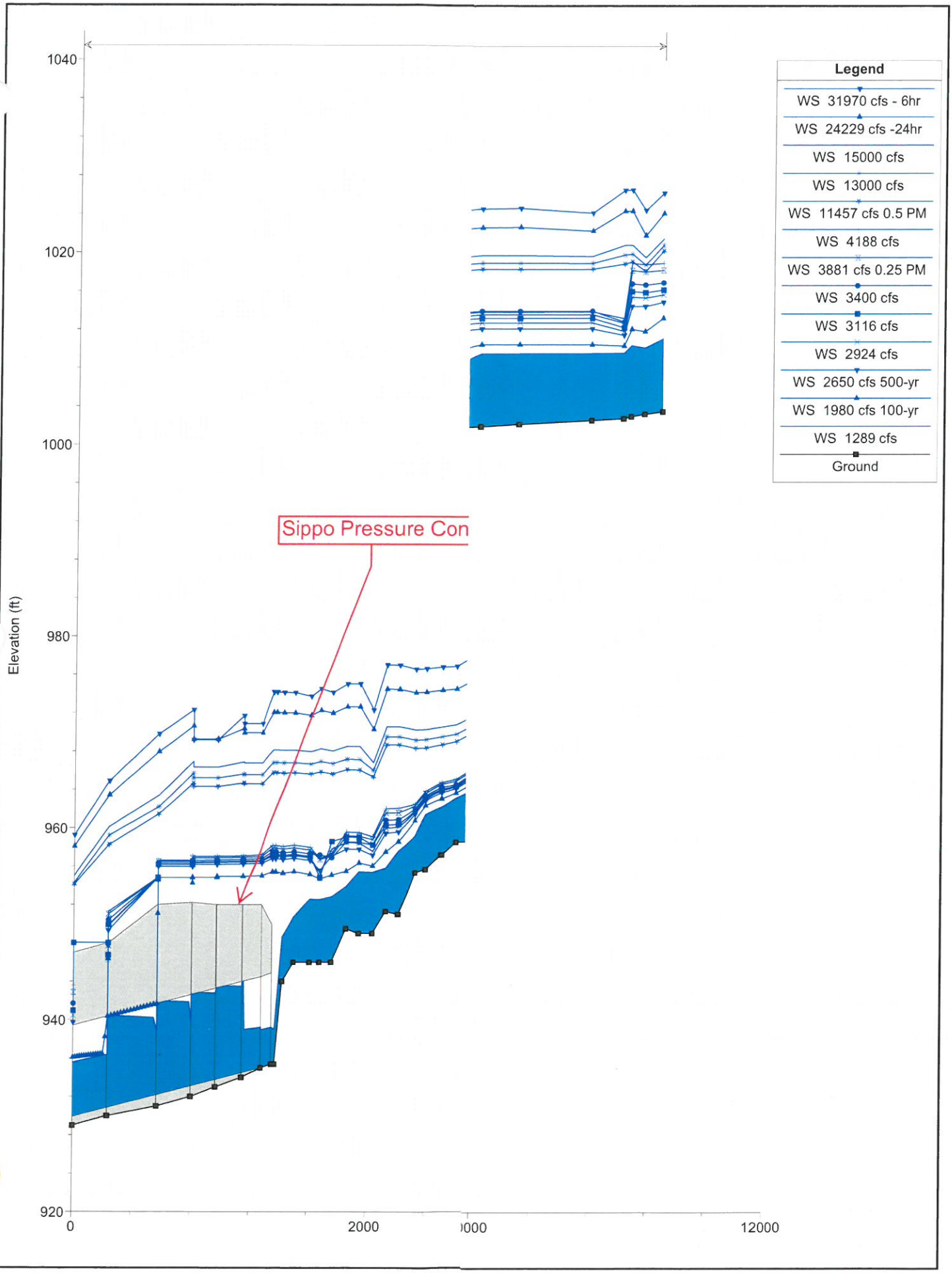
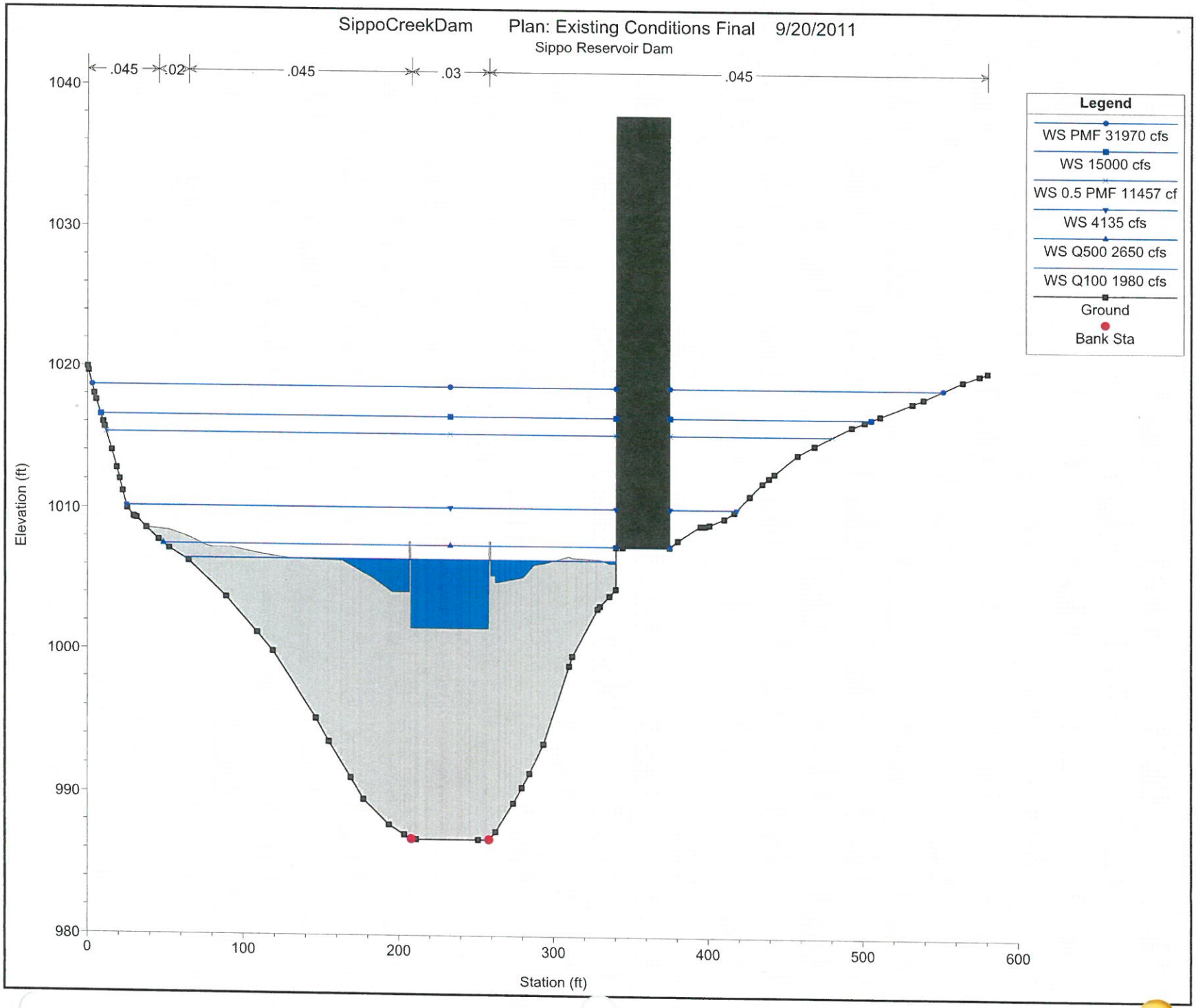
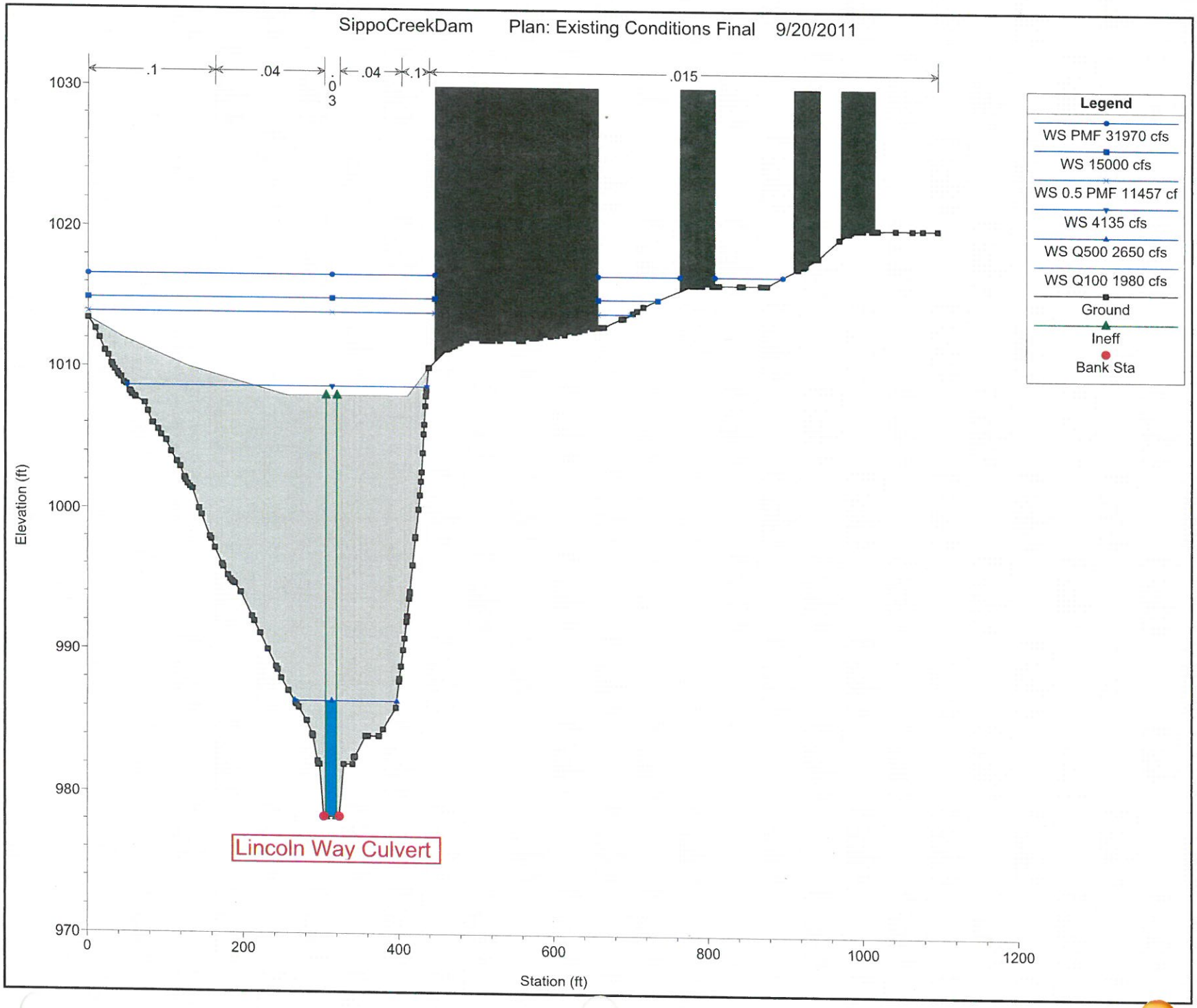
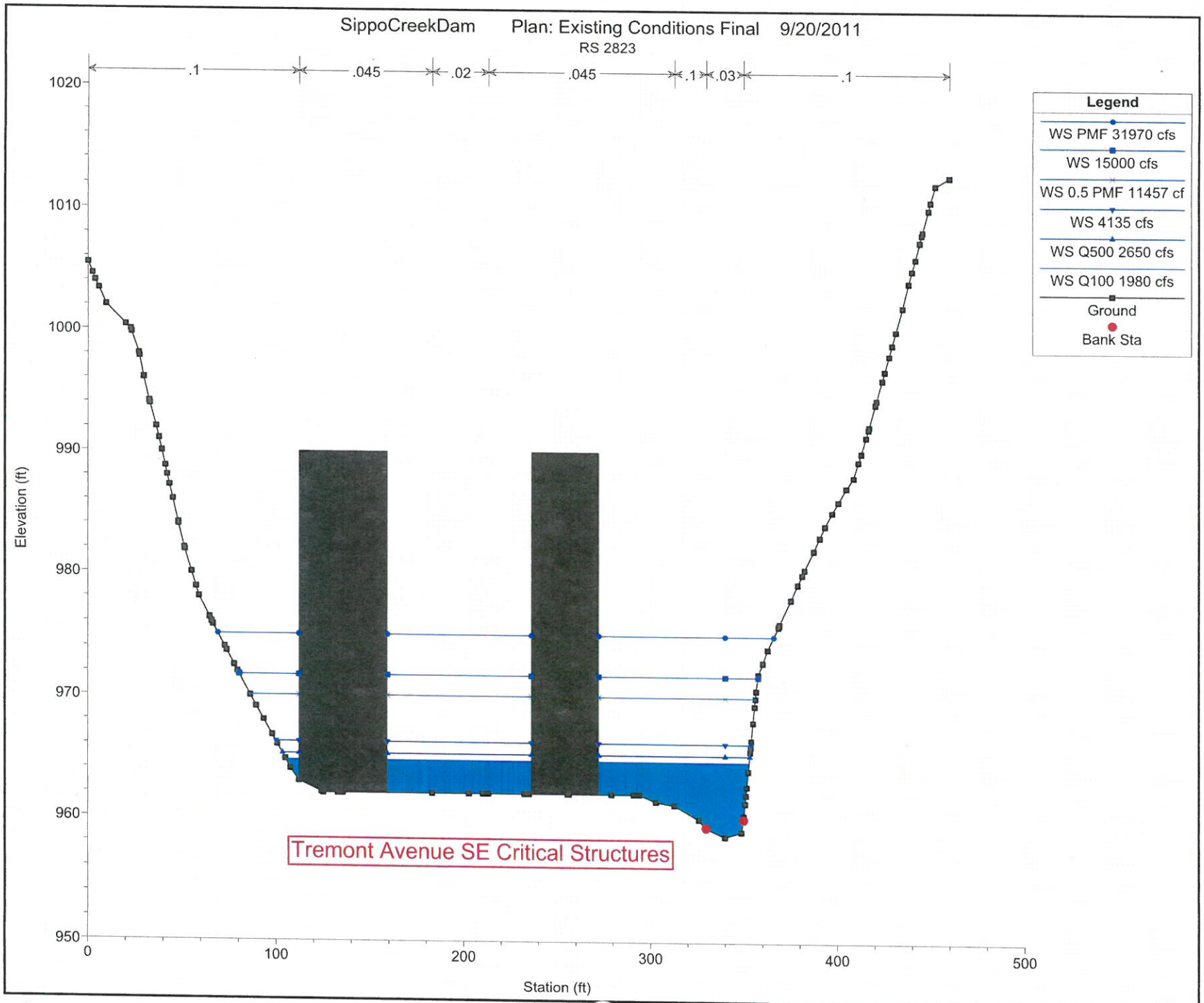
Appendix 2
HEC-RAS Output

SIPPO CREEK HEC-RAS GEOMETRY


Legend
WS 31970 cfs - 6hr
WS 24229 cfs -24hr
WS 15000 cfs
WS 13000 cfs
WS 11457 cfs 0.5 PM
WS 4188 cfs
WS 3881 cfs 0.25 PM
WS 3400 cfs
WS 3116 cfs
WS 2924 cfs
WS 2650 cfs 500-yr
WS 1980 cfs 100-yr
WS 1289 cfs
Ground
Sippo Pressure Con
Elevation (ft)
1040
1020
1000
980
960
940
920
0
2000
12000


SippoCreekDam Plan: Existing Conditions Final 9/20/2011
Sippo Reservoir Dam
.045
.02
.045
.03
.045
Legend
WS PMF 31970 cfs
WS 15000 cfs
WS 0.5 PMF 11457 cf
WS 4135 cfs
WS Q500 2650 cfs
WS Q100 1980 cfs
Ground
Bank Sta
Elevation (ft)
1040
1030
1020
1010
1000
990
980
0
100
200
300
400
500
600
Station (ft)


SippoCreekDam Plan: Existing Conditions Final 9/20/2011
.1
.04
.03
.04
.1
.015
Legend
WS PMF 31970 cfs
WS 15000 cfs
WS 0.5 PMF 11457 cf
WS 4135 cfs
WS Q500 2650 cfs
WS Q100 1980 cfs
Ground
Ineff
Bank Sta
Lincoln Way Culvert
Elevation (ft)
Station (ft)
1030
1020
1010
1000
990
980
970
0
200
400
600
800
1000
1200


SippoCreekDam Plan: Existing Conditions Final 9/20/2011
RS 2823
.1
.045
.02
.045
.1
.03
.1
Legend
WS PMF 31970 cfs
WS 15000 cfs
WS 0.5 PMF 11457 cf
WS 4135 cfs
WS Q500 2650 cfs
WS Q100 1980 cfs
Ground
Bank Sta
Elevation (ft)
1020
1010
1000
990
980
970
960
950
0
100
200
300
400
500
Station (ft)
Tremont Avenue SE Critical Structures

HEC-RAS Plan: SS-EX-Check River: SippoCreek Reach: Main

Reach	River Sta	Profile	Q Total	Q Channel	Q Left	Q Right	Hydr Depth C	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	Frctn Slope	Vel Total	Vel Chnl	Vel Left	Vel Right	Froude # Chl
			(cfs)	(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(ft/s)	(ft/s)	(ft/s)	
Main	11383.45	1289 cfs	1289.00	1087.85	149.80	51.34	7.57	1003.50	1011.08	1008.31	1011.67	0.001816	2.98	6.70	0.67	1.07	0.43
Main	11383.45	1980 cfs 100-yr	1980.00	1298.27	586.38	95.35	9.72	1003.50	1013.23	1010.90	1013.63	0.001323	2.13	6.23	0.94	1.02	0.35
Main	11383.45	2650 cfs 500-yr	2650.00	1493.12	1013.36	143.52	11.38	1003.50	1014.89	1011.75	1015.23	0.000796	1.98	6.12	1.06	1.03	0.32
Main	11383.45	2924 cfs	2924.00	1553.94	1204.14	165.93	12.15	1003.50	1015.66	1012.01	1015.97	0.000663	1.90	5.96	1.08	1.01	0.30
Main	11383.45	3116 cfs	3116.00	1599.03	1335.29	181.69	12.66	1003.50	1016.18	1012.20	1016.46	0.000599	1.87	5.89	1.10	1.01	0.29
Main	11383.45	3400 cfs	3400.00	1666.66	1528.29	205.05	13.40	1003.50	1016.91	1012.44	1017.18	0.000529	1.83	5.80	1.12	1.00	0.28
Main	11383.45	3881 cfs 0.25 PM	3881.00	1775.05	1859.62	246.33	14.71	1003.50	1018.22	1012.83	1018.45	0.000428	1.76	5.63	1.13	0.97	0.26
Main	11383.45	4188 cfs	4188.00	1854.97	2063.40	269.63	15.42	1003.50	1018.93	1013.05	1019.16	0.000388	1.74	5.61	1.15	0.95	0.25
Main	11383.45	11457 cfs 0.5 PM	11457.00	4817.20	5854.62	785.18	16.71	1003.50	1020.23	1016.81	1021.47	0.002613	4.13	13.44	2.83	2.25	0.58
Main	11383.45	13000 cfs	13000.00	5327.19	6698.66	974.15	17.29	1003.50	1020.80	1017.39	1022.20	0.002758	4.40	14.37	3.05	2.50	0.61
Main	11383.45	15000 cfs	15000.00	5969.45	7776.69	1253.87	17.95	1003.50	1021.46	1018.04	1023.05	0.002949	4.74	15.51	3.33	2.86	0.65
Main	11383.45	24229 cfs -24hr	24229.00	8669.06	12468.79	3091.15	20.60	1003.50	1024.11	1021.38	1026.43	0.003824	5.87	19.63	4.23	4.18	0.76
Main	11383.45	31970 cfs - 6hr	31970.00	9978.72	16123.81	5867.47	22.72	1003.50	1026.23	1023.49	1028.48	0.003440	5.96	20.49	4.40	4.85	0.76
Main	11259.68	1289 cfs	1289.00	1178.91	47.42	62.67	6.57	1003.25	1010.15	1008.74	1011.38	0.001961	6.46	9.32	1.36	1.64	0.64
Main	11259.68	1980 cfs 100-yr	1980.00	1694.40	146.09	139.52	8.27	1003.25	1011.84	1010.37	1013.35	0.002013	4.92	10.65	0.90	1.73	0.65
Main	11259.68	2650 cfs 500-yr	2650.00	1683.14	719.55	247.32	10.88	1003.25	1014.45		1015.10	0.000933	2.57	8.04	1.12	1.37	0.43
Main	11259.68	2924 cfs	2924.00	1701.21	932.13	290.65	11.77	1003.25	1015.34		1015.86	0.000665	2.32	7.51	1.15	1.31	0.39
Main	11259.68	3116 cfs	3116.00	1725.48	1070.54	319.99	12.33	1003.25	1015.90		1016.37	0.000552	2.21	7.27	1.16	1.28	0.37
Main	11259.68	3400 cfs	3400.00	1775.28	1272.05	352.67	13.11	1003.25	1016.69		1017.10	0.000439	2.10	7.04	1.18	1.21	0.34
Main	11259.68	3881 cfs 0.25 PM	3881.00	1848.54	1610.76	421.70	14.48	1003.25	1018.05		1018.39	0.000297	1.93	6.64	1.19	1.12	0.31
Main	11259.68	4188 cfs	4188.00	1885.33	1790.56	512.12	15.23	1003.25	1018.80		1019.10	0.000243	1.86	6.43	1.18	1.15	0.29
Main	11259.68	11457 cfs 0.5 PM	11457.00	5431.22	4770.54	1255.24	14.54	1003.25	1018.12	1018.12	1020.99	0.001880	5.64	19.41	3.48	3.28	0.90
Main	11259.68	13000 cfs	13000.00	5859.26	5555.38	1585.37	15.21	1003.25	1018.79	1018.79	1021.71	0.001698	5.78	20.02	3.68	3.56	0.90
Main	11259.68	15000 cfs	15000.00	6390.62	6532.38	2076.99	15.96	1003.25	1019.54	1019.54	1022.54	0.001639	6.02	20.81	3.92	4.01	0.92
Main	11259.68	24229 cfs -24hr	24229.00	8912.35	10731.29	4585.36	18.25	1003.25	1021.82	1021.82	1025.78		7.43	25.38	4.95	6.19	1.05
Main	11259.68	31970 cfs - 6hr	31970.00	10135.95	14015.11	7818.93	20.86	1003.25	1024.43	1024.39	1027.92	0.001070	7.32	25.26	4.94	6.94	0.97
Main	11165.78	1289 cfs	1289.00	1086.60	103.86	98.54	7.21	1003.00	1010.38		1011.02	0.001932	5.55	6.84	4.37	1.98	0.45
Main	11165.78	1980 cfs 100-yr	1980.00	1605.94	176.80	197.26	8.92	1003.00	1012.09		1012.98	0.002427	6.42	8.18	5.43	2.48	0.48
Main	11165.78	2650 cfs 500-yr	2650.00	1727.63	733.75	188.62	11.30	1003.00	1014.47		1014.97	0.001621	3.17	6.94	1.64	1.35	0.36
Main	11165.78	2924 cfs	2924.00	1604.03	1095.45	224.53	12.26	1003.00	1015.42	1010.66	1015.74	0.001199	2.51	5.94	1.59	1.08	0.30
Main	11165.78	3116 cfs	3116.00	1544.40	1306.48	265.11	12.84	1003.00	1016.01	1010.95	1016.25	0.001000	2.26	5.46	1.56	1.03	0.27
Main	11165.78	3400 cfs	3400.00	1479.63	1579.11	341.26	13.64	1003.00	1016.81	1011.34	1016.99	0.000790	2.00	4.93	1.50	0.99	0.24
Main	11165.78	3881 cfs 0.25 PM	3881.00	1365.18	1978.64	537.18	15.02	1003.00	1018.19	1011.93	1018.30	0.000561	1.66	4.13	1.36	0.98	0.19
Main	11165.78	4188 cfs	4188.00	1310.33	2180.70	696.97	15.76	1003.00	1018.93	1014.28	1019.02	0.000454	1.53	3.77	1.27	1.03	0.17
Main	11165.78	11457 cfs 0.5 PM	11457.00	3494.54	5992.85	1969.61	15.93	1003.00	1019.09	1017.13	1019.68	0.001184	4.04	9.96	3.37	2.79	0.44
Main	11165.78	13000 cfs	13000.00	3519.60	6921.67	2558.73	16.73	1003.00	1019.90	1017.42	1020.40	0.000964	3.91	9.55	3.28	3.02	0.41
Main	11165.78	15000 cfs	15000.00	3743.11	7808.74	3448.15	17.66	1003.00	1020.83	1017.98	1021.31	0.000835	3.82	9.62	3.09	3.40	0.40
Main	11165.78	24229 cfs -24hr	24229.00	3990.50	13658.78	6579.72	21.19	1003.00	1024.36	1019.39	1024.70	0.000520	3.81	8.55	3.31	3.72	0.33
Main	11165.78	31970 cfs - 6hr	31970.00	4429.87	18298.80	9241.33	23.37	1003.00	1026.54		1026.88	0.000466	4.01	8.61	3.58	3.95	0.31
Main	11114.83	1289 cfs	1289.00	1141.17	41.04	106.79	6.70	1002.80	1009.60		1010.77	0.001767	7.47	9.14	3.77	2.90	0.62
Main	11114.83	1980 cfs 100-yr	1980.00	1725.90	66.99	187.10	7.46	1002.80	1010.36		1012.49	0.002628	10.08	12.42	5.28	4.18	0.80
Main	11114.83	2650 cfs 500-yr	2650.00	2268.19	95.59	286.22	8.56	1002.80	1011.46	1010.76	1014.21	0.002037	11.47	14.23	6.25	5.08	0.86
Main	11114.83	2924 cfs	2924.00	2487.73	107.57	328.71	8.99	1002.80	1011.88	1011.24	1014.88	0.001839	11.97	14.87	6.60	5.41	0.87
Main	11114.83	3116 cfs	3116.00	2638.17	116.41	361.42	9.36	1002.80	1012.26	1011.56	1015.35	0.001663	12.17	15.14	6.78	5.59	0.87
Main	11114.83	3400 cfs	3400.00	2858.26	129.81	411.93	9.96	1002.80	1012.85	1012.01	1016.05	0.001432	12.37	15.42	6.98	5.81	0.86
Main	11114.83	3881 cfs 0.25 PM	3881.00	3267.48	147.52	466.01	9.83	1002.80	1012.72	1012.72	1017.01	0.002133	14.33	17.86	8.07	6.70	1.00
Main	11114.83	4188 cfs	4188.00	3506.98	161.77	519.25	10.31	1002.80	1013.21	1013.21	1017.68	0.002139	14.64	18.26	8.32	6.96	1.00
Main	11114.83	11457 cfs 0.5 PM	11457.00	3376.52	6306.50	1773.98	15.97	1002.80	1018.87		1019.58	0.001403	4.13	11.35	3.62	2.42	0.50
Main	11114.83	13000 cfs	13000.00	3251.53	7658.37	2090.10	16.91	1002.80	1019.80		1020.34	0.001263	3.83	10.33	3.50	2.33	0.44
Main	11114.83	15000 cfs	15000.00	3187.37	9322.36	2490.28	17.92	1002.80	1020.81		1021.24	0.001145	3.65	9.55	3.46	2.31	0.40
Main	11114.83	24229 cfs -24hr	24229.00	3402.07	16590.52	4236.41	21.45	1002.80	1024.35		1024.67	0.000954	3.66	8.52	3.69	2.46	0.32
Main	11114.83	31970 cfs - 6hr	31970.00	3802.00	22521.47	5646.53	23.63	1002.80	1026.52		1026.86	0.000912	3.92	8.64	4.02	2.67	0.31
Main	10892.05	1289 cfs	1289.00	971.91	145.06	172.03	6.83	1002.60	1009.57		1010.01	0.000581	3.75	6.08	1.55	1.90	0.41
Main	10892.05	1980 cfs 100-yr	1980.00	1428.03	260.35	291.62	7.74	1002.60	1010.48		1011.19	0.000824	4.37	7.87	1.95	2.11	0.50
Main	10892.05	2650 cfs 500-yr	2650.00	1580.56	380.13	689.32	9.40	1002.60	1012.13		1012.63	0.000575	3.45	7.18	1.74	2.08	0.41
Main	10892.05	2924 cfs	2924.00	1623.98	423.57	876.45	10.02	1002.60	1012.75		1013.19	0.000513	3.17	6.92	1.67	2.01	0.39

HEC-RAS Plan: SS-EX-Check River: SippoCreek Reach: Main (Continued)

Reach	River Sta	Profile	Q Total	Q Channel	Q Left	Q Right	Hydr Depth C	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	Frctn Slope	Vel Total	Vel Chnl	Vel Left	Vel Right	Froude # Chl
			(cfs)	(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(ft/s)	(ft/s)	(ft/s)	
Main	10892.05	3116 cfs	3116.00	1642.79	453.82	1019.38	10.50	1002.60	1013.24		1013.63	0.000463	2.98	6.68	1.61	1.97	0.36
Main	10892.05	3400 cfs	3400.00	1669.33	498.56	1232.11	11.23	1002.60	1013.97		1014.30	0.000401	2.76	6.35	1.52	1.92	0.33
Main	10892.05	3881 cfs 0.25 PM	3881.00	1968.45	567.33	1345.22	10.89	1002.60	1013.63	1011.24	1014.13	0.000606	3.39	7.72	1.85	2.30	0.41
Main	10892.05	4188 cfs	4188.00	2067.16	613.80	1507.05	11.17	1002.60	1013.91	1011.51	1014.43	0.000625	3.44	7.90	1.89	2.38	0.42
Main	10892.05	11457 cfs 0.5 PM	11457.00	4201.87	1717.28	5537.86	15.59	1002.60	1018.33		1019.21	0.000905	4.70	11.51	2.58	3.93	0.51
Main	10892.05	13000 cfs	13000.00	4649.83	1929.06	6421.11	16.20	1002.60	1018.93		1019.92	0.000937	4.95	12.26	2.66	4.23	0.54
Main	10892.05	15000 cfs	15000.00	5209.67	2221.28	7569.05	16.93	1002.60	1019.66		1020.78	0.000968	5.25	13.14	2.76	4.58	0.56
Main	10892.05	24229 cfs -24hr	24229.00	7754.49	3621.67	12852.85	19.55	1002.60	1022.29		1024.02	0.001108	6.29	16.94	2.96	5.92	0.68
Main	10892.05	31970 cfs - 6hr	31970.00	9387.67	5535.07	17047.26	21.41	1002.60	1024.15		1026.15	0.001156	6.87	18.72	3.48	6.65	0.71
Main	10397.80	1289 cfs	1289.00	445.41	195.73	647.87	6.92	1002.20	1009.55		1009.61	0.000176	1.48	3.22	1.06	1.19	0.22
Main	10397.80	1980 cfs 100-yr	1980.00	657.76	336.39	985.85	7.88	1002.20	1010.50		1010.61	0.000242	1.84	4.17	1.44	1.44	0.26
Main	10397.80	2650 cfs 500-yr	2650.00	768.89	471.05	1410.06	9.51	1002.20	1012.14		1012.23	0.000187	1.81	4.04	1.45	1.49	0.23
Main	10397.80	2924 cfs	2924.00	816.08	526.56	1581.36	10.12	1002.20	1012.74		1012.84	0.000174	1.81	4.03	1.46	1.51	0.22
Main	10397.80	3116 cfs	3116.00	846.19	566.34	1703.47	10.60	1002.20	1013.22		1013.32	0.000162	1.80	3.99	1.45	1.51	0.22
Main	10397.80	3400 cfs	3400.00	890.26	625.80	1883.94	11.32	1002.20	1013.94		1014.03	0.000146	1.78	3.93	1.44	1.51	0.21
Main	10397.80	3881 cfs 0.25 PM	3881.00	1033.68	710.19	2137.13	10.97	1002.20	1013.60		1013.72	0.000217	2.13	4.71	1.72	1.79	0.25
Main	10397.80	4188 cfs	4188.00	1100.27	769.95	2317.77	11.25	1002.20	1013.87		1014.01	0.000227	2.21	4.89	1.79	1.87	0.26
Main	10397.80	11457 cfs 0.5 PM	11457.00	2351.45	3040.23	6065.32	15.69	1002.20	1018.31		1018.59	0.000387	3.26	7.49	2.62	2.97	0.33
Main	10397.80	13000 cfs	13000.00	2527.89	3815.27	6656.83	16.34	1002.20	1018.97		1019.26	0.000409	3.39	7.73	2.85	3.07	0.34
Main	10397.80	15000 cfs	15000.00	2737.98	4881.14	7380.89	17.14	1002.20	1019.76		1020.07	0.000432	3.55	7.98	3.13	3.18	0.34
Main	10397.80	24229 cfs -24hr	24229.00	3620.89	10096.24	10511.87	20.06	1002.20	1022.69		1023.08	0.000529	4.25	9.02	4.25	3.60	0.35
Main	10397.80	31970 cfs - 6hr	31970.00	4280.86	14587.81	13101.33	22.03	1002.20	1024.65		1025.12	0.000583	4.75	9.71	4.99	3.89	0.36
Main	10137.55	1289 cfs	1289.00	310.21	505.09	473.69	7.54	1001.95	1009.53		1009.55	0.000296	1.02	1.96	0.93	0.84	0.13
Main	10137.55	1980 cfs 100-yr	1980.00	439.40	769.44	771.16	8.50	1001.95	1010.49		1010.53	0.000328	1.27	2.47	1.15	1.09	0.15
Main	10137.55	2650 cfs 500-yr	2650.00	528.46	1016.35	1105.18	10.14	1001.95	1012.13		1012.17	0.000213	1.25	2.49	1.10	1.14	0.14
Main	10137.55	2924 cfs	2924.00	564.06	1116.46	1243.48	10.75	1001.95	1012.74		1012.78	0.000190	1.25	2.51	1.08	1.15	0.13
Main	10137.55	3116 cfs	3116.00	586.66	1185.52	1343.82	11.23	1001.95	1013.22		1013.26	0.000171	1.23	2.49	1.05	1.16	0.13
Main	10137.55	3400 cfs	3400.00	618.86	1286.71	1494.43	11.96	1001.95	1013.95		1013.98	0.000147	1.21	2.47	1.01	1.16	0.13
Main	10137.55	3881 cfs 0.25 PM	3881.00	717.79	1472.54	1690.67	11.61	1001.95	1013.60		1013.64	0.000225	1.45	2.95	1.23	1.37	0.15
Main	10137.55	4188 cfs	4188.00	764.68	1585.73	1837.59	11.89	1001.95	1013.88		1013.93	0.000232	1.50	3.07	1.26	1.43	0.16
Main	10137.55	11457 cfs 0.5 PM	11457.00	1762.79	4209.47	5484.74	16.33	1001.95	1018.32		1018.45	0.000340	2.32	5.15	1.72	2.55	0.22
Main	10137.55	13000 cfs	13000.00	1961.77	4771.62	6266.61	16.97	1001.95	1018.96		1019.11	0.000359	2.47	5.52	1.81	2.75	0.24
Main	10137.55	15000 cfs	15000.00	2215.29	5500.78	7283.93	17.75	1001.95	1019.74		1019.91	0.000380	2.64	5.96	1.92	2.98	0.25
Main	10137.55	24229 cfs -24hr	24229.00	3363.34	8895.56	11970.11	20.64	1001.95	1022.63		1022.91	0.000471	3.34	7.78	2.38	3.87	0.30
Main	10137.55	31970 cfs - 6hr	31970.00	4233.20	11574.85	16161.95	22.58	1001.95	1024.57		1024.94	0.000530	3.84	8.95	2.69	4.56	0.33
Main	9989.336	1289 cfs	1289.00	959.22	275.89	53.89	6.65	1001.85	1008.51	1008.51	1009.42	0.002236	5.17	8.78	2.41	2.12	0.60
Main	9989.336	1980 cfs 100-yr	1980.00	972.39	824.00	183.61	8.12	1001.85	1009.98		1010.43	0.001132	3.59	7.29	2.57	1.89	0.45
Main	9989.336	2650 cfs 500-yr	2650.00	863.18	1368.86	417.96	10.07	1001.85	1011.94		1012.12	0.000403	2.54	5.21	2.22	1.62	0.29
Main	9989.336	2924 cfs	2924.00	855.65	1549.72	518.62	10.72	1001.85	1012.58		1012.74	0.000314	2.38	4.85	2.14	1.59	0.26
Main	9989.336	3116 cfs	3116.00	845.75	1673.97	596.28	11.23	1001.85	1013.09		1013.22	0.000260	2.26	4.58	2.06	1.56	0.24
Main	9989.336	3400 cfs	3400.00	835.58	1852.25	712.17	11.98	1001.85	1013.84		1013.95	0.000201	2.11	4.24	1.96	1.51	0.22
Main	9989.336	3881 cfs 0.25 PM	3881.00	1006.45	2100.10	774.45	11.56	1001.85	1013.42		1013.60	0.000330	2.62	5.30	2.42	1.84	0.27
Main	9989.336	4188 cfs	4188.00	1047.19	2276.89	863.92	11.84	1001.85	1013.70		1013.88	0.000328	2.67	5.38	2.48	1.90	0.28
Main	9989.336	11457 cfs 0.5 PM	11457.00	1813.04	6600.25	3043.71	16.29	1001.85	1018.15		1018.39	0.000333	3.30	6.77	3.12	2.81	0.30
Main	9989.336	13000 cfs	13000.00	1948.23	7569.33	3482.44	16.94	1001.85	1018.80		1019.04	0.000342	3.43	7.00	3.26	2.92	0.30
Main	9989.336	15000 cfs	15000.00	2111.24	8809.39	4079.37	17.72	1001.85	1019.58		1019.84	0.000348	3.57	7.25	3.42	3.07	0.30
Main	9989.336	24229 cfs -24hr	24229.00	2831.79	14489.19	6908.02	20.62	1001.85	1022.49		1022.83	0.000367	4.23	8.35	4.12	3.69	0.32
Main	9989.336	31970 cfs - 6hr	31970.00	3418.04	19306.64	9245.32	22.58	1001.85	1024.44		1024.86	0.000382	4.69	9.21	4.65	4.04	0.34
Main	9950.847	1289 cfs	1289.00	1131.83	97.36	59.81	5.78	1001.75	1007.99	1006.36	1008.67	0.001269	6.18	6.96	3.21	3.82	0.51
Main	9950.847	1980 cfs 100-yr	1980.00	1287.88	616.31	75.81	7.74	1001.75	1009.95		1010.32	0.000622	2.99	5.91	1.49	2.41	0.37
Main	9950.847	2650 cfs 500-yr	2650.00	1088.94	1440.00	121.06	9.73	1001.75	1011.94		1012.06	0.000268	1.89	3.98	1.37	1.48	0.22
Main	9950.847	2924 cfs	2924.00	1063.12	1717.73	143.15	10.38	1001.75	1012.59		1012.68	0.000219	1.73	3.64	1.34	1.30	0.20
Main	9950.847	3116 cfs	3116.00	1040.19	1914.17	161.65	10.89	1001.75	1013.10		1013.17	0.000187	1.62	3.39	1.29	1.19	0.18
Main	9950.847	3400 cfs	3400.00	1014.59	2194.91	190.50	11.64	1001.75	1013.85		1013.91	0.000150	1.49	3.10	1.23	1.08	0.16
Main	9950.847	3881 cfs 0.25 PM	3881.00	1229.47	2442.80	208.73	11.23	1001.75	1013.43		1013.53	0.000242	1.86	3.89	1.51	1.36	0.20
Main	9950.847	4188 cfs	4188.00	1273.43	2683.08	231.50	11.51	1001.75	1013.71		1013.81	0.000244	1.89	3.93	1.55	1.37	0.20

HEC-RAS Plan: SS-EX-Check River: SippoCreek Reach: Main (Continued)

Reach	River Sta	Profile	Q Total	Q Channel	Q Left	Q Right	Hydr Depth C	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	Frctn Slope	Vel Total	Vel Chnl	Vel Left	Vel Right	Froude # Chl
			(cfs)	(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(ft/s)	(ft/s)	(ft/s)	
Main	9950.847	11457 cfs 0.5 PM	11457.00	2199.68	8393.38	863.94	15.97	1001.75	1018.18		1018.31	0.000297	2.43	4.90	2.23	1.73	0.22
Main	9950.847	13000 cfs	13000.00	2390.69	9593.15	1016.17	16.61	1001.75	1018.82		1018.96	0.000313	2.53	5.11	2.34	1.81	0.22
Main	9950.847	15000 cfs	15000.00	2614.32	11169.99	1215.69	17.40	1001.75	1019.61		1019.76	0.000328	2.65	5.34	2.46	1.89	0.23
Main	9950.847	24229 cfs -24hr	24229.00	3437.99	18631.34	2159.67	20.32	1001.75	1022.53		1022.72	0.000376	3.10	6.01	2.99	2.13	0.24
Main	9950.847	31970 cfs - 6hr	31970.00	4047.22	24915.49	3007.30	22.29	1001.75	1024.50		1024.73	0.000406	3.43	6.45	3.37	2.29	0.24
Main	9798.714	1289 cfs	1289.00	987.99	172.43	128.59	6.44	1001.50	1007.99		1008.30	0.000960	3.21	5.07	1.25	1.86	0.35
Main	9798.714	1980 cfs 100-yr	1980.00	1082.44	688.60	208.96	8.42	1001.50	1009.97		1010.14	0.000476	2.40	4.25	1.60	1.49	0.26
Main	9798.714	2650 cfs 500-yr	2650.00	1105.35	1243.50	301.15	10.36	1001.50	1011.92		1012.02	0.000250	2.01	3.52	1.61	1.28	0.19
Main	9798.714	2924 cfs	2924.00	1134.71	1447.73	341.56	11.01	1001.50	1012.57		1012.66	0.000217	1.96	3.40	1.63	1.25	0.18
Main	9798.714	3116 cfs	3116.00	1150.02	1594.24	371.74	11.51	1001.50	1013.07		1013.15	0.000192	1.91	3.30	1.62	1.23	0.17
Main	9798.714	3400 cfs	3400.00	1172.18	1810.36	417.46	12.26	1001.50	1013.81		1013.89	0.000163	1.83	3.16	1.60	1.19	0.16
Main	9798.714	3881 cfs 0.25 PM	3881.00	1389.99	2022.11	468.89	11.83	1001.50	1013.39		1013.50	0.000261	2.25	3.88	1.93	1.45	0.20
Main	9798.714	4188 cfs	4188.00	1463.44	2213.28	511.29	12.11	1001.50	1013.66		1013.78	0.000270	2.31	3.99	2.01	1.50	0.20
Main	9798.714	11457 cfs 0.5 PM	11457.00	2976.95	6857.75	1622.30	16.43	1001.50	1017.98		1018.24	0.000440	3.53	5.98	3.30	2.42	0.26
Main	9798.714	13000 cfs	13000.00	3280.78	7853.76	1865.46	17.05	1001.50	1018.60		1018.89	0.000477	3.76	6.36	3.54	2.58	0.27
Main	9798.714	15000 cfs	15000.00	3660.29	9138.32	2201.39	17.79	1001.50	1019.35		1019.68	0.000524	4.03	6.79	3.82	2.78	0.28
Main	9798.714	24229 cfs -24hr	24229.00	5332.04	15063.85	3833.11	20.52	1001.50	1022.08		1022.59	0.000716	5.10	8.58	4.89	3.64	0.33
Main	9798.714	31970 cfs - 6hr	31970.00	6649.72	20002.97	5317.31	22.34	1001.50	1023.89		1024.56	0.000855	5.87	9.83	5.65	4.33	0.37
Main	9614.268	1289 cfs	1289.00	673.71	395.83	219.45	6.19	1001.25	1007.63		1007.92	0.001397	3.61	5.40	2.52	2.91	0.38
Main	9614.268	1980 cfs 100-yr	1980.00	770.63	878.58	330.79	8.25	1001.25	1009.69		1009.87	0.000633	2.94	4.64	2.49	2.15	0.28
Main	9614.268	2650 cfs 500-yr	2650.00	810.95	1356.64	482.41	10.29	1001.25	1011.73		1011.85	0.000335	2.47	3.91	2.32	1.71	0.21
Main	9614.268	2924 cfs	2924.00	839.54	1529.49	554.98	10.96	1001.25	1012.39		1012.51	0.000291	2.41	3.80	2.32	1.68	0.20
Main	9614.268	3116 cfs	3116.00	855.65	1650.07	610.29	11.47	1001.25	1012.91		1013.02	0.000259	2.36	3.70	2.29	1.65	0.19
Main	9614.268	3400 cfs	3400.00	880.47	1826.56	692.97	12.23	1001.25	1013.67		1013.77	0.000220	2.30	3.57	2.26	1.62	0.18
Main	9614.268	3881 cfs 0.25 PM	3881.00	1044.13	2065.96	770.91	11.72	1001.25	1013.16		1013.32	0.000361	2.83	4.42	2.76	1.99	0.23
Main	9614.268	4188 cfs	4188.00	1104.45	2240.30	843.25	11.98	1001.25	1013.42		1013.59	0.000375	2.93	4.58	2.88	2.06	0.23
Main	9614.268	11457 cfs 0.5 PM	11457.00	2411.36	6399.27	2646.37	16.02	1001.25	1017.46		1017.90	0.000693	4.85	7.47	4.94	3.55	0.33
Main	9614.268	13000 cfs	13000.00	2674.89	7285.09	3040.03	16.57	1001.25	1018.01		1018.51	0.000767	5.19	8.01	5.30	3.82	0.35
Main	9614.268	15000 cfs	15000.00	3025.66	8484.79	3489.55	17.23	1001.25	1018.67		1019.26	0.000864	5.60	8.72	5.75	4.07	0.37
Main	9614.268	24229 cfs -24hr	24229.00	4482.82	13801.99	5944.19	19.59	1001.25	1021.03		1022.01	0.001307	7.24	11.36	7.44	5.41	0.45
Main	9614.268	31970 cfs - 6hr	31970.00	5626.66	18244.82	8098.52	21.13	1001.25	1022.57		1023.85	0.001714	8.32	13.22	8.50	6.38	0.51
Main	9435.728	1289 cfs	1289.00	827.97	253.16	207.87	5.87	1001.00	1007.10		1007.64	0.001359	4.63	7.04	3.14	2.58	0.51
Main	9435.728	1980 cfs 100-yr	1980.00	920.73	656.68	402.58	8.25	1001.00	1009.48		1009.75	0.000569	3.16	5.57	2.45	2.08	0.34
Main	9435.728	2650 cfs 500-yr	2650.00	981.96	1040.65	627.40	10.39	1001.00	1011.62		1011.79	0.000312	2.55	4.72	2.14	1.82	0.26
Main	9435.728	2924 cfs	2924.00	1016.97	1181.66	725.37	11.07	1001.00	1012.30		1012.45	0.000274	2.47	4.59	2.11	1.81	0.24
Main	9435.728	3116 cfs	3116.00	1033.88	1279.33	802.79	11.60	1001.00	1012.82		1012.97	0.000244	2.40	4.45	2.06	1.80	0.23
Main	9435.728	3400 cfs	3400.00	1060.97	1422.38	916.66	12.37	1001.00	1013.60		1013.73	0.000209	2.32	4.28	2.02	1.79	0.21
Main	9435.728	3881 cfs 0.25 PM	3881.00	1264.41	1602.68	1013.91	11.82	1001.00	1013.04		1013.25	0.000345	2.89	5.34	2.49	2.19	0.27
Main	9435.728	4188 cfs	4188.00	1336.95	1740.30	1110.74	12.07	1001.00	1013.30		1013.51	0.000360	2.99	5.53	2.59	2.29	0.28
Main	9435.728	11457 cfs 0.5 PM	11457.00	2935.63	5010.39	3510.98	15.98	1001.00	1017.20		1017.76	0.000692	5.07	9.18	4.53	4.20	0.40
Main	9435.728	13000 cfs	13000.00	3264.82	5700.39	4034.79	16.49	1001.00	1017.71		1018.36	0.000770	5.47	9.89	4.90	4.57	0.43
Main	9435.728	15000 cfs	15000.00	3687.17	6598.59	4714.24	17.09	1001.00	1018.32		1019.08	0.000869	5.97	10.77	5.36	5.01	0.46
Main	9435.728	24229 cfs -24hr	24229.00	5654.79	10815.80	7758.42	19.09	1001.00	1020.32		1021.72	0.001389	8.10	14.79	7.36	6.82	0.60
Main	9435.728	31970 cfs - 6hr	31970.00	7401.77	14549.89	10018.35	20.11	1001.00	1021.34		1023.45	0.001951	9.82	18.39	9.09	8.00	0.72
Main	9285.969	1289 cfs	1289.00	836.02	203.38	249.59	7.14	999.75	1007.03		1007.38	0.001576	3.48	5.71	1.84	2.21	0.38
Main	9285.969	1980 cfs 100-yr	1980.00	898.05	687.54	394.42	9.57	999.75	1009.46		1009.64	0.000932	2.62	4.57	2.01	1.80	0.26
Main	9285.969	2650 cfs 500-yr	2650.00	945.89	1189.80	514.31	11.72	999.75	1011.60		1011.73	0.000597	2.27	3.93	2.07	1.47	0.20
Main	9285.969	2924 cfs	2924.00	977.94	1365.04	581.02	12.40	999.75	1012.29		1012.40	0.000387	2.24	3.84	2.10	1.44	0.19
Main	9285.969	3116 cfs	3116.00	992.94	1486.09	636.97	12.92	999.75	1012.81		1012.92	0.000330	2.20	3.74	2.09	1.43	0.18
Main	9285.969	3400 cfs	3400.00	1016.23	1663.52	720.25	13.70	999.75	1013.59		1013.69	0.000270	2.14	3.61	2.08	1.42	0.17
Main	9285.969	3881 cfs 0.25 PM	3881.00	1214.17	1865.15	801.68	13.14	999.75	1013.02		1013.18	0.000504	2.65	4.50	2.54	1.74	0.22
Main	9285.969	4188 cfs	4188.00	1282.85	2029.81	875.34	13.39	999.75	1013.28		1013.45	0.000526	2.75	4.67	2.66	1.81	0.22
Main	9285.969	11457 cfs 0.5 PM	11457.00	2736.94	5954.37	2765.69	17.29	999.75	1017.18		1017.62	0.000898	4.71	7.71	4.75	3.36	0.33
Main	9285.969	13000 cfs	13000.00	3031.37	6792.90	3175.73	17.80	999.75	1017.69		1018.20	0.000994	5.08	8.30	5.13	3.65	0.35
Main	9285.969	15000 cfs	15000.00	3403.88	7885.29	3710.83	18.41	999.75	1018.30		1018.90	0.001087	5.52	9.01	5.59	4.00	0.37
Main	9285.969	24229 cfs -24hr	24229.00	5090.21	12984.44	6154.35	20.45	999.75	1020.34		1021.41	0.001494	7.43	12.13	7.56	5.48	0.47

HEC-RAS Plan: SS-EX-Check River: SippoCreek Reach: Main (Continued)

Reach	River Sta	Profile	Q Total	Q Channel	Q Left	Q Right	Hydr Depth C	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	Frctn Slope	Vel Total	Vel Chnl	Vel Left	Vel Right	Froude # Chl
			(cfs)	(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(ft/s)	(ft/s)	(ft/s)	
Main	9285.969	31970 cfs - 6hr	31970.00	6508.32	17355.37	8106.31	21.54	999.75	1021.43		1022.99	0.001866	8.96	14.73	9.16	6.57	0.56
Main	9175	1289 cfs	1289.00	1289.00			6.04	999.50	1005.78		1006.96	0.003044	8.70	8.70			0.62
Main	9175	1980 cfs 100-yr	1980.00	1980.00			7.52	999.50	1007.26	1005.61	1009.05	0.004481	10.74	10.74			0.69
Main	9175	2650 cfs 500-yr	2650.00	2650.00			9.12	999.50	1008.86	1006.85	1011.04	0.004361	11.85	11.85			0.69
Main	9175	2924 cfs	2924.00	2178.74	708.30	36.96	11.79	999.50	1011.53	1007.33	1012.19	0.001876	3.72	7.54	1.51	1.39	0.39
Main	9175	3116 cfs	3116.00	2110.79	950.44	54.77	12.51	999.50	1012.25	1007.67	1012.76	0.001533	3.24	6.88	1.55	1.34	0.34
Main	9175	3400 cfs	3400.00	2054.46	1258.35	87.18	13.46	999.50	1013.20	1008.15	1013.57	0.001214	2.81	6.23	1.57	1.16	0.30
Main	9175	3881 cfs 0.25 PM	3881.00	2715.32	1101.77	63.91	12.26	999.50	1012.00	1010.86	1012.90	0.001578	4.32	9.04	1.96	1.81	0.45
Main	9175	4188 cfs	4188.00	2848.83	1266.32	72.85	12.48	999.50	1012.22	1011.11	1013.16	0.001619	4.40	9.31	2.09	1.81	0.46
Main	9175	11457 cfs 0.5 PM	11457.00	5131.77	5448.37	876.86	16.26	999.50	1016.00	1014.48	1017.27	0.002199	5.48	12.87	3.89	2.99	0.56
Main	9175	13000 cfs	13000.00	5606.87	6301.12	1092.01	16.68	999.50	1016.42	1015.02	1017.82	0.002291	5.78	13.71	4.22	3.15	0.59
Main	9175	15000 cfs	15000.00	6085.54	7394.83	1519.64	17.31	999.50	1017.05	1015.58	1018.52	0.002354	6.01	14.34	4.51	3.50	0.61
Main	9175	24229 cfs -24hr	24229.00	7943.12	12095.96	4189.93	19.63	999.50	1019.37		1021.06	0.002463	6.93	16.50	5.55	5.03	0.66
Main	9175	31970 cfs - 6hr	31970.00	9339.90	15761.77	6868.33	21.01	999.50	1020.75		1022.67	0.002503	7.73	18.13	6.26	6.23	0.70
Main	9132.836	1289 cfs	1289.00	1289.00			5.75	999.50	1005.49		1006.79	0.001426	9.14	9.14			0.67
Main	9132.836	1980 cfs 100-yr	1980.00	1980.00			6.01	999.50	1005.75	1005.61	1008.55	0.001817	13.43	13.43			0.97
Main	9132.836	2650 cfs 500-yr	2650.00	2650.00			7.11	999.50	1006.85	1006.85	1010.44	0.001638	15.20	15.20			1.00
Main	9132.836	2924 cfs	2924.00	2924.00			7.59	999.50	1007.33	1007.33	1011.16	0.000970	15.71	15.71			1.00
Main	9132.836	3116 cfs	3116.00	3116.00			7.93	999.50	1007.67	1007.67	1011.66	0.000905	16.02	16.02			1.00
Main	9132.836	3400 cfs	3400.00	3400.00			8.41	999.50	1008.15	1008.15	1012.37	0.000863	16.49	16.49			1.00
Main	9132.836	3881 cfs 0.25 PM	3881.00	3169.75	681.58	29.67	11.12	999.50	1010.86	1010.86	1012.59	0.000661	6.14	11.62	1.99	1.81	0.61
Main	9132.836	4188 cfs	4188.00	3305.96	842.61	39.43	11.37	999.50	1011.11	1011.11	1012.85	0.000657	6.09	11.86	2.16	1.98	0.62
Main	9132.836	11457 cfs 0.5 PM	11457.00	5983.74	4943.28	529.98	14.74	999.50	1014.48	1014.48	1016.85	0.000681	7.23	16.56	4.61	3.50	0.76
Main	9132.836	13000 cfs	13000.00	6344.05	5898.70	757.25	15.39	999.50	1015.13	1015.02	1017.45	0.000703	7.25	16.81	4.87	3.69	0.76
Main	9132.836	15000 cfs	15000.00	6847.72	7069.28	1083.00	16.06	999.50	1015.80	1015.58	1018.16	0.000753	7.42	17.39	5.21	3.99	0.76
Main	9132.836	24229 cfs -24hr	24229.00	8650.07	12139.25	3439.68	18.69	999.50	1018.43		1020.77	0.000916	7.87	18.87	6.20	5.20	0.77
Main	9132.836	31970 cfs - 6hr	31970.00	9722.47	15855.37	6392.16	20.51	999.50	1020.24		1022.48	0.000999	8.20	19.34	6.63	6.38	0.75
Main	8997.774	1289 cfs	1289.00	744.40	314.70	229.90	7.07	998.50	1005.82		1006.08	0.000643	2.98	5.12	1.59	2.58	0.34
Main	8997.774	1980 cfs 100-yr	1980.00	941.62	696.49	341.89	8.02	998.50	1006.77		1007.05	0.000665	3.00	5.71	1.95	2.48	0.36
Main	8997.774	2650 cfs 500-yr	2650.00	1048.43	1135.46	466.11	8.94	998.50	1007.69	1005.63	1007.94	0.000578	2.88	5.70	2.15	2.22	0.34
Main	8997.774	2924 cfs	2924.00	924.33	1435.59	564.09	10.11	998.50	1008.87	1005.95	1009.00	0.000304	2.24	4.45	1.86	1.73	0.25
Main	8997.774	3116 cfs	3116.00	934.00	1568.11	613.89	10.42	998.50	1009.18	1006.14	1009.30	0.000283	2.21	4.36	1.87	1.72	0.24
Main	8997.774	3400 cfs	3400.00	962.18	1753.27	684.54	10.79	998.50	1009.54	1006.36	1009.66	0.000270	2.21	4.34	1.91	1.73	0.23
Main	8997.774	3881 cfs 0.25 PM	3881.00	1021.89	2057.26	801.85	11.29	998.50	1010.04	1006.63	1010.16	0.000264	2.27	4.41	1.99	1.79	0.23
Main	8997.774	4188 cfs	4188.00	1060.13	2250.67	877.20	11.59	998.50	1010.34	1006.78	1010.46	0.000262	2.31	4.45	2.05	1.83	0.23
Main	8997.774	11457 cfs 0.5 PM	11457.00	1892.82	6831.96	2732.22	16.70	998.50	1015.45	1009.13	1015.63	0.000260	3.04	5.51	2.91	2.53	0.24
Main	8997.774	13000 cfs	13000.00	2068.57	7765.90	3165.53	17.35	998.50	1016.10		1016.30	0.000274	3.21	5.80	3.09	2.70	0.25
Main	8997.774	15000 cfs	15000.00	2300.94	8958.63	3740.43	18.02	998.50	1016.77		1017.00	0.000300	3.46	6.21	3.33	2.93	0.26
Main	8997.774	24229 cfs -24hr	24229.00	3293.86	14383.91	6551.24	20.55	998.50	1019.30		1019.66	0.000403	4.41	7.80	4.24	3.89	0.30
Main	8997.774	31970 cfs - 6hr	31970.00	4059.85	18856.49	9053.66	22.25	998.50	1021.00		1021.46	0.000474	5.03	8.88	4.85	4.51	0.33
Main	8889.001	1289 cfs	1289.00	688.35	361.93	238.72	7.66	997.80	1005.80		1005.99	0.000339	2.31	4.44	1.28	1.99	0.28
Main	8889.001	1980 cfs 100-yr	1980.00	847.11	796.35	336.54	8.61	997.80	1006.76		1006.95	0.000382	2.38	4.85	1.63	2.02	0.29
Main	8889.001	2650 cfs 500-yr	2650.00	938.69	1277.58	433.73	9.53	997.80	1007.68		1007.85	0.000344	2.37	4.86	1.83	1.92	0.28
Main	8889.001	2924 cfs	2924.00	831.62	1602.30	490.08	10.71	997.80	1008.86		1008.95	0.000190	1.93	3.83	1.63	1.55	0.21
Main	8889.001	3116 cfs	3116.00	843.83	1744.98	527.19	11.02	997.80	1009.17		1009.26	0.000179	1.92	3.78	1.65	1.54	0.20
Main	8889.001	3400 cfs	3400.00	873.22	1945.87	580.91	11.38	997.80	1009.53		1009.62	0.000174	1.94	3.79	1.70	1.56	0.20
Main	8889.001	3881 cfs 0.25 PM	3881.00	932.69	2277.34	670.97	11.88	997.80	1010.03		1010.12	0.000174	2.02	3.87	1.79	1.63	0.20
Main	8889.001	4188 cfs	4188.00	970.57	2488.45	728.98	12.18	997.80	1010.33		1010.42	0.000175	2.06	3.93	1.85	1.67	0.20
Main	8889.001	11457 cfs 0.5 PM	11457.00	1770.47	7471.49	2215.05	17.29	997.80	1015.44		1015.60	0.000190	2.87	5.05	2.76	2.36	0.21
Main	8889.001	13000 cfs	13000.00	1936.39	8484.98	2578.64	17.94	997.80	1016.09		1016.26	0.000202	3.04	5.32	2.94	2.52	0.22
Main	8889.001	15000 cfs	15000.00	2157.05	9790.67	3052.29	18.61	997.80	1016.76		1016.96	0.000223	3.29	5.72	3.18	2.76	0.23
Main	8889.001	24229 cfs -24hr	24229.00	3111.07	15759.89	5358.04	21.13	997.80	1019.28		1019.60	0.000308	4.25	7.26	4.12	3.71	0.28
Main	8889.001	31970 cfs - 6hr	31970.00	3852.67	20693.25	7424.07	22.82	997.80	1020.97		1021.40	0.000368	4.89	8.33	4.76	4.30	0.31
Main	8687.422	1289 cfs	1289.00	777.02	252.14	259.84	8.81	996.80	1005.71		1005.92	0.000160	2.23	4.42	0.84	2.59	0.26
Main	8687.422	1980 cfs 100-yr	1980.00	1005.12	609.96	364.92	9.73	996.80	1006.63		1006.87	0.000209	2.28	5.17	1.12	2.82	0.29

HEC-RAS Plan: SS-EX-Check River: SippoCreek Reach: Main (Continued)

Reach	River Sta	Profile	Q Total	Q Channel	Q Left	Q Right	Hydr Depth C	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	Frctn Slope	Vel Total	Vel Chnl	Vel Left	Vel Right	Froude # Chl
			(cfs)	(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(ft/s)	(ft/s)	(ft/s)	
Main	8687.422	2650 cfs 500-yr	2650.00	1123.59	1076.02	450.40	10.66	996.80	1007.57		1007.78	0.000206	2.22	5.28	1.34	2.58	0.28
Main	8687.422	2924 cfs	2924.00	1012.42	1433.30	478.28	11.89	996.80	1008.80		1008.91	0.000125	1.77	4.26	1.24	1.88	0.22
Main	8687.422	3116 cfs	3116.00	1031.58	1576.47	507.95	12.21	996.80	1009.11		1009.22	0.000121	1.76	4.23	1.26	1.84	0.21
Main	8687.422	3400 cfs	3400.00	1072.03	1775.40	552.57	12.57	996.80	1009.47		1009.58	0.000120	1.78	4.27	1.31	1.83	0.21
Main	8687.422	3881 cfs 0.25 PM	3881.00	1150.36	2101.56	629.08	13.07	996.80	1009.97		1010.09	0.000124	1.85	4.41	1.40	1.86	0.21
Main	8687.422	4188 cfs	4188.00	1199.61	2309.74	678.65	13.37	996.80	1010.27		1010.39	0.000127	1.89	4.49	1.46	1.89	0.22
Main	8687.422	11457 cfs 0.5 PM	11457.00	2194.18	7254.39	2008.43	18.49	996.80	1015.39		1015.56	0.000159	2.63	5.94	2.31	2.37	0.24
Main	8687.422	13000 cfs	13000.00	2399.55	8264.26	2336.19	19.13	996.80	1016.03		1016.22	0.000171	2.79	6.28	2.47	2.52	0.25
Main	8687.422	15000 cfs	15000.00	2672.92	9561.45	2765.63	19.79	996.80	1016.69		1016.91	0.000191	3.02	6.76	2.69	2.75	0.27
Main	8687.422	24229 cfs -24hr	24229.00	3849.66	15515.41	4863.93	22.29	996.80	1019.20		1019.55	0.000270	3.93	8.65	3.54	3.65	0.32
Main	8687.422	31970 cfs - 6hr	31970.00	4764.32	20464.95	6740.74	23.97	996.80	1020.87		1021.33	0.000328	4.55	9.95	4.13	4.24	0.36
Main	8449.557	1289 cfs	1289.00	684.72	373.18	231.10	9.84	995.80	1005.75		1005.85	0.000045	1.80	3.34	0.95	1.95	0.19
Main	8449.557	1980 cfs 100-yr	1980.00	931.55	716.07	332.38	10.75	995.80	1006.65		1006.80	0.000069	2.00	4.17	1.15	2.31	0.22
Main	8449.557	2650 cfs 500-yr	2650.00	1090.70	1150.12	409.18	11.66	995.80	1007.56		1007.72	0.000082	2.07	4.49	1.33	2.39	0.23
Main	8449.557	2924 cfs	2924.00	1033.75	1478.51	411.74	12.88	995.80	1008.78		1008.88	0.000060	1.75	3.86	1.24	1.93	0.19
Main	8449.557	3116 cfs	3116.00	1064.53	1621.42	430.06	13.19	995.80	1009.09		1009.19	0.000060	1.76	3.88	1.27	1.92	0.19
Main	8449.557	3400 cfs	3400.00	1118.64	1822.17	459.19	13.55	995.80	1009.45		1009.56	0.000062	1.80	3.97	1.33	1.93	0.19
Main	8449.557	3881 cfs 0.25 PM	3881.00	1216.72	2154.14	510.14	14.05	995.80	1009.95		1010.06	0.000066	1.89	4.16	1.43	1.99	0.20
Main	8449.557	4188 cfs	4188.00	1278.15	2367.57	542.27	14.35	995.80	1010.25		1010.36	0.000069	1.94	4.28	1.49	2.02	0.20
Main	8449.557	11457 cfs 0.5 PM	11457.00	2492.99	7522.19	1441.82	19.42	995.80	1015.32		1015.53	0.000110	2.85	6.17	2.49	2.43	0.25
Main	8449.557	13000 cfs	13000.00	2736.64	8582.00	1681.36	20.06	995.80	1015.96		1016.19	0.000121	3.03	6.56	2.67	2.57	0.26
Main	8449.557	15000 cfs	15000.00	3057.28	9943.06	1999.66	20.71	995.80	1016.61		1016.87	0.000137	3.29	7.09	2.91	2.79	0.27
Main	8449.557	24229 cfs -24hr	24229.00	4422.21	16141.14	3665.65	23.16	995.80	1019.06		1019.49	0.000200	4.28	9.18	3.85	3.75	0.34
Main	8449.557	31970 cfs - 6hr	31970.00	5479.77	21286.57	5203.66	24.80	995.80	1020.70		1021.25	0.000245	4.96	10.62	4.49	4.35	0.38
Main	8190.037	1289 cfs	1289.00	535.82	363.34	389.84	10.89	994.80	1005.79	998.17	1005.82	0.000004	1.16	1.61	0.87	1.10	0.09
Main	8190.037	1980 cfs 100-yr	1980.00	782.89	572.44	624.67	11.80	994.80	1006.70	999.13	1006.75	0.000008	1.51	2.17	1.07	1.52	0.11
Main	8190.037	2650 cfs 500-yr	2650.00	996.08	796.09	857.83	12.71	994.80	1007.61	999.85	1007.67	0.000010	1.72	2.56	1.17	1.82	0.13
Main	8190.037	2924 cfs	2924.00	1022.11	944.12	957.76	13.90	994.80	1008.80	1000.20	1008.85	0.000009	1.54	2.40	1.03	1.72	0.11
Main	8190.037	3116 cfs	3116.00	1067.11	1029.33	1019.56	14.21	994.80	1009.11	1000.34	1009.16	0.000009	1.56	2.45	1.05	1.76	0.11
Main	8190.037	3400 cfs	3400.00	1137.84	1151.31	1110.85	14.57	994.80	1009.47	1000.55	1009.53	0.000010	1.61	2.55	1.09	1.83	0.12
Main	8190.037	3881 cfs 0.25 PM	3881.00	1260.04	1355.83	1265.13	15.07	994.80	1009.97	1000.88	1010.03	0.000012	1.71	2.73	1.17	1.96	0.12
Main	8190.037	4188 cfs	4188.00	1336.90	1488.77	1362.33	15.36	994.80	1010.26	1001.09	1010.33	0.000013	1.78	2.84	1.22	2.04	0.13
Main	8190.037	11457 cfs 0.5 PM	11457.00	2840.64	4765.14	3851.22	20.43	994.80	1015.33	1005.00	1015.48	0.000030	2.66	4.54	2.05	2.83	0.18
Main	8190.037	13000 cfs	13000.00	3140.32	5455.17	4404.51	21.07	994.80	1015.97	1005.51	1016.14	0.000034	2.83	4.86	2.21	2.98	0.19
Main	8190.037	15000 cfs	15000.00	3533.21	6342.71	5124.09	21.72	994.80	1016.62	1005.93	1016.82	0.000039	3.07	5.31	2.43	3.20	0.20
Main	8190.037	24229 cfs -24hr	24229.00	5129.73	10250.81	8848.47	24.20	994.80	1019.10	1009.07	1019.40	0.000065	3.71	6.92	3.20	3.41	0.25
Main	8190.037	31970 cfs - 6hr	31970.00	6357.94	13474.48	12137.58	25.86	994.80	1020.76	1010.62	1021.14	0.000086	4.21	8.02	3.73	3.82	0.28
Main	7947.906	1289 cfs	1289.00	171.45	614.54	503.01	11.90	993.80	1005.81		1005.81	0.000004	0.43	0.47	0.43	0.42	0.02
Main	7947.906	1980 cfs 100-yr	1980.00	259.23	947.51	773.26	12.83	993.80	1006.73		1006.73	0.000006	0.61	0.66	0.60	0.60	0.03
Main	7947.906	2650 cfs 500-yr	2650.00	342.18	1272.45	1035.37	13.74	993.80	1007.64		1007.65	0.000009	0.75	0.81	0.74	0.73	0.04
Main	7947.906	2924 cfs	2924.00	372.10	1407.81	1144.09	14.93	993.80	1008.83		1008.84	0.000008	0.75	0.82	0.74	0.73	0.04
Main	7947.906	3116 cfs	3116.00	394.93	1502.19	1218.88	15.24	993.80	1009.14		1009.15	0.000008	0.78	0.85	0.77	0.76	0.04
Main	7947.906	3400 cfs	3400.00	428.93	1641.66	1329.42	15.60	993.80	1009.50		1009.51	0.000009	0.82	0.90	0.81	0.81	0.04
Main	7947.906	3881 cfs 0.25 PM	3881.00	486.30	1879.08	1515.62	16.10	993.80	1010.00		1010.01	0.000010	0.90	0.99	0.89	0.89	0.04
Main	7947.906	4188 cfs	4188.00	522.63	2031.22	1634.15	16.40	993.80	1010.30		1010.31	0.000011	0.95	1.04	0.94	0.93	0.05
Main	7947.906	11457 cfs 0.5 PM	11457.00	1336.16	5680.01	4440.83	21.49	993.80	1015.40		1015.45	0.000029	1.80	2.03	1.79	1.75	0.08
Main	7947.906	13000 cfs	13000.00	1504.98	6458.68	5036.34	22.14	993.80	1016.04		1016.10	0.000033	1.96	2.22	1.95	1.91	0.08
Main	7947.906	15000 cfs	15000.00	1724.03	7467.74	5808.24	22.80	993.80	1016.70		1016.77	0.000039	2.18	2.47	2.16	2.12	0.09
Main	7947.906	24229 cfs -24hr	24229.00	2716.68	12146.50	9365.82	25.29	993.80	1019.19		1019.34	0.000068	3.07	3.51	3.06	2.98	0.12
Main	7947.906	31970 cfs - 6hr	31970.00	3532.98	16091.31	12345.71	26.95	993.80	1020.85		1021.07	0.000093	3.73	4.29	3.72	3.61	0.15
Main	7696.011	1289 cfs	1289.00	420.49	573.82	294.70	12.04	993.50	1005.79		1005.81	0.000008	0.76	1.16	0.86	0.44	0.06
Main	7696.011	1980 cfs 100-yr	1980.00	626.14	890.97	462.89	12.96	993.50	1006.71		1006.73	0.000014	1.05	1.60	1.19	0.62	0.08
Main	7696.011	2650 cfs 500-yr	2650.00	815.16	1203.67	631.16	13.86	993.50	1007.61		1007.64	0.000019	1.27	1.95	1.43	0.76	0.09
Main	7696.011	2924 cfs	2924.00	868.47	1346.19	709.34	15.05	993.50	1008.80		1008.83	0.000016	1.24	1.91	1.39	0.75	0.09
Main	7696.011	3116 cfs	3116.00	917.64	1439.28	759.08	15.36	993.50	1009.11		1009.14	0.000017	1.28	1.98	1.44	0.78	0.09
Main	7696.011	3400 cfs	3400.00	991.64	1576.30	832.06	15.72	993.50	1009.47		1009.51	0.000018	1.35	2.09	1.52	0.82	0.09

HEC-RAS Plan: SS-EX-Check River: SippoCreek Reach: Main (Continued)

Reach	River Sta	Profile	Q Total	Q Channel	Q Left	Q Right	Hydr Depth C	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	Frctn Slope	Vel Total	Vel Chnl	Vel Left	Vel Right	Froude # Chl
			(cfs)	(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(ft/s)	(ft/s)	(ft/s)	
Main	7696.011	3881 cfs 0.25 PM	3881.00	1117.32	1808.40	955.28	16.21	993.50	1009.96		1010.01	0.000021	1.47	2.29	1.65	0.90	0.10
Main	7696.011	4188 cfs	4188.00	1196.56	1957.45	1033.99	16.50	993.50	1010.25		1010.30	0.000023	1.54	2.40	1.73	0.95	0.10
Main	7696.011	11457 cfs 0.5 PM	11457.00	2900.72	5537.90	3018.38	21.52	993.50	1015.27		1015.43	0.000059	2.74	4.47	3.04	1.77	0.17
Main	7696.011	13000 cfs	13000.00	3246.75	6294.19	3459.07	22.14	993.50	1015.89		1016.08	0.000068	2.97	4.86	3.29	1.93	0.18
Main	7696.011	15000 cfs	15000.00	3697.05	7273.08	4029.87	22.77	993.50	1016.52		1016.75	0.000080	3.29	5.39	3.63	2.15	0.20
Main	7696.011	24229 cfs -24hr	24229.00	5710.79	11795.83	6722.39	25.10	993.50	1018.85		1019.29	0.000140	4.57	7.55	5.02	3.06	0.27
Main	7696.011	31970 cfs - 6hr	31970.00	7345.50	15594.50	9030.01	26.62	993.50	1020.37		1021.01	0.000192	5.53	9.15	6.05	3.76	0.31
Main	7360.720	1289 cfs	1289.00	348.12	528.39	412.50	12.89	992.80	1005.79		1005.80	0.000004	0.75	0.90	0.69	0.73	0.04
Main	7360.720	1980 cfs 100-yr	1980.00	518.93	828.24	632.83	13.81	992.80	1006.71		1006.72	0.000007	1.05	1.25	0.97	1.02	0.06
Main	7360.720	2650 cfs 500-yr	2650.00	676.64	1127.44	845.92	14.71	992.80	1007.61		1007.64	0.000010	1.28	1.53	1.19	1.24	0.07
Main	7360.720	2924 cfs	2924.00	724.53	1267.51	931.97	15.90	992.80	1008.80		1008.83	0.000009	1.27	1.52	1.19	1.22	0.07
Main	7360.720	3116 cfs	3116.00	766.64	1356.59	992.78	16.21	992.80	1009.11		1009.14	0.000009	1.32	1.58	1.24	1.27	0.07
Main	7360.720	3400 cfs	3400.00	829.88	1487.35	1082.77	16.57	992.80	1009.47		1009.50	0.000010	1.40	1.67	1.31	1.34	0.07
Main	7360.720	3881 cfs 0.25 PM	3881.00	937.47	1708.34	1235.19	17.06	992.80	1009.96		1010.00	0.000011	1.53	1.83	1.44	1.47	0.08
Main	7360.720	4188 cfs	4188.00	1005.70	1849.53	1332.77	17.35	992.80	1010.25		1010.29	0.000012	1.61	1.93	1.52	1.54	0.08
Main	7360.720	11457 cfs 0.5 PM	11457.00	2510.06	5304.44	3642.51	22.36	992.80	1015.26		1015.40	0.000033	3.02	3.74	2.91	2.79	0.14
Main	7360.720	13000 cfs	13000.00	2816.20	6042.44	4141.36	22.98	992.80	1015.88		1016.05	0.000038	3.27	4.08	3.17	3.01	0.15
Main	7360.720	15000 cfs	15000.00	3213.59	6997.14	4789.27	23.60	992.80	1016.50		1016.71	0.000046	3.61	4.54	3.51	3.30	0.16
Main	7360.720	24229 cfs -24hr	24229.00	4989.26	11418.88	7820.86	25.93	992.80	1018.83		1019.23	0.000081	5.00	6.41	4.93	4.46	0.22
Main	7360.720	31970 cfs - 6hr	31970.00	6424.21	15130.49	10415.29	27.43	992.80	1020.33		1020.93	0.000110	6.01	7.80	5.97	5.30	0.26
Main	7059.152	1289 cfs	1289.00	274.47	560.67	453.86	13.90	991.80	1005.80		1005.80	0.000003	0.51	0.66	0.50	0.46	0.03
Main	7059.152	1980 cfs 100-yr	1980.00	407.18	867.71	705.11	14.81	991.80	1006.71		1006.72	0.000006	0.71	0.91	0.71	0.64	0.04
Main	7059.152	2650 cfs 500-yr	2650.00	528.68	1168.63	952.69	15.72	991.80	1007.62		1007.63	0.000009	0.88	1.12	0.87	0.79	0.05
Main	7059.152	2924 cfs	2924.00	563.51	1298.07	1062.42	16.91	991.80	1008.81		1008.82	0.000008	0.87	1.11	0.87	0.78	0.05
Main	7059.152	3116 cfs	3116.00	595.48	1385.80	1134.71	17.22	991.80	1009.12		1009.13	0.000008	0.90	1.15	0.90	0.81	0.05
Main	7059.152	3400 cfs	3400.00	643.64	1515.24	1241.12	17.57	991.80	1009.48		1009.49	0.000009	0.95	1.22	0.96	0.85	0.05
Main	7059.152	3881 cfs 0.25 PM	3881.00	725.63	1734.29	1421.08	18.07	991.80	1009.97		1009.99	0.000010	1.05	1.33	1.05	0.94	0.06
Main	7059.152	4188 cfs	4188.00	777.53	1874.33	1536.14	18.36	991.80	1010.26		1010.28	0.000011	1.10	1.40	1.11	0.99	0.06
Main	7059.152	11457 cfs 0.5 PM	11457.00	1918.11	5261.33	4277.56	23.40	991.80	1015.30		1015.37	0.000032	2.07	2.72	2.12	1.83	0.10
Main	7059.152	13000 cfs	13000.00	2150.82	5979.56	4869.61	24.03	991.80	1015.93		1016.01	0.000037	2.25	2.97	2.31	1.98	0.11
Main	7059.152	15000 cfs	15000.00	2452.92	6908.76	5638.33	24.67	991.80	1016.57		1016.67	0.000044	2.49	3.30	2.57	2.18	0.12
Main	7059.152	24229 cfs -24hr	24229.00	3800.65	11185.93	9242.42	27.05	991.80	1018.95		1019.15	0.000079	3.45	4.66	3.62	2.96	0.16
Main	7059.152	31970 cfs - 6hr	31970.00	4886.32	14749.83	12333.86	28.62	991.80	1020.52		1020.80	0.000108	4.13	5.67	4.39	3.51	0.19
Main	6933.617	1289 cfs	1289.00	658.62	385.47	244.90	18.99	986.80	1005.80	989.23	1005.80		0.42	0.69	0.29	0.30	0.03
Main	6933.617	1980 cfs 100-yr	1980.00	983.71	608.27	388.02	19.91	986.80	1006.71	989.96	1006.72		0.59	0.99	0.42	0.43	0.04
Main	6933.617	2650 cfs 500-yr	2650.00	1274.93	846.03	529.04	20.81	986.80	1007.61	990.54	1007.63		0.73	1.23	0.53	0.54	0.05
Main	6933.617	2924 cfs	2924.00	1351.11	978.61	594.28	22.00	986.80	1008.80	990.76	1008.82		0.73	1.23	0.55	0.55	0.05
Main	6933.617	3116 cfs	3116.00	1425.32	1054.90	635.77	22.31	986.80	1009.11	990.91	1009.13		0.76	1.28	0.57	0.57	0.05
Main	6933.617	3400 cfs	3400.00	1537.13	1165.86	697.01	22.67	986.80	1009.47	991.11	1009.49		0.81	1.36	0.61	0.60	0.05
Main	6933.617	3881 cfs 0.25 PM	3881.00	1726.75	1353.29	800.96	23.17	986.80	1009.97	991.47	1009.99		0.89	1.49	0.68	0.66	0.05
Main	6933.617	4188 cfs	4188.00	1845.82	1474.32	867.86	23.46	986.80	1010.26	991.67	1010.28		0.93	1.57	0.72	0.69	0.06
Main	6933.617	11457 cfs 0.5 PM	11457.00	4369.64	4546.60	2540.76	28.49	986.80	1015.29	995.44	1015.37		1.78	3.07	1.51	1.26	0.10
Main	6933.617	13000 cfs	13000.00	4879.46	5211.72	2908.82	29.12	986.80	1015.92	996.07	1016.01		1.93	3.35	1.66	1.36	0.11
Main	6933.617	15000 cfs	15000.00	5543.16	6071.84	3385.01	29.75	986.80	1016.55	996.83	1016.66		2.14	3.73	1.86	1.49	0.12
Main	6933.617	24229 cfs -24hr	24229.00	8451.68	10084.04	5693.29	32.12	986.80	1018.92	999.72	1019.14		2.96	5.26	2.70	2.01	0.16
Main	6933.617	31970 cfs - 6hr	31970.00	10731.60	13459.02	7779.38	33.68	986.80	1020.48	1001.98	1020.79		3.54	6.37	3.31	2.38	0.19
Main	6926.12		Inl Struct														
Main	6918.617	1289 cfs	1289.00	915.17	241.85	131.98	5.65	986.80	992.45		992.57	0.000362	2.42	3.24	1.53	1.42	0.24
Main	6918.617	1980 cfs 100-yr	1980.00	1207.66	475.79	296.55	10.50	986.80	997.30		997.36	0.000086	1.57	2.30	1.06	1.05	0.13
Main	6918.617	2650 cfs 500-yr	2650.00	1288.66	835.41	525.94	20.51	986.80	1007.31		1007.32	0.000012	0.75	1.26	0.54	0.55	0.05
Main	6918.617	2924 cfs	2924.00	1354.75	975.79	593.46	21.93	986.80	1008.73		1008.74	0.000010	0.74	1.24	0.55	0.55	0.05
Main	6918.617	3116 cfs	3116.00	1429.08	1051.99	634.92	22.24	986.80	1009.04		1009.05	0.000011	0.77	1.29	0.57	0.57	0.05
Main	6918.617	3400 cfs	3400.00	1540.43	1163.40	696.16	22.61	986.80	1009.41		1009.43	0.000012	0.81	1.36	0.61	0.61	0.05
Main	6918.617	3881 cfs 0.25 PM	3881.00	1730.38	1350.68	799.94	23.10	986.80	1009.90		1009.92	0.000014	0.89	1.50	0.68	0.66	0.05
Main	6918.617	4188 cfs	4188.00	1849.67	1471.61	866.73	23.40	986.80	1010.20		1010.22	0.000015	0.94	1.58	0.72	0.70	0.06

HEC-RAS Plan: SS-EX-Check River: SippoCreek Reach: Main (Continued)

Reach	River Sta	Profile	Q Total	Q Channel	Q Left	Q Right	Hydr Depth C	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	Frctn Slope	Vel Total	Vel Chnl	Vel Left	Vel Right	Froude # Chl
			(cfs)	(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(ft/s)	(ft/s)	(ft/s)	
Main	6918.617	11457 cfs 0.5 PM	11457.00	4378.62	4541.86	2536.52	28.42	986.80	1015.22		1015.29	0.000045	1.78	3.08	1.52	1.26	0.10
Main	6918.617	13000 cfs	13000.00	4890.46	5206.18	2903.36	29.04	986.80	1015.84		1015.93	0.000052	1.94	3.37	1.67	1.37	0.11
Main	6918.617	15000 cfs	15000.00	5557.87	6064.23	3377.90	29.65	986.80	1016.45		1016.56	0.000063	2.15	3.75	1.87	1.50	0.12
Main	6918.617	24229 cfs -24hr	24229.00	8486.25	10071.12	5671.63	31.96	986.80	1018.76		1018.98	0.000115	2.99	5.31	2.72	2.03	0.17
Main	6918.617	31970 cfs - 6hr	31970.00	10790.30	13449.29	7730.42	33.48	986.80	1020.28		1020.60	0.000163	3.59	6.45	3.35	2.40	0.20
Main	6900.112	1289 cfs	1289.00	1272.96	6.70	9.34	5.38	986.80	992.20		992.54	0.000480	4.41	4.73	0.65	0.74	0.36
Main	6900.112	1980 cfs 100-yr	1980.00	1904.20	32.74	43.06	10.32	986.80	997.14		997.34	0.000122	3.11	3.69	0.57	0.68	0.20
Main	6900.112	2650 cfs 500-yr	2650.00	2271.56	257.81	120.63	20.43	986.80	1007.25		1007.32	0.000015	1.21	2.22	0.33	0.31	0.09
Main	6900.112	2924 cfs	2924.00	2395.77	355.53	172.70	21.85	986.80	1008.67		1008.73	0.000013	1.11	2.19	0.35	0.33	0.08
Main	6900.112	3116 cfs	3116.00	2524.96	397.52	193.52	22.16	986.80	1008.98		1009.04	0.000014	1.14	2.28	0.37	0.35	0.09
Main	6900.112	3400 cfs	3400.00	2718.61	457.83	223.56	22.53	986.80	1009.35		1009.42	0.000015	1.19	2.41	0.41	0.37	0.09
Main	6900.112	3881 cfs 0.25 PM	3881.00	3049.49	557.85	273.66	23.01	986.80	1009.83		1009.92	0.000017	1.28	2.65	0.46	0.41	0.10
Main	6900.112	4188 cfs	4188.00	3256.94	624.05	307.00	23.30	986.80	1010.12		1010.21	0.000019	1.34	2.80	0.49	0.44	0.10
Main	6900.112	11457 cfs 0.5 PM	11457.00	7587.90	2550.45	1318.65	28.15	986.80	1014.97		1015.27	0.000052	2.26	5.39	1.15	0.92	0.18
Main	6900.112	13000 cfs	13000.00	8464.88	2982.78	1552.34	28.72	986.80	1015.54		1015.90	0.000060	2.44	5.89	1.28	1.01	0.19
Main	6900.112	15000 cfs	15000.00	9612.67	3534.32	1853.01	29.27	986.80	1016.09		1016.53	0.000072	2.69	6.57	1.44	1.12	0.21
Main	6900.112	24229 cfs -24hr	24229.00	14683.81	6192.63	3352.56	31.24	986.80	1018.06		1018.91	0.000131	3.71	9.40	2.17	1.60	0.30
Main	6900.112	31970 cfs - 6hr	31970.00	18763.18	8488.28	4718.54	32.42	986.80	1019.24		1020.50	0.000184	4.48	11.58	2.73	1.96	0.36
Main	6858.315	1289 cfs	1289.00	1261.55	24.18	3.27	5.59	986.60	992.20		992.51	0.001224	4.06	4.51	0.79	0.44	0.34
Main	6858.315	1980 cfs 100-yr	1980.00	1825.87	118.12	36.01	10.54	986.60	997.15		997.32	0.000249	2.57	3.47	0.64	0.61	0.19
Main	6858.315	2650 cfs 500-yr	2650.00	1713.28	629.18	307.55	20.66	986.60	1007.28		1007.30	0.000019	0.86	1.66	0.49	0.41	0.06
Main	6858.315	2924 cfs	2924.00	1744.84	771.83	407.32	22.08	986.60	1008.70		1008.72	0.000016	0.81	1.58	0.49	0.43	0.06
Main	6858.315	3116 cfs	3116.00	1828.75	838.95	448.30	22.39	986.60	1009.01		1009.03	0.000017	0.84	1.63	0.52	0.45	0.06
Main	6858.315	3400 cfs	3400.00	1956.59	936.24	507.17	22.76	986.60	1009.38		1009.41	0.000018	0.88	1.72	0.55	0.49	0.06
Main	6858.315	3881 cfs 0.25 PM	3881.00	2177.71	1098.51	604.78	23.25	986.60	1009.87		1009.90	0.000021	0.95	1.87	0.61	0.54	0.07
Main	6858.315	4188 cfs	4188.00	2317.70	1204.59	665.72	23.54	986.60	1010.16		1010.19	0.000023	1.00	1.97	0.65	0.57	0.07
Main	6858.315	11457 cfs 0.5 PM	11457.00	5165.08	3948.07	2343.84	28.49	986.60	1015.10		1015.21	0.000059	1.79	3.63	1.38	1.11	0.12
Main	6858.315	13000 cfs	13000.00	5711.12	4521.15	2767.73	29.09	986.60	1015.70		1015.83	0.000068	1.94	3.93	1.51	1.24	0.13
Main	6858.315	15000 cfs	15000.00	6431.88	5260.79	3307.34	29.68	986.60	1016.29		1016.44	0.000081	2.15	4.34	1.68	1.40	0.14
Main	6858.315	24229 cfs -24hr	24229.00	9571.20	8712.65	5945.15	31.85	986.60	1018.46		1018.73	0.000142	2.99	6.01	2.42	2.05	0.19
Main	6858.315	31970 cfs - 6hr	31970.00	12042.46	11620.49	8307.05	33.23	986.60	1019.84		1020.23	0.000196	3.60	7.25	2.98	2.51	0.22
Main	6825.169	1289 cfs	1289.00	1251.63	19.29	18.08	4.96	986.50	991.84		992.44	0.002764	5.37	6.35	0.78	0.99	0.50
Main	6825.169	1980 cfs 100-yr	1980.00	1629.09	242.92	107.99	10.23	986.50	997.11		997.31	0.000333	2.43	4.01	0.89	0.78	0.22
Main	6825.169	2650 cfs 500-yr	2650.00	1288.29	797.59	564.13	20.41	986.50	1007.28		1007.30	0.000017	0.75	1.59	0.52	0.48	0.06
Main	6825.169	2924 cfs	2924.00	1312.65	940.94	670.41	21.83	986.50	1008.70		1008.72	0.000014	0.72	1.51	0.52	0.47	0.06
Main	6825.169	3116 cfs	3116.00	1376.30	1015.28	724.42	22.14	986.50	1009.01		1009.03	0.000015	0.74	1.56	0.55	0.49	0.06
Main	6825.169	3400 cfs	3400.00	1473.27	1123.60	803.13	22.51	986.50	1009.38		1009.40	0.000016	0.78	1.65	0.58	0.52	0.06
Main	6825.169	3881 cfs 0.25 PM	3881.00	1641.03	1304.97	935.00	23.00	986.50	1009.87		1009.90	0.000019	0.85	1.80	0.64	0.58	0.07
Main	6825.169	4188 cfs	4188.00	1748.86	1424.35	1014.79	23.29	986.50	1010.16		1010.19	0.000021	0.90	1.89	0.68	0.61	0.07
Main	6825.169	11457 cfs 0.5 PM	11457.00	3891.32	4322.12	3243.56	28.25	986.50	1015.12		1015.20	0.000053	1.65	3.47	1.40	1.18	0.11
Main	6825.169	13000 cfs	13000.00	4309.30	4923.34	3767.36	28.85	986.50	1015.72		1015.82	0.000060	1.79	3.76	1.53	1.30	0.12
Main	6825.169	15000 cfs	15000.00	4860.87	5700.63	4438.50	29.44	986.50	1016.31		1016.43	0.000072	1.99	4.16	1.71	1.47	0.13
Main	6825.169	24229 cfs -24hr	24229.00	7284.44	9307.29	7637.27	31.62	986.50	1018.50		1018.71	0.000129	2.83	5.80	2.47	2.16	0.18
Main	6825.169	31970 cfs - 6hr	31970.00	9221.67	12348.29	10400.04	33.01	986.50	1019.89		1020.20	0.000179	3.47	7.03	3.05	2.70	0.22
Main	6790.440	1289 cfs	1289.00	894.72	173.44	220.84	4.86	986.40	991.26	990.47	992.30	0.005520	7.41	9.21	4.65	5.59	0.74
Main	6790.440	1980 cfs 100-yr	1980.00	999.36	462.06	518.58	10.71	986.40	997.11		997.30	0.000346	2.40	4.67	1.46	1.76	0.25
Main	6790.440	2650 cfs 500-yr	2650.00	623.52	1111.88	914.61	20.89	986.40	1007.29		1007.30	0.000011	0.68	1.49	0.59	0.56	0.06
Main	6790.440	2924 cfs	2924.00	638.37	1266.30	1019.33	22.31	986.40	1008.71		1008.72	0.000009	0.65	1.43	0.59	0.54	0.05
Main	6790.440	3116 cfs	3116.00	670.01	1357.20	1088.80	22.61	986.40	1009.02		1009.03	0.000010	0.67	1.48	0.61	0.55	0.05
Main	6790.440	3400 cfs	3400.00	718.02	1490.29	1191.69	22.99	986.40	1009.39		1009.40	0.000010	0.71	1.56	0.65	0.58	0.06
Main	6790.440	3881 cfs 0.25 PM	3881.00	800.80	1713.87	1366.33	23.48	986.40	1009.88		1009.89	0.000012	0.77	1.71	0.71	0.64	0.06
Main	6790.440	4188 cfs	4188.00	852.66	1857.11	1478.23	23.77	986.40	1010.17		1010.19	0.000013	0.81	1.79	0.76	0.67	0.06
Main	6790.440	11457 cfs 0.5 PM	11457.00	1861.22	5132.35	4463.44	28.74	986.40	1015.14		1015.19	0.000034	1.53	3.24	1.45	1.32	0.11
Main	6790.440	13000 cfs	13000.00	2065.57	5823.80	5110.63	29.34	986.40	1015.74		1015.80	0.000040	1.67	3.52	1.59	1.45	0.11
Main	6790.440	15000 cfs	15000.00	2334.61	6720.04	5945.35	29.94	986.40	1016.34		1016.41	0.000048	1.86	3.90	1.77	1.62	0.13
Main	6790.440	24229 cfs -24hr	24229.00	3522.27	10856.59	9850.14	32.14	986.40	1018.54		1018.69	0.000087	2.66	5.48	2.53	2.36	0.17

HEC-RAS Plan: SS-EX-Check River: SippoCreek Reach: Main (Continued)

Reach	River Sta	Profile	Q Total	Q Channel	Q Left	Q Right	Hydr Depth C	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	Frctn Slope	Vel Total	Vel Chnl	Vel Left	Vel Right	Froude # Chl
			(cfs)	(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(ft/s)	(ft/s)	(ft/s)	
Main	6790.440	31970 cfs - 6hr	31970.00	4475.80	14327.47	13166.73	33.55	986.40	1019.95		1020.16	0.000122	3.27	6.67	3.12	2.92	0.20
Main	6768.254	1289 cfs	1289.00	946.94	205.10	136.96	4.19	986.10	990.39	990.39	992.11	0.007637	10.30	11.20	8.66	8.09	0.96
Main	6768.254	1980 cfs 100-yr	1980.00	955.63	635.94	388.43	10.90	986.10	997.10		997.29	0.000290	2.82	4.34	2.67	1.59	0.23
Main	6768.254	2650 cfs 500-yr	2650.00	450.07	1541.76	658.17	21.09	986.10	1007.29		1007.30	0.000009	0.66	1.06	0.79	0.40	0.04
Main	6768.254	2924 cfs	2924.00	462.54	1717.31	744.15	22.51	986.10	1008.71		1008.72	0.000008	0.63	1.02	0.76	0.38	0.04
Main	6768.254	3116 cfs	3116.00	485.57	1831.67	798.76	22.82	986.10	1009.02		1009.03	0.000008	0.65	1.05	0.79	0.40	0.04
Main	6768.254	3400 cfs	3400.00	520.57	2000.33	879.10	23.19	986.10	1009.39		1009.40	0.000009	0.69	1.11	0.83	0.42	0.04
Main	6768.254	3881 cfs 0.25 PM	3881.00	580.99	2285.25	1014.76	23.68	986.10	1009.88		1009.89	0.000011	0.75	1.22	0.91	0.46	0.04
Main	6768.254	4188 cfs	4188.00	618.05	2464.03	1105.92	23.97	986.10	1010.17		1010.19	0.000012	0.79	1.28	0.96	0.49	0.05
Main	6768.254	11457 cfs 0.5 PM	11457.00	1380.82	6597.79	3478.39	28.94	986.10	1015.14		1015.19	0.000031	1.49	2.36	1.80	1.01	0.08
Main	6768.254	13000 cfs	13000.00	1537.41	7472.02	3990.57	29.55	986.10	1015.75		1015.80	0.000036	1.63	2.58	1.97	1.11	0.08
Main	6768.254	15000 cfs	15000.00	1742.89	8606.31	4650.80	30.14	986.10	1016.34		1016.41	0.000043	1.82	2.87	2.19	1.25	0.09
Main	6768.254	24229 cfs -24hr	24229.00	2655.41	13822.57	7751.02	32.35	986.10	1018.55		1018.68	0.000079	2.60	4.07	3.13	1.83	0.13
Main	6768.254	31970 cfs - 6hr	31970.00	3392.21	18183.75	10394.04	33.76	986.10	1019.96		1020.16	0.000111	3.21	4.98	3.85	2.28	0.15
Main	6755.926	1289 cfs	1289.00	987.60	184.95	116.45	3.86	985.90	989.76	990.13	991.96	0.008971	11.53	12.67	8.91	8.86	1.14
Main	6755.926	1980 cfs 100-yr	1980.00	916.24	675.67	388.09	11.23	985.90	997.13		997.27	0.000160	2.06	4.04	1.45	1.45	0.21
Main	6755.926	2650 cfs 500-yr	2650.00	548.58	1303.70	797.72	21.39	985.90	1007.29		1007.30	0.000009	0.61	1.27	0.59	0.47	0.05
Main	6755.926	2924 cfs	2924.00	567.18	1440.99	915.83	22.81	985.90	1008.71		1008.72	0.000008	0.59	1.23	0.58	0.46	0.05
Main	6755.926	3116 cfs	3116.00	596.11	1534.85	985.04	23.12	985.90	1009.02		1009.03	0.000009	0.61	1.28	0.60	0.47	0.05
Main	6755.926	3400 cfs	3400.00	639.92	1673.48	1086.60	23.49	985.90	1009.39		1009.40	0.000009	0.64	1.35	0.63	0.50	0.05
Main	6755.926	3881 cfs 0.25 PM	3881.00	715.83	1909.28	1255.89	23.98	985.90	1009.88		1009.89	0.000011	0.70	1.48	0.69	0.55	0.05
Main	6755.926	4188 cfs	4188.00	761.66	2055.41	1370.92	24.27	985.90	1010.17		1010.19	0.000012	0.74	1.56	0.73	0.58	0.06
Main	6755.926	11457 cfs 0.5 PM	11457.00	1703.49	5404.55	4348.96	29.24	985.90	1015.14		1015.18	0.000033	1.42	2.89	1.37	1.22	0.09
Main	6755.926	13000 cfs	13000.00	1896.62	6110.87	4992.51	29.85	985.90	1015.75		1015.80	0.000038	1.55	3.15	1.50	1.35	0.10
Main	6755.926	15000 cfs	15000.00	2150.00	7028.11	5821.89	30.44	985.90	1016.34		1016.41	0.000046	1.73	3.50	1.67	1.51	0.11
Main	6755.926	24229 cfs -24hr	24229.00	3274.88	11233.47	9720.66	32.65	985.90	1018.55		1018.68	0.000085	2.49	4.97	2.39	2.22	0.15
Main	6755.926	31970 cfs - 6hr	31970.00	4182.77	14738.97	13048.26	34.06	985.90	1019.97		1020.15	0.000120	3.06	6.08	2.93	2.76	0.18
Main	6737.893	1289 cfs	1289.00	940.31	240.91	107.78	3.28	985.70	989.12	990.13	991.69	0.013349	11.83	14.21	7.86	8.89	1.38
Main	6737.893	1980 cfs 100-yr	1980.00	591.79	1038.10	350.11	11.36	985.70	997.19		997.24	0.000111	1.38	2.58	1.22	0.99	0.14
Main	6737.893	2650 cfs 500-yr	2650.00	460.01	1463.00	726.98	21.45	985.70	1007.29		1007.30	0.000009	0.54	1.06	0.56	0.40	0.04
Main	6737.893	2924 cfs	2924.00	482.65	1600.94	840.41	22.87	985.70	1008.71		1008.72	0.000008	0.53	1.05	0.55	0.39	0.04
Main	6737.893	3116 cfs	3116.00	507.30	1697.30	911.40	23.18	985.70	1009.02		1009.03	0.000008	0.55	1.08	0.57	0.41	0.04
Main	6737.893	3400 cfs	3400.00	544.64	1841.14	1014.23	23.55	985.70	1009.39		1009.40	0.000009	0.58	1.15	0.60	0.44	0.04
Main	6737.893	3881 cfs 0.25 PM	3881.00	608.93	2086.46	1185.61	24.05	985.70	1009.88		1009.89	0.000011	0.64	1.25	0.66	0.49	0.05
Main	6737.893	4188 cfs	4188.00	649.07	2243.18	1295.75	24.34	985.70	1010.17		1010.18	0.000012	0.67	1.32	0.70	0.52	0.05
Main	6737.893	11457 cfs 0.5 PM	11457.00	1488.64	5905.68	4062.69	29.31	985.70	1015.15		1015.18	0.000036	1.32	2.52	1.36	1.10	0.08
Main	6737.893	13000 cfs	13000.00	1661.10	6678.39	4660.51	29.92	985.70	1015.75		1015.80	0.000042	1.45	2.75	1.49	1.21	0.09
Main	6737.893	15000 cfs	15000.00	1886.90	7681.73	5431.37	30.51	985.70	1016.35		1016.40	0.000051	1.62	3.06	1.66	1.36	0.10
Main	6737.893	24229 cfs -24hr	24229.00	2893.54	12282.39	9053.07	32.73	985.70	1018.57		1018.67	0.000097	2.35	4.38	2.39	2.00	0.13
Main	6737.893	31970 cfs - 6hr	31970.00	3709.33	16117.37	12143.30	34.15	985.70	1019.98		1020.14	0.000140	2.90	5.38	2.95	2.49	0.16
Main	6692.140	1289 cfs	1289.00	718.53	357.07	213.39	4.38	985.60	990.20	989.30	990.81	0.001342	4.50	7.91	2.47	4.17	0.67
Main	6692.140	1980 cfs 100-yr	1980.00	633.06	642.84	704.10	11.36	985.60	997.19		997.23	0.000059	1.12	2.68	0.71	1.13	0.14
Main	6692.140	2650 cfs 500-yr	2650.00	544.30	815.20	1290.50	21.46	985.60	1007.29		1007.30	0.000007	0.50	1.22	0.31	0.57	0.05
Main	6692.140	2924 cfs	2924.00	576.83	889.09	1458.08	22.88	985.60	1008.71		1008.72	0.000006	0.50	1.21	0.31	0.58	0.04
Main	6692.140	3116 cfs	3116.00	608.93	948.55	1558.53	23.19	985.60	1009.02		1009.02	0.000006	0.52	1.27	0.32	0.61	0.05
Main	6692.140	3400 cfs	3400.00	657.01	1036.93	1706.06	23.56	985.60	1009.39		1009.40	0.000007	0.55	1.34	0.34	0.65	0.05
Main	6692.140	3881 cfs 0.25 PM	3881.00	739.44	1186.38	1955.18	24.05	985.60	1009.88		1009.89	0.000008	0.61	1.48	0.38	0.72	0.05
Main	6692.140	4188 cfs	4188.00	791.54	1281.90	2114.55	24.35	985.60	1010.17		1010.18	0.000009	0.65	1.57	0.40	0.76	0.06
Main	6692.140	11457 cfs 0.5 PM	11457.00	1947.36	3565.79	5943.85	29.30	985.60	1015.13		1015.18	0.000031	1.35	3.20	0.84	1.63	0.10
Main	6692.140	13000 cfs	13000.00	2188.02	4052.07	6759.91	29.90	985.60	1015.73		1015.79	0.000036	1.49	3.53	0.93	1.80	0.11
Main	6692.140	15000 cfs	15000.00	2501.69	4681.94	7816.37	30.49	985.60	1016.32		1016.40	0.000044	1.67	3.95	1.04	2.02	0.13
Main	6692.140	24229 cfs -24hr	24229.00	3921.80	7596.78	12710.41	32.66	985.60	1018.49		1018.66	0.000086	2.45	5.79	1.54	2.99	0.18
Main	6692.140	31970 cfs - 6hr	31970.00	5091.22	10048.49	16830.29	34.04	985.60	1019.86		1020.12	0.000123	3.06	7.21	1.92	3.74	0.22
Main	6564.443	1289 cfs	1289.00	577.03	161.31	550.66	6.21	984.00	990.36		990.52	0.000352	2.15	4.42	1.04	1.75	0.31
Main	6564.443	1980 cfs 100-yr	1980.00	450.59	226.03	1303.39	13.05	984.00	997.20		997.22	0.000029	0.85	1.64	0.36	0.91	0.08

HEC-RAS Plan: SS-EX-Check River: SippoCreek Reach: Main (Continued)

Reach	River Sta	Profile	Q Total	Q Channel	Q Left	Q Right	Hydr Depth C	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	Frctn Slope	Vel Total	Vel Chnl	Vel Left	Vel Right	Froude # Chl
			(cfs)	(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(ft/s)	(ft/s)	(ft/s)	
Main	6564.443	2650 cfs 500-yr	2650.00	422.89	346.33	1880.79	23.14	984.00	1007.29		1007.29	0.000004	0.42	0.87	0.20	0.47	0.03
Main	6564.443	2924 cfs	2924.00	444.93	379.30	2099.77	24.56	984.00	1008.71		1008.71	0.000004	0.42	0.86	0.20	0.46	0.03
Main	6564.443	3116 cfs	3116.00	469.53	403.56	2242.91	24.87	984.00	1009.02		1009.02	0.000004	0.44	0.90	0.21	0.48	0.03
Main	6564.443	3400 cfs	3400.00	506.43	439.50	2454.07	25.24	984.00	1009.39		1009.40	0.000005	0.47	0.95	0.22	0.51	0.03
Main	6564.443	3881 cfs 0.25 PM	3881.00	569.56	500.40	2811.03	25.73	984.00	1009.88		1009.89	0.000006	0.51	1.05	0.24	0.57	0.04
Main	6564.443	4188 cfs	4188.00	609.86	539.61	3038.53	26.02	984.00	1010.17		1010.18	0.000006	0.54	1.11	0.26	0.60	0.04
Main	6564.443	11457 cfs 0.5 PM	11457.00	1489.68	1460.48	8506.85	30.99	984.00	1015.14		1015.17	0.000022	1.09	2.28	0.53	1.20	0.07
Main	6564.443	13000 cfs	13000.00	1668.81	1653.92	9677.27	31.59	984.00	1015.75		1015.78	0.000026	1.20	2.51	0.58	1.31	0.08
Main	6564.443	15000 cfs	15000.00	1904.02	1906.63	11189.35	32.19	984.00	1016.34		1016.38	0.000032	1.33	2.81	0.65	1.46	0.09
Main	6564.443	24229 cfs -24hr	24229.00	2943.24	3056.98	18228.78	34.39	984.00	1018.54		1018.62	0.000064	1.91	4.07	0.95	2.09	0.12
Main	6564.443	31970 cfs - 6hr	31970.00	3747.56	3982.23	24240.21	35.79	984.00	1019.94		1020.07	0.000093	2.35	4.98	1.16	2.57	0.15
Main	6469.916	1289 cfs	1289.00	426.59	119.69	742.72	7.60	982.80	990.40		990.46	0.000182	1.35	2.79	0.74	1.16	0.18
Main	6469.916	1980 cfs 100-yr	1980.00	412.58	188.03	1379.39	14.40	982.80	997.20		997.21	0.000021	0.70	1.42	0.37	0.69	0.07
Main	6469.916	2650 cfs 500-yr	2650.00	405.47	241.73	2002.80	24.49	982.80	1007.29		1007.29	0.000004	0.42	0.82	0.21	0.43	0.03
Main	6469.916	2924 cfs	2924.00	434.83	265.84	2223.34	25.91	982.80	1008.71		1008.71	0.000003	0.43	0.83	0.21	0.44	0.03
Main	6469.916	3116 cfs	3116.00	460.74	283.15	2372.11	26.22	982.80	1009.02		1009.02	0.000004	0.45	0.87	0.22	0.46	0.03
Main	6469.916	3400 cfs	3400.00	499.40	308.80	2591.80	26.59	982.80	1009.39		1009.40	0.000004	0.48	0.93	0.23	0.49	0.03
Main	6469.916	3881 cfs 0.25 PM	3881.00	565.26	352.25	2963.49	27.08	982.80	1009.88		1009.89	0.000005	0.53	1.04	0.26	0.55	0.04
Main	6469.916	4188 cfs	4188.00	607.05	379.94	3201.02	27.37	982.80	1010.17		1010.18	0.000005	0.57	1.10	0.27	0.59	0.04
Main	6469.916	11457 cfs 0.5 PM	11457.00	1554.26	1041.47	8861.27	32.33	982.80	1015.13		1015.17	0.000021	1.24	2.39	0.58	1.30	0.07
Main	6469.916	13000 cfs	13000.00	1752.30	1183.15	10064.55	32.93	982.80	1015.74		1015.78	0.000025	1.37	2.64	0.64	1.44	0.08
Main	6469.916	15000 cfs	15000.00	2009.87	1366.20	11623.93	33.53	982.80	1016.33		1016.38	0.000031	1.54	2.98	0.72	1.63	0.09
Main	6469.916	24229 cfs -24hr	24229.00	3183.06	2211.98	18833.96	35.70	982.80	1018.50		1018.62	0.000063	2.30	4.43	1.05	2.44	0.13
Main	6469.916	31970 cfs - 6hr	31970.00	4154.30	2924.65	24891.05	37.08	982.80	1019.88		1020.06	0.000095	2.89	5.56	1.31	3.07	0.16
Main	6368.388	1289 cfs	1289.00	468.03	23.40	797.56	7.72	982.60	990.39		990.44	0.000146	1.25	2.43	0.44	1.01	0.15
Main	6368.388	1980 cfs 100-yr	1980.00	464.29	39.12	1476.59	14.53	982.60	997.20		997.21	0.000018	0.68	1.28	0.22	0.62	0.06
Main	6368.388	2650 cfs 500-yr	2650.00	461.89	62.99	2125.12	24.61	982.60	1007.29		1007.29	0.000003	0.41	0.75	0.12	0.40	0.03
Main	6368.388	2924 cfs	2924.00	497.25	71.82	2354.93	26.03	982.60	1008.71		1008.71	0.000003	0.42	0.77	0.12	0.41	0.03
Main	6368.388	3116 cfs	3116.00	527.28	77.14	2511.58	26.34	982.60	1009.02		1009.02	0.000003	0.44	0.80	0.13	0.43	0.03
Main	6368.388	3400 cfs	3400.00	572.02	84.96	2743.02	26.71	982.60	1009.39		1009.39	0.000004	0.47	0.86	0.14	0.46	0.03
Main	6368.388	3881 cfs 0.25 PM	3881.00	648.15	98.23	3134.62	27.21	982.60	1009.88		1009.89	0.000004	0.53	0.96	0.15	0.52	0.03
Main	6368.388	4188 cfs	4188.00	696.47	106.85	3384.68	27.50	982.60	1010.17		1010.18	0.000005	0.56	1.02	0.16	0.55	0.03
Main	6368.388	11457 cfs 0.5 PM	11457.00	1796.36	338.09	9322.55	32.46	982.60	1015.13		1015.16	0.000019	1.23	2.22	0.36	1.23	0.07
Main	6368.388	13000 cfs	13000.00	2026.56	390.46	10582.99	33.06	982.60	1015.73		1015.77	0.000023	1.36	2.46	0.39	1.36	0.08
Main	6368.388	15000 cfs	15000.00	2325.62	458.71	12215.66	33.65	982.60	1016.33		1016.37	0.000028	1.53	2.77	0.44	1.54	0.08
Main	6368.388	24229 cfs -24hr	24229.00	3688.02	792.89	19748.09	35.83	982.60	1018.50		1018.61	0.000058	2.27	4.13	0.67	2.30	0.12
Main	6368.388	31970 cfs - 6hr	31970.00	4816.09	1091.34	26062.58	37.20	982.60	1019.88		1020.05	0.000087	2.86	5.19	0.84	2.91	0.15
Main	6261.580	1289 cfs	1289.00	397.49	39.10	852.41	8.14	982.25	990.39		990.42	0.000163	1.19	2.33	0.74	0.99	0.14
Main	6261.580	1980 cfs 100-yr	1980.00	398.43	62.84	1518.73	14.95	982.25	997.20		997.21	0.000020	0.66	1.27	0.31	0.61	0.06
Main	6261.580	2650 cfs 500-yr	2650.00	392.56	98.20	2159.24	25.04	982.25	1007.29		1007.29	0.000003	0.41	0.75	0.16	0.40	0.03
Main	6261.580	2924 cfs	2924.00	422.36	110.99	2390.65	26.46	982.25	1008.71		1008.71	0.000003	0.42	0.76	0.17	0.41	0.03
Main	6261.580	3116 cfs	3116.00	447.82	118.90	2549.27	26.77	982.25	1009.02		1009.02	0.000004	0.44	0.80	0.17	0.43	0.03
Main	6261.580	3400 cfs	3400.00	485.75	130.57	2783.68	27.14	982.25	1009.39		1009.39	0.000004	0.47	0.85	0.18	0.46	0.03
Main	6261.580	3881 cfs 0.25 PM	3881.00	550.32	150.29	3180.39	27.63	982.25	1009.88		1009.89	0.000005	0.52	0.95	0.20	0.52	0.03
Main	6261.580	4188 cfs	4188.00	591.29	163.01	3433.70	27.92	982.25	1010.17		1010.18	0.000005	0.55	1.01	0.22	0.55	0.03
Main	6261.580	11457 cfs 0.5 PM	11457.00	1523.89	485.28	9447.83	32.88	982.25	1015.13		1015.16	0.000021	1.22	2.21	0.47	1.23	0.07
Main	6261.580	13000 cfs	13000.00	1719.10	556.17	10724.73	33.48	982.25	1015.73		1015.77	0.000025	1.35	2.44	0.52	1.36	0.07
Main	6261.580	15000 cfs	15000.00	1972.79	647.99	12379.22	34.07	982.25	1016.32		1016.37	0.000031	1.52	2.76	0.58	1.54	0.08
Main	6261.580	24229 cfs -24hr	24229.00	3128.97	1084.13	20015.91	36.25	982.25	1018.50		1018.60	0.000064	2.27	4.11	0.86	2.31	0.12
Main	6261.580	31970 cfs - 6hr	31970.00	4086.71	1462.25	26421.05	37.62	982.25	1019.87		1020.04	0.000097	2.85	5.17	1.08	2.91	0.15
Main	6131.449	1289 cfs	1289.00	515.40	131.55	642.05	8.44	981.90	990.34		990.40	0.000166	1.41	2.91	1.01	1.06	0.18
Main	6131.449	1980 cfs 100-yr	1980.00	454.16	167.62	1358.21	15.30	981.90	997.20		997.21	0.000020	0.71	1.41	0.39	0.66	0.06
Main	6131.449	2650 cfs 500-yr	2650.00	446.05	236.56	1967.39	25.39	981.90	1007.29		1007.29	0.000004	0.43	0.84	0.20	0.45	0.03
Main	6131.449	2924 cfs	2924.00	480.56	267.21	2176.23	26.81	981.90	1008.71		1008.71	0.000004	0.44	0.85	0.20	0.46	0.03
Main	6131.449	3116 cfs	3116.00	509.61	286.49	2319.91	27.12	981.90	1009.02		1009.02	0.000004	0.46	0.90	0.21	0.48	0.03
Main	6131.449	3400 cfs	3400.00	552.87	314.87	2532.27	27.49	981.90	1009.39		1009.39	0.000004	0.49	0.96	0.22	0.52	0.03

HEC-RAS Plan: SS-EX-Check River: SippoCreek Reach: Main (Continued)

Reach	River Sta	Profile	Q Total	Q Channel	Q Left	Q Right	Hydr Depth C	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	Frctn Slope	Vel Total	Vel Chnl	Vel Left	Vel Right	Froude # Chl
			(cfs)	(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(ft/s)	(ft/s)	(ft/s)	
Main	6131.449	3881 cfs 0.25 PM	3881.00	626.48	362.80	2891.72	27.98	981.90	1009.88		1009.89	0.000005	0.55	1.07	0.25	0.58	0.04
Main	6131.449	4188 cfs	4188.00	673.13	394.03	3120.83	28.27	981.90	1010.17		1010.18	0.000006	0.58	1.13	0.26	0.61	0.04
Main	6131.449	11457 cfs 0.5 PM	11457.00	1733.66	1192.08	8531.27	33.22	981.90	1015.12		1015.16	0.000020	1.27	2.49	0.58	1.36	0.08
Main	6131.449	13000 cfs	13000.00	1955.58	1366.89	9677.54	33.82	981.90	1015.72		1015.77	0.000024	1.41	2.75	0.64	1.51	0.08
Main	6131.449	15000 cfs	15000.00	2244.04	1592.70	11163.26	34.41	981.90	1016.31		1016.37	0.000029	1.59	3.11	0.72	1.71	0.09
Main	6131.449	24229 cfs -24hr	24229.00	3558.48	2661.81	18008.72	36.57	981.90	1018.47		1018.59	0.000057	2.36	4.64	1.08	2.56	0.14
Main	6131.449	31970 cfs - 6hr	31970.00	4646.67	3586.76	23736.56	37.92	981.90	1019.82		1020.02	0.000085	2.96	5.84	1.35	3.23	0.17
Main	5982.247	1289 cfs	1289.00	462.39	619.99	206.62	9.07	981.25	990.32		990.37	0.000061	1.38	2.55	1.18	0.90	0.15
Main	5982.247	1980 cfs 100-yr	1980.00	428.89	951.88	599.23	15.94	981.25	997.19		997.21	0.000013	0.74	1.35	0.67	0.63	0.06
Main	5982.247	2650 cfs 500-yr	2650.00	427.99	1205.89	1016.12	26.04	981.25	1007.29		1007.29	0.000003	0.41	0.82	0.41	0.34	0.03
Main	5982.247	2924 cfs	2924.00	450.64	1295.44	1177.92	27.46	981.25	1008.71		1008.71	0.000003	0.41	0.82	0.41	0.34	0.03
Main	5982.247	3116 cfs	3116.00	475.55	1372.72	1267.74	27.77	981.25	1009.02		1009.02	0.000003	0.43	0.86	0.42	0.36	0.03
Main	5982.247	3400 cfs	3400.00	512.91	1487.82	1399.28	28.14	981.25	1009.39		1009.39	0.000003	0.45	0.91	0.45	0.39	0.03
Main	5982.247	3881 cfs 0.25 PM	3881.00	576.78	1683.64	1620.58	28.63	981.25	1009.88		1009.88	0.000004	0.50	1.01	0.50	0.43	0.03
Main	5982.247	4188 cfs	4188.00	616.57	1806.35	1765.08	28.92	981.25	1010.17		1010.18	0.000004	0.53	1.07	0.53	0.46	0.03
Main	5982.247	11457 cfs 0.5 PM	11457.00	1445.96	4472.11	5538.93	33.88	981.25	1015.13		1015.15	0.000015	1.09	2.14	1.04	1.00	0.06
Main	5982.247	13000 cfs	13000.00	1614.01	5021.23	6364.76	34.48	981.25	1015.73		1015.76	0.000018	1.20	2.34	1.13	1.11	0.07
Main	5982.247	15000 cfs	15000.00	1833.57	5736.74	7429.70	35.07	981.25	1016.32		1016.36	0.000023	1.34	2.62	1.26	1.25	0.08
Main	5982.247	24229 cfs -24hr	24229.00	2807.50	8958.65	12462.85	37.25	981.25	1018.50		1018.57	0.000045	1.94	3.77	1.81	1.83	0.11
Main	5982.247	31970 cfs - 6hr	31970.00	3590.74	11590.73	16788.53	38.62	981.25	1019.87		1019.98	0.000065	2.39	4.65	2.23	2.27	0.13
Main	5779.970	1289 cfs	1289.00	305.42	812.90	170.68	9.94	980.30	990.34		990.35	0.000029	0.77	1.34	0.68	0.70	0.07
Main	5779.970	1980 cfs 100-yr	1980.00	380.11	1344.27	255.62	16.80	980.30	997.20		997.20	0.000008	0.56	0.99	0.52	0.44	0.04
Main	5779.970	2650 cfs 500-yr	2650.00	416.22	1720.88	512.91	26.89	980.30	1007.29		1007.29	0.000002	0.34	0.68	0.35	0.22	0.02
Main	5779.970	2924 cfs	2924.00	446.57	1871.55	605.88	28.31	980.30	1008.71		1008.71	0.000002	0.34	0.69	0.36	0.23	0.02
Main	5779.970	3116 cfs	3116.00	473.12	1988.34	654.54	28.62	980.30	1009.02		1009.02	0.000002	0.36	0.72	0.37	0.24	0.02
Main	5779.970	3400 cfs	3400.00	512.82	2162.32	724.86	28.99	980.30	1009.39		1009.39	0.000003	0.38	0.77	0.40	0.25	0.03
Main	5779.970	3881 cfs 0.25 PM	3881.00	580.20	2456.90	843.90	29.48	980.30	1009.88		1009.88	0.000003	0.42	0.86	0.44	0.28	0.03
Main	5779.970	4188 cfs	4188.00	622.96	2644.41	920.63	29.77	980.30	1010.17		1010.18	0.000004	0.45	0.91	0.47	0.30	0.03
Main	5779.970	11457 cfs 0.5 PM	11457.00	1567.06	6899.68	2990.26	34.73	980.30	1015.13		1015.15	0.000014	0.94	1.97	1.00	0.66	0.06
Main	5779.970	13000 cfs	13000.00	1762.73	7792.38	3444.89	35.33	980.30	1015.73		1015.75	0.000017	1.03	2.18	1.10	0.73	0.06
Main	5779.970	15000 cfs	15000.00	2065.63	9166.80	3767.57	35.92	980.30	1016.32		1016.35	0.000021	1.15	2.51	1.27	0.76	0.07
Main	5779.970	24229 cfs -24hr	24229.00	3203.71	14410.42	6614.87	38.09	980.30	1018.49		1018.56	0.000042	1.66	3.67	1.84	1.12	0.10
Main	5779.970	31970 cfs - 6hr	31970.00	4125.52	18704.49	9139.99	39.47	980.30	1019.87		1019.97	0.000061	2.04	4.56	2.28	1.39	0.13
Main	5673.110	1289 cfs	1289.00	236.14	859.40	193.46	10.09	980.25	990.34		990.35	0.000030	0.68	1.15	0.61	0.66	0.06
Main	5673.110	1980 cfs 100-yr	1980.00	304.44	1361.91	313.65	16.95	980.25	997.20		997.20	0.000009	0.51	0.88	0.47	0.49	0.04
Main	5673.110	2650 cfs 500-yr	2650.00	361.77	1819.84	468.40	27.04	980.25	1007.29		1007.29	0.000003	0.36	0.66	0.34	0.29	0.02
Main	5673.110	2924 cfs	2924.00	394.09	2003.21	526.70	28.46	980.25	1008.71		1008.71	0.000003	0.36	0.68	0.35	0.30	0.02
Main	5673.110	3116 cfs	3116.00	418.94	2134.10	562.96	28.77	980.25	1009.02		1009.02	0.000003	0.38	0.72	0.37	0.31	0.02
Main	5673.110	3400 cfs	3400.00	455.69	2327.30	617.01	29.14	980.25	1009.39		1009.39	0.000003	0.41	0.77	0.40	0.33	0.03
Main	5673.110	3881 cfs 0.25 PM	3881.00	517.90	2653.75	709.36	29.63	980.25	1009.88		1009.88	0.000004	0.45	0.86	0.44	0.36	0.03
Main	5673.110	4188 cfs	4188.00	560.96	2879.79	747.26	29.92	980.25	1010.17		1010.18	0.000005	0.48	0.92	0.48	0.37	0.03
Main	5673.110	11457 cfs 0.5 PM	11457.00	1431.03	7555.62	2470.36	34.87	980.25	1015.12		1015.15	0.000018	1.03	2.02	1.02	0.82	0.06
Main	5673.110	13000 cfs	13000.00	1605.24	8501.45	2893.31	35.48	980.25	1015.73		1015.75	0.000021	1.13	2.22	1.13	0.90	0.07
Main	5673.110	15000 cfs	15000.00	1830.83	9724.74	3444.43	36.07	980.25	1016.32		1016.35	0.000026	1.25	2.49	1.26	0.98	0.07
Main	5673.110	24229 cfs -24hr	24229.00	2811.51	15091.06	6326.43	38.24	980.25	1018.49		1018.55	0.000051	1.72	3.61	1.81	1.27	0.10
Main	5673.110	31970 cfs - 6hr	31970.00	3584.03	19358.47	9027.50	39.62	980.25	1019.87		1019.96	0.000073	2.06	4.44	2.22	1.51	0.12
Main	5526.262	1289 cfs	1289.00	262.36	694.63	332.02	11.08	979.25	990.33		990.34	0.000108	0.86	1.50	0.76	0.81	0.08
Main	5526.262	1980 cfs 100-yr	1980.00	317.12	1177.82	485.06	17.94	979.25	997.19		997.20	0.000034	0.65	1.12	0.61	0.57	0.05
Main	5526.262	2650 cfs 500-yr	2650.00	365.19	1621.05	663.76	28.04	979.25	1007.29		1007.29	0.000010	0.46	0.83	0.45	0.38	0.03
Main	5526.262	2924 cfs	2924.00	397.09	1791.25	735.66	29.46	979.25	1008.71		1008.71	0.000010	0.47	0.86	0.47	0.39	0.03
Main	5526.262	3116 cfs	3116.00	421.96	1909.73	784.31	29.76	979.25	1009.01		1009.02	0.000012	0.50	0.90	0.49	0.40	0.03
Main	5526.262	3400 cfs	3400.00	458.85	2084.87	856.28	30.14	979.25	1009.39		1009.39	0.000014	0.53	0.97	0.53	0.43	0.03
Main	5526.262	3881 cfs 0.25 PM	3881.00	521.42	2381.11	978.47	30.63	979.25	1009.88		1009.88	0.000017	0.59	1.08	0.59	0.48	0.03
Main	5526.262	4188 cfs	4188.00	561.01	2569.38	1057.61	30.92	979.25	1010.17		1010.17	0.000019	0.63	1.15	0.63	0.51	0.04
Main	5526.262	11457 cfs 0.5 PM	11457.00	1435.20	6867.33	3154.48	35.86	979.25	1015.11		1015.14	0.000064	1.33	2.54	1.37	1.03	0.07
Main	5526.262	13000 cfs	13000.00	1609.71	7738.27	3652.02	36.45	979.25	1015.71		1015.75	0.000074	1.46	2.80	1.51	1.14	0.08

HEC-RAS Plan: SS-EX-Check River: SippoCreek Reach: Main (Continued)

Reach	River Sta	Profile	Q Total	Q Channel	Q Left	Q Right	Hydr Depth C	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	Frctn Slope	Vel Total	Vel Chnl	Vel Left	Vel Right	Froude # Chl
			(cfs)	(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(ft/s)	(ft/s)	(ft/s)	
Main	5526.262	15000 cfs	15000.00	1835.68	8863.87	4300.45	37.04	979.25	1016.29		1016.34	0.000091	1.62	3.15	1.69	1.26	0.09
Main	5526.262	24229 cfs -24hr	24229.00	2817.88	13821.44	7589.68	39.19	979.25	1018.44		1018.54	0.000165	2.22	4.57	2.43	1.64	0.13
Main	5526.262	31970 cfs - 6hr	31970.00	3573.32	17690.16	10706.51	40.54	979.25	1019.79		1019.94	0.000221	2.62	5.60	2.97	1.91	0.15
Main	5409.418	1289 cfs	1289.00	1289.00			10.85	978.25	989.10	984.65	990.22		8.48	8.48			0.45
Main	5409.418	1980 cfs 100-yr	1980.00	1980.00			17.88	978.25	996.13	986.76	997.10		7.91	7.91			0.33
Main	5409.418	2650 cfs 500-yr	2650.00	2650.00			28.27	978.25	1006.52	988.61	1007.22		6.69	6.69			0.22
Main	5409.418	2924 cfs	2924.00	2924.00			29.61	978.25	1007.86	989.29	1008.63		7.05	7.05			0.23
Main	5409.418	3116 cfs	3116.00	3113.65	1.58	0.78	20.86	978.25	1008.07	989.76	1008.93		7.04	7.45	0.09	0.10	0.29
Main	5409.418	3400 cfs	3400.00	3369.16	20.64	10.20	21.11	978.25	1008.32	990.47	1009.29		6.34	7.97	0.26	0.29	0.31
Main	5409.418	3881 cfs 0.25 PM	3881.00	3788.19	62.15	30.67	21.37	978.25	1008.58	991.60	1009.76		6.11	8.85	0.43	0.48	0.34
Main	5409.418	4188 cfs	4188.00	4046.38	94.85	46.78	21.51	978.25	1008.72	992.29	1010.04		6.07	9.39	0.53	0.59	0.36
Main	5409.418	11457 cfs 0.5 PM	11457.00	6141.14	3475.93	1839.94	26.68	978.25	1013.89	1012.15	1015.02		3.96	11.49	2.12	2.55	0.39
Main	5409.418	13000 cfs	13000.00	6517.02	4191.26	2291.72	27.26	978.25	1014.47	1012.64	1015.63		4.09	11.93	2.31	2.79	0.40
Main	5409.418	15000 cfs	15000.00	7147.51	5021.90	2830.60	27.71	978.25	1014.92	1013.28	1016.21		4.40	12.88	2.58	3.12	0.43
Main	5409.418	24229 cfs -24hr	24229.00	9186.53	8765.36	6277.11	29.61	978.25	1016.82	1015.63	1018.38		5.37	15.49	3.47	4.50	0.50
Main	5409.418	31970 cfs - 6hr	31970.00	10112.63	11517.23	10340.13	31.03	978.25	1018.24	1017.04	1019.78		5.88	16.27	3.90	5.54	0.51
Main	5312.23		Culvert														
Main	5251.314	1289 cfs	1289.00	1289.00			6.40	978.13	984.53	984.53	987.74	0.006470	14.38	14.38			1.00
Main	5251.314	1980 cfs 100-yr	1980.00	1980.00			8.51	978.13	986.64	986.64	990.93	0.006090	16.63	16.63			1.00
Main	5251.314	2650 cfs 500-yr	2650.00	2650.00			10.36	978.13	988.49	988.49	993.67	0.006003	18.28	18.28			1.00
Main	5251.314	2924 cfs	2924.00	2924.00			11.03	978.13	989.16	989.16	994.73	0.005952	18.93	18.93			1.00
Main	5251.314	3116 cfs	3116.00	3116.00			11.51	978.13	989.64	989.64	995.45	0.005885	19.34	19.34			1.00
Main	5251.314	3400 cfs	3400.00	3400.00			12.22	978.13	990.35	990.35	996.48	0.005777	19.87	19.87			1.00
Main	5251.314	3881 cfs 0.25 PM	3881.00	3881.00			13.35	978.13	991.48	991.48	998.18	0.005751	20.77	20.77			1.00
Main	5251.314	4188 cfs	4188.00	4188.00			14.04	978.13	992.17	992.17	999.22	0.005688	21.30	21.30			1.00
Main	5251.314	11457 cfs 0.5 PM	11457.00	7295.25	3178.04	983.71	28.21	978.13	1012.90	1012.90	1014.99	0.002247	4.81	14.42	2.75	1.36	0.48
Main	5251.314	13000 cfs	13000.00	7929.23	3854.45	1216.31	28.52	978.13	1013.21	1013.21	1015.53	0.002503	5.10	15.50	3.10	1.53	0.51
Main	5251.314	15000 cfs	15000.00	8407.50	4956.25	1636.25	29.13	978.13	1013.82	1013.82	1016.14	0.002589	5.19	16.09	3.48	1.74	0.53
Main	5251.314	24229 cfs -24hr	24229.00	10224.27	10144.67	3860.06	31.25	978.13	1015.94	1015.94	1018.29	0.002968	5.77	18.24	4.77	2.55	0.57
Main	5251.314	31970 cfs - 6hr	31970.00	11936.01	14368.82	5665.17	32.25	978.13	1016.94	1016.94	1019.67	0.003439	6.52	20.63	5.78	3.08	0.64
Main	5207.865	1289 cfs	1289.00	1083.11	18.77	187.12	2.92	978.00	981.39	983.00	986.54	0.014126	14.74	19.67	5.12	6.52	2.03
Main	5207.865	1980 cfs 100-yr	1980.00	1552.41	44.87	382.72	3.38	978.00	981.85	983.89	989.35	0.014163	17.47	24.40	6.97	8.85	2.34
Main	5207.865	2650 cfs 500-yr	2650.00	1976.78	63.77	609.46	3.74	978.00	982.21	984.49	991.76	0.013894	19.40	28.04	6.29	10.89	2.56
Main	5207.865	2924 cfs	2924.00	2141.72	76.89	705.39	3.87	978.00	982.34	984.72	992.68	0.013901	20.09	29.39	6.32	11.66	2.63
Main	5207.865	3116 cfs	3116.00	2255.08	87.48	773.45	3.95	978.00	982.42	984.89	993.31	0.013862	20.52	30.28	6.34	12.17	2.68
Main	5207.865	3400 cfs	3400.00	2418.95	107.03	874.03	4.07	978.00	982.54	985.12	994.22	0.013728	21.13	31.55	6.50	12.89	2.76
Main	5207.865	3881 cfs 0.25 PM	3881.00	2689.04	146.52	1045.44	4.25	978.00	982.72	985.43	995.70	0.013610	22.03	33.57	6.79	14.03	2.87
Main	5207.865	4188 cfs	4188.00	2856.90	176.19	1154.91	4.36	978.00	982.83	985.64	996.61	0.013542	22.53	34.79	6.98	14.71	2.94
Main	5207.865	11457 cfs 0.5 PM	11457.00	5865.88	2000.74	3590.38	6.14	978.00	984.61	988.55	1008.34	0.003601	28.29	50.67	14.50	23.74	3.60
Main	5207.865	13000 cfs	13000.00	6327.70	2597.50	4074.80	6.48	978.00	984.95	988.94	1008.88	0.004038	28.46	51.78	15.45	24.48	3.58
Main	5207.865	15000 cfs	15000.00	6869.96	3393.20	4736.84	6.89	978.00	985.36	989.55	1009.43	0.004193	28.75	52.91	16.39	25.61	3.55
Main	5207.865	24229 cfs -24hr	24229.00	8945.87	7771.12	7512.02	8.39	978.00	986.86	991.74	1011.42	0.004749	30.58	56.57	20.66	29.12	3.44
Main	5207.865	31970 cfs - 6hr	31970.00	10409.06	11935.96	9624.99	9.45	978.00	987.92	993.37	1012.78	0.005609	32.01	58.41	23.59	30.62	3.35
Main	5095.508	1289 cfs	1289.00	1055.68	212.79	20.54	3.08	975.00	978.58	979.99	982.49	0.032995	12.57	17.26	6.75	2.08	1.73
Main	5095.508	1980 cfs 100-yr	1980.00	1511.01	417.83	51.17	3.72	975.00	979.22	980.57	984.34	0.038719	12.51	20.51	6.46	2.57	1.88
Main	5095.508	2650 cfs 500-yr	2650.00	1861.81	709.47	78.72	4.01	975.00	979.51	981.04	985.76	0.045182	13.60	23.42	7.94	3.02	2.06
Main	5095.508	2924 cfs	2924.00	1997.41	835.99	90.60	4.11	975.00	979.61	981.21	986.31	0.047705	14.03	24.52	8.49	3.19	2.13
Main	5095.508	3116 cfs	3116.00	2091.90	924.75	99.35	4.18	975.00	979.68	981.32	986.69	0.049401	14.30	25.26	8.81	3.30	2.18
Main	5095.508	3400 cfs	3400.00	2224.94	1062.92	112.14	4.27	975.00	979.77	981.48	987.22	0.051837	14.73	26.29	9.33	3.46	2.24
Main	5095.508	3881 cfs 0.25 PM	3881.00	2443.51	1303.14	134.35	4.41	975.00	979.91	981.73	988.10	0.055838	15.43	27.97	10.17	3.73	2.35
Main	5095.508	4188 cfs	4188.00	2579.06	1460.08	148.86	4.49	975.00	979.99	981.93	988.65	0.058316	15.86	28.99	10.67	3.89	2.41
Main	5095.508	11457 cfs 0.5 PM	11457.00	4980.26	5897.45	579.29	5.87	975.00	981.37	984.43	996.62	0.083765	22.59	42.75	18.94	7.31	3.11
Main	5095.508	13000 cfs	13000.00	5359.92	6965.02	675.06	6.14	975.00	981.64	984.82	997.37	0.082583	23.22	44.01	19.87	7.72	3.13
Main	5095.508	15000 cfs	15000.00	5824.02	8377.85	798.13	6.47	975.00	981.97	985.26	998.25	0.080899	23.93	45.41	20.91	8.17	3.15
Main	5095.508	24229 cfs -24hr	24229.00	7580.96	15322.43	1325.61	7.71	975.00	983.21	987.21	1001.49	0.073757	26.99	49.56	25.27	9.59	3.14

HEC-RAS Plan: SS-EX-Check River: SippoCreek Reach: Main (Continued)

Reach	River Sta	Profile	Q Total	Q Channel	Q Left	Q Right	Hydr Depth C	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	Frctn Slope	Vel Total	Vel Chnl	Vel Left	Vel Right	Froude # Chl
			(cfs)	(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(ft/s)	(ft/s)	(ft/s)	
Main	5095.508	31970 cfs - 6hr	31970.00	8855.44	21364.58	1749.98	8.63	975.00	984.13	988.69	1003.79	0.068266	28.87	51.77	27.84	10.35	3.11
Main	4997.530	1289 cfs	1289.00	560.07	604.53	124.39	4.02	974.70	978.87	978.40	979.28	0.003311	4.15	6.97	3.16	3.21	0.61
Main	4997.530	1980 cfs 100-yr	1980.00	1118.74	697.79	163.47	3.17	974.70	978.02	978.98	981.10	0.028545	10.82	17.62	7.09	7.74	1.74
Main	4997.530	2650 cfs 500-yr	2650.00	817.02	1493.90	339.08	5.45	974.70	980.30	979.39	980.71	0.002295	4.32	7.49	3.73	3.26	0.57
Main	4997.530	2924 cfs	2924.00	856.29	1682.77	384.94	5.70	974.70	980.55	979.55	980.95	0.002192	4.34	7.51	3.80	3.26	0.55
Main	4997.530	3116 cfs	3116.00	883.89	1815.17	416.95	5.86	974.70	980.71	979.65	981.12	0.002140	4.36	7.53	3.86	3.28	0.55
Main	4997.530	3400 cfs	3400.00	924.19	2011.42	464.39	6.10	974.70	980.95	979.81	981.35	0.002074	4.39	7.57	3.93	3.30	0.54
Main	4997.530	3881 cfs 0.25 PM	3881.00	990.46	2345.57	544.96	6.48	974.70	981.33	980.06	981.74	0.001977	4.44	7.64	4.03	3.36	0.53
Main	4997.530	4188 cfs	4188.00	1032.23	2559.53	596.24	6.71	974.70	981.56	980.18	981.97	0.001930	4.48	7.68	4.09	3.39	0.52
Main	4997.530	11457 cfs 0.5 PM	11457.00	1814.01	7960.45	1682.54	10.91	974.70	985.76	982.40	986.28	0.001436	5.40	8.31	5.43	3.86	0.44
Main	4997.530	13000 cfs	13000.00	1975.60	9111.80	1912.61	11.63	974.70	986.48	982.73	987.03	0.001399	5.58	8.49	5.64	3.95	0.44
Main	4997.530	15000 cfs	15000.00	2183.18	10604.99	2211.82	12.51	974.70	987.36	983.11	987.95	0.001361	5.79	8.72	5.90	4.06	0.43
Main	4997.530	24229 cfs -24hr	24229.00	3119.85	17501.72	3607.43	16.09	974.70	990.94	984.83	991.70	0.001256	6.59	9.69	6.86	4.48	0.43
Main	4997.530	31970 cfs - 6hr	31970.00	3883.90	23291.95	4794.16	18.69	974.70	993.54	986.08	994.42	0.001204	7.11	10.38	7.48	4.75	0.42
Main	4873.143	1289 cfs	1289.00	483.76	295.42	509.83	3.52	974.65	978.51		978.85	0.003873	3.54	6.78	2.69	2.79	0.64
Main	4873.143	1980 cfs 100-yr	1980.00	592.28	583.61	804.10	4.42	974.65	979.40	978.53	979.70	0.003306	3.54	6.61	3.13	2.84	0.55
Main	4873.143	2650 cfs 500-yr	2650.00	707.28	856.30	1086.42	5.09	974.65	980.08		980.39	0.003195	3.72	6.85	3.50	2.99	0.53
Main	4873.143	2924 cfs	2924.00	753.12	967.69	1203.19	5.35	974.65	980.33		980.65	0.003182	3.80	6.95	3.62	3.05	0.53
Main	4873.143	3116 cfs	3116.00	785.68	1045.47	1284.85	5.51	974.65	980.50		980.83	0.003168	3.86	7.03	3.71	3.10	0.53
Main	4873.143	3400 cfs	3400.00	833.67	1160.79	1405.55	5.75	974.65	980.74		981.07	0.003150	3.95	7.15	3.84	3.17	0.53
Main	4873.143	3881 cfs 0.25 PM	3881.00	913.93	1357.26	1609.81	6.13	974.65	981.12		981.47	0.003144	4.08	7.35	4.03	3.29	0.52
Main	4873.143	4188 cfs	4188.00	965.00	1483.00	1740.01	6.36	974.65	981.35		981.72	0.003140	4.17	7.48	4.15	3.36	0.52
Main	4873.143	11457 cfs 0.5 PM	11457.00	2118.94	4537.61	4800.46	10.43	974.65	985.42		986.08	0.003268	5.81	10.02	6.15	4.69	0.55
Main	4873.143	13000 cfs	13000.00	2353.78	5200.69	5445.53	11.13	974.65	986.12		986.84	0.003283	6.07	10.43	6.45	4.90	0.55
Main	4873.143	15000 cfs	15000.00	2654.77	6065.47	6279.76	11.98	974.65	986.97		987.76	0.003297	6.37	10.92	6.81	5.15	0.56
Main	4873.143	24229 cfs -24hr	24229.00	4006.24	10122.61	10100.16	15.44	974.65	990.43		991.51	0.003319	7.50	12.79	8.10	6.05	0.57
Main	4873.143	31970 cfs - 6hr	31970.00	5106.55	13589.29	13274.16	17.95	974.65	992.94		994.23	0.003316	8.22	14.03	8.91	6.63	0.58
Main	4770.454	1289 cfs	1289.00	900.31	120.90	267.78	5.09	972.00	977.40	977.40	978.38	0.003971	5.20	9.35	3.09	2.38	0.73
Main	4770.454	1980 cfs 100-yr	1980.00	1179.96	240.29	559.75	5.85	972.00	978.16	978.16	979.28	0.004504	5.53	10.67	3.88	3.01	0.78
Main	4770.454	2650 cfs 500-yr	2650.00	1426.12	376.80	847.08	6.38	972.00	978.69	978.69	979.97	0.004798	5.99	11.82	4.75	3.49	0.82
Main	4770.454	2924 cfs	2924.00	1526.63	432.28	965.08	6.55	972.00	978.86	978.86	980.22	0.005009	6.21	12.32	5.08	3.68	0.85
Main	4770.454	3116 cfs	3116.00	1591.05	473.24	1051.71	6.68	972.00	979.00	979.00	980.39	0.005108	6.32	12.58	5.28	3.80	0.86
Main	4770.454	3400 cfs	3400.00	1684.11	534.52	1181.37	6.88	972.00	979.19	979.19	980.64	0.005253	6.47	12.95	5.56	3.95	0.87
Main	4770.454	3881 cfs 0.25 PM	3881.00	1843.53	637.50	1399.97	7.16	972.00	979.47	979.47	981.03	0.005525	6.77	13.61	6.02	4.22	0.90
Main	4770.454	4188 cfs	4188.00	1940.59	704.74	1542.68	7.34	972.00	979.65	979.65	981.27	0.005677	6.93	13.98	6.28	4.37	0.91
Main	4770.454	11457 cfs 0.5 PM	11457.00	3939.68	2355.23	5162.09	10.39	972.00	982.70	982.70	985.53	0.007421	9.88	20.04	10.31	7.02	1.10
Main	4770.454	13000 cfs	13000.00	4324.70	2718.43	5956.88	10.91	972.00	983.22	983.22	986.27	0.007652	10.34	20.96	10.88	7.44	1.12
Main	4770.454	15000 cfs	15000.00	4812.96	3193.60	6993.44	11.54	972.00	983.85	983.85	987.17	0.007820	10.89	22.05	11.54	7.93	1.14
Main	4770.454	24229 cfs -24hr	24229.00	6956.08	5437.89	11835.04	14.10	972.00	986.42	986.42	990.84	0.008423	12.93	26.07	13.85	9.75	1.22
Main	4770.454	31970 cfs - 6hr	31970.00	8675.08	7369.04	15925.88	15.94	972.00	988.25	988.25	993.50	0.008683	14.27	28.77	15.26	10.94	1.27
Main	4694.740	1289 cfs	1289.00	938.31	218.99	131.70	4.89	971.00	976.39	976.85	977.93	0.005201	6.51	11.47	4.39	1.99	0.91
Main	4694.740	1980 cfs 100-yr	1980.00	1216.13	362.53	401.35	5.50	971.00	977.00	977.49	978.78	0.005748	6.81	13.21	5.35	3.07	0.99
Main	4694.740	2650 cfs 500-yr	2650.00	1447.93	498.90	703.17	5.98	971.00	977.48	978.06	979.42	0.006233	7.21	14.46	6.00	3.81	1.04
Main	4694.740	2924 cfs	2924.00	1537.67	554.11	832.22	6.16	971.00	977.66	978.22	979.66	0.006469	7.37	14.93	6.22	4.07	1.06
Main	4694.740	3116 cfs	3116.00	1599.86	592.93	923.21	6.27	971.00	977.77	978.34	979.83	0.006580	7.50	15.25	6.38	4.24	1.07
Main	4694.740	3400 cfs	3400.00	1690.63	650.59	1058.78	6.42	971.00	977.92	978.50	980.06	0.006737	7.69	15.73	6.60	4.48	1.09
Main	4694.740	3881 cfs 0.25 PM	3881.00	1834.86	758.71	1287.43	6.66	971.00	978.16	978.75	980.42	0.007047	8.03	16.47	7.07	4.86	1.12
Main	4694.740	4188 cfs	4188.00	1927.29	829.81	1430.90	6.79	971.00	978.29	978.90	980.65	0.007237	8.27	16.97	7.40	5.10	1.15
Main	4694.740	11457 cfs 0.5 PM	11457.00	3709.14	2579.32	5168.55	9.24	971.00	980.74	981.73	984.70	0.009458	12.07	23.99	12.15	8.88	1.39
Main	4694.740	13000 cfs	13000.00	4049.52	2957.84	5992.64	9.65	971.00	981.15	982.19	985.42	0.009728	12.69	25.09	12.84	9.47	1.42
Main	4694.740	15000 cfs	15000.00	4473.65	3452.50	7073.85	10.16	971.00	981.66	982.80	986.29	0.009993	13.40	26.33	13.62	10.16	1.46
Main	4694.740	24229 cfs -24hr	24229.00	6325.44	5769.89	12133.67	12.18	971.00	983.68	985.17	989.85	0.010788	16.09	31.05	16.44	12.76	1.57
Main	4694.740	31970 cfs - 6hr	31970.00	7785.12	7746.04	16438.84	13.65	971.00	985.15	986.92	992.45	0.011168	17.82	34.09	18.15	14.43	1.63
Main	4565.850	1289 cfs	1289.00	957.87	78.21	252.92	3.61	971.00	974.98	975.56	976.81	0.008478	7.57	12.40	3.44	3.60	1.15
Main	4565.850	1980 cfs 100-yr	1980.00	1245.68	184.75	549.57	4.24	971.00	975.62	976.23	977.58	0.009049	7.98	13.73	4.15	4.87	1.18

HEC-RAS Plan: SS-EX-Check River: SippoCreek Reach: Main (Continued)

Reach	River Sta	Profile	Q Total	Q Channel	Q Left	Q Right	Hydr Depth C	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	Frctn Slope	Vel Total	Vel Chnl	Vel Left	Vel Right	Froude # Chl
			(cfs)	(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(ft/s)	(ft/s)	(ft/s)	
Main	4565.850	2650 cfs 500-yr	2650.00	1491.94	317.59	840.47	4.73	971.00	976.11	976.71	978.21	0.009383	8.38	14.73	4.73	5.69	1.19
Main	4565.850	2924 cfs	2924.00	1583.40	380.20	960.40	4.91	971.00	976.29	976.88	978.43	0.009477	8.51	15.05	4.95	5.95	1.20
Main	4565.850	3116 cfs	3116.00	1649.21	424.07	1042.72	5.03	971.00	976.41	977.03	978.59	0.009600	8.64	15.32	5.11	6.13	1.20
Main	4565.850	3400 cfs	3400.00	1740.70	493.12	1166.17	5.20	971.00	976.58	977.23	978.80	0.009732	8.78	15.64	5.31	6.37	1.21
Main	4565.850	3881 cfs 0.25 PM	3881.00	1889.94	616.41	1374.65	5.48	971.00	976.85	977.50	979.15	0.009921	9.00	16.12	5.62	6.73	1.21
Main	4565.850	4188 cfs	4188.00	1980.46	699.87	1507.67	5.65	971.00	977.03	977.69	979.35	0.010054	9.12	16.38	5.79	6.93	1.21
Main	4565.850	11457 cfs 0.5 PM	11457.00	3802.03	3331.09	4323.88	8.31	971.00	979.69	980.41	983.01	0.011682	11.76	21.36	9.24	9.93	1.31
Main	4565.850	13000 cfs	13000.00	4166.60	3937.71	4895.69	8.70	971.00	980.08	980.88	983.65	0.012054	12.26	22.36	9.71	10.44	1.34
Main	4565.850	15000 cfs	15000.00	4637.09	4735.65	5627.26	9.14	971.00	980.52	981.37	984.46	0.012538	12.93	23.69	10.35	11.10	1.38
Main	4565.850	24229 cfs -24hr	24229.00	5995.60	9509.53	8723.87	13.32	971.00	984.69	983.54	987.47	0.004023	11.10	21.03	9.50	9.73	1.02
Main	4565.850	31970 cfs - 6hr	31970.00	7345.22	13347.15	11277.63	15.71	971.00	987.09	985.14	989.97	0.003620	11.36	21.84	9.96	9.90	0.97
Main	4407.253	1289 cfs	1289.00	736.59	30.49	521.92	5.33	968.50	974.10	972.98	974.56	0.003013	3.92	6.84	1.18	2.67	0.52
Main	4407.253	1980 cfs 100-yr	1980.00	1013.16	102.19	864.65	5.86	968.50	974.64	973.80	975.31	0.003010	4.82	8.55	1.99	3.59	0.62
Main	4407.253	2650 cfs 500-yr	2650.00	1233.34	207.43	1209.23	6.39	968.50	975.16	974.62	975.95	0.002809	5.35	9.55	2.61	4.21	0.67
Main	4407.253	2924 cfs	2924.00	1315.72	260.87	1347.42	6.58	968.50	975.36	974.79	976.19	0.002790	5.53	9.89	2.87	4.43	0.68
Main	4407.253	3116 cfs	3116.00	1371.91	300.41	1443.68	6.71	968.50	975.49	974.92	976.35	0.002786	5.66	10.11	3.05	4.57	0.69
Main	4407.253	3400 cfs	3400.00	1454.60	360.02	1585.38	6.89	968.50	975.66	975.13	976.57	0.002798	5.85	10.44	3.28	4.77	0.70
Main	4407.253	3881 cfs 0.25 PM	3881.00	1593.84	463.29	1823.88	7.16	968.50	975.93	975.42	976.92	0.002875	6.17	11.01	3.64	5.11	0.73
Main	4407.253	4188 cfs	4188.00	1671.25	539.47	1977.28	7.36	968.50	976.13	975.58	977.15	0.002828	6.29	11.23	3.82	5.26	0.73
Main	4407.253	11457 cfs 0.5 PM	11457.00	3175.00	2775.16	5506.85	11.35	968.50	980.12	978.39	981.43	0.002160	7.63	13.84	5.72	7.01	0.72
Main	4407.253	13000 cfs	13000.00	3465.70	3296.00	6238.30	12.02	968.50	980.79	978.83	982.16	0.002126	7.83	14.26	5.95	7.22	0.73
Main	4407.253	15000 cfs	15000.00	3835.91	3978.32	7185.77	12.82	968.50	981.60	979.42	983.04	0.002097	8.07	14.80	6.23	7.47	0.73
Main	4407.253	24229 cfs -24hr	24229.00	5451.42	7201.62	11575.96	16.04	968.50	984.81		986.52	0.002012	8.76	16.81	7.17	8.05	0.74
Main	4407.253	31970 cfs - 6hr	31970.00	6655.38	9958.82	15355.79	18.50	968.50	987.28		989.07	0.001895	8.94	17.79	7.54	8.17	0.73
Main	4211.037	1289 cfs	1289.00	767.00	72.40	449.60	4.04	968.60	973.30	973.30	974.01	0.004372	4.63	8.48	2.72	2.78	0.74
Main	4211.037	1980 cfs 100-yr	1980.00	888.75	139.43	951.81	4.97	968.60	974.22		974.75	0.003707	4.23	7.99	2.49	3.17	0.63
Main	4211.037	2650 cfs 500-yr	2650.00	983.05	248.63	1418.32	5.67	968.60	974.92		975.38	0.003238	4.24	7.75	2.86	3.44	0.57
Main	4211.037	2924 cfs	2924.00	1029.99	291.19	1602.82	5.90	968.60	975.15		975.60	0.003129	4.31	7.81	3.00	3.57	0.57
Main	4211.037	3116 cfs	3116.00	1063.89	320.90	1731.21	6.04	968.60	975.30		975.76	0.003097	4.37	7.87	3.09	3.66	0.56
Main	4211.037	3400 cfs	3400.00	1115.34	364.64	1920.01	6.25	968.60	975.50		975.97	0.003094	4.47	7.98	3.22	3.79	0.56
Main	4211.037	3881 cfs 0.25 PM	3881.00	1207.86	437.42	2235.72	6.54	968.60	975.80		976.29	0.002898	4.68	8.25	3.44	4.02	0.57
Main	4211.037	4188 cfs	4188.00	1257.25	487.27	2443.48	6.77	968.60	976.02		976.52	0.002713	4.75	8.31	3.54	4.12	0.56
Main	4211.037	11457 cfs 0.5 PM	11457.00	2358.54	1719.55	7378.91	10.96	968.60	980.22		980.87	0.001993	5.93	9.62	4.88	5.53	0.51
Main	4211.037	13000 cfs	13000.00	2589.00	1987.20	8423.80	11.65	968.60	980.90		981.60	0.001980	6.13	9.93	5.08	5.74	0.51
Main	4211.037	15000 cfs	15000.00	2882.80	2334.28	9782.92	12.48	968.60	981.73		982.48	0.001976	6.37	10.33	5.32	5.97	0.52
Main	4211.037	24229 cfs -24hr	24229.00	4168.49	3934.62	16125.90	15.76	968.60	985.01		985.95	0.001932	7.18	11.83	6.15	6.76	0.53
Main	4211.037	31970 cfs - 6hr	31970.00	5185.53	5297.35	21487.12	18.22	968.60	987.47		988.53	0.001842	7.62	12.72	6.59	7.20	0.53
Main	4069.035	1289 cfs	1289.00	994.15	48.66	246.19	4.88	967.00	972.05	972.25	973.31	0.004891	5.95	10.17	1.62	2.77	0.81
Main	4069.035	1980 cfs 100-yr	1980.00	1255.50	81.10	643.40	5.86	967.00	973.03	973.03	974.22	0.002451	5.63	10.69	1.67	3.47	0.78
Main	4069.035	2650 cfs 500-yr	2650.00	1485.07	113.71	1051.23	6.50	967.00	973.67	973.67	974.90	0.002469	5.81	11.40	1.79	4.01	0.79
Main	4069.035	2924 cfs	2924.00	1561.28	127.65	1235.07	6.75	967.00	973.92	973.92	975.14	0.002453	5.82	11.53	1.81	4.17	0.78
Main	4069.035	3116 cfs	3116.00	1617.33	137.07	1361.60	6.90	967.00	974.07	974.07	975.30	0.002456	5.90	11.70	1.84	4.32	0.78
Main	4069.035	3400 cfs	3400.00	1701.95	150.57	1547.48	7.07	967.00	974.24	974.24	975.51	0.002482	6.07	12.01	1.89	4.57	0.80
Main	4069.035	3881 cfs 0.25 PM	3881.00	1763.74	175.95	1941.31	7.58	967.00	974.75		975.88	0.002360	5.92	11.61	1.84	4.76	0.74
Main	4069.035	4188 cfs	4188.00	1797.05	193.34	2197.61	7.92	967.00	975.09		976.14	0.002251	5.81	11.32	1.81	4.83	0.71
Main	4069.035	11457 cfs 0.5 PM	11457.00	3218.96	700.89	7537.15	12.13	967.00	979.30		980.58	0.002364	7.11	13.24	2.33	7.06	0.67
Main	4069.035	13000 cfs	13000.00	3515.47	825.64	8658.89	12.76	967.00	979.93		981.30	0.002433	7.40	13.74	2.46	7.43	0.68
Main	4069.035	15000 cfs	15000.00	3896.23	1003.72	10100.05	13.52	967.00	980.69		982.17	0.002525	7.72	14.37	2.64	7.82	0.69
Main	4069.035	24229 cfs -24hr	24229.00	5501.15	1845.10	16882.75	16.62	967.00	983.79		985.64	0.002778	8.70	16.51	3.24	8.97	0.71
Main	4069.035	31970 cfs - 6hr	31970.00	6724.76	2581.89	22663.35	19.03	967.00	986.20		988.22	0.002787	9.15	17.63	3.56	9.50	0.71
Main	3956.761	1289 cfs	1289.00	569.16	85.51	634.34	4.95	967.00	971.95	970.38	972.21	0.003051	2.93	5.57	1.11	2.44	0.44
Main	3956.761	1980 cfs 100-yr	1980.00	784.19	141.65	1054.16	5.96	967.00	972.96	971.07	973.28	0.003066	3.32	6.38	1.32	2.88	0.46
Main	3956.761	2650 cfs 500-yr	2650.00	979.19	196.86	1473.95	6.77	967.00	973.77	971.61	974.15	0.003123	3.63	7.00	1.48	3.22	0.47
Main	3956.761	2924 cfs	2924.00	1055.27	219.11	1649.62	7.07	967.00	974.07	971.84	974.46	0.003111	3.74	7.23	1.54	3.34	0.48
Main	3956.761	3116 cfs	3116.00	1104.84	233.96	1777.20	7.26	967.00	974.26	972.03	974.67	0.003096	3.82	7.37	1.57	3.44	0.48
Main	3956.761	3400 cfs	3400.00	1177.87	255.98	1966.15	7.54	967.00	974.54	972.23	974.96	0.003090	3.94	7.57	1.62	3.57	0.49

HEC-RAS Plan: SS-EX-Check River: SippoCreek Reach: Main (Continued)

Reach	River Sta	Profile	Q Total	Q Channel	Q Left	Q Right	Hydr Depth C	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	Frctn Slope	Vel Total	Vel Chnl	Vel Left	Vel Right	Froude # Chl
			(cfs)	(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(ft/s)	(ft/s)	(ft/s)	
Main	3956.761	3881 cfs 0.25 PM	3881.00	1301.40	293.40	2286.20	7.96	967.00	974.96		975.42	0.003097	4.14	7.92	1.71	3.80	0.49
Main	3956.761	4188 cfs	4188.00	1376.30	317.47	2494.23	8.24	967.00	975.24		975.72	0.002426	4.23	8.09	1.75	3.91	0.50
Main	3956.761	11457 cfs 0.5 PM	11457.00	3058.86	878.84	7519.30	12.21	967.00	979.21		980.25	0.002836	6.55	12.14	2.62	6.47	0.61
Main	3956.761	13000 cfs	13000.00	3398.76	1000.26	8600.98	12.81	967.00	979.81		980.98	0.002979	6.93	12.85	2.76	6.89	0.63
Main	3956.761	15000 cfs	15000.00	3836.02	1151.86	10012.12	13.53	967.00	980.53		981.85	0.003174	7.39	13.73	2.92	7.38	0.66
Main	3956.761	24229 cfs -24hr	24229.00	5768.39	1874.60	16586.00	16.34	967.00	983.34		985.33	0.004006	9.03	17.10	3.48	9.17	0.75
Main	3956.761	31970 cfs - 6hr	31970.00	7285.34	2531.86	22152.80	18.47	967.00	985.47		987.88	0.004456	9.90	19.11	3.80	10.15	0.78
Main	3844.176	1289 cfs	1289.00	730.33	156.98	401.69	3.39	967.25	970.65	970.65	971.78	0.008110	5.78	10.77	2.34	4.55	1.03
Main	3844.176	1980 cfs 100-yr	1980.00	1027.60	251.99	700.41	4.21	967.25	971.48	971.48	972.83	0.007813	6.29	12.19	2.65	5.17	1.05
Main	3844.176	2650 cfs 500-yr	2650.00	1301.48	345.26	1003.26	4.82	967.25	972.08	972.08	973.68	0.007978	6.79	13.50	2.93	5.69	1.08
Main	3844.176	2924 cfs	2924.00	1406.67	390.51	1126.82	5.09	967.25	972.36	972.36	973.99	0.007850	6.83	13.80	3.03	5.71	1.08
Main	3844.176	3116 cfs	3116.00	1477.66	421.50	1216.84	5.28	967.25	972.54	972.54	974.20	0.007767	6.86	13.99	3.09	5.74	1.07
Main	3844.176	3400 cfs	3400.00	1580.58	466.14	1353.28	5.52	967.25	972.79	972.79	974.49	0.007643	6.94	14.29	3.19	5.80	1.07
Main	3844.176	3881 cfs 0.25 PM	3881.00	1745.41	539.87	1595.72	5.92	967.25	973.19	973.19	974.95	0.007649	7.03	14.72	3.32	5.89	1.07
Main	3844.176	4188 cfs	4188.00	1664.27	573.13	1950.60	7.10	967.25	974.36		975.40	0.005997	5.55	11.71	2.69	4.89	0.77
Main	3844.176	11457 cfs 0.5 PM	11457.00	3382.33	1417.82	6656.85	10.99	967.25	978.25		979.88	0.004480	7.67	15.38	3.56	7.59	0.82
Main	3844.176	13000 cfs	13000.00	3746.60	1595.25	7658.15	11.51	967.25	978.78		980.59	0.004708	8.12	16.26	3.75	8.10	0.84
Main	3844.176	15000 cfs	15000.00	4215.80	1826.76	8957.44	12.11	967.25	979.37		981.43	0.004941	8.69	17.39	4.00	8.73	0.88
Main	3844.176	24229 cfs -24hr	24229.00	6343.33	2908.65	14977.02	14.16	967.25	981.42	980.28	984.75	0.005911	11.16	22.38	5.07	11.40	1.05
Main	3844.176	31970 cfs - 6hr	31970.00	8067.59	3797.80	20104.61	15.51	967.25	982.77	982.08	987.19	0.006021	12.88	25.99	5.79	13.25	1.16
Main	3765.976	1289 cfs	1289.00	983.60	237.70	67.70	3.41	964.80	968.41	969.08	970.75	0.011681	9.87	13.74	5.33	4.70	1.31
Main	3765.976	1980 cfs 100-yr	1980.00	1360.09	471.17	148.75	4.38	964.80	969.38	970.06	971.90	0.010499	10.19	14.79	6.24	5.55	1.25
Main	3765.976	2650 cfs 500-yr	2650.00	1688.53	720.71	240.76	5.25	964.80	970.25	970.79	972.82	0.009819	10.30	15.32	6.75	5.99	1.18
Main	3765.976	2924 cfs	2924.00	1815.40	828.02	280.57	5.58	964.80	970.58	971.08	973.16	0.009403	10.36	15.50	6.94	6.13	1.16
Main	3765.976	3116 cfs	3116.00	1902.10	904.36	309.55	5.81	964.80	970.81	971.27	973.40	0.009123	10.39	15.60	7.05	6.20	1.14
Main	3765.976	3400 cfs	3400.00	2022.98	1021.58	355.45	6.18	964.80	971.18	971.56	973.73	0.008672	10.31	15.59	7.14	6.25	1.11
Main	3765.976	3881 cfs 0.25 PM	3881.00	2211.44	1227.52	442.04	6.88	964.80	971.88	971.94	974.28	0.007783	10.02	15.31	7.14	6.24	1.03
Main	3765.976	4188 cfs	4188.00	2412.26	1308.60	467.14	6.70	964.80	971.70	971.70	974.72	0.005978	11.26	17.16	7.97	6.97	1.17
Main	3765.976	11457 cfs 0.5 PM	11457.00	4536.05	3633.81	3287.13	11.80	964.80	976.80	976.80	979.43	0.003283	9.71	18.31	8.84	6.31	0.94
Main	3765.976	13000 cfs	13000.00	4958.78	4058.09	3983.13	12.26	964.80	977.27	977.27	980.11	0.003226	10.23	19.25	9.29	6.91	0.97
Main	3765.976	15000 cfs	15000.00	5462.24	4594.39	4943.37	12.89	964.80	977.89	977.89	980.94	0.003203	10.74	20.18	9.72	7.57	0.99
Main	3765.976	24229 cfs -24hr	24229.00	7559.21	7108.91	9560.88	15.41	964.80	980.41	980.41	984.23	0.003496	12.61	23.37	11.32	9.86	1.05
Main	3765.976	31970 cfs - 6hr	31970.00	8884.99	9511.18	13573.83	17.64	964.80	982.64	982.06	986.57	0.003499	13.23	23.99	12.19	10.73	1.01
Main	3588.168	1289 cfs	1289.00	864.38	413.63	10.98	4.13	963.00	967.16	967.53	968.56	0.011225	6.22	11.36	3.32	1.67	0.99
Main	3588.168	1980 cfs 100-yr	1980.00	1200.89	761.99	17.12	4.47	963.00	967.49	968.16	969.63	0.012704	7.84	14.60	4.69	2.17	1.22
Main	3588.168	2650 cfs 500-yr	2650.00	1500.28	1126.62	23.10	4.72	963.00	967.75	968.64	970.59	0.013112	9.19	17.25	5.85	2.59	1.40
Main	3588.168	2924 cfs	2924.00	1610.77	1287.67	25.56	4.83	963.00	967.86	968.80	970.93	0.013078	9.63	18.11	6.27	2.72	1.45
Main	3588.168	3116 cfs	3116.00	1687.58	1401.13	27.29	4.90	963.00	967.93	968.92	971.17	0.013020	9.93	18.71	6.55	2.81	1.49
Main	3588.168	3400 cfs	3400.00	1799.55	1570.64	29.81	4.99	963.00	968.02	969.08	971.52	0.012717	10.38	19.57	6.97	2.95	1.54
Main	3588.168	3881 cfs 0.25 PM	3881.00	1455.04	2389.34	36.62	6.91	963.00	969.94	969.34	970.94	0.003629	6.26	11.43	5.07	1.70	0.77
Main	3588.168	4188 cfs	4188.00	1507.84	2639.62	40.54	7.23	963.00	970.25	969.50	971.23	0.003460	6.25	11.33	5.14	1.70	0.74
Main	3588.168	11457 cfs 0.5 PM	11457.00	2864.47	8433.28	159.24	12.64	963.00	975.67	972.41	976.76	0.002381	7.19	12.30	6.60	1.94	0.61
Main	3588.168	13000 cfs	13000.00	3142.39	9667.09	190.52	13.61	963.00	976.64	972.92	977.76	0.002264	7.35	12.53	6.79	1.98	0.60
Main	3588.168	15000 cfs	15000.00	3511.82	11255.94	232.24	14.68	963.00	977.71	973.51	978.91	0.002258	7.63	12.99	7.11	2.06	0.60
Main	3588.168	24229 cfs -24hr	24229.00	5262.11	18527.31	439.58	18.11	963.00	981.14	976.03	982.89	0.002601	9.19	15.77	8.71	2.50	0.65
Main	3588.168	31970 cfs - 6hr	31970.00	6619.45	24722.40	628.14	20.26	963.00	983.29		985.49	0.002806	10.37	17.74	9.94	2.82	0.69
Main	3402.445	1289 cfs	1289.00	844.91	387.00	57.09	5.19	961.00	966.44	966.25	967.27	0.002958	4.67	8.81	2.74	1.47	0.68
Main	3402.445	1980 cfs 100-yr	1980.00	1094.94	790.65	94.42	6.13	961.00	967.39	966.97	968.27	0.003317	5.00	9.66	3.51	1.66	0.69
Main	3402.445	2650 cfs 500-yr	2650.00	1318.44	1198.76	132.80	6.88	961.00	968.14	967.53	969.09	0.003664	5.34	10.36	4.06	1.80	0.70
Main	3402.445	2924 cfs	2924.00	1397.58	1377.35	149.07	7.19	961.00	968.45	967.74	969.40	0.003722	5.42	10.51	4.23	1.83	0.69
Main	3402.445	3116 cfs	3116.00	1451.63	1503.61	160.76	7.41	961.00	968.66	967.88	969.62	0.003725	5.47	10.60	4.35	1.86	0.69
Main	3402.445	3400 cfs	3400.00	1534.74	1687.05	178.21	7.69	961.00	968.95	968.12	969.92	0.003926	5.58	10.80	4.52	1.90	0.69
Main	3402.445	3881 cfs 0.25 PM	3881.00	1667.72	2003.53	209.75	8.18	961.00	969.43		970.43	0.004074	5.71	11.04	4.76	1.96	0.68
Main	3402.445	4188 cfs	4188.00	1751.20	2206.39	230.41	8.48	961.00	969.73		970.74	0.004167	5.79	11.18	4.89	1.99	0.68
Main	3402.445	11457 cfs 0.5 PM	11457.00	3571.64	7061.99	823.37	13.71	961.00	974.96		976.41	0.004151	7.31	14.10	7.02	2.67	0.67
Main	3402.445	13000 cfs	13000.00	3921.84	8103.05	975.11	14.67	961.00	975.93		977.43	0.004081	7.49	14.46	7.27	2.78	0.67

HEC-RAS Plan: SS-EX-Check River: SippoCreek Reach: Main (Continued)

Reach	River Sta	Profile	Q Total	Q Channel	Q Left	Q Right	Hydr Depth C	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	Frctn Slope	Vel Total	Vel Chnl	Vel Left	Vel Right	Froude # Chl
			(cfs)	(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(ft/s)	(ft/s)	(ft/s)	
Main	3402.445	15000 cfs	15000.00	4426.87	9398.27	1174.86	15.66	961.00	976.92		978.57	0.004085	7.83	15.30	7.63	2.97	0.68
Main	3402.445	24229 cfs -24hr	24229.00	6535.63	15653.04	2040.33	18.75	961.00	980.00		982.47	0.004219	9.72	18.86	9.78	3.74	0.77
Main	3402.445	31970 cfs - 6hr	31970.00	8097.24	21122.28	2750.48	20.92	961.00	982.17		985.05	0.004382	10.46	20.95	10.51	4.17	0.81
Main	3205.869	1289 cfs	1289.00	746.28	352.11	190.61	5.09	961.00	966.09		966.62	0.003572	3.65	7.33	2.99	1.42	0.57
Main	3205.869	1980 cfs 100-yr	1980.00	1065.08	598.01	316.91	5.84	961.00	966.84		967.61	0.004331	4.41	9.12	3.73	1.84	0.66
Main	3205.869	2650 cfs 500-yr	2650.00	1365.64	843.40	440.96	6.35	961.00	967.35		968.39	0.004952	5.12	10.74	4.42	2.21	0.75
Main	3205.869	2924 cfs	2924.00	1484.82	946.52	492.66	6.55	961.00	967.55		968.68	0.005235	5.38	11.33	4.67	2.35	0.78
Main	3205.869	3116 cfs	3116.00	1564.73	1021.58	529.69	6.70	961.00	967.70		968.90	0.005459	5.52	11.67	4.82	2.42	0.79
Main	3205.869	3400 cfs	3400.00	1699.42	1120.51	580.07	6.77	961.00	967.77		969.15	0.005340	5.92	12.55	5.18	2.61	0.85
Main	3205.869	3881 cfs 0.25 PM	3881.00	1912.84	1298.85	669.31	6.97	961.00	967.97	967.55	969.60	0.005709	6.44	13.71	5.67	2.86	0.91
Main	3205.869	4188 cfs	4188.00	2048.52	1413.14	726.33	7.08	961.00	968.08	967.77	969.88	0.006046	6.78	14.45	5.99	3.02	0.96
Main	3205.869	11457 cfs 0.5 PM	11457.00	4712.97	4488.63	2255.40	10.74	961.00	971.74	971.74	975.41	0.007506	9.80	21.92	9.33	4.77	1.18
Main	3205.869	13000 cfs	13000.00	5274.10	5104.60	2621.30	11.41	961.00	972.41	972.41	976.42	0.006710	10.18	23.10	9.65	5.04	1.21
Main	3205.869	15000 cfs	15000.00	5904.70	6011.61	3083.69	12.37	961.00	973.37	973.37	977.55	0.005873	10.42	23.86	9.97	5.23	1.20
Main	3205.869	24229 cfs -24hr	24229.00	8280.84	10898.02	5050.15	16.14	961.00	977.14	977.14	981.50	0.004139	10.75	25.64	10.48	5.67	1.12
Main	3205.869	31970 cfs - 6hr	31970.00	10073.33	15354.26	6542.41	18.16	961.00	979.16	979.16	984.04	0.003700	11.62	27.73	11.62	6.13	1.15
Main	3065.593	1289 cfs	1289.00	828.32	248.16	212.52	4.24	960.80	965.11	965.11	966.06	0.003928	4.55	9.58	2.56	2.12	0.82
Main	3065.593	1980 cfs 100-yr	1980.00	1117.48	548.50	314.02	4.91	960.80	965.79	965.79	966.95	0.003770	5.14	11.15	3.46	2.48	0.89
Main	3065.593	2650 cfs 500-yr	2650.00	1361.52	879.28	409.21	5.49	960.80	966.36	966.36	967.65	0.003723	5.55	12.16	4.08	2.72	0.92
Main	3065.593	2924 cfs	2924.00	1463.40	1011.89	448.71	5.66	960.80	966.54	966.54	967.91	0.003762	5.77	12.67	4.33	2.85	0.94
Main	3065.593	3116 cfs	3116.00	1542.13	1096.99	476.89	5.74	960.80	966.61	966.61	968.08	0.003832	6.00	13.18	4.54	2.96	0.97
Main	3065.593	3400 cfs	3400.00	1584.74	1301.52	513.74	6.19	960.80	967.07	967.07	968.34	0.003530	5.62	12.54	4.38	2.84	0.89
Main	3065.593	3881 cfs 0.25 PM	3881.00	1711.96	1598.30	570.74	6.50	960.80	967.38	967.38	968.68	0.003540	5.80	12.92	4.68	2.93	0.89
Main	3065.593	4188 cfs	4188.00	1801.30	1778.87	607.83	6.64	960.80	967.52	967.52	968.88	0.003580	5.99	13.30	4.91	3.03	0.91
Main	3065.593	11457 cfs 0.5 PM	11457.00	4148.62	5784.06	1524.32	7.69	960.80	968.57	970.05	973.54	0.011989	12.33	26.43	11.09	6.09	1.68
Main	3065.593	13000 cfs	13000.00	3582.41	7898.73	1518.86	10.24	960.80	971.12	970.49	973.10	0.002918	8.61	17.15	8.56	4.02	0.94
Main	3065.593	15000 cfs	15000.00	3830.32	9473.90	1695.78	11.33	960.80	972.21	970.97	974.04	0.002604	8.46	16.57	8.56	3.89	0.87
Main	3065.593	24229 cfs -24hr	24229.00	5133.55	16534.21	2561.24	15.44	960.80	976.32	973.11	978.03	0.001961	8.42	16.30	8.75	3.82	0.73
Main	3065.593	31970 cfs - 6hr	31970.00	6179.35	22532.94	3257.72	18.23	960.80	979.11	974.70	980.85	0.001749	8.61	16.61	9.02	3.85	0.69
Main	2954.488	1289 cfs	1289.00	879.73	171.20	238.07	4.00	959.00	963.20	963.87	965.12	0.007485	7.93	12.67	2.64	8.46	1.12
Main	2954.488	1980 cfs 100-yr	1980.00	767.82	935.32	276.85	5.68	959.00	964.87	964.36	965.37	0.002070	4.38	7.80	3.10	5.37	0.58
Main	2954.488	2650 cfs 500-yr	2650.00	892.47	1414.99	342.55	6.28	959.00	965.48	964.77	966.00	0.002149	4.68	8.19	3.57	5.62	0.58
Main	2954.488	2924 cfs	2924.00	941.93	1613.27	368.80	6.50	959.00	965.70	964.91	966.23	0.002181	4.80	8.35	3.74	5.72	0.58
Main	2954.488	3116 cfs	3116.00	975.54	1753.56	386.90	6.66	959.00	965.85	965.01	966.39	0.002196	4.88	8.45	3.84	5.78	0.58
Main	2954.488	3400 cfs	3400.00	1024.68	1961.82	413.50	6.87	959.00	966.07	965.15	966.62	0.002217	4.99	8.59	3.99	5.87	0.58
Main	2954.488	3881 cfs 0.25 PM	3881.00	1110.71	2311.24	459.05	7.20	959.00	966.39	965.37	966.98	0.002298	5.21	8.90	4.25	6.05	0.58
Main	2954.488	4188 cfs	4188.00	1163.06	2537.46	487.48	7.40	959.00	966.60	965.50	967.20	0.002330	5.33	9.06	4.39	6.14	0.59
Main	2954.488	11457 cfs 0.5 PM	11457.00	2179.62	8180.31	1097.07	11.58	959.00	970.77	967.97	971.60	0.002239	6.72	10.85	6.09	6.79	0.56
Main	2954.488	13000 cfs	13000.00	2372.94	9404.17	1222.89	12.37	959.00	971.57		972.42	0.002163	6.88	11.06	6.29	6.80	0.55
Main	2954.488	15000 cfs	15000.00	2618.86	10995.32	1385.82	13.36	959.00	972.56		973.45	0.002071	7.05	11.30	6.50	6.80	0.54
Main	2954.488	24229 cfs -24hr	24229.00	3708.91	18385.08	2135.01	17.35	959.00	976.55		977.60	0.001844	7.74	12.32	7.30	6.82	0.52
Main	2954.488	31970 cfs - 6hr	31970.00	4584.75	24622.20	2763.06	20.09	959.00	979.29		980.49	0.001791	8.26	13.15	7.89	6.91	0.52
Main	2823.359	1289 cfs	1289.00	568.84	717.11	3.04	5.05	958.60	963.96	963.14	964.23	0.002468	3.15	5.62	2.36	0.61	0.44
Main	2823.359	1980 cfs 100-yr	1980.00	751.34	1223.64	5.02	5.77	958.60	964.68		965.01	0.002840	3.76	6.50	3.03	0.72	0.48
Main	2823.359	2650 cfs 500-yr	2650.00	920.29	1722.60	7.12	6.32	958.60	965.23		965.64	0.003100	4.29	7.26	3.57	0.81	0.51
Main	2823.359	2924 cfs	2924.00	987.23	1928.74	8.03	6.52	958.60	965.43		965.88	0.003197	4.49	7.55	3.77	0.85	0.52
Main	2823.359	3116 cfs	3116.00	1033.06	2074.26	8.69	6.66	958.60	965.57		966.04	0.003269	4.61	7.73	3.90	0.87	0.53
Main	2823.359	3400 cfs	3400.00	1100.02	2290.29	9.69	6.86	958.60	965.77		966.27	0.003369	4.79	7.99	4.08	0.90	0.54
Main	2823.359	3881 cfs 0.25 PM	3881.00	1215.59	2653.99	11.41	7.15	958.60	966.06		966.62	0.003408	5.12	8.48	4.40	0.96	0.56
Main	2823.359	4188 cfs	4188.00	1286.70	2888.73	12.57	7.34	958.60	966.25		966.84	0.003441	5.30	8.74	4.58	1.00	0.57
Main	2823.359	11457 cfs 0.5 PM	11457.00	2798.06	8610.48	48.46	11.12	958.60	970.03		971.22	0.003386	7.81	12.55	7.11	1.49	0.66
Main	2823.359	13000 cfs	13000.00	3095.48	9846.29	58.23	11.87	958.60	970.78		972.05	0.003266	8.08	13.01	7.39	1.55	0.67
Main	2823.359	15000 cfs	15000.00	3476.73	11451.33	71.95	12.81	958.60	971.72		973.08	0.003126	8.38	13.54	7.70	1.62	0.67
Main	2823.359	24229 cfs -24hr	24229.00	5224.20	18847.15	157.65	16.56	958.60	975.47		977.24	0.002900	9.47	15.73	8.82	1.75	0.68
Main	2823.359	31970 cfs - 6hr	31970.00	6678.45	25003.79	287.76	19.09	958.60	978.00		980.11	0.002953	10.23	17.45	9.62	2.00	0.70

HEC-RAS Plan: SS-EX-Check River: SippoCreek Reach: Main (Continued)

Reach	River Sta	Profile	Q Total	Q Channel	Q Left	Q Right	Hydr Depth C	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	Frctn Slope	Vel Total	Vel Chnl	Vel Left	Vel Right	Froude # Chl
			(cfs)	(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(ft/s)	(ft/s)	(ft/s)	
Main	2705.758	1289 cfs	1289.00	774.74	492.89	21.37	4.34	958.50	963.11	963.11	963.87	0.004008	4.54	8.79	2.71	1.51	0.74
Main	2705.758	1980 cfs 100-yr	1980.00	1026.84	921.07	32.09	4.86	958.50	963.63	963.63	964.60	0.004195	5.47	10.41	3.75	1.80	0.83
Main	2705.758	2650 cfs 500-yr	2650.00	1232.91	1374.66	42.43	5.32	958.50	964.09	964.09	965.19	0.004326	6.09	11.42	4.49	1.98	0.87
Main	2705.758	2924 cfs	2924.00	1313.35	1563.97	46.68	5.48	958.50	964.25	964.25	965.41	0.004374	6.32	11.79	4.76	2.05	0.89
Main	2705.758	3116 cfs	3116.00	1371.82	1694.50	49.68	5.58	958.50	964.35	964.35	965.56	0.004500	6.51	12.10	4.96	2.10	0.90
Main	2705.758	3400 cfs	3400.00	1456.53	1889.32	54.15	5.73	958.50	964.50	964.49	965.78	0.004592	6.77	12.53	5.23	2.18	0.92
Main	2705.758	3881 cfs 0.25 PM	3881.00	1558.52	2260.70	61.78	6.10	958.50	964.87		966.13	0.004500	6.89	12.59	5.49	2.19	0.90
Main	2705.758	4188 cfs	4188.00	1629.56	2491.70	66.75	6.30	958.50	965.07		966.35	0.004547	7.02	12.74	5.68	2.22	0.89
Main	2705.758	11457 cfs 0.5 PM	11457.00	3174.80	8073.54	208.67	10.24	958.50	969.01		970.74	0.003903	8.98	15.27	8.16	2.65	0.84
Main	2705.758	13000 cfs	13000.00	3480.66	9273.86	245.48	11.03	958.50	969.80		971.59	0.003665	9.17	15.54	8.41	2.70	0.82
Main	2705.758	15000 cfs	15000.00	3876.21	10827.54	296.25	12.01	958.50	970.78		972.64	0.003422	9.39	15.89	8.69	2.75	0.81
Main	2705.758	24229 cfs -24hr	24229.00	5736.52	17925.82	566.66	15.73	958.50	974.50		976.82	0.003068	10.51	17.96	9.94	3.09	0.80
Main	2705.758	31970 cfs - 6hr	31970.00	7315.16	23827.73	827.11	18.10	958.50	976.87		979.67	0.003133	11.50	19.90	10.97	3.43	0.82
Main	2605.517	1289 cfs	1289.00	854.88	414.34	19.78	4.99	957.20	962.19	962.04	962.99	0.004005	5.03	8.56	2.94	1.29	0.68
Main	2605.517	1980 cfs 100-yr	1980.00	1075.56	873.91	30.52	5.85	957.20	963.05	962.75	963.85	0.003712	5.29	9.19	3.71	1.41	0.67
Main	2605.517	2650 cfs 500-yr	2650.00	1277.41	1331.48	41.11	6.47	957.20	963.67	963.24	964.55	0.003875	5.72	9.86	4.34	1.53	0.68
Main	2605.517	2924 cfs	2924.00	1355.90	1522.54	45.55	6.70	957.20	963.90	963.41	964.81	0.003978	5.88	10.10	4.56	1.57	0.69
Main	2605.517	3116 cfs	3116.00	1417.54	1649.79	48.67	6.82	957.20	964.02	963.53	964.97	0.004016	6.05	10.37	4.74	1.61	0.70
Main	2605.517	3400 cfs	3400.00	1498.18	1848.44	53.38	7.04	957.20	964.24		965.22	0.004119	6.23	10.63	4.96	1.66	0.71
Main	2605.517	3881 cfs 0.25 PM	3881.00	1633.73	2185.77	61.50	7.37	957.20	964.57		965.61	0.004284	6.51	11.07	5.29	1.73	0.72
Main	2605.517	4188 cfs	4188.00	1725.17	2396.12	66.71	7.54	957.20	964.74		965.84	0.004353	6.73	11.43	5.52	1.79	0.73
Main	2605.517	11457 cfs 0.5 PM	11457.00	3405.80	7838.37	212.84	11.48	957.20	968.68		970.33	0.003565	8.58	14.81	7.71	2.37	0.77
Main	2605.517	13000 cfs	13000.00	3708.53	9040.84	250.63	12.31	957.20	969.51		971.19	0.003340	8.68	15.04	7.88	2.42	0.76
Main	2605.517	15000 cfs	15000.00	4099.31	10598.17	302.52	13.34	957.20	970.54		972.26	0.003117	8.81	15.34	8.08	2.48	0.74
Main	2605.517	24229 cfs -24hr	24229.00	5928.27	17727.45	573.29	17.17	957.20	974.37		976.44	0.002796	9.70	17.24	9.09	2.81	0.73
Main	2605.517	31970 cfs - 6hr	31970.00	7473.02	23667.58	829.40	19.60	957.20	976.80		979.26	0.002850	10.54	19.04	9.97	3.11	0.76
Main	2500.830	1289 cfs	1289.00	990.48	268.33	30.20	4.90	955.70	961.41	961.41	962.53	0.005880	4.19	9.65	1.45	1.56	0.77
Main	2500.830	1980 cfs 100-yr	1980.00	1267.42	663.27	49.31	5.82	955.70	962.34	962.34	963.44	0.004207	4.26	10.39	2.11	1.71	0.76
Main	2500.830	2650 cfs 500-yr	2650.00	1531.40	1051.49	67.12	6.35	955.70	962.87	962.87	964.10	0.004542	4.72	11.50	2.68	1.90	0.80
Main	2500.830	2924 cfs	2924.00	1642.08	1207.49	74.43	6.52	955.70	963.03	963.03	964.35	0.004783	4.95	12.03	2.90	2.00	0.83
Main	2500.830	3116 cfs	3116.00	1700.76	1335.50	79.74	6.68	955.70	963.20	963.20	964.51	0.004745	5.02	12.15	3.02	2.02	0.83
Main	2500.830	3400 cfs	3400.00	1808.90	1503.64	87.46	6.84	955.70	963.36	963.36	964.75	0.004939	5.23	12.62	3.23	2.10	0.85
Main	2500.830	3881 cfs 0.25 PM	3881.00	1985.03	1795.26	100.71	7.10	955.70	963.61	963.61	965.12	0.005264	5.57	13.35	3.57	2.23	0.88
Main	2500.830	4188 cfs	4188.00	2077.83	2000.66	109.51	7.31	955.70	963.82	963.82	965.35	0.005287	5.69	13.57	3.74	2.27	0.88
Main	2500.830	11457 cfs 0.5 PM	11457.00	3845.65	7242.23	369.12	11.84	955.70	968.35		969.94	0.003175	7.02	15.51	5.81	2.66	0.79
Main	2500.830	13000 cfs	13000.00	4182.58	8381.22	436.20	12.70	955.70	969.22		970.82	0.003011	7.16	15.72	6.04	2.71	0.78
Main	2500.830	15000 cfs	15000.00	4614.13	9856.39	529.48	13.76	955.70	970.28		971.91	0.002844	7.33	16.01	6.29	2.77	0.76
Main	2500.830	24229 cfs -24hr	24229.00	6604.87	16601.79	1022.34	17.66	955.70	974.18		976.11	0.002626	8.26	17.85	7.39	3.23	0.75
Main	2500.830	31970 cfs - 6hr	31970.00	8262.53	22244.90	1462.57	20.11	955.70	976.62		978.91	0.002699	9.07	19.62	8.25	3.61	0.77
Main	2428.753	1289 cfs	1289.00	1065.32	163.99	59.70	3.70	955.33	959.15	959.83	961.82	0.007599	7.67	14.38	2.32	2.56	1.32
Main	2428.753	1980 cfs 100-yr	1980.00	1451.54	405.57	122.90	5.33	955.33	960.78	961.49	962.91	0.005726	5.54	13.60	2.03	2.44	1.04
Main	2428.753	2650 cfs 500-yr	2650.00	1726.86	756.37	166.77	6.01	955.33	961.45	962.07	963.58	0.005894	5.57	14.37	2.60	2.58	1.03
Main	2428.753	2924 cfs	2924.00	1829.72	910.52	183.76	6.22	955.33	961.67	962.25	963.82	0.006076	5.68	14.70	2.84	2.64	1.04
Main	2428.753	3116 cfs	3116.00	1901.71	1018.68	195.61	6.36	955.33	961.81	962.41	963.98	0.006041	5.77	14.95	3.00	2.69	1.05
Main	2428.753	3400 cfs	3400.00	2004.87	1181.72	213.42	6.55	955.33	962.00	962.58	964.20	0.006216	5.91	15.30	3.22	2.76	1.05
Main	2428.753	3881 cfs 0.25 PM	3881.00	2170.48	1465.33	245.20	6.85	955.33	962.30	962.84	964.56	0.006459	6.15	15.83	3.58	2.88	1.07
Main	2428.753	4188 cfs	4188.00	2275.56	1647.06	265.38	7.03	955.33	962.48	963.03	964.78	0.006469	6.31	16.19	3.80	2.96	1.08
Main	2428.753	11457 cfs 0.5 PM	11457.00	3676.14	6991.52	789.33	12.86	955.33	968.31		969.61	0.001355	6.23	14.29	5.37	2.83	0.70
Main	2428.753	13000 cfs	13000.00	4011.77	8083.44	904.80	13.72	955.33	969.17		970.51	0.001367	6.42	14.61	5.63	2.89	0.70
Main	2428.753	15000 cfs	15000.00	4439.19	9501.65	1059.16	14.78	955.33	970.23		971.62	0.001377	6.64	15.01	5.92	2.96	0.69
Main	2428.753	24229 cfs -24hr	24229.00	6392.75	16017.82	1818.43	18.66	955.33	974.11		975.85	0.001518	7.66	17.12	7.12	3.37	0.70
Main	2428.753	31970 cfs - 6hr	31970.00	8002.69	21461.72	2505.59	21.11	955.33	976.56		978.64	0.001618	8.48	18.95	8.02	3.74	0.73
Main	2316.257	1289 cfs	1289.00	806.71	133.17	349.12	6.47	951.00	957.56	955.05	957.96	0.002704	3.92	6.15	1.91	2.74	0.43
Main	2316.257	1980 cfs 100-yr	1980.00	1144.06	282.86	553.08	7.47	951.00	958.56	955.96	959.13	0.002601	4.60	7.55	2.50	3.34	0.49
Main	2316.257	2650 cfs 500-yr	2650.00	1414.17	480.82	755.00	8.49	951.00	959.57	957.43	960.21	0.001759	4.77	8.21	2.74	3.62	0.50
Main	2316.257	2924 cfs	2924.00	1500.07	584.13	839.80	8.98	951.00	960.07	957.72	960.69	0.001580	4.68	8.23	2.76	3.63	0.48

HEC-RAS Plan: SS-EX-Check River: SippoCreek Reach: Main (Continued)

Reach	River Sta	Profile	Q Total	Q Channel	Q Left	Q Right	Hydr Depth C	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	Frctn Slope	Vel Total	Vel Chnl	Vel Left	Vel Right	Froude # Chl
			(cfs)	(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(ft/s)	(ft/s)	(ft/s)	
Main	2316.257	3116 cfs	3116.00	1557.55	658.44	900.01	9.29	951.00	960.37	957.89	960.99	0.001504	4.66	8.27	2.81	3.66	0.48
Main	2316.257	3400 cfs	3400.00	1634.95	775.31	989.73	9.77	951.00	960.86	958.22	961.46	0.001377	4.60	8.25	2.86	3.67	0.47
Main	2316.257	3881 cfs 0.25 PM	3881.00	1759.86	985.19	1135.95	10.51	951.00	961.60	958.67	962.17	0.001239	4.51	8.25	2.90	3.70	0.45
Main	2316.257	4188 cfs	4188.00	1826.01	1139.63	1222.35	10.97	951.00	962.06	958.95	962.61	0.001163	4.44	8.21	2.92	3.69	0.44
Main	2316.257	11457 cfs 0.5 PM	11457.00	3375.30	4839.72	3241.98	17.57	951.00	968.66		969.26	0.000775	4.97	9.47	4.00	4.38	0.40
Main	2316.257	13000 cfs	13000.00	3718.45	5587.90	3693.66	18.42	951.00	969.50		970.16	0.000798	5.20	9.95	4.23	4.61	0.41
Main	2316.257	15000 cfs	15000.00	4154.74	6560.76	4284.50	19.46	951.00	970.55		971.27	0.000820	5.48	10.52	4.48	4.87	0.42
Main	2316.257	24229 cfs -24hr	24229.00	6183.02	10880.57	7165.41	23.36	951.00	974.45		975.48	0.000951	6.48	13.05	5.24	6.01	0.48
Main	2316.257	31970 cfs - 6hr	31970.00	7641.05	14886.65	9442.31	25.89	951.00	976.98		978.22	0.001044	7.18	14.55	5.92	6.67	0.50
Main	2232.403	1289 cfs	1289.00	984.37	62.52	242.11	4.16	951.30	955.81	955.81	957.60	0.004676	6.53	12.18	3.84	2.42	1.05
Main	2232.403	1980 cfs 100-yr	1980.00	1292.04	218.20	469.76	5.85	951.30	957.50	957.50	958.84	0.004954	4.80	11.36	2.84	2.11	0.83
Main	2232.403	2650 cfs 500-yr	2650.00	1303.55	665.49	680.96	7.80	951.30	959.45		960.06	0.002890	3.51	8.61	2.94	1.81	0.54
Main	2232.403	2924 cfs	2924.00	1353.82	816.87	753.31	8.33	951.30	959.98		960.54	0.002620	3.44	8.36	3.04	1.79	0.51
Main	2232.403	3116 cfs	3116.00	1396.83	915.75	803.42	8.65	951.30	960.30		960.84	0.002343	3.43	8.31	3.12	1.80	0.50
Main	2232.403	3400 cfs	3400.00	1456.27	1066.40	877.33	9.16	951.30	960.81		961.31	0.002336	3.40	8.19	3.20	1.79	0.48
Main	2232.403	3881 cfs 0.25 PM	3881.00	1567.51	1311.30	1002.19	9.91	951.30	961.56		962.04	0.002178	3.41	8.14	3.34	1.81	0.46
Main	2232.403	4188 cfs	4188.00	1639.92	1466.15	1081.93	10.36	951.30	962.01		962.49	0.002109	3.43	8.15	3.42	1.83	0.45
Main	2232.403	11457 cfs 0.5 PM	11457.00	2964.03	5939.22	2553.75	17.01	951.30	968.66		969.16	0.001428	3.99	8.97	4.49	2.10	0.38
Main	2232.403	13000 cfs	13000.00	3250.60	6893.35	2856.05	17.86	951.30	969.51		970.06	0.001465	4.20	9.36	4.77	2.19	0.39
Main	2232.403	15000 cfs	15000.00	3611.33	8141.89	3246.79	18.92	951.30	970.57		971.17	0.001509	4.44	9.82	5.09	2.30	0.40
Main	2232.403	24229 cfs -24hr	24229.00	5227.46	13920.67	5080.86	22.85	951.30	974.50		975.34	0.001657	5.41	11.78	6.35	2.76	0.43
Main	2232.403	31970 cfs - 6hr	31970.00	6553.46	18779.21	6637.33	25.36	951.30	977.01		978.08	0.001830	6.13	13.30	7.25	3.11	0.47
Main	2143.723	1289 cfs	1289.00	1200.82	8.17	80.01	6.17	949.00	955.37	953.86	956.49	0.003017	5.75	8.81	0.30	1.32	0.63
Main	2143.723	1980 cfs 100-yr	1980.00	1863.97	8.42	107.62	6.82	949.00	956.02	955.39	958.26	0.004665	7.35	12.37	0.23	1.30	0.84
Main	2143.723	2650 cfs 500-yr	2650.00	2349.79	24.98	275.23	7.94	949.00	957.14	957.14	959.62	0.004001	6.33	13.40	0.27	1.84	0.84
Main	2143.723	2924 cfs	2924.00	2535.66	36.13	352.21	8.36	949.00	957.56	957.56	960.11	0.003597	5.99	13.73	0.28	2.01	0.84
Main	2143.723	3116 cfs	3116.00	2612.17	57.85	445.99	9.01	949.00	958.21	957.82	960.46	0.002997	5.14	13.12	0.30	2.07	0.77
Main	2143.723	3400 cfs	3400.00	2847.41	63.91	488.68	9.03	949.00	958.23	958.23	960.89	0.004112	5.58	14.27	0.33	2.25	0.84
Main	2143.723	3881 cfs 0.25 PM	3881.00	3160.66	98.66	621.68	9.57	949.00	958.78	958.78	961.62	0.004004	5.44	14.94	0.39	2.47	0.85
Main	2143.723	4188 cfs	4188.00	3361.53	121.09	705.39	9.87	949.00	959.08	959.08	962.05	0.003975	5.44	15.40	0.43	2.61	0.86
Main	2143.723	11457 cfs 0.5 PM	11457.00	6801.41	1897.00	2758.59	16.11	949.00	965.32	965.32	968.75	0.002553	5.35	19.10	1.76	3.91	0.84
Main	2143.723	13000 cfs	13000.00	7420.96	2460.45	3118.59	16.80	949.00	966.01	966.01	969.62	0.002452	5.61	19.98	2.07	4.12	0.86
Main	2143.723	15000 cfs	15000.00	8229.48	3226.91	3543.61	17.60	949.00	966.80	966.80	970.70	0.002350	5.95	21.16	2.46	4.32	0.89
Main	2143.723	24229 cfs -24hr	24229.00	11417.89	7363.71	5447.40	21.08	949.00	970.28	970.28	974.83	0.002327	6.98	24.51	3.93	4.80	0.94
Main	2143.723	31970 cfs - 6hr	31970.00	13882.97	10767.78	7319.25	23.08	949.00	972.28	972.28	977.51	0.002530	7.88	27.22	4.87	5.47	1.00
Main	2051.261	1289 cfs	1289.00	1028.98	23.01	237.00	6.37	949.00	955.43		956.07	0.004784	4.46	7.16	0.93	1.97	0.50
Main	2051.261	1980 cfs 100-yr	1980.00	1533.46	52.79	393.76	7.29	949.00	956.35	954.47	957.41	0.004720	5.11	9.32	0.75	2.59	0.61
Main	2051.261	2650 cfs 500-yr	2650.00	1798.28	320.49	531.23	8.71	949.00	957.77	955.58	958.67	0.002285	4.12	9.15	1.33	2.59	0.55
Main	2051.261	2924 cfs	2924.00	1864.35	478.21	581.44	9.39	949.00	958.44	955.82	959.23	0.001885	3.79	8.80	1.46	2.51	0.51
Main	2051.261	3116 cfs	3116.00	1888.53	613.11	614.36	9.97	949.00	959.03		959.72	0.001583	3.51	8.39	1.51	2.40	0.47
Main	2051.261	3400 cfs	3400.00	2155.86	568.63	675.51	9.45	949.00	958.50	957.29	959.54	0.002456	4.34	10.11	1.69	2.89	0.58
Main	2051.261	3881 cfs 0.25 PM	3881.00	2330.40	786.72	763.88	10.09	949.00	959.14	957.73	960.16	0.002313	4.27	10.24	1.87	2.94	0.57
Main	2051.261	4188 cfs	4188.00	2439.84	928.60	819.56	10.46	949.00	959.52	957.98	960.53	0.002233	4.25	10.33	1.96	2.97	0.56
Main	2051.261	11457 cfs 0.5 PM	11457.00	4018.81	5684.50	1753.69	16.97	949.00	966.03	962.36	966.73	0.001124	4.25	10.49	3.34	2.90	0.45
Main	2051.261	13000 cfs	13000.00	4261.06	6817.68	1921.26	18.07	949.00	967.13	962.87	967.80	0.001041	4.30	10.45	3.52	2.85	0.43
Main	2051.261	15000 cfs	15000.00	4563.97	8283.52	2152.52	19.43	949.00	968.48	963.53	969.13	0.000955	4.37	10.41	3.71	2.82	0.42
Main	2051.261	24229 cfs -24hr	24229.00	6161.16	14671.54	3396.30	23.59	949.00	972.65	965.71	973.40	0.000955	5.09	11.57	4.65	3.18	0.42
Main	2051.261	31970 cfs - 6hr	31970.00	7533.54	19966.15	4470.32	25.98	949.00	975.04	967.23	975.95	0.001053	5.77	12.85	5.40	3.56	0.44
Main	1964.138	1289 cfs	1289.00	1109.96	95.54	83.50	4.00	949.49	953.88	953.88	955.55	0.004375	8.51	11.10	2.96	4.36	0.98
Main	1964.138	1980 cfs 100-yr	1980.00	1534.52	279.73	165.76	5.60	949.49	955.48	955.48	956.96	0.003233	6.41	10.96	2.14	4.35	0.82
Main	1964.138	2650 cfs 500-yr	2650.00	1564.56	844.61	240.83	7.90	949.49	957.78		958.39	0.001587	3.94	7.92	2.12	3.16	0.50
Main	1964.138	2924 cfs	2924.00	1624.39	1026.41	273.20	8.59	949.49	958.47		959.00	0.001330	3.68	7.57	2.10	3.04	0.46
Main	1964.138	3116 cfs	3116.00	1661.08	1155.90	299.02	9.17	949.49	959.05		959.52	0.001076	3.44	7.25	2.02	2.92	0.42
Main	1964.138	3400 cfs	3400.00	1877.76	1203.62	318.62	8.66	949.49	958.54		959.23	0.002148	4.21	8.68	2.41	3.48	0.52
Main	1964.138	3881 cfs 0.25 PM	3881.00	2051.22	1455.42	374.36	9.30	949.49	959.17		959.87	0.002223	4.18	8.83	2.46	3.56	0.51
Main	1964.138	4188 cfs	4188.00	2152.73	1626.05	409.22	9.68	949.49	959.56		960.24	0.002214	4.16	8.90	2.50	3.60	0.50

HEC-RAS Plan: SS-EX-Check River: SippoCreek Reach: Main (Continued)

Reach	River Sta	Profile	Q Total	Q Channel	Q Left	Q Right	Hydr Depth C	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	Frctn Slope	Vel Total	Vel Chnl	Vel Left	Vel Right	Froude # Chl
			(cfs)	(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(ft/s)	(ft/s)	(ft/s)	
Main	1964.138	11457 cfs 0.5 PM	11457.00	3523.72	6839.66	1093.63	16.21	949.49	966.09		966.58	0.000814	4.30	8.70	3.51	3.53	0.38
Main	1964.138	13000 cfs	13000.00	3794.02	7955.69	1250.29	17.30	949.49	967.17		967.67	0.000770	4.39	8.78	3.66	3.56	0.37
Main	1964.138	15000 cfs	15000.00	4139.25	9404.73	1456.03	18.64	949.49	968.51		969.01	0.000724	4.51	8.89	3.83	3.59	0.36
Main	1964.138	24229 cfs -24hr	24229.00	5867.71	15919.26	2442.04	22.77	949.49	972.64		973.30	0.000782	5.37	10.32	4.77	4.04	0.38
Main	1964.138	31970 cfs - 6hr	31970.00	7313.77	21315.87	3340.36	25.14	949.49	975.01		975.84	0.000899	6.11	11.65	5.52	4.50	0.41
Main	1862.561	1289 cfs	1289.00	1217.71	42.08	29.21	6.81	946.00	952.81	951.13	954.11	0.002984	7.56	9.37	2.40	1.27	0.63
Main	1862.561	1980 cfs 100-yr	1980.00	1786.19	125.42	68.39	9.09	946.00	955.09	952.77	956.58	0.002534	6.81	10.31	1.81	1.41	0.60
Main	1862.561	2650 cfs 500-yr	2650.00	2035.70	503.30	111.00	11.04	946.00	957.04	953.96	958.18	0.002236	5.38	9.67	2.52	1.36	0.51
Main	1862.561	2924 cfs	2924.00	2108.96	685.03	130.01	11.80	946.00	957.80	956.06	958.81	0.002277	5.08	9.37	2.71	1.33	0.48
Main	1862.561	3116 cfs	3116.00	2071.04	901.48	143.48	12.58	946.00	958.58	956.30	959.38	0.002129	4.37	8.63	2.52	1.24	0.43
Main	1862.561	3400 cfs	3400.00	2647.61	611.77	140.62	10.89	946.00	956.89	956.61	958.88	0.002356	7.15	12.75	3.24	1.79	0.68
Main	1862.561	3881 cfs 0.25 PM	3881.00	2964.24	753.33	163.43	11.11	946.00	957.11	957.11	959.47	0.002621	7.77	13.99	3.68	1.97	0.74
Main	1862.561	4188 cfs	4188.00	3136.86	871.54	179.60	11.34	946.00	957.34	957.34	959.84	0.002715	7.99	14.51	3.95	2.05	0.76
Main	1862.561	11457 cfs 0.5 PM	11457.00	4005.83	6862.55	588.63	19.62	946.00	965.62		966.46	0.000654	5.35	10.71	4.85	1.68	0.43
Main	1862.561	13000 cfs	13000.00	4289.62	8027.32	683.06	20.70	946.00	966.70		967.55	0.000630	5.47	10.87	5.06	1.72	0.42
Main	1862.561	15000 cfs	15000.00	4650.39	9537.78	811.83	22.03	946.00	968.03		968.90	0.000604	5.60	11.07	5.30	1.77	0.42
Main	1862.561	24229 cfs -24hr	24229.00	6529.92	16285.22	1413.86	25.97	946.00	971.97		973.17	0.000689	6.69	13.18	6.65	2.10	0.46
Main	1862.561	31970 cfs - 6hr	31970.00	8132.01	21870.83	1967.15	28.13	946.00	974.13		975.68	0.000815	7.67	15.16	7.77	2.42	0.50
Main	1782.724	1289 cfs	1289.00	1138.88	89.57	60.55	6.53	946.00	952.53		953.86	0.002856	7.25	9.82	3.47	1.69	0.68
Main	1782.724	1980 cfs 100-yr	1980.00	1715.95	143.63	120.42	8.68	946.00	954.68		956.36	0.002013	7.42	11.12	2.91	1.90	0.67
Main	1782.724	2650 cfs 500-yr	2650.00	2247.92	227.94	174.13	9.57	946.00	955.57	953.90	957.88	0.001853	7.85	13.22	2.52	2.26	0.75
Main	1782.724	2924 cfs	2924.00	2514.44	219.31	190.25	9.34	946.00	955.34	954.00	958.42	0.002091	9.43	15.13	3.11	2.59	0.87
Main	1782.724	3116 cfs	3116.00	2710.03	211.76	194.21	8.86	946.00	954.86	954.53	958.88	0.002391	11.25	17.21	3.96	2.94	1.02
Main	1782.724	3400 cfs	3400.00	2224.08	974.77	201.14	11.18	946.00	957.18	957.18	958.49	0.001569	5.21	11.19	2.79	1.92	0.59
Main	1782.724	3881 cfs 0.25 PM	3881.00	2805.80	832.18	243.01	10.70	946.00	956.70	957.47	959.18	0.003475	7.05	14.75	3.15	2.53	0.79
Main	1782.724	4188 cfs	4188.00	2989.69	937.93	260.37	10.76	946.00	956.76	957.65	959.51	0.003746	7.44	15.63	3.42	2.68	0.84
Main	1782.724	11457 cfs 0.5 PM	11457.00	2876.38	8125.46	455.15	19.85	946.00	965.85		966.29	0.000564	4.31	8.15	4.11	1.39	0.32
Main	1782.724	13000 cfs	13000.00	3088.46	9396.89	514.65	20.92	946.00	966.92		967.38	0.000555	4.44	8.30	4.29	1.42	0.32
Main	1782.724	15000 cfs	15000.00	3357.49	11048.45	594.06	22.25	946.00	968.25		968.74	0.000545	4.59	8.49	4.49	1.45	0.32
Main	1782.724	24229 cfs -24hr	24229.00	4725.93	18552.49	950.58	26.27	946.00	972.27		972.96	0.000657	5.60	10.12	5.65	1.65	0.35
Main	1782.724	31970 cfs - 6hr	31970.00	5883.32	24818.81	1267.87	28.51	946.00	974.51		975.42	0.000801	6.45	11.61	6.61	1.83	0.38
Main	1715.933	1289 cfs	1289.00	1048.49	129.60	110.91	6.57	946.00	952.57		953.57	0.004167	6.13	8.77	4.18	1.86	0.60
Main	1715.933	1980 cfs 100-yr	1980.00	1401.73	382.05	196.22	9.15	946.00	955.15		955.96	0.000888	4.76	8.41	2.84	1.71	0.49
Main	1715.933	2650 cfs 500-yr	2650.00	1562.26	837.71	250.04	10.61	946.00	956.61		957.25	0.000704	4.17	8.09	2.92	1.61	0.44
Main	1715.933	2924 cfs	2924.00	1651.70	1001.47	270.83	10.89	946.00	956.89		957.55	0.000735	4.28	8.33	3.11	1.66	0.44
Main	1715.933	3116 cfs	3116.00	1724.42	1105.49	286.10	11.03	946.00	957.03		957.72	0.000774	4.40	8.59	3.26	1.71	0.46
Main	1715.933	3400 cfs	3400.00	1809.33	1283.57	307.10	11.30	946.00	957.30	955.64	958.01	0.000800	4.50	8.79	3.44	1.74	0.46
Main	1715.933	3881 cfs 0.25 PM	3881.00	1957.14	1580.78	343.08	11.70	946.00	957.70	956.33	958.45	0.000855	4.70	9.19	3.73	1.82	0.47
Main	1715.933	4188 cfs	4188.00	2036.63	1786.25	365.13	11.98	946.00	957.98	956.57	958.74	0.000870	4.78	9.34	3.89	1.84	0.48
Main	1715.933	11457 cfs 0.5 PM	11457.00	3241.25	7278.82	936.94	19.62	946.00	965.62		966.24	0.000525	4.98	9.07	5.05	1.86	0.36
Main	1715.933	13000 cfs	13000.00	3545.24	8387.90	1066.86	20.66	946.00	966.66		967.32	0.000532	5.20	9.42	5.32	1.94	0.37
Main	1715.933	15000 cfs	15000.00	3932.61	9830.15	1237.24	21.95	946.00	967.95		968.67	0.000538	5.45	9.84	5.64	2.03	0.37
Main	1715.933	24229 cfs -24hr	24229.00	5817.33	16376.94	2034.73	25.74	946.00	971.74		972.87	0.000694	6.88	12.41	7.24	2.56	0.43
Main	1715.933	31970 cfs - 6hr	31970.00	7425.01	21874.38	2670.61	27.72	946.00	973.72		975.30	0.000876	8.10	14.71	8.59	2.97	0.49
Main	1601.778	1289 cfs	1289.00	1191.59	50.85	46.57	4.73	946.00	950.73	950.73	952.97	0.007639	9.65	12.48	2.80	2.32	1.01
Main	1601.778	1980 cfs 100-yr	1980.00	1019.85	903.03	57.12	9.44	946.00	955.44		955.68	0.000593	2.31	5.35	1.51	0.83	0.31
Main	1601.778	2650 cfs 500-yr	2650.00	1156.64	1420.46	72.90	10.82	946.00	956.82		957.04	0.000480	2.30	5.29	1.69	0.77	0.28
Main	1601.778	2924 cfs	2924.00	1241.10	1602.27	80.63	11.10	946.00	957.10		957.33	0.000508	2.41	5.53	1.81	0.79	0.29
Main	1601.778	3116 cfs	3116.00	1304.18	1725.64	86.18	11.25	946.00	957.25		957.49	0.000537	2.50	5.74	1.89	0.82	0.30
Main	1601.778	3400 cfs	3400.00	1387.85	1917.34	94.82	11.52	946.00	957.52		957.78	0.000562	2.60	5.97	2.00	0.84	0.31
Main	1601.778	3881 cfs 0.25 PM	3881.00	1530.07	2240.74	110.18	11.91	946.00	957.91		958.20	0.000609	2.78	6.36	2.17	0.89	0.32
Main	1601.778	4188 cfs	4188.00	1613.72	2453.47	120.82	12.19	946.00	958.19		958.49	0.000626	2.87	6.55	2.27	0.92	0.33
Main	1601.778	11457 cfs 0.5 PM	11457.00	3033.99	7811.04	611.97	19.74	946.00	965.74		966.09	0.000420	3.40	7.61	3.15	1.24	0.30
Main	1601.778	13000 cfs	13000.00	3338.55	8925.63	735.82	20.80	946.00	966.80		967.17	0.000425	3.55	7.95	3.32	1.33	0.31
Main	1601.778	15000 cfs	15000.00	3723.99	10373.70	902.31	22.10	946.00	968.10		968.51	0.000429	3.73	8.34	3.53	1.42	0.31
Main	1601.778	24229 cfs -24hr	24229.00	5550.71	17011.74	1666.56	26.00	946.00	972.00		972.63	0.000547	4.72	10.57	4.57	1.88	0.37

HEC-RAS Plan: SS-EX-Check River: SippoCreek Reach: Main (Continued)

Reach	River Sta	Profile	Q Total	Q Channel	Q Left	Q Right	Hydr Depth C	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	Frctn Slope	Vel Total	Vel Chnl	Vel Left	Vel Right	Froude # Chl
			(cfs)	(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(ft/s)	(ft/s)	(ft/s)	
Main	1601.778	31970 cfs - 6hr	31970.00	7076.93	22577.25	2315.82	28.11	946.00	974.11		974.97	0.000681	5.56	12.46	5.44	2.24	0.41
Main	1526.039	1289 cfs	1289.00	1193.68	20.69	74.63	4.64	944.00	948.64	949.42	952.10	0.009881	13.78	15.40	3.79	7.05	1.26
Main	1526.039	1980 cfs 100-yr	1980.00	1148.51	692.65	138.84	11.27	944.00	955.27		955.63	0.000507	2.91	6.10	1.70	1.62	0.32
Main	1526.039	2650 cfs 500-yr	2650.00	1258.98	1136.48	254.54	12.71	944.00	956.71		956.99	0.000431	2.72	5.93	1.90	1.54	0.29
Main	1526.039	2924 cfs	2924.00	1341.17	1283.35	299.48	12.98	944.00	956.98		957.28	0.000458	2.83	6.19	2.02	1.64	0.30
Main	1526.039	3116 cfs	3116.00	1404.75	1382.29	328.95	13.12	944.00	957.12		957.44	0.000486	2.93	6.41	2.12	1.71	0.31
Main	1526.039	3400 cfs	3400.00	1484.40	1536.66	378.95	13.39	944.00	957.39		957.73	0.000511	3.03	6.64	2.23	1.81	0.32
Main	1526.039	3881 cfs 0.25 PM	3881.00	1620.67	1795.88	464.45	13.78	944.00	957.78		958.15	0.000557	3.21	7.04	2.42	1.97	0.33
Main	1526.039	4188 cfs	4188.00	1697.24	1966.29	524.47	14.05	944.00	958.05		958.44	0.000575	3.30	7.23	2.52	2.06	0.34
Main	1526.039	11457 cfs 0.5 PM	11457.00	2795.46	6049.14	2612.41	21.71	944.00	965.71		966.05	0.000395	3.63	7.71	3.22	2.84	0.29
Main	1526.039	13000 cfs	13000.00	3036.95	6860.30	3102.76	22.77	944.00	966.77		967.13	0.000400	3.77	7.99	3.37	3.02	0.29
Main	1526.039	15000 cfs	15000.00	3340.27	7905.44	3754.29	24.09	944.00	968.09		968.47	0.000404	3.94	8.30	3.53	3.22	0.30
Main	1526.039	24229 cfs -24hr	24229.00	4812.46	12684.00	6732.54	28.00	944.00	972.00		972.57	0.000511	4.92	10.29	4.44	4.21	0.34
Main	1526.039	31970 cfs - 6hr	31970.00	6046.32	16645.36	9278.32	30.13	944.00	974.13		974.89	0.000632	5.76	12.02	5.20	5.02	0.39
Main	1480.719	1289 cfs	1289.00	1289.00			3.62	935.38	939.00	942.03	950.20	0.024895	26.86	26.86			2.49
Main	1480.719	1980 cfs 100-yr	1980.00	1097.40	808.63	73.97	14.92	935.38	955.40	944.21	955.54		2.47	3.62	1.99	0.82	0.16
Main	1480.719	2650 cfs 500-yr	2650.00	1200.34	1277.79	171.87	16.32	935.38	956.79	946.13	956.93		2.48	3.62	2.27	1.00	0.16
Main	1480.719	2924 cfs	2924.00	1277.13	1440.77	206.10	16.59	935.38	957.07	946.86	957.21		2.61	3.78	2.42	1.09	0.16
Main	1480.719	3116 cfs	3116.00	1336.07	1551.37	228.57	16.74	935.38	957.22	947.35	957.37		2.71	3.92	2.54	1.15	0.17
Main	1480.719	3400 cfs	3400.00	1409.93	1723.02	267.05	17.01	935.38	957.48	948.07	957.65		2.82	4.08	2.68	1.23	0.17
Main	1480.719	3881 cfs 0.25 PM	3881.00	1535.53	2012.19	333.28	17.40	935.38	957.88	953.33	958.07		3.02	4.34	2.93	1.37	0.18
Main	1480.719	4188 cfs	4188.00	1605.41	2201.99	380.60	17.68	935.38	958.16	953.43	958.36		3.12	4.46	3.06	1.45	0.19
Main	1480.719	11457 cfs 0.5 PM	11457.00	2504.34	6847.02	2105.64	25.28	935.38	965.75	956.79	966.01		3.71	4.87	4.14	2.29	0.17
Main	1480.719	13000 cfs	13000.00	2706.69	7801.16	2492.16	26.34	935.38	966.81	957.18	967.09		3.88	5.05	4.35	2.43	0.17
Main	1480.719	15000 cfs	15000.00	2955.79	9028.85	3015.37	27.65	935.38	968.12	957.76	968.43		4.06	5.26	4.59	2.60	0.18
Main	1480.719	24229 cfs -24hr	24229.00	4161.57	14591.63	5475.80	31.57	935.38	972.04	960.00	972.52		5.10	6.48	5.82	3.42	0.20
Main	1480.719	31970 cfs - 6hr	31970.00	5165.17	19208.43	7596.40	33.71	935.38	974.18	961.62	974.82		5.98	7.53	6.84	4.11	0.23
Main	1430.15		Culvert														
Main	1379.577	1289 cfs	1289.00	1289.00			3.99	934.98	938.97	941.63	948.21		24.39	24.39			2.15
Main	1379.577	1980 cfs 100-yr	1980.00	1715.45	248.21	16.34	14.09	934.98	955.01	943.83	955.51		3.60	6.08	1.13	0.34	0.29
Main	1379.577	2650 cfs 500-yr	2650.00	2110.72	483.96	55.33	15.39	934.98	956.31	945.73	956.90		3.58	6.85	1.49	0.51	0.31
Main	1379.577	2924 cfs	2924.00	2299.37	556.84	67.79	15.59	934.98	956.51	946.46	957.18		3.78	7.37	1.63	0.57	0.33
Main	1379.577	3116 cfs	3116.00	2438.68	602.32	75.00	15.67	934.98	956.58	946.95	957.33		3.97	7.77	1.73	0.61	0.35
Main	1379.577	3400 cfs	3400.00	2627.72	682.33	89.95	15.87	934.98	956.78	947.65	957.61		4.16	8.27	1.87	0.67	0.37
Main	1379.577	3881 cfs 0.25 PM	3881.00	2957.91	809.75	113.34	16.09	934.98	957.00	953.43	958.02		4.55	9.18	2.12	0.76	0.40
Main	1379.577	4188 cfs	4188.00	3153.68	901.74	132.58	16.28	934.98	957.19	949.55	958.31		4.73	9.68	2.26	0.82	0.42
Main	1379.577	11457 cfs 0.5 PM	11457.00	5938.22	3988.62	1530.16	23.68	934.98	964.59	959.92	965.94		4.87	12.53	3.80	1.85	0.45
Main	1379.577	13000 cfs	13000.00	6508.40	4621.93	1869.68	24.63	934.98	965.54	960.67	967.00		5.07	13.20	4.05	2.01	0.47
Main	1379.577	15000 cfs	15000.00	7208.91	5453.44	2337.65	25.85	934.98	966.76	961.57	968.33		5.28	13.93	4.34	2.19	0.48
Main	1379.577	24229 cfs -24hr	24229.00	10642.09	9179.53	4407.37	29.00	934.98	969.91	965.13	972.43		6.71	18.33	5.85	3.01	0.60
Main	1379.577	31970 cfs - 6hr	31970.00	13669.16	12183.40	6117.45	29.95	934.98	970.86	967.39	974.68		8.29	22.80	7.32	3.85	0.73
Main	1317.58		Culvert														
Main	1255.590	1289 cfs	1289.00	1289.00			10.00	934.00	944.00	940.65	945.47		9.73	9.73			0.54
Main	1255.590	1980 cfs 100-yr	1980.00	1762.36	212.17	5.47	14.50	934.00	954.92	942.83	955.43		3.67	6.07	0.95	0.21	0.28
Main	1255.590	2650 cfs 500-yr	2650.00	2174.12	430.27	45.62	15.80	934.00	956.23	944.75	956.83		3.42	6.87	1.24	0.41	0.30
Main	1255.590	2924 cfs	2924.00	2364.93	498.19	60.88	16.01	934.00	956.43	945.47	957.12		3.57	7.38	1.35	0.47	0.32
Main	1255.590	3116 cfs	3116.00	2508.48	538.88	68.64	16.08	934.00	956.50	945.94	957.27		3.74	7.79	1.44	0.51	0.34
Main	1255.590	3400 cfs	3400.00	2704.08	610.13	85.79	16.25	934.00	956.68	946.69	957.54		3.91	8.31	1.55	0.57	0.36
Main	1255.590	3881 cfs 0.25 PM	3881.00	3036.96	729.02	115.02	16.49	934.00	956.91	947.85	957.95		4.23	9.20	1.75	0.67	0.40
Main	1255.590	4188 cfs	4188.00	3242.53	808.98	136.49	16.64	934.00	957.07	948.57	958.22		4.40	9.73	1.88	0.73	0.42
Main	1255.590	11457 cfs 0.5 PM	11457.00	5755.94	3689.73	2011.33	24.25	934.00	964.68	959.95	965.83		4.05	11.86	3.01	1.80	0.42
Main	1255.590	13000 cfs	13000.00	6290.17	4264.22	2445.61	25.18	934.00	965.60	960.69	966.83		4.22	12.48	3.21	1.96	0.44
Main	1255.590	15000 cfs	15000.00	6924.41	5021.03	3054.57	26.44	934.00	966.87	961.55	968.17		4.37	13.08	3.41	2.13	0.45
Main	1255.590	24229 cfs -24hr	24229.00	10009.88	8400.99	5818.14	29.93	934.00	970.35	964.81	972.28		5.46	16.71	4.48	2.97	0.54

HEC-RAS Plan: SS-EX-Check River: SippoCreek Reach: Main (Continued)

Reach	River Sta	Profile	Q Total	Q Channel	Q Left	Q Right	Hydr Depth C	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	Frctn Slope	Vel Total	Vel Chnl	Vel Left	Vel Right	Froude # Chl
			(cfs)	(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(ft/s)	(ft/s)	(ft/s)	
Main	1255.590	31970 cfs - 6hr	31970.00	12723.42	11171.54	8075.04	31.27	934.00	971.70	966.96	974.47		6.61	20.32	5.48	3.72	0.64
Main	1166.32		Culvert														
Main	1077.047	1289 cfs	1289.00	1289.00			10.41	933.00	943.41	939.65	944.77		9.34	9.34			0.51
Main	1077.047	1980 cfs 100-yr	1980.00	1818.54	140.46	21.00	14.91	933.00	954.83	941.84	955.35		3.69	6.07	0.89	0.27	0.28
Main	1077.047	2650 cfs 500-yr	2650.00	2214.11	325.36	110.53	16.26	933.00	956.18	943.74	956.78		3.34	6.77	1.27	0.53	0.30
Main	1077.047	2924 cfs	2924.00	2405.89	380.74	137.36	16.48	933.00	956.40	944.46	957.07		3.51	7.26	1.40	0.60	0.32
Main	1077.047	3116 cfs	3116.00	2552.82	412.16	151.02	16.54	933.00	956.46	944.97	957.21		3.69	7.68	1.49	0.64	0.33
Main	1077.047	3400 cfs	3400.00	2752.49	468.77	178.74	16.71	933.00	956.63	945.69	957.48		3.87	8.20	1.62	0.71	0.35
Main	1077.047	3881 cfs 0.25 PM	3881.00	3089.46	565.04	226.51	16.95	933.00	956.86	946.85	957.89		4.20	9.07	1.84	0.82	0.39
Main	1077.047	4188 cfs	4188.00	3298.49	629.74	259.77	17.10	933.00	957.02	947.54	958.15		4.39	9.60	1.98	0.88	0.41
Main	1077.047	11457 cfs 0.5 PM	11457.00	6198.35	3172.40	2086.25	24.38	933.00	964.29	959.71	965.71		4.60	12.65	3.71	1.83	0.45
Main	1077.047	13000 cfs	13000.00	6817.50	3698.65	2483.86	25.28	933.00	965.20	960.50	966.75		4.83	13.42	4.01	1.97	0.47
Main	1077.047	15000 cfs	15000.00	7596.85	4387.22	3015.93	26.40	933.00	966.32	961.35	968.03		5.09	14.32	4.36	2.14	0.49
Main	1077.047	24229 cfs -24hr	24229.00	11373.00	7458.80	5397.20	29.32	933.00	969.23	964.86	972.16		6.69	19.30	6.09	2.99	0.63
Main	1077.047	31970 cfs - 6hr	31970.00	15025.11	9834.52	7110.37	29.26	933.00	969.18	967.30	974.31		8.86	25.55	8.06	3.95	0.83
Main	993.45		Culvert														
Main	910.2854	1289 cfs	1289.00	1289.00			10.73	932.00	942.73	938.65	944.01		9.07	9.07			0.49
Main	910.2854	1980 cfs 100-yr	1980.00	1971.82	2.22	5.96	14.66	932.00	954.26	940.84	954.94		5.88	6.64	0.18	0.22	0.31
Main	910.2854	2650 cfs 500-yr	2650.00	2392.95	76.62	180.42	16.36	932.00	955.96	942.75	956.69		4.06	7.23	0.72	0.84	0.31
Main	910.2854	2924 cfs	2924.00	2599.69	98.35	225.96	16.55	932.00	956.15	943.48	956.98		4.23	7.76	0.83	0.95	0.34
Main	910.2854	3116 cfs	3116.00	2767.21	105.92	242.87	16.56	932.00	956.16	943.97	957.10		4.49	8.25	0.88	1.02	0.36
Main	910.2854	3400 cfs	3400.00	2985.14	127.54	287.32	16.70	932.00	956.30	944.68	957.37		4.71	8.83	0.99	1.13	0.38
Main	910.2854	3881 cfs 0.25 PM	3881.00	3353.63	164.41	362.97	16.89	932.00	956.49	945.85	957.78		5.11	9.81	1.17	1.31	0.42
Main	910.2854	4188 cfs	4188.00	3587.80	188.31	411.89	16.99	932.00	956.59	946.57	958.04		5.37	10.43	1.28	1.43	0.45
Main	910.2854	11457 cfs 0.5 PM	11457.00	5302.38	1973.64	4180.99	25.04	932.00	964.63	960.12	965.49		4.38	10.46	2.63	3.08	0.37
Main	910.2854	13000 cfs	13000.00	5653.89	2328.86	5017.25	26.08	932.00	965.68	960.75	966.54		4.52	10.71	2.78	3.32	0.37
Main	910.2854	15000 cfs	15000.00	6108.93	2786.79	6104.28	27.30	932.00	966.90	961.61	967.78		4.71	11.05	2.97	3.61	0.37
Main	910.2854	24229 cfs -24hr	24229.00	8487.97	4907.40	10833.63	31.03	932.00	970.63	964.43	971.83		5.82	13.51	3.88	4.77	0.43
Main	910.2854	31970 cfs - 6hr	31970.00	10460.61	6618.62	14890.77	32.71	932.00	972.31	966.13	973.89		6.84	15.80	4.60	5.78	0.49
Main	793.67		Culvert														
Main	677.0554	1289 cfs	1289.00	1289.00			10.82	931.00	941.82	937.65	943.08		8.99	8.99			0.48
Main	677.0554	1980 cfs 100-yr	1980.00	1980.00			20.08	931.00	951.08	939.84	951.94		7.44	7.44			0.29
Main	677.0554	2650 cfs 500-yr	2650.00	2650.00			23.59	931.00	954.59	941.74	955.71		8.48	8.48			0.31
Main	677.0554	2924 cfs	2924.00	2924.00			23.80	931.00	954.80	942.45	956.13		9.27	9.27			0.34
Main	677.0554	3116 cfs	3116.00	3116.00			23.66	931.00	954.66	942.97	956.19		9.94	9.94			0.36
Main	677.0554	3400 cfs	3400.00	3400.00			23.74	931.00	954.74	943.66	956.55		10.81	10.81			0.39
Main	677.0554	3881 cfs 0.25 PM	3881.00	3881.00			23.66	931.00	954.66	944.85	957.04		12.38	12.38			0.45
Main	677.0554	4188 cfs	4188.00	4188.00			23.45	931.00	954.45	945.57	957.27		13.48	13.48			0.49
Main	677.0554	11457 cfs 0.5 PM	11457.00	8414.64	601.61	2440.75	21.06	931.00	961.43	961.43	965.38		5.42	18.58	1.13	2.16	0.71
Main	677.0554	13000 cfs	13000.00	9193.21	795.16	3011.62	21.81	931.00	962.17	962.17	966.42		5.47	19.60	1.24	2.38	0.74
Main	677.0554	15000 cfs	15000.00	10008.83	1129.66	3861.50	23.00	931.00	963.36	963.36	967.64		5.18	20.24	1.23	2.61	0.74
Main	677.0554	24229 cfs -24hr	24229.00	12566.69	4259.56	7402.75	27.56	931.00	967.92	967.92	971.60		3.84	21.21	1.26	3.15	0.71
Main	677.0554	31970 cfs - 6hr	31970.00	14537.23	7794.98	9637.79	29.43	931.00	969.80	969.80	973.59		3.95	22.97	1.64	3.55	0.75
Main	510.57		Culvert														
Main	344.0778	1289 cfs	1289.00	1289.00			10.38	930.00	940.38	936.65	941.75		9.37	9.37			0.51
Main	344.0778	1980 cfs 100-yr	1980.00	1980.00			16.33	930.00	946.33	938.84	947.63		9.15	9.15			0.40
Main	344.0778	2650 cfs 500-yr	2650.00	2650.00			17.69	930.00	947.69	940.73	949.68		11.30	11.30			0.47
Main	344.0778	2924 cfs	2924.00	2924.00			17.69	930.00	947.69	941.44	950.11		12.47	12.47			0.52
Main	344.0778	3116 cfs	3116.00	3116.00			16.73	930.00	946.73	941.96	949.80		14.06	14.06			0.61
Main	344.0778	3400 cfs	3400.00	3400.00			16.58	930.00	946.58	942.68	950.30		15.47	15.47			0.67
Main	344.0778	3881 cfs 0.25 PM	3881.00	3881.00			16.54	930.00	946.54	943.85	951.41		17.71	17.71			0.77
Main	344.0778	4188 cfs	4188.00	4188.00			15.96	930.00	945.96	944.57	952.05		19.80	19.80			0.87

HEC-RAS Plan: SS-EX-Check River: SippoCreek Reach: Main (Continued)

Reach	River Sta	Profile	Q Total	Q Channel	Q Left	Q Right	Hydr Depth C	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	Frctn Slope	Vel Total	Vel Chnl	Vel Left	Vel Right	Froude # Chl
			(cfs)	(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(ft/s)	(ft/s)	(ft/s)	
Main	344.0778	11457 cfs 0.5 PM	11457.00	7840.78	2030.90	1585.32	22.13	930.00	958.25	958.25	961.57		3.37	17.65	1.09	1.47	0.66
Main	344.0778	13000 cfs	13000.00	8314.03	2767.24	1918.74	23.11	930.00	959.22	959.22	962.43		3.15	17.93	1.15	1.52	0.66
Main	344.0778	15000 cfs	15000.00	8952.78	3739.47	2307.75	24.00	930.00	960.12	960.12	963.33		3.10	18.58	1.28	1.61	0.67
Main	344.0778	24229 cfs -24hr	24229.00	11512.67	8573.89	4142.44	27.30	930.00	963.42	963.42	966.70		3.04	21.01	1.64	1.89	0.71
Main	344.0778	31970 cfs - 6hr	31970.00	13573.45	12873.10	5523.45	28.79	930.00	964.91	964.91	968.58		3.34	23.49	2.02	2.12	0.77
Main	226.91		Culvert														
Main	109.7401	1289 cfs	1289.00	1289.00			6.57	929.00	935.57	935.65	938.97		14.81	14.81			1.02
Main	109.7401	1980 cfs 100-yr	1980.00	1980.00			7.08	929.00	936.08	937.84	943.00		21.12	21.12			1.40
Main	109.7401	2650 cfs 500-yr	2650.00	2650.00			10.73	929.00	939.73	939.73	945.12		18.64	18.64			1.00
Main	109.7401	2924 cfs	2924.00	2924.00			11.44	929.00	940.44	940.44	946.22		19.28	19.28			1.00
Main	109.7401	3116 cfs	3116.00	3116.00			11.96	929.00	940.96	940.96	946.96		19.67	19.67			1.00
Main	109.7401	3400 cfs	3400.00	3400.00			12.68	929.00	941.68	941.68	948.04		20.23	20.23			1.00
Main	109.7401	3881 cfs 0.25 PM	3881.00	3881.00			13.85	929.00	942.85	942.85	949.80		21.15	21.15			1.00
Main	109.7401	4188 cfs	4188.00	4188.00			14.57	929.00	943.57	943.57	950.88		21.69	21.69			1.00
Main	109.7401	11457 cfs 0.5 PM	11457.00	6384.77	3491.12	1581.12	18.85	929.00	954.07	954.07	956.57		2.66	16.96	1.25	1.40	0.69
Main	109.7401	13000 cfs	13000.00	7086.89	4091.94	1821.17	19.05	929.00	954.27	954.27	957.23		2.89	18.63	1.39	1.55	0.75
Main	109.7401	15000 cfs	15000.00	7626.09	5266.78	2107.13	19.80	929.00	955.02	955.02	957.98		2.86	19.29	1.51	1.56	0.76
Main	109.7401	24229 cfs -24hr	24229.00	9336.14	11140.93	3751.92	22.85	929.00	958.08	958.08	960.61		2.68	20.46	1.85	1.47	0.75
Main	109.7401	31970 cfs - 6hr	31970.00	11001.74	15366.86	5601.40	24.01	929.00	959.23	959.23	962.09		2.99	22.95	2.18	1.78	0.83

Appendix 3
Dam Failure Parameter Spreadsheets And HydroCAD Dam Failure Analysis

Sippo Creek Reservoir 100-YR Dam Breach Parameters (with Tailwater conditions)

Input Parameters			
Water Height (ft)	H=	13.61 ft	4.15105 m
Crest Width (ft)	C=	15 ft	4.575 m
Storage Volume (ac-ft)	V_s =	104.1 ac-ft	128,405 m^3
Upstream slope (Z_1 : 1)	Z_1 =	3	3
Downstream slope (Z_2 : 1)	Z_2 =	2.5	2.5
Breach Sideslope	Z_b =	1	1
Surface Area of Reservoir	S_a =	18.4 acres	74,462 m^2

Peak Discharge

MacDonald & Langridge-Monopolis [2]		check w/ Max C
$Q_p = 3.1B_aH^{1.5}$ $[C / (C + T_f*\text{sqrt}(H))]^3$		4,412 cfs
$C = 23.4(S_a/B_a)$ =	15.11	4,387 cfs

Froehlich [2]		
	113.96 cms	4,024 cfs
$Q_p = 0.607V_s^{0.295}H^{1.24}$	Overtopping	Piping
$B_a = 9.5K_O(V_s*H)^{0.25}$	58.28 ft	40.80 ft
$T_f = 0.59(V_s^{0.47})/H^{0.91}$	0.487 hrs	0.341 hrs

Peak Discharge

National Weather Service (NWS) [2]

		Max B_a	check w/ Min Ba
	check w/ Min C	4,723 cfs	2,309 cfs
$Q_p = Q_o + 3.1B_a[(C/(T_f+C/H^{0.5}))]^3$	Max C	6,477 cfs	3,167 cfs

Q_o= 0 cfs

B_a= 58.28 ft^2

C= 23.4(S_a/B_a)= 15.11

T_f= 0.487 hrs

Natural Resource Conservation Service (NRCS) [2]

$Q_p = 3.2H^{2.5}$ = 2,187 cfs

MacDonald & Langridge-Monopolis [2]

Breach Formation Factor = **1416.801**

$BFF = V_w(H)$

Volume of Eroded Material = **667 yds^3**

$V_m = 2.50\ (BFF)^{.77}$

Breach Base Width = **14.89 ft**

$$W_b = \frac{27V_m - H^2\,(CZ_b + HZ_bZ_3/3)}{H\,(C + HZ_3/2)}$$

Z3 = Z1 + Z2 = **5.5**

Breach Top Width = **42.11 ft**

Average Breach Width = **28.50 ft**

Breach Development Time = **0.44 hrs**

Piping **0.306 hrs**

$T = .042\ V_m^{.36}$

Von Thun and Gillette [1]

Breach Base Width = **40.45 ft**

Average Breach Width = **16.48 m** **54.06 ft**

$B_a = 2.5H + C_b$ C_b is based on vol = **6.1** *Page 15*

Breach Development Time = *upper bound* **0.99 hrs**; *lower bound* **0.52 hrs**

*Erosion Resistant

$T_f = 0.020H + 0.25$ $T_f = \frac{B_a}{4H}$

Breach Development Time = *upper bound* **0.21 hrs**; *lower bound* **0.20 hrs**

*highly erodible

$T_f = 0.015H$ $T_f = \frac{Ba}{4H + 61.0}$

Min C

C= 7.96 Von Thun

C= 7.39 Froelich

with Min C

$3.1*B_a$= 180.681

$C/(H^{0.5})$=	4.096	2.002
$T_f+C/(H^{0.5})$=	4.582	2.489

	North	East	South	West	
H=	21			18	ft
T=	1.03				hrs
B_a=	86.4				ft
V_w=	1475	1475	1475	1475	ac-ft
S_a=	75	75	75	75	acres
Q_p=	15k-25.5k			12.5k-23.3	cfs

Minimum Time to Failure

Tf= H/120= 0.11 hrs

6.805 min

[1] - Prediction of Embankment Dam Breach Parameters - DSO-98-004 by Tony L. Wahl

[2] - Dam Safety Guidelines - Dam Break Inundation Analysis and Downstream Hazard Classification - Technical Note 1 - Washington State Dept. of Ecology

[3] - NWS Simple Dam Break Analysis Equation (1999)

Sippo Creek Reservoir 500-YR Dam Breach Parameters (with Tailwater conditions)

Input Parameters			
Water Height (ft)	H=	9.35 ft	2.85175 m
Crest Width (ft)	C=	15 ft	4.575 m
Storage Volume (ac-ft)	V_s =	83.9 ac-ft	103,489 m^3
Upstream slope (Z_1 : 1)	Z_1 =	3	3
Downstream slope (Z_2 : 1)	Z_2 =	2.5	2.5
Breach Sideslope	Z_b =	1	1
Surface Area of Reservoir	S_a =	18.5 acres	74,867 m^2

Peak Discharge

MacDonald & Langridge-Monopolis [2] — check w/ Max C: **2,824 cfs**

$Q_p = 3.1B_aH^{1.5}$ $[C / (C + T_f*\text{sqrt}(H))]^3$ — **2,818 cfs**

$C = 23.4(S_a/B_a)$ = 13.53

Froehlich [2] — **67.13 cms** (Overtopping) — **2,371 cfs** (Piping)

$Q_p = 0.607V_s^{0.295}H^{1.24}$

$B_a = 9.5K_O(V_s*H)^{0.25}$ — 50.28 ft — 35.19 ft

$T_f = 0.59(V_s^{0.47})/H^{0.91}$ — 0.619 hrs — 0.433 hrs

Peak Discharge

National Weather Service (NWS) [2]

		Max B_a	check w/ Min Ba
$Q_p = Q_0+3.1B_a[(C/(T_f+C/H^{0.5}))]^3$	check w/ Min C	5.105 cfs	4,213 cfs
	Max C	5,659 cfs	4,565 cfs

Q_0= 2650 cfs

B_a= 50.28 ft^2

C= 23.4(S_a/B_a)= 13.53

T_f= 0.619 hrs

Natural Resource Conservation Service (NRCS) [2]

$Q_p = 3.2H^{2.5}$ = 855 cfs

MacDonald & Langridge-Monopolis [2]

Breach Formation Factor = **784.465**

BFF = $V_w(H)$

Volume of Eroded Material = **423 yds^3**

$V_m = 2.50\ (BFF)^{.77}$

Breach Base Width = **22.65 ft**

$$W_b = \frac{27V_m - H^2(CZ_b + HZ_bZ_3/3)}{H(C + HZ_3/2)}$$

Z3 = Z1 + Z2 = **5.5**

Breach Top Width = **41.35 ft**

Average Breach Width = **32.00 ft**

Breach Development Time = **0.37 hrs**

Piping: $T = .042\ V_m^{.36}$ = **0.259 hrs**

Von Thun and Gillette [1]

Breach Base Width = **34.05 ft**

Average Breach Width = **13.23 m** = **43.40 ft**

$B_a = 2.5H + C_b$ — C_b is based on vol = **6.1** *Page 15*

Breach Development Time = upper bound **1.16 hrs**; lower bound **0.44 hrs**

*Erosion Resistant

$T_f = 0.020H + 0.25$ $T_f = B_a/4H$

Breach Development Time = upper bound **0.18 hrs**; lower bound **0.14 hrs**

*highly erodible

$T_f = 0.015H$ $T_f = Ba/(4H+61.0)$

Min C

C= 9.97 Von Thun

C= 8.61 Froelich

	with Min C	
$3.1*B_a$=	155.858	
$C/(H^{0.5})$=	4.424	2.816
$T_f+C/(H^{0.5})$=	5.043	3.435

Minimum Time to Failure

Tf= H/120= 0.08 hrs = 4.675 min

	North	East	South	West	
H=	21			18	ft
T=	1.03				hrs
B_a=	86.4				ft
V_w=	1475	1475	1475	1475	ac-ft
S_a=	75	75	75	75	acres
Q_p=	15k-25.5k			12.5k-23.3	cfs

[1] - Prediction of Embankment Dam Breach Parameters - DSO-98-004 by Tony L. Wahl

[2] - Dam Safety Guidelines - Dam Break Inundation Analysis and Downstream Hazard Classification - Technical Note 1 - Washington State Dept. of Ecology

[3] - NWS Simple Dam Break Analysis Equation (1999)

Sippo Creek Reservoir 6-HR 0.22 PMF Dam Breach Parameters (with Tailwater conditions)

Input Parameters

Water Height (ft)	H=	5.56 ft	1.6956 m
Crest Width (ft)	C=	15 ft	4.575 m
Storage Volume (ac-ft)	V_s =	66.7 ac-ft	82,273 m^3
Upstream slope (Z_1 : 1)	Z_1 =	2	2
Downstream slope (Z_2 : 1)	Z_2 =	2	2
Breach Sideslope	Z_b =	1	1
Surface Area of Reservoir	S_a =	19.4 acres	78,509 m^2

Peak Discharge

MacDonald & Langridge-Monopolis [2] — check w/ Max C: **1,823 cfs**

$Q_p = 3.1B_aH^{1.5}$ $[C / (C + T_f*\text{sqrt}(H))]^3$ = **1,823 cfs**

$C = 23.4(S_a/B_a)$ = 10.09

Froehlich [2]: **32.93 cms** (Overtopping) | **1,163 cfs** (Piping)

$Q_p = 0.607V_s^{0.295}H^{1.24}$

$B_a = 9.5K_O(V_s*H)^{0.25}$: 41.69 ft | 29.18 ft

$T_f = 0.59(V_s^{0.47})/H^{0.91}$: 0.892 hrs | 0.624124359

Peak Discharge

National Weather Service (NWS) [2]

		Max B_a	check w/ Min Ba
$Q_p = Q_0+3.1B_w((C/(T_f+C/H^{0.5}))^3$	check w/ Min C	4,141 cfs	4,220 cfs
	Max C	4,103 cfs	4,179 cfs

Q_0= 3,143 cfs

B_a= 41.69 ft^2

C= $23.4(S_a/B_a)$= 10.09

T_f= 0.892 hrs

Natural Resource Conservation Service (NRCS) [2]

$Q_p = 3.2H^{2.5}$ = 233 cfs

MacDonald & Langridge-Monopolis [2]

Breach Formation Factor = **370.852**

$BFF = V_w(H)$

Volume of Eroded Material = **238 yds^3**

$V_m = 2.50\ (BFF)^{.77}$

Breach Base Width = **39.44 ft**

$$W_b = \frac{27V_m - H^2(CZ_b + HZ_bZ_3/3)}{H(C + HZ_3/2)}$$

Z3 = Z1 + Z2 = 4

Breach Top Width = **50.56 ft**

Average Breach Width = **45.00 ft**

Breach Development Time = **0.30 hrs**

$T = .042\ V_m^{.36}$ = 0.21075998

Von Thun and Gillette [1]

Breach Base Width = **28.36 ft**

Average Breach Width = **10.34 m** = **33.92 ft**

$B_a = 2.5H + C_b$ C_b is based on vol = **6.1** *Page 15*

Breach Development Time = *upper bound* **1.52 hrs**; *lower bound* **0.36 hrs**

*Erosion Resistant

$T_f = 0.020H + 0.25$ $T_f = \frac{B_a}{4H}$

Breach Development Time = *upper bound* **0.15 hrs**; *lower bound* **0.08 hrs**

*highly erodible

$T_f = 0.015H$ $T_f = \frac{Ba}{4H + 61.0}$

Min C

C= 13.38 Von Thun

C= 10.89 Froelich

with Min C

$3.1*B_a$= 129.237

$C/(H^{0.5})$= 4.278 4.618

$T_f+C/(H^{0.5})$= 5.170 5.510

	North	East	South	West	
H=	21			18	ft
T=	1.03				hrs
B_a=	86.4				ft
V_w=	1475	1475	1475	1475	ac-ft
S_a=	75	75	75	75	acres
Q_p=	15k-25.5k			12.5k-23.3	cfs

Overtopping Minimum Time to Failure

Tf= H/120= 0.05 hrs

2.78 min

[1] - Prediction of Embankment Dam Breach Parameters - DSO-98-004 by Tony L. Wahl

[2] - Dam Safety Guidelines - Dam Break Inundation Analysis and Downstream Hazard Classification - Technical Note 1 - Washington State Dept. of Ecology

[3] - NWS Simple Dam Break Analysis Equation (1999)

Sippo Creek Reservoir 6-HR 0.24 PMF Dam Breach Parameters (with Tailwater conditions)

Input Parameters			
Water Height (ft)	H=	1.97 ft	0.60085 m
Crest Width (ft)	C=	15 ft	4.575 m
Storage Volume (ac-ft)	V_s =	35.83 ac-ft	44,186 m^3
Upstream slope (Z_1 : 1)	Z_1 =	2	2
Downstream slope (Z_2 : 1)	Z_2 =	2	2
Breach Sideslope	Z_b =	1	1
Surface Area of Reservoir	S_a =	20.77 acres	84,053 m^2

Peak Discharge

MacDonald & Langridge-Monopolis [2] — check w/ Max C: **412 cfs**

$Q_p = 3.1B_aH^{1.5}$ $[C / (C + T_f*\text{sqrt}(H))]^3$ = **412 cfs**

$C = 23.4(S_a/B_a)$ = 10.10

Froehlich [2]: **7.57 cms** (Overtopping) | **267 cfs** (Piping)

$Q_p = 0.607V_s^{0.295}H^{1.24}$ | $B_a = 9.5K_O(V_s*H)^{0.25}$ | $T_f = 0.59(V_s^{0.47})/H^{0.91}$

Overtopping: 27.54 ft | 1.712 hrs

Piping: 19.28 ft | 1.198068875

Peak Discharge

National Weather Service (NWS) [2]

	check w/ Min C	Max B_a	check w/ Min Ba
$Q_p = Q_o+3.1B_a((C/(T_f+C/H^{0.5}))^3$	Max C	3,801 cfs	3,921 cfs
		3,764 cfs	3,857 cfs

Q_o= 3,640 cfs

B_a= 27.54 ft^2

C= $23.4(S_a/B_a)$= 10.10

T_f= 1.712 hrs

Natural Resource Conservation Service (NRCS) [2]

$Q_p = 3.2H^{2.5}$ = 17 cfs

MacDonald & Langridge-Monopolis [2]

Breach Formation Factor = **70.5851**

$BFF = V_w(H)$

Volume of Eroded Material = **66 yds^3**

$V_m = 2.50\ (BFF)^{.77}$

Breach Base Width = **46.14 ft**

$W_b = \dfrac{27V_m - H^2\ (CZ_b + HZ_bZ_3/3)}{H\ (C + HZ_3/2)}$

Z3 = Z1 + Z2 = 4

Breach Top Width = **50.08 ft**

Average Breach Width = **48.11 ft**

Breach Development Time = **0.19 hrs**

$T = .042\ V_m^{.36}$ = 0.13306658

Von Thun and Gillette [1]

Breach Base Width = **22.97 ft**

Average Breach Width = **7.60 m** = **24.94 ft**

$B_a = 2.5H + C_b$ C_b is based on vol = **6.1** *Page 15*

Breach Development Time = *upper bound* **3.16 hrs**; *lower bound* **0.29 hrs**

*Erosion Resistant

$T_f = 0.020H + 0.25$ $T_f = \dfrac{B_a}{4H}$

Breach Development Time = *upper bound* **0.12 hrs**; *lower bound* **0.03 hrs**

*highly erodible

$T_f = 0.015H$ $T_f = \dfrac{Ba}{4H + 61.0}$

Min C

C= 19.49 Von Thun

C= 17.65 Froelich

with Min C

$3.1*B_a$= 85.3618

$C/(H^{0.5})$= 7.198 12.575

$T_f+C/(H^{0.5})$= 8.910 14.287

	North	East	South	West	
H=	21			18	ft
T=	1.03				hrs
B_a=	86.4				ft
V_w=	1475	1475	1475	1475	ac-ft
S_a=	75	75	75	75	acres
Q_p=	15k-25.5k			12.5k-23.3	cfs

Overtopping Minimum Time to Failure

Tf= H/120= 0.02 hrs

0.985 min

[1] - Prediction of Embankment Dam Breach Parameters - DSO-98-004 by Tony L. Wahl

[2] - Dam Safety Guidelines - Dam Break Inundation Analysis and Downstream Hazard Classification - Technical Note 1 - Washington State Dept. of Ecology

[3] - NWS Simple Dam Break Analysis Equation (1999)

Sippo Creek Reservoir 6-HR 0.25 PMF Dam Breach Parameters (with Tailwater conditions)

Input Parameters			
Water Height (ft)	H=	0.93 ft	0.28365 m
Crest Width (ft)	C=	15 ft	4.575 m
Storage Volume (ac-ft)	V_s =	20.1 ac-ft	24,793 m^3
Upstream slope (Z_1 : 1)	Z_1 =	2	2
Downstream slope (Z_2 : 1)	Z_2 =	2	2
Breach Sideslope	Z_b =	1	1
Surface Area of Reservoir	S_a =	22.63 acres	91,580 m^2

Peak Discharge

MacDonald & Langridge-Monopolis [2] — check w/ Max C: **114 cfs**

$Q_p = 3.1B_aH^{1.5}$ $[C / (C + T_f*\text{sqrt}(H))]^3$ **114 cfs**

$C = 23.4(S_a/B_a)$ = 12.89

Froehlich [2] — **2.52 cms** (Overtopping) — **89 cfs** (Piping)

$Q_p = 0.607V_s^{0.295}H^{1.24}$ — $B_a = 9.5K_O(V_s*H)^{0.25}$: Overtopping 19.75 ft, Piping 13.83 ft

$T_f = 0.59(V_s^{0.47})/H^{0.91}$: Overtopping 2.582 hrs, Piping 1.807726462

Peak Discharge

National Weather Service (NWS) [2]

$Q_p = Q_o + 3.1B_a((C/(T_f+C/H^{0.5}))^3$

	check w/ Min C	Max B_a	check w/ Min Ba
		3.923 cfs	3.968 cfs
Max C		3,913 cfs	3,948 cfs

Q_o= 3,881 cfs

B_a= 19.75 ft^2

C= 23.4(S_a/B_a)= 12.89

T_f= 2.582 hrs

Natural Resource Conservation Service (NRCS) [2]

$Q_p = 3.2H^{2.5}$ = 3 cfs

MacDonald & Langridge-Monopolis [2]

Breach Formation Factor = **18.693**

BFF = $V_w(H)$

Volume of Eroded Material = **24 yds^3**

$V_m = 2.50\ (BFF)^{.77}$

Breach Base Width = **40.14 ft**

$$W_b = \frac{27V_m - H^2\ (CZ_b + HZ_bZ_3/3)}{H\ (C + HZ_3/2)}$$

Z3 = Z1 + Z2 = **4**

Breach Top Width = **42.00 ft**

Average Breach Width = **41.07 ft**

Breach Development Time = **0.13 hrs**

$T = .042\ V_m^{.36}$ = 0.09206937

Von Thun and Gillette [1]

Breach Base Width = **21.41 ft**

Average Breach Width = **6.81 m** = **22.34 ft**

$B_a = 2.5H + C_b$ — C_b is based on vol = **6.1** *Page 15*

Breach Development Time = *upper bound* **6.00 hrs**; *lower bound* **0.27 hrs**

**Erosion Resistant*

$T_f = 0.020H + 0.25$ $T_f = \frac{B_a}{4H}$

Breach Development Time = *upper bound* **0.11 hrs**; *lower bound* **0.01 hrs**

**highly erodible*

$T_f = 0.015H$ $T_f = \frac{Ba}{4H + 61.0}$

Min C

C= 23.70 Von Thun

C= 26.81 Froelich

	with Min C	
$3.1*B_a$=	61.2358	
$C/(H^{0.5})$=	13.370	27.798
$T_f+C/(H^{0.5})$=	15.953	30.381

	North	East	South	West	
H=	21			18	ft
T=	1.03				hrs
B_a=	86.4				ft
V_w=	1475	1475	1475	1475	ac-ft
S_a=	75	75	75	75	acres
Q_p=	15k-25.5k			12.5k-23.3	cfs

Overtopping Minimum Time to Failure

Tf= H/120= 0.01 hrs

0.465 min

[1] - Prediction of Embankment Dam Breach Parameters - DSO-98-004 by Tony L. Wahl

[2] - Dam Safety Guidelines - Dam Break Inundation Analysis and Downstream Hazard Classification - Technical Note 1 - Washington State Dept. of Ecology

[3] - NWS Simple Dam Break Analysis Equation (1999)

Sippo Creek Reservoir 6-HR 0.5 PMF Dam Breach Parameters (with Tailwater conditions)

Input Parameters			
Water Height (ft)	H=	1.2 ft	0.366 m
Crest Width (ft)	C=	15 ft	4.575 m
Storage Volume (ac-ft)	V_s =	48.9 ac-ft	60,317 m^3
Upstream slope (Z_1 : 1)	Z_1 =	2	2
Downstream slope (Z_2 : 1)	Z_2 =	2	2
Breach Sideslope	Z_b =	1	1
Surface Area of Reservoir	S_a =	47.44 acres	191,983 m^2

Peak Discharge

MacDonald & Langridge-Monopolis [2] — check w/ Max C: **303 cfs**

$Q_p = 3.1B_aH^{1.5}$ $[C / (C + T_f*\text{sqrt}(H))]^3$ = **303 cfs**

$C = 23.4(S_a/B_a)$ = 14.92

Froehlich [2]: **4.49 cms** (Overtopping) — **159 cfs** (Piping)

$Q_p = 0.607V_s^{0.295}H^{1.24}$

$B_a = 9.5K_O(V_s*H)^{0.25}$: 26.29 ft — 18.41 ft

$T_f = 0.59(V_s^{0.47})/H^{0.91}$: 3.110 hrs — 2.177059414

Peak Discharge

National Weather Service (NWS) [2]

		Max B_a	check w/ Min Ba
$Q_p = Q_0+3.1B_a(C/(T_f+C/H^{0.5}))^3$	check w/ Min C	11,542 cfs	11,697 cfs
	Max C	11,515 cfs	11,621 cfs

Q_0= 11,457 cfs

B_a= 26.29 ft^2

C= 23.4(S_a/B_a)= 14.92

T_f= 3.110 hrs

Natural Resource Conservation Service (NRCS) [2]

$Q_p = 3.2H^{2.5}$ = 5 cfs

MacDonald & Langridge-Monopolis [2]

Breach Formation Factor = **58.68**

BFF = $V_w(H)$

Volume of Eroded Material = **58 yds^3**

$V_m = 2.50\ (BFF)^{.77}$

Breach Base Width = **73.21 ft**

$$W_b = \frac{27V_m - H^2\ (CZ_b + HZ_bZ_3/3)}{H\ (C + HZ_3/2)}$$

Z3 = Z1 + Z2 = **4**

Breach Top Width = **75.61 ft**

Average Breach Width = **74.41 ft**

Breach Development Time = **0.18 hrs**

$T = .042\ V_m^{.36}$ = 0.12642448

Von Thun and Gillette [1]

Breach Base Width = **21.81 ft**

Average Breach Width = **7.02 m** — **23.01 ft**

$B_a = 2.5H + C_b$ C_b is based on vol = **6.1** *Page 15*

Breach Development Time = *upper bound* **4.79 hrs**; *lower bound* **0.27 hrs**

*Erosion Resistant

$T_f = 0.020H + 0.25$ $T_f = \frac{B_a}{4H}$

Breach Development Time = *upper bound* **0.11 hrs**; *lower bound* **0.02 hrs**

*highly erodible

$T_f = 0.015H$ $T_f = \frac{Ba}{4H + 61.0}$

Min C

C= 48.23 Von Thun

C= 42.22 Froelich

with Min C

3.1*B_a=	81.5094	
$C/(H^{0.5})$=	13.619	38.541
$T_f+C/(H^{0.5})$=	16.729	41.651

	North	East	South	West	
H=	21			18	ft
T=	1.03				hrs
B_a=	86.4				ft
V_a=	1475	1475	1475	1475	ac-ft
S_a=	75	75	75	75	acres
Q_p=	15k-25.5k			12.5k-23.3	cfs

Overtopping Minimum Time to Failure

Tf= H/120= 0.01 hrs

0.6 min

[1] - Prediction of Embankment Dam Breach Parameters - DSO-98-004 by Tony L. Wahl

[2] - Dam Safety Guidelines - Dam Break Inundation Analysis and Downstream Hazard Classification - Technical Note 1 - Washington State Dept. of Ecology

[3] - NWS Simple Dam Break Analysis Equation (1999)

Sippo Creek Reservoir 6-HR PMF Dam Breach Parameters (with Tailwater conditions)

Input Parameters			
Water Height (ft)	H=	2.8 ft	0.854 m
Crest Width (ft)	C=	15 ft	4.575 m
Storage Volume (ac-ft)	V_s =	206.34 ac-ft	254,516 m^3
Upstream slope (Z_1 : 1)	Z_1 =	2	2
Downstream slope (Z_2 : 1)	Z_2 =	2	2
Breach Sideslope	Z_b =	1	1
Surface Area of Reservoir	S_a =	77.7 acres	314,441 m^2

Peak Discharge			
MacDonald & Langridge-Monopolis [2]		check w/ Max C	2,273 cfs
$Q_p = 3.1B_aH^{1.5}$	$[C / (C + T_f*\text{sqrt}(H))]^3$		2,277 cfs
$C = 23.4(S_a/B_a)$ =	11.59		
Froehlich [2]		19.63 cms	693 cfs
$Q_p = 0.607V_s^{0.295}H^{1.24}$		Overtopping	Piping
$B_a = 9.5K_O(V_s*H)^{0.25}$		46.58 ft	32.60 ft
$T_f = 0.59(V_s^{0.47})/H^{0.91}$		2.830 hrs	1.981027268

Peak Discharge			
National Weather Service (NWS) [2]		Max B_a	
	check w/ Min C	32,450 cfs	33,586 cfs
$Q_p = Q_0+3.1B_a(C/(T_f+C/H^{0.5}))^3$	Max C	32,212 cfs	32,785 cfs
Q_0= 31970 cfs			
B_a= 46.58 ft^2			
C= $23.4(S_a/B_a)$=	11.59		
T_f= 2.830 hrs			
Natural Resource Conservation Service (NRCS) [2]			
$Q_p = 3.2H^{2.5}$ =	42 cfs		

MacDonald & Langridge-Monopolis [2]		
Breach Formation Factor =	577.752	
BFF = $V_w(H)$		
Volume of Eroded Material =	335 yds^3	
$V_m = 2.50\ (BFF)^{.77}$		
Breach Base Width =	154.06 ft	
$W_b = \frac{27V_m - H^2(CZ_b + HZ_bZ_3/3)}{H(C + HZ_3/2)}$		
Z3 = Z1 + Z2 =	4	
Breach Top Width =	159.66 ft	
Average Breach Width =	156.86 ft	
Breach Development Time =	0.34 hrs	
$T = .042\ V_m^{.36}$	0.23831999	

Von Thun and Gillette [1]			
Breach Base Width =			24.22 ft
Average Breach Width =		8.24 m	27.02 ft
$B_a = 2.5H + C_b$	C_b is based on vol =	6.1	*Page 15*
Breach Development Time =	*upper bound*		2.41 hrs
	lower bound		0.31 hrs
Erosion Resistant			
$T_f = 0.020H + 0.25$		$T_f = B_a/4H$	
Breach Development Time =	*upper bound*		0.13 hrs
	lower bound		0.04 hrs
highly erodible			
$T_f = 0.015H$		$T_f = Ba/(4H+61.0)$	

Min C

C= 67.30 Von Thun

C= 39.04 Froelich

	with Min C	
$3.1*B_a$=	144.385	
$C/(H^{0.5})$=	6.927	23.329
$T_f+C/(H^{0.5})$=	9.757	26.159

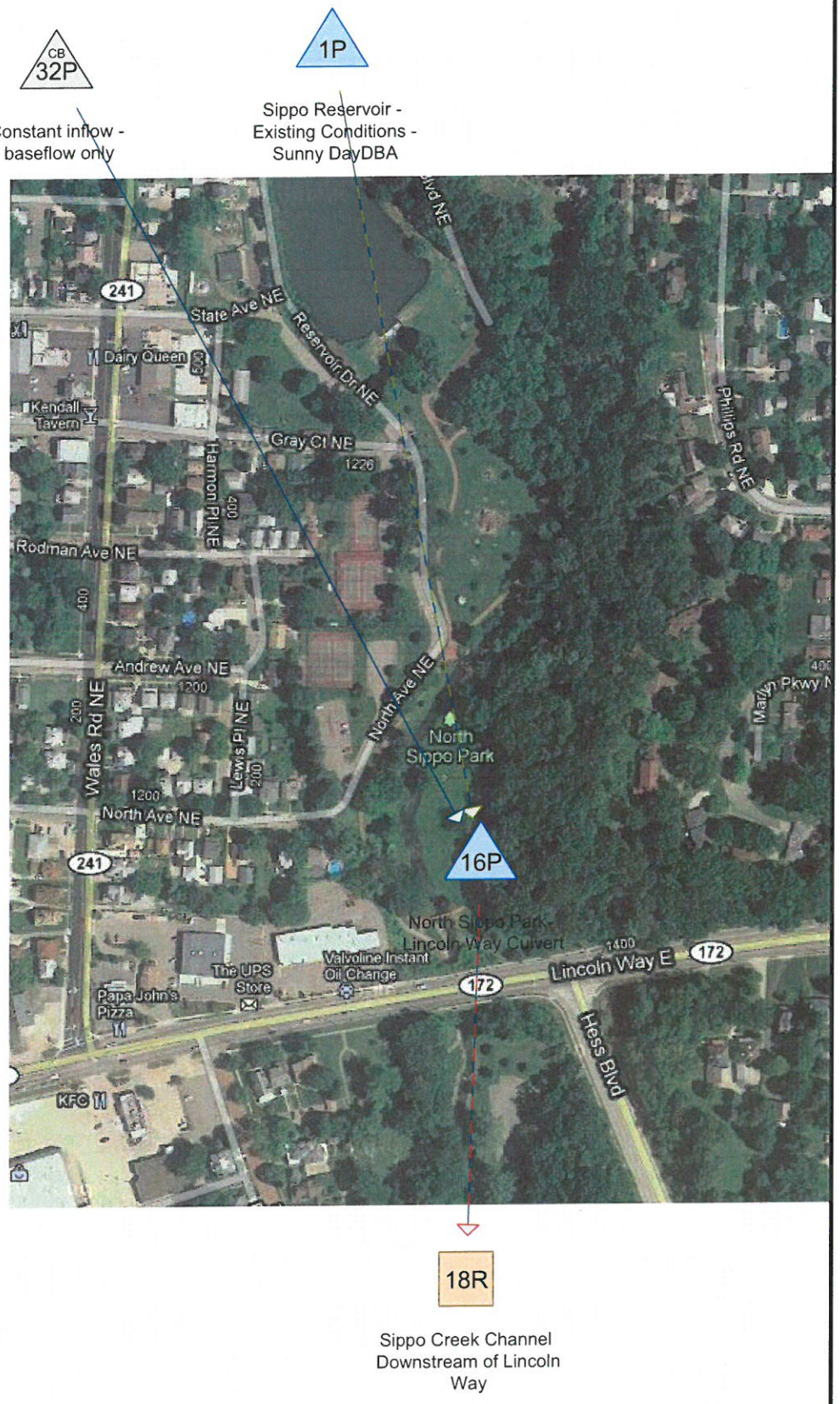
Overtopping Minimum Time to Failure			
Tf=	H/120=	0.02	hrs
		1.4	min

	North	East	South	West	
H=	21			18	ft
T=	1.03				hrs
B_a=	86.4				ft
V_w=	1475	1475	1475	1475	ac-ft
S_a=	75	75	75	75	acres
Q_p=	15k-25.5k			12.5k-23.3	cfs

[1] - Prediction of Embankment Dam Breach Parameters - DSO-98-004 by Tony L. Wahl

[2] - Dam Safety Guidelines - Dam Break Inundation Analysis and Downstream Hazard Classification - Technical Note 1 - Washington State Dept. of Ecology

[3] - NWS Simple Dam Break Analysis Equation (1999)



Drainage Diagram for Existing Conditions Sippo Resevoir-URS-DBA-SunnyDay

Prepared by URS Corporation, Printed 10/31/2011

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.000	0	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
0.000		**TOTAL AREA**

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Fill (inches)
1	16P	978.25	978.13	121.8	0.0010	0.015	168.0	98.0	0.0

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Reach 18R: Sippo Creek Channel Avg. Flow Depth=4.49' Max Vel=9.08 fps Inflow=1,289.17 cfs 90.929 af
L=450.0' S=0.0084 '/' Capacity=200,707.82 cfs Outflow=1,288.66 cfs 90.897 af

Pond 1P: Sippo Reservoir - Existing Peak Elev=1,001.64' Storage=60.962 af Inflow=0.00 cfs 0.000 af
Outflow=3,498.98 cfs 60.962 af

Pond 16P: North Sippo Park- Lincoln Peak Elev=988.87' Storage=22.258 af Inflow=3,498.98 cfs 90.706 af
Primary=1,289.17 cfs 90.937 af Secondary=0.00 cfs 0.000 af Outflow=1,289.17 cfs 90.937 af

Pond 32P: Constant inflow - baseflow only Peak Elev=1,004.24' Inflow=10.00 cfs 29.752 af
Outflow=10.00 cfs 29.752 af

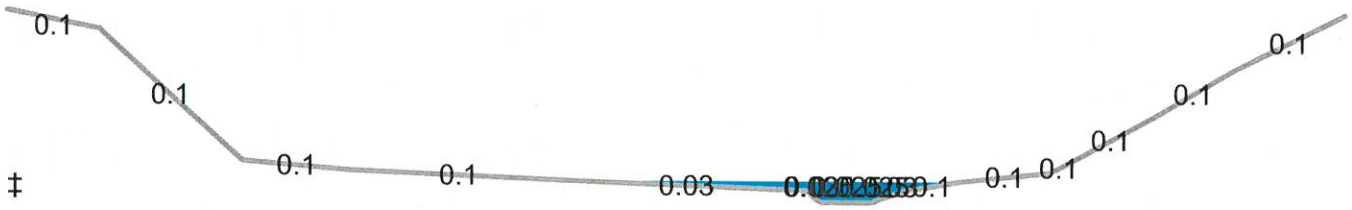
Summary for Reach 18R: Sippo Creek Channel Downstream of Lincoln Way

Inflow = 1,289.17 cfs @ 0.21 hrs, Volume= 90.929 af
Outflow = 1,288.66 cfs @ 0.22 hrs, Volume= 90.897 af, Atten= 0%, Lag= 0.9 min

Routing by Sim-Route method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Max. Velocity= 9.08 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 2.69 fps, Avg. Travel Time= 2.8 min

Peak Storage= 65,153 cf @ 0.22 hrs
Average Depth at Peak Storage= 4.49'
Defined Flood Depth= 15.00', Capacity at Flood Depth= 28,360.41 cfs
Bank-Full Depth= 40.50', Capacity at Bank-Full= 200,707.82 cfs

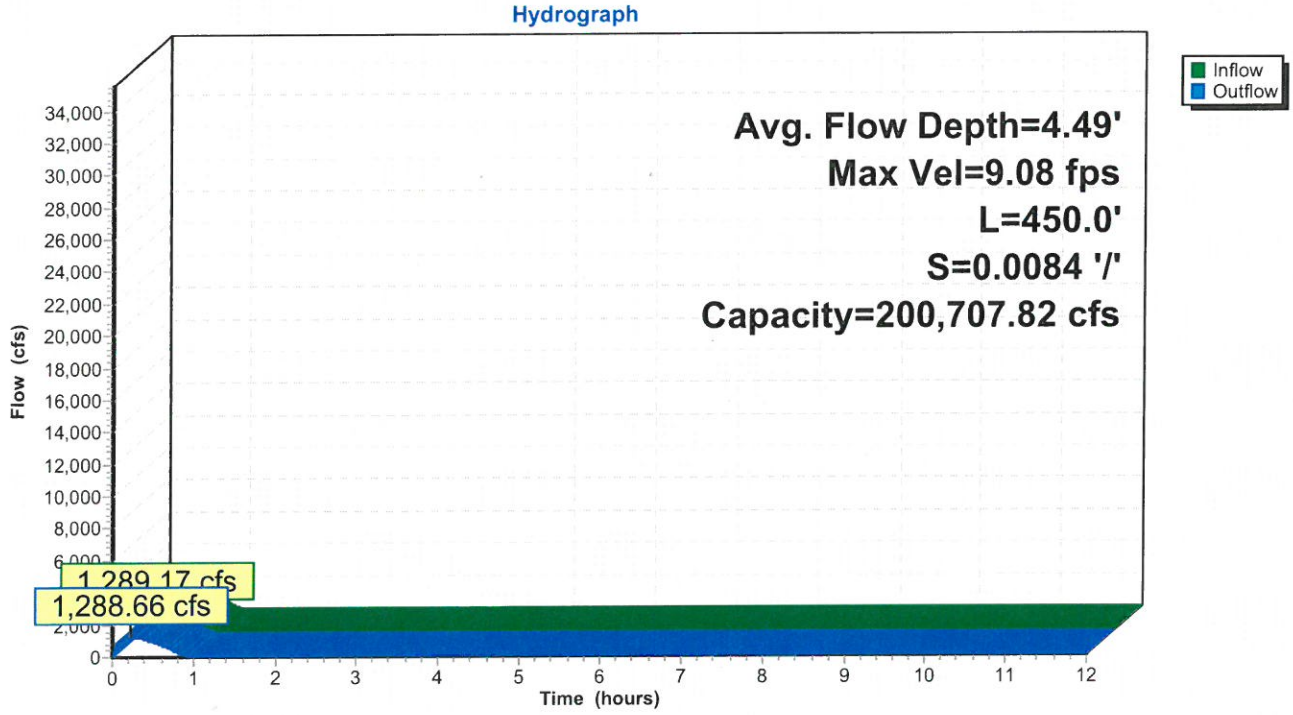
Custom cross-section, Length= 450.0' Slope= 0.0084 '/' (1006 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 978.13', Outlet Invert= 974.35'



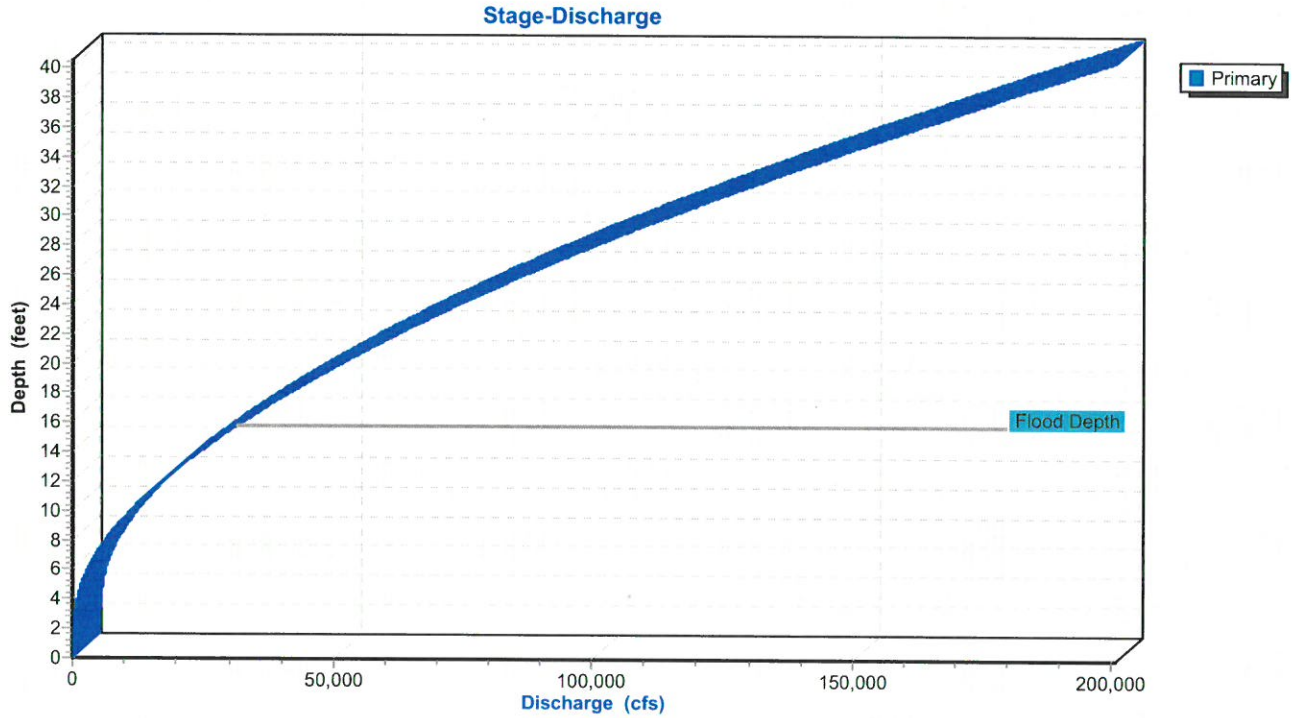
Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	1,012.00	0.00		
20.00	1,008.00	4.00	0.100	Heavy timber, flow below branches
51.00	980.00	32.00	0.100	Heavy timber, flow below branches
74.00	978.00	34.00	0.100	Heavy timber, flow below branches
121.00	976.00	36.00	0.100	Heavy timber, flow below branches
173.00	974.00	38.00	0.030	Short grass
175.00	972.00	40.00	0.030	Short grass
176.00	971.50	40.50	0.025	Stream, clean & straight
187.00	971.50	40.50	0.025	Stream, clean & straight
188.00	972.00	40.00	0.025	Stream, clean & straight
194.00	974.00	38.00	0.030	Short grass
206.00	976.00	36.00	0.100	Heavy timber, flow below branches
225.50	978.00	34.00	0.100	Heavy timber, flow below branches
229.50	980.00	32.00	0.100	Heavy timber, flow below branches
248.00	990.00	22.00	0.100	Heavy timber, flow below branches
265.00	1,000.00	12.00	0.100	Heavy timber, flow below branches
289.00	1,012.00	0.00	0.100	Heavy timber, flow below branches

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	11.0	0	0.00
0.50	6.0	13.2	2,700	19.29
2.50	40.0	22.4	18,000	347.53
4.50	146.0	86.6	65,701	1,300.01
6.50	382.5	153.2	172,125	3,703.14
8.50	712.5	180.8	320,625	7,536.06
18.50	2,645.4	216.7	1,190,411	44,005.23
28.50	4,866.4	251.4	2,189,893	103,800.74
36.50	6,855.0	281.2	3,084,750	166,501.22
40.50	7,955.0	310.6	3,579,750	200,707.82

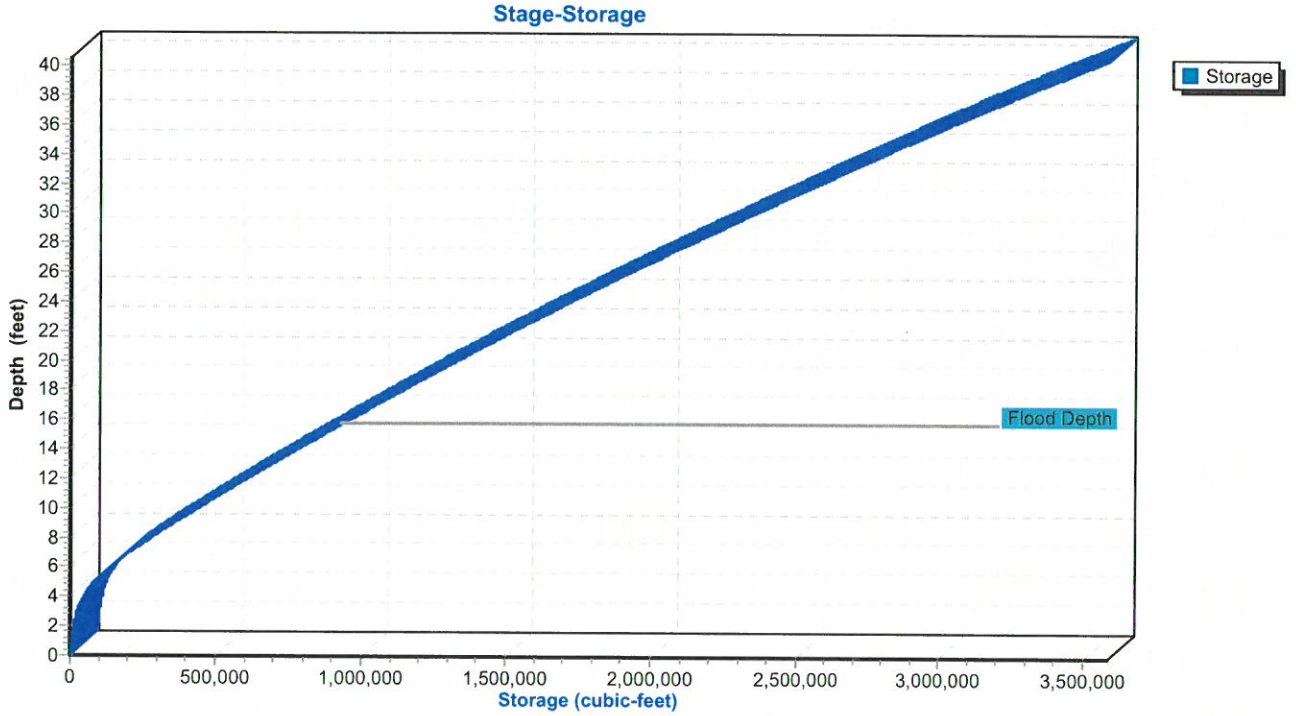
Reach 18R: Sippo Creek Channel Downstream of Lincoln Way



Reach 18R: Sippo Creek Channel Downstream of Lincoln Way



Reach 18R: Sippo Creek Channel Downstream of Lincoln Way



Summary for Pond 1P: Sippo Reservoir - Existing Conditions - Sunny DayDBA

Inflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Outflow	=	3,498.98 cfs @	0.00 hrs, Volume=	60.962 af, Atten= 0%, Lag= 0.0 min
Primary	=	3,498.98 cfs @	0.00 hrs, Volume=	60.962 af

Routing by Sim-Route method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Starting Elev= 1,001.64' Surf.Area= 7.050 ac Storage= 60.962 af
Peak Elev= 1,001.64' @ 0.00 hrs Surf.Area= 7.050 ac Storage= 60.962 af
Flood Elev= 1,008.00' Surf.Area= 21.577 ac Storage= 143.356 af (82.393 af above start)

Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no inflow)

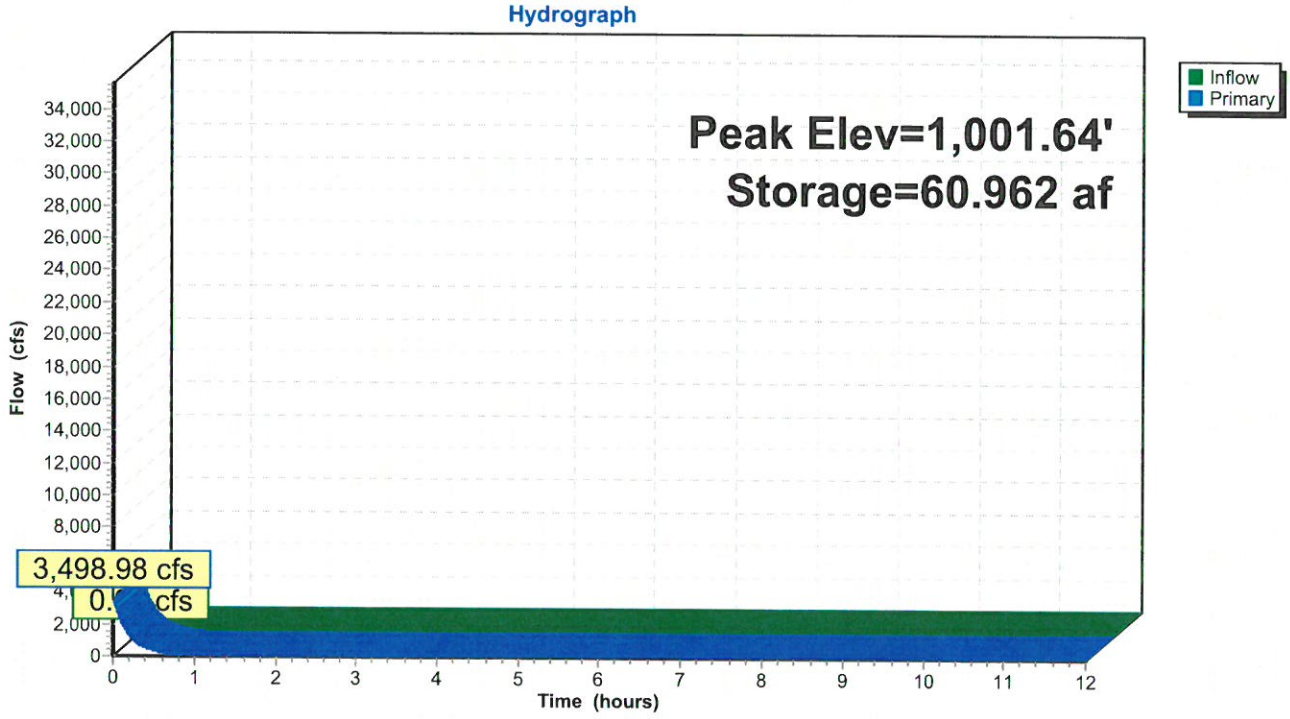
Volume	Invert	Avail.Storage	Storage Description
#1	985.00'	1,292.544 af	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
985.00	0.500	500.0	0.000	0.000	0.500
990.00	3.000	1,000.0	7.875	7.875	1.873
998.00	4.870	2,500.0	31.179	39.054	11.469
1,000.00	6.204	3,251.0	11.047	50.101	19.360
1,002.00	7.243	5,147.0	13.434	63.535	48.449
1,004.00	9.610	10,274.0	16.797	80.332	192.887
1,006.00	16.124	11,202.9	25.455	105.787	229.335
1,008.00	21.577	15,736.9	37.569	143.356	452.477
1,010.00	29.674	20,301.4	51.036	194.392	752.988
1,012.00	39.539	22,845.5	68.977	263.369	953.524
1,014.00	68.669	34,370.5	106.876	370.246	2,158.174
1,025.00	100.000	50,000.0	922.298	1,292.544	4,567.204

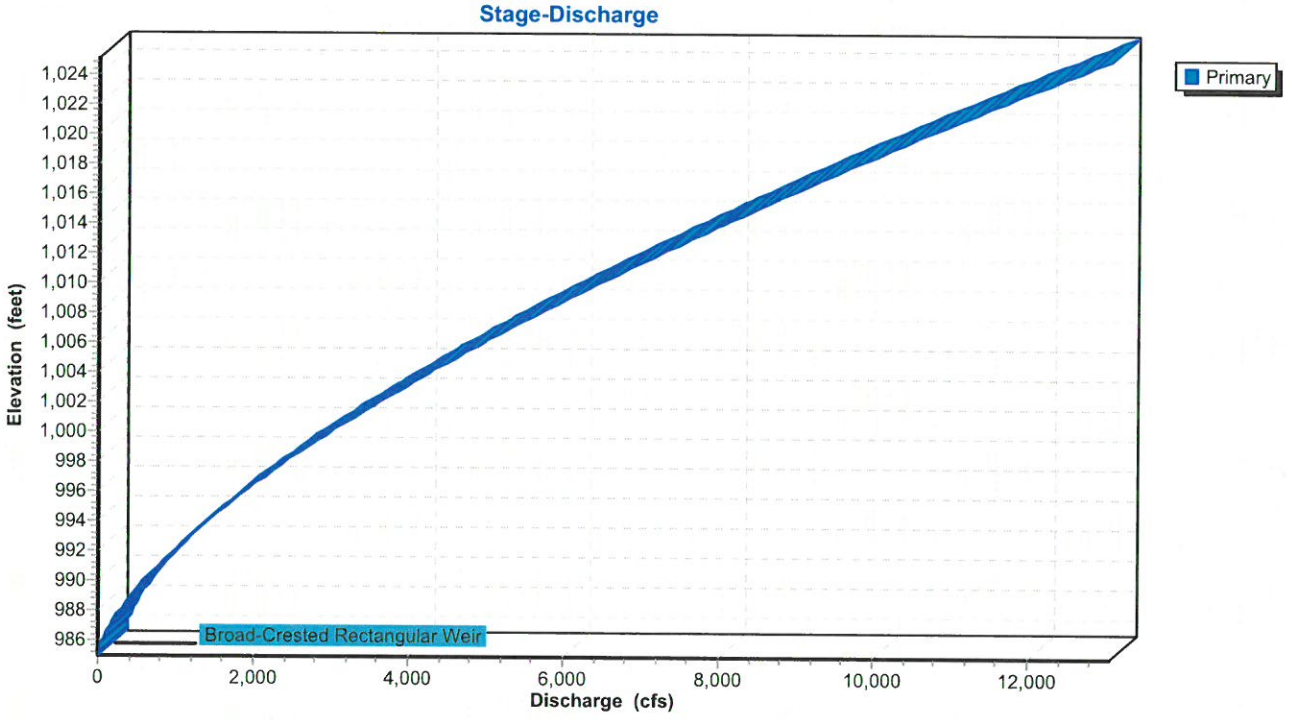
Device	Routing	Invert	Outlet Devices
#1	Primary	985.00'	**19.6' long x 50.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 20.00 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63 2.63

Primary OutFlow Max=3,498.98 cfs @ 0.00 hrs HW=1,001.64' TW=980.00' (Dynamic Tailwater)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 3,498.98 cfs @ 10.73 fps)

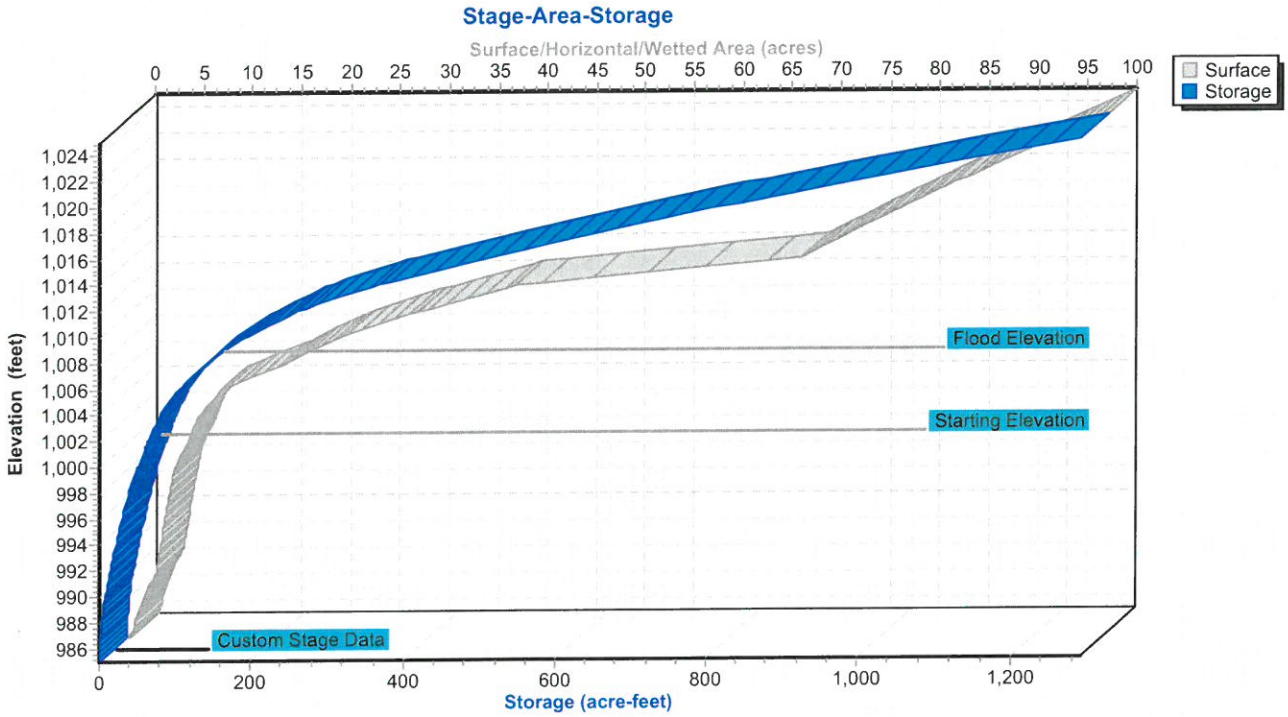
Pond 1P: Sippo Reservoir - Existing Conditions - Sunny DayDBA



Pond 1P: Sippo Reservoir - Existing Conditions - Sunny DayDBA



Pond 1P: Sippo Reservoir - Existing Conditions - Sunny DayDBA



Summary for Pond 16P: North Sippo Park- Lincoln Way Culvert

Inflow	=	3,498.98 cfs @	0.00 hrs,	Volume=	90.706 af
Outflow	=	1,289.17 cfs @	0.21 hrs,	Volume=	90.937 af, Atten= 63%, Lag= 12.3 min
Primary	=	1,289.17 cfs @	0.21 hrs,	Volume=	90.937 af
Secondary	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af

Routing by Sim-Route method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Starting Elev= 980.00' Surf.Area= 0.221 ac Storage= 0.313 af
Peak Elev= 988.87' @ 0.21 hrs Surf.Area= 5.476 ac Storage= 22.258 af (21.945 af above start)
Flood Elev= 1,008.00' Surf.Area= 13.465 ac Storage= 197.028 af (196.714 af above start)

Plug-Flow detention time= 8.9 min calculated for 90.599 af (100% of inflow)
Center-of-Mass det. time= 6.0 min (368.0 - 362.0)

Volume	Invert	Avail.Storage	Storage Description
#1	978.00'	371.368 af	**Stage Storage in Sippo Park (Irregular)** Listed below (Recalc)

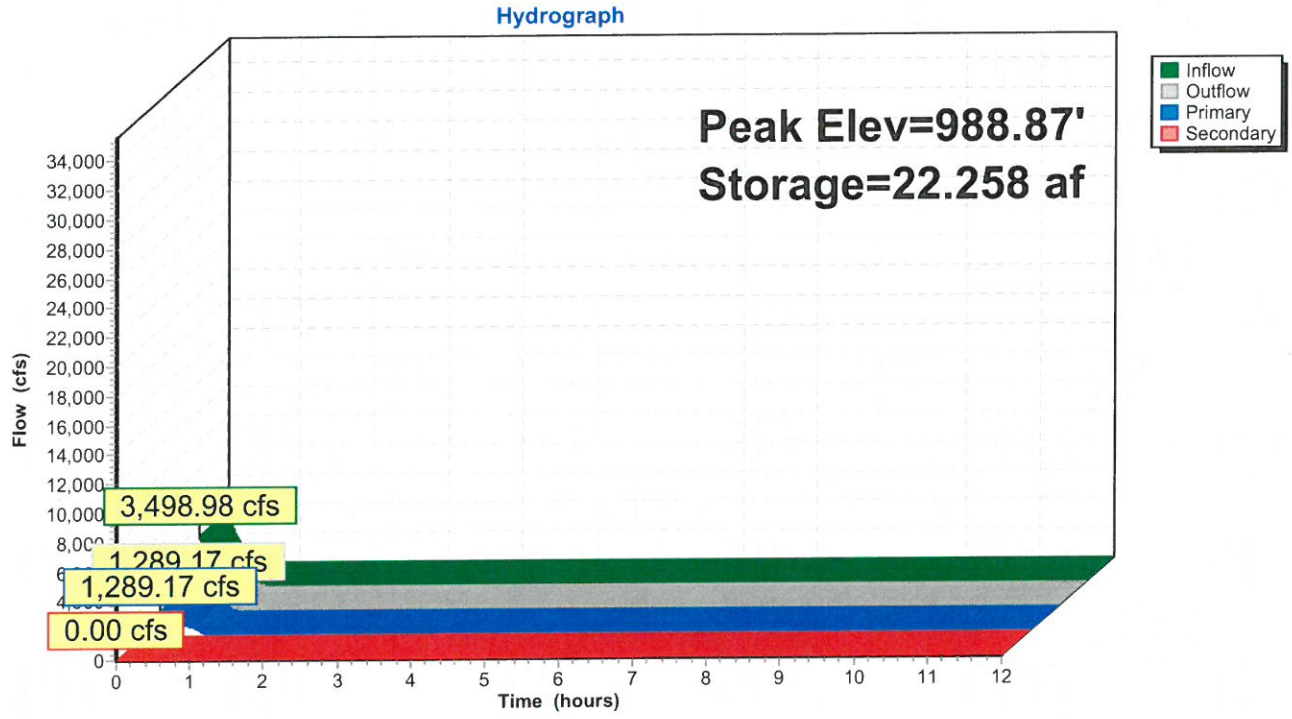
Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
978.00	0.100	200.0	0.000	0.000	0.100
981.00	0.300	500.0	0.573	0.573	0.484
982.00	0.659	1,392.9	0.468	1.041	3.572
984.00	2.018	2,470.7	2.553	3.595	11.180
986.00	3.584	3,300.7	5.528	9.122	19.932
988.00	5.007	3,247.5	8.551	17.674	20.586
990.00	6.111	3,143.9	11.100	28.773	21.805
992.00	6.773	3,217.1	12.878	41.652	22.668
994.00	7.411	3,271.9	14.179	55.831	23.334
996.00	8.110	3,253.8	15.516	71.347	23.597
998.00	8.804	3,273.8	16.909	88.256	23.878
1,000.00	9.441	3,318.6	18.241	106.497	24.439
1,002.00	10.181	3,437.0	19.617	126.114	25.908
1,004.00	11.109	3,548.6	21.283	147.398	27.341
1,006.00	12.538	3,553.4	23.633	171.030	27.516
1,008.00	13.465	3,829.8	25.997	197.028	31.248
1,010.00	14.326	4,085.3	27.787	224.814	34.947
1,012.00	15.633	4,329.5	29.949	254.764	38.706
1,014.00	17.576	4,742.6	33.190	287.954	45.555
1,016.00	20.521	5,940.5	38.059	326.013	68.935
1,018.00	24.905	6,310.6	45.355	371.368	77.223

Device	Routing	Invert	Outlet Devices
#1	Primary	978.25'	**168.0" W x 98.0" H Box Box Culvert** L= 121.8' Box, 30-75° wingwalls, rounded crown, Ke= 0.200 Inlet / Outlet Invert= 978.25' / 978.13' S= 0.0010 '/' Cc= 0.900 n= 0.015 Brickwork
#2	Secondary	1,008.00'	**Linclon Way (172), Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 2.00 4.00 6.00 8.00 10.00 Width (feet) 233.00 373.00 475.00 630.00 790.00 940.00 1,090.00

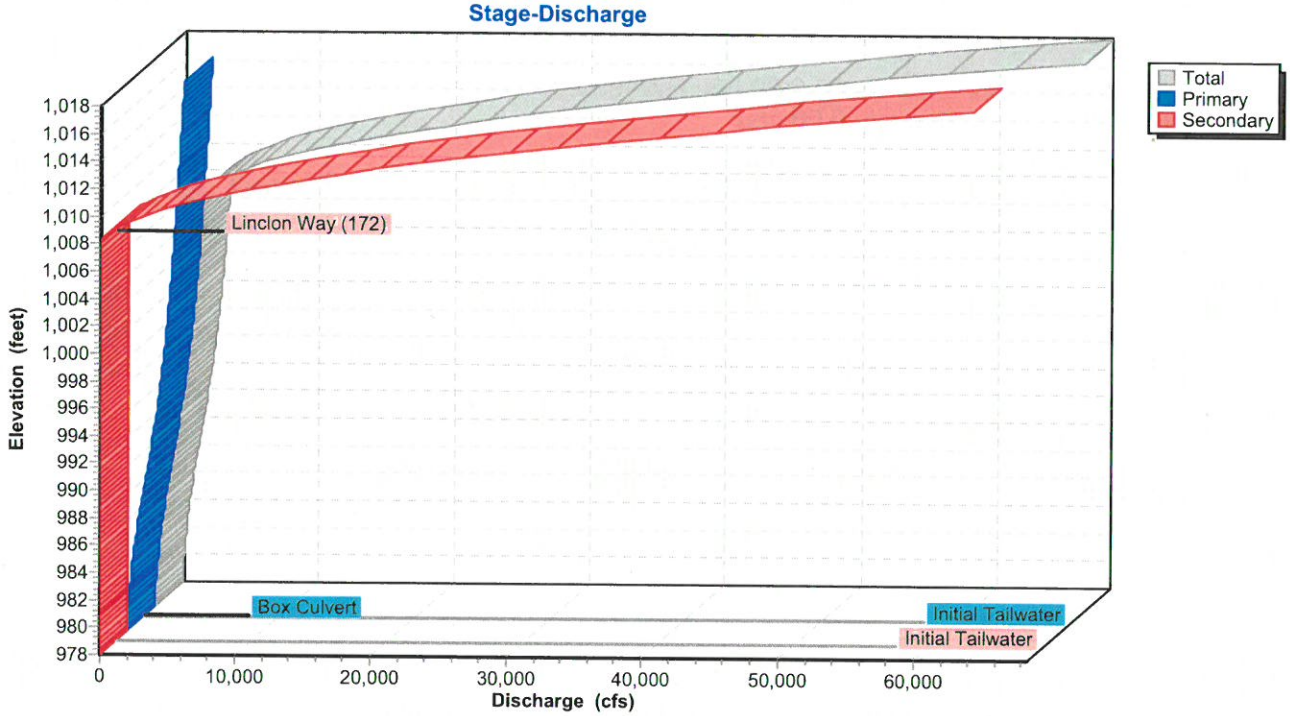
Primary OutFlow Max=1,288.95 cfs @ 0.21 hrs HW=988.87' TW=982.61' (Dynamic Tailwater)
└─**1=Box Culvert** (Barrel Controls 1,288.95 cfs @ 11.55 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=980.00' TW=978.13' (Dynamic Tailwater)
└─**2=Linclon Way (172)** (Controls 0.00 cfs)

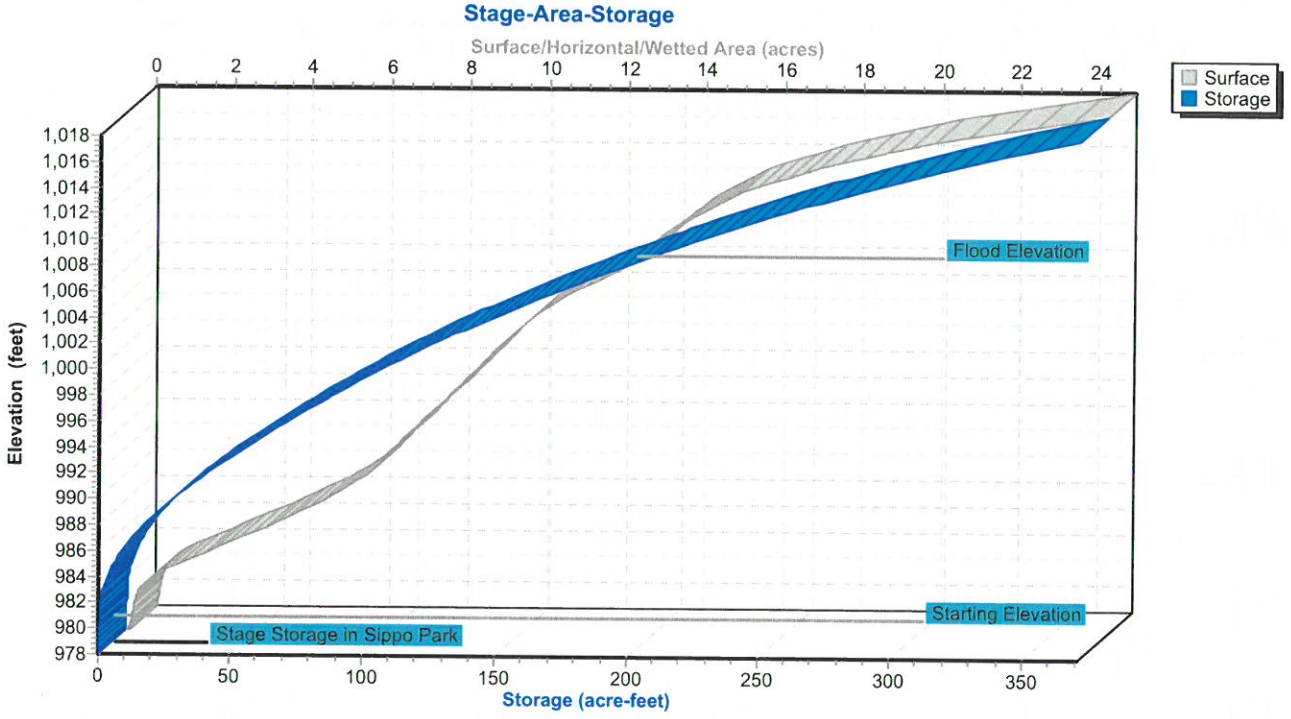
Pond 16P: North Sippo Park- Lincoln Way Culvert



Pond 16P: North Sippo Park- Lincoln Way Culvert



Pond 16P: North Sippo Park- Lincoln Way Culvert



Summary for Pond 32P: Constant inflow - baseflow only

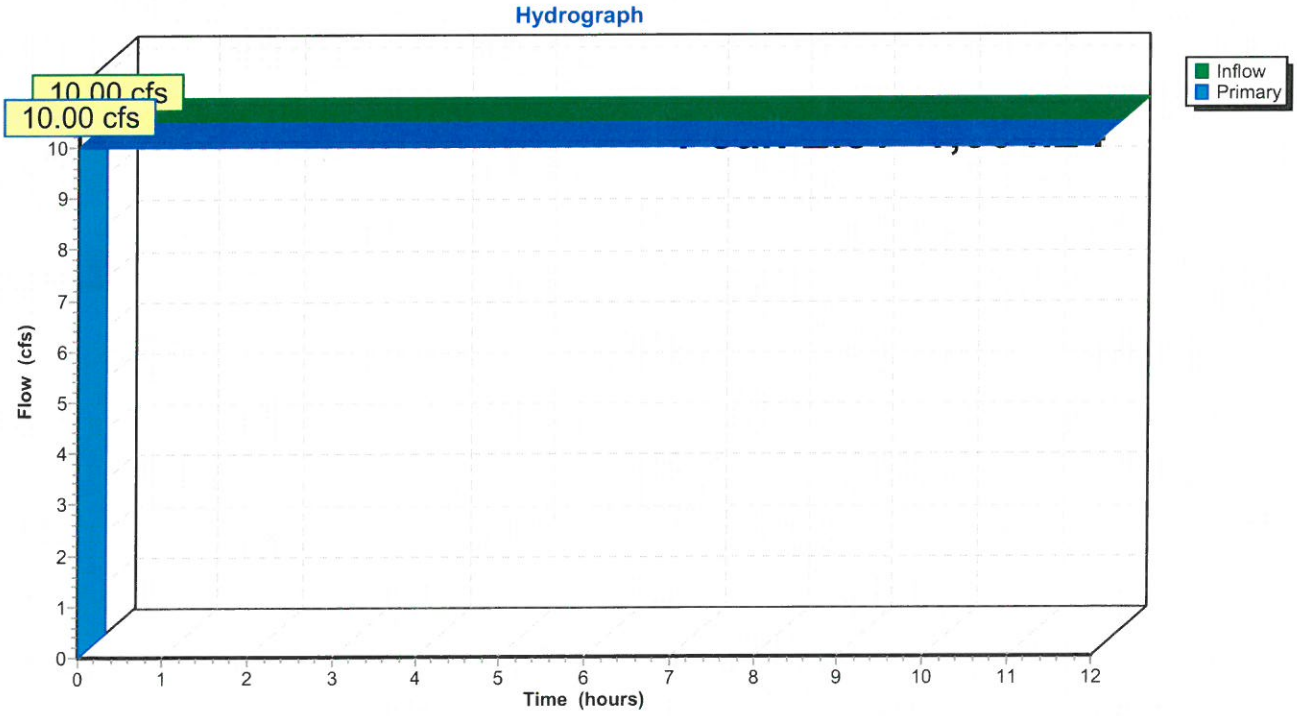
Inflow	=	10.00 cfs @	0.00 hrs, Volume=	29.752 af, Incl. 10.00 cfs Base Flow
Outflow	=	10.00 cfs @	0.01 hrs, Volume=	29.752 af, Atten= 0%, Lag= 0.6 min
Primary	=	10.00 cfs @	0.01 hrs, Volume=	29.752 af

Routing by Sim-Route method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 1,004.24' @ 0.01 hrs

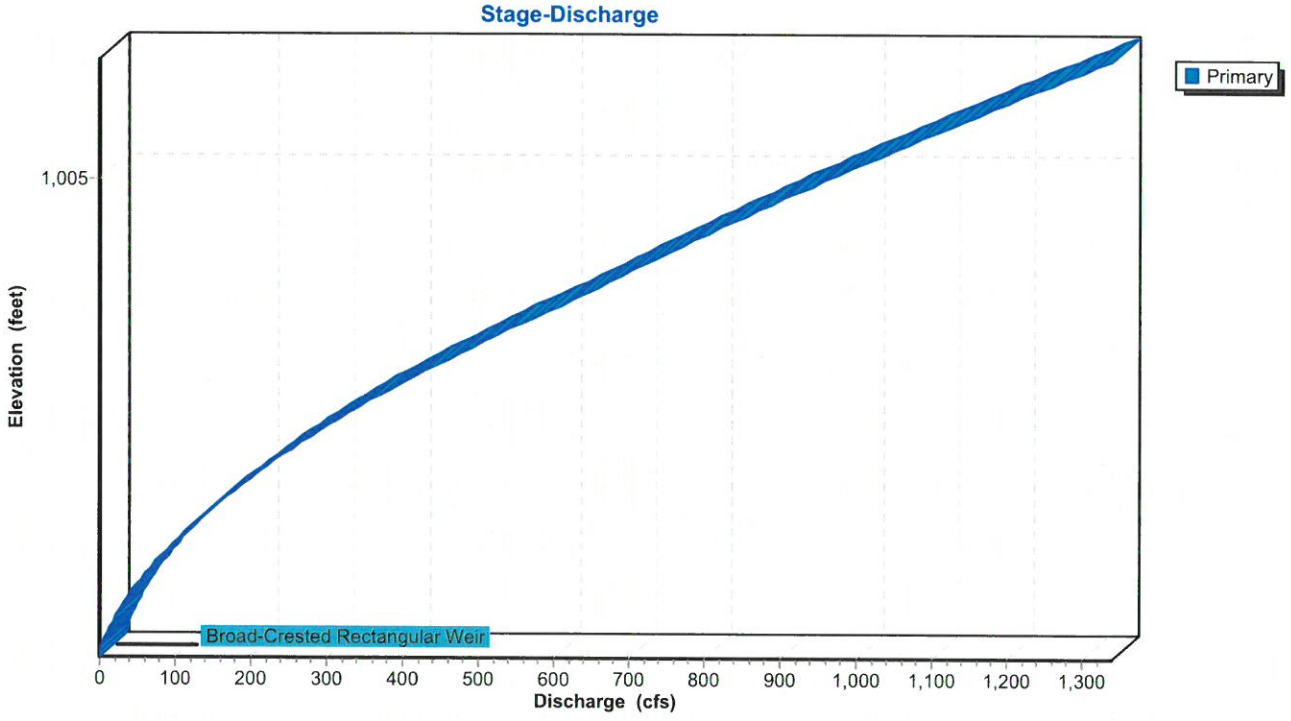
Device	Routing	Invert	Outlet Devices
#1	Primary	1,004.20'	**500.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=10.00 cfs @ 0.01 hrs HW=1,004.24' TW=983.75' (Dynamic Tailwater)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 10.00 cfs @ 0.48 fps)

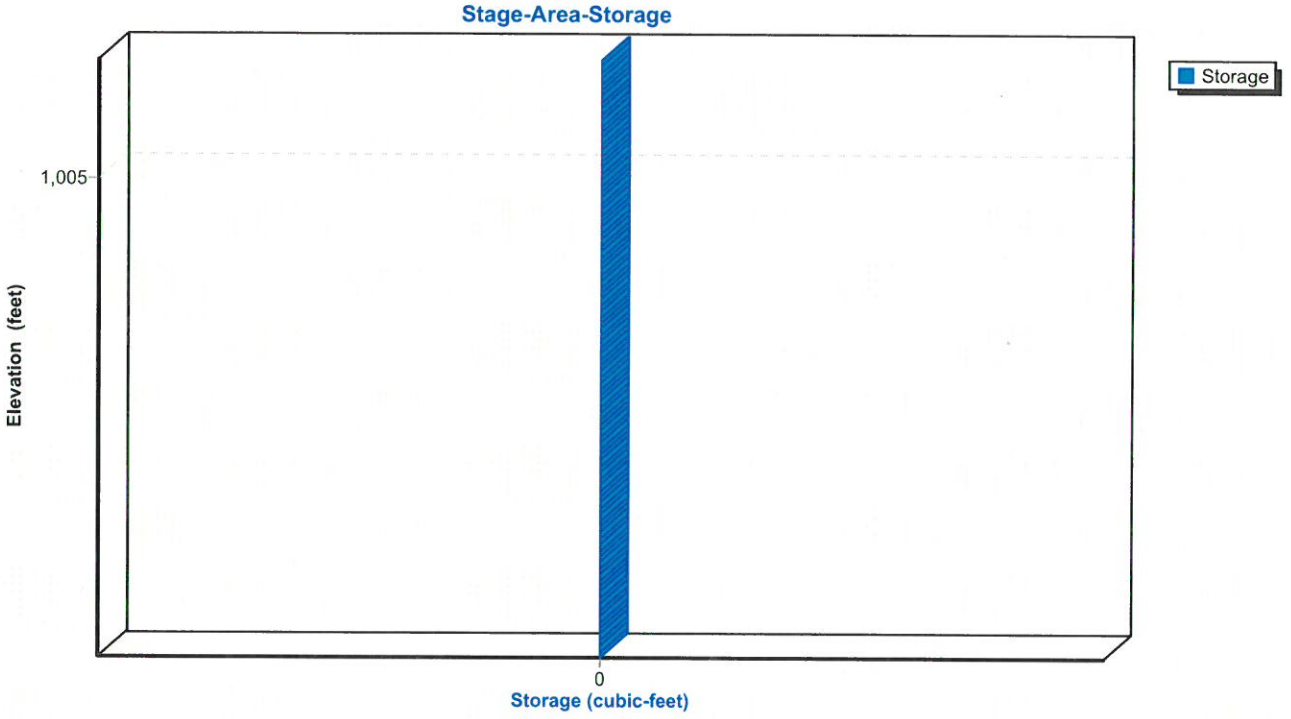
Pond 32P: Constant inflow - baseflow only



Pond 32P: Constant inflow - baseflow only



Pond 32P: Constant inflow - baseflow only




CB
32P
Constant inflow - 100-yr flood
1P
Sippo Reservoir - Existing Conditions - 100 yr DBA
241
State Ave NE
Reservoir Dr NE
Dairy Queen
Kendall Tavern
Gray Ct NE
1226
Harmon Pl NE
300
Phillips Rd NE
Rodman Ave NE
400
Andrew Ave NE
1200
Wales Rd NE
200
Lewis Pl NE
200
North Ave NE
North Sippo Park
16P
North Sippo Park - Lincoln Way Culvert
1400
Lincoln Way E
172
Valvoline Instant Oil Change
The UPS Store
Papa John's Pizza
Hess Blvd
KFC
18R
Sippo Creek Channel Downstream of Lincoln Way
Subcat
Reach
Pond
Link
Drainage Diagram for Existing Conditions Sippo Resevoir-URS-DBA-100yr flood
Prepared by URS Corporation, Printed 10/31/2011
HydroCAD® 9.10 s/n 04378 © 2010 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.000	0	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
0.000		**TOTAL AREA**

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Fill (inches)
1	16P	978.25	978.13	121.8	0.0010	0.015	168.0	98.0	0.0

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Reach 18R: Sippo Creek Avg. Flow Depth=5.75' Max Vel=9.48 fps Inflow=2,642.94 cfs 5,979.902 af
L=450.0' S=0.0084 '/' Capacity=200,707.82 cfs Outflow=2,642.80 cfs 5,979.333 af

Pond 1P: Sippo Reservoir - Existing Peak Elev=1,006.27' Storage=110.233 af Inflow=0.00 cfs 0.000 af
Outflow=4,416.23 cfs 92.614 af

Pond 16P: North Sippo Park- Peak Elev=999.04' Storage=97.543 af Inflow=6,320.15 cfs 5,981.887 af
Primary=2,642.94 cfs 5,981.539 af Secondary=0.00 cfs 0.000 af Outflow=2,642.94 cfs 5,981.539 af

Pond 32P: Constant inflow - 100-yr flood Peak Elev=1,005.51' Inflow=1,980.00 cfs 5,890.909 af
Outflow=1,980.00 cfs 5,890.909 af

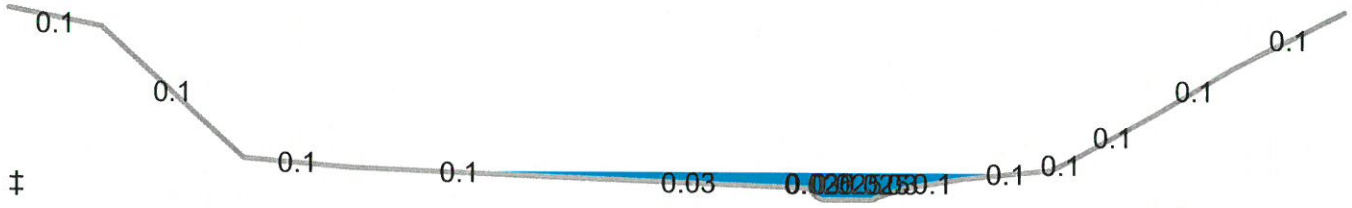
Summary for Reach 18R: Sippo Creek Channel Downstream of Lincoln Way

Inflow = 2,642.94 cfs @ 0.31 hrs, Volume= 5,979.902 af
Outflow = 2,642.80 cfs @ 0.32 hrs, Volume= 5,979.333 af, Atten= 0%, Lag= 0.7 min

Routing by Sim-Route method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Max. Velocity= 9.48 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 9.28 fps, Avg. Travel Time= 0.8 min

Peak Storage= 125,452 cf @ 0.32 hrs
Average Depth at Peak Storage= 5.75'
Defined Flood Depth= 15.00', Capacity at Flood Depth= 28,360.41 cfs
Bank-Full Depth= 40.50', Capacity at Bank-Full= 200,707.82 cfs

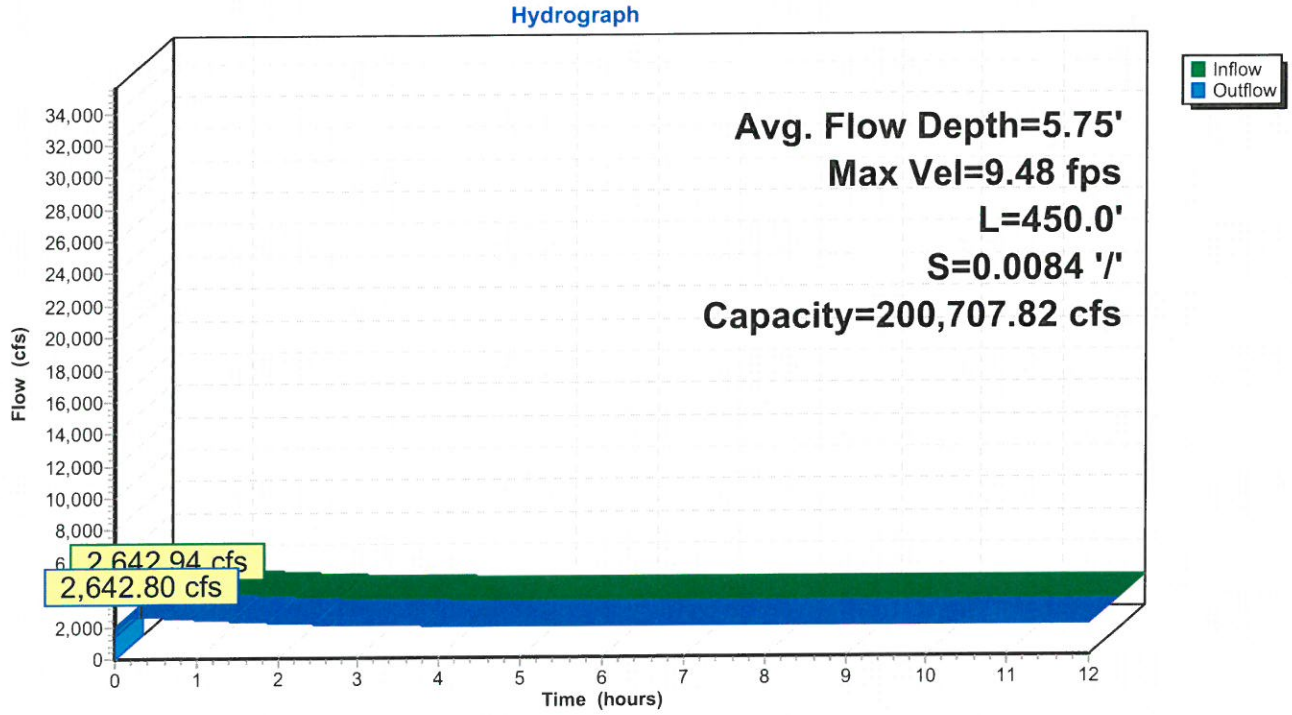
Custom cross-section, Length= 450.0' Slope= 0.0084 '/' (1006 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 978.13', Outlet Invert= 974.35'



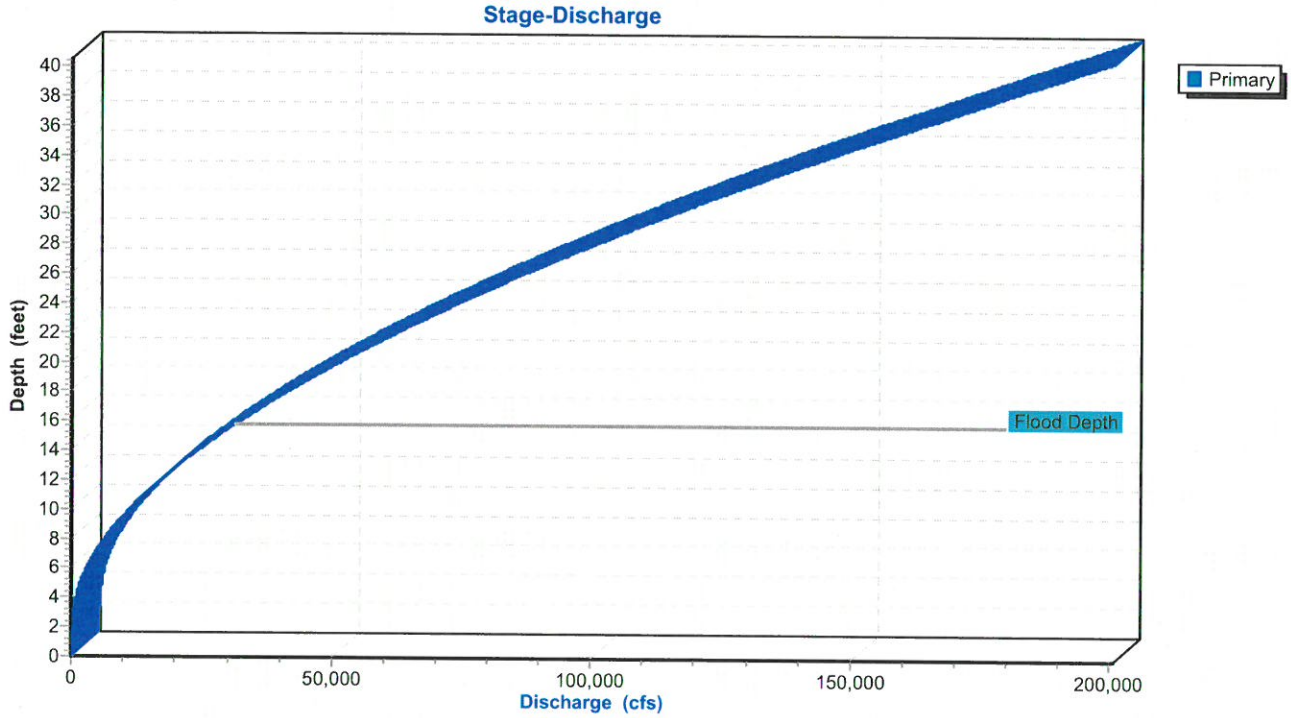
Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	1,012.00	0.00		
20.00	1,008.00	4.00	0.100	Heavy timber, flow below branches
51.00	980.00	32.00	0.100	Heavy timber, flow below branches
74.00	978.00	34.00	0.100	Heavy timber, flow below branches
121.00	976.00	36.00	0.100	Heavy timber, flow below branches
173.00	974.00	38.00	0.030	Short grass
175.00	972.00	40.00	0.030	Short grass
176.00	971.50	40.50	0.025	Stream, clean & straight
187.00	971.50	40.50	0.025	Stream, clean & straight
188.00	972.00	40.00	0.025	Stream, clean & straight
194.00	974.00	38.00	0.030	Short grass
206.00	976.00	36.00	0.100	Heavy timber, flow below branches
225.50	978.00	34.00	0.100	Heavy timber, flow below branches
229.50	980.00	32.00	0.100	Heavy timber, flow below branches
248.00	990.00	22.00	0.100	Heavy timber, flow below branches
265.00	1,000.00	12.00	0.100	Heavy timber, flow below branches
289.00	1,012.00	0.00	0.100	Heavy timber, flow below branches

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	11.0	0	0.00
0.50	6.0	13.2	2,700	19.29
2.50	40.0	22.4	18,000	347.53
4.50	146.0	86.6	65,701	1,300.01
6.50	382.5	153.2	172,125	3,703.14
8.50	712.5	180.8	320,625	7,536.06
18.50	2,645.4	216.7	1,190,411	44,005.23
28.50	4,866.4	251.4	2,189,893	103,800.74
36.50	6,855.0	281.2	3,084,750	166,501.22
40.50	7,955.0	310.6	3,579,750	200,707.82

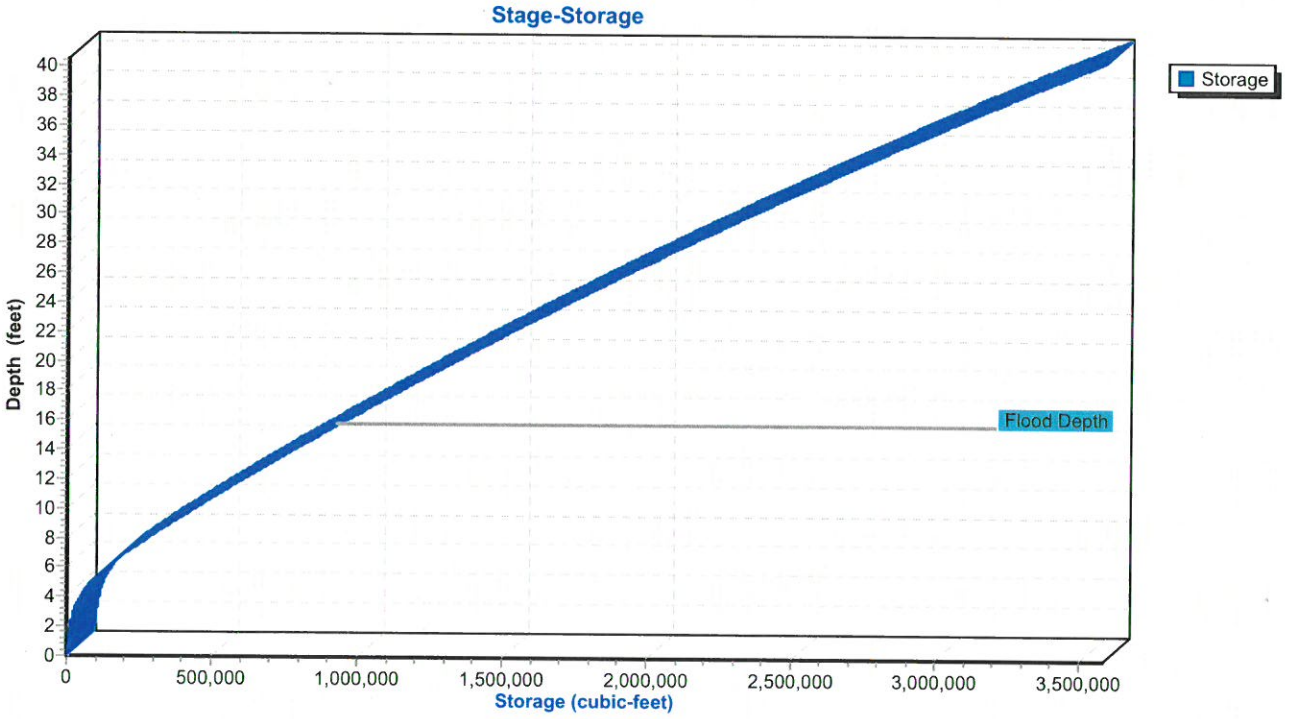
Reach 18R: Sippo Creek Channel Downstream of Lincoln Way



Reach 18R: Sippo Creek Channel Downstream of Lincoln Way



Reach 18R: Sippo Creek Channel Downstream of Lincoln Way



Summary for Pond 1P: Sippo Reservoir - Existing Conditions - 100 yr DBA

Inflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Outflow	=	4,416.23 cfs @	0.00 hrs, Volume=	92.614 af, Atten= 0%, Lag= 0.0 min
Primary	=	4,416.23 cfs @	0.00 hrs, Volume=	92.614 af

Routing by Sim-Route method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Starting Elev= 1,006.27' Surf.Area= 16.814 ac Storage= 110.233 af
Peak Elev= 1,006.27' @ 0.00 hrs Surf.Area= 16.814 ac Storage= 110.233 af
Flood Elev= 1,008.00' Surf.Area= 21.577 ac Storage= 143.356 af (33.123 af above start)

Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no inflow)

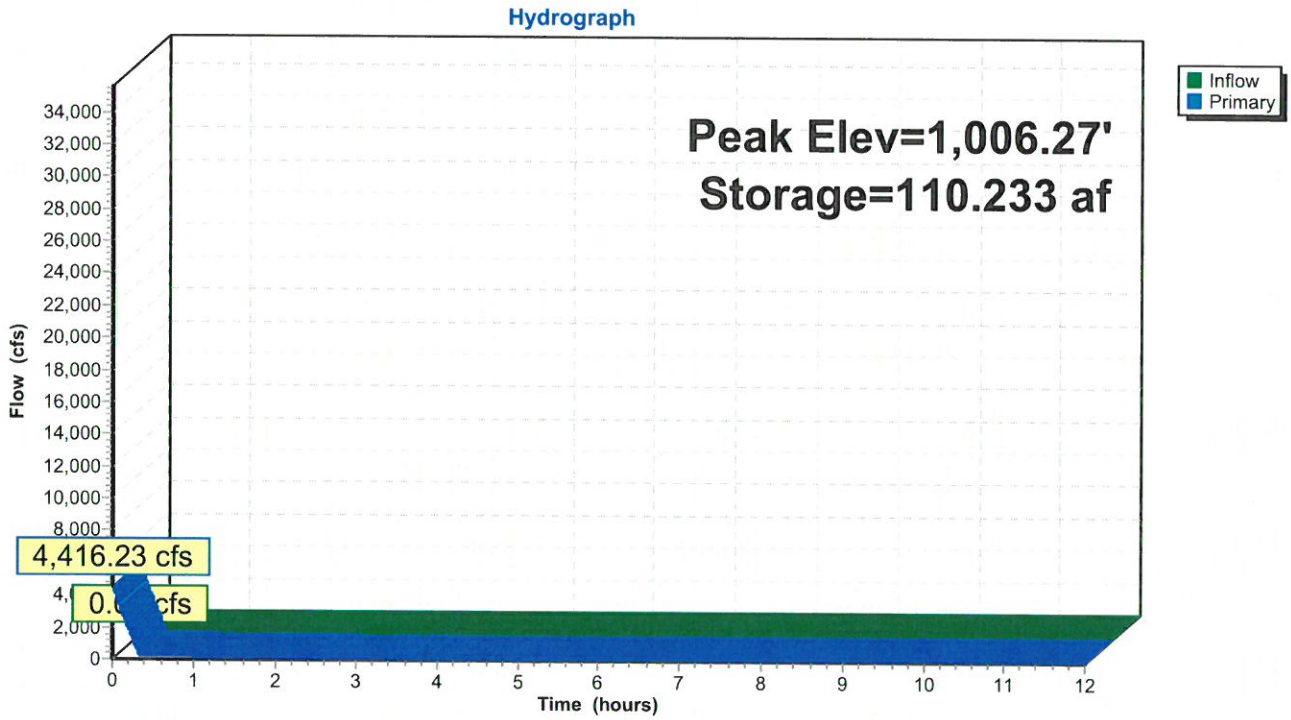
Volume	Invert	Avail.Storage	Storage Description
#1	985.00'	1,292.544 af	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
985.00	0.500	500.0	0.000	0.000	0.500
990.00	3.000	1,000.0	7.875	7.875	1.873
998.00	4.870	2,500.0	31.179	39.054	11.469
1,000.00	6.204	3,251.0	11.047	50.101	19.360
1,002.00	7.243	5,147.0	13.434	63.535	48.449
1,004.00	9.610	10,274.0	16.797	80.332	192.887
1,006.00	16.124	11,202.9	25.455	105.787	229.335
1,008.00	21.577	15,736.9	37.569	143.356	452.477
1,010.00	29.674	20,301.4	51.036	194.392	752.988
1,012.00	39.539	22,845.5	68.977	263.369	953.524
1,014.00	68.669	34,370.5	106.876	370.246	2,158.174
1,025.00	100.000	50,000.0	922.298	1,292.544	4,567.204

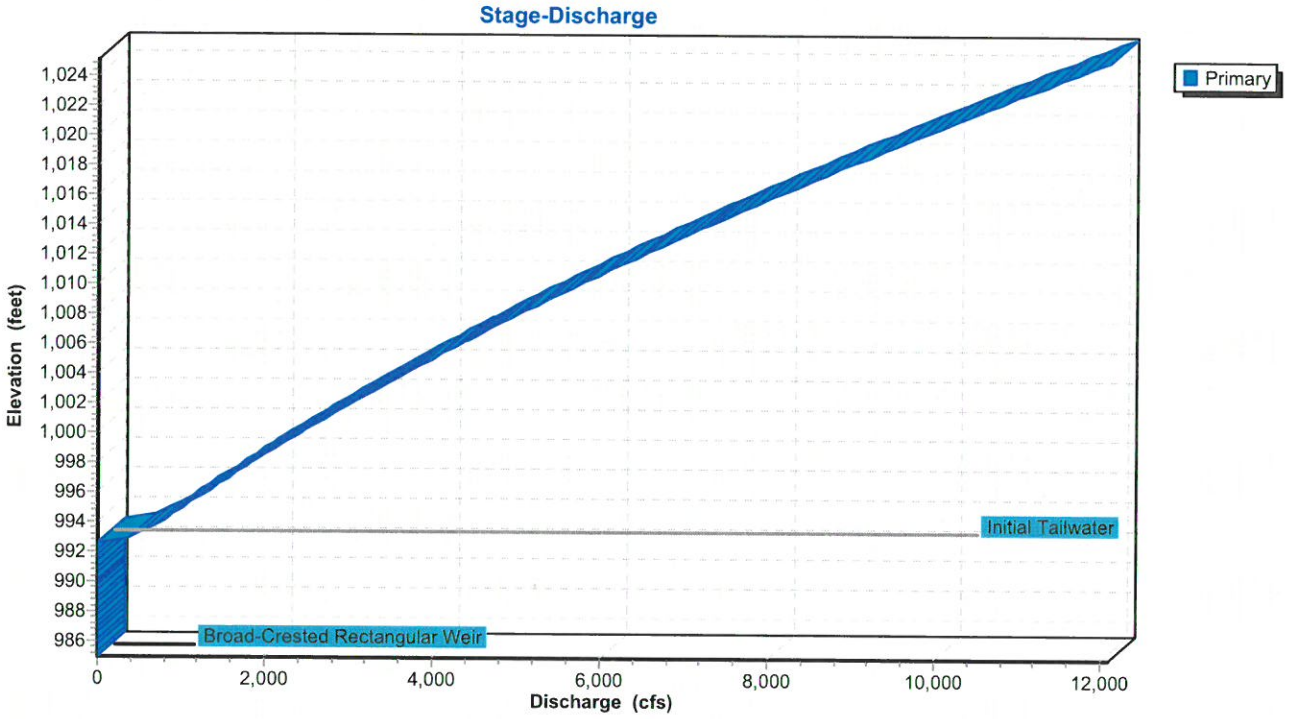
Device	Routing	Invert	Outlet Devices
#1	Primary	985.00'	**18.8' long x 50.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 20.00 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63 2.63

Primary OutFlow Max=4,416.23 cfs @ 0.00 hrs HW=1,006.27' TW=992.66' (Dynamic Tailwater)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 4,416.23 cfs @ 11.04 fps)

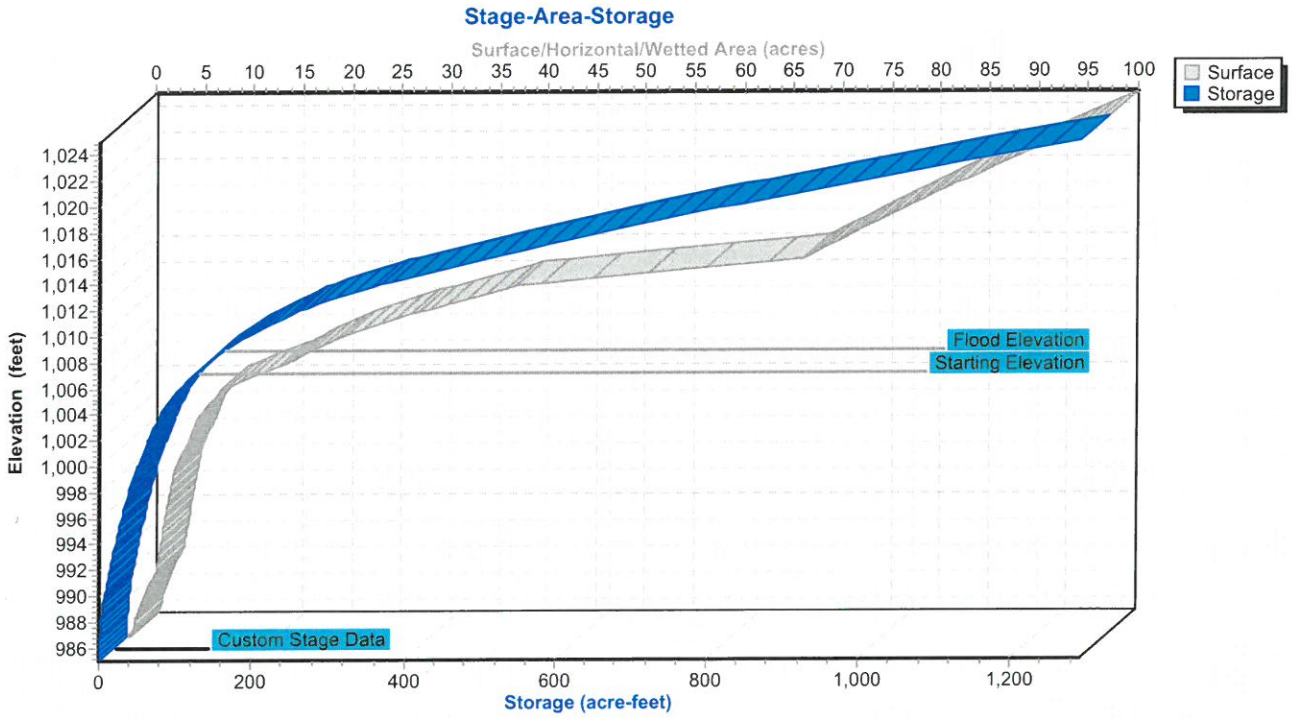
Pond 1P: Sippo Reservoir - Existing Conditions - 100 yr DBA



Pond 1P: Sippo Reservoir - Existing Conditions - 100 yr DBA



Pond 1P: Sippo Reservoir - Existing Conditions - 100 yr DBA



Summary for Pond 16P: North Sippo Park- Lincoln Way Culvert

Inflow = 6,320.15 cfs @ 0.01 hrs, Volume= 5,981.887 af
Outflow = 2,642.94 cfs @ 0.31 hrs, Volume= 5,981.539 af, Atten= 58%, Lag= 17.7 min
Primary = 2,642.94 cfs @ 0.31 hrs, Volume= 5,981.539 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Sim-Route method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Starting Elev= 992.66' Surf.Area= 6.980 ac Storage= 46.190 af
Peak Elev= 999.04' @ 0.31 hrs Surf.Area= 9.131 ac Storage= 97.543 af (51.353 af above start)
Flood Elev= 1,008.00' Surf.Area= 13.465 ac Storage= 197.028 af (150.838 af above start)

Plug-Flow detention time= 18.1 min calculated for 5,935.349 af (99% of inflow)
Center-of-Mass det. time= 1.3 min (1,065.1 - 1,063.7)

Volume	Invert	Avail.Storage	Storage Description
#1	978.00'	371.368 af	**Stage Storage in Sippo Park (Irregular)** Listed below (Recalc)

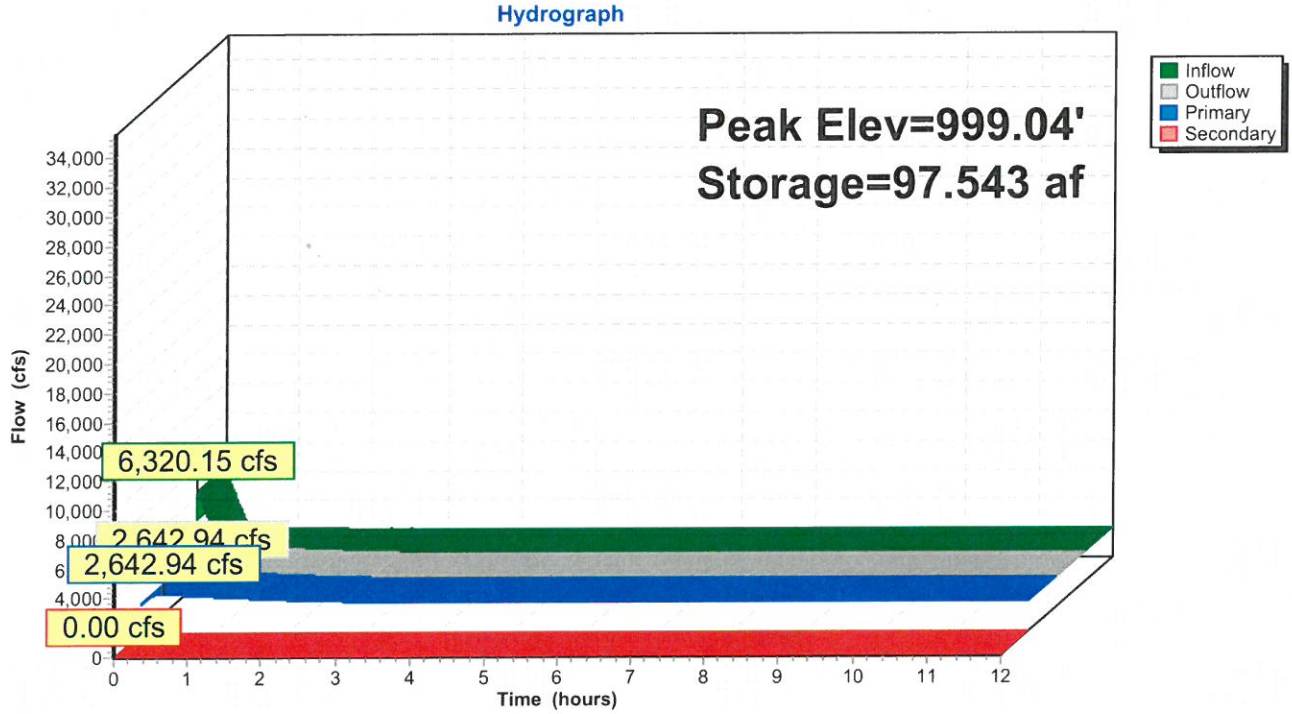
Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
978.00	0.100	200.0	0.000	0.000	0.100
981.00	0.300	500.0	0.573	0.573	0.484
982.00	0.659	1,392.9	0.468	1.041	3.572
984.00	2.018	2,470.7	2.553	3.595	11.180
986.00	3.584	3,300.7	5.528	9.122	19.932
988.00	5.007	3,247.5	8.551	17.674	20.586
990.00	6.111	3,143.9	11.100	28.773	21.805
992.00	6.773	3,217.1	12.878	41.652	22.668
994.00	7.411	3,271.9	14.179	55.831	23.334
996.00	8.110	3,253.8	15.516	71.347	23.597
998.00	8.804	3,273.8	16.909	88.256	23.878
1,000.00	9.441	3,318.6	18.241	106.497	24.439
1,002.00	10.181	3,437.0	19.617	126.114	25.908
1,004.00	11.109	3,548.6	21.283	147.398	27.341
1,006.00	12.538	3,553.4	23.633	171.030	27.516
1,008.00	13.465	3,829.8	25.997	197.028	31.248
1,010.00	14.326	4,085.3	27.787	224.814	34.947
1,012.00	15.633	4,329.5	29.949	254.764	38.706
1,014.00	17.576	4,742.6	33.190	287.954	45.555
1,016.00	20.521	5,940.5	38.059	326.013	68.935
1,018.00	24.905	6,310.6	45.355	371.368	77.223

Device	Routing	Invert	Outlet Devices
#1	Primary	978.25'	**168.0" W x 98.0" H Box Box Culvert** L= 121.8' Box, 30-75° wingwalls, rounded crown, Ke= 0.200 Inlet / Outlet Invert= 978.25' / 978.13' S= 0.0010 '/' Cc= 0.900 n= 0.015 Brickwork
#2	Secondary	1,008.00'	**Linclon Way (172), Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 2.00 4.00 6.00 8.00 10.00 Width (feet) 233.00 373.00 475.00 630.00 790.00 940.00 1,090.00

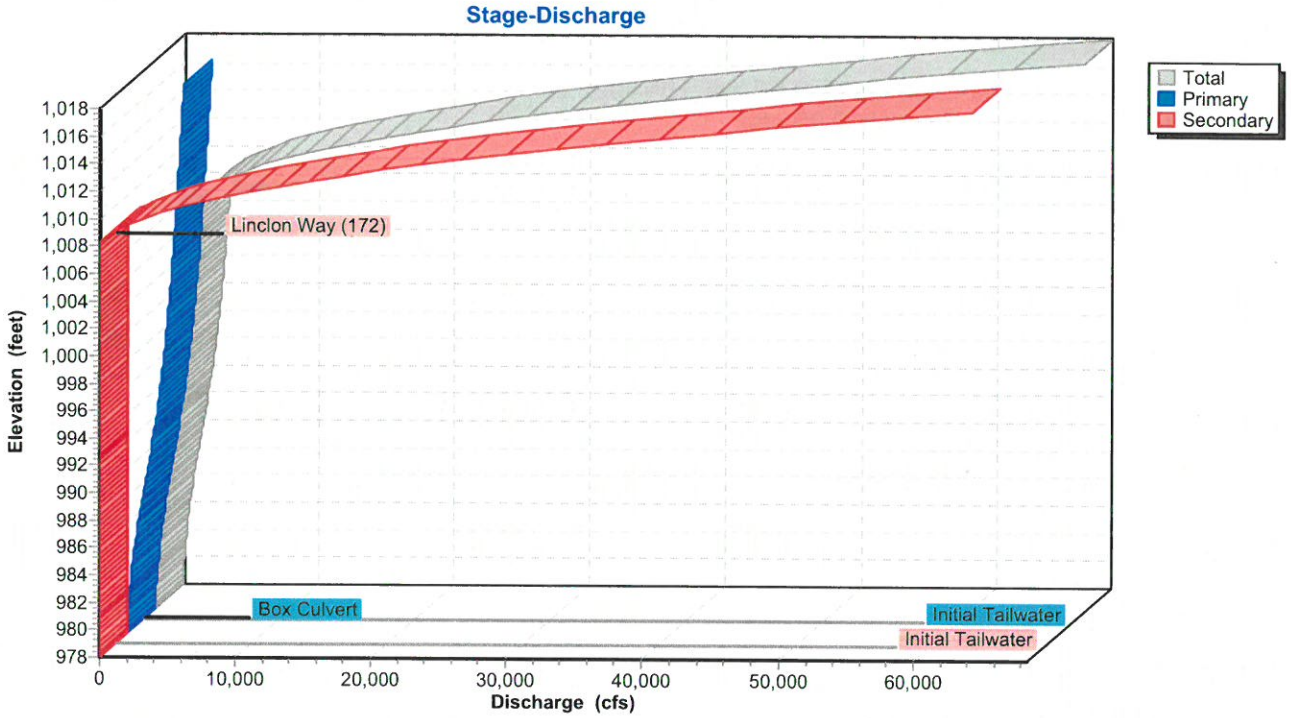
Primary OutFlow Max=2,642.74 cfs @ 0.31 hrs HW=999.03' TW=983.88' (Dynamic Tailwater)
└─**1=Box Culvert** (Inlet Controls 2,642.74 cfs @ 23.11 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=992.66' TW=978.13' (Dynamic Tailwater)
└─**2=Linclon Way (172)** (Controls 0.00 cfs)

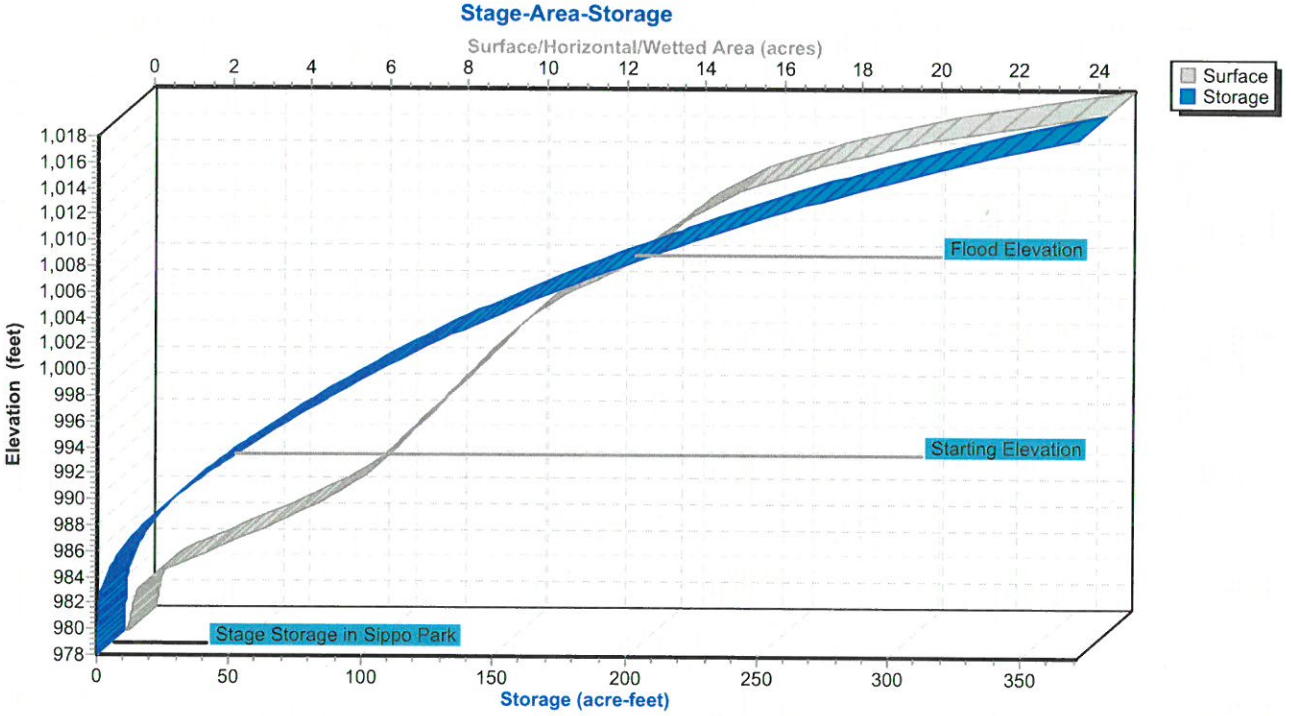
Pond 16P: North Sippo Park- Lincoln Way Culvert



Pond 16P: North Sippo Park- Lincoln Way Culvert



Pond 16P: North Sippo Park- Lincoln Way Culvert



Summary for Pond 32P: Constant inflow - 100-yr flood

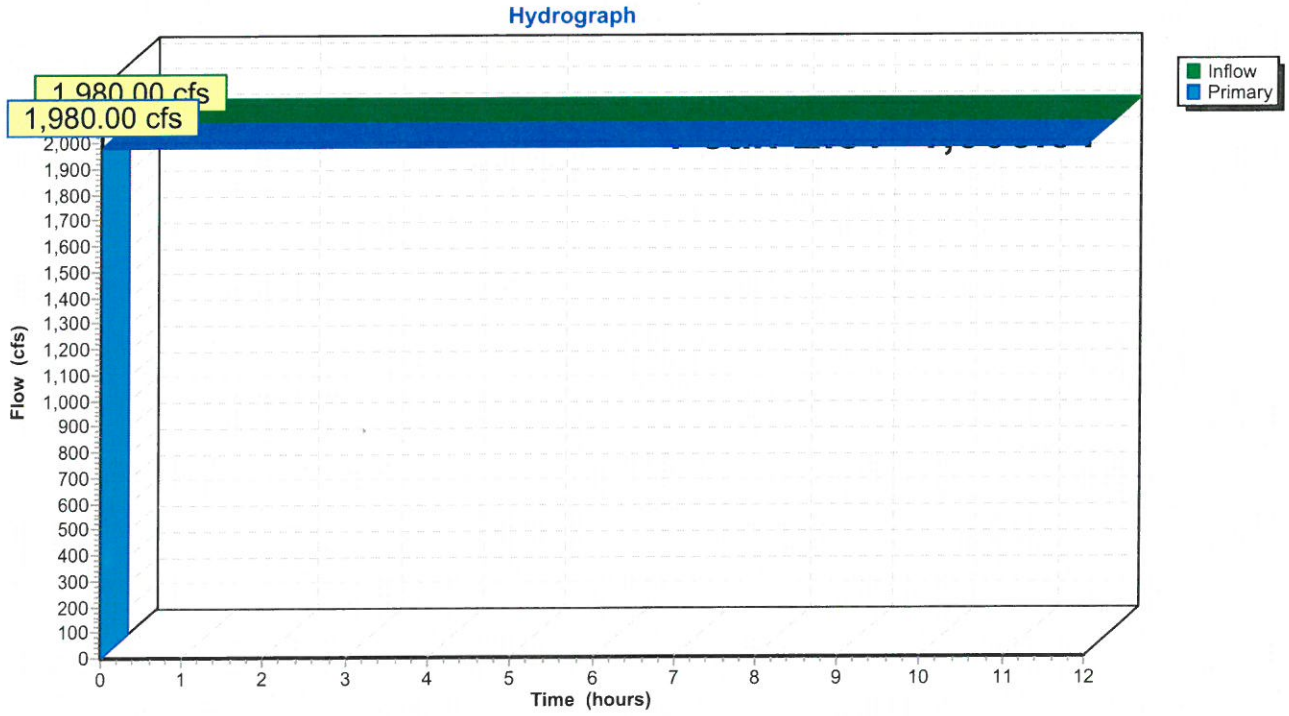
Inflow	=	1,980.00 cfs @	0.00 hrs,	Volume=	5,890.909 af, Incl. 1,980.00 cfs Base Flow
Outflow	=	1,980.00 cfs @	0.01 hrs,	Volume=	5,890.909 af, Atten= 0%, Lag= 0.6 min
Primary	=	1,980.00 cfs @	0.01 hrs,	Volume=	5,890.909 af

Routing by Sim-Route method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 1,005.51' @ 0.01 hrs

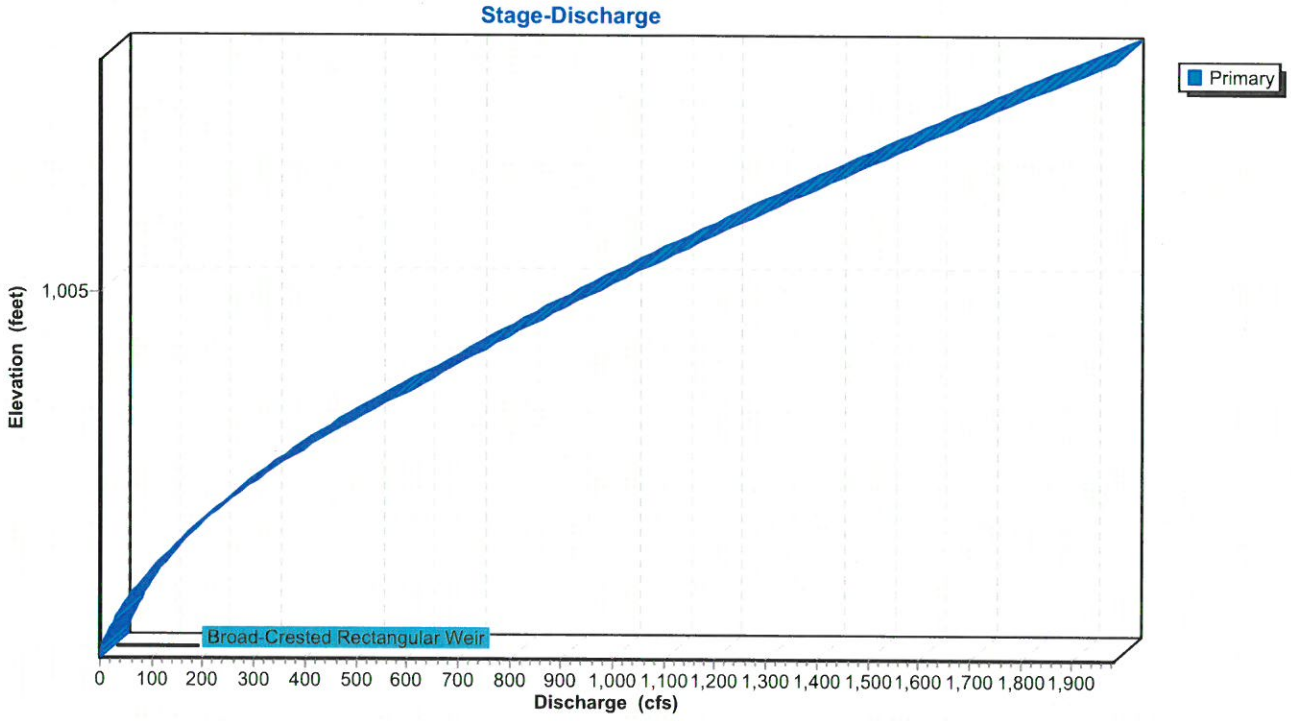
Device	Routing	Invert	Outlet Devices
#1	Primary	1,004.20'	**500.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=1,980.00 cfs @ 0.01 hrs HW=1,005.51' TW=992.95' (Dynamic Tailwater)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 1,980.00 cfs @ 3.03 fps)

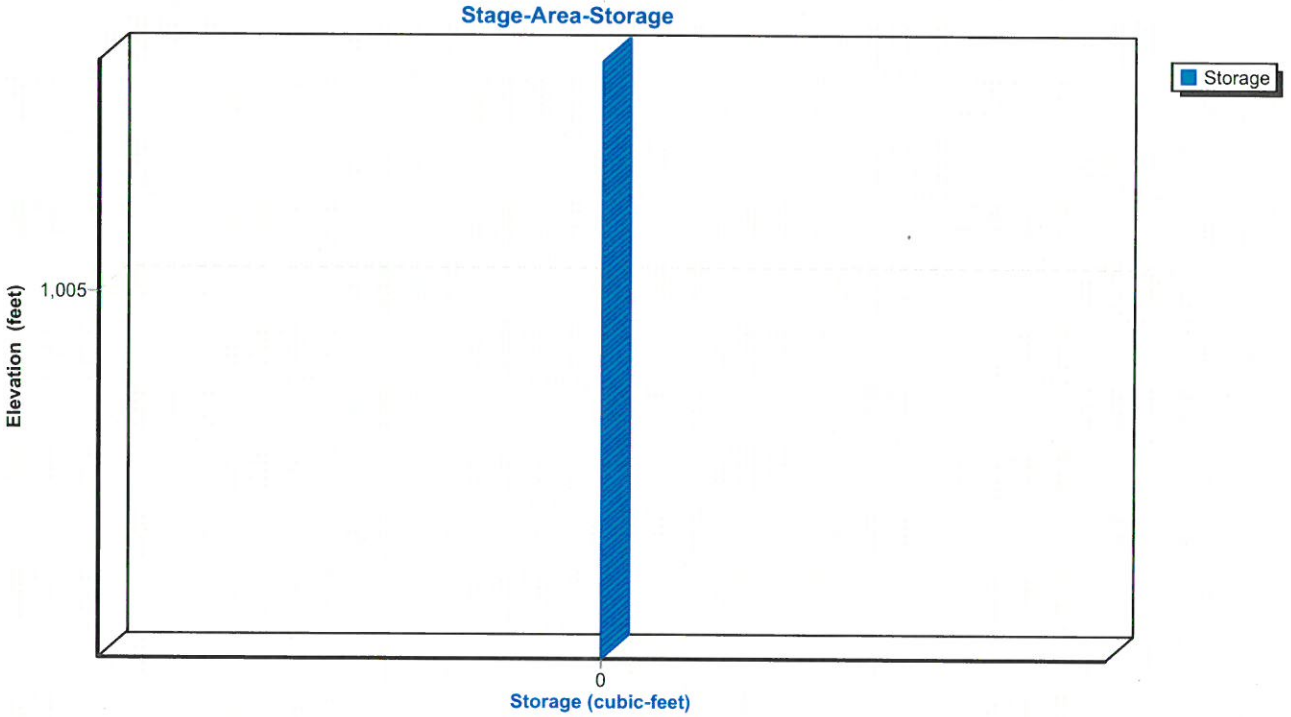
Pond 32P: Constant inflow - 100-yr flood



Pond 32P: Constant inflow - 100-yr flood



Pond 32P: Constant inflow - 100-yr flood



Subcat | Reach | Pond | Link

Drainage Diagram for Existing Conditions Sippo Resevoir-URS-DBA-500yr flood

Prepared by URS Corporation, Printed 10/31/2011

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.000	0	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
0.000		**TOTAL AREA**

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Fill (inches)
1	16P	978.25	978.13	121.8	0.0010	0.015	168.0	98.0	0.0

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Reach 18R: Sippo Creek Avg. Flow Depth=5.97' Max Vel=9.54 fps Inflow=2,923.71 cfs 10,571.568 af
L=450.0' S=0.0084 '/' Capacity=200,707.82 cfs Outflow=2,923.57 cfs 10,570.871 af

Pond 1P: Sippo Reservoir - Existing Peak Elev=1,006.86' Storage=120.609 af Inflow=0.00 cfs 0.000 af
Outflow=2,852.05 cfs 75.691 af

Pond 16P: North Sippo Park- Peak Elev=1,002.48' Storage=131.074 af Inflow=5,468.97 cfs 10,585.898 af
Primary=2,923.71 cfs 10,573.758 af Secondary=0.00 cfs 0.000 af Outflow=2,923.71 cfs 10,573.758 af

Pond 32P: Constant inflow - 500-yr flood Peak Elev=1,005.79' Inflow=2,650.00 cfs 10,512.397 af
Outflow=2,650.00 cfs 10,512.397 af

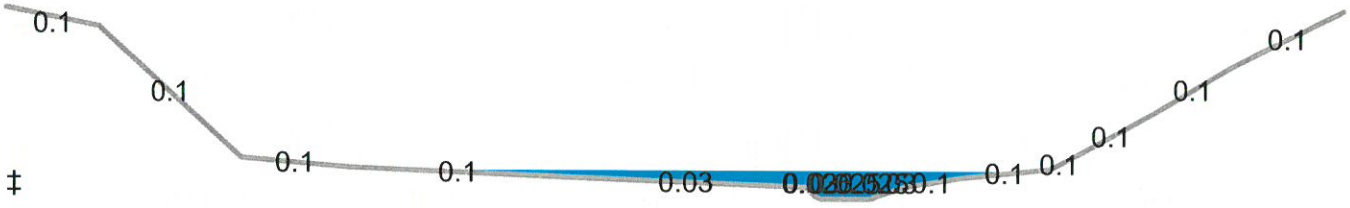
Summary for Reach 18R: Sippo Creek Channel Downstream of Lincoln Way

Inflow = 2,923.71 cfs @ 0.38 hrs, Volume= 10,571.568 af
Outflow = 2,923.57 cfs @ 0.39 hrs, Volume= 10,570.871 af, Atten= 0%, Lag= 0.7 min

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 9.54 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 9.49 fps, Avg. Travel Time= 0.8 min

Peak Storage= 137,844 cf @ 0.39 hrs
Average Depth at Peak Storage= 5.97'
Defined Flood Depth= 15.00', Capacity at Flood Depth= 28,360.41 cfs
Bank-Full Depth= 40.50', Capacity at Bank-Full= 200,707.82 cfs

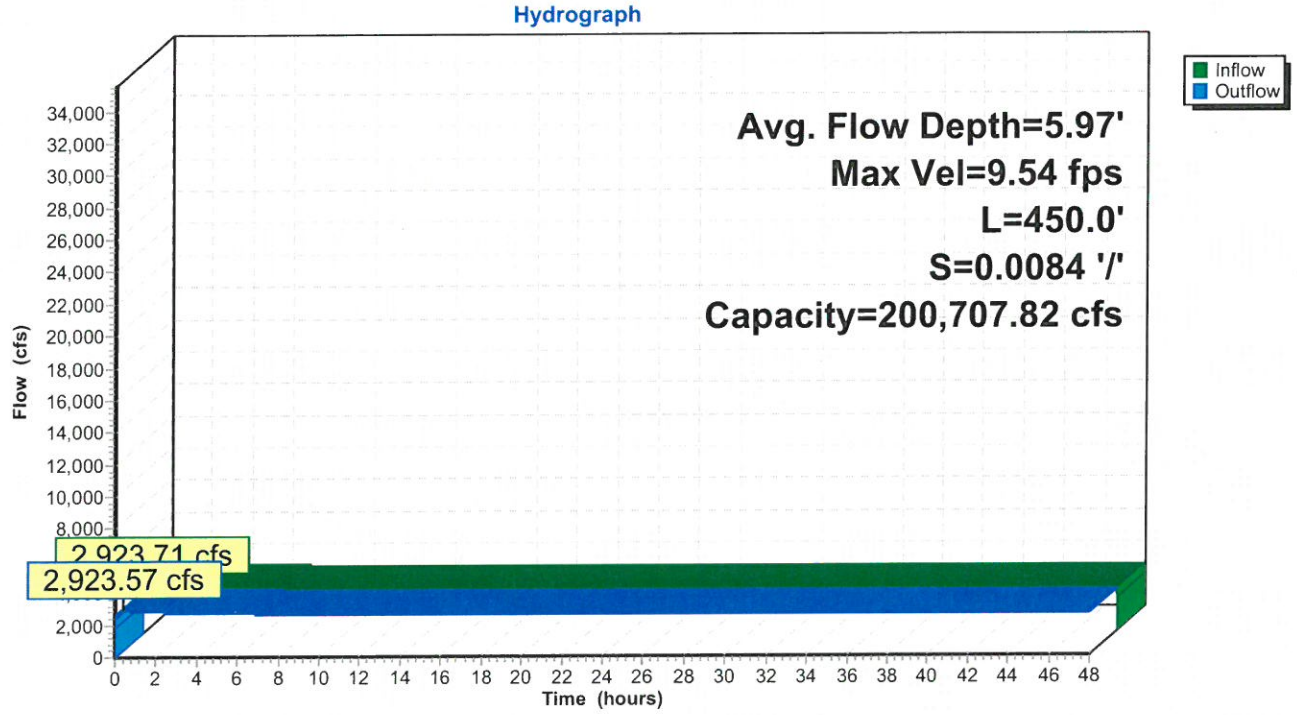
Custom cross-section, Length= 450.0' Slope= 0.0084 '/' (1006 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 978.13', Outlet Invert= 974.35'



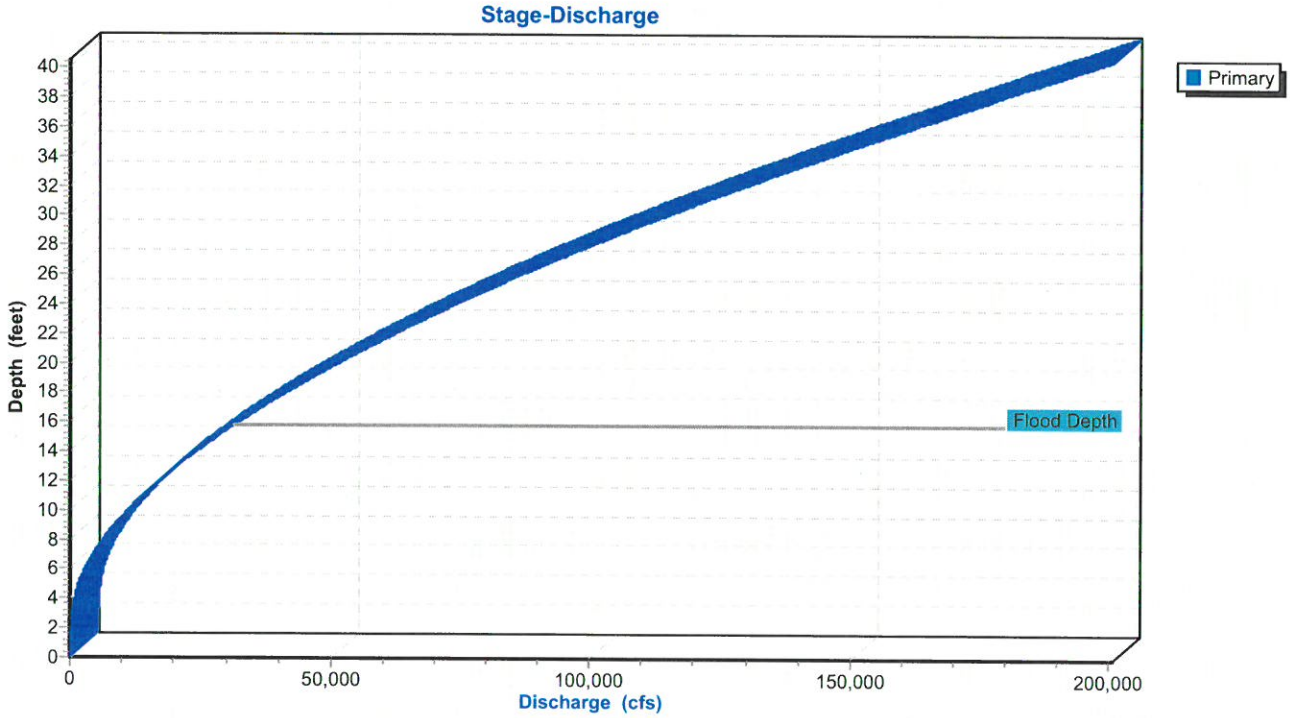
Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	1,012.00	0.00		
20.00	1,008.00	4.00	0.100	Heavy timber, flow below branches
51.00	980.00	32.00	0.100	Heavy timber, flow below branches
74.00	978.00	34.00	0.100	Heavy timber, flow below branches
121.00	976.00	36.00	0.100	Heavy timber, flow below branches
173.00	974.00	38.00	0.030	Short grass
175.00	972.00	40.00	0.030	Short grass
176.00	971.50	40.50	0.025	Stream, clean & straight
187.00	971.50	40.50	0.025	Stream, clean & straight
188.00	972.00	40.00	0.025	Stream, clean & straight
194.00	974.00	38.00	0.030	Short grass
206.00	976.00	36.00	0.100	Heavy timber, flow below branches
225.50	978.00	34.00	0.100	Heavy timber, flow below branches
229.50	980.00	32.00	0.100	Heavy timber, flow below branches
248.00	990.00	22.00	0.100	Heavy timber, flow below branches
265.00	1,000.00	12.00	0.100	Heavy timber, flow below branches
289.00	1,012.00	0.00	0.100	Heavy timber, flow below branches

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	11.0	0	0.00
0.50	6.0	13.2	2,700	19.29
2.50	40.0	22.4	18,000	347.53
4.50	146.0	86.6	65,701	1,300.01
6.50	382.5	153.2	172,125	3,703.14
8.50	712.5	180.8	320,625	7,536.06
18.50	2,645.4	216.7	1,190,411	44,005.23
28.50	4,866.4	251.4	2,189,893	103,800.74
36.50	6,855.0	281.2	3,084,750	166,501.22
40.50	7,955.0	310.6	3,579,750	200,707.82

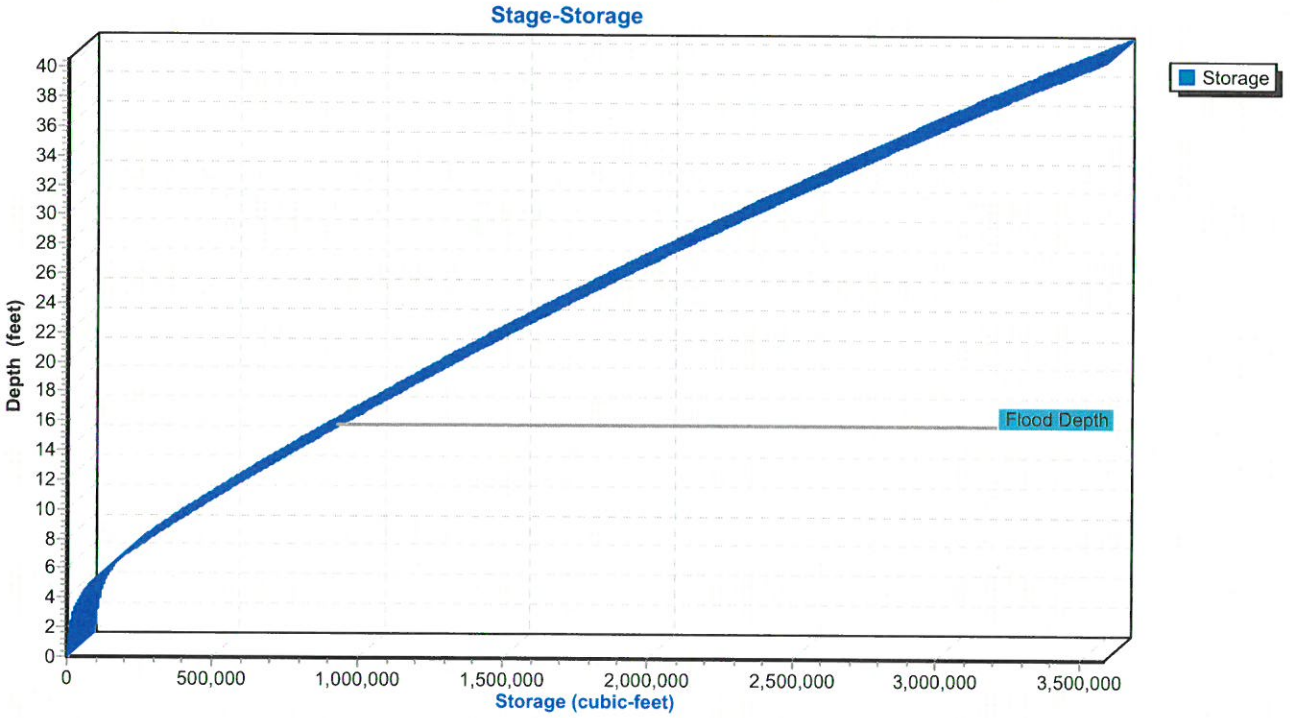
Reach 18R: Sippo Creek Channel Downstream of Lincoln Way



Reach 18R: Sippo Creek Channel Downstream of Lincoln Way



Reach 18R: Sippo Creek Channel Downstream of Lincoln Way



Summary for Pond 1P: Sippo Reservoir - Existing Conditions - 500 yr DBA

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 2,852.05 cfs @ 0.00 hrs, Volume= 75.691 af, Atten= 0%, Lag= 0.0 min
Primary = 2,852.05 cfs @ 0.00 hrs, Volume= 75.691 af

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Starting Elev= 1,006.86' Surf.Area= 18.372 ac Storage= 120.609 af
Peak Elev= 1,006.86' @ 0.00 hrs Surf.Area= 18.372 ac Storage= 120.609 af
Flood Elev= 1,008.00' Surf.Area= 21.577 ac Storage= 143.356 af (22.746 af above start)

Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no inflow)

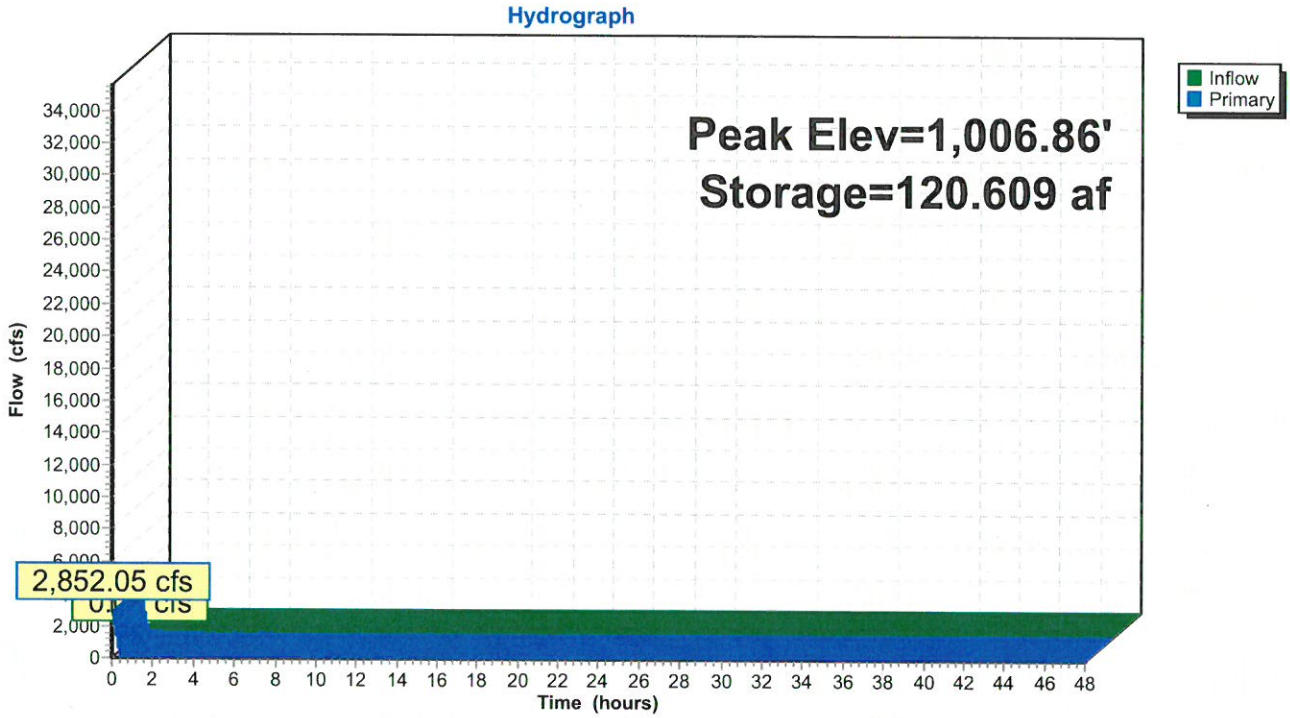
Volume	Invert	Avail.Storage	Storage Description
#1	985.00'	1,292.544 af	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
985.00	0.500	500.0	0.000	0.000	0.500
990.00	3.000	1,000.0	7.875	7.875	1.873
998.00	4.870	2,500.0	31.179	39.054	11.469
1,000.00	6.204	3,251.0	11.047	50.101	19.360
1,002.00	7.243	5,147.0	13.434	63.535	48.449
1,004.00	9.610	10,274.0	16.797	80.332	192.887
1,006.00	16.124	11,202.9	25.455	105.787	229.335
1,008.00	21.577	15,736.9	37.569	143.356	452.477
1,010.00	29.674	20,301.4	51.036	194.392	752.988
1,012.00	39.539	22,845.5	68.977	263.369	953.524
1,014.00	68.669	34,370.5	106.876	370.246	2,158.174
1,025.00	100.000	50,000.0	922.298	1,292.544	4,567.204

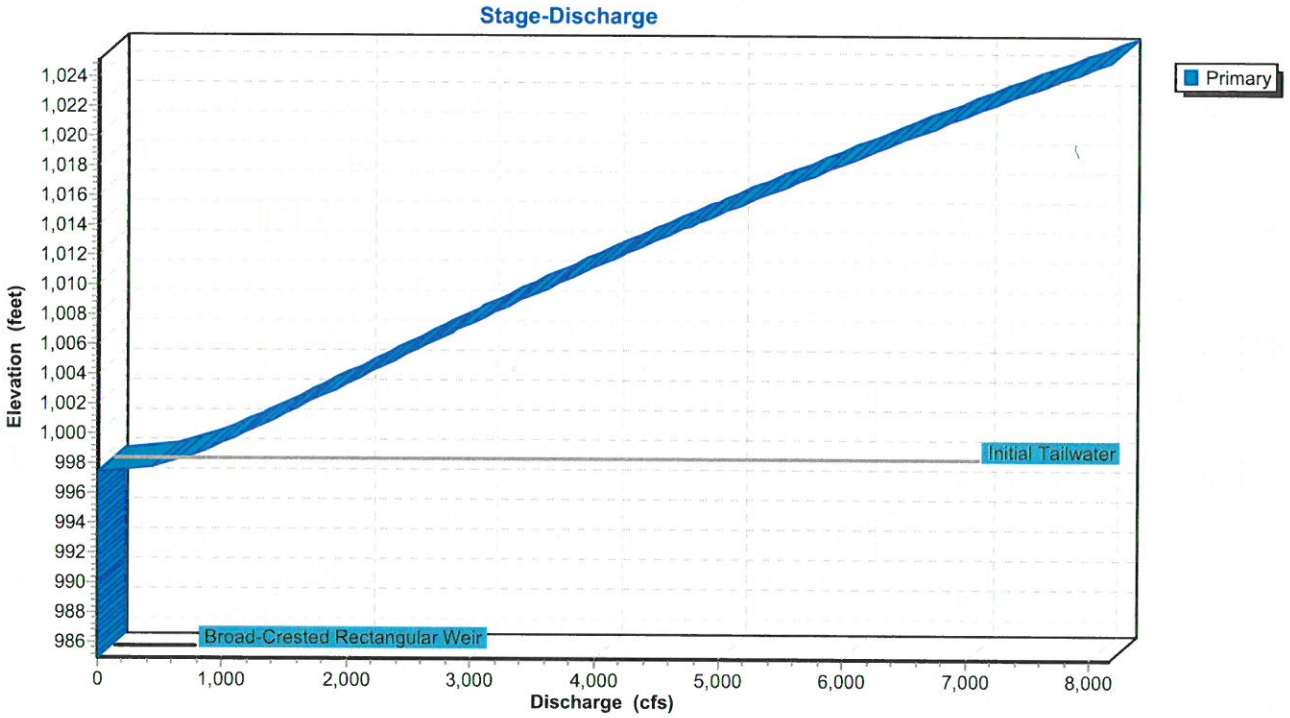
Device	Routing	Invert	Outlet Devices
#1	Primary	985.00'	**13.2' long x 50.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 20.00 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63 2.63

Primary OutFlow Max=2,852.05 cfs @ 0.00 hrs HW=1,006.86' TW=997.51' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 2,852.05 cfs @ 9.88 fps)

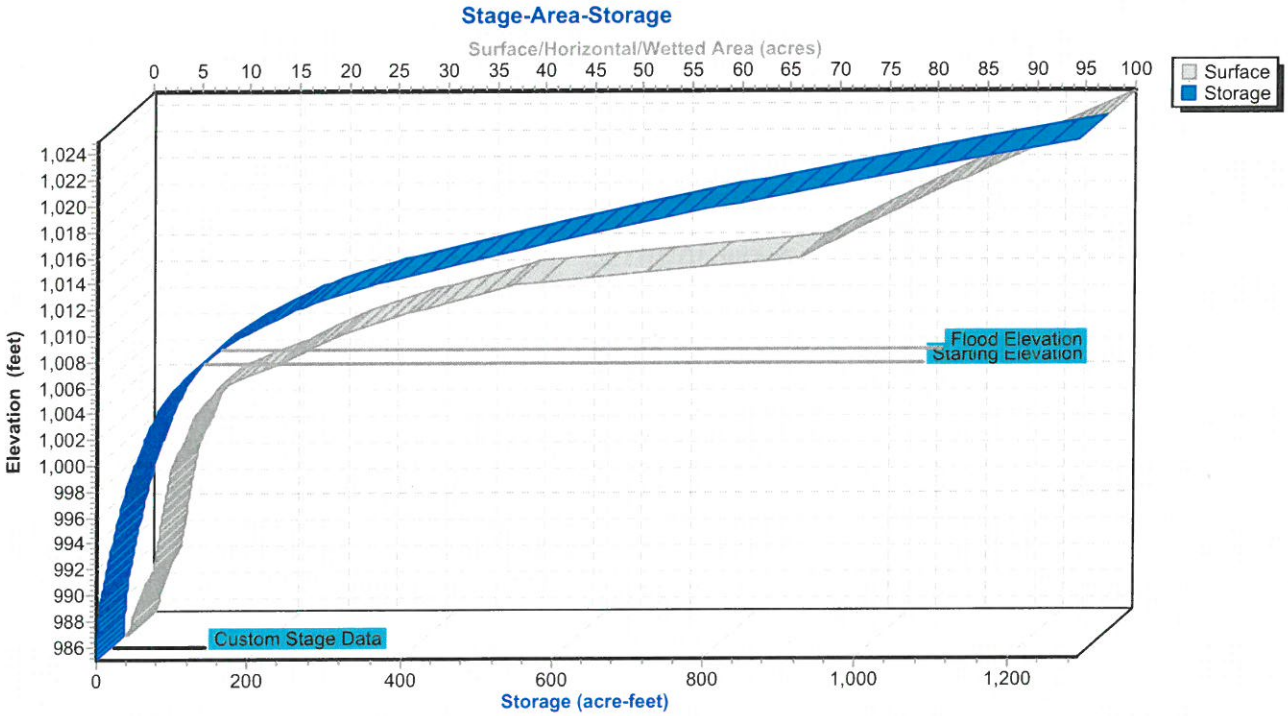
Pond 1P: Sippo Reservoir - Existing Conditions - 500 yr DBA



Pond 1P: Sippo Reservoir - Existing Conditions - 500 yr DBA



Pond 1P: Sippo Reservoir - Existing Conditions - 500 yr DBA



Summary for Pond 16P: North Sippo Park- Lincoln Way Culvert

Inflow = 5,468.97 cfs @ 0.01 hrs, Volume= 10,585.898 af
Outflow = 2,923.71 cfs @ 0.38 hrs, Volume= 10,573.758 af, Atten= 47%, Lag= 21.9 min
Primary = 2,923.71 cfs @ 0.38 hrs, Volume= 10,573.758 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Starting Elev= 997.51' Surf.Area= 8.631 ac Storage= 83.984 af
Peak Elev= 1,002.48' @ 0.38 hrs Surf.Area= 10.401 ac Storage= 131.074 af (47.089 af above start)
Flood Elev= 1,008.00' Surf.Area= 13.465 ac Storage= 197.028 af (113.044 af above start)

Plug-Flow detention time= 27.2 min calculated for 10,489.774 af (99% of inflow)
Center-of-Mass det. time= 2.7 min (1,432.8 - 1,430.1)

Volume	Invert	Avail.Storage	Storage Description
#1	978.00'	371.368 af	**Stage Storage in Sippo Park (Irregular)** Listed below (Recalc)

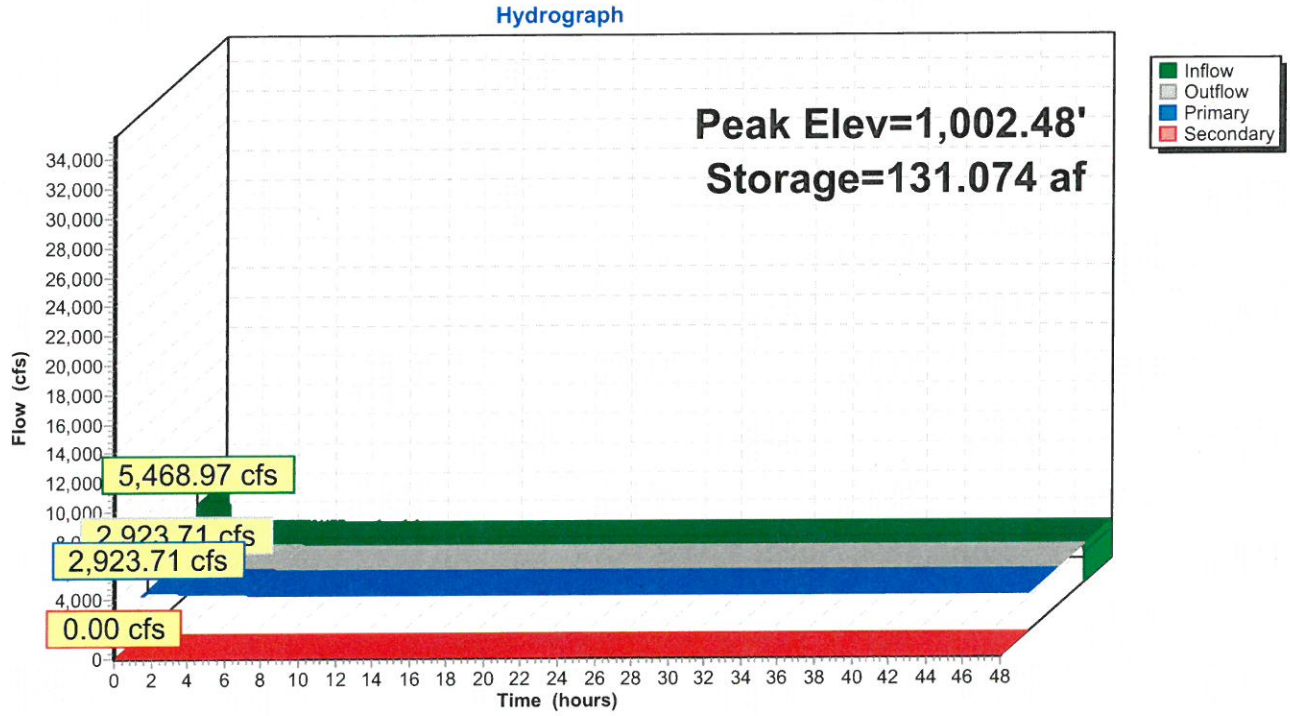
Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
978.00	0.100	200.0	0.000	0.000	0.100
981.00	0.300	500.0	0.573	0.573	0.484
982.00	0.659	1,392.9	0.468	1.041	3.572
984.00	2.018	2,470.7	2.553	3.595	11.180
986.00	3.584	3,300.7	5.528	9.122	19.932
988.00	5.007	3,247.5	8.551	17.674	20.586
990.00	6.111	3,143.9	11.100	28.773	21.805
992.00	6.773	3,217.1	12.878	41.652	22.668
994.00	7.411	3,271.9	14.179	55.831	23.334
996.00	8.110	3,253.8	15.516	71.347	23.597
998.00	8.804	3,273.8	16.909	88.256	23.878
1,000.00	9.441	3,318.6	18.241	106.497	24.439
1,002.00	10.181	3,437.0	19.617	126.114	25.908
1,004.00	11.109	3,548.6	21.283	147.398	27.341
1,006.00	12.538	3,553.4	23.633	171.030	27.516
1,008.00	13.465	3,829.8	25.997	197.028	31.248
1,010.00	14.326	4,085.3	27.787	224.814	34.947
1,012.00	15.633	4,329.5	29.949	254.764	38.706
1,014.00	17.576	4,742.6	33.190	287.954	45.555
1,016.00	20.521	5,940.5	38.059	326.013	68.935
1,018.00	24.905	6,310.6	45.355	371.368	77.223

Device	Routing	Invert	Outlet Devices
#1	Primary	978.25'	**168.0" W x 98.0" H Box Box Culvert** L= 121.8' Box, 30-75° wingwalls, rounded crown, Ke= 0.200 Inlet / Outlet Invert= 978.25' / 978.13' S= 0.0010 '/' Cc= 0.900 n= 0.015 Brickwork
#2	Secondary	1,008.00'	**Linclon Way (172), Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 2.00 4.00 6.00 8.00 10.00 Width (feet) 233.00 373.00 475.00 630.00 790.00 940.00 1,090.00

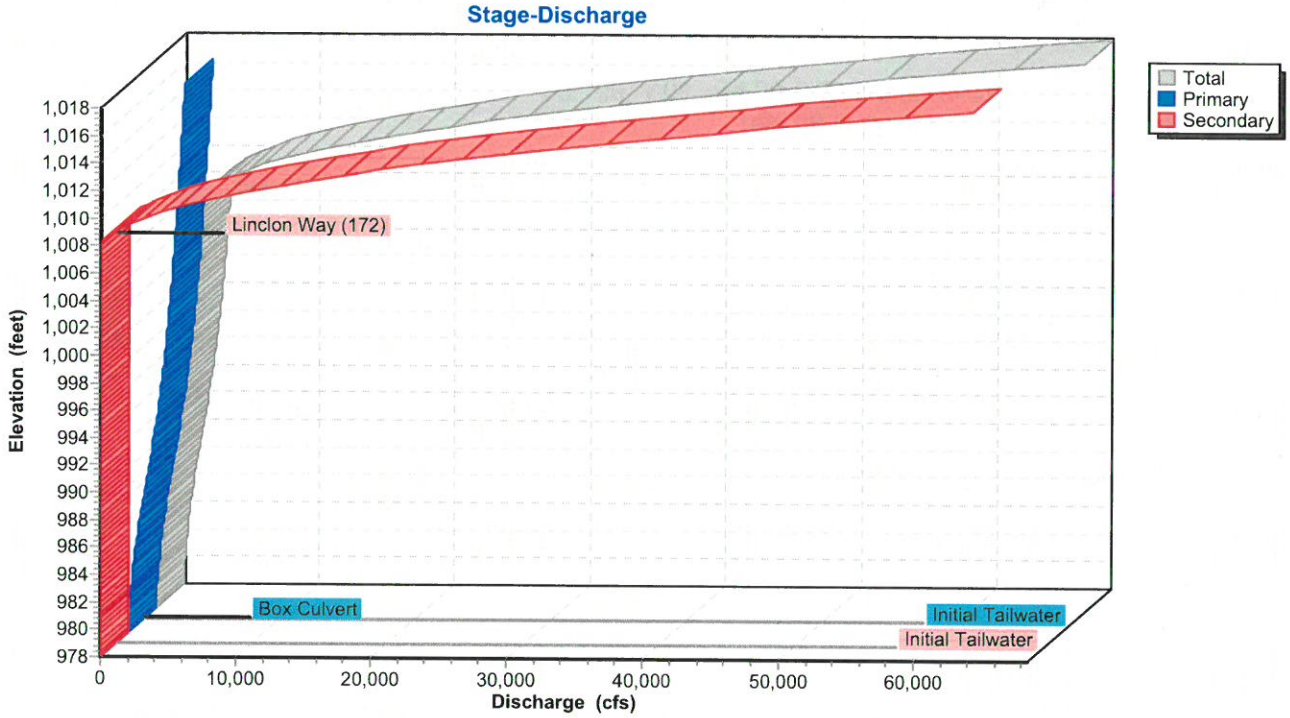
Primary OutFlow Max=2,923.43 cfs @ 0.38 hrs HW=1,002.48' TW=984.10' (Dynamic Tailwater)
└**1=Box Culvert** (Inlet Controls 2,923.43 cfs @ 25.57 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=997.51' TW=978.13' (Dynamic Tailwater)
└**2=Linclon Way (172)** (Controls 0.00 cfs)

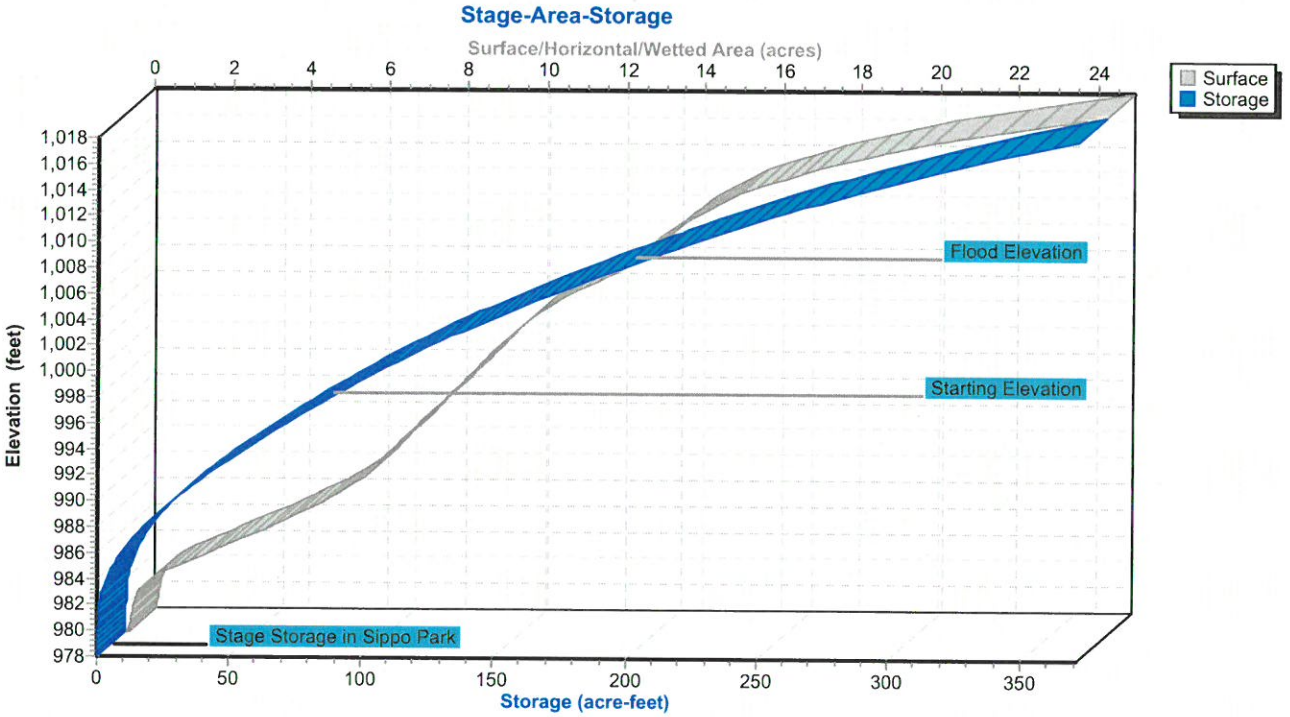
Pond 16P: North Sippo Park- Lincoln Way Culvert



Pond 16P: North Sippo Park- Lincoln Way Culvert



Pond 16P: North Sippo Park- Lincoln Way Culvert



Summary for Pond 32P: Constant inflow - 500-yr flood

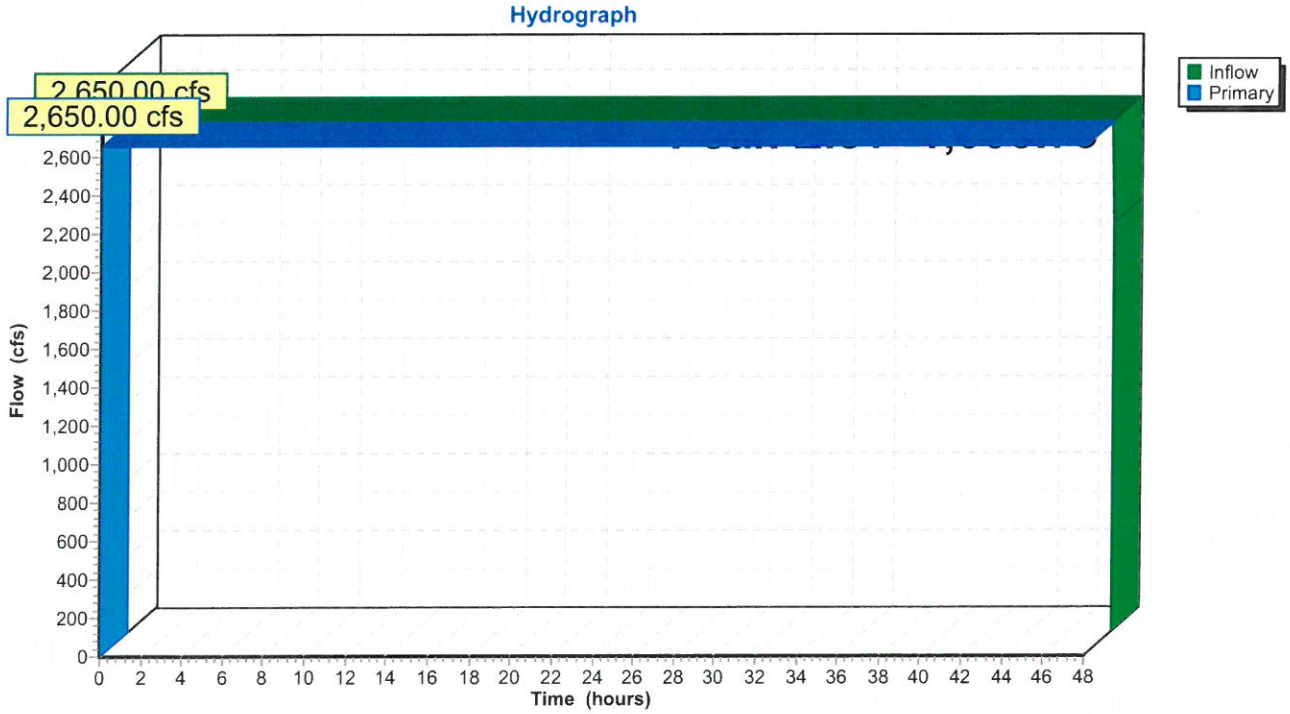
Inflow = 2,650.00 cfs @ 0.00 hrs, Volume= 10,512.397 af, Incl. 2,650.00 cfs Base Flow
Outflow = 2,650.00 cfs @ 0.01 hrs, Volume= 10,512.397 af, Atten= 0%, Lag= 0.6 min
Primary = 2,650.00 cfs @ 0.01 hrs, Volume= 10,512.397 af

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,005.79' @ 0.01 hrs

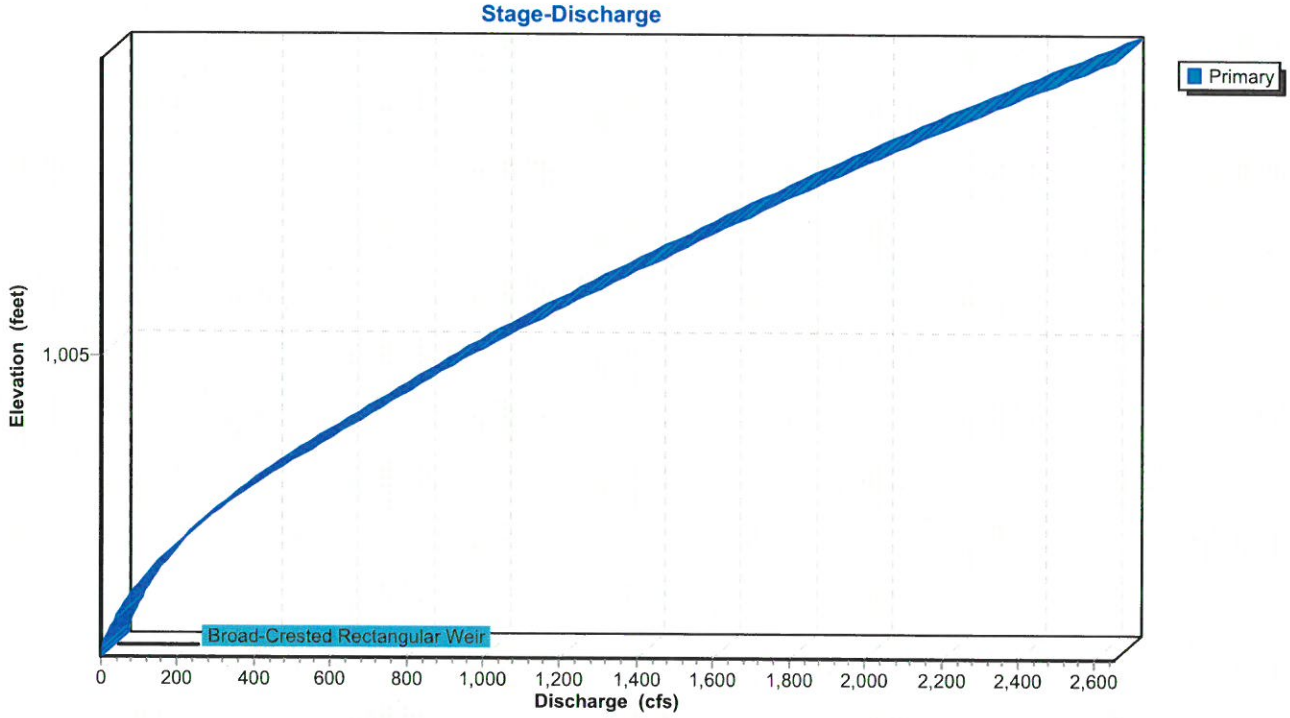
Device	Routing	Invert	Outlet Devices
#1	Primary	1,004.20'	**500.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=2,650.00 cfs @ 0.01 hrs HW=1,005.79' TW=997.54' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Weir Controls 2,650.00 cfs @ 3.34 fps)

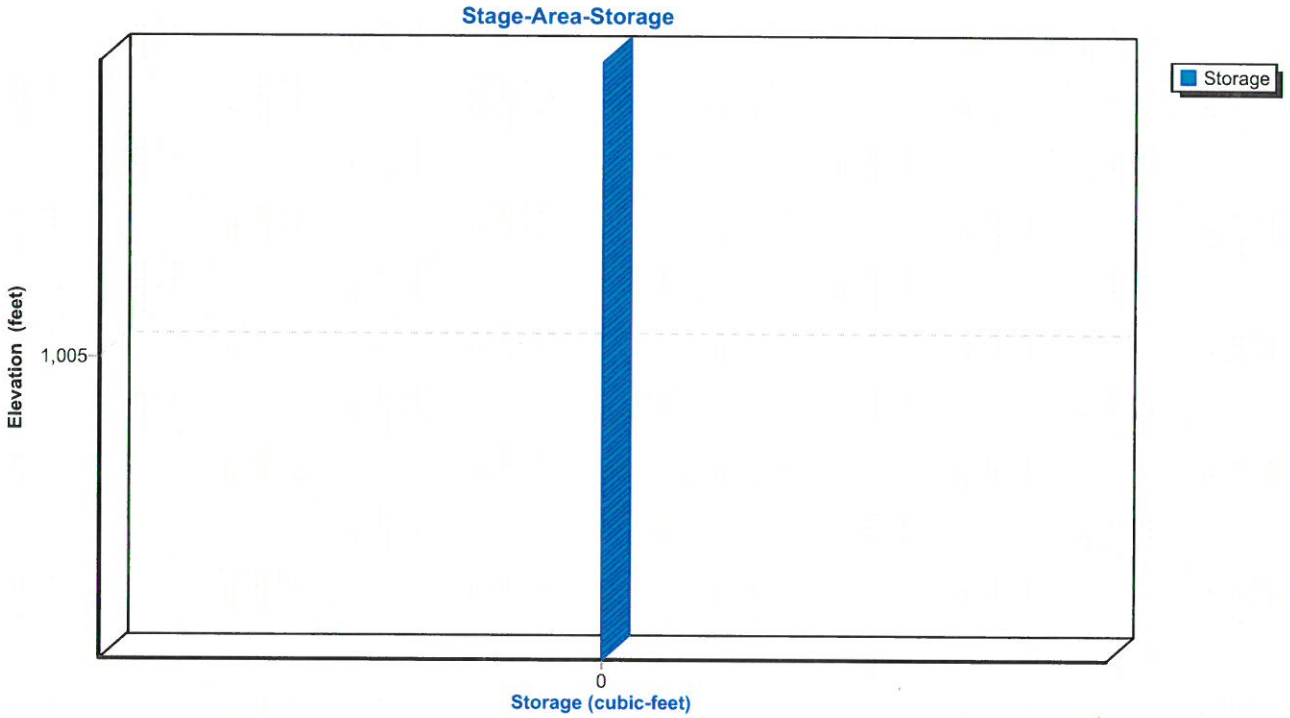
Pond 32P: Constant inflow - 500-yr flood



Pond 32P: Constant inflow - 500-yr flood



Pond 32P: Constant inflow - 500-yr flood



Subcat Reach Pond Link

Drainage Diagram for Existing Conditions Sippo Resevoir-URS-DBA-22PMF

Prepared by URS Corporation, Printed 10/31/2011

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.000	0	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
0.000		**TOTAL AREA**

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Fill (inches)
1	16P	978.25	978.13	121.8	0.0010	0.015	168.0	98.0	0.0

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Reach 18R: Sippo Creek Avg. Flow Depth=6.12' Max Vel=9.59 fps Inflow=3,143.00 cfs 12,459.969 af
L=450.0' S=0.0084 '/' Capacity=200,707.82 cfs Outflow=3,143.00 cfs 12,459.180 af

Pond 1P: Sippo Reservoir - Existing Peak Elev=1,007.21' Storage=127.206 af Inflow=0.00 cfs 0.000 af
Outflow=1,839.43 cfs 35.606 af

Pond 16P: North Sippo Park- Peak Elev=1,005.40' Storage=163.699 af Inflow=4,965.44 cfs 12,501.108 af
Primary=3,143.00 cfs 12,462.566 af Secondary=0.00 cfs 0.000 af Outflow=3,143.00 cfs 12,462.566 af

Pond 32P: Constant inflow - 0.22 PMF Peak Elev=1,006.27' Inflow=3,143.00 cfs 12,468.099 af
Outflow=3,143.00 cfs 12,468.099 af

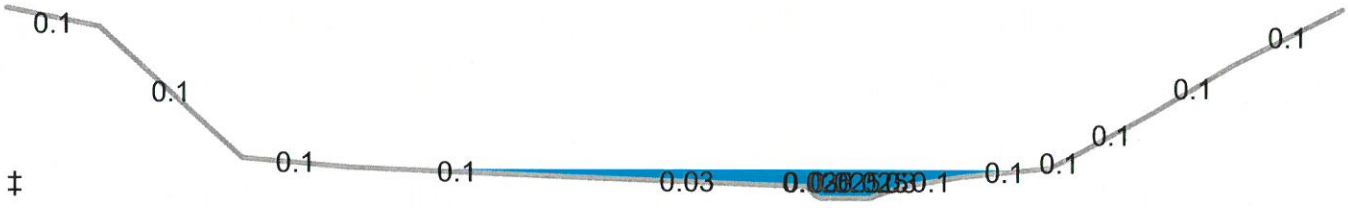
Summary for Reach 18R: Sippo Creek Channel Downstream of Lincoln Way

Inflow = 3,143.00 cfs @ 47.99 hrs, Volume= 12,459.969 af
Outflow = 3,143.00 cfs @ 47.87 hrs, Volume= 12,459.180 af, Atten= 0%, Lag= 0.0 min

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 9.59 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 9.59 fps, Avg. Travel Time= 0.8 min

Peak Storage= 147,510 cf @ 47.97 hrs
Average Depth at Peak Storage= 6.12'
Defined Flood Depth= 15.00', Capacity at Flood Depth= 28,360.41 cfs
Bank-Full Depth= 40.50', Capacity at Bank-Full= 200,707.82 cfs

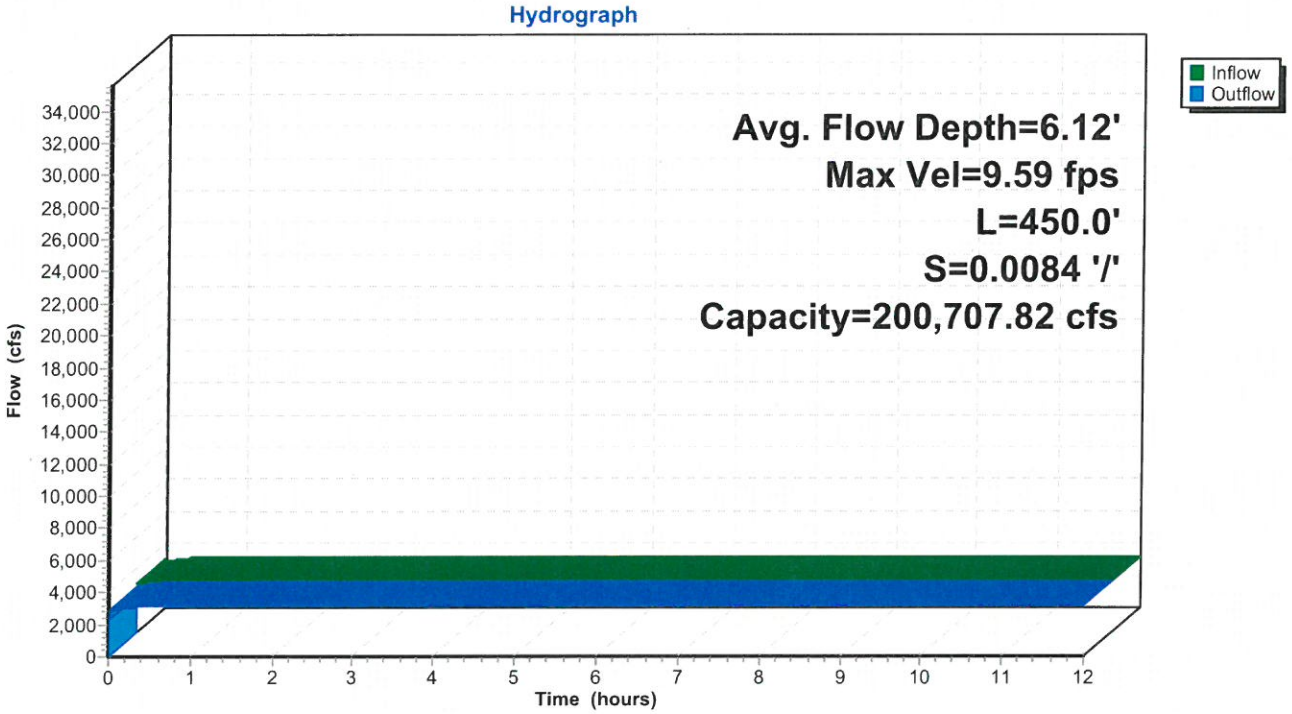
Custom cross-section, Length= 450.0' Slope= 0.0084 '/' (1006 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 978.13', Outlet Invert= 974.35'



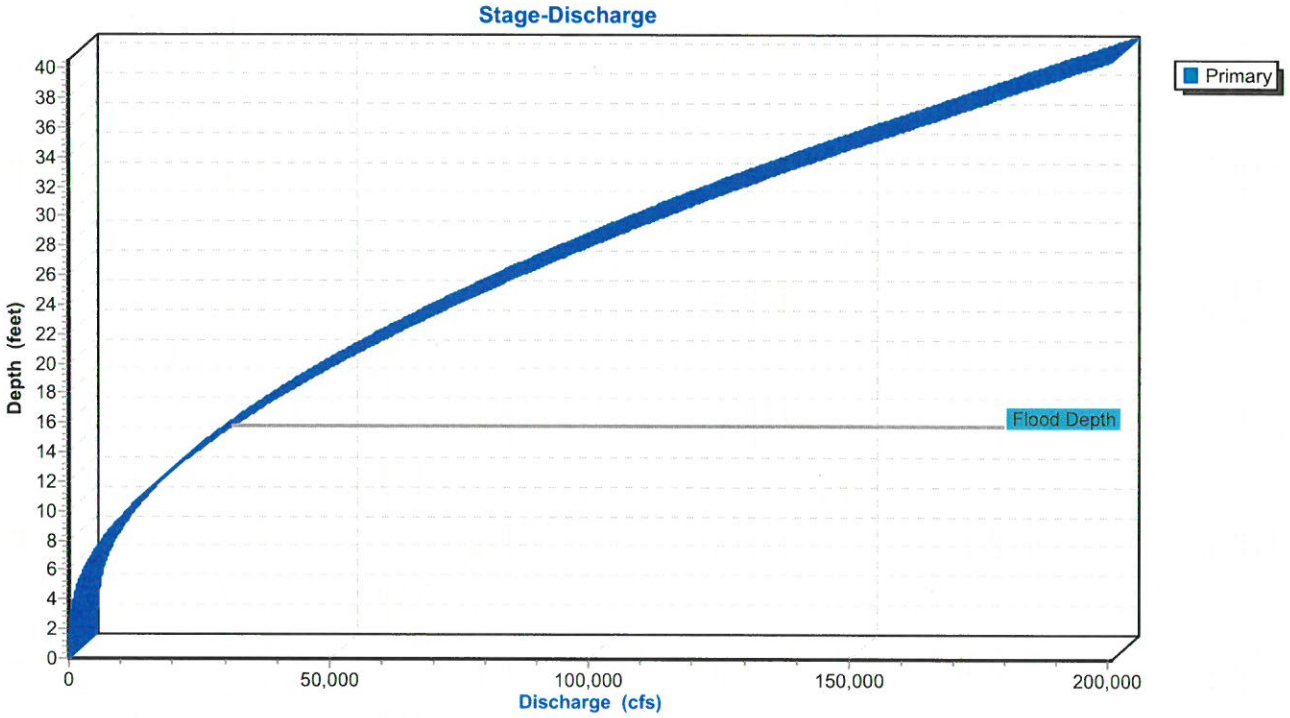
Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	1,012.00	0.00		
20.00	1,008.00	4.00	0.100	Heavy timber, flow below branches
51.00	980.00	32.00	0.100	Heavy timber, flow below branches
74.00	978.00	34.00	0.100	Heavy timber, flow below branches
121.00	976.00	36.00	0.100	Heavy timber, flow below branches
173.00	974.00	38.00	0.030	Short grass
175.00	972.00	40.00	0.030	Short grass
176.00	971.50	40.50	0.025	Stream, clean & straight
187.00	971.50	40.50	0.025	Stream, clean & straight
188.00	972.00	40.00	0.025	Stream, clean & straight
194.00	974.00	38.00	0.030	Short grass
206.00	976.00	36.00	0.100	Heavy timber, flow below branches
225.50	978.00	34.00	0.100	Heavy timber, flow below branches
229.50	980.00	32.00	0.100	Heavy timber, flow below branches
248.00	990.00	22.00	0.100	Heavy timber, flow below branches
265.00	1,000.00	12.00	0.100	Heavy timber, flow below branches
289.00	1,012.00	0.00	0.100	Heavy timber, flow below branches

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	11.0	0	0.00
0.50	6.0	13.2	2,700	19.29
2.50	40.0	22.4	18,000	347.53
4.50	146.0	86.6	65,701	1,300.01
6.50	382.5	153.2	172,125	3,703.14
8.50	712.5	180.8	320,625	7,536.06
18.50	2,645.4	216.7	1,190,411	44,005.23
28.50	4,866.4	251.4	2,189,893	103,800.74
36.50	6,855.0	281.2	3,084,750	166,501.22
40.50	7,955.0	310.6	3,579,750	200,707.82

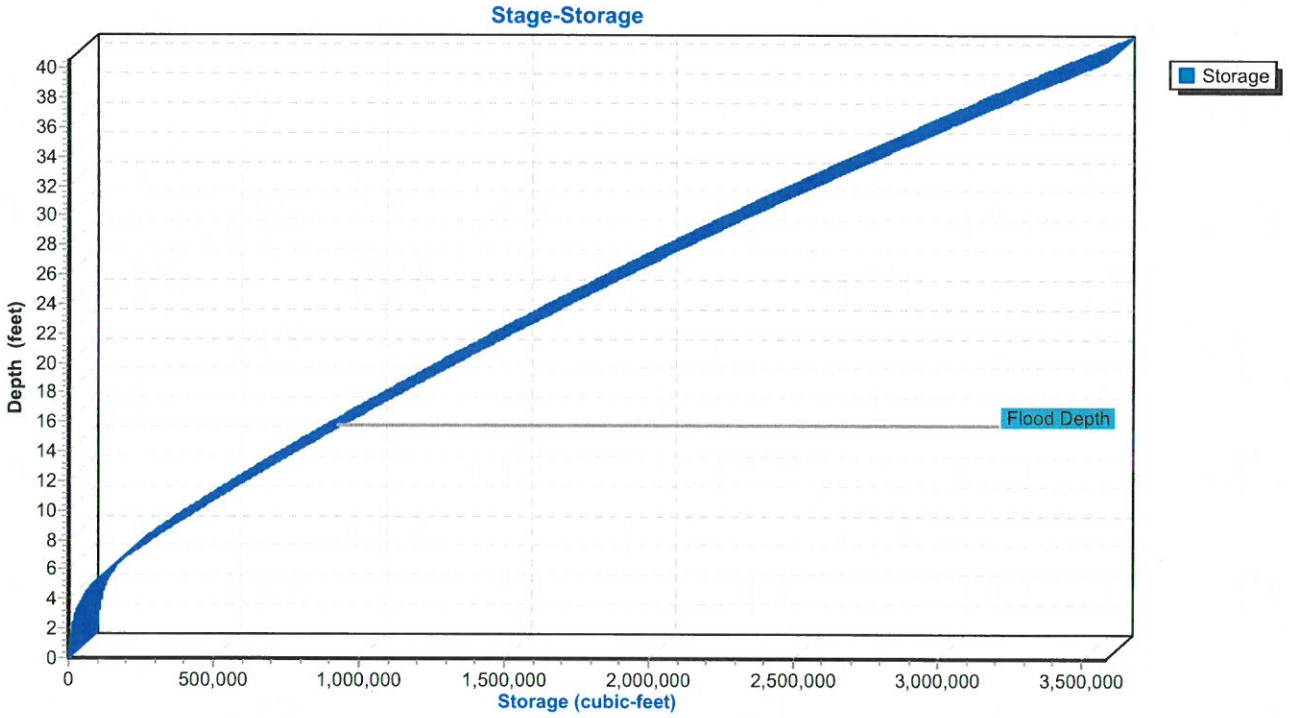
Reach 18R: Sippo Creek Channel Downstream of Lincoln Way



Reach 18R: Sippo Creek Channel Downstream of Lincoln Way



Reach 18R: Sippo Creek Channel Downstream of Lincoln Way



Summary for Pond 1P: Sippo Reservoir - Existing Conditions - 0.22 PMF DBA

Inflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Outflow	=	1,839.43 cfs @	0.00 hrs, Volume=	35.606 af, Atten= 0%, Lag= 0.0 min
Primary	=	1,839.43 cfs @	0.00 hrs, Volume=	35.606 af

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Starting Elev= 1,007.21' Surf.Area= 19.328 ac Storage= 127.206 af
Peak Elev= 1,007.21' @ 0.00 hrs Surf.Area= 19.328 ac Storage= 127.206 af
Flood Elev= 1,008.00' Surf.Area= 21.577 ac Storage= 143.356 af (16.149 af above start)

Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no inflow)

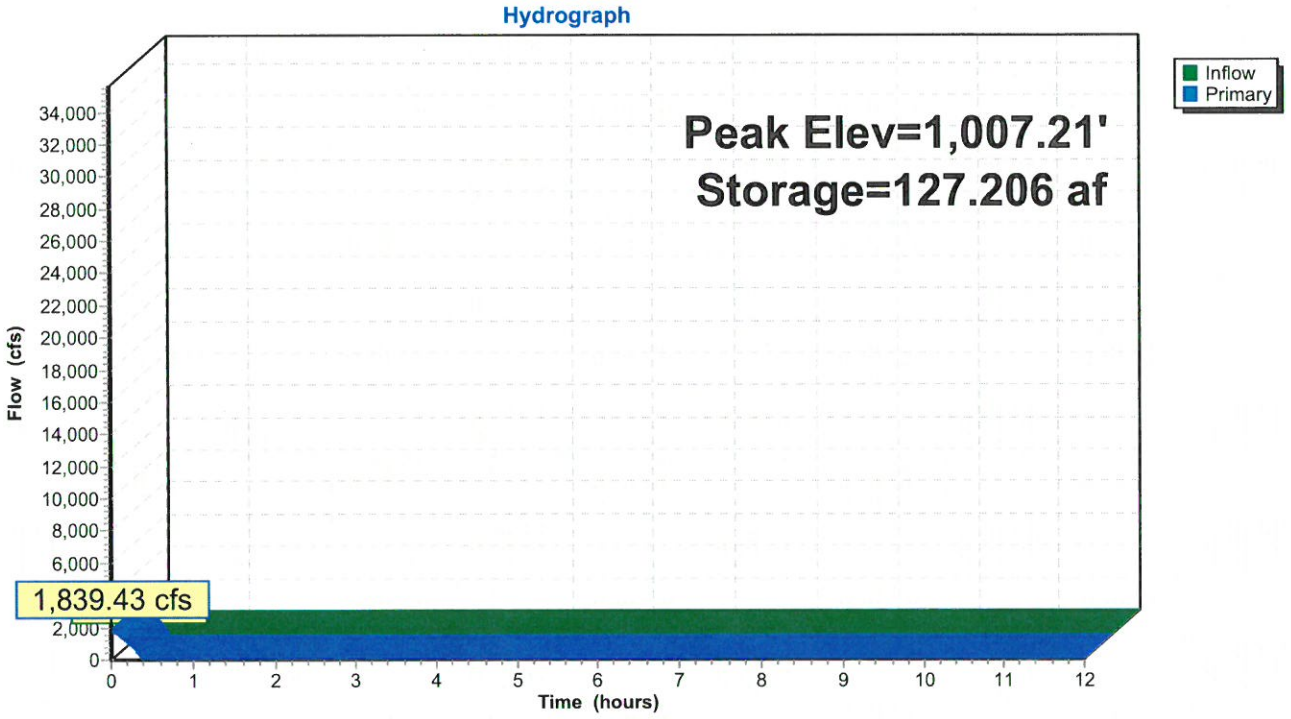
Volume	Invert	Avail.Storage	Storage Description
#1	985.00'	1,292.544 af	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
985.00	0.500	500.0	0.000	0.000	0.500
990.00	3.000	1,000.0	7.875	7.875	1.873
998.00	4.870	2,500.0	31.179	39.054	11.469
1,000.00	6.204	3,251.0	11.047	50.101	19.360
1,002.00	7.243	5,147.0	13.434	63.535	48.449
1,004.00	9.610	10,274.0	16.797	80.332	192.887
1,006.00	16.124	11,202.9	25.455	105.787	229.335
1,008.00	21.577	15,736.9	37.569	143.356	452.477
1,010.00	29.674	20,301.4	51.036	194.392	752.988
1,012.00	39.539	22,845.5	68.977	263.369	953.524
1,014.00	68.669	34,370.5	106.876	370.246	2,158.174
1,025.00	100.000	50,000.0	922.298	1,292.544	4,567.204

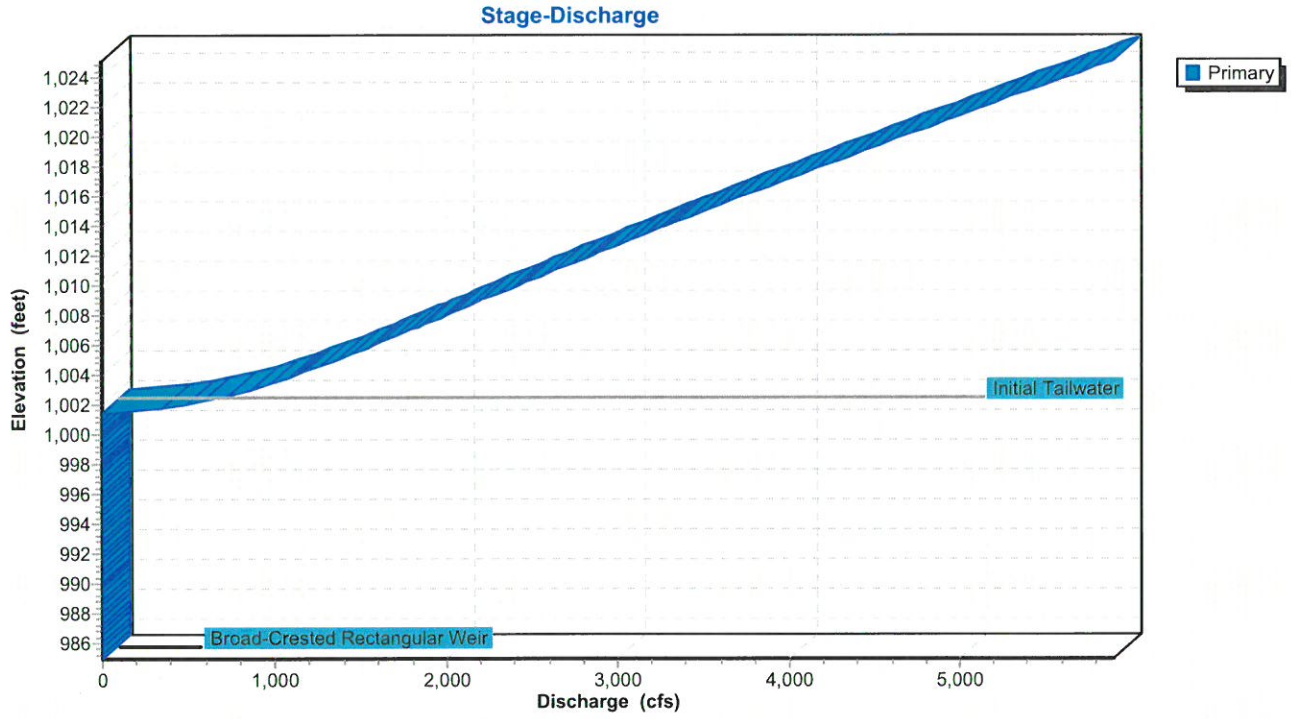
Device	Routing	Invert	Outlet Devices
#1	Primary	985.00'	**10.0' long x 50.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 20.00 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63 2.63

Primary OutFlow Max=1,839.43 cfs @ 0.00 hrs HW=1,007.21' TW=1,001.65' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 1,839.43 cfs @ 8.28 fps)

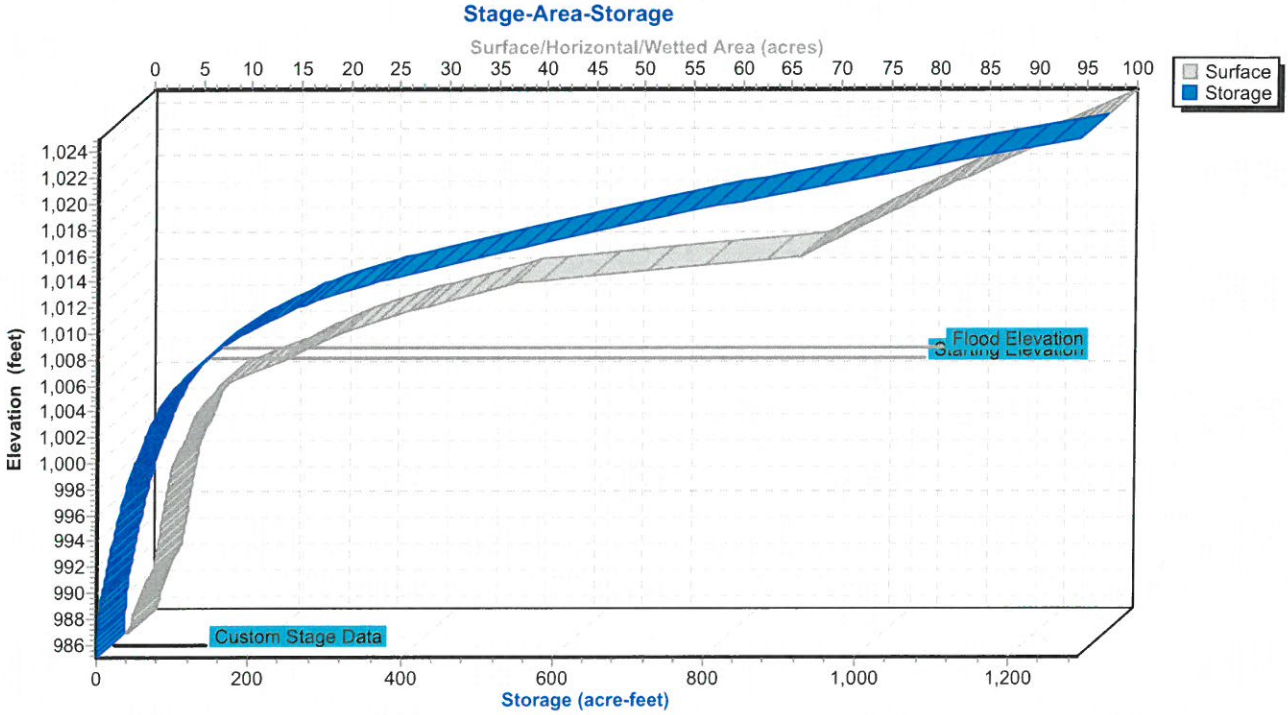
Pond 1P: Sippo Reservoir - Existing Conditions - 0.22 PMF DBA



Pond 1P: Sippo Reservoir - Existing Conditions - 0.22 PMF DBA



Pond 1P: Sippo Reservoir - Existing Conditions - 0.22 PMF DBA



Summary for Pond 16P: North Sippo Park- Lincoln Way Culvert

Inflow = 4,965.44 cfs @ 0.01 hrs, Volume= 12,501.108 af
Outflow = 3,143.00 cfs @ 47.99 hrs, Volume= 12,462.566 af, Atten= 37%, Lag= 2,878.8 min
Primary = 3,143.00 cfs @ 47.99 hrs, Volume= 12,462.566 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Starting Elev= 1,001.65' Surf.Area= 10.049 ac Storage= 122.574 af
Peak Elev= 1,005.40' @ 47.99 hrs Surf.Area= 12.104 ac Storage= 163.699 af (41.125 af above start)
Flood Elev= 1,008.00' Surf.Area= 13.465 ac Storage= 197.028 af (74.454 af above start)

Plug-Flow detention time= 37.7 min calculated for 12,339.992 af (99% of inflow)
Center-of-Mass det. time= 5.0 min (1,440.9 - 1,435.9)

Volume	Invert	Avail.Storage	Storage Description
#1	978.00'	371.368 af	**Stage Storage in Sippo Park (Irregular)** Listed below (Recalc)

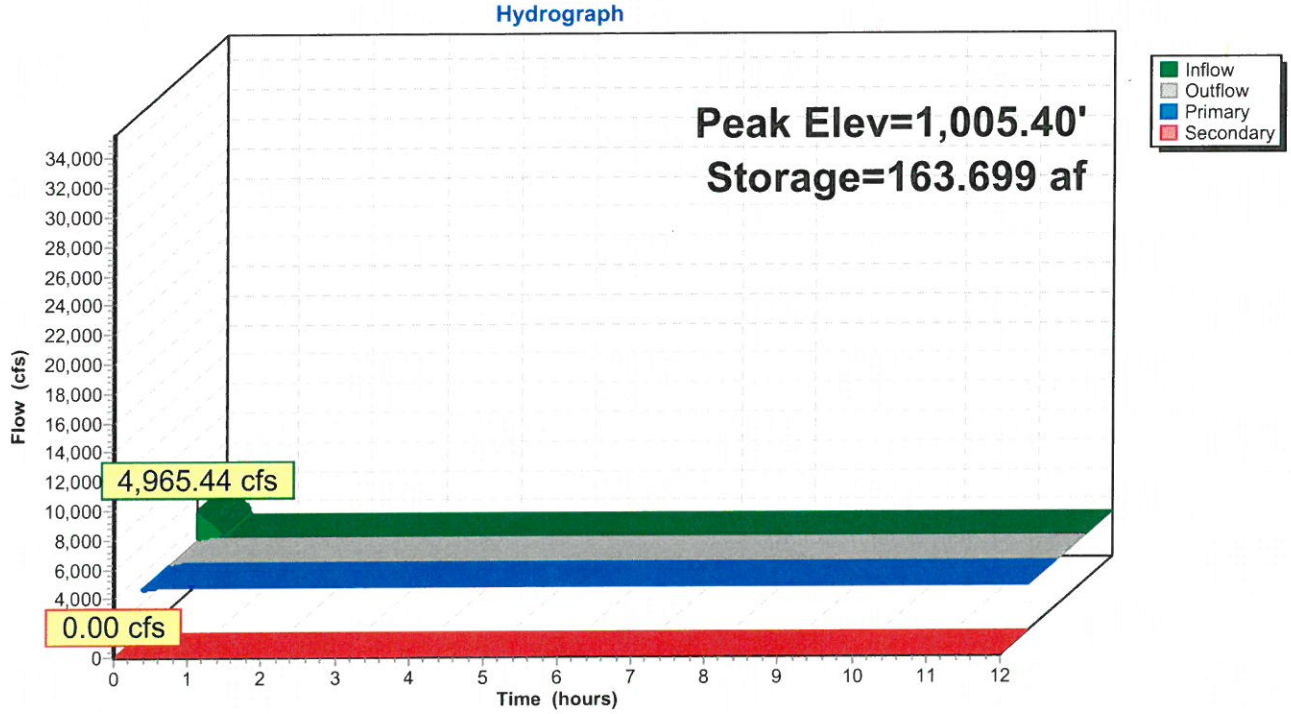
Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
978.00	0.100	200.0	0.000	0.000	0.100
981.00	0.300	500.0	0.573	0.573	0.484
982.00	0.659	1,392.9	0.468	1.041	3.572
984.00	2.018	2,470.7	2.553	3.595	11.180
986.00	3.584	3,300.7	5.528	9.122	19.932
988.00	5.007	3,247.5	8.551	17.674	20.586
990.00	6.111	3,143.9	11.100	28.773	21.805
992.00	6.773	3,217.1	12.878	41.652	22.668
994.00	7.411	3,271.9	14.179	55.831	23.334
996.00	8.110	3,253.8	15.516	71.347	23.597
998.00	8.804	3,273.8	16.909	88.256	23.878
1,000.00	9.441	3,318.6	18.241	106.497	24.439
1,002.00	10.181	3,437.0	19.617	126.114	25.908
1,004.00	11.109	3,548.6	21.283	147.398	27.341
1,006.00	12.538	3,553.4	23.633	171.030	27.516
1,008.00	13.465	3,829.8	25.997	197.028	31.248
1,010.00	14.326	4,085.3	27.787	224.814	34.947
1,012.00	15.633	4,329.5	29.949	254.764	38.706
1,014.00	17.576	4,742.6	33.190	287.954	45.555
1,016.00	20.521	5,940.5	38.059	326.013	68.935
1,018.00	24.905	6,310.6	45.355	371.368	77.223

Device	Routing	Invert	Outlet Devices
#1	Primary	978.25'	**168.0" W x 98.0" H Box Box Culvert** L= 121.8' Box, 30-75° wingwalls, rounded crown, Ke= 0.200 Inlet / Outlet Invert= 978.25' / 978.13' S= 0.0010 '/' Cc= 0.900 n= 0.015 Brickwork
#2	Secondary	1,008.00'	**Linclon Way (172), Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 2.00 4.00 6.00 8.00 10.00 Width (feet) 233.00 373.00 475.00 630.00 790.00 940.00 1,090.00

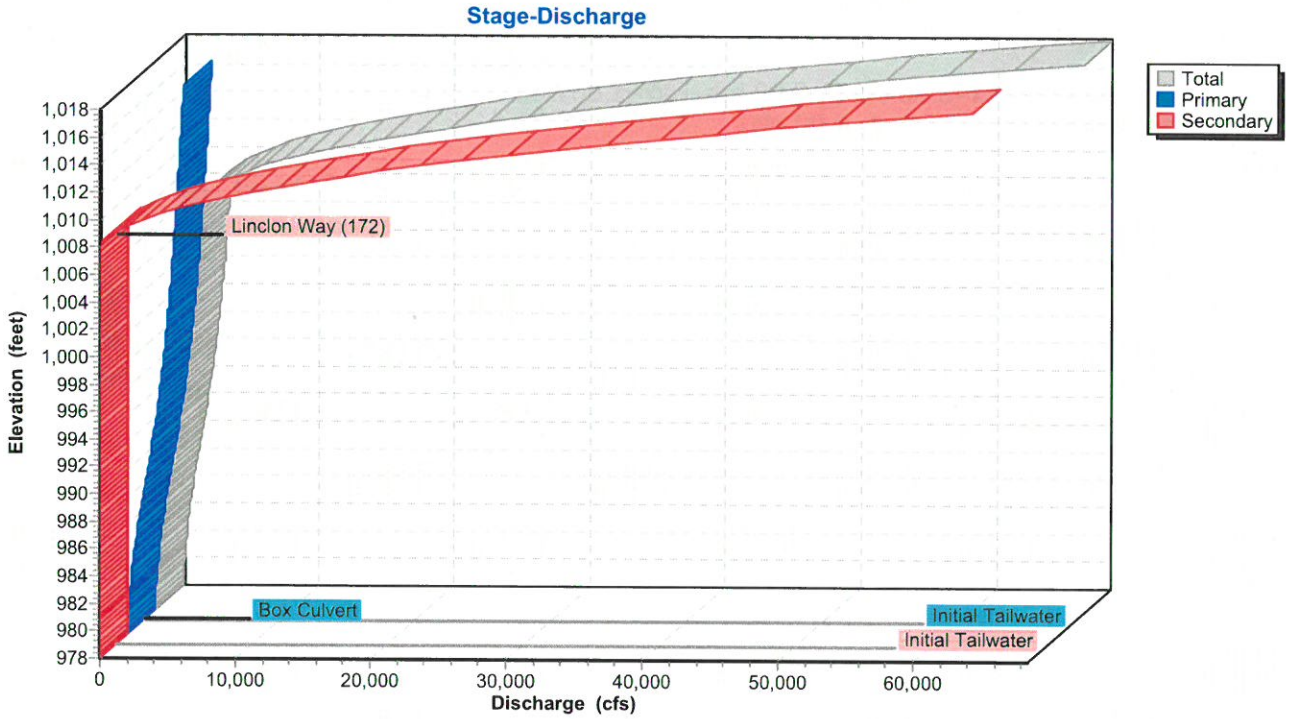
Primary OutFlow Max=3,143.00 cfs @ 47.99 hrs HW=1,005.40' TW=984.25' (Dynamic Tailwater)
└**1=Box Culvert** (Inlet Controls 3,143.00 cfs @ 27.49 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,001.65' TW=978.13' (Dynamic Tailwater)
└**2=Linclon Way (172)** (Controls 0.00 cfs)

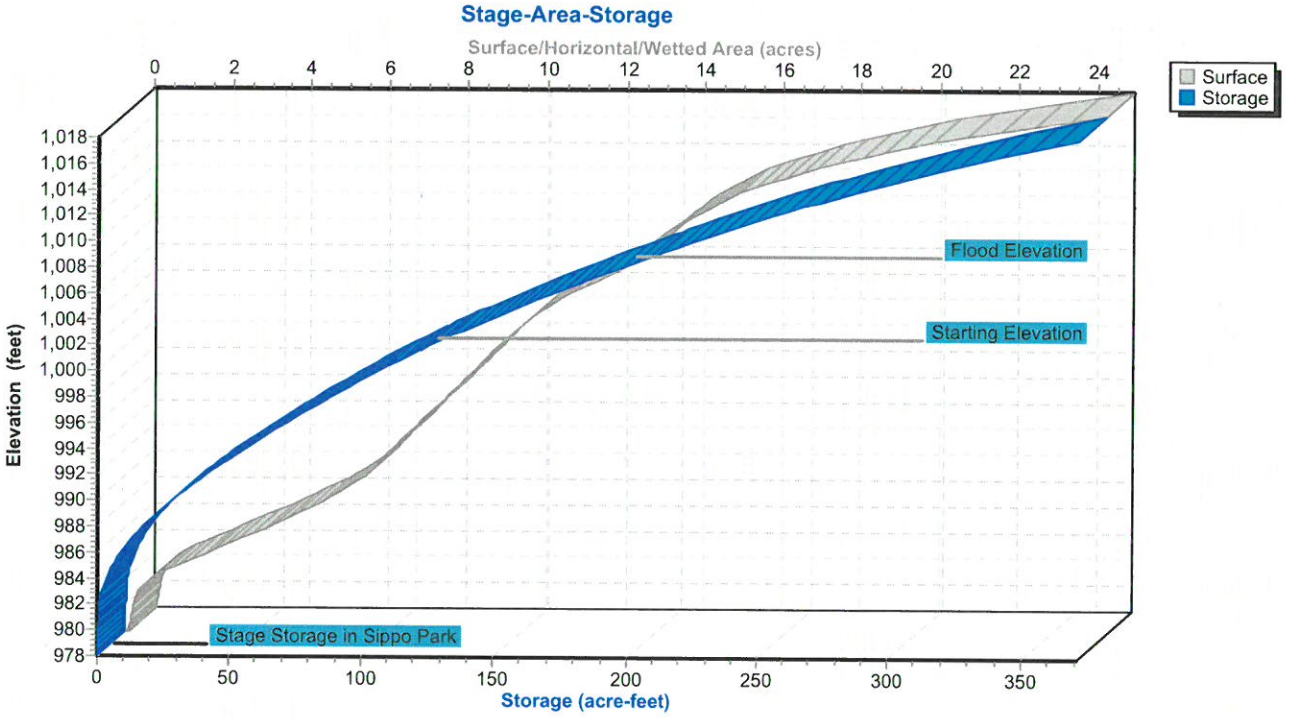
Pond 16P: North Sippo Park- Lincoln Way Culvert



Pond 16P: North Sippo Park- Lincoln Way Culvert



Pond 16P: North Sippo Park- Lincoln Way Culvert



Summary for Pond 32P: Constant inflow - 0.22 PMF

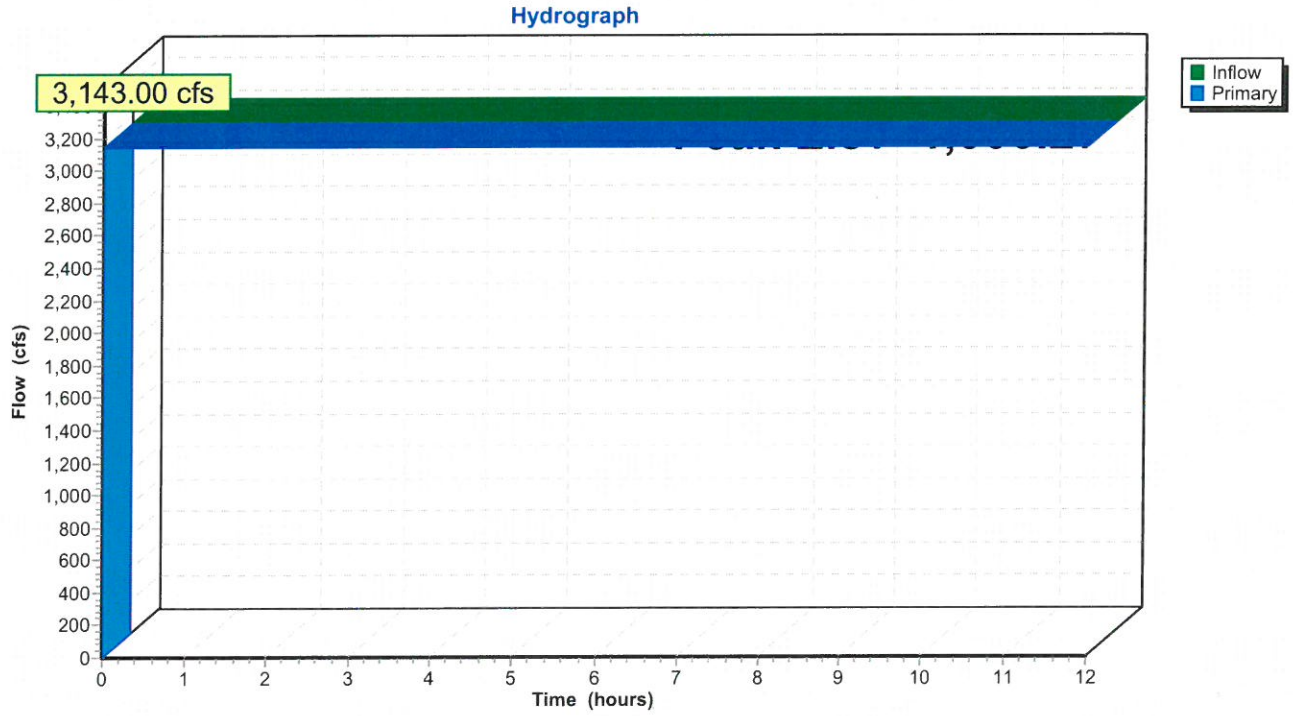
Inflow = 3,143.00 cfs @ 0.00 hrs, Volume= 12,468.099 af, Incl. 3,143.00 cfs Base Flow
Outflow = 3,143.00 cfs @ 18.41 hrs, Volume= 12,468.099 af, Atten= 0%, Lag= 1,104.6 min
Primary = 3,143.00 cfs @ 18.41 hrs, Volume= 12,468.099 af

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,006.27' @ 47.99 hrs

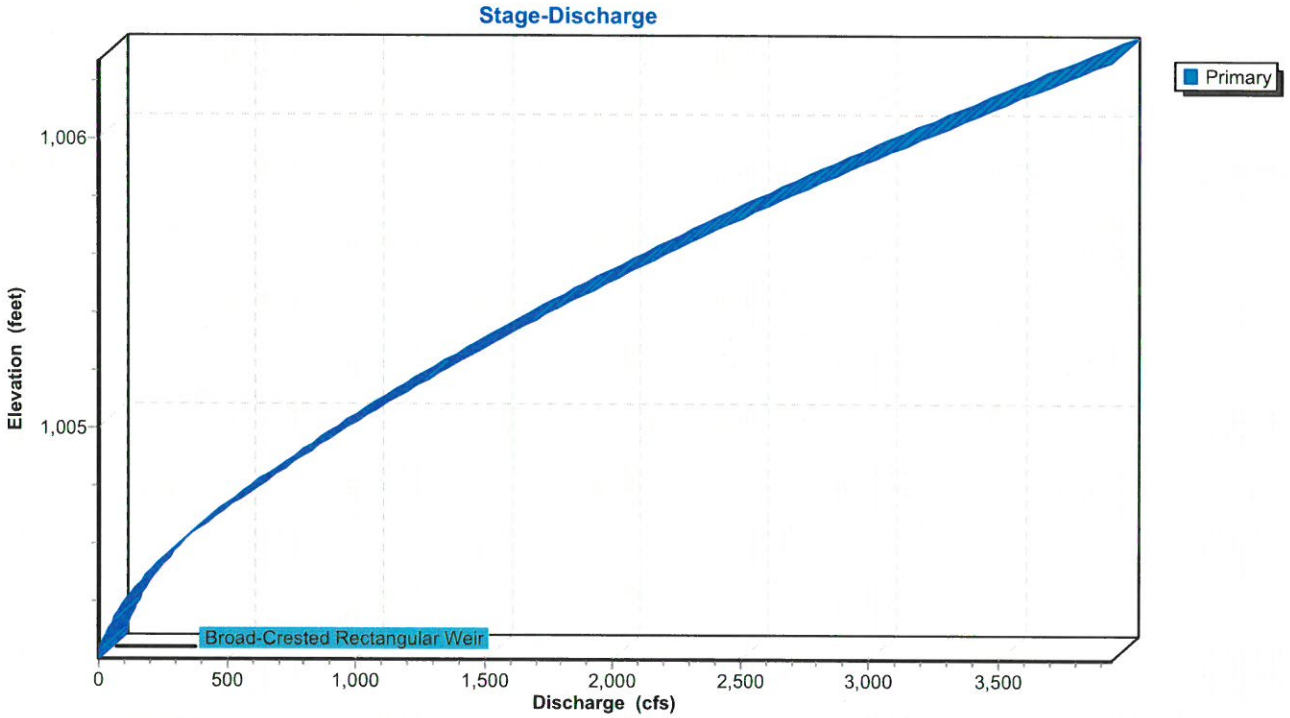
Device	Routing	Invert	Outlet Devices
#1	Primary	1,004.20'	**500.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=3,143.00 cfs @ 18.41 hrs HW=1,006.27' TW=1,005.40' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 3,143.00 cfs @ 3.04 fps)

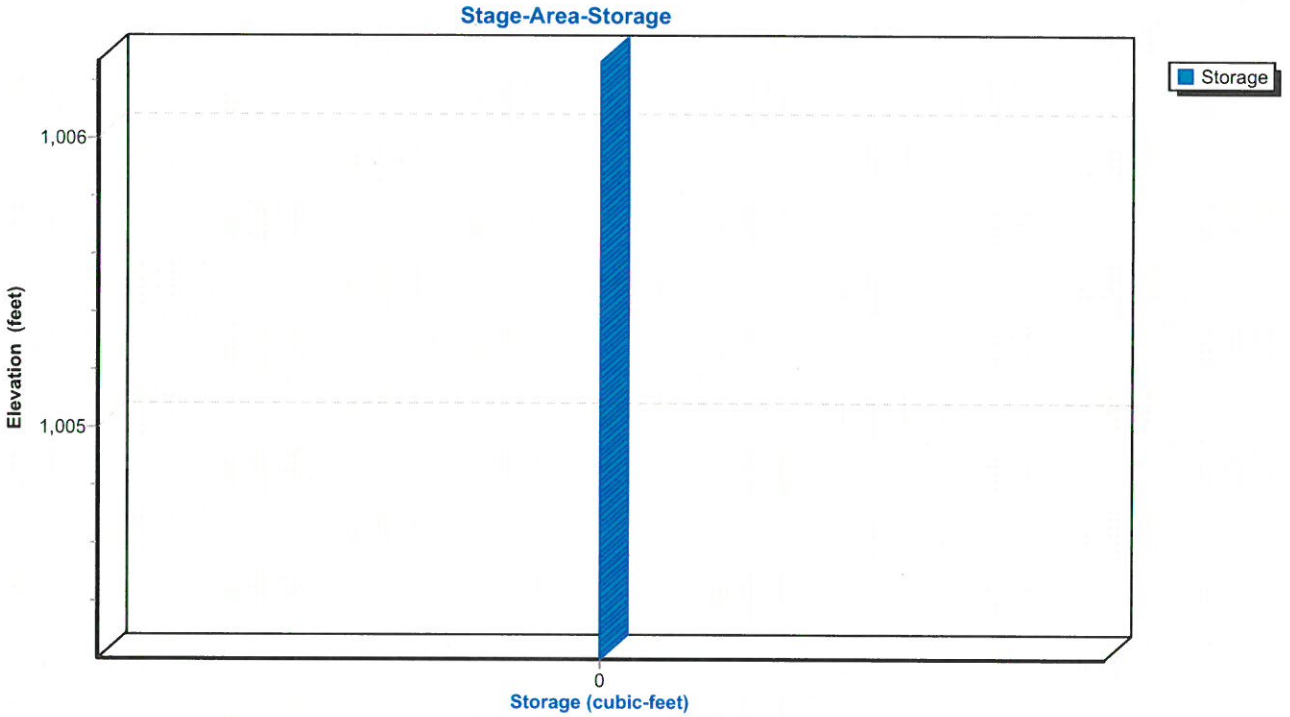
Pond 32P: Constant inflow - 0.22 PMF



Pond 32P: Constant inflow - 0.22 PMF



Pond 32P: Constant inflow - 0.22 PMF



Drainage Diagram for Existing Conditions Sippo Resevoir-URS-DBA-24PMF

Prepared by URS Corporation, Printed 10/31/2011

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.000	0	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
0.000		**TOTAL AREA**

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Fill (inches)
1	16P	978.25	978.13	121.8	0.0010	0.015	168.0	98.0	0.0

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Reach 18R: Sippo Creek Avg. Flow Depth=6.46' Max Vel=9.67 fps Inflow=3,640.00 cfs 14,410.233 af
L=450.0' S=0.0084 '/' Capacity=200,707.82 cfs Outflow=3,640.00 cfs 14,409.353 af

Pond 1P: Sippo Reservoir - Existing Peak Elev=1,007.72' Storage=137.428 af Inflow=0.00 cfs 0.000 af
Outflow=411.19 cfs 9.307 af

Pond 16P: North Sippo Park- Peak Elev=1,008.49' Storage=203.647 af Inflow=4,050.76 cfs 14,445.968 af
Primary=3,349.48 cfs 13,284.382 af Secondary=290.52 cfs 1,128.859 af Outflow=3,640.00 cfs 14,413.241 af

Pond 32P: Constant inflow - 0.24 PMF Peak Elev=1,008.60' Inflow=3,640.00 cfs 14,439.669 af
Outflow=3,640.00 cfs 14,439.669 af

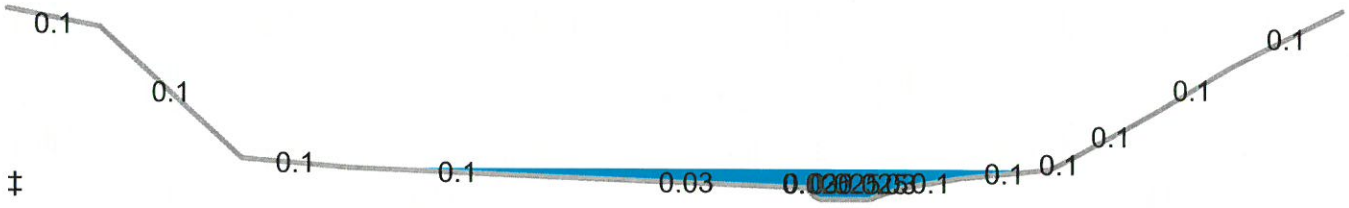
Summary for Reach 18R: Sippo Creek Channel Downstream of Lincoln Way

Inflow = 3,640.00 cfs @ 5.50 hrs, Volume= 14,410.233 af
Outflow = 3,640.00 cfs @ 6.16 hrs, Volume= 14,409.353 af, Atten= 0%, Lag= 39.8 min

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 9.67 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 9.67 fps, Avg. Travel Time= 0.8 min

Peak Storage= 169,357 cf @ 6.16 hrs
Average Depth at Peak Storage= 6.46'
Defined Flood Depth= 15.00', Capacity at Flood Depth= 28,360.41 cfs
Bank-Full Depth= 40.50', Capacity at Bank-Full= 200,707.82 cfs

Custom cross-section, Length= 450.0' Slope= 0.0084 '/' (1006 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 978.13', Outlet Invert= 974.35'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	1,012.00	0.00		
20.00	1,008.00	4.00	0.100	Heavy timber, flow below branches
51.00	980.00	32.00	0.100	Heavy timber, flow below branches
74.00	978.00	34.00	0.100	Heavy timber, flow below branches
121.00	976.00	36.00	0.100	Heavy timber, flow below branches
173.00	974.00	38.00	0.030	Short grass
175.00	972.00	40.00	0.030	Short grass
176.00	971.50	40.50	0.025	Stream, clean & straight
187.00	971.50	40.50	0.025	Stream, clean & straight
188.00	972.00	40.00	0.025	Stream, clean & straight
194.00	974.00	38.00	0.030	Short grass
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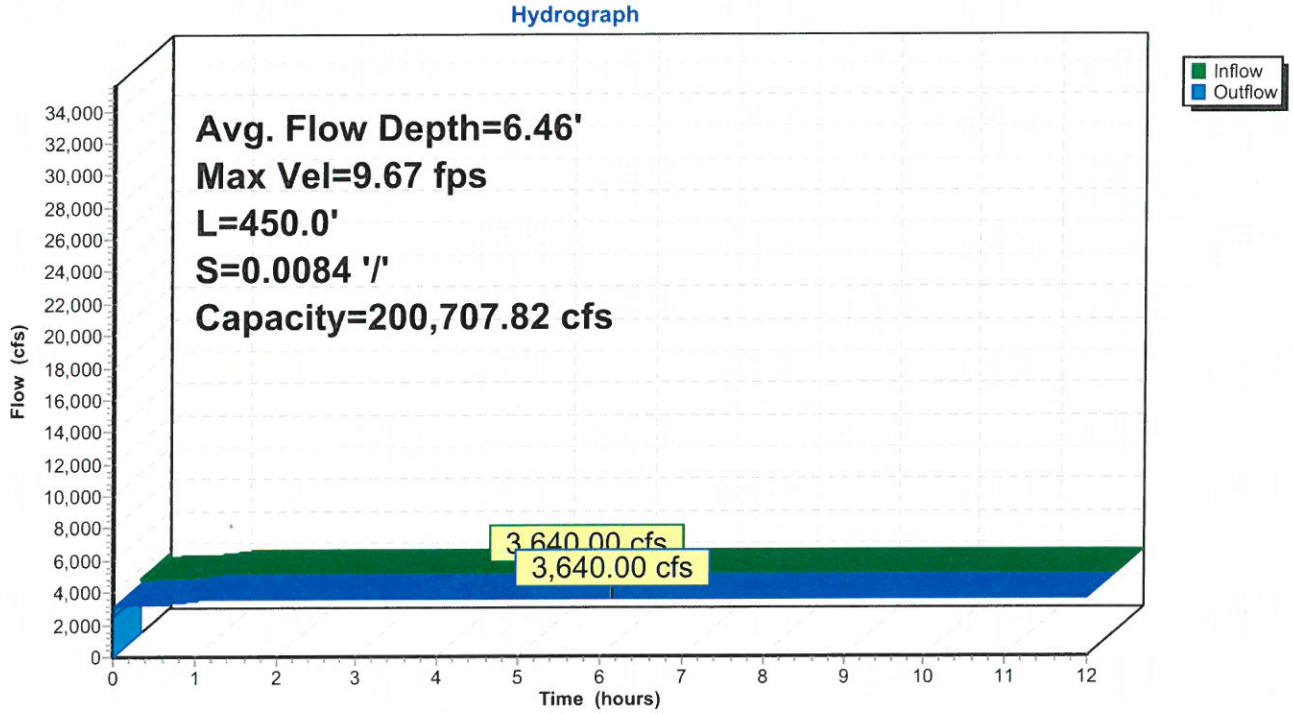
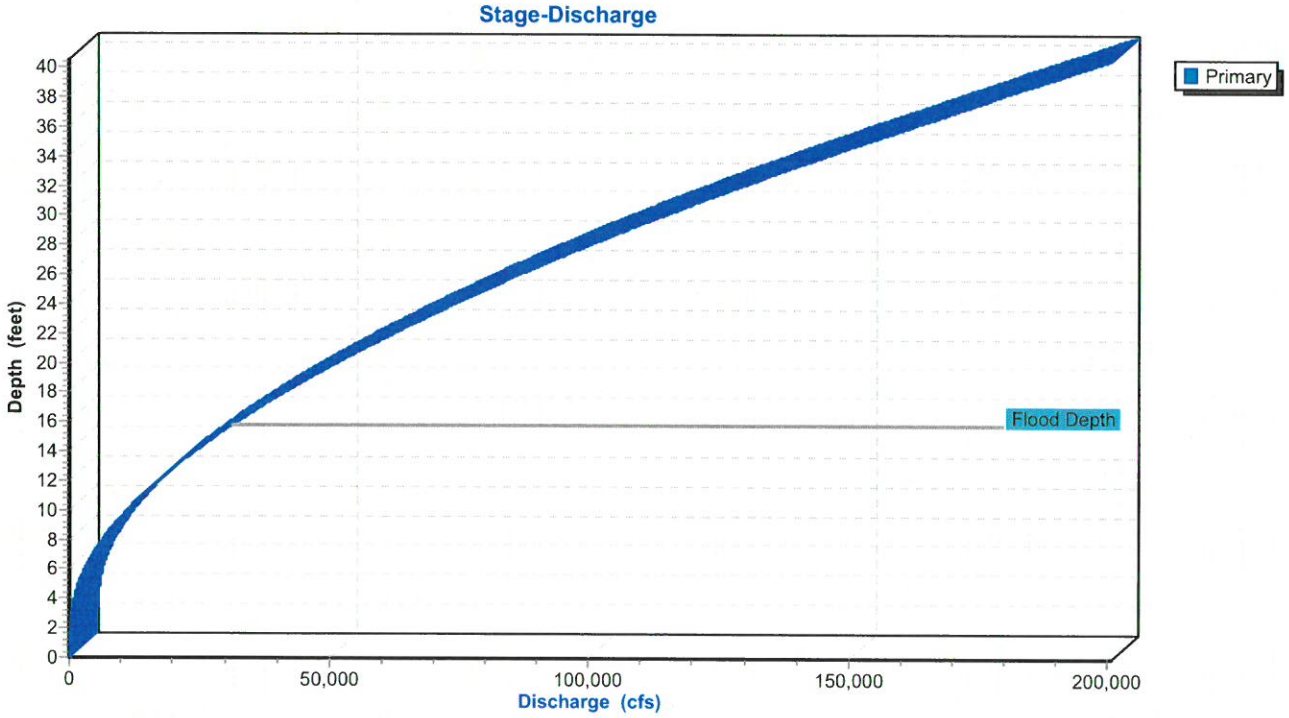
225.50	978.00	34.00	0.100	Heavy timber, flow below branches
229.50	980.00	32.00	0.100	Heavy timber, flow below branches
248.00	990.00	22.00	0.100	Heavy timber, flow below branches
265.00	1,000.00	12.00	0.100	Heavy timber, flow below branches
289.00	1,012.00	0.00	0.100	Heavy timber, flow below branches

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	11.0	0	0.00
0.50	6.0	13.2	2,700	19.29
2.50	40.0	22.4	18,000	347.53
4.50	146.0	86.6	65,701	1,300.01
6.50	382.5	153.2	172,125	3,703.14
8.50	712.5	180.8	320,625	7,536.06
18.50	2,645.4	216.7	1,190,411	44,005.23
28.50	4,866.4	251.4	2,189,893	103,800.74
36.50	6,855.0	281.2	3,084,750	166,501.22
40.50	7,955.0	310.6	3,579,750	200,707.82

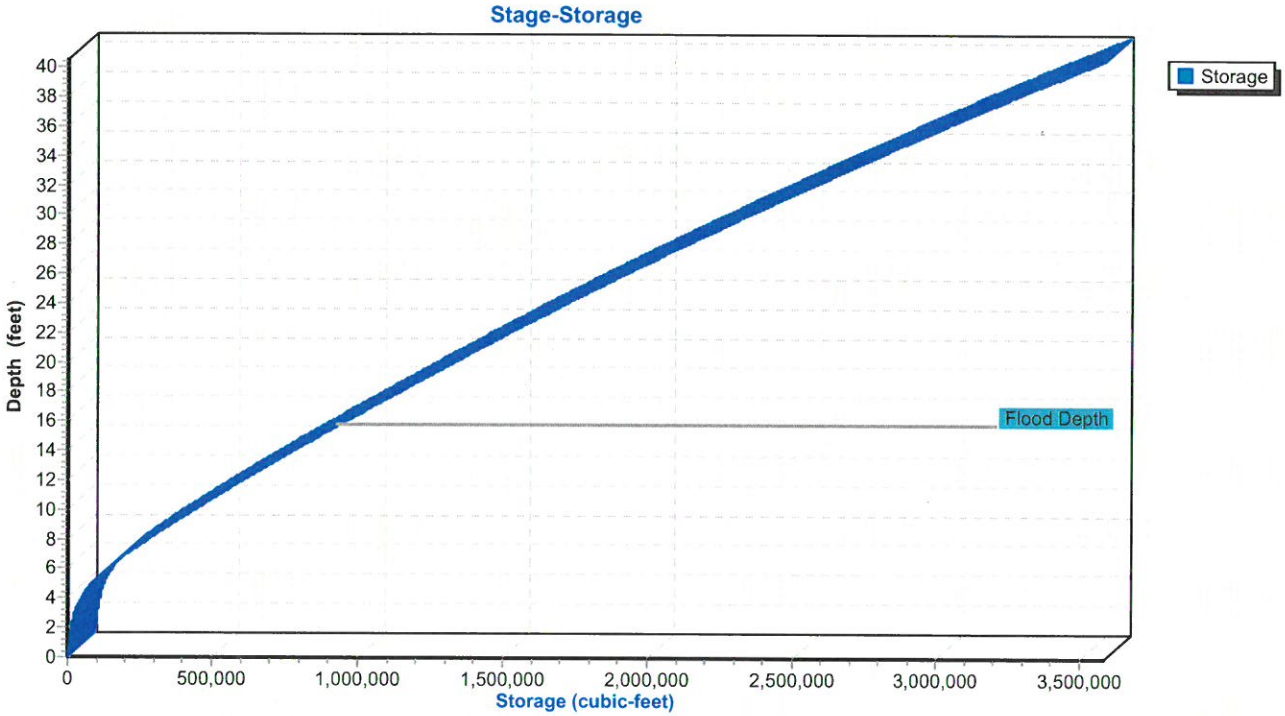
Reach 18R: Sippo Creek Channel Downstream of Lincoln Way



Reach 18R: Sippo Creek Channel Downstream of Lincoln Way



Reach 18R: Sippo Creek Channel Downstream of Lincoln Way



Summary for Pond 1P: Sippo Reservoir - Existing Conditions - 0.24 PMF DBA

Inflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Outflow	=	411.19 cfs @	0.02 hrs, Volume=	9.307 af, Atten= 0%, Lag= 1.3 min
Primary	=	411.19 cfs @	0.02 hrs, Volume=	9.307 af

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Starting Elev= 1,007.72' Surf.Area= 20.766 ac Storage= 137.428 af
Peak Elev= 1,007.72' @ 0.00 hrs Surf.Area= 20.766 ac Storage= 137.428 af
Flood Elev= 1,008.00' Surf.Area= 21.577 ac Storage= 143.356 af (5.928 af above start)

Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no inflow)

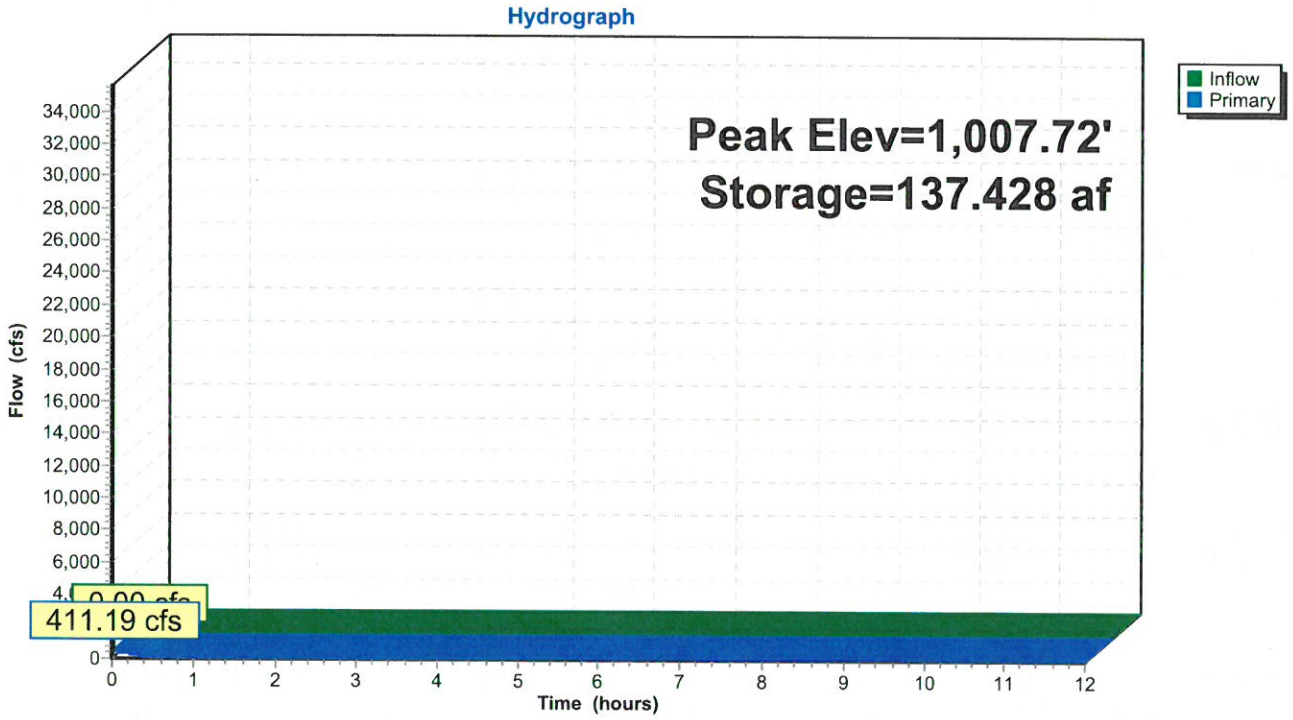
Volume	Invert	Avail.Storage	Storage Description
#1	985.00'	1,292.544 af	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
985.00	0.500	500.0	0.000	0.000	0.500
990.00	3.000	1,000.0	7.875	7.875	1.873
998.00	4.870	2,500.0	31.179	39.054	11.469
1,000.00	6.204	3,251.0	11.047	50.101	19.360
1,002.00	7.243	5,147.0	13.434	63.535	48.449
1,004.00	9.610	10,274.0	16.797	80.332	192.887
1,006.00	16.124	11,202.9	25.455	105.787	229.335
1,008.00	21.577	15,736.9	37.569	143.356	452.477
1,010.00	29.674	20,301.4	51.036	194.392	752.988
1,012.00	39.539	22,845.5	68.977	263.369	953.524
1,014.00	68.669	34,370.5	106.876	370.246	2,158.174
1,025.00	100.000	50,000.0	922.298	1,292.544	4,567.204

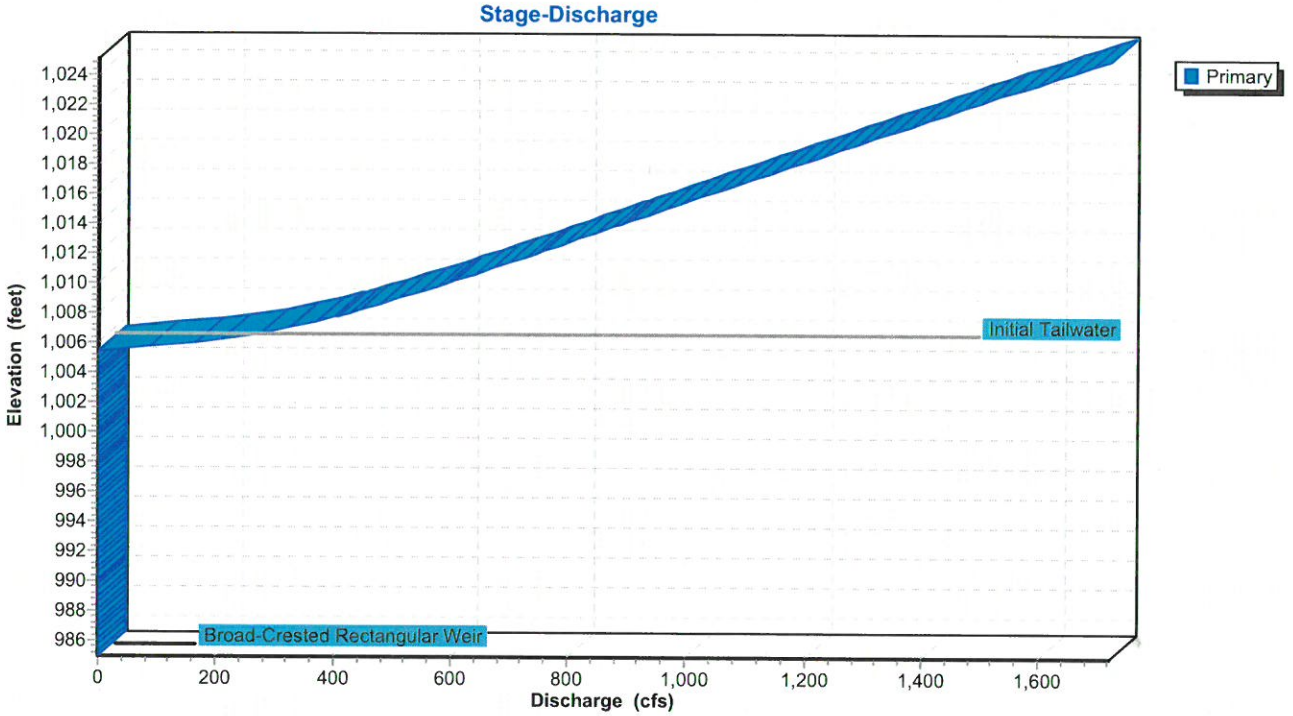
Device	Routing	Invert	Outlet Devices
#1	Primary	985.00'	**3.1' long x 50.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 20.00 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63 2.63

Primary OutFlow Max=405.88 cfs @ 0.02 hrs HW=1,007.68' TW=1,005.61' (Dynamic Tailwater)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 405.88 cfs @ 5.77 fps)

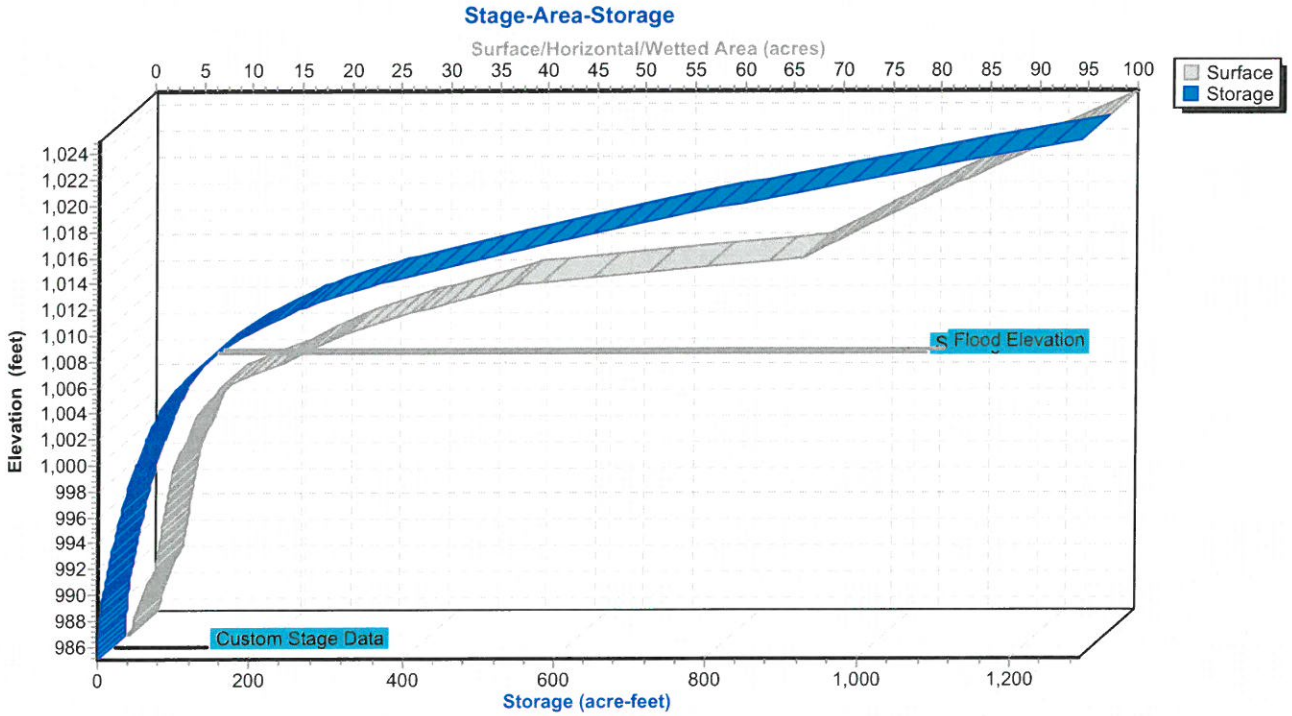
Pond 1P: Sippo Reservoir - Existing Conditions - 0.24 PMF DBA



Pond 1P: Sippo Reservoir - Existing Conditions - 0.24 PMF DBA



Pond 1P: Sippo Reservoir - Existing Conditions - 0.24 PMF DBA



Summary for Pond 16P: North Sippo Park- Lincoln Way Culvert

Inflow = 4,050.76 cfs @ 0.02 hrs, Volume= 14,445.968 af
Outflow = 3,640.00 cfs @ 5.50 hrs, Volume= 14,413.241 af, Atten= 10%, Lag= 328.5 min
Primary = 3,349.48 cfs @ 5.50 hrs, Volume= 13,284.382 af
Secondary = 290.52 cfs @ 5.50 hrs, Volume= 1,128.859 af

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Starting Elev= 1,005.75' Surf.Area= 12.355 ac Storage= 167.919 af
Peak Elev= 1,008.49' @ 5.50 hrs Surf.Area= 13.673 ac Storage= 203.647 af (35.729 af above start)
Flood Elev= 1,008.00' Surf.Area= 13.465 ac Storage= 197.028 af (29.109 af above start)

Plug-Flow detention time= 40.6 min calculated for 14,245.323 af (99% of inflow)
Center-of-Mass det. time= 3.8 min (1,442.9 - 1,439.1)

Volume	Invert	Avail.Storage	Storage Description
#1	978.00'	371.368 af	**Stage Storage in Sippo Park (Irregular)** Listed below (Recalc)

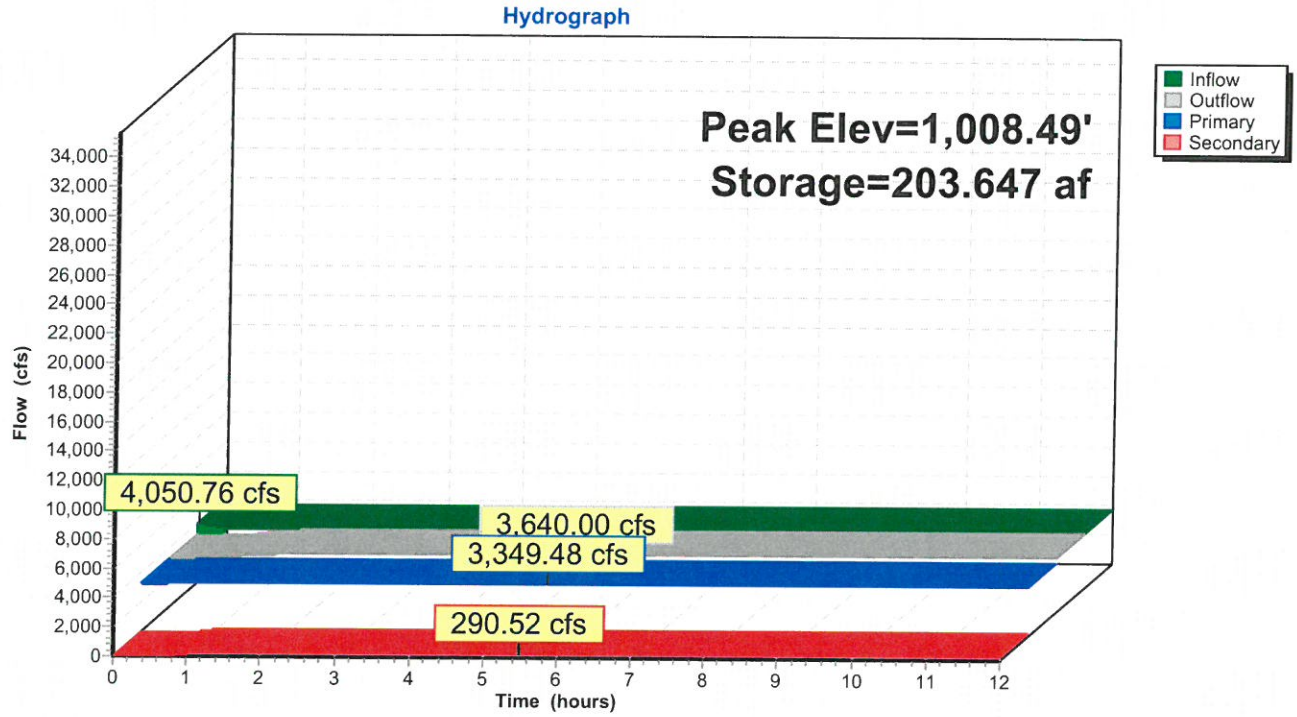
Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
978.00	0.100	200.0	0.000	0.000	0.100
981.00	0.300	500.0	0.573	0.573	0.484
982.00	0.659	1,392.9	0.468	1.041	3.572
984.00	2.018	2,470.7	2.553	3.595	11.180
986.00	3.584	3,300.7	5.528	9.122	19.932
988.00	5.007	3,247.5	8.551	17.674	20.586
990.00	6.111	3,143.9	11.100	28.773	21.805
992.00	6.773	3,217.1	12.878	41.652	22.668
994.00	7.411	3,271.9	14.179	55.831	23.334
996.00	8.110	3,253.8	15.516	71.347	23.597
998.00	8.804	3,273.8	16.909	88.256	23.878
1,000.00	9.441	3,318.6	18.241	106.497	24.439
1,002.00	10.181	3,437.0	19.617	126.114	25.908
1,004.00	11.109	3,548.6	21.283	147.398	27.341
1,006.00	12.538	3,553.4	23.633	171.030	27.516
1,008.00	13.465	3,829.8	25.997	197.028	31.248
1,010.00	14.326	4,085.3	27.787	224.814	34.947
1,012.00	15.633	4,329.5	29.949	254.764	38.706
1,014.00	17.576	4,742.6	33.190	287.954	45.555
1,016.00	20.521	5,940.5	38.059	326.013	68.935
1,018.00	24.905	6,310.6	45.355	371.368	77.223

Device	Routing	Invert	Outlet Devices
#1	Primary	978.25'	**168.0" W x 98.0" H Box Box Culvert** L= 121.8' Box, 30-75° wingwalls, rounded crown, Ke= 0.200 Inlet / Outlet Invert= 978.25' / 978.13' S= 0.0010 '/' Cc= 0.900 n= 0.015 Brickwork
#2	Secondary	1,008.00'	**Linclon Way (172), Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 2.00 4.00 6.00 8.00 10.00 Width (feet) 233.00 373.00 475.00 630.00 790.00 940.00 1,090.00

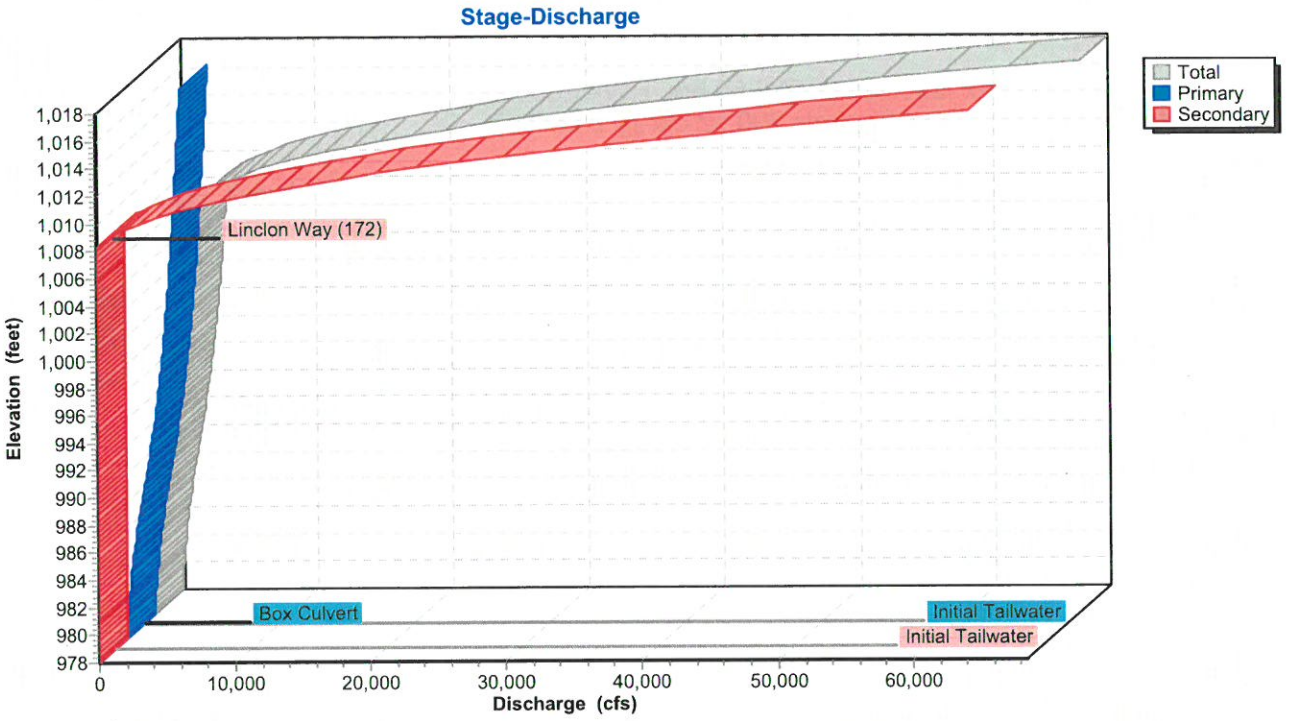
Primary OutFlow Max=3,349.48 cfs @ 5.50 hrs HW=1,008.49' TW=984.59' (Dynamic Tailwater)
↑—**1=Box Culvert** (Inlet Controls 3,349.48 cfs @ 29.30 fps)

Secondary OutFlow Max=290.52 cfs @ 5.50 hrs HW=1,008.49' TW=984.59' (Dynamic Tailwater)
↑—**2=Linclon Way (172)** (Weir Controls 290.52 cfs @ 2.23 fps)

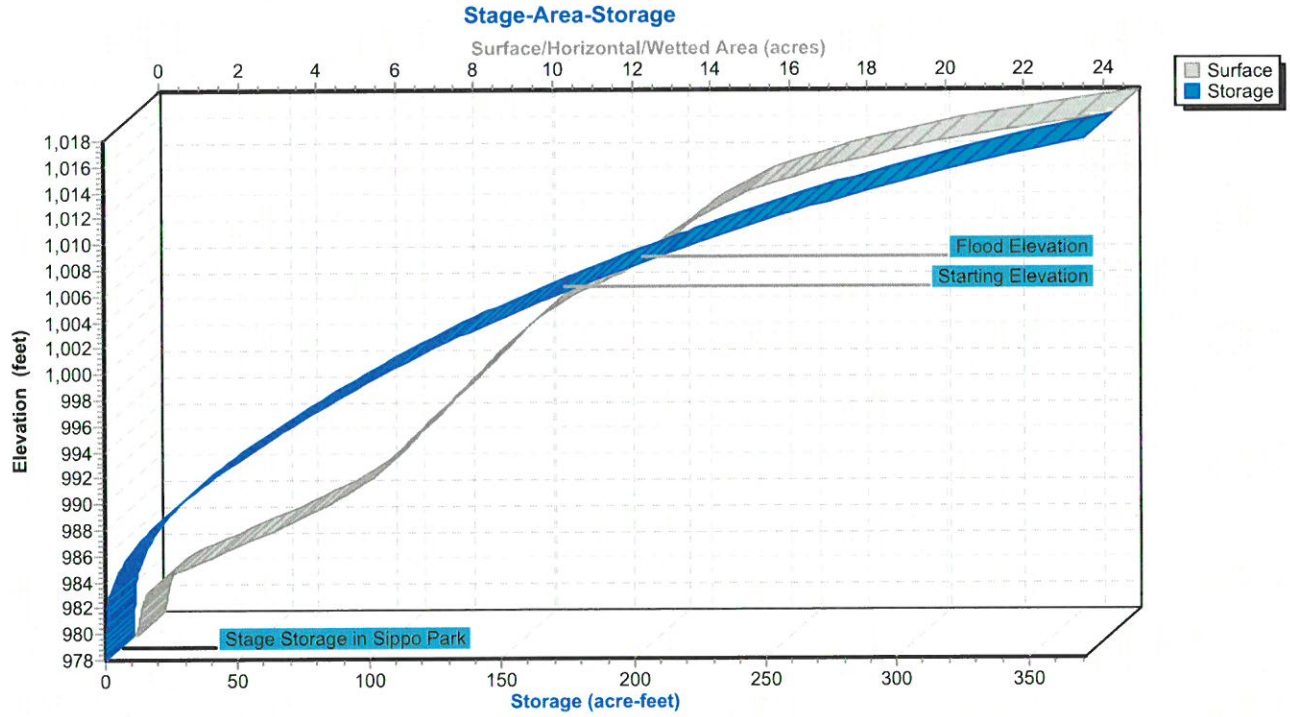
Pond 16P: North Sippo Park- Lincoln Way Culvert



Pond 16P: North Sippo Park- Lincoln Way Culvert



Pond 16P: North Sippo Park- Lincoln Way Culvert



Summary for Pond 32P: Constant inflow - 0.24 PMF

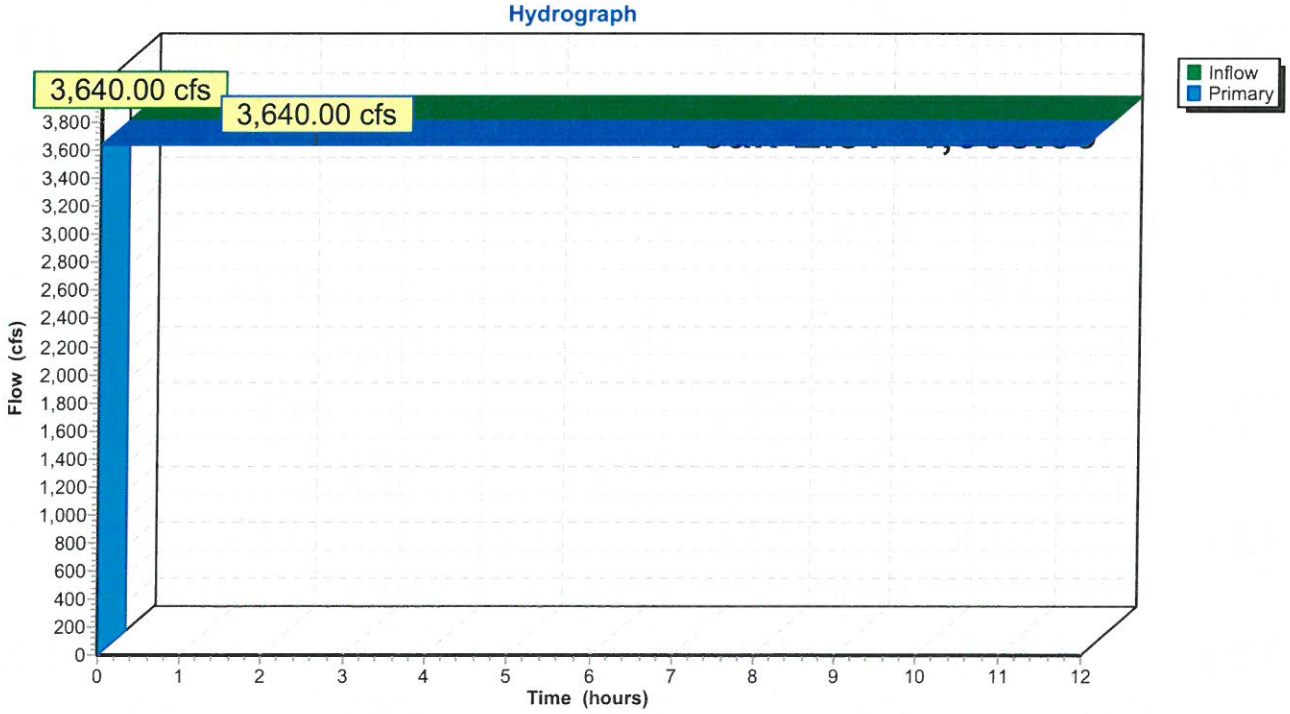
Inflow = 3,640.00 cfs @ 0.00 hrs, Volume= 14,439.669 af, Incl. 3,640.00 cfs Base Flow
Outflow = 3,640.00 cfs @ 2.63 hrs, Volume= 14,439.669 af, Atten= 0%, Lag= 157.6 min
Primary = 3,640.00 cfs @ 2.63 hrs, Volume= 14,439.669 af

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,008.60' @ 5.48 hrs

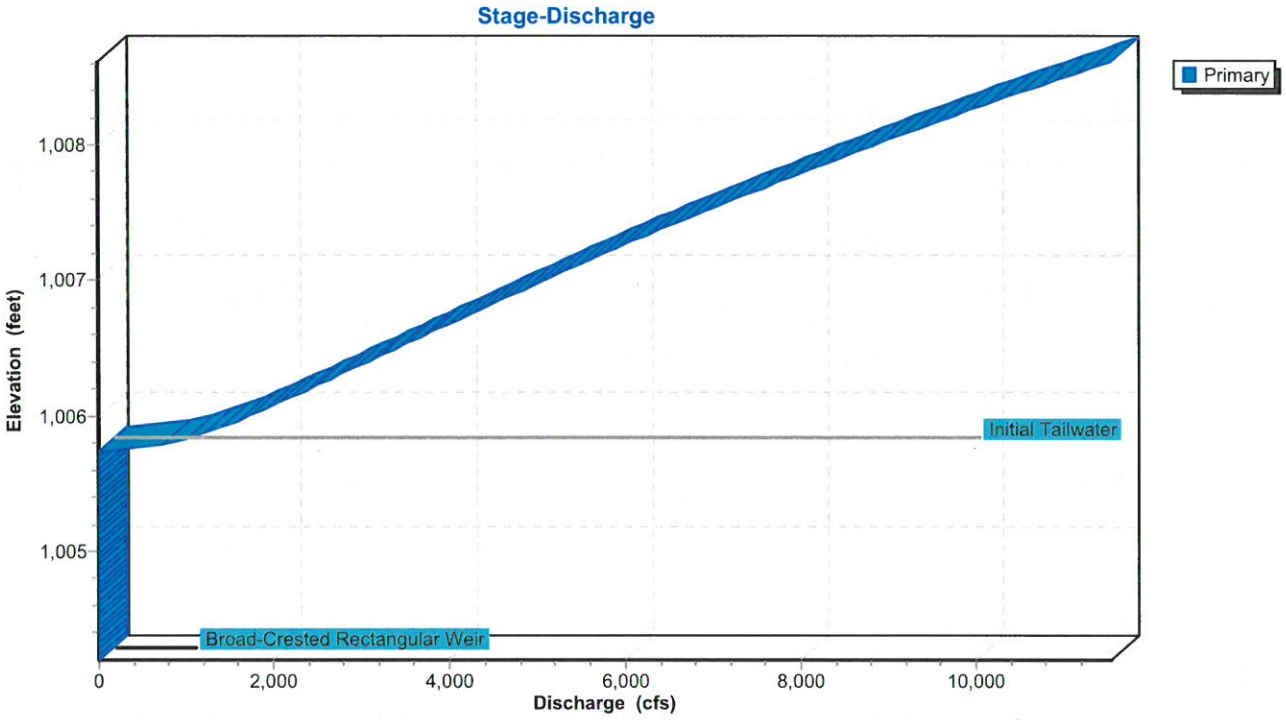
Device	Routing	Invert	Outlet Devices
#1	Primary	1,004.20'	**500.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=3,640.00 cfs @ 2.63 hrs HW=1,008.60' TW=1,008.49' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Weir Controls 3,640.00 cfs @ 1.65 fps)

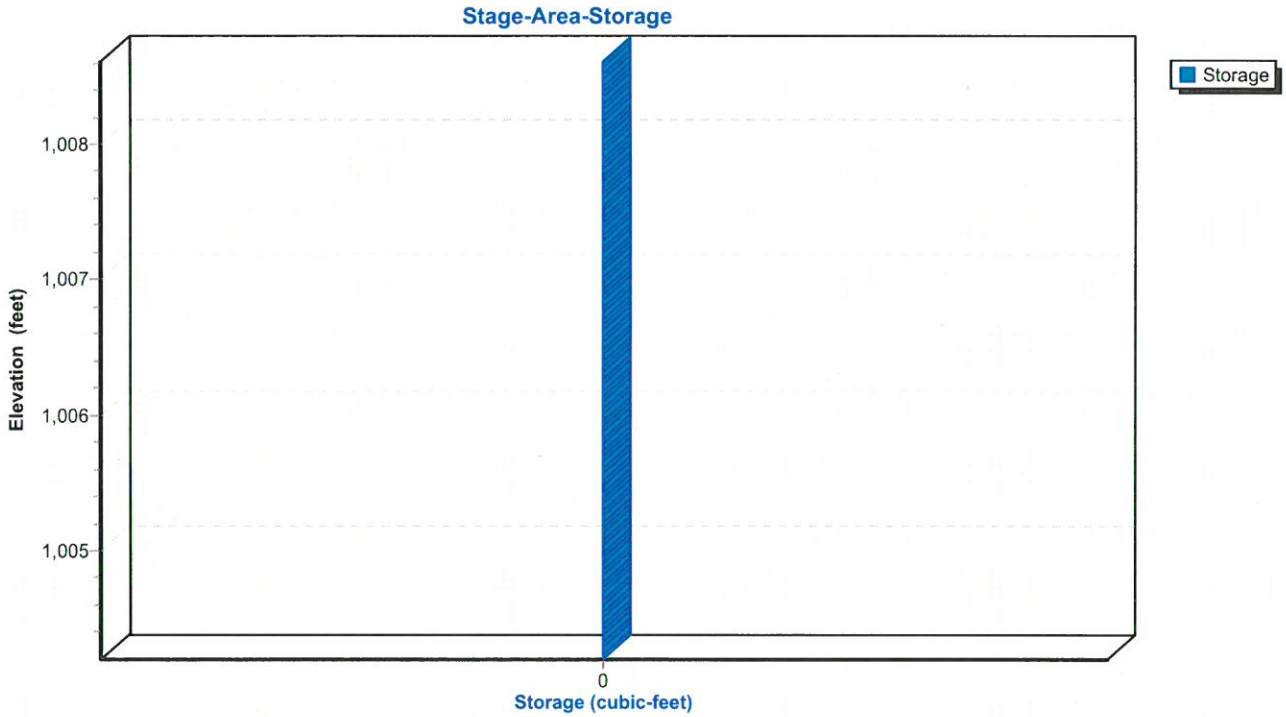
Pond 32P: Constant inflow - 0.24 PMF

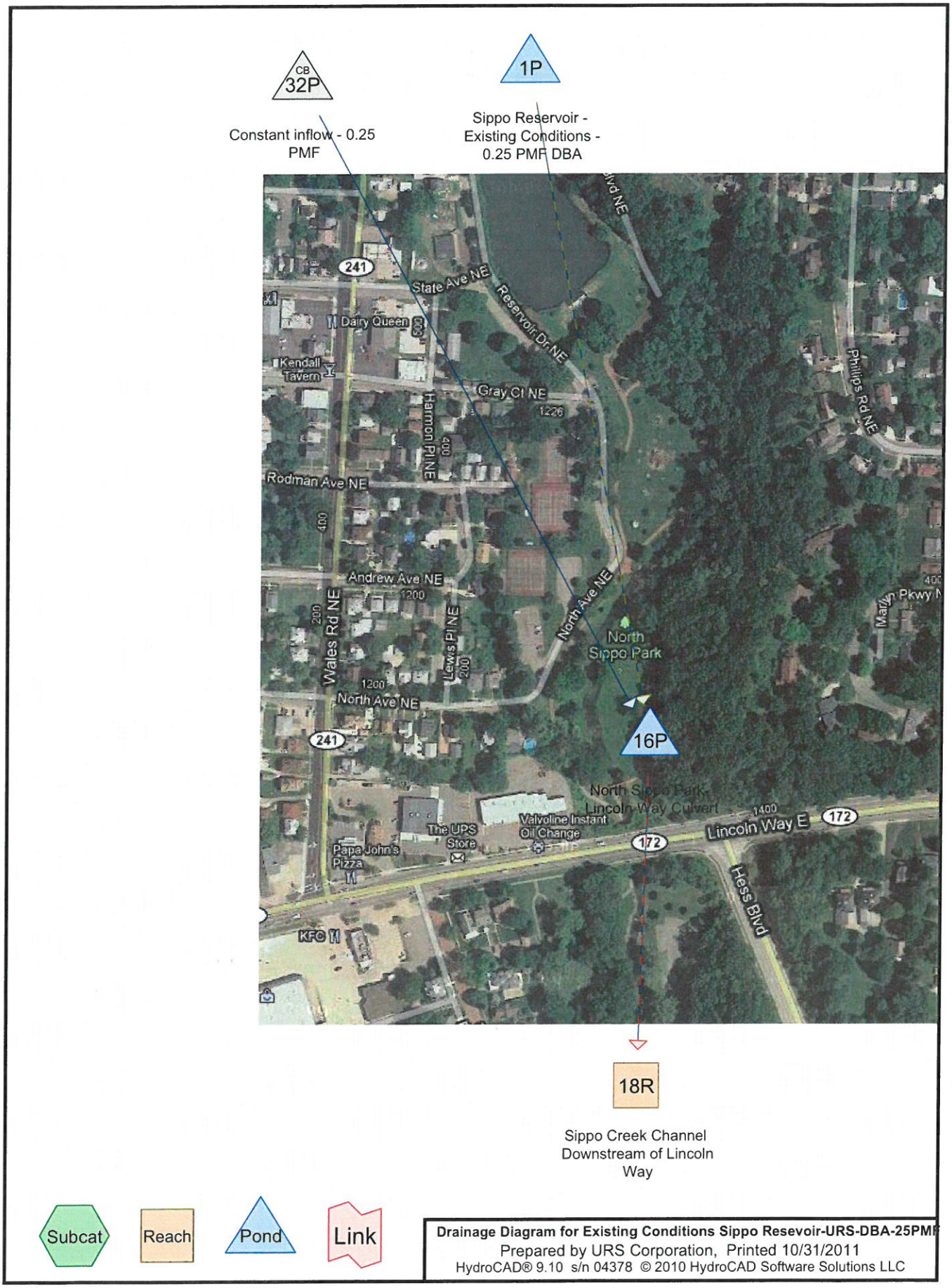


Pond 32P: Constant inflow - 0.24 PMF



Pond 32P: Constant inflow - 0.24 PMF




CB
32P
Constant inflow - 0.25 PMF
1P
Sippo Reservoir - Existing Conditions - 0.25 PMF DBA
241
State Ave NE
Reservoir Dr NE
Dairy Queen
Kendall Tavern
Gray Ct NE
1226
Harmon Pl NE
400
Rodman Ave NE
400
Andrew Ave NE
1200
Wales Rd NE
200
Lewis Pl NE
200
North Ave NE
1200
North Sippo Park
16P
241
North Sippo Park-Lincoln Way Culvert
1400
Valvoline Instant Oil Change
The UPS Store
Papa John's Pizza
172
Lincoln Way E
172
Hess Blvd
KFC
Phillips Rd NE
18R
Sippo Creek Channel Downstream of Lincoln Way
Subcat
Reach
Pond
Link
Drainage Diagram for Existing Conditions Sippo Resevoir-URS-DBA-25PMF
Prepared by URS Corporation, Printed 10/31/2011
HydroCAD® 9.10 s/n 04378 © 2010 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.000	0	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
0.000		**TOTAL AREA**

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Fill (inches)
1	16P	978.25	978.13	121.8	0.0010	0.015	168.0	98.0	0.0

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Reach 18R: Sippo Creek Avg. Flow Depth=6.61' Max Vel=9.72 fps Inflow=3,881.00 cfs 15,376.275 af
L=450.0' S=0.0084 '/' Capacity=200,707.82 cfs Outflow=3,881.00 cfs 15,375.356 af

Pond 1P: Sippo Reservoir - Existing Peak Elev=1,008.28' Storage=149.544 af Inflow=0.00 cfs 0.000 af
Outflow=118.59 cfs 1.999 af

Pond 16P: North Sippo Park- Peak Elev=1,008.70' Storage=206.588 af Inflow=3,998.99 cfs 15,394.494 af
Primary=3,438.01 cfs 13,315.636 af Secondary=524.77 cfs 2,063.846 af Outflow=3,881.00 cfs 15,379.482 af

Pond 32P: Constant inflow - 0.25 PMF Peak Elev=1,008.82' Inflow=3,881.00 cfs 15,395.702 af
Outflow=3,881.00 cfs 15,395.702 af

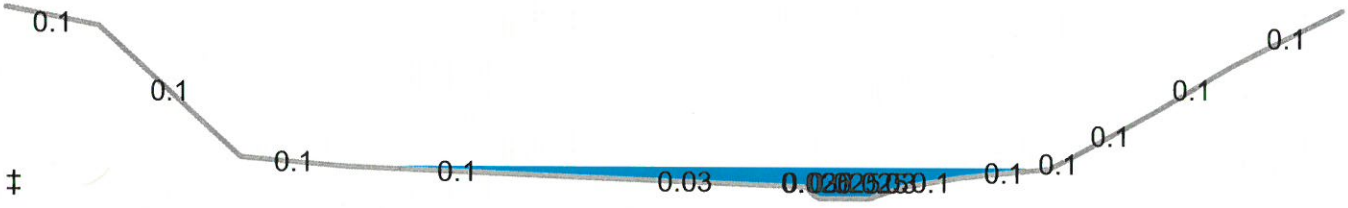
Summary for Reach 18R: Sippo Creek Channel Downstream of Lincoln Way

Inflow = 3,881.00 cfs @ 4.06 hrs, Volume= 15,376.275 af
Outflow = 3,881.00 cfs @ 5.93 hrs, Volume= 15,375.356 af, Atten= 0%, Lag= 112.2 min

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 9.72 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 9.72 fps, Avg. Travel Time= 0.8 min

Peak Storage= 179,735 cf @ 5.93 hrs
Average Depth at Peak Storage= 6.61'
Defined Flood Depth= 15.00', Capacity at Flood Depth= 28,360.41 cfs
Bank-Full Depth= 40.50', Capacity at Bank-Full= 200,707.82 cfs

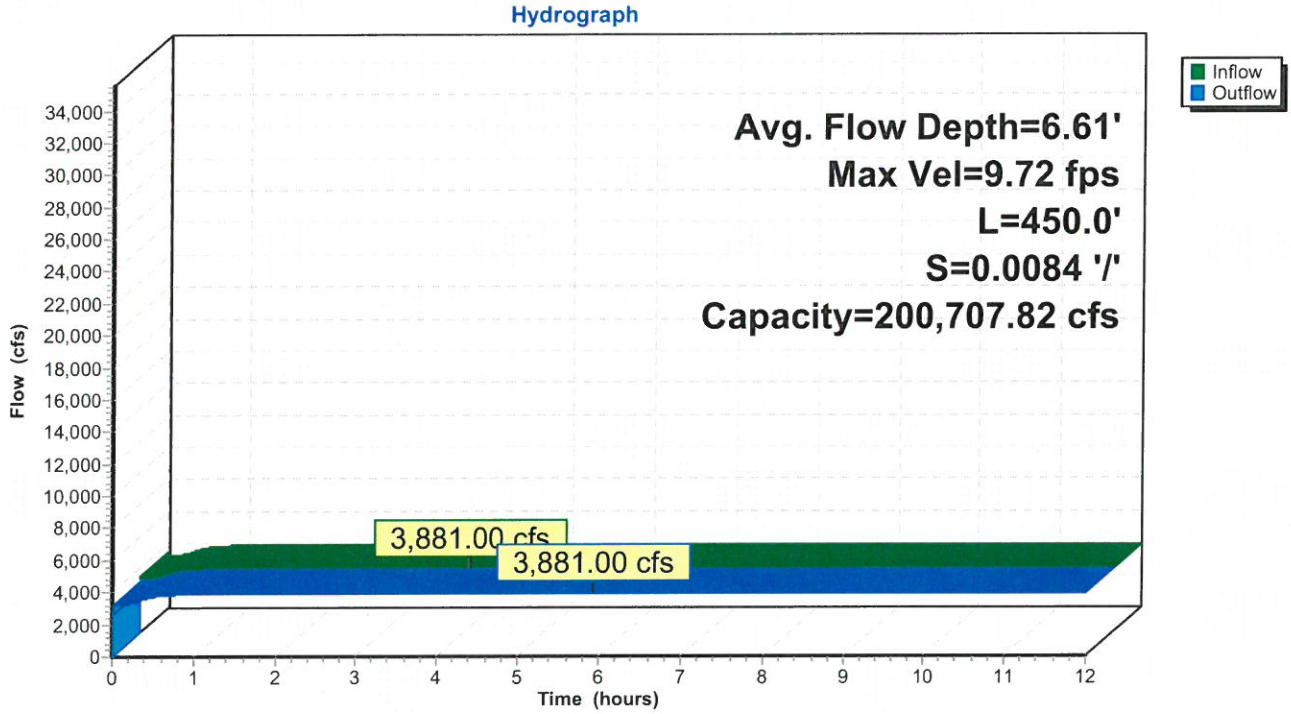
Custom cross-section, Length= 450.0' Slope= 0.0084 '/' (1006 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 978.13', Outlet Invert= 974.35'



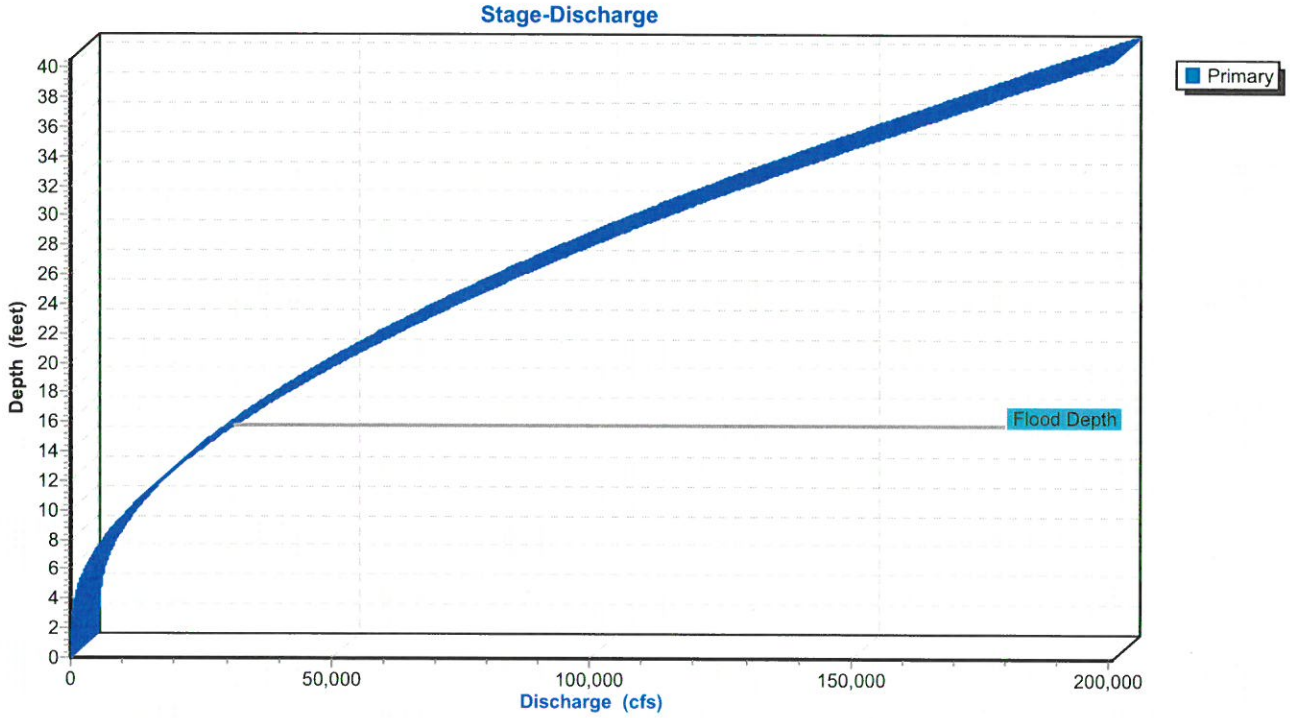
Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	1,012.00	0.00		
20.00	1,008.00	4.00	0.100	Heavy timber, flow below branches
51.00	980.00	32.00	0.100	Heavy timber, flow below branches
74.00	978.00	34.00	0.100	Heavy timber, flow below branches
121.00	976.00	36.00	0.100	Heavy timber, flow below branches
173.00	974.00	38.00	0.030	Short grass
175.00	972.00	40.00	0.030	Short grass
176.00	971.50	40.50	0.025	Stream, clean & straight
187.00	971.50	40.50	0.025	Stream, clean & straight
188.00	972.00	40.00	0.025	Stream, clean & straight
194.00	974.00	38.00	0.030	Short grass
206.00	976.00	36.00	0.100	Heavy timber, flow below branches
225.50	978.00	34.00	0.100	Heavy timber, flow below branches
229.50	980.00	32.00	0.100	Heavy timber, flow below branches
248.00	990.00	22.00	0.100	Heavy timber, flow below branches
265.00	1,000.00	12.00	0.100	Heavy timber, flow below branches
289.00	1,012.00	0.00	0.100	Heavy timber, flow below branches

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	11.0	0	0.00
0.50	6.0	13.2	2,700	19.29
2.50	40.0	22.4	18,000	347.53
4.50	146.0	86.6	65,701	1,300.01
6.50	382.5	153.2	172,125	3,703.14
8.50	712.5	180.8	320,625	7,536.06
18.50	2,645.4	216.7	1,190,411	44,005.23
28.50	4,866.4	251.4	2,189,893	103,800.74
36.50	6,855.0	281.2	3,084,750	166,501.22
40.50	7,955.0	310.6	3,579,750	200,707.82

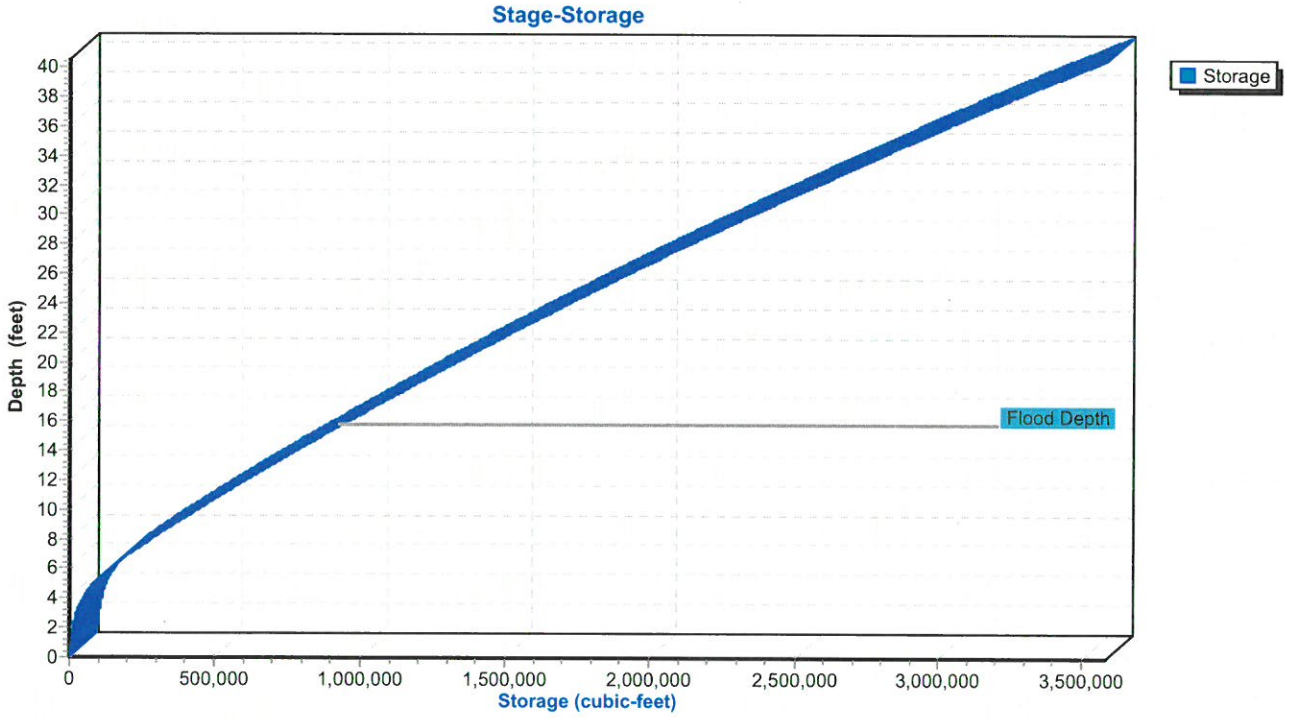
Reach 18R: Sippo Creek Channel Downstream of Lincoln Way



Reach 18R: Sippo Creek Channel Downstream of Lincoln Way



Reach 18R: Sippo Creek Channel Downstream of Lincoln Way



Summary for Pond 1P: Sippo Reservoir - Existing Conditions - 0.25 PMF DBA

Inflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Outflow	=	118.59 cfs @	0.02 hrs, Volume=	1.999 af, Atten= 0%, Lag= 1.4 min
Primary	=	118.59 cfs @	0.02 hrs, Volume=	1.999 af

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Starting Elev= 1,008.28' Surf.Area= 22.633 ac Storage= 149.544 af
Peak Elev= 1,008.28' @ 0.00 hrs Surf.Area= 22.633 ac Storage= 149.544 af
Flood Elev= 1,008.00' Surf.Area= 21.577 ac Storage= 143.356 af

Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no inflow)

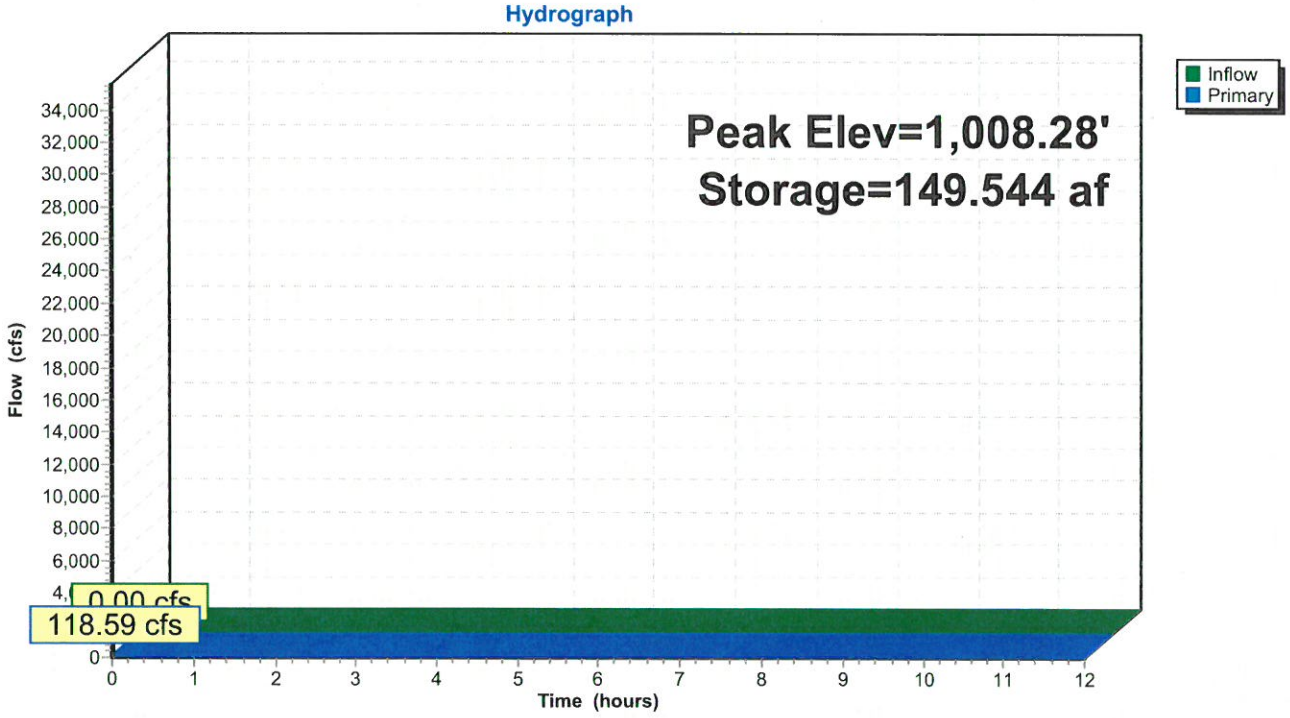
Volume	Invert	Avail.Storage	Storage Description
#1	985.00'	1,292.544 af	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
985.00	0.500	500.0	0.000	0.000	0.500
990.00	3.000	1,000.0	7.875	7.875	1.873
998.00	4.870	2,500.0	31.179	39.054	11.469
1,000.00	6.204	3,251.0	11.047	50.101	19.360
1,002.00	7.243	5,147.0	13.434	63.535	48.449
1,004.00	9.610	10,274.0	16.797	80.332	192.887
1,006.00	16.124	11,202.9	25.455	105.787	229.335
1,008.00	21.577	15,736.9	37.569	143.356	452.477
1,010.00	29.674	20,301.4	51.036	194.392	752.988
1,012.00	39.539	22,845.5	68.977	263.369	953.524
1,014.00	68.669	34,370.5	106.876	370.246	2,158.174
1,025.00	100.000	50,000.0	922.298	1,292.544	4,567.204

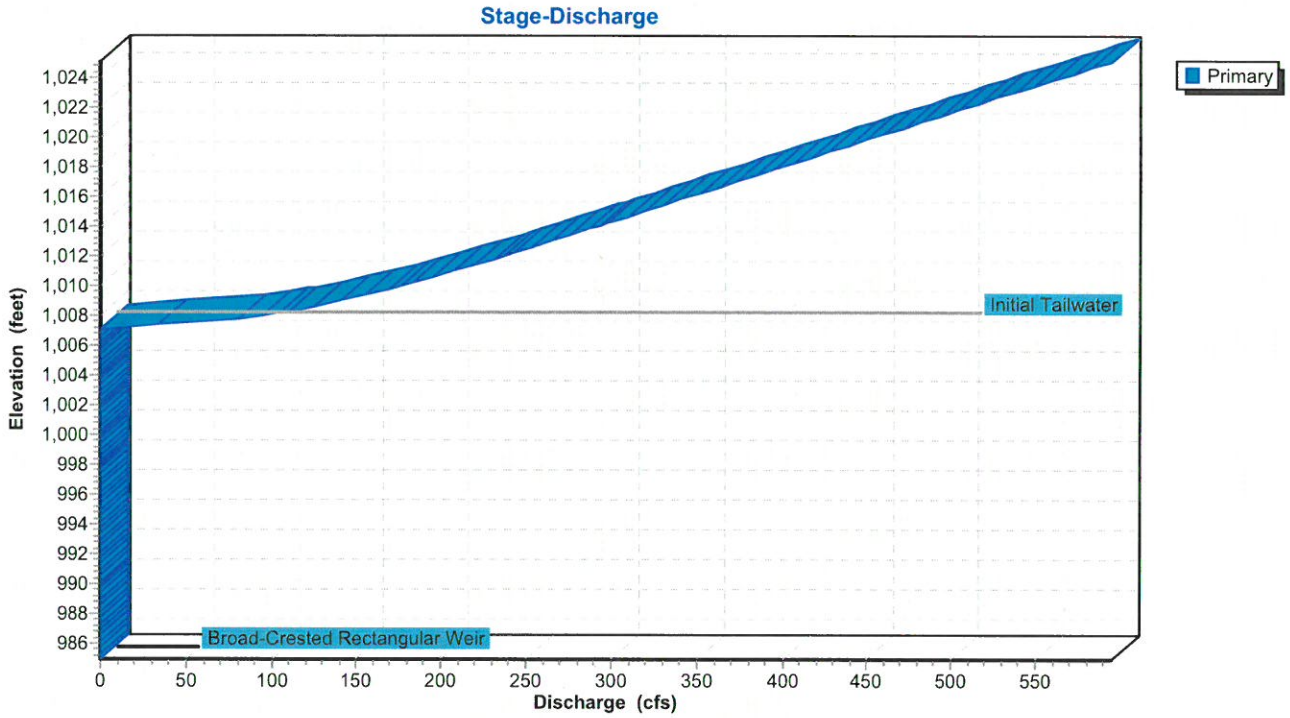
Device	Routing	Invert	Outlet Devices
#1	Primary	985.00'	**1.1' long x 50.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 20.00 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63 2.63

Primary OutFlow Max=115.86 cfs @ 0.02 hrs HW=1,008.27' TW=1,007.19' (Dynamic Tailwater)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 115.86 cfs @ 4.53 fps)

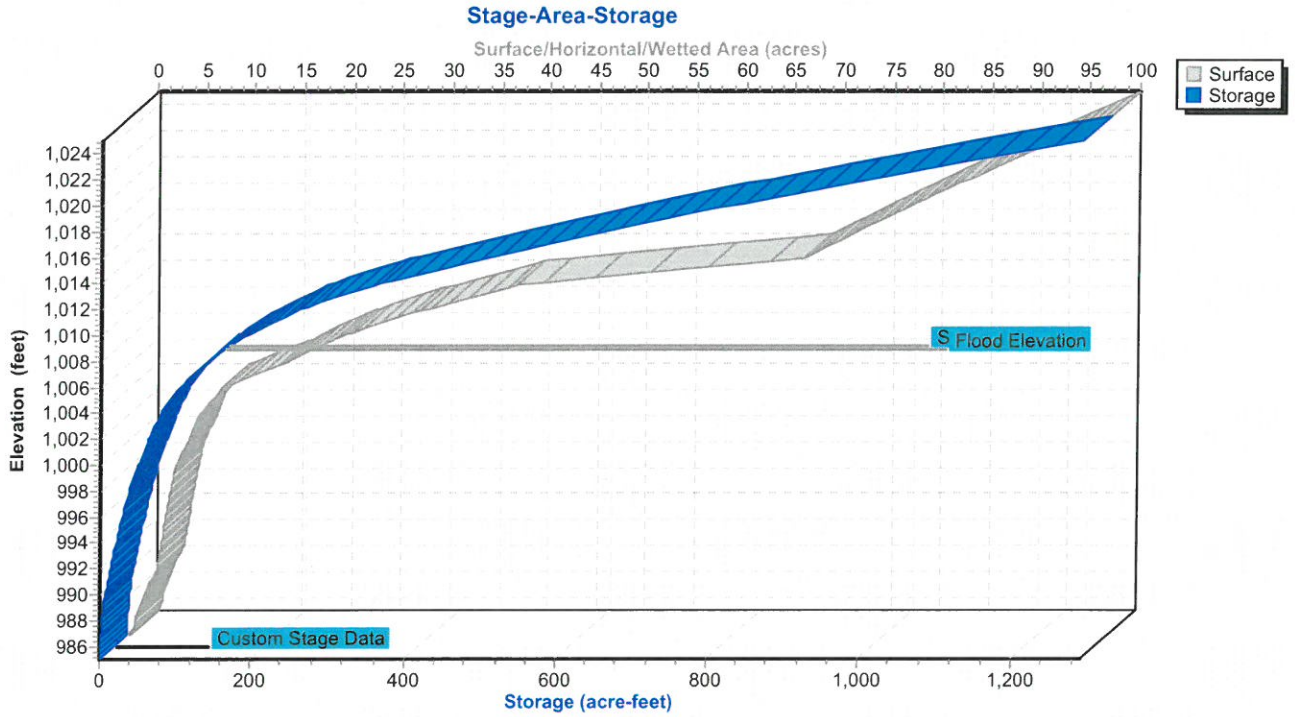
Pond 1P: Sippo Reservoir - Existing Conditions - 0.25 PMF DBA



Pond 1P: Sippo Reservoir - Existing Conditions - 0.25 PMF DBA



Pond 1P: Sippo Reservoir - Existing Conditions - 0.25 PMF DBA



Summary for Pond 16P: North Sippo Park- Lincoln Way Culvert

Inflow = 3,998.99 cfs @ 0.02 hrs, Volume= 15,394.494 af
Outflow = 3,881.00 cfs @ 4.06 hrs, Volume= 15,379.482 af, Atten= 3%, Lag= 242.4 min
Primary = 3,438.01 cfs @ 0.00 hrs, Volume= 13,315.636 af
Secondary = 524.77 cfs @ 3.86 hrs, Volume= 2,063.846 af

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Starting Elev= 1,007.35' Surf.Area= 13.160 ac Storage= 188.375 af
Peak Elev= 1,008.70' @ 3.86 hrs Surf.Area= 13.764 ac Storage= 206.588 af (18.213 af above start)
Flood Elev= 1,008.00' Surf.Area= 13.465 ac Storage= 197.028 af (8.653 af above start)

Plug-Flow detention time= 38.6 min calculated for 15,187.943 af (99% of inflow)
Center-of-Mass det. time= 2.0 min (1,441.8 - 1,439.8)

Volume	Invert	Avail.Storage	Storage Description
#1	978.00'	371.368 af	**Stage Storage in Sippo Park (Irregular)** Listed below (Recalc)

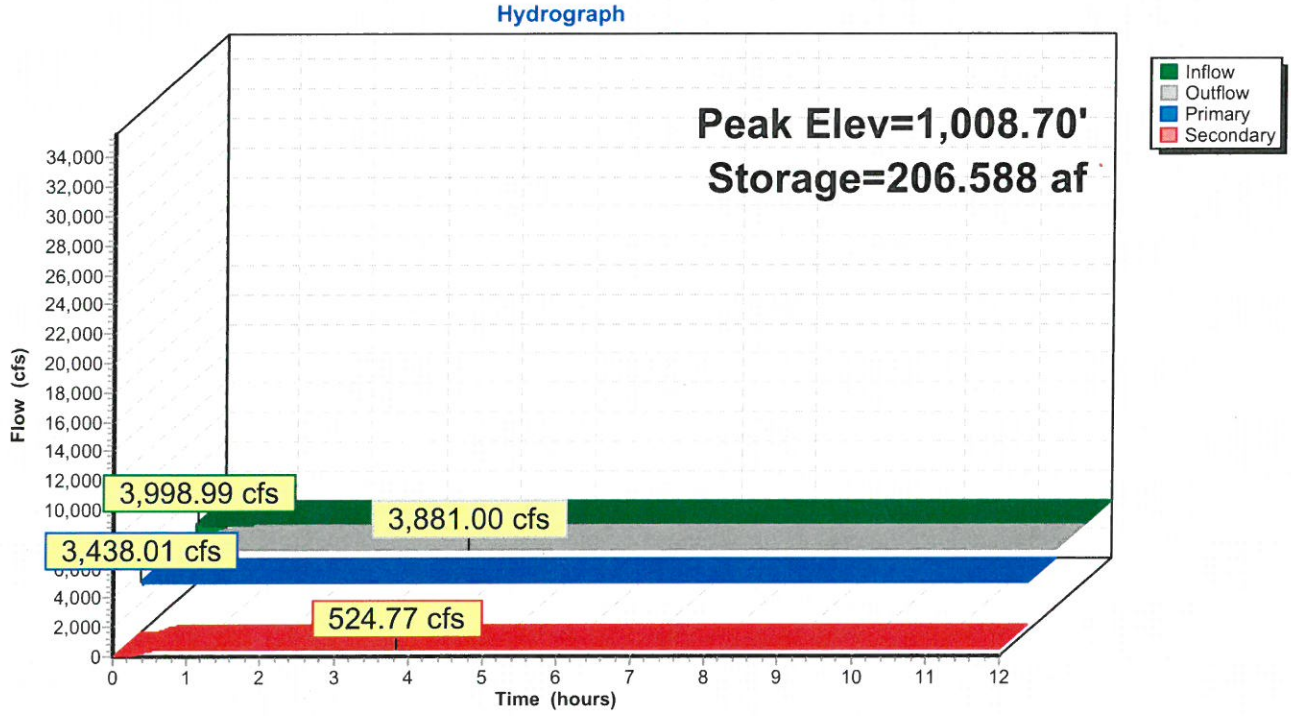
Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
978.00	0.100	200.0	0.000	0.000	0.100
981.00	0.300	500.0	0.573	0.573	0.484
982.00	0.659	1,392.9	0.468	1.041	3.572
984.00	2.018	2,470.7	2.553	3.595	11.180
986.00	3.584	3,300.7	5.528	9.122	19.932
988.00	5.007	3,247.5	8.551	17.674	20.586
990.00	6.111	3,143.9	11.100	28.773	21.805
992.00	6.773	3,217.1	12.878	41.652	22.668
994.00	7.411	3,271.9	14.179	55.831	23.334
996.00	8.110	3,253.8	15.516	71.347	23.597
998.00	8.804	3,273.8	16.909	88.256	23.878
1,000.00	9.441	3,318.6	18.241	106.497	24.439
1,002.00	10.181	3,437.0	19.617	126.114	25.908
1,004.00	11.109	3,548.6	21.283	147.398	27.341
1,006.00	12.538	3,553.4	23.633	171.030	27.516
1,008.00	13.465	3,829.8	25.997	197.028	31.248
1,010.00	14.326	4,085.3	27.787	224.814	34.947
1,012.00	15.633	4,329.5	29.949	254.764	38.706
1,014.00	17.576	4,742.6	33.190	287.954	45.555
1,016.00	20.521	5,940.5	38.059	326.013	68.935
1,018.00	24.905	6,310.6	45.355	371.368	77.223

Device	Routing	Invert	Outlet Devices
#1	Primary	978.25'	**168.0" W x 98.0" H Box Box Culvert** L= 121.8' Box, 30-75° wingwalls, rounded crown, Ke= 0.200 Inlet / Outlet Invert= 978.25' / 978.13' S= 0.0010 '/' Cc= 0.900 n= 0.015 Brickwork
#2	Secondary	1,008.00'	**Linclon Way (172), Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 2.00 4.00 6.00 8.00 10.00 Width (feet) 233.00 373.00 475.00 630.00 790.00 940.00 1,090.00

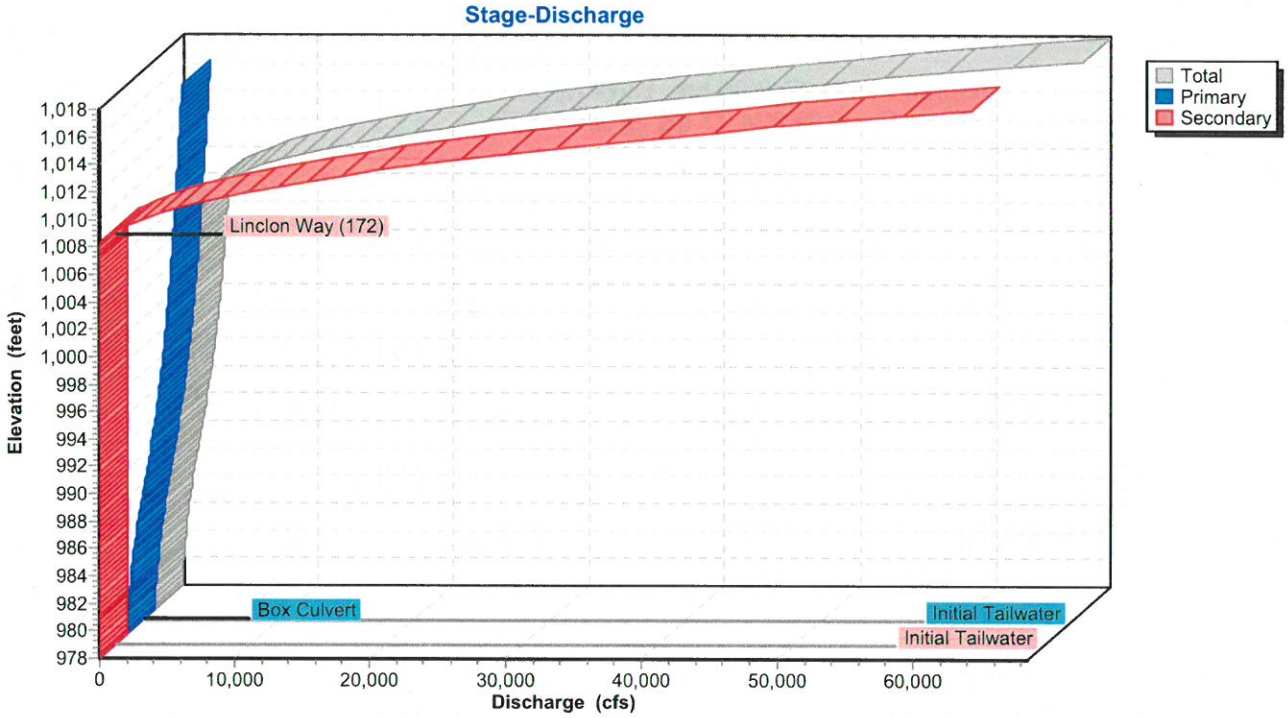
Primary OutFlow Max=3,438.01 cfs @ 0.00 hrs HW=1,007.35' TW=978.13' (Dynamic Tailwater)
└**1=Box Culvert** (Inlet Controls 3,438.01 cfs @ 30.07 fps)

Secondary OutFlow Max=524.77 cfs @ 3.86 hrs HW=1,008.70' TW=984.74' (Dynamic Tailwater)
└**2=Linclon Way (172)** (Weir Controls 524.77 cfs @ 2.65 fps)

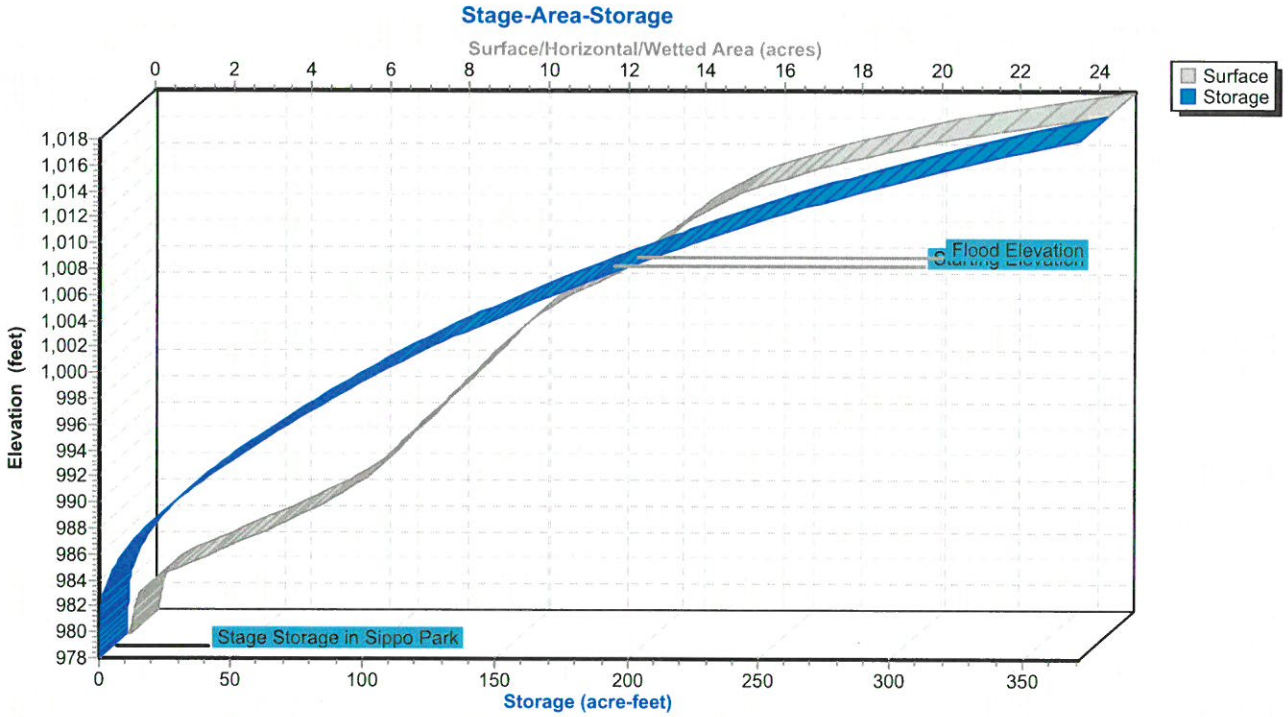
Pond 16P: North Sippo Park- Lincoln Way Culvert



Pond 16P: North Sippo Park- Lincoln Way Culvert



Pond 16P: North Sippo Park- Lincoln Way Culvert



Summary for Pond 32P: Constant inflow - 0.25 PMF

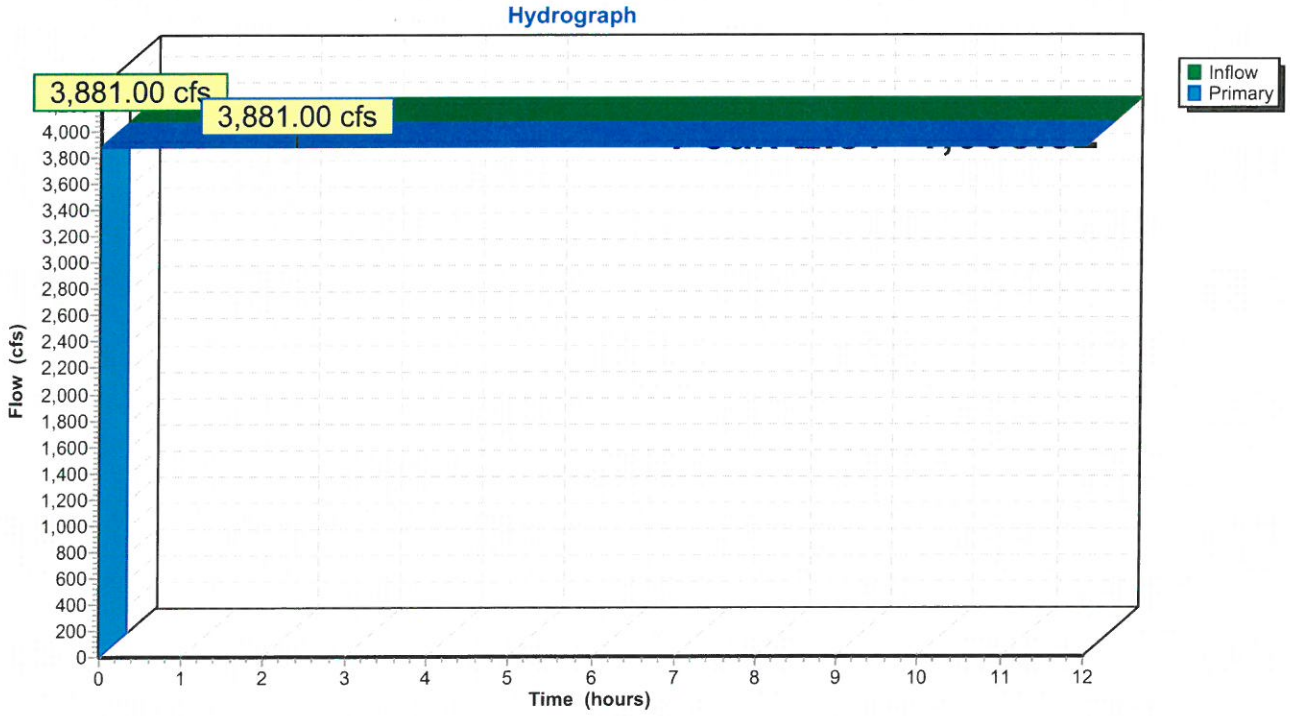
Inflow	=	3,881.00 cfs @	0.00 hrs,	Volume=	15,395.702 af, Incl. 3,881.00 cfs Base Flow
Outflow	=	3,881.00 cfs @	2.38 hrs,	Volume=	15,395.702 af, Atten= 0%, Lag= 142.9 min
Primary	=	3,881.00 cfs @	2.38 hrs,	Volume=	15,395.702 af

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,008.82' @ 3.87 hrs

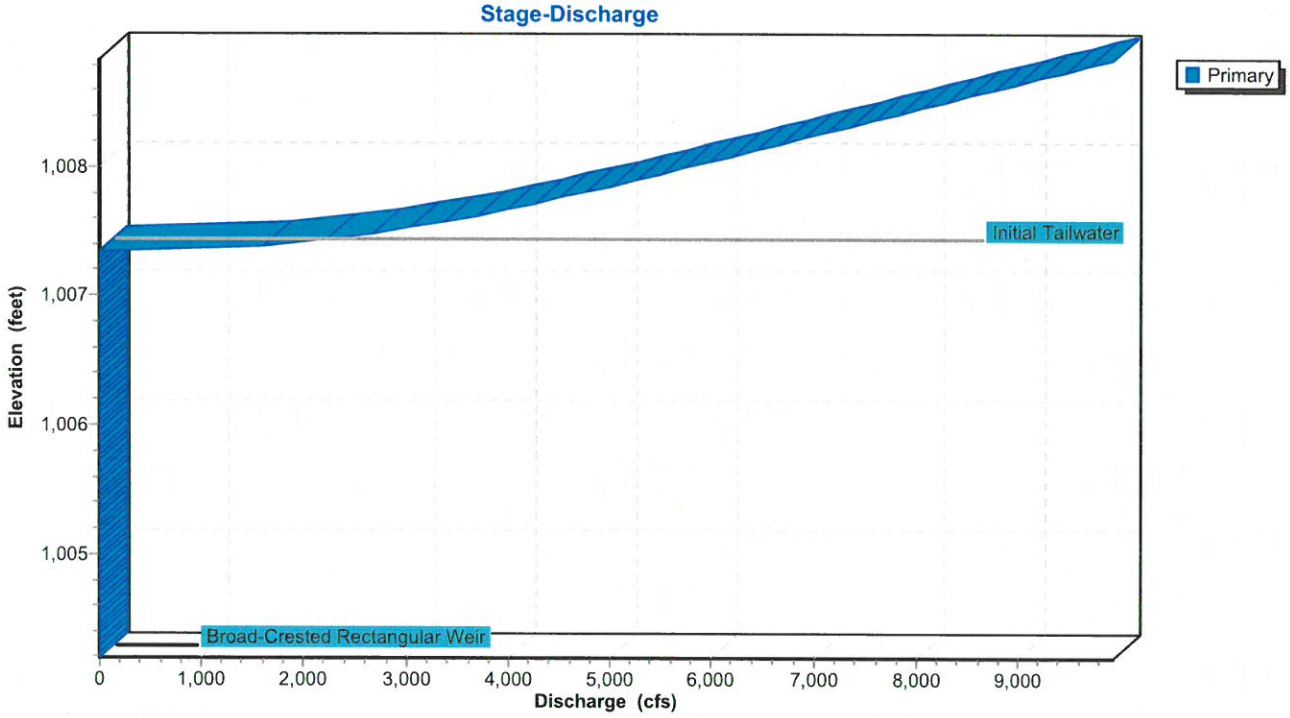
Device	Routing	Invert	Outlet Devices
#1	Primary	1,004.20'	**500.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=3,881.00 cfs @ 2.38 hrs HW=1,008.82' TW=1,008.70' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 3,881.00 cfs @ 1.68 fps)

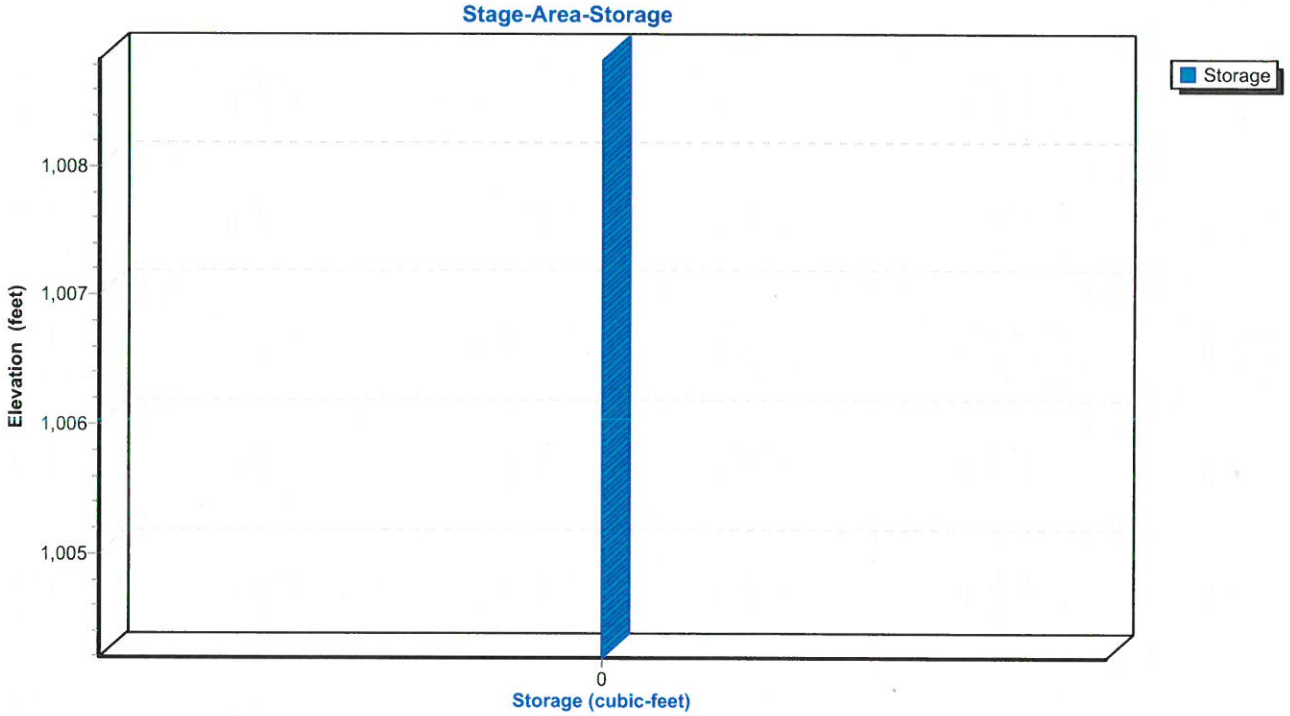
Pond 32P: Constant inflow - 0.25 PMF

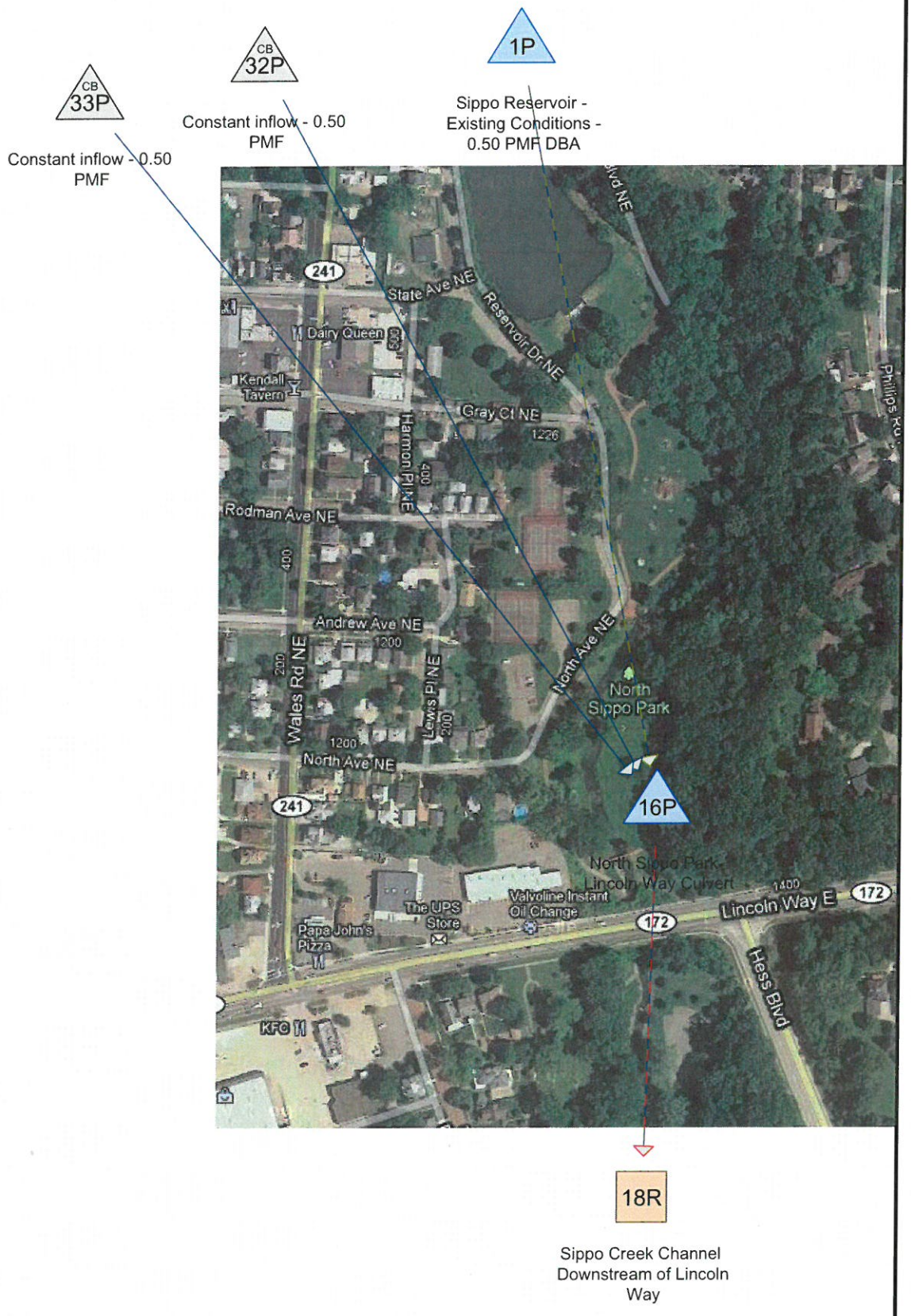


Pond 32P: Constant inflow - 0.25 PMF



Pond 32P: Constant inflow - 0.25 PMF





Drainage Diagram for Existing Conditions Sippo Resevoir-URS-DBA-50PMF

Prepared by URS Corporation, Printed 10/31/2011

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.000	0	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
0.000		**TOTAL AREA**

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Fill (inches)
1	16P	978.25	978.13	121.8	0.0010	0.015	168.0	98.0	0.0

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Reach 18R: Sippo Creek Avg. Flow Depth=10.14' Max Vel=11.58 fps Inflow=11,792.69 cfs 45,486.814 af
L=450.0' S=0.0084 '/' Capacity=200,707.82 cfs Outflow=11,700.60 cfs 45,486.015 af

Pond 1P: Sippo Reservoir - Existing Peak Elev=1,012.56' Storage=287.540 af Inflow=0.00 cfs 0.000 af
Outflow=312.38 cfs 47.219 af

Pond 16P: North Sippo Park- Peak Elev=1,011.45' Storage=246.240 af Inflow=11,766.38 cfs 45,487.006 af
Primary=3,705.66 cfs 13,153.252 af Secondary=8,387.95 cfs 32,343.030 af Outflow=11,792.69 cfs 45,496.282 af

Pond 32P: Constant inflow - 0.50 PMF Peak Elev=1,011.68' Inflow=9,000.00 cfs 35,702.479 af
Outflow=9,000.00 cfs 35,702.479 af

Pond 33P: Constant inflow - 0.50 PMF Peak Elev=1,011.46' Inflow=2,457.00 cfs 9,746.777 af
Outflow=2,457.00 cfs 9,746.777 af

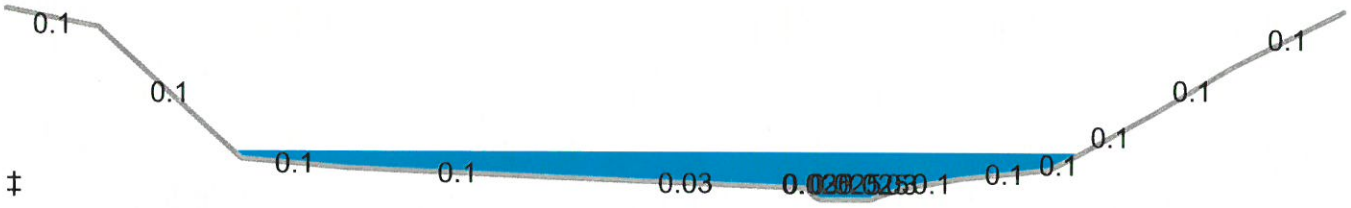
Summary for Reach 18R: Sippo Creek Channel Downstream of Lincoln Way

Inflow = 11,792.69 cfs @ 0.00 hrs, Volume= 45,486.814 af
Outflow = 11,700.60 cfs @ 0.29 hrs, Volume= 45,486.015 af, Atten= 1%, Lag= 17.7 min

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 11.58 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 11.53 fps, Avg. Travel Time= 0.7 min

Peak Storage= 454,542 cf @ 0.29 hrs
Average Depth at Peak Storage= 10.14'
Defined Flood Depth= 15.00', Capacity at Flood Depth= 28,360.41 cfs
Bank-Full Depth= 40.50', Capacity at Bank-Full= 200,707.82 cfs

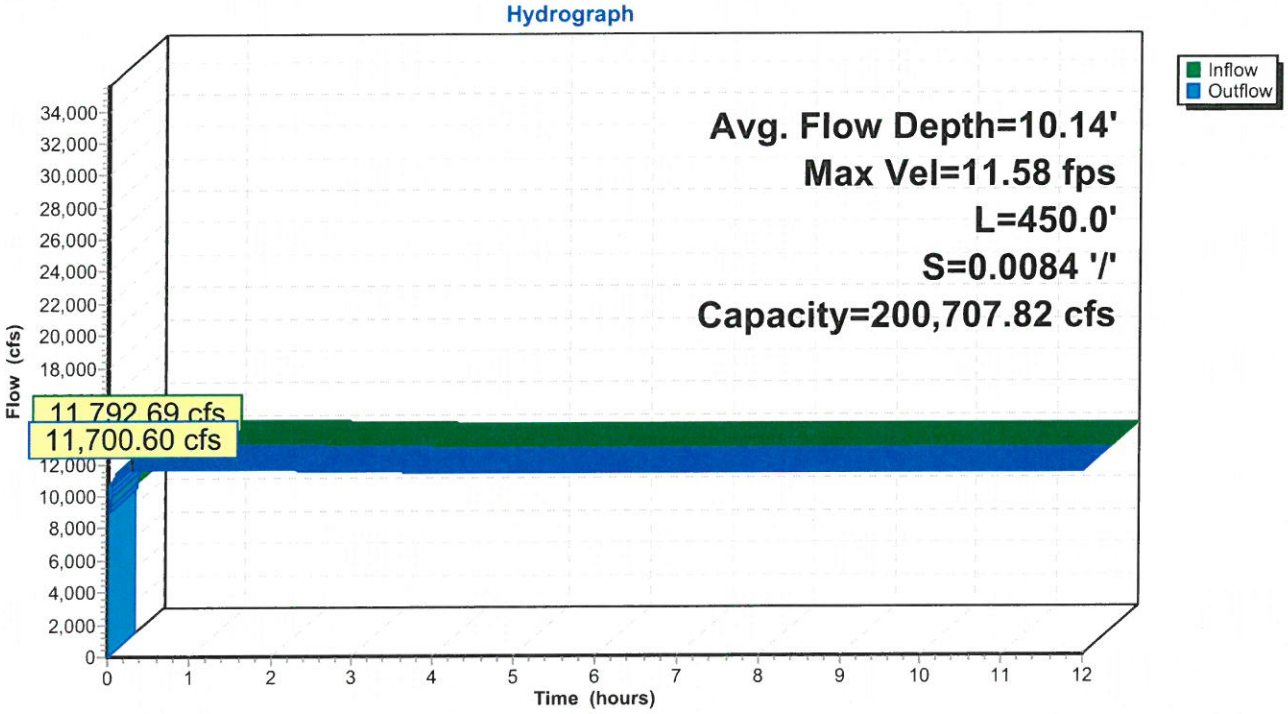
Custom cross-section, Length= 450.0' Slope= 0.0084 '/' (1006 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 978.13', Outlet Invert= 974.35'



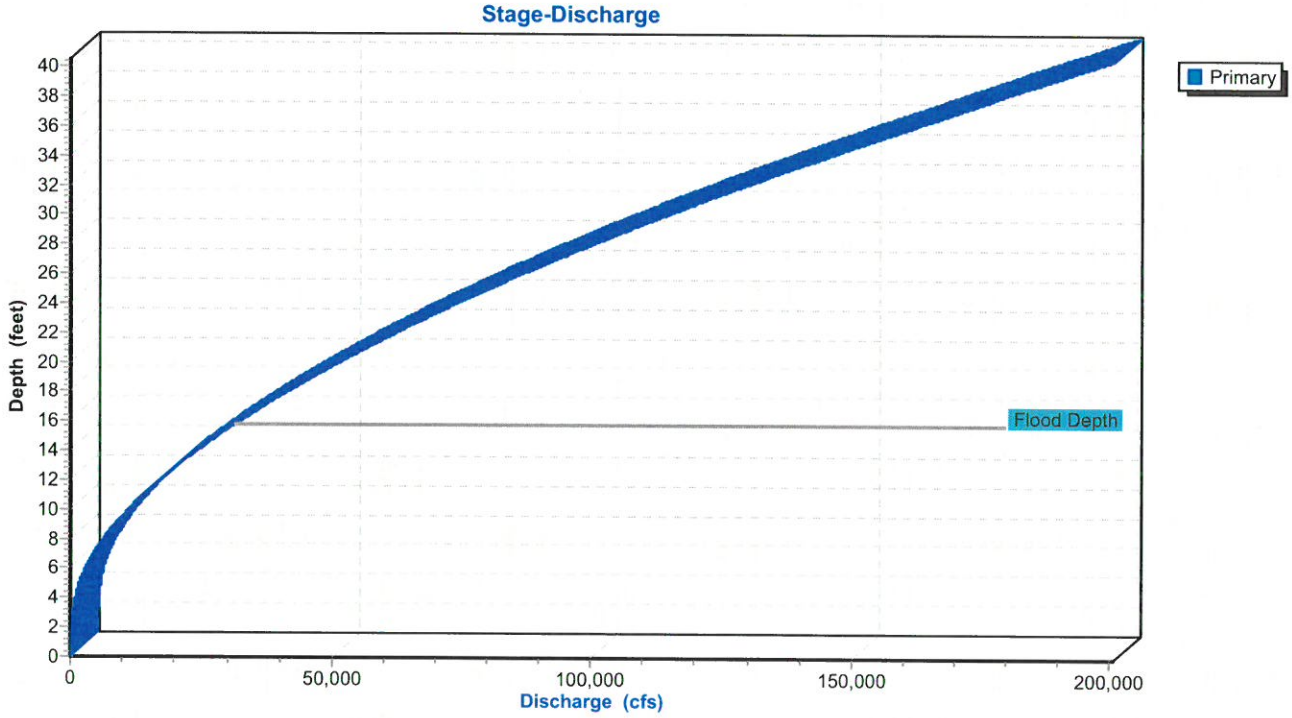
Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	1,012.00	0.00		
20.00	1,008.00	4.00	0.100	Heavy timber, flow below branches
51.00	980.00	32.00	0.100	Heavy timber, flow below branches
74.00	978.00	34.00	0.100	Heavy timber, flow below branches
121.00	976.00	36.00	0.100	Heavy timber, flow below branches
173.00	974.00	38.00	0.030	Short grass
175.00	972.00	40.00	0.030	Short grass
176.00	971.50	40.50	0.025	Stream, clean & straight
187.00	971.50	40.50	0.025	Stream, clean & straight
188.00	972.00	40.00	0.025	Stream, clean & straight
194.00	974.00	38.00	0.030	Short grass
206.00	976.00	36.00	0.100	Heavy timber, flow below branches
225.50	978.00	34.00	0.100	Heavy timber, flow below branches
229.50	980.00	32.00	0.100	Heavy timber, flow below branches
248.00	990.00	22.00	0.100	Heavy timber, flow below branches
265.00	1,000.00	12.00	0.100	Heavy timber, flow below branches
289.00	1,012.00	0.00	0.100	Heavy timber, flow below branches

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	11.0	0	0.00
0.50	6.0	13.2	2,700	19.29
2.50	40.0	22.4	18,000	347.53
4.50	146.0	86.6	65,701	1,300.01
6.50	382.5	153.2	172,125	3,703.14
8.50	712.5	180.8	320,625	7,536.06
18.50	2,645.4	216.7	1,190,411	44,005.23
28.50	4,866.4	251.4	2,189,893	103,800.74
36.50	6,855.0	281.2	3,084,750	166,501.22
40.50	7,955.0	310.6	3,579,750	200,707.82

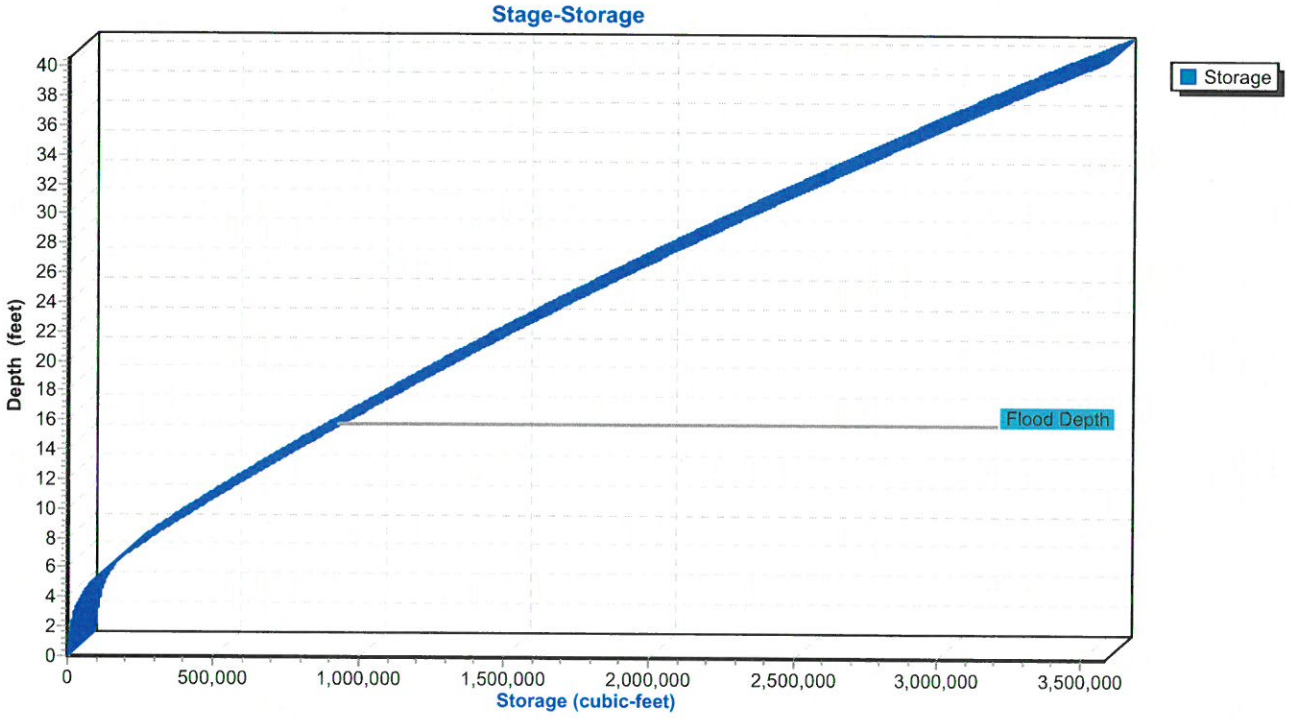
Reach 18R: Sippo Creek Channel Downstream of Lincoln Way



Reach 18R: Sippo Creek Channel Downstream of Lincoln Way



Reach 18R: Sippo Creek Channel Downstream of Lincoln Way



Summary for Pond 1P: Sippo Reservoir - Existing Conditions - 0.50 PMF DBA

Inflow	=	0.00 cfs @	0.00 hrs, Volume=	0.000 af
Outflow	=	312.38 cfs @	0.02 hrs, Volume=	47.219 af, Atten= 0%, Lag= 1.4 min
Primary	=	312.38 cfs @	0.02 hrs, Volume=	47.219 af

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Starting Elev= 1,012.56' Surf.Area= 46.890 ac Storage= 287.540 af
Peak Elev= 1,012.56' @ 0.00 hrs Surf.Area= 46.890 ac Storage= 287.540 af
Flood Elev= 1,008.00' Surf.Area= 21.577 ac Storage= 143.356 af

Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no inflow)

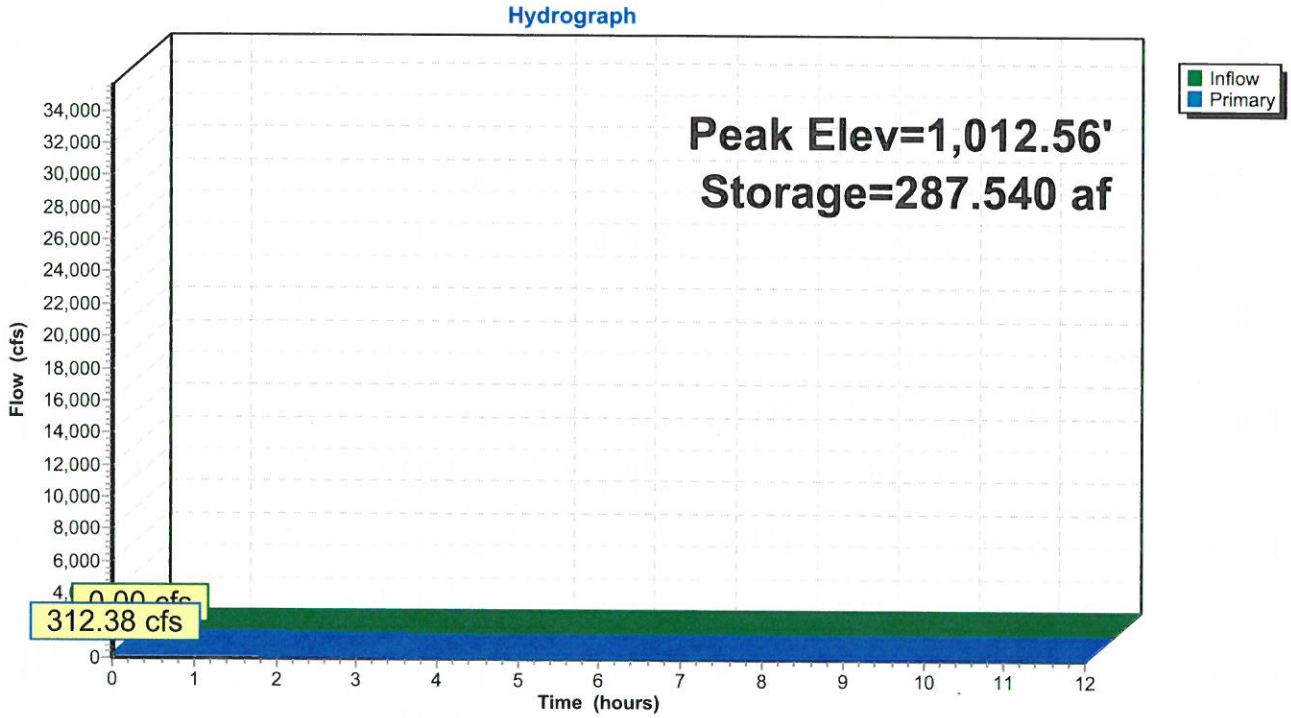
Volume	Invert	Avail.Storage	Storage Description
#1	985.00'	1,292.544 af	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
985.00	0.500	500.0	0.000	0.000	0.500
990.00	3.000	1,000.0	7.875	7.875	1.873
998.00	4.870	2,500.0	31.179	39.054	11.469
1,000.00	6.204	3,251.0	11.047	50.101	19.360
1,002.00	7.243	5,147.0	13.434	63.535	48.449
1,004.00	9.610	10,274.0	16.797	80.332	192.887
1,006.00	16.124	11,202.9	25.455	105.787	229.335
1,008.00	21.577	15,736.9	37.569	143.356	452.477
1,010.00	29.674	20,301.4	51.036	194.392	752.988
1,012.00	39.539	22,845.5	68.977	263.369	953.524
1,014.00	68.669	34,370.5	106.876	370.246	2,158.174
1,025.00	100.000	50,000.0	922.298	1,292.544	4,567.204

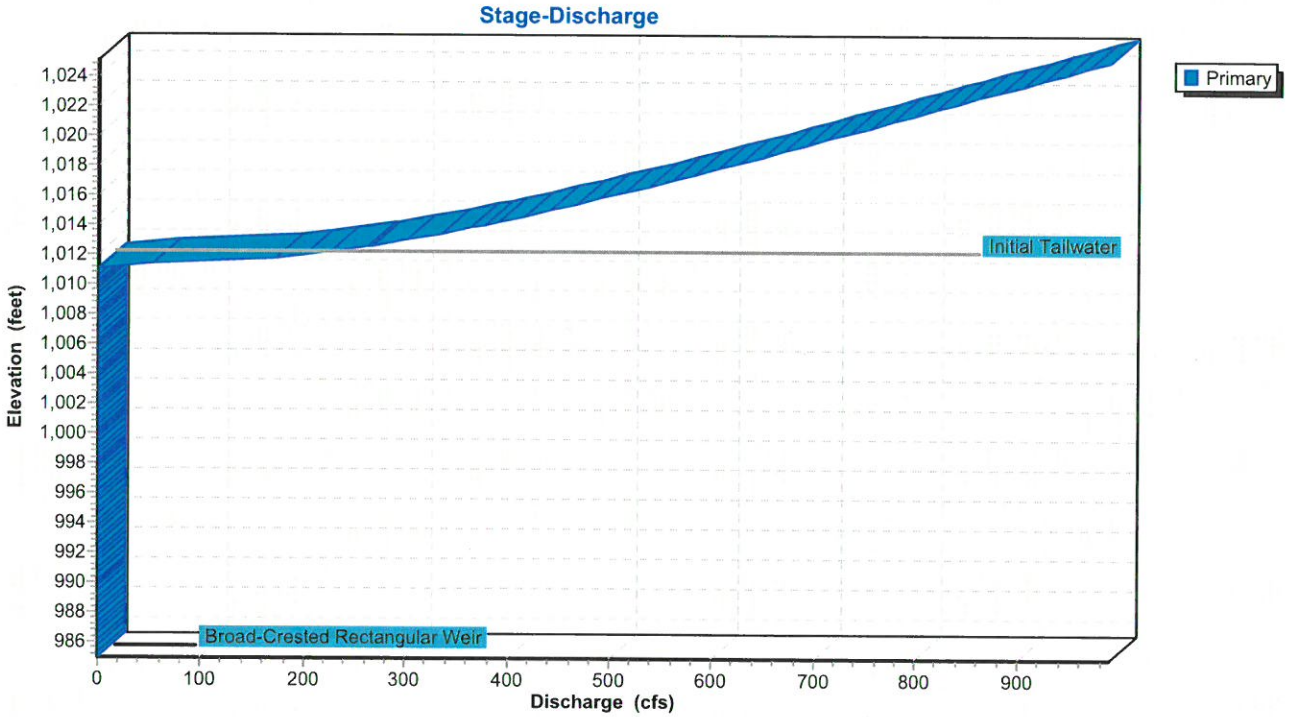
Device	Routing	Invert	Outlet Devices
#1	Primary	985.00'	**2.0' long x 50.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 20.00 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63 2.63

Primary OutFlow Max=296.96 cfs @ 0.02 hrs HW=1,012.55' TW=1,010.93' (Dynamic Tailwater)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 296.96 cfs @ 5.39 fps)

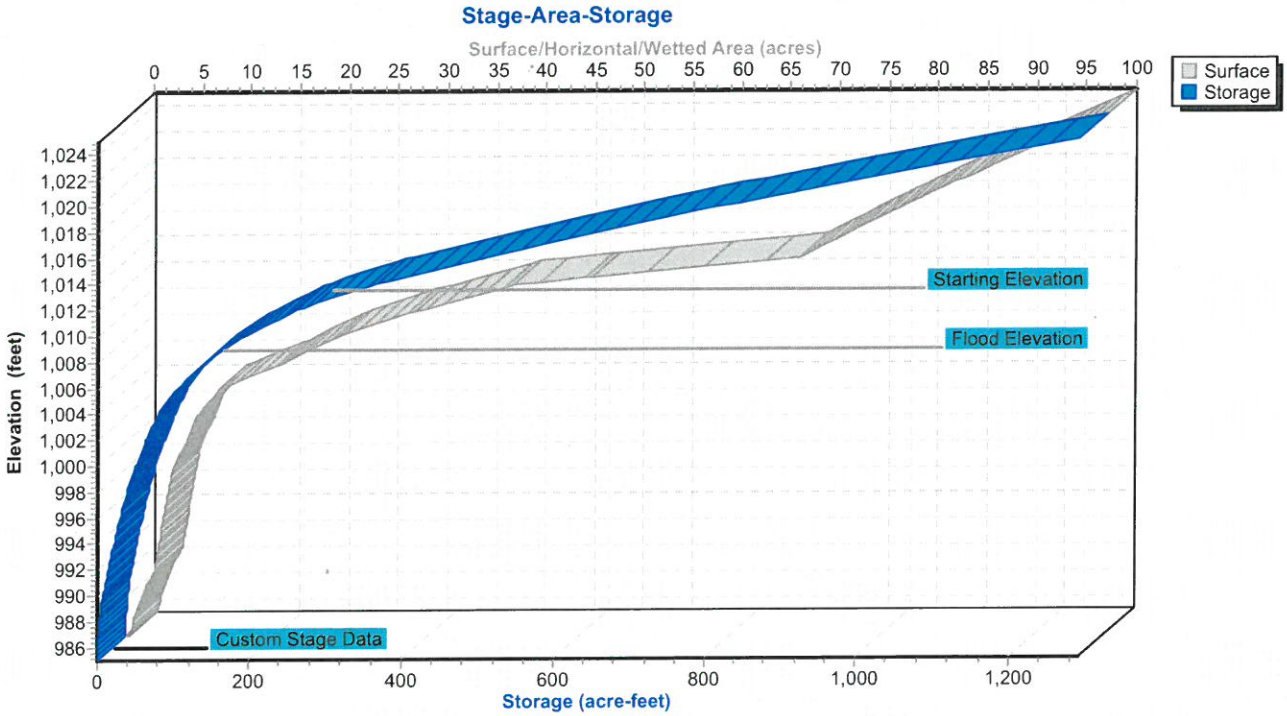
Pond 1P: Sippo Reservoir - Existing Conditions - 0.50 PMF DBA



Pond 1P: Sippo Reservoir - Existing Conditions - 0.50 PMF DBA



Pond 1P: Sippo Reservoir - Existing Conditions - 0.50 PMF DBA



Summary for Pond 16P: North Sippo Park- Lincoln Way Culvert

Inflow = 11,766.38 cfs @ 0.02 hrs, Volume= 45,487.006 af
Outflow = 11,792.69 cfs @ 0.00 hrs, Volume= 45,496.282 af, Atten= 0%, Lag= 0.0 min
Primary = 3,705.66 cfs @ 0.00 hrs, Volume= 13,153.252 af
Secondary = 8,387.95 cfs @ 0.29 hrs, Volume= 32,343.030 af

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Starting Elev= 1,011.38' Surf.Area= 15.222 ac Storage= 245.199 af
Peak Elev= 1,011.45' @ 0.29 hrs Surf.Area= 15.267 ac Storage= 246.240 af (1.041 af above start)
Flood Elev= 1,008.00' Surf.Area= 13.465 ac Storage= 197.028 af

Plug-Flow detention time= 15.5 min calculated for 45,251.083 af (99% of inflow)
Center-of-Mass det. time= 0.3 min (1,438.9 - 1,438.6)

Volume	Invert	Avail.Storage	Storage Description
#1	978.00'	371.368 af	**Stage Storage in Sippo Park (Irregular)** Listed below (Recalc)

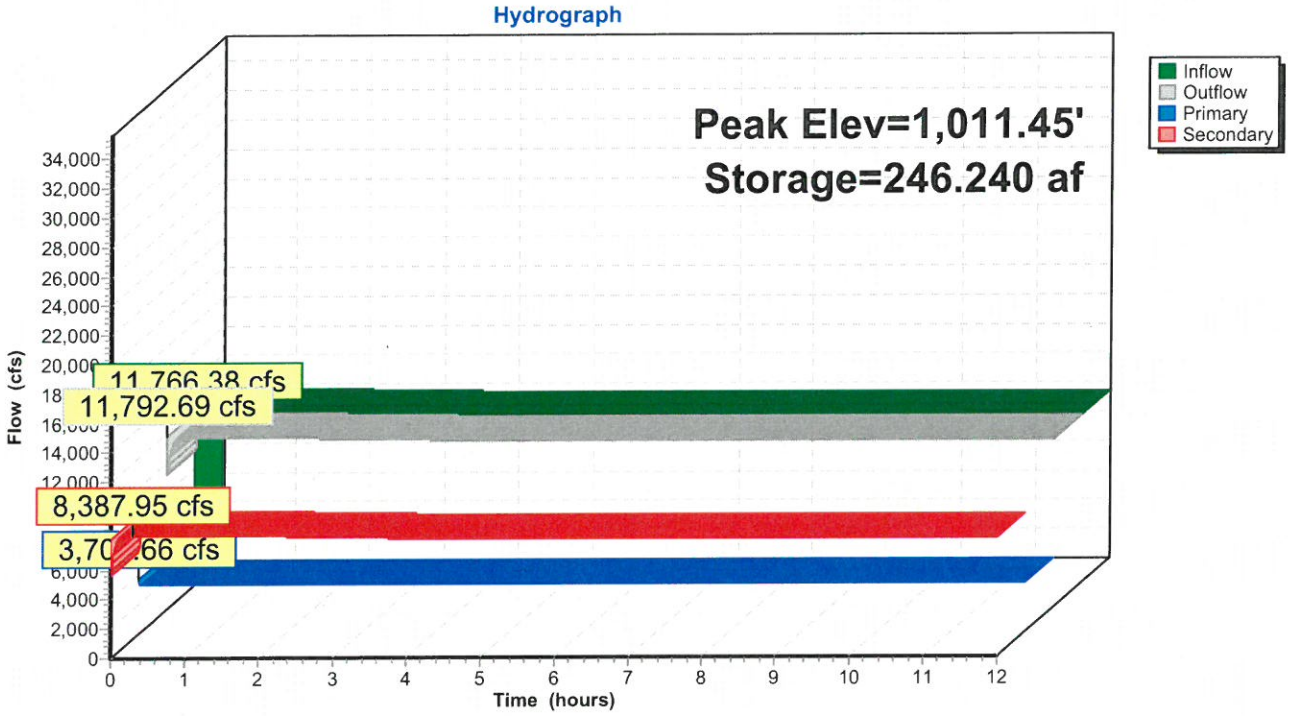
Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
978.00	0.100	200.0	0.000	0.000	0.100
981.00	0.300	500.0	0.573	0.573	0.484
982.00	0.659	1,392.9	0.468	1.041	3.572
984.00	2.018	2,470.7	2.553	3.595	11.180
986.00	3.584	3,300.7	5.528	9.122	19.932
988.00	5.007	3,247.5	8.551	17.674	20.586
990.00	6.111	3,143.9	11.100	28.773	21.805
992.00	6.773	3,217.1	12.878	41.652	22.668
994.00	7.411	3,271.9	14.179	55.831	23.334
996.00	8.110	3,253.8	15.516	71.347	23.597
998.00	8.804	3,273.8	16.909	88.256	23.878
1,000.00	9.441	3,318.6	18.241	106.497	24.439
1,002.00	10.181	3,437.0	19.617	126.114	25.908
1,004.00	11.109	3,548.6	21.283	147.398	27.341
1,006.00	12.538	3,553.4	23.633	171.030	27.516
1,008.00	13.465	3,829.8	25.997	197.028	31.248
1,010.00	14.326	4,085.3	27.787	224.814	34.947
1,012.00	15.633	4,329.5	29.949	254.764	38.706
1,014.00	17.576	4,742.6	33.190	287.954	45.555
1,016.00	20.521	5,940.5	38.059	326.013	68.935
1,018.00	24.905	6,310.6	45.355	371.368	77.223

Device	Routing	Invert	Outlet Devices
#1	Primary	978.25'	**168.0" W x 98.0" H Box Box Culvert** L= 121.8' Box, 30-75° wingwalls, rounded crown, Ke= 0.200 Inlet / Outlet Invert= 978.25' / 978.13' S= 0.0010 '/' Cc= 0.900 n= 0.015 Brickwork
#2	Secondary	1,008.00'	**Linclon Way (172), Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 2.00 4.00 6.00 8.00 10.00 Width (feet) 233.00 373.00 475.00 630.00 790.00 940.00 1,090.00

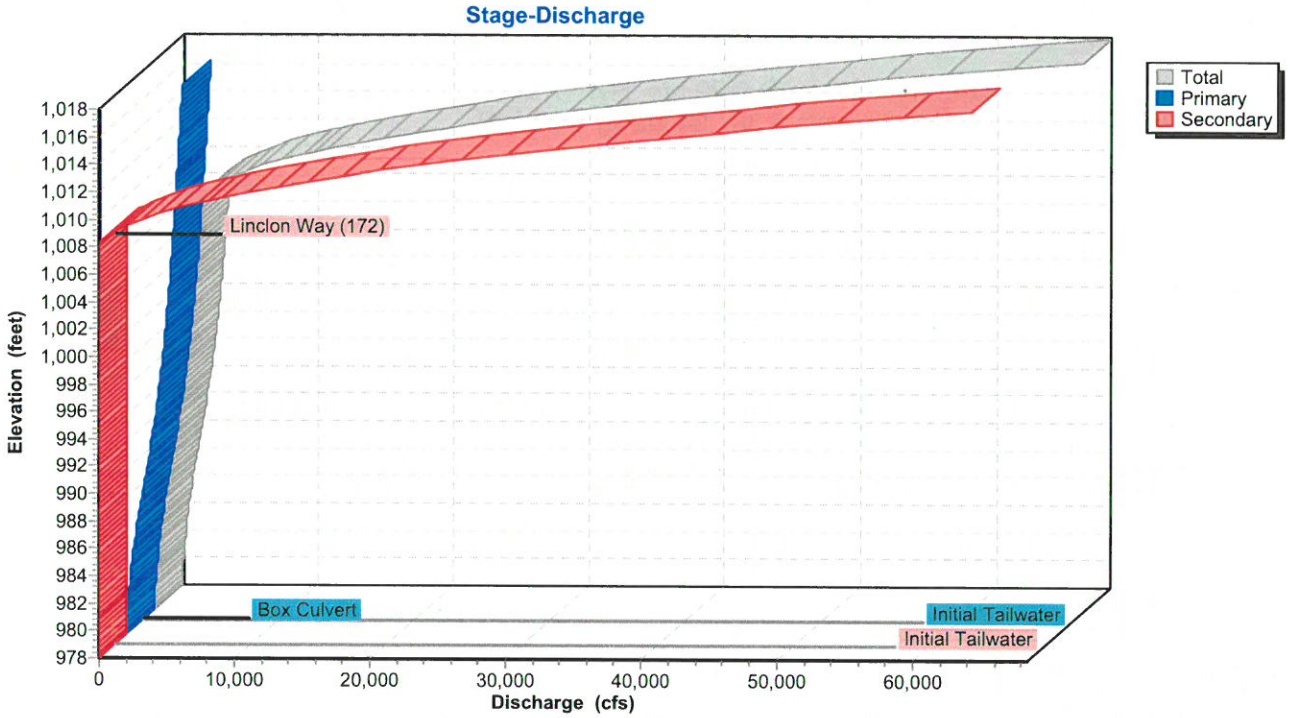
Primary OutFlow Max=3,705.66 cfs @ 0.00 hrs HW=1,011.38' TW=978.13' (Dynamic Tailwater)
└**1=Box Culvert** (Inlet Controls 3,705.66 cfs @ 32.41 fps)

Secondary OutFlow Max=8,387.94 cfs @ 0.29 hrs HW=1,011.45' TW=988.27' (Dynamic Tailwater)
└**2=Linclon Way (172)** (Weir Controls 8,387.94 cfs @ 5.61 fps)

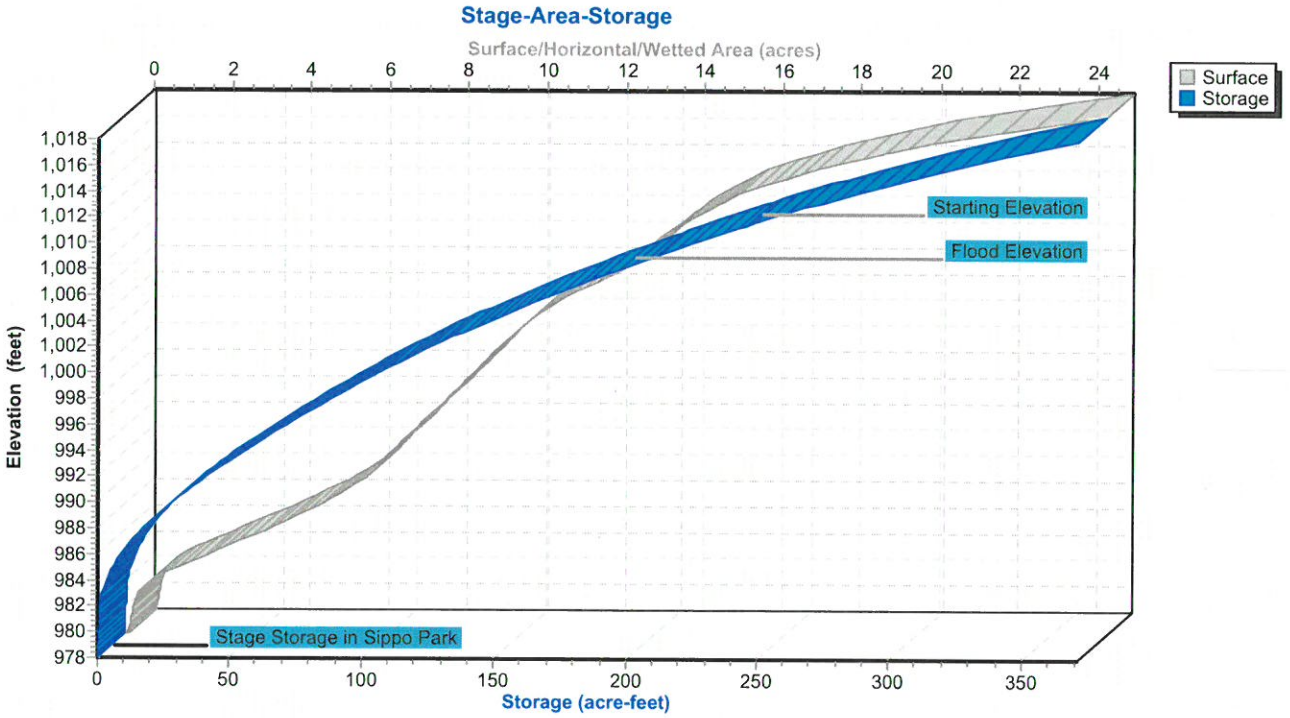
Pond 16P: North Sippo Park- Lincoln Way Culvert



Pond 16P: North Sippo Park- Lincoln Way Culvert



Pond 16P: North Sippo Park- Lincoln Way Culvert



Summary for Pond 32P: Constant inflow - 0.50 PMF

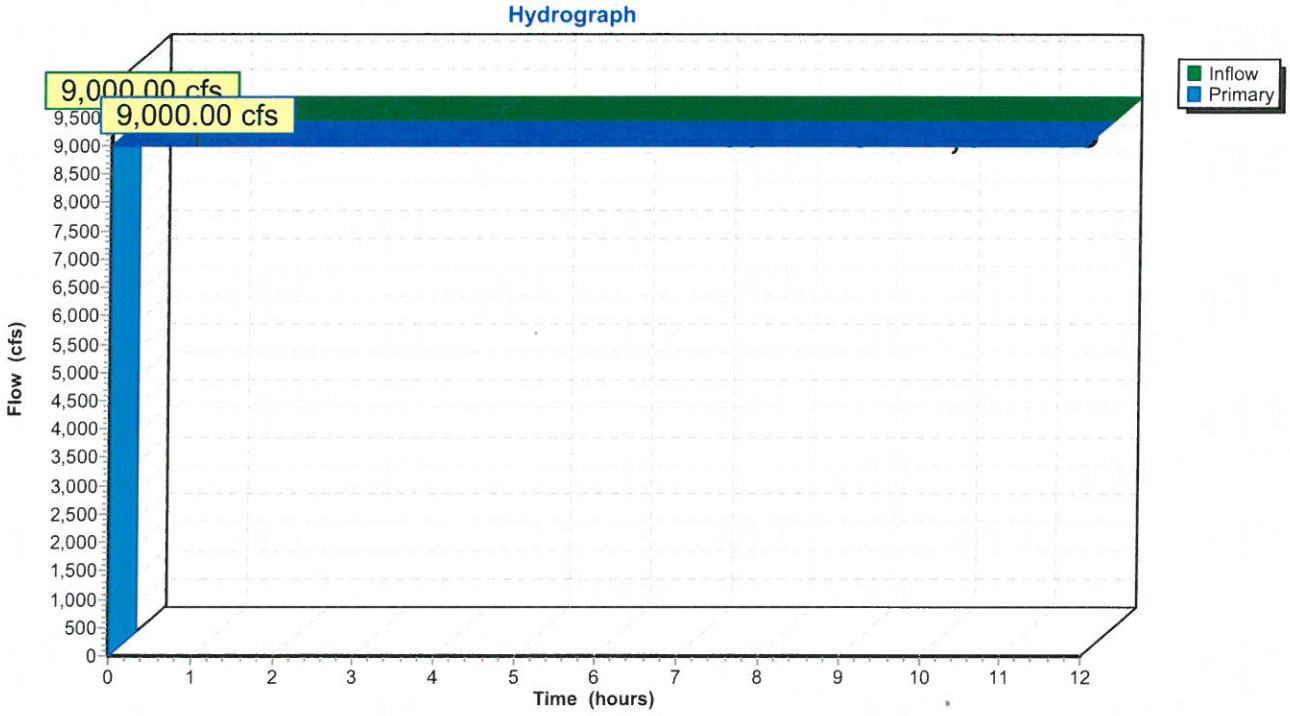
Inflow = 9,000.00 cfs @ 0.00 hrs, Volume= 35,702.479 af, Incl. 9,000.00 cfs Base Flow
Outflow = 9,000.00 cfs @ 1.02 hrs, Volume= 35,702.479 af, Atten= 0%, Lag= 61.3 min
Primary = 9,000.00 cfs @ 1.02 hrs, Volume= 35,702.479 af

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,011.68' @ 0.30 hrs

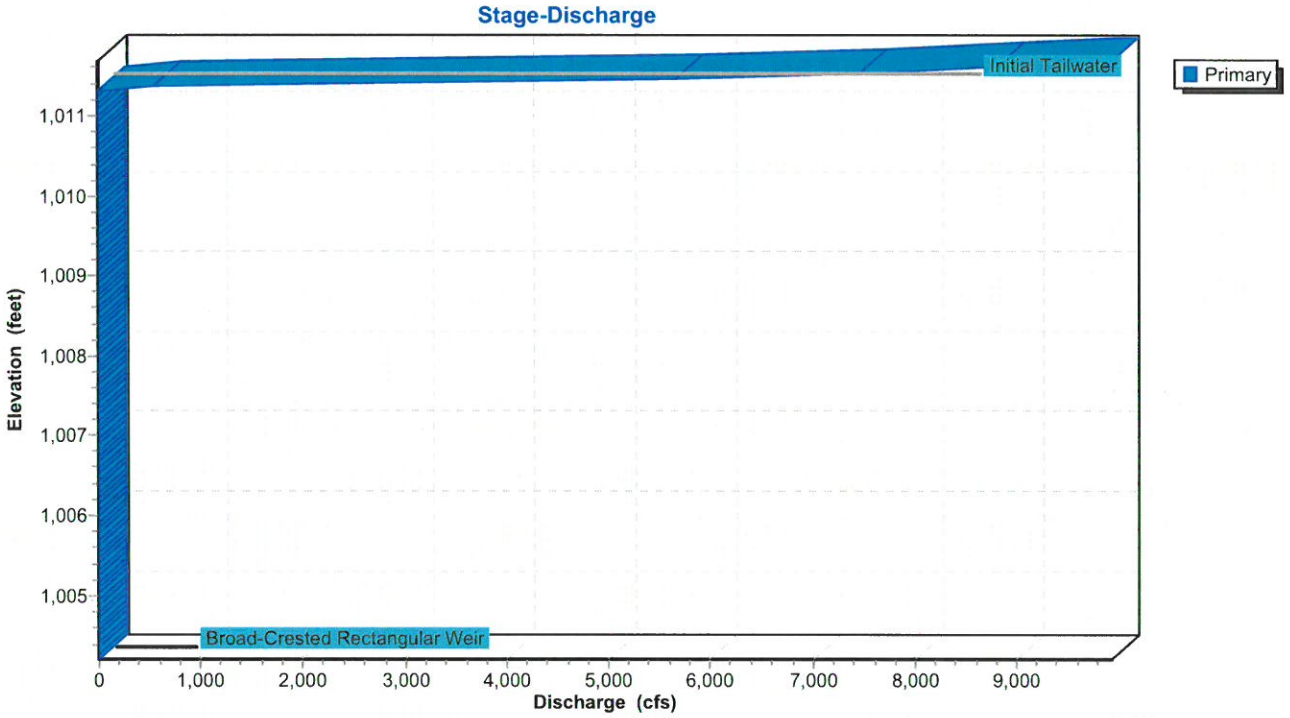
Device	Routing	Invert	Outlet Devices
#1	Primary	1,004.20'	**500.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=9,001.77 cfs @ 1.02 hrs HW=1,011.67' TW=1,011.44' (Dynamic Tailwater)
↳**1=Broad-Crested Rectangular Weir** (Weir Controls 9,001.77 cfs @ 2.41 fps)

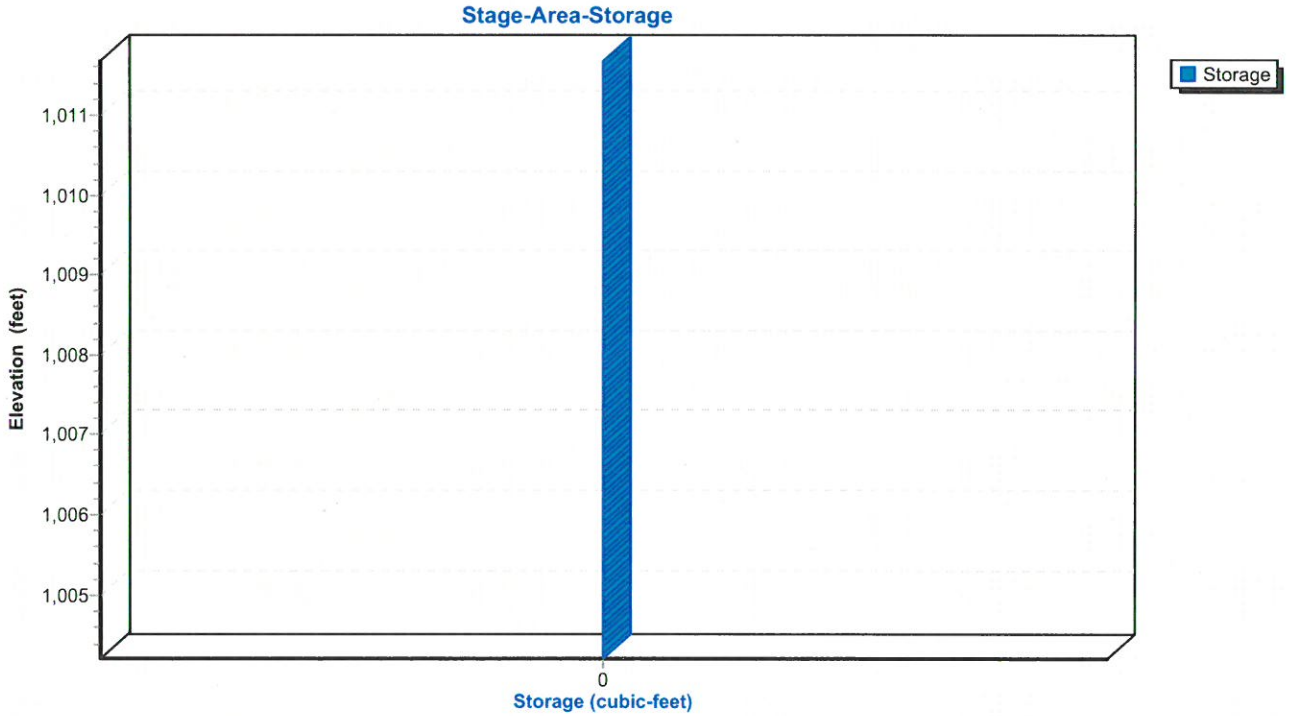
Pond 32P: Constant inflow - 0.50 PMF



Pond 32P: Constant inflow - 0.50 PMF



Pond 32P: Constant inflow - 0.50 PMF



Summary for Pond 33P: Constant inflow - 0.50 PMF

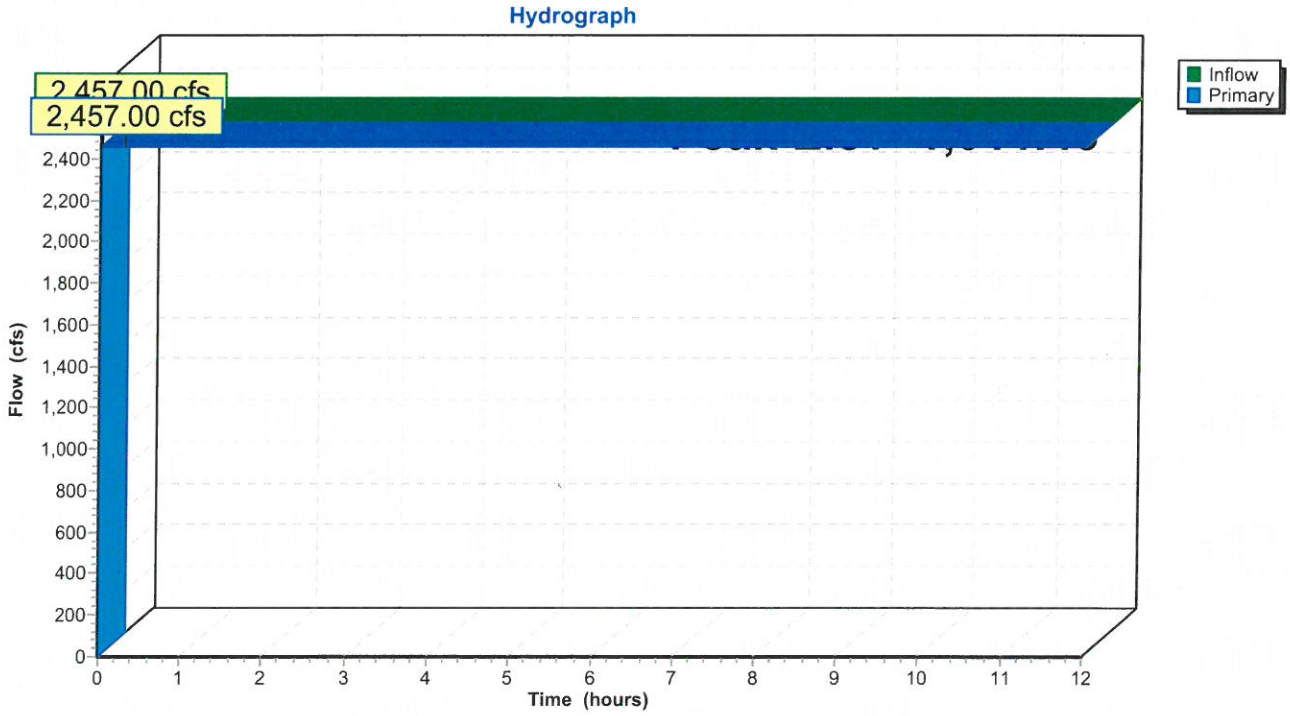
Inflow	=	2,457.00 cfs @	0.00 hrs, Volume=	9,746.777 af,	Incl. 2,457.00 cfs Base Flow
Outflow	=	2,457.00 cfs @	0.28 hrs, Volume=	9,746.777 af,	Atten= 0%, Lag= 16.8 min
Primary	=	2,457.00 cfs @	0.28 hrs, Volume=	9,746.777 af	

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,011.46' @ 0.30 hrs

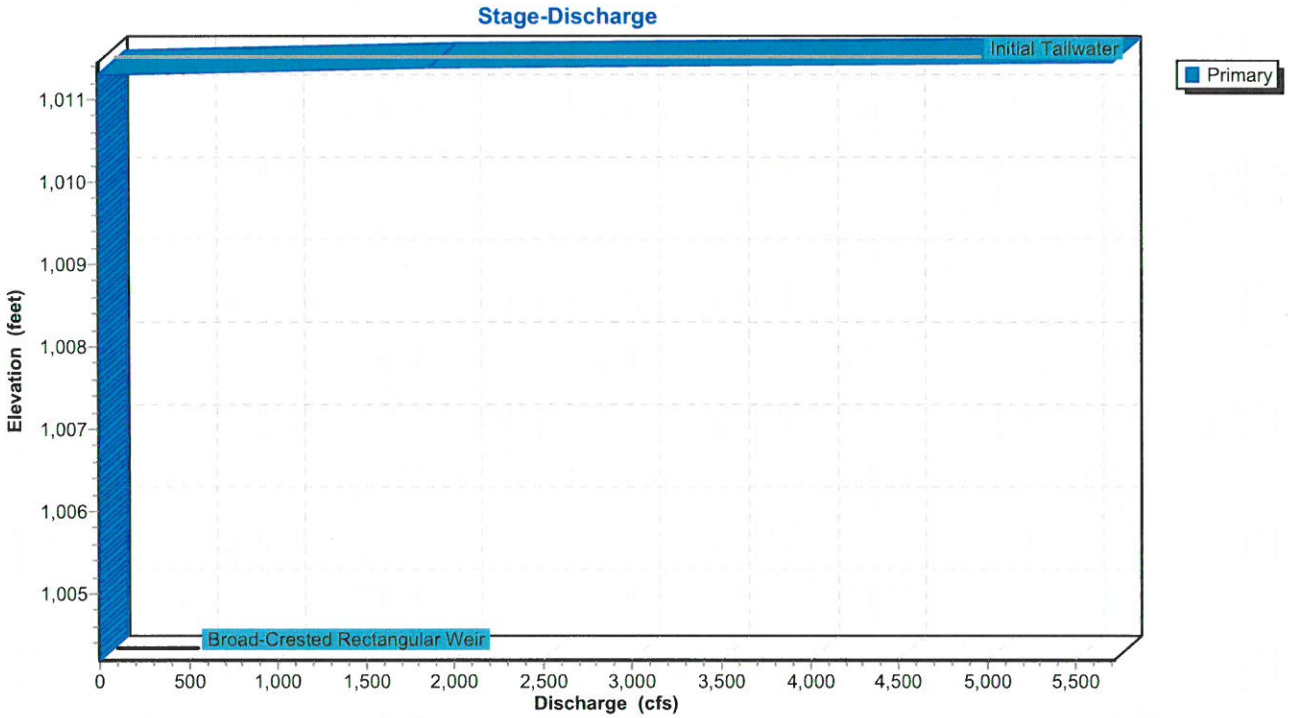
Device	Routing	Invert	Outlet Devices
#1	Primary	1,004.20'	**500.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=2,452.05 cfs @ 0.28 hrs HW=1,011.46' TW=1,011.45' (Dynamic Tailwater)
↳**1=Broad-Crested Rectangular Weir** (Weir Controls 2,452.05 cfs @ 0.68 fps)

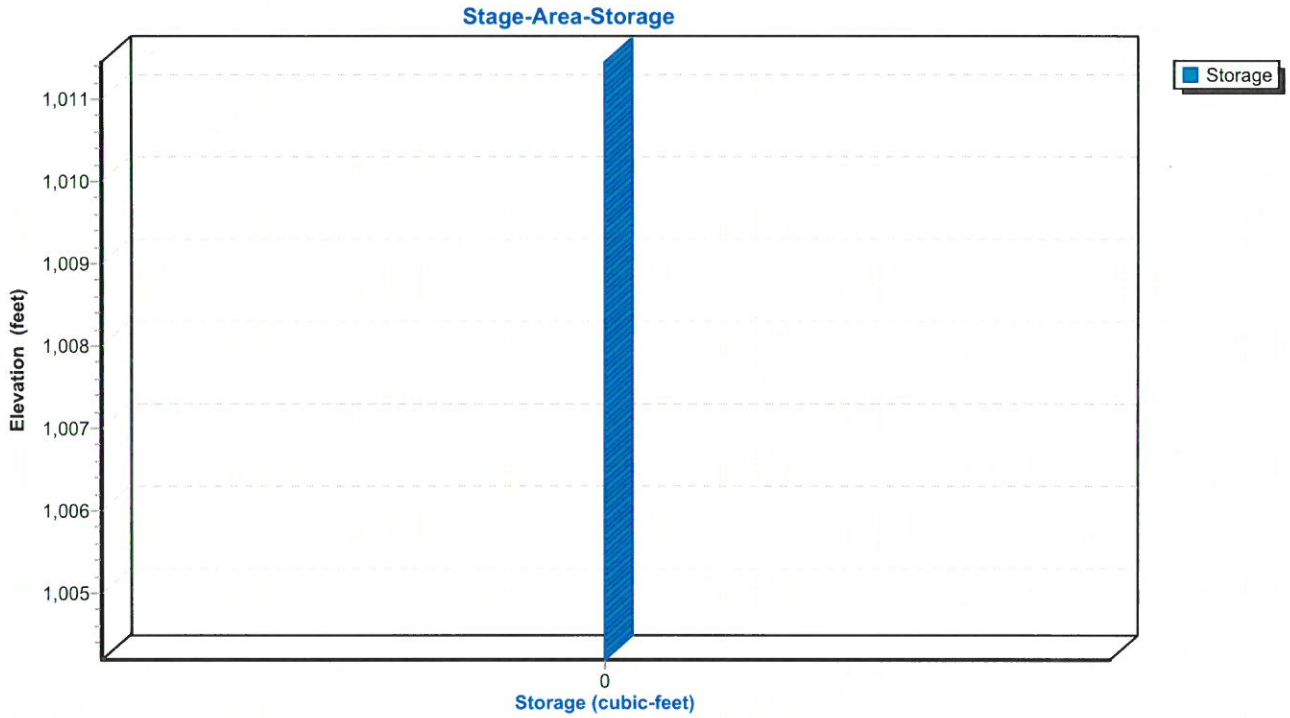
Pond 33P: Constant inflow - 0.50 PMF

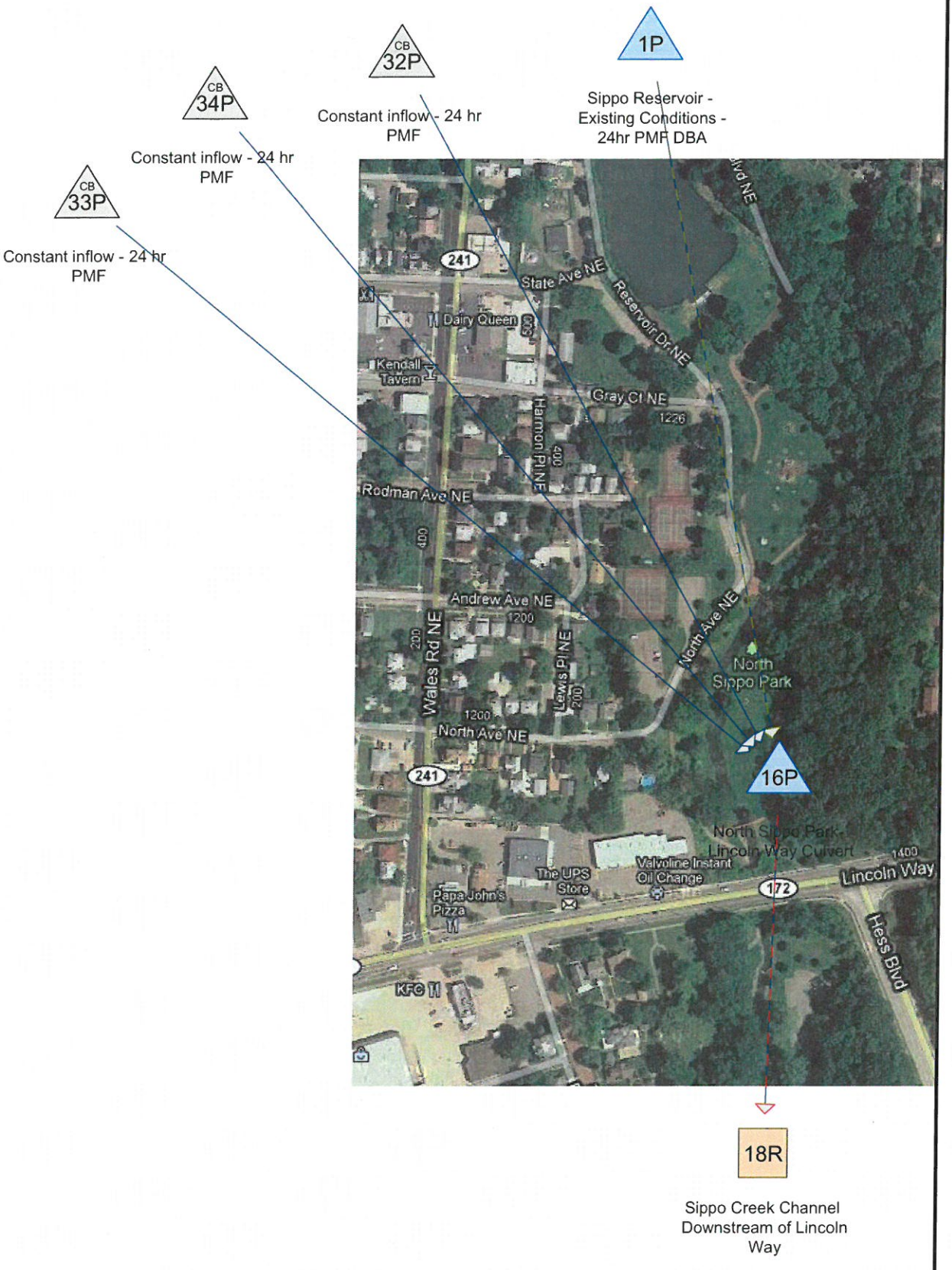


Pond 33P: Constant inflow - 0.50 PMF



Pond 33P: Constant inflow - 0.50 PMF





Subcat Reach Pond Link

Drainage Diagram for Existing Conditions Sippo Resevoir-URS-DBA-24-hrPMF

Prepared by URS Corporation, Printed 10/31/2011

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.000	0	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
0.000		**TOTAL AREA**

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Fill (inches)
1	16P	978.25	978.13	121.8	0.0010	0.015	168.0	98.0	0.0

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Reach 18R: Sippo Creek Avg. Flow Depth=14.80' Max Vel=14.53 fps Inflow=24,228.91 cfs 92,049.489 af
L=450.0' S=0.0084 '/' Capacity=200,707.82 cfs Outflow=27,541.58 cfs 92,051.346 af

Pond 1P: Sippo Reservoir - Existing Peak Elev=1,015.62' Storage=484.911 af Inflow=0.00 cfs 0.000 af
Outflow=1,353.05 cfs 146.943 af

Pond 16P: North Sippo Park- Peak Elev=1,013.65' Storage=281.851 af Inflow=24,517.05 cfs 92,049.776 af
Primary=3,837.70 cfs 12,719.310 af Secondary=21,032.72 cfs 79,349.329 af Outflow=24,228.91 cfs 92,068.639 af

Pond 32P: Constant inflow - 24 hr PMF Peak Elev=1,013.76' Inflow=9,000.00 cfs 35,702.479 af
Outflow=9,000.00 cfs 35,702.479 af

Pond 33P: Constant inflow - 24 hr PMF Peak Elev=1,013.68' Inflow=5,172.00 cfs 20,517.025 af
Outflow=5,172.00 cfs 20,517.025 af

Pond 34P: Constant inflow - 24 hr PMF Peak Elev=1,013.76' Inflow=9,000.00 cfs 35,702.479 af
Outflow=9,000.00 cfs 35,702.479 af

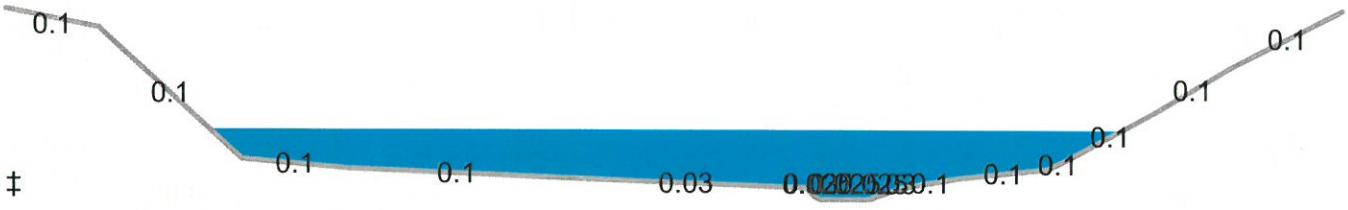
Summary for Reach 18R: Sippo Creek Channel Downstream of Lincoln Way

Inflow = 24,228.91 cfs @ 0.18 hrs, Volume= 92,049.489 af
Outflow = 27,541.58 cfs @ 0.01 hrs, Volume= 92,051.346 af, Atten= 0%, Lag= 0.0 min

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 14.53 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 13.85 fps, Avg. Travel Time= 0.5 min

Peak Storage= 852,787 cf @ 0.01 hrs
Average Depth at Peak Storage= 14.80'
Defined Flood Depth= 15.00', Capacity at Flood Depth= 28,360.41 cfs
Bank-Full Depth= 40.50', Capacity at Bank-Full= 200,707.82 cfs

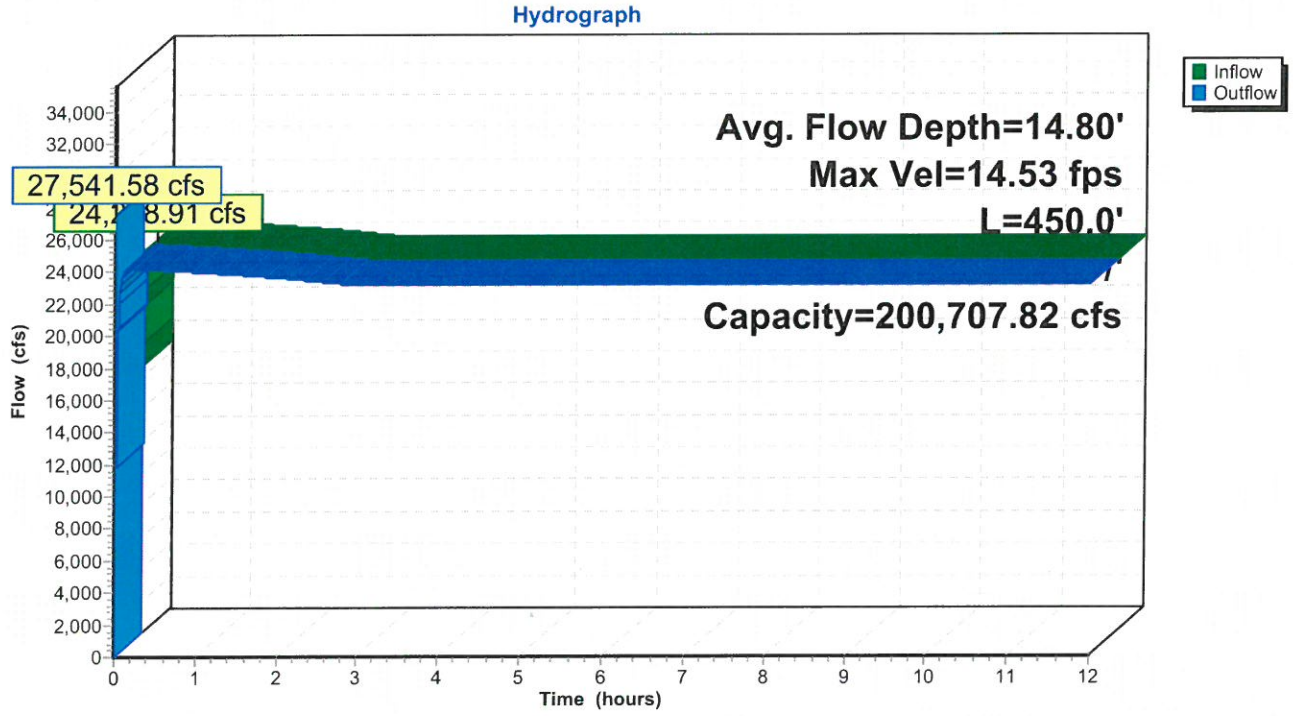
Custom cross-section, Length= 450.0' Slope= 0.0084 '/' (1006 Elevation Intervals)
Flow calculated by Manning's Subdivision method
Inlet Invert= 978.13', Outlet Invert= 974.35'



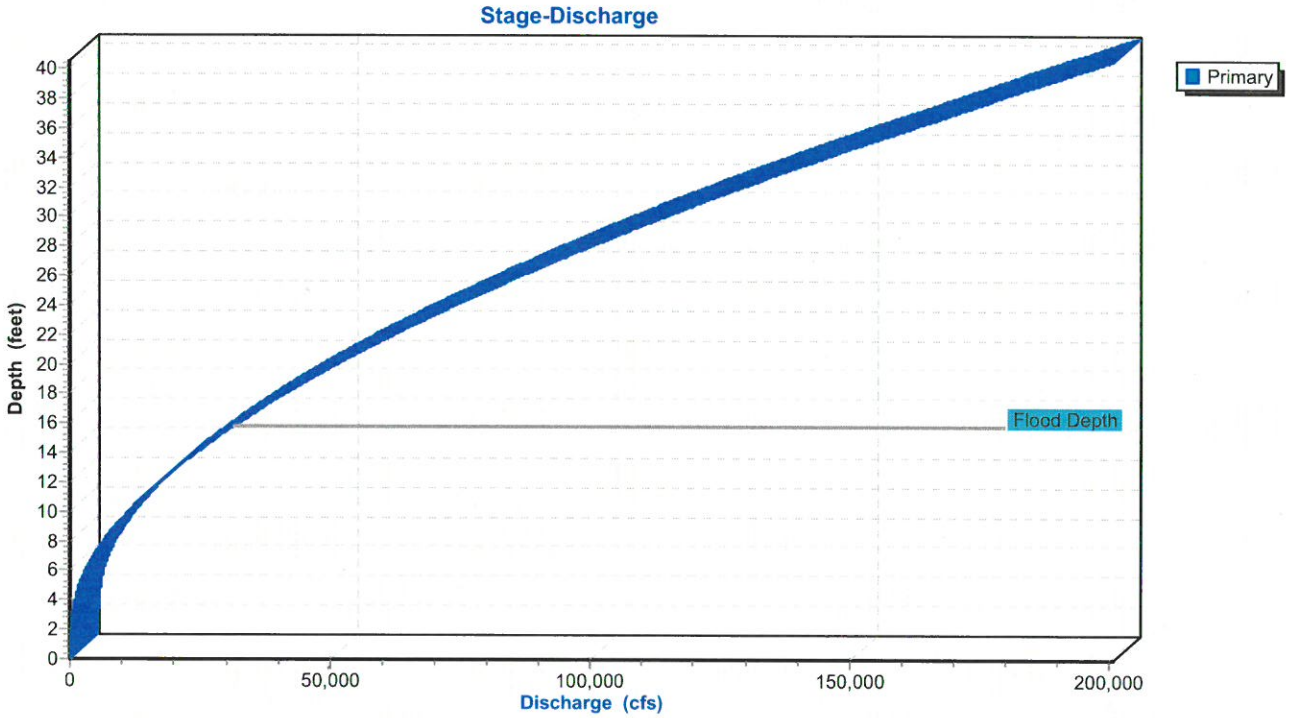
Offset (feet)	Elevation (feet)	Chan.Depth (feet)	n	Description
0.00	1,012.00	0.00		
20.00	1,008.00	4.00	0.100	Heavy timber, flow below branches
51.00	980.00	32.00	0.100	Heavy timber, flow below branches
74.00	978.00	34.00	0.100	Heavy timber, flow below branches
121.00	976.00	36.00	0.100	Heavy timber, flow below branches
173.00	974.00	38.00	0.030	Short grass
175.00	972.00	40.00	0.030	Short grass
176.00	971.50	40.50	0.025	Stream, clean & straight
187.00	971.50	40.50	0.025	Stream, clean & straight
188.00	972.00	40.00	0.025	Stream, clean & straight
194.00	974.00	38.00	0.030	Short grass
206.00	976.00	36.00	0.100	Heavy timber, flow below branches
225.50	978.00	34.00	0.100	Heavy timber, flow below branches
229.50	980.00	32.00	0.100	Heavy timber, flow below branches
248.00	990.00	22.00	0.100	Heavy timber, flow below branches
265.00	1,000.00	12.00	0.100	Heavy timber, flow below branches
289.00	1,012.00	0.00	0.100	Heavy timber, flow below branches

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	11.0	0	0.00
0.50	6.0	13.2	2,700	19.29
2.50	40.0	22.4	18,000	347.53
4.50	146.0	86.6	65,701	1,300.01
6.50	382.5	153.2	172,125	3,703.14
8.50	712.5	180.8	320,625	7,536.06
18.50	2,645.4	216.7	1,190,411	44,005.23
28.50	4,866.4	251.4	2,189,893	103,800.74
36.50	6,855.0	281.2	3,084,750	166,501.22
40.50	7,955.0	310.6	3,579,750	200,707.82

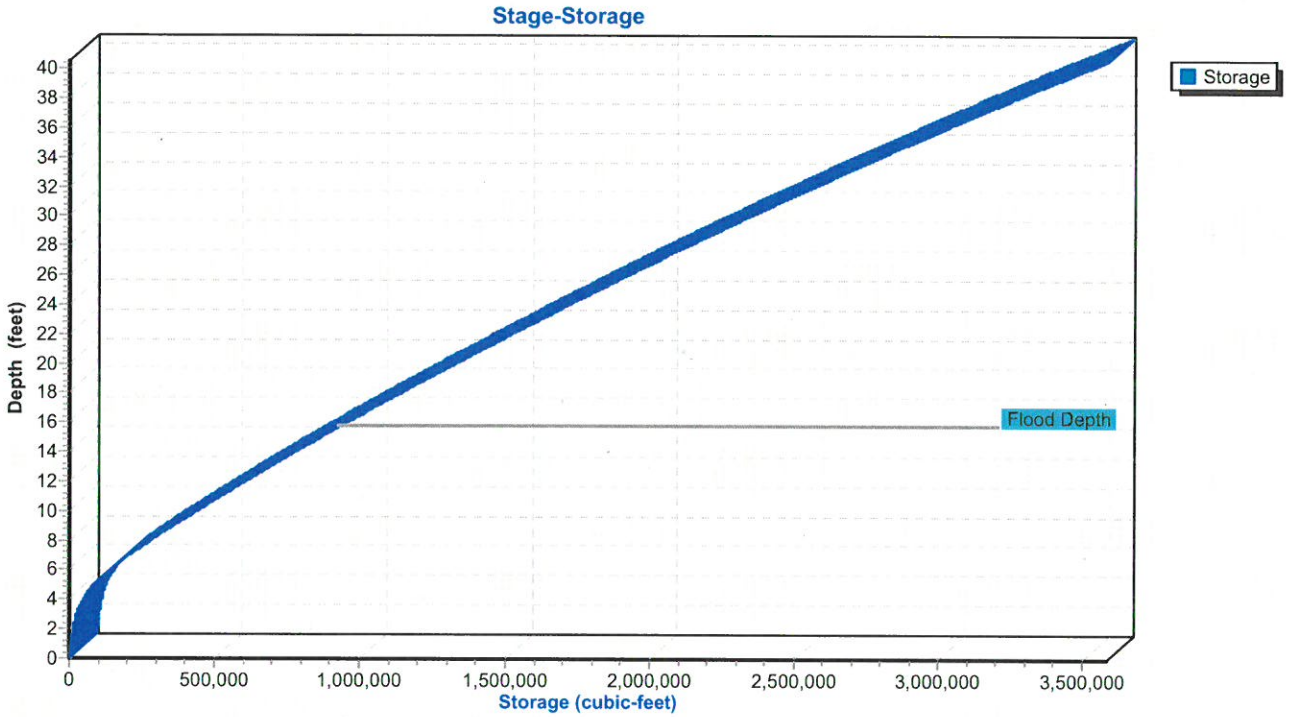
Reach 18R: Sippo Creek Channel Downstream of Lincoln Way



Reach 18R: Sippo Creek Channel Downstream of Lincoln Way



Reach 18R: Sippo Creek Channel Downstream of Lincoln Way



Summary for Pond 1P: Sippo Reservoir - Existing Conditions - 24hr PMF DBA

Inflow	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af
Outflow	=	1,353.05 cfs @	0.02 hrs,	Volume=	146.943 af, Atten= 0%, Lag= 1.3 min
Primary	=	1,353.05 cfs @	0.02 hrs,	Volume=	146.943 af

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Starting Elev= 1,015.62' Surf.Area= 72.915 ac Storage= 484.911 af
Peak Elev= 1,015.62' @ 0.00 hrs Surf.Area= 72.915 ac Storage= 484.911 af
Flood Elev= 1,008.00' Surf.Area= 21.577 ac Storage= 143.356 af

Plug-Flow detention time= (not calculated: initial storage excedes outflow)
Center-of-Mass det. time= (not calculated: no inflow)

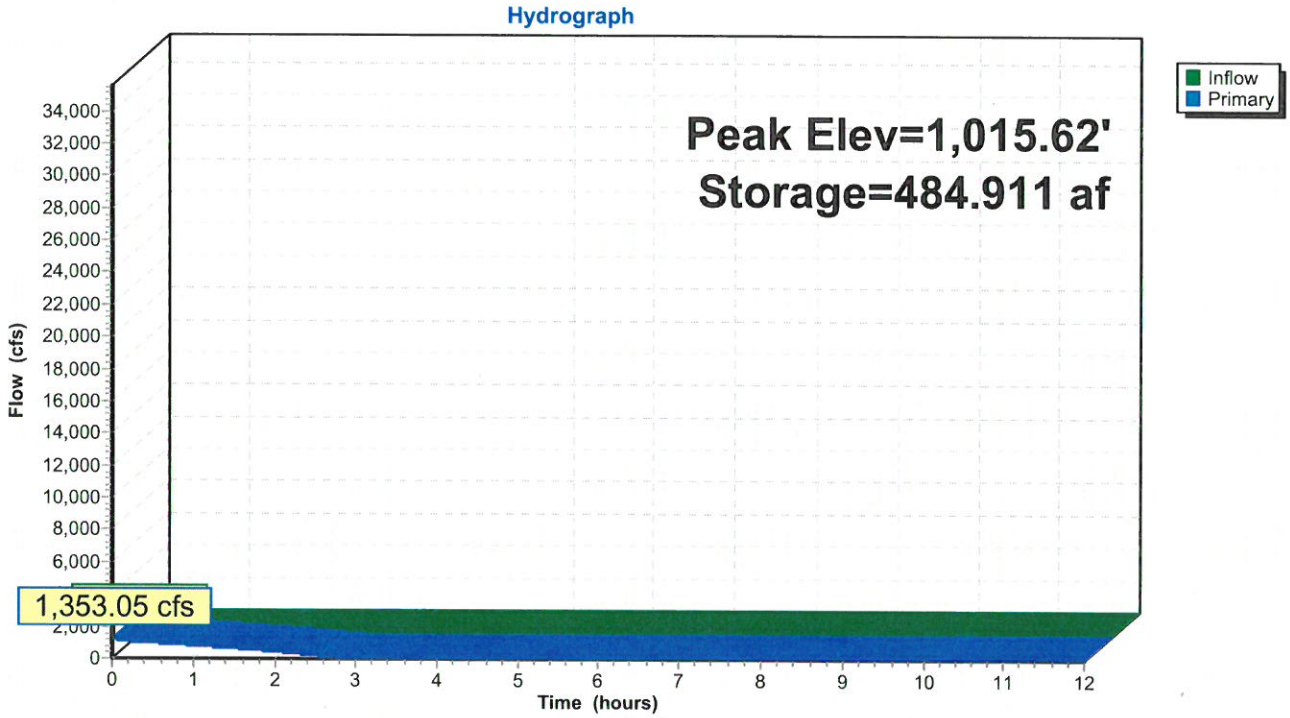
Volume	Invert	Avail.Storage	Storage Description
#1	985.00'	1,292.544 af	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
985.00	0.500	500.0	0.000	0.000	0.500
990.00	3.000	1,000.0	7.875	7.875	1.873
998.00	4.870	2,500.0	31.179	39.054	11.469
1,000.00	6.204	3,251.0	11.047	50.101	19.360
1,002.00	7.243	5,147.0	13.434	63.535	48.449
1,004.00	9.610	10,274.0	16.797	80.332	192.887
1,006.00	16.124	11,202.9	25.455	105.787	229.335
1,008.00	21.577	15,736.9	37.569	143.356	452.477
1,010.00	29.674	20,301.4	51.036	194.392	752.988
1,012.00	39.539	22,845.5	68.977	263.369	953.524
1,014.00	68.669	34,370.5	106.876	370.246	2,158.174
1,025.00	100.000	50,000.0	922.298	1,292.544	4,567.204

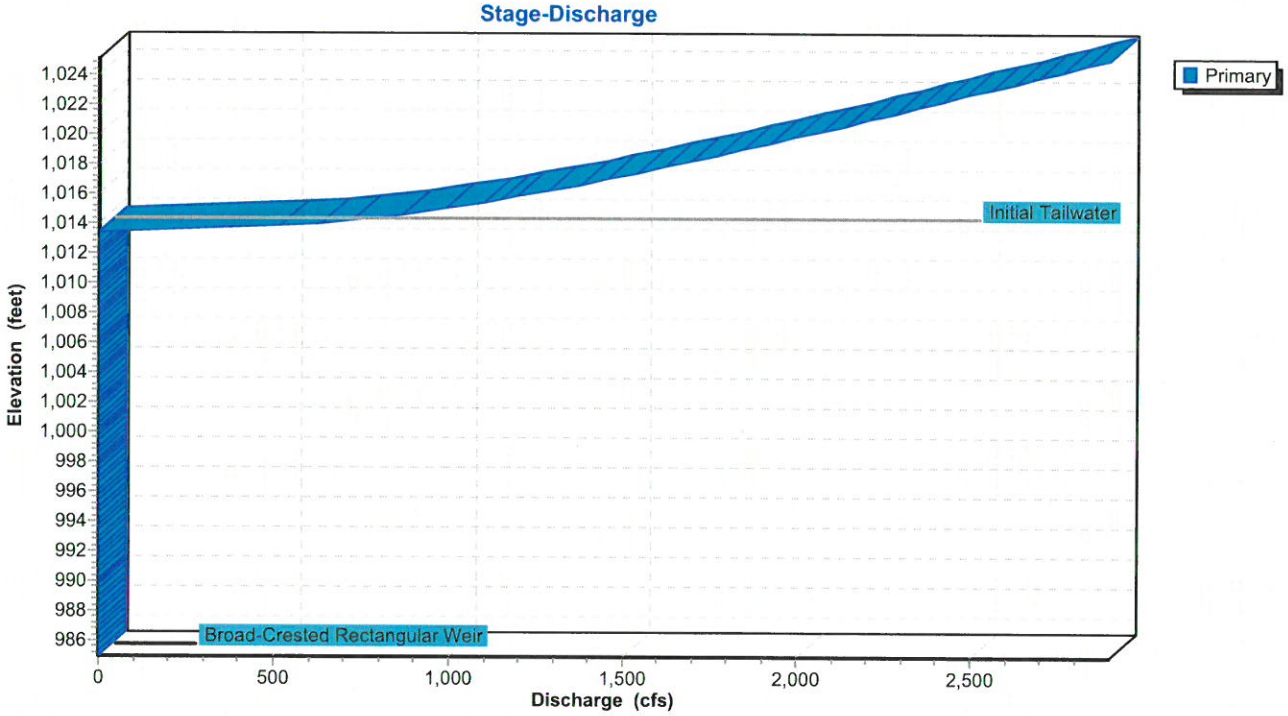
Device	Routing	Invert	Outlet Devices
#1	Primary	985.00'	**6.2' long x 50.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 20.00 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63 2.63

Primary OutFlow Max=1,267.39 cfs @ 0.02 hrs HW=1,015.59' TW=1,012.82' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 1,267.39 cfs @ 6.68 fps)

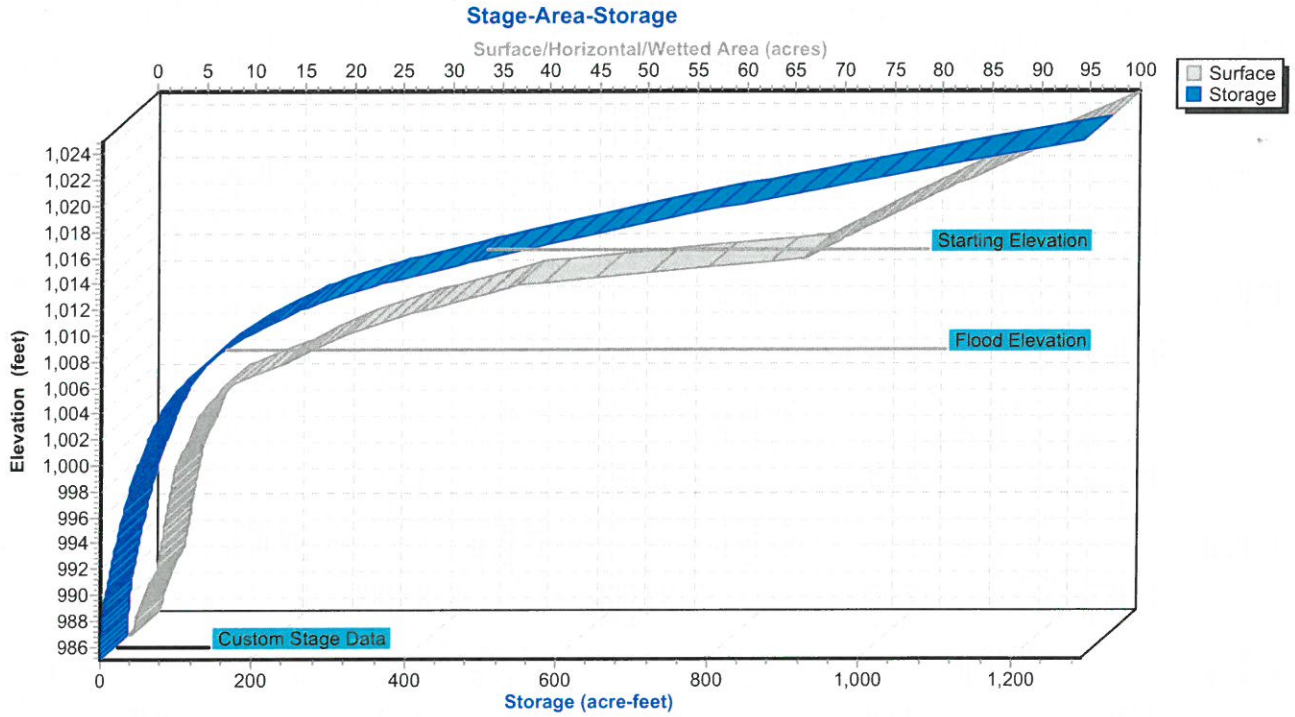
Pond 1P: Sippo Reservoir - Existing Conditions - 24hr PMF DBA



Pond 1P: Sippo Reservoir - Existing Conditions - 24hr PMF DBA



Pond 1P: Sippo Reservoir - Existing Conditions - 24hr PMF DBA



Summary for Pond 16P: North Sippo Park- Lincoln Way Culvert

Inflow = 24,517.05 cfs @ 0.02 hrs, Volume= 92,049.776 af
Outflow = 24,228.91 cfs @ 0.18 hrs, Volume= 92,068.639 af, Atten= 1%, Lag= 9.7 min
Primary = 3,837.70 cfs @ 0.00 hrs, Volume= 12,719.310 af
Secondary = 21,032.72 cfs @ 0.18 hrs, Volume= 79,349.329 af

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Starting Elev= 1,013.48' Surf.Area= 17.060 ac Storage= 278.949 af
Peak Elev= 1,013.65' @ 0.18 hrs Surf.Area= 17.227 ac Storage= 281.851 af (2.902 af above start)
Flood Elev= 1,008.00' Surf.Area= 13.465 ac Storage= 197.028 af

Plug-Flow detention time= 8.7 min calculated for 91,789.690 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (1,438.1 - 1,437.8)

Volume	Invert	Avail.Storage	Storage Description
#1	978.00'	371.368 af	**Stage Storage in Sippo Park (Irregular)** Listed below (Recalc)

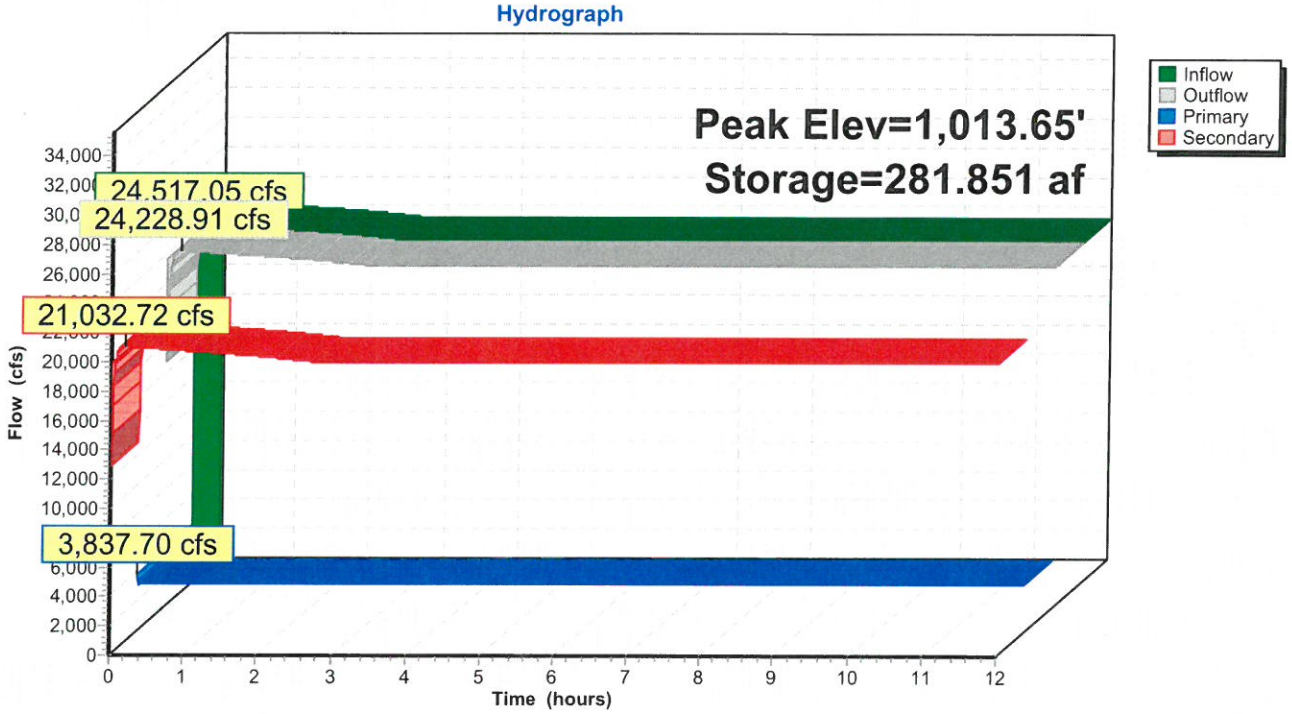
Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
978.00	0.100	200.0	0.000	0.000	0.100
981.00	0.300	500.0	0.573	0.573	0.484
982.00	0.659	1,392.9	0.468	1.041	3.572
984.00	2.018	2,470.7	2.553	3.595	11.180
986.00	3.584	3,300.7	5.528	9.122	19.932
988.00	5.007	3,247.5	8.551	17.674	20.586
990.00	6.111	3,143.9	11.100	28.773	21.805
992.00	6.773	3,217.1	12.878	41.652	22.668
994.00	7.411	3,271.9	14.179	55.831	23.334
996.00	8.110	3,253.8	15.516	71.347	23.597
998.00	8.804	3,273.8	16.909	88.256	23.878
1,000.00	9.441	3,318.6	18.241	106.497	24.439
1,002.00	10.181	3,437.0	19.617	126.114	25.908
1,004.00	11.109	3,548.6	21.283	147.398	27.341
1,006.00	12.538	3,553.4	23.633	171.030	27.516
1,008.00	13.465	3,829.8	25.997	197.028	31.248
1,010.00	14.326	4,085.3	27.787	224.814	34.947
1,012.00	15.633	4,329.5	29.949	254.764	38.706
1,014.00	17.576	4,742.6	33.190	287.954	45.555
1,016.00	20.521	5,940.5	38.059	326.013	68.935
1,018.00	24.905	6,310.6	45.355	371.368	77.223

Device	Routing	Invert	Outlet Devices
#1	Primary	978.25'	**168.0" W x 98.0" H Box Box Culvert** L= 121.8' Box, 30-75° wingwalls, rounded crown, Ke= 0.200 Inlet / Outlet Invert= 978.25' / 978.13' S= 0.0010 '/' Cc= 0.900 n= 0.015 Brickwork
#2	Secondary	1,008.00'	**Linclon Way (172), Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 2.00 4.00 6.00 8.00 10.00 Width (feet) 233.00 373.00 475.00 630.00 790.00 940.00 1,090.00

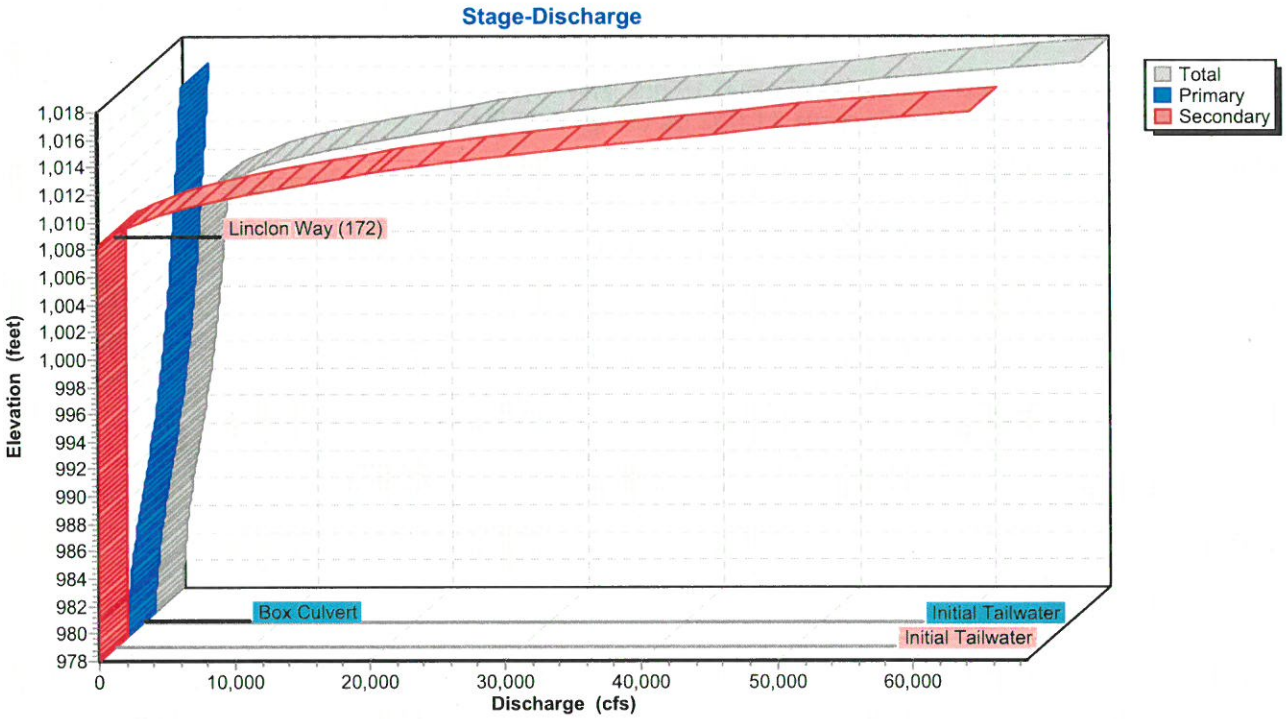
Primary OutFlow Max=3,837.70 cfs @ 0.00 hrs HW=1,013.48' TW=978.13' (Dynamic Tailwater)
↑—**1=Box Culvert** (Inlet Controls 3,837.70 cfs @ 33.57 fps)

Secondary OutFlow Max=21,032.64 cfs @ 0.18 hrs HW=1,013.65' TW=992.08' (Dynamic Tailwater)
↑—**2=Linclon Way (172)** (Weir Controls 21,032.64 cfs @ 7.06 fps)

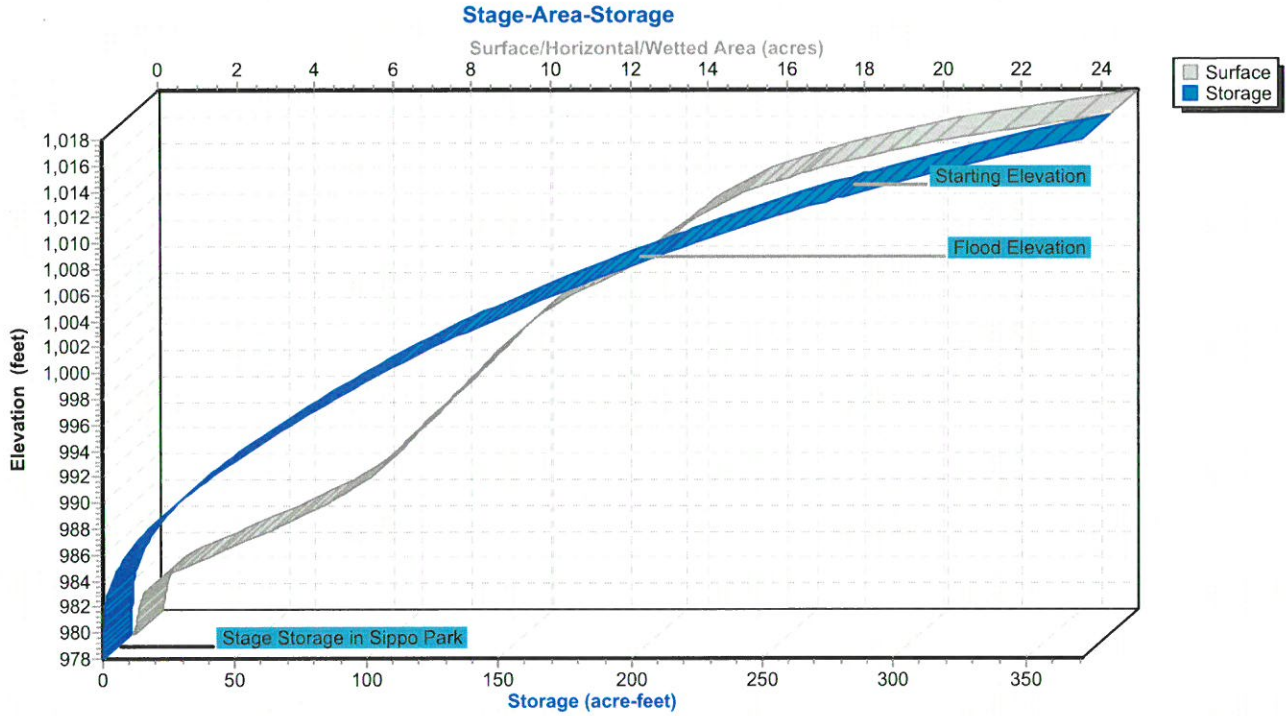
Pond 16P: North Sippo Park- Lincoln Way Culvert



Pond 16P: North Sippo Park- Lincoln Way Culvert



Pond 16P: North Sippo Park- Lincoln Way Culvert



Summary for Pond 32P: Constant inflow - 24 hr PMF

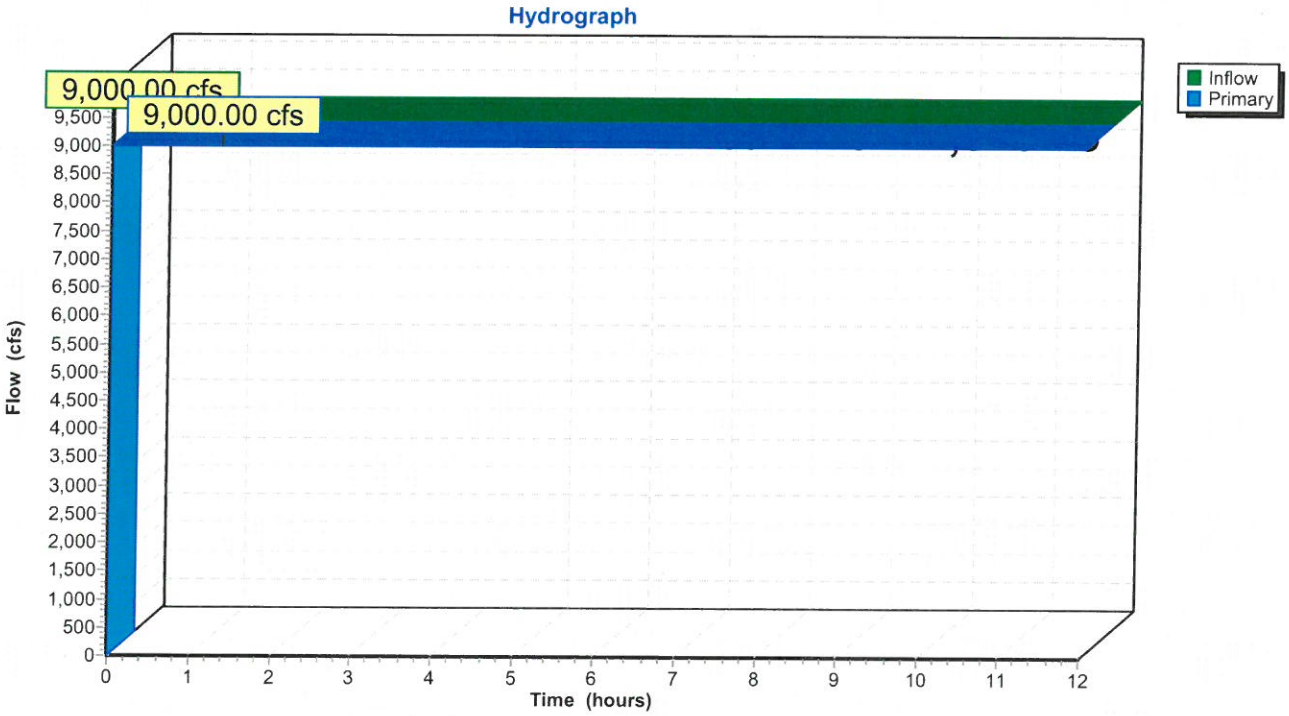
Inflow	=	9,000.00 cfs @	0.00 hrs, Volume=	35,702.479 af,	Incl. 9,000.00 cfs Base Flow
Outflow	=	9,000.00 cfs @	1.34 hrs, Volume=	35,702.479 af,	Atten= 0%, Lag= 80.3 min
Primary	=	9,000.00 cfs @	1.34 hrs, Volume=	35,702.479 af	

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,013.76' @ 0.19 hrs

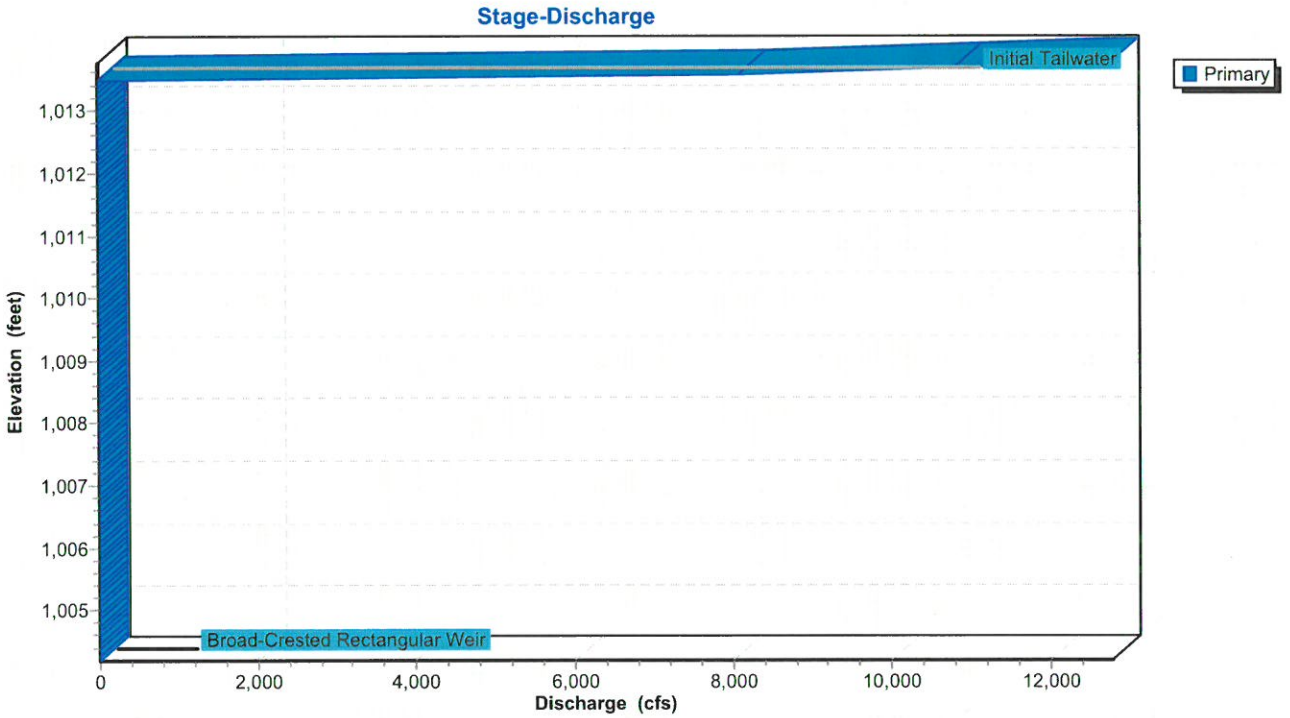
Device	Routing	Invert	Outlet Devices
#1	Primary	1,004.20'	**500.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=9,014.74 cfs @ 1.34 hrs HW=1,013.71' TW=1,013.60' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 9,014.74 cfs @ 1.90 fps)

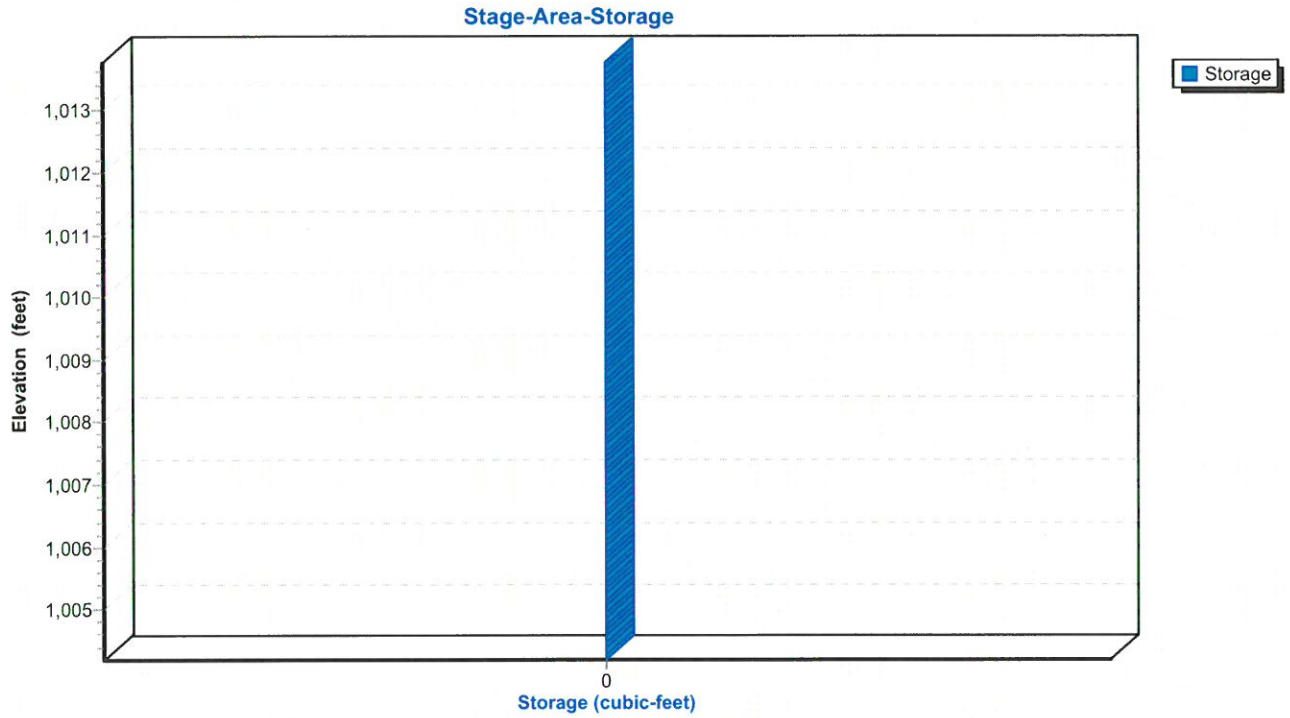
Pond 32P: Constant inflow - 24 hr PMF



Pond 32P: Constant inflow - 24 hr PMF



Pond 32P: Constant inflow - 24 hr PMF



Summary for Pond 33P: Constant inflow - 24 hr PMF

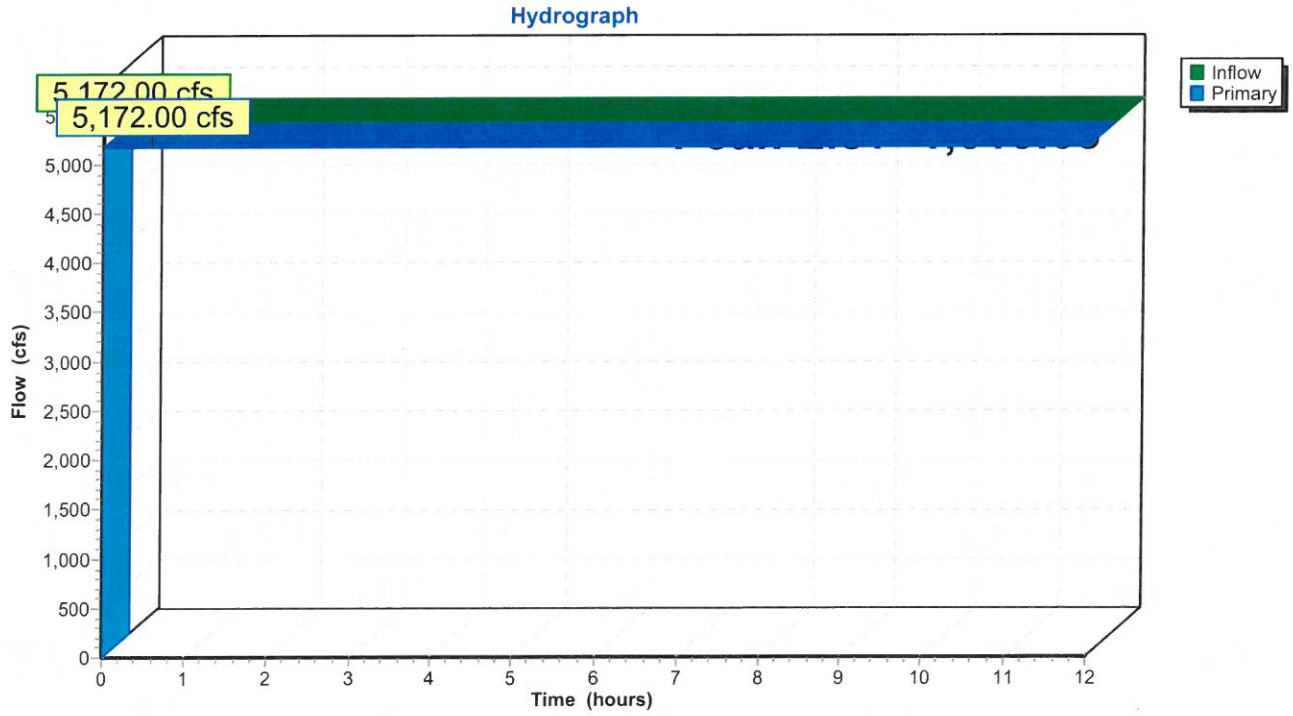
Inflow	=	5,172.00 cfs @	0.00 hrs,	Volume=	20,517.025 af, Incl. 5,172.00 cfs Base Flow
Outflow	=	5,172.00 cfs @	0.57 hrs,	Volume=	20,517.025 af, Atten= 0%, Lag= 34.5 min
Primary	=	5,172.00 cfs @	0.57 hrs,	Volume=	20,517.025 af

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,013.68' @ 0.19 hrs

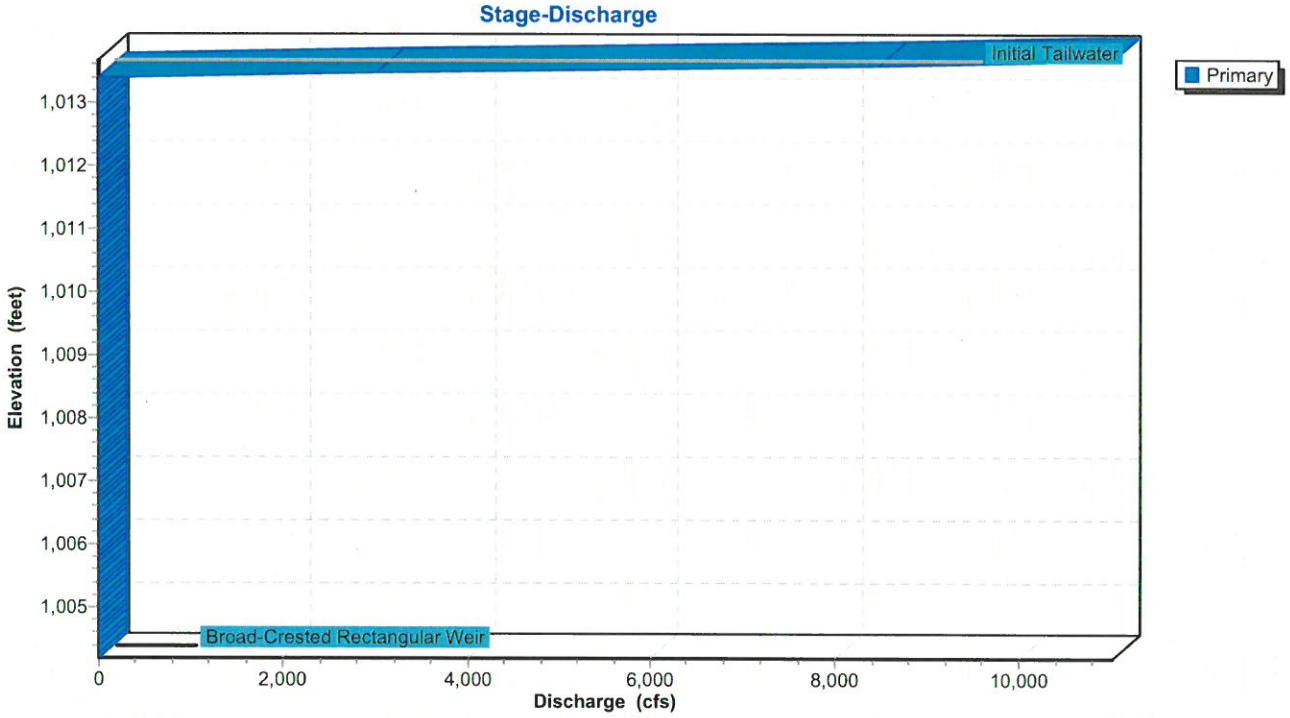
Device	Routing	Invert	Outlet Devices
#1	Primary	1,004.20'	**500.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=5,204.86 cfs @ 0.57 hrs HW=1,013.66' TW=1,013.63' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Weir Controls 5,204.86 cfs @ 1.10 fps)

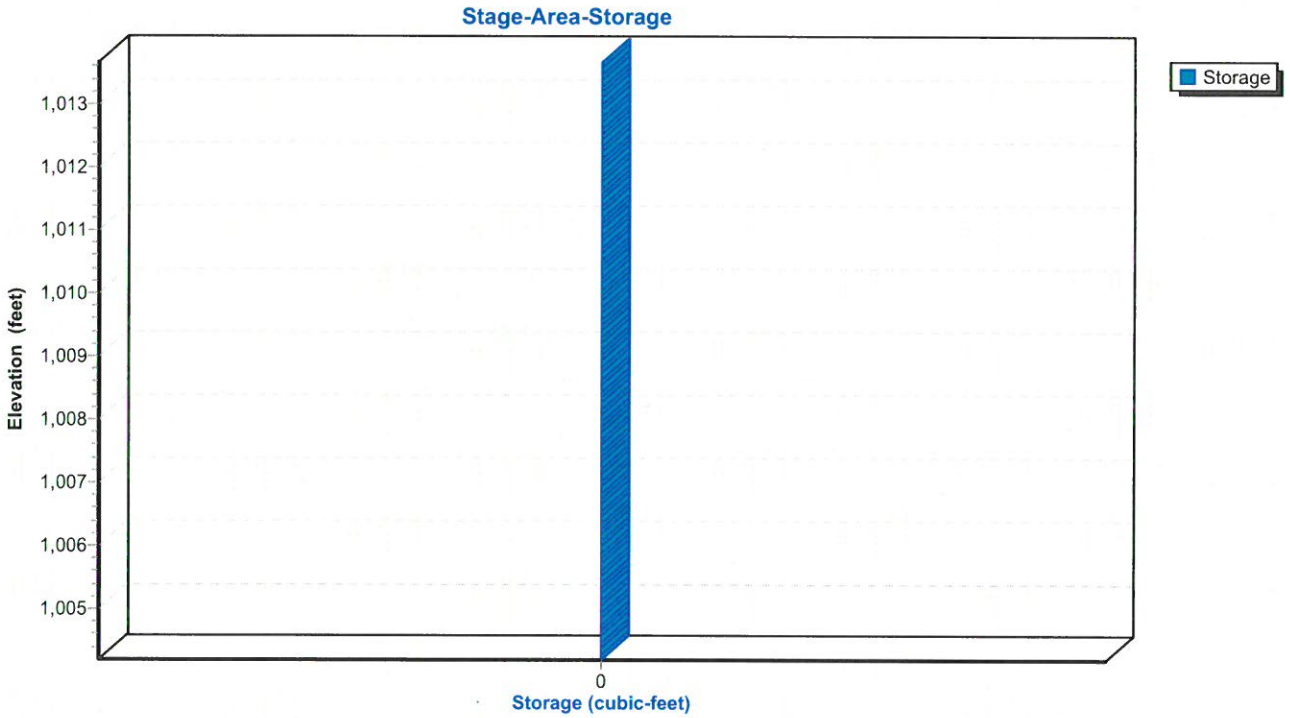
Pond 33P: Constant inflow - 24 hr PMF



Pond 33P: Constant inflow - 24 hr PMF



Pond 33P: Constant inflow - 24 hr PMF



Summary for Pond 34P: Constant inflow - 24 hr PMF

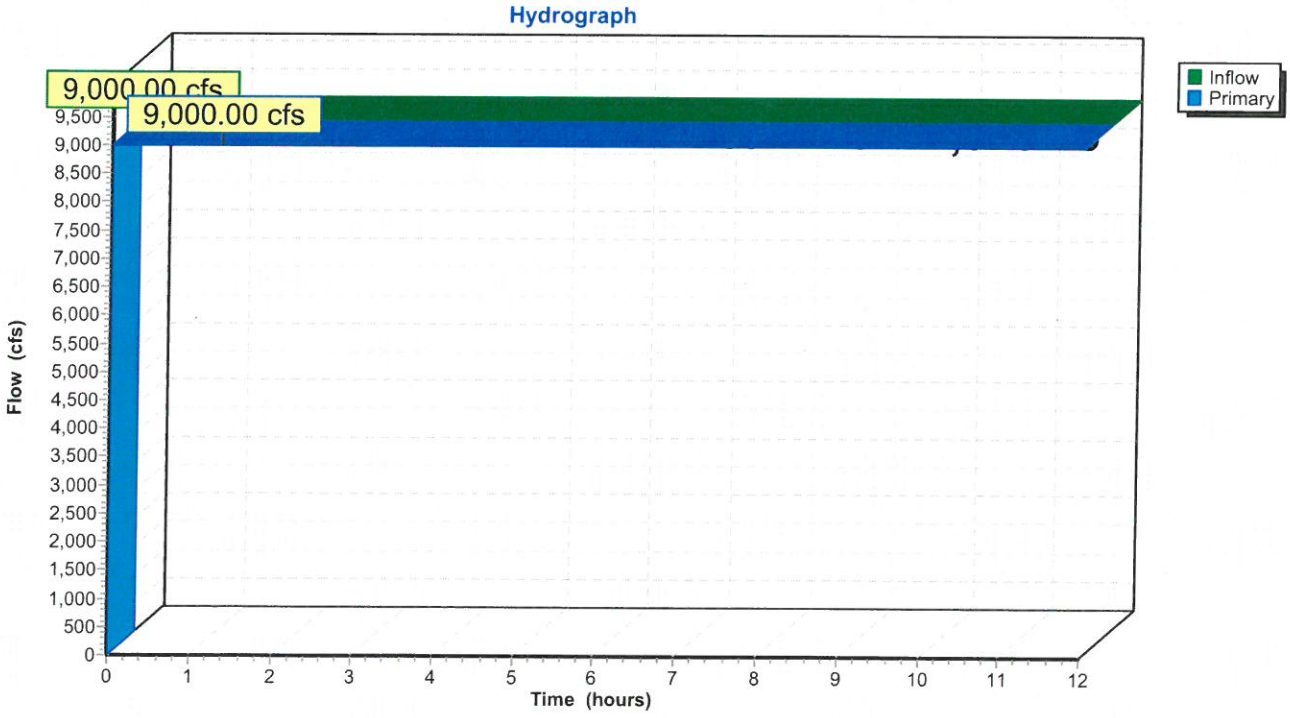
Inflow	=	9,000.00 cfs @	0.00 hrs, Volume=	35,702.479 af,	Incl. 9,000.00 cfs Base Flow
Outflow	=	9,000.00 cfs @	1.34 hrs, Volume=	35,702.479 af,	Atten= 0%, Lag= 80.3 min
Primary	=	9,000.00 cfs @	1.34 hrs, Volume=	35,702.479 af	

Routing by Sim-Route method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,013.76' @ 0.19 hrs

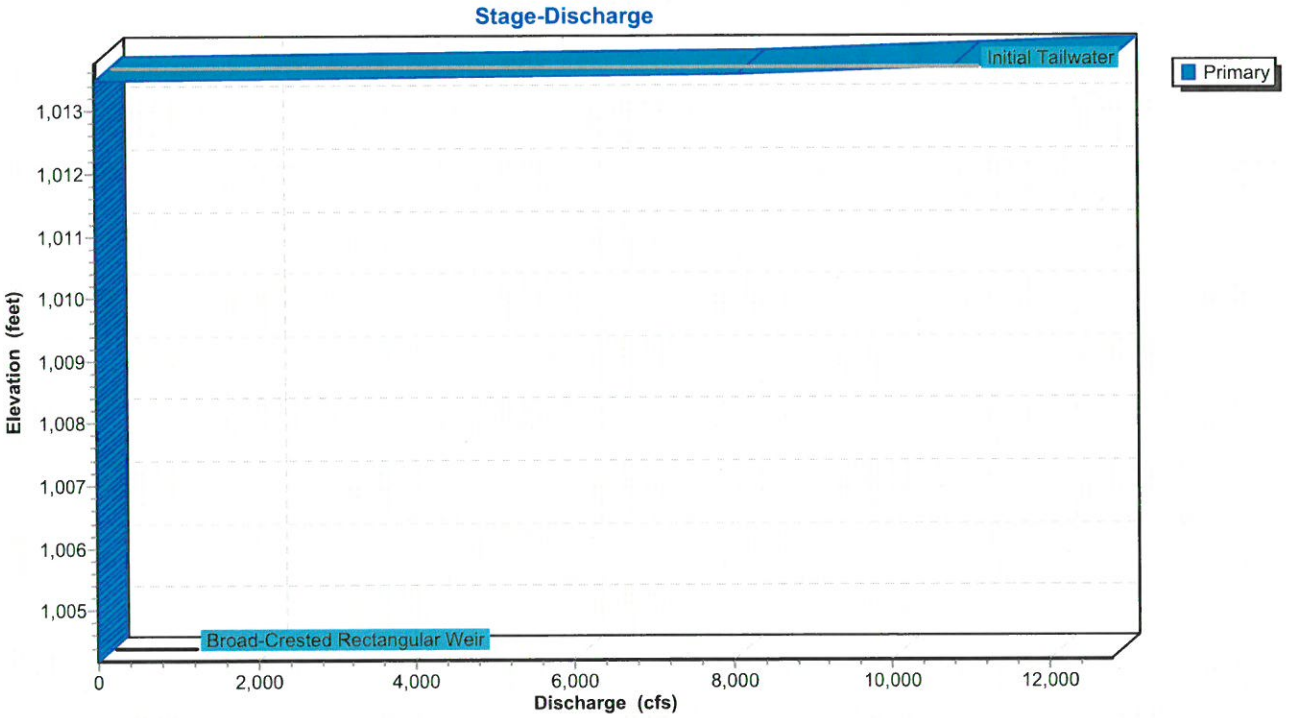
Device	Routing	Invert	Outlet Devices
#1	Primary	1,004.20'	**500.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=9,014.74 cfs @ 1.34 hrs HW=1,013.71' TW=1,013.60' (Dynamic Tailwater)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 9,014.74 cfs @ 1.90 fps)

Pond 34P: Constant inflow - 24 hr PMF



Pond 34P: Constant inflow - 24 hr PMF



Pond 34P: Constant inflow - 24 hr PMF