

130 ENVIRONMENTAL PARK

ATTACHMENT C2

APPENDIX C2-D

POST DEVELOPMENT CONDITION HEC-RAS ANALYSIS

Includes pages C2-D-1 through C2-D-79

Technically Complete October 28, 2014



Bryce & Matthews, Inc.
Firm Registration No. F-834

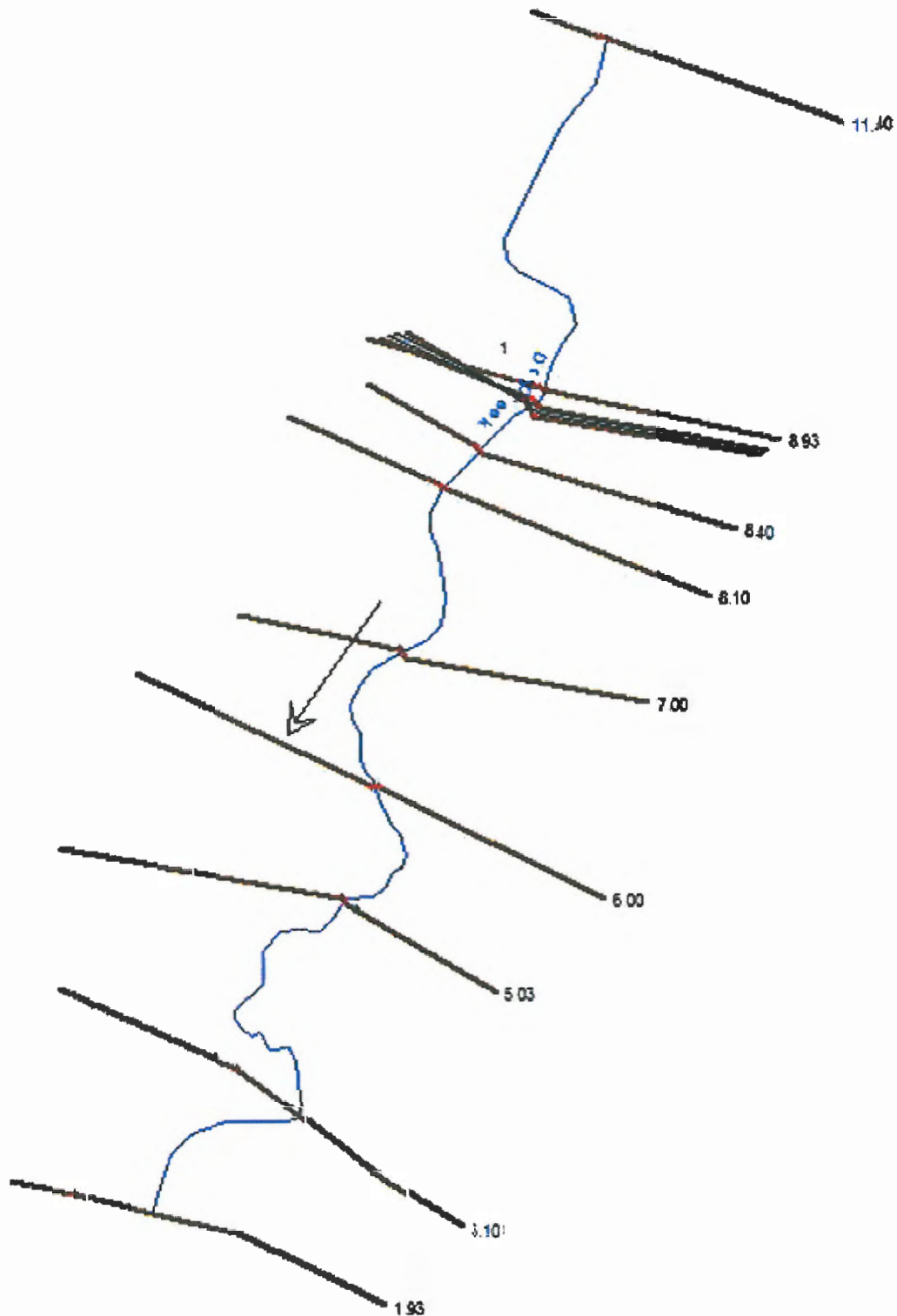
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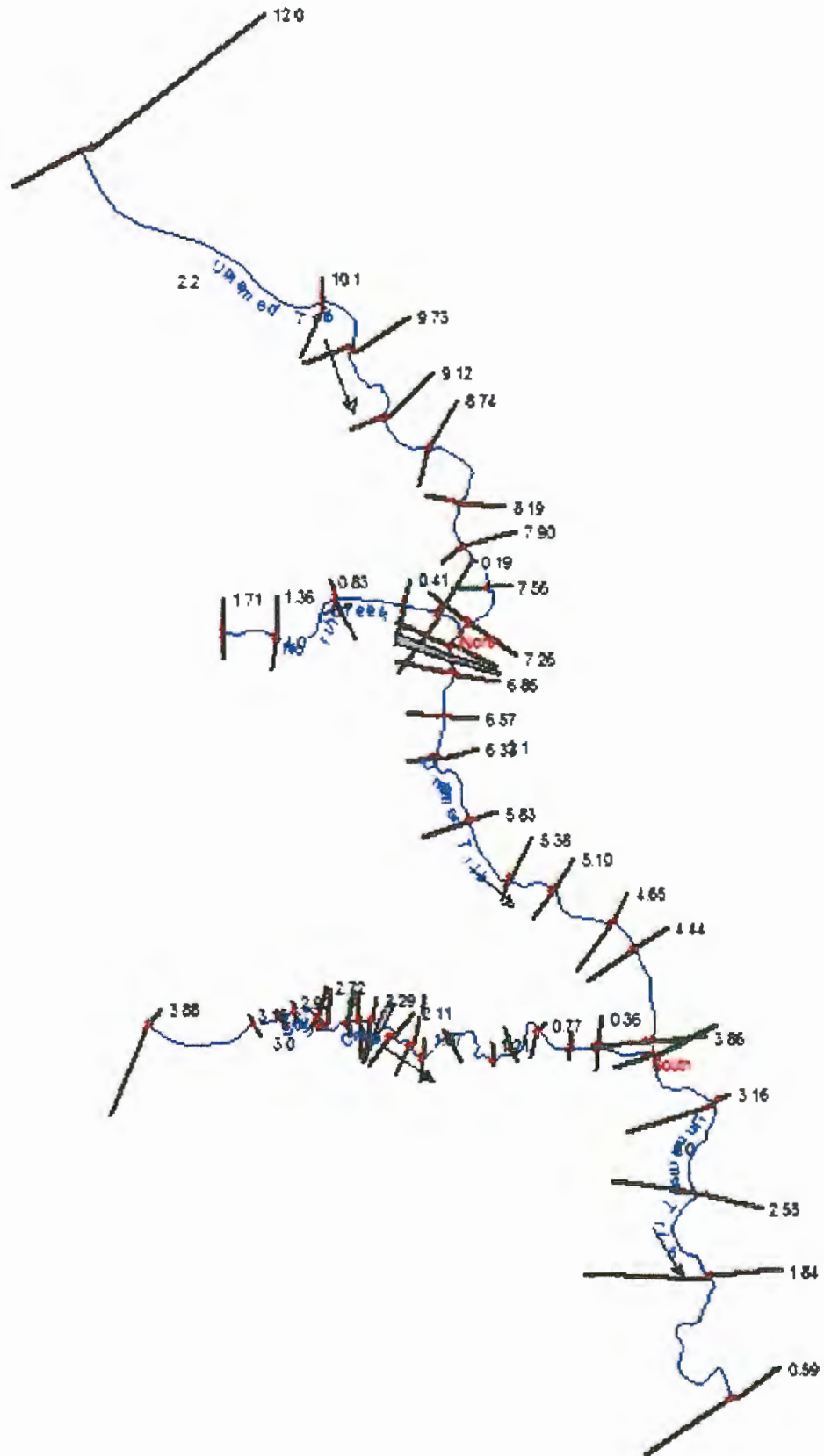
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Pose Developed Condition HEC-RAS Analysis	C2-D-4



Biggs & Mathews, Inc.
Firm Registration No. F-834

POST DEVELOPED CONDITION HEC-RAS SCHEMATIC





POST DEVELOPED CONDITION HEC-RAS ANALYSIS

HEC-RAS Plan: Dry Creek River Dry Creek Reach: 1

Reach	River Sta	Profile	Q Total (cfs)	Min Chl El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	11.40	100 yr	5381.00	514.60	521.38	521.38	522.04	0.035746	8.80	1152.96	746.25	0.74
1	11.40	25 yr	3939.60	514.60	521.12	521.12	521.67	0.030491	7.80	957.88	725.27	0.67
1	8.93	100 yr	5381.00	506.00	519.14	513.23	519.15	0.000099	1.16	6021.98	1361.27	0.06
1	8.93	25 yr	3939.60	506.00	517.64	512.74	517.66	0.000147	1.29	4130.43	1171.05	0.07
1	8.84	100 yr	5381.00	506.00	519.13	514.07	519.14	0.000127	1.19	5885.99	1323.34	0.07
1	8.84	25 yr	3939.60	506.00	517.63	513.53	517.64	0.000178	1.27	4094.37	1088.03	0.08
1	8.81	Culvert										
1	8.78	100 yr	5381.00	505.89	519.07		519.09	0.000217	1.66	5951.36	1321.31	0.09
1	8.78	25 yr	3939.60	505.89	517.61		517.63	0.000278	1.70	4190.24	1101.00	0.10
1	8.40	100 yr	5381.00	505.09	519.00		519.01	0.000194	1.65	6714.24	1606.63	0.08
1	8.40	25 yr	3939.60	505.09	517.50		517.52	0.000283	1.82	4497.96	1348.86	0.10
1	8.10	100 yr	5381.00	504.56	518.96		518.97	0.000090	1.17	9146.12	1799.46	0.06
1	8.10	25 yr	3939.60	504.56	517.46		517.47	0.000114	1.21	6638.62	1561.55	0.06
1	7.00	100 yr	7266.00	502.00	518.92		518.92	0.000028	0.73	14286.76	1609.42	0.03
1	7.00	25 yr	5326.50	502.00	517.42		517.42	0.000025	0.65	11952.51	1499.68	0.03
1	6.00	100 yr	7266.00	502.00	518.91		518.91	0.000012	0.72	20236.27	2123.98	0.03
1	6.00	25 yr	5326.50	502.00	517.41		517.41	0.000009	0.60	17241.55	1843.82	0.03
1	5.03	100 yr	7266.00	500.00	518.90		518.91	0.000007	0.49	23576.79	2115.32	0.02
1	5.03	25 yr	5326.50	500.00	517.40		517.40	0.000006	0.41	20489.25	1987.57	0.02
1	3.10	100 yr	7266.00	498.12	518.90		518.90	0.000001	0.28	32791.92	2343.33	0.01
1	3.10	25 yr	5326.50	498.12	517.40		517.40	0.000001	0.23	29346.24	2239.22	0.01
1	1.93	100 yr	7266.00	497.59	518.90	499.05	518.90	0.000001	0.27	32373.33	2207.92	0.01
1	1.93	25 yr	5326.50	497.59	517.40	498.83	517.40	0.000001	0.22	29172.10	1995.17	0.01

HEC-RAS Plan: Post

River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Unnamed Trib	2.2	12.0	100 yr	1933.40	555.00	559.02	558.97	560.08	0.017260	8.24	234.61	106.59	0.98
Unnamed Trib	2.2	12.0	25 yr	1410.50	555.00	558.52	558.47	559.43	0.017537	7.66	184.20	94.56	0.97
Unnamed Trib	2.2	10.1	100 yr	1933.40	546.00	550.74		550.93	0.002164	4.06	724.48	403.55	0.35
Unnamed Trib	2.2	10.1	25 yr	1410.50	546.00	550.30		550.47	0.002101	3.73	553.95	375.28	0.33
Unnamed Trib	2.2	9.73	100 yr	1933.40	544.26	548.63		549.05	0.014005	6.36	514.76	305.47	0.59
Unnamed Trib	2.2	9.73	25 yr	1410.50	544.26	548.18	547.76	548.59	0.015072	6.04	383.86	274.34	0.60
Unnamed Trib	2.2	9.12	100 yr	1933.40	539.18	546.15		546.26	0.002352	3.46	1015.24	539.49	0.26
Unnamed Trib	2.2	9.12	25 yr	1410.50	539.18	545.68		545.79	0.002290	3.23	773.61	494.43	0.25
Unnamed Trib	2.2	8.74	100 yr	1933.40	538.94	545.07		545.19	0.003892	3.99	869.22	440.60	0.32
Unnamed Trib	2.2	8.74	25 yr	1410.50	538.94	544.46		544.59	0.004963	4.12	619.19	382.28	0.36
Unnamed Trib	2.2	8.19	100 yr	1933.40	536.67	543.91		544.00	0.001528	3.13	962.94	370.88	0.22
Unnamed Trib	2.2	8.19	25 yr	1410.50	536.67	543.22		543.31	0.001497	2.87	730.56	305.52	0.21
Unnamed Trib	2.2	7.90	100 yr	1933.40	535.72	543.32		543.44	0.002820	4.07	807.29	323.94	0.28
Unnamed Trib	2.2	7.90	25 yr	1410.50	535.72	542.62		542.73	0.002981	3.89	601.06	262.38	0.28
Unnamed Trib	2.2	7.56	100 yr	1933.40	535.18	542.37		542.49	0.003072	4.51	819.95	345.27	0.30
Unnamed Trib	2.2	7.56	25 yr	1410.50	535.18	541.48		541.62	0.003932	4.65	550.53	252.48	0.34
Unnamed Trib	2.2	7.26	100 yr	1933.40	533.95	541.28		541.53	0.003850	4.95	589.59	181.08	0.34
Unnamed Trib	2.2	7.26	25 yr	1410.50	533.95	540.28		540.50	0.003964	4.50	434.53	136.51	0.34
Unnamed Trib	2.1	7.03	100 yr	2909.00	532.47	539.98	537.90	540.39	0.005958	6.27	643.17	154.65	0.42
Unnamed Trib	2.1	7.03	25 yr	2121.10	532.47	538.76	537.26	539.18	0.007597	6.20	465.47	136.51	0.46
Unnamed Trib	2.1	6.95		Culvert									
Unnamed Trib	2.1	6.85	100 yr	2909.00	531.33	539.70		539.81	0.001584	3.67	1263.13	333.68	0.23
Unnamed Trib	2.1	6.85	25 yr	2121.10	531.33	538.82		538.91	0.001469	3.27	993.00	270.86	0.21
Unnamed Trib	2.1	6.57	100 yr	2909.00	530.49	538.99		539.21	0.002606	4.31	975.43	269.30	0.28
Unnamed Trib	2.1	6.57	25 yr	2121.10	530.49	538.18		538.37	0.002394	3.81	770.17	237.98	0.27
Unnamed Trib	2.1	6.33	100 yr	2909.00	530.55	537.97		538.31	0.005338	5.87	810.94	256.11	0.40
Unnamed Trib	2.1	6.33	25 yr	2121.10	530.55	537.22		537.52	0.005142	5.32	630.93	223.40	0.38

HEC-RAS Plan: Post (Continued)

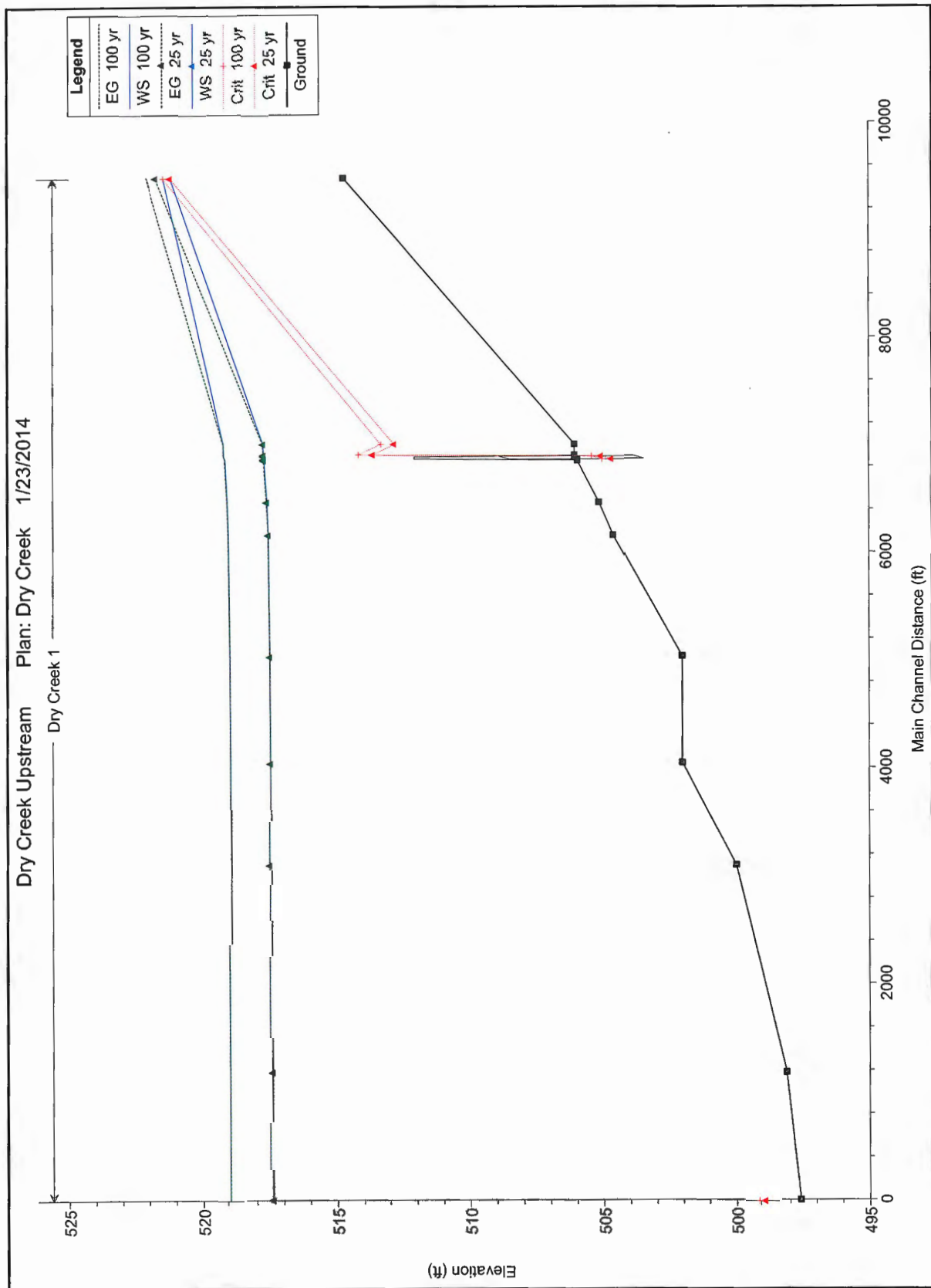
River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Unnamed Trib	2.1	5.83	100 yr	2909.00	527.28	535.23		535.55	0.006706	6.51	778.38	255.77	0.44
Unnamed Trib	2.1	5.83	25 yr	2121.10	527.28	534.52		534.81	0.006653	6.03	606.87	226.01	0.43
Unnamed Trib	2.1	5.38	100 yr	2909.00	525.29	532.81		533.07	0.004352	5.28	928.22	296.77	0.36
Unnamed Trib	2.1	5.38	25 yr	2121.10	525.29	532.11		532.36	0.004287	4.87	728.07	281.29	0.35
Unnamed Trib	2.1	5.10	100 yr	2909.00	523.57	531.49		531.77	0.004970	5.40	898.20	300.24	0.38
Unnamed Trib	2.1	5.10	25 yr	2121.10	523.57	530.91		531.14	0.004437	4.78	728.57	277.21	0.35
Unnamed Trib	2.1	4.65	100 yr	2909.00	521.27	528.96		529.27	0.006902	6.62	945.35	431.63	0.45
Unnamed Trib	2.1	4.65	25 yr	2121.10	521.27	528.43		528.75	0.007019	6.32	722.83	408.90	0.45
Unnamed Trib	2.1	4.44	100 yr	2909.00	520.53	527.61		527.83	0.006265	5.89	1014.85	414.31	0.42
Unnamed Trib	2.1	4.44	25 yr	2121.10	520.53	527.09		527.29	0.006138	5.49	805.60	388.88	0.41
Unnamed Trib	2.1	3.86	100 yr	2909.00	518.57	525.15		525.29	0.003261	4.03	1273.81	520.54	0.30
Unnamed Trib	2.1	3.86	25 yr	2121.10	518.57	524.50		524.63	0.003602	3.89	948.95	464.47	0.31
Unnamed Trib	2.0	3.70	100 yr	3803.20	516.79	524.08		524.53	0.006320	6.17	954.64	320.47	0.43
Unnamed Trib	2.0	3.70	25 yr	2761.00	516.79	523.67		523.97	0.004516	4.99	829.37	291.36	0.36
Unnamed Trib	2.0	3.16	100 yr	3803.20	512.97	519.33		519.93	0.012649	7.29	777.75	311.74	0.58
Unnamed Trib	2.0	3.16	25 yr	2761.00	512.97	518.05	518.05	519.04	0.027319	8.72	427.46	236.43	0.82
Unnamed Trib	2.0	2.53	100 yr	3803.20	509.18	518.96		519.00	0.000452	2.00	2839.41	644.07	0.12
Unnamed Trib	2.0	2.53	25 yr	2761.00	509.18	517.45	512.97	517.50	0.000634	2.08	1920.37	557.15	0.14
Unnamed Trib	2.0	1.84	100 yr	3803.20	504.96	518.92		518.93	0.000044	0.81	6751.34	1032.04	0.04
Unnamed Trib	2.0	1.84	25 yr	2761.00	504.96	517.42		517.43	0.000043	0.74	5320.43	867.03	0.04
Unnamed Trib	2.0	0.59	100 yr	3803.20	498.13	518.90	506.55	518.90	0.000018	0.66	9669.92	938.57	0.03
Unnamed Trib	2.0	0.59	25 yr	2761.00	498.13	517.40	505.59	517.40	0.000015	0.56	8288.81	903.26	0.02
South Creek	3.0	3.88	100 yr	337.20	580.00	581.50	580.97	581.60	0.009393	2.91	147.14	151.88	0.42
South Creek	3.0	3.88	25 yr	245.40	580.00	581.30	580.82	581.38	0.009017	2.59	118.17	137.48	0.40
South Creek	3.0	3.16	100 yr	337.20	567.00	568.68		569.01	0.041991	6.61	81.58	76.01	0.90
South Creek	3.0	3.16	25 yr	245.40	567.00	568.43	568.36	568.74	0.046629	6.26	63.25	72.50	0.92
South Creek	3.0	2.99	100 yr	337.20	563.05	565.43		565.64	0.011699	3.80	100.18	68.96	0.48
South Creek	3.0	2.99	25 yr	245.40	563.05	565.14		565.30	0.011393	3.35	80.62	63.56	0.47

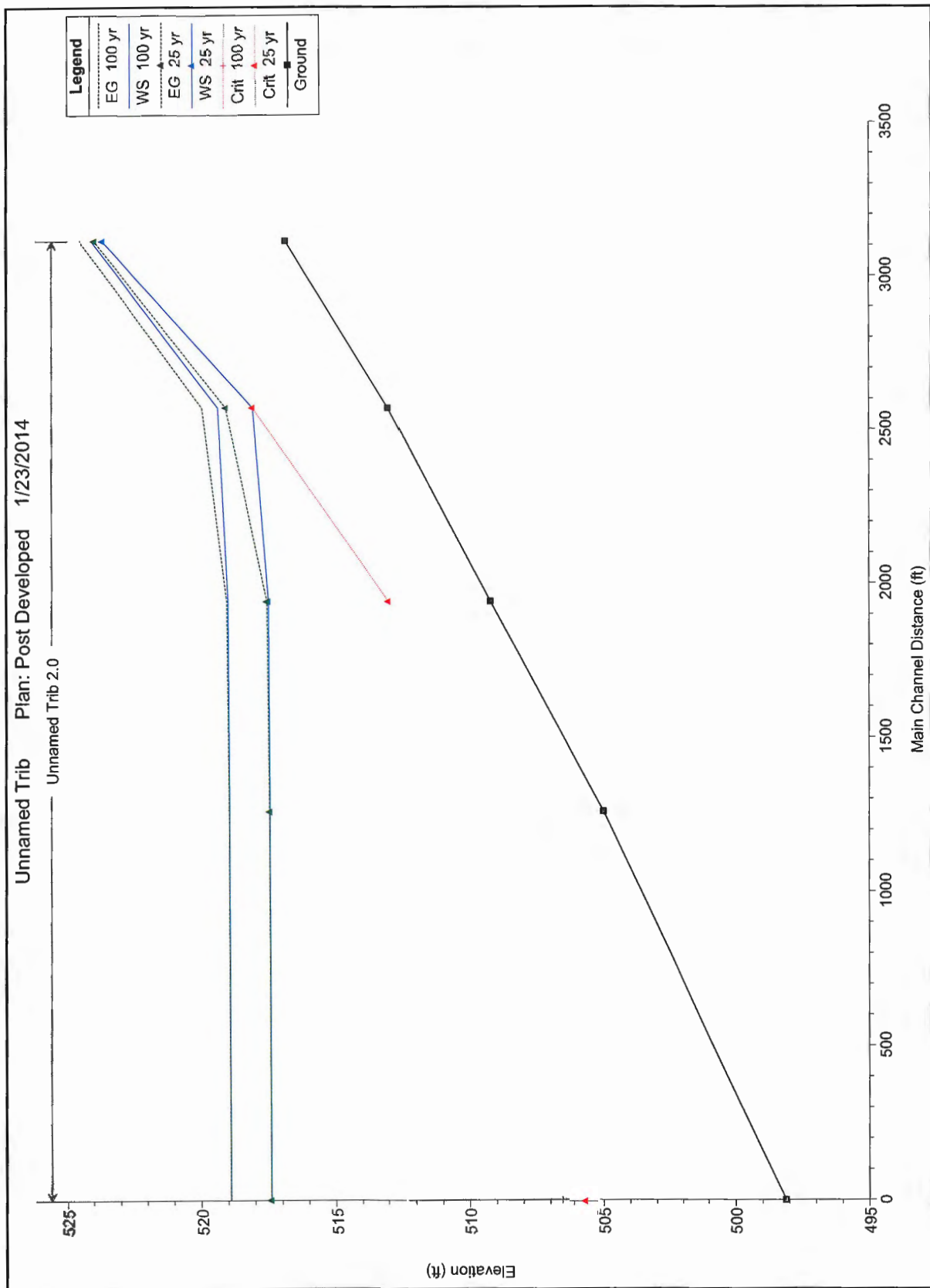
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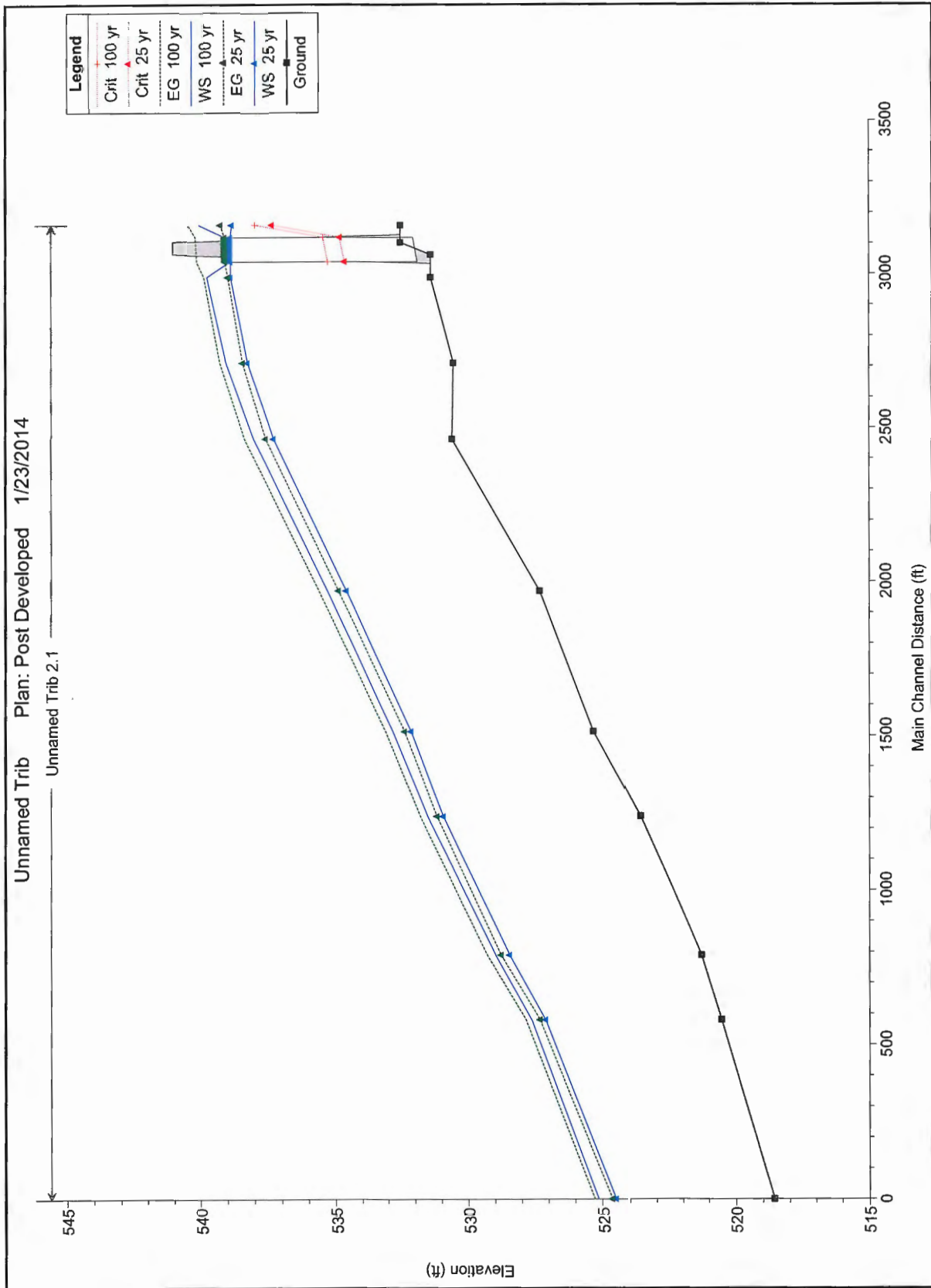
River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
South Creek	3.0	2.90	100 yr	337.20	561.91	563.82	563.49	564.12	0.021098	4.87	89.04	75.84	0.64
South Creek	3.0	2.90	25 yr	245.40	561.91	563.55	563.25	563.80	0.021263	4.38	69.69	67.86	0.63
South Creek	3.0	2.72	100 yr	337.20	554.76	557.72	557.72	558.56	0.053866	7.33	46.02	27.63	1.00
South Creek	3.0	2.72	25 yr	245.40	554.76	557.32	557.32	558.06	0.057553	6.91	35.49	24.44	1.01
South Creek	3.0	2.65	100 yr	337.20	554.11	556.58	555.84	556.79	0.010276	3.82	102.57	67.06	0.46
South Creek	3.0	2.65	25 yr	245.40	554.11	556.20	555.58	556.38	0.011561	3.54	77.74	60.08	0.47
South Creek	3.0	2.48	100 yr	337.20	550.38	553.70	553.21	554.17	0.022866	5.50	62.16	32.46	0.67
South Creek	3.0	2.48	25 yr	245.40	550.38	553.42		553.76	0.019565	4.63	53.31	30.86	0.60
South Creek	3.0	2.36	100 yr	337.20	549.54	551.79		552.13	0.024247	5.21	85.17	78.48	0.69
South Creek	3.0	2.36	25 yr	245.40	549.54	551.48		551.80	0.027819	4.91	62.63	67.30	0.71
South Creek	3.0	2.29	100 yr	337.20	547.28	551.32	549.64	551.40	0.002845	2.89	179.34	91.07	0.27
South Creek	3.0	2.29	25 yr	245.40	547.28	550.43	549.32	550.55	0.005165	3.24	108.27	69.95	0.34
South Creek	3.0	2.23		Culvert									
South Creek	3.0	2.11	100 yr	337.20	544.58	546.93		547.21	0.015195	4.55	88.86	59.80	0.56
South Creek	3.0	2.11	25 yr	245.40	544.58	546.61		546.84	0.015274	4.08	70.49	55.72	0.54
South Creek	3.0	1.97	100 yr	337.20	542.05	544.91		545.20	0.013285	4.67	92.31	62.12	0.53
South Creek	3.0	1.97	25 yr	245.40	542.05	544.54		544.79	0.013833	4.26	70.69	54.42	0.53
South Creek	3.0	1.87	100 yr	337.20	541.35	543.84		544.04	0.008963	3.69	97.66	52.87	0.43
South Creek	3.0	1.87	25 yr	245.40	541.35	543.54		543.69	0.007836	3.13	82.32	50.23	0.40
South Creek	3.0	1.66	100 yr	337.20	539.78	541.98		542.13	0.009260	3.45	126.21	106.48	0.43
South Creek	3.0	1.66	25 yr	245.40	539.78	541.63		541.78	0.010783	3.27	91.87	90.12	0.45
South Creek	3.0	1.21	100 yr	337.20	532.89	535.40	535.00	535.88	0.026395	6.46	76.22	60.92	0.75
South Creek	3.0	1.21	25 yr	245.40	532.89	535.13		535.46	0.021136	5.32	61.79	45.30	0.66
South Creek	3.0	1.08	100 yr	337.20	531.07	534.07		534.21	0.006541	3.17	127.35	83.73	0.37
South Creek	3.0	1.08	25 yr	245.40	531.07	533.63		533.76	0.007917	3.01	92.81	71.80	0.39
South Creek	3.0	0.77	100 yr	337.20	527.80	532.35	530.73	532.54	0.004760	3.76	128.92	85.76	0.34
South Creek	3.0	0.77	25 yr	245.40	527.80	531.92		532.06	0.004169	3.24	96.09	51.42	0.31

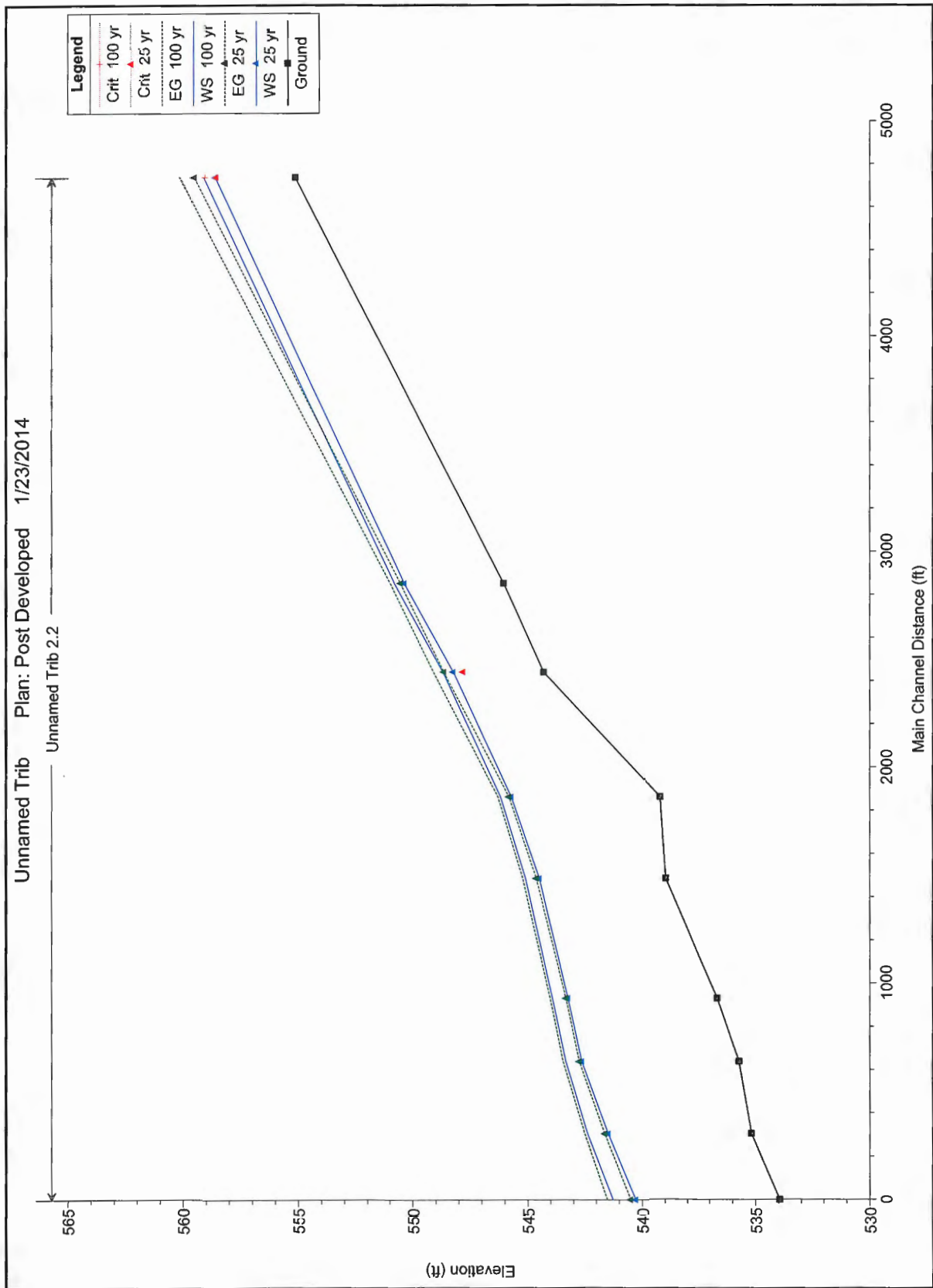
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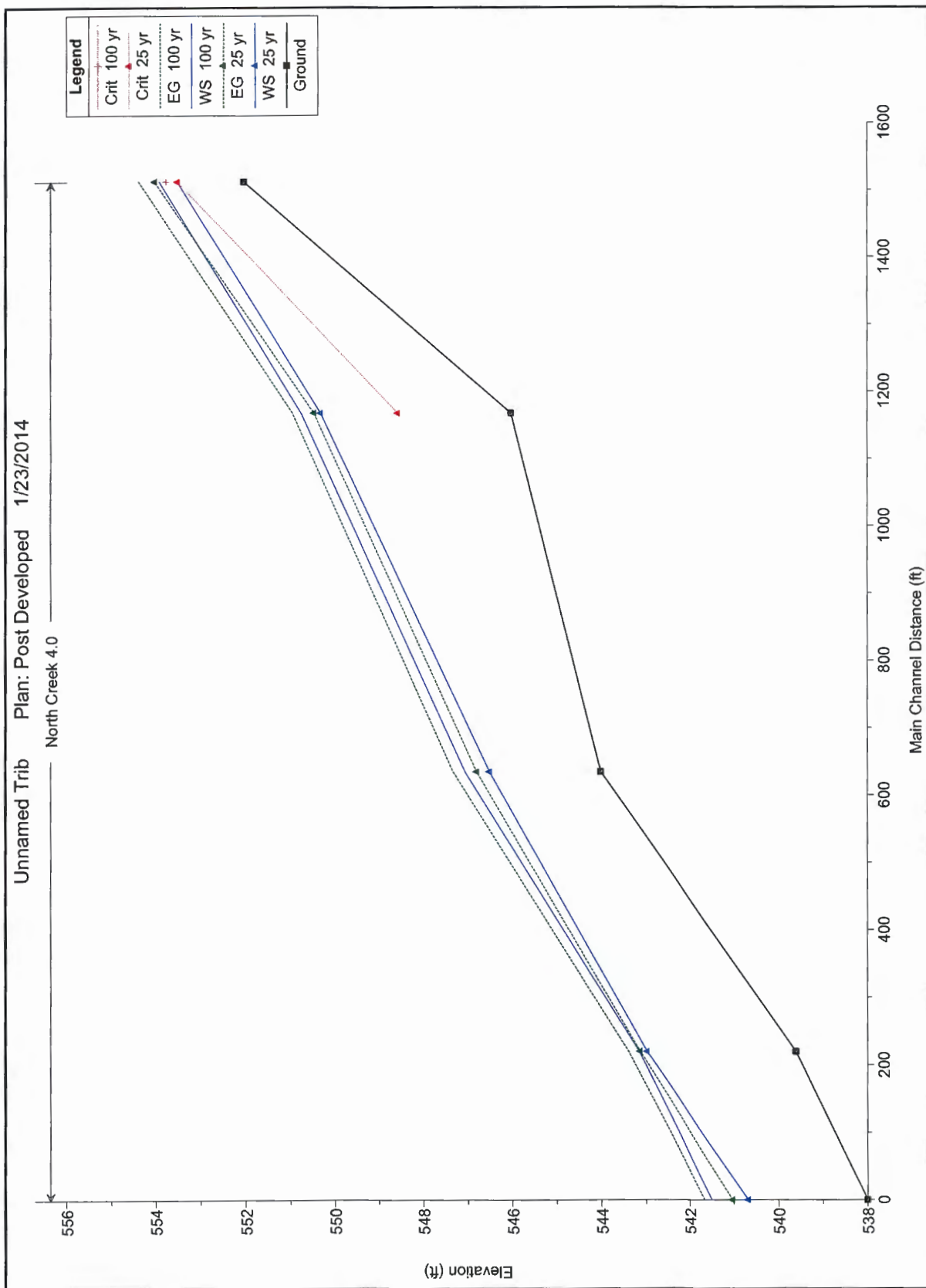
River	Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
South Creek	3.0	0.53	100 yr	337.20	528.00	529.45	529.45	529.87	0.050737	5.85	75.03	91.66	0.94
South Creek	3.0	0.53	25 yr	245.40	528.00	529.27	529.27	529.63	0.051032	5.28	59.36	85.93	0.91
South Creek	3.0	0.36	100 yr	337.20	523.75	526.28	524.84	526.31	0.000734	1.60	307.97	206.65	0.18
South Creek	3.0	0.36	25 yr	245.40	523.75	525.48	524.67	525.53	0.002006	2.03	162.79	156.35	0.28
North Creek	4.0	1.71	100 yr	975.70	552.00	553.89	553.75	554.36	0.035647	6.60	222.13	185.97	0.85
North Creek	4.0	1.71	25 yr	716.60	552.00	553.48	553.48	554.00	0.051292	6.74	152.31	156.89	0.97
North Creek	4.0	1.36	100 yr	975.70	546.00	550.71		550.91	0.004585	4.21	362.37	152.74	0.35
North Creek	4.0	1.36	25 yr	716.60	546.00	550.27	548.55	550.43	0.003880	3.62	299.04	137.73	0.32
North Creek	4.0	0.83	100 yr	975.70	544.00	547.06		547.32	0.011512	4.91	305.72	184.21	0.51
North Creek	4.0	0.83	25 yr	716.60	544.00	546.50		546.79	0.015899	4.98	210.69	157.49	0.58
North Creek	4.0	0.41	100 yr	975.70	539.61	543.15		543.39	0.008063	4.41	312.39	175.20	0.44
North Creek	4.0	0.41	25 yr	716.60	539.61	542.98		543.13	0.005575	3.53	282.36	168.22	0.36
North Creek	4.0	0.19	100 yr	975.70	538.00	541.50		541.66	0.007400	4.28	371.14	246.47	0.42
North Creek	4.0	0.19	25 yr	716.60	538.00	540.68		541.03	0.019384	5.70	194.71	185.74	0.65

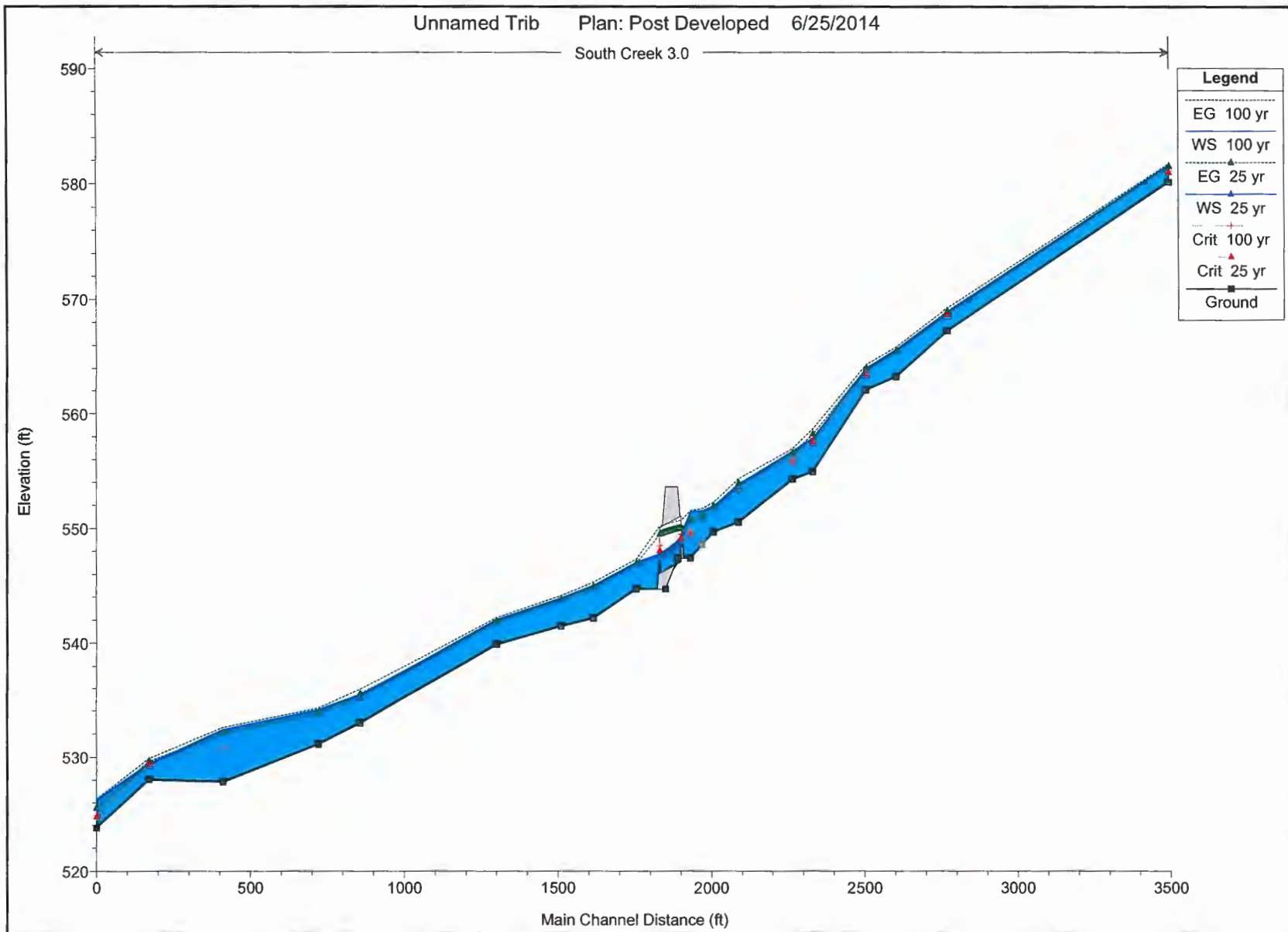




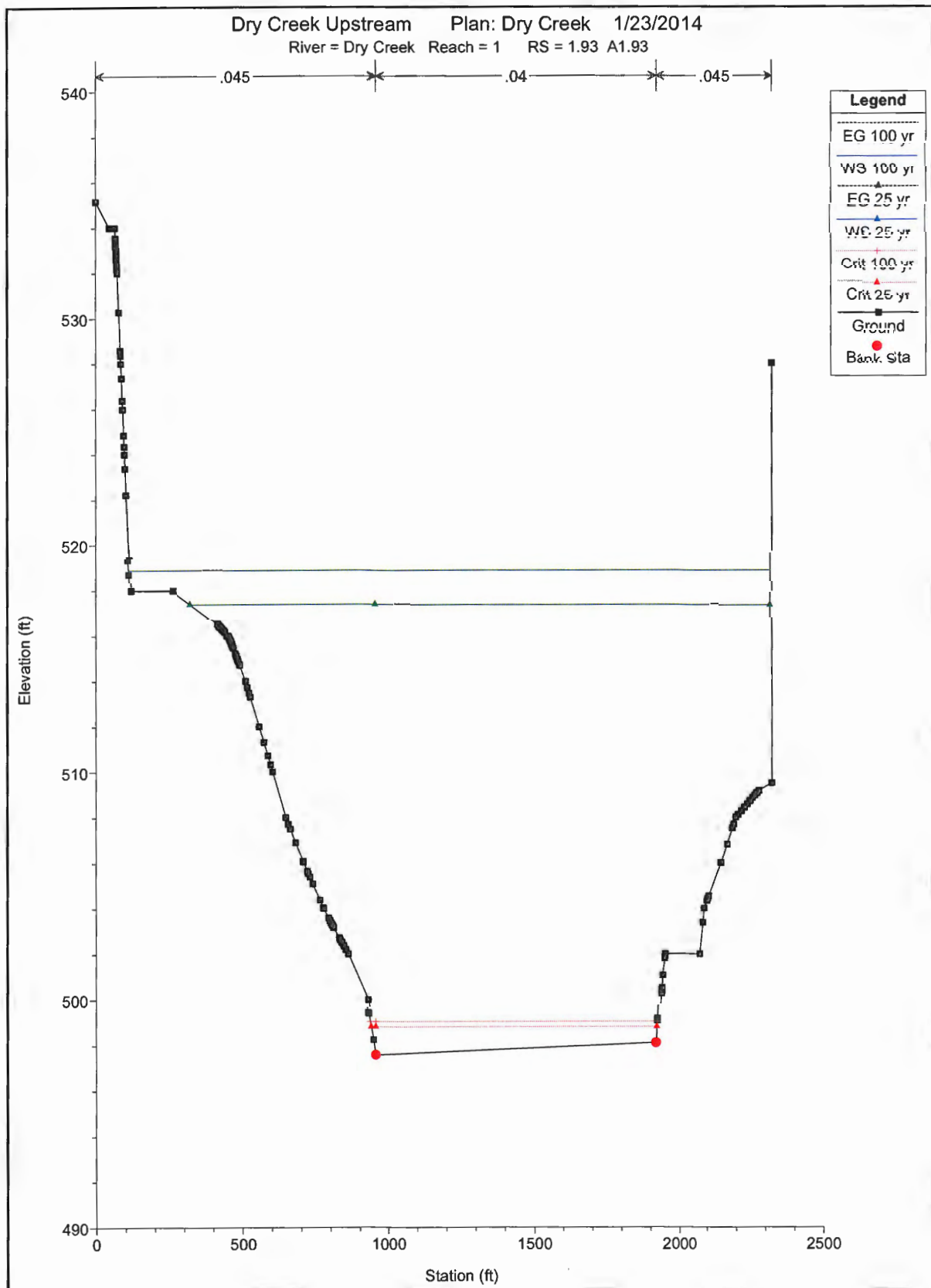




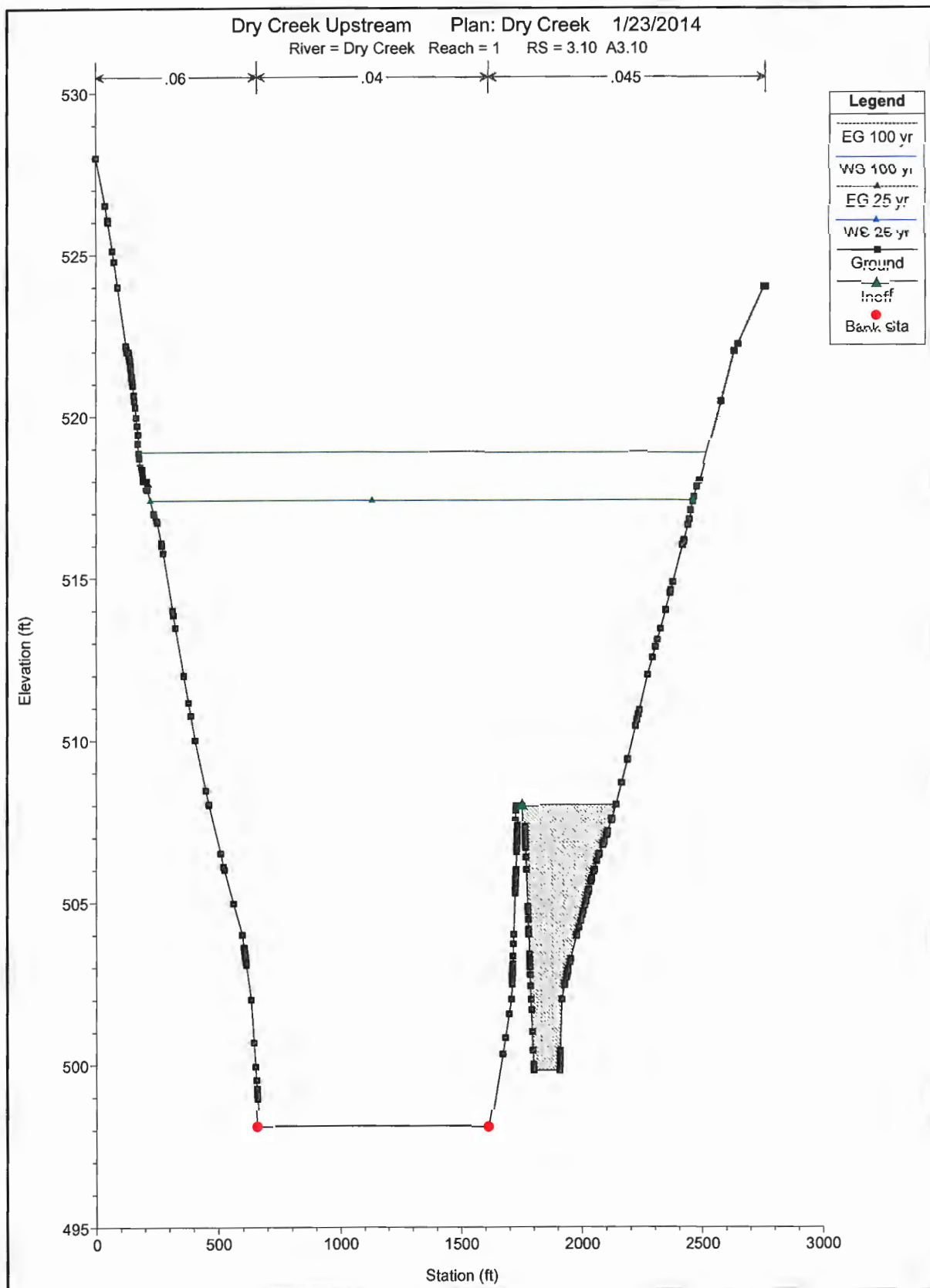




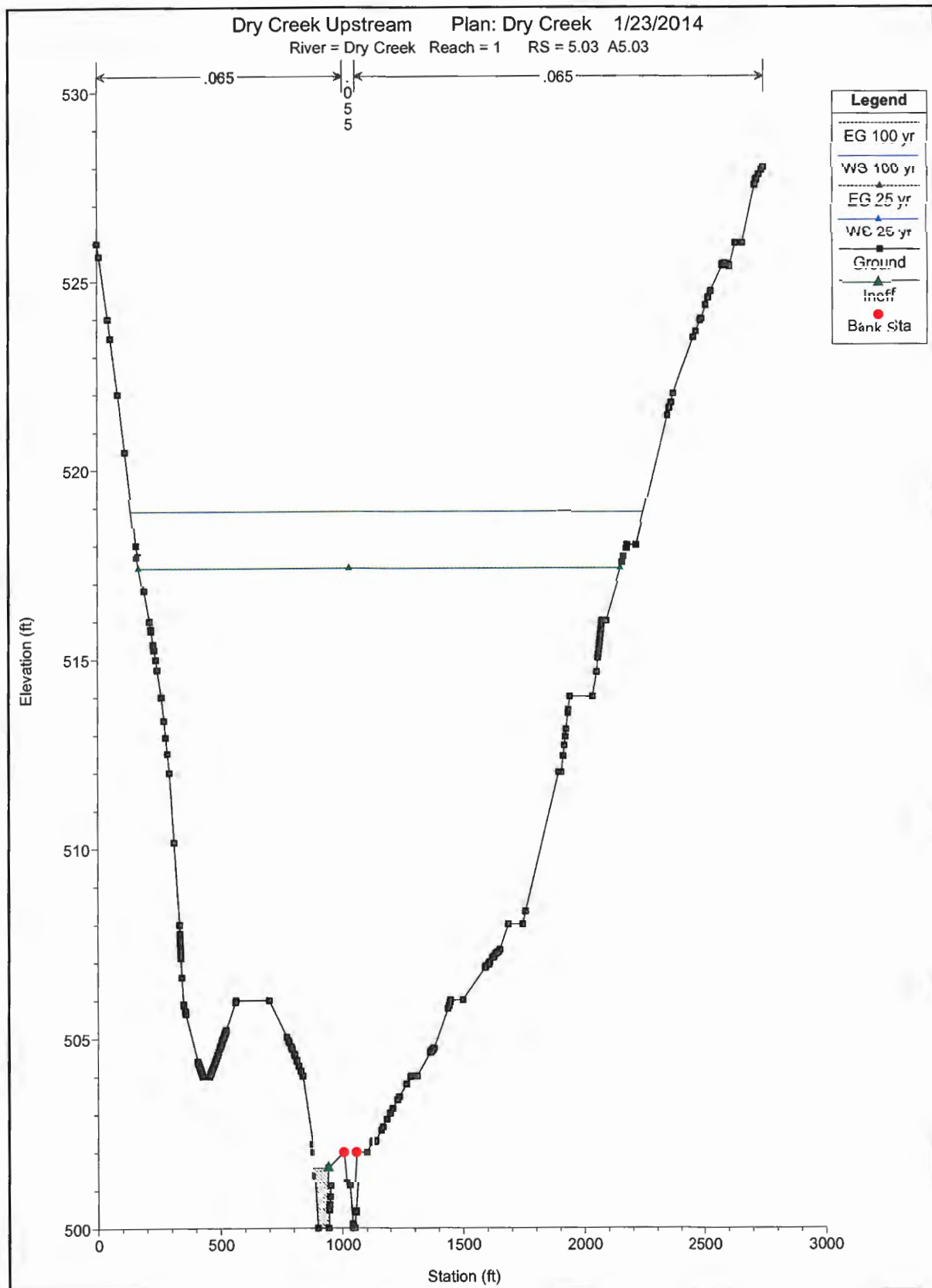
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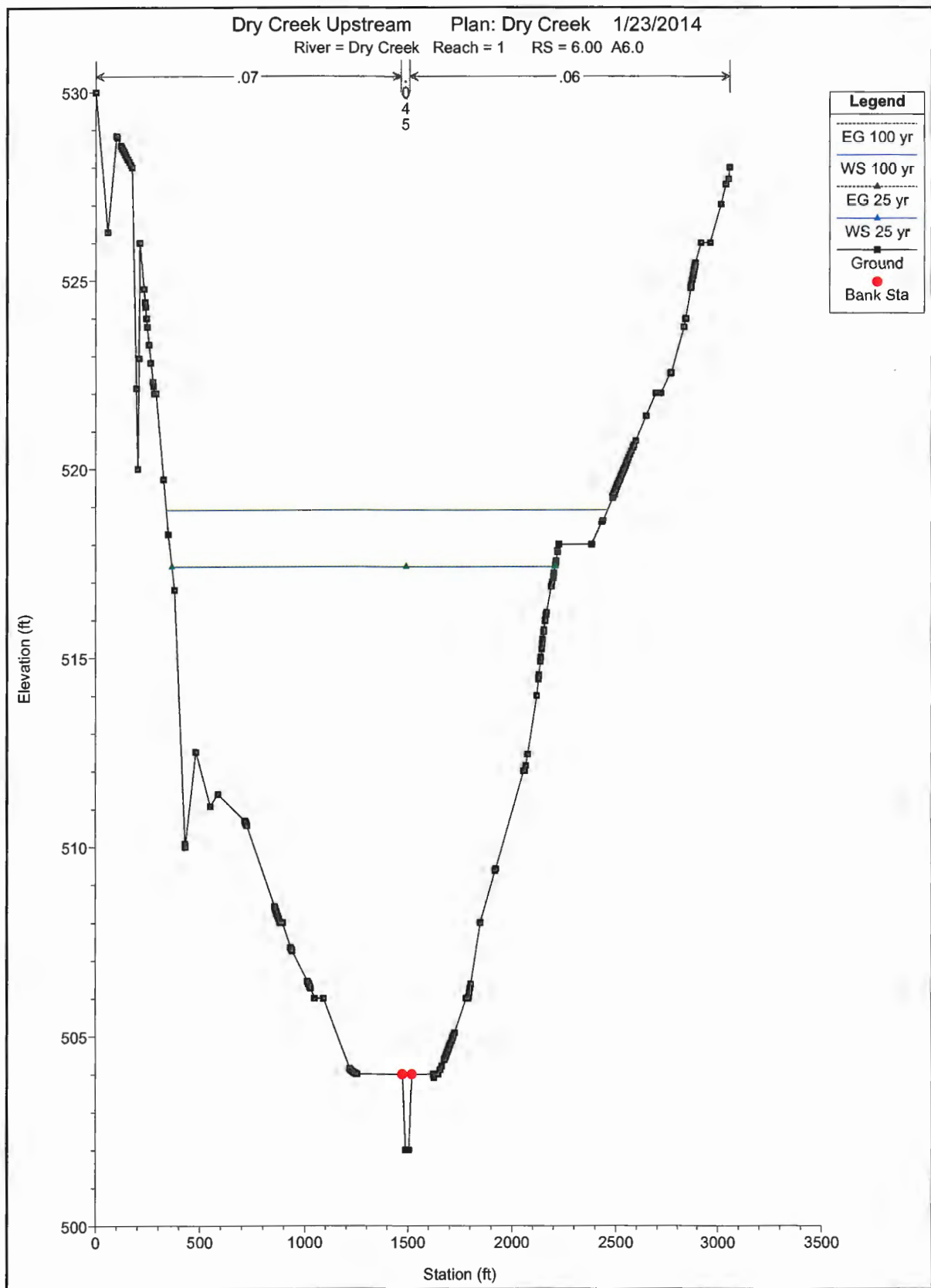
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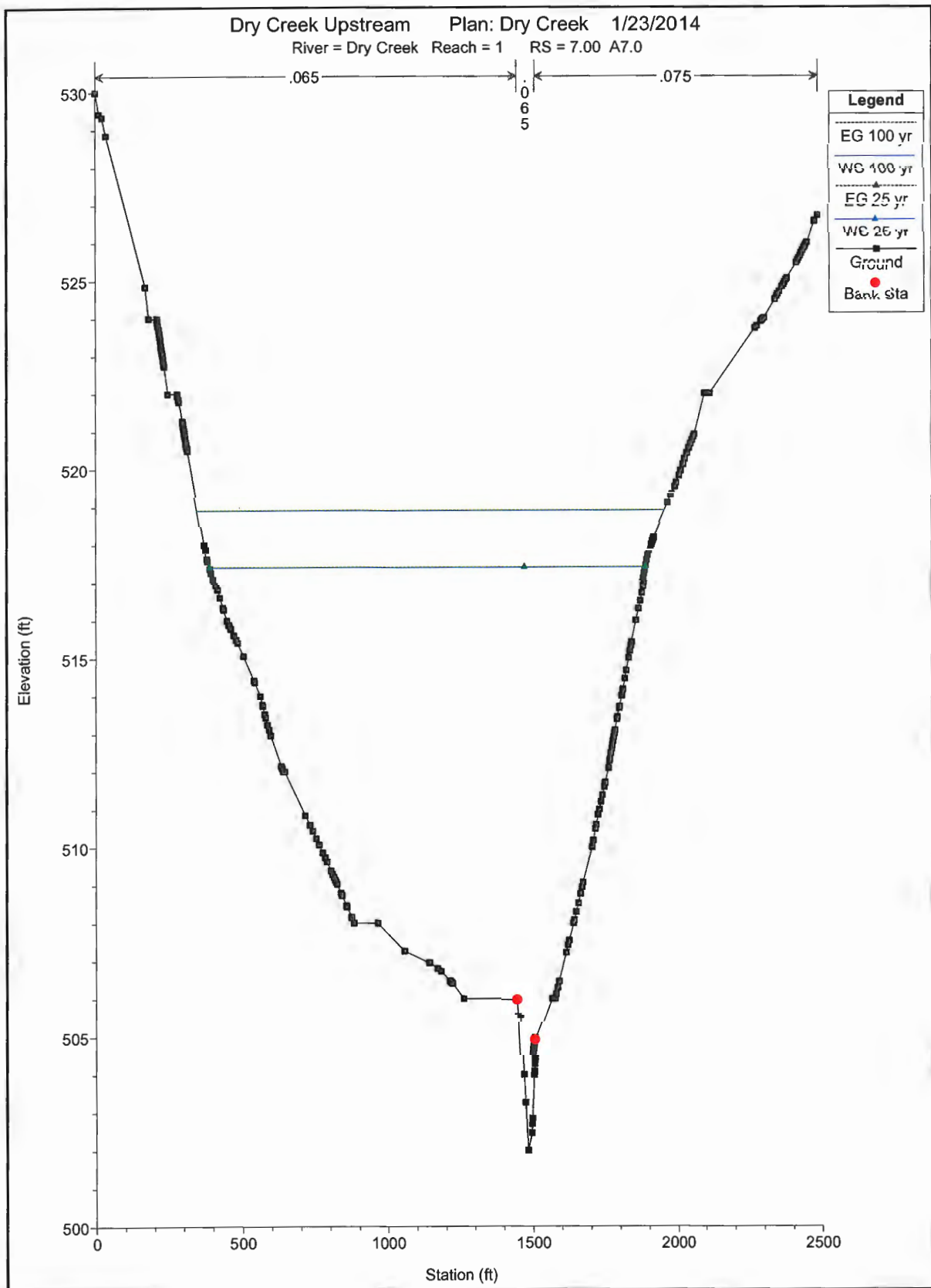


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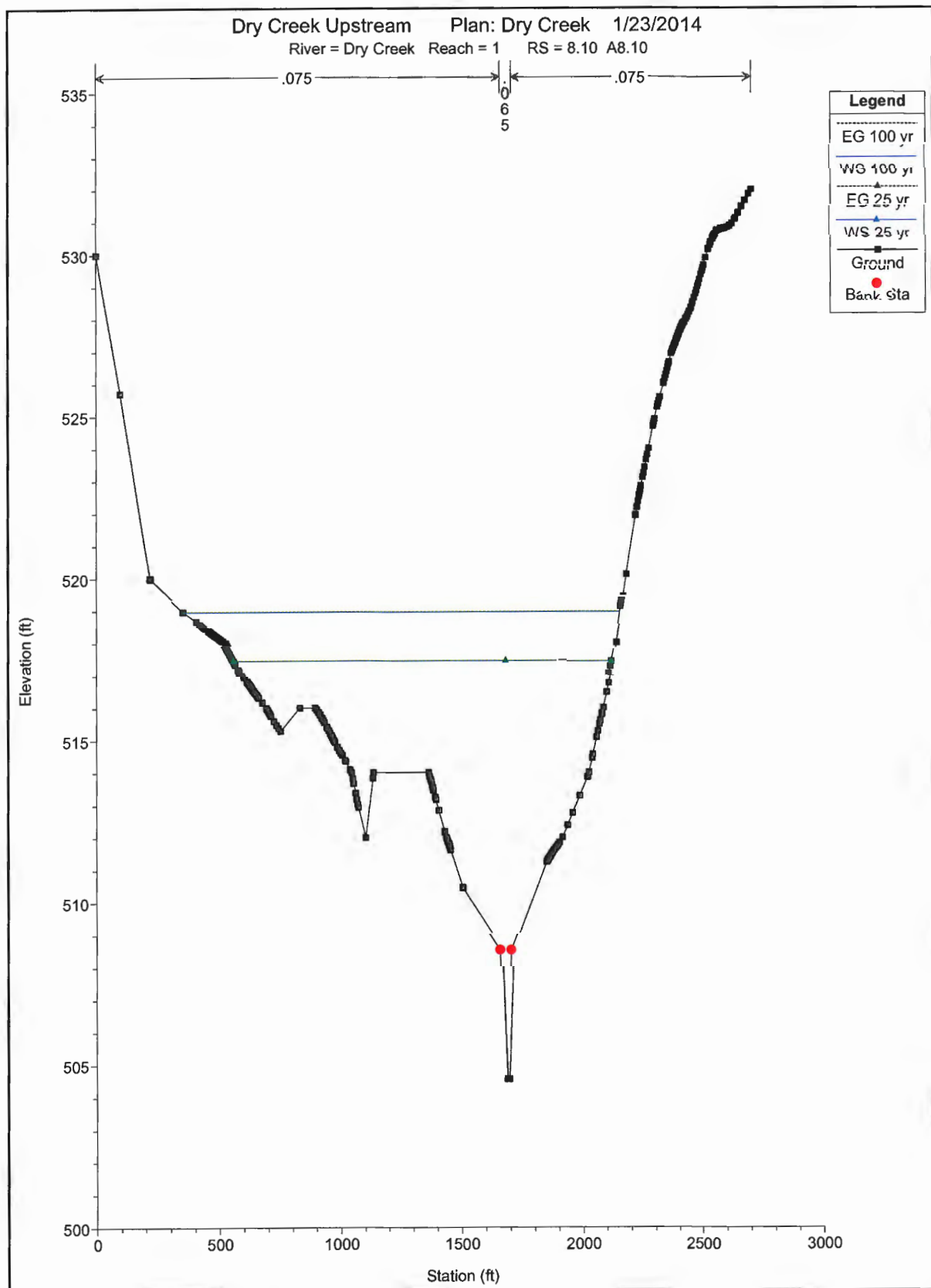


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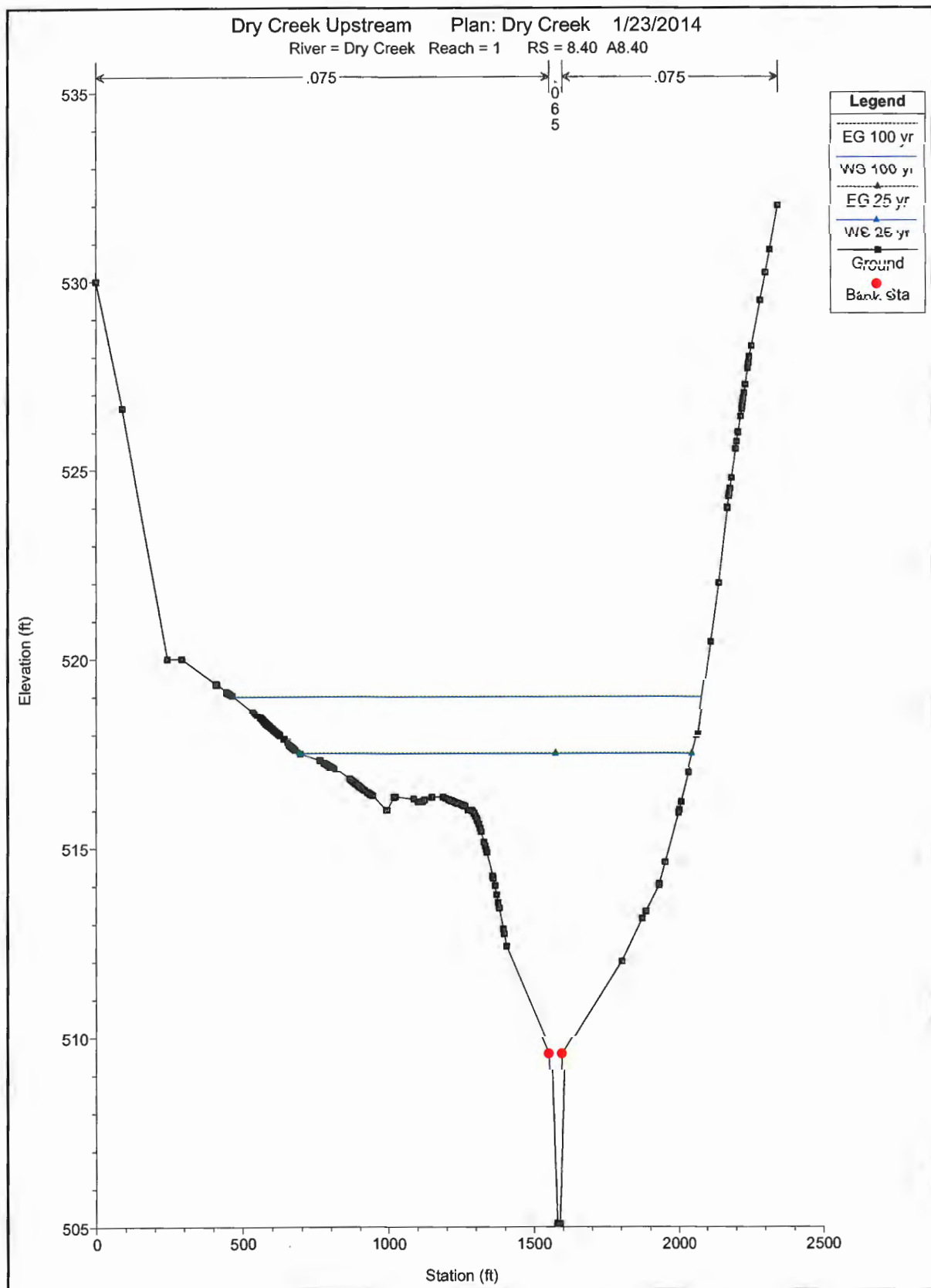




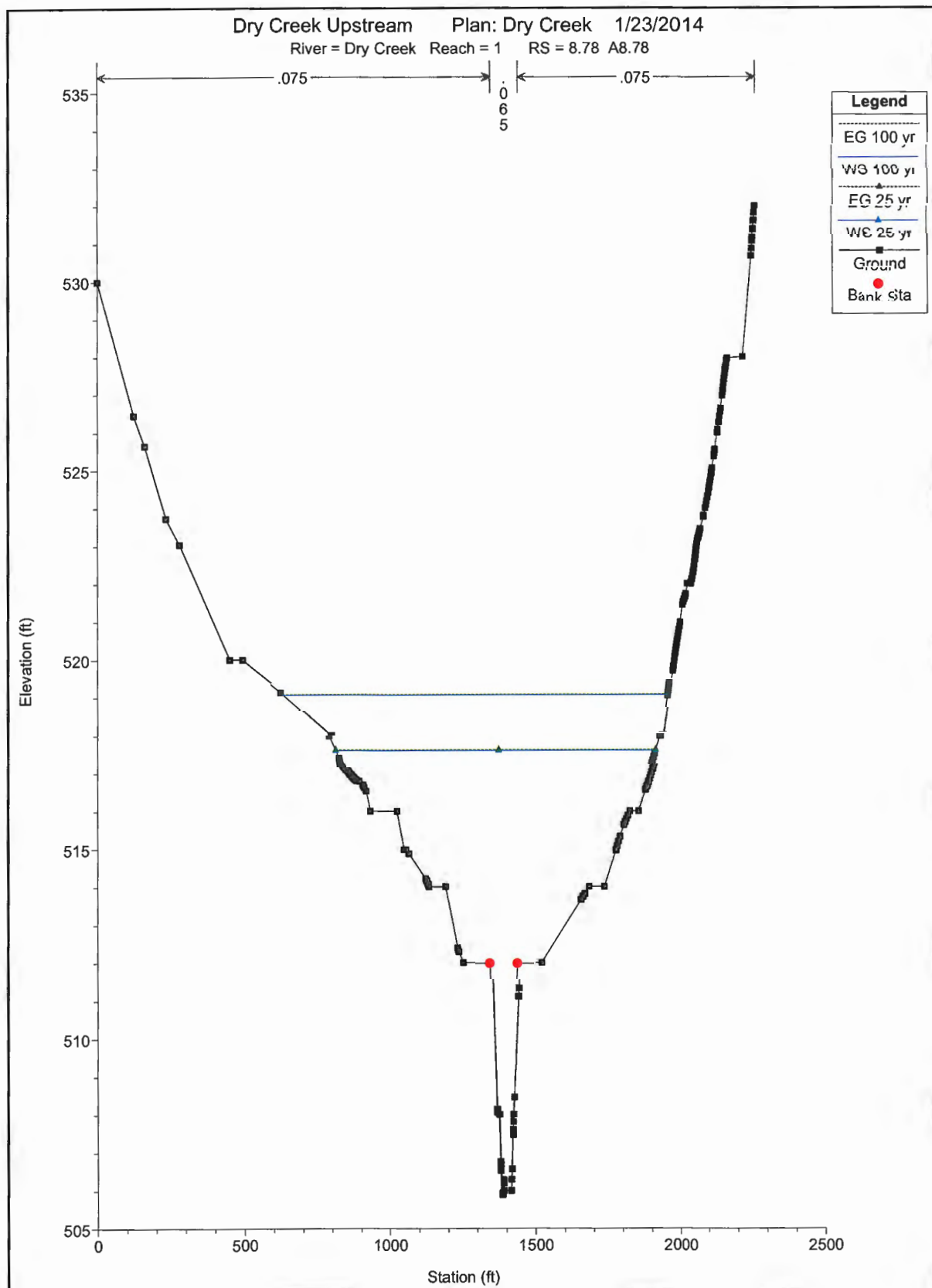
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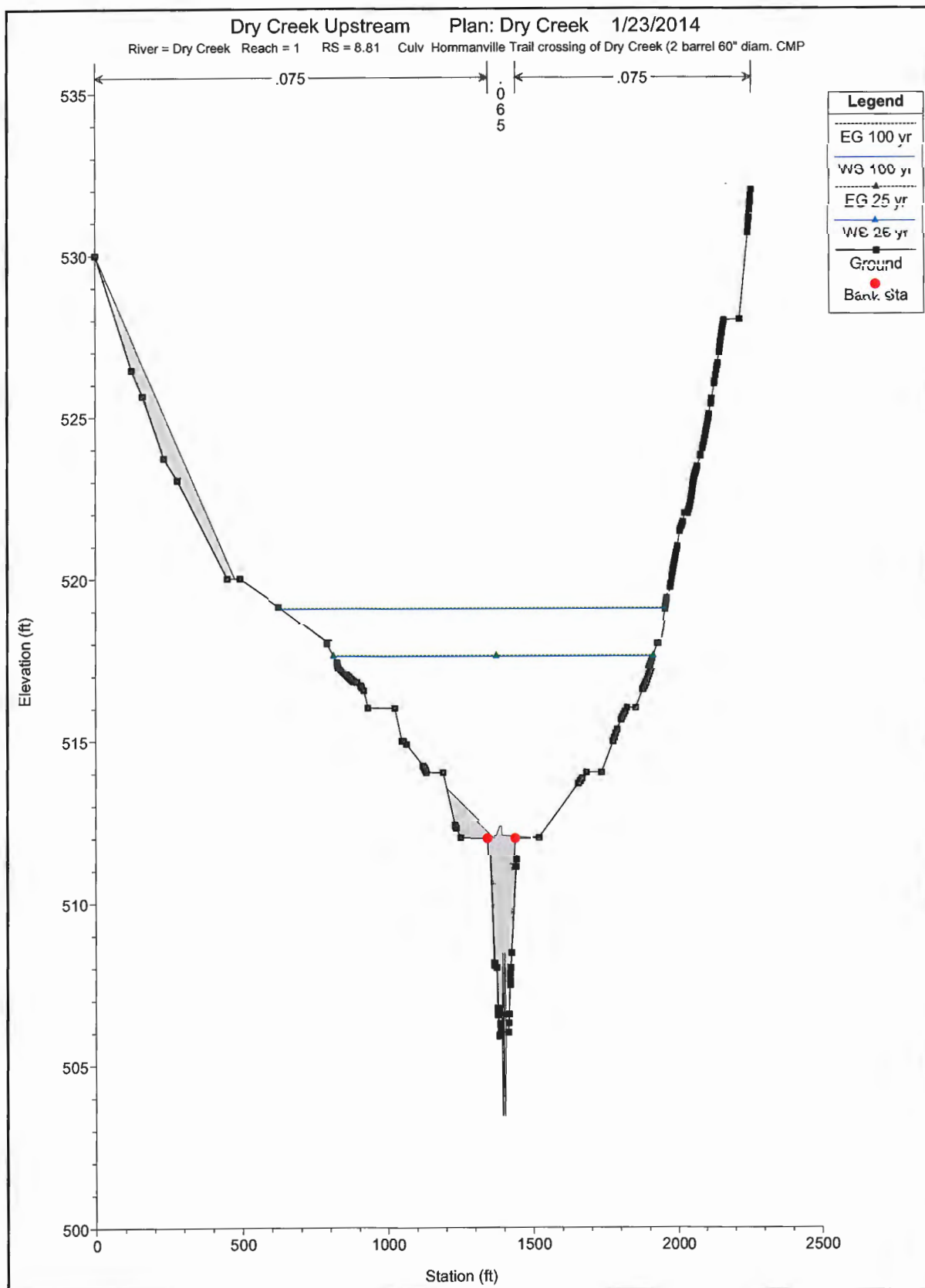


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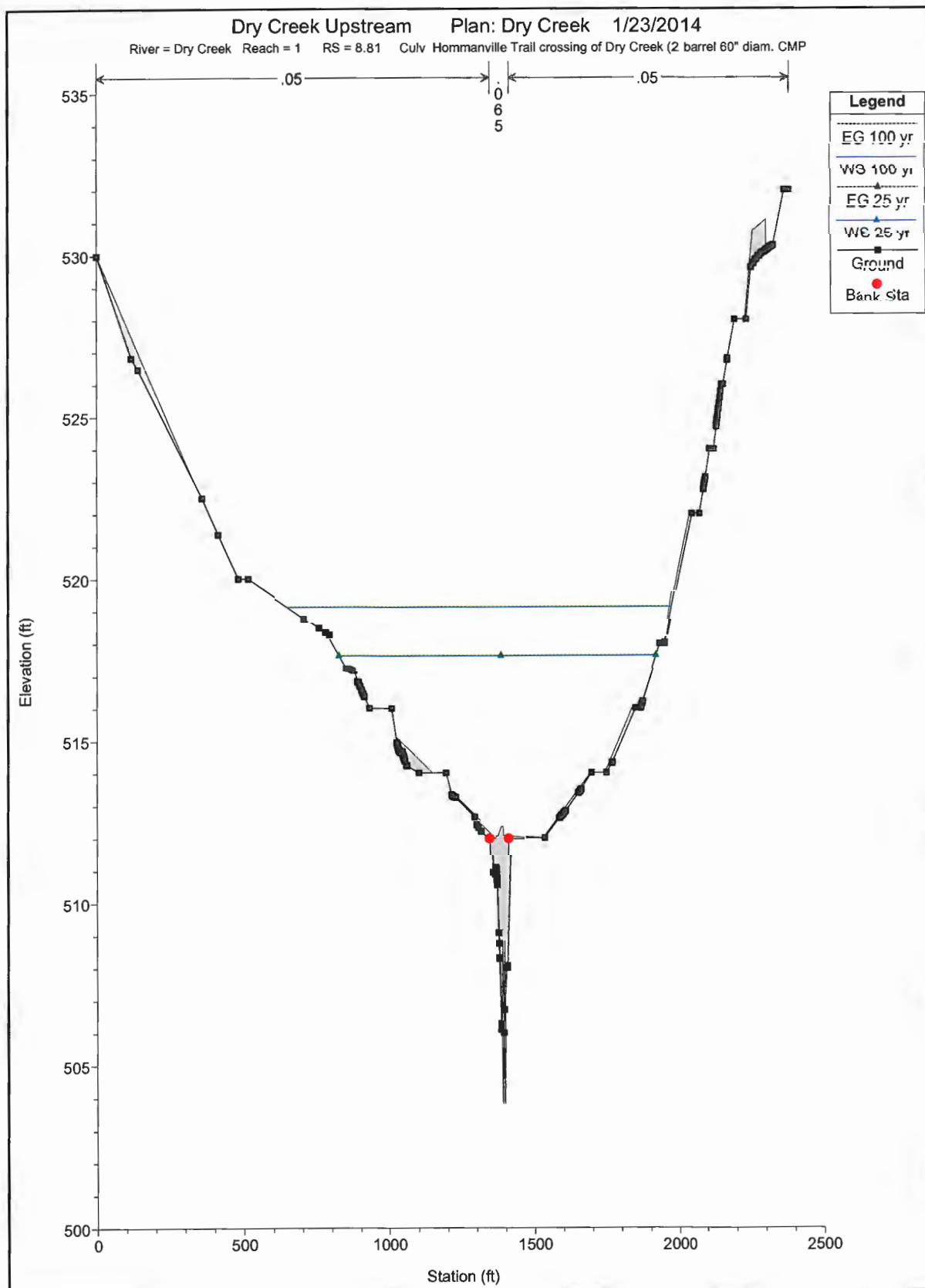


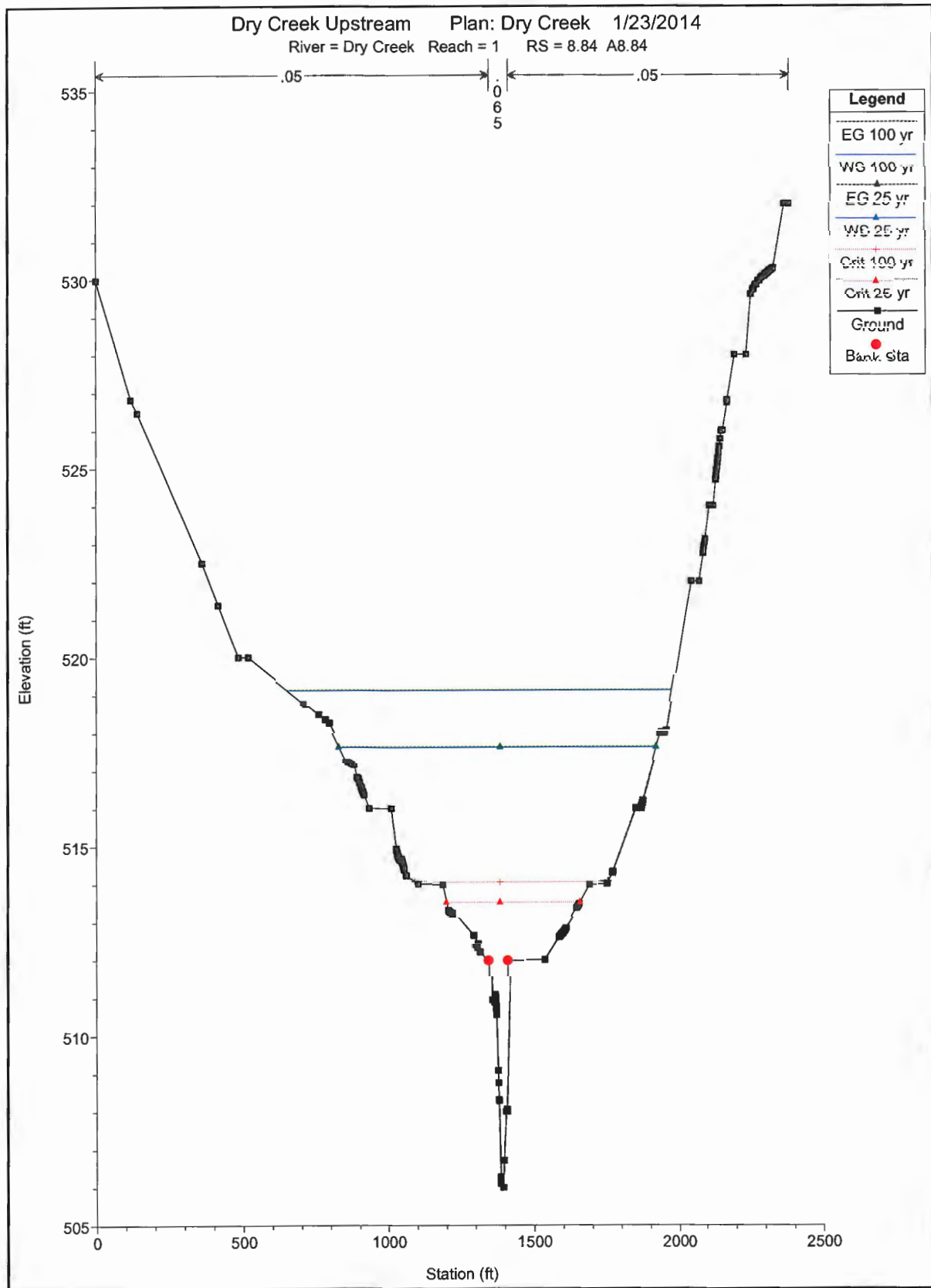
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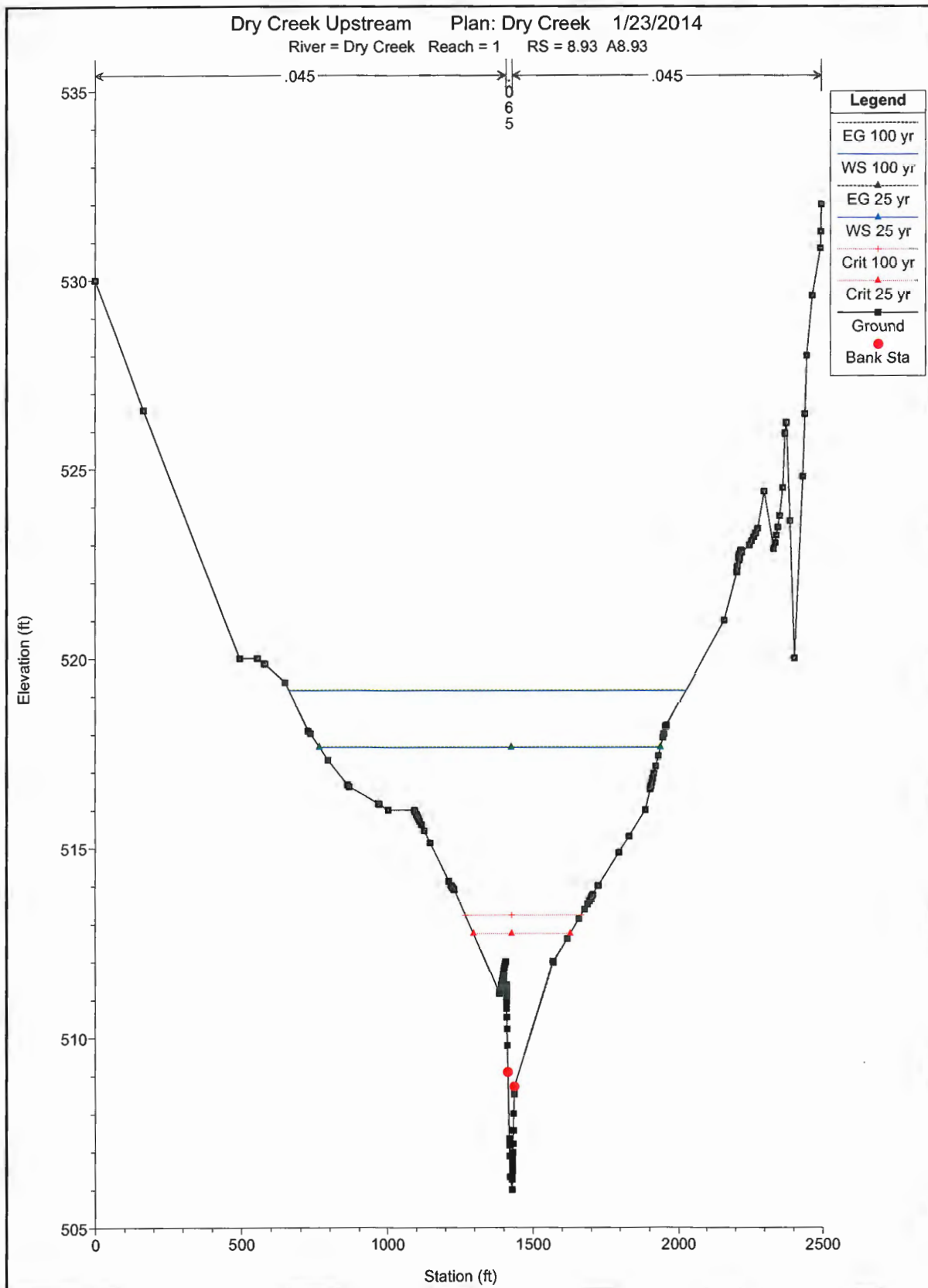




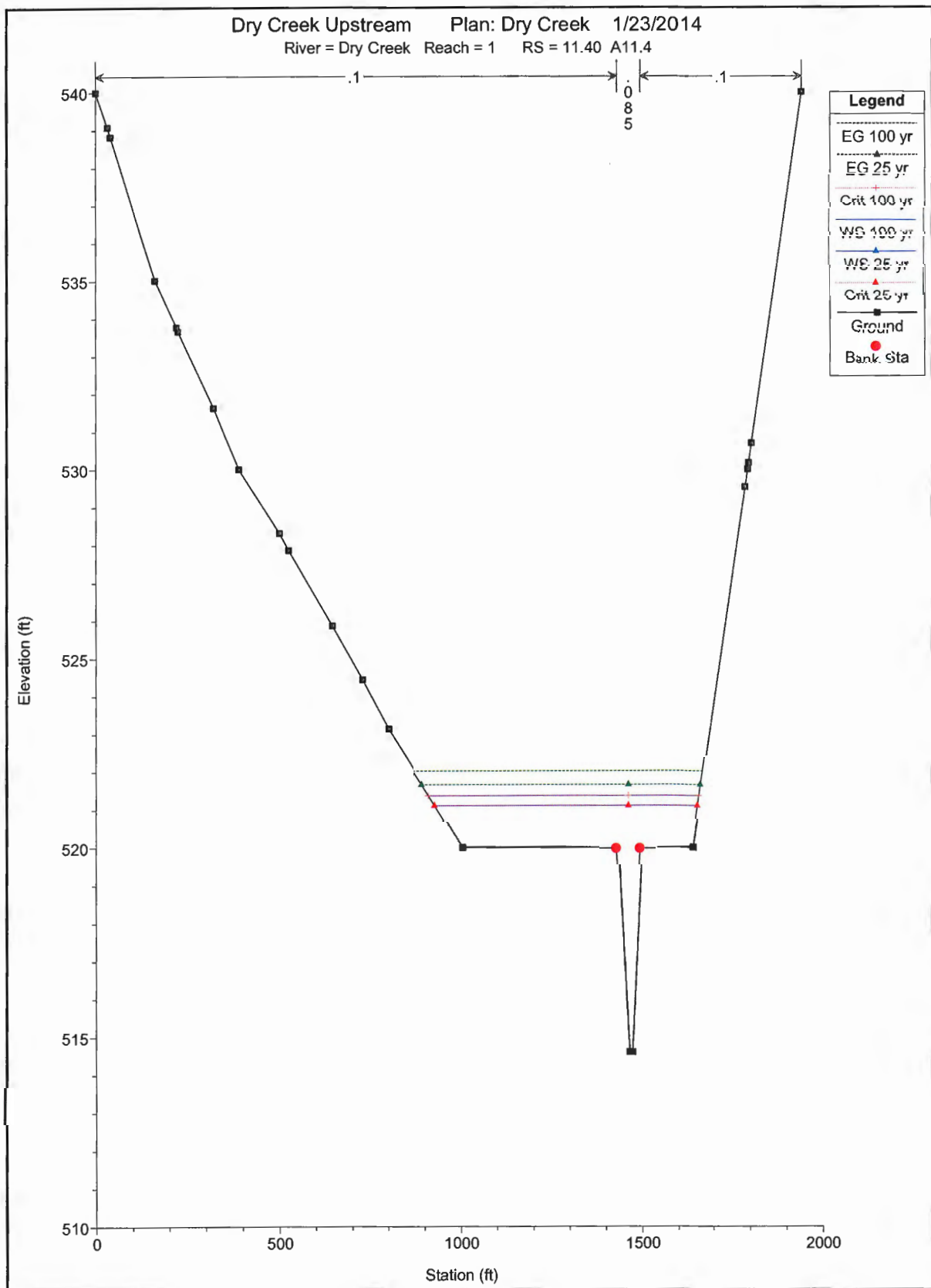
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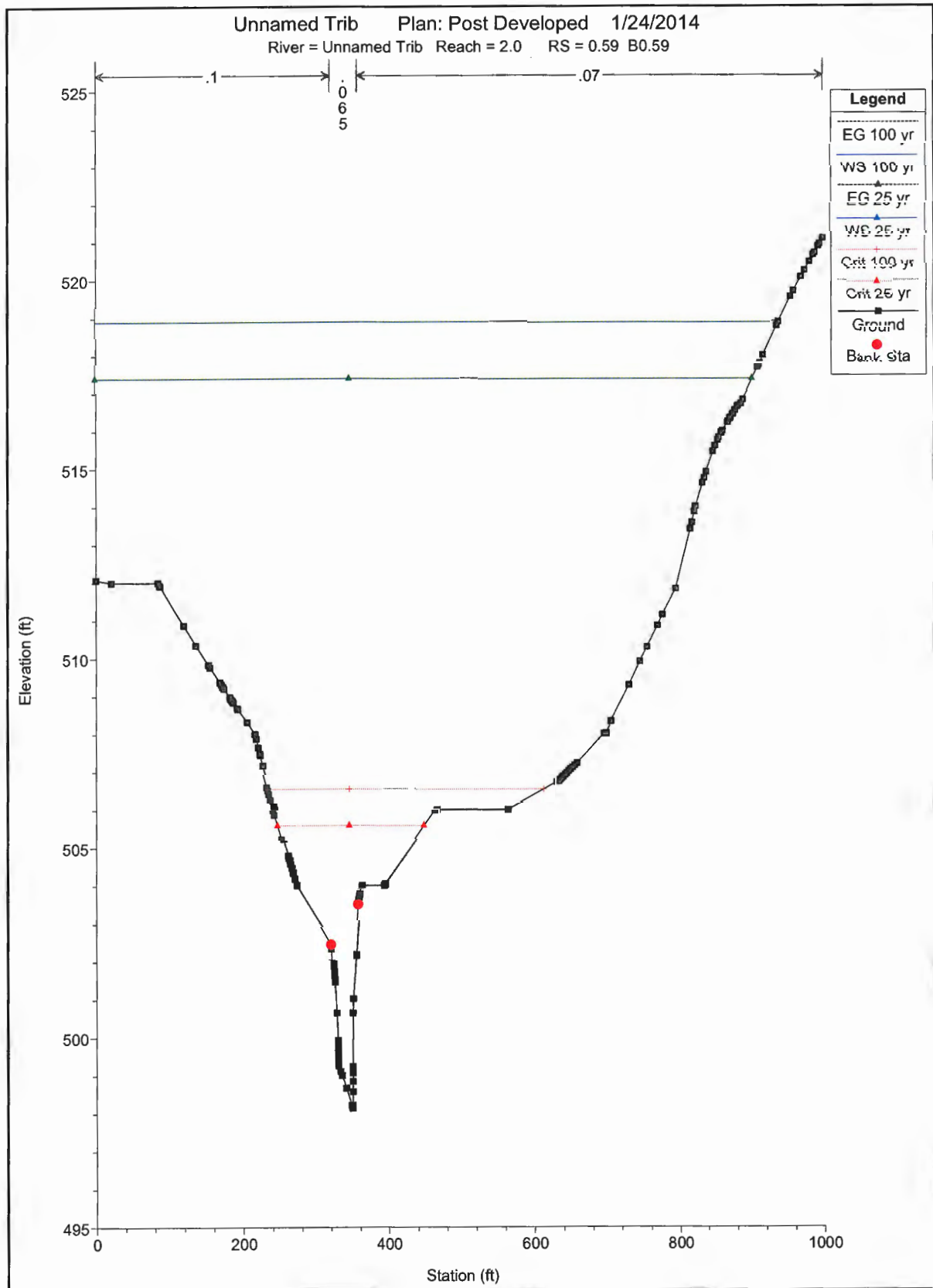




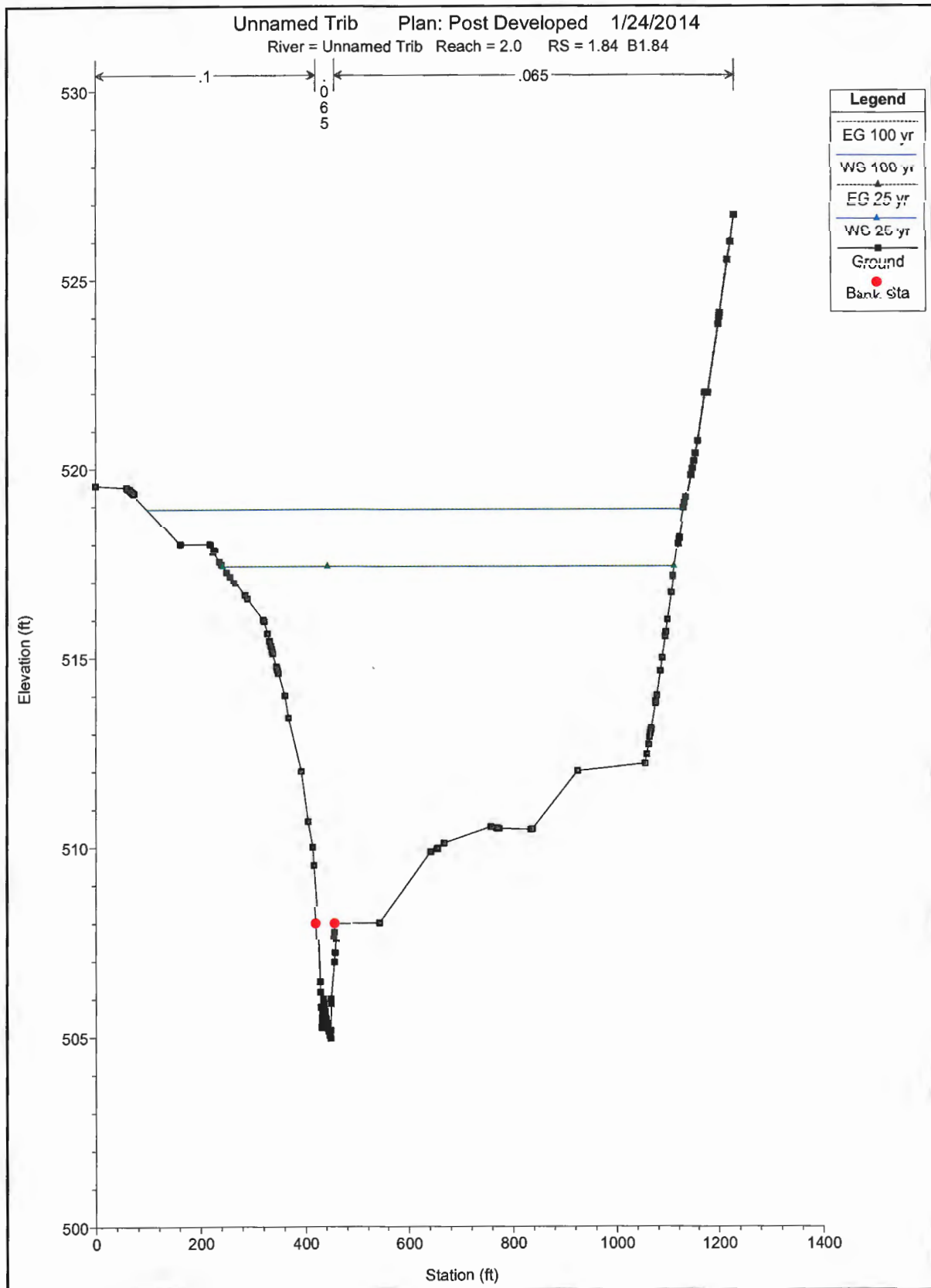


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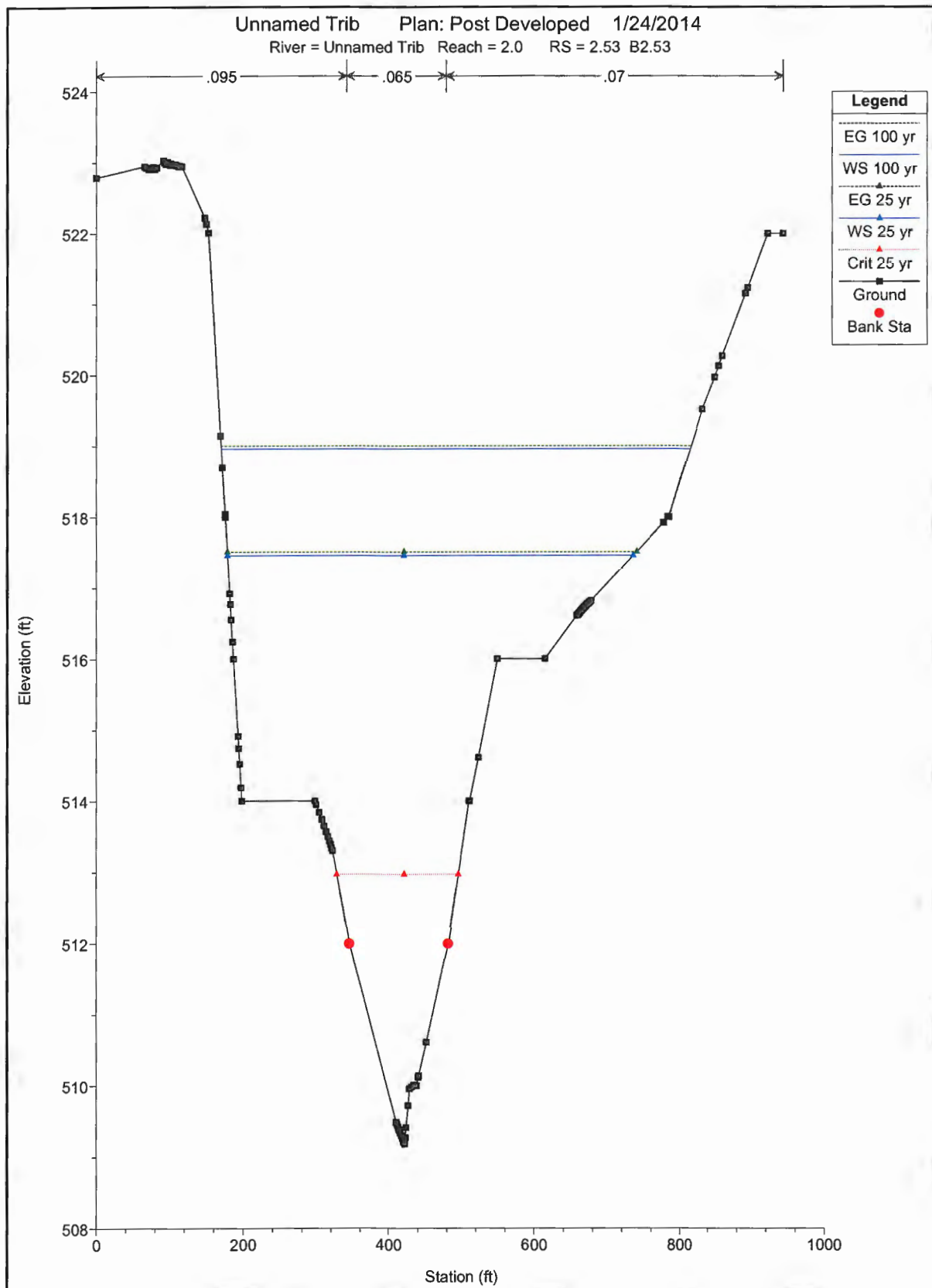




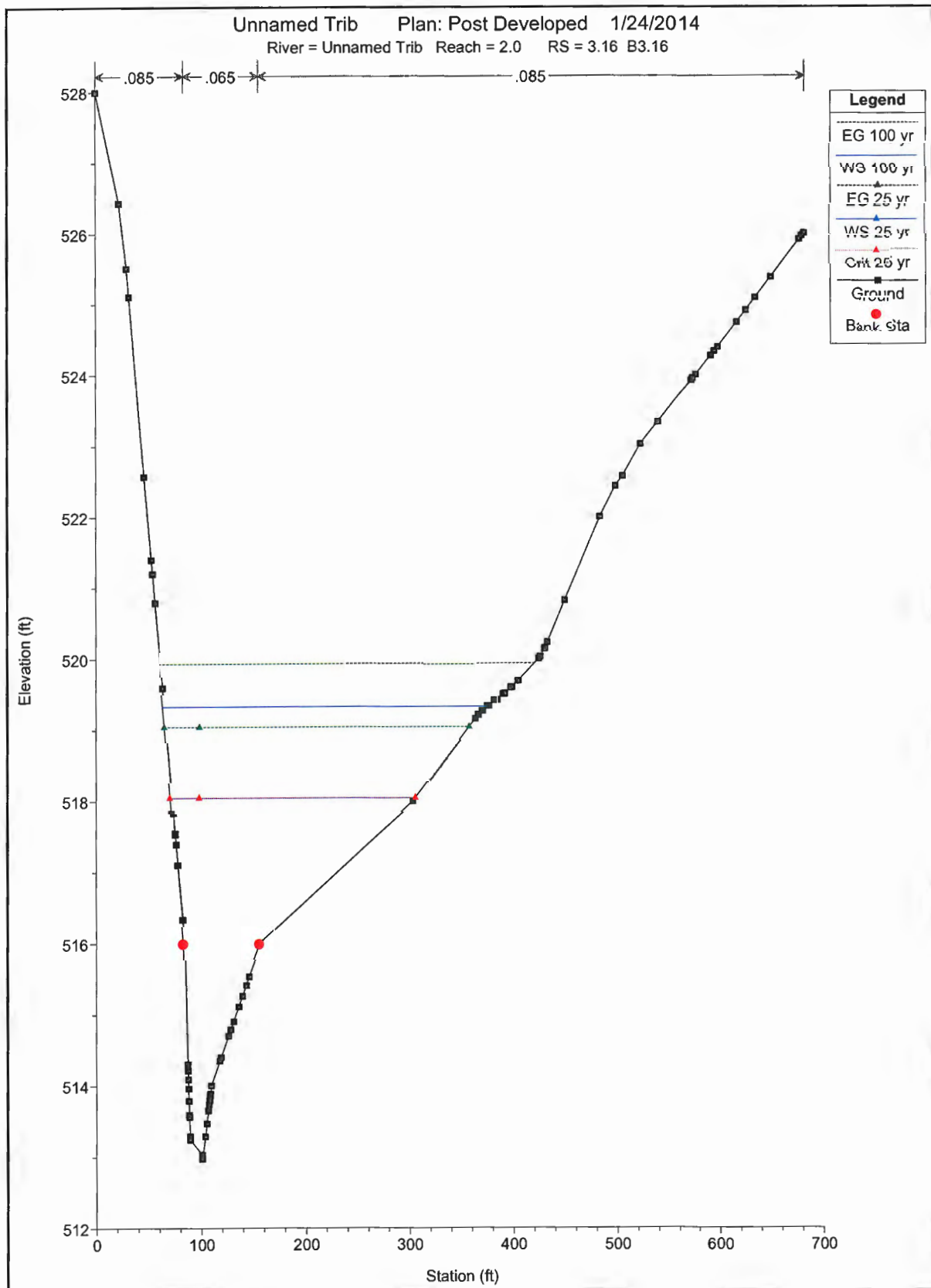
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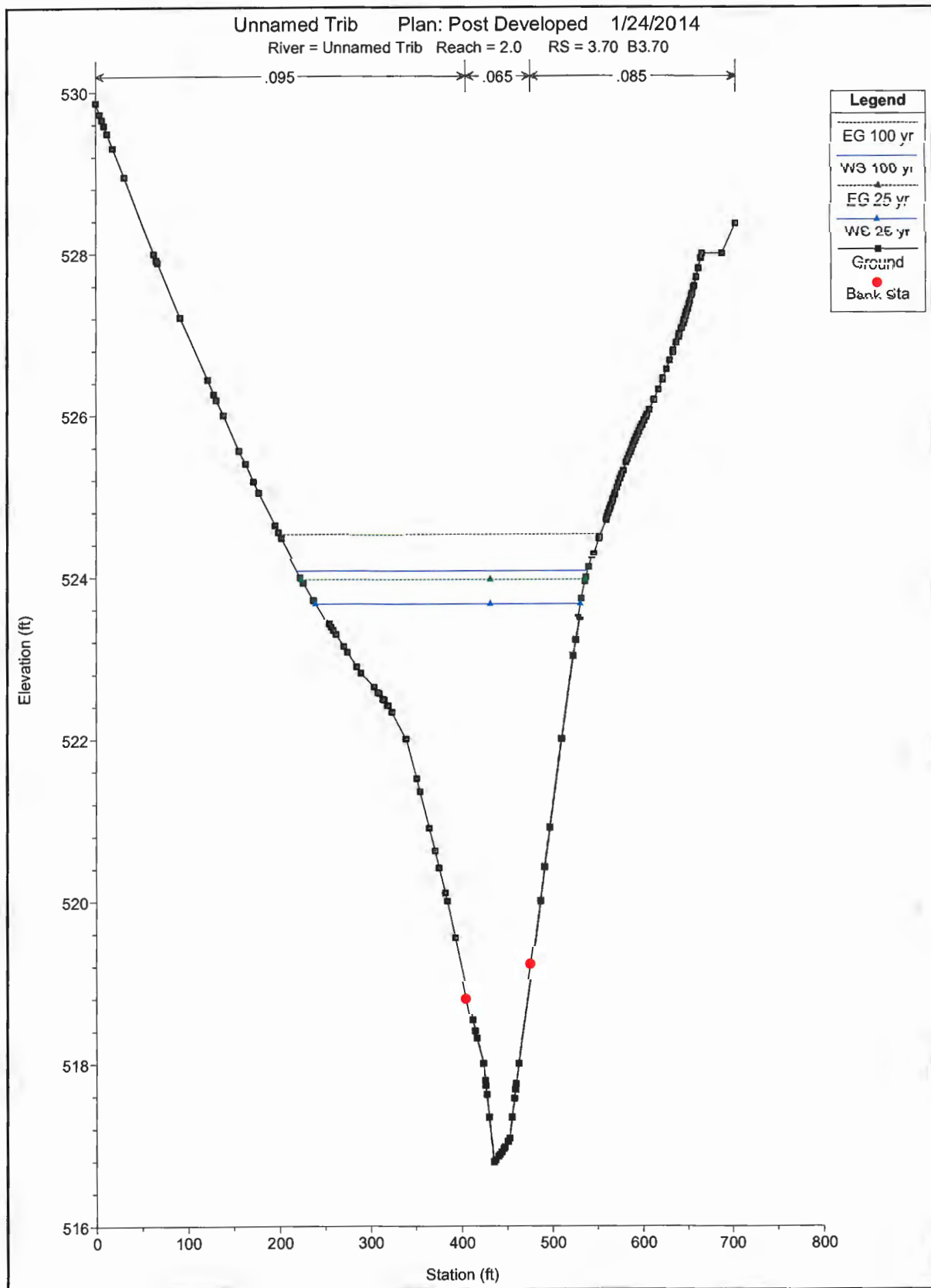
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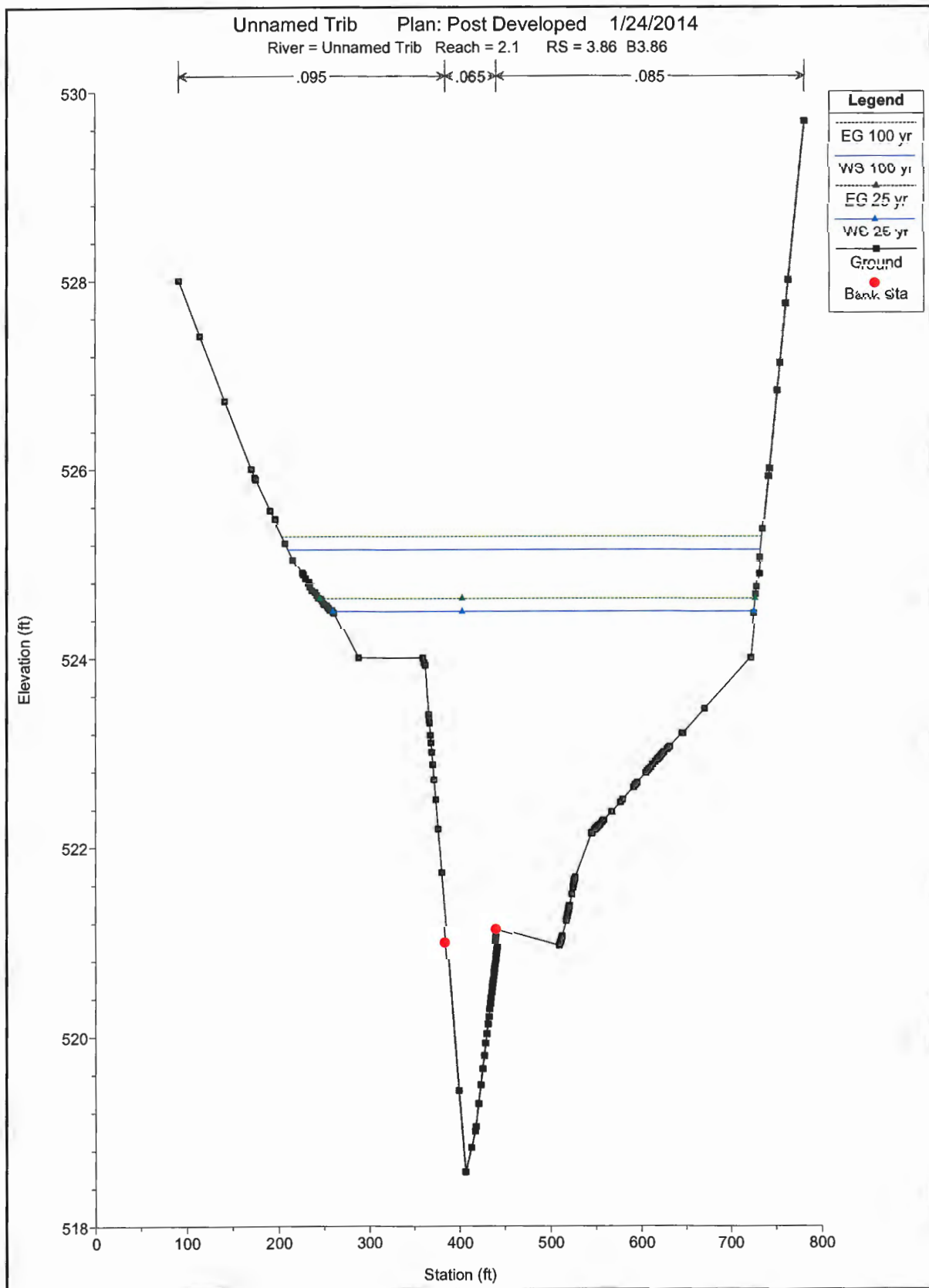
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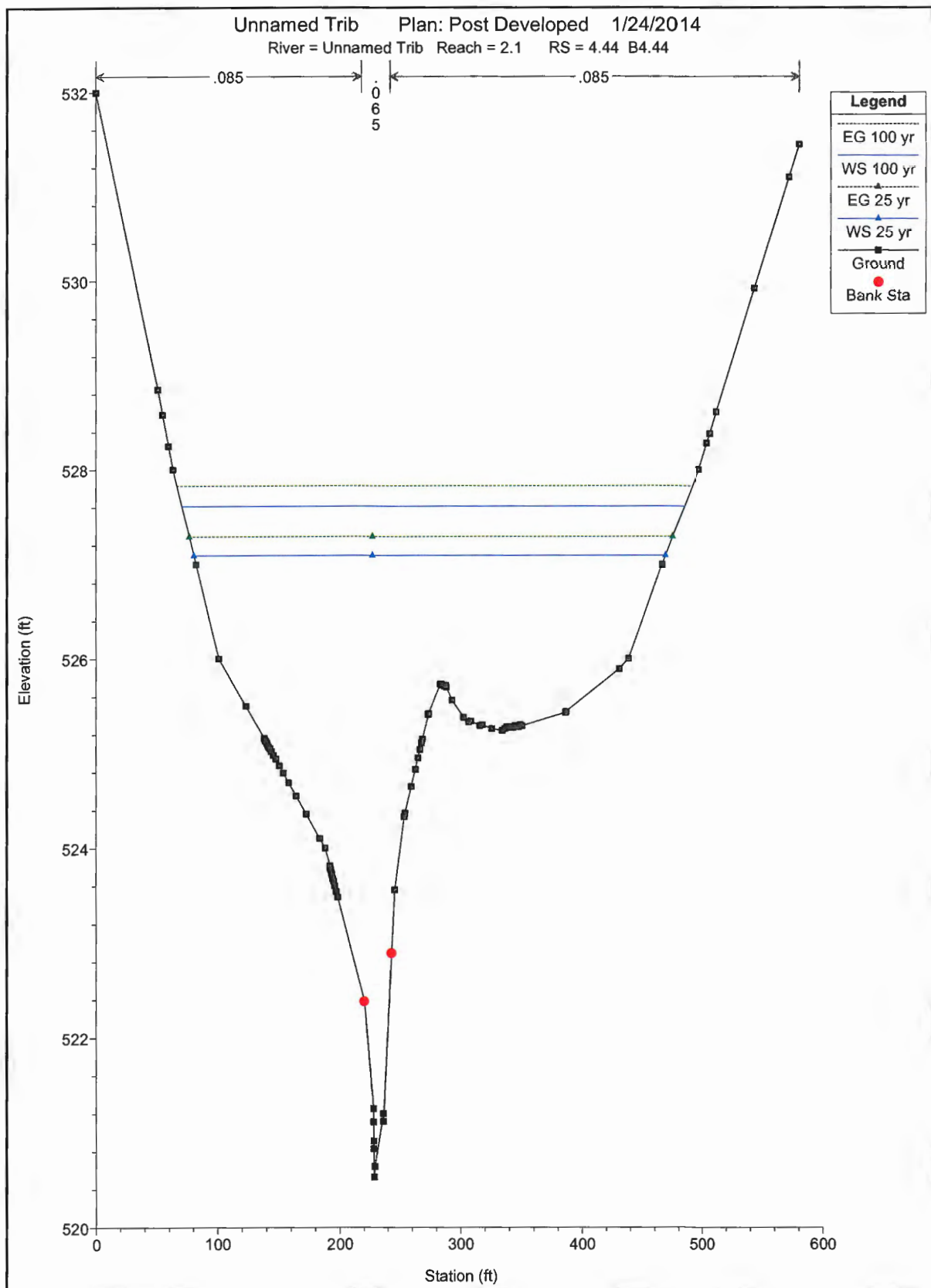
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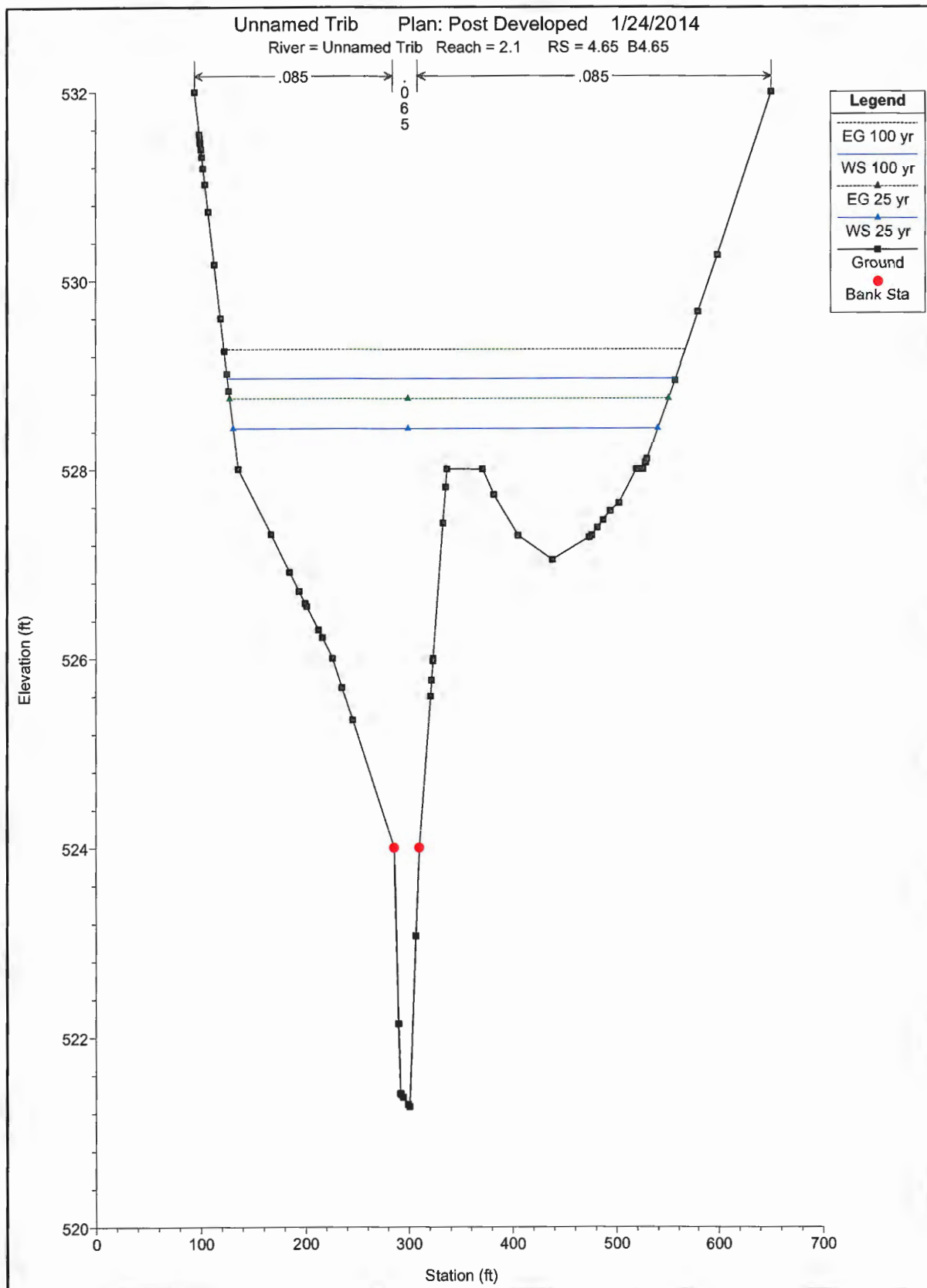


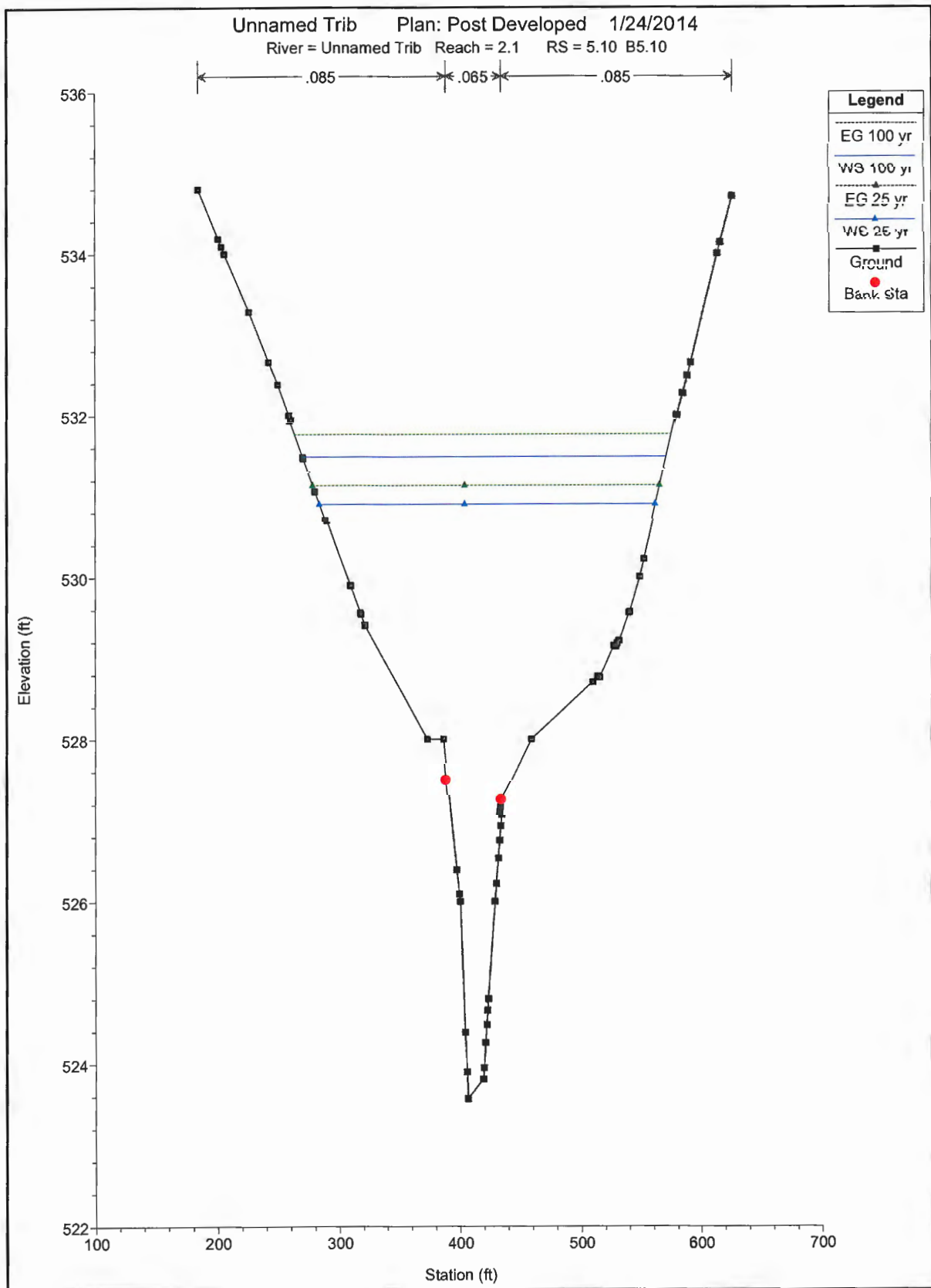
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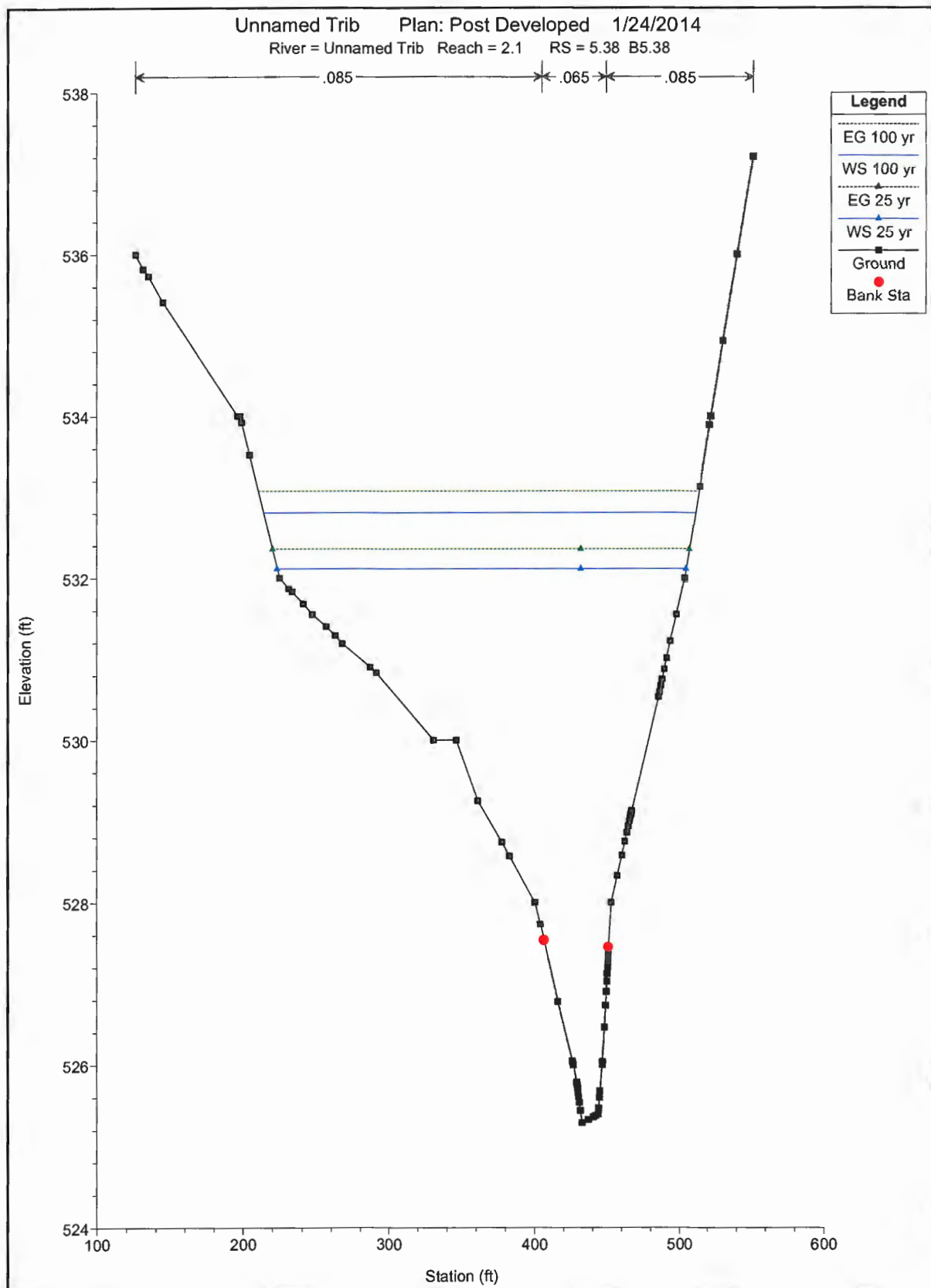
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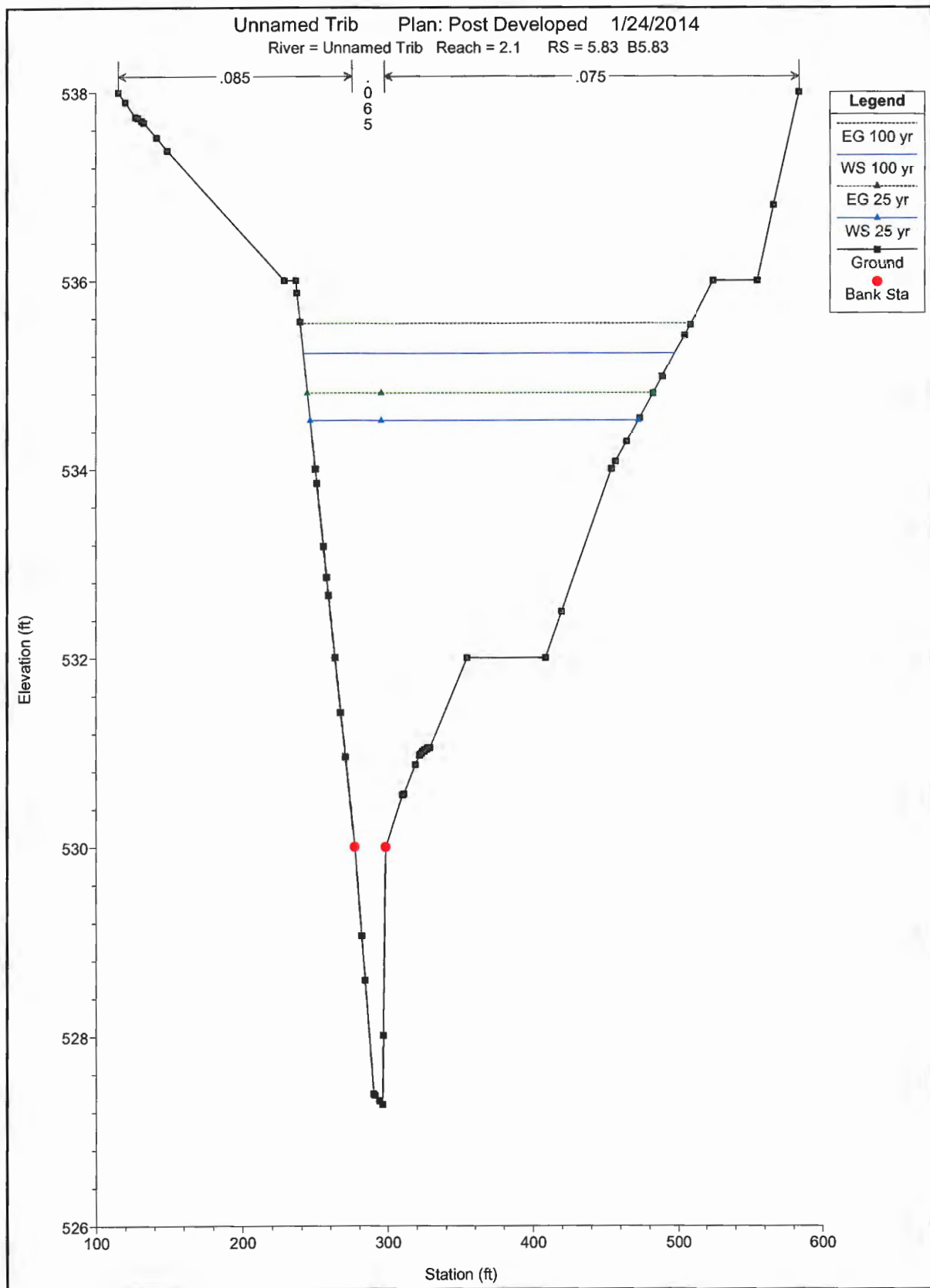


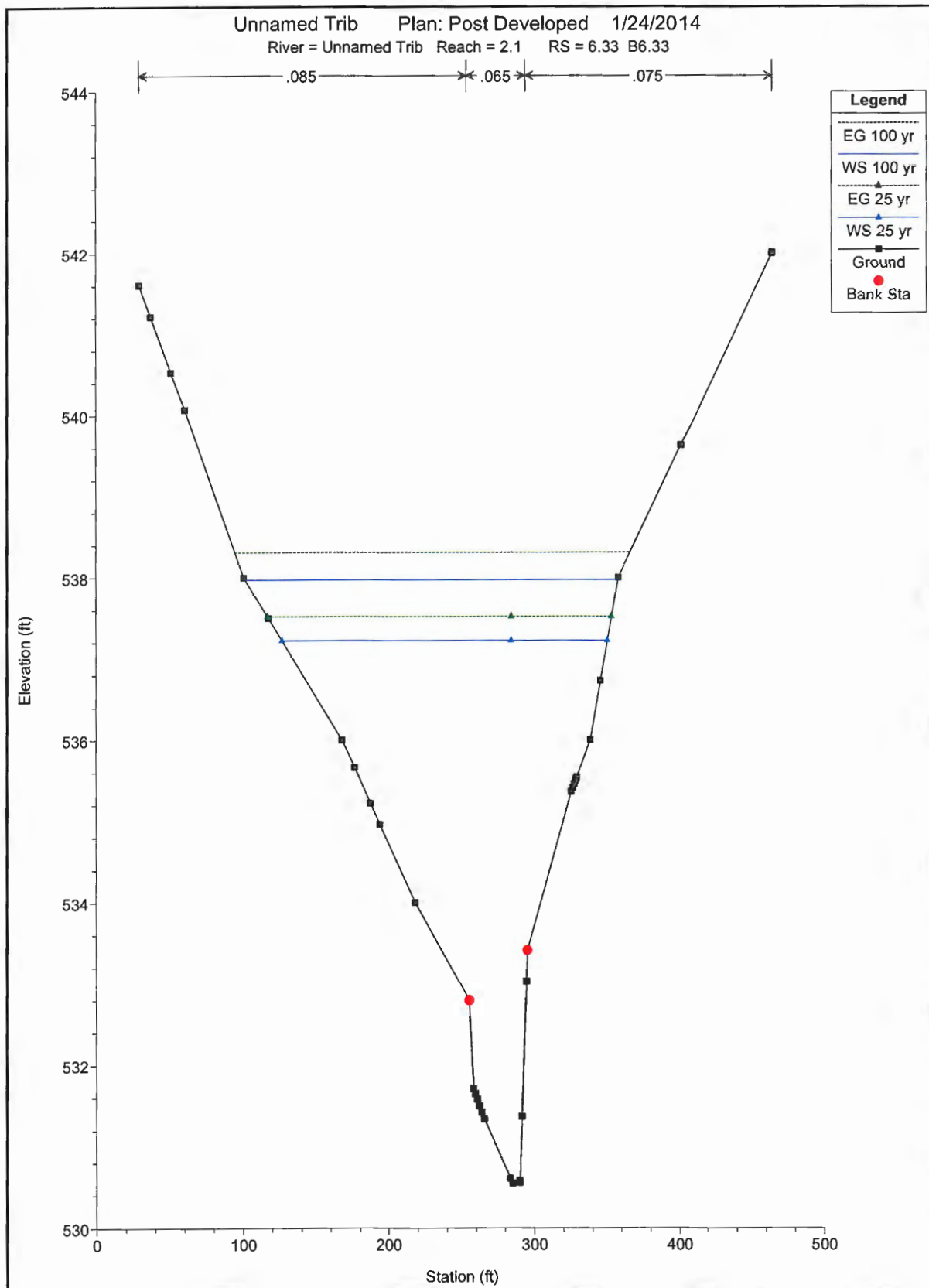


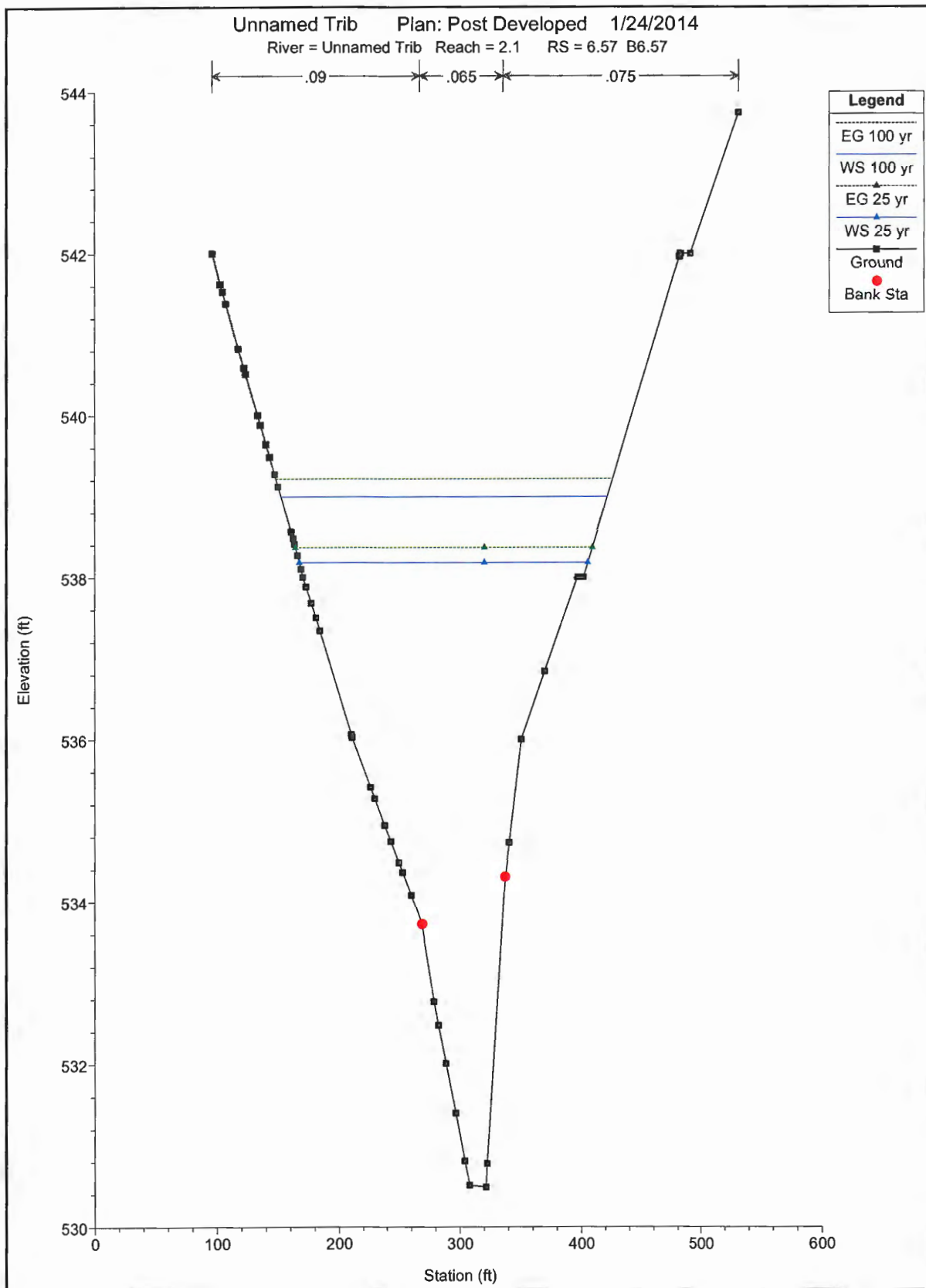
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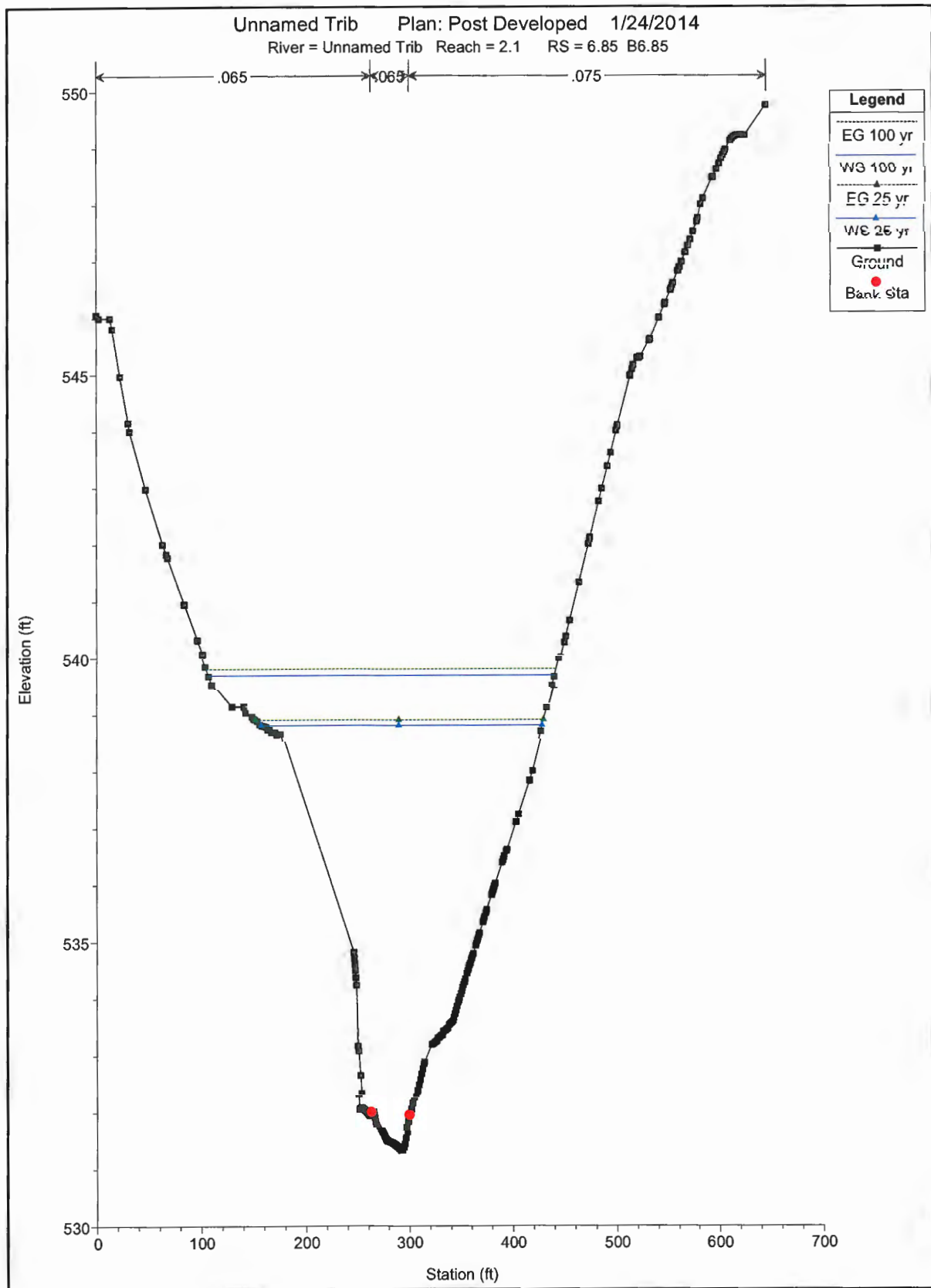
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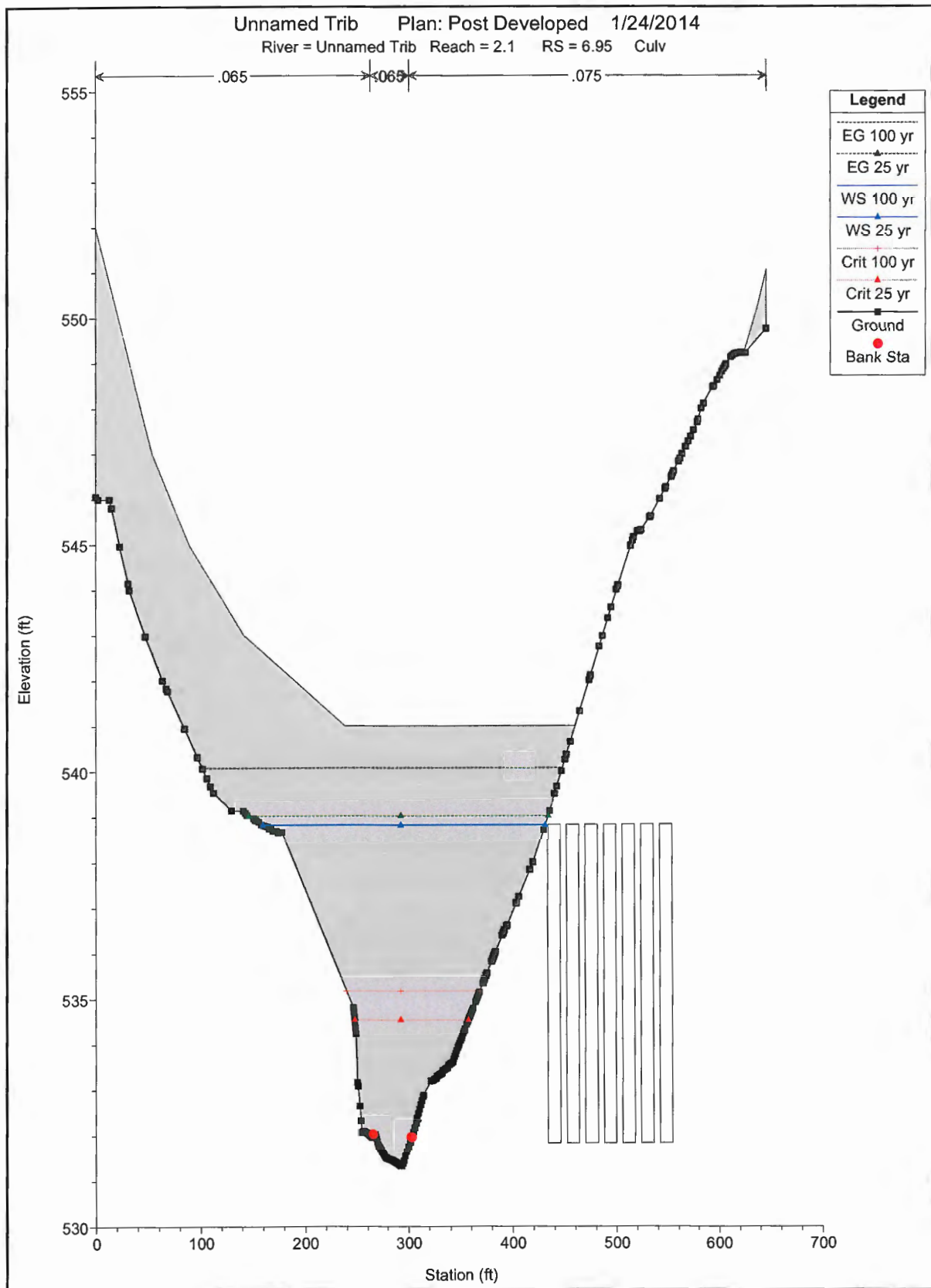




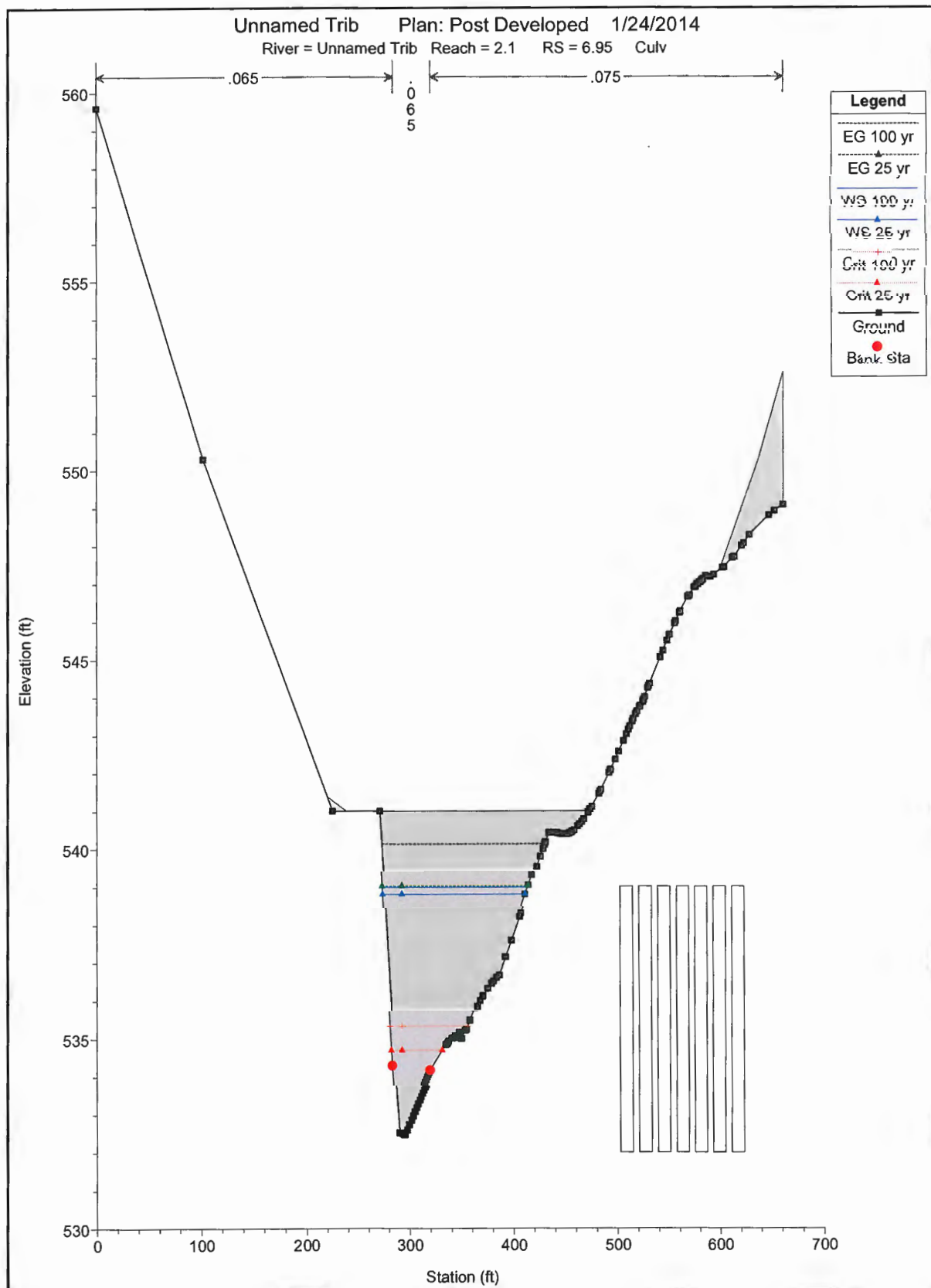
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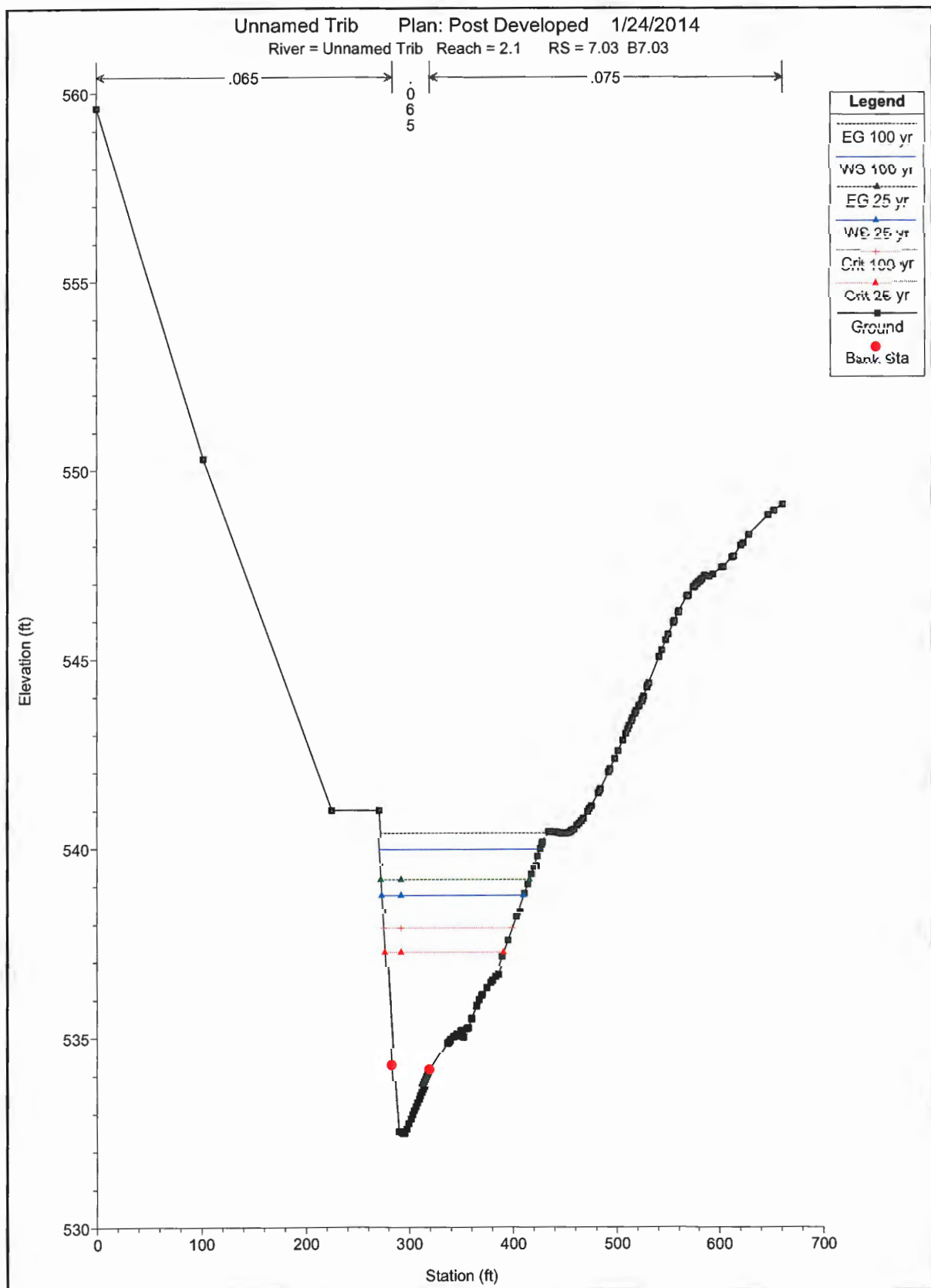
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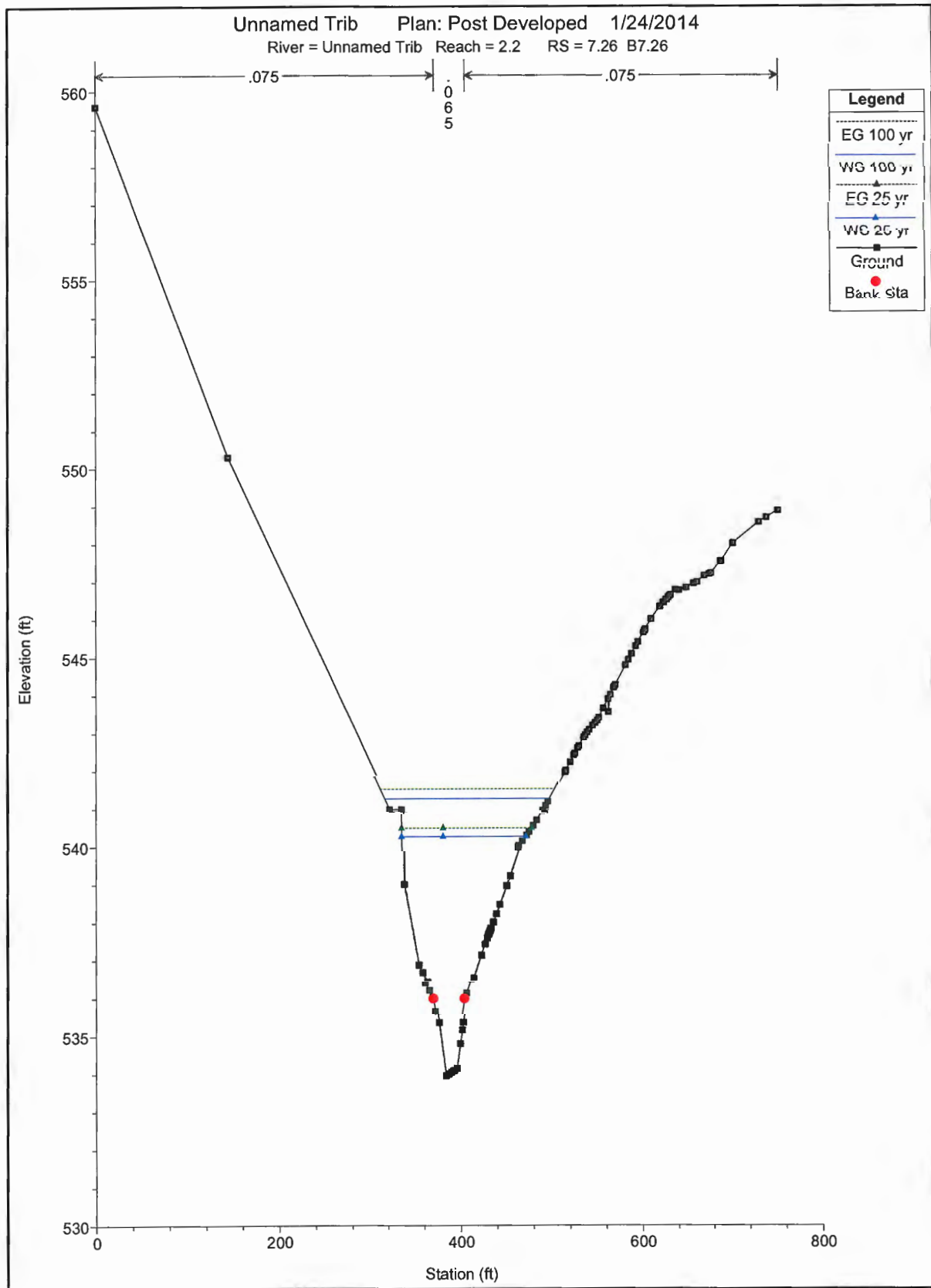
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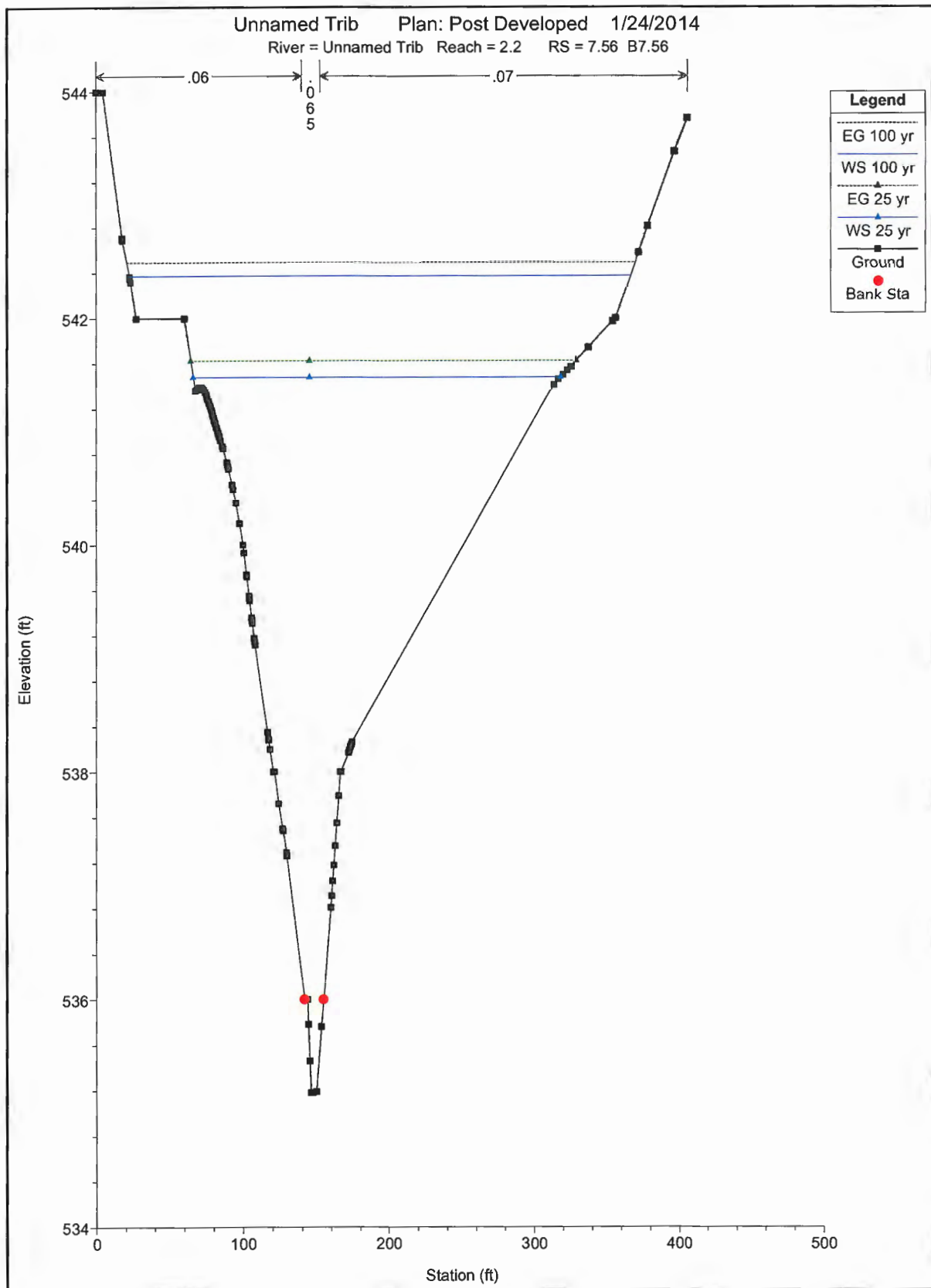
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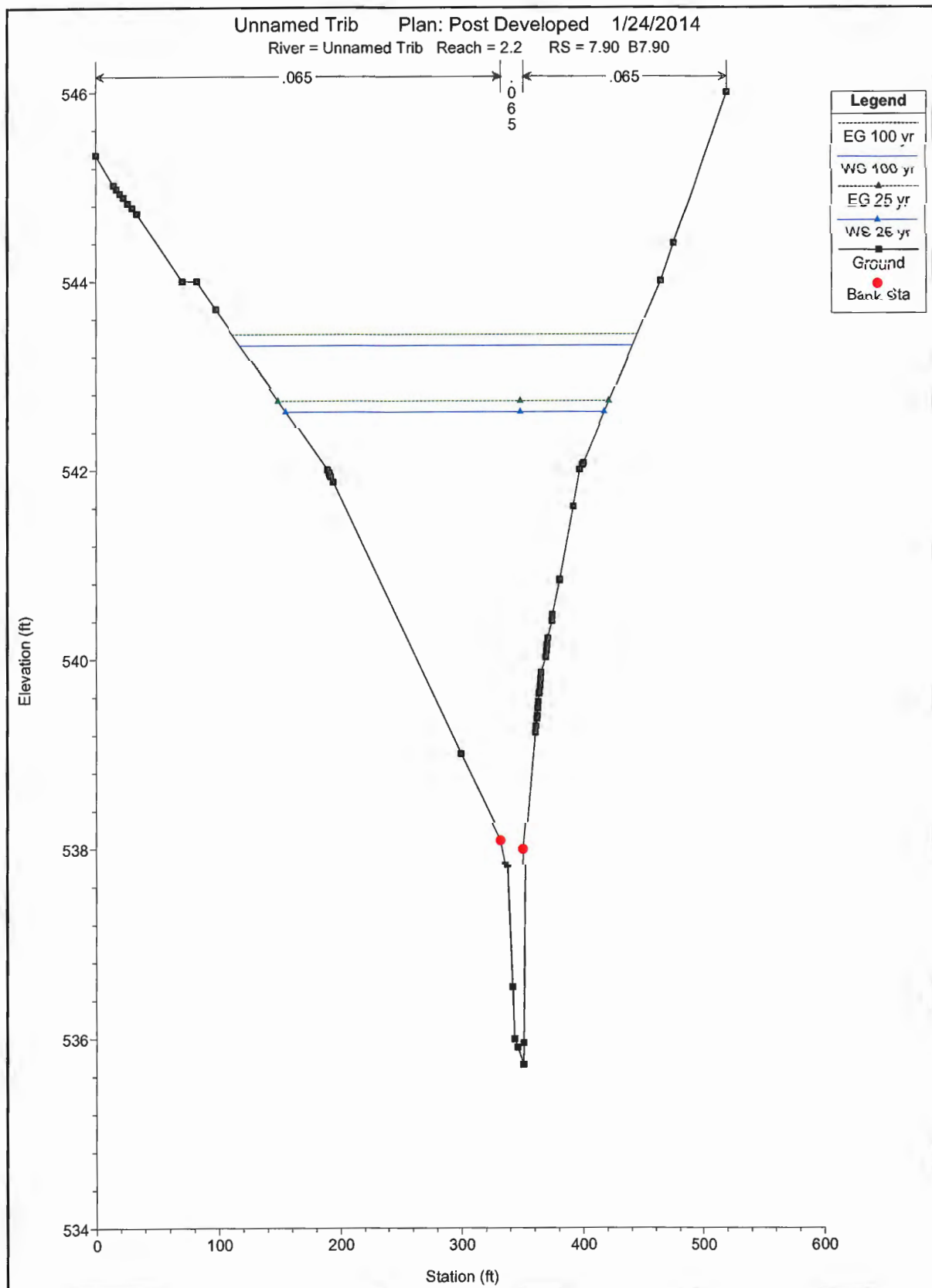
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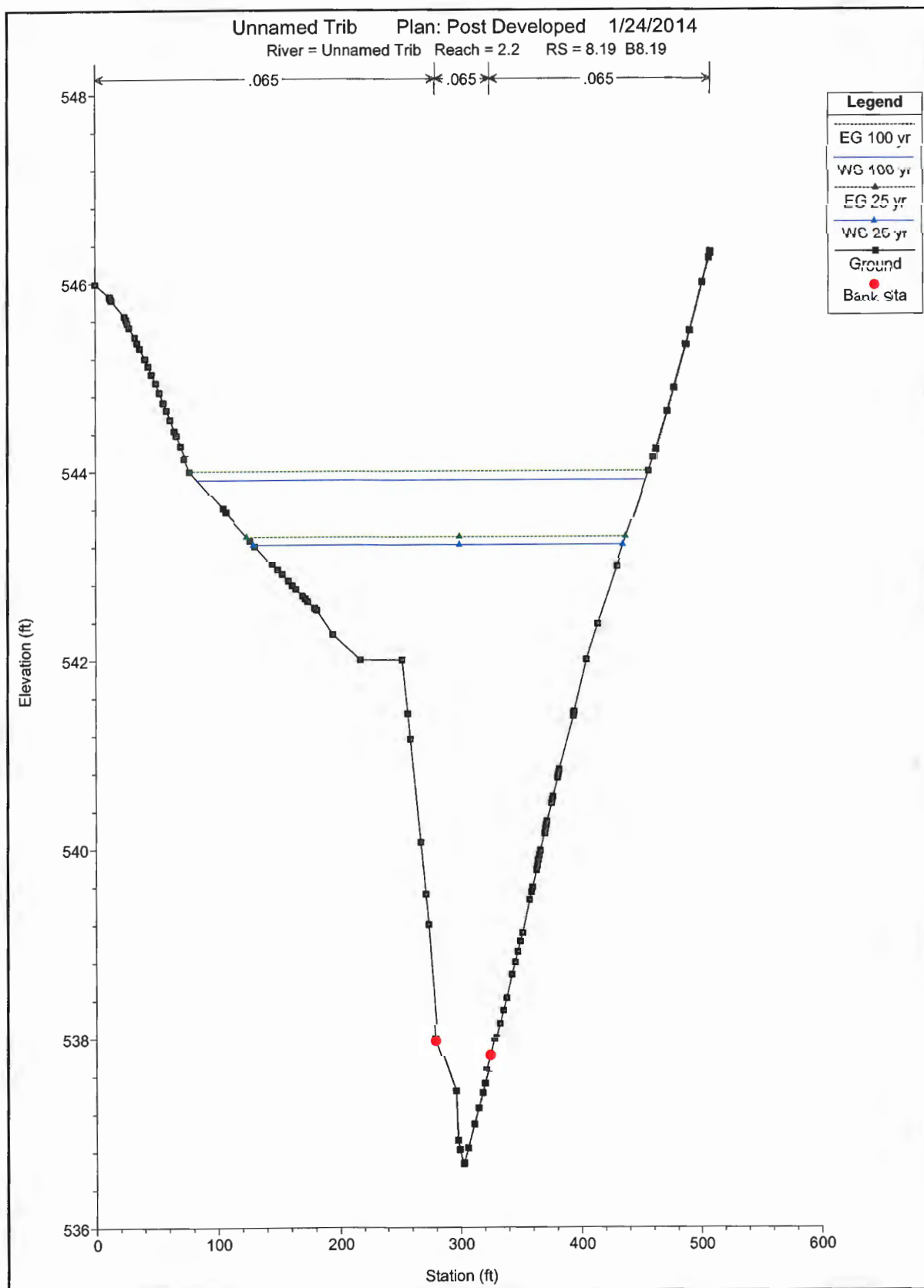


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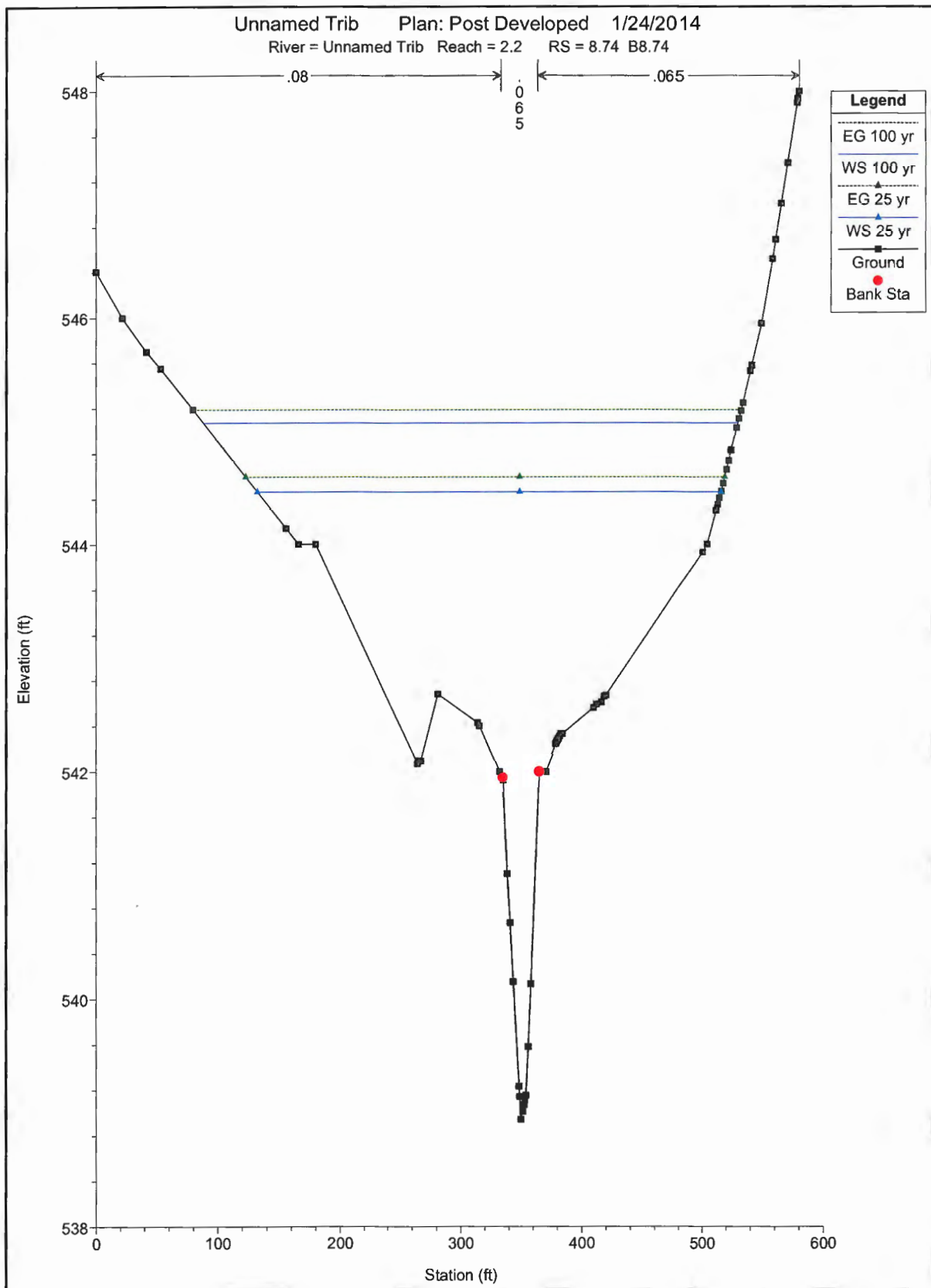


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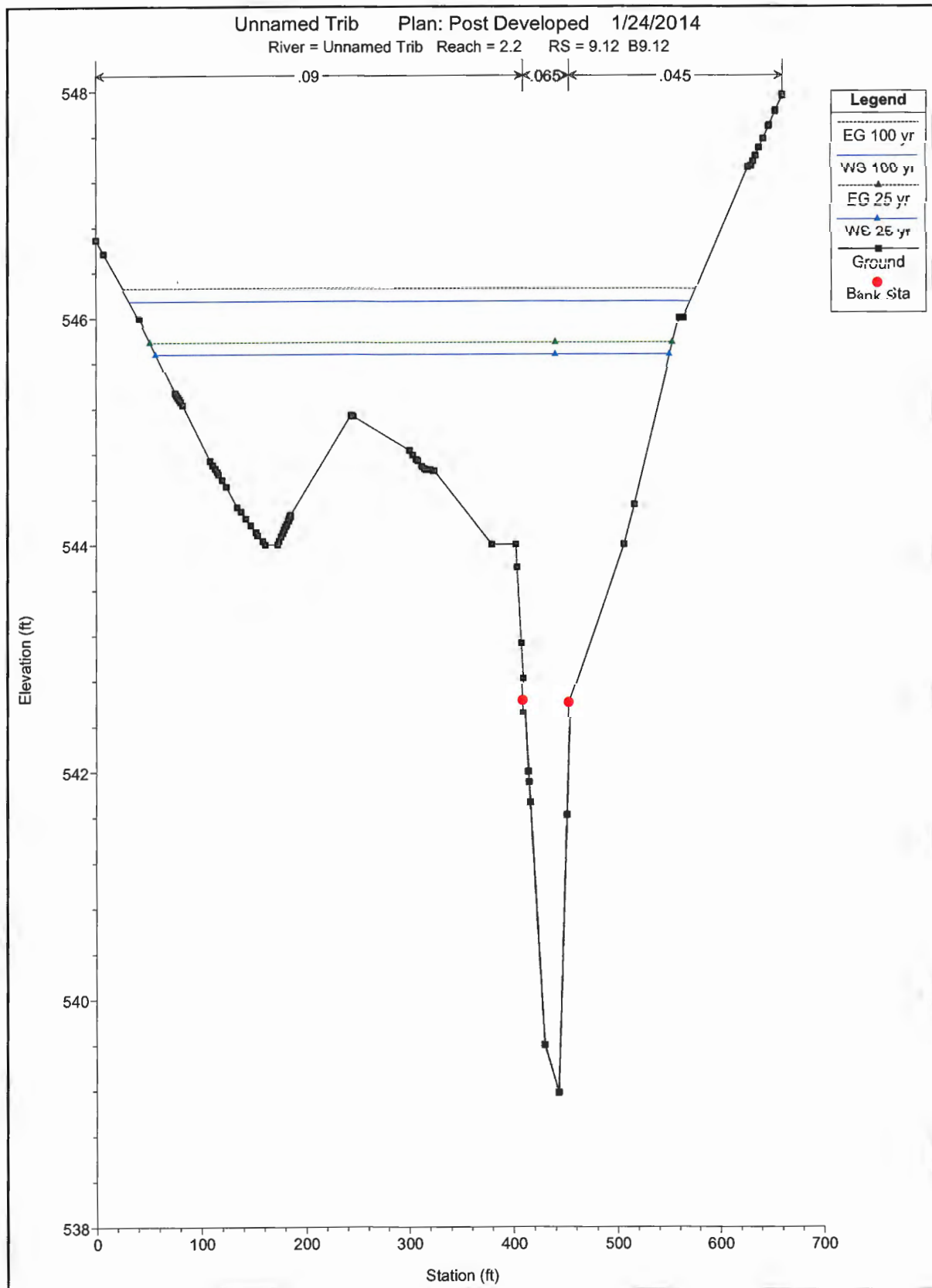


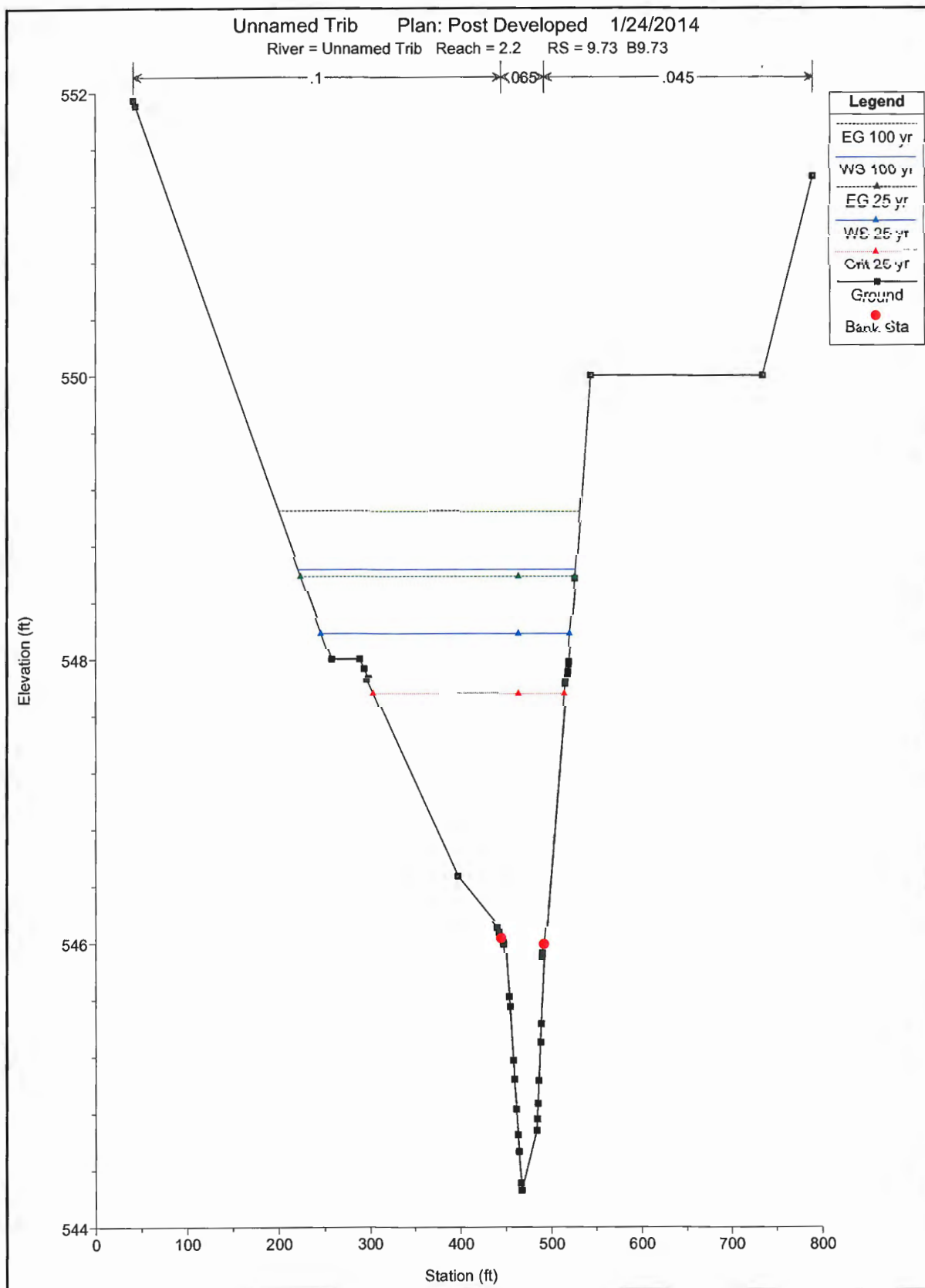


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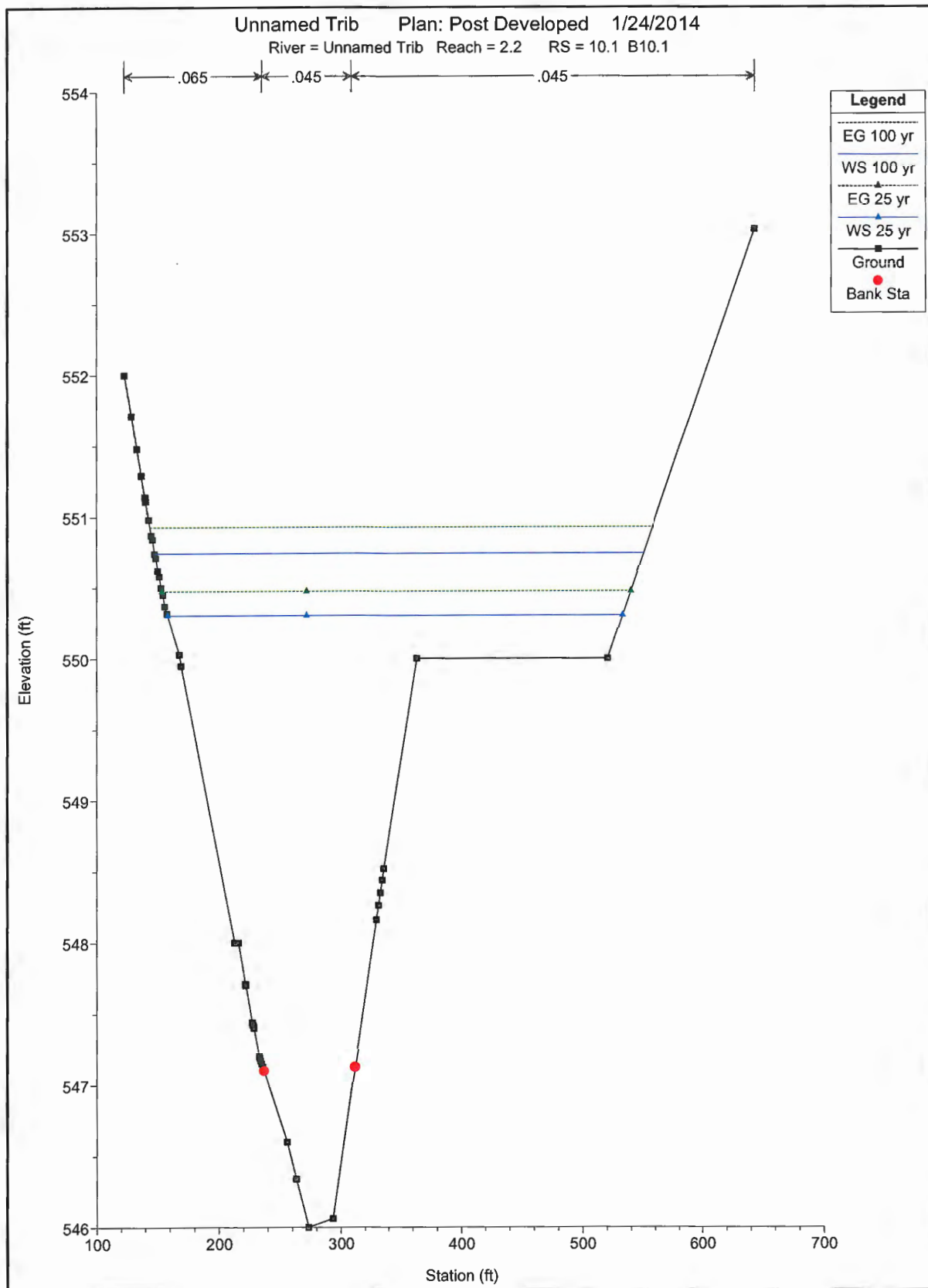


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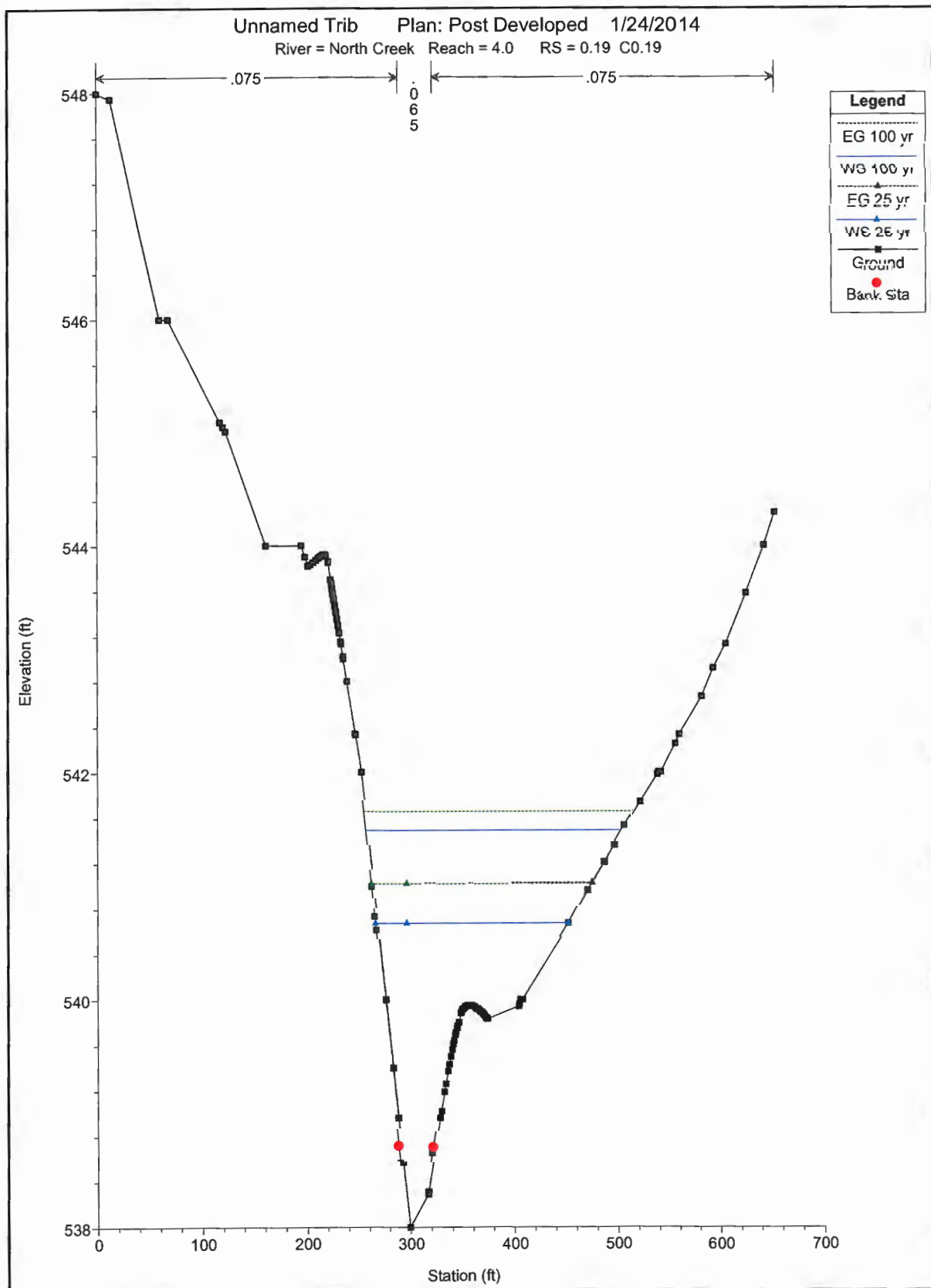




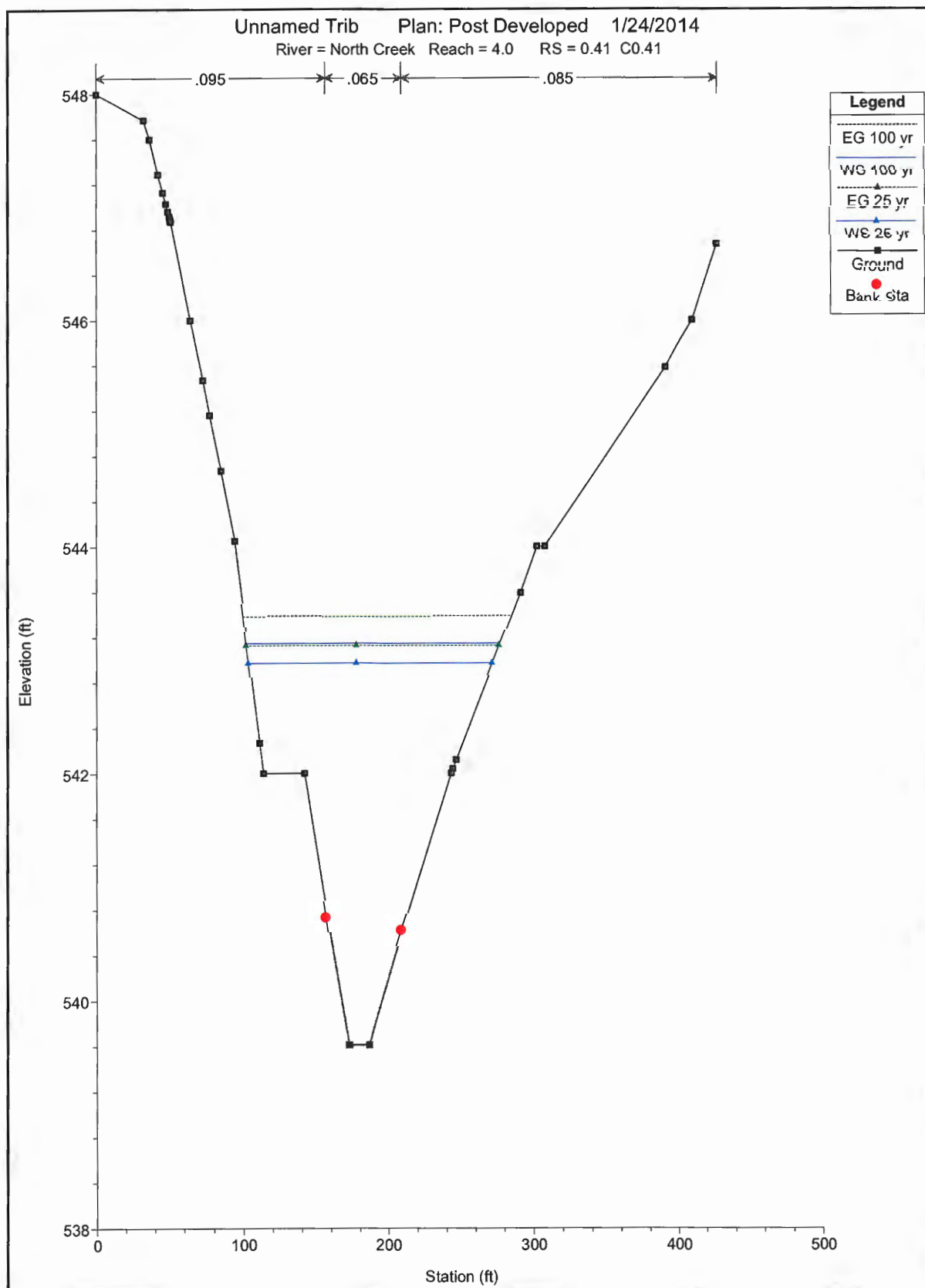
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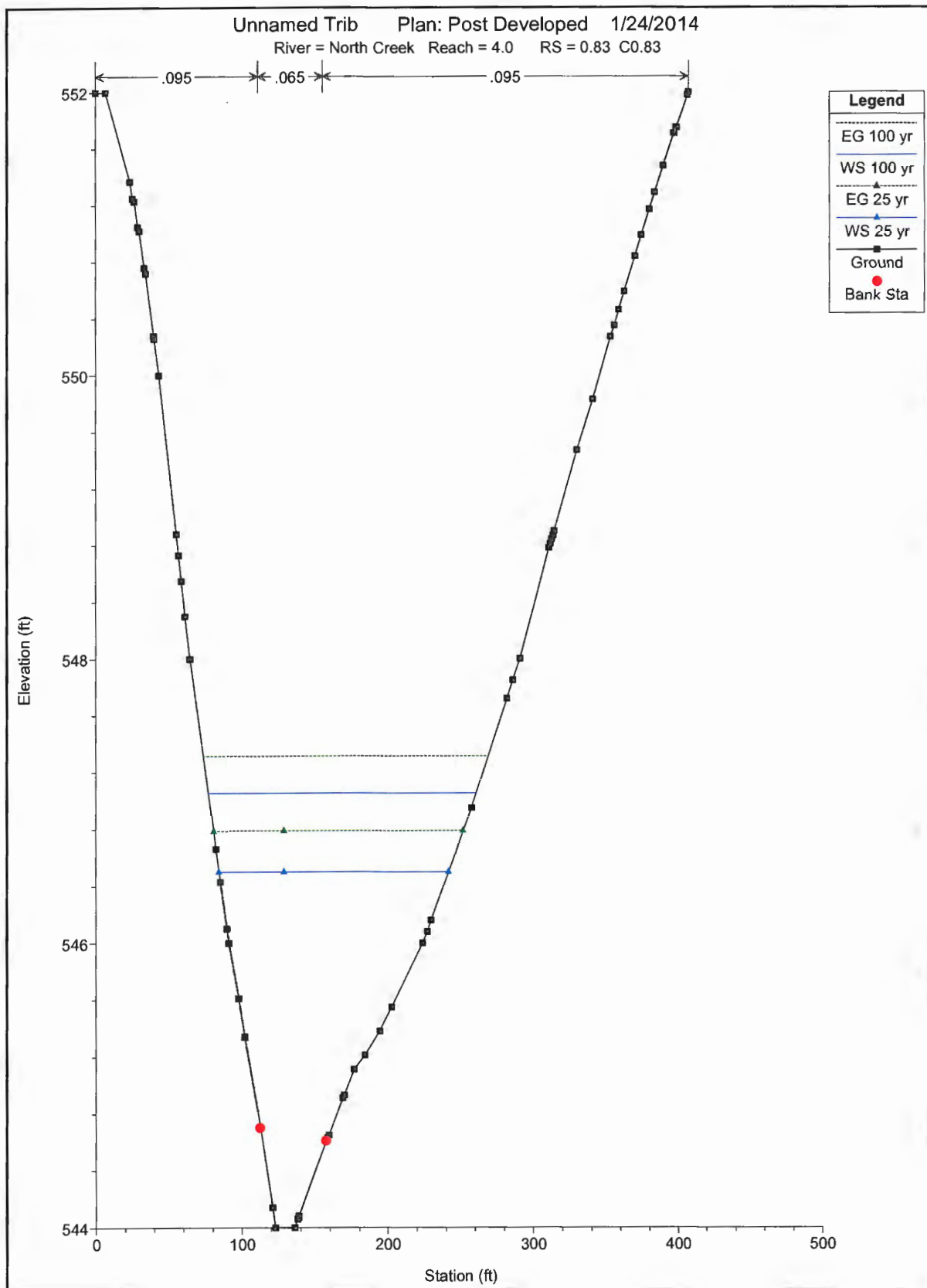


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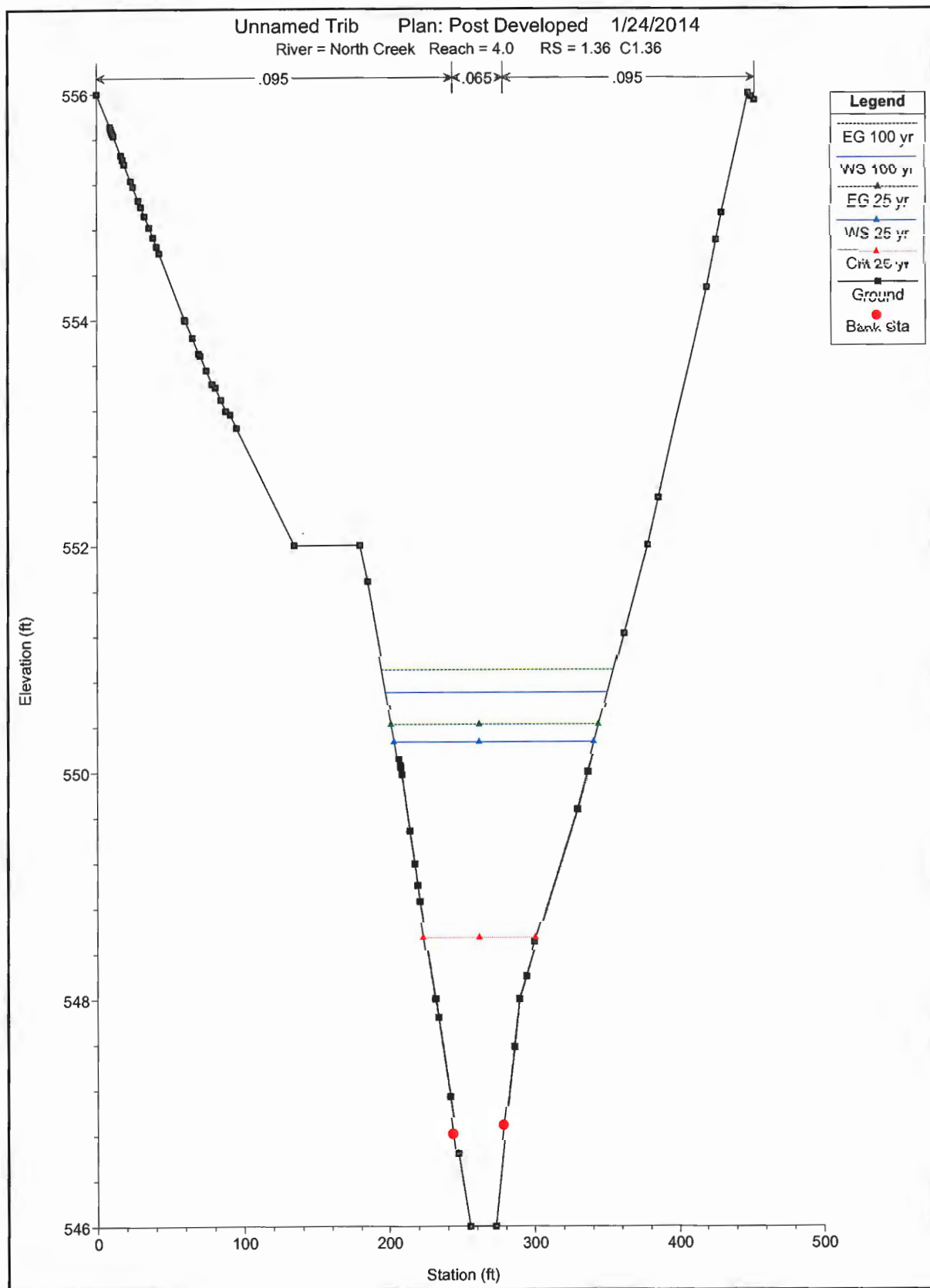


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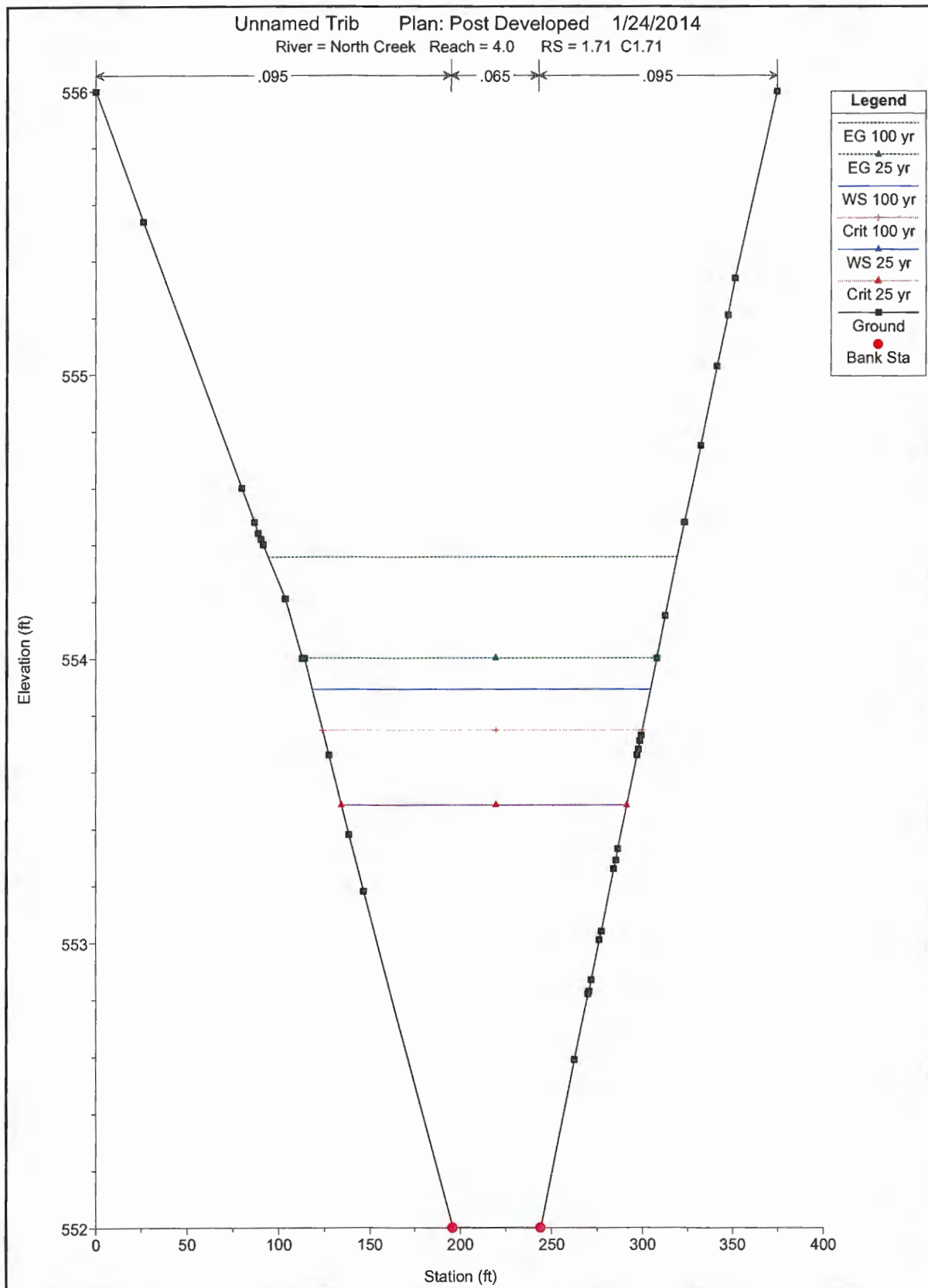


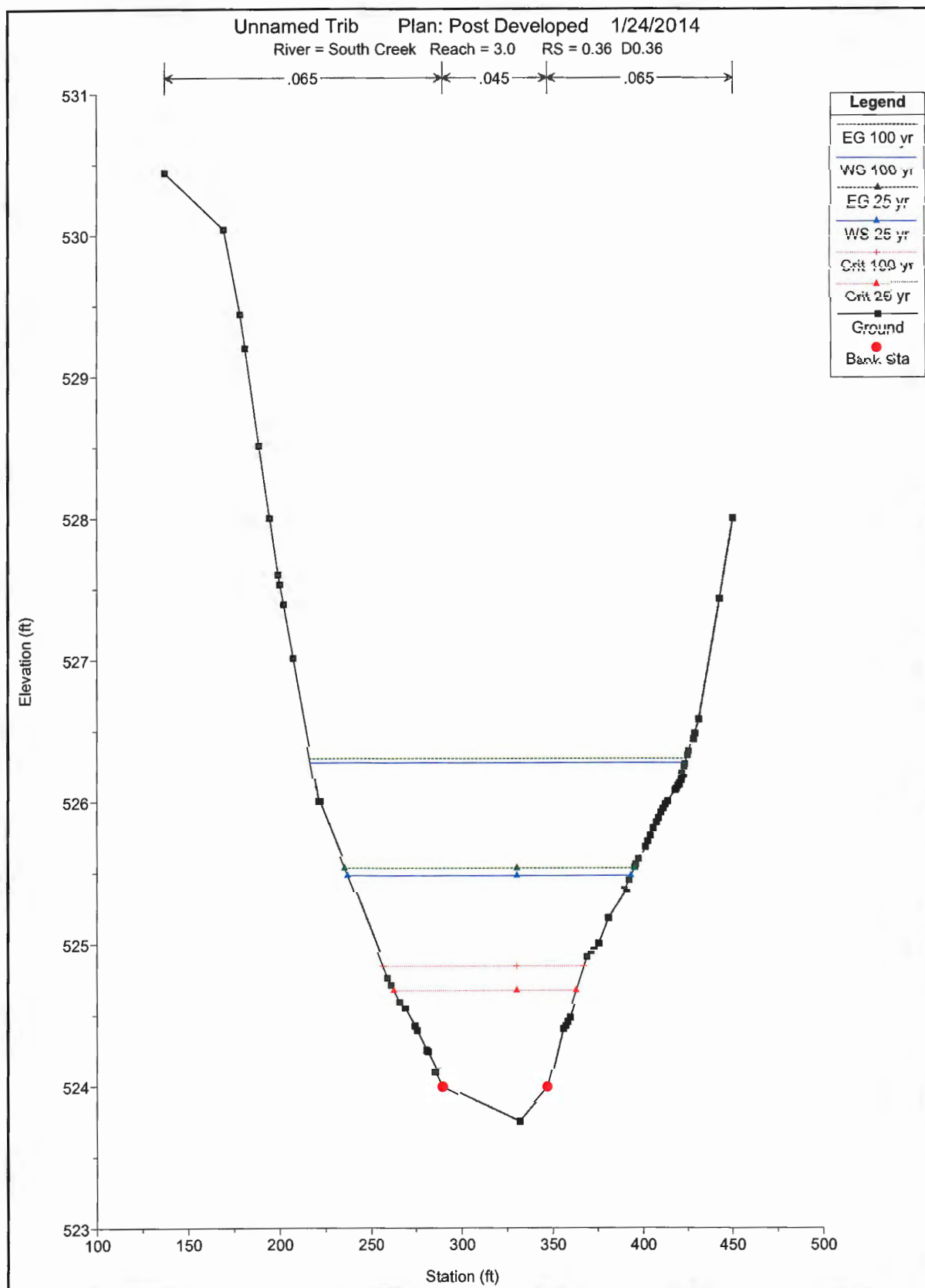


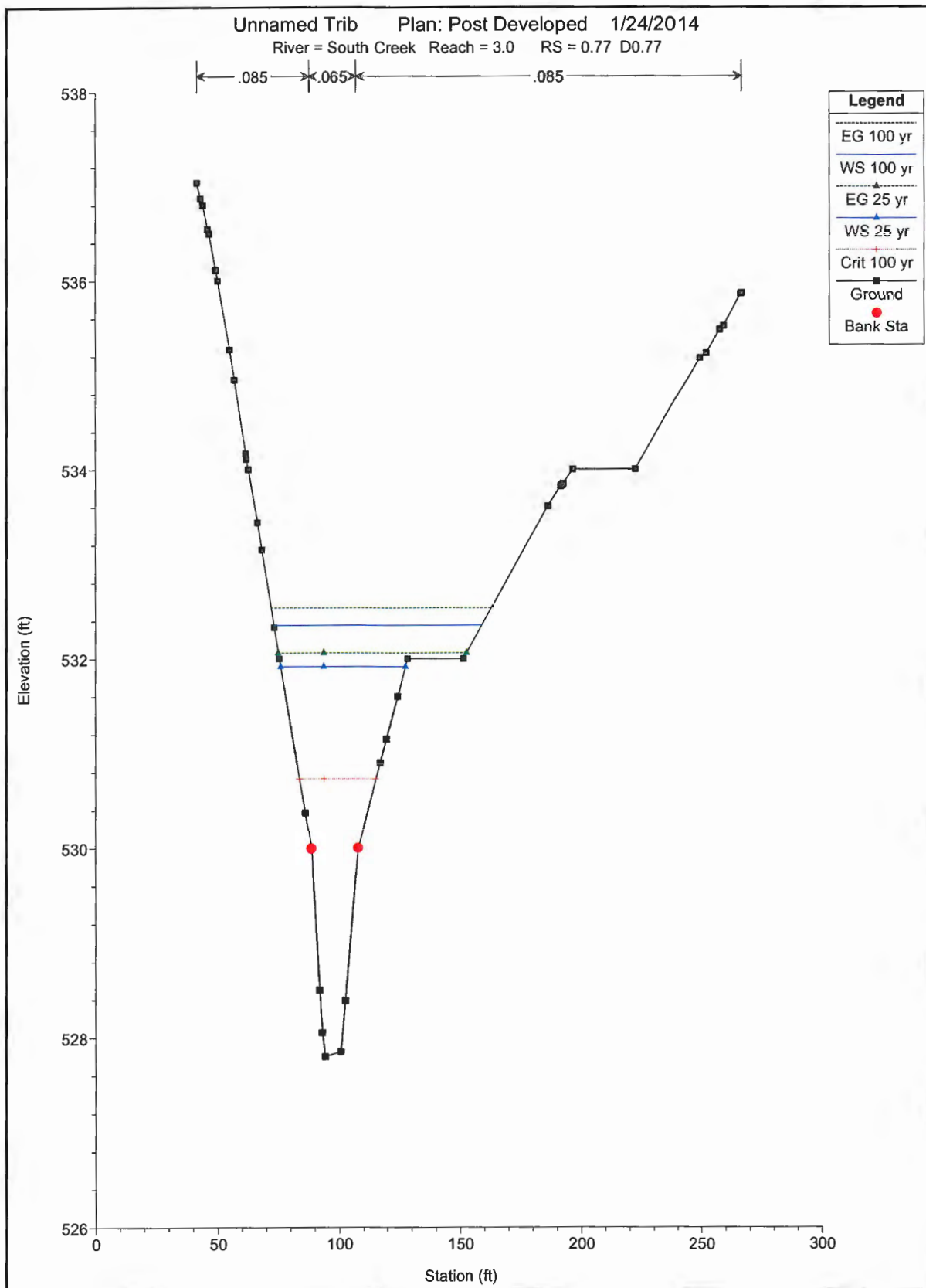
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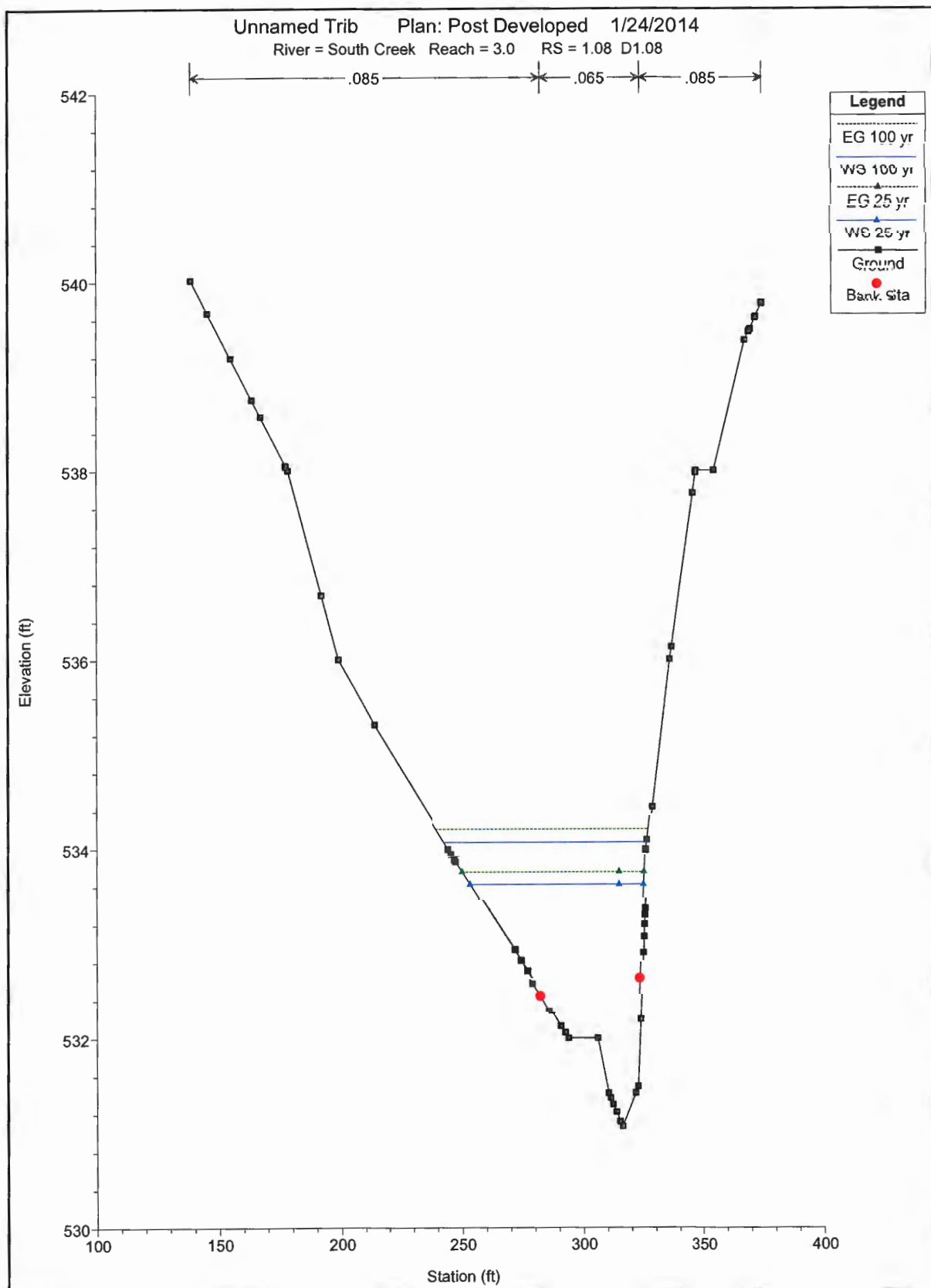


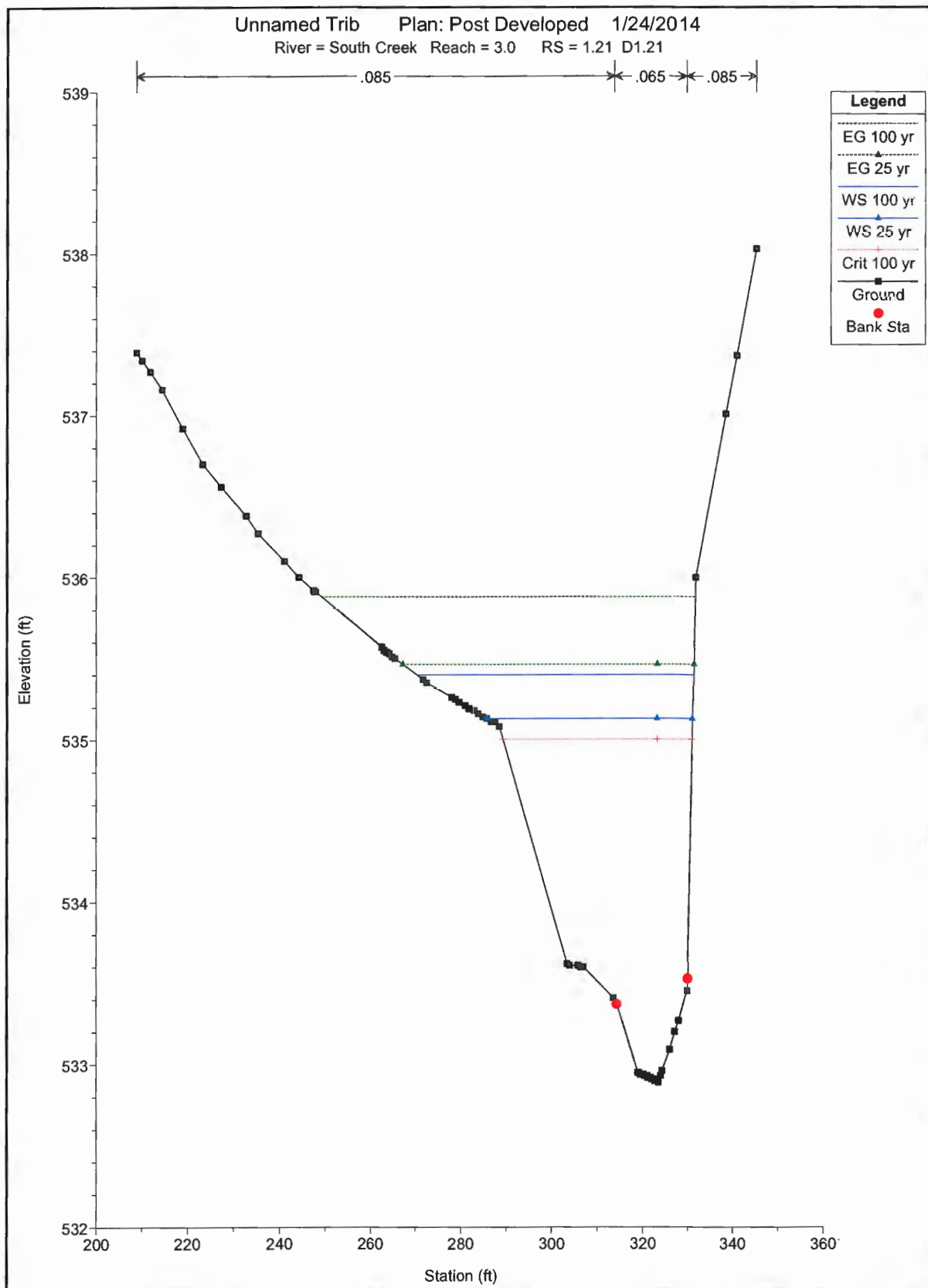
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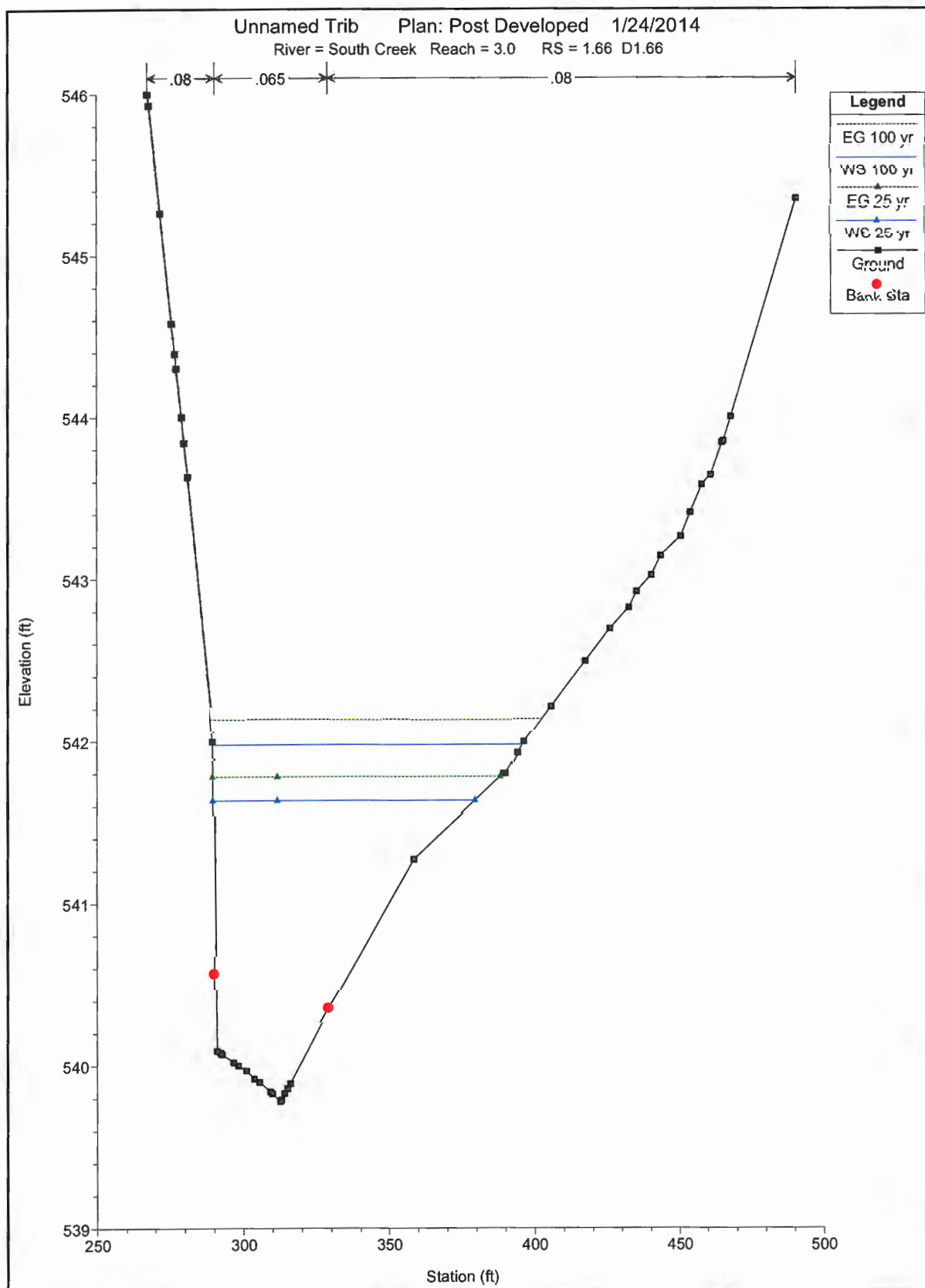


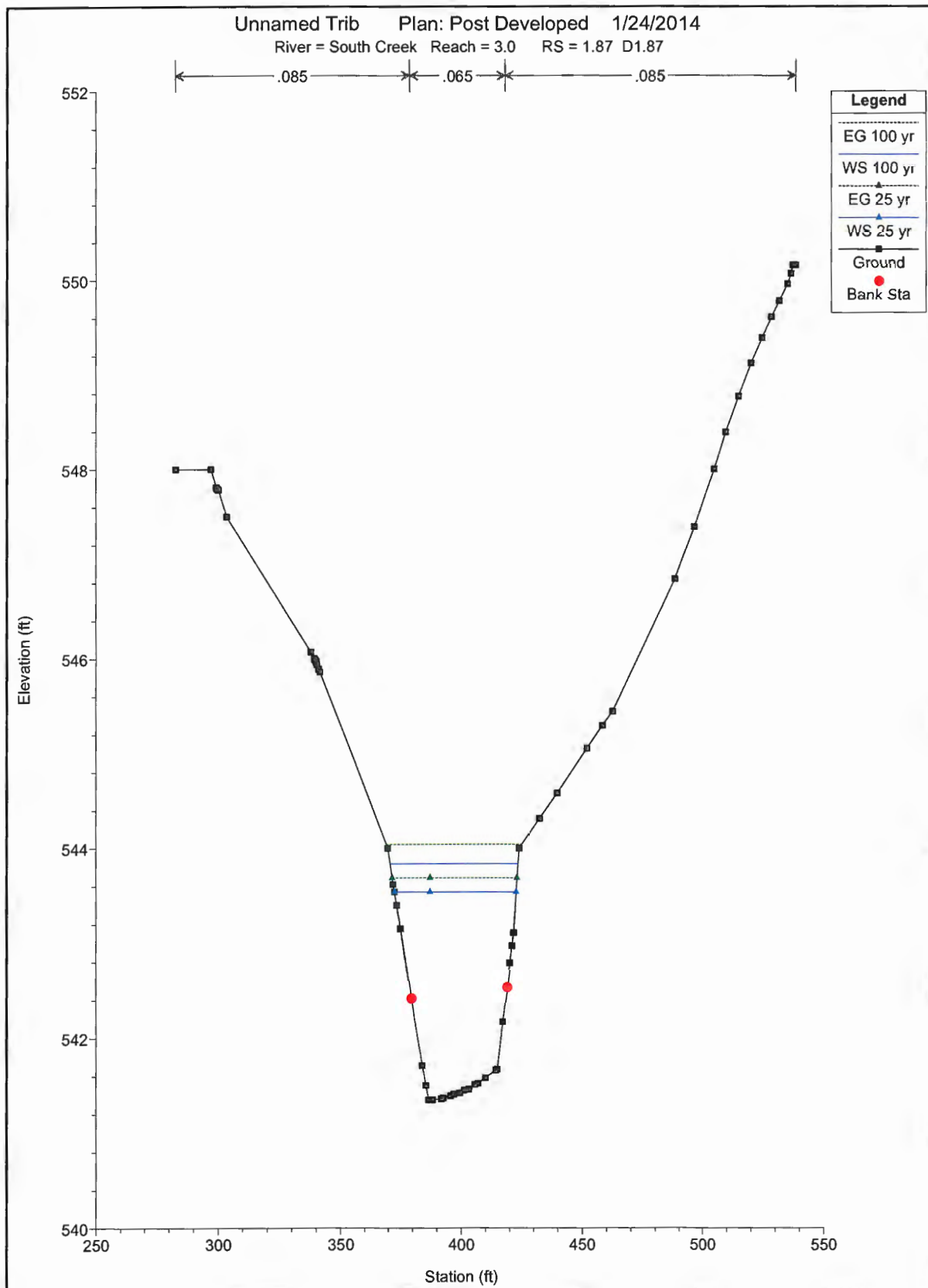


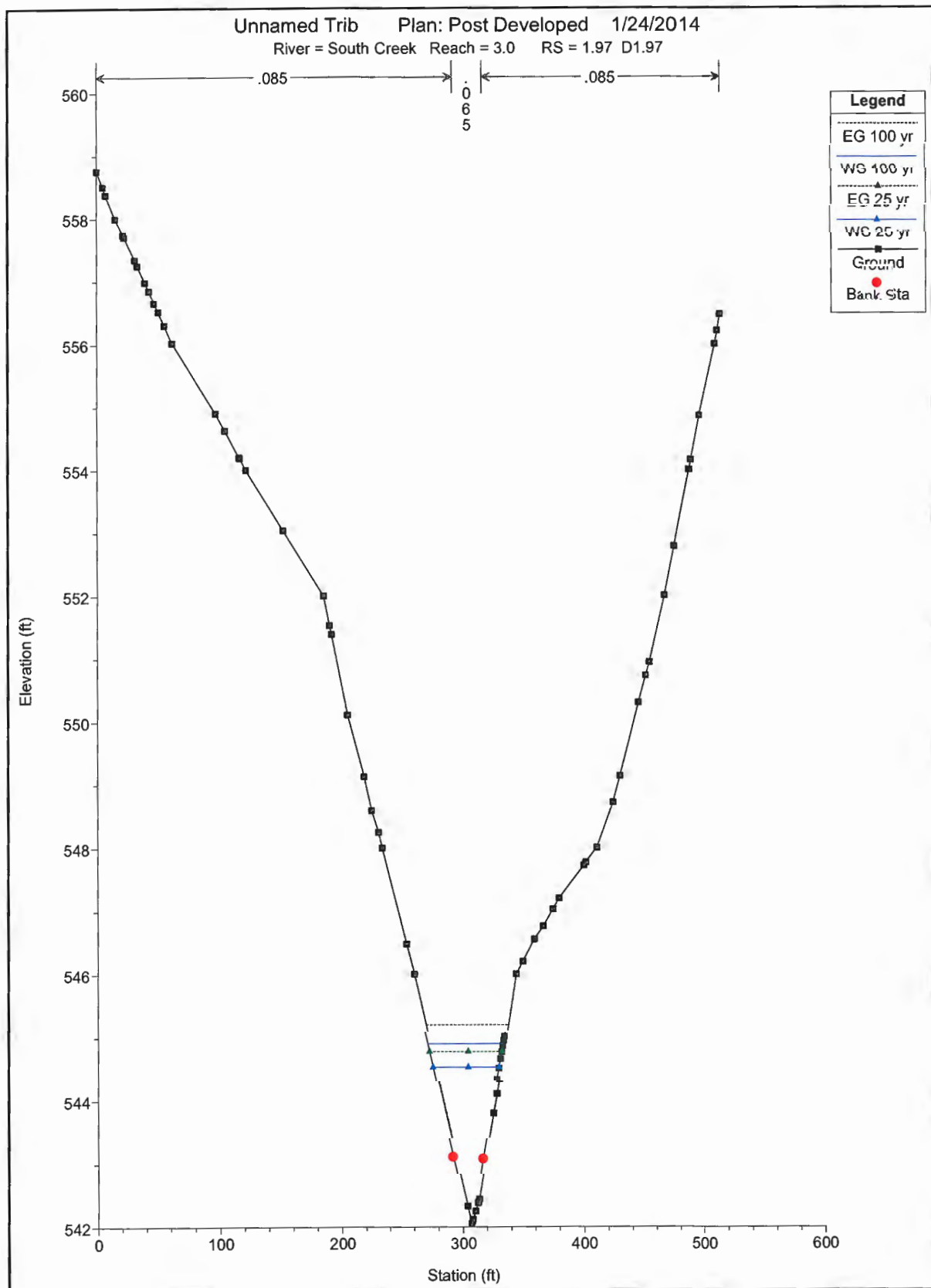




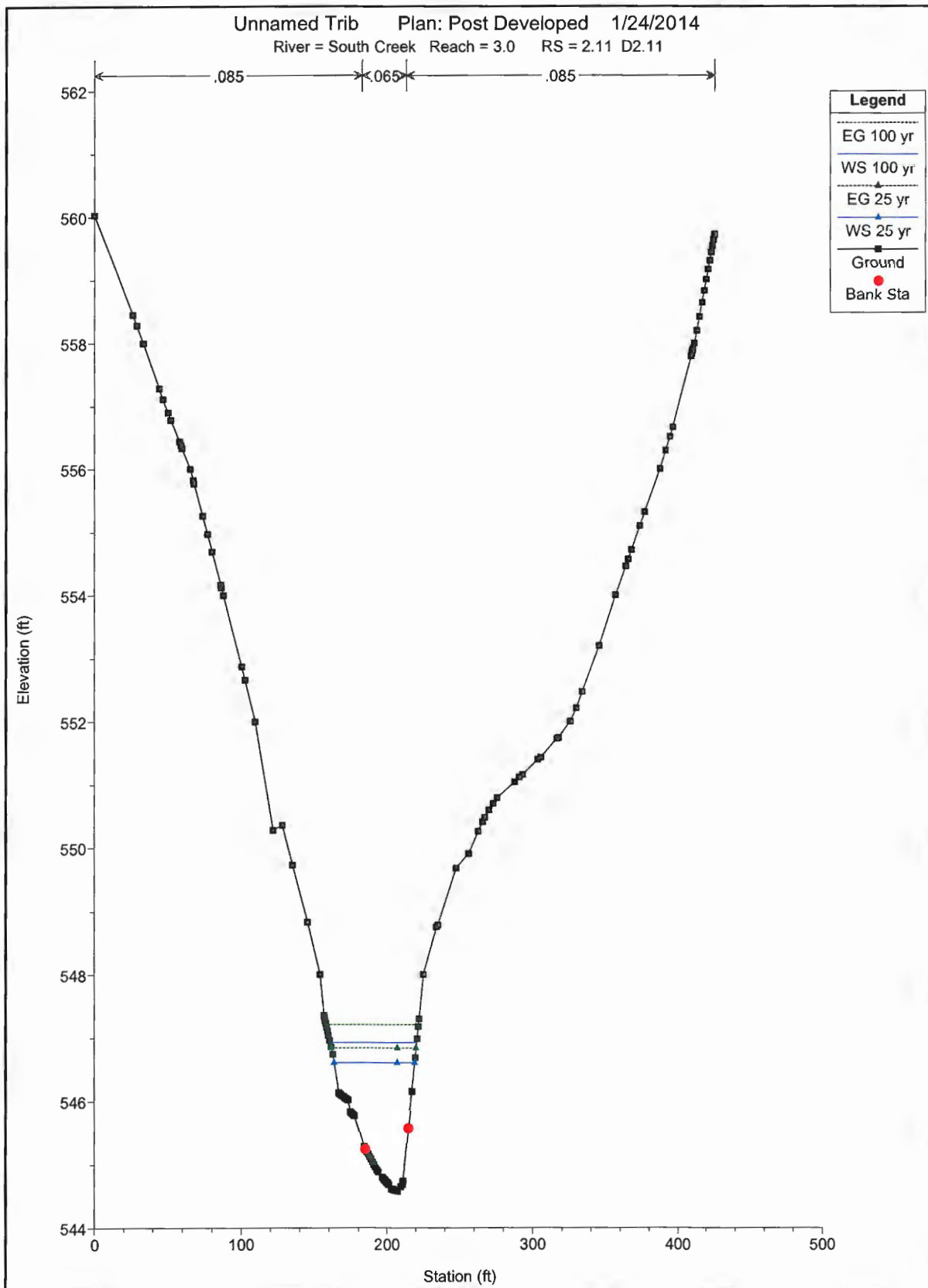


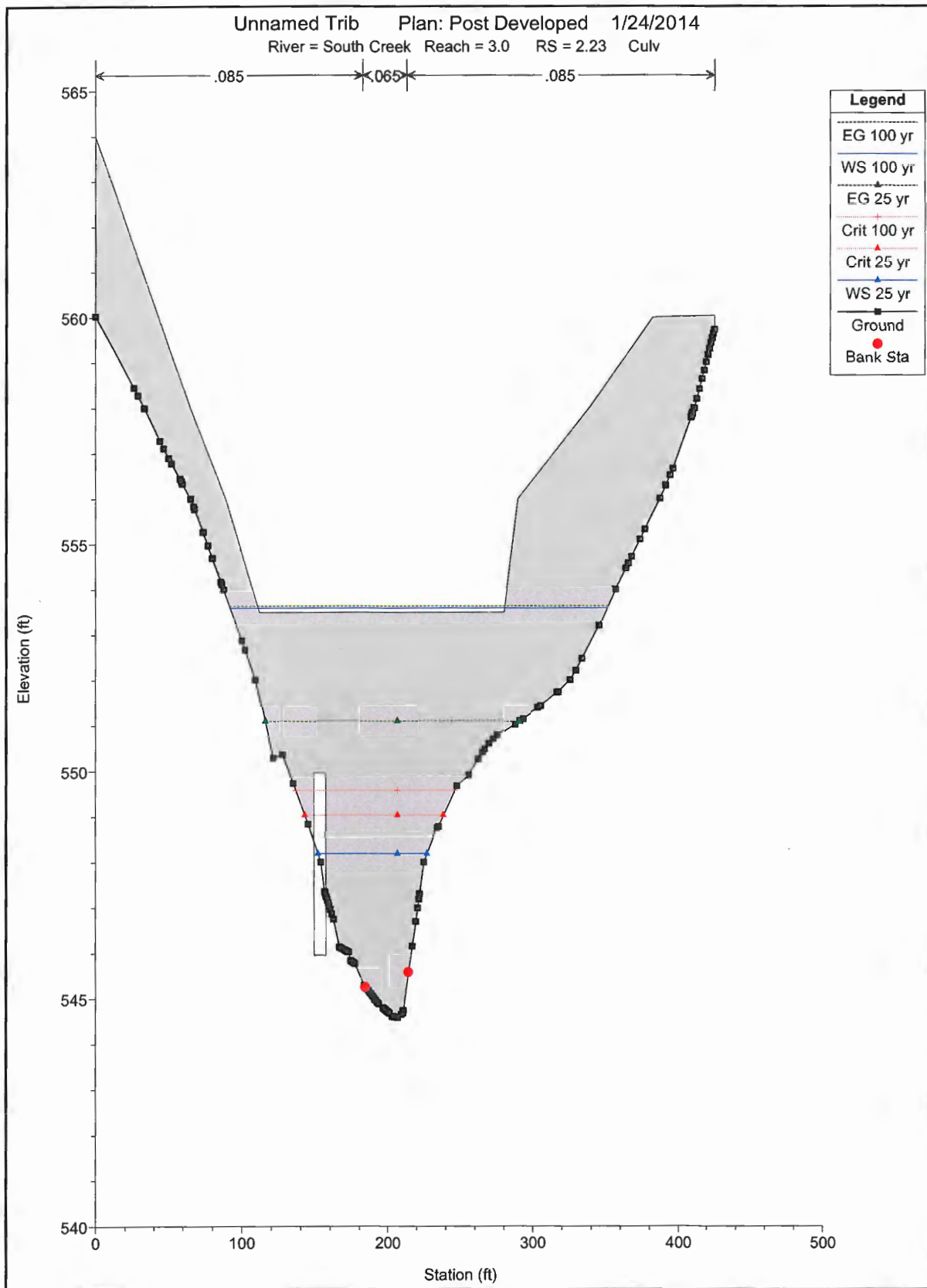


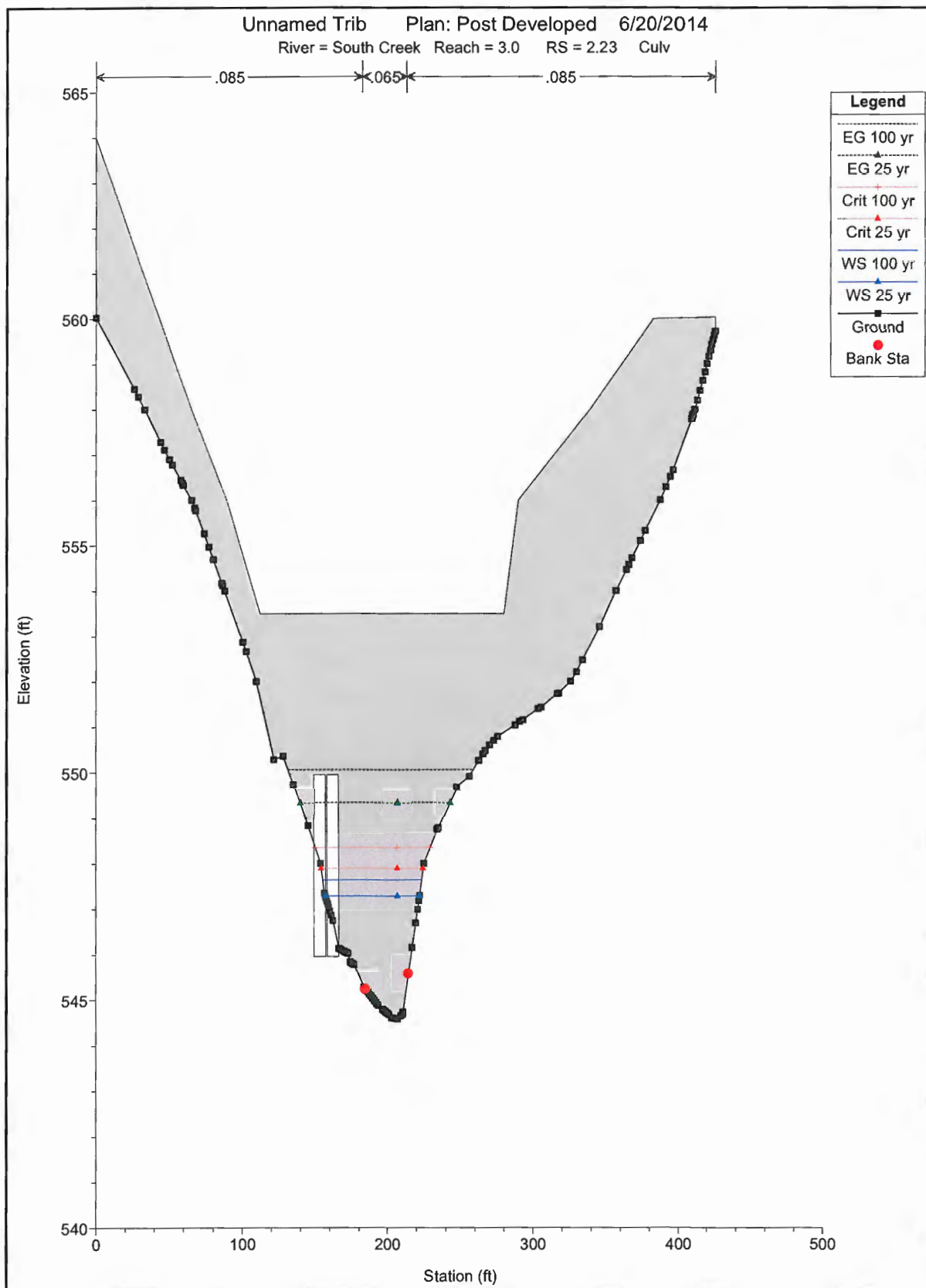


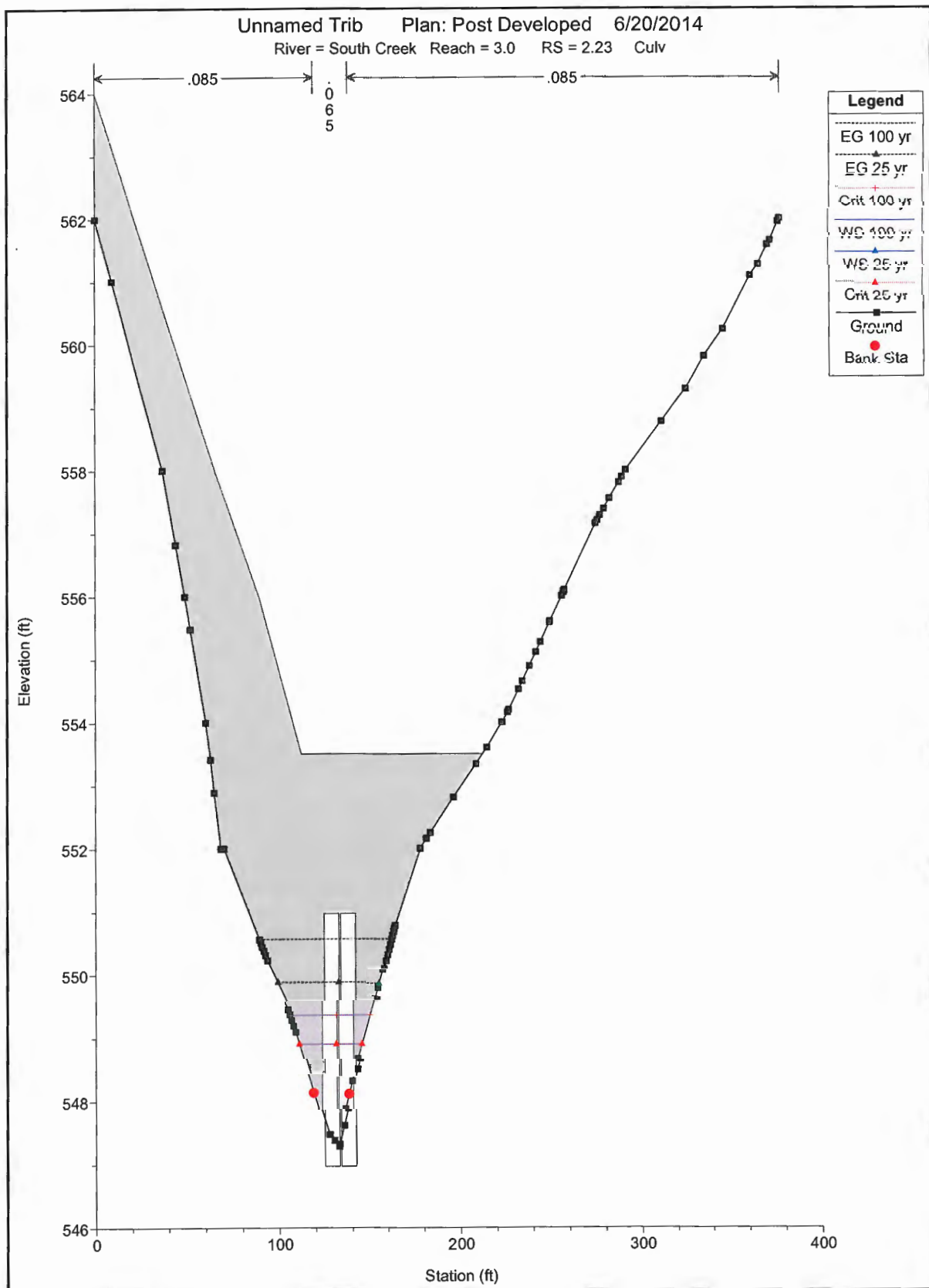


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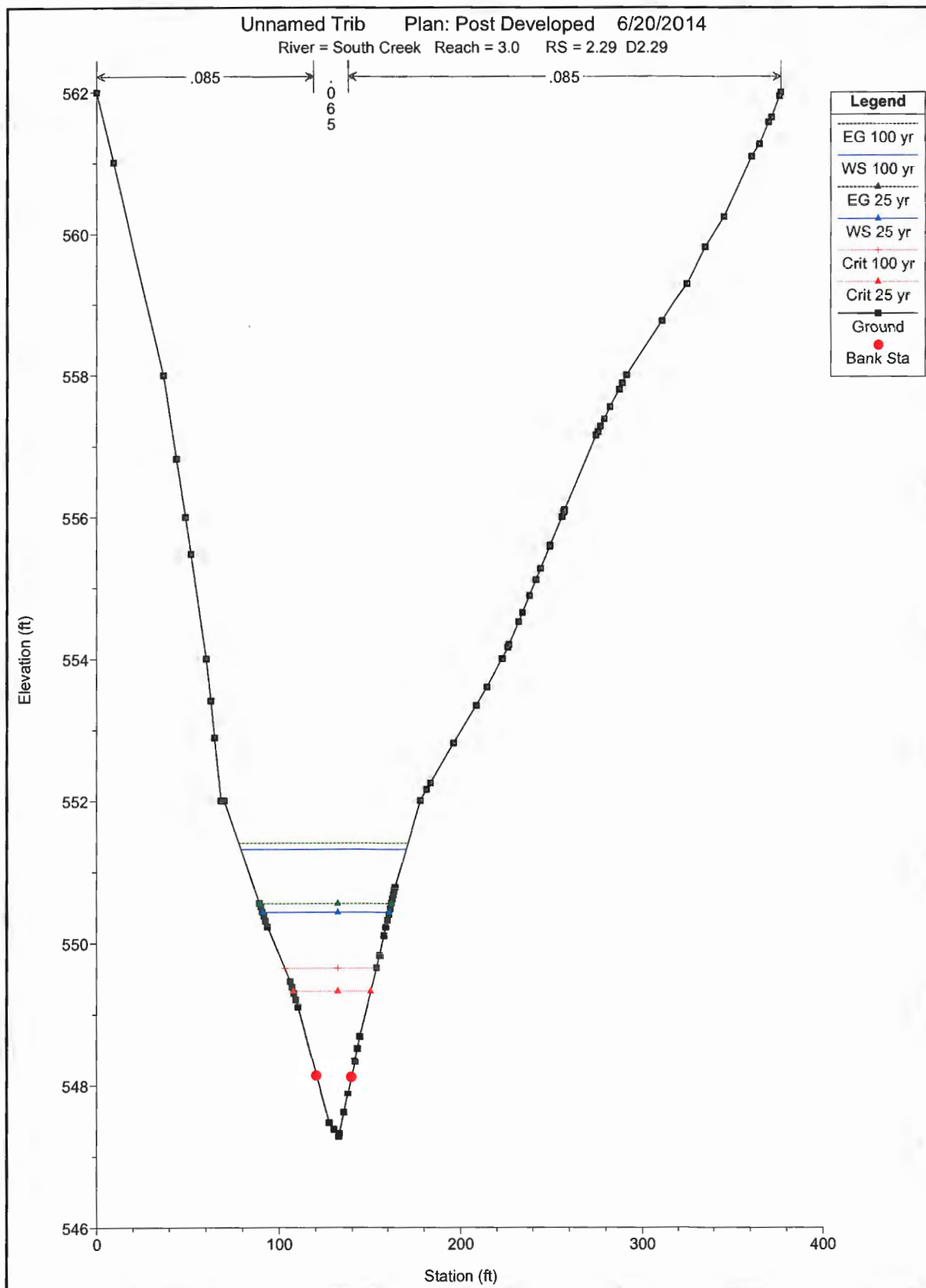


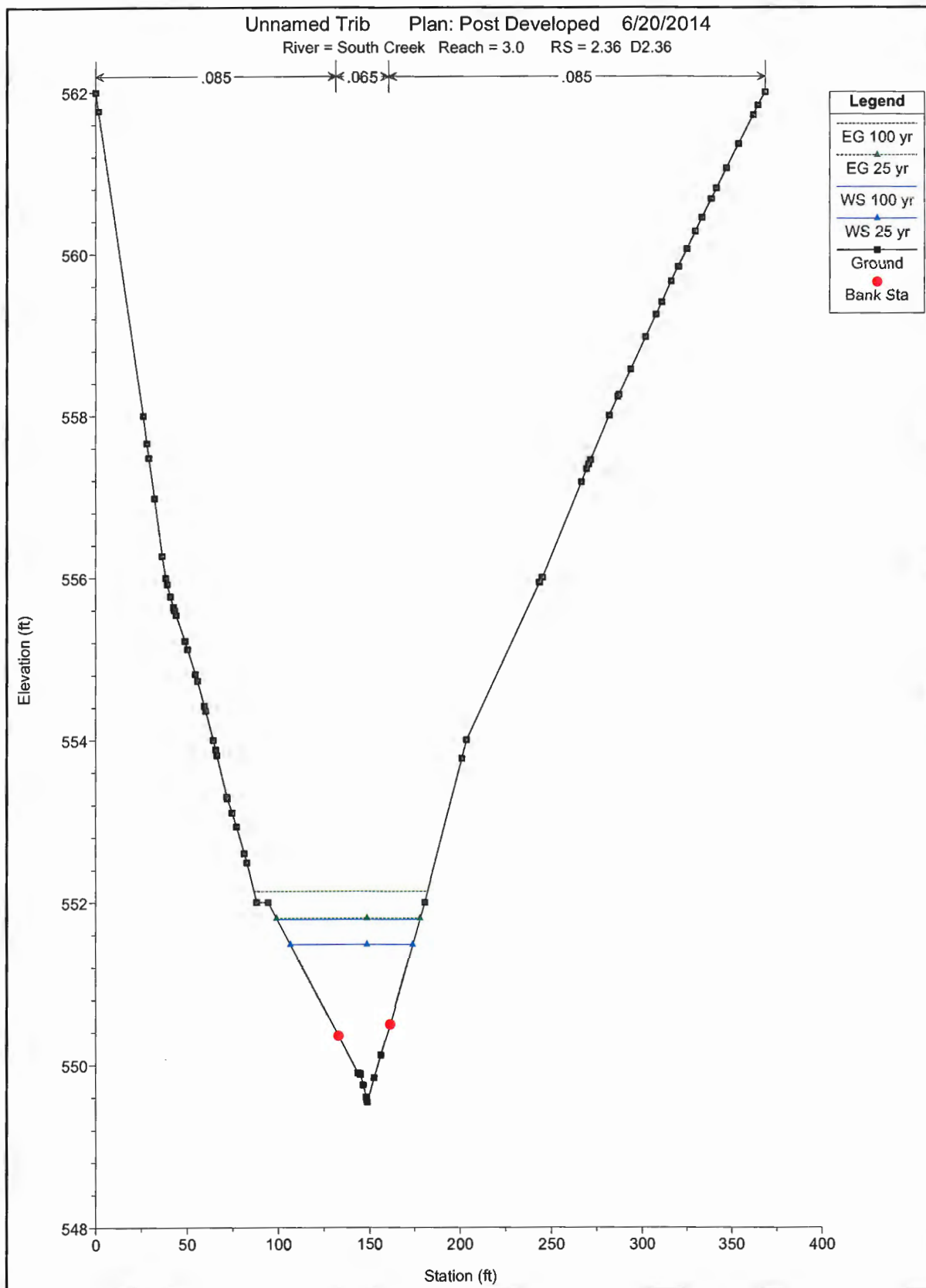


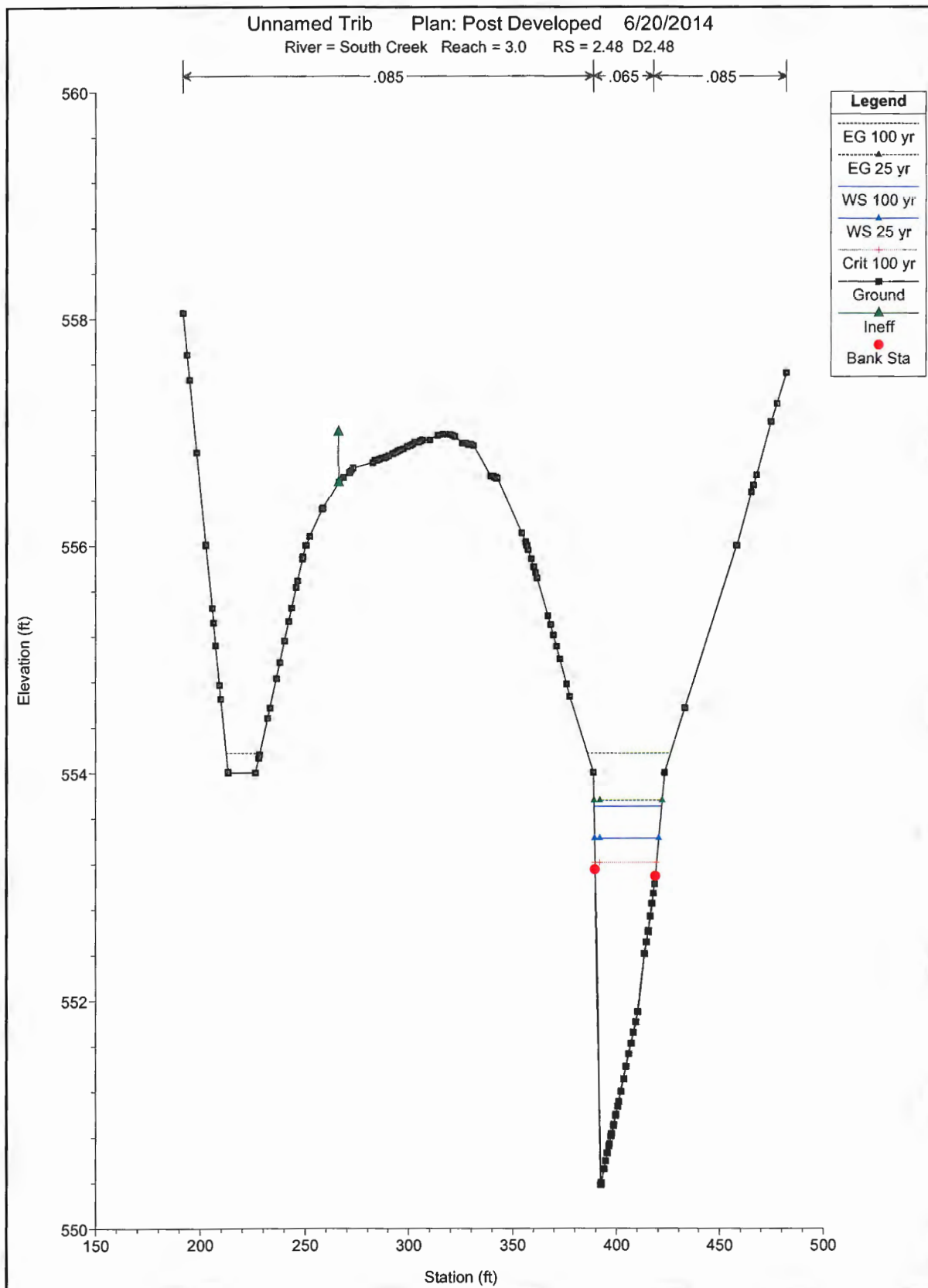


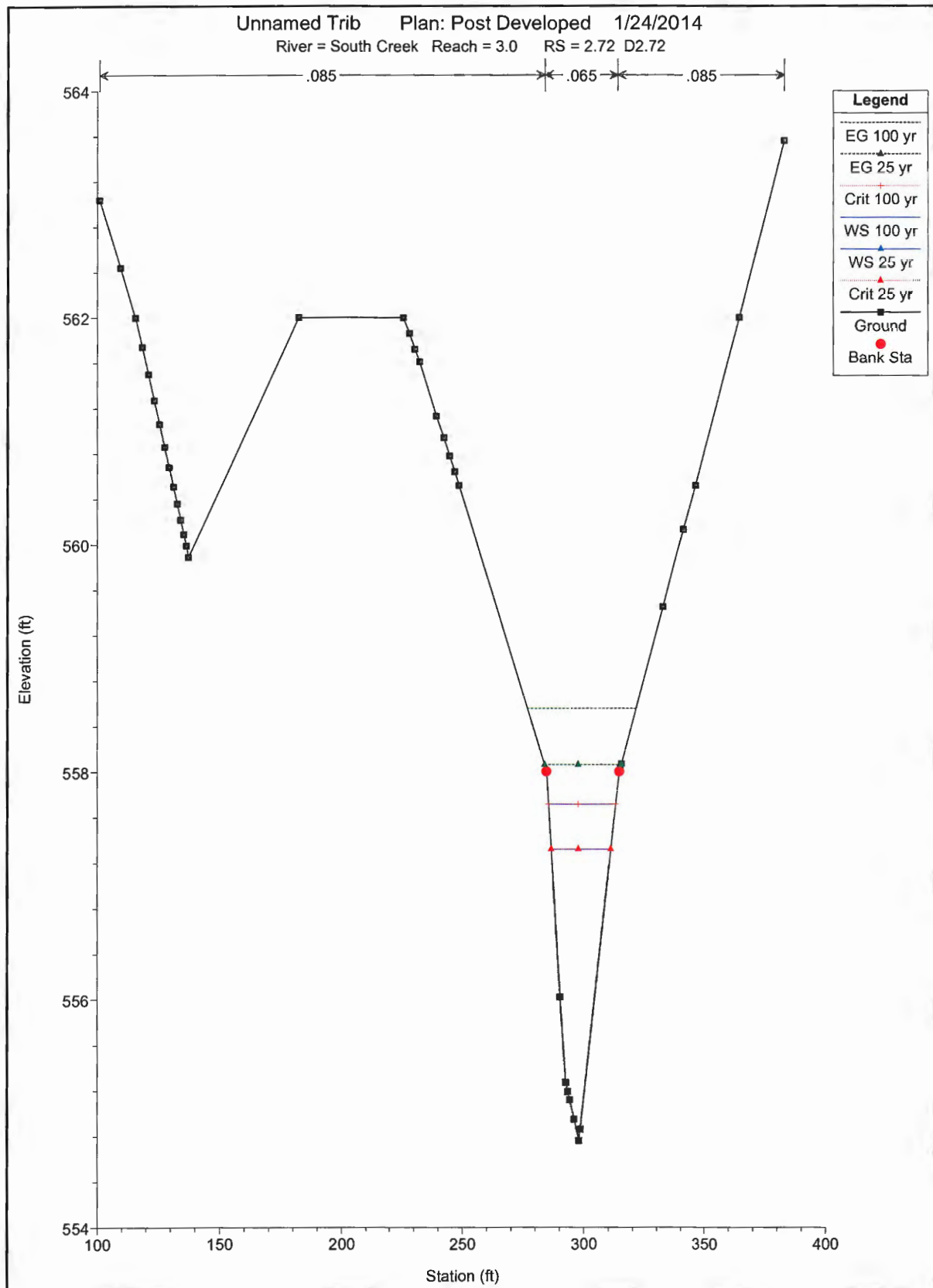


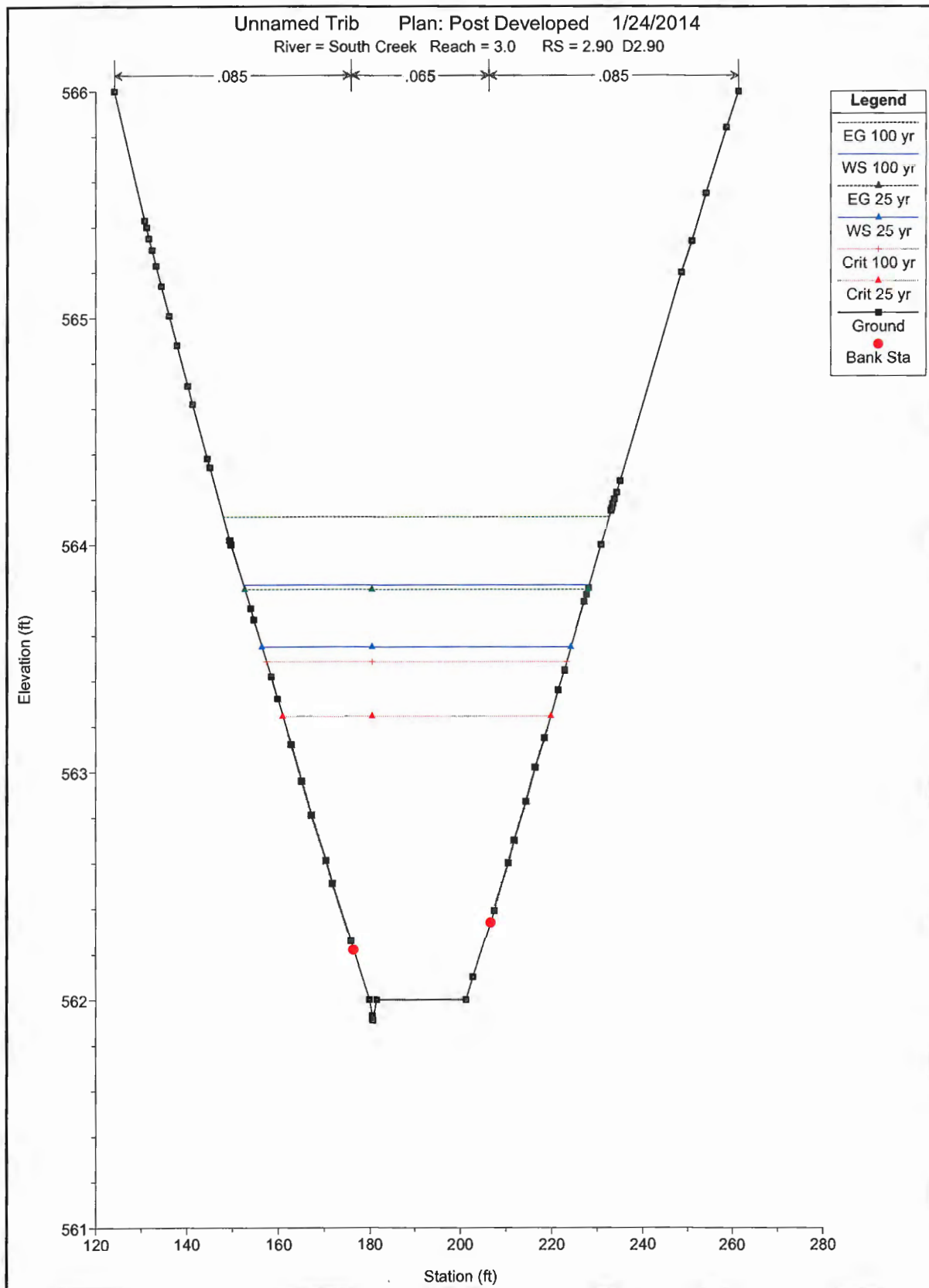
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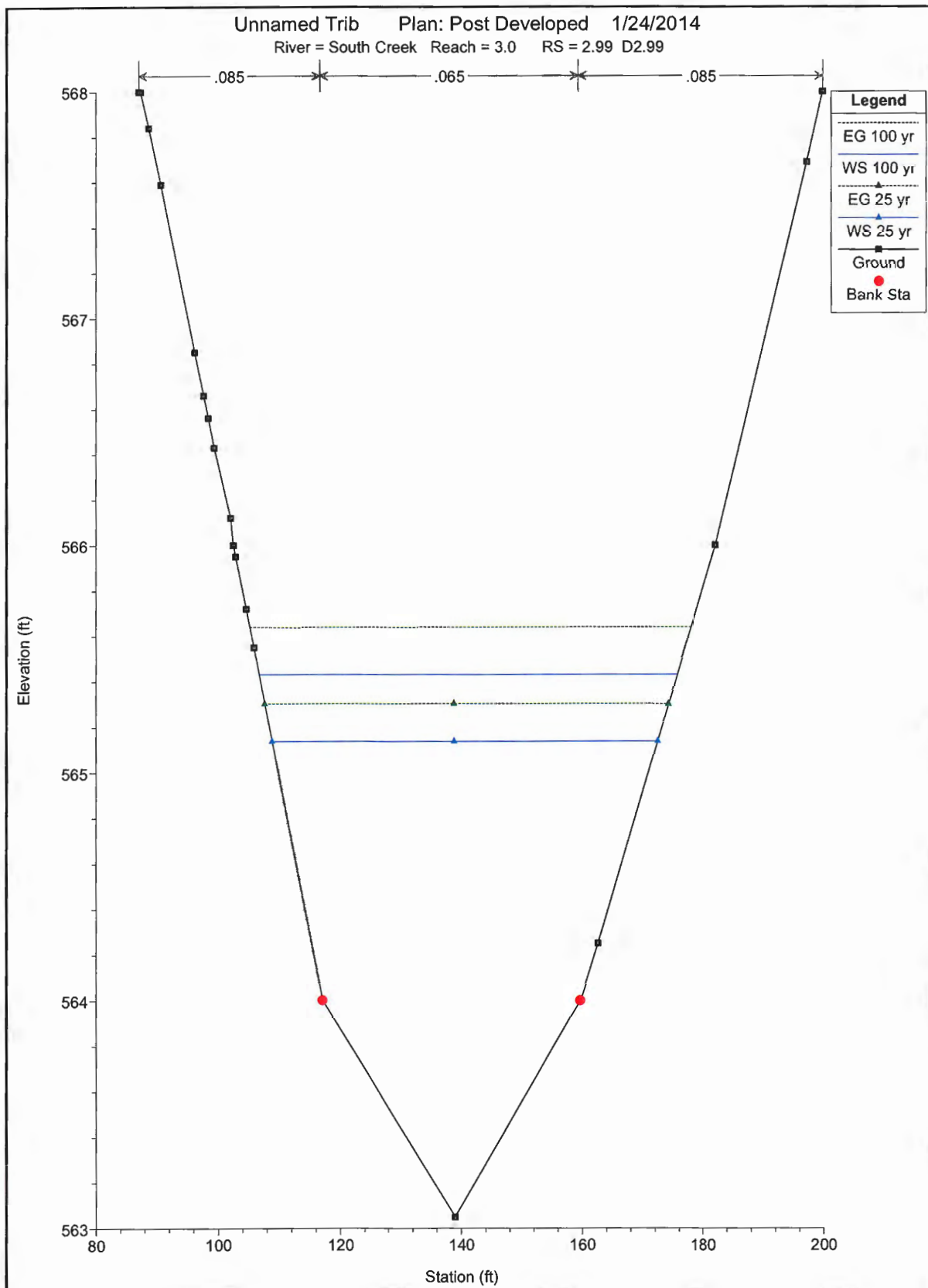


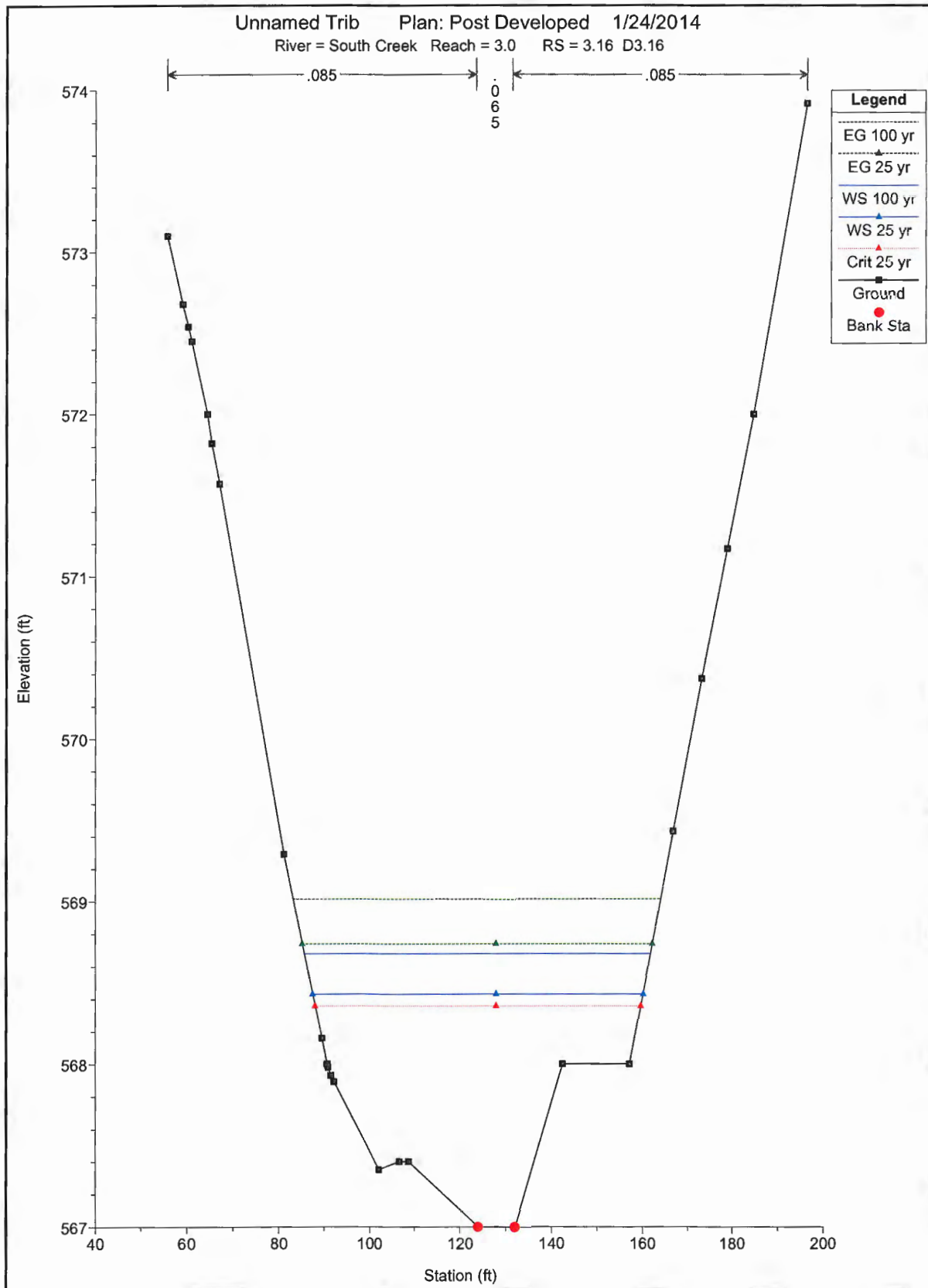






C2-D-76





C2-D-78

**130 ENVIRONMENTAL PARK
CALDWELL COUNTY, TEXAS
TCEQ PERMIT APPLICATION NO. MSW 2383**

TYPE I PERMIT APPLICATION

PART III – FACILITY INVESTIGATION AND DESIGN

**ATTACHMENT C3
DRAINAGE SYSTEM PLANS AND DETAILS**

Prepared for

130 ENVIRONMENTAL PARK, LLC

Technically Complete October 28, 2014



Prepared by

Biggs & Mathews, Inc.
Firm Registration No. F-834

BIGGS & MATHEWS ENVIRONMENTAL

1700 Robert Road, Suite 100 ♦ Mansfield, Texas 76063 ♦ 817-563-1144

TEXAS BOARD OF PROFESSIONAL ENGINEERS
FIRM REGISTRATION NO. F-256

TEXAS BOARD OF PROFESSIONAL GEOSCIENTISTS
FIRM REGISTRATION NO. 50222

And

BIGGS & MATHEWS, INC.

2500 Brook Avenue ♦ Wichita Falls, Texas 76301 ♦ 940-766-0156

TEXAS BOARD OF PROFESSIONAL ENGINEERS
FIRM REGISTRATION NO. F-834

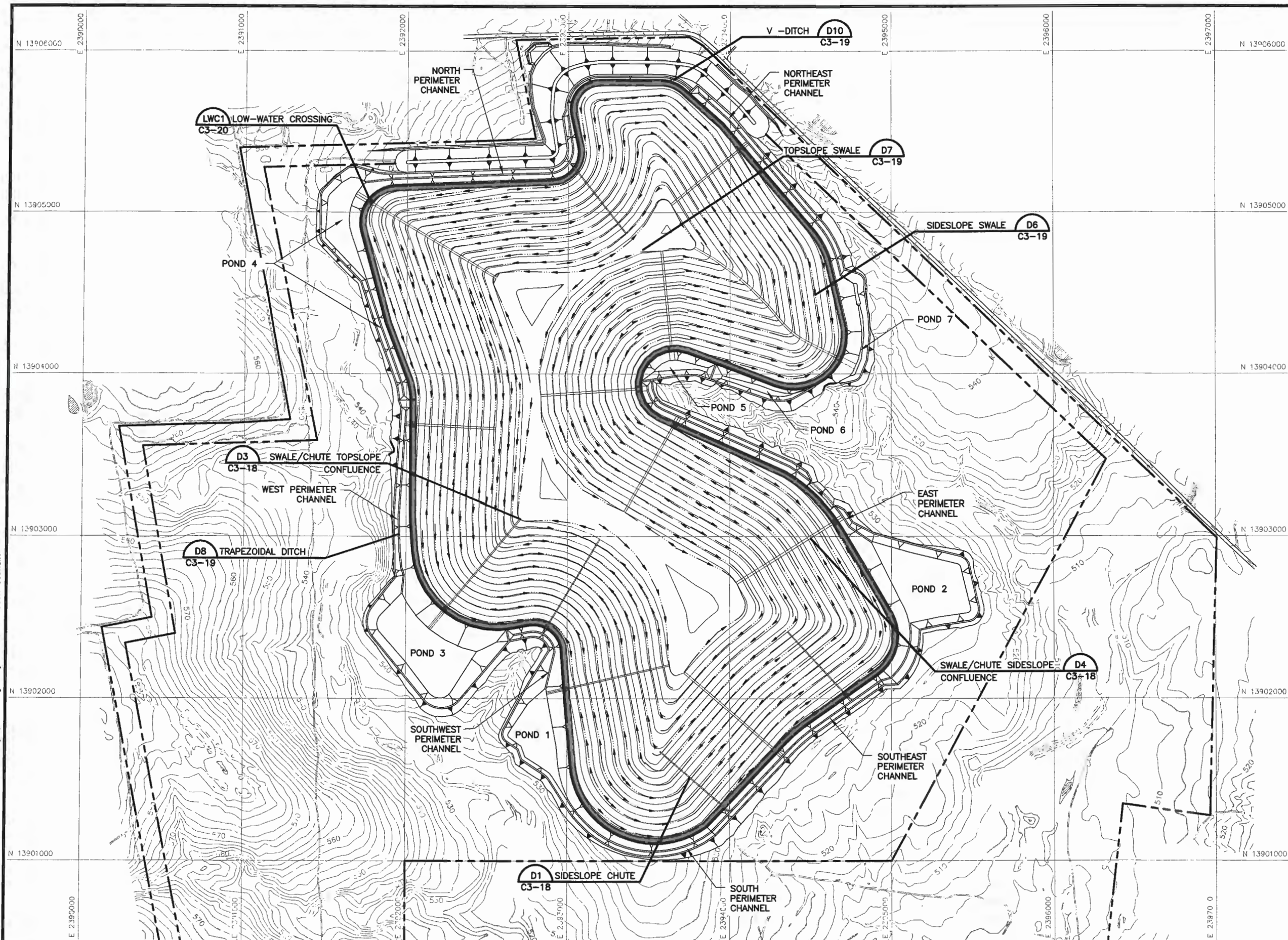
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- C3-2 - Perimeter Drainage Plan
- C3-3 - Pond 1
- C3-4 - Pond 2
- C3-5 - Pond 3
- C3-6 - Pond 4
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- C3-9 - Pond 7
- C3-10 - North Perimeter Channel Profile 0+00 through 25+15
- C3-11 - Northeast Perimeter Channel Profile 0+00 through 15+50
- C3-12 - West Perimeter Channel Profile 0+00 through 11+34
- C3-13 - East Perimeter Ditch Profile 0+00 through 17+43
- C3-14 - Southwest Perimeter Channel Profile 0+00 through 5+61
- C3-15 - Southeast Perimeter Channel Profile 0+00 through 18+39
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- C3-18 - Drainage Details
- C3-19 - Drainage Details
- C3-20 - Perimeter Road Low Water Crossing



Biggs & Mathews, Inc.
Firm Registration No. F-834

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NOTES:

1. CONTOURS AND ELEVATIONS PROVIDED BY DALLAS AERIAL SERVICE FROM AERIAL PHOTOGRAPHY FLOWN MAY 13, 2013. HORIZONTAL DATUM IS TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE (NAD 83). ELEVATIONS ARE RELATIVE TO NAVD88 - GEOID 12A.
2. CONTOURS WITHIN LANDFILL FOOTPRINT DEPICT TOP OF FINAL COVER.



DRAINAGE STRUCTURE PLAN

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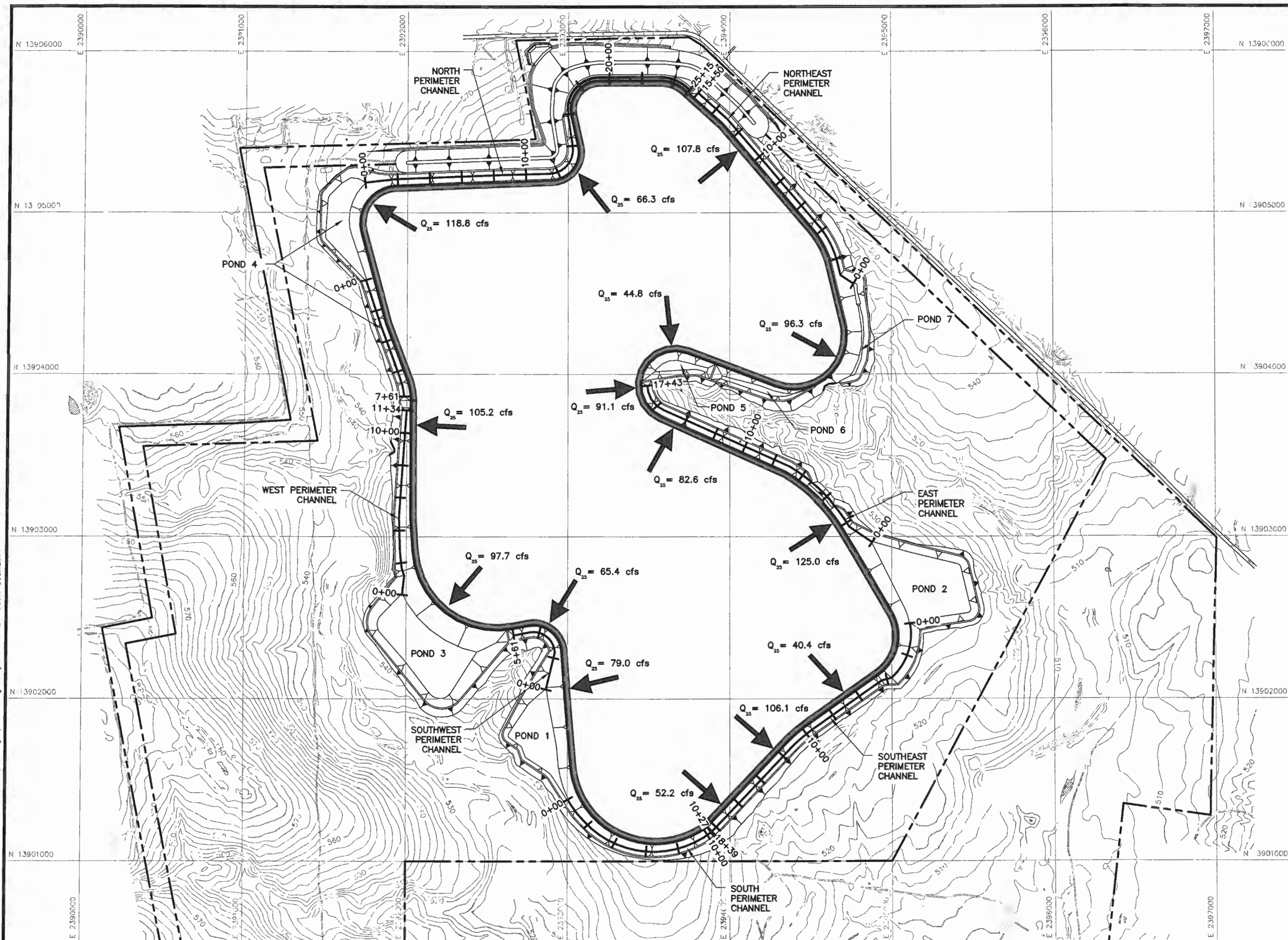


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CONSULTING ENGINEERS
MANFIELD • WICHITA FALLS
817-563-1144

ISSUED FOR PERMITTING PURPOSES ONLY

REVISIONS							TBPE FIRM NO. F-256 & F-834		TBPG FIRM NO. 50222	
							DSN. CRH	DATE : 02/14		DRAWING C3-
-	10/28/14	TECHNICALLY COMPLETE	BBB	TLT	TLT	TLT	DWN. BBB	SCALE : GRAPHIC		
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY	CHK. TLT	DWG : C3-1.dwg		

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PERIMETER DRAINAGE PLAN

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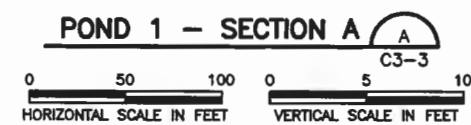
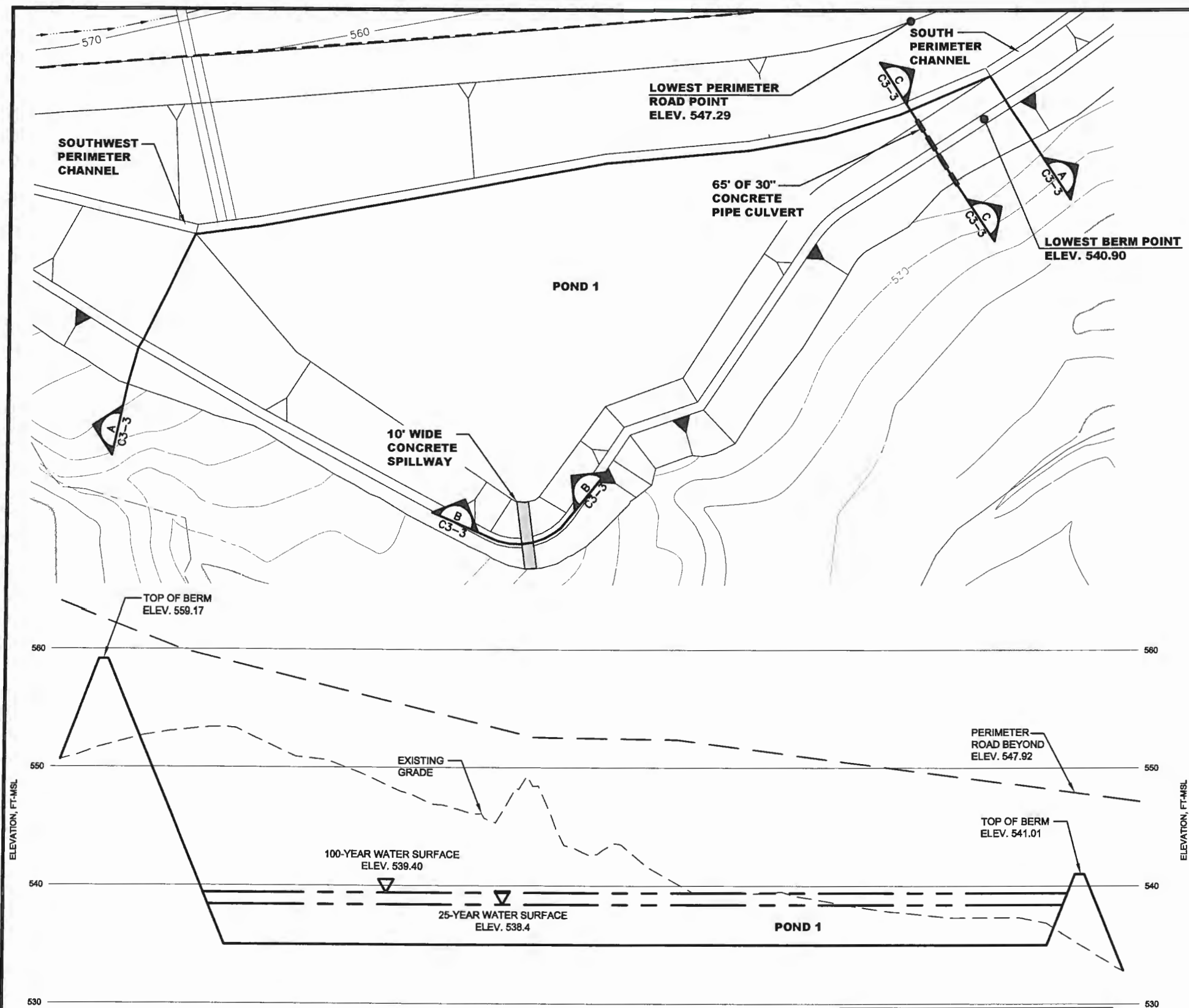
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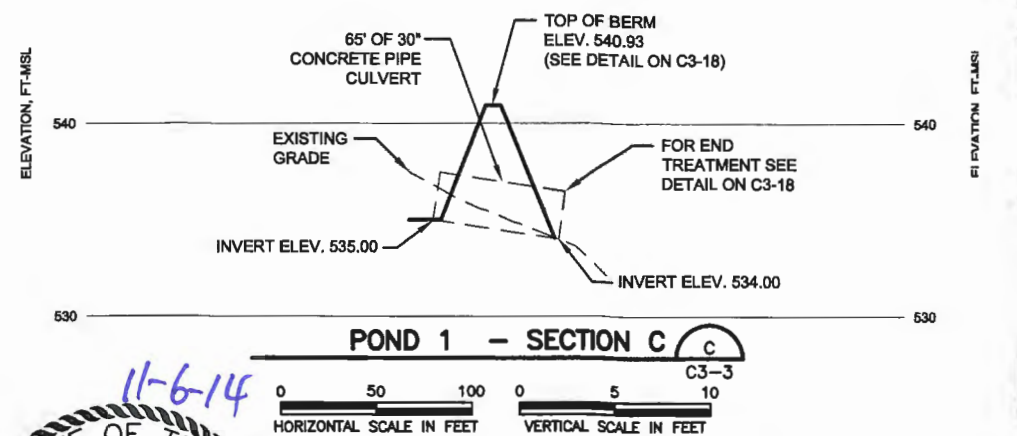
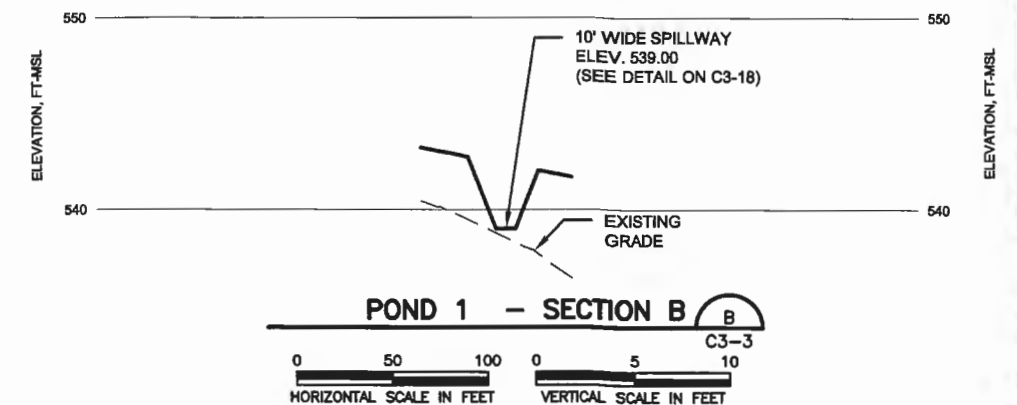
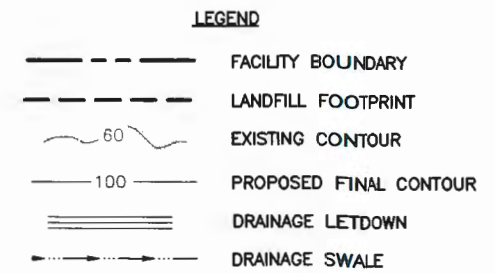
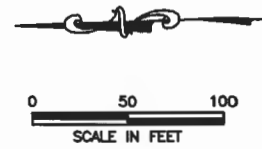
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10/28/14		TECHNICALLY COMPLETE	BBB	TLT	TLT	TLT				

C3-2

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POND 1 ELEVATION-STORAGE RELATIONSHIP		
ELEVATION (FT)	AREA (AC)	VOLUME AT ELEVATION (AC-FT)
535	2.16	0.00
536	2.37	2.26
537	2.64	4.77
538	2.90	7.54
539	3.25	10.62
540	3.59	14.04
541	3.94	17.80



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REVISIONS						TBPE FIRM NO. F-256 & F-834		TBPG FIRM NO. 50222	
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY	DSN. TLT	DATE : 02/14	DRAWING
-	10/28/14	TECHNICALLY COMPLETE	BBB	TLT	TLT	TLT	DWN. BBB	SCALE : GRAPHIC	C3-3
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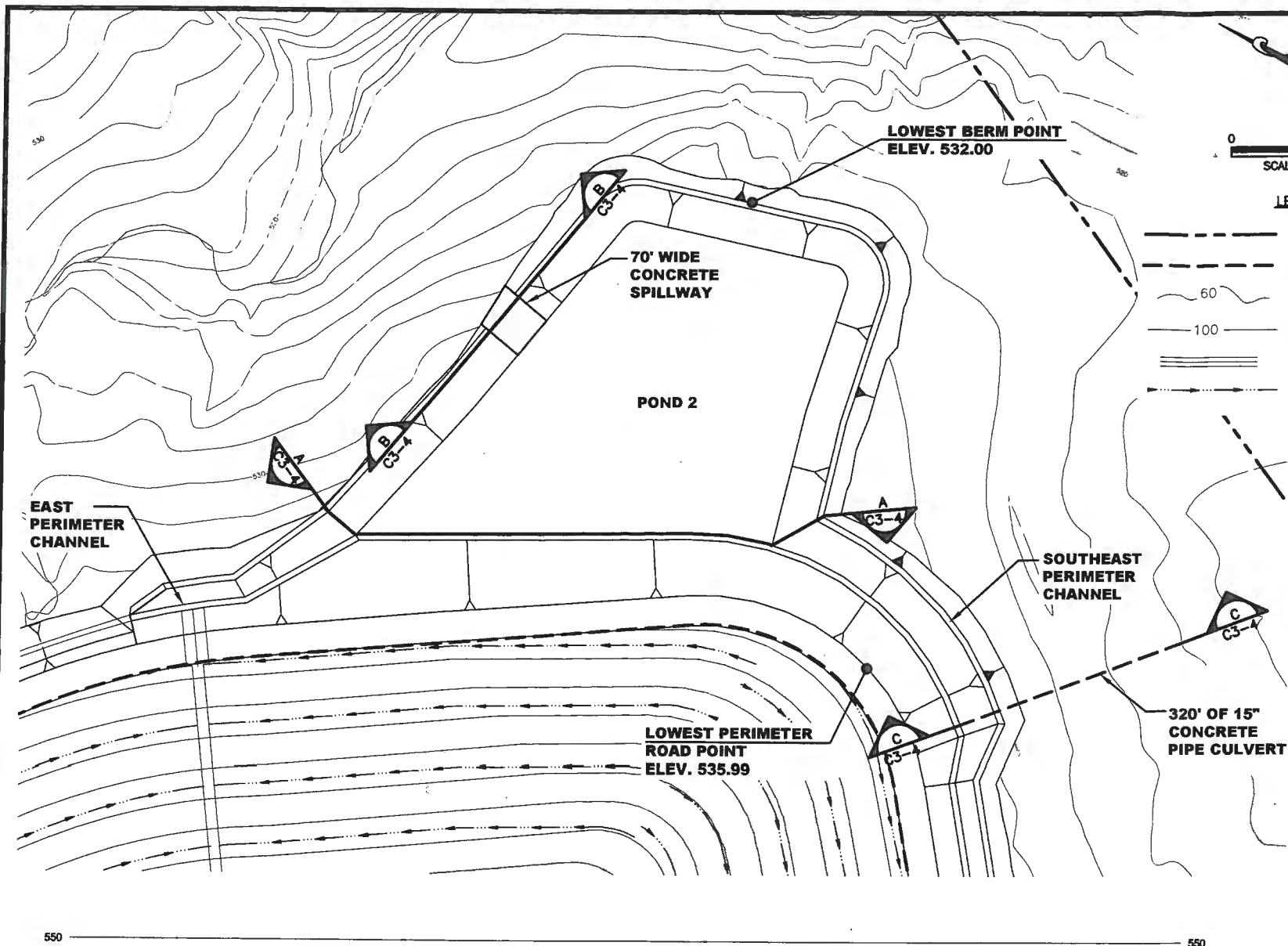
POND 1

130 ENVIRONMENTAL PARK, LLC
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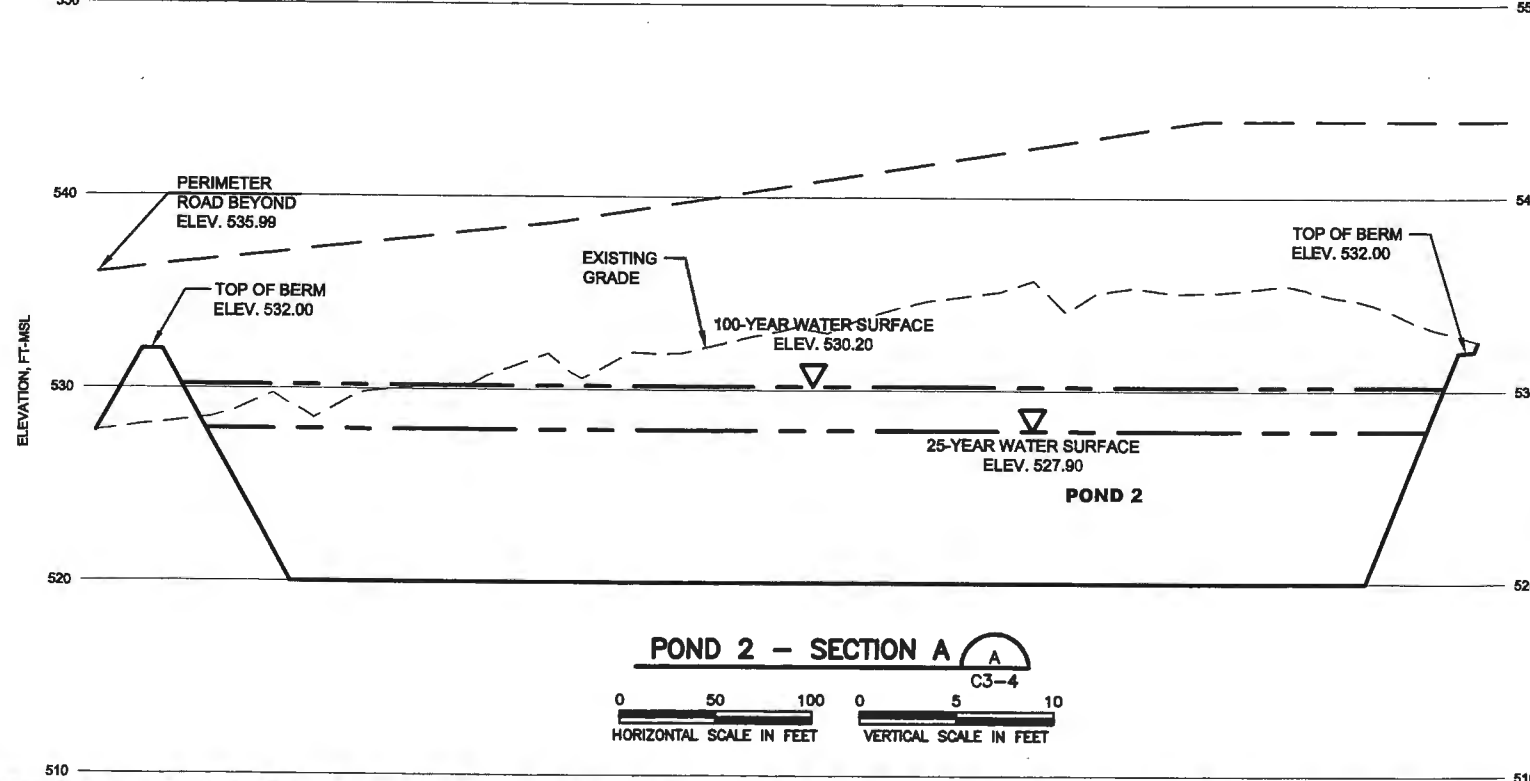
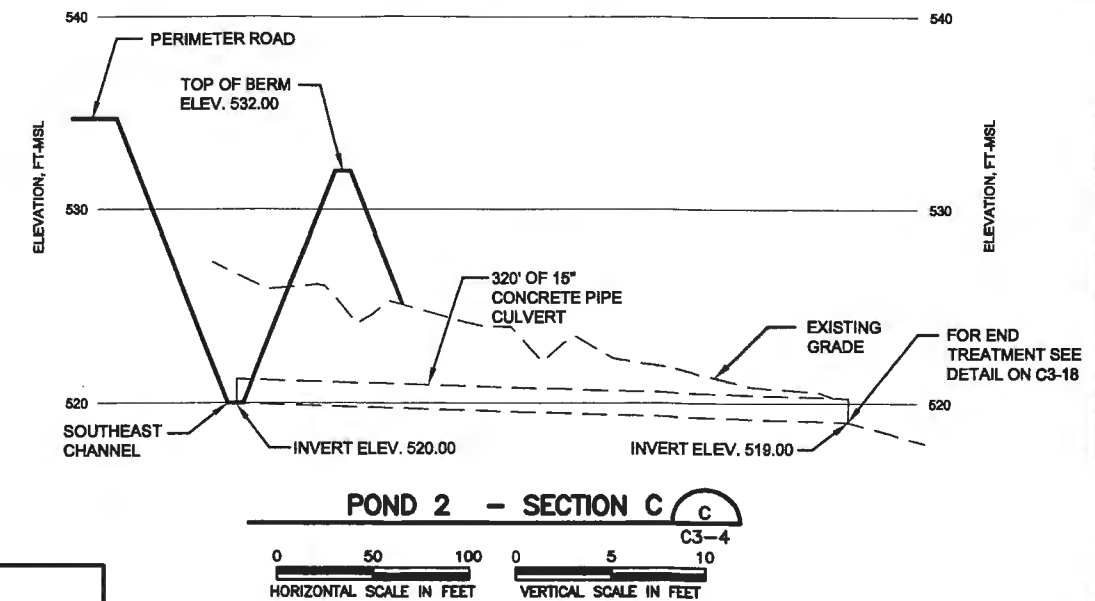
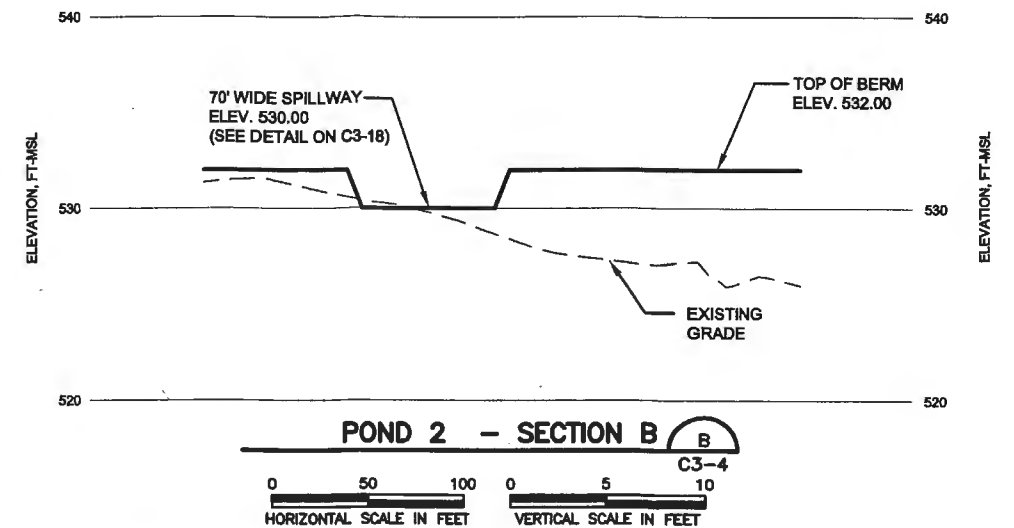
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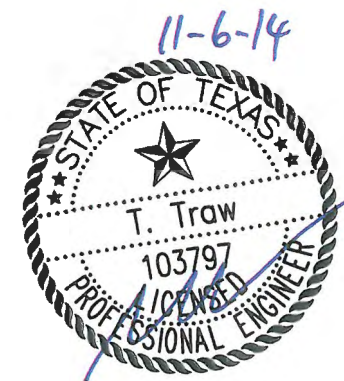


LEGEND

- FACILITY BOUNDARY
- LANDFILL FOOTPRINT
- 60 --- EXISTING CONTOUR
- 100 --- PROPOSED FINAL CONTOUR
- DRAINAGE LETDOWN
- DRAINAGE SWALE



POND 2 ELEVATION-STORAGE RELATIONSHIP		
ELEVATION (FT)	AREA (AC)	VOLUME AT ELEVATION (AC-FT)
520	4.08	0.00
521	4.32	4.20
522	4.55	8.64
523	4.80	13.31
524	5.05	18.24
525	5.30	23.41
526	5.55	28.84
527	5.87	34.55
528	6.18	40.57
529	6.55	46.94
530	6.92	53.68
531	7.33	60.80
532	7.74	68.3



POND 2

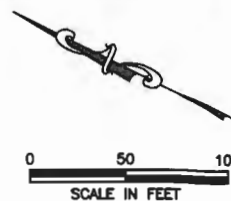
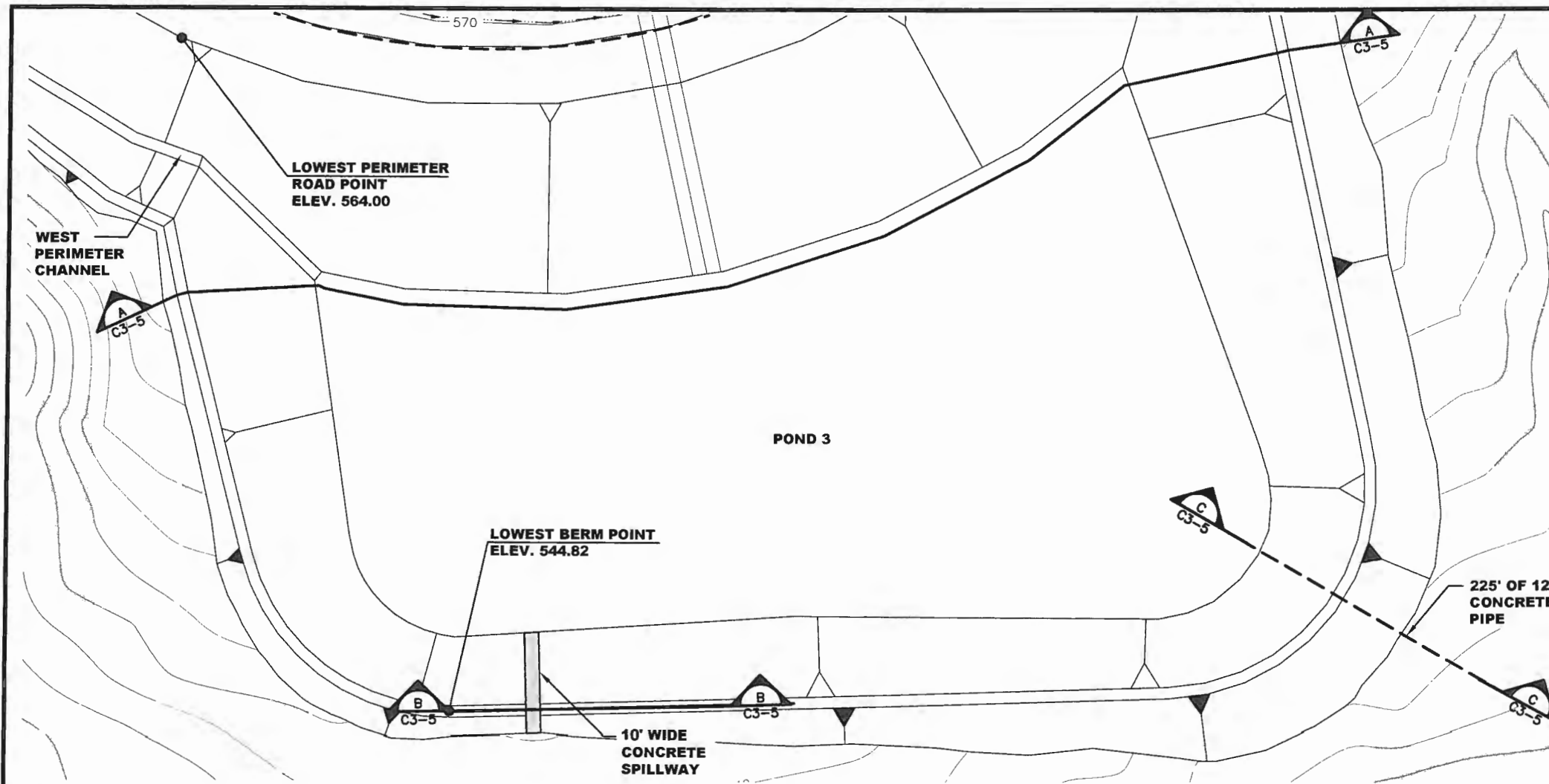
130 ENVIRONMENTAL PARK, LLC
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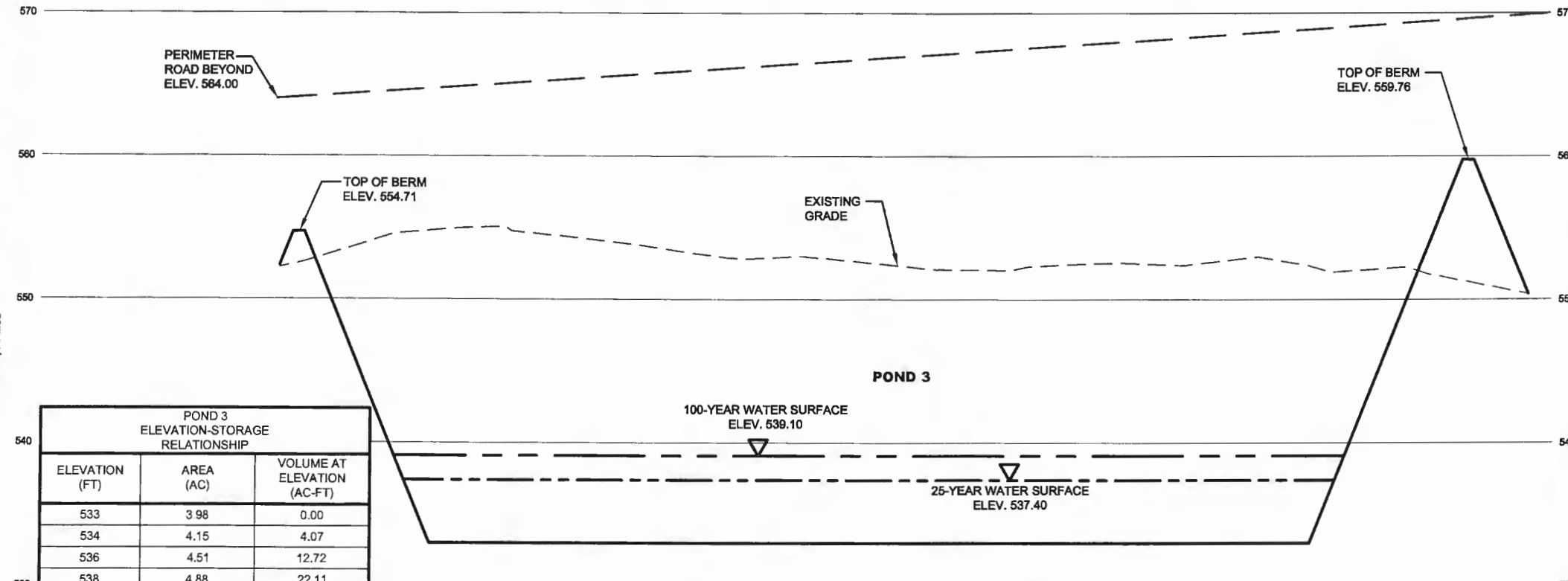
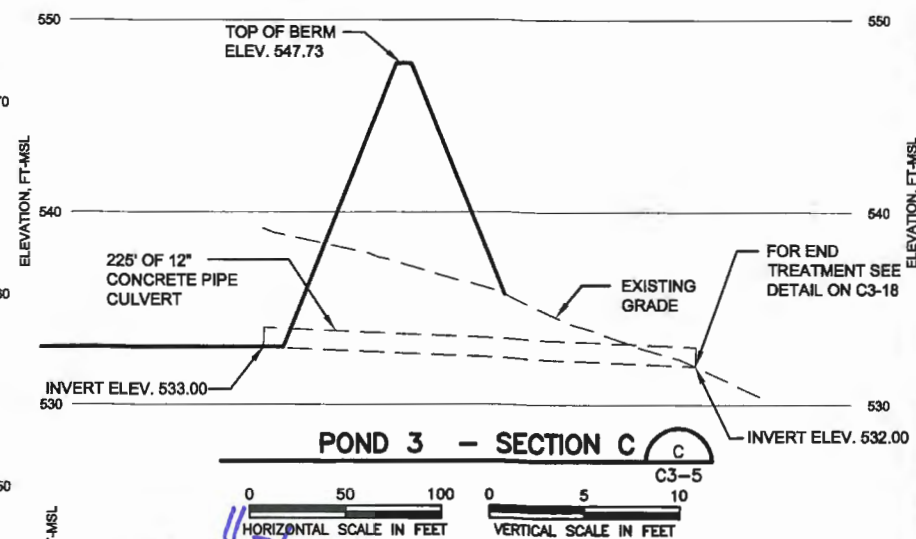
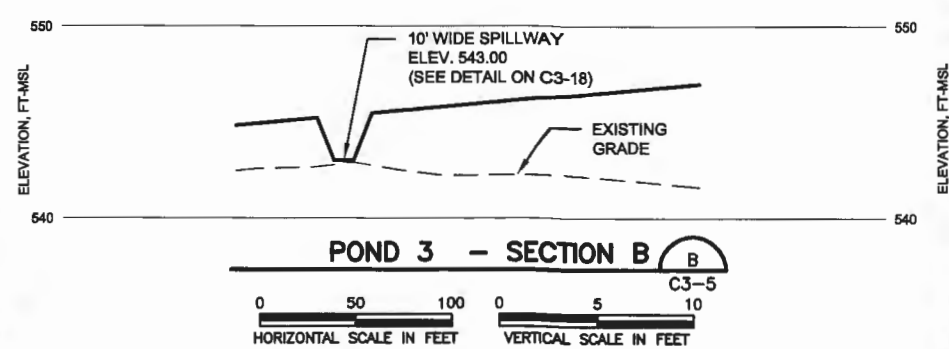
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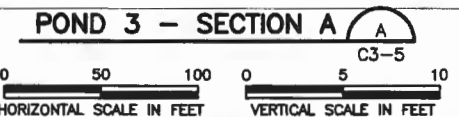


LEGEND

- FACILITY BOUNDARY
- LANDFILL FOOTPRINT
- 60 --- EXISTING CONTOUR
- 100 --- PROPOSED FINAL CONTOUR
- === DRAINAGE LETDOWN
- DRAINAGE SWALE



POND 3 ELEVATION-STORAGE RELATIONSHIP		
ELEVATION (FT)	AREA (AC)	VOLUME AT ELEVATION (AC-FT)
533	3.98	0.00
534	4.15	4.07
536	4.51	12.72
538	4.88	22.11
540	5.26	32.25
542	5.66	43.17
544	6.07	54.90
545	6.28	61.07



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REVISIONS						TBPE FIRM NO. F-256 & F-834		TBPG FIRM NO. 50222	
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY	CHK.	TLT	DWG : C3-5.dwg
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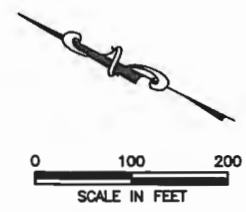
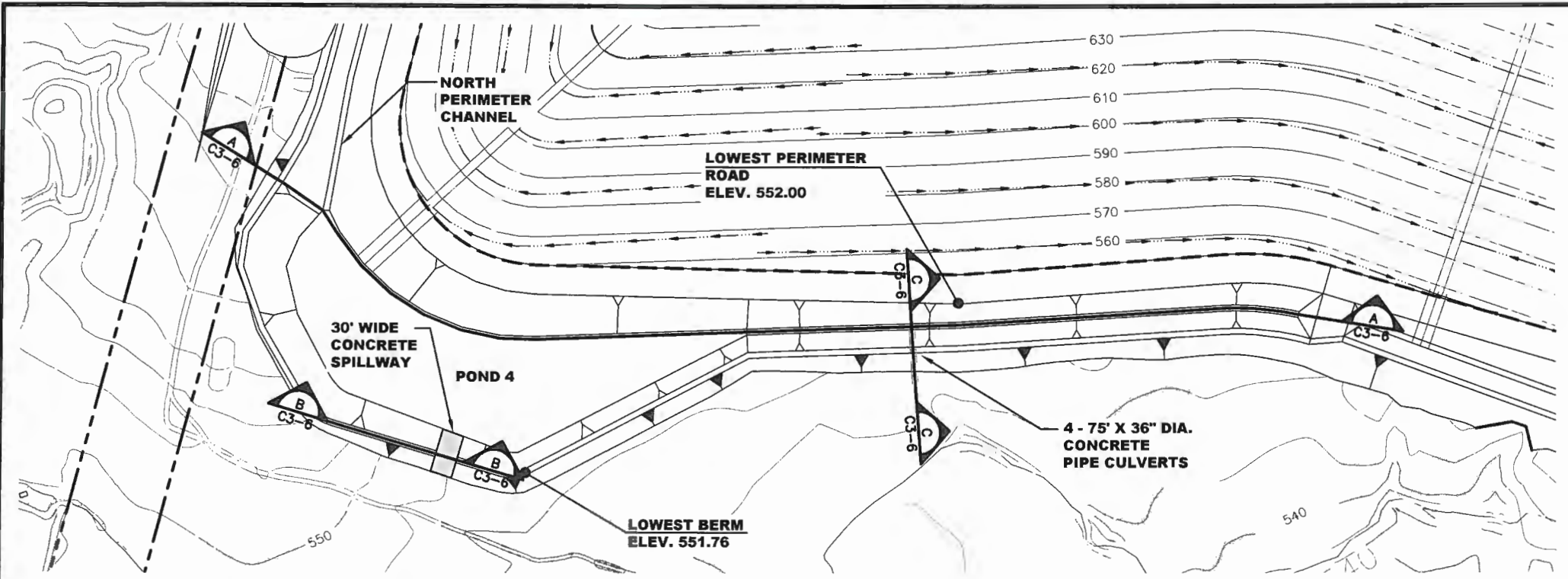
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DRAWING
C3-5

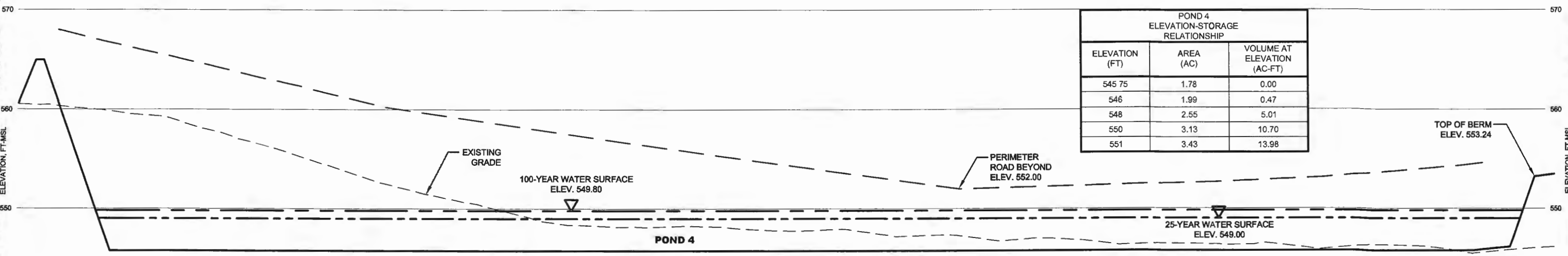
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- LEGEND**
- FACILITY BOUNDARY
 - LANDFILL FOOTPRINT
 - 60 --- EXISTING CONTOUR
 - 100 --- PROPOSED FINAL CONTOUR
 - === DRAINAGE LETDOWN
 - DRAINAGE SWALE

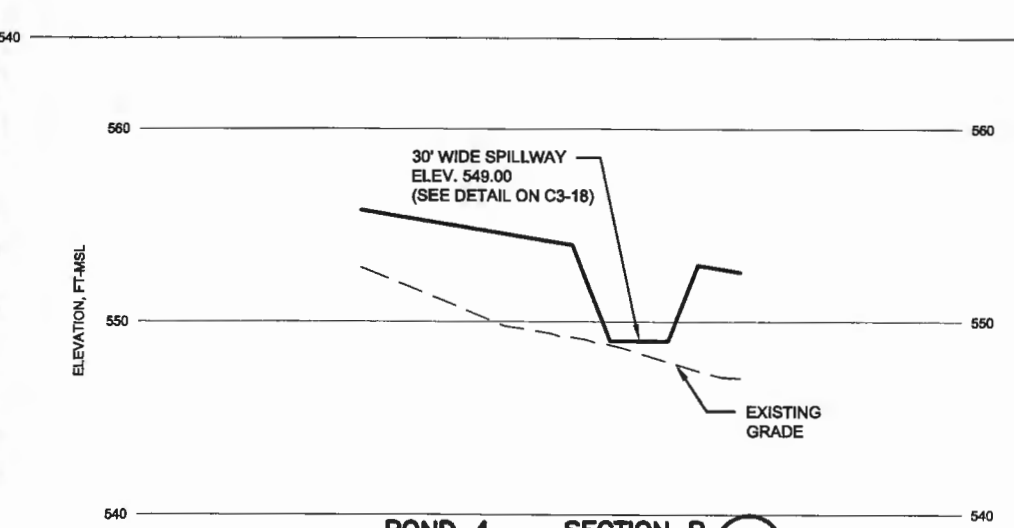
POND 4 ELEVATION-STORAGE RELATIONSHIP		
ELEVATION (FT)	AREA (AC)	VOLUME AT ELEVATION (AC-FT)
545.75	1.78	0.00
546	1.99	0.47
548	2.55	5.01
550	3.13	10.70
551	3.43	13.98



POND 4 - SECTION A

0 50 100 HORIZONTAL SCALE IN FEET

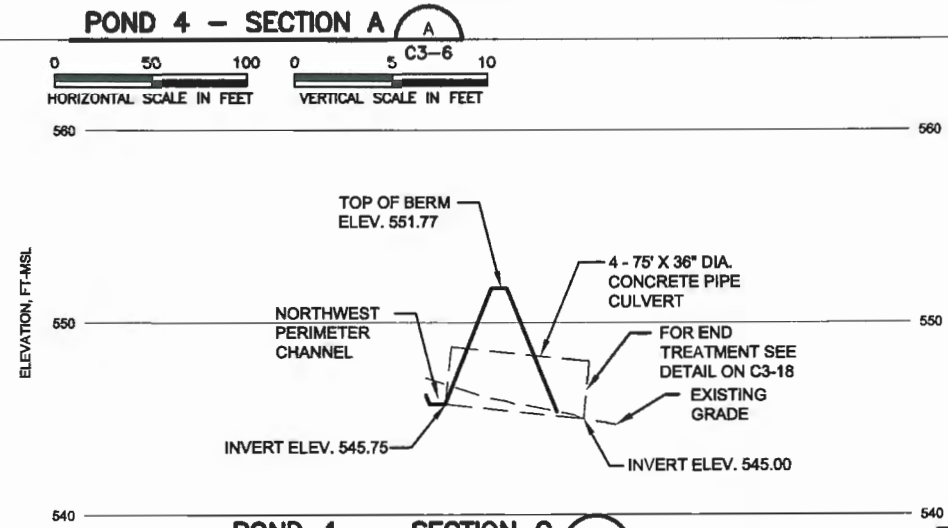
0 5 10 VERTICAL SCALE IN FEET



POND 4 - SECTION B

0 50 100 HORIZONTAL SCALE IN FEET

0 5 10 VERTICAL SCALE IN FEET



POND 4 - SECTION C

0 50 100 HORIZONTAL SCALE IN FEET

0 5 10 VERTICAL SCALE IN FEET



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REVISIONS						
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY
-	10/28/14	TECHNICALLY COMPLETE	BBB	TLT	TLT	TLT

POND 4

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TBPE FIRM NO. F-256 & F-834

DSN. TLT DATE : 02/14

DWN. BBB SCALE : GRAPHIC

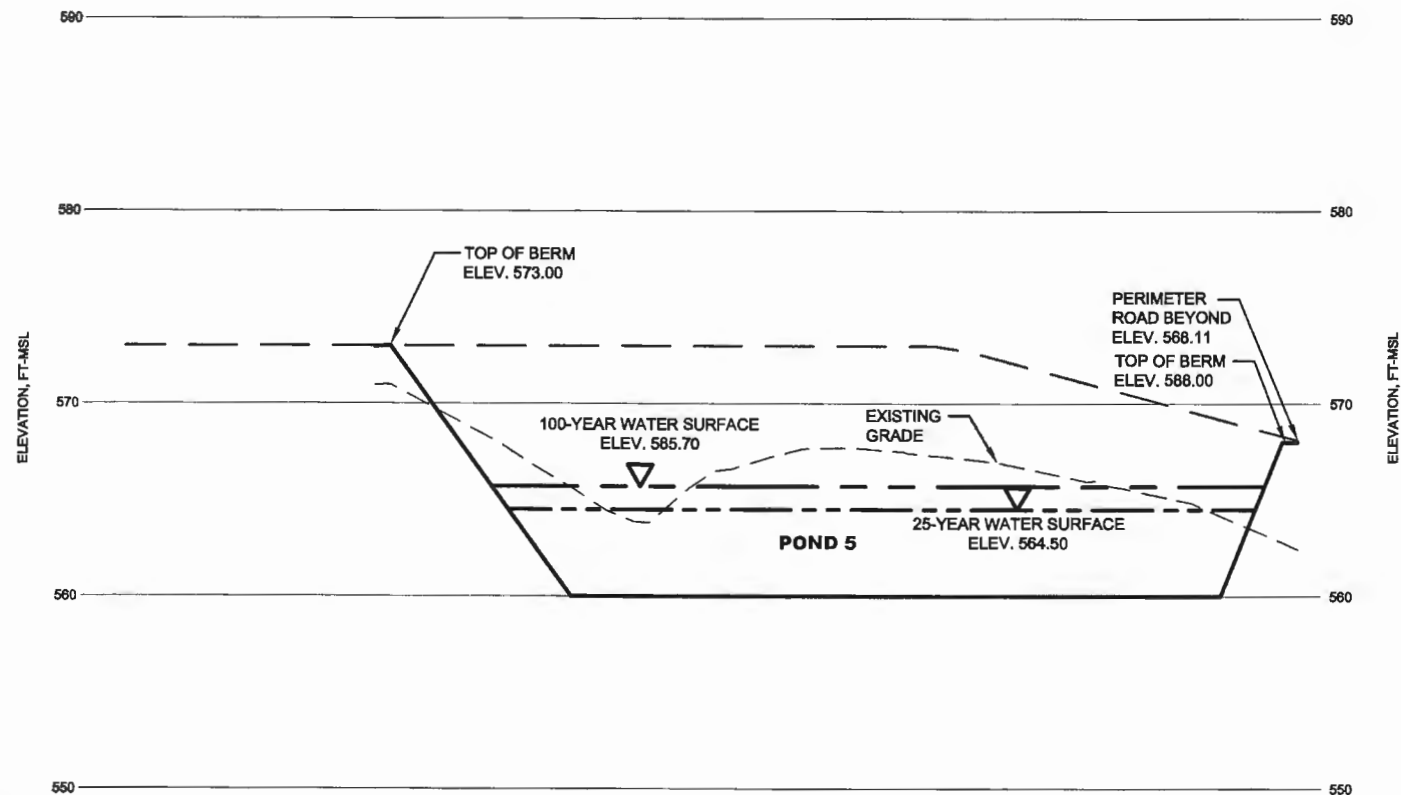
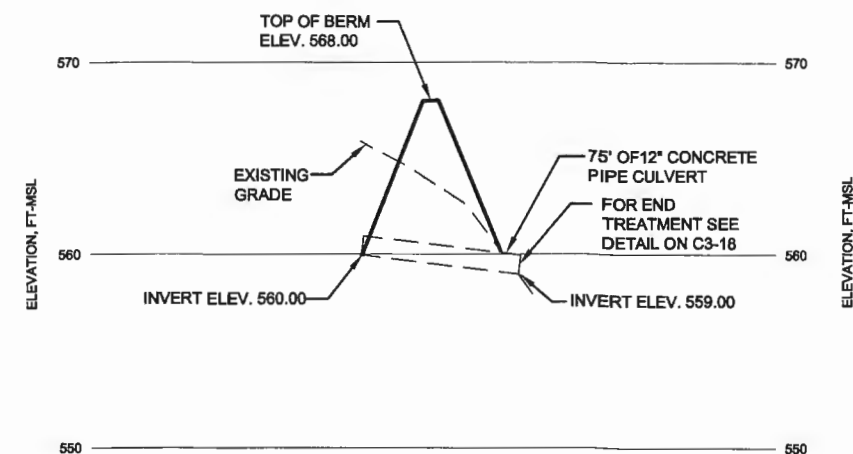
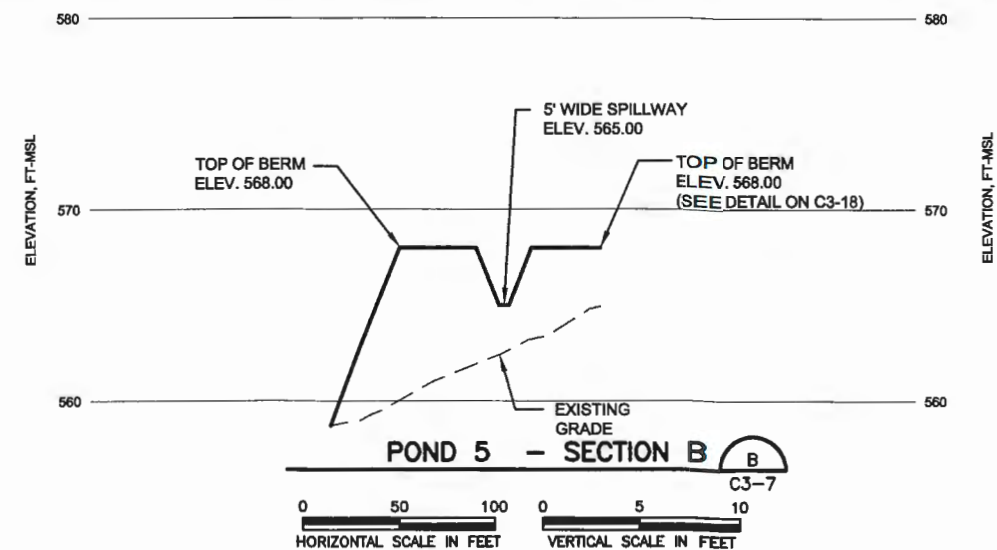
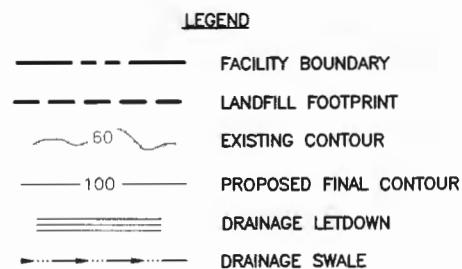
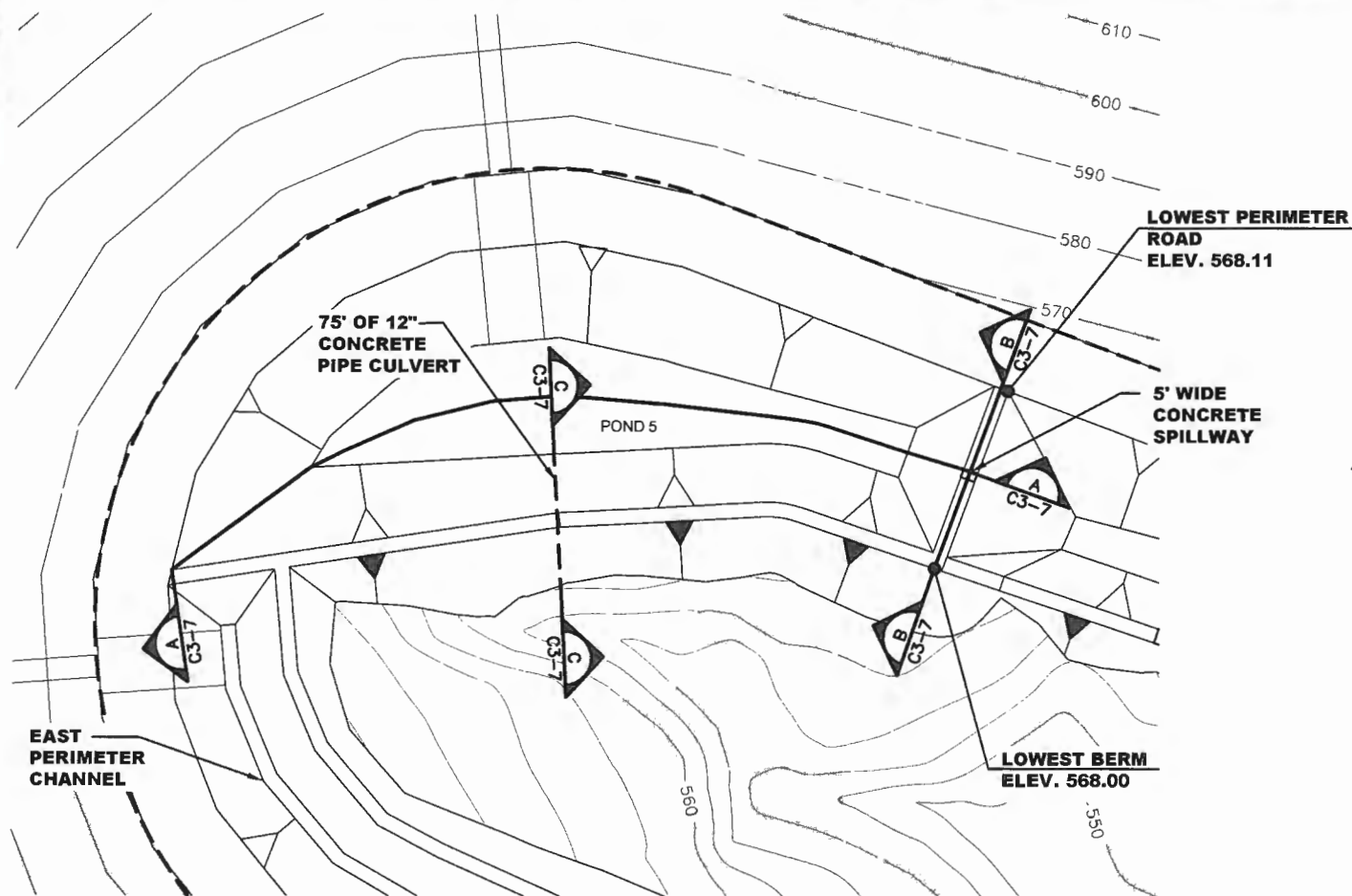
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TBPG FIRM NO. 50222

DRAWING

C3-6

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POND 5 ELEVATION-STORAGE RELATIONSHIP		
ELEVATION (FT)	AREA (AC)	VOLUME AT ELEVATION (AC-FT)
560	0.32	0.00
561	0.39	0.36
562	0.46	0.78
563	0.53	1.28
564	0.61	1.85
565	0.69	2.50
566	0.70	3.23
567	0.87	4.05
568	0.97	4.97



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REVISIONS							TBPE FIRM NO. F-256 & F-834		TBPG FIRM NO. 50222	
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY	DSN.	TLT	DATE	02/14
-	10/28/14	TECHNICALLY COMPLETE	BBB	TLT	TLT	TLT	DWN.	BBB	SCALE	GRAPHIC
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DRAWING
C3-7

POND 5

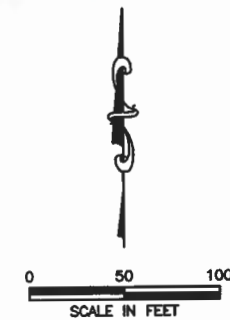
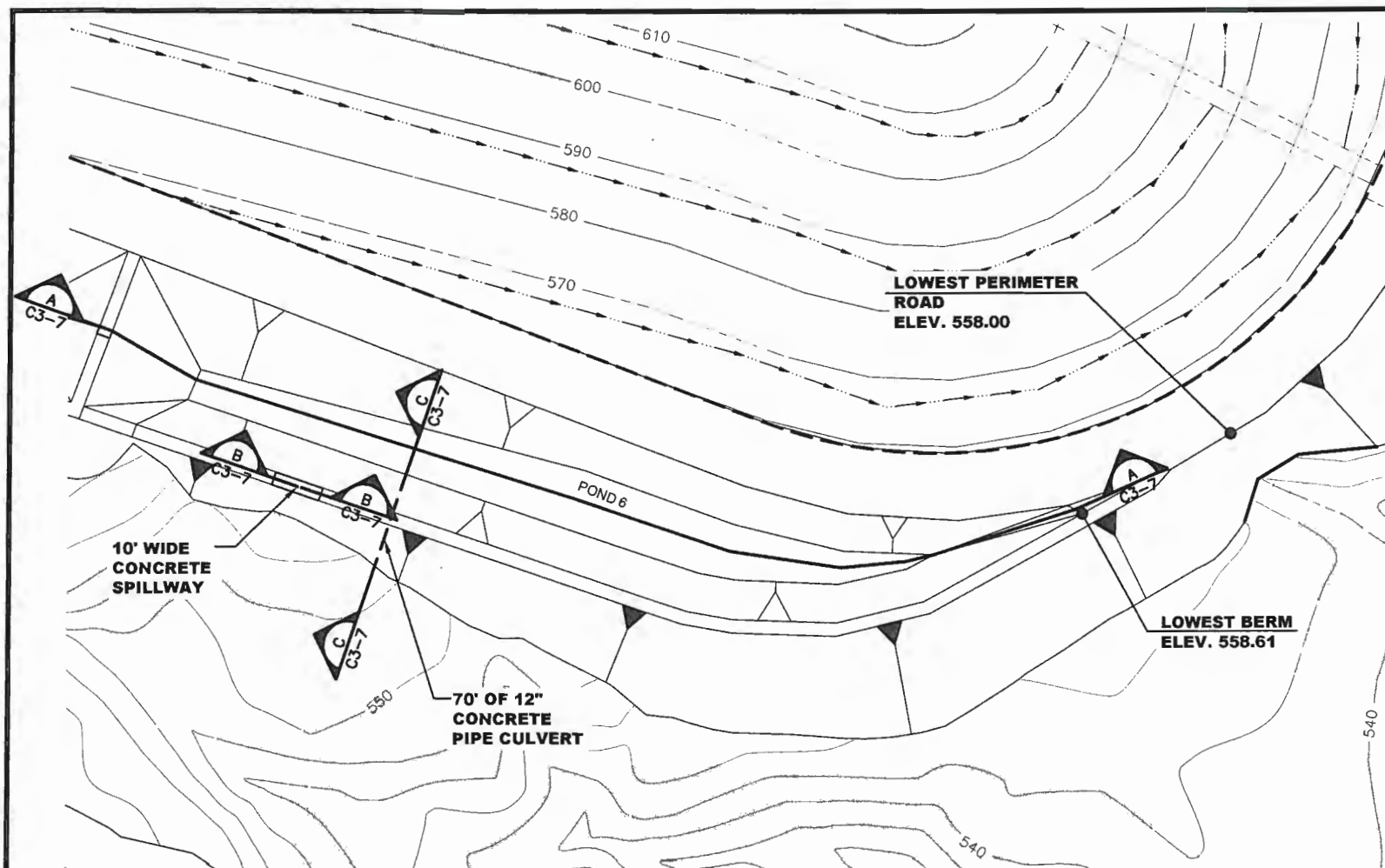
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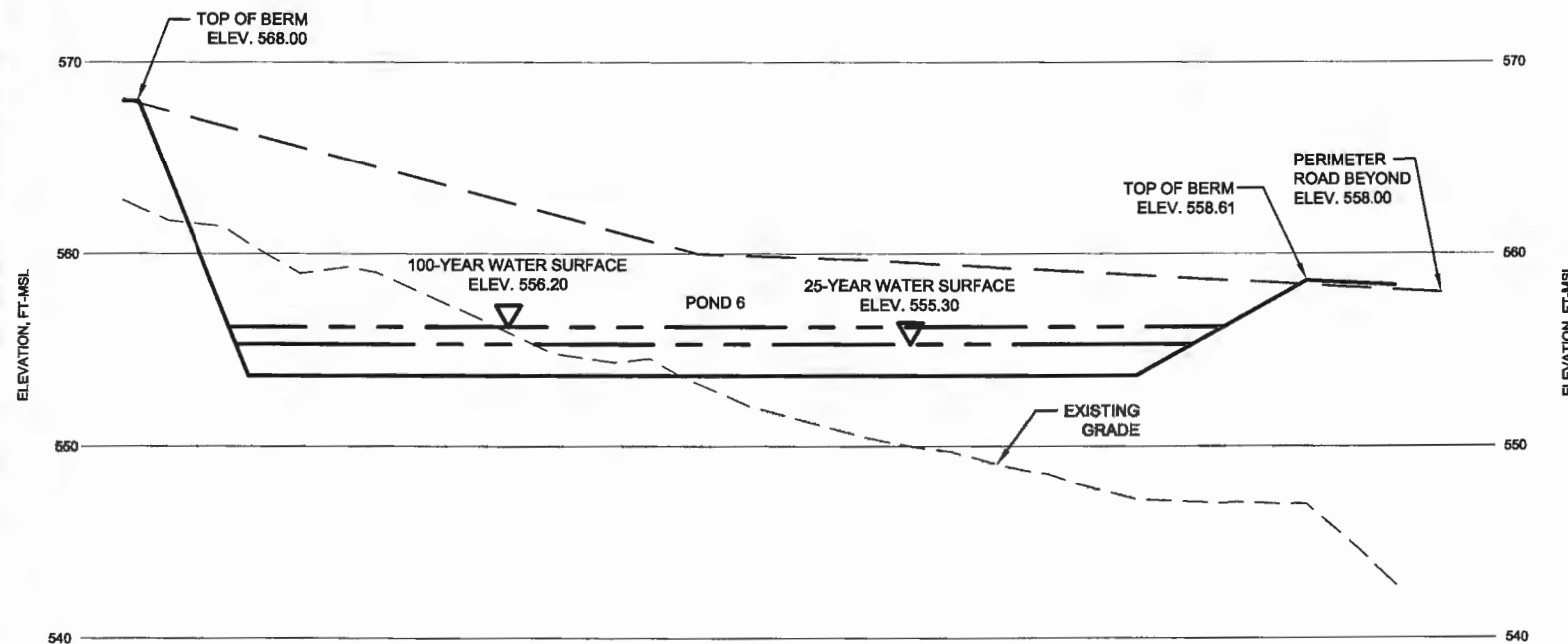
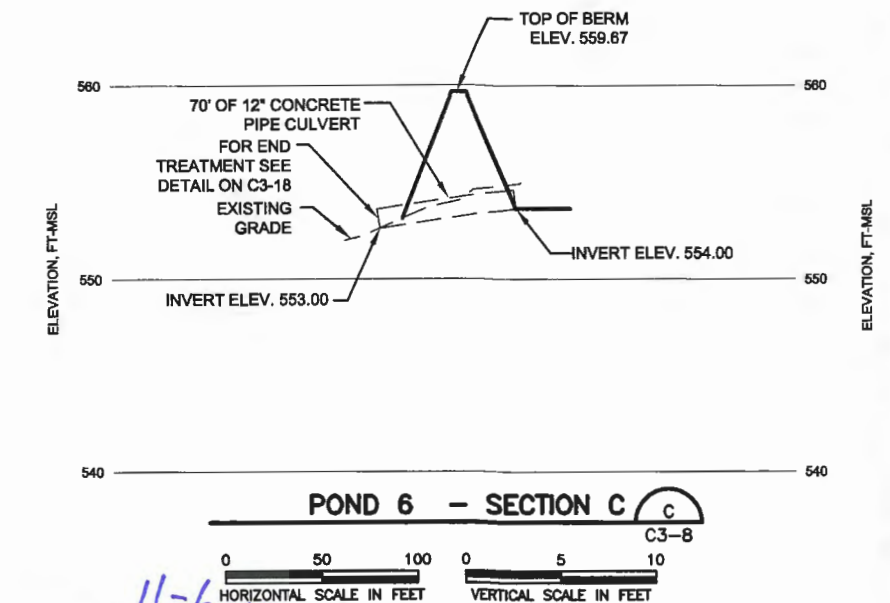
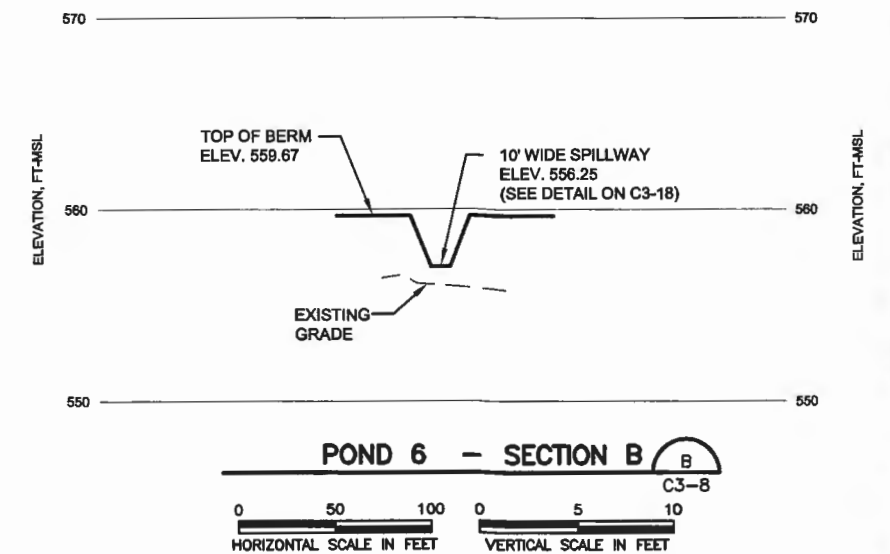
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LEGEND

- FACILITY BOUNDARY
- LANDFILL FOOTPRINT
- 60 --- EXISTING CONTOUR
- 100 --- PROPOSED FINAL CONTOUR
- === DRAINAGE LETDOWN
- DRAINAGE SWALE



POND 6 ELEVATION-STORAGE RELATIONSHIP		
ELEVATION (FT)	AREA (AC)	VOLUME AT ELEVATION (AC-FT)
554	0.32	0.00
555	0.41	0.37
556	0.51	0.83
557	0.61	1.39
558	0.72	2.05
559	0.81	2.82
560	0.91	3.68



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REVISIONS							TBPE FIRM NO. F-256 & F-834		TBPG FIRM NO. 50222		
-	10/28/14	TECHNICALLY COMPLETE	BBB	TLT	TLT	TLT	DSN.	TLT	DATE :	02/14	DRAWING C3-8
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY	DWN.	BBB	SCALE :	GRAPHIC	
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POND 6

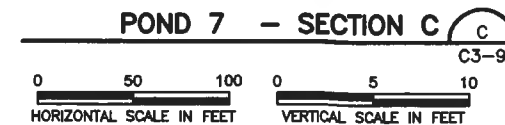
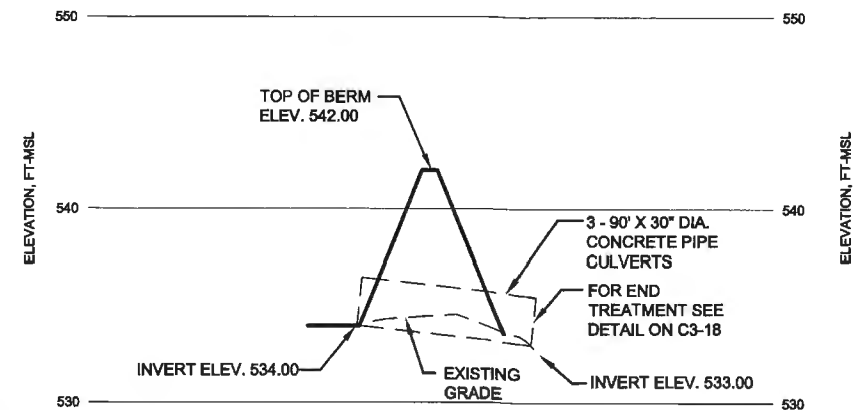
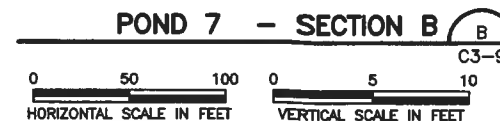
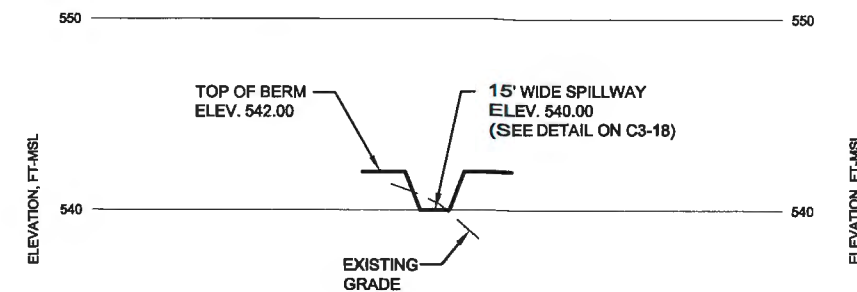
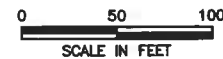
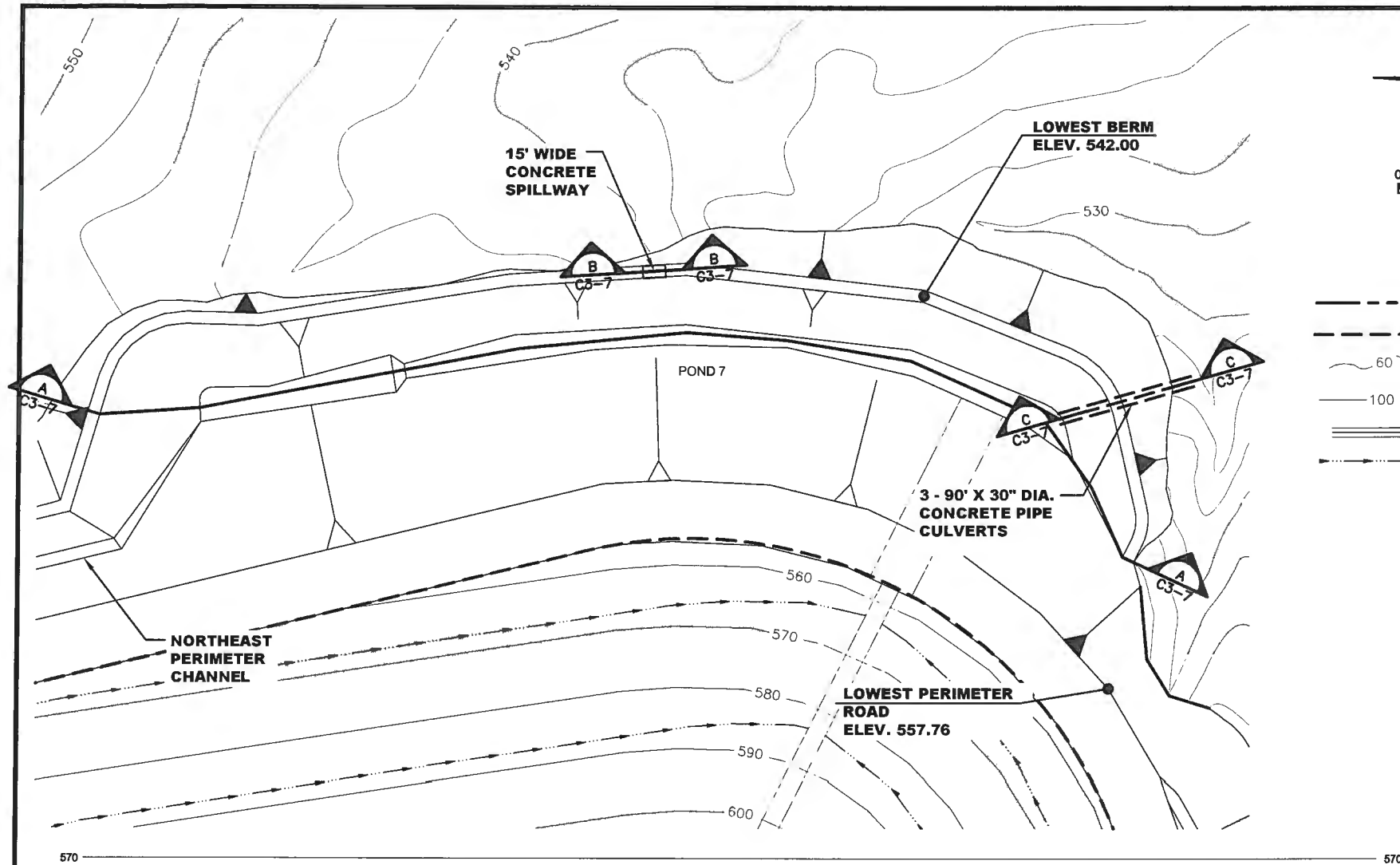
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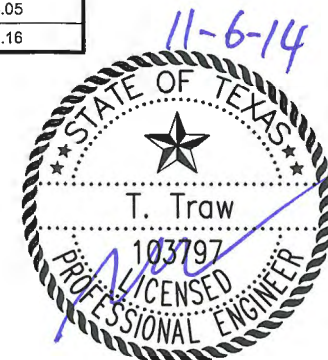
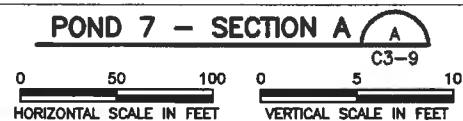
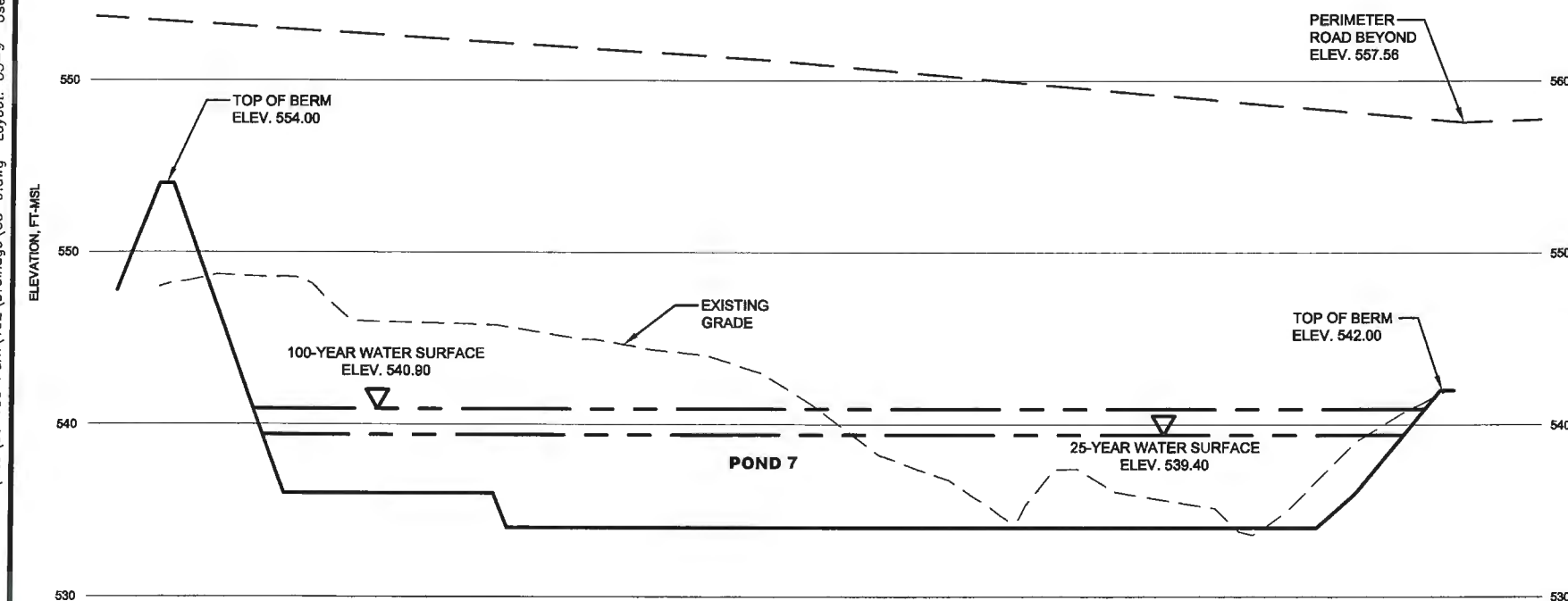
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POND 7 ELEVATION-STORAGE RELATIONSHIP		
ELEVATION (FT)	AREA (AC)	VOLUME AT ELEVATION (AC-FT)
534	0.14	0.00
536	0.38	0.52
537	0.50	0.96
538	0.62	1.52
539	0.77	2.22
540	0.92	3.06
541	1.05	4.05
542	1.18	5.16



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REVISIONS							TBPE FIRM NO. F-256 & F-834			TBPG FIRM NO. 50222		
—	10/28/14	TECHNICALLY COMPLETE		BBB	TLT	TLT	TLT	DSN.	TLT	DATE : 02/14		DRAWING C3-9
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REV	DATE	DESCRIPTION		DWN BY	DES BY	CHK BY	APP BY	CHK.	TLT	DWG : C3-9.dwg		

POND 7

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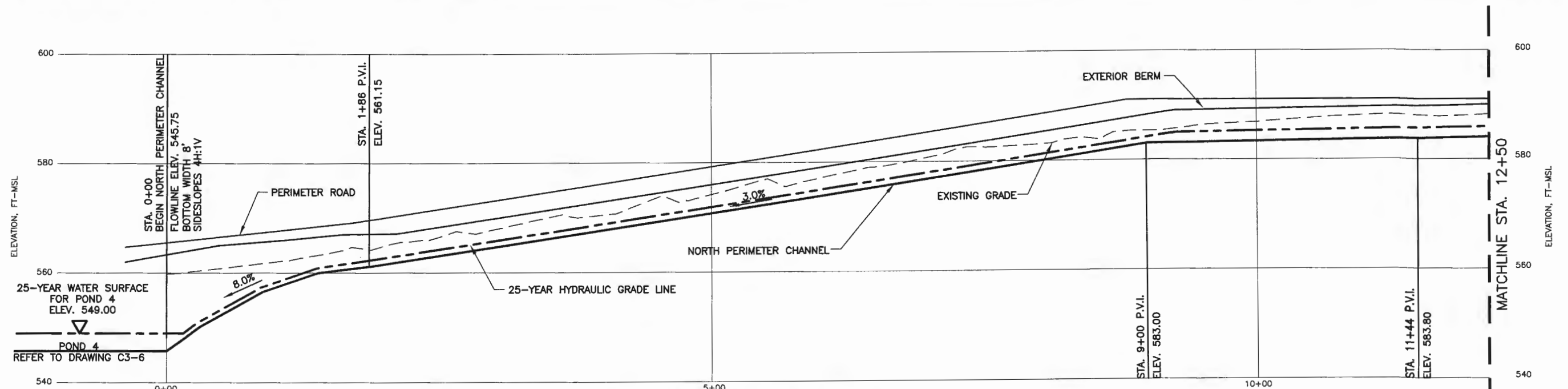


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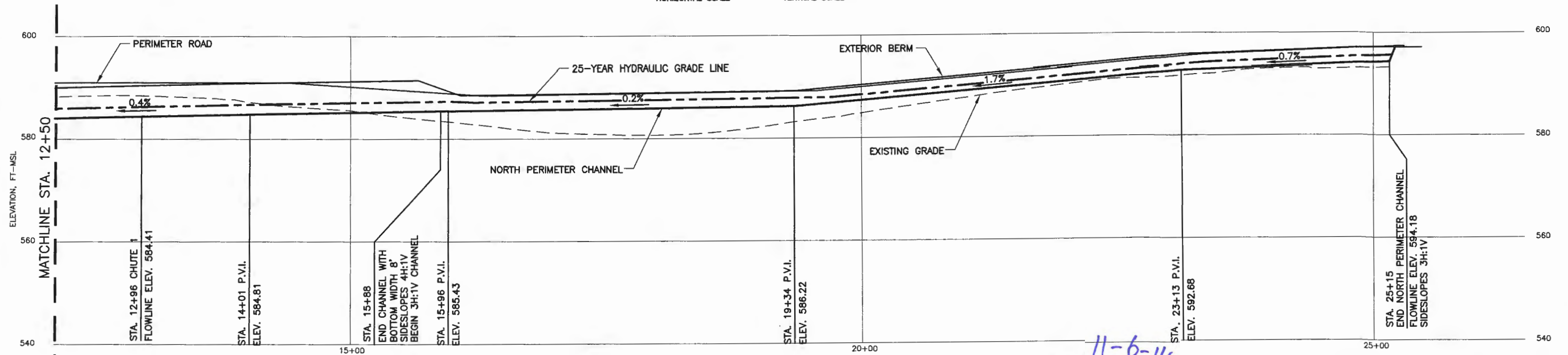
C3-9

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NORTH PERIMETER CHANNEL PROFILE
STA. 0+00 TO 12+50

0 50 100 0 10 20
HORIZONTAL SCALE VERTICAL SCALE



NORTH PERIMETER CHANNEL PROFILE
STA. 12+50 TO 25+15

0 50 100 0 10 20
HORIZONTAL SCALE VERTICAL SCALE

25 Year Hydraulic Analysis									
Station	Bottom Slope (%)	Bottom Width (ft)	Channel Depth (ft)	Flow Depth (ft)	Freeboard (ft)	Discharge (cfs)	Velocity (fps)	Shear Stress (psf)	Erosion Protection
25+15 23+13	0.7%	N/A	2.64	1.29	1.35	14.9	2.99	0.56	NO
23+13 19+34	1.7%	N/A	2.42	1.09	1.33	14.9	4.17	1.16	NO
19+34 15+96	0.2%	N/A	3.03	1.63	1.40	14.9	1.87	0.20	NO
15+96 9+00	0.4%	8.0	3.58	1.89	1.69	106.6	3.63	0.47	NO
9+00 1+86	3.0%	8.0	5.19	1.13	4.06	106.6	7.51	2.12	YES
1+86 0+00	8.0%	8.0	6.38	0.87	5.51	106.6	10.62	4.36	YES



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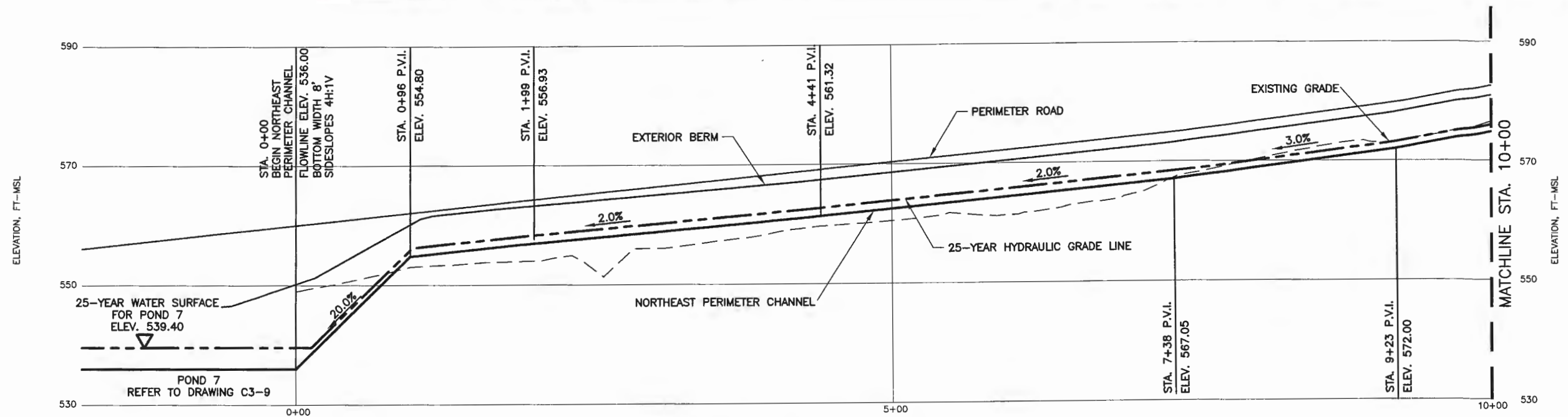
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NORTH PERIMETER CHANNEL PROFILE
0+00 THROUGH 25+15

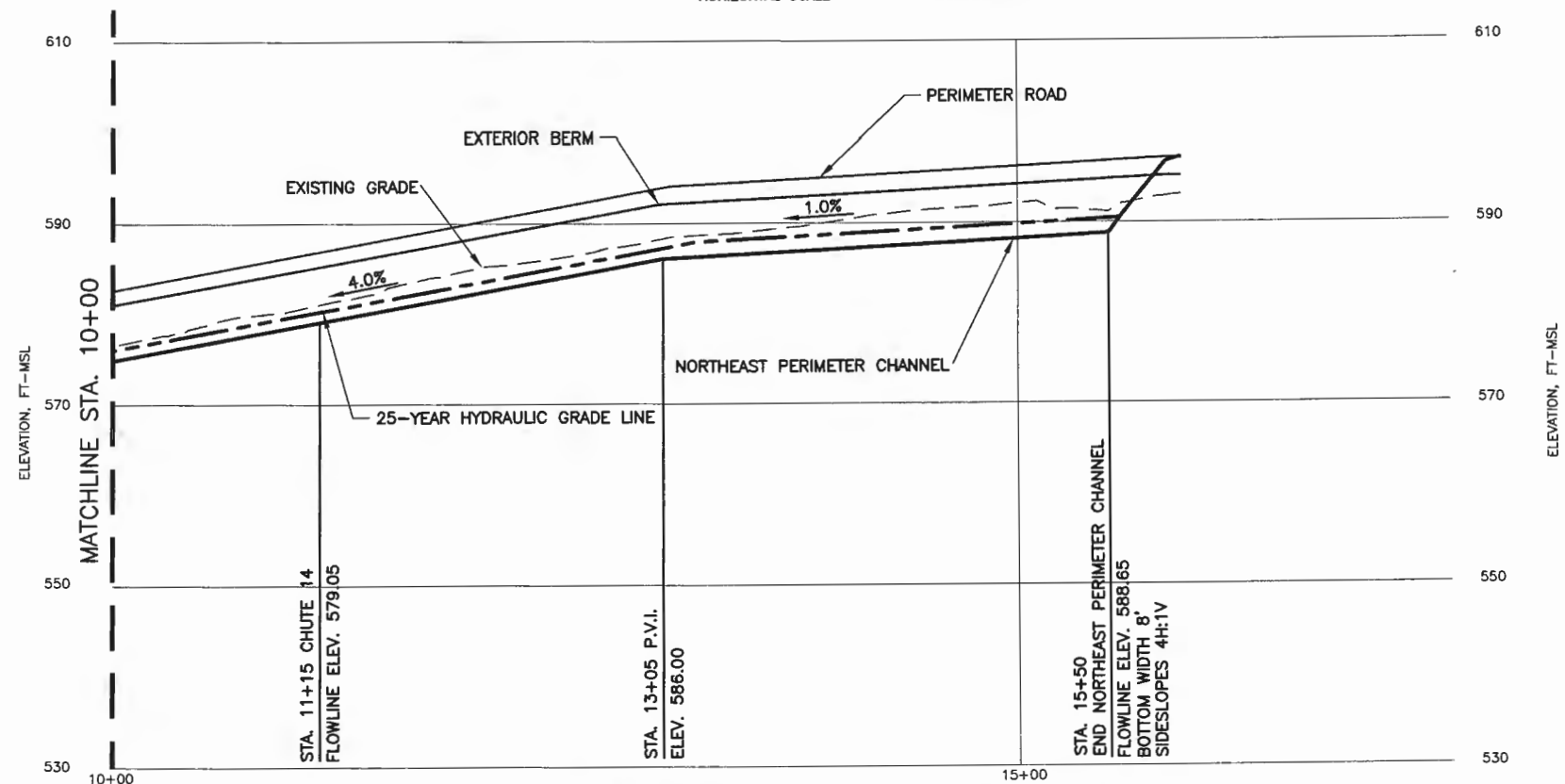
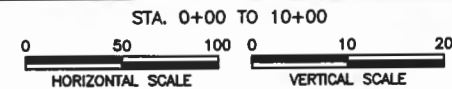
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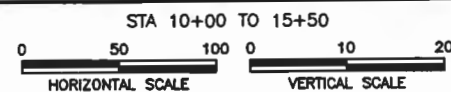
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NORTHEAST PERIMETER CHANNEL PROFILE



NORTHEAST PERIMETER CHANNEL PROFILE



25 Year Hydraulic Analysis										
Station		Bottom Slope (%)	Bottom Width (ft)	Channel Depth (ft)	Flow Depth (ft)	Freeboard (ft)	Discharge (cfs)	Velocity (fps)	Shear Stress (psf)	Erosion Protection
15+50	13+05	1.0%	8	6.00	1.63	4.37	125.6	5.29	1.02	NO
13+05	9+23	4.0%	8	6.00	1.14	4.86	125.6	8.72	2.86	YES
9+23	7+38	3.0%	8	6.06	1.23	4.83	125.6	7.87	2.31	YES
7+38	0+96	2.0%	8	6.06	1.37	4.69	125.6	6.80	1.71	NO
0+96	0+00	20.0%	8	5.35	0.74	4.61	125.6	15.37	9.29	YES



NORTHEAST PERIMETER CHANNEL PROFILE
0+00 THROUGH 15+50

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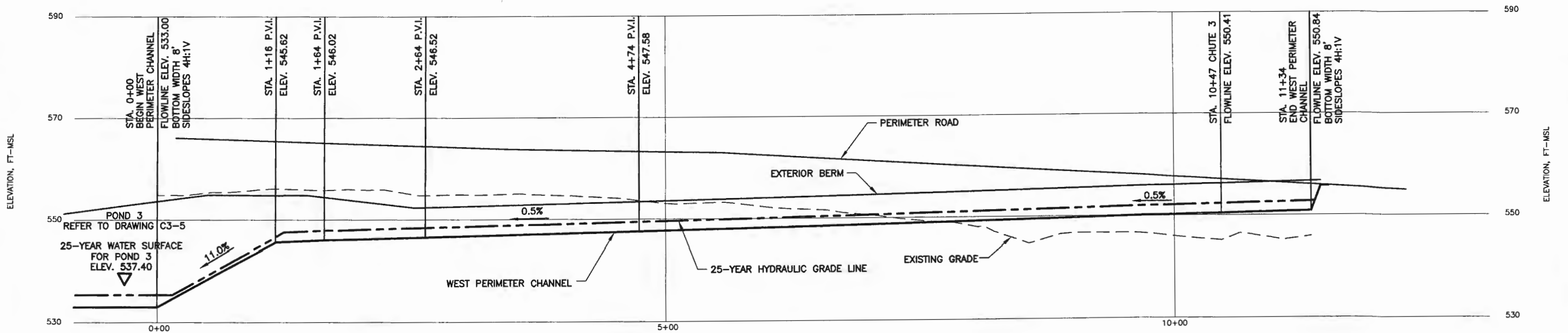
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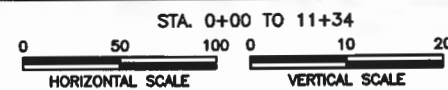
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REVISIONS										TBPE FIRM NO. F-256 & F-834	TBPG FIRM NO. 50222
DSN.	TLT	DATE	02/14	DATE	02/14	DATE	02/14	DATE	02/14	DATE	02/14
DWN.	BBB	SCALE	GRAPHIC	DWN.	BBB	SCALE	GRAPHIC	DWN.	BBB	SCALE	GRAPHIC
CHK.	TLT	DWG	C3_10-16.dwg	CHK.	TLT	DWG	C3_10-16.dwg	CHK.	TLT	DWG	C3_10-16.dwg

DRAWING
C3-11



WEST PERIMETER CHANNEL PROFILE



25 Year Hydraulic Analysis										
Station		Bottom Slope (%)	Bottom Width (ft)	Channel Depth (ft)	Flow Depth (ft)	Freeboard (ft)	Discharge (cfs)	Velocity (fps)	Shear Stress (psf)	Erosion Protection
11+34	1+16	0.5%	8	5.85	1.89	3.96	119.90	4.06	0.59	NO
1+16	0+00	11.0%	8	9.19	0.85	8.34	119.90	12.30	5.86	YES



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REVISIONS								TBPE FIRM NO. F-256 & F-834		TBPG FIRM NO. 50222	
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY		DSN. TLT	DATE : 02/14	DRAWING	
-	10/26/14	TECHNICALLY COMPLETE	BBB	TLT	TLT	TLT		DWN. BBB	SCALE : GRAPHIC		
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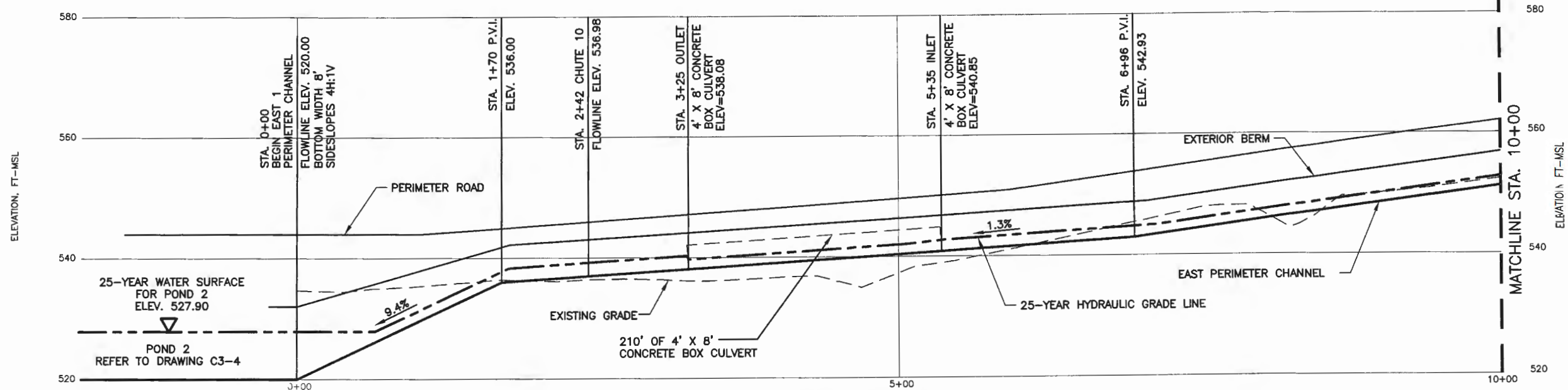
WEST PERIMETER CHANNEL PROFILE
0+00 THROUGH 11+34
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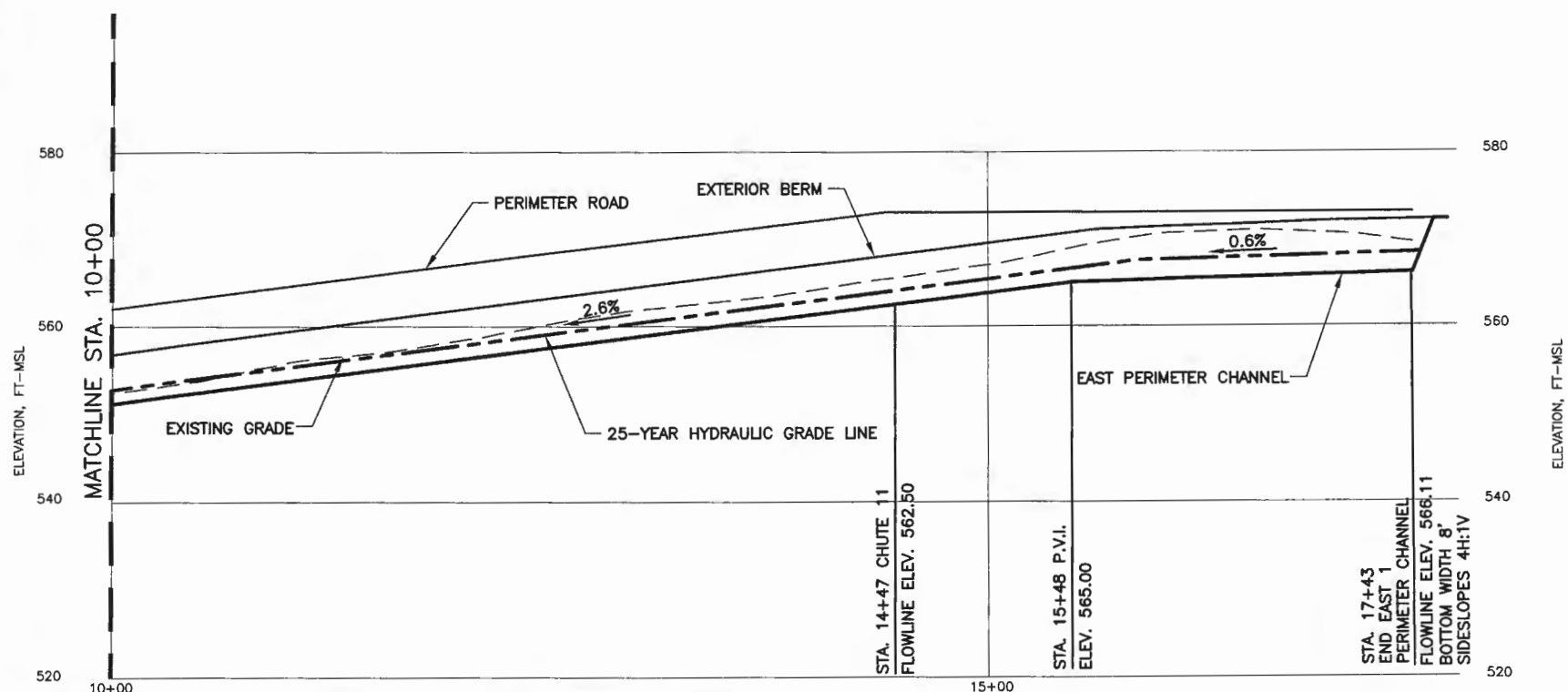
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C3-12

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EAST PERIMETER CHANNEL PROFILE
STA. 0+00 TO 10+00
0 50 100 0 10 20
HORIZONTAL SCALE VERTICAL SCALE



EAST PERIMETER CHANNEL PROFILE
STA. 10+00 TO 17+43
0 50 100 0 10 20
HORIZONTAL SCALE VERTICAL SCALE

25 Year Hydraulic Analysis										
Station		Bottom Slope (%)	Bottom Width (ft)	Channel Depth (ft)	Flow Depth (ft)	Freeboard (ft)	Discharge (cfs)	Velocity (fps)	Shear Stress (psf)	Erosion Protection
17+43	15+48	0.6%	8	6.03	2.25	3.78	186.50	4.89	0.84	NO
15+48	6+96	2.6%	8	5.60	1.57	4.03	186.50	8.35	2.54	YES
6+96	5+35	1.3%	8	5.89	1.86	4.03	186.50	6.49	1.51	NO
5+35	3+25	1.3%	8	5.98	1.62	4.36	186.50	14.35	1.32	NO
3+25	1+70	1.8%	8	6.08	2.23	3.85	317.10	8.43	2.50	YES
1+70	0+00	7.1%	8	5.79	1.59	4.20	317.10	13.90	7.04	YES



ISSUED FOR PERMITTING PURPOSES ONLY

REVISIONS					
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY
-	10/28/14	TECHNICALLY COMPLETE	BBB	TLT	TLT

EAST PERIMETER DITCH PROFILE
0+00 THROUGH 17+43

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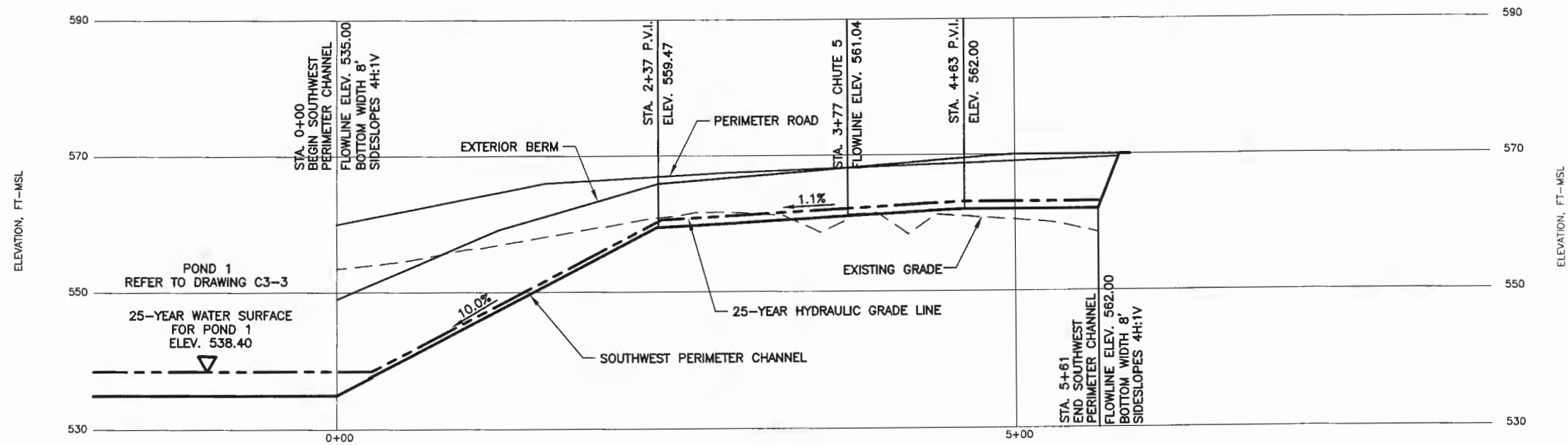
BIGGS & MATHEWS
ENVIRONMENTAL
CONSULTING ENGINEERS
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817-563-1144

TBPE FIRM NO. F-256 & F-834
TBPB FIRM NO. 50222

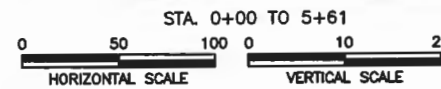
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DRAWING
C3-13

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SOUTHWEST PERIMETER CHANNEL PROFILE



25 Year Hydraulic Analysis

25 Year Hydraulic Analysis										
Station		Bottom Slope (%)	Bottom Width (ft)	Channel Depth (ft)	Flow Depth (ft)	Freeboard (ft)	Discharge (cfs)	Velocity (fps)	Shear Stress (psf)	Erosion Protection
5+61	2+37	1.1%	8.0000	6.76	1.21	5.55	73.3000	4.71	0.83	NO
2+37	0+00	10.0%	8.0000	6.31	0.67	5.64	73.3000	10.25	4.18	YES



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REVISIONS							
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY	
-	10/28/14	TECHNICALLY COMPLETE	BBB	TLT	TLT	TLT	

SOUTHWEST PERIMETER CHANNEL PROFILE 0+00 THROUGH 5+61

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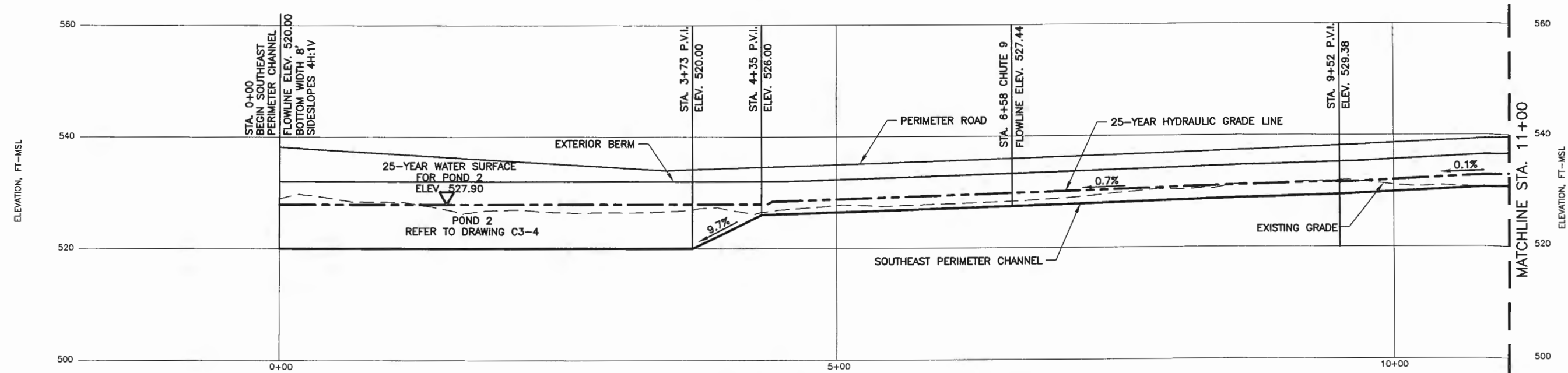


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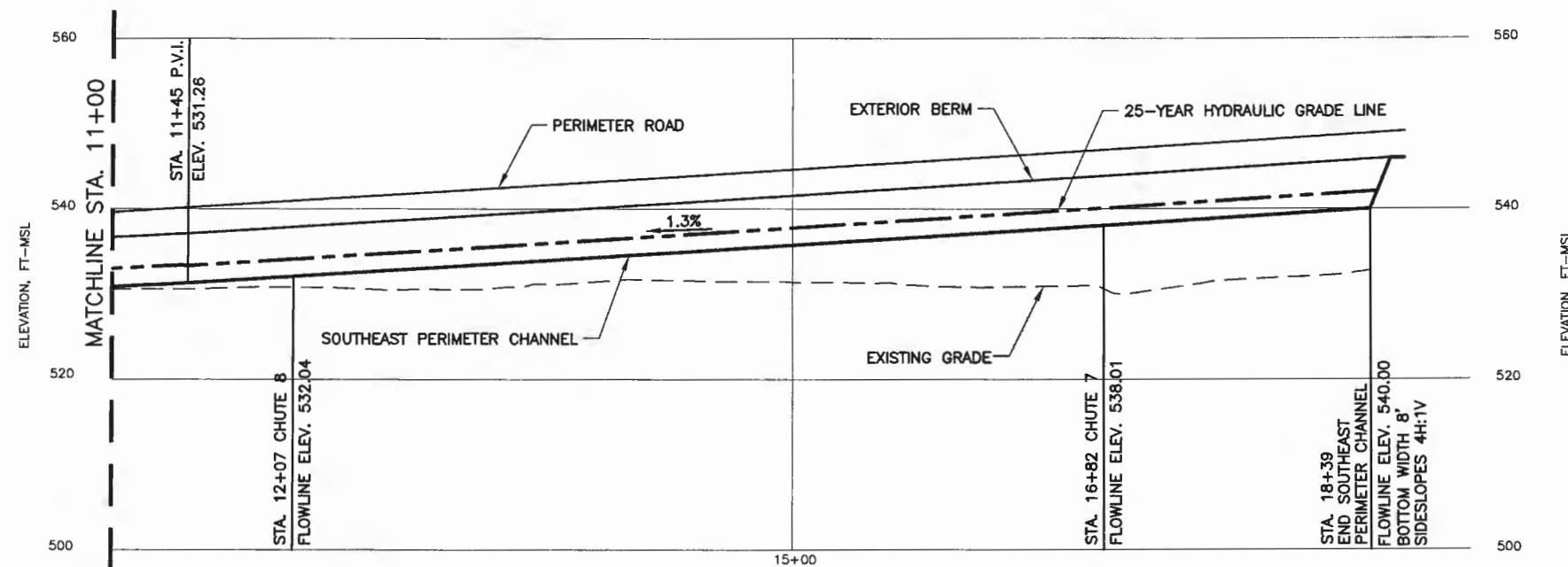
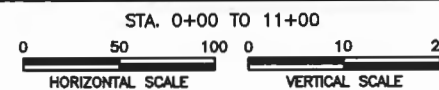
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TBPE FIRM NO. F-256 & F-834				TBPG FIRM NO. 50222			
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CHK.	TLT	DWG :	C3_10-16.dwg				

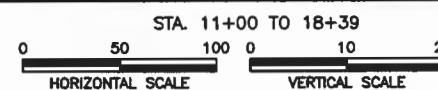
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SOUTHEAST PERIMETER CHANNEL PROFILE



SOUTHEAST PERIMETER CHANNEL PROFILE



25 Year Hydraulic Analysis

Station	Bottom Slope (%)	Bottom Width (ft)	Channel Depth (ft)	Flow Depth (ft)	Freeboard (ft)	Discharge (cfs)	Velocity (fps)	Shear Stress (psf)	Erosion Protection
18+39	1.3%	8	5.80	2.02	3.78	220.00	6.78	1.64	NO
11+45	1.0%	8	5.80	2.15	3.65	220.00	6.16	1.34	NO
9+52	0.7%	8	6.00	2.34	3.66	220.00	5.41	1.02	NO
4+35	9.7%	8	6.00	1.22	4.78	220.00	14.04	7.37	YES



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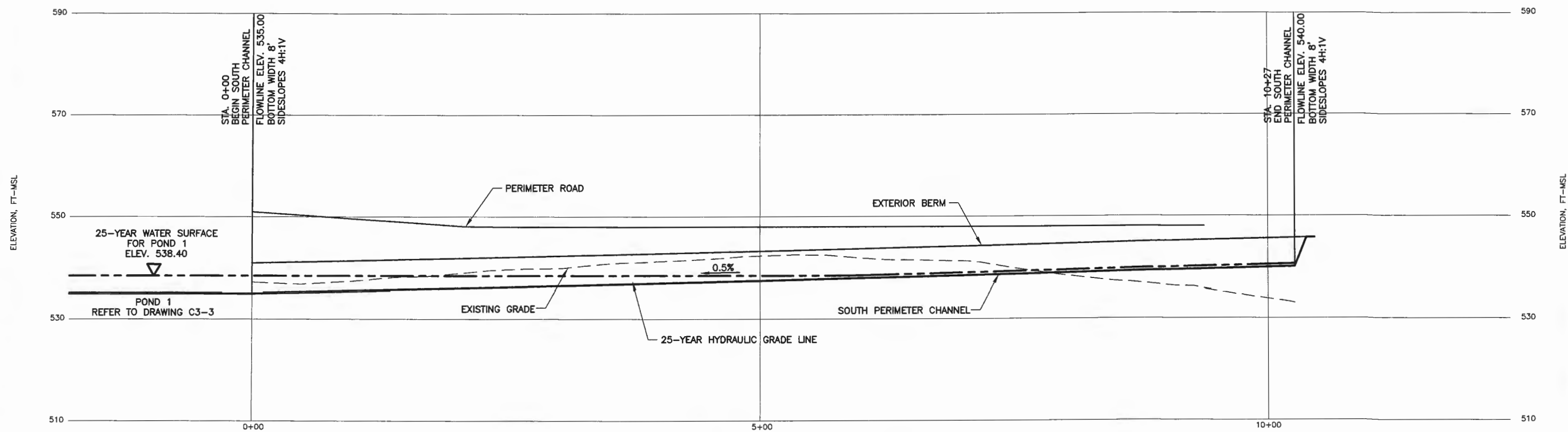
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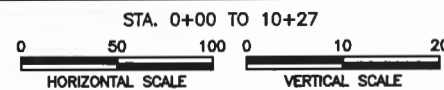
SOUTHEAST PERIMETER CHANNEL PROFILE
0+00 THROUGH 18+39
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DRAWING
C3-15

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SOUTH PERIMETER CHANNEL PROFILE



25 Year Hydraulic Analysis										
Station		Bottom Slope (%)	Bottom Width (ft)	Channel Depth (ft)	Flow Depth (ft)	Freeboard (ft)	Discharge (cfs)	Velocity (fps)	Shear Stress (psf)	Erosion Protection
10+27	0+00	0.5%	8	5.78	0.55	5.23	11.40	2.04	0.17	NO



SOUTH PERIMETER CHANNEL PROFILE 0+00 THROUGH 10+27

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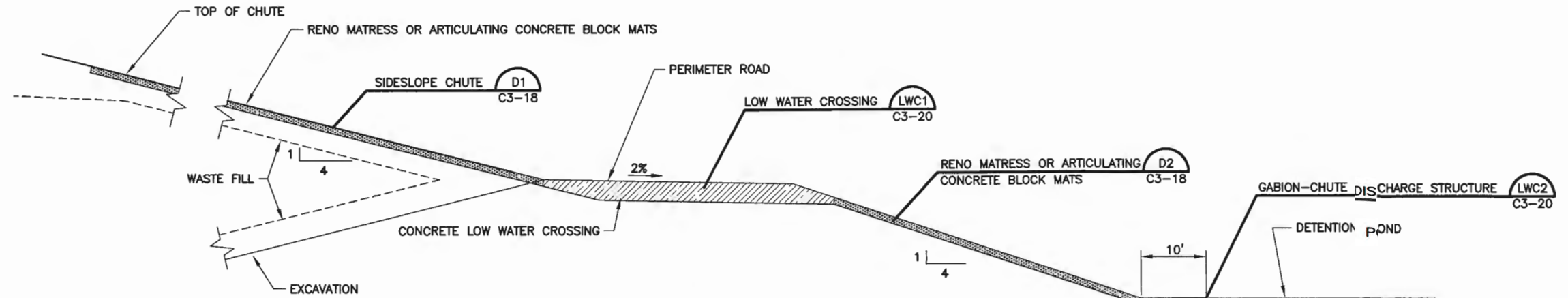
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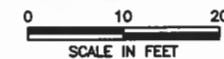
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TYPICAL CHUTE PROFILE 1

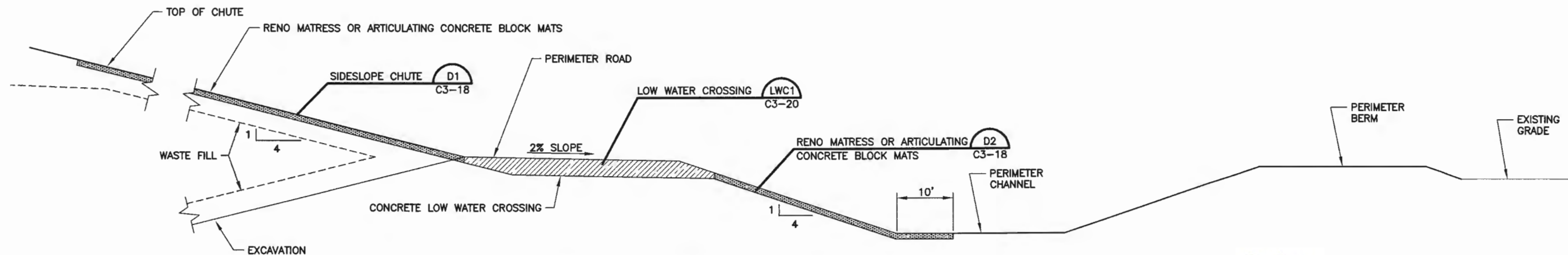
DISCHARGE TO POND



NOTES:

1. CHUTES DISCHARGING INTO DETENTION PONDS SHALL USE GABION - CHUTE DISCHARGE STRUCTURE FOR ENERGY DISSIPATION.
2. CHUTES DISCHARGING INTO DRAINAGE CHANNELS, SHALL INCLUDE A MINIMUM OF 30 LINEAR FEET OF ROCK RIP RAP LINING IN THE CHANNEL AS SHOWN IN DETAIL D-8 ON SHEET C3-19.

NOTE: SEE ATTACHMENT C1, APPENDIX C1-E, PAGE C1-E-18 FOR DOWNCHUTE CALCULATIONS.



TYPICAL CHUTE PROFILE 2

DISCHARGE TO PERIMETER CHANNEL



NOTE: SEE ATTACHMENT C1, APPENDIX C1-E, PAGE C1-E-18 FOR DOWNCHUTE CALCULATIONS.



TYPICAL CHUTE PROFILES

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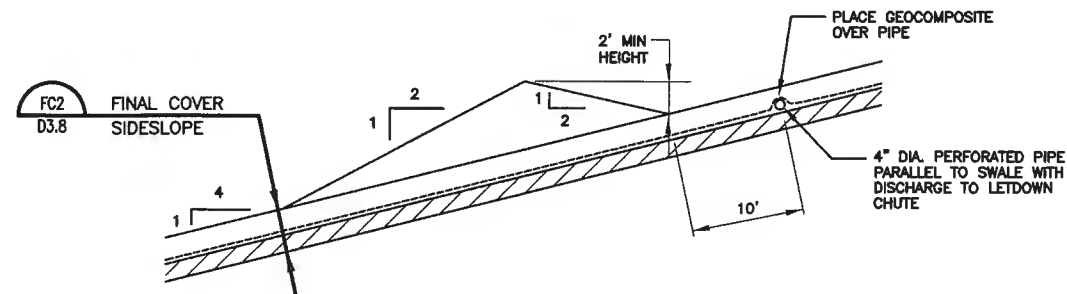
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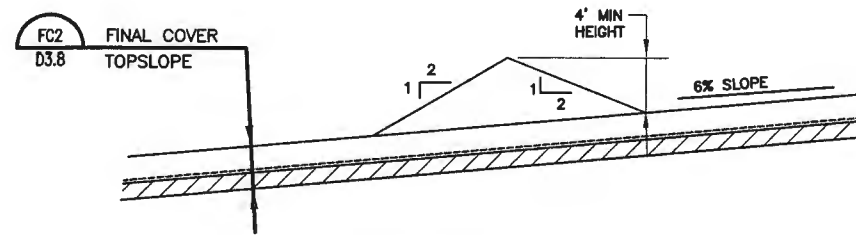
ISSUED FOR PERMITTING PURPOSES ONLY

REVISIONS							TBPE FIRM NO. F-256 & F-834		TBPG FIRM NO. 50222	
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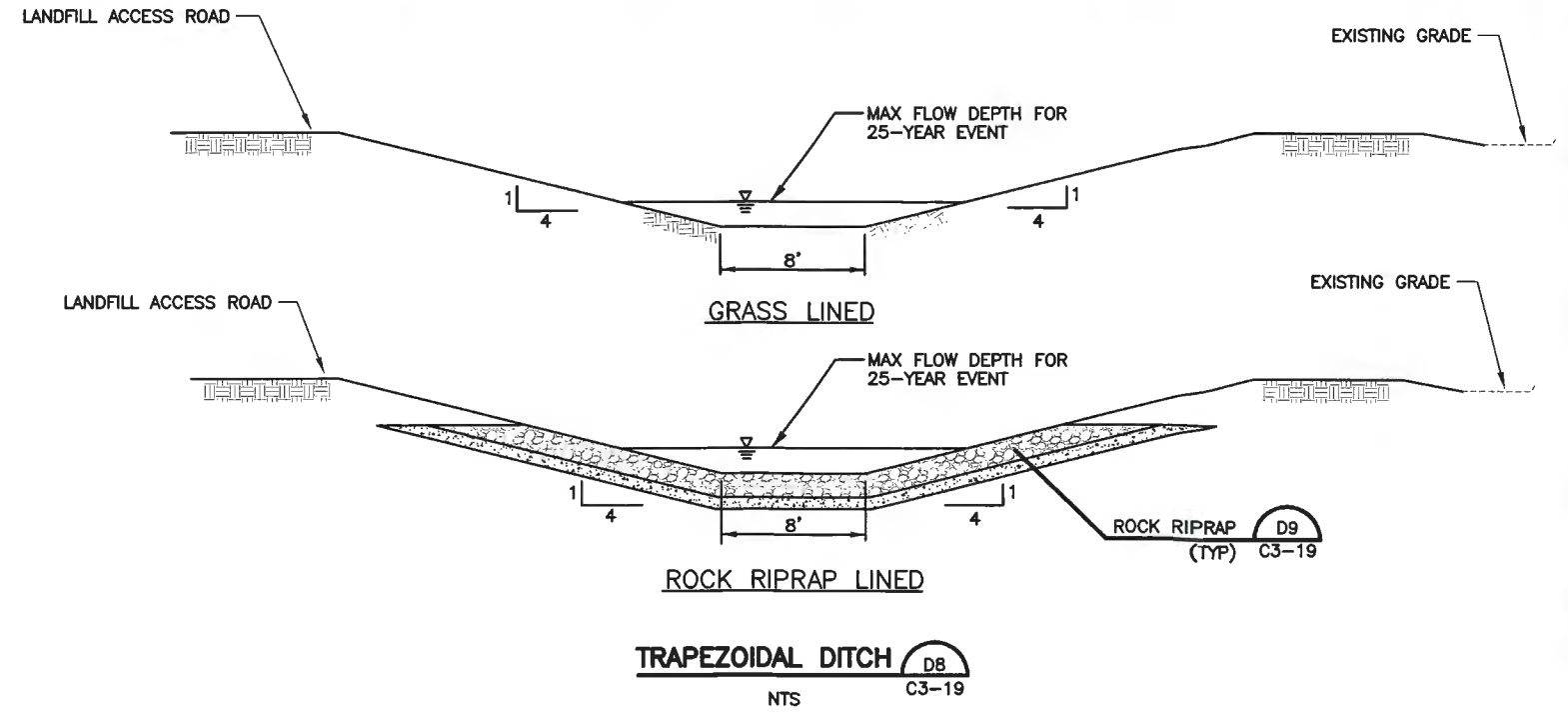
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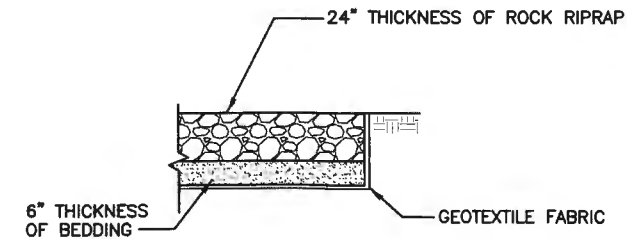
SIDESLOPE SWALE (D6)
C3-19
SCALE IN FEET



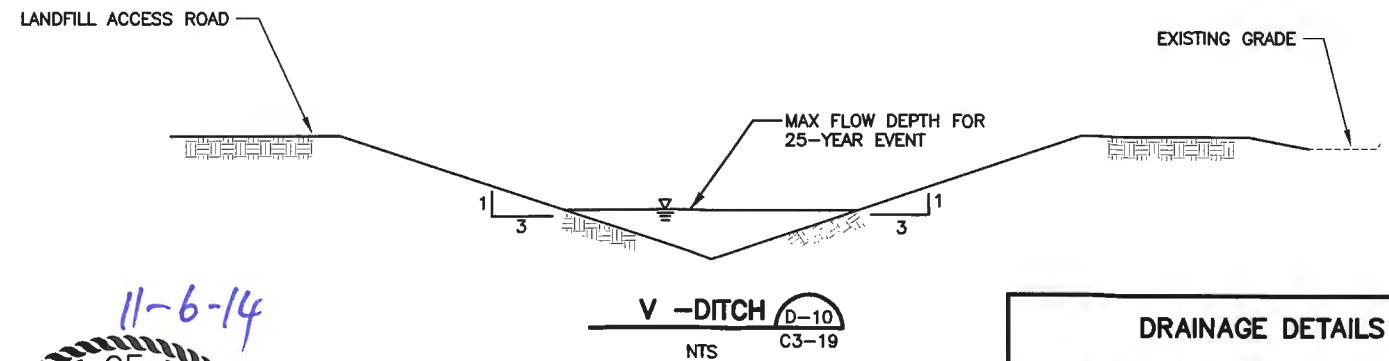
TOPSLOPE SWALE (D7)
C3-19
SCALE IN FEET



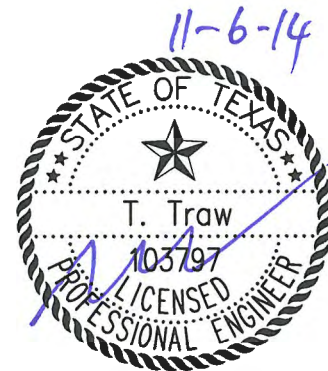
TRAPEZOIDAL DITCH (D8)
C3-19
NTS



ROCK RIPRAP (TYP) (D9)
C3-19
SCALE IN FEET



V-DITCH (D-10)
C3-19
NTS



DRAINAGE DETAILS

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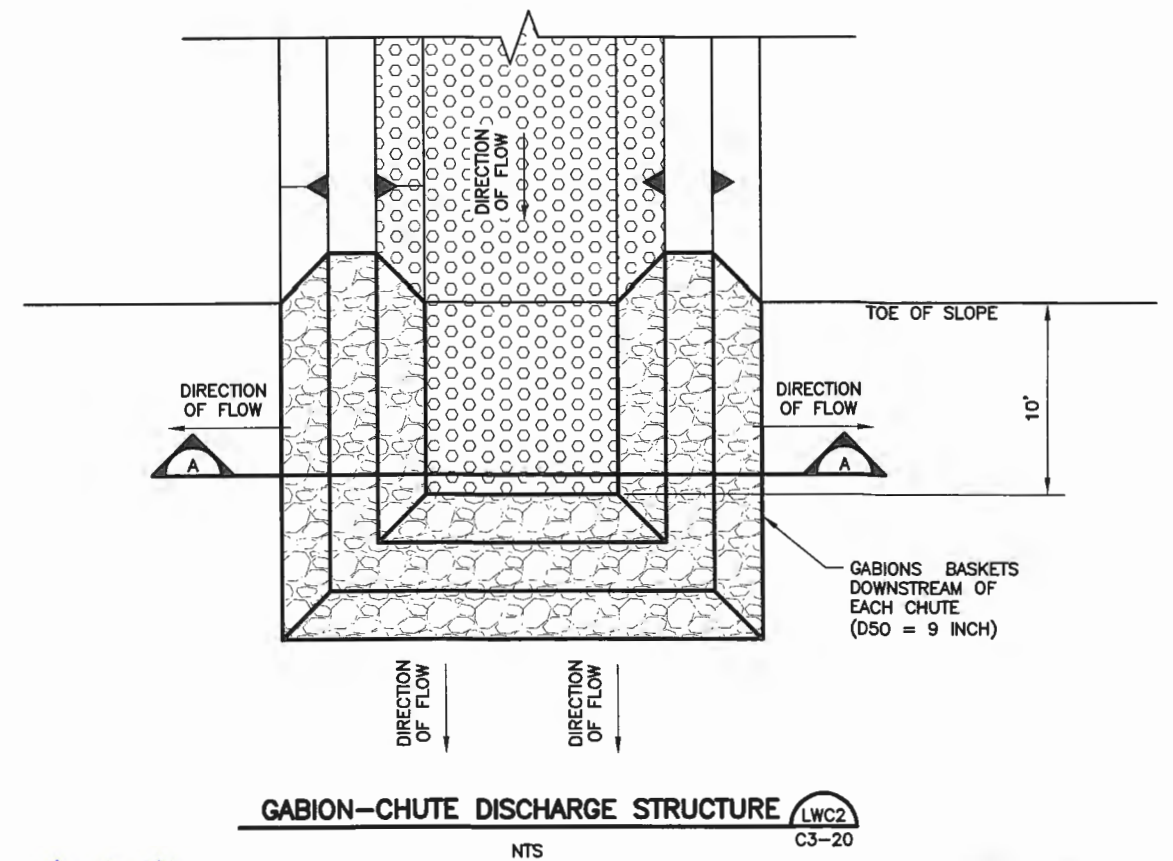
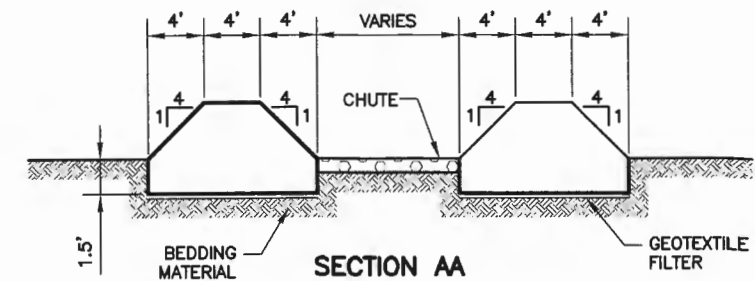
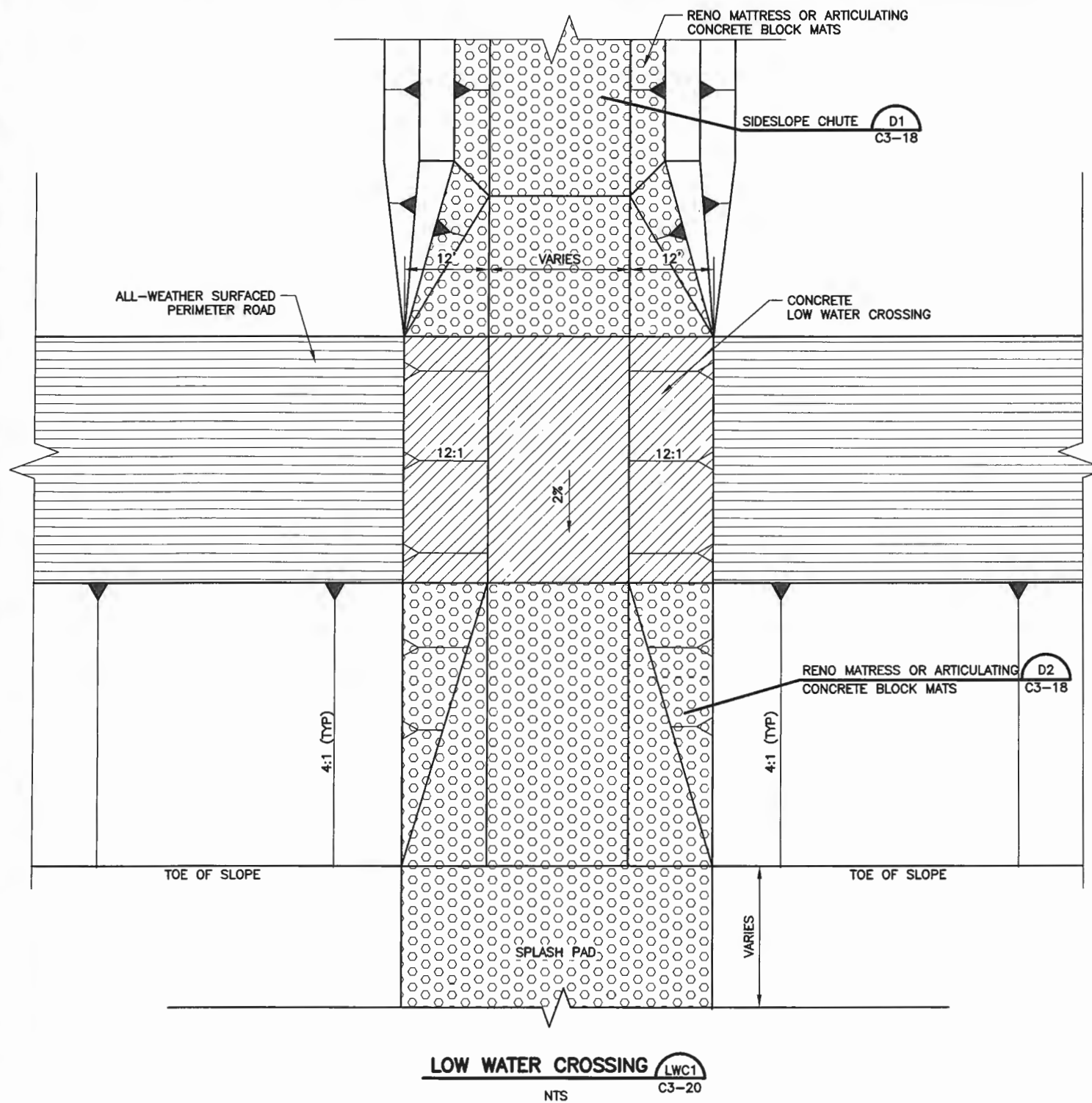


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REVISIONS						TBPE FIRM NO. F-256 & F-834		TBPG FIRM NO. 50222	
REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY	DSN. TLT	DATE : 02/14	DRAWING
-	10/28/14	TECHNICALLY COMPLETE	BBB	TLT	TLT	TLT	DWN. BBB	SCALE : GRAPHIC	C3-19
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REVISIONS							TBPE FIRM NO. F-256 & F-834		TBPG FIRM NO. 50222	
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REV	DATE	DESCRIPTION	DWN BY	DES BY	CHK BY	APP BY	CHK. TLT	DWG : C3-18_19_20.dwg		

PERIMETER ROAD
LOW WATER CROSSING

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