

Table 1A: Pond 1 Pipe Data and Hydraulic Simulation Results for the 100-Year, 4-Hour Chicago Storm (Free Outfall Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Width (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S ⁽¹⁾ (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Freeboard U/S HGL and MH Cover (m)
103	104	93.074	92.929	1200	N/A	85.0	0.2	0.013	95.979	95.813	1.421	1.607	1.45	0.9	0.366	1.500	94.640	94.487	1.339
104	105	92.899	92.716	1200	N/A	107.5	0.2	0.013	95.813	95.598	1.421	1.607	1.79	1.1	0.388	1.500	94.487	94.243	1.326
105	106	92.539	92.474	1350	N/A	43.5	0.2	0.013	95.598	95.511	1.444	2.067	1.94	0.9	0.354	1.500	94.243	94.181	1.355
106	107	92.454	92.389	1350	N/A	43.5	0.2	0.013	95.511	95.424	1.444	2.067	2.03	1.0	0.377	1.500	94.181	94.114	1.330
107	108	92.352	92.245	1350	N/A	71.5	0.2	0.013	95.424	95.282	1.444	2.067	2.34	1.1	0.412	1.500	94.114	93.970	1.310
108	109	92.185	92.141	1200	2400	43.5	0.1	0.013	95.282	95.108	1.321	3.803	2.62	0.7	0.585	1.500	93.970	93.950	1.312
109	110	92.121	92.047	1200	2400	73.5	0.1	0.013	95.108	94.961	1.321	3.803	2.91	0.8	0.629	1.500	93.950	93.908	1.158
110	111	92.027	91.912	1200	2400	77.0	0.2	0.013	94.961	94.807	1.617	4.658	3.67	0.8	0.681	1.500	93.908	93.837	1.053
111	112	91.892	91.812	1200	2400	53.0	0.2	0.013	94.807	94.702	1.617	4.658	4.65	1.0	0.745	1.500	93.837	93.758	0.970
112	113	91.792	91.679	1200	2400	75.5	0.2	0.013	94.702	94.539	1.617	4.658	4.77	1.0	0.766	1.500	93.758	93.640	0.944
113	119	91.619	91.485	1200	2400	67.0	0.2	0.013	94.539	94.400	1.868	5.379	5.27	1.0	0.821	1.500	93.640	93.478	0.899
114	115	92.758	92.532	375	N/A	90.5	0.3	0.013	94.778	94.919	0.794	0.088	0.06	0.7	0.749	1.350	93.882	93.780	0.896
114	120	92.338	92.231	600	N/A	71.5	0.2	0.013	94.778	94.634	0.841	0.238	0.15	0.6	0.944	1.267	93.882	93.853	0.896
115	116	92.232	92.144	675	N/A	59.0	0.2	0.013	94.919	94.805	0.910	0.326	0.28	0.9	0.873	1.350	93.780	93.694	1.139
116	117	92.084	91.982	675	N/A	68.0	0.2	0.013	94.805	94.665	0.910	0.326	0.34	1.0	0.935	1.350	93.694	93.524	1.111
117	118	91.719	91.612	1200	N/A	71.5	0.2	0.013	94.665	94.522	1.335	1.510	1.24	0.8	0.605	1.517	93.524	93.481	1.141
118	119	91.592	91.485	1200	N/A	71.5	0.2	0.013	94.522	94.400	1.335	1.510	1.27	0.8	0.689	1.500	93.481	93.478	1.041
119	POND1	91.185	91.151	1500	2400	34.0	0.1	0.013	94.400	94.400	1.453	5.230	6.54	1.3	0.793	1.500	93.478	93.477	0.922
120	121	91.781	91.661	1050	N/A	75.0	0.2	0.013	94.634	94.400	1.261	1.092	0.81	0.7	1.022	1.283	93.853	93.736	0.781
121	12700	91.211	91.067	1500	N/A	41.0	0.4	0.013	94.400	94.400	2.367	4.182	4.52	1.1	1.025	1.350	93.736	93.479	0.664
122	123	92.802	92.666	675	N/A	71.5	0.2	0.013	95.083	94.941	1.024	0.366	0.29	0.8	0.828	1.283	94.305	94.230	0.778
123	124	92.516	92.373	825	N/A	71.5	0.2	0.013	94.941	94.798	1.201	0.642	0.48	0.7	0.889	1.333	94.230	94.152	0.711
124	125	92.104	91.967	1050	N/A	91.5	0.2	0.013	94.798	94.614	1.221	1.058	0.90	0.9	0.998	1.300	94.152	94.054	0.646
125	126	91.814	91.788	1200	N/A	13.0	0.2	0.013	94.614	94.580	1.542	1.744	1.20	0.7	1.040	1.300	94.054	93.967	0.560
126	127	91.630	91.451	1350	N/A	89.5	0.2	0.013	94.580	94.401	1.668	2.387	1.62	0.7	0.987	1.350	93.967	93.860	0.613
127	121	91.421	91.361	1350	N/A	40.0	0.2	0.013	94.401	94.400	1.444	2.067	1.63	0.8	1.089	1.350	93.860	93.736	0.541
132	133	92.543	92.365	1050	N/A	93.5	0.2	0.013	95.196	95.013	1.375	1.190	1.08	0.9	0.891	1.350	94.484	94.343	0.712
133	134	92.335	92.235	1050	N/A	66.5	0.2	0.013	95.013	95.005	1.221	1.058	1.14	1.1	0.958	1.350	94.343	94.231	0.670
134	135	91.935	91.842	1350	N/A	62.0	0.2	0.013	95.005	94.885	1.444	2.067	1.83	0.9	0.946	1.350	94.231	94.058	0.774
135	136	91.782	91.671	1350	N/A	74.0	0.2	0.013	94.885	94.736	1.444	2.067	1.93	0.9	0.926	1.350	94.058	93.963	0.827
136	137	91.651	91.544	1350	N/A	71.5	0.2	0.013	94.736	94.594	1.444	2.067	2.02	1.0	0.962	1.350	93.963	93.864	0.773
137	121	91.524	91.435	1350	N/A	59.5	0.2	0.013	94.594	94.400	1.444	2.067	2.09	1.0	0.990	1.350	93.864	93.736	0.730
138	139	93.838	93.671	525	N/A	88.0	0.2	0.013	95.963	95.793	0.866	0.187	0.12	0.6	0.688	1.333	95.051	95.026	0.912
139	140	93.593	93.421	600	N/A	86.0	0.2	0.013	95.793	95.621	0.971	0.275	0.23	0.8	0.833	1.333	95.026	94.863	0.767
140	141	93.341	93.195	675	N/A	69.5	0.2	0.013	95.621	95.470	1.076	0.385	0.32	0.8	0.847	1.350	94.863	94.775	0.758
141	142	93.045	92.916	825	N/A	71.5	0.2	0.013	95.470	95.339	1.139	0.609	0.59	1.0	0.905	1.350	94.775	94.662	0.695
142	132	92.728	92.618	975	N/A	73.5	0.2	0.013	95.339	95.196	1.163	0.868	0.85	1.0	0.959	1.350	94.662	94.484	0.677
160	161	94.236	94.135	525	N/A	63.0	0.2	0.013	96.368	96.381	0.795	0.172	0.12	0.7	0.278	1.500	95.039	94.992	1.329

Table 1A: Pond 1 Pipe Data and Hydraulic Simulation Results for the 100-Year, 4-Hour Chicago Storm (Free Outfall Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Width (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S ⁽¹⁾ (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Freeboard U/S HGL and MH Cover (m)
161	162	94.060	93.966	600	N/A	63.0	0.2	0.013	96.381	96.255	0.841	0.238	0.18	0.8	0.332	1.500	94.992	94.941	1.389
162	163	93.632	93.525	900	N/A	71.5	0.2	0.013	96.255	96.112	1.102	0.701	0.54	0.8	0.409	1.500	94.941	94.874	1.314
163	103	93.342	93.238	1050	N/A	69.5	0.2	0.013	96.112	95.979	1.221	1.058	1.12	1.1	0.482	1.500	94.874	94.640	1.238
190	191	92.802	92.617	600	N/A	92.5	0.2	0.013	95.185	95.000	0.971	0.275	0.16	0.6	0.408	1.483	93.810	93.746	1.375
191	192	92.542	92.355	675	N/A	93.5	0.2	0.013	95.000	94.813	1.051	0.376	0.26	0.7	0.529	1.333	93.746	93.661	1.254
192	117	91.980	91.869	1050	N/A	74.0	0.2	0.013	94.813	94.665	1.221	1.058	0.85	0.8	0.631	1.333	93.661	93.524	1.152
12700	POND1	91.007	90.953	1500	N/A	15.5	0.4	0.013	94.400	94.400	2.367	4.182	4.51	1.1	0.972	1.350	93.479	93.477	0.921
POND1	P1out	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.17	N/A	N/A	2.217	N/A	N/A	N/A
POND1	P1out	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.14	N/A	N/A	2.233	N/A	N/A	N/A
POND1	P1out	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.66	N/A	N/A	2.233	N/A	N/A	N/A

Note: ⁽¹⁾ A negative surcharge implies that the pipe is not flowing full

Table 1B: Pond 1 Pipe Data and Hydraulic Simulation Results for the 100-Year, 24-Hour SCS Storm (Free Outfall Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Width (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S ⁽¹⁾ (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Freeboard U/S HGL and MH Cover (m)
103	104	93.074	92.929	1200	N/A	85.0	0.2	0.013	95.979	95.813	1.421	1.607	1.47	0.9	0.523	11.933	94.797	94.657	1.182
104	105	92.899	92.716	1200	N/A	107.5	0.2	0.013	95.813	95.598	1.421	1.607	1.82	1.1	0.558	11.933	94.657	94.439	1.156
105	106	92.539	92.474	1350	N/A	43.5	0.2	0.013	95.598	95.511	1.444	2.067	1.96	0.9	0.550	11.933	94.439	94.385	1.159
106	107	92.454	92.389	1350	N/A	43.5	0.2	0.013	95.511	95.424	1.444	2.067	2.05	1.0	0.581	11.933	94.385	94.327	1.126
107	108	92.352	92.245	1350	N/A	71.5	0.2	0.013	95.424	95.282	1.444	2.067	2.37	1.1	0.625	11.933	94.327	94.199	1.097
108	109	92.185	92.141	1200	2400	43.5	0.1	0.013	95.282	95.108	1.321	3.803	2.65	0.7	0.814	11.933	94.199	94.180	1.083
109	110	92.121	92.047	1200	2400	73.5	0.1	0.013	95.108	94.961	1.321	3.803	2.94	0.8	0.859	11.933	94.180	94.140	0.928
110	111	92.027	91.912	1200	2400	77.0	0.2	0.013	94.961	94.807	1.617	4.658	3.71	0.8	0.913	11.933	94.140	94.073	0.821
111	112	91.892	91.812	1200	2400	53.0	0.2	0.013	94.807	94.702	1.617	4.658	4.69	1.0	0.981	11.933	94.073	93.996	0.734
112	113	91.792	91.679	1200	2400	75.5	0.2	0.013	94.702	94.539	1.617	4.658	4.81	1.0	1.004	11.933	93.996	93.883	0.706
113	119	91.619	91.485	1200	2400	67.0	0.2	0.013	94.539	94.400	1.868	5.379	5.31	1.0	1.064	11.933	93.883	93.617	0.656
114	115	92.758	92.532	375	N/A	90.5	0.3	0.013	94.778	94.919	0.794	0.088	0.06	0.7	0.960	12.117	94.093	93.986	0.685
114	120	92.338	92.231	600	N/A	71.5	0.2	0.013	94.778	94.634	0.841	0.238	0.13	0.5	1.155	11.833	94.093	94.072	0.685
115	116	92.232	92.144	675	N/A	59.0	0.2	0.013	94.919	94.805	0.910	0.326	0.27	0.8	1.079	11.967	93.986	93.906	0.933
116	117	92.084	91.982	675	N/A	68.0	0.2	0.013	94.805	94.665	0.910	0.326	0.34	1.0	1.147	11.933	93.906	93.757	0.899
117	118	91.719	91.612	1200	N/A	71.5	0.2	0.013	94.665	94.522	1.335	1.510	1.24	0.8	0.838	11.967	93.757	93.692	0.908
118	119	91.592	91.485	1200	N/A	71.5	0.2	0.013	94.522	94.400	1.335	1.510	1.27	0.8	0.900	11.950	93.692	93.617	0.830
119	POND1	91.185	91.151	1500	2400	34.0	0.1	0.013	94.400	94.400	1.453	5.230	6.58	1.3	0.932	11.933	93.617	93.612	0.783
120	121	91.781	91.661	1050	N/A	75.0	0.2	0.013	94.634	94.400	1.261	1.092	0.79	0.7	1.241	11.883	94.072	93.960	0.562
121	12700	91.211	91.067	1500	N/A	41.0	0.4	0.013	94.400	94.400	2.367	4.182	4.46	1.1	1.249	11.967	93.960	93.619	0.440
122	123	92.802	92.666	675	N/A	71.5	0.2	0.013	95.083	94.941	1.024	0.366	0.28	0.8	1.017	11.850	94.494	94.424	0.589
123	124	92.516	92.373	825	N/A	71.5	0.2	0.013	94.941	94.798	1.201	0.642	0.48	0.7	1.083	11.850	94.424	94.355	0.517
124	125	92.104	91.967	1050	N/A	91.5	0.2	0.013	94.798	94.614	1.221	1.058	0.90	0.9	1.201	11.967	94.355	94.263	0.443
125	126	91.814	91.788	1200	N/A	13.0	0.2	0.013	94.614	94.580	1.542	1.744	1.19	0.7	1.249	12.000	94.263	94.180	0.351
126	127	91.630	91.451	1350	N/A	89.5	0.2	0.013	94.580	94.401	1.668	2.387	1.62	0.7	1.200	11.967	94.180	94.078	0.400
127	121	91.421	91.361	1350	N/A	40.0	0.2	0.013	94.401	94.400	1.444	2.067	1.62	0.8	1.307	11.950	94.078	93.960	0.323
132	133	92.543	92.365	1050	N/A	93.5	0.2	0.013	95.196	95.013	1.375	1.190	1.06	0.9	1.049	11.850	94.642	94.506	0.554
133	134	92.335	92.235	1050	N/A	66.5	0.2	0.013	95.013	95.005	1.221	1.058	1.11	1.0	1.121	11.850	94.506	94.407	0.507
134	135	91.935	91.842	1350	N/A	62.0	0.2	0.013	95.005	94.885	1.444	2.067	1.79	0.9	1.122	11.950	94.407	94.245	0.598
135	136	91.782	91.671	1350	N/A	74.0	0.2	0.013	94.885	94.736	1.444	2.067	1.89	0.9	1.113	11.950	94.245	94.161	0.640
136	137	91.651	91.544	1350	N/A	71.5	0.2	0.013	94.736	94.594	1.444	2.067	1.98	1.0	1.160	11.950	94.161	94.073	0.575
137	121	91.524	91.435	1350	N/A	59.5	0.2	0.013	94.594	94.400	1.444	2.067	2.05	1.0	1.199	11.950	94.073	93.960	0.521
138	139	93.838	93.671	525	N/A	88.0	0.2	0.013	95.963	95.793	0.866	0.187	0.11	0.6	0.840	11.850	95.203	95.152	0.760
139	140	93.593	93.421	600	N/A	86.0	0.2	0.013	95.793	95.621	0.971	0.275	0.22	0.8	0.959	11.850	95.152	95.016	0.641
140	141	93.341	93.195	675	N/A	69.5	0.2	0.013	95.621	95.470	1.076	0.385	0.31	0.8	1.000	11.850	95.016	94.928	0.605
141	142	93.045	92.916	825	N/A	71.5	0.2	0.013	95.470	95.339	1.139	0.609	0.58	1.0	1.058	11.850	94.928	94.816	0.542
142	132	92.728	92.618	975	N/A	73.5	0.2	0.013	95.339	95.196	1.163	0.868	0.83	1.0	1.113	11.850	94.816	94.642	0.523
160	161	94.236	94.135	525	N/A	63.0	0.2	0.013	96.368	96.381	0.795	0.172	0.12	0.7	0.419	11.933	95.180	95.126	1.188

Table 1B: Pond 1 Pipe Data and Hydraulic Simulation Results for the 100-Year, 24-Hour SCS Storm (Free Outfall Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Width (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S ⁽¹⁾ (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Freeboard U/S HGL and MH Cover (m)
161	162	94.060	93.966	600	N/A	63.0	0.2	0.013	96.381	96.255	0.841	0.238	0.18	0.8	0.466	11.933	95.126	95.071	1.255
162	163	93.632	93.525	900	N/A	71.5	0.2	0.013	96.255	96.112	1.102	0.701	0.55	0.8	0.539	11.933	95.071	95.014	1.184
163	103	93.342	93.238	1050	N/A	69.5	0.2	0.013	96.112	95.979	1.221	1.058	1.14	1.1	0.622	11.933	95.014	94.797	1.098
190	191	92.802	92.617	600	N/A	92.5	0.2	0.013	95.185	95.000	0.971	0.275	0.16	0.6	0.603	11.883	94.005	93.952	1.180
191	192	92.542	92.355	675	N/A	93.5	0.2	0.013	95.000	94.813	1.051	0.376	0.26	0.7	0.735	11.883	93.952	93.885	1.048
192	117	91.980	91.869	1050	N/A	74.0	0.2	0.013	94.813	94.665	1.221	1.058	0.85	0.8	0.855	11.950	93.885	93.757	0.928
12700	POND1	91.007	90.953	1500	N/A	15.5	0.4	0.013	94.400	94.400	2.367	4.182	4.46	1.1	1.112	12.000	93.619	93.612	0.781
POND1	P1out	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.18	N/A	N/A	0.000	N/A	N/A	N/A
POND1	P1out	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.16	N/A	N/A	0.000	N/A	N/A	N/A
POND1	P1out	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.84	N/A	N/A	0.000	N/A	N/A	N/A

Note: ⁽¹⁾ A negative surcharge implies that the pipe is not flowing full

Table 1C: Pond 1 Pipe Data and Hydraulic Simulation Results for the 100-Year, 24-Hour SCS Storm (Restrictive Downstream Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Width (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Freeboard U/S HGL and MH Cover (m)
103	104	93.074	92.929	1200	N/A	85.0	0.2	0.013	95.979	95.813	1.421	1.607	1.47	0.9	0.531	11.933	94.805	94.666	1.174
104	105	92.899	92.716	1200	N/A	107.5	0.2	0.013	95.813	95.598	1.421	1.607	1.82	1.1	0.567	11.933	94.666	94.447	1.147
105	106	92.539	92.474	1350	N/A	43.5	0.2	0.013	95.598	95.511	1.444	2.067	1.97	1.0	0.558	11.933	94.447	94.394	1.151
106	107	92.454	92.389	1350	N/A	43.5	0.2	0.013	95.511	95.424	1.444	2.067	2.06	1.0	0.590	11.933	94.394	94.336	1.117
107	108	92.352	92.245	1350	N/A	71.5	0.2	0.013	95.424	95.282	1.444	2.067	2.37	1.1	0.634	11.933	94.336	94.208	1.088
108	109	92.185	92.141	1200	2400	43.5	0.1	0.013	95.282	95.108	1.321	3.803	2.65	0.7	0.823	11.933	94.208	94.189	1.074
109	110	92.121	92.047	1200	2400	73.5	0.1	0.013	95.108	94.961	1.321	3.803	2.95	0.8	0.868	11.933	94.189	94.149	0.919
110	111	92.027	91.912	1200	2400	77.0	0.2	0.013	94.961	94.807	1.617	4.658	3.71	0.8	0.922	11.933	94.149	94.081	0.812
111	112	91.892	91.812	1200	2400	53.0	0.2	0.013	94.807	94.702	1.617	4.658	4.69	1.0	0.989	11.933	94.081	94.005	0.726
112	113	91.792	91.679	1200	2400	75.5	0.2	0.013	94.702	94.539	1.617	4.658	4.81	1.0	1.013	11.933	94.005	93.892	0.697
113	119	91.619	91.485	1200	2400	67.0	0.2	0.013	94.539	94.400	1.868	5.379	5.31	1.0	1.073	11.933	93.892	93.724	0.647
114	115	92.758	92.532	375	N/A	90.5	0.3	0.013	94.778	94.919	0.794	0.088	0.06	0.7	0.968	12.150	94.101	93.995	0.677
114	120	92.338	92.231	600	N/A	71.5	0.2	0.013	94.778	94.634	0.841	0.238	0.13	0.5	1.163	11.833	94.101	94.081	0.677
115	116	92.232	92.144	675	N/A	59.0	0.2	0.013	94.919	94.805	0.910	0.326	0.27	0.8	1.088	11.967	93.995	93.915	0.924
116	117	92.084	91.982	675	N/A	68.0	0.2	0.013	94.805	94.665	0.910	0.326	0.34	1.0	1.156	11.950	93.915	93.766	0.890
117	118	91.719	91.612	1200	N/A	71.5	0.2	0.013	94.665	94.522	1.335	1.510	1.24	0.8	0.847	11.967	93.766	93.725	0.899
118	119	91.592	91.485	1200	N/A	71.5	0.2	0.013	94.522	94.400	1.335	1.510	1.27	0.8	0.933	11.967	93.725	93.724	0.797
119	POND1	91.185	91.151	1500	2400	34.0	0.1	0.013	94.400	94.400	1.453	5.230	6.58	1.3	1.039	11.933	93.724	93.724	0.676
120	121	91.781	91.661	1050	N/A	75.0	0.2	0.013	94.634	94.400	1.261	1.092	0.79	0.7	1.250	11.883	94.081	93.969	0.553
121	12700	91.211	91.067	1500	N/A	41.0	0.4	0.013	94.400	94.400	2.367	4.182	4.46	1.1	1.258	11.950	93.969	93.724	0.431
122	123	92.802	92.666	675	N/A	71.5	0.2	0.013	95.083	94.941	1.024	0.366	0.28	0.8	1.026	11.850	94.503	94.433	0.580
123	124	92.516	92.373	825	N/A	71.5	0.2	0.013	94.941	94.798	1.201	0.642	0.48	0.7	1.092	11.850	94.433	94.363	0.508
124	125	92.104	91.967	1050	N/A	91.5	0.2	0.013	94.798	94.614	1.221	1.058	0.90	0.9	1.209	11.967	94.363	94.272	0.435
125	126	91.814	91.788	1200	N/A	13.0	0.2	0.013	94.614	94.580	1.542	1.744	1.19	0.7	1.258	11.967	94.272	94.189	0.342
126	127	91.630	91.451	1350	N/A	89.5	0.2	0.013	94.580	94.401	1.668	2.387	1.62	0.7	1.209	11.983	94.189	94.087	0.391
127	121	91.421	91.361	1350	N/A	40.0	0.2	0.013	94.401	94.400	1.444	2.067	1.62	0.8	1.316	11.983	94.087	93.969	0.314
132	133	92.543	92.365	1050	N/A	93.5	0.2	0.013	95.196	95.013	1.375	1.190	1.06	0.9	1.054	11.850	94.647	94.514	0.549
133	134	92.335	92.235	1050	N/A	66.5	0.2	0.013	95.013	95.005	1.221	1.058	1.11	1.0	1.129	11.850	94.514	94.414	0.499
134	135	91.935	91.842	1350	N/A	62.0	0.2	0.013	95.005	94.885	1.444	2.067	1.79	0.9	1.129	11.950	94.414	94.254	0.591
135	136	91.782	91.671	1350	N/A	74.0	0.2	0.013	94.885	94.736	1.444	2.067	1.89	0.9	1.122	11.950	94.254	94.170	0.631
136	137	91.651	91.544	1350	N/A	71.5	0.2	0.013	94.736	94.594	1.444	2.067	1.98	1.0	1.169	11.950	94.170	94.082	0.566
137	121	91.524	91.435	1350	N/A	59.5	0.2	0.013	94.594	94.400	1.444	2.067	2.05	1.0	1.208	11.950	94.082	93.969	0.512
138	139	93.838	93.671	525	N/A	88.0	0.2	0.013	95.963	95.793	0.866	0.187	0.11	0.6	0.845	11.850	95.208	95.157	0.755
139	140	93.593	93.421	600	N/A	86.0	0.2	0.013	95.793	95.621	0.971	0.275	0.22	0.8	0.964	11.850	95.157	95.021	0.636
140	141	93.341	93.195	675	N/A	69.5	0.2	0.013	95.621	95.470	1.076	0.385	0.31	0.8	1.005	11.850	95.021	94.934	0.600
141	142	93.045	92.916	825	N/A	71.5	0.2	0.013	95.470	95.339	1.139	0.609	0.58	1.0	1.064	11.850	94.934	94.821	0.536
142	132	92.728	92.618	975	N/A	73.5	0.2	0.013	95.339	95.196	1.163	0.868	0.83	1.0	1.118	11.850	94.821	94.647	0.518
160	161	94.236	94.135	525	N/A	63.0	0.2	0.013	96.368	96.381	0.795	0.172	0.12	0.7	0.411	11.933	95.172	95.123	1.196

Table 1C: Pond 1 Pipe Data and Hydraulic Simulation Results for the 100-Year, 24-Hour SCS Storm (Restrictive Downstream Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Width (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S ⁽¹⁾ (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Freeboard U/S HGL and MH Cover (m)
161	162	94.060	93.966	600	N/A	63.0	0.2	0.013	96.381	96.255	0.841	0.238	0.18	0.8	0.463	11.933	95.123	95.079	1.258
162	163	93.632	93.525	900	N/A	71.5	0.2	0.013	96.255	96.112	1.102	0.701	0.55	0.8	0.547	11.933	95.079	95.022	1.176
163	103	93.342	93.238	1050	N/A	69.5	0.2	0.013	96.112	95.979	1.221	1.058	1.14	1.1	0.630	11.933	95.022	94.805	1.090
190	191	92.802	92.617	600	N/A	92.5	0.2	0.013	95.185	95.000	0.971	0.275	0.16	0.6	0.612	11.883	94.014	93.961	1.171
191	192	92.542	92.355	675	N/A	93.5	0.2	0.013	95.000	94.813	1.051	0.376	0.26	0.7	0.744	11.883	93.961	93.894	1.039
192	117	91.980	91.869	1050	N/A	74.0	0.2	0.013	94.813	94.665	1.221	1.058	0.85	0.8	0.864	11.967	93.894	93.766	0.919
12700	POND1	91.007	90.953	1500	N/A	15.5	0.4	0.013	94.400	94.400	2.367	4.182	4.46	1.1	1.217	11.967	93.724	93.724	0.676
POND1	P1out	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.17	N/A	N/A	0.000	N/A	N/A	N/A
POND1	P1out	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.12	N/A	N/A	0.000	N/A	N/A	N/A
POND1	P1out	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.99	N/A	N/A	0.000	N/A	N/A	N/A

Note: ⁽¹⁾ A negative surcharge implies that the pipe is not flowing full

Table 1D: Pond 1 Pipe Data and Hydraulic Simulation Results for the 100-Year, 10-Day Snowmelt+Rain Event (Free Outfall Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Width (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S ⁽¹⁾ (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Freeboard U/S HGL and MH Cover (m)
103	104	93.074	92.929	1200	N/A	85.0	0.2	0.013	95.979	95.813	1.421	1.607	0.12	0.1	-0.850	108.0	93.424	93.409	2.555
104	105	92.899	92.716	1200	N/A	107.5	0.2	0.013	95.813	95.598	1.421	1.607	0.15	0.1	-0.690	108.0	93.409	93.404	2.404
105	106	92.539	92.474	1350	N/A	43.5	0.2	0.013	95.598	95.511	1.444	2.067	0.16	0.1	-0.485	109.0	93.404	93.403	2.194
106	107	92.454	92.389	1350	N/A	43.5	0.2	0.013	95.511	95.424	1.444	2.067	0.17	0.1	-0.401	109.0	93.403	93.403	2.108
107	108	92.352	92.245	1350	N/A	71.5	0.2	0.013	95.424	95.282	1.444	2.067	0.20	0.1	-0.299	109.0	93.403	93.402	2.021
108	109	92.185	92.141	1200	2400	43.5	0.1	0.013	95.282	95.108	1.321	3.803	0.22	0.1	0.017	109.0	93.402	93.402	1.880
109	110	92.121	92.047	1200	2400	73.5	0.1	0.013	95.108	94.961	1.321	3.803	0.25	0.1	0.081	108.4	93.402	93.402	1.706
110	111	92.027	91.912	1200	2400	77.0	0.2	0.013	94.961	94.807	1.617	4.658	0.31	0.1	0.175	109.0	93.402	93.401	1.559
111	112	91.892	91.812	1200	2400	53.0	0.2	0.013	94.807	94.702	1.617	4.658	0.41	0.1	0.309	109.0	93.401	93.400	1.406
112	113	91.792	91.679	1200	2400	75.5	0.2	0.013	94.702	94.539	1.617	4.658	0.41	0.1	0.408	109.0	93.400	93.400	1.302
113	119	91.619	91.485	1200	2400	67.0	0.2	0.013	94.539	94.400	1.868	5.379	0.46	0.1	0.581	108.9	93.400	93.397	1.139
114	115	92.758	92.532	375	N/A	90.5	0.3	0.013	94.778	94.919	0.794	0.088	0.01	0.1	0.268	109.1	93.401	93.400	1.377
114	120	92.338	92.231	600	N/A	71.5	0.2	0.013	94.778	94.634	0.841	0.238	0.01	0.0	0.463	0.0	93.401	93.401	1.377
115	116	92.232	92.144	675	N/A	59.0	0.2	0.013	94.919	94.805	0.910	0.326	0.02	0.1	0.493	108.4	93.400	93.400	1.519
116	117	92.084	91.982	675	N/A	68.0	0.2	0.013	94.805	94.665	0.910	0.326	0.03	0.1	0.641	108.4	93.400	93.399	1.405
117	118	91.719	91.612	1200	N/A	71.5	0.2	0.013	94.665	94.522	1.335	1.510	0.11	0.1	0.480	108.4	93.399	93.398	1.266
118	119	91.592	91.485	1200	N/A	71.5	0.2	0.013	94.522	94.400	1.335	1.510	0.11	0.1	0.606	108.5	93.398	93.397	1.124
119	POND1	91.185	91.151	1500	2400	34.0	0.1	0.013	94.400	94.400	1.453	5.230	0.57	0.1	0.712	109.0	93.397	93.397	1.003
120	121	91.781	91.661	1050	N/A	75.0	0.2	0.013	94.634	94.400	1.261	1.092	0.07	0.1	0.570	107.7	93.401	93.400	1.233
121	12700	91.211	91.067	1500	N/A	41.0	0.4	0.013	94.400	94.400	2.367	4.182	0.38	0.1	0.689	109.0	93.400	93.397	1.000
122	123	92.802	92.666	675	N/A	71.5	0.2	0.013	95.083	94.941	1.024	0.366	0.02	0.1	-0.073	109.0	93.404	93.403	1.679
123	124	92.516	92.373	825	N/A	71.5	0.2	0.013	94.941	94.798	1.201	0.642	0.04	0.1	0.062	109.0	93.403	93.403	1.538
124	125	92.104	91.967	1050	N/A	91.5	0.2	0.013	94.798	94.614	1.221	1.058	0.07	0.1	0.249	108.9	93.403	93.402	1.395
125	126	91.814	91.788	1200	N/A	13.0	0.2	0.013	94.614	94.580	1.542	1.744	0.10	0.1	0.388	109.0	93.402	93.402	1.212
126	127	91.630	91.451	1350	N/A	89.5	0.2	0.013	94.580	94.401	1.668	2.387	0.14	0.1	0.422	109.0	93.402	93.401	1.178
127	121	91.421	91.361	1350	N/A	40.0	0.2	0.013	94.401	94.400	1.444	2.067	0.14	0.1	0.630	108.9	93.401	93.400	1.000
132	133	92.543	92.365	1050	N/A	93.5	0.2	0.013	95.196	95.013	1.375	1.190	0.09	0.1	-0.188	109.0	93.405	93.404	1.791
133	134	92.335	92.235	1050	N/A	66.5	0.2	0.013	95.013	95.005	1.221	1.058	0.09	0.1	0.019	109.0	93.404	93.403	1.609
134	135	91.935	91.842	1350	N/A	62.0	0.2	0.013	95.005	94.885	1.444	2.067	0.15	0.1	0.118	109.0	93.403	93.402	1.602
135	136	91.782	91.671	1350	N/A	74.0	0.2	0.013	94.885	94.736	1.444	2.067	0.16	0.1	0.270	109.0	93.402	93.402	1.483
136	137	91.651	91.544	1350	N/A	71.5	0.2	0.013	94.736	94.594	1.444	2.067	0.17	0.1	0.401	109.0	93.402	93.401	1.334
137	121	91.524	91.435	1350	N/A	59.5	0.2	0.013	94.594	94.400	1.444	2.067	0.17	0.1	0.527	109.0	93.401	93.400	1.193
138	139	93.838	93.671	525	N/A	88.0	0.2	0.013	95.963	95.793	0.866	0.187	0.01	0.1	-0.446	110.1	93.917	93.704	2.046
139	140	93.593	93.421	600	N/A	86.0	0.2	0.013	95.793	95.621	0.971	0.275	0.02	0.1	-0.489	109.0	93.704	93.468	2.089
140	141	93.341	93.195	675	N/A	69.5	0.2	0.013	95.621	95.470	1.076	0.385	0.02	0.1	-0.548	107.4	93.468	93.408	2.153
141	142	93.045	92.916	825	N/A	71.5	0.2	0.013	95.470	95.339	1.139	0.609	0.05	0.1	-0.462	109.0	93.408	93.406	2.062
142	132	92.728	92.618	975	N/A	73.5	0.2	0.013	95.339	95.196	1.163	0.868	0.07	0.1	-0.297	109.0	93.406	93.405	1.933
160	161	94.236	94.135	525	N/A	63.0	0.2	0.013	96.368	96.381	0.795	0.172	0.01	0.1	-0.438	109.0	94.323	94.161	2.045

Table 1D: Pond 1 Pipe Data and Hydraulic Simulation Results for the 100-Year, 10-Day Snowmelt+Rain Event (Free Outfall Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Width (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S ⁽¹⁾ (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Freeboard U/S HGL and MH Cover (m)
161	162	94.060	93.966	600	N/A	63.0	0.2	0.013	96.381	96.255	0.841	0.238	0.01	0.0	-0.499	109.5	94.161	93.788	2.220
162	163	93.632	93.525	900	N/A	71.5	0.2	0.013	96.255	96.112	1.102	0.701	0.04	0.1	-0.744	109.2	93.788	93.575	2.467
163	103	93.342	93.238	1050	N/A	69.5	0.2	0.013	96.112	95.979	1.221	1.058	0.10	0.1	-0.817	108.0	93.575	93.424	2.537
190	191	92.802	92.617	600	N/A	92.5	0.2	0.013	95.185	95.000	0.971	0.275	0.01	0.0	-0.001	106.4	93.401	93.400	1.784
191	192	92.542	92.355	675	N/A	93.5	0.2	0.013	95.000	94.813	1.051	0.376	0.02	0.1	0.183	107.1	93.400	93.400	1.600
192	117	91.980	91.869	1050	N/A	74.0	0.2	0.013	94.813	94.665	1.221	1.058	0.07	0.1	0.370	108.4	93.400	93.399	1.413
12700	POND1	91.007	90.953	1500	N/A	15.5	0.4	0.013	94.400	94.400	2.367	4.182	0.38	0.1	0.890	109.0	93.397	93.397	1.003
POND1	P1out	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A	110.1	N/A	N/A	N/A
POND1	P1out	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A	110.1	N/A	N/A	N/A
POND1	P1out	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A	110.1	N/A	N/A	N/A

Note: ⁽¹⁾ A negative surcharge implies that the pipe is not flowing full

Table 1E: Pond 1 Pipe Data and Hydraulic Simulation Results for the 100-Year, 10-Day Snowmelt+Rain Event (Restrictive Downstream Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Width (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S ⁽¹⁾ (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Freeboard U/S HGL and MH Cover (m)
103	104	93.074	92.929	1200	N/A	85.0	0.2	0.013	95.979	95.813	1.421	1.607	0.12	0.1	-0.140	108.0	94.134	94.131	1.845
104	105	92.899	92.716	1200	N/A	107.5	0.2	0.013	95.813	95.598	1.421	1.607	0.15	0.1	0.032	108.0	94.131	94.138	1.682
105	106	92.539	92.474	1350	N/A	43.5	0.2	0.013	95.598	95.511	1.444	2.067	0.16	0.1	0.249	108.0	94.138	94.133	1.460
106	107	92.454	92.389	1350	N/A	43.5	0.2	0.013	95.511	95.424	1.444	2.067	0.17	0.1	0.329	108.0	94.133	94.140	1.378
107	108	92.352	92.245	1350	N/A	71.5	0.2	0.013	95.424	95.282	1.444	2.067	0.20	0.1	0.438	108.0	94.140	94.150	1.284
108	109	92.185	92.141	1200	2400	43.5	0.1	0.013	95.282	95.108	1.321	3.803	0.22	0.1	0.765	108.0	94.150	94.153	1.132
109	110	92.121	92.047	1200	2400	73.5	0.1	0.013	95.108	94.961	1.321	3.803	0.25	0.1	0.832	108.0	94.153	94.156	0.955
110	111	92.027	91.912	1200	2400	77.0	0.2	0.013	94.961	94.807	1.617	4.658	0.32	0.1	0.929	108.0	94.156	94.146	0.805
111	112	91.892	91.812	1200	2400	53.0	0.2	0.013	94.807	94.702	1.617	4.658	0.41	0.1	1.054	108.0	94.146	94.141	0.661
112	113	91.792	91.679	1200	2400	75.5	0.2	0.013	94.702	94.539	1.617	4.658	0.42	0.1	1.149	108.0	94.141	94.130	0.561
113	119	91.619	91.485	1200	2400	67.0	0.2	0.013	94.539	94.400	1.868	5.379	0.46	0.1	1.311	108.0	94.130	94.118	0.409
114	115	92.758	92.532	375	N/A	90.5	0.3	0.013	94.778	94.919	0.794	0.088	0.01	0.1	1.029	109.1	94.162	94.171	0.616
114	120	92.338	92.231	600	N/A	71.5	0.2	0.013	94.778	94.634	0.841	0.238	0.01	0.0	1.224	106.4	94.162	94.146	0.616
115	116	92.232	92.144	675	N/A	59.0	0.2	0.013	94.919	94.805	0.910	0.326	0.02	0.1	1.264	107.9	94.171	94.158	0.748
116	117	92.084	91.982	675	N/A	68.0	0.2	0.013	94.805	94.665	0.910	0.326	0.03	0.1	1.399	107.8	94.158	94.137	0.647
117	118	91.719	91.612	1200	N/A	71.5	0.2	0.013	94.665	94.522	1.335	1.510	0.11	0.1	1.218	107.9	94.137	94.133	0.528
118	119	91.592	91.485	1200	N/A	71.5	0.2	0.013	94.522	94.400	1.335	1.510	0.11	0.1	1.341	107.9	94.133	94.118	0.389
119	POND1	91.185	91.151	1500	2400	34.0	0.1	0.013	94.400	94.400	1.453	5.230	0.57	0.1	1.433	108.0	94.118	94.116	0.282
120	121	91.781	91.661	1050	N/A	75.0	0.2	0.013	94.634	94.400	1.261	1.092	0.07	0.1	1.315	109.0	94.146	94.130	0.488
121	12700	91.211	91.067	1500	N/A	41.0	0.4	0.013	94.400	94.400	2.367	4.182	0.38	0.1	1.419	107.8	94.130	94.118	0.270
122	123	92.802	92.666	675	N/A	71.5	0.2	0.013	95.083	94.941	1.024	0.366	0.02	0.1	0.735	107.2	94.212	94.184	0.871
123	124	92.516	92.373	825	N/A	71.5	0.2	0.013	94.941	94.798	1.201	0.642	0.04	0.1	0.843	107.4	94.184	94.166	0.757
124	125	92.104	91.967	1050	N/A	91.5	0.2	0.013	94.798	94.614	1.221	1.058	0.07	0.1	1.012	107.4	94.166	94.153	0.632
125	126	91.814	91.788	1200	N/A	13.0	0.2	0.013	94.614	94.580	1.542	1.744	0.10	0.1	1.139	107.4	94.153	94.151	0.461
126	127	91.630	91.451	1350	N/A	89.5	0.2	0.013	94.580	94.401	1.668	2.387	0.14	0.1	1.171	109.0	94.151	94.146	0.429
127	121	91.421	91.361	1350	N/A	40.0	0.2	0.013	94.401	94.400	1.444	2.067	0.14	0.1	1.375	109.0	94.146	94.130	0.255
132	133	92.543	92.365	1050	N/A	93.5	0.2	0.013	95.196	95.013	1.375	1.190	0.09	0.1	0.567	107.4	94.160	94.167	1.036
133	134	92.335	92.235	1050	N/A	66.5	0.2	0.013	95.013	95.005	1.221	1.058	0.09	0.1	0.782	107.4	94.167	94.161	0.846
134	135	91.935	91.842	1350	N/A	62.0	0.2	0.013	95.005	94.885	1.444	2.067	0.15	0.1	0.876	107.6	94.161	94.158	0.844
135	136	91.782	91.671	1350	N/A	74.0	0.2	0.013	94.885	94.736	1.444	2.067	0.16	0.1	1.026	107.6	94.158	94.149	0.727
136	137	91.651	91.544	1350	N/A	71.5	0.2	0.013	94.736	94.594	1.444	2.067	0.17	0.1	1.148	107.6	94.149	94.147	0.587
137	121	91.524	91.435	1350	N/A	59.5	0.2	0.013	94.594	94.400	1.444	2.067	0.17	0.1	1.273	107.6	94.147	94.130	0.447
138	139	93.838	93.671	525	N/A	88.0	0.2	0.013	95.963	95.793	0.866	0.187	-0.01	-0.1	-0.213	0.027	94.150	94.143	1.813
139	140	93.593	93.421	600	N/A	86.0	0.2	0.013	95.793	95.621	0.971	0.275	0.03	0.1	-0.050	0.062	94.143	94.158	1.650
140	141	93.341	93.195	675	N/A	69.5	0.2	0.013	95.621	95.470	1.076	0.385	0.03	0.1	0.142	0.074	94.158	94.146	1.463
141	142	93.045	92.916	825	N/A	71.5	0.2	0.013	95.470	95.339	1.139	0.609	0.05	0.1	0.276	107.4	94.146	94.150	1.324
142	132	92.728	92.618	975	N/A	73.5	0.2	0.013	95.339	95.196	1.163	0.868	0.07	0.1	0.447	107.4	94.150	94.160	1.189
160	161	94.236	94.135	525	N/A	63.0	0.2	0.013	96.368	96.381	0.795	0.172	0.01	0.1	-0.438	109.0	94.323	94.169	2.045

Table 1E: Pond 1 Pipe Data and Hydraulic Simulation Results for the 100-Year, 10-Day Snowmelt+Rain Event (Restrictive Downstream Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Width (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S ⁽¹⁾ (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Freeboard U/S HGL and MH Cover (m)
161	162	94.060	93.966	600	N/A	63.0	0.2	0.013	96.381	96.255	0.841	0.238	0.01	0.0	-0.491	110.1	94.169	94.146	2.212
162	163	93.632	93.525	900	N/A	71.5	0.2	0.013	96.255	96.112	1.102	0.701	0.04	0.1	-0.386	107.3	94.146	94.138	2.109
163	103	93.342	93.238	1050	N/A	69.5	0.2	0.013	96.112	95.979	1.221	1.058	0.10	0.1	-0.254	108.0	94.138	94.134	1.974
190	191	92.802	92.617	600	N/A	92.5	0.2	0.013	95.185	95.000	0.971	0.275	0.01	0.0	0.775	106.5	94.177	94.163	1.008
191	192	92.542	92.355	675	N/A	93.5	0.2	0.013	95.000	94.813	1.051	0.376	0.02	0.1	0.946	107.2	94.163	94.141	0.837
192	117	91.980	91.869	1050	N/A	74.0	0.2	0.013	94.813	94.665	1.221	1.058	0.07	0.1	1.111	107.5	94.141	94.137	0.672
12700	POND1	91.007	90.953	1500	N/A	15.5	0.4	0.013	94.400	94.400	2.367	4.182	0.38	0.1	1.611	108.9	94.118	94.116	0.282
POND1	P1out	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.02	N/A	N/A	108.6	N/A	N/A	N/A
POND1	P1out	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.02	N/A	N/A	109.0	N/A	N/A	N/A
POND1	P1out	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.99	N/A	N/A	109.0	N/A	N/A	N/A

Note: ⁽¹⁾ A negative surcharge implies that the pipe is not flowing full

Table 2A: Pond 2 Pipe Data and Hydraulic Simulation Results for the 100-Year, 4-Hour Chicago Storm (Free Outfall Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Width (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S ⁽¹⁾ (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Freeboard U/S HGL and MH Cover (m)
201	202	92.408	92.230	1200	N/A	118.5	0.2	0.013	95.375	95.143	1.335	1.510	1.30	0.9	0.704	1.285	94.312	94.196	1.063
202	212	92.210	92.110	1200	N/A	40.0	0.3	0.013	95.143	94.750	1.724	1.949	2.10	1.1	0.786	1.287	94.196	94.017	0.947
204	205	93.756	93.620	825	N/A	71.5	0.2	0.013	96.514	96.376	1.170	0.626	0.51	0.8	0.644	1.402	95.225	95.136	1.289
205	206	93.545	93.465	900	N/A	40.0	0.2	0.013	96.376	96.296	1.273	0.810	0.66	0.8	0.691	1.404	95.136	95.082	1.240
206	207	93.390	93.213	975	N/A	88.5	0.2	0.013	96.296	96.122	1.342	1.002	0.93	0.9	0.717	1.404	95.082	94.928	1.214
207	208	92.988	92.878	1200	N/A	73.5	0.2	0.013	96.122	96.000	1.335	1.510	1.34	0.9	0.740	1.403	94.928	94.752	1.194
208	209	92.818	92.732	1200	N/A	43.0	0.2	0.013	96.000	95.596	1.542	1.744	1.52	0.9	0.734	1.402	94.752	94.571	1.248
209	210	92.672	92.562	1200	2400	73.0	0.2	0.013	95.596	95.446	1.617	4.658	3.57	0.8	0.699	1.484	94.571	94.401	1.025
210	211	92.502	92.394	1200	2400	72.0	0.2	0.013	95.446	95.309	1.617	4.658	4.01	0.9	0.699	1.484	94.401	94.193	1.045
211	212	92.334	92.200	1200	2400	89.5	0.2	0.013	95.309	94.750	1.617	4.658	4.12	0.9	0.659	1.483	94.193	94.017	1.116
212	POND2	92.050	91.976	1200	2400	49.0	0.2	0.013	94.750	94.750	1.617	4.658	6.14	1.3	0.767	1.494	94.017	94.005	0.733
250	251	92.932	92.761	825	N/A	114.0	0.2	0.013	95.512	95.571	1.040	0.556	0.33	0.6	0.842	1.254	94.599	94.523	0.913
251	252	92.701	92.596	825	N/A	70.0	0.2	0.013	95.571	95.427	1.040	0.556	0.41	0.7	0.997	1.254	94.523	94.443	1.048
252	255	92.521	92.414	900	N/A	71.5	0.2	0.013	95.427	95.289	1.102	0.701	0.55	0.8	1.022	1.252	94.443	94.346	0.984
255	202	92.339	92.225	975	N/A	71.0	0.2	0.013	95.289	95.143	1.201	0.896	0.81	0.9	1.032	1.252	94.346	94.196	0.943
256	257	93.604	93.471	600	N/A	66.5	0.2	0.013	96.144	96.013	0.971	0.275	0.22	0.8	0.817	1.291	95.021	94.961	1.123
257	258	93.396	93.263	675	N/A	66.5	0.2	0.013	96.013	95.872	1.051	0.376	0.30	0.8	0.890	1.291	94.961	94.862	1.052
258	259	93.113	92.914	825	N/A	104.5	0.2	0.013	95.872	95.669	1.170	0.626	0.71	1.1	0.924	1.279	94.862	94.539	1.010
259	260	92.839	92.724	900	N/A	77.0	0.2	0.013	95.669	95.513	1.102	0.701	0.75	1.1	0.800	1.287	94.539	94.423	1.130
260	201	92.574	92.468	1200	N/A	71.0	0.2	0.013	95.513	95.375	1.335	1.510	1.13	0.7	0.649	1.287	94.423	94.312	1.090
264	265	95.029	94.893	675	N/A	71.5	0.2	0.013	97.533	97.391	1.024	0.366	0.23	0.6	0.511	1.464	96.215	96.161	1.318
265	266	94.818	94.607	750	N/A	105.5	0.2	0.013	97.391	97.173	1.127	0.498	0.39	0.8	0.593	1.490	96.161	95.983	1.230
266	267	94.532	94.399	825	N/A	70.0	0.2	0.013	97.173	97.040	1.170	0.626	0.58	0.9	0.626	1.491	95.983	95.792	1.190
267	268	94.324	94.234	900	N/A	47.5	0.2	0.013	97.040	96.951	1.240	0.789	0.61	0.8	0.568	1.489	95.792	95.680	1.248
268	269	94.174	94.115	900	N/A	39.5	0.2	0.013	96.951	96.879	1.102	0.701	0.65	0.9	0.606	1.488	95.680	95.563	1.271
269	270	94.055	93.950	900	N/A	70.0	0.2	0.013	96.879	96.746	1.102	0.701	0.70	1.0	0.608	1.489	95.563	95.460	1.316
270	271	93.875	93.768	975	N/A	71.5	0.2	0.013	96.746	96.604	1.163	0.868	0.87	1.0	0.610	1.488	95.460	95.354	1.286
271	272	93.693	93.586	1050	N/A	71.5	0.2	0.013	96.604	96.460	1.221	1.058	1.07	1.0	0.611	1.488	95.354	95.243	1.250
272	273	93.436	93.318	1200	N/A	73.5	0.2	0.013	96.460	96.313	1.379	1.559	1.25	0.8	0.607	1.487	95.243	95.086	1.217
273	274	93.258	93.151	1200	N/A	71.5	0.2	0.013	96.313	96.000	1.335	1.510	1.45	1.0	0.628	1.487	95.086	94.981	1.227
274	278	93.131	93.024	1200	N/A	71.5	0.2	0.013	96.000	96.298	1.335	1.510	1.53	1.0	0.650	1.484	94.981	94.860	1.019
278	209	92.874	92.732	1350	N/A	95.0	0.2	0.013	96.298	95.596	1.444	2.067	2.05	1.0	0.636	1.483	94.860	94.571	1.438
279	280	94.674	94.524	375	N/A	60.0	0.3	0.013	96.913	96.792	0.794	0.088	0.07	0.8	0.411	1.397	95.460	95.358	1.453
280	281	94.299	94.087	600	N/A	70.5	0.3	0.013	96.792	96.651	1.189	0.336	0.16	0.5	0.459	1.399	95.358	95.306	1.434
281	204	94.012	93.906	675	N/A	70.5	0.2	0.013	96.651	96.514	0.910	0.326	0.24	0.7	0.619	1.399	95.306	95.225	1.345
POND2	P2out	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.77	N/A	N/A	1.984	N/A	N/A	N/A
POND2	P2out	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.07	N/A	N/A	1.994	N/A	N/A	N/A

Note: ⁽¹⁾ A negative surcharge implies that the pipe is not flowing full

Table 2B: Pond 2 Pipe Data and Hydraulic Simulation Results for the 100-Year, 24-Hour SCS Storm (Free Outfall Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Width (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S ⁽¹⁾ (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Freeboard U/S HGL and MH Cover (m)
201	202	92.408	92.230	1200	N/A	118.5	0.2	0.013	95.375	95.143	1.335	1.510	1.22	0.8	0.800	11.927	94.408	94.302	0.967
202	212	92.210	92.110	1200	N/A	40.0	0.3	0.013	95.143	94.750	1.724	1.949	2.03	1.0	0.892	11.999	94.302	94.111	0.841
204	205	93.756	93.620	825	N/A	71.5	0.2	0.013	96.514	96.376	1.170	0.626	0.51	0.8	0.680	11.906	95.261	95.172	1.253
205	206	93.545	93.465	900	N/A	40.0	0.2	0.013	96.376	96.296	1.273	0.810	0.66	0.8	0.727	11.905	95.172	95.119	1.204
206	207	93.390	93.213	975	N/A	88.5	0.2	0.013	96.296	96.122	1.342	1.002	0.93	0.9	0.754	11.905	95.119	94.965	1.177
207	208	92.988	92.878	1200	N/A	73.5	0.2	0.013	96.122	96.000	1.335	1.510	1.33	0.9	0.777	11.906	94.965	94.798	1.157
208	209	92.818	92.732	1200	N/A	43.0	0.2	0.013	96.000	95.596	1.542	1.744	1.52	0.9	0.780	11.906	94.798	94.630	1.202
209	210	92.672	92.562	1200	2400	73.0	0.2	0.013	95.596	95.446	1.617	4.658	3.57	0.8	0.758	11.989	94.630	94.483	0.966
210	211	92.502	92.394	1200	2400	72.0	0.2	0.013	95.446	95.309	1.617	4.658	4.00	0.9	0.781	11.989	94.483	94.295	0.963
211	212	92.334	92.200	1200	2400	89.5	0.2	0.013	95.309	94.750	1.617	4.658	4.11	0.9	0.761	11.988	94.295	94.111	1.014
212	POND2	92.050	91.976	1200	2400	49.0	0.2	0.013	94.750	94.750	1.617	4.658	6.14	1.3	0.861	11.999	94.111	94.094	0.639
250	251	92.932	92.761	825	N/A	114.0	0.2	0.013	95.512	95.571	1.040	0.556	0.31	0.6	0.920	12.091	94.677	94.602	0.835
251	252	92.701	92.596	825	N/A	70.0	0.2	0.013	95.571	95.427	1.040	0.556	0.37	0.7	1.076	11.841	94.602	94.527	0.969
252	255	92.521	92.414	900	N/A	71.5	0.2	0.013	95.427	95.289	1.102	0.701	0.51	0.7	1.106	11.841	94.527	94.439	0.900
255	202	92.339	92.225	975	N/A	71.0	0.2	0.013	95.289	95.143	1.201	0.896	0.76	0.8	1.125	11.841	94.439	94.302	0.850
256	257	93.604	93.471	600	N/A	66.5	0.2	0.013	96.144	96.013	0.971	0.275	0.19	0.7	0.851	11.844	95.055	94.996	1.089
257	258	93.396	93.263	675	N/A	66.5	0.2	0.013	96.013	95.872	1.051	0.376	0.26	0.7	0.925	11.783	94.996	94.910	1.017
258	259	93.113	92.914	825	N/A	104.5	0.2	0.013	95.872	95.669	1.170	0.626	0.66	1.1	0.972	11.999	94.910	94.615	0.962
259	260	92.839	92.724	900	N/A	77.0	0.2	0.013	95.669	95.513	1.102	0.701	0.70	1.0	0.876	11.927	94.615	94.511	1.054
260	201	92.574	92.468	1200	N/A	71.0	0.2	0.013	95.513	95.375	1.335	1.510	1.06	0.7	0.737	12.003	94.511	94.408	1.002
264	265	95.029	94.893	675	N/A	71.5	0.2	0.013	97.533	97.391	1.024	0.366	0.23	0.6	0.543	11.969	96.247	96.193	1.286
265	266	94.818	94.607	750	N/A	105.5	0.2	0.013	97.391	97.173	1.127	0.498	0.39	0.8	0.625	11.996	96.193	96.014	1.198
266	267	94.532	94.399	825	N/A	70.0	0.2	0.013	97.173	97.040	1.170	0.626	0.58	0.9	0.657	11.996	96.014	95.823	1.159
267	268	94.324	94.234	900	N/A	47.5	0.2	0.013	97.040	96.951	1.240	0.789	0.61	0.8	0.599	11.994	95.823	95.710	1.217
268	269	94.174	94.115	900	N/A	39.5	0.2	0.013	96.951	96.879	1.102	0.701	0.65	0.9	0.636	11.993	95.710	95.594	1.241
269	270	94.055	93.950	900	N/A	70.0	0.2	0.013	96.879	96.746	1.102	0.701	0.70	1.0	0.639	11.994	95.594	95.490	1.285
270	271	93.875	93.768	975	N/A	71.5	0.2	0.013	96.746	96.604	1.163	0.868	0.87	1.0	0.640	11.993	95.490	95.384	1.256
271	272	93.693	93.586	1050	N/A	71.5	0.2	0.013	96.604	96.460	1.221	1.058	1.07	1.0	0.641	11.993	95.384	95.274	1.220
272	273	93.436	93.318	1200	N/A	73.5	0.2	0.013	96.460	96.313	1.379	1.559	1.25	0.8	0.638	11.992	95.274	95.117	1.186
273	274	93.258	93.151	1200	N/A	71.5	0.2	0.013	96.313	96.000	1.335	1.510	1.44	1.0	0.659	11.992	95.117	95.012	1.196
274	278	93.131	93.024	1200	N/A	71.5	0.2	0.013	96.000	96.298	1.335	1.510	1.53	1.0	0.681	11.989	95.012	94.891	0.988
278	209	92.874	92.732	1350	N/A	95.0	0.2	0.013	96.298	95.596	1.444	2.067	2.05	1.0	0.667	11.989	94.891	94.630	1.407
279	280	94.674	94.524	375	N/A	60.0	0.3	0.013	96.913	96.792	0.794	0.088	0.07	0.8	0.445	11.899	95.494	95.391	1.419
280	281	94.299	94.087	600	N/A	70.5	0.3	0.013	96.792	96.651	1.189	0.336	0.16	0.5	0.492	11.903	95.391	95.338	1.401
281	204	94.012	93.906	675	N/A	70.5	0.2	0.013	96.651	96.514	0.910	0.326	0.24	0.7	0.651	11.902	95.338	95.261	1.313
POND2	P2out	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.12	N/A	N/A	12.508	N/A	N/A	N/A
POND2	P2out	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.07	N/A	N/A	12.517	N/A	N/A	N/A

Note: ⁽¹⁾ A negative surcharge implies that the pipe is not flowing full

Table 2C: Pond 2 Pipe Data and Hydraulic Simulation Results for the 100-Year, 10-Day Snowmelt+Rain Event (Free Outfall Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Width (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S ⁽¹⁾ (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Freeboard U/S HGL and MH Cover (m)
201	202	92.408	92.230	1200	N/A	118.5	0.2	0.013	95.375	95.143	1.335	1.510	0.11	0.1	-0.026	109.0	93.582	93.582	1.793
202	212	92.210	92.110	1200	N/A	40.0	0.3	0.013	95.143	94.750	1.724	1.949	0.17	0.1	0.172	109.0	93.582	93.580	1.561
204	205	93.756	93.620	825	N/A	71.5	0.2	0.013	96.514	96.376	1.170	0.626	0.04	0.1	-0.676	109.0	93.905	93.703	2.609
205	206	93.545	93.465	900	N/A	40.0	0.2	0.013	96.376	96.296	1.273	0.810	0.05	0.1	-0.742	108.1	93.703	93.618	2.673
206	207	93.390	93.213	975	N/A	88.5	0.2	0.013	96.296	96.122	1.342	1.002	0.08	0.1	-0.747	109.0	93.618	93.588	2.678
207	208	92.988	92.878	1200	N/A	73.5	0.2	0.013	96.122	96.000	1.335	1.510	0.11	0.1	-0.600	109.0	93.588	93.585	2.534
208	209	92.818	92.732	1200	N/A	43.0	0.2	0.013	96.000	95.596	1.542	1.744	0.13	0.1	-0.433	109.0	93.585	93.584	2.415
209	210	92.672	92.562	1200	2400	73.0	0.2	0.013	95.596	95.446	1.617	4.658	0.30	0.1	-0.288	109.0	93.584	93.583	2.012
210	211	92.502	92.394	1200	2400	72.0	0.2	0.013	95.446	95.309	1.617	4.658	0.33	0.1	-0.119	109.0	93.583	93.582	1.863
211	212	92.334	92.200	1200	2400	89.5	0.2	0.013	95.309	94.750	1.617	4.658	0.34	0.1	0.048	109.0	93.582	93.580	1.727
212	POND2	92.050	91.976	1200	2400	49.0	0.2	0.013	94.750	94.750	1.617	4.658	0.52	0.1	0.330	109.0	93.580	93.580	1.170
250	251	92.932	92.761	825	N/A	114.0	0.2	0.013	95.512	95.571	1.040	0.556	0.03	0.1	-0.173	109.2	93.584	93.583	1.928
251	252	92.701	92.596	825	N/A	70.0	0.2	0.013	95.571	95.427	1.040	0.556	0.03	0.1	0.057	109.2	93.583	93.583	1.988
252	255	92.521	92.414	900	N/A	71.5	0.2	0.013	95.427	95.289	1.102	0.701	0.04	0.1	0.162	108.2	93.583	93.582	1.844
255	202	92.339	92.225	975	N/A	71.0	0.2	0.013	95.289	95.143	1.201	0.896	0.06	0.1	0.268	108.2	93.582	93.582	1.707
256	257	93.604	93.471	600	N/A	66.5	0.2	0.013	96.144	96.013	0.971	0.275	0.02	0.1	-0.501	107.5	93.703	93.592	2.441
257	258	93.396	93.263	675	N/A	66.5	0.2	0.013	96.013	95.872	1.051	0.376	0.02	0.1	-0.479	107.4	93.592	93.586	2.421
258	259	93.113	92.914	825	N/A	104.5	0.2	0.013	95.872	95.669	1.170	0.626	0.06	0.1	-0.352	107.4	93.586	93.583	2.286
259	260	92.839	92.724	900	N/A	77.0	0.2	0.013	95.669	95.513	1.102	0.701	0.06	0.1	-0.156	107.4	93.583	93.583	2.086
260	201	92.574	92.468	1200	N/A	71.0	0.2	0.013	95.513	95.375	1.335	1.510	0.09	0.1	-0.191	109.0	93.583	93.582	1.930
264	265	95.029	94.893	675	N/A	71.5	0.2	0.013	97.533	97.391	1.024	0.366	0.02	0.1	-0.567	109.2	95.137	94.958	2.396
265	266	94.818	94.607	750	N/A	105.5	0.2	0.013	97.391	97.173	1.127	0.498	0.03	0.1	-0.610	109.2	94.958	94.701	2.433
266	267	94.532	94.399	825	N/A	70.0	0.2	0.013	97.173	97.040	1.170	0.626	0.05	0.1	-0.656	109.1	94.701	94.493	2.472
267	268	94.324	94.234	900	N/A	47.5	0.2	0.013	97.040	96.951	1.240	0.789	0.05	0.1	-0.731	109.1	94.493	94.355	2.547
268	269	94.174	94.115	900	N/A	39.5	0.2	0.013	96.951	96.879	1.102	0.701	0.05	0.1	-0.719	109.1	94.355	94.230	2.596
269	270	94.055	93.950	900	N/A	70.0	0.2	0.013	96.879	96.746	1.102	0.701	0.06	0.1	-0.725	109.1	94.230	94.066	2.649
270	271	93.875	93.768	975	N/A	71.5	0.2	0.013	96.746	96.604	1.163	0.868	0.07	0.1	-0.784	109.1	94.066	93.898	2.680
271	272	93.693	93.586	1050	N/A	71.5	0.2	0.013	96.604	96.460	1.221	1.058	0.09	0.1	-0.845	109.1	93.898	93.673	2.706
272	273	93.436	93.318	1200	N/A	73.5	0.2	0.013	96.460	96.313	1.379	1.559	0.10	0.1	-0.963	109.2	93.673	93.601	2.787
273	274	93.258	93.151	1200	N/A	71.5	0.2	0.013	96.313	96.000	1.335	1.510	0.12	0.1	-0.857	109.2	93.601	93.591	2.712
274	278	93.131	93.024	1200	N/A	71.5	0.2	0.013	96.000	96.298	1.335	1.510	0.12	0.1	-0.740	109.2	93.591	93.587	2.409
278	209	92.874	92.732	1350	N/A	95.0	0.2	0.013	96.298	95.596	1.444	2.067	0.17	0.1	-0.637	109.1	93.587	93.584	2.711
279	280	94.674	94.524	375	N/A	60.0	0.3	0.013	96.913	96.792	0.794	0.088	0.01	0.1	-0.308	109.0	94.741	94.383	2.172
280	281	94.299	94.087	600	N/A	70.5	0.3	0.013	96.792	96.651	1.189	0.336	0.01	0.0	-0.516	109.0	94.383	94.133	2.409
281	204	94.012	93.906	675	N/A	70.5	0.2	0.013	96.651	96.514	0.910	0.326	0.02	0.1	-0.554	109.0	94.133	93.905	2.518
POND2	P2out	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.43	N/A	N/A	111.1	N/A	N/A	N/A
POND2	P2out	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.04	N/A	N/A	111.1	N/A	N/A	N/A

Note: ⁽¹⁾ A negative surcharge implies that the pipe is not flowing full

Table 2D: Pond 2 Pipe Data and Hydraulic Simulation Results for the 100-Year, 10-Day Snowmelt+Rain Event (Restrictive Downstream Conditions)

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Width (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m ³ /s)	Peak Pipe Flow (m ³ /s)	Peak / Design Flow	Surcharge U/S ⁽¹⁾ (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Freeboard U/S HGL and MH Cover (m)
201	202	92.408	92.230	1200	N/A	118.5	0.2	0.013	95.375	95.143	1.335	1.510	0.11	0.1	0.604	107.4	94.212	94.206	1.163
202	212	92.210	92.110	1200	N/A	40.0	0.3	0.013	95.143	94.750	1.724	1.949	0.18	0.1	0.796	107.4	94.206	94.204	0.937
204	205	93.756	93.620	825	N/A	71.5	0.2	0.013	96.514	96.376	1.170	0.626	0.04	0.1	-0.368	107.3	94.213	94.212	2.301
205	206	93.545	93.465	900	N/A	40.0	0.2	0.013	96.376	96.296	1.273	0.810	0.05	0.1	-0.233	107.3	94.212	94.211	2.164
206	207	93.390	93.213	975	N/A	88.5	0.2	0.013	96.296	96.122	1.342	1.002	0.08	0.1	-0.154	107.3	94.211	94.211	2.085
207	208	92.988	92.878	1200	N/A	73.5	0.2	0.013	96.122	96.000	1.335	1.510	0.11	0.1	0.023	107.5	94.211	94.209	1.911
208	209	92.818	92.732	1200	N/A	43.0	0.2	0.013	96.000	95.596	1.542	1.744	0.13	0.1	0.191	107.7	94.209	94.208	1.791
209	210	92.672	92.562	1200	2400	73.0	0.2	0.013	95.596	95.446	1.617	4.658	0.30	0.1	0.336	107.7	94.208	94.207	1.388
210	211	92.502	92.394	1200	2400	72.0	0.2	0.013	95.446	95.309	1.617	4.658	0.34	0.1	0.505	107.7	94.207	94.206	1.239
211	212	92.334	92.200	1200	2400	89.5	0.2	0.013	95.309	94.750	1.617	4.658	0.35	0.1	0.672	107.7	94.206	94.204	1.103
212	POND2	92.050	91.976	1200	2400	49.0	0.2	0.013	94.750	94.750	1.617	4.658	0.52	0.1	0.954	107.7	94.204	94.203	0.546
250	251	92.932	92.761	825	N/A	114.0	0.2	0.013	95.512	95.571	1.040	0.556	0.03	0.1	0.486	107.2	94.243	94.244	1.269
251	252	92.701	92.596	825	N/A	70.0	0.2	0.013	95.571	95.427	1.040	0.556	0.03	0.1	0.718	107.2	94.244	94.229	1.327
252	255	92.521	92.414	900	N/A	71.5	0.2	0.013	95.427	95.289	1.102	0.701	0.04	0.1	0.808	107.2	94.229	94.219	1.198
255	202	92.339	92.225	975	N/A	71.0	0.2	0.013	95.289	95.143	1.201	0.896	0.06	0.1	0.905	107.2	94.219	94.206	1.070
256	257	93.604	93.471	600	N/A	66.5	0.2	0.013	96.144	96.013	0.971	0.275	0.02	0.1	0.030	0.1	94.234	94.227	1.910
257	258	93.396	93.263	675	N/A	66.5	0.2	0.013	96.013	95.872	1.051	0.376	0.02	0.1	0.156	0.0	94.227	94.213	1.786
258	259	93.113	92.914	825	N/A	104.5	0.2	0.013	95.872	95.669	1.170	0.626	0.06	0.1	0.275	107.4	94.213	94.228	1.659
259	260	92.839	92.724	900	N/A	77.0	0.2	0.013	95.669	95.513	1.102	0.701	0.06	0.1	0.489	107.4	94.228	94.222	1.441
260	201	92.574	92.468	1200	N/A	71.0	0.2	0.013	95.513	95.375	1.335	1.510	0.09	0.1	0.448	107.4	94.222	94.212	1.291
264	265	95.029	94.893	675	N/A	71.5	0.2	0.013	97.533	97.391	1.024	0.366	0.02	0.1	-0.567	109.2	95.137	94.958	2.396
265	266	94.818	94.607	750	N/A	105.5	0.2	0.013	97.391	97.173	1.127	0.498	0.03	0.1	-0.610	109.2	94.958	94.701	2.433
266	267	94.532	94.399	825	N/A	70.0	0.2	0.013	97.173	97.040	1.170	0.626	0.05	0.1	-0.656	109.1	94.701	94.493	2.472
267	268	94.324	94.234	900	N/A	47.5	0.2	0.013	97.040	96.951	1.240	0.789	0.05	0.1	-0.731	109.1	94.493	94.355	2.547
268	269	94.174	94.115	900	N/A	39.5	0.2	0.013	96.951	96.879	1.102	0.701	0.05	0.1	-0.719	107.8	94.355	94.258	2.596
269	270	94.055	93.950	900	N/A	70.0	0.2	0.013	96.879	96.746	1.102	0.701	0.06	0.1	-0.697	109.1	94.258	94.220	2.621
270	271	93.875	93.768	975	N/A	71.5	0.2	0.013	96.746	96.604	1.163	0.868	0.07	0.1	-0.630	109.2	94.220	94.214	2.526
271	272	93.693	93.586	1050	N/A	71.5	0.2	0.013	96.604	96.460	1.221	1.058	0.09	0.1	-0.529	109.1	94.214	94.213	2.390
272	273	93.436	93.318	1200	N/A	73.5	0.2	0.013	96.460	96.313	1.379	1.559	0.10	0.1	-0.423	109.1	94.213	94.211	2.247
273	274	93.258	93.151	1200	N/A	71.5	0.2	0.013	96.313	96.000	1.335	1.510	0.12	0.1	-0.247	109.1	94.211	94.211	2.102
274	278	93.131	93.024	1200	N/A	71.5	0.2	0.013	96.000	96.298	1.335	1.510	0.12	0.1	-0.120	109.1	94.211	94.210	1.789
278	209	92.874	92.732	1350	N/A	95.0	0.2	0.013	96.298	95.596	1.444	2.067	0.17	0.1	-0.014	109.1	94.210	94.208	2.088
279	280	94.674	94.524	375	N/A	60.0	0.3	0.013	96.913	96.792	0.794	0.088	0.01	0.1	-0.308	109.0	94.741	94.379	2.172
280	281	94.299	94.087	600	N/A	70.5	0.3	0.013	96.792	96.651	1.189	0.336	0.01	0.0	-0.520	109.0	94.379	94.220	2.413
281	204	94.012	93.906	675	N/A	70.5	0.2	0.013	96.651	96.514	0.910	0.326	0.02	0.1	-0.467	107.3	94.220	94.213	2.431
POND2	P2out	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.53	N/A	N/A	109.0	N/A	N/A	N/A
POND2	P2out	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.02	N/A	N/A	109.0	N/A	N/A	N/A

Note: ⁽¹⁾ A negative surcharge implies that the pipe is not flowing full