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Victoria Court 22 St Pancras West Sussex PO19 7GD	34 Hurst Road. Hassocks Surface Water Drainage Design Simulation Rev03	
Date Nov 25	Designed by JS	
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STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	2	Add Flow / Climate Change (%)	45
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.000
Ratio R	0.343	Maximum Backdrop Height (m)	0.000
Maximum Rainfall (mm/hr)	50	Min Design Depth for Optimisation (m)	0.000
Foul Sewage (l/s/ha)	0.00	Min Vel for Auto Design only (m/s)	0.76
Volumetric Runoff Coeff.	1.000	Min Slope for Optimisation (1:X)	500
PIMP (%)	100		

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.014	4-8	0.002

Total Area Contributing (ha) = 0.016

Total Pipe Volume (m³) = 0.381

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)
1.000	16.200	1.906	8.5	0.004	5.00	0.0	0.600	o	110
1.001	5.000	0.050	100.0	0.004	0.00	0.0	0.600	o	110
2.000	3.600	0.379	9.5	0.004	5.00	0.0	0.600	o	110
2.001	9.200	1.533	6.0	0.004	0.00	0.0	0.600	o	110
1.002	3.600	0.045	80.0	0.000	0.00	0.0	0.600	o	110
1.003	1.000	0.010	100.0	0.000	0.00	0.0	0.600	o	110
1.004	1.500	0.015	100.0	0.000	0.00	0.0	0.600	o	110

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	50.00	5.10	65.400	0.004	0.0	0.0	0.3	2.84	27.0	1.0
1.001	50.00	5.20	63.494	0.008	0.0	0.0	0.6	0.82	7.8	2.1
2.000	50.00	5.02	65.400	0.004	0.0	0.0	0.3	2.69	25.5	1.0
2.001	50.00	5.07	65.000	0.008	0.0	0.0	0.6	3.38	32.2	2.1
1.002	50.00	5.26	63.444	0.016	0.0	0.0	1.3	0.92	8.7	4.2
1.003	50.00	5.28	63.250	0.016	0.0	0.0	1.3	0.82	7.8	4.2
1.004	50.00	5.31	63.100	0.016	0.0	0.0	1.3	0.82	7.8	4.2

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Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backd (mm)
RE1	66.000	0.600	Open Manhole	110	1.000	65.400	110				
S1	64.100	0.606	Open Manhole	600	1.001	63.494	110	1.000	63.494	110	
RE2	66.000	0.600	Open Manhole	110	2.000	65.400	110				
S2	65.650	0.650	Open Manhole	600	2.001	65.000	110	2.000	65.021	110	
S3	64.100	0.656	Open Manhole	600	1.002	63.444	110	1.001	63.444	110	
								2.001	63.467	110	
S4	64.000	0.750	Open Manhole	600	1.003	63.250	110	1.002	63.399	110	
RAIN GARDEN	63.700	0.600	Open Manhole	600	1.004	63.100	110	1.003	63.240	110	
Dummy	63.800	0.715	Open Manhole	600		OUTFALL		1.004	63.085	110	

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	110	RE1	66.000	65.400	0.490	Open Manhole	110
1.001	o	110	S1	64.100	63.494	0.496	Open Manhole	600
2.000	o	110	RE2	66.000	65.400	0.490	Open Manhole	110
2.001	o	110	S2	65.650	65.000	0.540	Open Manhole	600
1.002	o	110	S3	64.100	63.444	0.546	Open Manhole	600
1.003	o	110	S4	64.000	63.250	0.640	Open Manhole	600
1.004	o	110	RAIN GARDEN	63.700	63.100	0.490	Open Manhole	600

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	16.200	8.5	S1	64.100	63.494	0.496	Open Manhole	600
1.001	5.000	100.0	S3	64.100	63.444	0.546	Open Manhole	600
2.000	3.600	9.5	S2	65.650	65.021	0.519	Open Manhole	600
2.001	9.200	6.0	S3	64.100	63.467	0.523	Open Manhole	600
1.002	3.600	80.0	S4	64.000	63.399	0.491	Open Manhole	600
1.003	1.000	100.0	RAIN GARDEN	63.700	63.240	0.350	Open Manhole	600
1.004	1.500	100.0	Dummy	63.800	63.085	0.605	Open Manhole	600

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
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1.004	Dummy	63.800	63.085	63.100	600	0
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Simulation Criteria for Storm

Volumetric Runoff Coeff	1.000	Foul Sewage per hectare (l/s)	0.000
Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	45.000
Hot Start (mins)	0	MADD Factor * 10m ³ /ha Storage	2.000
Hot Start Level (mm)	0	Run Time (mins)	60
Manhole Headloss Coeff (Global)	0.500	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Storage Structures	2
Number of Online Controls	2	Number of Time/Area Diagrams	0
Number of Offline Controls	0		

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Winter
Return Period (years)	100	Cv (Summer)	1.000
Region	England and Wales	Cv (Winter)	1.000
M5-60 (mm)	20.000	Storm Duration (mins)	30
Ratio R	0.343		

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Online Controls for Storm

Orifice Manhole: S4, DS/PN: 1.003, Volume (m³): 0.2

Diameter (m) 0.017 Discharge Coefficient 0.600 Invert Level (m) 63.250

Depth/Flow Relationship Manhole: RAIN GARDEN, DS/PN: 1.004, Volume (m³): 0.2

Invert Level (m) 63.100

Depth (m) Flow (l/s)

0.700 0.0400

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Storage Structures for Storm

cellular Storage Manhole: S4, DS/PN: 1.003

Invert Level (m) 63.250 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	30.0	30.0	0.500	0.0	43.6
0.400	30.0	43.6			

Infiltration Blanket Manhole: RAIN GARDEN, DS/PN: 1.004

Infiltration Coefficient Base (m/hr) 0.04461 Diameter/Width (m) 1.2
Safety Factor 2.0 Length (m) 7.7
Porosity 0.30 Cap Volume Depth (m) 0.000
Invert Level (m) 63.100

Manhole Headloss for Storm

PN	US/MH Name	US/MH Headloss
1.000	RE1	0.500
1.001	S1	0.500
2.000	RE2	0.500
2.001	S2	0.500
1.002	S3	0.500
1.003	S4	0.500
1.004	RAIN GARDEN	0.500

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Summary of Results for 30 minute 100 year Winter (Storm)

Margin for Flood Risk Warning (mm) 0.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

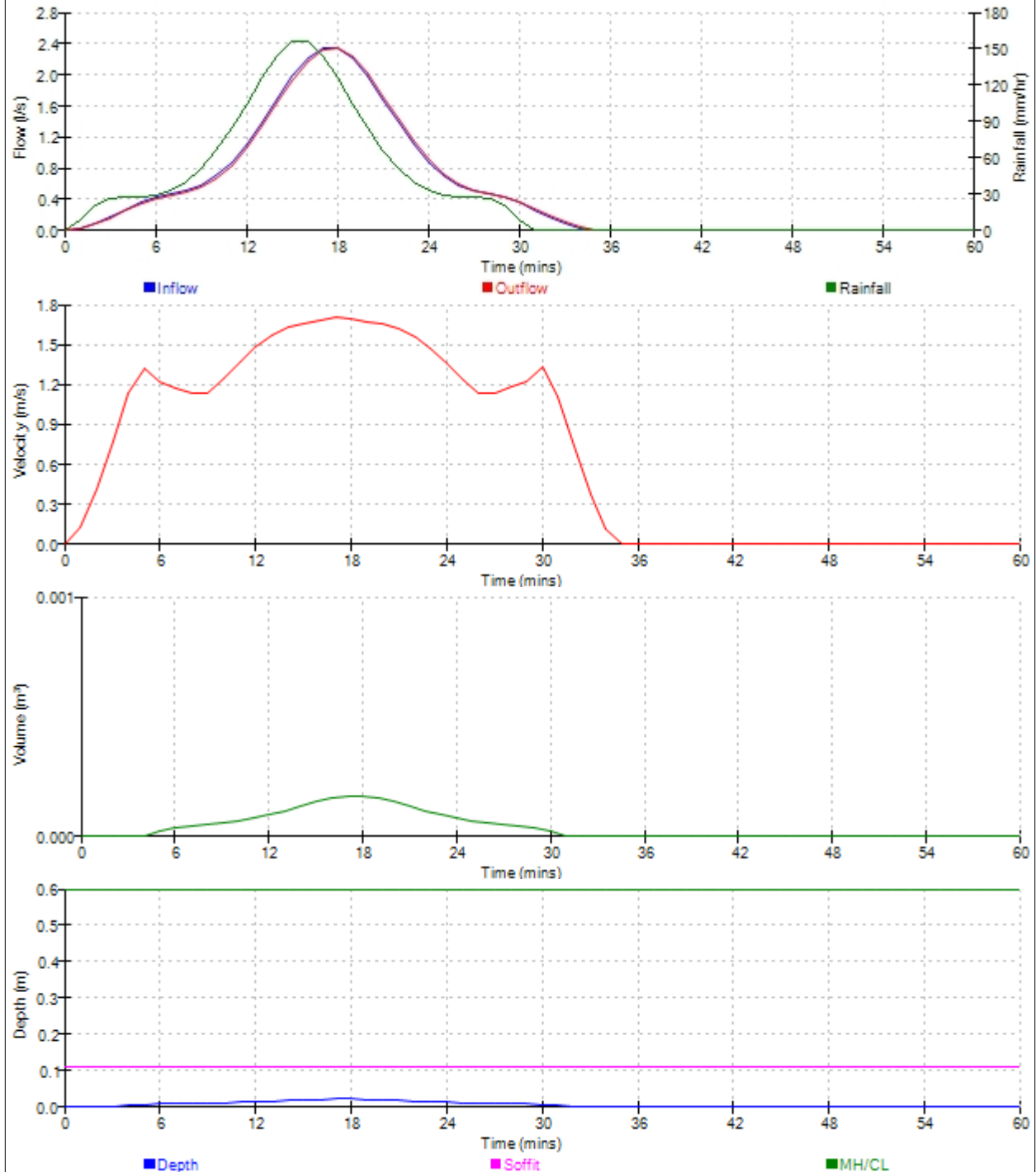
PN	US/MH Name	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status
1.000	RE1	65.422	-0.088	0.000	0.09	0.0	2.3	OK
1.001	S1	63.608	0.004	0.000	0.70	0.0	4.7	SURCHARGED
2.000	RE2	65.424	-0.086	0.000	0.11	0.0	2.3	OK
2.001	S2	65.029	-0.081	0.000	0.16	0.0	4.7	OK
1.002	S3	63.583	0.029	0.000	1.32	0.0	9.4	SURCHARGED
1.003	S4	63.491	0.131	0.000	0.06	0.0	0.3	SURCHARGED
1.004	RAIN GARDEN	63.285	0.075	0.000	0.00	0.0	0.0	SURCHARGED

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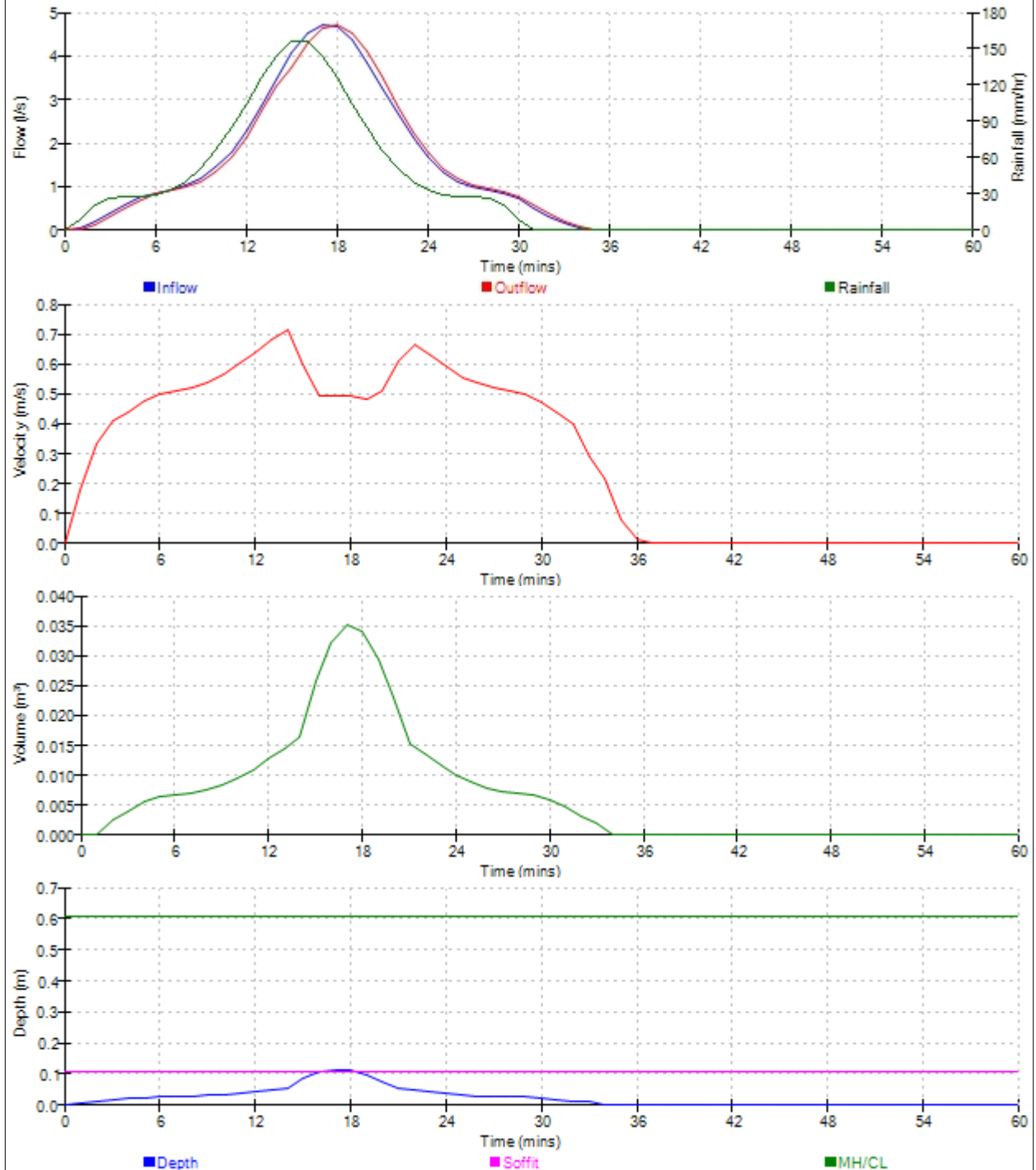
Rainfall Hyetograph for 30 minute 100 year Winter (Storm)

Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)	Time (mins)	Rain (mm/hr)
1	8.682	7	32.561	13	125.587	19	104.655	25	28.980
2	21.331	8	39.648	14	143.564	20	84.452	26	28.063
3	26.717	9	50.705	15	156.320	21	66.176	27	28.052
4	28.052	10	66.176	16	156.320	22	50.705	28	26.717
5	28.063	11	84.452	17	143.564	23	39.648	29	21.331
6	28.980	12	104.655	18	125.587	24	32.561	30	8.682

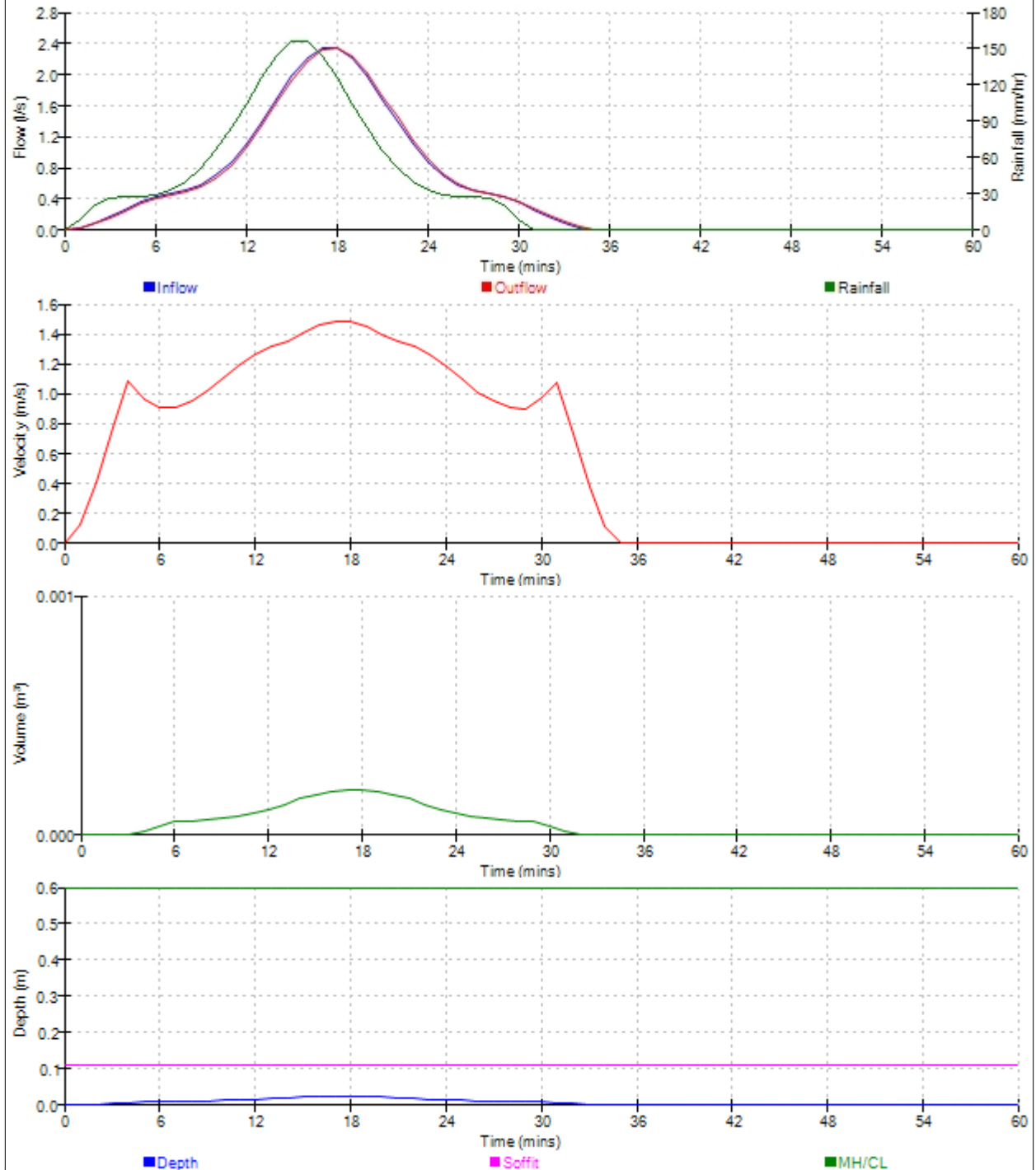
Graphs for Pipe 1.000 US/MH RE1 (Storm)
30 minute 100 year winter
Status: OK



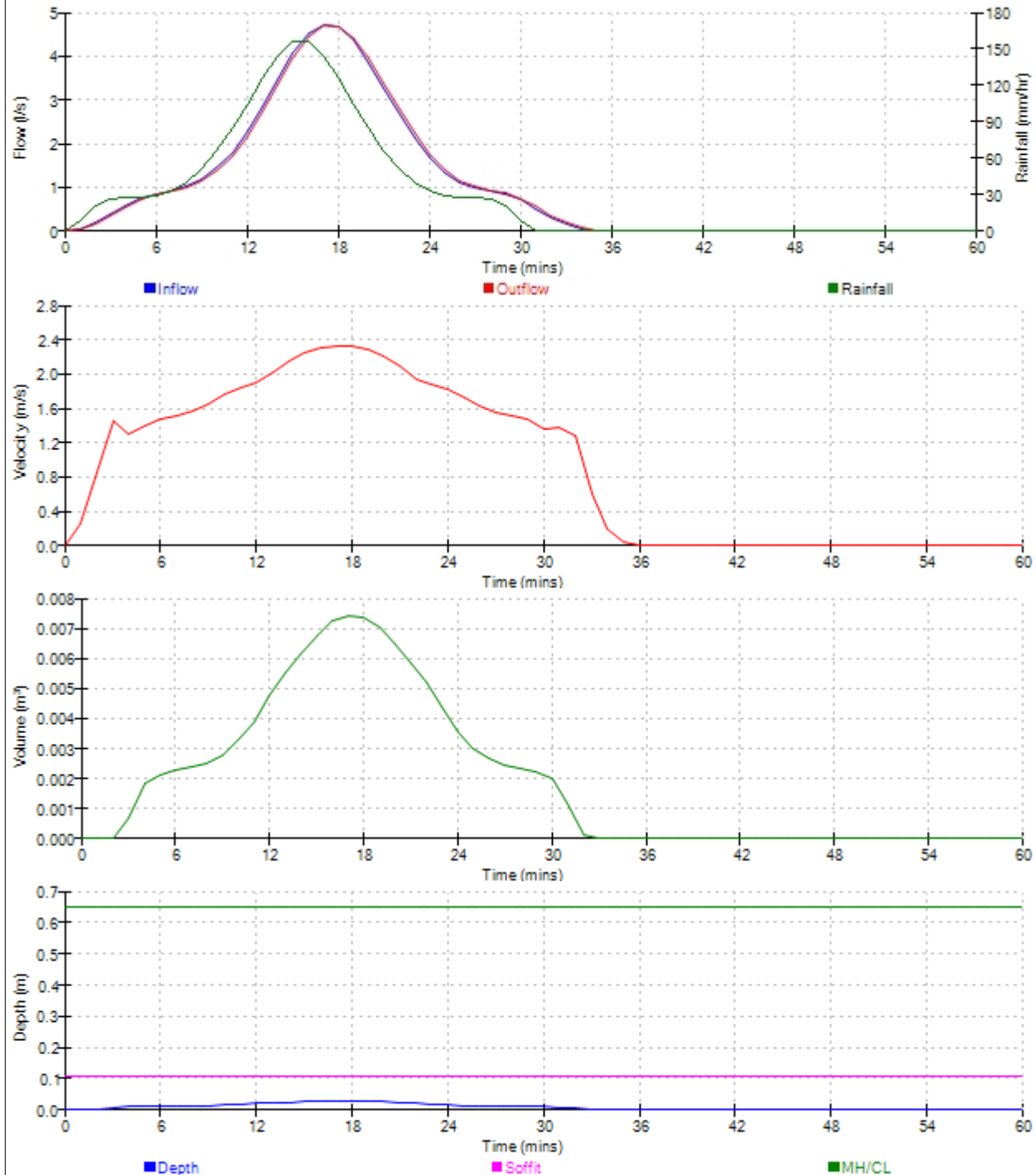
Graphs for Pipe 1.001 US/MH S1 (Storm)
30 minute 100 year winter
Status: SURCHARGED



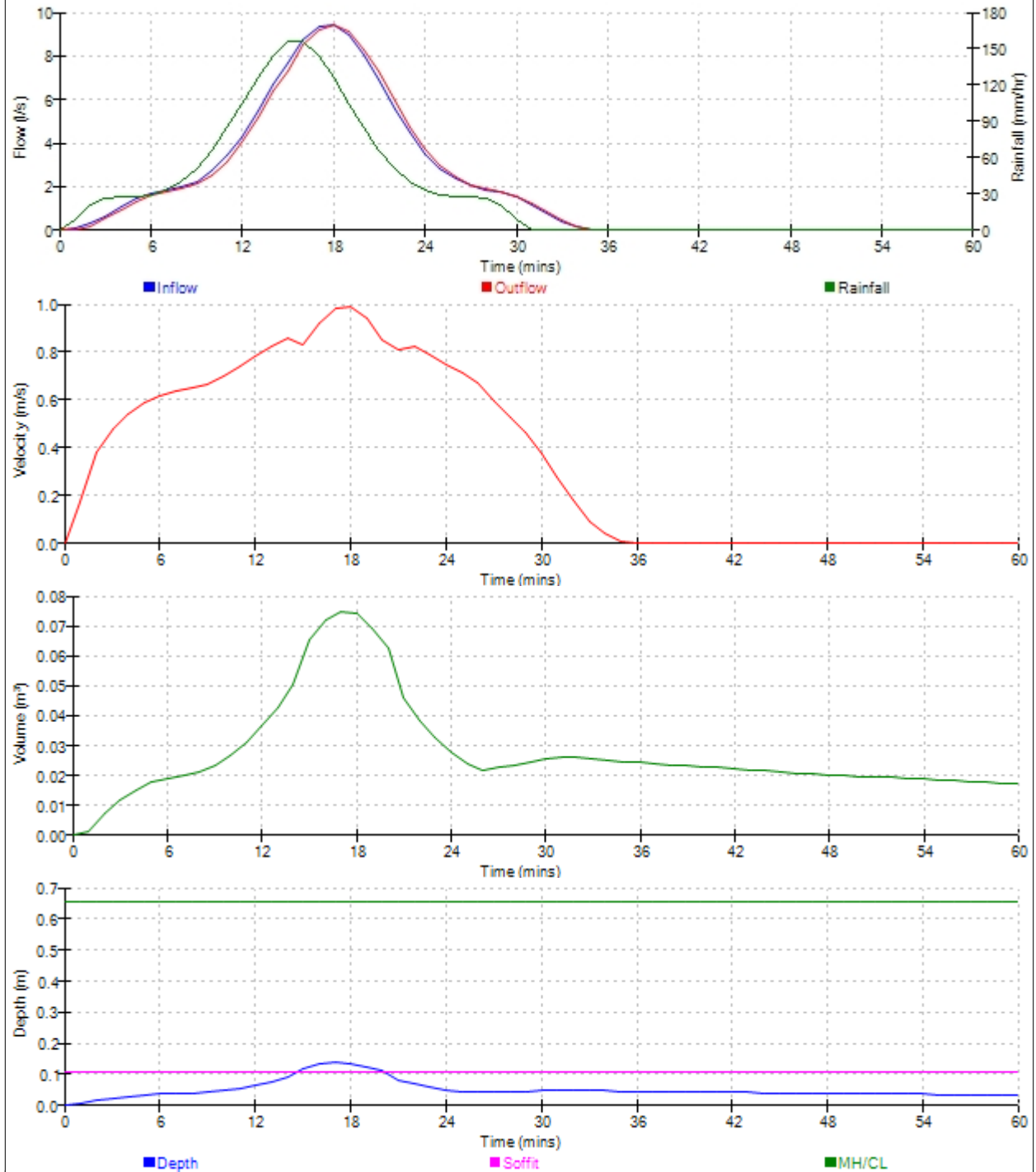
Graphs for Pipe 2.000 US/MH RE2 (Storm)
30 minute 100 year winter
Status: OK



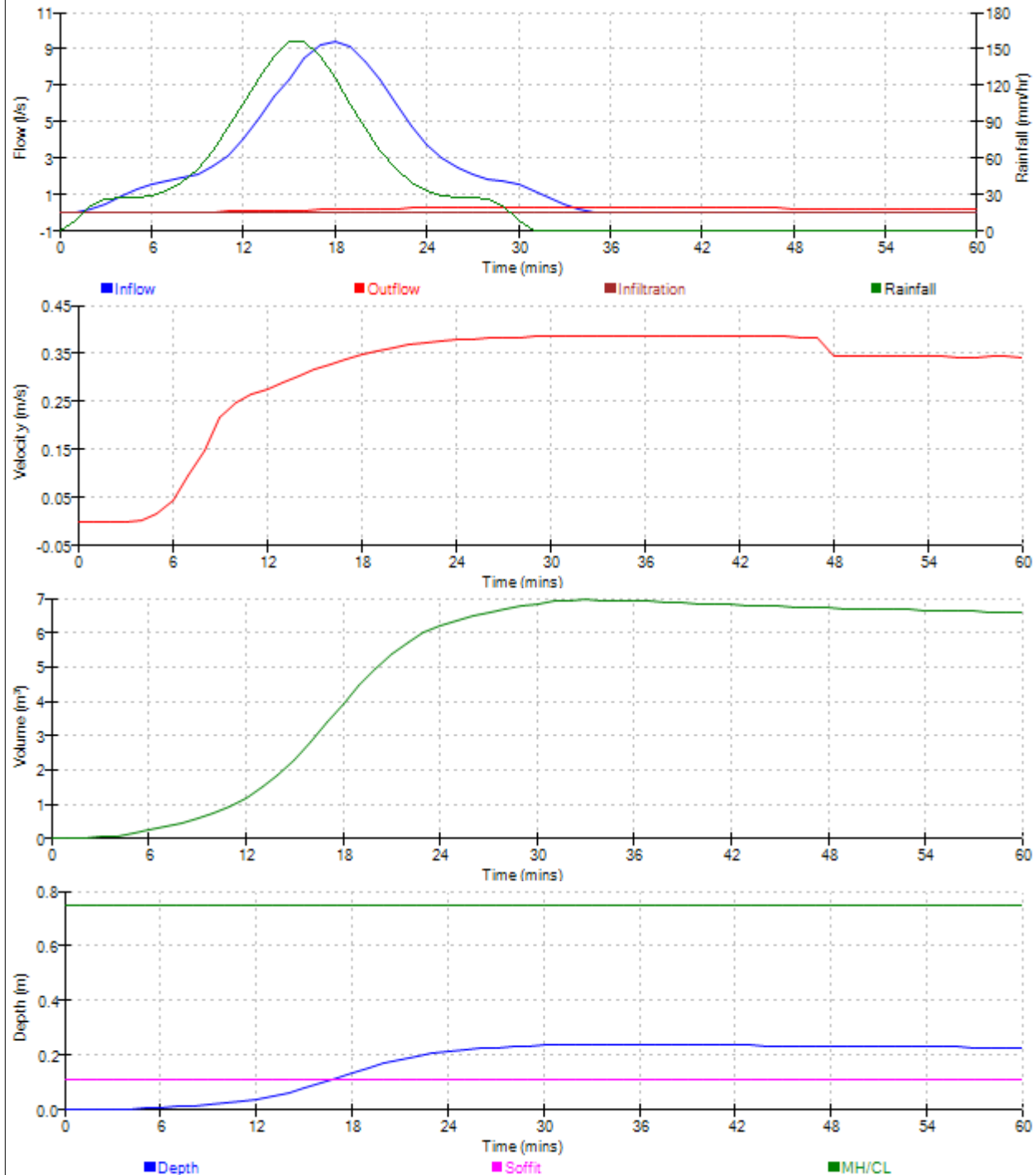
Graphs for Pipe 2.001 US/MH S2 (Storm)
30 minute 100 year winter
Status: OK



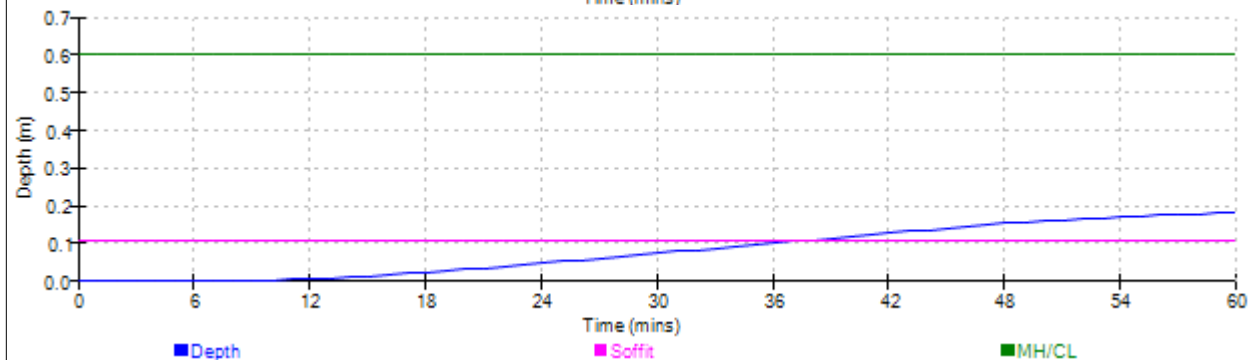
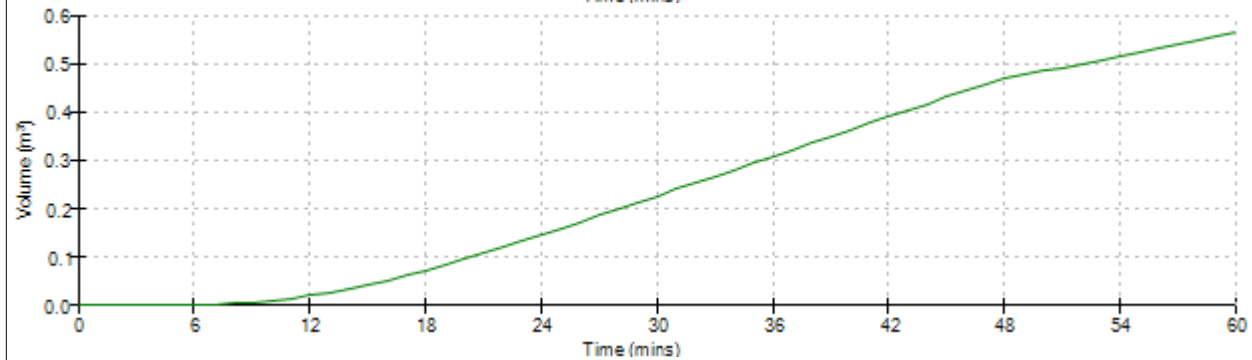
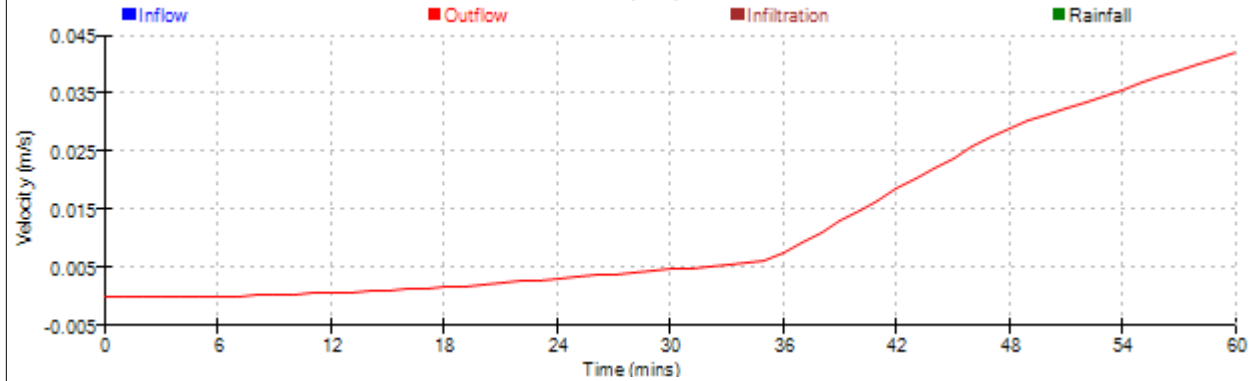
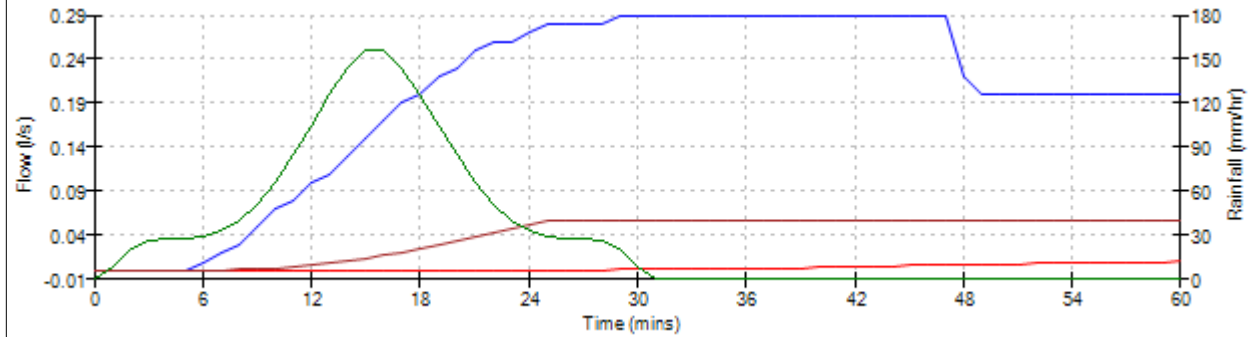
Graphs for Pipe 1.002 US/MH S3 (Storm)
30 minute 100 year winter
Status: SURCHARGED



Graphs for Pipe 1.003 US/MH S4 (Storm)
30 minute 100 year winter
Status: SURCHARGED



Graphs for Pipe 1.004 US/MH RAIN GARDEN (Storm)
30 minute 100 year winter
Status: SURCHARGED



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Flows and Levels for Pipe 1.000 US/MH RE1 (Storm)
30 minute 100 year winter
Average Rainfall Intensity 63.033 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total (l/s)	O/F Velocity (m/s)	Pipe Flow (l/s)
51	65.400	63.494	-0.110	0.0	0.0	0.0
52	65.400	63.494	-0.110	0.0	0.0	0.0
53	65.400	63.494	-0.110	0.0	0.0	0.0
54	65.400	63.494	-0.110	0.0	0.0	0.0
55	65.400	63.494	-0.110	0.0	0.0	0.0
56	65.400	63.494	-0.110	0.0	0.0	0.0
57	65.400	63.494	-0.110	0.0	0.0	0.0
58	65.400	63.494	-0.110	0.0	0.0	0.0
59	65.400	63.494	-0.110	0.0	0.0	0.0
60	65.400	63.494	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 1.001 US/MH S1 (Storm)
30 minute 100 year winter
Average Rainfall Intensity 63.033 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total (l/s)	O/F Velocity (m/s)	Pipe Flow (l/s)
1	63.499	63.452	-0.105	0.0	0.2	0.0
2	63.507	63.461	-0.097	0.0	0.3	0.1
3	63.512	63.469	-0.092	0.0	0.4	0.3
4	63.517	63.474	-0.088	0.0	0.4	0.5
5	63.519	63.479	-0.085	0.0	0.5	0.7
6	63.520	63.481	-0.084	0.0	0.5	0.8
7	63.521	63.482	-0.083	0.0	0.5	0.9
8	63.523	63.484	-0.081	0.0	0.5	1.0
9	63.525	63.488	-0.079	0.0	0.5	1.1
10	63.529	63.493	-0.075	0.0	0.6	1.4
11	63.533	63.501	-0.071	0.0	0.6	1.7
12	63.539	63.510	-0.065	0.0	0.6	2.1
13	63.545	63.521	-0.059	0.0	0.7	2.7
14	63.551	63.534	-0.053	0.0	0.7	3.3
15	63.580	63.561	-0.024	0.0	0.6	3.7
16	63.600	63.576	-0.005	0.0	0.5	4.3
17	63.608	63.583	0.004	0.0	0.5	4.6
18	63.605	63.581	0.001	0.0	0.5	4.7
19	63.592	63.571	-0.013	0.0	0.5	4.5
20	63.572	63.555	-0.032	0.0	0.5	4.1
21	63.547	63.526	-0.057	0.0	0.6	3.6
22	63.542	63.514	-0.062	0.0	0.7	2.8
23	63.536	63.504	-0.068	0.0	0.6	2.3
24	63.531	63.496	-0.073	0.0	0.6	1.8
25	63.527	63.489	-0.077	0.0	0.6	1.4
26	63.524	63.486	-0.080	0.0	0.5	1.2
27	63.522	63.487	-0.082	0.0	0.5	1.0
28	63.521	63.488	-0.083	0.0	0.5	0.9
29	63.520	63.490	-0.084	0.0	0.5	0.9
30	63.518	63.492	-0.086	0.0	0.5	0.8
31	63.514	63.493	-0.090	0.0	0.4	0.6
32	63.509	63.493	-0.095	0.0	0.4	0.4
33	63.505	63.492	-0.099	0.0	0.3	0.2
34	63.498	63.491	-0.106	0.0	0.2	0.1
35	63.495	63.491	-0.109	0.0	0.1	0.0
36	63.494	63.490	-0.110	0.0	0.0	0.0
37	63.494	63.489	-0.110	0.0	0.0	0.0
38	63.494	63.489	-0.110	0.0	0.0	0.0
39	63.494	63.488	-0.110	0.0	0.0	0.0
40	63.494	63.488	-0.110	0.0	0.0	0.0
41	63.494	63.487	-0.110	0.0	0.0	0.0
42	63.494	63.486	-0.110	0.0	0.0	0.0
43	63.494	63.486	-0.110	0.0	0.0	0.0
44	63.494	63.485	-0.110	0.0	0.0	0.0
45	63.494	63.485	-0.110	0.0	0.0	0.0
46	63.494	63.484	-0.110	0.0	0.0	0.0
47	63.494	63.484	-0.110	0.0	0.0	0.0
48	63.494	63.483	-0.110	0.0	0.0	0.0
49	63.494	63.482	-0.110	0.0	0.0	0.0
50	63.494	63.482	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 1.001 US/MH S1 (Storm)
30 minute 100 year winter
Average Rainfall Intensity 63.033 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total (l/s)	O/F Velocity (m/s)	Pipe Flow (l/s)
51	63.494	63.482	-0.110	0.0	0.0	0.0
52	63.494	63.481	-0.110	0.0	0.0	0.0
53	63.494	63.481	-0.110	0.0	0.0	0.0
54	63.494	63.481	-0.110	0.0	0.0	0.0
55	63.494	63.480	-0.110	0.0	0.0	0.0
56	63.494	63.480	-0.110	0.0	0.0	0.0
57	63.494	63.479	-0.110	0.0	0.0	0.0
58	63.494	63.479	-0.110	0.0	0.0	0.0
59	63.494	63.479	-0.110	0.0	0.0	0.0
60	63.494	63.478	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 2.000 US/MH RE2 (Storm)
30 minute 100 year winter
Average Rainfall Intensity 63.033 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total (l/s)	O/F Velocity (m/s)	Pipe Flow (l/s)
1	65.401	65.001	-0.109	0.0	0.1	0.0
2	65.402	65.004	-0.108	0.0	0.4	0.1
3	65.405	65.007	-0.105	0.0	0.8	0.2
4	65.407	65.011	-0.103	0.0	1.1	0.3
5	65.409	65.012	-0.101	0.0	1.0	0.3
6	65.411	65.012	-0.099	0.0	0.9	0.4
7	65.411	65.013	-0.099	0.0	0.9	0.5
8	65.412	65.013	-0.098	0.0	1.0	0.5
9	65.412	65.014	-0.098	0.0	1.0	0.6
10	65.413	65.016	-0.097	0.0	1.1	0.7
11	65.414	65.018	-0.096	0.0	1.2	0.8
12	65.416	65.021	-0.094	0.0	1.3	1.1
13	65.419	65.023	-0.091	0.0	1.3	1.3
14	65.421	65.025	-0.089	0.0	1.4	1.6
15	65.423	65.027	-0.087	0.0	1.4	1.9
16	65.424	65.029	-0.086	0.0	1.5	2.2
17	65.424	65.029	-0.086	0.0	1.5	2.3
18	65.424	65.029	-0.086	0.0	1.5	2.3
19	65.424	65.028	-0.086	0.0	1.5	2.2
20	65.423	65.026	-0.087	0.0	1.4	2.0
21	65.421	65.024	-0.089	0.0	1.3	1.7
22	65.419	65.022	-0.091	0.0	1.3	1.4
23	65.416	65.019	-0.094	0.0	1.3	1.2
24	65.414	65.017	-0.096	0.0	1.2	0.9
25	65.413	65.015	-0.097	0.0	1.1	0.7
26	65.412	65.014	-0.098	0.0	1.0	0.6
27	65.412	65.013	-0.098	0.0	1.0	0.5
28	65.411	65.013	-0.099	0.0	0.9	0.5
29	65.411	65.012	-0.099	0.0	0.9	0.4
30	65.409	65.011	-0.101	0.0	1.0	0.4
31	65.407	65.009	-0.103	0.0	1.1	0.3
32	65.405	65.005	-0.105	0.0	0.7	0.2
33	65.402	65.002	-0.108	0.0	0.4	0.1
34	65.401	65.000	-0.109	0.0	0.1	0.0
35	65.400	65.000	-0.110	0.0	0.0	0.0
36	65.400	65.000	-0.110	0.0	0.0	0.0
37	65.400	65.000	-0.110	0.0	0.0	0.0
38	65.400	65.000	-0.110	0.0	0.0	0.0
39	65.400	65.000	-0.110	0.0	0.0	0.0
40	65.400	65.000	-0.110	0.0	0.0	0.0
41	65.400	65.000	-0.110	0.0	0.0	0.0
42	65.400	65.000	-0.110	0.0	0.0	0.0
43	65.400	65.000	-0.110	0.0	0.0	0.0
44	65.400	65.000	-0.110	0.0	0.0	0.0
45	65.400	65.000	-0.110	0.0	0.0	0.0
46	65.400	65.000	-0.110	0.0	0.0	0.0
47	65.400	65.000	-0.110	0.0	0.0	0.0
48	65.400	65.000	-0.110	0.0	0.0	0.0
49	65.400	65.000	-0.110	0.0	0.0	0.0
50	65.400	65.000	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 2.000 US/MH RE2 (Storm)
30 minute 100 year winter
Average Rainfall Intensity 63.033 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total (l/s)	0/F Velocity (m/s)	Pipe Flow (l/s)
51	65.400	65.000	-0.110	0.0	0.0	0.0
52	65.400	65.000	-0.110	0.0	0.0	0.0
53	65.400	65.000	-0.110	0.0	0.0	0.0
54	65.400	65.000	-0.110	0.0	0.0	0.0
55	65.400	65.000	-0.110	0.0	0.0	0.0
56	65.400	65.000	-0.110	0.0	0.0	0.0
57	65.400	65.000	-0.110	0.0	0.0	0.0
58	65.400	65.000	-0.110	0.0	0.0	0.0
59	65.400	65.000	-0.110	0.0	0.0	0.0
60	65.400	65.000	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 2.001 US/MH S2 (Storm)
30 minute 100 year winter
Average Rainfall Intensity 63.033 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total (l/s)	O/F Velocity (m/s)	Pipe Flow (l/s)
51	65.000	63.482	-0.110	0.0	0.0	0.0
52	65.000	63.481	-0.110	0.0	0.0	0.0
53	65.000	63.481	-0.110	0.0	0.0	0.0
54	65.000	63.481	-0.110	0.0	0.0	0.0
55	65.000	63.480	-0.110	0.0	0.0	0.0
56	65.000	63.480	-0.110	0.0	0.0	0.0
57	65.000	63.479	-0.110	0.0	0.0	0.0
58	65.000	63.479	-0.110	0.0	0.0	0.0
59	65.000	63.479	-0.110	0.0	0.0	0.0
60	65.000	63.478	-0.110	0.0	0.0	0.0

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Flows and Levels for Pipe 1.002 US/MH S3 (Storm)
30 minute 100 year winter
Average Rainfall Intensity 63.033 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
1	63.452	63.250	-0.103	0.0	0.2	0.0
2	63.461	63.250	-0.093	0.0	0.4	0.2
3	63.469	63.251	-0.085	0.0	0.5	0.5
4	63.474	63.253	-0.080	0.0	0.5	0.9
5	63.479	63.256	-0.075	0.0	0.6	1.3
6	63.481	63.259	-0.073	0.0	0.6	1.6
7	63.482	63.263	-0.072	0.0	0.6	1.8
8	63.484	63.267	-0.070	0.0	0.6	1.9
9	63.488	63.271	-0.066	0.0	0.7	2.1
10	63.493	63.276	-0.061	0.0	0.7	2.5
11	63.501	63.282	-0.053	0.0	0.7	3.2
12	63.510	63.290	-0.044	0.0	0.8	4.0
13	63.521	63.302	-0.033	0.0	0.8	5.2
14	63.534	63.315	-0.020	0.0	0.9	6.4
15	63.561	63.330	0.007	0.0	0.8	7.3
16	63.576	63.349	0.022	0.0	0.9	8.5
17	63.583	63.367	0.029	0.0	1.0	9.2
18	63.581	63.387	0.027	0.0	1.0	9.4
19	63.571	63.405	0.016	0.0	0.9	9.1
20	63.555	63.422	0.001	0.0	0.8	8.3
21	63.526	63.437	-0.028	0.0	0.8	7.3
22	63.514	63.449	-0.041	0.0	0.8	5.9
23	63.504	63.458	-0.050	0.0	0.8	4.7
24	63.496	63.465	-0.058	0.0	0.8	3.8
25	63.489	63.470	-0.065	0.0	0.7	3.0
26	63.486	63.475	-0.068	0.0	0.7	2.5
27	63.487	63.479	-0.067	0.0	0.6	2.1
28	63.488	63.482	-0.066	0.0	0.5	1.9
29	63.490	63.485	-0.064	0.0	0.5	1.7
30	63.492	63.488	-0.062	0.0	0.4	1.5
31	63.493	63.490	-0.061	0.0	0.3	1.2
32	63.493	63.491	-0.061	0.0	0.2	0.8
33	63.492	63.491	-0.062	0.0	0.1	0.5
34	63.491	63.491	-0.063	0.0	0.0	0.2
35	63.491	63.491	-0.064	0.0	0.0	0.1
36	63.490	63.490	-0.064	0.0	0.0	0.0
37	63.489	63.489	-0.065	0.0	0.0	0.0
38	63.489	63.489	-0.065	0.0	0.0	0.0
39	63.488	63.488	-0.066	0.0	0.0	0.0
40	63.488	63.488	-0.066	0.0	0.0	0.0
41	63.487	63.487	-0.067	0.0	0.0	0.0
42	63.486	63.486	-0.068	0.0	0.0	0.0
43	63.486	63.486	-0.068	0.0	0.0	0.0
44	63.485	63.485	-0.069	0.0	0.0	0.0
45	63.485	63.485	-0.070	0.0	0.0	0.0
46	63.484	63.484	-0.070	0.0	0.0	0.0
47	63.484	63.484	-0.071	0.0	0.0	0.0
48	63.483	63.483	-0.071	0.0	0.0	0.0
49	63.482	63.483	-0.072	0.0	0.0	0.0
50	63.482	63.482	-0.072	0.0	0.0	0.0

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Flows and Levels for Pipe 1.002 US/MH S3 (Storm)
30 minute 100 year winter
Average Rainfall Intensity 63.033 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total (l/s)	O/F Velocity (m/s)	Pipe Flow (l/s)
51	63.482	63.482	-0.072	0.0	0.0	0.0
52	63.481	63.482	-0.073	0.0	0.0	0.0
53	63.481	63.481	-0.073	0.0	0.0	0.0
54	63.481	63.481	-0.073	0.0	0.0	0.0
55	63.480	63.480	-0.074	0.0	0.0	0.0
56	63.480	63.480	-0.074	0.0	0.0	0.0
57	63.479	63.479	-0.075	0.0	0.0	0.0
58	63.479	63.479	-0.075	0.0	0.0	0.0
59	63.479	63.479	-0.076	0.0	0.0	0.0
60	63.478	63.478	-0.076	0.0	0.0	0.0

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Flows and Levels for Pipe 1.003 US/MH S4 (Storm)
30 minute 100 year winter
Average Rainfall Intensity 63.033 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total (l/s)	O/F Velocity (m/s)	Pipe Flow (l/s)
1	63.250	63.100	-0.110	0.0	0.0	0.0
2	63.250	63.100	-0.110	0.0	0.0	0.0
3	63.251	63.100	-0.109	0.0	0.0	0.0
4	63.253	63.100	-0.107	0.0	0.0	0.0
5	63.256	63.100	-0.104	0.0	0.0	0.0
6	63.259	63.100	-0.101	0.0	0.0	0.0
7	63.263	63.101	-0.097	0.0	0.1	0.0
8	63.267	63.101	-0.093	0.0	0.1	0.0
9	63.271	63.102	-0.089	0.0	0.2	0.0
10	63.276	63.104	-0.084	0.0	0.2	0.1
11	63.282	63.105	-0.078	0.0	0.3	0.1
12	63.290	63.107	-0.070	0.0	0.3	0.1
13	63.302	63.109	-0.058	0.0	0.3	0.1
14	63.315	63.112	-0.045	0.0	0.3	0.1
15	63.330	63.114	-0.030	0.0	0.3	0.1
16	63.349	63.117	-0.011	0.0	0.3	0.2
17	63.367	63.121	0.007	0.0	0.3	0.2
18	63.387	63.124	0.027	0.0	0.3	0.2
19	63.405	63.128	0.045	0.0	0.4	0.2
20	63.422	63.132	0.062	0.0	0.4	0.2
21	63.437	63.136	0.077	0.0	0.4	0.2
22	63.449	63.140	0.089	0.0	0.4	0.3
23	63.458	63.144	0.098	0.0	0.4	0.3
24	63.465	63.149	0.105	0.0	0.4	0.3
25	63.470	63.153	0.110	0.0	0.4	0.3
26	63.475	63.157	0.115	0.0	0.4	0.3
27	63.479	63.161	0.119	0.0	0.4	0.3
28	63.482	63.166	0.122	0.0	0.4	0.3
29	63.485	63.170	0.125	0.0	0.4	0.3
30	63.488	63.175	0.128	0.0	0.4	0.3
31	63.490	63.179	0.130	0.0	0.4	0.3
32	63.491	63.184	0.131	0.0	0.4	0.3
33	63.491	63.188	0.131	0.0	0.4	0.3
34	63.491	63.192	0.131	0.0	0.4	0.3
35	63.491	63.197	0.131	0.0	0.4	0.3
36	63.490	63.201	0.130	0.0	0.4	0.3
37	63.489	63.206	0.129	0.0	0.4	0.3
38	63.489	63.210	0.129	0.0	0.4	0.3
39	63.488	63.215	0.128	0.0	0.4	0.3
40	63.488	63.219	0.128	0.0	0.4	0.3
41	63.487	63.224	0.127	0.0	0.4	0.3
42	63.486	63.228	0.126	0.0	0.4	0.3
43	63.486	63.232	0.126	0.0	0.4	0.3
44	63.485	63.237	0.125	0.0	0.4	0.3
45	63.485	63.241	0.125	0.0	0.4	0.3
46	63.484	63.246	0.124	0.0	0.4	0.3
47	63.484	63.250	0.124	0.0	0.4	0.3
48	63.483	63.253	0.123	0.0	0.3	0.2
49	63.483	63.256	0.123	0.0	0.3	0.2
50	63.482	63.259	0.122	0.0	0.3	0.2

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Flows and Levels for Pipe 1.003 US/MH S4 (Storm)
30 minute 100 year winter
Average Rainfall Intensity 63.033 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total (l/s)	O/F Velocity (m/s)	Pipe Flow (l/s)
51	63.482	63.261	0.122	0.0	0.3	0.2
52	63.482	63.264	0.122	0.0	0.3	0.2
53	63.481	63.267	0.121	0.0	0.3	0.2
54	63.481	63.269	0.121	0.0	0.3	0.2
55	63.480	63.272	0.120	0.0	0.3	0.2
56	63.480	63.274	0.120	0.0	0.3	0.2
57	63.479	63.277	0.119	0.0	0.3	0.2
58	63.479	63.280	0.119	0.0	0.3	0.2
59	63.479	63.282	0.119	0.0	0.3	0.2
60	63.478	63.285	0.118	0.0	0.3	0.2

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Flows and Levels for Pipe 1.004 US/MH RAIN GARDEN (Storm)
30 minute 100 year winter
Average Rainfall Intensity 63.033 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total O/F (l/s)	Velocity (m/s)	Pipe Flow (l/s)
1	63.100	63.096	-0.110	0.0	0.0	0.0
2	63.100	63.096	-0.110	0.0	0.0	0.0
3	63.100	63.096	-0.110	0.0	0.0	0.0
4	63.100	63.096	-0.110	0.0	0.0	0.0
5	63.100	63.096	-0.110	0.0	0.0	0.0
6	63.100	63.096	-0.110	0.0	0.0	0.0
7	63.101	63.096	-0.109	0.0	0.0	0.0
8	63.101	63.096	-0.109	0.0	0.0	0.0
9	63.102	63.096	-0.108	0.0	0.0	0.0
10	63.104	63.096	-0.106	0.0	0.0	0.0
11	63.105	63.096	-0.105	0.0	0.0	0.0
12	63.107	63.096	-0.103	0.0	0.0	0.0
13	63.109	63.096	-0.101	0.0	0.0	0.0
14	63.112	63.096	-0.098	0.0	0.0	0.0
15	63.114	63.096	-0.096	0.0	0.0	0.0
16	63.117	63.096	-0.093	0.0	0.0	0.0
17	63.121	63.096	-0.089	0.0	0.0	0.0
18	63.124	63.096	-0.086	0.0	0.0	0.0
19	63.128	63.096	-0.082	0.0	0.0	0.0
20	63.132	63.096	-0.078	0.0	0.0	0.0
21	63.136	63.096	-0.074	0.0	0.0	0.0
22	63.140	63.096	-0.070	0.0	0.0	0.0
23	63.144	63.096	-0.066	0.0	0.0	0.0
24	63.149	63.096	-0.061	0.0	0.0	0.0
25	63.153	63.096	-0.057	0.0	0.0	0.0
26	63.157	63.096	-0.053	0.0	0.0	0.0
27	63.161	63.096	-0.049	0.0	0.0	0.0
28	63.166	63.096	-0.044	0.0	0.0	0.0
29	63.170	63.096	-0.040	0.0	0.0	0.0
30	63.175	63.096	-0.035	0.0	0.0	0.0
31	63.179	63.096	-0.031	0.0	0.0	0.0
32	63.184	63.096	-0.026	0.0	0.0	0.0
33	63.188	63.096	-0.022	0.0	0.0	0.0
34	63.192	63.096	-0.018	0.0	0.0	0.0
35	63.197	63.096	-0.013	0.0	0.0	0.0
36	63.201	63.096	-0.009	0.0	0.0	0.0
37	63.206	63.096	-0.004	0.0	0.0	0.0
38	63.210	63.096	0.000	0.0	0.0	0.0
39	63.215	63.096	0.005	0.0	0.0	0.0
40	63.219	63.096	0.009	0.0	0.0	0.0
41	63.224	63.096	0.014	0.0	0.0	0.0
42	63.228	63.096	0.018	0.0	0.0	0.0
43	63.232	63.096	0.022	0.0	0.0	0.0
44	63.237	63.096	0.027	0.0	0.0	0.0
45	63.241	63.096	0.031	0.0	0.0	0.0
46	63.246	63.096	0.036	0.0	0.0	0.0
47	63.250	63.096	0.040	0.0	0.0	0.0
48	63.253	63.096	0.043	0.0	0.0	0.0
49	63.256	63.096	0.046	0.0	0.0	0.0
50	63.259	63.096	0.049	0.0	0.0	0.0

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Flows and Levels for Pipe 1.004 US/MH RAIN GARDEN (Storm)
30 minute 100 year winter
Average Rainfall Intensity 63.033 mm/hr

Time (mins)	Upstream Level (m)	Downstream Level (m)	Surcharged Depth (m)	Total (l/s)	O/F Velocity (m/s)	Pipe Flow (l/s)
51	63.261	63.096	0.051	0.0	0.0	0.0
52	63.264	63.096	0.054	0.0	0.0	0.0
53	63.267	63.096	0.057	0.0	0.0	0.0
54	63.269	63.096	0.059	0.0	0.0	0.0
55	63.272	63.096	0.062	0.0	0.0	0.0
56	63.274	63.096	0.064	0.0	0.0	0.0
57	63.277	63.096	0.067	0.0	0.0	0.0
58	63.280	63.096	0.070	0.0	0.0	0.0
59	63.282	63.096	0.072	0.0	0.0	0.0
60	63.285	63.096	0.075	0.0	0.0	0.0