

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	2	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	0.650
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
SW MH 01.00	0.004	5.00	15.093	450	496457.430	106292.140	1.500
SW MH 01.50			15.093	600	496452.330	106287.890	1.566
SW MH 02.00			14.160	450	496430.810	106269.950	0.624
EX HW RG			13.830	450	496433.730	106260.650	0.550

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	SW MH 01.00	SW MH 01.50	6.614	0.600	13.893	13.827	0.066	100.2	100	5.14	50.0
1.002	SW MH 01.50	SW MH 02.00	29.107	0.600	13.827	13.536	0.291	100.0	100	5.77	50.0
1.002_1	SW MH 02.00	EX HW RG	9.748	0.600	13.536	13.280	0.256	38.1	100	5.90	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)
1.000	0.768	6.0	0.7	1.100	1.166	0.004	0.0
1.002	0.769	6.0	0.7	1.166	0.524	0.004	0.0
1.002_1	1.253	9.8	0.7	0.524	0.450	0.004	0.0

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	6.614	100.2	100	Circular	15.093	13.893	1.100	15.093	13.827	1.166
1.002	29.107	100.0	100	Circular	15.093	13.827	1.166	14.160	13.536	0.524
1.002_1	9.748	38.1	100	Circular	14.160	13.536	0.524	13.830	13.280	0.450

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	SW MH 01.00	450	Manhole	Adoptable	SW MH 01.50	600	Manhole	Adoptable
1.002	SW MH 01.50	600	Manhole	Adoptable	SW MH 02.00	450	Manhole	Adoptable
1.002_1	SW MH 02.00	450	Manhole	Adoptable	EX HW RG	450	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
SW MH 01.00	496457.430	106292.140	15.093	1.500	450		0	1.000	13.893	100
SW MH 01.50	496452.330	106287.890	15.093	1.566	600		1	1.000	13.827	100
SW MH 02.00	496430.810	106269.950	14.160	0.624	450		1	1.002	13.827	100
							0	1.002_1	13.536	100
EX HW RG	496433.730	106260.650	13.830	0.550	450		1	1.002_1	13.280	100

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Starting Level (m)	
Rainfall Events	Singular	Skip Steady State	x	Check Discharge Rate(s)	x
Summer CV	1.000	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	1.000	Additional Storage (m³/ha)	0.0		

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	40	10	0
30	40	10	0
100	45	10	0

Node SW MH 01.50 Online Orifice Control

Flap Valve	x	Design Depth (m)	0.550	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Flow (l/s)	0.5		
Invert Level (m)	13.827	Diameter (m)	0.016		

Node SW MH 02.00 Online Orifice Control

Flap Valve	x	Invert Level (m)	13.536	Discharge Coefficient	0.600
Replaces Downstream Link	x	Diameter (m)	0.001		

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year +40% CC +10% A 15 minute summer	106.491	30.133
1 year +40% CC +10% A 15 minute winter	74.731	30.133
1 year +40% CC +10% A 30 minute summer	69.465	19.656
1 year +40% CC +10% A 30 minute winter	48.747	19.656
1 year +40% CC +10% A 60 minute summer	47.255	12.488
1 year +40% CC +10% A 60 minute winter	31.395	12.488
1 year +40% CC +10% A 120 minute summer	35.777	9.455
1 year +40% CC +10% A 120 minute winter	23.769	9.455
1 year +40% CC +10% A 180 minute summer	29.622	7.623
1 year +40% CC +10% A 180 minute winter	19.255	7.623
1 year +40% CC +10% A 240 minute summer	24.297	6.421
1 year +40% CC +10% A 240 minute winter	16.142	6.421
1 year +40% CC +10% A 360 minute summer	19.118	4.920
1 year +40% CC +10% A 360 minute winter	12.427	4.920
1 year +40% CC +10% A 480 minute summer	15.187	4.013
1 year +40% CC +10% A 480 minute winter	10.090	4.013
1 year +40% CC +10% A 600 minute summer	12.470	3.411
1 year +40% CC +10% A 600 minute winter	8.520	3.411
1 year +40% CC +10% A 720 minute summer	11.119	2.980
1 year +40% CC +10% A 720 minute winter	7.473	2.980
1 year +40% CC +10% A 960 minute summer	9.130	2.404
1 year +40% CC +10% A 960 minute winter	6.048	2.404
1 year +40% CC +10% A 1440 minute summer	6.652	1.783
1 year +40% CC +10% A 1440 minute winter	4.471	1.783
1 year +40% CC +10% A 2160 minute summer	4.848	1.340
1 year +40% CC +10% A 2160 minute winter	3.341	1.340
1 year +40% CC +10% A 2880 minute summer	4.130	1.107
1 year +40% CC +10% A 2880 minute winter	2.776	1.107
1 year +40% CC +10% A 4320 minute summer	3.318	0.868
1 year +40% CC +10% A 4320 minute winter	2.185	0.868
1 year +40% CC +10% A 5760 minute summer	2.903	0.743
1 year +40% CC +10% A 5760 minute winter	1.879	0.743
1 year +40% CC +10% A 7200 minute summer	2.611	0.666
1 year +40% CC +10% A 7200 minute winter	1.685	0.666
1 year +40% CC +10% A 8640 minute summer	2.406	0.614
1 year +40% CC +10% A 8640 minute winter	1.553	0.614
1 year +40% CC +10% A 10080 minute summer	2.259	0.576
1 year +40% CC +10% A 10080 minute winter	1.458	0.576
30 year +40% CC +10% A 15 minute summer	408.670	115.639
30 year +40% CC +10% A 15 minute winter	286.786	115.639
30 year +40% CC +10% A 30 minute summer	272.636	77.147
30 year +40% CC +10% A 30 minute winter	191.324	77.147
30 year +40% CC +10% A 60 minute summer	185.789	49.099
30 year +40% CC +10% A 60 minute winter	123.434	49.099
30 year +40% CC +10% A 120 minute summer	114.056	30.142
30 year +40% CC +10% A 120 minute winter	75.776	30.142
30 year +40% CC +10% A 180 minute summer	86.708	22.313
30 year +40% CC +10% A 180 minute winter	56.362	22.313
30 year +40% CC +10% A 240 minute summer	67.751	17.905
30 year +40% CC +10% A 240 minute winter	45.012	17.905
30 year +40% CC +10% A 360 minute summer	50.522	13.001
30 year +40% CC +10% A 360 minute winter	32.841	13.001

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
30 year +40% CC +10% A 480 minute summer	38.961	10.296
30 year +40% CC +10% A 480 minute winter	25.885	10.296
30 year +40% CC +10% A 600 minute summer	31.340	8.572
30 year +40% CC +10% A 600 minute winter	21.413	8.572
30 year +40% CC +10% A 720 minute summer	27.505	7.372
30 year +40% CC +10% A 720 minute winter	18.485	7.372
30 year +40% CC +10% A 960 minute summer	22.030	5.801
30 year +40% CC +10% A 960 minute winter	14.593	5.801
30 year +40% CC +10% A 1440 minute summer	15.487	4.151
30 year +40% CC +10% A 1440 minute winter	10.408	4.151
30 year +40% CC +10% A 2160 minute summer	10.814	2.989
30 year +40% CC +10% A 2160 minute winter	7.451	2.989
30 year +40% CC +10% A 2880 minute summer	8.897	2.384
30 year +40% CC +10% A 2880 minute winter	5.979	2.384
30 year +40% CC +10% A 4320 minute summer	6.757	1.767
30 year +40% CC +10% A 4320 minute winter	4.450	1.767
30 year +40% CC +10% A 5760 minute summer	5.655	1.448
30 year +40% CC +10% A 5760 minute winter	3.660	1.448
30 year +40% CC +10% A 7200 minute summer	4.908	1.252
30 year +40% CC +10% A 7200 minute winter	3.168	1.252
30 year +40% CC +10% A 8640 minute summer	4.389	1.120
30 year +40% CC +10% A 8640 minute winter	2.833	1.120
30 year +40% CC +10% A 10080 minute summer	4.013	1.024
30 year +40% CC +10% A 10080 minute winter	2.590	1.024
100 year +45% CC +10% A 15 minute summer	530.252	150.043
100 year +45% CC +10% A 15 minute winter	372.107	150.043
100 year +45% CC +10% A 30 minute summer	356.114	100.768
100 year +45% CC +10% A 30 minute winter	249.905	100.768
100 year +45% CC +10% A 60 minute summer	245.224	64.805
100 year +45% CC +10% A 60 minute winter	162.921	64.805
100 year +45% CC +10% A 120 minute summer	147.438	38.964
100 year +45% CC +10% A 120 minute winter	97.955	38.964
100 year +45% CC +10% A 180 minute summer	111.452	28.680
100 year +45% CC +10% A 180 minute winter	72.446	28.680
100 year +45% CC +10% A 240 minute summer	86.923	22.971
100 year +45% CC +10% A 240 minute winter	57.750	22.971
100 year +45% CC +10% A 360 minute summer	64.794	16.674
100 year +45% CC +10% A 360 minute winter	42.118	16.674
100 year +45% CC +10% A 480 minute summer	50.056	13.228
100 year +45% CC +10% A 480 minute winter	33.256	13.228
100 year +45% CC +10% A 600 minute summer	40.326	11.030
100 year +45% CC +10% A 600 minute winter	27.553	11.030
100 year +45% CC +10% A 720 minute summer	35.429	9.495
100 year +45% CC +10% A 720 minute winter	23.810	9.495
100 year +45% CC +10% A 960 minute summer	28.388	7.475
100 year +45% CC +10% A 960 minute winter	18.805	7.475
100 year +45% CC +10% A 1440 minute summer	19.925	5.340
100 year +45% CC +10% A 1440 minute winter	13.391	5.340
100 year +45% CC +10% A 2160 minute summer	13.845	3.826
100 year +45% CC +10% A 2160 minute winter	9.540	3.826
100 year +45% CC +10% A 2880 minute summer	11.326	3.035
100 year +45% CC +10% A 2880 minute winter	7.612	3.035

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year +45% CC +10% A 4320 minute summer	8.488	2.219
100 year +45% CC +10% A 4320 minute winter	5.590	2.219
100 year +45% CC +10% A 5760 minute summer	7.017	1.796
100 year +45% CC +10% A 5760 minute winter	4.542	1.796
100 year +45% CC +10% A 7200 minute summer	6.030	1.538
100 year +45% CC +10% A 7200 minute winter	3.892	1.538
100 year +45% CC +10% A 8640 minute summer	5.344	1.363
100 year +45% CC +10% A 8640 minute winter	3.449	1.363
100 year +45% CC +10% A 10080 minute summer	4.849	1.237
100 year +45% CC +10% A 10080 minute winter	3.129	1.237

Results for 1 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 20.64%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
600 minute winter	SW MH 01.00	420	14.148	0.255	0.1	0.0405	0.0000	SURCHARGED
600 minute winter	SW MH 01.50	420	14.148	0.321	0.1	0.0908	0.0000	SURCHARGED
600 minute winter	SW MH 02.00	420	14.148	0.612	0.1	0.0973	0.0000	FLOOD RISK
180 minute winter	EX HW RG	200	13.281	0.001	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
600 minute winter	SW MH 01.00	1.000	SW MH 01.50	0.1	0.147	0.017	0.0518	
600 minute winter	SW MH 01.50	Orifice	SW MH 02.00	0.1				
600 minute winter	SW MH 02.00	1.002_1	EX HW RG	0.0	0.000	0.000	0.0001	0.0

Results for 30 year +40% CC +10% A Critical Storm Duration. Lowest mass balance: 20.64%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute summer	SW MH 01.00	152	14.540	0.647	0.8	0.1029	0.0000	SURCHARGED
240 minute summer	SW MH 01.50	152	14.540	0.713	0.5	0.2018	0.0000	SURCHARGED
480 minute winter	SW MH 02.00	216	14.160	0.624	0.3	0.0992	2.6042	FLOOD
15 minute summer	EX HW RG	32	13.281	0.001	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
240 minute summer	SW MH 01.00	1.000	SW MH 01.50	0.5	0.361	0.087	0.0518	
240 minute summer	SW MH 01.50	Orifice	SW MH 02.00	0.3				
480 minute winter	SW MH 02.00	1.002_1	EX HW RG	0.0	0.000	0.000	0.0001	0.1

Results for 100 year +45% CC +10% A Critical Storm Duration. Lowest mass balance: 20.64%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute summer	SW MH 01.00	82	14.782	0.889	1.7	0.1414	0.0000	SURCHARGED
120 minute summer	SW MH 01.50	82	14.782	0.955	1.0	0.2702	0.0000	SURCHARGED
720 minute winter	SW MH 02.00	285	14.160	0.624	0.3	0.0992	4.0548	FLOOD
240 minute summer	EX HW RG	64	13.281	0.001	0.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
120 minute summer	SW MH 01.00	1.000	SW MH 01.50	1.0	0.381	0.167	0.0518	
120 minute summer	SW MH 01.50	Orifice	SW MH 02.00	0.4				
720 minute winter	SW MH 02.00	1.002_1	EX HW RG	0.0	0.000	0.000	0.0001	0.1