



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	0.750	Preferred Cover Depth (m)	1.200
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)
EX COMINED MH 6908			19.990	1200	564689.120	173975.380	2.400
SW MH 01.00			19.820	475	564686.440	173984.380	1.200
TANK	0.017	5.00	16.325	50	564685.500	173994.350	2.525
SW MH 06.00	0.014	5.00	16.325	475	564661.830	173973.930	1.050
SW MH 05.00	0.014	5.00	16.325	475	564681.100	173979.410	1.251
FW CW 01.00			19.820	1350	564687.900	173979.200	1.650
SW MH 02.00			16.325	1200	564684.450	173990.250	2.575
SW MH 04.00	0.014	5.00	16.325	1200	564676.120	173994.760	1.413
SW MH 03.00			17.100	1200	564682.200	173997.160	2.253
SW MH 07.00	0.014	5.00	16.325	475	564665.070	173991.300	1.050

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)
1.005	SW MH 02.00	SW MH 01.00	6.198	0.600	13.750	18.620	-4.870	-1.3	150	5.94	50.0
1.004	TANK	SW MH 02.00	4.232	0.600	13.800	13.750	0.050	84.6	150	5.84	50.0
1.007	FW CW 01.00	EX COMINED MH 6908	4.010	0.600	18.170	17.590	0.580	6.9	150	5.99	50.0
1.000	SW MH 06.00	SW MH 05.00	20.034	0.600	15.275	15.074	0.201	99.7	150	5.33	50.0
1.006	SW MH 01.00	FW CW 01.00	5.382	0.600	18.620	18.170	0.450	12.0	150	5.98	50.0
1.001	SW MH 05.00	SW MH 04.00	16.138	0.600	15.074	14.912	0.162	99.6	150	5.60	50.0
1.002	SW MH 04.00	SW MH 03.00	6.537	0.600	14.912	14.847	0.065	100.6	150	5.71	50.0
1.003	SW MH 03.00	TANK	4.334	0.600	14.847	14.800	0.047	92.2	150	5.78	50.0
2.000	SW MH 07.00	SW MH 04.00	11.579	0.600	15.275	14.912	0.363	31.9	150	5.11	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)
1.005	1.000	17.7	9.9	2.425	1.050	0.073	0.0
1.004	1.093	19.3	9.9	2.375	2.425	0.073	0.0
1.007	3.856	68.1	9.9	1.500	2.250	0.073	0.0
1.000	1.006	17.8	1.9	0.900	1.101	0.014	0.0
1.006	2.929	51.8	9.9	1.050	1.500	0.073	0.0
1.001	1.007	17.8	3.8	1.101	1.263	0.028	0.0
1.002	1.002	17.7	7.6	1.263	2.103	0.056	0.0
1.003	1.047	18.5	7.6	2.103	1.375	0.056	0.0
2.000	1.788	31.6	1.9	0.900	1.263	0.014	0.0

Pipeline Schedule

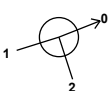
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.005	6.198	-1.3	150	Circular	16.325	13.750	2.425	19.820	18.620	1.050
1.004	4.232	84.6	150	Circular	16.325	13.800	2.375	16.325	13.750	2.425
1.007	4.010	6.9	150	Circular	19.820	18.170	1.500	19.990	17.590	2.250
1.000	20.034	99.7	150	Circular	16.325	15.275	0.900	16.325	15.074	1.101
1.006	5.382	12.0	150	Circular	19.820	18.620	1.050	19.820	18.170	1.500
1.001	16.138	99.6	150	Circular	16.325	15.074	1.101	16.325	14.912	1.263
1.002	6.537	100.6	150	Circular	16.325	14.912	1.263	17.100	14.847	2.103
1.003	4.334	92.2	150	Circular	17.100	14.847	2.103	16.325	14.800	1.375
2.000	11.579	31.9	150	Circular	16.325	15.275	0.900	16.325	14.912	1.263

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.005	SW MH 02.00	1200	Manhole	Adoptable	SW MH 01.00	475	Manhole	Adoptable
1.004	TANK	50	Manhole	Adoptable	SW MH 02.00	1200	Manhole	Adoptable
1.007	FW CW 01.00	1350	Manhole	Adoptable	EX COMINED MH 6908	1200	Manhole	Adoptable
1.000	SW MH 06.00	475	Manhole	Adoptable	SW MH 05.00	475	Manhole	Adoptable
1.006	SW MH 01.00	475	Manhole	Adoptable	FW CW 01.00	1350	Manhole	Adoptable
1.001	SW MH 05.00	475	Manhole	Adoptable	SW MH 04.00	1200	Manhole	Adoptable
1.002	SW MH 04.00	1200	Manhole	Adoptable	SW MH 03.00	1200	Manhole	Adoptable
1.003	SW MH 03.00	1200	Manhole	Adoptable	TANK	50	Manhole	Adoptable
2.000	SW MH 07.00	475	Manhole	Adoptable	SW MH 04.00	1200	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
EX COMINED MH 6908	564689.120	173975.380	19.990	2.400	1200	 1	1.007	17.590	150
SW MH 01.00	564686.440	173984.380	19.820	1.200	475	 1	1.005	18.620	150
TANK	564685.500	173994.350	16.325	2.525	50	 0	1.006	18.620	150
						 1	1.003	14.800	150
						 0	1.004	13.800	150
SW MH 06.00	564661.830	173973.930	16.325	1.050	475	 0	1.000	15.275	150
SW MH 05.00	564681.100	173979.410	16.325	1.251	475	 1	1.000	15.074	150
						 0	1.001	15.074	150
FW CW 01.00	564687.900	173979.200	19.820	1.650	1350	 1	1.006	18.170	150
						 0	1.007	18.170	150

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
SW MH 02.00	564684.450	173990.250	16.325	2.575	1200		1 1.004	13.750	150
SW MH 04.00	564676.120	173994.760	16.325	1.413	1200		1 2.000 2 1.001	14.912	150
SW MH 03.00	564682.200	173997.160	17.100	2.253	1200		1 1.002	14.912	150
SW MH 07.00	564665.070	173991.300	16.325	1.050	475		0 1.002	14.847	150
							0 2.000	15.275	150

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Additional Storage (m³/ha)	20.0
Summer CV	0.750	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	0.840	Drain Down Time (mins)	240	Check Discharge Volume	x

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 %)
2	0	0	0
30	35	0	0
100	45	0	0

Node SW MH 02.00 Online Pump Control

Flap Valve	x	Design Depth (m)	1.650	Switch off depth (m)	0.050
Replaces Downstream Link	✓	Design Flow (l/s)	2.0		
Invert Level (m)	13.400	Switch on depth (m)	0.500		

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.001	2.000	1.600	2.000

Node TANK Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	13.800
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	134

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	27.0	0.0	1.200	27.0	0.0	1.201	0.0	0.0

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
2 year 15 minute summer	105.395	29.823
2 year 15 minute winter	73.961	29.823
2 year 30 minute summer	67.037	18.969
2 year 30 minute winter	47.043	18.969
2 year 60 minute summer	44.214	11.685
2 year 60 minute winter	29.375	11.685
2 year 120 minute summer	30.286	8.004
2 year 120 minute winter	20.122	8.004
2 year 180 minute summer	24.135	6.211
2 year 180 minute winter	15.689	6.211
2 year 240 minute summer	19.415	5.131
2 year 240 minute winter	12.899	5.131
2 year 360 minute summer	15.026	3.867
2 year 360 minute winter	9.767	3.867
2 year 480 minute summer	11.837	3.128
2 year 480 minute winter	7.864	3.128
2 year 600 minute summer	9.656	2.641
2 year 600 minute winter	6.598	2.641
2 year 720 minute summer	8.560	2.294
2 year 720 minute winter	5.753	2.294
2 year 960 minute summer	6.943	1.828
2 year 960 minute winter	4.599	1.828
2 year 1440 minute summer	4.968	1.332
2 year 1440 minute winter	3.339	1.332
2 year 2160 minute summer	3.526	0.974
2 year 2160 minute winter	2.429	0.974
2 year 2880 minute summer	2.932	0.786
2 year 2880 minute winter	1.971	0.786
2 year 4320 minute summer	2.261	0.591
2 year 4320 minute winter	1.489	0.591
2 year 5760 minute summer	1.913	0.490
2 year 5760 minute winter	1.238	0.490
2 year 7200 minute summer	1.679	0.428
2 year 7200 minute winter	1.084	0.428
2 year 8640 minute summer	1.516	0.387
2 year 8640 minute winter	0.978	0.387
2 year 10080 minute summer	1.398	0.357
2 year 10080 minute winter	0.903	0.357
30 year +35% CC 15 minute summer	373.699	105.744
30 year +35% CC 15 minute winter	262.245	105.744
30 year +35% CC 30 minute summer	241.552	68.351
30 year +35% CC 30 minute winter	169.510	68.351
30 year +35% CC 60 minute summer	159.470	42.143
30 year +35% CC 60 minute winter	105.948	42.143
30 year +35% CC 120 minute summer	96.166	25.414
30 year +35% CC 120 minute winter	63.890	25.414
30 year +35% CC 180 minute summer	73.073	18.804
30 year +35% CC 180 minute winter	47.499	18.804
30 year +35% CC 240 minute summer	57.345	15.155
30 year +35% CC 240 minute winter	38.098	15.155
30 year +35% CC 360 minute summer	43.330	11.150
30 year +35% CC 360 minute winter	28.166	11.150

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
30 year +35% CC 480 minute summer	33.916	8.963
30 year +35% CC 480 minute winter	22.533	8.963
30 year +35% CC 600 minute summer	27.664	7.567
30 year +35% CC 600 minute winter	18.901	7.567
30 year +35% CC 720 minute summer	24.588	6.590
30 year +35% CC 720 minute winter	16.525	6.590
30 year +35% CC 960 minute summer	20.142	5.304
30 year +35% CC 960 minute winter	13.343	5.304
30 year +35% CC 1440 minute summer	14.555	3.901
30 year +35% CC 1440 minute winter	9.782	3.901
30 year +35% CC 2160 minute summer	10.340	2.858
30 year +35% CC 2160 minute winter	7.125	2.858
30 year +35% CC 2880 minute summer	8.540	2.289
30 year +35% CC 2880 minute winter	5.739	2.289
30 year +35% CC 4320 minute summer	6.380	1.668
30 year +35% CC 4320 minute winter	4.202	1.668
30 year +35% CC 5760 minute summer	5.236	1.340
30 year +35% CC 5760 minute winter	3.389	1.340
30 year +35% CC 7200 minute summer	4.486	1.145
30 year +35% CC 7200 minute winter	2.896	1.145
30 year +35% CC 8640 minute summer	3.968	1.012
30 year +35% CC 8640 minute winter	2.561	1.012
30 year +35% CC 10080 minute summer	3.596	0.917
30 year +35% CC 10080 minute winter	2.321	0.917
100 year +45% CC 15 minute summer	514.011	145.447
100 year +45% CC 15 minute winter	360.709	145.447
100 year +45% CC 30 minute summer	335.131	94.831
100 year +45% CC 30 minute winter	235.180	94.831
100 year +45% CC 60 minute summer	222.923	58.912
100 year +45% CC 60 minute winter	148.105	58.912
100 year +45% CC 120 minute summer	133.055	35.163
100 year +45% CC 120 minute winter	88.399	35.163
100 year +45% CC 180 minute summer	101.275	26.062
100 year +45% CC 180 minute winter	65.832	26.062
100 year +45% CC 240 minute summer	79.899	21.115
100 year +45% CC 240 minute winter	53.083	21.115
100 year +45% CC 360 minute summer	61.263	15.765
100 year +45% CC 360 minute winter	39.823	15.765
100 year +45% CC 480 minute summer	48.676	12.864
100 year +45% CC 480 minute winter	32.339	12.864
100 year +45% CC 600 minute summer	40.183	10.991
100 year +45% CC 600 minute winter	27.456	10.991
100 year +45% CC 720 minute summer	36.055	9.663
100 year +45% CC 720 minute winter	24.232	9.663
100 year +45% CC 960 minute summer	29.881	7.868
100 year +45% CC 960 minute winter	19.794	7.868
100 year +45% CC 1440 minute summer	21.764	5.833
100 year +45% CC 1440 minute winter	14.627	5.833
100 year +45% CC 2160 minute summer	15.418	4.261
100 year +45% CC 2160 minute winter	10.623	4.261
100 year +45% CC 2880 minute summer	12.609	3.379
100 year +45% CC 2880 minute winter	8.474	3.379

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year +45% CC 4320 minute summer	9.172	2.398
100 year +45% CC 4320 minute winter	6.040	2.398
100 year +45% CC 5760 minute summer	7.351	1.882
100 year +45% CC 5760 minute winter	4.758	1.882
100 year +45% CC 7200 minute summer	6.160	1.571
100 year +45% CC 7200 minute winter	3.975	1.571
100 year +45% CC 8640 minute summer	5.342	1.363
100 year +45% CC 8640 minute winter	3.448	1.363
100 year +45% CC 10080 minute summer	4.759	1.214
100 year +45% CC 10080 minute winter	3.071	1.214

Results for 2 year Critical Storm Duration. Lowest mass balance: 75.76%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
480 minute summer	EX COMINED MH 6908	216	17.608	0.018	2.0	0.0000	0.0000	OK
240 minute summer	SW MH 01.00	104	18.643	0.023	2.0	0.0040	0.0000	OK
180 minute summer	TANK	108	13.958	0.158	3.6	4.0636	0.0000	SURCHARGED
15 minute winter	SW MH 06.00	10	15.308	0.033	1.9	0.0145	0.0000	OK
15 minute winter	SW MH 05.00	11	15.120	0.046	3.8	0.0185	0.0000	OK
480 minute summer	FW CW 01.00	216	18.189	0.019	2.0	0.0265	0.0000	OK
180 minute summer	SW MH 02.00	108	13.957	0.207	2.6	0.2343	0.0000	SURCHARGED
15 minute winter	SW MH 04.00	11	14.986	0.074	7.4	0.0983	0.0000	OK
15 minute winter	SW MH 03.00	11	14.920	0.073	7.4	0.0831	0.0000	OK
15 minute winter	SW MH 07.00	10	15.300	0.025	1.9	0.0111	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	1.006	FW CW 01.00	2.2	1.606	0.042	0.0074	
180 minute summer	TANK	1.004	SW MH 02.00	2.6	0.577	0.132	0.0745	
15 minute winter	SW MH 06.00	1.000	SW MH 05.00	1.9	0.505	0.105	0.0744	
15 minute winter	SW MH 05.00	1.001	SW MH 04.00	3.7	0.562	0.207	0.1069	
480 minute summer	FW CW 01.00	1.007	EX COMINED MH 6908	2.0	1.677	0.030	0.0049	11.7
180 minute summer	SW MH 02.00	Pump	SW MH 01.00	2.0				
15 minute winter	SW MH 04.00	1.002	SW MH 03.00	7.4	0.857	0.417	0.0563	
15 minute winter	SW MH 03.00	1.003	TANK	7.4	0.925	0.400	0.0347	
15 minute winter	SW MH 07.00	2.000	SW MH 04.00	1.9	0.386	0.060	0.0608	

Results for 30 year +35% CC Critical Storm Duration. Lowest mass balance: 75.76%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	EX COMINED MH 6908	9	17.608	0.018	2.0	0.0000	0.0000	OK
240 minute winter	SW MH 01.00	60	18.644	0.024	2.0	0.0042	0.0000	OK
120 minute winter	TANK	108	14.553	0.753	10.9	19.4144	0.0000	SURCHARGED
15 minute winter	SW MH 06.00	12	15.339	0.064	6.7	0.0284	0.0000	OK
15 minute winter	SW MH 05.00	11	15.323	0.249	13.3	0.1000	0.0000	SURCHARGED
15 minute summer	FW CW 01.00	9	18.189	0.019	2.0	0.0265	0.0000	OK
120 minute winter	SW MH 02.00	106	14.552	0.802	2.4	0.9076	0.0000	SURCHARGED
15 minute winter	SW MH 04.00	11	15.236	0.324	24.4	0.4300	0.0000	SURCHARGED
15 minute winter	SW MH 03.00	12	15.064	0.217	23.7	0.2454	0.0000	SURCHARGED
15 minute winter	SW MH 07.00	10	15.322	0.047	6.7	0.0208	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 winter	SW MH 01.00	1.006	FW CW 01.00	2.0	1.797	0.039	0.0074	
120 minute winter	TANK	1.004	SW MH 02.00	2.4	0.606	0.123	0.0745	
15 minute winter	SW MH 06.00	1.000	SW MH 05.00	6.6	0.668	0.372	0.2481	
15 minute winter	SW MH 05.00	1.001	SW MH 04.00	11.8	0.671	0.664	0.2841	
15 minute summer	FW CW 01.00	1.007	EX COMINED MH 6908	2.0	1.675	0.030	0.0048	14.0
120 minute winter	SW MH 02.00	Pump	SW MH 01.00	2.0				
15 minute winter	SW MH 04.00	1.002	SW MH 03.00	23.7	1.346	1.338	0.1151	
15 minute winter	SW MH 03.00	1.003	TANK	23.5	1.334	1.269	0.0746	
15 minute winter	SW MH 07.00	2.000	SW MH 04.00	6.7	0.502	0.211	0.1290	

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 75.76%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
60 minute winter	EX COMINED MH 6908	18	17.608	0.018	2.0	0.0000	0.0000	OK
15 minute summer	SW MH 01.00	8	18.642	0.022	2.0	0.0039	0.0000	OK
120 minute winter	TANK	116	14.958	1.158	15.1	29.8594	0.0000	SURCHARGED
15 minute winter	SW MH 06.00	12	15.631	0.356	9.3	0.1583	0.0000	SURCHARGED
15 minute winter	SW MH 05.00	12	15.587	0.513	16.3	0.2056	0.0000	SURCHARGED
30 minute summer	FW CW 01.00	13	18.189	0.019	2.0	0.0265	0.0000	OK
120 minute winter	SW MH 02.00	116	14.957	1.207	2.6	1.3657	0.0000	SURCHARGED
15 minute winter	SW MH 04.00	12	15.439	0.527	31.6	0.7007	0.0000	SURCHARGED
15 minute winter	SW MH 03.00	12	15.156	0.309	30.5	0.3492	0.0000	SURCHARGED
15 minute winter	SW MH 07.00	12	15.466	0.191	9.3	0.0849	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	SW MH 01.00	1.006	FW CW 01.00	2.1	1.524	0.041	0.0075	
120 minute winter	TANK	1.004	SW MH 02.00	2.6	0.644	0.132	0.0745	
15 minute winter	SW MH 06.00	1.000	SW MH 05.00	7.7	0.668	0.431	0.3527	
15 minute winter	SW MH 05.00	1.001	SW MH 04.00	15.3	0.869	0.860	0.2841	
30 minute summer	FW CW 01.00	1.007	EX COMINED MH 6908	2.0	1.676	0.030	0.0048	25.5
120 minute winter	SW MH 02.00	Pump	SW MH 01.00	2.0				
15 minute winter	SW MH 04.00	1.002	SW MH 03.00	30.5	1.734	1.724	0.1151	
15 minute winter	SW MH 03.00	1.003	TANK	30.6	1.739	1.655	0.0755	
15 minute winter	SW MH 07.00	2.000	SW MH 04.00	8.6	0.623	0.271	0.2038	