

Routing Diagram for Site1HillsboroughMunicipalComplex_20240628

Prepared by Rutgers Cooperative Extension Water Resources Program, Printed 6/29/2024

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Site1HillsboroughMunicipComplex_20240628

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Project Notes

Rainfall events imported from "NRCS-Rain.txt" for 6600 NJ Atlantic-C
Rainfall events imported from "NRCS-Rain.txt" for 7614 PA Chester-C
Rainfall events imported from "NRCS-Rain.txt" for 6617 NJ Somerset-C
Rainfall events imported from "Site 4_20240402.hcp"

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year_2100	NOAA 24-hr	C	Default	24.00	1	3.97	2
2	2-Year_Current	NOAA 24-hr	C	Default	24.00	1	3.34	2
3	10-Year_2100	NOAA 24-hr	C	Default	24.00	1	6.21	2
4	10-Year_Current	NOAA 24-hr	C	Default	24.00	1	5.16	2
5	100-Year_2100	NOAA 24-hr	C	Default	24.00	1	12.15	2
6	100-Year_Current	NOAA 24-hr	C	Default	24.00	1	8.95	2

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Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
13,302	79	50-75% Grass cover, Fair, HSG C (3Sa)
2,767	70	Brush (fair) C (8S)
63,031	77	Brush (fair) D (8S)
159,121	65	Brush (good) C (8S, 9S)
64,708	73	Brush (good) D (8S)
966	98	Gravel surface, HSG C - Path (3Sa)
596,450	98	Impervious (1S, 1Sb, 2S, 3S, 3Sc, 4S, 4Sb, 5S, 5Sb, 6S, 7S, 8S, 9S, 31S)
3,630	98	Impervious - Road / Sidewalk (3Sb)
10,303	98	Impervious - Roof top (3Sb)
14,584	98	Impervious Parking Lot (1Sa)
9,716	98	Impervious Parking lot (5Sa)
14,019	98	Impervious Parkinglot (4Sa)
6,507	98	Impervious Roof Top (3Sa)
5,114	98	Impervious Sidewalk (3Sa)
2,484	74	OPen Space (Good) C - Portion from DA1 (1Sa)
22,588	79	Open Space (Fair) C (5S, 5Sa, 5Sb)
108,641	79	Open Space (fair) C (6S, 7S, 31S)
433,830	74	Open Space (good) C (2S, 5S, 5Sb, 6S, 7S, 9S)
100,978	79	Open space (Fair) C (2S, 3S, 3Sc, 8S)
6,912	79	Open space (fair) C (1S, 1Sb, 4S, 4Sb)
5,569	79	Open space (fair) C - Portion from DA 9 the field (1Sa)
10,350	79	Open space (fair) C _from DA 8 (4Sa)
31,153	84	Open space (fair) D (4S, 4Sb, 8S)
118,684	74	Open space (good) C (1S, 1Sb, 3S, 3Sb, 3Sc, 4S, 4Sb, 8S)
9,087	80	Open space (good) D (8S)
10,448	79	Open spcae (fair) C (9S)
1,824,942	83	TOTAL AREA

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Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
14,268	HSG C	3Sa
0	HSG D	
1,810,674	Other	1S, 1Sa, 1Sb, 2S, 3S, 3Sa, 3Sb, 3Sc, 4S, 4Sa, 4Sb, 5S, 5Sa, 5Sb, 6S, 7S, 8S, 9S, 31S
1,824,942		TOTAL AREA

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Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover
0	0	13,302	0	0	13,302	50-75% Grass cover, Fair
0	0	0	0	2,767	2,767	Brush (fair) C
0	0	0	0	63,031	63,031	Brush (fair) D
0	0	0	0	159,121	159,121	Brush (good) C
0	0	0	0	64,708	64,708	Brush (good) D
0	0	966	0	0	966	Gravel surface
0	0	0	0	596,450	596,450	Impervious
0	0	0	0	3,630	3,630	Impervious - Road / Sidewalk
0	0	0	0	10,303	10,303	Impervious - Roof top
0	0	0	0	14,584	14,584	Impervious Parking Lot
0	0	0	0	9,716	9,716	Impervious Parking lot
0	0	0	0	14,019	14,019	Impervious Parkinglot
0	0	0	0	6,507	6,507	Impervious Roof Top
0	0	0	0	5,114	5,114	Impervious Sidewalk
0	0	0	0	2,484	2,484	Open Space (Good) C - Portion from DA1
0	0	0	0	22,588	22,588	Open Space (Fair) C
0	0	0	0	108,641	108,641	Open Space (fair) C
0	0	0	0	433,830	433,830	Open Space (good) C
0	0	0	0	100,978	100,978	Open space (Fair) C
0	0	0	0	6,912	6,912	Open space (fair) C
0	0	0	0	5,569	5,569	Open space (fair) C - Portion from DA 9 the field
0	0	0	0	10,350	10,350	Open space (fair) C _from DA 8
0	0	0	0	31,153	31,153	Open space (fair) D

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Ground Covers (all nodes) (continued)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover
0	0	0	0	118,684	118,684	Open space (good) C
0	0	0	0	9,087	9,087	Open space (good) D
0	0	0	0	10,448	10,448	Open spcae (fair) C
0	0	14,268	0	1,810,674	1,824,942	TOTAL AREA

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
1	1P	98.15	98.09	11.0	0.0055	0.020	0.0	4.0	0.0
2	1P	98.25	98.15	20.0	0.0050	0.020	0.0	4.0	0.0
3	2P	92.17	90.37	359.0	0.0050	0.020	0.0	6.0	0.0
4	3P	92.17	90.37	359.0	0.0050	0.020	0.0	6.0	0.0
5	4P	99.15	99.09	11.0	0.0055	0.020	0.0	4.0	0.0
6	4P	99.25	99.15	20.0	0.0050	0.020	0.0	4.0	0.0
7	5P	99.15	99.09	11.0	0.0055	0.020	0.0	4.0	0.0
8	5P	99.25	99.15	20.0	0.0050	0.020	0.0	4.0	0.0
9	6P	92.17	90.37	359.0	0.0050	0.020	0.0	6.0	0.0
10	7P	98.15	98.09	11.0	0.0055	0.020	0.0	4.0	0.0
11	7P	98.25	98.15	20.0	0.0050	0.020	0.0	4.0	0.0
12	8P	92.17	90.37	359.0	0.0050	0.020	0.0	6.0	0.0
13	9P	98.15	98.09	11.0	0.0055	0.020	0.0	4.0	0.0
14	9P	98.25	98.15	20.0	0.0050	0.020	0.0	4.0	0.0
15	10P	92.17	90.37	359.0	0.0050	0.020	0.0	6.0	0.0
16	11P	98.15	98.09	11.0	0.0055	0.020	0.0	4.0	0.0
17	11P	98.25	98.15	20.0	0.0050	0.020	0.0	4.0	0.0
18	12P	92.17	90.37	359.0	0.0050	0.020	0.0	6.0	0.0

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

- Subcatchment 1S: DA1: CN w/ IC** Runoff Area=56,173 sf 73.47% Impervious Runoff Depth=3.18"
Flow Length=361' Tc=14.3 min CN=75/98 Runoff=3.57 cfs 14,888 cf
- Subcatchment 1Sa: Existing RG 1_West** Runoff Area=22,637 sf 64.43% Impervious Runoff Depth=3.04"
Flow Length=361' Tc=14.3 min CN=77/98 Runoff=1.39 cfs 5,740 cf
- Subcatchment 1Sb: DA1: CN w/ IC** Runoff Area=39,105 sf 68.25% Impervious Runoff Depth=3.07"
Flow Length=361' Tc=14.3 min CN=75/98 Runoff=2.41 cfs 10,008 cf
- Subcatchment 2S: DA 2: CN w/ IC areas** Runoff Area=58,249 sf 86.46% Impervious Runoff Depth=3.46"
Flow Length=391' Tc=7.0 min CN=76/98 Runoff=5.01 cfs 16,804 cf
- Subcatchment 3S: DA 3: CN w/ IC** Runoff Area=158,623 sf 63.48% Impervious Runoff Depth=3.00"
Flow Length=441' Tc=8.3 min CN=76/98 Runoff=11.58 cfs 39,625 cf
- Subcatchment 3Sa: Existing RG 2 Front DA** Runoff Area=25,889 sf 48.62% Impervious Runoff Depth=2.81"
Tc=8.3 min CN=79/98 Runoff=1.81 cfs 6,067 cf
- Subcatchment 3Sb: RG 1 DA** Runoff Area=21,388 sf 65.14% Impervious Runoff Depth=2.98"
Flow Length=441' Tc=8.3 min CN=74/98 Runoff=1.55 cfs 5,315 cf
- Subcatchment 3Sc: DA 3: CN w/ IC areas** Runoff Area=111,346 sf 66.62% Impervious Runoff Depth=3.04"
Flow Length=441' Tc=8.3 min CN=75/98 Runoff=8.20 cfs 28,182 cf
- Subcatchment 4S: DA 4: CN w/ IC** Runoff Area=86,816 sf 90.62% Impervious Runoff Depth=3.54"
Flow Length=143' Tc=8.4 min CN=75/98 Runoff=7.27 cfs 25,603 cf
- Subcatchment 4Sa: RG 4 DA** Runoff Area=24,369 sf 57.53% Impervious Runoff Depth=2.97"
Flow Length=143' Tc=8.4 min CN=79/98 Runoff=1.77 cfs 6,036 cf
- Subcatchment 4Sb: DA 4: CN w/ IC areas** Runoff Area=72,797 sf 88.81% Impervious Runoff Depth=3.50"
Flow Length=143' Tc=8.4 min CN=75/98 Runoff=6.04 cfs 21,240 cf
- Subcatchment 5S: DA 5: CN w/ IC** Runoff Area=78,058 sf 72.85% Impervious Runoff Depth=3.21"
Flow Length=310' Tc=11.5 min CN=77/98 Runoff=5.42 cfs 20,859 cf
- Subcatchment 5Sa: RG 3 DA** Runoff Area=19,898 sf 48.83% Impervious Runoff Depth=2.82"
Flow Length=310' Tc=11.5 min CN=79/98 Runoff=1.25 cfs 4,670 cf
- Subcatchment 5Sb: DA 5: CN w/ IC areas** Runoff Area=58,163 sf 81.07% Impervious Runoff Depth=3.34"
Flow Length=310' Tc=11.5 min CN=75/98 Runoff=4.17 cfs 16,185 cf
- Subcatchment 6S: DA 6: CN w/ IC areas** Runoff Area=32,033 sf 45.19% Impervious Runoff Depth=2.75"
Flow Length=276' Tc=14.0 min CN=79/98 Runoff=1.84 cfs 7,343 cf
- Subcatchment 7S: DA 7 (Offsite South):** Runoff Area=107,001 sf 18.84% Impervious Runoff Depth=2.22"
Flow Length=309' Tc=14.5 min CN=78/98 Runoff=5.03 cfs 19,757 cf

Subcatchment 8S: DA 8 (Offsite North): CN Runoff Area=340,642 sf 1.94% Impervious Runoff Depth=1.62"
 Flow Length=976' Tc=19.4 min CN=74/98 Runoff=10.54 cfs 45,879 cf

Subcatchment 9S: DA 9 (Offsite Field) Runoff Area=479,720 sf 0.89% Impervious Runoff Depth=1.53"
 Flow Length=1,468' Tc=30.4 min CN=73/98 Runoff=11.17 cfs 60,998 cf

Subcatchment 31S: RG 2 DA Runoff Area=32,035 sf 32.46% Impervious Runoff Depth=2.52"
 Flow Length=276' Tc=14.0 min CN=79/98 Runoff=1.72 cfs 6,733 cf

Reach 1R: Existing Bioswale West 1 Avg. Flow Depth=0.20' Max Vel=1.94 fps Inflow=1.39 cfs 5,740 cf
 n=0.035 L=33.0' S=0.0227 '/' Capacity=7.36 cfs Outflow=1.38 cfs 5,740 cf

Reach 2R: Bioswale E 1 RG 3 Avg. Flow Depth=0.29' Max Vel=2.36 fps Inflow=1.25 cfs 4,670 cf
 n=0.035 L=35.0' S=0.0286 '/' Capacity=4.02 cfs Outflow=1.24 cfs 4,670 cf

Pond 1P: Existing Rain Garden 1 West Peak Elev=100.38' Storage=1,831 cf Inflow=1.38 cfs 5,740 cf
 Primary=0.27 cfs 4,082 cf Secondary=1.13 cfs 1,483 cf Outflow=1.40 cfs 5,565 cf

Pond 2P: Underground Storage w/ Porous Peak Elev=97.33' Storage=13,272 cf Inflow=3.79 cfs 15,573 cf
 Primary=0.02 cfs 3,613 cf Secondary=0.00 cfs 0 cf Outflow=0.02 cfs 3,613 cf

Pond 3P: Underground Storage w/ Porous Peak Elev=97.29' Storage=15,715 cf Inflow=5.01 cfs 16,804 cf
 Primary=0.01 cfs 3,642 cf Secondary=0.00 cfs 0 cf Outflow=0.01 cfs 3,642 cf

Pond 4P: Existing Rain Garden 2 Front Peak Elev=101.21' Storage=3,140 cf Inflow=1.81 cfs 6,067 cf
 Primary=0.20 cfs 4,306 cf Secondary=0.27 cfs 633 cf Outflow=0.47 cfs 4,938 cf

Pond 5P: Proposed Rain Garden 1 (South) Peak Elev=101.31' Storage=2,466 cf Inflow=1.55 cfs 5,315 cf
 Primary=0.24 cfs 3,954 cf Secondary=0.75 cfs 810 cf Outflow=1.00 cfs 4,764 cf

Pond 6P: Underground Storage w/ Porous Peak Elev=97.18' Storage=34,307 cf Inflow=8.38 cfs 37,884 cf
 Primary=0.01 cfs 3,591 cf Secondary=0.00 cfs 0 cf Outflow=0.01 cfs 3,591 cf

Pond 7P: Proposed Rain Garden 4 (North) Peak Elev=100.53' Storage=2,453 cf Inflow=1.77 cfs 6,036 cf
 Primary=0.32 cfs 4,289 cf Secondary=2.15 cfs 1,518 cf Outflow=2.47 cfs 5,806 cf

Pond 8P: Underground Storage w/ Porous Peak Elev=97.21' Storage=24,597 cf Inflow=7.67 cfs 27,046 cf
 Primary=0.01 cfs 3,618 cf Secondary=0.00 cfs 0 cf Outflow=0.01 cfs 3,618 cf

Pond 9P: Proposed Rain Garden 3 (North) Peak Elev=100.34' Storage=1,751 cf Inflow=1.24 cfs 4,670 cf
 Primary=0.25 cfs 3,651 cf Secondary=0.86 cfs 884 cf Outflow=1.12 cfs 4,535 cf

Pond 10P: Underground Storage w/ Porous Peak Elev=97.23' Storage=18,421 cf Inflow=4.77 cfs 20,720 cf
 Primary=0.01 cfs 3,623 cf Secondary=0.00 cfs 0 cf Outflow=0.01 cfs 3,623 cf

Pond 11P: Proposed Rain Garden 2 (East) Peak Elev=100.35' Storage=3,267 cf Inflow=1.84 cfs 7,343 cf
 Primary=0.27 cfs 5,879 cf Secondary=0.97 cfs 1,248 cf Outflow=1.24 cfs 7,127 cf

Pond 12P: Underground Storage w/ Porous Peak Elev=96.76' Storage=4,178 cf Inflow=1.24 cfs 7,127 cf
 Primary=0.01 cfs 3,224 cf Secondary=0.00 cfs 0 cf Outflow=0.01 cfs 3,224 cf

Link 1L: Offsite Flows Inflow=24.16 cfs 126,634 cf
 Primary=24.16 cfs 126,634 cf

Total Runoff Area = 1,824,942 sf Runoff Volume = 361,933 cf Average Runoff Depth = 2.38"
63.76% Pervious = 1,163,653 sf 36.24% Impervious = 661,289 sf

Summary for Subcatchment 1S: DA1: CN w/ IC areas_original

Runoff = 3.57 cfs @ 12.22 hrs, Volume= 14,888 cf, Depth= 3.18"

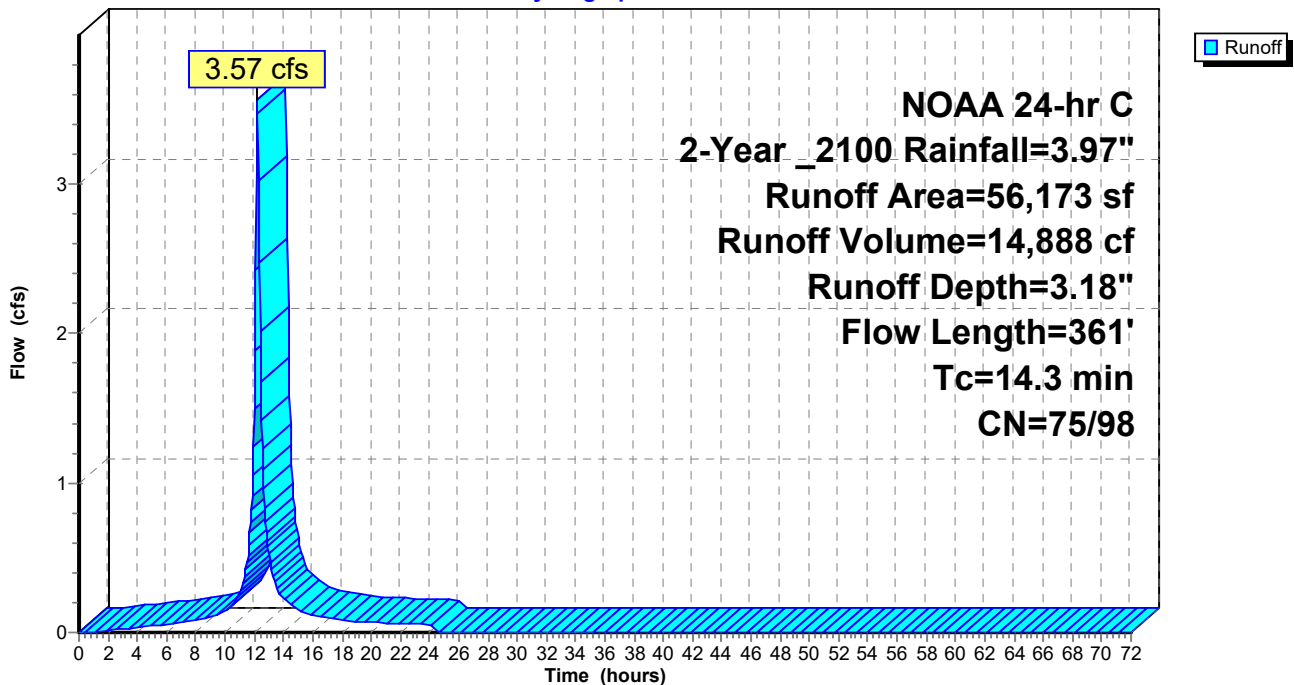
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _2100 Rainfall=3.97"

Area (sf)	CN	Description
* 2,053	79	Open space (fair) C
* 12,848	74	Open space (good) C
* 41,272	98	Impervious
56,173	92	Weighted Average
14,901	75	26.53% Pervious Area
41,272	98	73.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	100	0.0109	0.14		Sheet Flow, Sheet flow Grass: Short n= 0.150 P2= 3.34"
0.2	33	0.0280	2.69		Shallow Concentrated Flow, SCF - unpaved Unpaved Kv= 16.1 fps
1.9	228	0.0095	1.98		Shallow Concentrated Flow, SCF - Paved parking lot Paved Kv= 20.3 fps
14.3	361	Total			

Subcatchment 1S: DA1: CN w/ IC areas_original

Hydrograph



Summary for Subcatchment 1Sa: Existing RG 1_West_DA

Runoff = 1.39 cfs @ 12.22 hrs, Volume= 5,740 cf, Depth= 3.04"
 Routed to Reach 1R : Existing Bioswale West 1

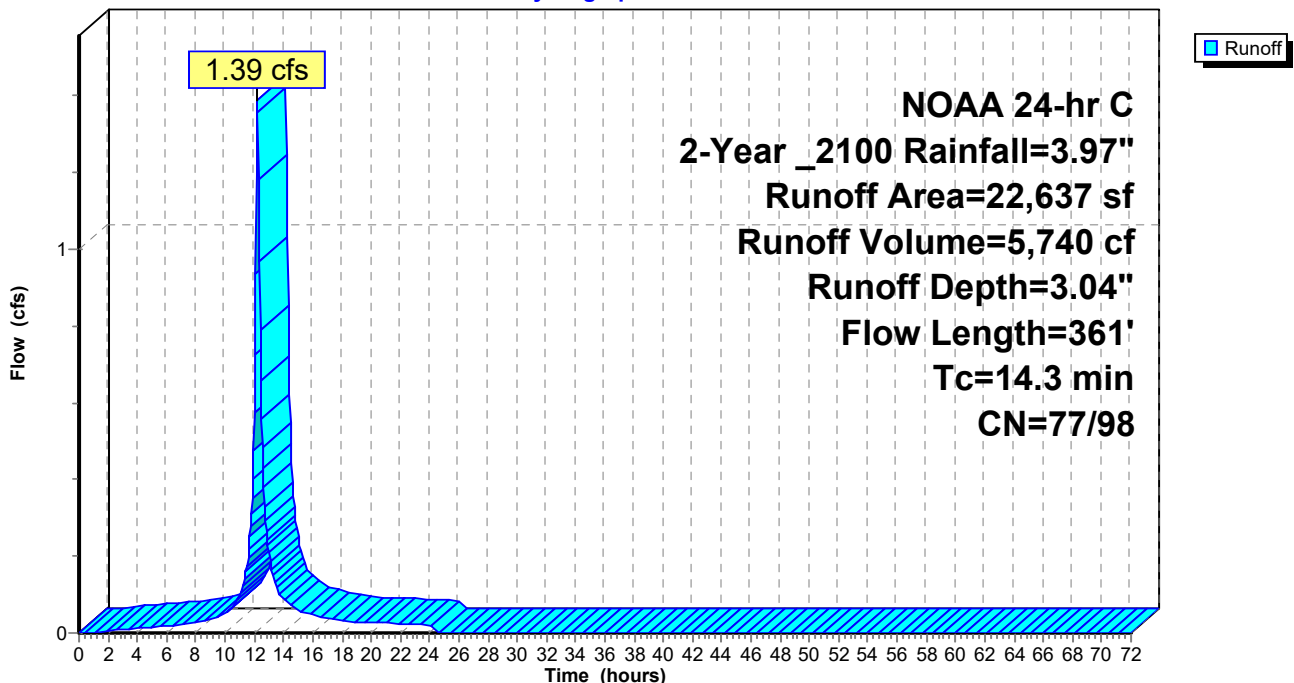
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _2100 Rainfall=3.97"

	Area (sf)	CN	Description
*	5,569	79	Open space (fair) C - Portion from DA 9 the field
*	14,584	98	Impervious Parking Lot
*	2,484	74	OPen Space (Good) C - Portion from DA1
	22,637	91	Weighted Average
	8,053	77	35.57% Pervious Area
	14,584	98	64.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	100	0.0109	0.14		Sheet Flow, Sheet flow Grass: Short n= 0.150 P2= 3.34"
0.2	33	0.0280	2.69		Shallow Concentrated Flow, SCF - unpaved Unpaved Kv= 16.1 fps
1.9	228	0.0095	1.98		Shallow Concentrated Flow, SCF - Paved parking lot Paved Kv= 20.3 fps
14.3	361	Total			

Subcatchment 1Sa: Existing RG 1_West_DA

Hydrograph



Summary for Subcatchment 1Sb: DA1: CN w/ IC areas_Remaining

Runoff = 2.41 cfs @ 12.22 hrs, Volume= 10,008 cf, Depth= 3.07"
 Routed to Pond 2P : Underground Storage w/ Porous Pavement 1

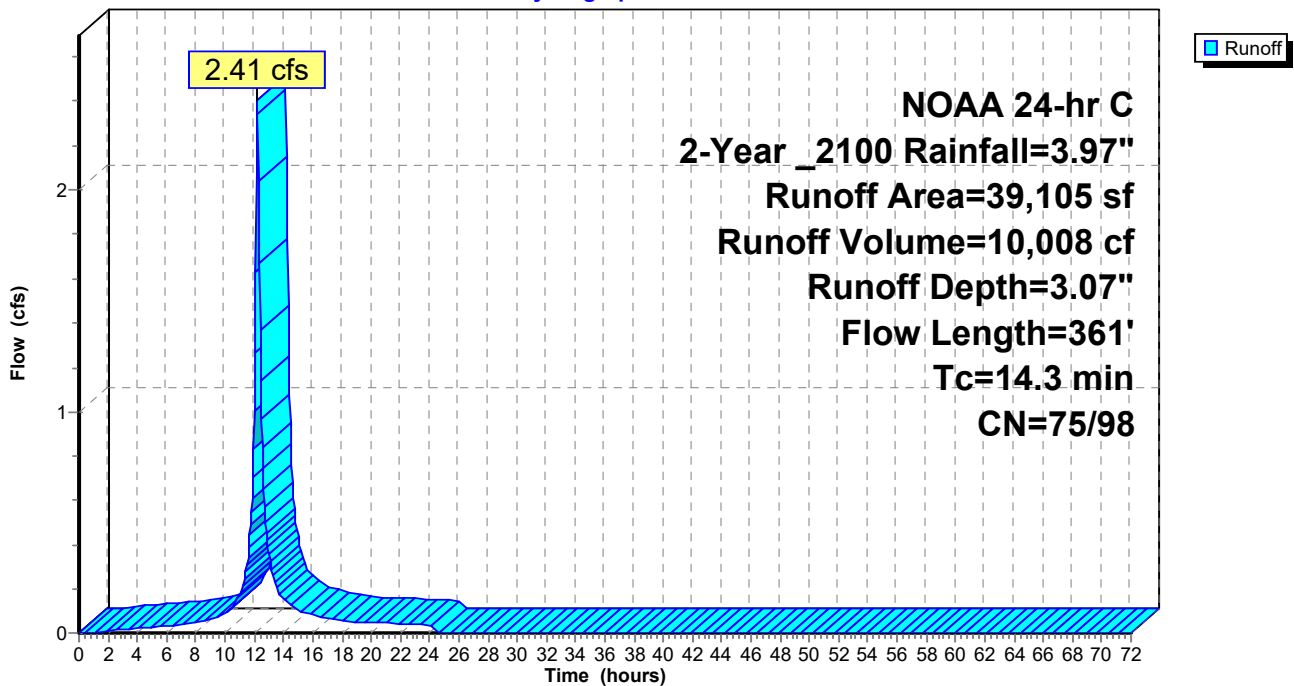
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _2100 Rainfall=3.97"

Area (sf)	CN	Description
* 2,053	79	Open space (fair) C
* 10,364	74	Open space (good) C
* 26,688	98	Impervious
39,105	91	Weighted Average
12,417	75	31.75% Pervious Area
26,688	98	68.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	100	0.0109	0.14		Sheet Flow, Sheet flow Grass: Short n= 0.150 P2= 3.34"
0.2	33	0.0280	2.69		Shallow Concentrated Flow, SCF - unpaved Unpaved Kv= 16.1 fps
1.9	228	0.0095	1.98		Shallow Concentrated Flow, SCF - Paved parking lot Paved Kv= 20.3 fps
14.3	361	Total			

Subcatchment 1Sb: DA1: CN w/ IC areas_Remaining

Hydrograph



Summary for Subcatchment 2S: DA 2: CN w/ IC areas

Runoff = 5.01 cfs @ 12.14 hrs, Volume= 16,804 cf, Depth= 3.46"
 Routed to Pond 3P : Underground Storage w/ Porous Pavement 2

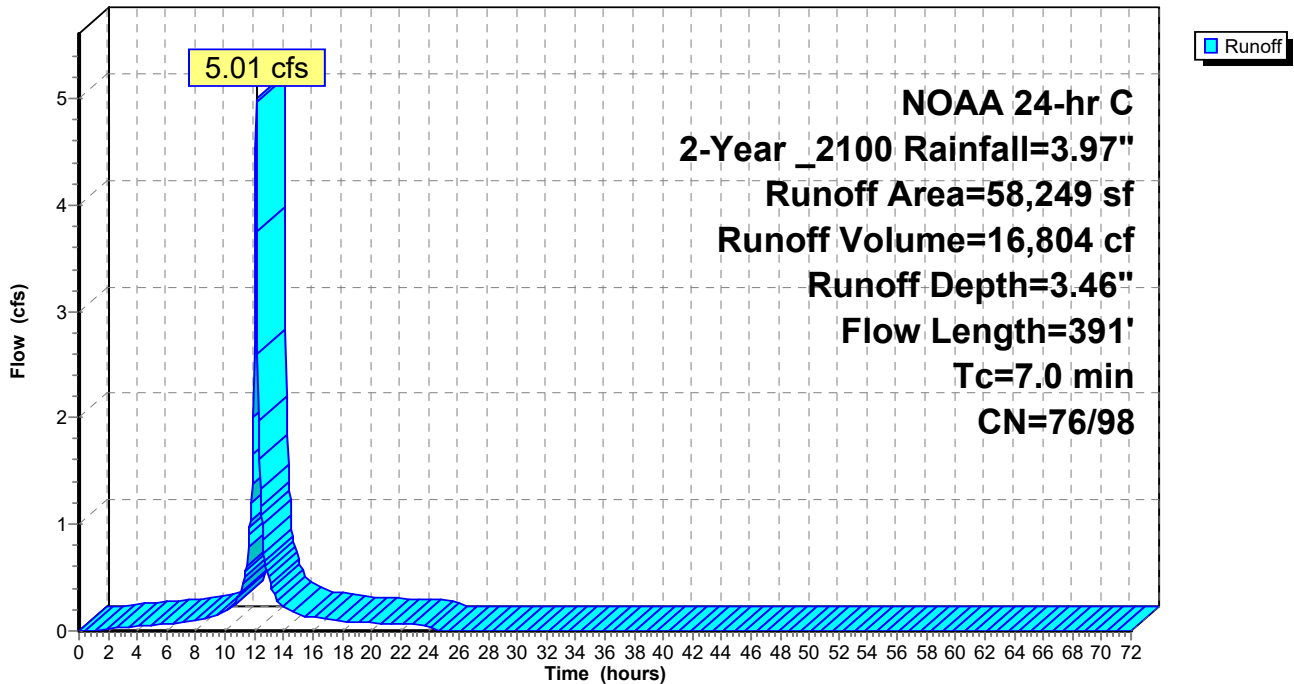
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _2100 Rainfall=3.97"

	Area (sf)	CN	Description
*	3,767	79	Open space (Fair) C
*	4,118	74	Open Space (good) C
*	50,364	98	Impervious
	58,249	95	Weighted Average
	7,885	76	13.54% Pervious Area
	50,364	98	86.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	18	0.0037	0.06		Sheet Flow, Sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
2.2	373	0.0186	2.77		Shallow Concentrated Flow, SCF _ paved Paved Kv= 20.3 fps
7.0	391	Total			

Subcatchment 2S: DA 2: CN w/ IC areas

Hydrograph



Summary for Subcatchment 3S: DA 3: CN w/ IC areas_Original

Runoff = 11.58 cfs @ 12.15 hrs, Volume= 39,625 cf, Depth= 3.00"

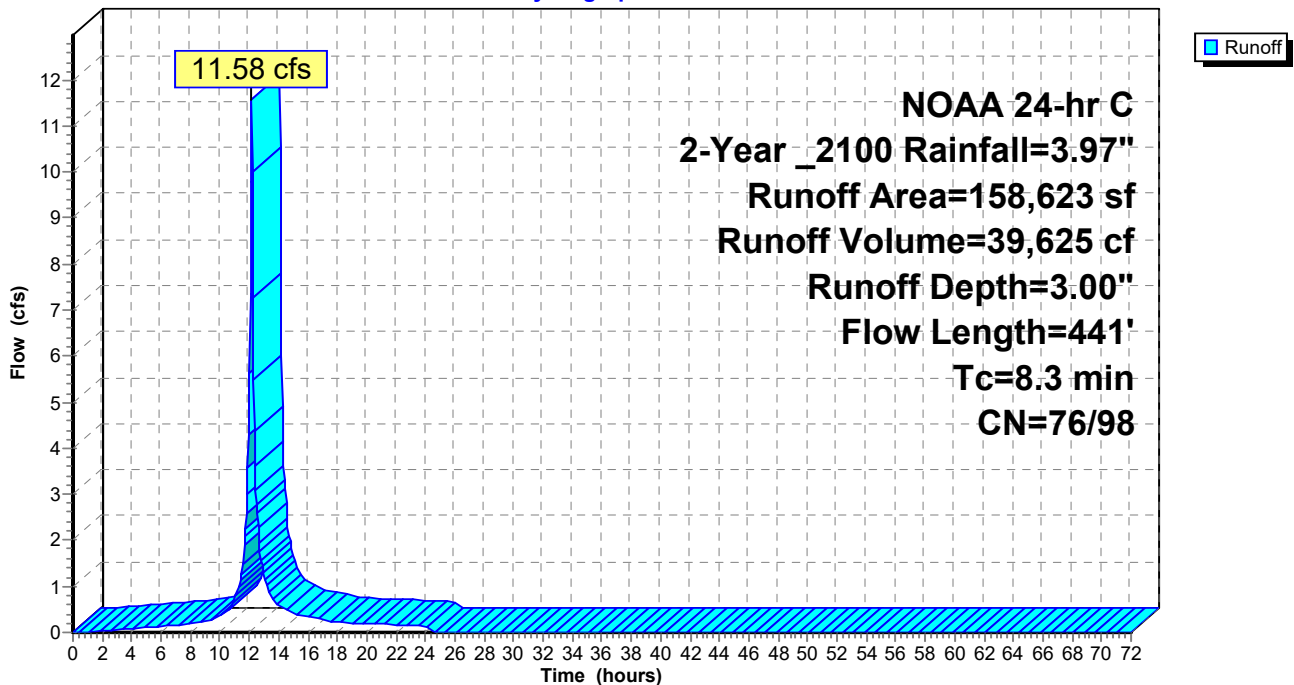
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _2100 Rainfall=3.97"

	Area (sf)	CN	Description
*	18,715	79	Open space (Fair) C
*	39,208	74	Open space (good) C
*	100,700	98	Impervious
	158,623	90	Weighted Average
	57,923	76	36.52% Pervious Area
	100,700	98	63.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	83	0.0489	0.24		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
2.5	358	0.0138	2.38		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
8.3	441	Total			

Subcatchment 3S: DA 3: CN w/ IC areas_Original

Hydrograph



Summary for Subcatchment 3Sa: Existing RG 2 Front DA

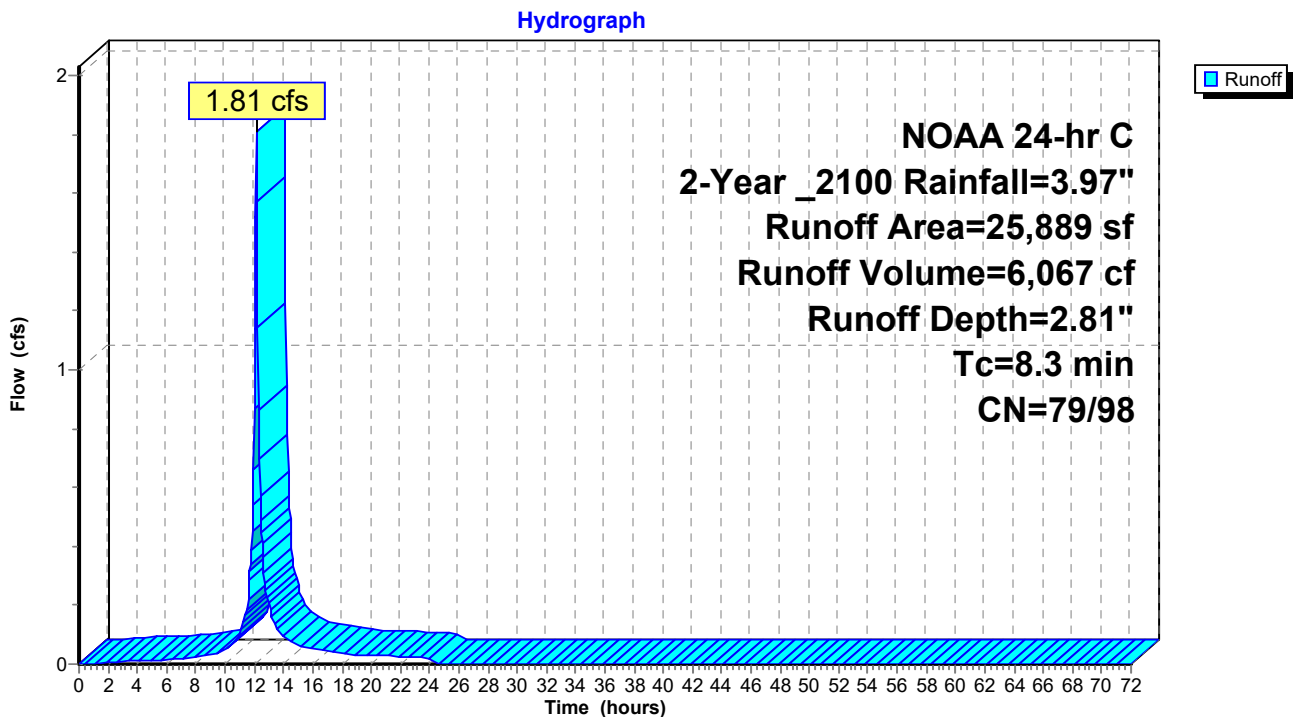
Runoff = 1.81 cfs @ 12.15 hrs, Volume= 6,067 cf, Depth= 2.81"
 Routed to Pond 4P : Existing Rain Garden 2 Front

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _2100 Rainfall=3.97"

	Area (sf)	CN	Description
*	6,507	98	Impervious Roof Top
*	966	98	Gravel surface, HSG C - Path
*	5,114	98	Impervious Sidewalk
	13,302	79	50-75% Grass cover, Fair, HSG C
	25,889	88	Weighted Average
	13,302	79	51.38% Pervious Area
	12,587	98	48.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3					Direct Entry,

Subcatchment 3Sa: Existing RG 2 Front DA



Summary for Subcatchment 3Sb: RG 1 DA

Runoff = 1.55 cfs @ 12.15 hrs, Volume= 5,315 cf, Depth= 2.98"
 Routed to Pond 5P : Proposed Rain Garden 1 (South West)

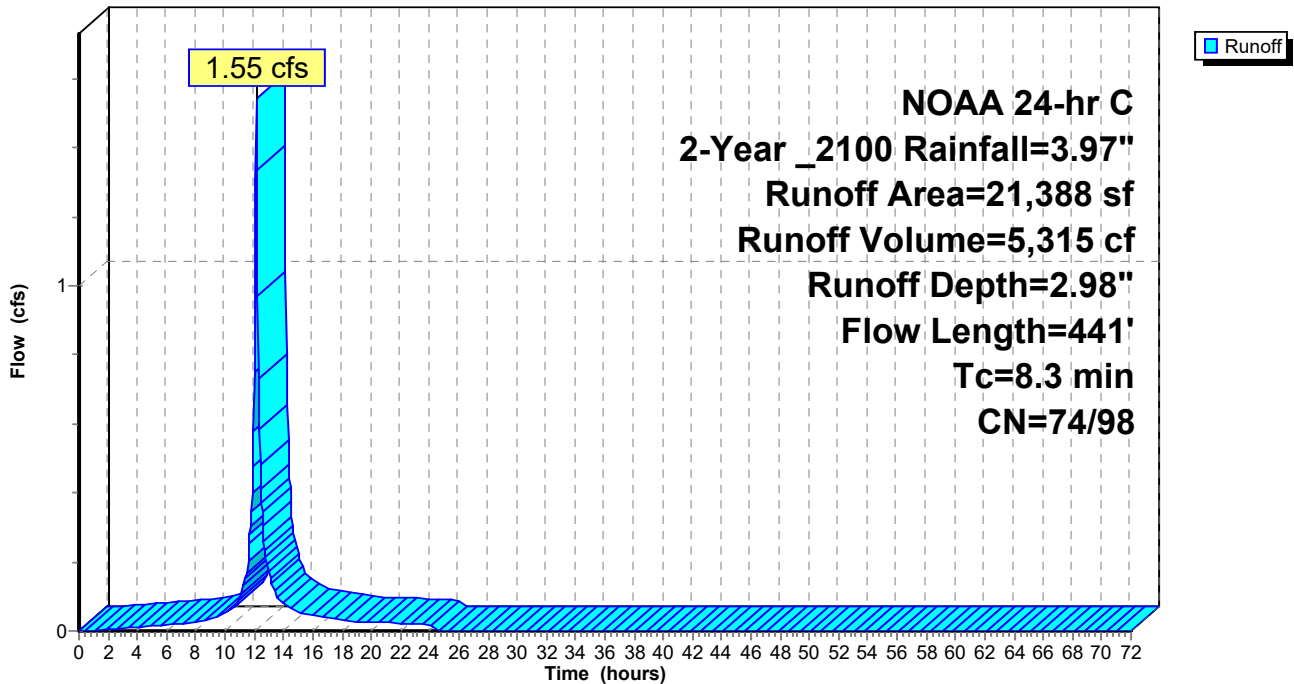
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _2100 Rainfall=3.97"

	Area (sf)	CN	Description
*	7,455	74	Open space (good) C
*	10,303	98	Impervious - Roof top
*	3,630	98	Impervious - Road / Sidewalk
	21,388	90	Weighted Average
	7,455	74	34.86% Pervious Area
	13,933	98	65.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	83	0.0489	0.24		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
2.5	358	0.0138	2.38		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
8.3	441	Total			

Subcatchment 3Sb: RG 1 DA

Hydrograph



Summary for Subcatchment 3Sc: DA 3: CN w/ IC areas Remaining

Runoff = 8.20 cfs @ 12.15 hrs, Volume= 28,182 cf, Depth= 3.04"
 Routed to Pond 6P : Underground Storage w/ Porous Pavement 3

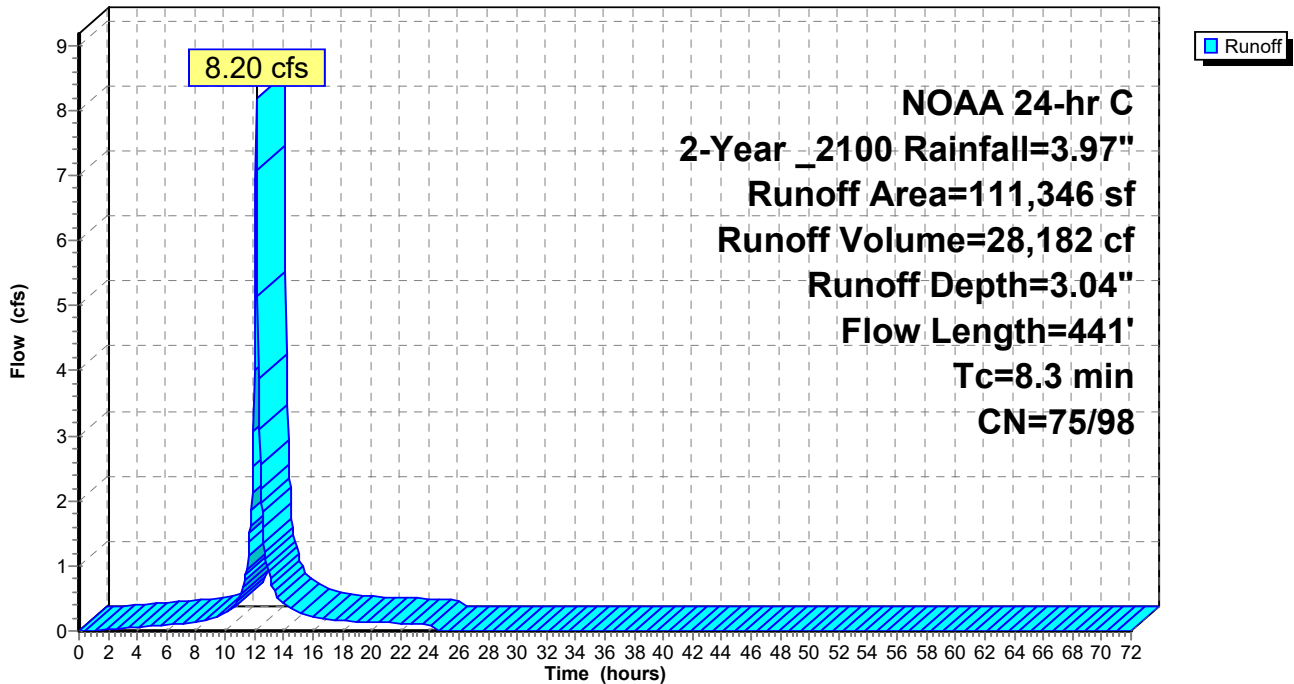
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _2100 Rainfall=3.97"

Area (sf)	CN	Description
* 5,413	79	Open space (Fair) C
* 31,753	74	Open space (good) C
* 74,180	98	Impervious
111,346	90	Weighted Average
37,166	75	33.38% Pervious Area
74,180	98	66.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	83	0.0489	0.24		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
2.5	358	0.0138	2.38		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
8.3	441	Total			

Subcatchment 3Sc: DA 3: CN w/ IC areas Remaining

Hydrograph



Summary for Subcatchment 4S: DA 4: CN w/ IC areas_original

Runoff = 7.27 cfs @ 12.15 hrs, Volume= 25,603 cf, Depth= 3.54"

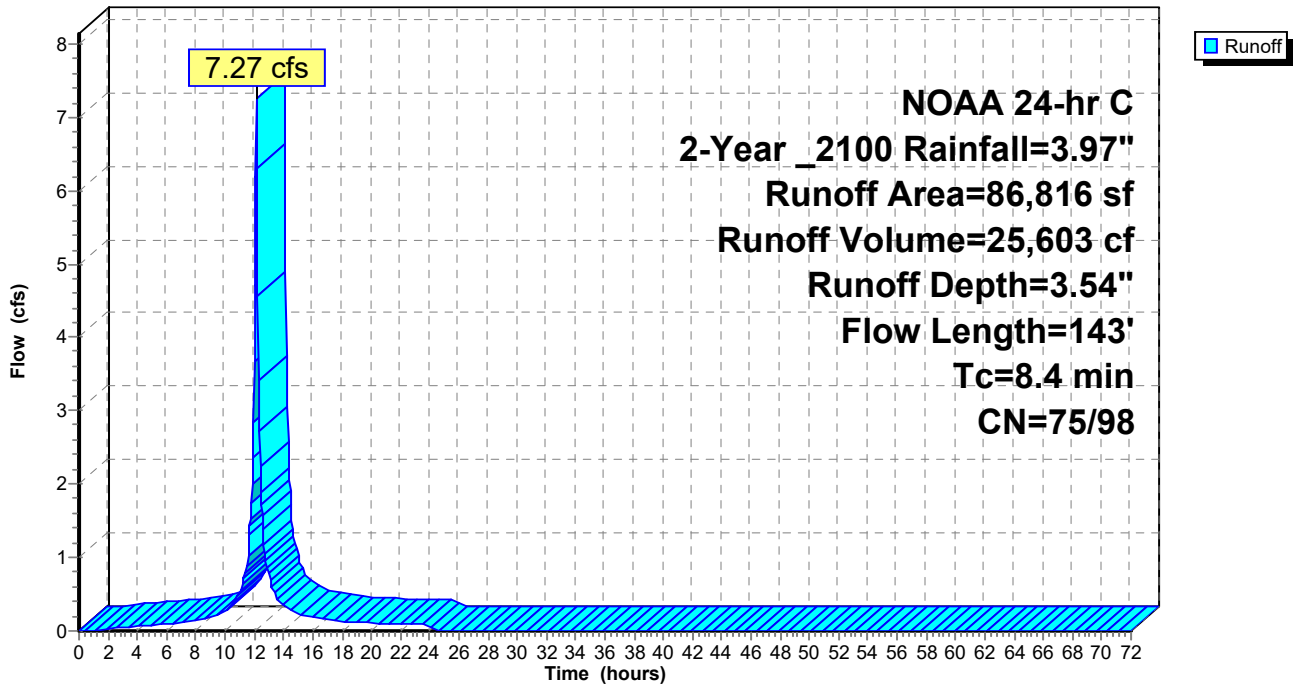
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _2100 Rainfall=3.97"

Area (sf)	CN	Description
* 1,403	79	Open space (fair) C
* 446	84	Open space (fair) D
* 6,298	74	Open space (good) C
* 78,669	98	Impervious
86,816	96	Weighted Average
8,147	75	9.38% Pervious Area
78,669	98	90.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	67	0.0144	0.14		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
0.5	76	0.0155	2.53		Shallow Concentrated Flow, SCF - Paved Paved Kv= 20.3 fps
8.4	143	Total			

Subcatchment 4S: DA 4: CN w/ IC areas_original

Hydrograph



Summary for Subcatchment 4Sa: RG 4 DA

Runoff = 1.77 cfs @ 12.15 hrs, Volume= 6,036 cf, Depth= 2.97"
 Routed to Pond 7P : Proposed Rain Garden 4 (North)

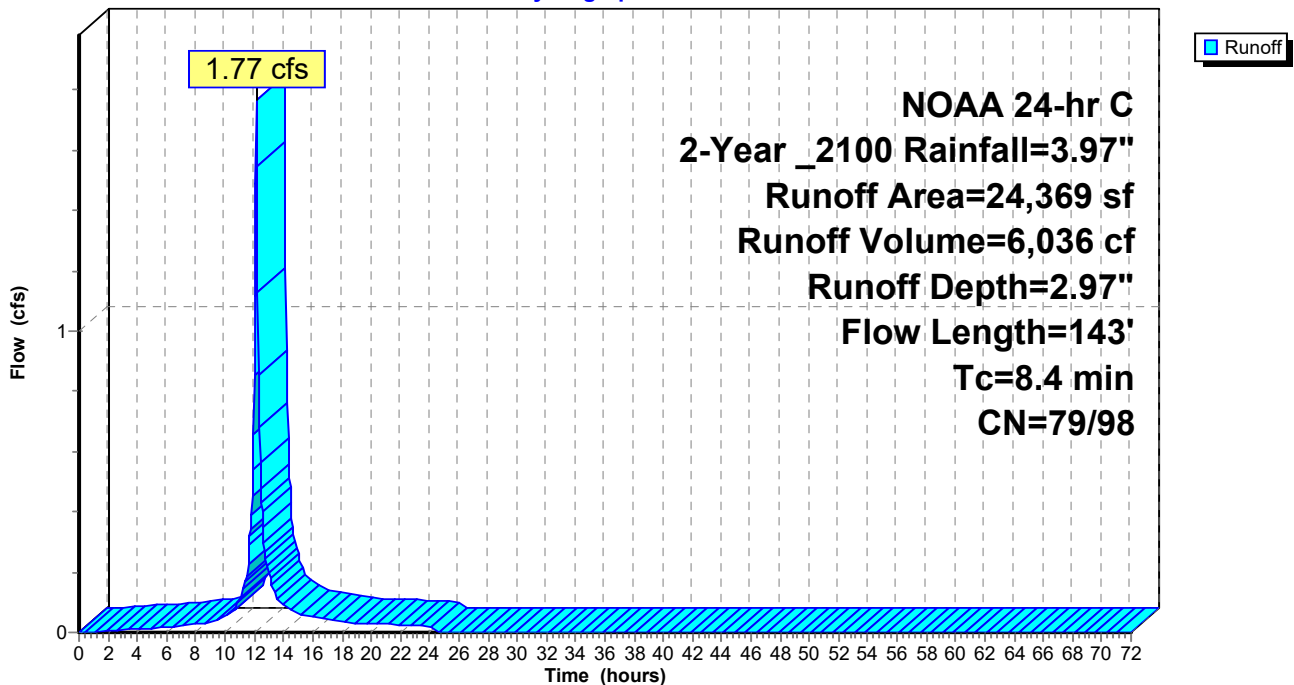
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _2100 Rainfall=3.97"

	Area (sf)	CN	Description
*	10,350	79	Open space (fair) C_from DA 8
*	14,019	98	Impervious Parkinglot
	24,369	90	Weighted Average
	10,350	79	42.47% Pervious Area
	14,019	98	57.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	67	0.0144	0.14		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
0.5	76	0.0155	2.53		Shallow Concentrated Flow, SCF - Paved Paved Kv= 20.3 fps
8.4	143	Total			

Subcatchment 4Sa: RG 4 DA

Hydrograph



Summary for Subcatchment 4Sb: DA 4: CN w/ IC areas

Runoff = 6.04 cfs @ 12.15 hrs, Volume= 21,240 cf, Depth= 3.50"
 Routed to Pond 8P : Underground Storage w/ Porous Pavement 4

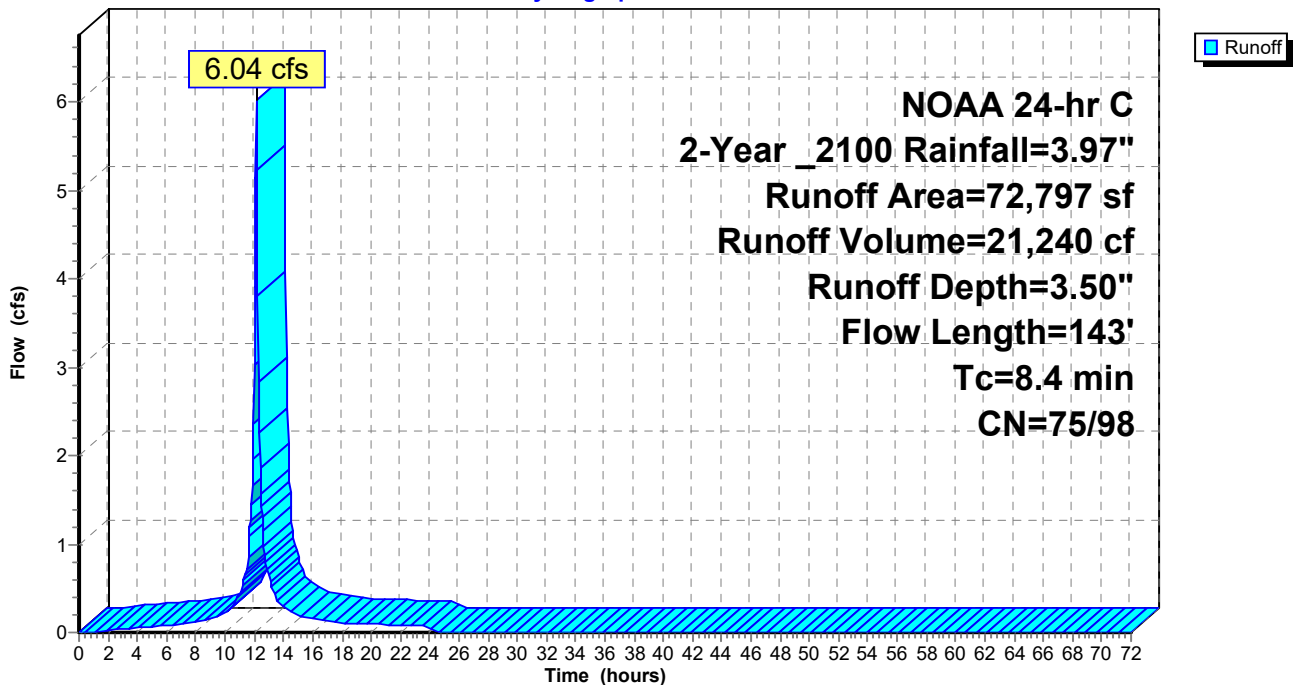
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _2100 Rainfall=3.97"

	Area (sf)	CN	Description
*	1,403	79	Open space (fair) C
*	446	84	Open space (fair) D
*	6,298	74	Open space (good) C
*	64,650	98	Impervious
	72,797	95	Weighted Average
	8,147	75	11.19% Pervious Area
	64,650	98	88.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	67	0.0144	0.14		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
0.5	76	0.0155	2.53		Shallow Concentrated Flow, SCF - Paved Paved Kv= 20.3 fps
8.4	143	Total			

Subcatchment 4Sb: DA 4: CN w/ IC areas

Hydrograph



Summary for Subcatchment 5S: DA 5: CN w/ IC areas_Original

Runoff = 5.42 cfs @ 12.19 hrs, Volume= 20,859 cf, Depth= 3.21"

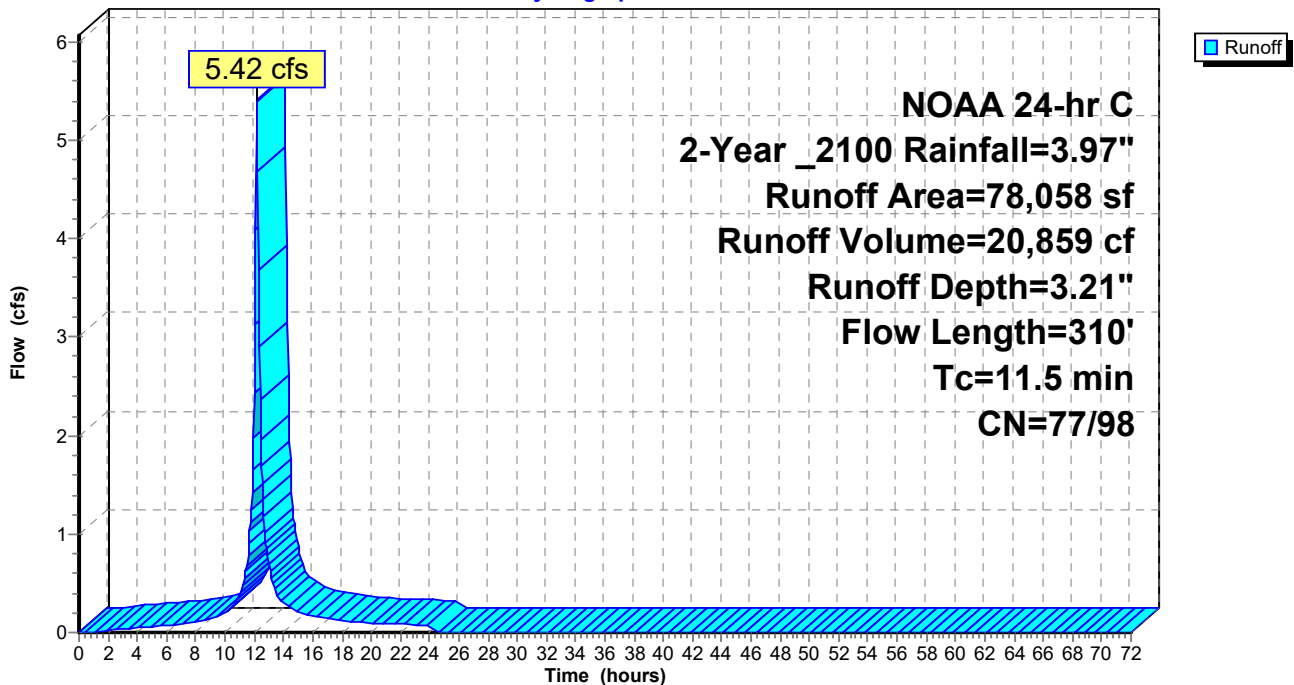
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _2100 Rainfall=3.97"

Area (sf)	CN	Description
* 11,294	79	Open Space (Fair) C
* 9,899	74	Open Space (good) C
* 56,865	98	Impervious
78,058	92	Weighted Average
21,193	77	27.15% Pervious Area
56,865	98	72.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	64	0.0105	0.12		Sheet Flow, Sheet flow -grass Grass: Short n= 0.150 P2= 3.34"
1.3	179	0.0129	2.31		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
1.5	67	0.0120	0.77		Shallow Concentrated Flow, SCF _ grass Short Grass Pasture Kv= 7.0 fps
11.5	310	Total			

Subcatchment 5S: DA 5: CN w/ IC areas_Original

Hydrograph



Summary for Subcatchment 5Sa: RG 3 DA

Runoff = 1.25 cfs @ 12.19 hrs, Volume= 4,670 cf, Depth= 2.82"
 Routed to Reach 2R : Bioswale E 1 RG 3

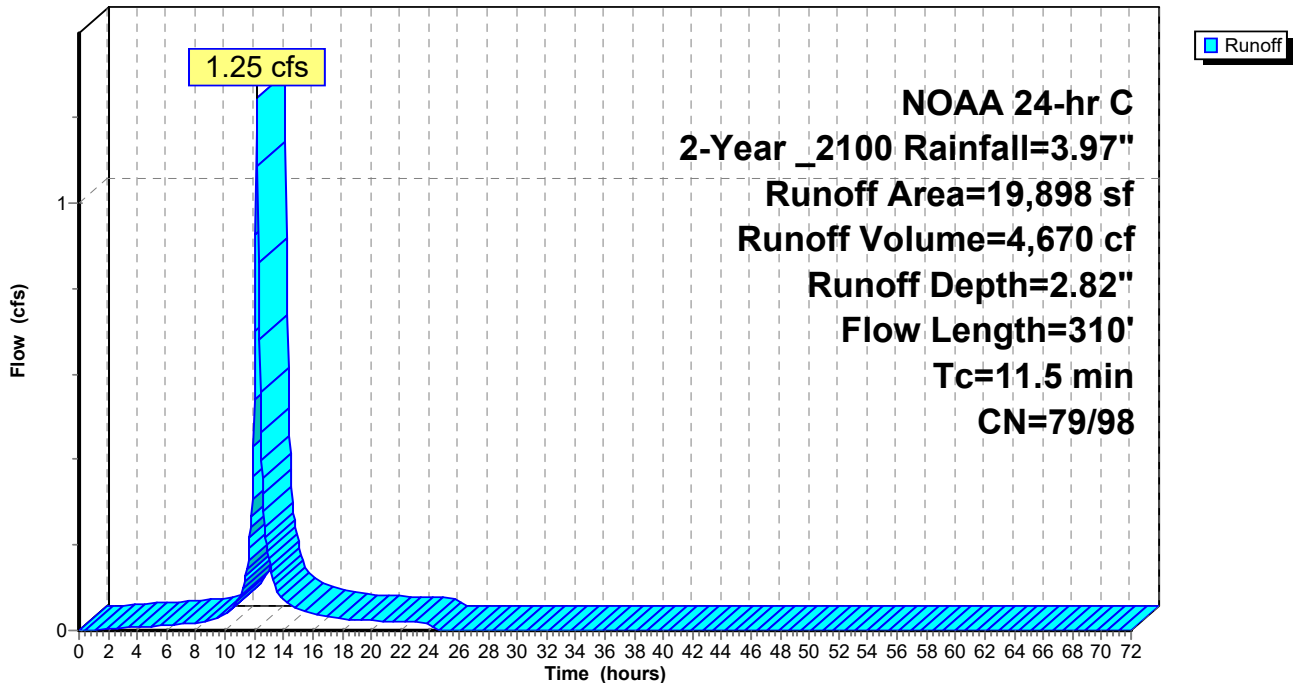
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _2100 Rainfall=3.97"

	Area (sf)	CN	Description
*	10,182	79	Open Space (Fair) C
*	9,716	98	Impervious Parking lot
	19,898	88	Weighted Average
	10,182	79	51.17% Pervious Area
	9,716	98	48.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	64	0.0105	0.12		Sheet Flow, Sheet flow -grass Grass: Short n= 0.150 P2= 3.34"
1.3	179	0.0129	2.31		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
1.5	67	0.0120	0.77		Shallow Concentrated Flow, SCF _ grass Short Grass Pasture Kv= 7.0 fps
11.5	310	Total			

Subcatchment 5Sa: RG 3 DA

Hydrograph



Summary for Subcatchment 5Sb: DA 5: CN w/ IC areas

Runoff = 4.17 cfs @ 12.19 hrs, Volume= 16,185 cf, Depth= 3.34"
 Routed to Pond 10P : Underground Storage w/ Porous Pavement 5

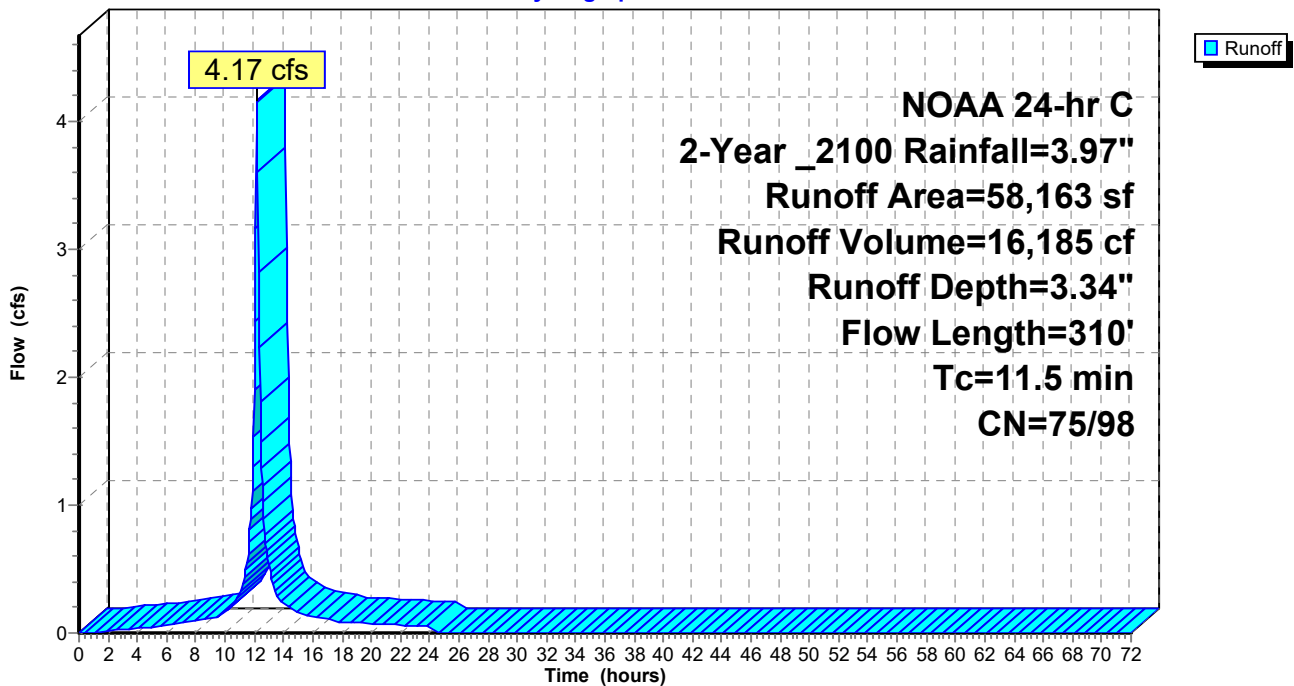
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _2100 Rainfall=3.97"

Area (sf)	CN	Description
* 1,112	79	Open Space (Fair) C
* 9,899	74	Open Space (good) C
* 47,152	98	Impervious
58,163	94	Weighted Average
11,011	75	18.93% Pervious Area
47,152	98	81.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	64	0.0105	0.12		Sheet Flow, Sheet flow -grass Grass: Short n= 0.150 P2= 3.34"
1.3	179	0.0129	2.31		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
1.5	67	0.0120	0.77		Shallow Concentrated Flow, SCF _ grass Short Grass Pasture Kv= 7.0 fps
11.5	310	Total			

Subcatchment 5Sb: DA 5: CN w/ IC areas

Hydrograph



Summary for Subcatchment 6S: DA 6: CN w/ IC areas

Runoff = 1.84 cfs @ 12.22 hrs, Volume= 7,343 cf, Depth= 2.75"
 Routed to Pond 11P : Proposed Rain Garden 2 (East)

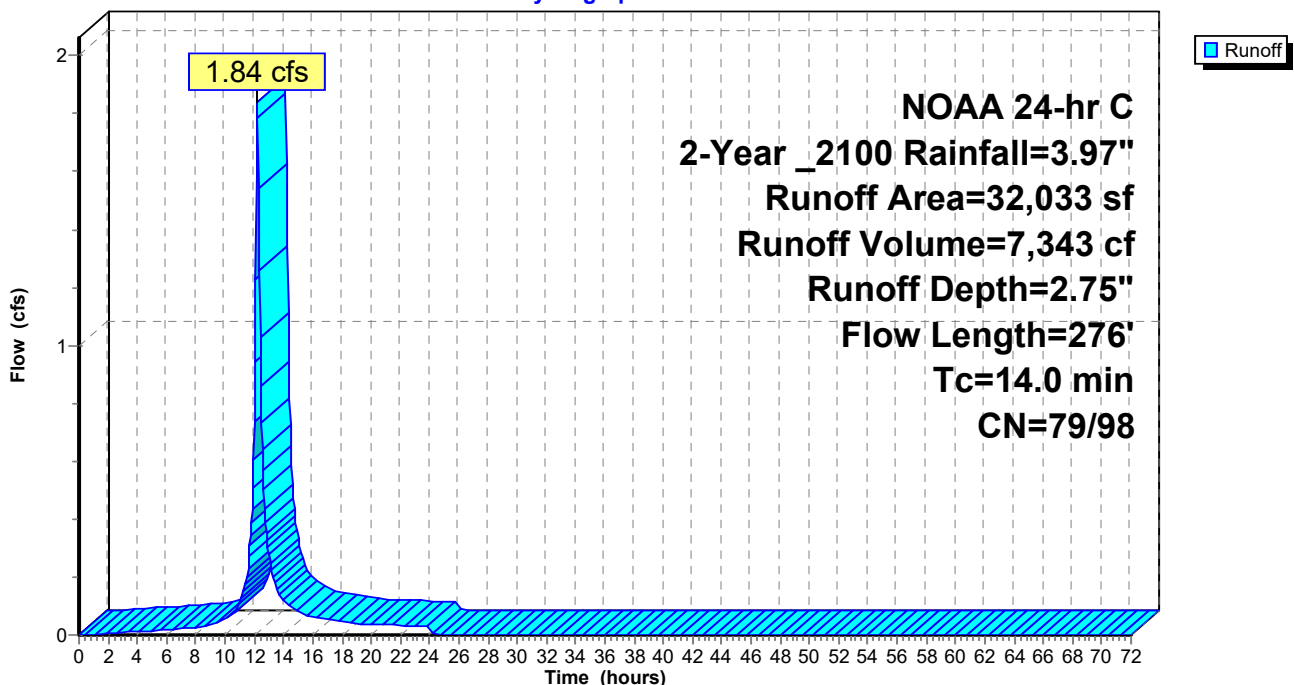
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _2100 Rainfall=3.97"

Area (sf)	CN	Description
* 16,559	79	Open Space (fair) C
* 998	74	Open Space (good) C
* 14,476	98	Impervious
32,033	87	Weighted Average
17,557	79	54.81% Pervious Area
14,476	98	45.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0098	0.13		Sheet Flow, Sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
0.5	86	0.0244	3.17		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
0.7	90	0.0178	2.15		Shallow Concentrated Flow, SCF - unpaved Unpaved Kv= 16.1 fps
14.0	276	Total			

Subcatchment 6S: DA 6: CN w/ IC areas

Hydrograph



Summary for Subcatchment 7S: DA 7 (Offsite South): CN w/ IC areas

Runoff = 5.03 cfs @ 12.23 hrs, Volume= 19,757 cf, Depth= 2.22"
 Routed to Link 1L : Offsite Flows

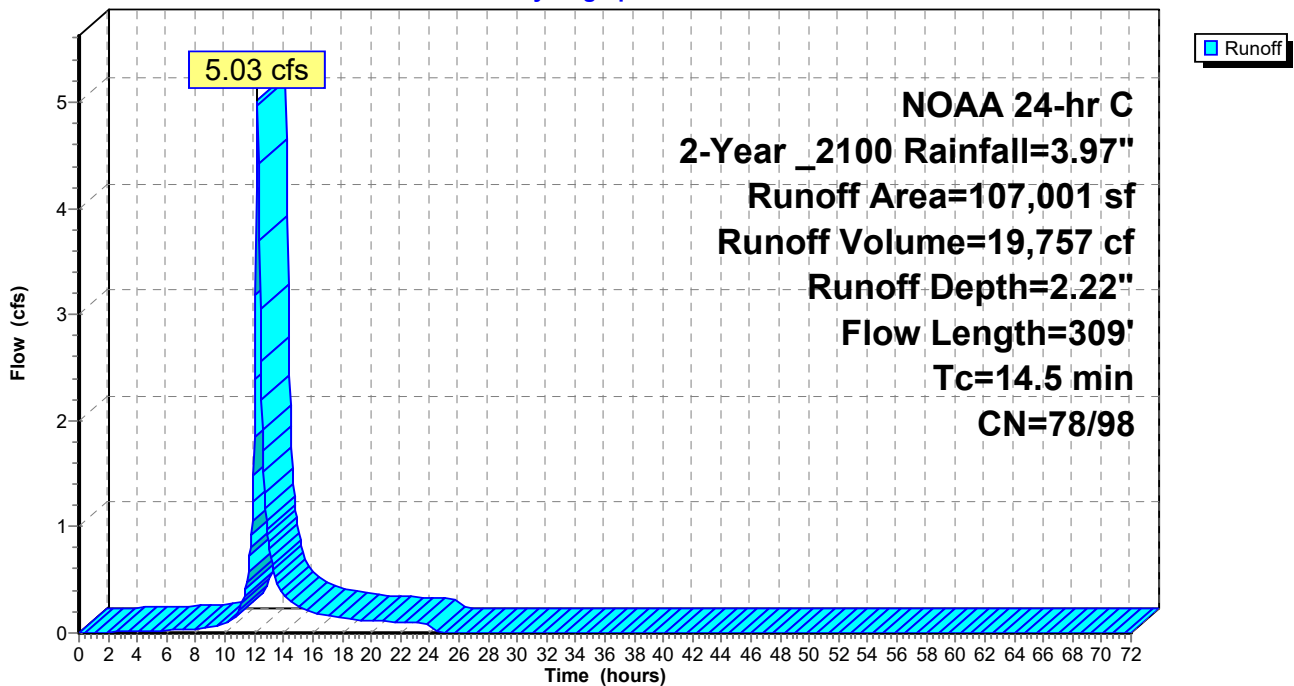
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _2100 Rainfall=3.97"

Area (sf)	CN	Description
* 70,444	79	Open Space (fair) C
* 16,401	74	Open Space (good) C
* 20,156	98	Impervious
107,001	82	Weighted Average
86,845	78	81.16% Pervious Area
20,156	98	18.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	100	0.0112	0.14		Sheet Flow, Sheet flow Grass: Short n= 0.150 P2= 3.34"
2.2	165	0.0305	1.22		Shallow Concentrated Flow, SCF _ grass Short Grass Pasture Kv= 7.0 fps
0.2	44	0.0317	3.61		Shallow Concentrated Flow, SCF _ paved Paved Kv= 20.3 fps
14.5	309	Total			

Subcatchment 7S: DA 7 (Offsite South): CN w/ IC areas

Hydrograph



Summary for Subcatchment 8S: DA 8 (Offsite North): CN w/ IC areas

Runoff = 10.54 cfs @ 12.30 hrs, Volume= 45,879 cf, Depth= 1.62"
 Routed to Link 1L : Offsite Flows

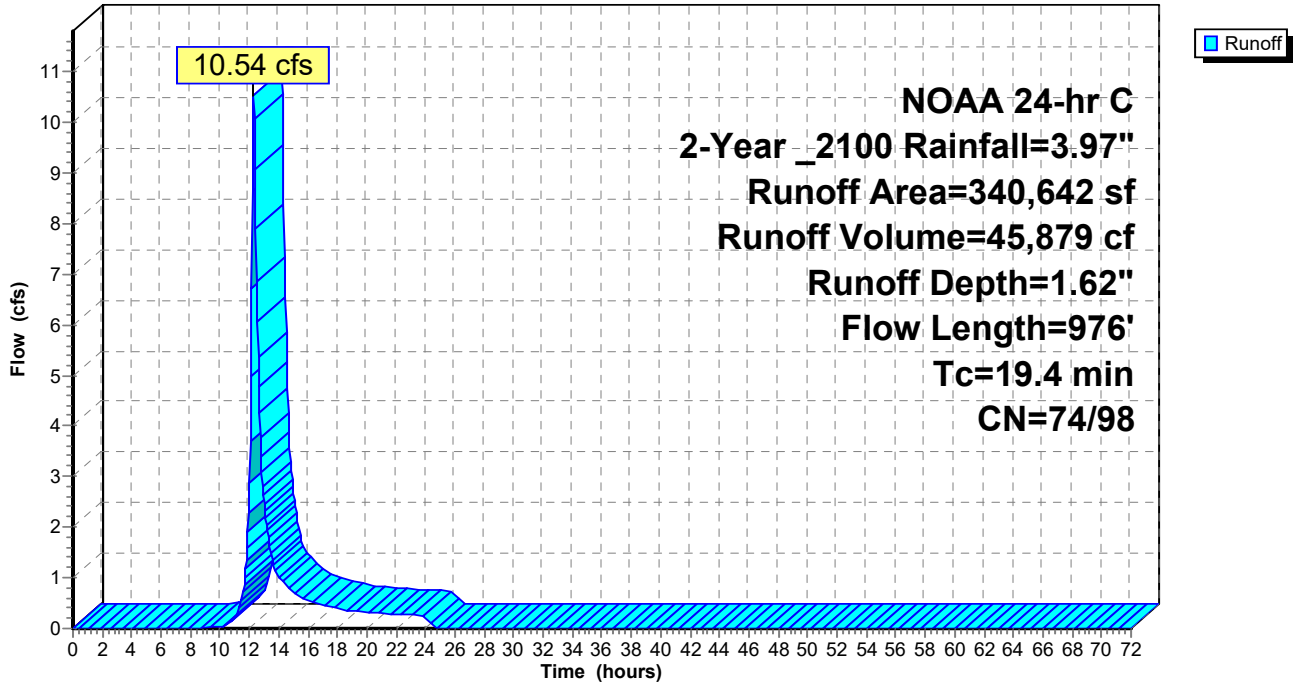
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _2100 Rainfall=3.97"

Area (sf)	CN	Description
*	2,767	70 Brush (fair) C
*	63,031	77 Brush (fair) D
*	86,643	65 Brush (good) C
*	64,708	73 Brush (good) D
*	73,083	79 Open space (Fair) C
*	30,261	84 Open space (fair) D
*	4,460	74 Open space (good) C
*	9,087	80 Open space (good) D
*	6,602	98 Impervious
340,642	75	Weighted Average
334,040	74	98.06% Pervious Area
6,602	98	1.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.0366	0.22		Sheet Flow, sheet flow Grass: Short n= 0.150 P2= 3.34"
11.9	876	0.0067	1.23		Shallow Concentrated Flow, scf - grass waterway Grassed Waterway Kv= 15.0 fps
19.4	976	Total			

Subcatchment 8S: DA 8 (Offsite North): CN w/ IC areas

Hydrograph



Summary for Subcatchment 9S: DA 9 (Offsite Field West): CN w/ IC areas

Runoff = 11.17 cfs @ 12.45 hrs, Volume= 60,998 cf, Depth= 1.53"
 Routed to Link 1L : Offsite Flows

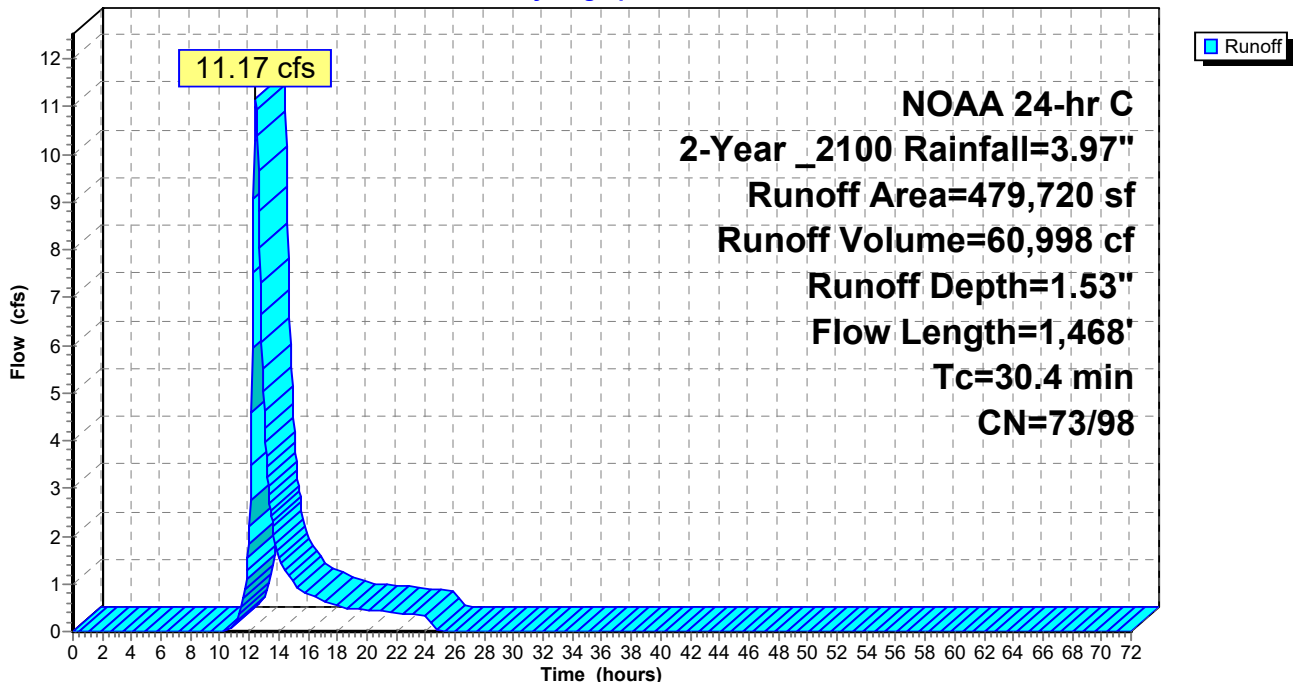
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _2100 Rainfall=3.97"

	Area (sf)	CN	Description
*	72,478	65	Brush (good) C
*	10,448	79	Open spcae (fair) C
*	392,515	74	Open Space (good) C
*	4,279	98	Impervious
	479,720	73	Weighted Average
	475,441	73	99.11% Pervious Area
	4,279	98	0.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0159	0.16		Sheet Flow, Sheet flow Grass: Short n= 0.150 P2= 3.34"
7.1	362	0.0148	0.85		Shallow Concentrated Flow, SCF - grass Short Grass Pasture Kv= 7.0 fps
12.8	1,006	0.0076	1.31		Shallow Concentrated Flow, SCF - grass waterway Grassed Waterway Kv= 15.0 fps
30.4	1,468	Total			

Subcatchment 9S: DA 9 (Offsite Field West): CN w/ IC areas

Hydrograph



Summary for Subcatchment 31S: RG 2 DA

Runoff = 1.72 cfs @ 12.22 hrs, Volume= 6,733 cf, Depth= 2.52"

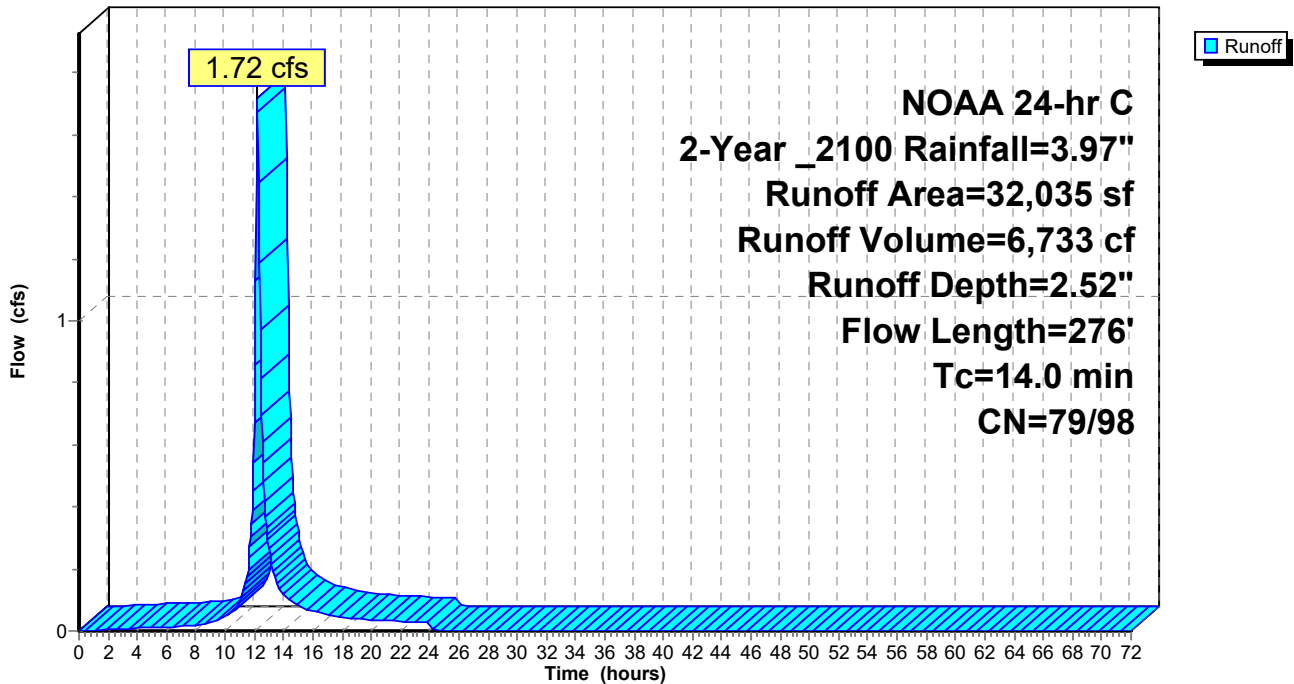
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _2100 Rainfall=3.97"

	Area (sf)	CN	Description
*	21,638	79	Open Space (fair) C
*	10,397	98	Impervious
	32,035	85	Weighted Average
	21,638	79	67.54% Pervious Area
	10,397	98	32.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0098	0.13		Sheet Flow, Sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
0.5	86	0.0244	3.17		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
0.7	90	0.0178	2.15		Shallow Concentrated Flow, SCF - unpaved Unpaved Kv= 16.1 fps
14.0	276	Total			

Subcatchment 31S: RG 2 DA

Hydrograph



Summary for Reach 1R: Existing Bioswale West 1

Inflow Area = 22,637 sf, 64.43% Impervious, Inflow Depth = 3.04" for 2-Year _2100 event
 Inflow = 1.39 cfs @ 12.22 hrs, Volume= 5,740 cf
 Outflow = 1.38 cfs @ 12.23 hrs, Volume= 5,740 cf, Atten= 1%, Lag= 0.5 min
 Routed to Pond 1P : Existing Rain Garden 1 West

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Max. Velocity= 1.94 fps, Min. Travel Time= 0.3 min
 Avg. Velocity = 0.52 fps, Avg. Travel Time= 1.0 min

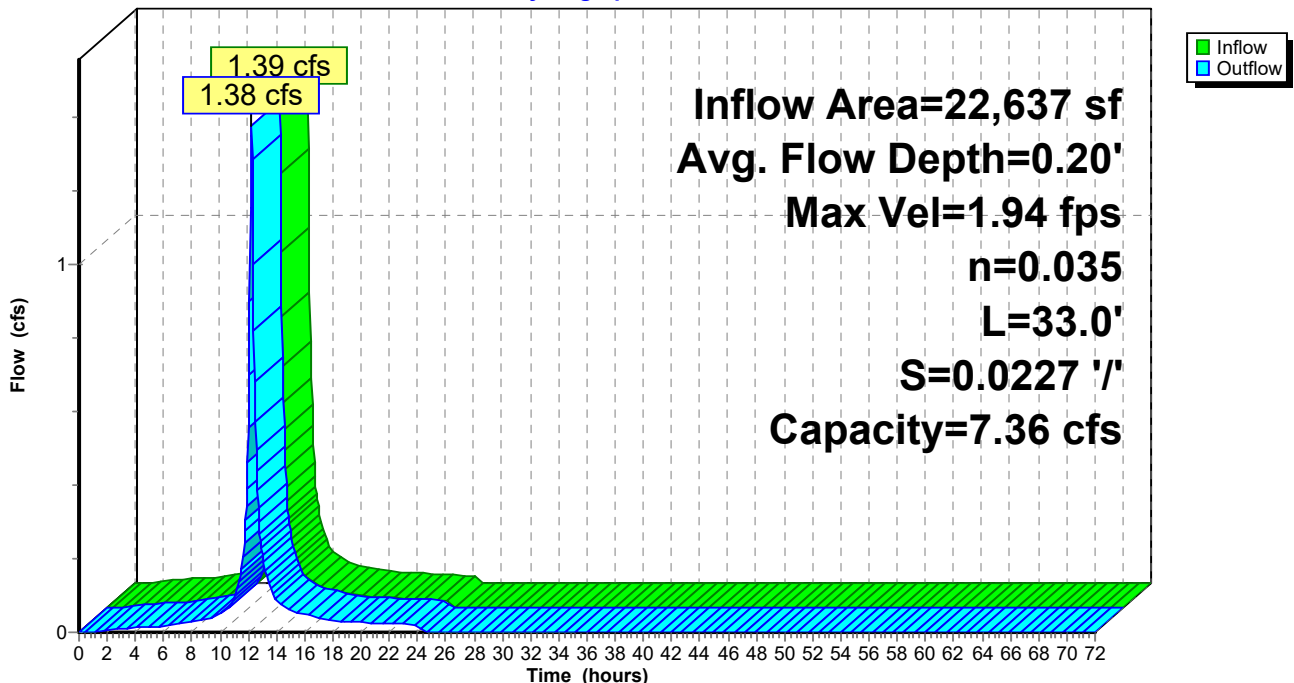
Peak Storage= 24 cf @ 12.22 hrs
 Average Depth at Peak Storage= 0.20' , Surface Width= 4.19'
 Bank-Full Depth= 0.50' Flow Area= 2.3 sf, Capacity= 7.36 cfs

3.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
 Side Slope Z-value= 3.0 '/ Top Width= 6.00'
 Length= 33.0' Slope= 0.0227 '/
 Inlet Invert= 100.75', Outlet Invert= 100.00'



Reach 1R: Existing Bioswale West 1

Hydrograph



Summary for Reach 2R: Bioswale E 1 RG 3

Inflow Area = 19,898 sf, 48.83% Impervious, Inflow Depth = 2.82" for 2-Year _2100 event
 Inflow = 1.25 cfs @ 12.19 hrs, Volume= 4,670 cf
 Outflow = 1.24 cfs @ 12.20 hrs, Volume= 4,670 cf, Atten= 1%, Lag= 0.4 min
 Routed to Pond 9P : Proposed Rain Garden 3 (North East)

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Max. Velocity= 2.36 fps, Min. Travel Time= 0.2 min
 Avg. Velocity = 0.73 fps, Avg. Travel Time= 0.8 min

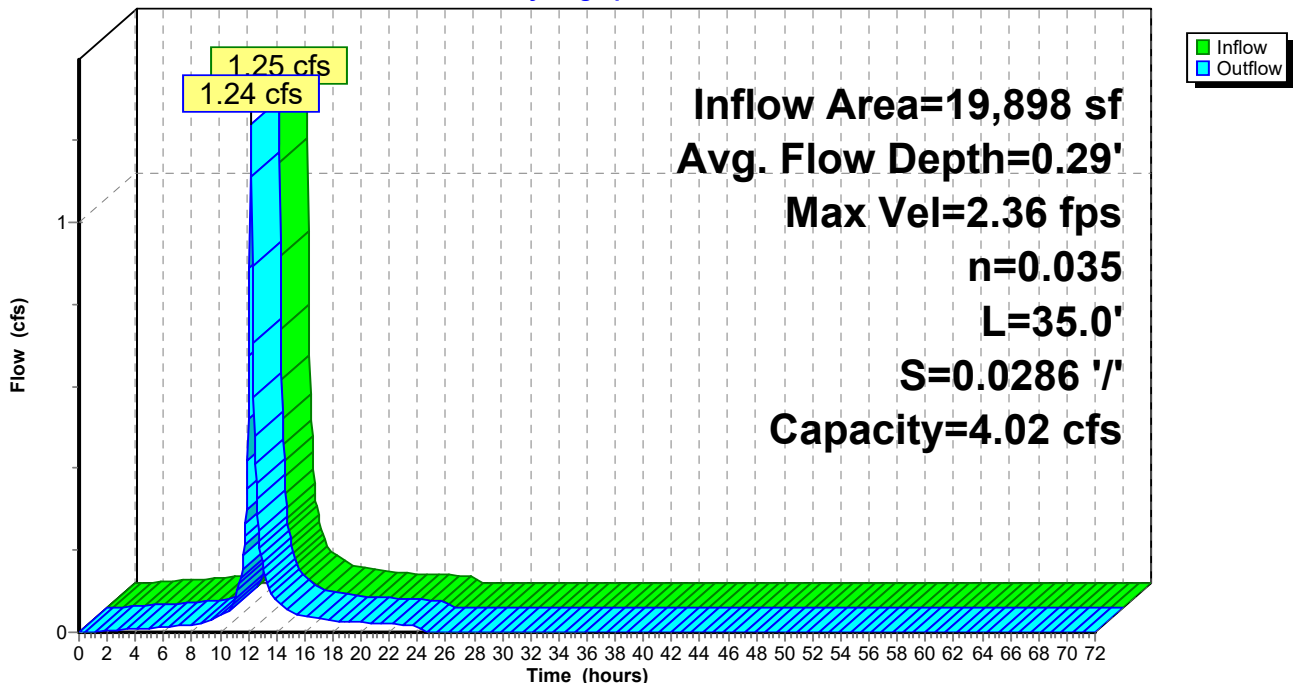
Peak Storage= 19 cf @ 12.19 hrs
 Average Depth at Peak Storage= 0.29' , Surface Width= 2.71'
 Bank-Full Depth= 0.50' Flow Area= 1.3 sf, Capacity= 4.02 cfs

1.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
 Side Slope Z-value= 3.0 '/ Top Width= 4.00'
 Length= 35.0' Slope= 0.0286 '/
 Inlet Invert= 101.00', Outlet Invert= 100.00'



Reach 2R: Bioswale E 1 RG 3

Hydrograph



Summary for Pond 1P: Exising Rain Garden 1 West

[93] Warning: Storage range exceeded by 0.13'
 [88] Warning: Qout>Qin may require smaller dt or Finer Routing
 [62] Hint: Exceeded Reach 1R OUTLET depth by 0.18' @ 12.25 hrs

Inflow Area = 22,637 sf, 64.43% Impervious, Inflow Depth = 3.04" for 2-Year _2100 event
 Inflow = 1.38 cfs @ 12.23 hrs, Volume= 5,740 cf
 Outflow = 1.40 cfs @ 12.24 hrs, Volume= 5,565 cf, Atten= 0%, Lag= 0.5 min
 Primary = 0.27 cfs @ 12.24 hrs, Volume= 4,082 cf
 Routed to Pond 2P : Underground Storage w/ Porous Pavement 1
 Secondary = 1.13 cfs @ 12.24 hrs, Volume= 1,483 cf
 Routed to Pond 2P : Underground Storage w/ Porous Pavement 1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 100.38' @ 12.24 hrs Surf.Area= 1,750 sf Storage= 1,831 cf

Plug-Flow detention time= 512.5 min calculated for 5,561 cf (97% of inflow)
 Center-of-Mass det. time= 495.2 min (1,276.0 - 780.8)

Volume	Invert	Avail.Storage	Storage Description			
#1	98.25'	1,831 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
98.25	1,445	0.0	0	0	1,445	
99.25	1,445	35.0	506	506	1,580	
99.50	1,445	25.0	90	596	1,613	
100.00	1,750	100.0	798	1,394	1,927	
100.25	1,750	100.0	438	1,831	1,964	

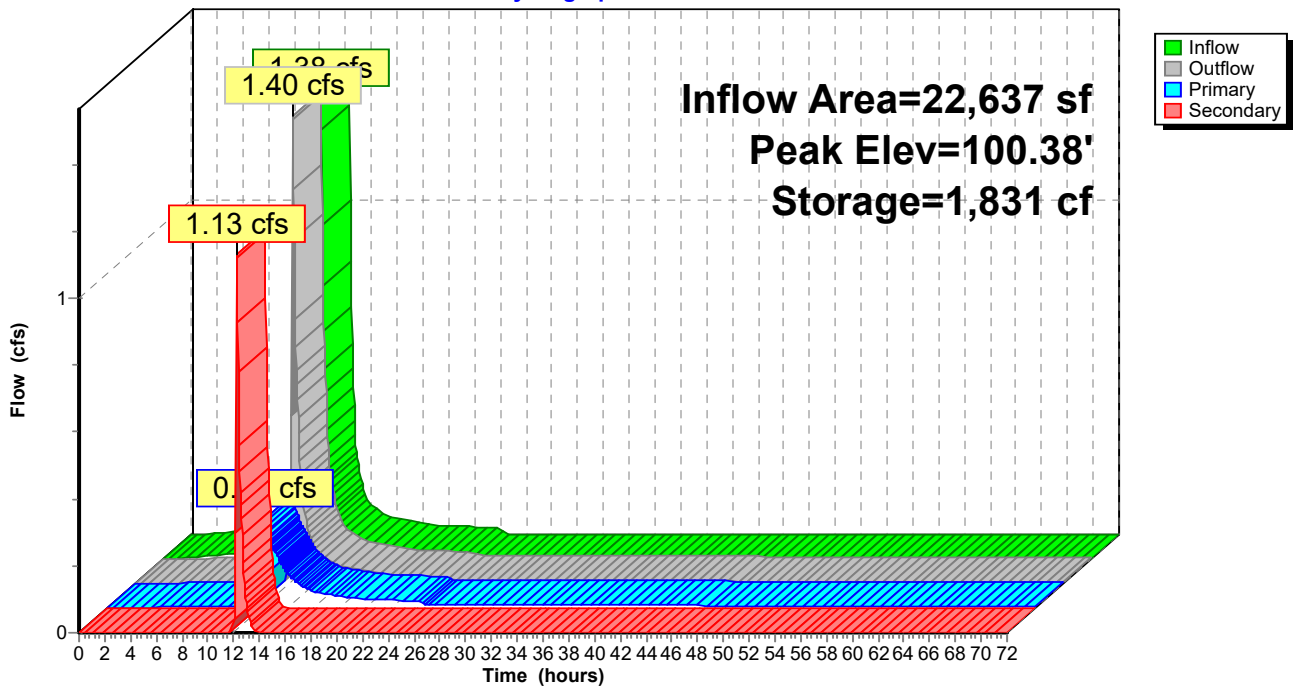
Device	Routing	Invert	Outlet Devices	
#1	Primary	98.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 98.15' / 98.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#2	Device 1	98.15'	0.5" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads	
#3	Device 2	98.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 98.25' / 98.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#4	Device 3	98.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads	
#5	Device 1	100.00'	4.0" Horiz. Drintech Atrium C= 0.600 Limited to weir flow at low heads	
#6	Secondary	100.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32	

Primary OutFlow Max=0.27 cfs @ 12.24 hrs HW=100.37' (Free Discharge)
 1=Culvert (Passes 0.27 cfs of 0.44 cfs potential flow)
 2=Restrictive Orifice (Orifice Controls 0.01 cfs @ 7.15 fps)
 3=4" HDPE Underdrain (Passes 0.01 cfs of 0.34 cfs potential flow)
 4=Perforations (Passes 0.01 cfs of 5.26 cfs potential flow)
 5=Draintech Atrium (Orifice Controls 0.26 cfs @ 2.95 fps)

Secondary OutFlow Max=1.11 cfs @ 12.24 hrs HW=100.37' (Free Discharge)
 6=Broad-Crested Rectangular Weir (Weir Controls 1.11 cfs @ 1.34 fps)

Pond 1P: Existing Rain Garden 1 West

Hydrograph



Summary for Pond 2P: Underground Storage w/ Porous Pavement 1

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 61,742 sf, 66.85% Impervious, Inflow Depth > 3.03" for 2-Year _2100 event
 Inflow = 3.79 cfs @ 12.23 hrs, Volume= 15,573 cf
 Outflow = 0.02 cfs @ 24.53 hrs, Volume= 3,613 cf, Atten= 100%, Lag= 737.9 min
 Primary = 0.02 cfs @ 24.53 hrs, Volume= 3,613 cf
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 97.33' @ 24.53 hrs Surf.Area= 13,421 sf Storage= 13,272 cf

Plug-Flow detention time= 1,692.7 min calculated for 3,611 cf (23% of inflow)
 Center-of-Mass det. time= 1,341.4 min (2,296.9 - 955.5)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	1,612 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	9,359 cf	72.75'W x 146.02'L x 3.50'H Field A
			37,179 cf Overall - 13,782 cf Embedded = 23,397 cf x 40.0% Voids
#3A	96.17'	13,782 cf	ADS_StormTech SC-740 +Cap x 300 Inside #2
			Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
			Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
			300 Chambers in 15 Rows
		24,753 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	2,798	0.0	0	0
97.67	2,798	35.0	1,469	1,469
97.83	2,798	15.0	67	1,536
98.01	2,798	15.0	76	1,612

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.02 cfs @ 24.53 hrs HW=97.33' (Free Discharge)

↑ **1=Restriction Orifice** (Orifice Controls 0.02 cfs @ 11.02 fps)

↑ **2=6" HDPE Underdrain** (Passes 0.02 cfs of 0.44 cfs potential flow)

↑ **3=Perforations** (Passes 0.02 cfs of 8.20 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.67' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2P: Underground Storage w/ Porous Pavement 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

20 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 144.02' Row Length +12.0" End Stone x 2 = 146.02' Base Length

15 Rows x 51.0" Wide + 6.0" Spacing x 14 + 12.0" Side Stone x 2 = 72.75' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

300 Chambers x 45.9 cf = 13,782.0 cf Chamber Storage

37,179.5 cf Field - 13,782.0 cf Chambers = 23,397.5 cf Stone x 40.0% Voids = 9,359.0 cf Stone Storage

Chamber Storage + Stone Storage = 23,141.0 cf = 0.531 af

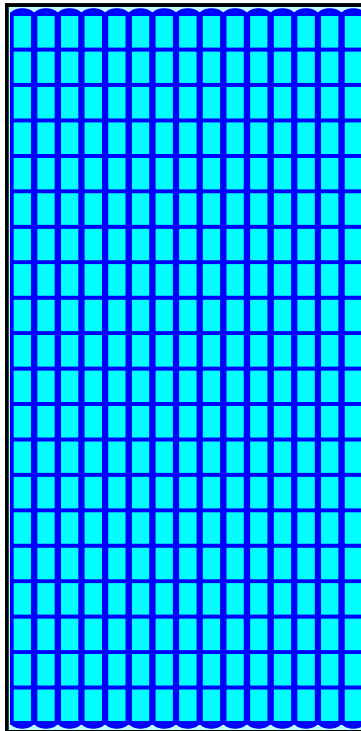
Overall Storage Efficiency = 62.2%

Overall System Size = 146.02' x 72.75' x 3.50'

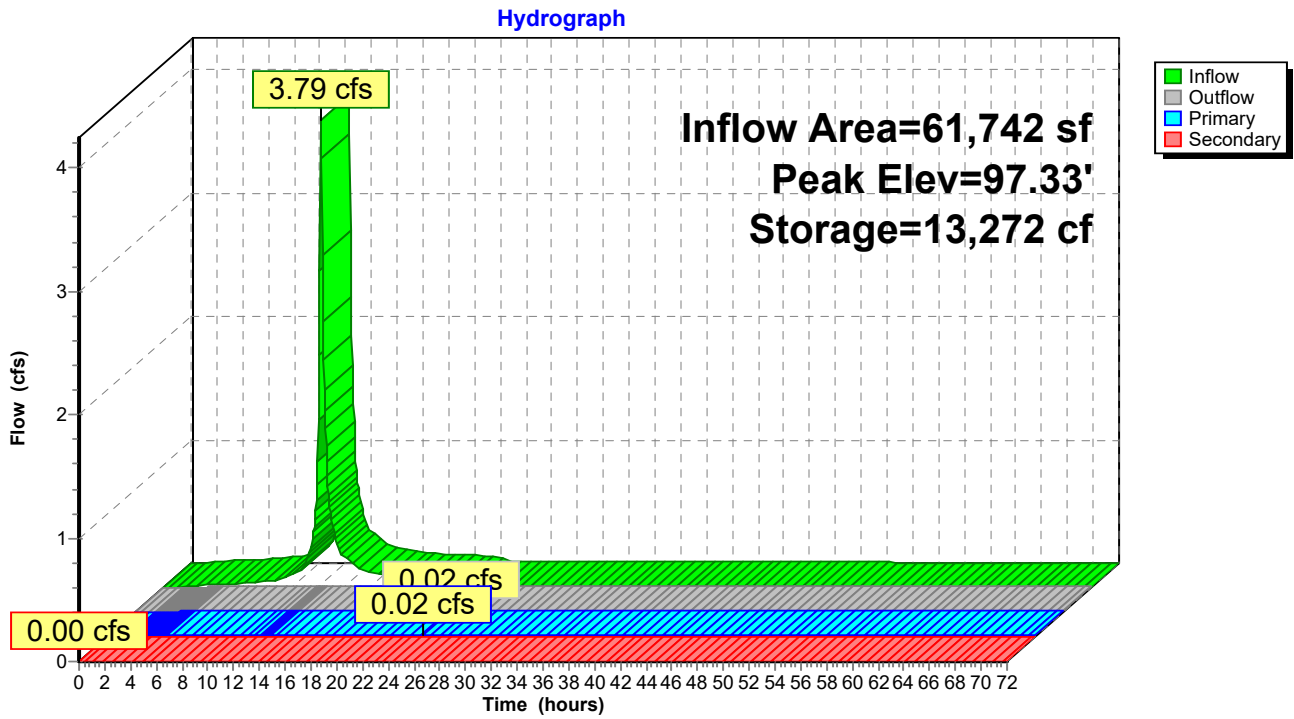
300 Chambers

1,377.0 cy Field

866.6 cy Stone



Pond 2P: Underground Storage w/ Porous Pavement 1



Summary for Pond 3P: Underground Storage w/ Porous Pavement 2

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 58,249 sf, 86.46% Impervious, Inflow Depth = 3.46" for 2-Year _2100 event
 Inflow = 5.01 cfs @ 12.14 hrs, Volume= 16,804 cf
 Outflow = 0.01 cfs @ 24.15 hrs, Volume= 3,642 cf, Atten= 100%, Lag= 720.7 min
 Primary = 0.01 cfs @ 24.15 hrs, Volume= 3,642 cf
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 97.29' @ 24.15 hrs Surf.Area= 23,296 sf Storage= 15,715 cf

Plug-Flow detention time= 1,747.3 min calculated for 3,642 cf (22% of inflow)
 Center-of-Mass det. time= 1,505.9 min (2,266.2 - 760.3)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	8,187 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	8,029 cf	82.25'W x 110.42'L x 3.50'H Field A
			31,786 cf Overall - 11,715 cf Embedded = 20,071 cf x 40.0% Voids
#3A	96.17'	11,715 cf	ADS_StormTech SC-740 +Cap x 255 Inside #2
			Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
			Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
			255 Chambers in 17 Rows
		27,931 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	14,214	0.0	0	0
97.67	14,214	35.0	7,462	7,462
97.83	14,214	15.0	341	7,803
98.01	14,214	15.0	384	8,187

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.01 cfs @ 24.15 hrs HW=97.29' (Free Discharge)

↑ **1=Restriction Orifice** (Orifice Controls 0.01 cfs @ 10.98 fps)

↑ **2=6" HDPE Underdrain** (Passes 0.01 cfs of 0.43 cfs potential flow)

↑ **3=Perforations** (Passes 0.01 cfs of 8.17 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.67' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: Underground Storage w/ Porous Pavement 2 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

15 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 108.42' Row Length +12.0" End Stone x 2 = 110.42' Base Length

17 Rows x 51.0" Wide + 6.0" Spacing x 16 + 12.0" Side Stone x 2 = 82.25' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

255 Chambers x 45.9 cf = 11,714.7 cf Chamber Storage

31,786.2 cf Field - 11,714.7 cf Chambers = 20,071.5 cf Stone x 40.0% Voids = 8,028.6 cf Stone Storage

Chamber Storage + Stone Storage = 19,743.3 cf = 0.453 af

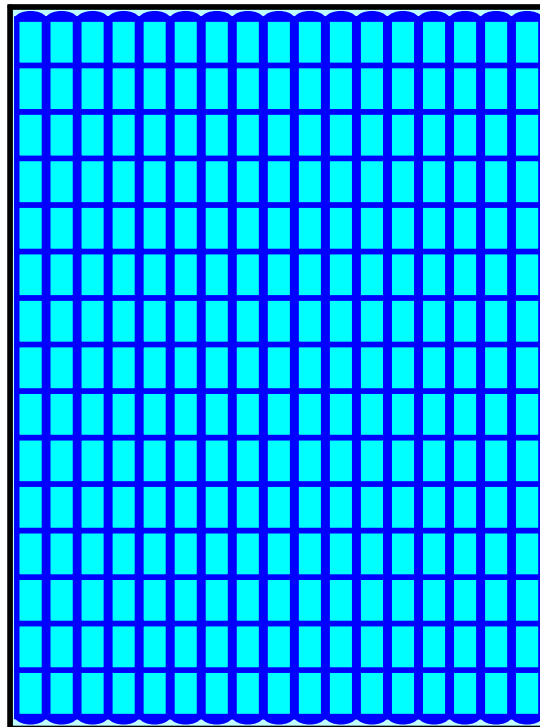
Overall Storage Efficiency = 62.1%

Overall System Size = 110.42' x 82.25' x 3.50'

255 Chambers

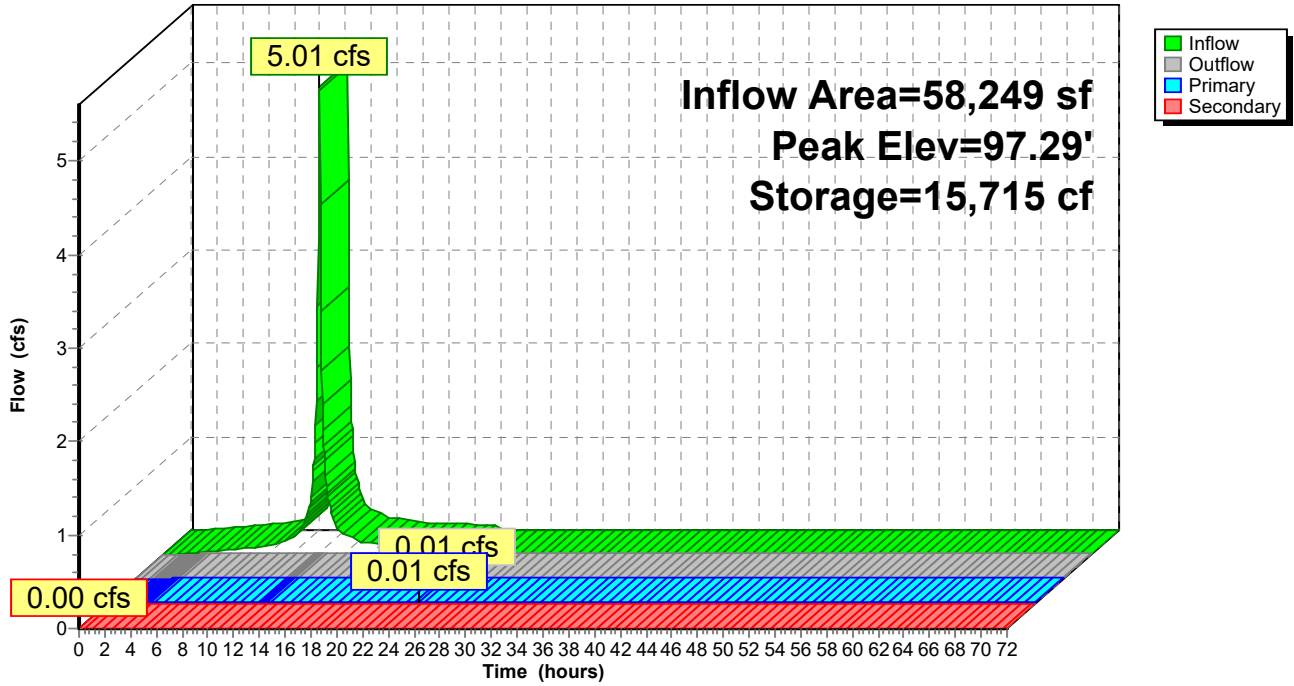
1,177.3 cy Field

743.4 cy Stone



Pond 3P: Underground Storage w/ Porous Pavement 2

Hydrograph



Summary for Pond 4P: Existing Rain Garden 2 Front

Inflow Area = 25,889 sf, 48.62% Impervious, Inflow Depth = 2.81" for 2-Year _2100 event
 Inflow = 1.81 cfs @ 12.15 hrs, Volume= 6,067 cf
 Outflow = 0.47 cfs @ 12.47 hrs, Volume= 4,938 cf, Atten= 74%, Lag= 19.2 min
 Primary = 0.20 cfs @ 12.47 hrs, Volume= 4,306 cf
 Routed to Pond 6P : Underground Storage w/ Porous Pavement 3
 Secondary = 0.27 cfs @ 12.47 hrs, Volume= 633 cf
 Routed to Pond 6P : Underground Storage w/ Porous Pavement 3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 101.21' @ 12.47 hrs Surf.Area= 3,045 sf Storage= 3,140 cf

Plug-Flow detention time= 762.4 min calculated for 4,938 cf (81% of inflow)
 Center-of-Mass det. time= 683.3 min (1,468.8 - 785.5)

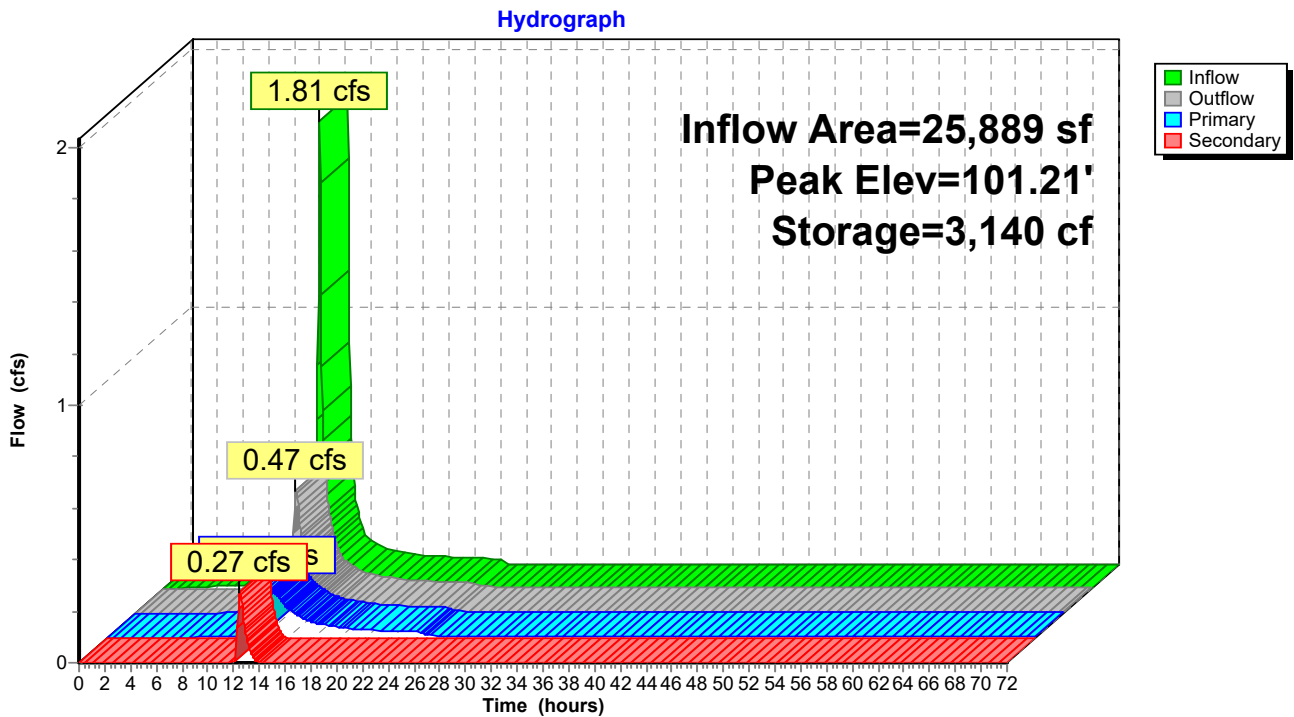
Volume	Invert	Avail.Storage	Storage Description			
#1	99.25'	3,267 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
99.25	2,635	0.0	0	0	2,635	
100.25	2,635	35.0	922	922	2,817	
100.50	2,635	25.0	165	1,087	2,862	
101.00	3,045	100.0	1,419	2,506	3,283	
101.25	3,045	100.0	761	3,267	3,332	

Device	Routing	Invert	Outlet Devices	
#1	Primary	99.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 99.15' / 99.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#2	Device 1	99.15'	0.5" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads	
#3	Device 2	99.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 99.25' / 99.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#4	Device 3	99.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads	
#5	Device 1	101.00'	4.0" Horiz. Draintech Atrium C= 0.600 Limited to weir flow at low heads	
#6	Secondary	101.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32	

Primary OutFlow Max=0.20 cfs @ 12.47 hrs HW=101.21' (Free Discharge)
 1=Culvert (Passes 0.20 cfs of 0.42 cfs potential flow)
 2=Restrictive Orifice (Orifice Controls 0.01 cfs @ 6.87 fps)
 3=4" HDPE Underdrain (Passes 0.01 cfs of 0.33 cfs potential flow)
 4=Perforations (Passes 0.01 cfs of 5.05 cfs potential flow)
 5=DrainTech Atrium (Orifice Controls 0.19 cfs @ 2.20 fps)

Secondary OutFlow Max=0.27 cfs @ 12.47 hrs HW=101.21' (Free Discharge)
 6=Broad-Crested Rectangular Weir (Weir Controls 0.27 cfs @ 0.83 fps)

Pond 4P: Existing Rain Garden 2 Front



Summary for Pond 5P: Proposed Rain Garden 1 (South West)

[93] Warning: Storage range exceeded by 0.06'

Inflow Area = 21,388 sf, 65.14% Impervious, Inflow Depth = 2.98" for 2-Year _2100 event
 Inflow = 1.55 cfs @ 12.15 hrs, Volume= 5,315 cf
 Outflow = 1.00 cfs @ 12.30 hrs, Volume= 4,764 cf, Atten= 35%, Lag= 8.8 min
 Primary = 0.24 cfs @ 12.30 hrs, Volume= 3,954 cf
 Routed to Pond 6P : Underground Storage w/ Porous Pavement 3
 Secondary = 0.75 cfs @ 12.30 hrs, Volume= 810 cf
 Routed to Pond 6P : Underground Storage w/ Porous Pavement 3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 101.31' @ 12.30 hrs Surf.Area= 2,325 sf Storage= 2,466 cf

Plug-Flow detention time= 712.4 min calculated for 4,764 cf (90% of inflow)
 Center-of-Mass det. time= 658.5 min (1,432.0 - 773.6)

Volume	Invert	Avail.Storage	Storage Description		
#1	99.25'	2,466 cf	Custom Stage Data (Conic) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
99.25	1,970	0.0	0	0	1,970
100.25	1,970	35.0	690	690	2,127
100.50	1,970	25.0	123	813	2,167
101.00	2,325	100.0	1,073	1,885	2,531
101.25	2,325	100.0	581	2,466	2,574

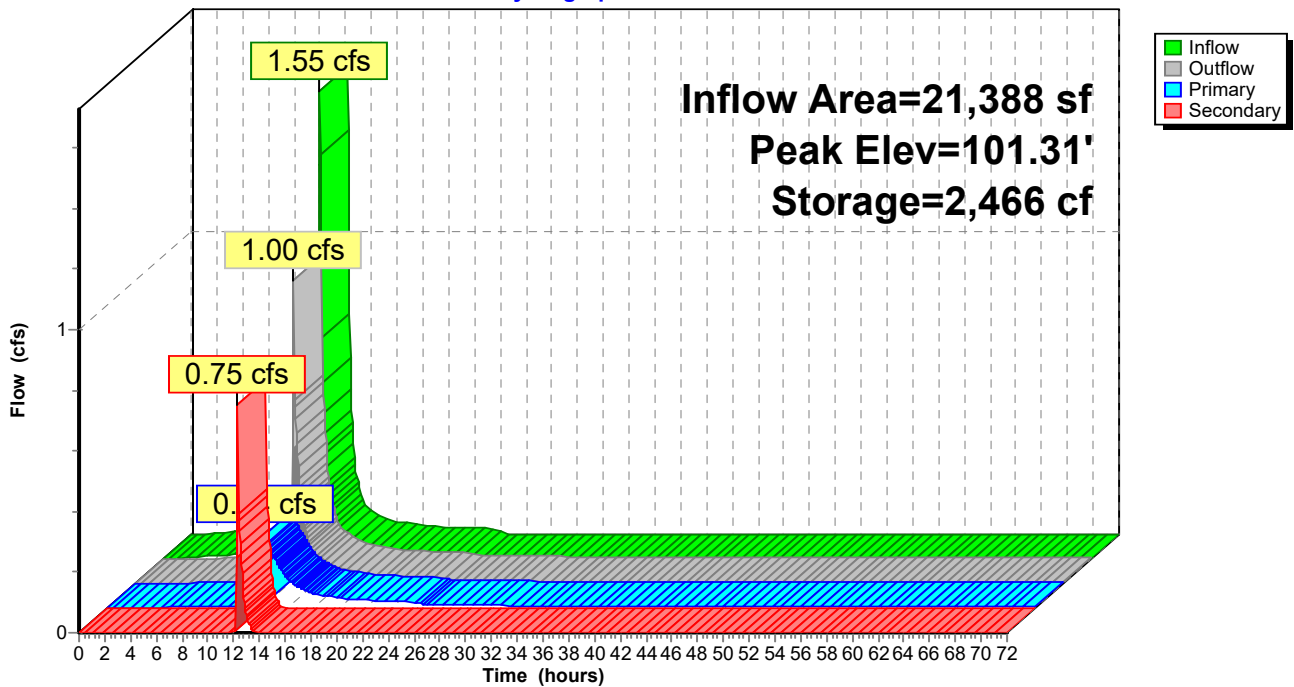
Device	Routing	Invert	Outlet Devices
#1	Primary	99.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 99.15' / 99.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf
#2	Device 1	99.15'	0.5" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads
#3	Device 2	99.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 99.25' / 99.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf
#4	Device 3	99.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#5	Device 1	101.00'	4.0" Horiz. Drintech Atrium C= 0.600 Limited to weir flow at low heads
#6	Secondary	101.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.24 cfs @ 12.30 hrs HW=101.31' (Free Discharge)
 1=Culvert (Passes 0.24 cfs of 0.43 cfs potential flow)
 2=Restrictive Orifice (Orifice Controls 0.01 cfs @ 7.04 fps)
 3=4" HDPE Underdrain (Passes 0.01 cfs of 0.34 cfs potential flow)
 4=Perforations (Passes 0.01 cfs of 5.18 cfs potential flow)
 5=Draintech Atrium (Orifice Controls 0.23 cfs @ 2.69 fps)

Secondary OutFlow Max=0.74 cfs @ 12.30 hrs HW=101.31' (Free Discharge)
 6=Broad-Crested Rectangular Weir (Weir Controls 0.74 cfs @ 1.17 fps)

Pond 5P: Proposed Rain Garden 1 (South West)

Hydrograph



Summary for Pond 6P: Underground Storage w/ Porous Pavement 3

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 158,623 sf, 63.48% Impervious, Inflow Depth > 2.87" for 2-Year _2100 event
 Inflow = 8.38 cfs @ 12.16 hrs, Volume= 37,884 cf
 Outflow = 0.01 cfs @ 65.01 hrs, Volume= 3,591 cf, Atten= 100%, Lag= 3,171.0 min
 Primary = 0.01 cfs @ 65.01 hrs, Volume= 3,591 cf
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 97.18' @ 65.01 hrs Surf.Area= 38,014 sf Storage= 34,307 cf

Plug-Flow detention time= 1,851.9 min calculated for 3,589 cf (9% of inflow)
 Center-of-Mass det. time= 1,347.2 min (2,293.5 - 946.4)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	4,287 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	26,630 cf	106.00'W x 288.42'L x 3.50'H Field A 107,003 cf Overall - 40,427 cf Embedded = 66,575 cf x 40.0% Voids
#3A	96.17'	40,427 cf	ADS_StormTech SC-740 +Cap x 880 Inside #2 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 880 Chambers in 22 Rows
		71,344 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	7,442	0.0	0	0
97.67	7,442	35.0	3,907	3,907
97.83	7,442	15.0	179	4,086
98.01	7,442	15.0	201	4,287

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.01 cfs @ 65.01 hrs HW=97.18' (Free Discharge)

↑ **1=Restriction Orifice** (Orifice Controls 0.01 cfs @ 10.86 fps)

↑ **2=6" HDPE Underdrain** (Passes 0.01 cfs of 0.43 cfs potential flow)

↑ **3=Perforations** (Passes 0.01 cfs of 8.08 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.67' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 6P: Underground Storage w/ Porous Pavement 3 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

40 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 286.42' Row Length +12.0" End Stone x 2 = 288.42' Base Length

22 Rows x 51.0" Wide + 6.0" Spacing x 21 + 12.0" Side Stone x 2 = 106.00' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

880 Chambers x 45.9 cf = 40,427.2 cf Chamber Storage

107,002.6 cf Field - 40,427.2 cf Chambers = 66,575.4 cf Stone x 40.0% Voids = 26,630.1 cf Stone Storage

Chamber Storage + Stone Storage = 67,057.4 cf = 1.539 af

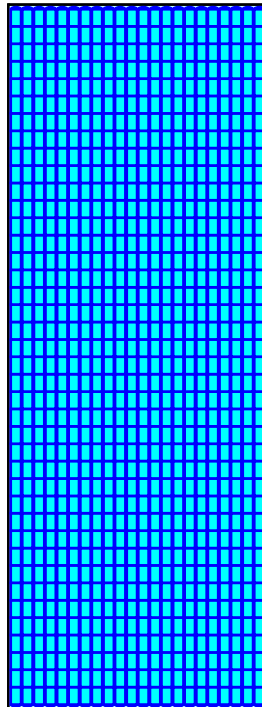
Overall Storage Efficiency = 62.7%

Overall System Size = 288.42' x 106.00' x 3.50'

880 Chambers

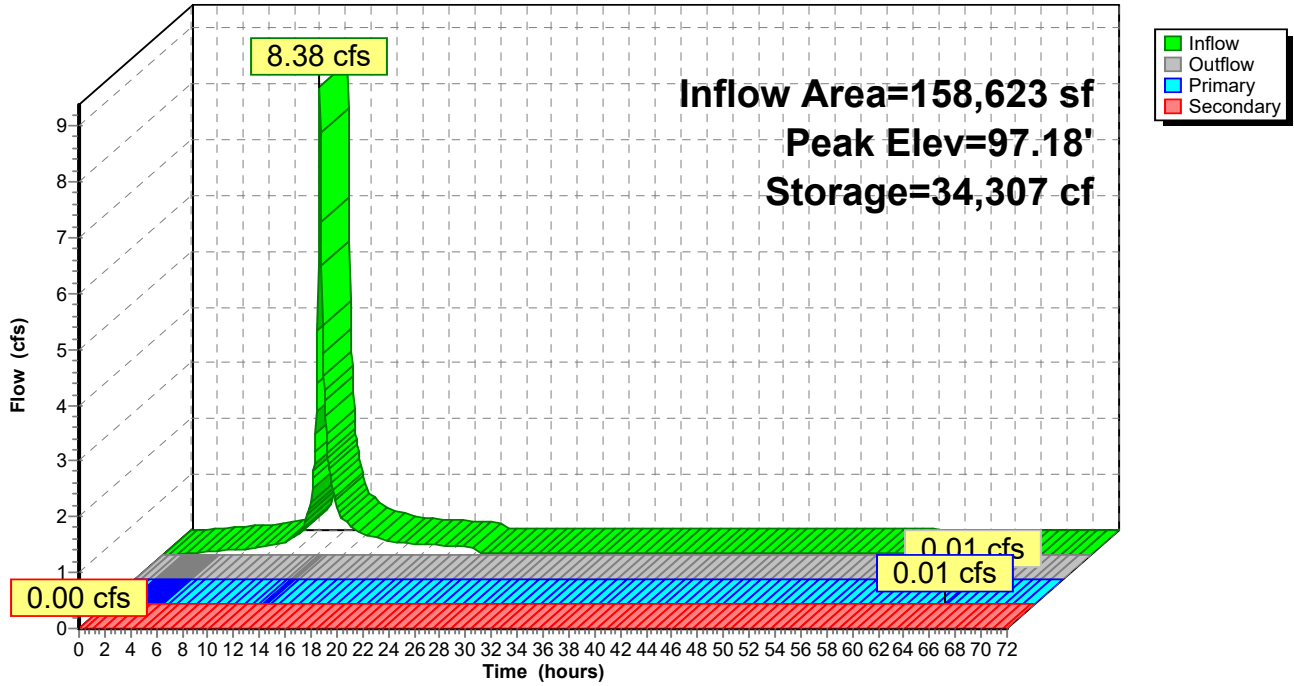
3,963.1 cy Field

2,465.8 cy Stone



Pond 6P: Underground Storage w/ Porous Pavement 3

Hydrograph



Summary for Pond 7P: Proposed Rain Garden 4 (North)

[93] Warning: Storage range exceeded by 0.28'
 [88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 24,369 sf, 57.53% Impervious, Inflow Depth = 2.97" for 2-Year _2100 event
 Inflow = 1.77 cfs @ 12.15 hrs, Volume= 6,036 cf
 Outflow = 2.47 cfs @ 12.21 hrs, Volume= 5,806 cf, Atten= 0%, Lag= 3.5 min
 Primary = 0.32 cfs @ 12.21 hrs, Volume= 4,289 cf
 Routed to Pond 8P : Underground Storage w/ Porous Pavement 4
 Secondary = 2.15 cfs @ 12.21 hrs, Volume= 1,518 cf
 Routed to Pond 8P : Underground Storage w/ Porous Pavement 4

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 100.53' @ 12.21 hrs Surf.Area= 2,435 sf Storage= 2,453 cf

Plug-Flow detention time= 563.4 min calculated for 5,802 cf (96% of inflow)
 Center-of-Mass det. time= 541.9 min (1,320.9 - 779.0)

Volume	Invert	Avail.Storage	Storage Description			
#1	98.25'	2,453 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
98.25	1,870	0.0	0	0	1,870	
99.25	1,870	35.0	655	655	2,023	
99.50	1,870	25.0	117	771	2,062	
100.00	2,435	100.0	1,073	1,845	2,633	
100.25	2,435	100.0	609	2,453	2,676	

Device	Routing	Invert	Outlet Devices																
#1	Primary	98.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 98.15' / 98.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf																
#2	Device 1	98.15'	0.5" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads																
#3	Device 2	98.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 98.25' / 98.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf																
#4	Device 3	98.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads																
#5	Device 1	100.00'	4.0" Horiz. Drintech Atrium C= 0.600 Limited to weir flow at low heads																
#6	Secondary	100.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32																

Primary OutFlow Max=0.30 cfs @ 12.21 hrs HW=100.49' (Free Discharge)

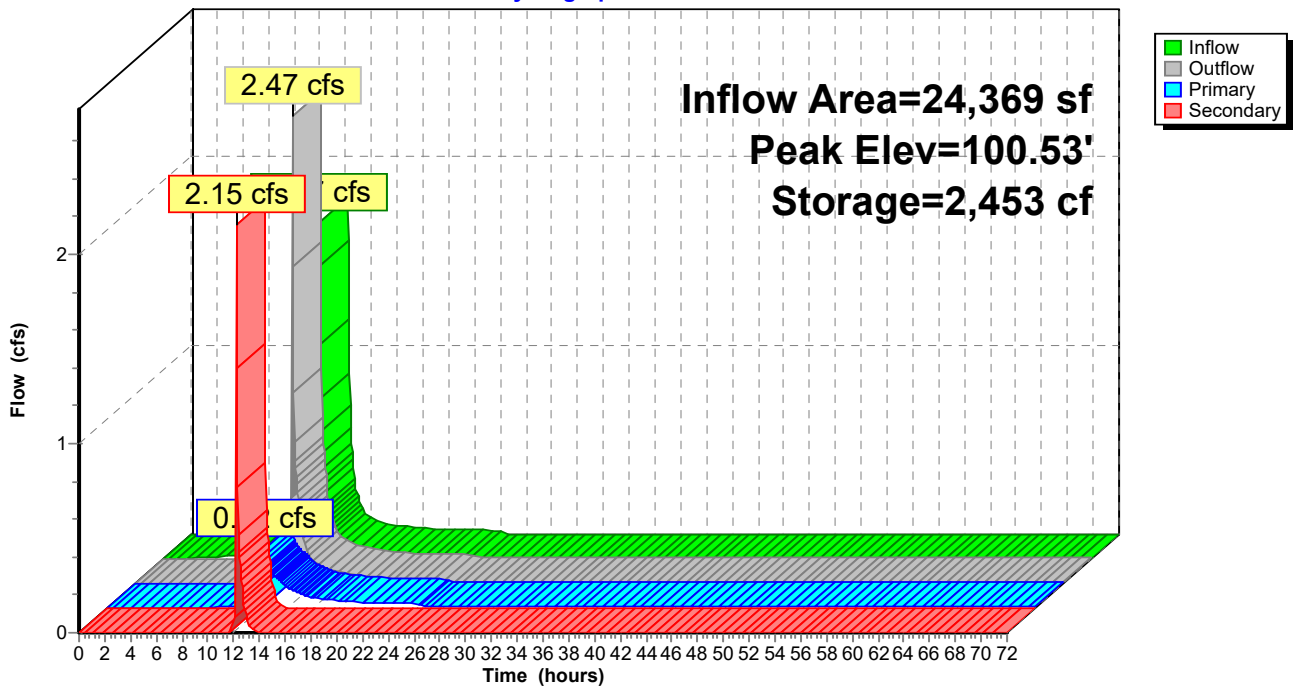
- 1=Culvert (Passes 0.30 cfs of 0.45 cfs potential flow)
- 2=Restrictive Orifice (Orifice Controls 0.01 cfs @ 7.33 fps)
 - 3=4" HDPE Underdrain (Passes 0.01 cfs of 0.35 cfs potential flow)
 - 4=Perforations (Passes 0.01 cfs of 5.40 cfs potential flow)
- 5=Draintech Atrium (Orifice Controls 0.29 cfs @ 3.36 fps)

Secondary OutFlow Max=1.92 cfs @ 12.21 hrs HW=100.49' (Free Discharge)

- 6=Broad-Crested Rectangular Weir (Weir Controls 1.92 cfs @ 1.63 fps)

Pond 7P: Proposed Rain Garden 4 (North)

Hydrograph



Summary for Pond 8P: Underground Storage w/ Porous Pavement 4

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 97,166 sf, 80.96% Impervious, Inflow Depth > 3.34" for 2-Year _2100 event
 Inflow = 7.67 cfs @ 12.19 hrs, Volume= 27,046 cf
 Outflow = 0.01 cfs @ 24.56 hrs, Volume= 3,618 cf, Atten= 100%, Lag= 741.8 min
 Primary = 0.01 cfs @ 24.56 hrs, Volume= 3,618 cf
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 97.21' @ 24.56 hrs Surf.Area= 33,612 sf Storage= 24,597 cf

Plug-Flow detention time= 1,810.4 min calculated for 3,618 cf (13% of inflow)
 Center-of-Mass det. time= 1,399.4 min (2,280.1 - 880.7)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	9,112 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	15,592 cf	63.25'W x 281.30'L x 3.50'H Field A 62,272 cf Overall - 23,292 cf Embedded = 38,980 cf x 40.0% Voids
#3A	96.17'	23,292 cf	ADS_StormTech SC-740 +Cap x 507 Inside #2 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 507 Chambers in 13 Rows
		47,996 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	15,820	0.0	0	0
97.67	15,820	35.0	8,306	8,306
97.83	15,820	15.0	380	8,685
98.01	15,820	15.0	427	9,112

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.01 cfs @ 24.56 hrs HW=97.21' (Free Discharge)

↑1=Restriction Orifice (Orifice Controls 0.01 cfs @ 10.90 fps)

↑2=6" HDPE Underdrain (Passes 0.01 cfs of 0.43 cfs potential flow)

↑3=Perforations (Passes 0.01 cfs of 8.11 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.67' (Free Discharge)

↑4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 8P: Underground Storage w/ Porous Pavement 4 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

39 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 279.30' Row Length +12.0" End Stone x 2 = 281.30' Base Length

13 Rows x 51.0" Wide + 6.0" Spacing x 12 + 12.0" Side Stone x 2 = 63.25' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

507 Chambers x 45.9 cf = 23,291.6 cf Chamber Storage

62,272.0 cf Field - 23,291.6 cf Chambers = 38,980.5 cf Stone x 40.0% Voids = 15,592.2 cf Stone Storage

Chamber Storage + Stone Storage = 38,883.8 cf = 0.893 af

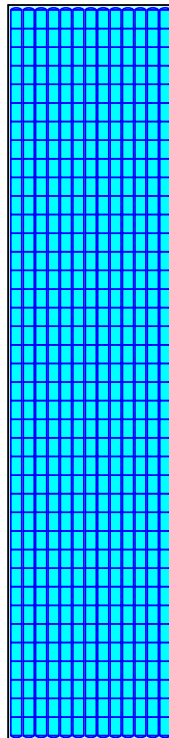
Overall Storage Efficiency = 62.4%

Overall System Size = 281.30' x 63.25' x 3.50'

507 Chambers

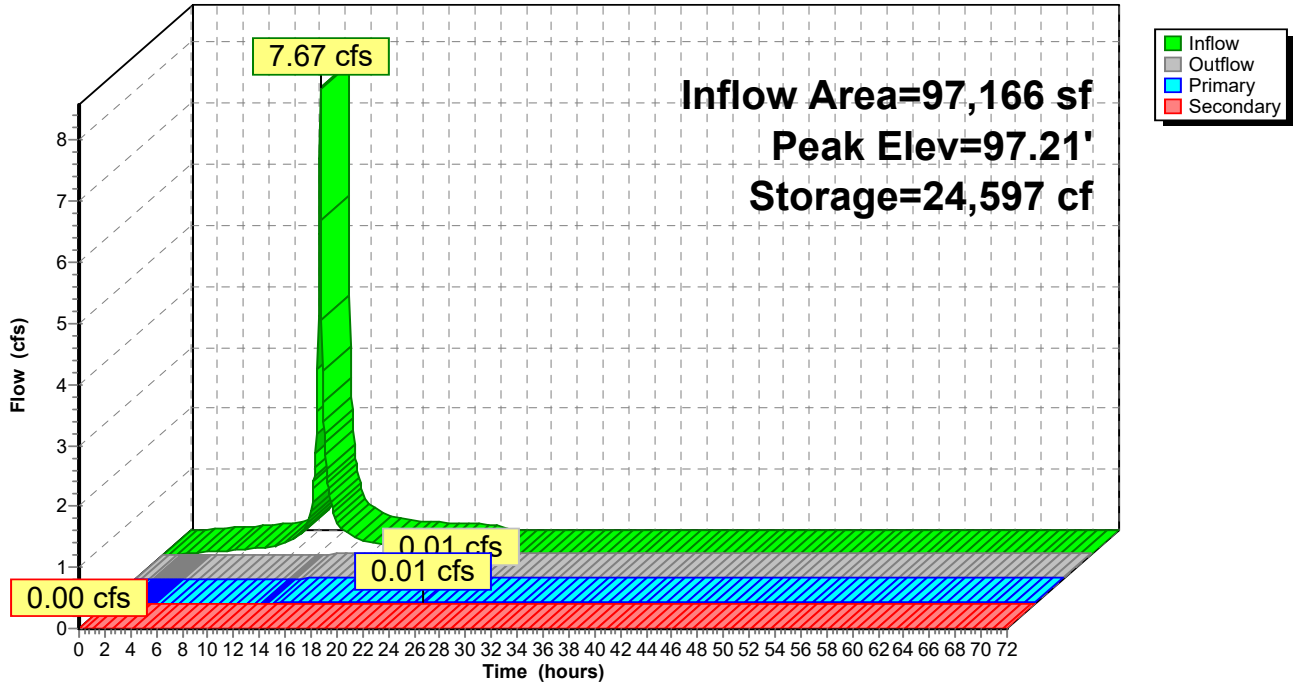
2,306.4 cy Field

1,443.7 cy Stone



Pond 8P: Underground Storage w/ Porous Pavement 4

Hydrograph



Summary for Pond 9P: Proposed Rain Garden 3 (North East)

[93] Warning: Storage range exceeded by 0.09'
 [62] Hint: Exceeded Reach 2R OUTLET depth by 0.06' @ 12.45 hrs

Inflow Area = 19,898 sf, 48.83% Impervious, Inflow Depth = 2.82" for 2-Year _2100 event
 Inflow = 1.24 cfs @ 12.20 hrs, Volume= 4,670 cf
 Outflow = 1.12 cfs @ 12.26 hrs, Volume= 4,535 cf, Atten= 10%, Lag= 4.0 min
 Primary = 0.25 cfs @ 12.27 hrs, Volume= 3,651 cf
 Routed to Pond 10P : Underground Storage w/ Porous Pavement 5
 Secondary = 0.86 cfs @ 12.26 hrs, Volume= 884 cf
 Routed to Pond 10P : Underground Storage w/ Porous Pavement 5

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 100.34' @ 12.27 hrs Surf.Area= 1,670 sf Storage= 1,751 cf

Plug-Flow detention time= 594.3 min calculated for 4,535 cf (97% of inflow)
 Center-of-Mass det. time= 576.4 min (1,365.4 - 789.0)

Volume	Invert	Avail.Storage	Storage Description			
#1	98.25'	1,751 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
98.25	1,385	0.0	0	0	1,385	
99.25	1,385	35.0	485	485	1,517	
99.50	1,385	25.0	87	571	1,550	
100.00	1,670	100.0	763	1,334	1,843	
100.25	1,670	100.0	418	1,751	1,879	

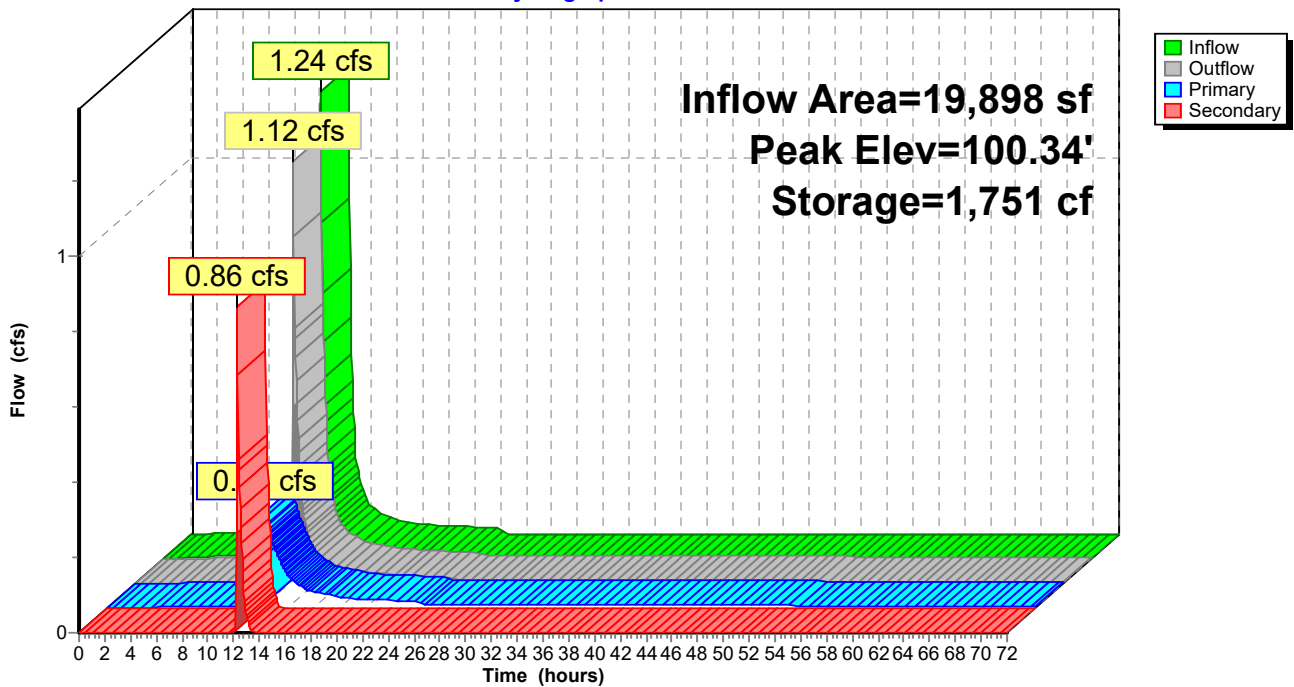
Device	Routing	Invert	Outlet Devices	
#1	Primary	98.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 98.15' / 98.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#2	Device 1	98.15'	0.5" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads	
#3	Device 2	98.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 98.25' / 98.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#4	Device 3	98.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads	
#5	Device 1	100.00'	4.0" Horiz. Drintech Atrium C= 0.600 Limited to weir flow at low heads	
#6	Secondary	100.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32	

Primary OutFlow Max=0.25 cfs @ 12.27 hrs HW=100.32' (Free Discharge)
 1=Culvert (Passes 0.25 cfs of 0.43 cfs potential flow)
 2=Restrictive Orifice (Orifice Controls 0.01 cfs @ 7.06 fps)
 3=4" HDPE Underdrain (Passes 0.01 cfs of 0.34 cfs potential flow)
 4=Perforations (Passes 0.01 cfs of 5.19 cfs potential flow)
 5=Draintech Atrium (Orifice Controls 0.24 cfs @ 2.72 fps)

Secondary OutFlow Max=0.79 cfs @ 12.26 hrs HW=100.32' (Free Discharge)
 6=Broad-Crested Rectangular Weir (Weir Controls 0.79 cfs @ 1.20 fps)

Pond 9P: Proposed Rain Garden 3 (North East)

Hydrograph



Summary for Pond 10P: Underground Storage w/ Porous Pavement 5

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 78,061 sf, 72.85% Impervious, Inflow Depth > 3.19" for 2-Year _2100 event
 Inflow = 4.77 cfs @ 12.23 hrs, Volume= 20,720 cf
 Outflow = 0.01 cfs @ 24.41 hrs, Volume= 3,623 cf, Atten= 100%, Lag= 730.7 min
 Primary = 0.01 cfs @ 24.41 hrs, Volume= 3,623 cf
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 97.23' @ 24.41 hrs Surf.Area= 27,852 sf Storage= 18,421 cf

Plug-Flow detention time= 1,753.8 min calculated for 3,623 cf (17% of inflow)
 Center-of-Mass det. time= 1,380.9 min (2,279.1 - 898.1)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	9,426 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	10,110 cf	63.25'W x 181.62'L x 3.50'H Field A
			40,205 cf Overall - 14,931 cf Embedded = 25,275 cf x 40.0% Voids
#3A	96.17'	14,931 cf	ADS_StormTech SC-740 +Cap x 325 Inside #2
			Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
			Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
			325 Chambers in 13 Rows
		34,467 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	16,365	0.0	0	0
97.67	16,365	35.0	8,592	8,592
97.83	16,365	15.0	393	8,984
98.01	16,365	15.0	442	9,426

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.01 cfs @ 24.41 hrs HW=97.23' (Free Discharge)

↑**1=Restriction Orifice** (Orifice Controls 0.01 cfs @ 10.92 fps)

↑**2=6" HDPE Underdrain** (Passes 0.01 cfs of 0.43 cfs potential flow)

↑**3=Perforations** (Passes 0.01 cfs of 8.13 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.67' (Free Discharge)

↑**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 10P: Underground Storage w/ Porous Pavement 5 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

25 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 179.62' Row Length +12.0" End Stone x 2 = 181.62' Base Length

13 Rows x 51.0" Wide + 6.0" Spacing x 12 + 12.0" Side Stone x 2 = 63.25' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

325 Chambers x 45.9 cf = 14,930.5 cf Chamber Storage

40,205.4 cf Field - 14,930.5 cf Chambers = 25,274.9 cf Stone x 40.0% Voids = 10,110.0 cf Stone Storage

Chamber Storage + Stone Storage = 25,040.5 cf = 0.575 af

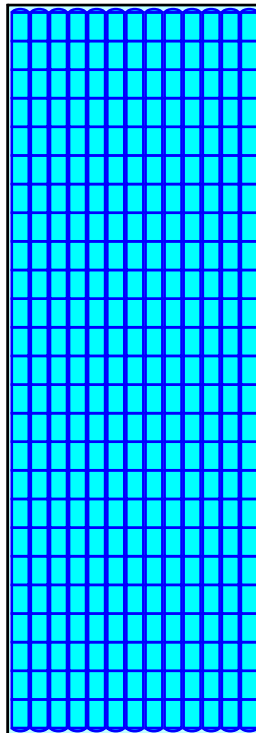
Overall Storage Efficiency = 62.3%

Overall System Size = 181.62' x 63.25' x 3.50'

325 Chambers

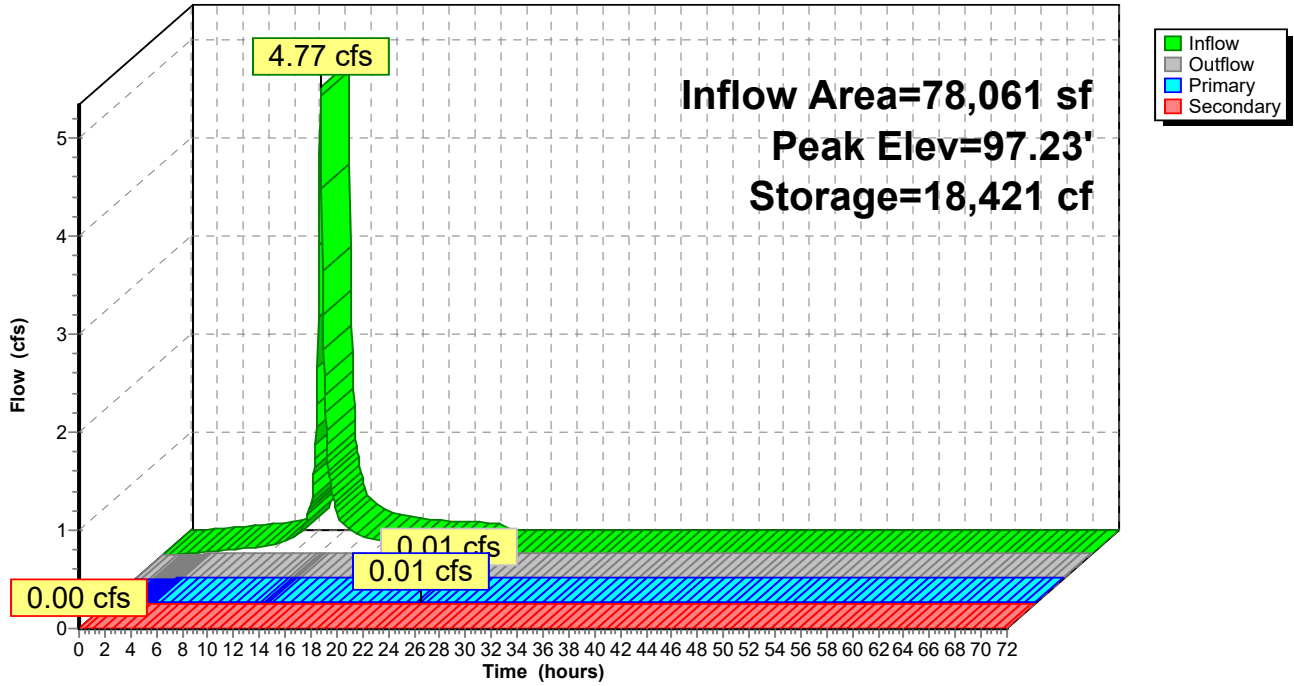
1,489.1 cy Field

936.1 cy Stone



Pond 10P: Underground Storage w/ Porous Pavement 5

Hydrograph



Summary for Pond 11P: Proposed Rain Garden 2 (East)

[93] Warning: Storage range exceeded by 0.10'

Inflow Area = 32,033 sf, 45.19% Impervious, Inflow Depth = 2.75" for 2-Year _2100 event
 Inflow = 1.84 cfs @ 12.22 hrs, Volume= 7,343 cf
 Outflow = 1.24 cfs @ 12.40 hrs, Volume= 7,127 cf, Atten= 33%, Lag= 11.0 min
 Primary = 0.27 cfs @ 12.40 hrs, Volume= 5,879 cf
 Routed to Pond 12P : Underground Storage w/ Porous Pavement 6
 Secondary = 0.97 cfs @ 12.40 hrs, Volume= 1,248 cf
 Routed to Pond 12P : Underground Storage w/ Porous Pavement 6

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 100.35' @ 12.40 hrs Surf.Area= 3,045 sf Storage= 3,267 cf

Plug-Flow detention time= 709.1 min calculated for 7,122 cf (97% of inflow)
 Center-of-Mass det. time= 692.5 min (1,486.0 - 793.5)

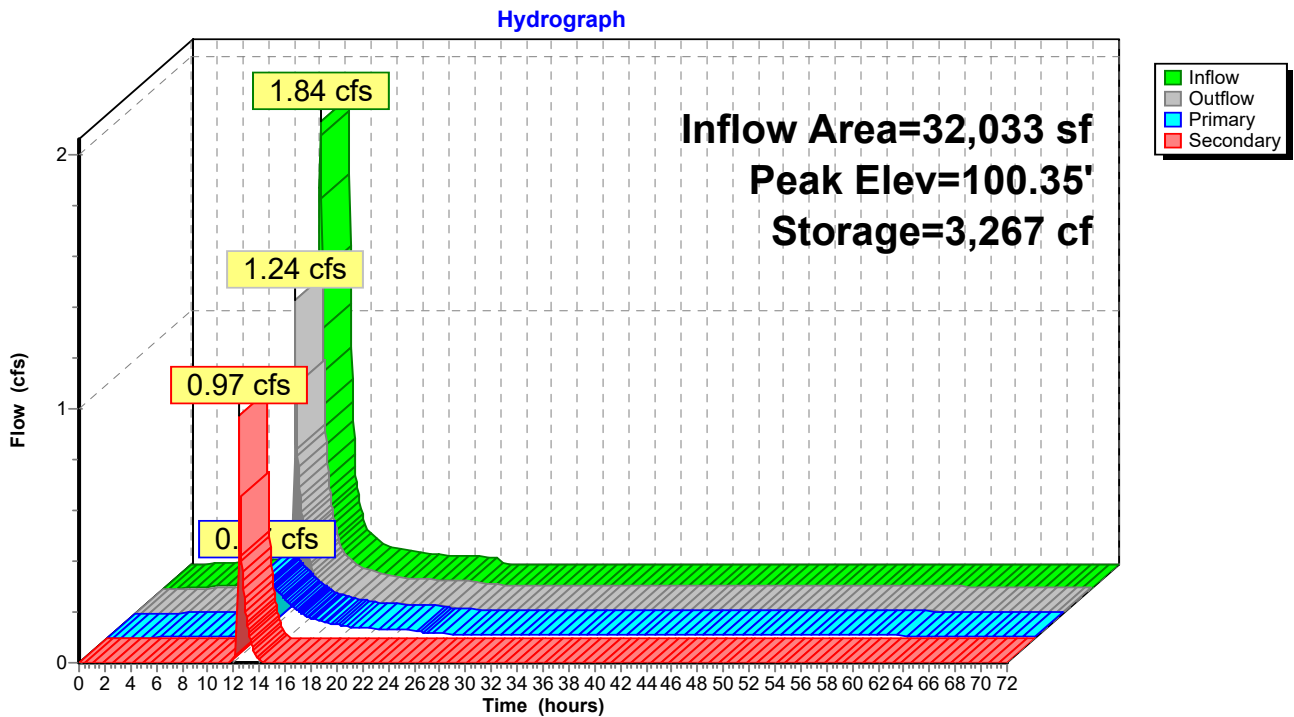
Volume	Invert	Avail.Storage	Storage Description			
#1	98.25'	3,267 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
98.25	2,635	0.0	0	0	2,635	
99.25	2,635	35.0	922	922	2,817	
99.50	2,635	25.0	165	1,087	2,862	
100.00	3,045	100.0	1,419	2,506	3,283	
100.25	3,045	100.0	761	3,267	3,332	

Device	Routing	Invert	Outlet Devices
#1	Primary	98.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 98.15' / 98.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf
#2	Device 1	98.15'	0.7" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads
#3	Device 2	98.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 98.25' / 98.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf
#4	Device 3	98.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#5	Device 1	100.00'	4.0" Horiz. Drintech Atrium C= 0.600 Limited to weir flow at low heads
#6	Secondary	100.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.27 cfs @ 12.40 hrs HW=100.35' (Free Discharge)
 1=Culvert (Passes 0.27 cfs of 0.43 cfs potential flow)
 2=Restrictive Orifice (Orifice Controls 0.02 cfs @ 7.09 fps)
 3=4" HDPE Underdrain (Passes 0.02 cfs of 0.34 cfs potential flow)
 4=Perforations (Passes 0.02 cfs of 5.23 cfs potential flow)
 5=Draintech Atrium (Orifice Controls 0.25 cfs @ 2.84 fps)

Secondary OutFlow Max=0.96 cfs @ 12.40 hrs HW=100.35' (Free Discharge)
 6=Broad-Crested Rectangular Weir (Weir Controls 0.96 cfs @ 1.28 fps)

Pond 11P: Proposed Rain Garden 2 (East)



Summary for Pond 12P: Underground Storage w/ Porous Pavement 6

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 32,033 sf, 45.19% Impervious, Inflow Depth > 2.67" for 2-Year _2100 event
 Inflow = 1.24 cfs @ 12.40 hrs, Volume= 7,127 cf
 Outflow = 0.01 cfs @ 50.90 hrs, Volume= 3,224 cf, Atten= 99%, Lag= 2,310.1 min
 Primary = 0.01 cfs @ 50.90 hrs, Volume= 3,224 cf
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 96.76' @ 50.90 hrs Surf.Area= 8,364 sf Storage= 4,178 cf

Plug-Flow detention time= 1,649.0 min calculated for 3,224 cf (45% of inflow)
 Center-of-Mass det. time= 931.9 min (2,417.9 - 1,486.0)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	1,866 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	4,603 cf	25.25'W x 202.98'L x 3.50'H Field A 17,938 cf Overall - 6,432 cf Embedded = 11,506 cf x 40.0% Voids
#3A	96.17'	6,432 cf	ADS_StormTech SC-740 +Cap x 140 Inside #2 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 140 Chambers in 5 Rows
		12,900 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	3,239	0.0	0	0
97.67	3,239	35.0	1,700	1,700
97.83	3,239	15.0	78	1,778
98.01	3,239	15.0	87	1,866

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.01 cfs @ 50.90 hrs HW=96.76' (Free Discharge)

↑**1=Restriction Orifice** (Orifice Controls 0.01 cfs @ 10.40 fps)

↑**2=6" HDPE Underdrain** (Passes 0.01 cfs of 0.41 cfs potential flow)

↑**3=Perforations** (Passes 0.01 cfs of 7.74 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.67' (Free Discharge)

↑**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 12P: Underground Storage w/ Porous Pavement 6 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

28 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 200.98' Row Length +12.0" End Stone x 2 = 202.98' Base Length

5 Rows x 51.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.25' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

140 Chambers x 45.9 cf = 6,431.6 cf Chamber Storage

17,938.1 cf Field - 6,431.6 cf Chambers = 11,506.5 cf Stone x 40.0% Voids = 4,602.6 cf Stone Storage

Chamber Storage + Stone Storage = 11,034.2 cf = 0.253 af

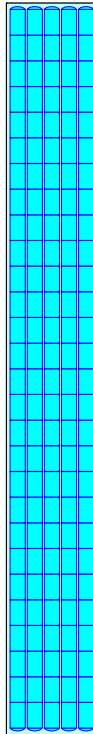
Overall Storage Efficiency = 61.5%

Overall System Size = 202.98' x 25.25' x 3.50'

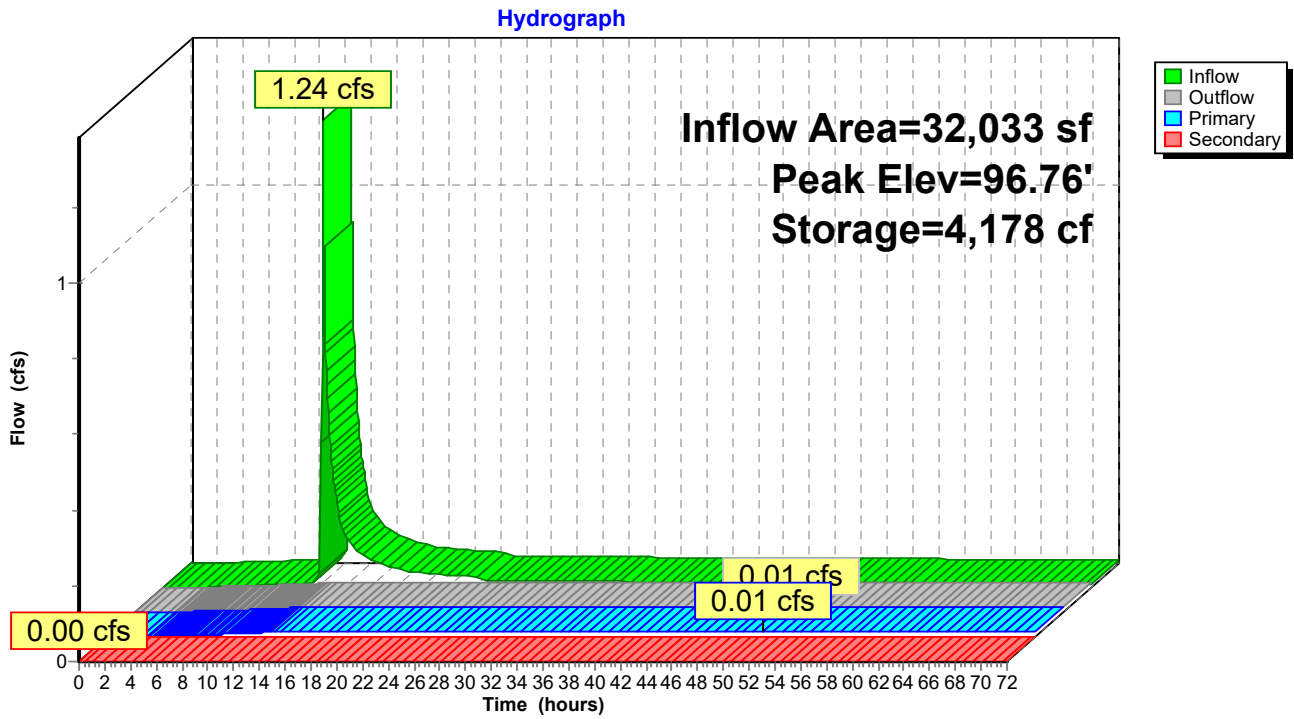
140 Chambers

664.4 cy Field

426.2 cy Stone



Pond 12P: Underground Storage w/ Porous Pavement 6



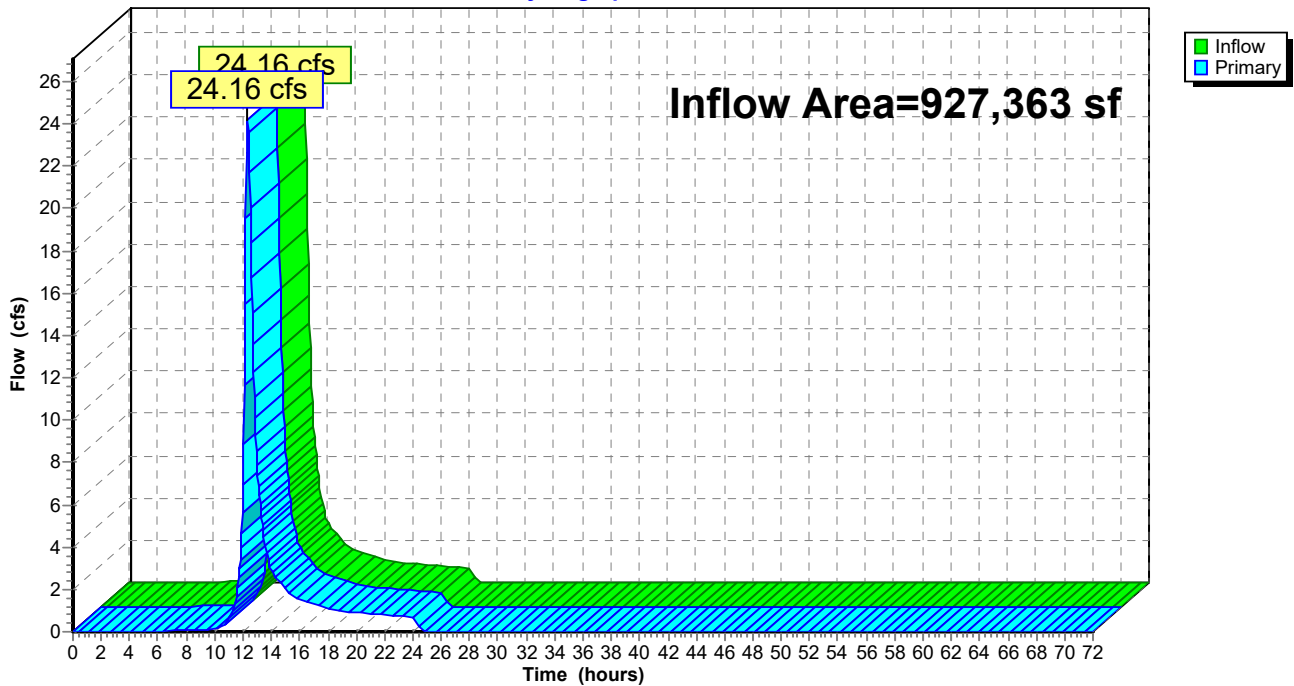
Summary for Link 1L: Offsite Flows

Inflow Area = 927,363 sf, 3.35% Impervious, Inflow Depth = 1.64" for 2-Year _2100 event
Inflow = 24.16 cfs @ 12.33 hrs, Volume= 126,634 cf
Primary = 24.16 cfs @ 12.33 hrs, Volume= 126,634 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 1L: Offsite Flows

Hydrograph



Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
 Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

- Subcatchment 1S: DA1: CN w/ IC** Runoff Area=56,173 sf 73.47% Impervious Runoff Depth=2.60"
 Flow Length=361' Tc=14.3 min CN=75/98 Runoff=2.92 cfs 12,163 cf
- Subcatchment 1Sa: Existing RG 1_West** Runoff Area=22,637 sf 64.43% Impervious Runoff Depth=2.47"
 Flow Length=361' Tc=14.3 min CN=77/98 Runoff=1.13 cfs 4,657 cf
- Subcatchment 1Sb: DA1: CN w/ IC** Runoff Area=39,105 sf 68.25% Impervious Runoff Depth=2.50"
 Flow Length=361' Tc=14.3 min CN=75/98 Runoff=1.96 cfs 8,141 cf
- Subcatchment 2S: DA 2: CN w/ IC areas** Runoff Area=58,249 sf 86.46% Impervious Runoff Depth=2.86"
 Flow Length=391' Tc=7.0 min CN=76/98 Runoff=4.15 cfs 13,862 cf
- Subcatchment 3S: DA 3: CN w/ IC** Runoff Area=158,623 sf 63.48% Impervious Runoff Depth=2.43"
 Flow Length=441' Tc=8.3 min CN=76/98 Runoff=9.39 cfs 32,109 cf
- Subcatchment 3Sa: Existing RG 2 Front DA** Runoff Area=25,889 sf 48.62% Impervious Runoff Depth=2.25"
 Tc=8.3 min CN=79/98 Runoff=1.45 cfs 4,858 cf
- Subcatchment 3Sb: RG 1 DA** Runoff Area=21,388 sf 65.14% Impervious Runoff Depth=2.42"
 Flow Length=441' Tc=8.3 min CN=74/98 Runoff=1.25 cfs 4,310 cf
- Subcatchment 3Sc: DA 3: CN w/ IC areas** Runoff Area=111,346 sf 66.62% Impervious Runoff Depth=2.47"
 Flow Length=441' Tc=8.3 min CN=75/98 Runoff=6.67 cfs 22,891 cf
- Subcatchment 4S: DA 4: CN w/ IC** Runoff Area=86,816 sf 90.62% Impervious Runoff Depth=2.93"
 Flow Length=143' Tc=8.4 min CN=75/98 Runoff=6.05 cfs 21,176 cf
- Subcatchment 4Sa: RG 4 DA** Runoff Area=24,369 sf 57.53% Impervious Runoff Depth=2.40"
 Flow Length=143' Tc=8.4 min CN=79/98 Runoff=1.43 cfs 4,874 cf
- Subcatchment 4Sb: DA 4: CN w/ IC areas** Runoff Area=72,797 sf 88.81% Impervious Runoff Depth=2.89"
 Flow Length=143' Tc=8.4 min CN=75/98 Runoff=5.02 cfs 17,547 cf
- Subcatchment 5S: DA 5: CN w/ IC** Runoff Area=78,058 sf 72.85% Impervious Runoff Depth=2.62"
 Flow Length=310' Tc=11.5 min CN=77/98 Runoff=4.44 cfs 17,042 cf
- Subcatchment 5Sa: RG 3 DA** Runoff Area=19,898 sf 48.83% Impervious Runoff Depth=2.26"
 Flow Length=310' Tc=11.5 min CN=79/98 Runoff=1.00 cfs 3,740 cf
- Subcatchment 5Sb: DA 5: CN w/ IC areas** Runoff Area=58,163 sf 81.07% Impervious Runoff Depth=2.74"
 Flow Length=310' Tc=11.5 min CN=75/98 Runoff=3.44 cfs 13,300 cf
- Subcatchment 6S: DA 6: CN w/ IC areas** Runoff Area=32,033 sf 45.19% Impervious Runoff Depth=2.19"
 Flow Length=276' Tc=14.0 min CN=79/98 Runoff=1.47 cfs 5,859 cf
- Subcatchment 7S: DA 7 (Offsite South):** Runoff Area=107,001 sf 18.84% Impervious Runoff Depth=1.70"
 Flow Length=309' Tc=14.5 min CN=78/98 Runoff=3.84 cfs 15,183 cf

Subcatchment 8S: DA 8 (Offsite North): CN Runoff Area=340,642 sf 1.94% Impervious Runoff Depth=1.17"
 Flow Length=976' Tc=19.4 min CN=74/98 Runoff=7.46 cfs 33,187 cf

Subcatchment 9S: DA 9 (Offsite Field) Runoff Area=479,720 sf 0.89% Impervious Runoff Depth=1.09"
 Flow Length=1,468' Tc=30.4 min CN=73/98 Runoff=7.77 cfs 43,637 cf

Subcatchment 31S: RG 2 DA Runoff Area=32,035 sf 32.46% Impervious Runoff Depth=1.98"
 Flow Length=276' Tc=14.0 min CN=79/98 Runoff=1.35 cfs 5,293 cf

Reach 1R: Existing Bioswale West 1 Avg. Flow Depth=0.18' Max Vel=1.81 fps Inflow=1.13 cfs 4,657 cf
 n=0.035 L=33.0' S=0.0227 '/' Capacity=7.36 cfs Outflow=1.12 cfs 4,657 cf

Reach 2R: Bioswale E 1 RG 3 Avg. Flow Depth=0.25' Max Vel=2.22 fps Inflow=1.00 cfs 3,740 cf
 n=0.035 L=35.0' S=0.0286 '/' Capacity=4.02 cfs Outflow=0.99 cfs 3,740 cf

Pond 1P: Existing Rain Garden 1 West Peak Elev=100.31' Storage=1,831 cf Inflow=1.12 cfs 4,657 cf
 Primary=0.24 cfs 3,637 cf Secondary=0.71 cfs 848 cf Outflow=0.95 cfs 4,484 cf

Pond 2P: Underground Storage w/ Porous Peak Elev=97.01' Storage=10,372 cf Inflow=2.58 cfs 12,625 cf
 Primary=0.01 cfs 3,492 cf Secondary=0.00 cfs 0 cf Outflow=0.01 cfs 3,492 cf

Pond 3P: Underground Storage w/ Porous Peak Elev=97.05' Storage=12,809 cf Inflow=4.15 cfs 13,862 cf
 Primary=0.01 cfs 3,546 cf Secondary=0.00 cfs 0 cf Outflow=0.01 cfs 3,546 cf

Pond 4P: Existing Rain Garden 2 Front Peak Elev=101.12' Storage=2,880 cf Inflow=1.45 cfs 4,858 cf
 Primary=0.15 cfs 3,674 cf Secondary=0.03 cfs 61 cf Outflow=0.18 cfs 3,735 cf

Pond 5P: Proposed Rain Garden 1 (South) Peak Elev=101.17' Storage=2,278 cf Inflow=1.25 cfs 4,310 cf
 Primary=0.18 cfs 3,513 cf Secondary=0.14 cfs 250 cf Outflow=0.32 cfs 3,763 cf

Pond 6P: Underground Storage w/ Porous Peak Elev=96.91' Storage=26,914 cf Inflow=6.68 cfs 30,390 cf
 Primary=0.01 cfs 3,482 cf Secondary=0.00 cfs 0 cf Outflow=0.01 cfs 3,482 cf

Pond 7P: Proposed Rain Garden 4 (North) Peak Elev=100.22' Storage=2,371 cf Inflow=1.43 cfs 4,874 cf
 Primary=0.20 cfs 3,818 cf Secondary=0.30 cfs 545 cf Outflow=0.51 cfs 4,363 cf

Pond 8P: Underground Storage w/ Porous Peak Elev=96.95' Storage=19,505 cf Inflow=5.04 cfs 21,910 cf
 Primary=0.01 cfs 3,515 cf Secondary=0.00 cfs 0 cf Outflow=0.01 cfs 3,515 cf

Pond 9P: Proposed Rain Garden 3 (North) Peak Elev=100.21' Storage=1,678 cf Inflow=0.99 cfs 3,740 cf
 Primary=0.20 cfs 3,238 cf Secondary=0.26 cfs 369 cf Outflow=0.46 cfs 3,607 cf

Pond 10P: Underground Storage w/ Porous Peak Elev=96.98' Storage=14,650 cf Inflow=3.44 cfs 16,907 cf
 Primary=0.01 cfs 3,521 cf Secondary=0.00 cfs 0 cf Outflow=0.01 cfs 3,521 cf

Pond 11P: Proposed Rain Garden 2 (East) Peak Elev=100.18' Storage=3,049 cf Inflow=1.47 cfs 5,859 cf
 Primary=0.20 cfs 5,263 cf Secondary=0.17 cfs 386 cf Outflow=0.36 cfs 5,649 cf

Pond 12P: Underground Storage w/ Porous Peak Elev=96.50' Storage=2,789 cf Inflow=0.36 cfs 5,649 cf
 Primary=0.01 cfs 3,111 cf Secondary=0.00 cfs 0 cf Outflow=0.01 cfs 3,111 cf

Link 1L: Offsite Flows Inflow=17.10 cfs 92,008 cf
 Primary=17.10 cfs 92,008 cf

Total Runoff Area = 1,824,942 sf Runoff Volume = 283,830 cf Average Runoff Depth = 1.87"
63.76% Pervious = 1,163,653 sf 36.24% Impervious = 661,289 sf

Summary for Subcatchment 1S: DA1: CN w/ IC areas_original

Runoff = 2.92 cfs @ 12.22 hrs, Volume= 12,163 cf, Depth= 2.60"

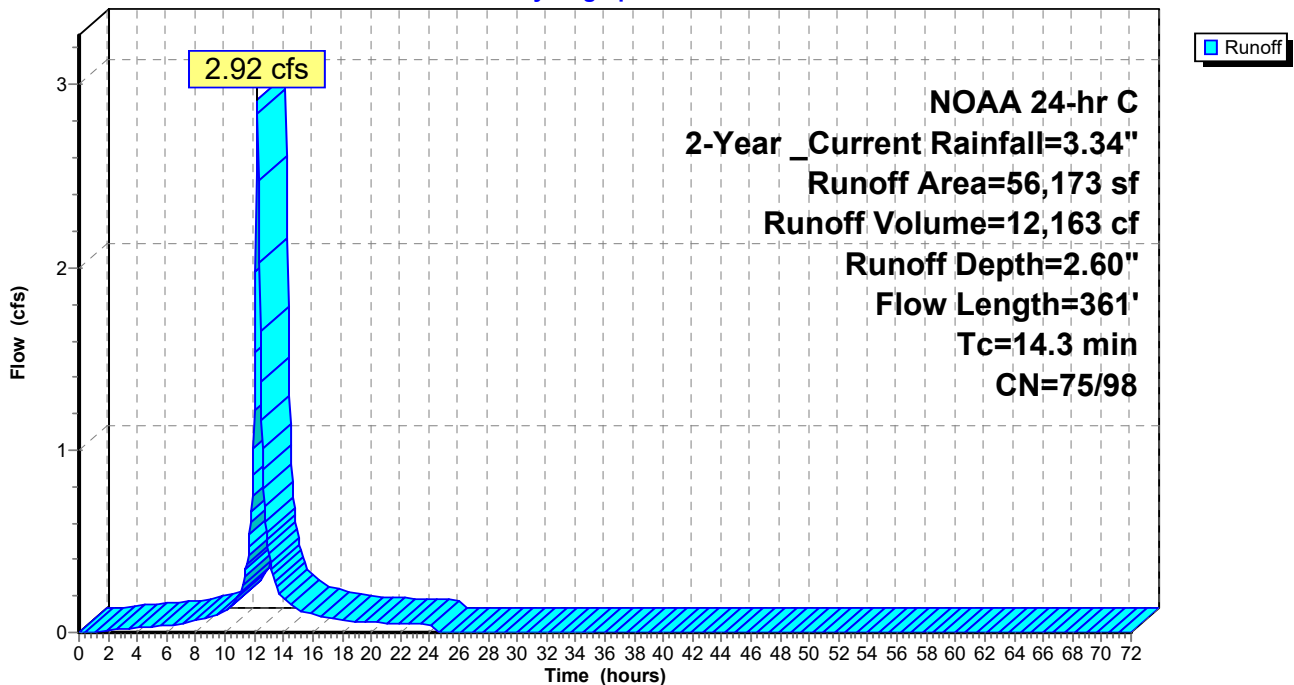
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _Current Rainfall=3.34"

Area (sf)	CN	Description
* 2,053	79	Open space (fair) C
* 12,848	74	Open space (good) C
* 41,272	98	Impervious
56,173	92	Weighted Average
14,901	75	26.53% Pervious Area
41,272	98	73.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	100	0.0109	0.14		Sheet Flow, Sheet flow Grass: Short n= 0.150 P2= 3.34"
0.2	33	0.0280	2.69		Shallow Concentrated Flow, SCF - unpaved Unpaved Kv= 16.1 fps
1.9	228	0.0095	1.98		Shallow Concentrated Flow, SCF - Paved parking lot Paved Kv= 20.3 fps
14.3	361	Total			

Subcatchment 1S: DA1: CN w/ IC areas_original

Hydrograph



Summary for Subcatchment 1Sa: Existing RG 1_West_DA

Runoff = 1.13 cfs @ 12.22 hrs, Volume= 4,657 cf, Depth= 2.47"
 Routed to Reach 1R : Existing Bioswale West 1

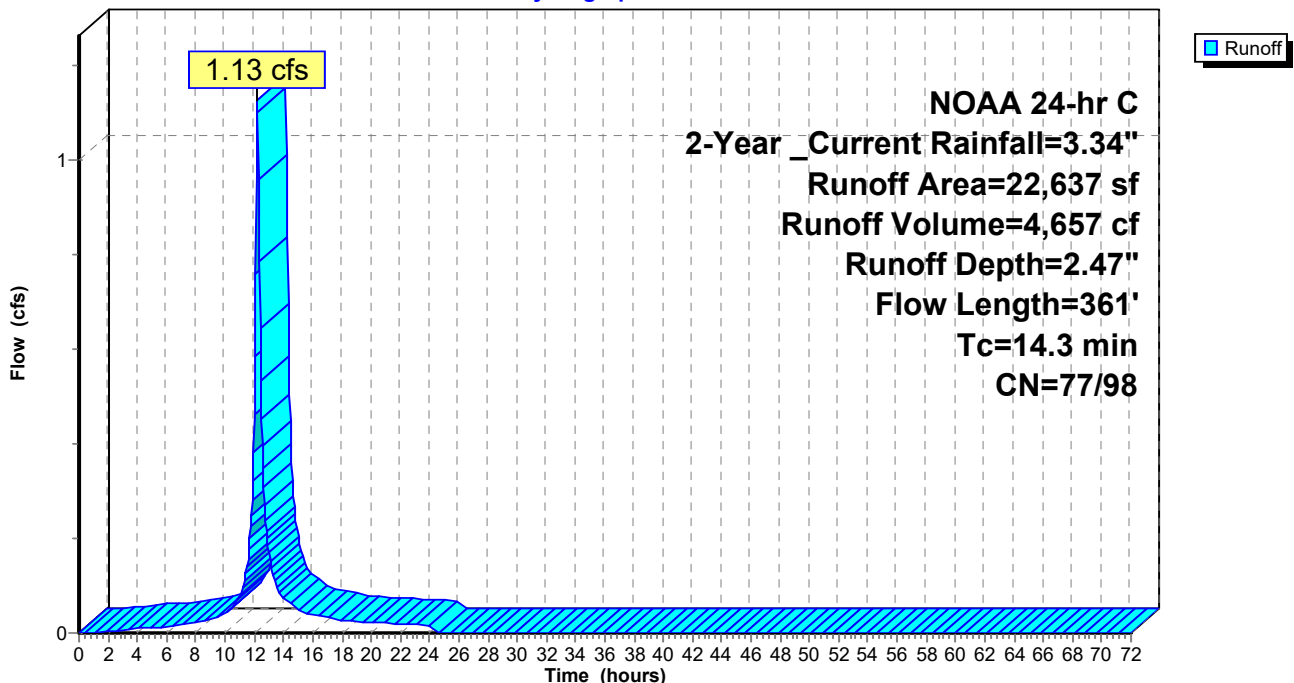
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _Current Rainfall=3.34"

	Area (sf)	CN	Description
*	5,569	79	Open space (fair) C - Portion from DA 9 the field
*	14,584	98	Impervious Parking Lot
*	2,484	74	OPen Space (Good) C - Portion from DA1
	22,637	91	Weighted Average
	8,053	77	35.57% Pervious Area
	14,584	98	64.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	100	0.0109	0.14		Sheet Flow, Sheet flow Grass: Short n= 0.150 P2= 3.34"
0.2	33	0.0280	2.69		Shallow Concentrated Flow, SCF - unpaved Unpaved Kv= 16.1 fps
1.9	228	0.0095	1.98		Shallow Concentrated Flow, SCF - Paved parking lot Paved Kv= 20.3 fps
14.3	361	Total			

Subcatchment 1Sa: Existing RG 1_West_DA

Hydrograph



Summary for Subcatchment 1Sb: DA1: CN w/ IC areas_Remaining

Runoff = 1.96 cfs @ 12.22 hrs, Volume= 8,141 cf, Depth= 2.50"
 Routed to Pond 2P : Underground Storage w/ Porous Pavement 1

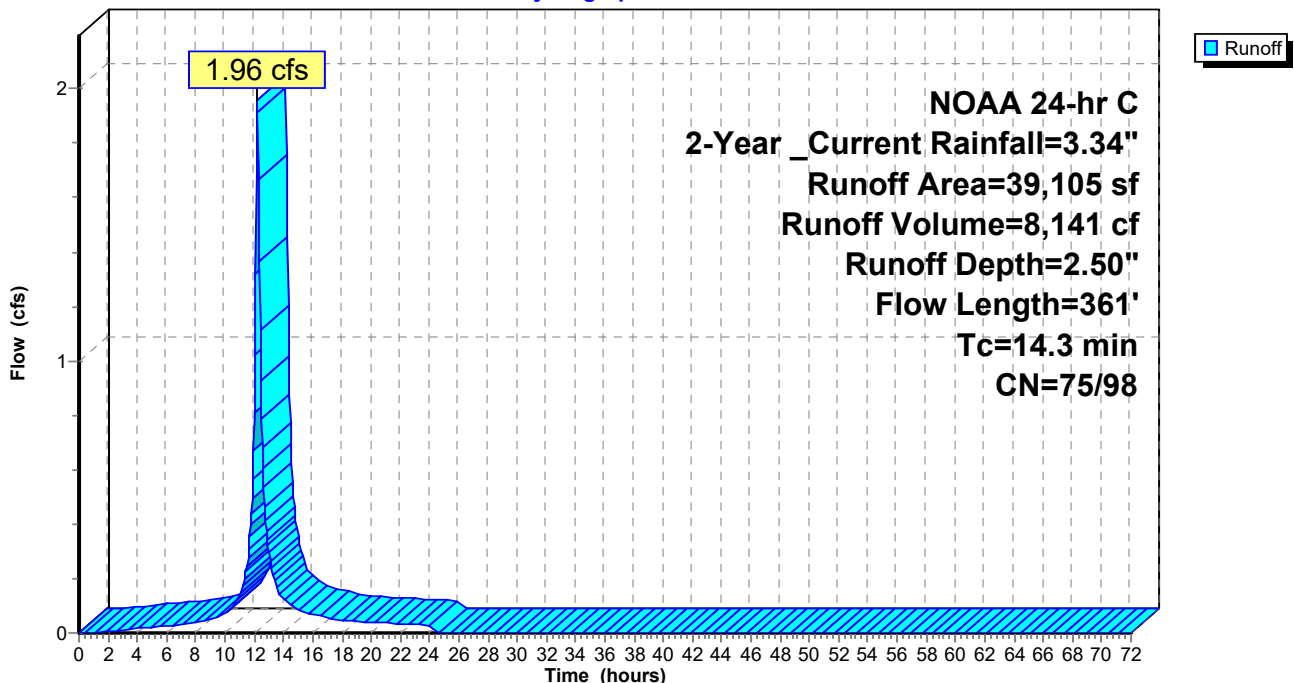
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _Current Rainfall=3.34"

Area (sf)	CN	Description
* 2,053	79	Open space (fair) C
* 10,364	74	Open space (good) C
* 26,688	98	Impervious
39,105	91	Weighted Average
12,417	75	31.75% Pervious Area
26,688	98	68.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	100	0.0109	0.14		Sheet Flow, Sheet flow Grass: Short n= 0.150 P2= 3.34"
0.2	33	0.0280	2.69		Shallow Concentrated Flow, SCF - unpaved Unpaved Kv= 16.1 fps
1.9	228	0.0095	1.98		Shallow Concentrated Flow, SCF - Paved parking lot Paved Kv= 20.3 fps
14.3	361	Total			

Subcatchment 1Sb: DA1: CN w/ IC areas_Remaining

Hydrograph



Summary for Subcatchment 2S: DA 2: CN w/ IC areas

Runoff = 4.15 cfs @ 12.14 hrs, Volume= 13,862 cf, Depth= 2.86"
 Routed to Pond 3P : Underground Storage w/ Porous Pavement 2

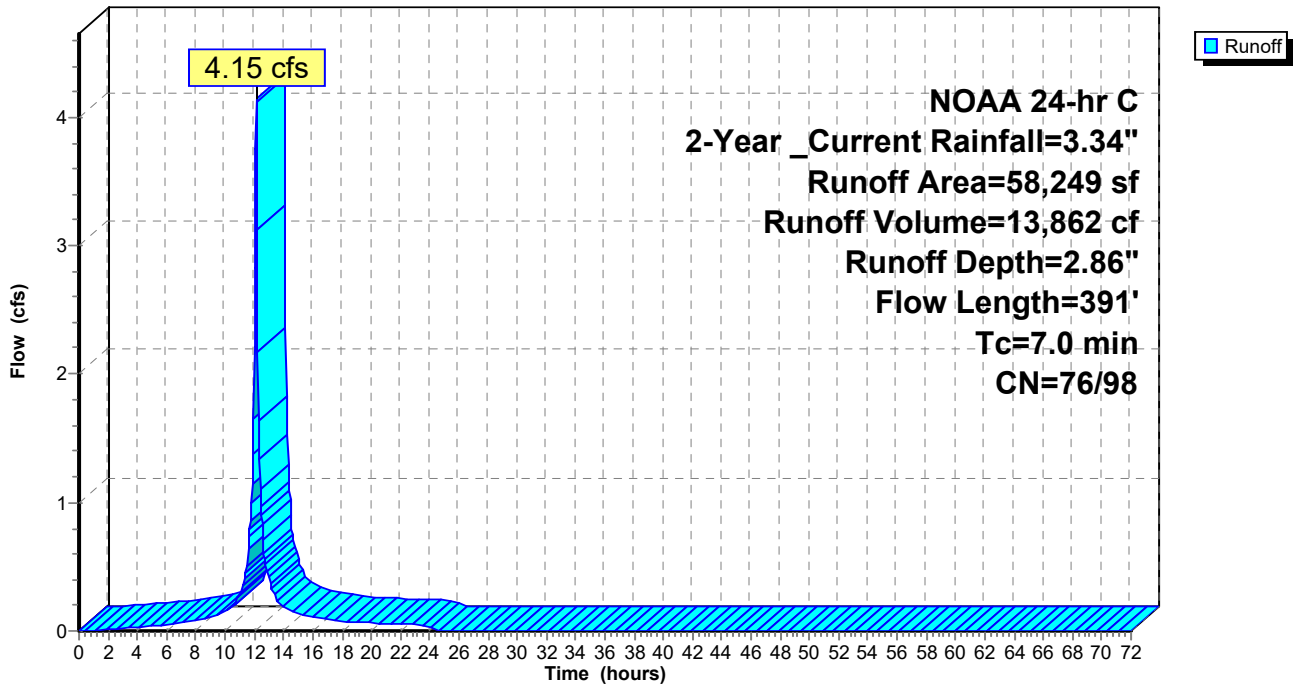
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _Current Rainfall=3.34"

	Area (sf)	CN	Description
*	3,767	79	Open space (Fair) C
*	4,118	74	Open Space (good) C
*	50,364	98	Impervious
	58,249	95	Weighted Average
	7,885	76	13.54% Pervious Area
	50,364	98	86.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	18	0.0037	0.06		Sheet Flow, Sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
2.2	373	0.0186	2.77		Shallow Concentrated Flow, SCF _ paved Paved Kv= 20.3 fps
7.0	391	Total			

Subcatchment 2S: DA 2: CN w/ IC areas

Hydrograph



Summary for Subcatchment 3S: DA 3: CN w/ IC areas_Original

Runoff = 9.39 cfs @ 12.15 hrs, Volume= 32,109 cf, Depth= 2.43"

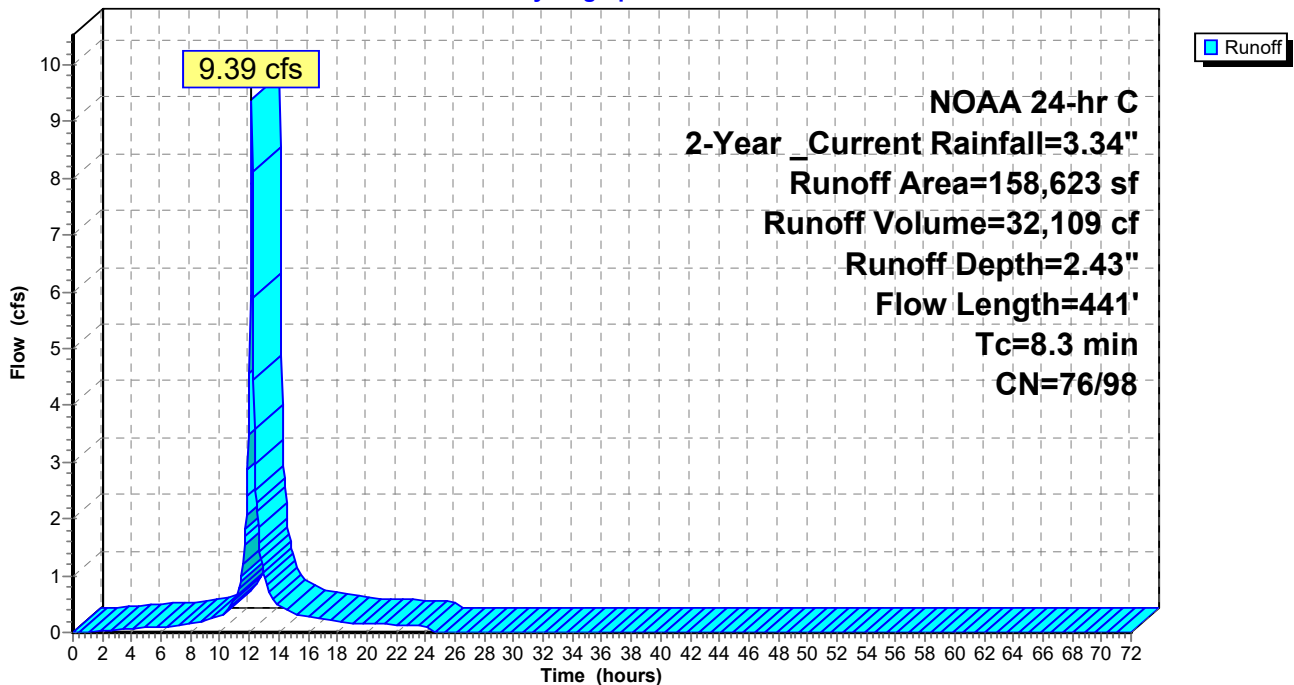
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _Current Rainfall=3.34"

Area (sf)	CN	Description
* 18,715	79	Open space (Fair) C
* 39,208	74	Open space (good) C
* 100,700	98	Impervious
158,623	90	Weighted Average
57,923	76	36.52% Pervious Area
100,700	98	63.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	83	0.0489	0.24		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
2.5	358	0.0138	2.38		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
8.3	441	Total			

Subcatchment 3S: DA 3: CN w/ IC areas_Original

Hydrograph



Summary for Subcatchment 3Sa: Existing RG 2 Front DA

Runoff = 1.45 cfs @ 12.15 hrs, Volume= 4,858 cf, Depth= 2.25"
 Routed to Pond 4P : Existing Rain Garden 2 Front

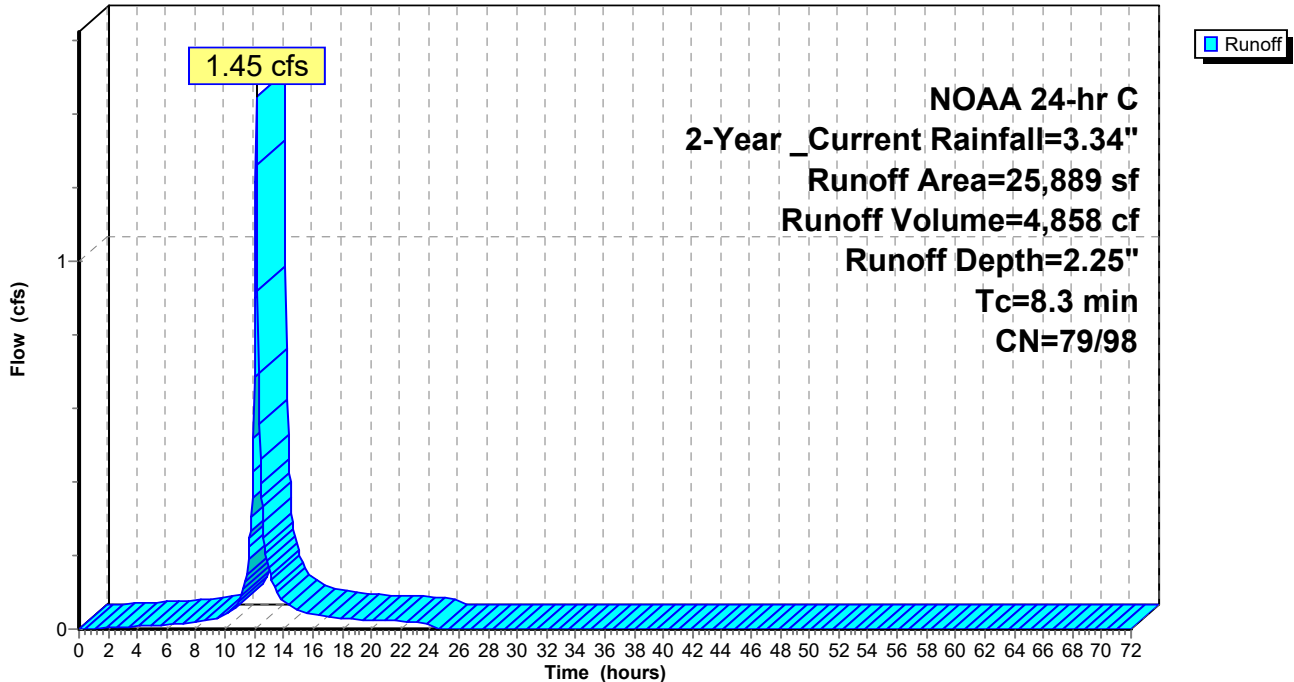
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _Current Rainfall=3.34"

	Area (sf)	CN	Description
*	6,507	98	Impervious Roof Top
*	966	98	Gravel surface, HSG C - Path
*	5,114	98	Impervious Sidewalk
	13,302	79	50-75% Grass cover, Fair, HSG C
	25,889	88	Weighted Average
	13,302	79	51.38% Pervious Area
	12,587	98	48.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3					Direct Entry,

Subcatchment 3Sa: Existing RG 2 Front DA

Hydrograph



Summary for Subcatchment 3Sb: RG 1 DA

Runoff = 1.25 cfs @ 12.15 hrs, Volume= 4,310 cf, Depth= 2.42"
 Routed to Pond 5P : Proposed Rain Garden 1 (South West)

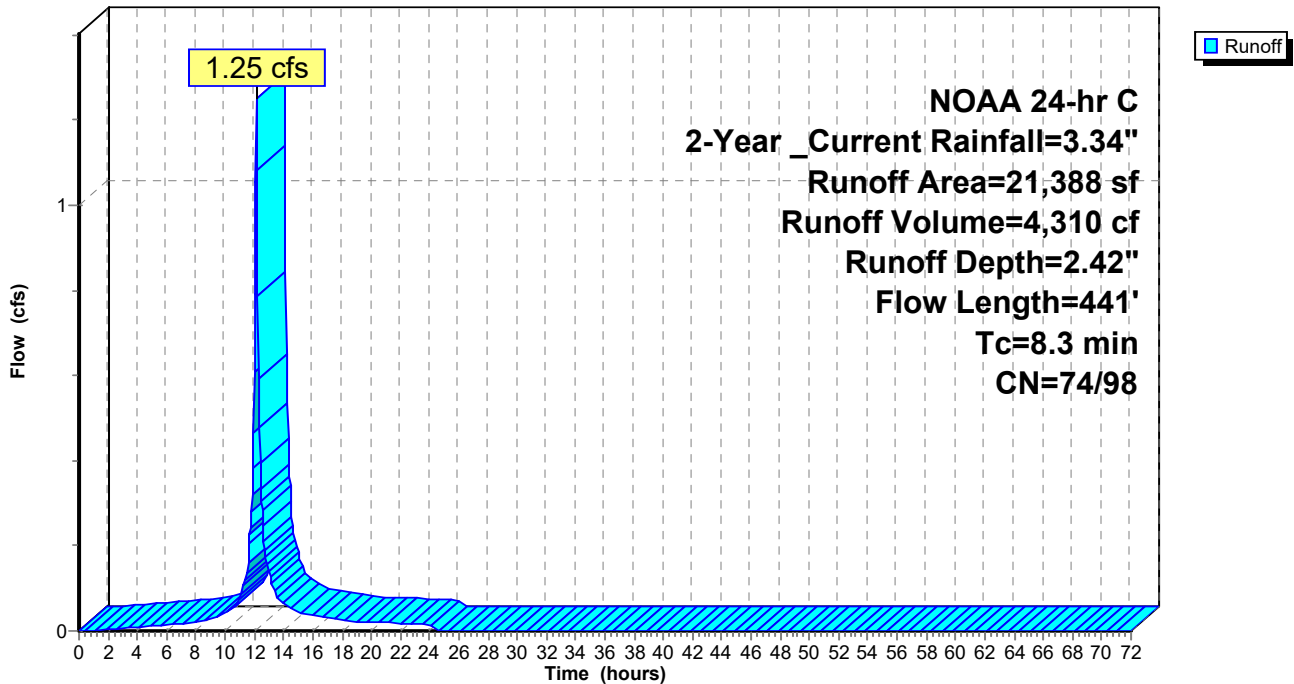
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _Current Rainfall=3.34"

	Area (sf)	CN	Description
*	7,455	74	Open space (good) C
*	10,303	98	Impervious - Roof top
*	3,630	98	Impervious - Road / Sidewalk
	21,388	90	Weighted Average
	7,455	74	34.86% Pervious Area
	13,933	98	65.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	83	0.0489	0.24		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
2.5	358	0.0138	2.38		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
8.3	441	Total			

Subcatchment 3Sb: RG 1 DA

Hydrograph



Summary for Subcatchment 3Sc: DA 3: CN w/ IC areas Remaining

Runoff = 6.67 cfs @ 12.15 hrs, Volume= 22,891 cf, Depth= 2.47"
 Routed to Pond 6P : Underground Storage w/ Porous Pavement 3

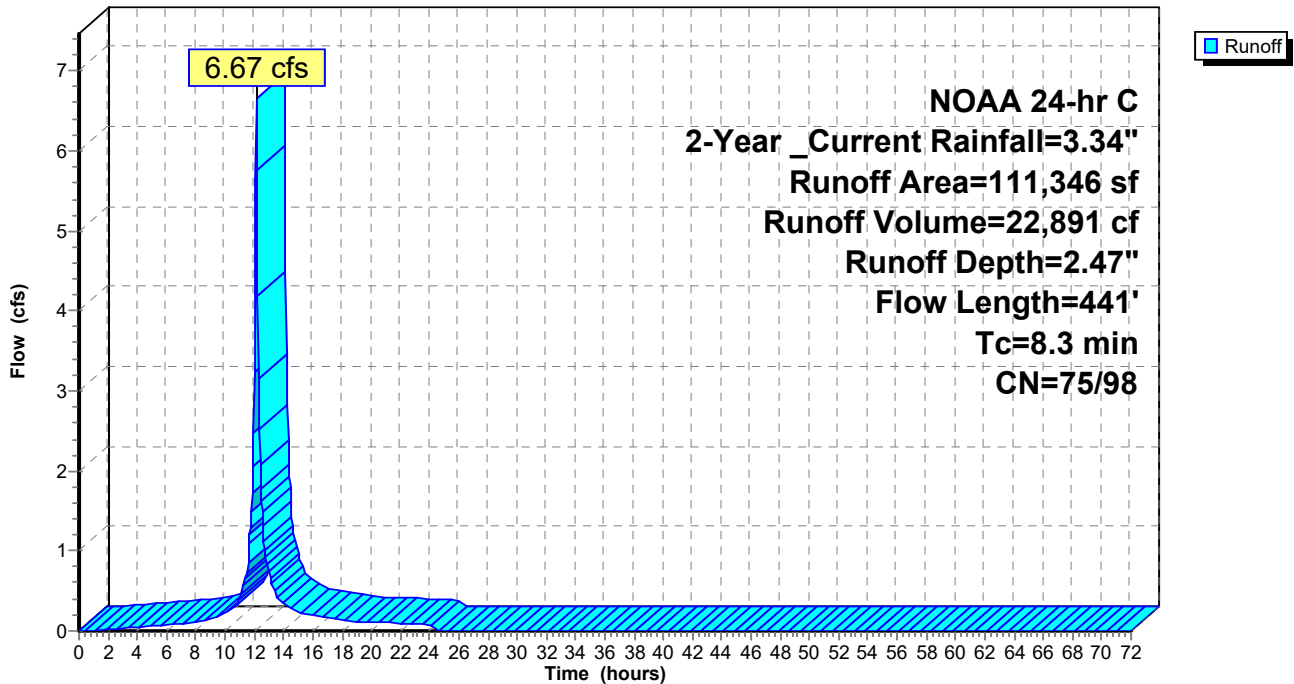
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _Current Rainfall=3.34"

	Area (sf)	CN	Description
*	5,413	79	Open space (Fair) C
*	31,753	74	Open space (good) C
*	74,180	98	Impervious
	111,346	90	Weighted Average
	37,166	75	33.38% Pervious Area
	74,180	98	66.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	83	0.0489	0.24		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
2.5	358	0.0138	2.38		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
8.3	441	Total			

Subcatchment 3Sc: DA 3: CN w/ IC areas Remaining

Hydrograph



Summary for Subcatchment 4S: DA 4: CN w/ IC areas_original

Runoff = 6.05 cfs @ 12.15 hrs, Volume= 21,176 cf, Depth= 2.93"

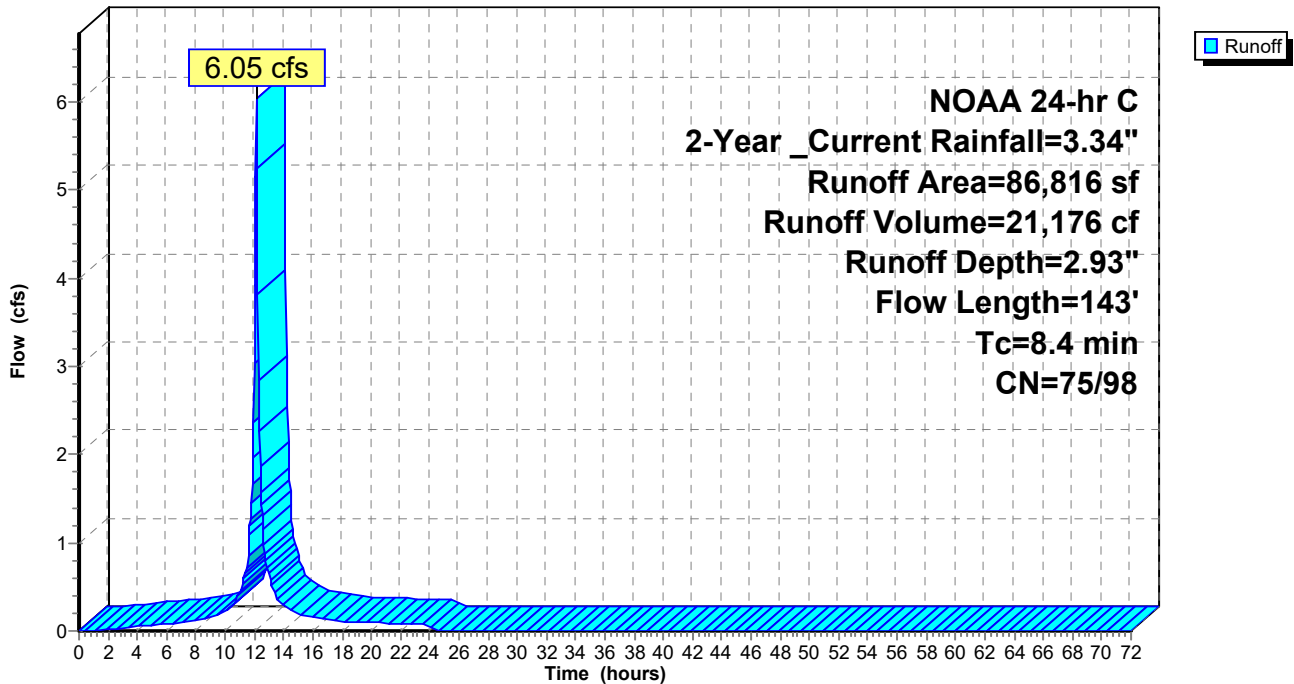
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _Current Rainfall=3.34"

	Area (sf)	CN	Description
*	1,403	79	Open space (fair) C
*	446	84	Open space (fair) D
*	6,298	74	Open space (good) C
*	78,669	98	Impervious
	86,816	96	Weighted Average
	8,147	75	9.38% Pervious Area
	78,669	98	90.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	67	0.0144	0.14		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
0.5	76	0.0155	2.53		Shallow Concentrated Flow, SCF - Paved Paved Kv= 20.3 fps
8.4	143	Total			

Subcatchment 4S: DA 4: CN w/ IC areas_original

Hydrograph



Summary for Subcatchment 4Sa: RG 4 DA

Runoff = 1.43 cfs @ 12.15 hrs, Volume= 4,874 cf, Depth= 2.40"
 Routed to Pond 7P : Proposed Rain Garden 4 (North)

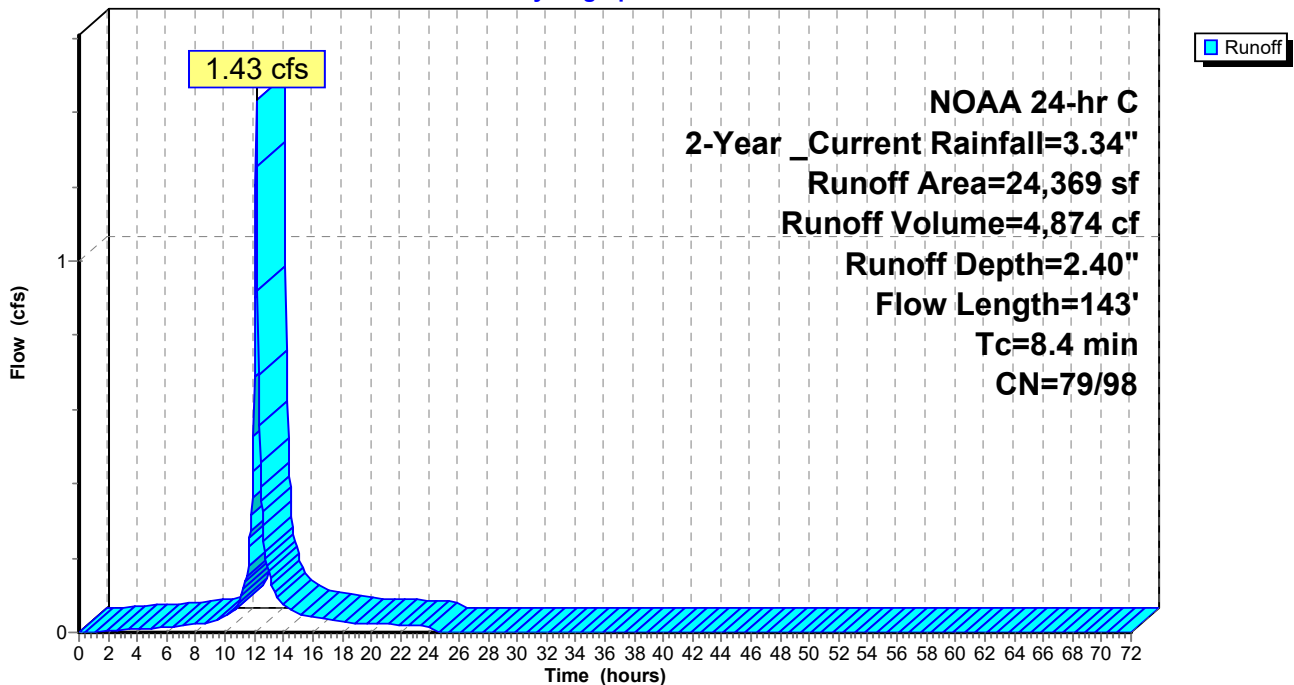
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _Current Rainfall=3.34"

	Area (sf)	CN	Description
*	10,350	79	Open space (fair) C_from DA 8
*	14,019	98	Impervious Parkinglot
	24,369	90	Weighted Average
	10,350	79	42.47% Pervious Area
	14,019	98	57.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	67	0.0144	0.14		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
0.5	76	0.0155	2.53		Shallow Concentrated Flow, SCF - Paved Paved Kv= 20.3 fps
8.4	143	Total			

Subcatchment 4Sa: RG 4 DA

Hydrograph



Summary for Subcatchment 4Sb: DA 4: CN w/ IC areas

Runoff = 5.02 cfs @ 12.15 hrs, Volume= 17,547 cf, Depth= 2.89"
 Routed to Pond 8P : Underground Storage w/ Porous Pavement 4

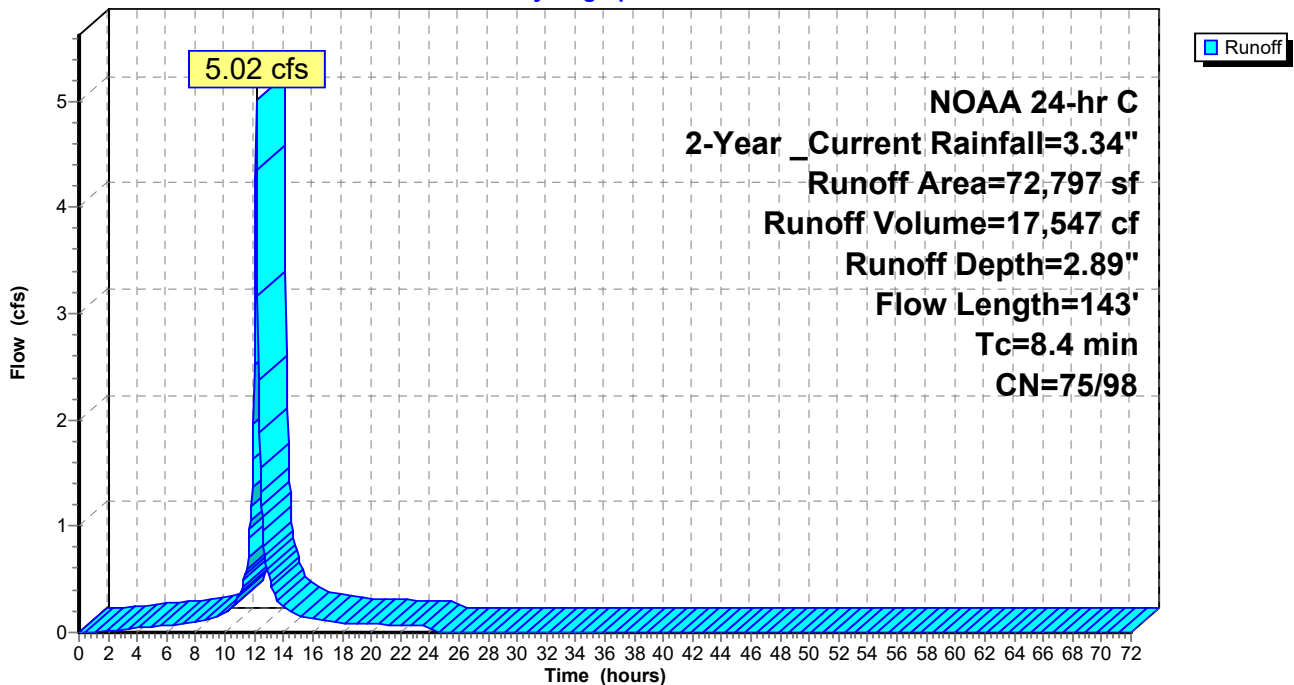
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _Current Rainfall=3.34"

	Area (sf)	CN	Description
*	1,403	79	Open space (fair) C
*	446	84	Open space (fair) D
*	6,298	74	Open space (good) C
*	64,650	98	Impervious
	72,797	95	Weighted Average
	8,147	75	11.19% Pervious Area
	64,650	98	88.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	67	0.0144	0.14		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
0.5	76	0.0155	2.53		Shallow Concentrated Flow, SCF - Paved Paved Kv= 20.3 fps
8.4	143	Total			

Subcatchment 4Sb: DA 4: CN w/ IC areas

Hydrograph



Summary for Subcatchment 5S: DA 5: CN w/ IC areas_Original

Runoff = 4.44 cfs @ 12.19 hrs, Volume= 17,042 cf, Depth= 2.62"

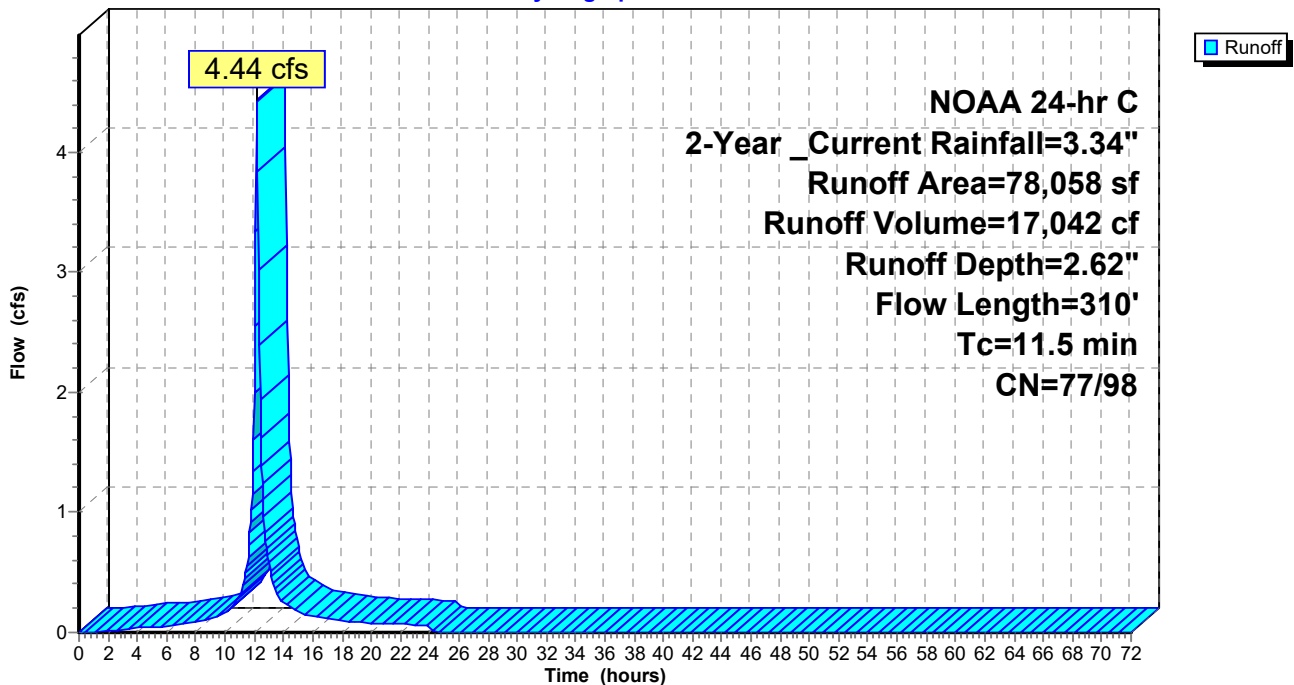
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _Current Rainfall=3.34"

	Area (sf)	CN	Description
*	11,294	79	Open Space (Fair) C
*	9,899	74	Open Space (good) C
*	56,865	98	Impervious
	78,058	92	Weighted Average
	21,193	77	27.15% Pervious Area
	56,865	98	72.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	64	0.0105	0.12		Sheet Flow, Sheet flow -grass Grass: Short n= 0.150 P2= 3.34"
1.3	179	0.0129	2.31		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
1.5	67	0.0120	0.77		Shallow Concentrated Flow, SCF _ grass Short Grass Pasture Kv= 7.0 fps
11.5	310	Total			

Subcatchment 5S: DA 5: CN w/ IC areas_Original

Hydrograph



Summary for Subcatchment 5Sa: RG 3 DA

Runoff = 1.00 cfs @ 12.19 hrs, Volume= 3,740 cf, Depth= 2.26"
 Routed to Reach 2R : Bioswale E 1 RG 3

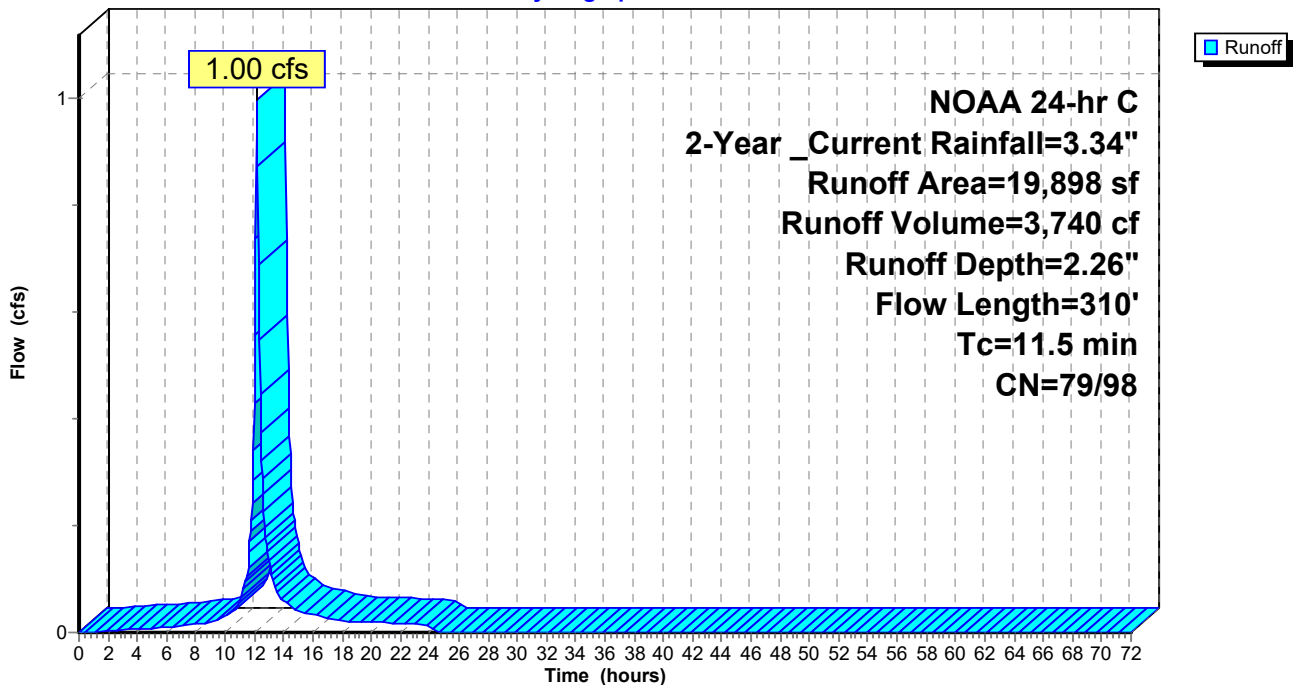
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _Current Rainfall=3.34"

	Area (sf)	CN	Description
*	10,182	79	Open Space (Fair) C
*	9,716	98	Impervious Parking lot
	19,898	88	Weighted Average
	10,182	79	51.17% Pervious Area
	9,716	98	48.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	64	0.0105	0.12		Sheet Flow, Sheet flow -grass Grass: Short n= 0.150 P2= 3.34"
1.3	179	0.0129	2.31		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
1.5	67	0.0120	0.77		Shallow Concentrated Flow, SCF _ grass Short Grass Pasture Kv= 7.0 fps
11.5	310	Total			

Subcatchment 5Sa: RG 3 DA

Hydrograph



Summary for Subcatchment 5Sb: DA 5: CN w/ IC areas

Runoff = 3.44 cfs @ 12.19 hrs, Volume= 13,300 cf, Depth= 2.74"
 Routed to Pond 10P : Underground Storage w/ Porous Pavement 5

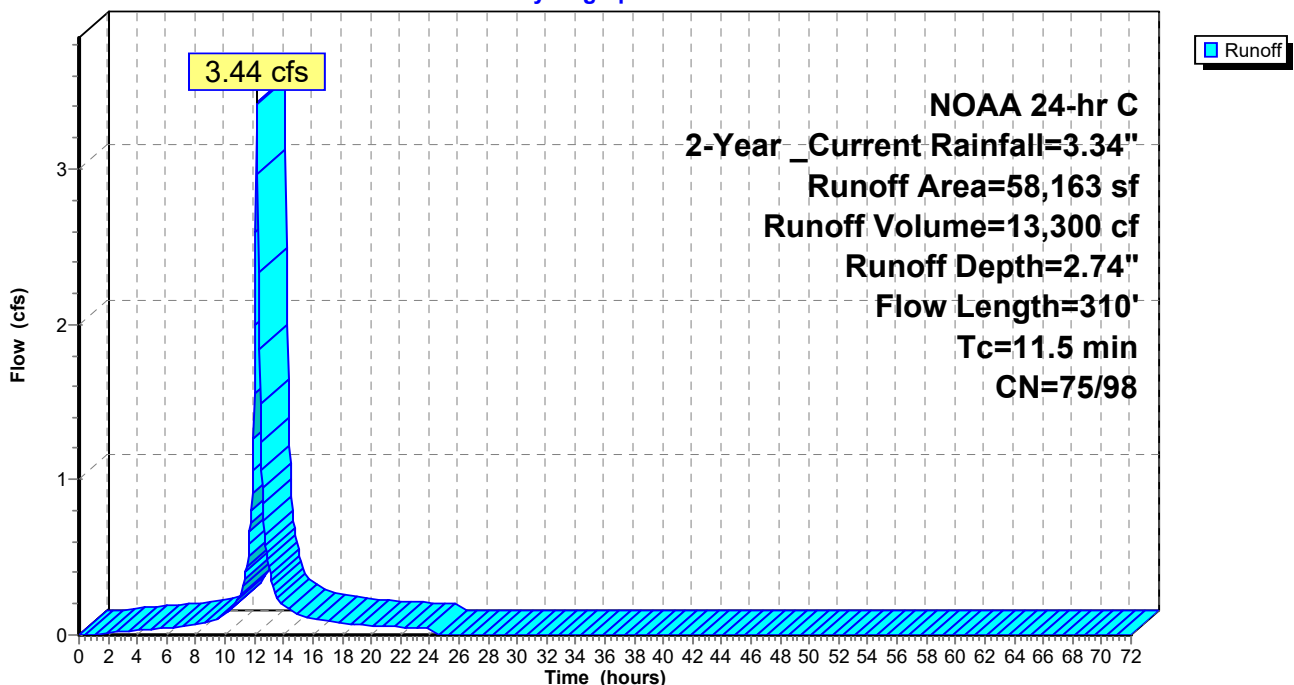
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _Current Rainfall=3.34"

Area (sf)	CN	Description
* 1,112	79	Open Space (Fair) C
* 9,899	74	Open Space (good) C
* 47,152	98	Impervious
58,163	94	Weighted Average
11,011	75	18.93% Pervious Area
47,152	98	81.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	64	0.0105	0.12		Sheet Flow, Sheet flow -grass Grass: Short n= 0.150 P2= 3.34"
1.3	179	0.0129	2.31		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
1.5	67	0.0120	0.77		Shallow Concentrated Flow, SCF _ grass Short Grass Pasture Kv= 7.0 fps
11.5	310	Total			

Subcatchment 5Sb: DA 5: CN w/ IC areas

Hydrograph



Summary for Subcatchment 6S: DA 6: CN w/ IC areas

Runoff = 1.47 cfs @ 12.22 hrs, Volume= 5,859 cf, Depth= 2.19"
 Routed to Pond 11P : Proposed Rain Garden 2 (East)

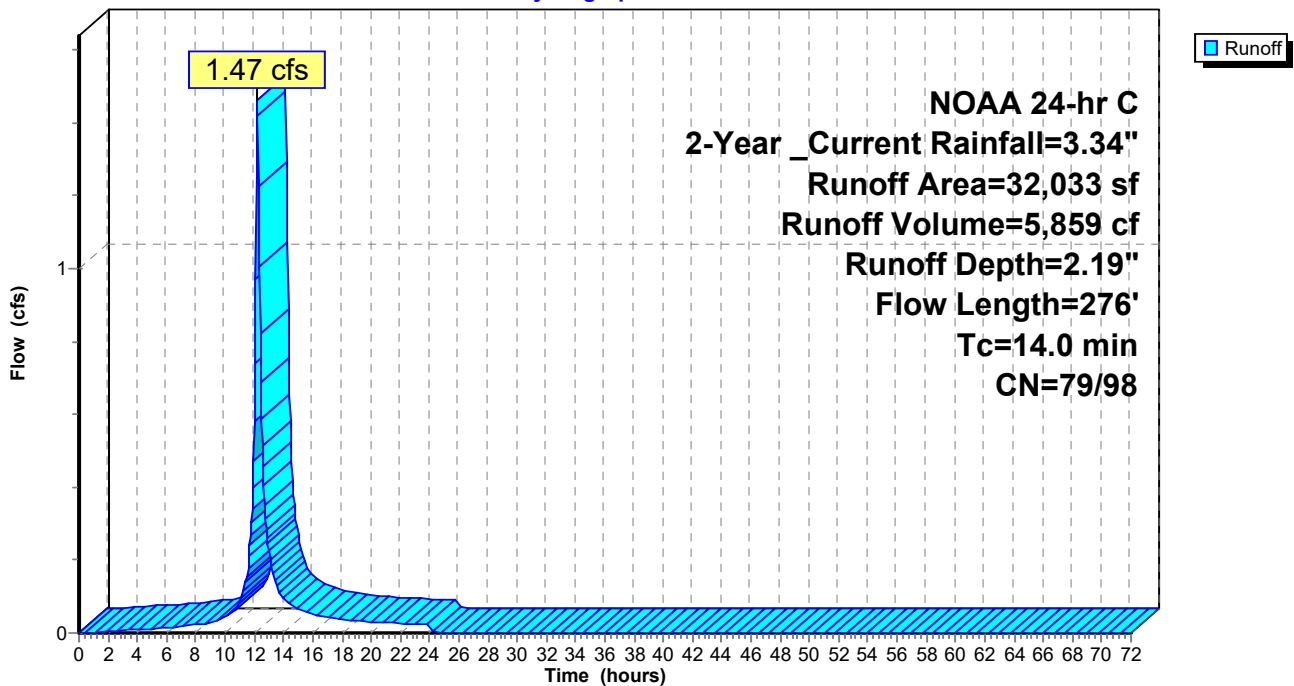
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _Current Rainfall=3.34"

Area (sf)	CN	Description
* 16,559	79	Open Space (fair) C
* 998	74	Open Space (good) C
* 14,476	98	Impervious
32,033	87	Weighted Average
17,557	79	54.81% Pervious Area
14,476	98	45.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0098	0.13		Sheet Flow, Sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
0.5	86	0.0244	3.17		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
0.7	90	0.0178	2.15		Shallow Concentrated Flow, SCF - unpaved Unpaved Kv= 16.1 fps
14.0	276	Total			

Subcatchment 6S: DA 6: CN w/ IC areas

Hydrograph



Summary for Subcatchment 7S: DA 7 (Offsite South): CN w/ IC areas

Runoff = 3.84 cfs @ 12.23 hrs, Volume= 15,183 cf, Depth= 1.70"
 Routed to Link 1L : Offsite Flows

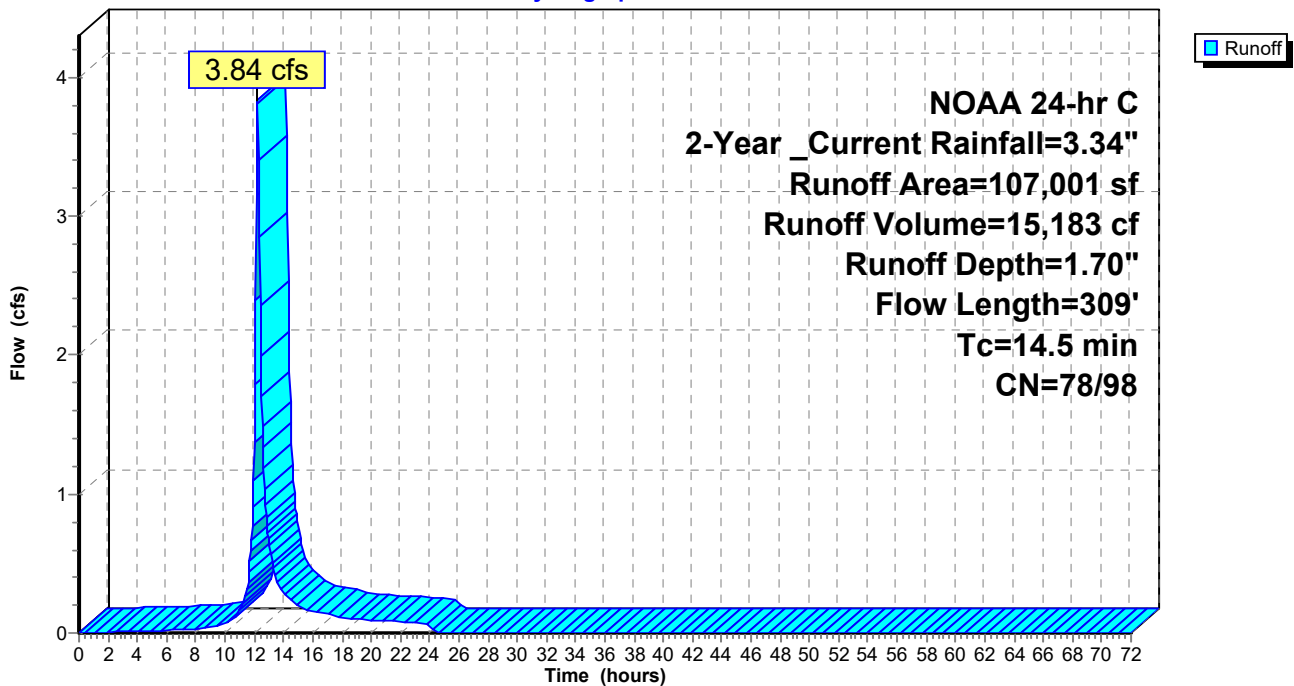
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _Current Rainfall=3.34"

	Area (sf)	CN	Description
*	70,444	79	Open Space (fair) C
*	16,401	74	Open Space (good) C
*	20,156	98	Impervious
	107,001	82	Weighted Average
	86,845	78	81.16% Pervious Area
	20,156	98	18.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	100	0.0112	0.14		Sheet Flow, Sheet flow Grass: Short n= 0.150 P2= 3.34"
2.2	165	0.0305	1.22		Shallow Concentrated Flow, SCF _ grass Short Grass Pasture Kv= 7.0 fps
0.2	44	0.0317	3.61		Shallow Concentrated Flow, SCF _ paved Paved Kv= 20.3 fps
14.5	309	Total			

Subcatchment 7S: DA 7 (Offsite South): CN w/ IC areas

Hydrograph



Summary for Subcatchment 8S: DA 8 (Offsite North): CN w/ IC areas

Runoff = 7.46 cfs @ 12.30 hrs, Volume= 33,187 cf, Depth= 1.17"
 Routed to Link 1L : Offsite Flows

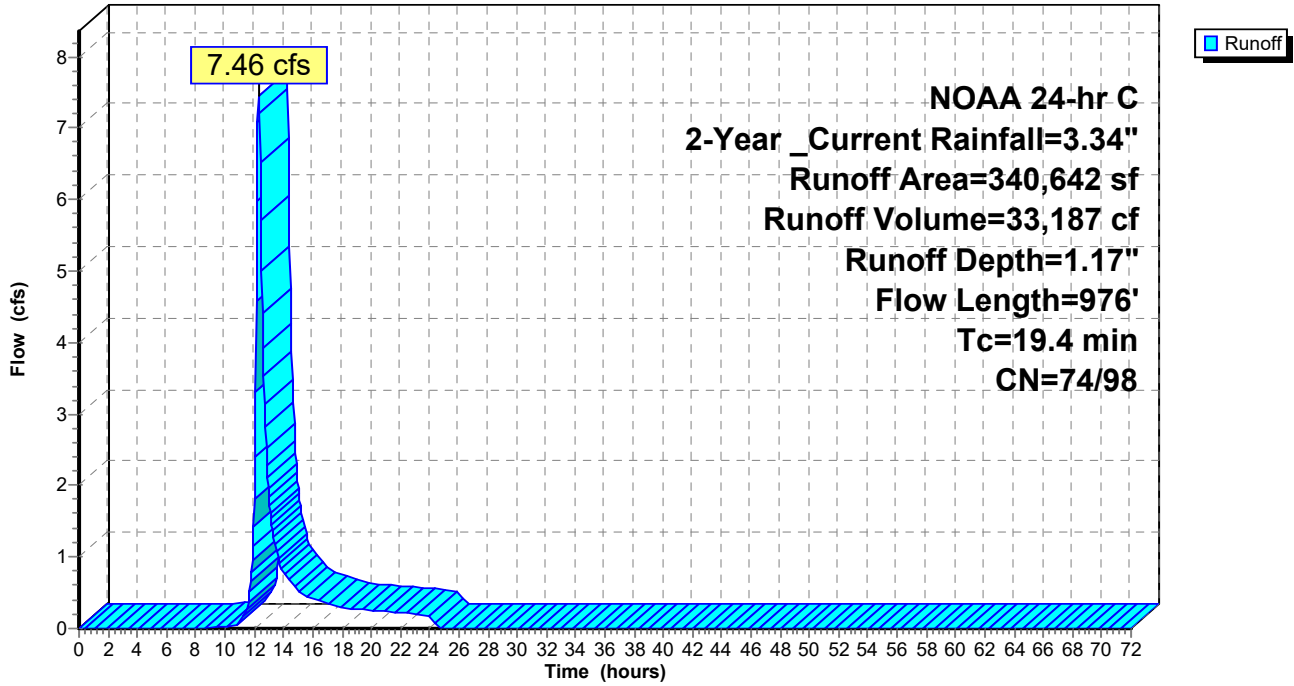
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _Current Rainfall=3.34"

Area (sf)	CN	Description
*	2,767	70 Brush (fair) C
*	63,031	77 Brush (fair) D
*	86,643	65 Brush (good) C
*	64,708	73 Brush (good) D
*	73,083	79 Open space (Fair) C
*	30,261	84 Open space (fair) D
*	4,460	74 Open space (good) C
*	9,087	80 Open space (good) D
*	6,602	98 Impervious
340,642	75	Weighted Average
334,040	74	98.06% Pervious Area
6,602	98	1.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.0366	0.22		Sheet Flow, sheet flow Grass: Short n= 0.150 P2= 3.34"
11.9	876	0.0067	1.23		Shallow Concentrated Flow, scf - grass waterway Grassed Waterway Kv= 15.0 fps
19.4	976	Total			

Subcatchment 8S: DA 8 (Offsite North): CN w/ IC areas

Hydrograph



Summary for Subcatchment 9S: DA 9 (Offsite Field West): CN w/ IC areas

Runoff = 7.77 cfs @ 12.46 hrs, Volume= 43,637 cf, Depth= 1.09"
 Routed to Link 1L : Offsite Flows

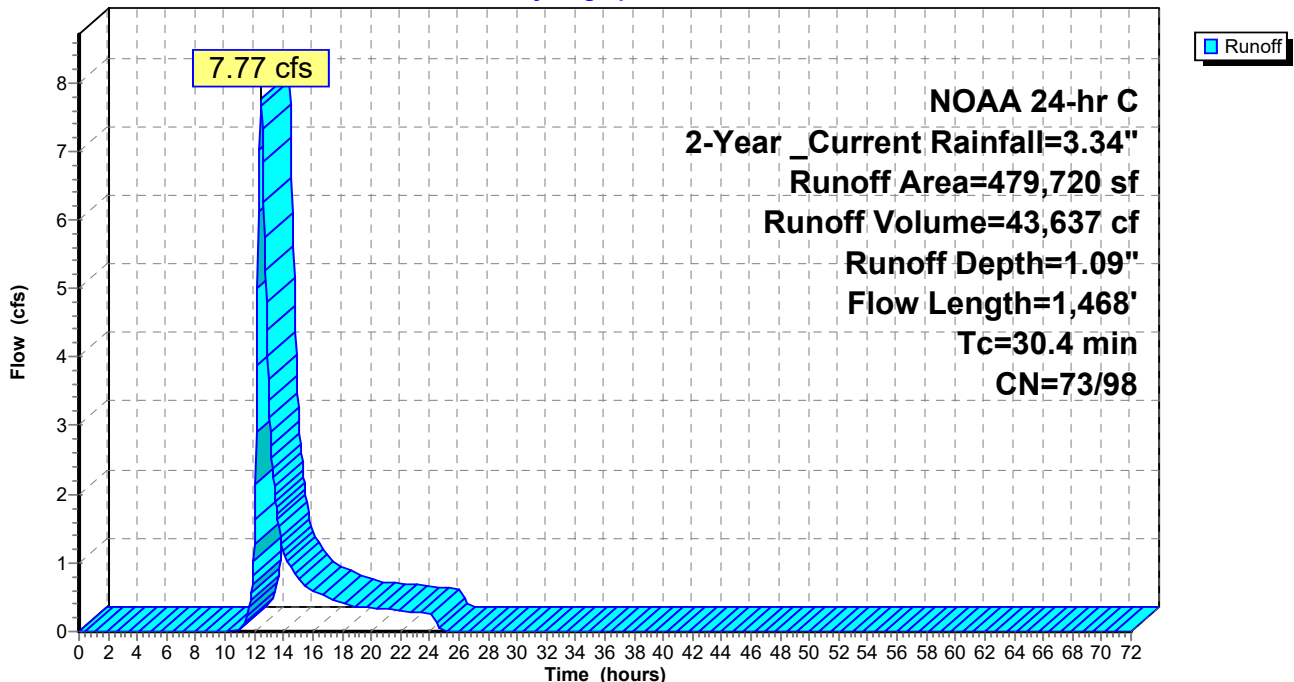
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _Current Rainfall=3.34"

	Area (sf)	CN	Description
*	72,478	65	Brush (good) C
*	10,448	79	Open spcae (fair) C
*	392,515	74	Open Space (good) C
*	4,279	98	Impervious
	479,720	73	Weighted Average
	475,441	73	99.11% Pervious Area
	4,279	98	0.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0159	0.16		Sheet Flow, Sheet flow Grass: Short n= 0.150 P2= 3.34"
7.1	362	0.0148	0.85		Shallow Concentrated Flow, SCF - grass Short Grass Pasture Kv= 7.0 fps
12.8	1,006	0.0076	1.31		Shallow Concentrated Flow, SCF - grass waterway Grassed Waterway Kv= 15.0 fps
30.4	1,468	Total			

Subcatchment 9S: DA 9 (Offsite Field West): CN w/ IC areas

Hydrograph



Summary for Subcatchment 31S: RG 2 DA

Runoff = 1.35 cfs @ 12.22 hrs, Volume= 5,293 cf, Depth= 1.98"

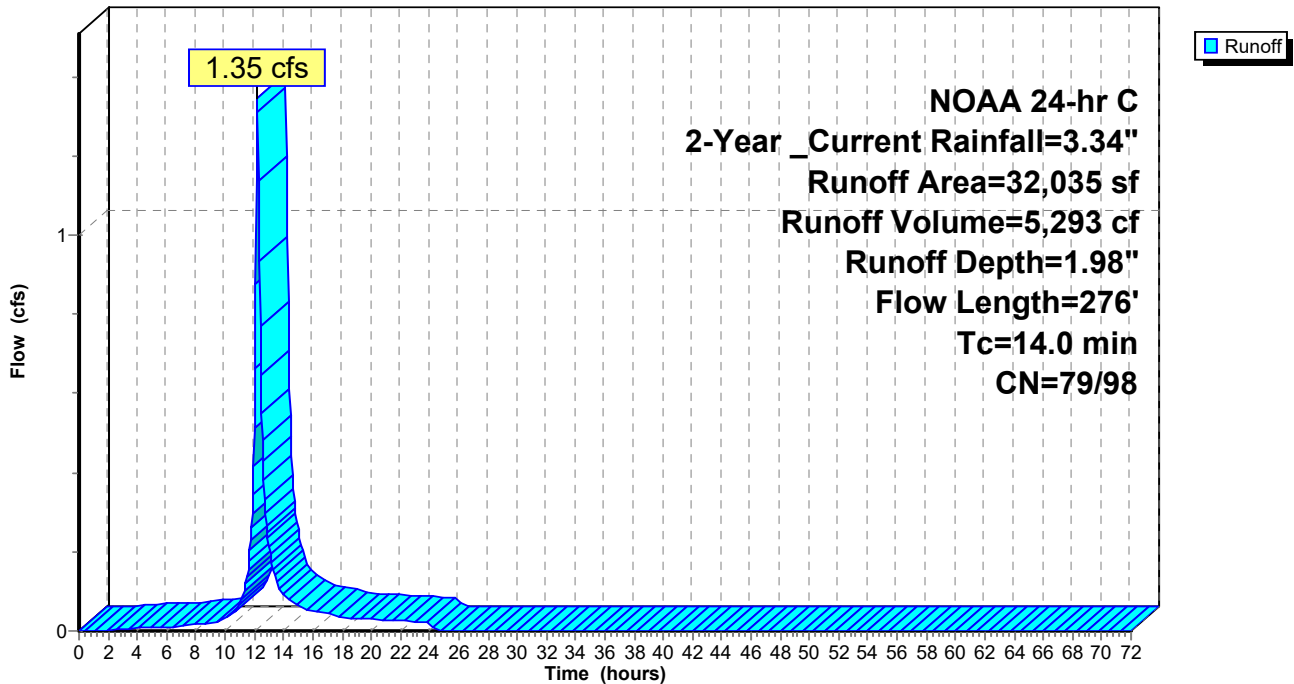
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 2-Year _Current Rainfall=3.34"

	Area (sf)	CN	Description
*	21,638	79	Open Space (fair) C
*	10,397	98	Impervious
	32,035	85	Weighted Average
	21,638	79	67.54% Pervious Area
	10,397	98	32.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0098	0.13		Sheet Flow, Sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
0.5	86	0.0244	3.17		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
0.7	90	0.0178	2.15		Shallow Concentrated Flow, SCF - unpaved Unpaved Kv= 16.1 fps
14.0	276	Total			

Subcatchment 31S: RG 2 DA

Hydrograph



Summary for Reach 1R: Existing Bioswale West 1

Inflow Area = 22,637 sf, 64.43% Impervious, Inflow Depth = 2.47" for 2-Year _Current event
 Inflow = 1.13 cfs @ 12.22 hrs, Volume= 4,657 cf
 Outflow = 1.12 cfs @ 12.23 hrs, Volume= 4,657 cf, Atten= 1%, Lag= 0.6 min
 Routed to Pond 1P : Existing Rain Garden 1 West

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Max. Velocity= 1.81 fps, Min. Travel Time= 0.3 min
 Avg. Velocity = 0.49 fps, Avg. Travel Time= 1.1 min

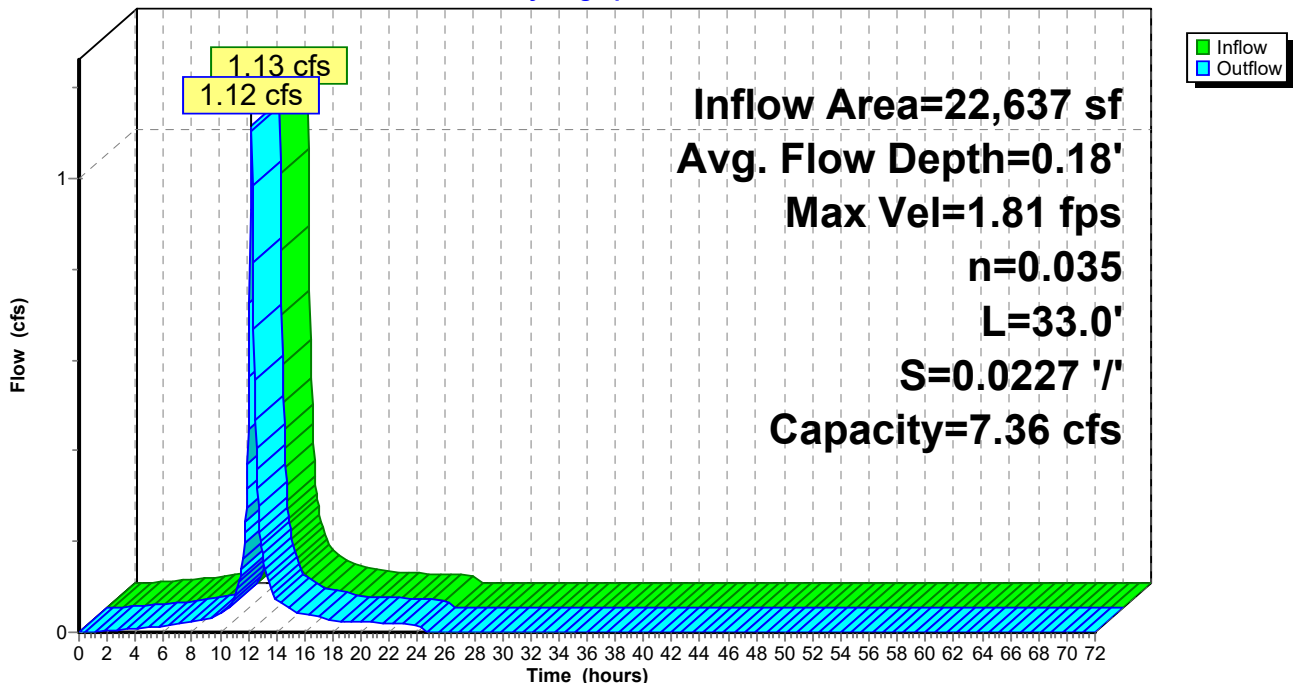
Peak Storage= 21 cf @ 12.22 hrs
 Average Depth at Peak Storage= 0.18' , Surface Width= 4.06'
 Bank-Full Depth= 0.50' Flow Area= 2.3 sf, Capacity= 7.36 cfs

3.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
 Side Slope Z-value= 3.0 '/ Top Width= 6.00'
 Length= 33.0' Slope= 0.0227 '/
 Inlet Invert= 100.75', Outlet Invert= 100.00'



Reach 1R: Existing Bioswale West 1

Hydrograph



Summary for Reach 2R: Bioswale E 1 RG 3

Inflow Area = 19,898 sf, 48.83% Impervious, Inflow Depth = 2.26" for 2-Year _Current event
 Inflow = 1.00 cfs @ 12.19 hrs, Volume= 3,740 cf
 Outflow = 0.99 cfs @ 12.20 hrs, Volume= 3,740 cf, Atten= 1%, Lag= 0.4 min
 Routed to Pond 9P : Proposed Rain Garden 3 (North East)

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Max. Velocity= 2.22 fps, Min. Travel Time= 0.3 min
 Avg. Velocity = 0.68 fps, Avg. Travel Time= 0.9 min

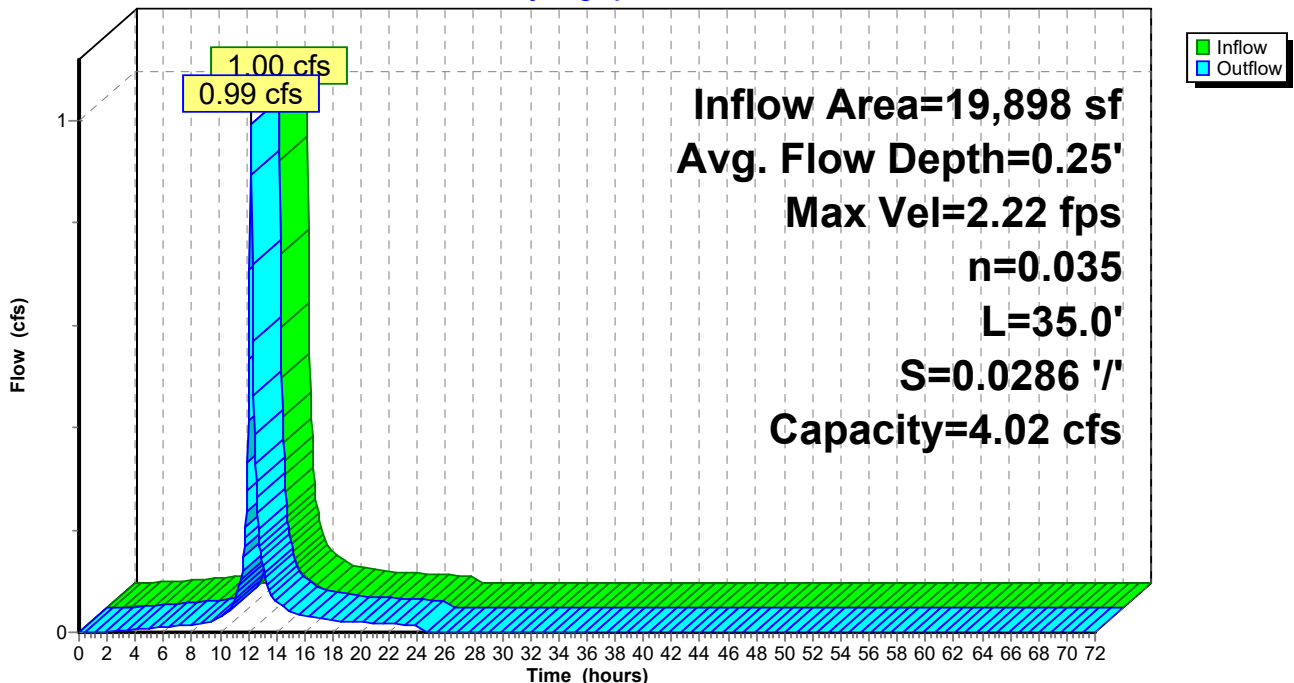
Peak Storage= 16 cf @ 12.19 hrs
 Average Depth at Peak Storage= 0.25' , Surface Width= 2.53'
 Bank-Full Depth= 0.50' Flow Area= 1.3 sf, Capacity= 4.02 cfs

1.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
 Side Slope Z-value= 3.0 '/ Top Width= 4.00'
 Length= 35.0' Slope= 0.0286 '/
 Inlet Invert= 101.00', Outlet Invert= 100.00'



Reach 2R: Bioswale E 1 RG 3

Hydrograph



Summary for Pond 1P: Exising Rain Garden 1 West

[93] Warning: Storage range exceeded by 0.06'
 [62] Hint: Exceeded Reach 1R OUTLET depth by 0.15' @ 12.35 hrs

Inflow Area = 22,637 sf, 64.43% Impervious, Inflow Depth = 2.47" for 2-Year _Current event
 Inflow = 1.12 cfs @ 12.23 hrs, Volume= 4,657 cf
 Outflow = 0.95 cfs @ 12.32 hrs, Volume= 4,484 cf, Atten= 15%, Lag= 5.6 min
 Primary = 0.24 cfs @ 12.32 hrs, Volume= 3,637 cf
 Routed to Pond 2P : Underground Storage w/ Porous Pavement 1
 Secondary = 0.71 cfs @ 12.32 hrs, Volume= 848 cf
 Routed to Pond 2P : Underground Storage w/ Porous Pavement 1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 100.31' @ 12.32 hrs Surf.Area= 1,750 sf Storage= 1,831 cf

Plug-Flow detention time= 624.6 min calculated for 4,484 cf (96% of inflow)
 Center-of-Mass det. time= 601.9 min (1,385.6 - 783.7)

Volume	Invert	Avail.Storage	Storage Description			
#1	98.25'	1,831 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
98.25	1,445	0.0	0	0	1,445	
99.25	1,445	35.0	506	506	1,580	
99.50	1,445	25.0	90	596	1,613	
100.00	1,750	100.0	798	1,394	1,927	
100.25	1,750	100.0	438	1,831	1,964	

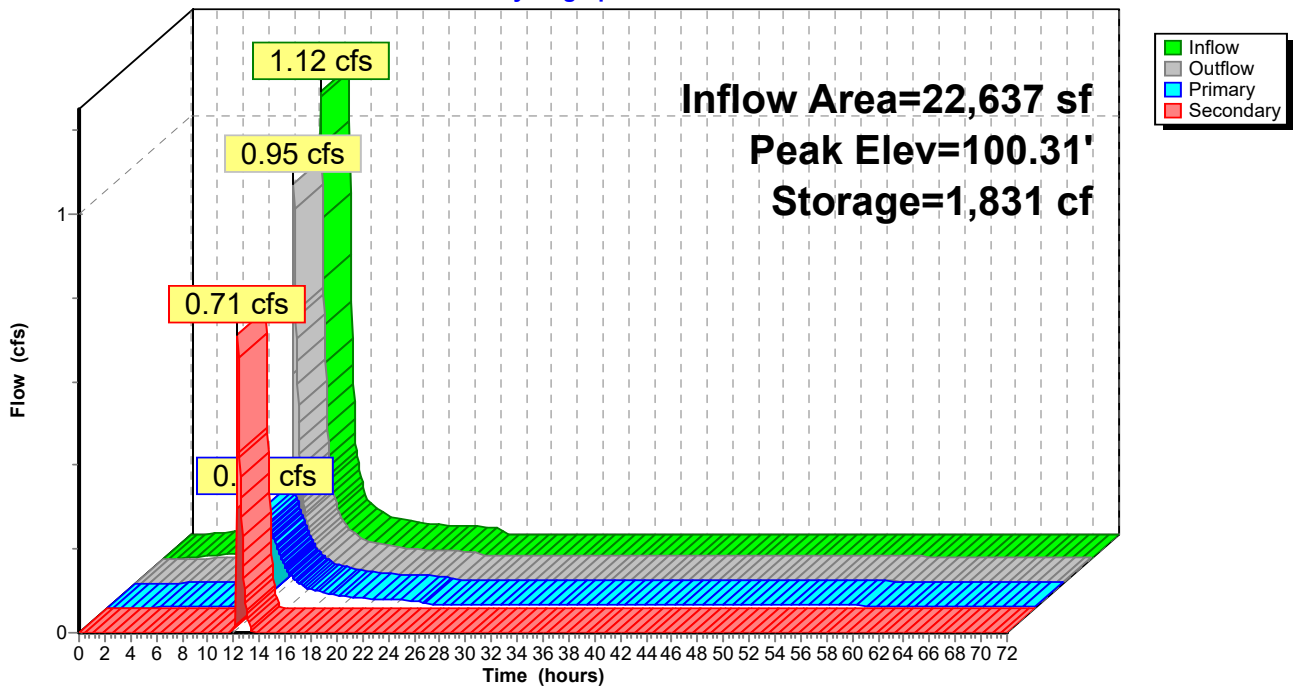
Device	Routing	Invert	Outlet Devices																
#1	Primary	98.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 98.15' / 98.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf																
#2	Device 1	98.15'	0.5" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads																
#3	Device 2	98.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 98.25' / 98.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf																
#4	Device 3	98.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads																
#5	Device 1	100.00'	4.0" Horiz. Drintech Atrium C= 0.600 Limited to weir flow at low heads																
#6	Secondary	100.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32																

Primary OutFlow Max=0.24 cfs @ 12.32 hrs HW=100.30' (Free Discharge)
 1=Culvert (Passes 0.24 cfs of 0.43 cfs potential flow)
 2=Restrictive Orifice (Orifice Controls 0.01 cfs @ 7.02 fps)
 3=4" HDPE Underdrain (Passes 0.01 cfs of 0.33 cfs potential flow)
 4=Perforations (Passes 0.01 cfs of 5.17 cfs potential flow)
 5=Draintech Atrium (Orifice Controls 0.23 cfs @ 2.62 fps)

Secondary OutFlow Max=0.66 cfs @ 12.32 hrs HW=100.30' (Free Discharge)
 6=Broad-Crested Rectangular Weir (Weir Controls 0.66 cfs @ 1.13 fps)

Pond 1P: Existing Rain Garden 1 West

Hydrograph



Summary for Pond 2P: Underground Storage w/ Porous Pavement 1

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 61,742 sf, 66.85% Impervious, Inflow Depth > 2.45" for 2-Year _Current event
 Inflow = 2.58 cfs @ 12.29 hrs, Volume= 12,625 cf
 Outflow = 0.01 cfs @ 24.45 hrs, Volume= 3,492 cf, Atten= 99%, Lag= 729.3 min
 Primary = 0.01 cfs @ 24.45 hrs, Volume= 3,492 cf
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 97.01' @ 24.45 hrs Surf.Area= 13,421 sf Storage= 10,372 cf

Plug-Flow detention time= 1,677.6 min calculated for 3,490 cf (28% of inflow)
 Center-of-Mass det. time= 1,310.2 min (2,305.3 - 995.0)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	1,612 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	9,359 cf	72.75'W x 146.02'L x 3.50'H Field A
			37,179 cf Overall - 13,782 cf Embedded = 23,397 cf x 40.0% Voids
#3A	96.17'	13,782 cf	ADS_StormTech SC-740 +Cap x 300 Inside #2
			Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
			Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
			300 Chambers in 15 Rows
		24,753 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	2,798	0.0	0	0
97.67	2,798	35.0	1,469	1,469
97.83	2,798	15.0	67	1,536
98.01	2,798	15.0	76	1,612

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.01 cfs @ 24.45 hrs HW=97.01' (Free Discharge)

↑ **1=Restriction Orifice** (Orifice Controls 0.01 cfs @ 10.68 fps)

↑ **2=6" HDPE Underdrain** (Passes 0.01 cfs of 0.42 cfs potential flow)

↑ **3=Perforations** (Passes 0.01 cfs of 7.95 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.67' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2P: Underground Storage w/ Porous Pavement 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

20 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 144.02' Row Length +12.0" End Stone x 2 = 146.02' Base Length

15 Rows x 51.0" Wide + 6.0" Spacing x 14 + 12.0" Side Stone x 2 = 72.75' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

300 Chambers x 45.9 cf = 13,782.0 cf Chamber Storage

37,179.5 cf Field - 13,782.0 cf Chambers = 23,397.5 cf Stone x 40.0% Voids = 9,359.0 cf Stone Storage

Chamber Storage + Stone Storage = 23,141.0 cf = 0.531 af

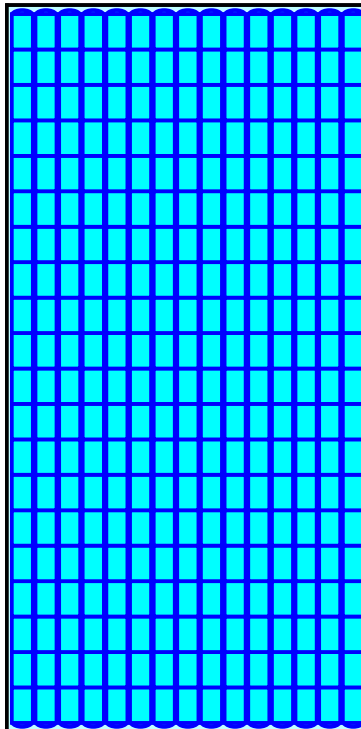
Overall Storage Efficiency = 62.2%

Overall System Size = 146.02' x 72.75' x 3.50'

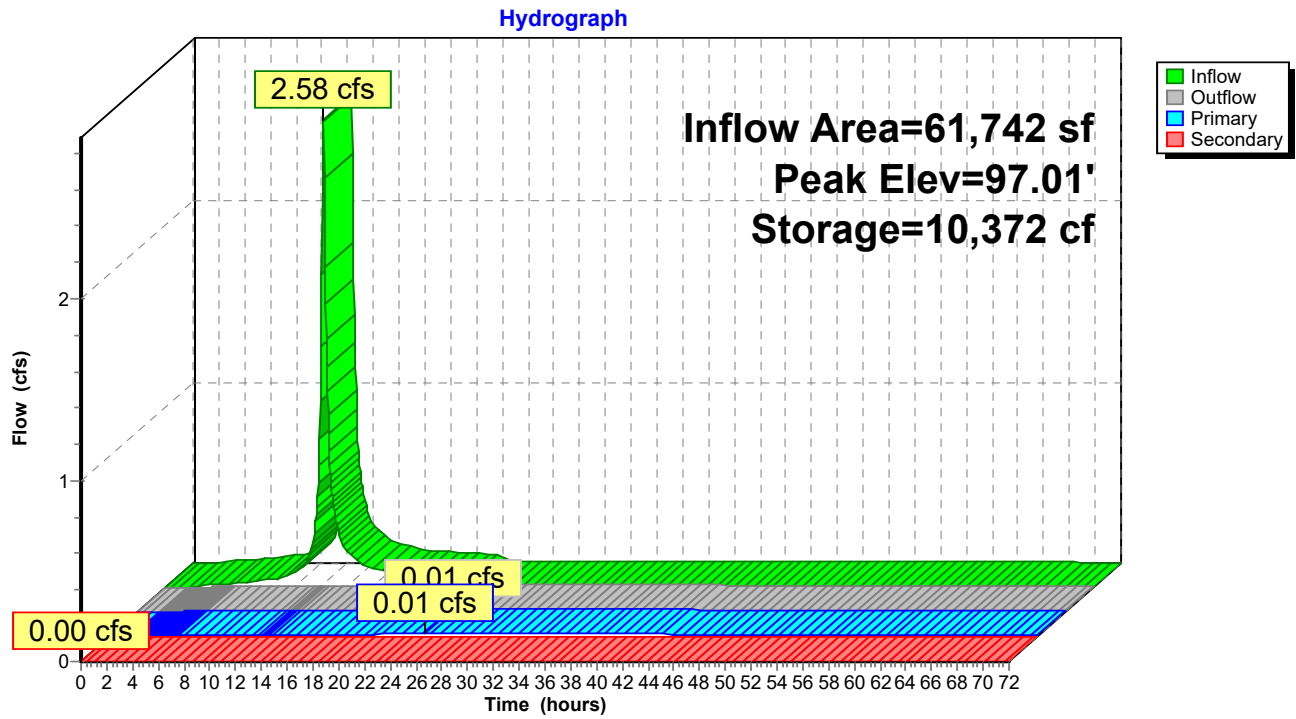
300 Chambers

1,377.0 cy Field

866.6 cy Stone



Pond 2P: Underground Storage w/ Porous Pavement 1



Summary for Pond 3P: Underground Storage w/ Porous Pavement 2

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 58,249 sf, 86.46% Impervious, Inflow Depth = 2.86" for 2-Year _Current event
 Inflow = 4.15 cfs @ 12.14 hrs, Volume= 13,862 cf
 Outflow = 0.01 cfs @ 24.14 hrs, Volume= 3,546 cf, Atten= 100%, Lag= 720.1 min
 Primary = 0.01 cfs @ 24.14 hrs, Volume= 3,546 cf
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 97.05' @ 24.14 hrs Surf.Area= 23,296 sf Storage= 12,809 cf

Plug-Flow detention time= 1,717.8 min calculated for 3,543 cf (26% of inflow)
 Center-of-Mass det. time= 1,509.6 min (2,273.1 - 763.5)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	8,187 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	8,029 cf	82.25'W x 110.42'L x 3.50'H Field A
			31,786 cf Overall - 11,715 cf Embedded = 20,071 cf x 40.0% Voids
#3A	96.17'	11,715 cf	ADS_StormTech SC-740 +Cap x 255 Inside #2
			Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
			Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
			255 Chambers in 17 Rows
		27,931 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	14,214	0.0	0	0
97.67	14,214	35.0	7,462	7,462
97.83	14,214	15.0	341	7,803
98.01	14,214	15.0	384	8,187

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.01 cfs @ 24.14 hrs HW=97.05' (Free Discharge)

↑ **1=Restriction Orifice** (Orifice Controls 0.01 cfs @ 10.73 fps)

↑ **2=6" HDPE Underdrain** (Passes 0.01 cfs of 0.42 cfs potential flow)

↑ **3=Perforations** (Passes 0.01 cfs of 7.98 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.67' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: Underground Storage w/ Porous Pavement 2 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

15 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 108.42' Row Length +12.0" End Stone x 2 =
110.42' Base Length

17 Rows x 51.0" Wide + 6.0" Spacing x 16 + 12.0" Side Stone x 2 = 82.25' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

255 Chambers x 45.9 cf = 11,714.7 cf Chamber Storage

31,786.2 cf Field - 11,714.7 cf Chambers = 20,071.5 cf Stone x 40.0% Voids = 8,028.6 cf Stone Storage

Chamber Storage + Stone Storage = 19,743.3 cf = 0.453 af

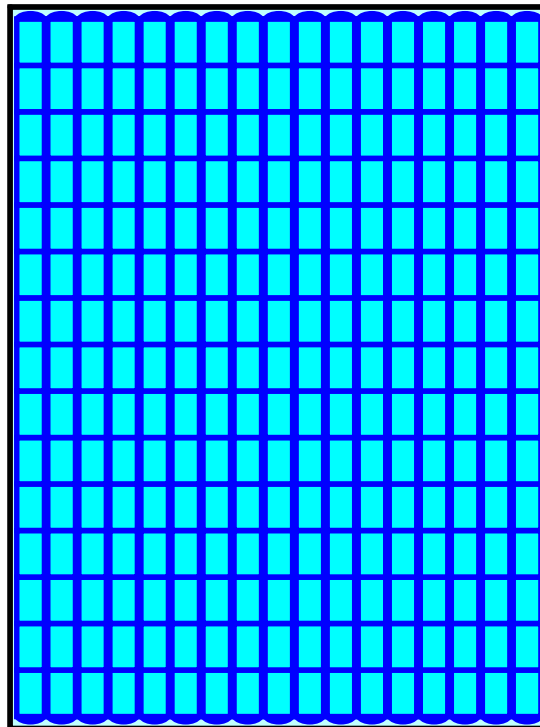
Overall Storage Efficiency = 62.1%

Overall System Size = 110.42' x 82.25' x 3.50'

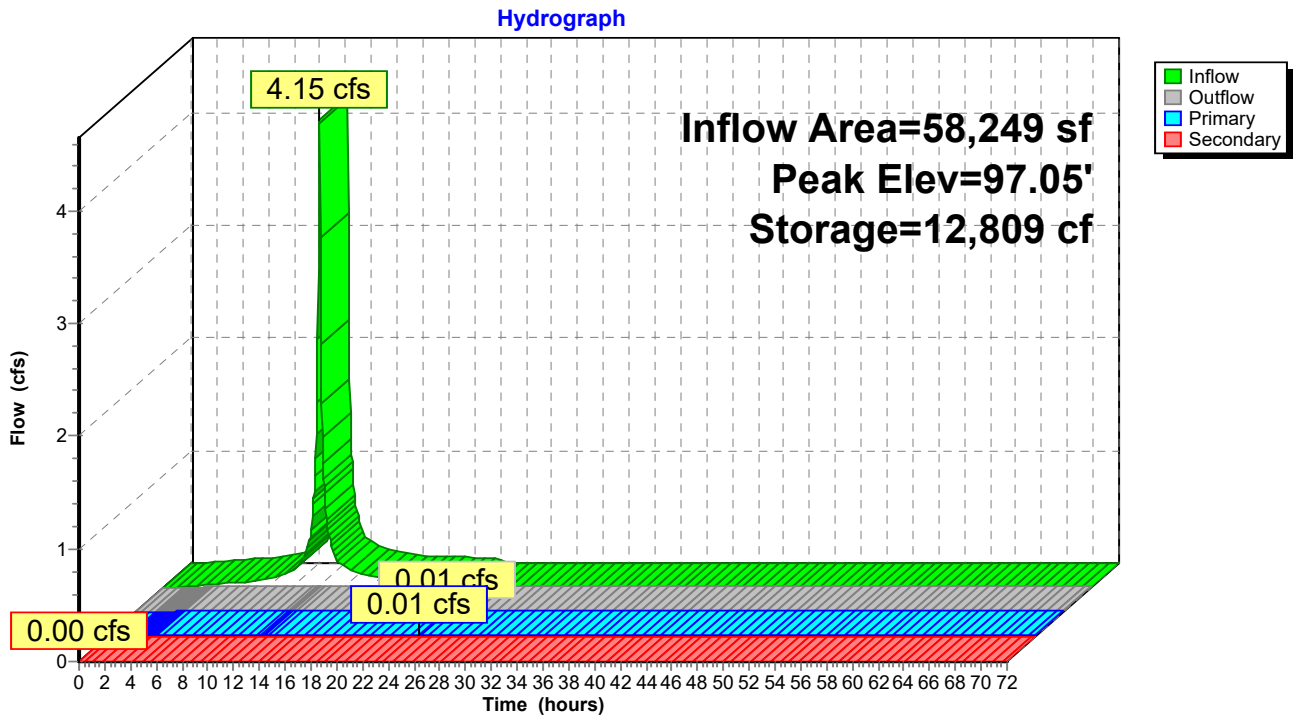
255 Chambers

1,177.3 cy Field

743.4 cy Stone



Pond 3P: Underground Storage w/ Porous Pavement 2



Summary for Pond 4P: Existing Rain Garden 2 Front

Inflow Area = 25,889 sf, 48.62% Impervious, Inflow Depth = 2.25" for 2-Year _Current event
 Inflow = 1.45 cfs @ 12.15 hrs, Volume= 4,858 cf
 Outflow = 0.18 cfs @ 12.91 hrs, Volume= 3,735 cf, Atten= 88%, Lag= 45.2 min
 Primary = 0.15 cfs @ 12.91 hrs, Volume= 3,674 cf
 Routed to Pond 6P : Underground Storage w/ Porous Pavement 3
 Secondary = 0.03 cfs @ 12.91 hrs, Volume= 61 cf
 Routed to Pond 6P : Underground Storage w/ Porous Pavement 3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 101.12' @ 12.91 hrs Surf.Area= 3,045 sf Storage= 2,880 cf

Plug-Flow detention time= 971.4 min calculated for 3,733 cf (77% of inflow)
 Center-of-Mass det. time= 883.8 min (1,672.4 - 788.6)

Volume	Invert	Avail.Storage	Storage Description			
#1	99.25'	3,267 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
99.25	2,635	0.0	0	0	2,635	
100.25	2,635	35.0	922	922	2,817	
100.50	2,635	25.0	165	1,087	2,862	
101.00	3,045	100.0	1,419	2,506	3,283	
101.25	3,045	100.0	761	3,267	3,332	

Device	Routing	Invert	Outlet Devices	
#1	Primary	99.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 99.15' / 99.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#2	Device 1	99.15'	0.5" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads	
#3	Device 2	99.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 99.25' / 99.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#4	Device 3	99.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads	
#5	Device 1	101.00'	4.0" Horiz. Drintech Atrium C= 0.600 Limited to weir flow at low heads	
#6	Secondary	101.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32	

Primary OutFlow Max=0.16 cfs @ 12.91 hrs HW=101.12' (Free Discharge)

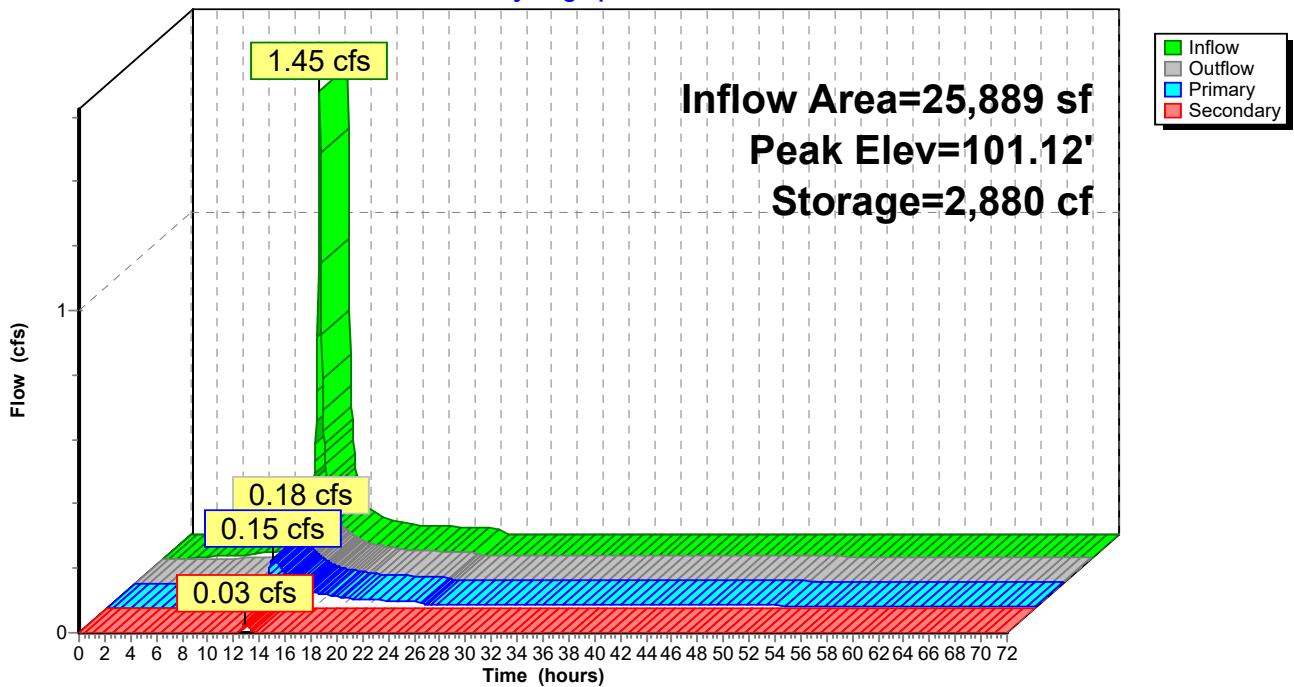
- 1=Culvert (Passes 0.16 cfs of 0.41 cfs potential flow)
- 2=Restrictive Orifice (Orifice Controls 0.01 cfs @ 6.73 fps)
 - 3=4" HDPE Underdrain (Passes 0.01 cfs of 0.32 cfs potential flow)
 - 4=Perforations (Passes 0.01 cfs of 4.94 cfs potential flow)
- 5=Draintech Atrium (Orifice Controls 0.15 cfs @ 1.69 fps)

Secondary OutFlow Max=0.03 cfs @ 12.91 hrs HW=101.12' (Free Discharge)

- 6=Broad-Crested Rectangular Weir (Weir Controls 0.03 cfs @ 0.38 fps)

Pond 4P: Existing Rain Garden 2 Front

Hydrograph



Summary for Pond 5P: Proposed Rain Garden 1 (South West)

Inflow Area = 21,388 sf, 65.14% Impervious, Inflow Depth = 2.42" for 2-Year _Current event
 Inflow = 1.25 cfs @ 12.15 hrs, Volume= 4,310 cf
 Outflow = 0.32 cfs @ 12.48 hrs, Volume= 3,763 cf, Atten= 74%, Lag= 19.5 min
 Primary = 0.18 cfs @ 12.48 hrs, Volume= 3,513 cf
 Routed to Pond 6P : Underground Storage w/ Porous Pavement 3
 Secondary = 0.14 cfs @ 12.48 hrs, Volume= 250 cf
 Routed to Pond 6P : Underground Storage w/ Porous Pavement 3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 101.17' @ 12.48 hrs Surf.Area= 2,325 sf Storage= 2,278 cf

Plug-Flow detention time= 879.5 min calculated for 3,763 cf (87% of inflow)
 Center-of-Mass det. time= 817.3 min (1,593.4 - 776.1)

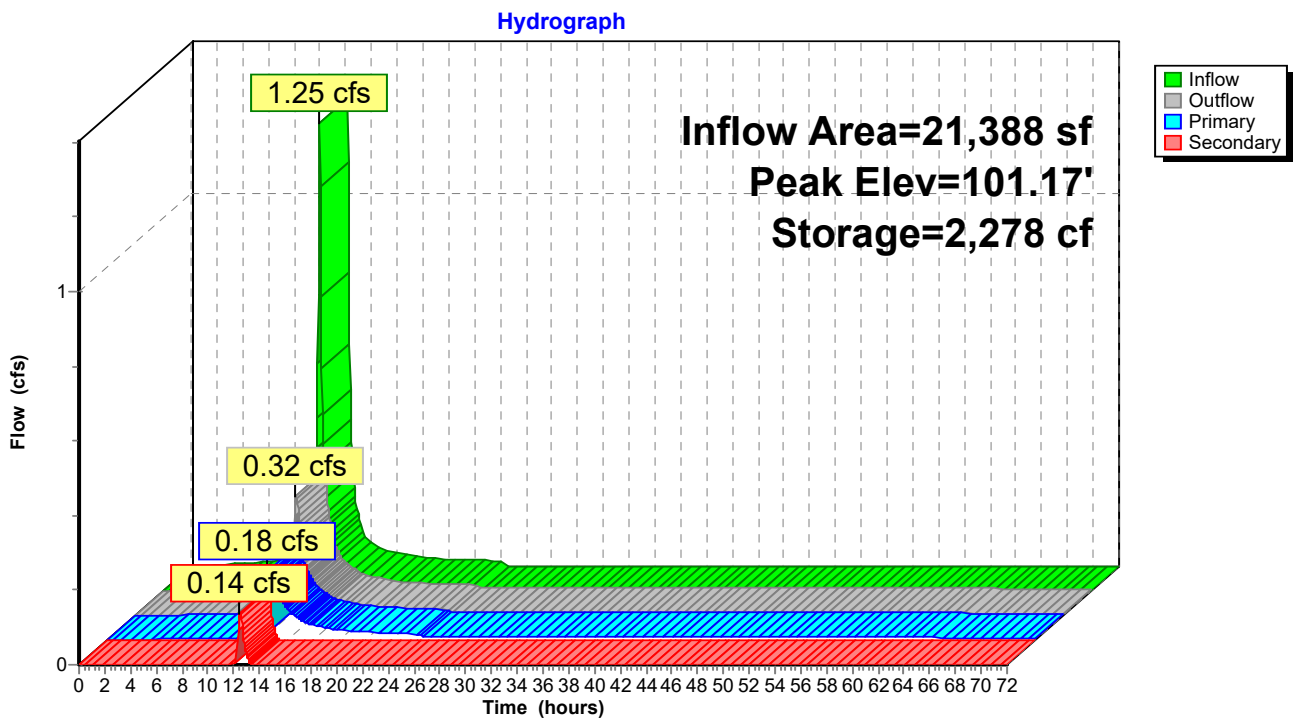
Volume	Invert	Avail.Storage	Storage Description			
#1	99.25'	2,466 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
99.25	1,970	0.0	0	0	1,970	
100.25	1,970	35.0	690	690	2,127	
100.50	1,970	25.0	123	813	2,167	
101.00	2,325	100.0	1,073	1,885	2,531	
101.25	2,325	100.0	581	2,466	2,574	

Device	Routing	Invert	Outlet Devices	
#1	Primary	99.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 99.15' / 99.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#2	Device 1	99.15'	0.5" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads	
#3	Device 2	99.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 99.25' / 99.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#4	Device 3	99.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads	
#5	Device 1	101.00'	4.0" Horiz. Drintech Atrium C= 0.600 Limited to weir flow at low heads	
#6	Secondary	101.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32	

Primary OutFlow Max=0.18 cfs @ 12.48 hrs HW=101.17' (Free Discharge)
 1=Culvert (Passes 0.18 cfs of 0.41 cfs potential flow)
 2=Restrictive Orifice (Orifice Controls 0.01 cfs @ 6.81 fps)
 3=4" HDPE Underdrain (Passes 0.01 cfs of 0.32 cfs potential flow)
 4=Perforations (Passes 0.01 cfs of 5.00 cfs potential flow)
 5=Draintech Atrium (Orifice Controls 0.17 cfs @ 1.98 fps)

Secondary OutFlow Max=0.14 cfs @ 12.48 hrs HW=101.17' (Free Discharge)
 6=Broad-Crested Rectangular Weir (Weir Controls 0.14 cfs @ 0.67 fps)

Pond 5P: Proposed Rain Garden 1 (South West)



Summary for Pond 6P: Underground Storage w/ Porous Pavement 3

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 158,623 sf, 63.48% Impervious, Inflow Depth > 2.30" for 2-Year _Current event
 Inflow = 6.68 cfs @ 12.15 hrs, Volume= 30,390 cf
 Outflow = 0.01 cfs @ 67.33 hrs, Volume= 3,482 cf, Atten= 100%, Lag= 3,310.4 min
 Primary = 0.01 cfs @ 67.33 hrs, Volume= 3,482 cf
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 96.91' @ 67.33 hrs Surf.Area= 38,014 sf Storage= 26,914 cf

Plug-Flow detention time= 1,820.4 min calculated for 3,479 cf (11% of inflow)
 Center-of-Mass det. time= 1,314.5 min (2,301.4 - 986.9)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	4,287 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	26,630 cf	106.00'W x 288.42'L x 3.50'H Field A 107,003 cf Overall - 40,427 cf Embedded = 66,575 cf x 40.0% Voids
#3A	96.17'	40,427 cf	ADS_StormTech SC-740 +Cap x 880 Inside #2 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 880 Chambers in 22 Rows
		71,344 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	7,442	0.0	0	0
97.67	7,442	35.0	3,907	3,907
97.83	7,442	15.0	179	4,086
98.01	7,442	15.0	201	4,287

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.01 cfs @ 67.33 hrs HW=96.91' (Free Discharge)

↑ **1=Restriction Orifice** (Orifice Controls 0.01 cfs @ 10.56 fps)

↑ **2=6" HDPE Underdrain** (Passes 0.01 cfs of 0.42 cfs potential flow)

↑ **3=Perforations** (Passes 0.01 cfs of 7.86 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.67' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 6P: Underground Storage w/ Porous Pavement 3 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

40 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 286.42' Row Length +12.0" End Stone x 2 = 288.42' Base Length

22 Rows x 51.0" Wide + 6.0" Spacing x 21 + 12.0" Side Stone x 2 = 106.00' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

880 Chambers x 45.9 cf = 40,427.2 cf Chamber Storage

107,002.6 cf Field - 40,427.2 cf Chambers = 66,575.4 cf Stone x 40.0% Voids = 26,630.1 cf Stone Storage

Chamber Storage + Stone Storage = 67,057.4 cf = 1.539 af

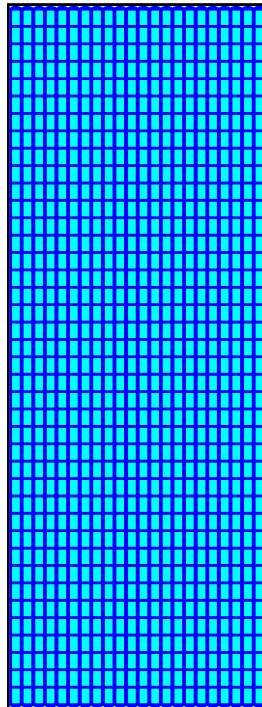
Overall Storage Efficiency = 62.7%

Overall System Size = 288.42' x 106.00' x 3.50'

880 Chambers

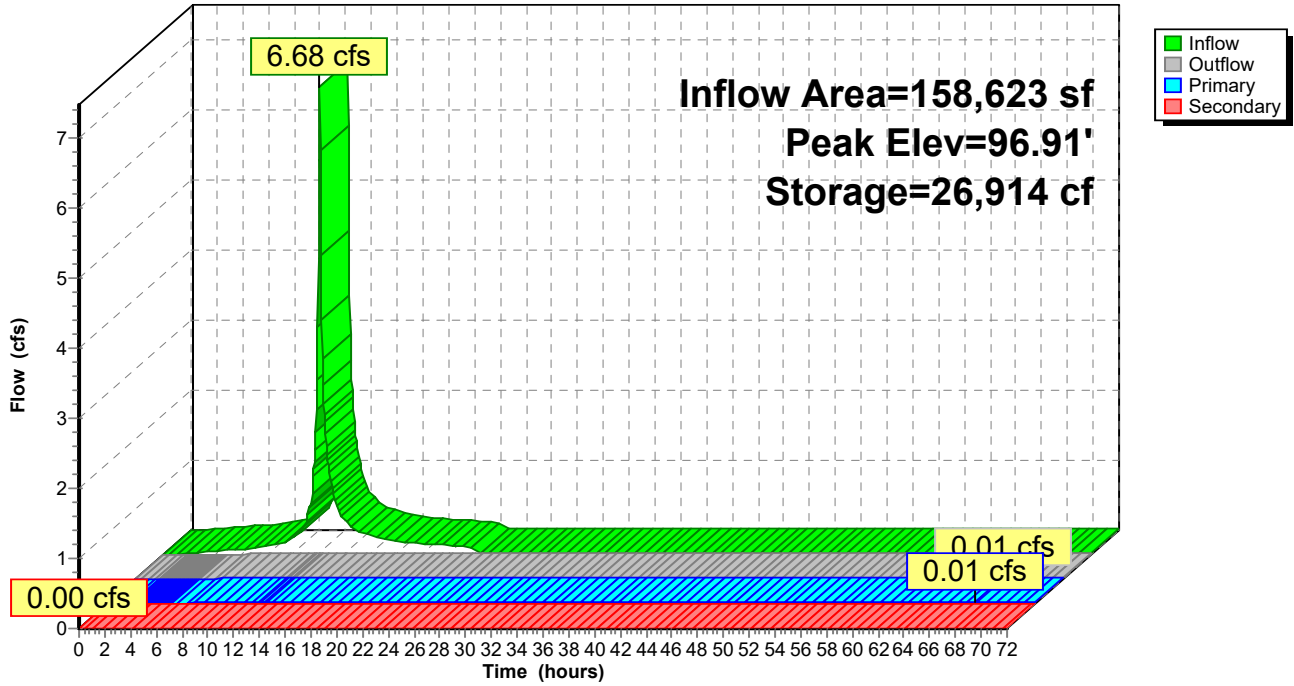
3,963.1 cy Field

2,465.8 cy Stone



Pond 6P: Underground Storage w/ Porous Pavement 3

Hydrograph



Summary for Pond 7P: Proposed Rain Garden 4 (North)

Inflow Area = 24,369 sf, 57.53% Impervious, Inflow Depth = 2.40" for 2-Year _Current event
 Inflow = 1.43 cfs @ 12.15 hrs, Volume= 4,874 cf
 Outflow = 0.51 cfs @ 12.38 hrs, Volume= 4,363 cf, Atten= 65%, Lag= 13.4 min
 Primary = 0.20 cfs @ 12.38 hrs, Volume= 3,818 cf
 Routed to Pond 8P : Underground Storage w/ Porous Pavement 4
 Secondary = 0.30 cfs @ 12.38 hrs, Volume= 545 cf
 Routed to Pond 8P : Underground Storage w/ Porous Pavement 4

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 100.22' @ 12.38 hrs Surf.Area= 2,435 sf Storage= 2,371 cf

Plug-Flow detention time= 763.8 min calculated for 4,363 cf (90% of inflow)
 Center-of-Mass det. time= 709.6 min (1,491.6 - 782.0)

Volume	Invert	Avail.Storage	Storage Description			
#1	98.25'	2,453 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
98.25	1,870	0.0	0	0	1,870	
99.25	1,870	35.0	655	655	2,023	
99.50	1,870	25.0	117	771	2,062	
100.00	2,435	100.0	1,073	1,845	2,633	
100.25	2,435	100.0	609	2,453	2,676	

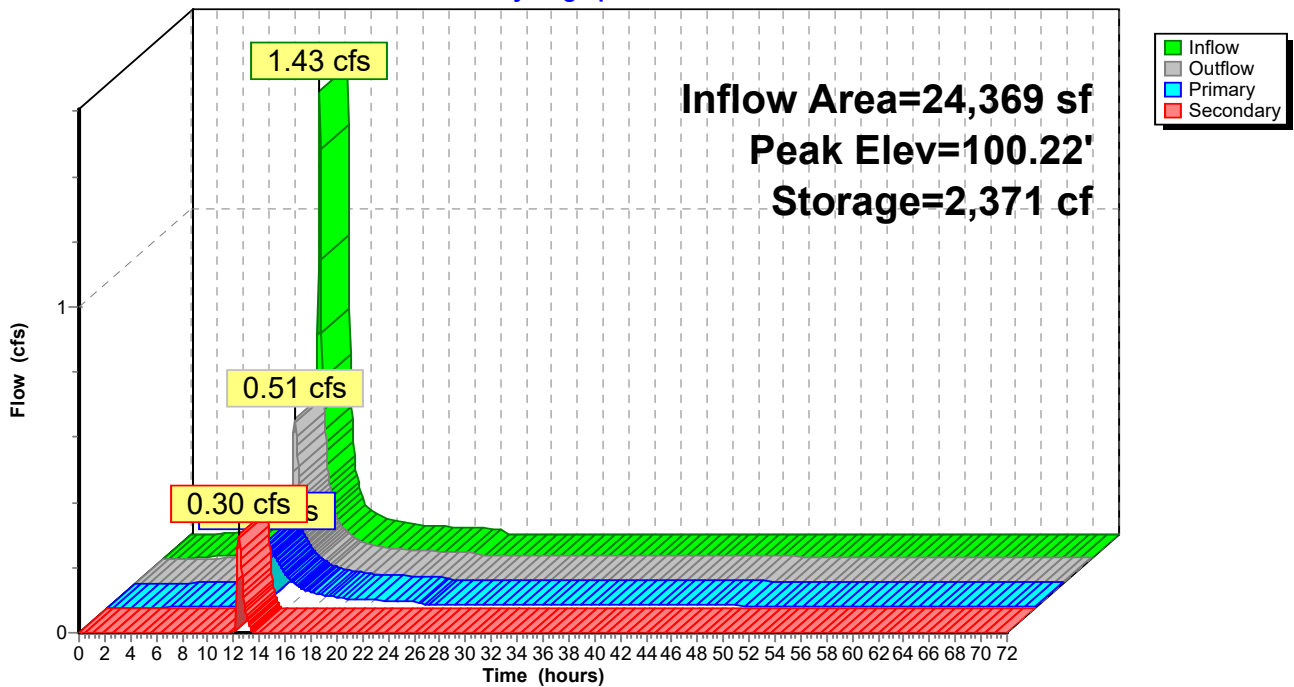
Device	Routing	Invert	Outlet Devices							
#1	Primary	98.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 98.15' / 98.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf							
#2	Device 1	98.15'	0.5" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads							
#3	Device 2	98.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 98.25' / 98.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf							
#4	Device 3	98.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads							
#5	Device 1	100.00'	4.0" Horiz. Draintech Atrium C= 0.600 Limited to weir flow at low heads							
#6	Secondary	100.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32							

Primary OutFlow Max=0.20 cfs @ 12.38 hrs HW=100.22' (Free Discharge)
 1=Culvert (Passes 0.20 cfs of 0.42 cfs potential flow)
 2=Restrictive Orifice (Orifice Controls 0.01 cfs @ 6.88 fps)
 3=4" HDPE Underdrain (Passes 0.01 cfs of 0.33 cfs potential flow)
 4=Perforations (Passes 0.01 cfs of 5.06 cfs potential flow)
 5=Draintech Atrium (Orifice Controls 0.20 cfs @ 2.23 fps)

Secondary OutFlow Max=0.30 cfs @ 12.38 hrs HW=100.22' (Free Discharge)
 6=Broad-Crested Rectangular Weir (Weir Controls 0.30 cfs @ 0.86 fps)

Pond 7P: Proposed Rain Garden 4 (North)

Hydrograph



Summary for Pond 8P: Underground Storage w/ Porous Pavement 4

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 97,166 sf, 80.96% Impervious, Inflow Depth > 2.71" for 2-Year _Current event
 Inflow = 5.04 cfs @ 12.15 hrs, Volume= 21,910 cf
 Outflow = 0.01 cfs @ 24.41 hrs, Volume= 3,515 cf, Atten= 100%, Lag= 735.3 min
 Primary = 0.01 cfs @ 24.41 hrs, Volume= 3,515 cf
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 96.95' @ 24.41 hrs Surf.Area= 33,612 sf Storage= 19,505 cf

Plug-Flow detention time= 1,779.0 min calculated for 3,515 cf (16% of inflow)
 Center-of-Mass det. time= 1,378.7 min (2,287.3 - 908.6)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	9,112 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	15,592 cf	63.25'W x 281.30'L x 3.50'H Field A 62,272 cf Overall - 23,292 cf Embedded = 38,980 cf x 40.0% Voids
#3A	96.17'	23,292 cf	ADS_StormTech SC-740 +Cap x 507 Inside #2 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 507 Chambers in 13 Rows
		47,996 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	15,820	0.0	0	0
97.67	15,820	35.0	8,306	8,306
97.83	15,820	15.0	380	8,685
98.01	15,820	15.0	427	9,112

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.01 cfs @ 24.41 hrs HW=96.95' (Free Discharge)

↑ **1=Restriction Orifice** (Orifice Controls 0.01 cfs @ 10.62 fps)

↑ **2=6" HDPE Underdrain** (Passes 0.01 cfs of 0.42 cfs potential flow)

↑ **3=Perforations** (Passes 0.01 cfs of 7.90 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.67' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 8P: Underground Storage w/ Porous Pavement 4 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

39 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 279.30' Row Length +12.0" End Stone x 2 = 281.30' Base Length

13 Rows x 51.0" Wide + 6.0" Spacing x 12 + 12.0" Side Stone x 2 = 63.25' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

507 Chambers x 45.9 cf = 23,291.6 cf Chamber Storage

62,272.0 cf Field - 23,291.6 cf Chambers = 38,980.5 cf Stone x 40.0% Voids = 15,592.2 cf Stone Storage

Chamber Storage + Stone Storage = 38,883.8 cf = 0.893 af

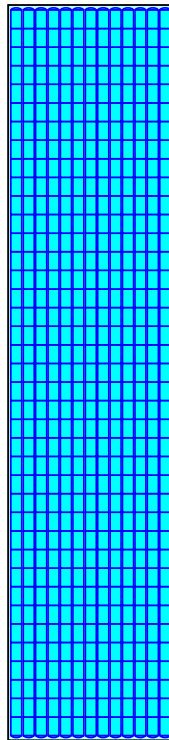
Overall Storage Efficiency = 62.4%

Overall System Size = 281.30' x 63.25' x 3.50'

507 Chambers

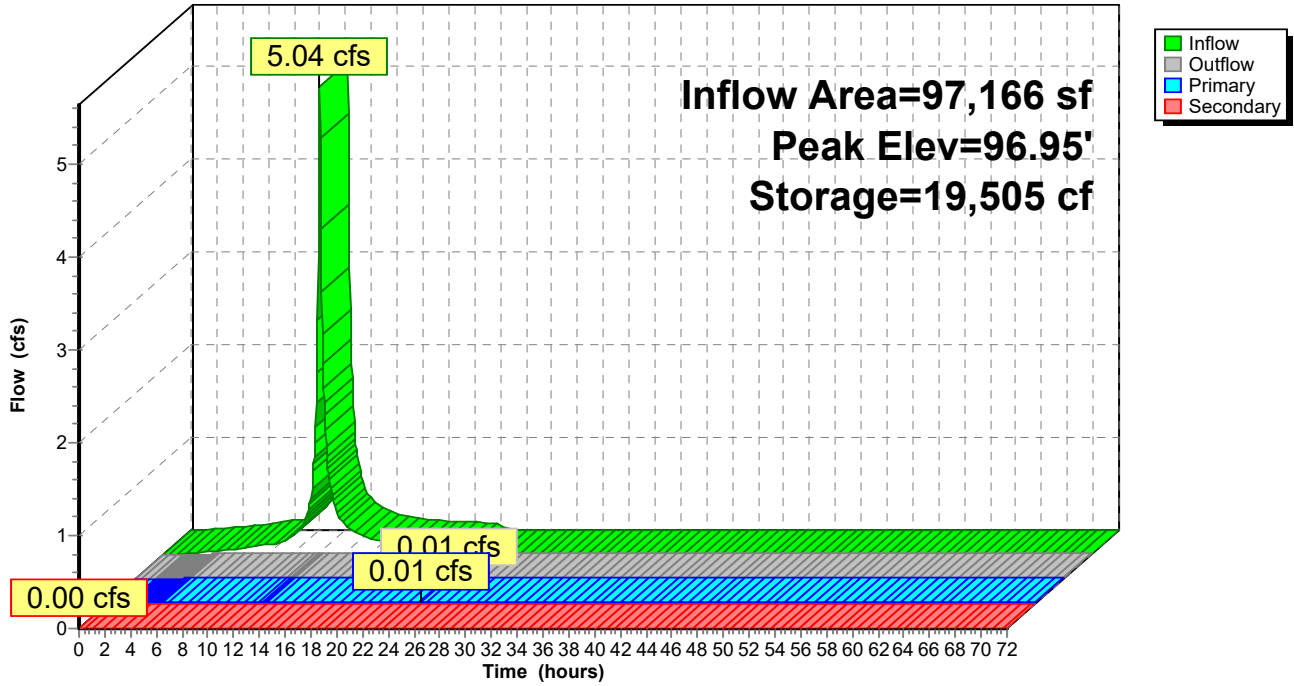
2,306.4 cy Field

1,443.7 cy Stone



Pond 8P: Underground Storage w/ Porous Pavement 4

Hydrograph



Summary for Pond 9P: Proposed Rain Garden 3 (North East)

[62] Hint: Exceeded Reach 2R OUTLET depth by 0.05' @ 12.50 hrs

Inflow Area = 19,898 sf, 48.83% Impervious, Inflow Depth = 2.26" for 2-Year _Current event
 Inflow = 0.99 cfs @ 12.20 hrs, Volume= 3,740 cf
 Outflow = 0.46 cfs @ 12.41 hrs, Volume= 3,607 cf, Atten= 53%, Lag= 12.6 min
 Primary = 0.20 cfs @ 12.41 hrs, Volume= 3,238 cf
 Routed to Pond 10P : Underground Storage w/ Porous Pavement 5
 Secondary = 0.26 cfs @ 12.41 hrs, Volume= 369 cf
 Routed to Pond 10P : Underground Storage w/ Porous Pavement 5

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 100.21' @ 12.41 hrs Surf.Area= 1,670 sf Storage= 1,678 cf

Plug-Flow detention time= 733.5 min calculated for 3,607 cf (96% of inflow)
 Center-of-Mass det. time= 711.9 min (1,504.1 - 792.2)

Volume	Invert	Avail.Storage	Storage Description			
#1	98.25'	1,751 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
98.25	1,385	0.0	0	0	1,385	
99.25	1,385	35.0	485	485	1,517	
99.50	1,385	25.0	87	571	1,550	
100.00	1,670	100.0	763	1,334	1,843	
100.25	1,670	100.0	418	1,751	1,879	

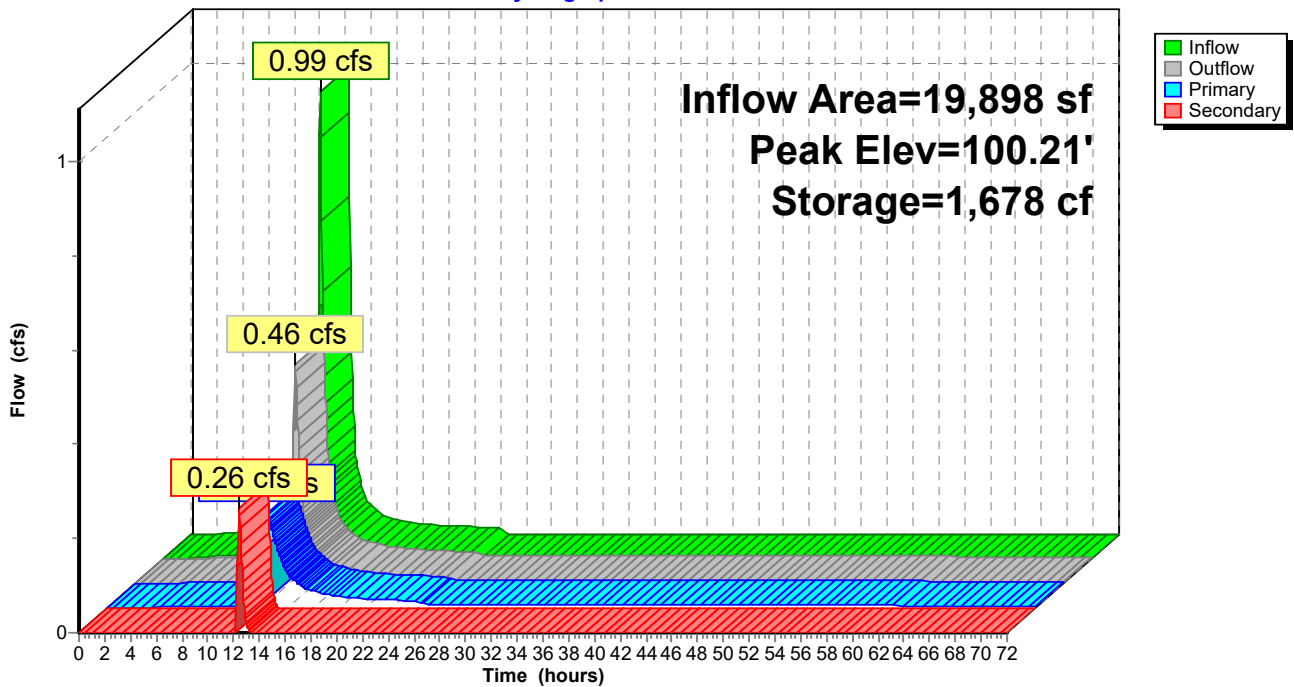
Device	Routing	Invert	Outlet Devices	
#1	Primary	98.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 98.15' / 98.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#2	Device 1	98.15'	0.5" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads	
#3	Device 2	98.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 98.25' / 98.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#4	Device 3	98.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads	
#5	Device 1	100.00'	4.0" Horiz. Drintech Atrium C= 0.600 Limited to weir flow at low heads	
#6	Secondary	100.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32	

Primary OutFlow Max=0.20 cfs @ 12.41 hrs HW=100.21' (Free Discharge)
 1=Culvert (Passes 0.20 cfs of 0.42 cfs potential flow)
 2=Restrictive Orifice (Orifice Controls 0.01 cfs @ 6.87 fps)
 3=4" HDPE Underdrain (Passes 0.01 cfs of 0.33 cfs potential flow)
 4=Perforations (Passes 0.01 cfs of 5.05 cfs potential flow)
 5=Draintech Atrium (Orifice Controls 0.19 cfs @ 2.18 fps)

Secondary OutFlow Max=0.26 cfs @ 12.41 hrs HW=100.21' (Free Discharge)
 6=Broad-Crested Rectangular Weir (Weir Controls 0.26 cfs @ 0.82 fps)

Pond 9P: Proposed Rain Garden 3 (North East)

Hydrograph



Summary for Pond 10P: Underground Storage w/ Porous Pavement 5

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 78,061 sf, 72.85% Impervious, Inflow Depth > 2.60" for 2-Year _Current event
 Inflow = 3.44 cfs @ 12.19 hrs, Volume= 16,907 cf
 Outflow = 0.01 cfs @ 24.36 hrs, Volume= 3,521 cf, Atten= 100%, Lag= 729.8 min
 Primary = 0.01 cfs @ 24.36 hrs, Volume= 3,521 cf
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 96.98' @ 24.36 hrs Surf.Area= 27,852 sf Storage= 14,650 cf

Plug-Flow detention time= 1,726.9 min calculated for 3,521 cf (21% of inflow)
 Center-of-Mass det. time= 1,359.6 min (2,286.3 - 926.7)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	9,426 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	10,110 cf	63.25'W x 181.62'L x 3.50'H Field A
			40,205 cf Overall - 14,931 cf Embedded = 25,275 cf x 40.0% Voids
#3A	96.17'	14,931 cf	ADS_StormTech SC-740 +Cap x 325 Inside #2
			Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
			Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
			325 Chambers in 13 Rows
		34,467 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	16,365	0.0	0	0
97.67	16,365	35.0	8,592	8,592
97.83	16,365	15.0	393	8,984
98.01	16,365	15.0	442	9,426

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.01 cfs @ 24.36 hrs HW=96.98' (Free Discharge)

↑ **1=Restriction Orifice** (Orifice Controls 0.01 cfs @ 10.65 fps)

↑ **2=6" HDPE Underdrain** (Passes 0.01 cfs of 0.42 cfs potential flow)

↑ **3=Perforations** (Passes 0.01 cfs of 7.92 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.67' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 10P: Underground Storage w/ Porous Pavement 5 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

25 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 179.62' Row Length +12.0" End Stone x 2 = 181.62' Base Length

13 Rows x 51.0" Wide + 6.0" Spacing x 12 + 12.0" Side Stone x 2 = 63.25' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

325 Chambers x 45.9 cf = 14,930.5 cf Chamber Storage

40,205.4 cf Field - 14,930.5 cf Chambers = 25,274.9 cf Stone x 40.0% Voids = 10,110.0 cf Stone Storage

Chamber Storage + Stone Storage = 25,040.5 cf = 0.575 af

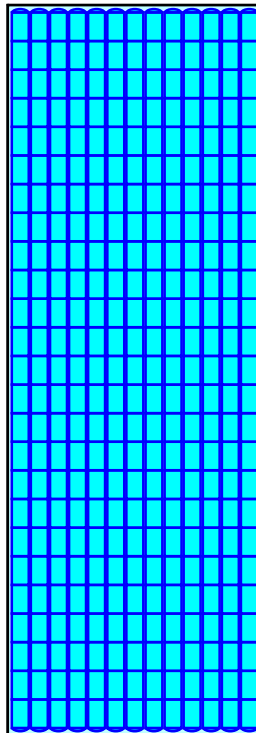
Overall Storage Efficiency = 62.3%

Overall System Size = 181.62' x 63.25' x 3.50'

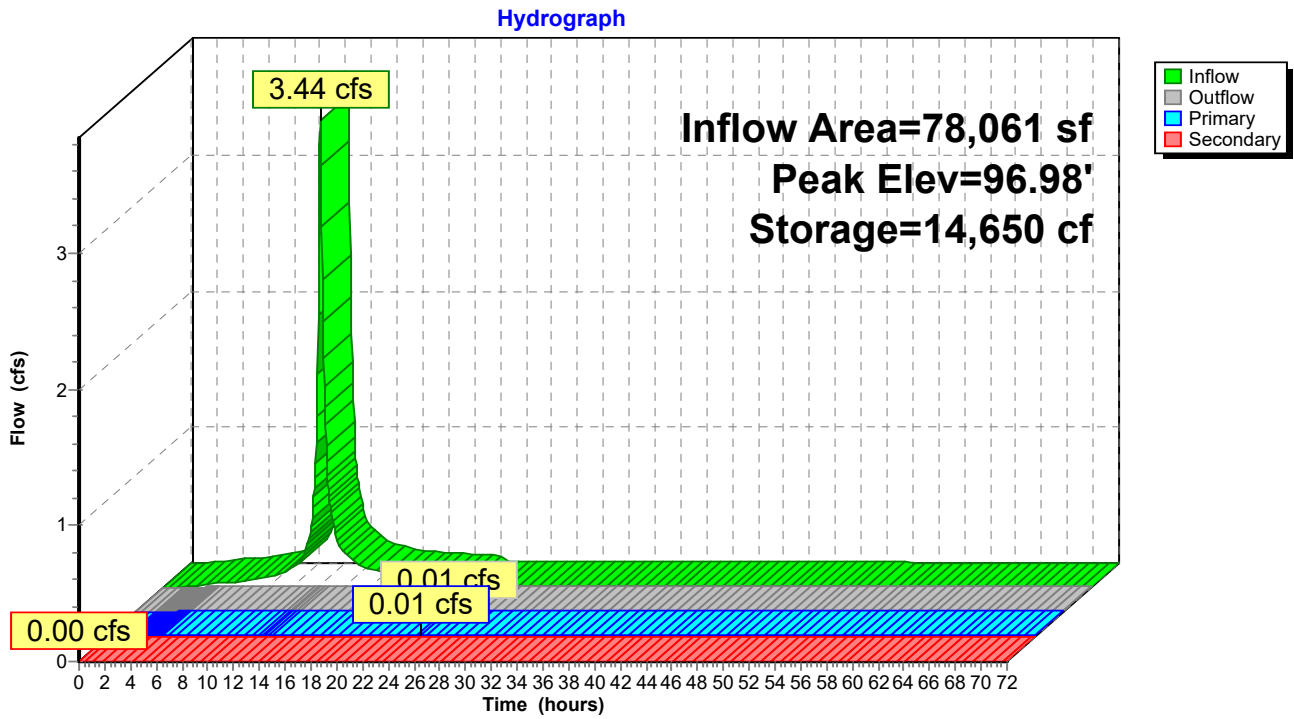
325 Chambers

1,489.1 cy Field

936.1 cy Stone



Pond 10P: Underground Storage w/ Porous Pavement 5



Summary for Pond 11P: Proposed Rain Garden 2 (East)

Inflow Area = 32,033 sf, 45.19% Impervious, Inflow Depth = 2.19" for 2-Year _Current event
 Inflow = 1.47 cfs @ 12.22 hrs, Volume= 5,859 cf
 Outflow = 0.36 cfs @ 12.69 hrs, Volume= 5,649 cf, Atten= 75%, Lag= 28.5 min
 Primary = 0.20 cfs @ 12.69 hrs, Volume= 5,263 cf
 Routed to Pond 12P : Underground Storage w/ Porous Pavement 6
 Secondary = 0.17 cfs @ 12.69 hrs, Volume= 386 cf
 Routed to Pond 12P : Underground Storage w/ Porous Pavement 6

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 100.18' @ 12.69 hrs Surf.Area= 3,045 sf Storage= 3,049 cf

Plug-Flow detention time= 879.1 min calculated for 5,649 cf (96% of inflow)
 Center-of-Mass det. time= 857.4 min (1,654.1 - 796.6)

Volume	Invert	Avail.Storage	Storage Description			
#1	98.25'	3,267 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
98.25	2,635	0.0	0	0	2,635	
99.25	2,635	35.0	922	922	2,817	
99.50	2,635	25.0	165	1,087	2,862	
100.00	3,045	100.0	1,419	2,506	3,283	
100.25	3,045	100.0	761	3,267	3,332	

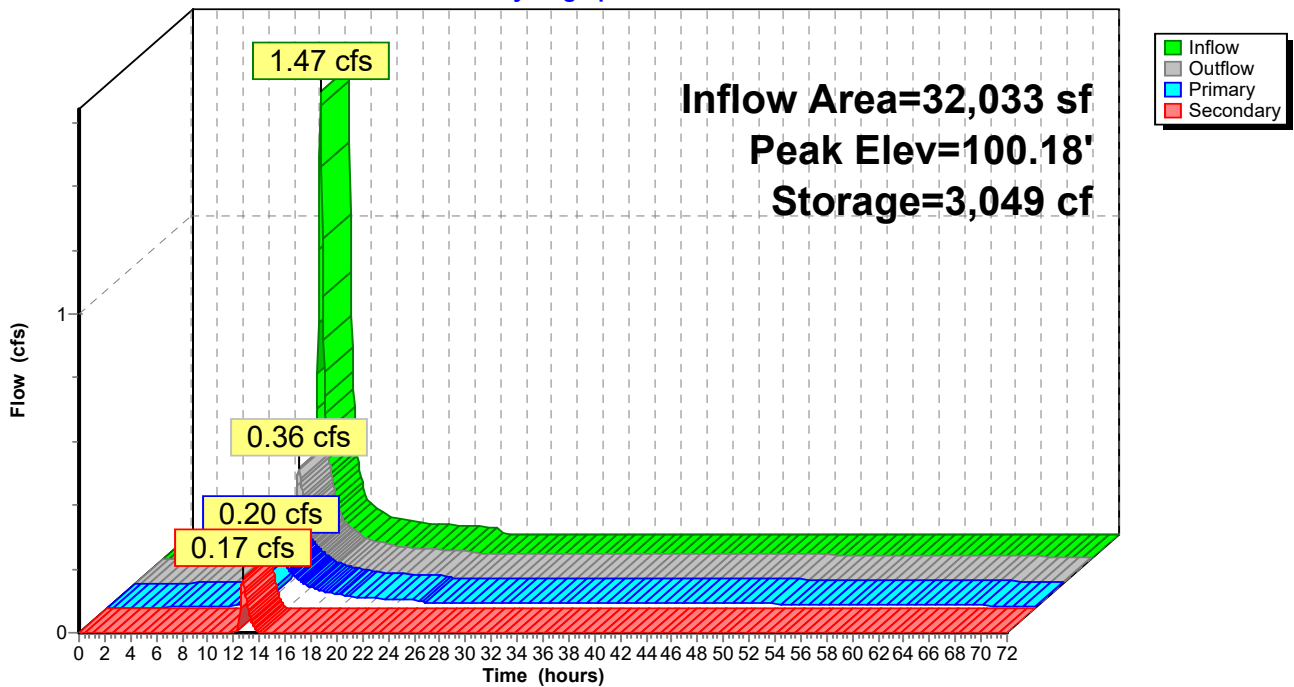
Device	Routing	Invert	Outlet Devices	
#1	Primary	98.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 98.15' / 98.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#2	Device 1	98.15'	0.7" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads	
#3	Device 2	98.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 98.25' / 98.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#4	Device 3	98.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads	
#5	Device 1	100.00'	4.0" Horiz. Drintech Atrium C= 0.600 Limited to weir flow at low heads	
#6	Secondary	100.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32	

Primary OutFlow Max=0.20 cfs @ 12.69 hrs HW=100.18' (Free Discharge)
 1=Culvert (Passes 0.20 cfs of 0.41 cfs potential flow)
 2=Restrictive Orifice (Orifice Controls 0.02 cfs @ 6.81 fps)
 3=4" HDPE Underdrain (Passes 0.02 cfs of 0.32 cfs potential flow)
 4=Perforations (Passes 0.02 cfs of 5.01 cfs potential flow)
 5=Draintech Atrium (Orifice Controls 0.18 cfs @ 2.03 fps)

Secondary OutFlow Max=0.17 cfs @ 12.69 hrs HW=100.18' (Free Discharge)
 6=Broad-Crested Rectangular Weir (Weir Controls 0.17 cfs @ 0.71 fps)

Pond 11P: Proposed Rain Garden 2 (East)

Hydrograph



Summary for Pond 12P: Underground Storage w/ Porous Pavement 6

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 32,033 sf, 45.19% Impervious, Inflow Depth > 2.12" for 2-Year _Current event
 Inflow = 0.36 cfs @ 12.69 hrs, Volume= 5,649 cf
 Outflow = 0.01 cfs @ 51.56 hrs, Volume= 3,111 cf, Atten= 96%, Lag= 2,332.1 min
 Primary = 0.01 cfs @ 51.56 hrs, Volume= 3,111 cf
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 96.50' @ 51.56 hrs Surf.Area= 8,364 sf Storage= 2,789 cf

Plug-Flow detention time= 1,546.7 min calculated for 3,109 cf (55% of inflow)
 Center-of-Mass det. time= 777.5 min (2,431.6 - 1,654.1)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	1,866 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	4,603 cf	25.25'W x 202.98'L x 3.50'H Field A
			17,938 cf Overall - 6,432 cf Embedded = 11,506 cf x 40.0% Voids
#3A	96.17'	6,432 cf	ADS_StormTech SC-740 +Cap x 140 Inside #2
			Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
			Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
			140 Chambers in 5 Rows
		12,900 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	3,239	0.0	0	0
97.67	3,239	35.0	1,700	1,700
97.83	3,239	15.0	78	1,778
98.01	3,239	15.0	87	1,866

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.01 cfs @ 51.56 hrs HW=96.50' (Free Discharge)

↑ **1=Restriction Orifice** (Orifice Controls 0.01 cfs @ 10.11 fps)

↑ **2=6" HDPE Underdrain** (Passes 0.01 cfs of 0.40 cfs potential flow)

↑ **3=Perforations** (Passes 0.01 cfs of 7.51 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.67' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 12P: Underground Storage w/ Porous Pavement 6 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

28 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 200.98' Row Length +12.0" End Stone x 2 = 202.98' Base Length

5 Rows x 51.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.25' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

140 Chambers x 45.9 cf = 6,431.6 cf Chamber Storage

17,938.1 cf Field - 6,431.6 cf Chambers = 11,506.5 cf Stone x 40.0% Voids = 4,602.6 cf Stone Storage

Chamber Storage + Stone Storage = 11,034.2 cf = 0.253 af

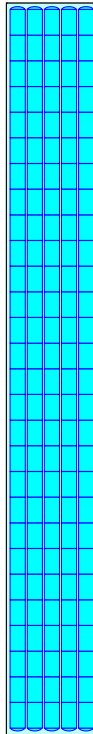
Overall Storage Efficiency = 61.5%

Overall System Size = 202.98' x 25.25' x 3.50'

140 Chambers

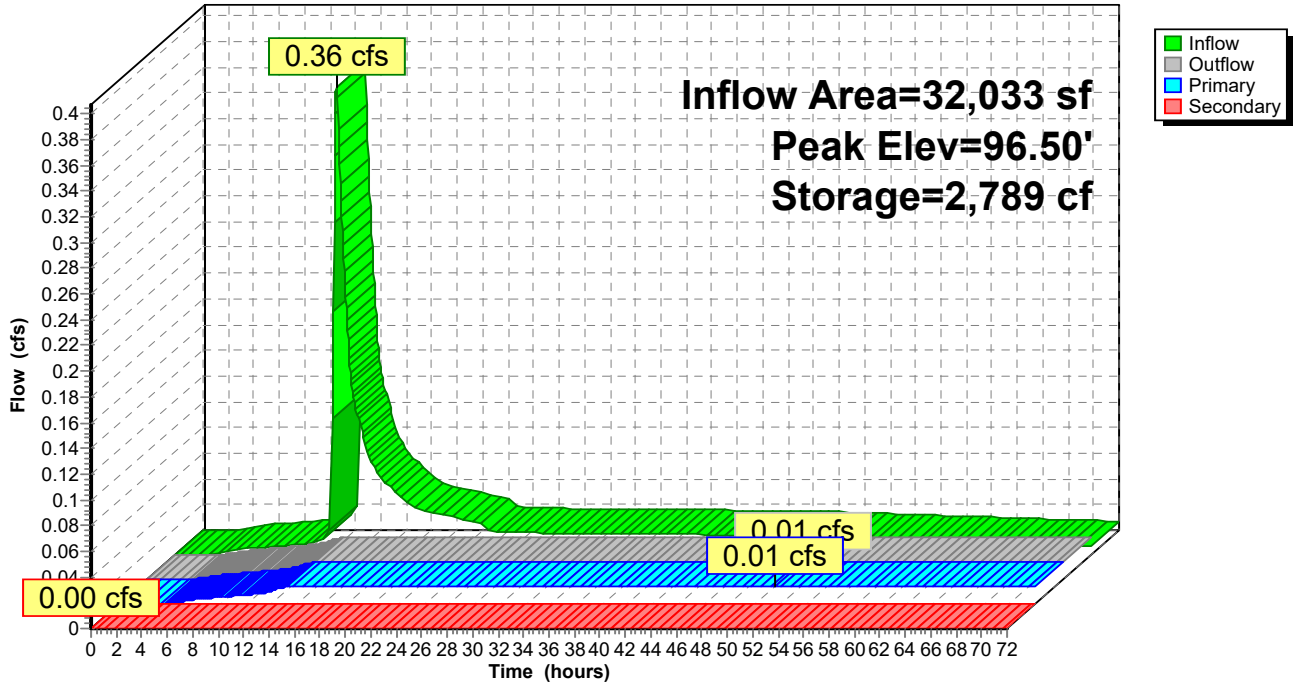
664.4 cy Field

426.2 cy Stone



Pond 12P: Underground Storage w/ Porous Pavement 6

Hydrograph



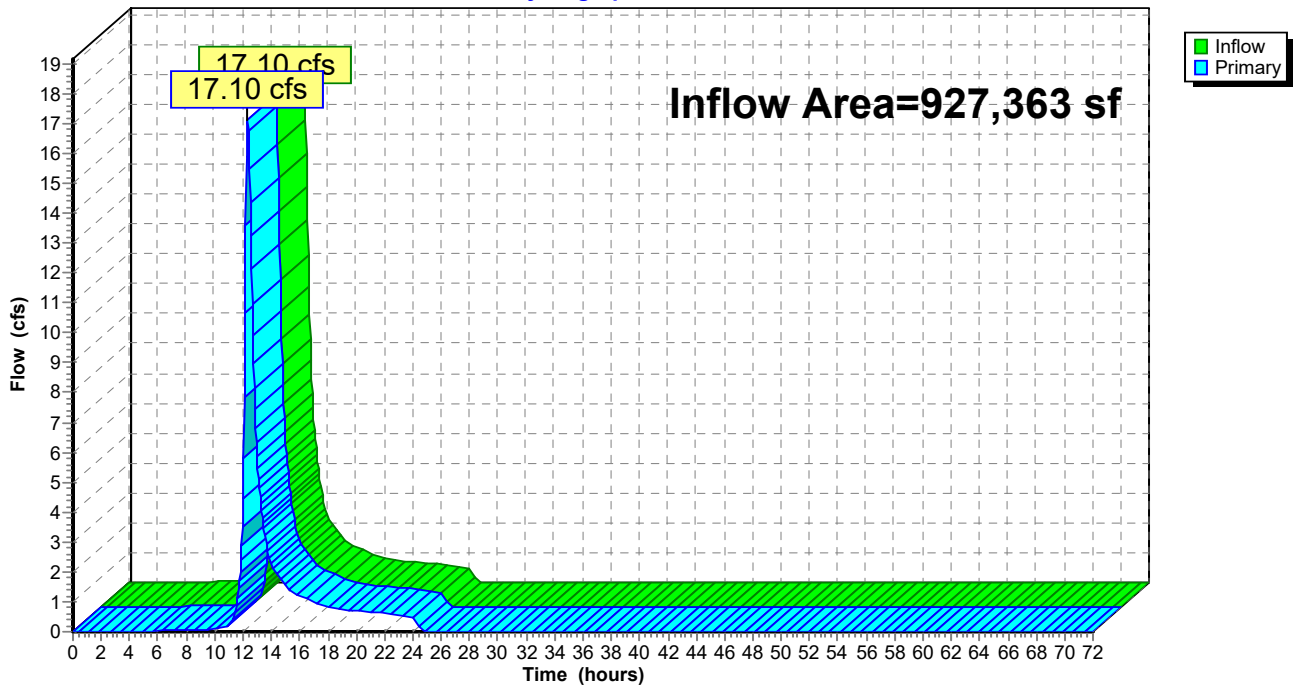
Summary for Link 1L: Offsite Flows

Inflow Area = 927,363 sf, 3.35% Impervious, Inflow Depth = 1.19" for 2-Year _Current event
Inflow = 17.10 cfs @ 12.33 hrs, Volume= 92,008 cf
Primary = 17.10 cfs @ 12.33 hrs, Volume= 92,008 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 1L: Offsite Flows

Hydrograph



Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

- Subcatchment 1S: DA1: CN w/ IC** Runoff Area=56,173 sf 73.47% Impervious Runoff Depth=5.31"
Flow Length=361' Tc=14.3 min CN=75/98 Runoff=5.91 cfs 24,837 cf
- Subcatchment 1Sa: Existing RG 1_West_** Runoff Area=22,637 sf 64.43% Impervious Runoff Depth=5.15"
Flow Length=361' Tc=14.3 min CN=77/98 Runoff=2.34 cfs 9,716 cf
- Subcatchment 1Sb: DA1: CN w/ IC** Runoff Area=39,105 sf 68.25% Impervious Runoff Depth=5.17"
Flow Length=361' Tc=14.3 min CN=75/98 Runoff=4.04 cfs 16,863 cf
- Subcatchment 2S: DA 2: CN w/ IC areas** Runoff Area=58,249 sf 86.46% Impervious Runoff Depth=5.65"
Flow Length=391' Tc=7.0 min CN=76/98 Runoff=8.07 cfs 27,403 cf
- Subcatchment 3S: DA 3: CN w/ IC** Runoff Area=158,623 sf 63.48% Impervious Runoff Depth=5.09"
Flow Length=441' Tc=8.3 min CN=76/98 Runoff=19.58 cfs 67,305 cf
- Subcatchment 3Sa: Existing RG 2 Front DA** Runoff Area=25,889 sf 48.62% Impervious Runoff Depth=4.89"
Tc=8.3 min CN=79/98 Runoff=3.14 cfs 10,551 cf
- Subcatchment 3Sb: RG 1 DA** Runoff Area=21,388 sf 65.14% Impervious Runoff Depth=5.06"
Flow Length=441' Tc=8.3 min CN=74/98 Runoff=2.62 cfs 9,022 cf
- Subcatchment 3Sc: DA 3: CN w/ IC areas** Runoff Area=111,346 sf 66.62% Impervious Runoff Depth=5.13"
Flow Length=441' Tc=8.3 min CN=75/98 Runoff=13.79 cfs 47,636 cf
- Subcatchment 4S: DA 4: CN w/ IC** Runoff Area=86,816 sf 90.62% Impervious Runoff Depth=5.74"
Flow Length=143' Tc=8.4 min CN=75/98 Runoff=11.62 cfs 41,499 cf
- Subcatchment 4Sa: RG 4 DA** Runoff Area=24,369 sf 57.53% Impervious Runoff Depth=5.08"
Flow Length=143' Tc=8.4 min CN=79/98 Runoff=3.01 cfs 10,312 cf
- Subcatchment 4Sb: DA 4: CN w/ IC areas** Runoff Area=72,797 sf 88.81% Impervious Runoff Depth=5.69"
Flow Length=143' Tc=8.4 min CN=75/98 Runoff=9.69 cfs 34,522 cf
- Subcatchment 5S: DA 5: CN w/ IC** Runoff Area=78,058 sf 72.85% Impervious Runoff Depth=5.34"
Flow Length=310' Tc=11.5 min CN=77/98 Runoff=8.96 cfs 34,767 cf
- Subcatchment 5Sa: RG 3 DA** Runoff Area=19,898 sf 48.83% Impervious Runoff Depth=4.90"
Flow Length=310' Tc=11.5 min CN=79/98 Runoff=2.16 cfs 8,117 cf
- Subcatchment 5Sb: DA 5: CN w/ IC areas** Runoff Area=58,163 sf 81.07% Impervious Runoff Depth=5.50"
Flow Length=310' Tc=11.5 min CN=75/98 Runoff=6.79 cfs 26,641 cf
- Subcatchment 6S: DA 6: CN w/ IC areas** Runoff Area=32,033 sf 45.19% Impervious Runoff Depth=4.82"
Flow Length=276' Tc=14.0 min CN=79/98 Runoff=3.22 cfs 12,863 cf
- Subcatchment 7S: DA 7 (Offsite South):** Runoff Area=107,001 sf 18.84% Impervious Runoff Depth=4.18"
Flow Length=309' Tc=14.5 min CN=78/98 Runoff=9.51 cfs 37,278 cf

Subcatchment 8S: DA 8 (Offsite North): CN Runoff Area=340,642 sf 1.94% Impervious Runoff Depth=3.41"
 Flow Length=976' Tc=19.4 min CN=74/98 Runoff=22.69 cfs 96,880 cf

Subcatchment 9S: DA 9 (Offsite Field) Runoff Area=479,720 sf 0.89% Impervious Runoff Depth=3.29"
 Flow Length=1,468' Tc=30.4 min CN=73/98 Runoff=24.78 cfs 131,435 cf

Subcatchment 31S: RG 2 DA Runoff Area=32,035 sf 32.46% Impervious Runoff Depth=4.55"
 Flow Length=276' Tc=14.0 min CN=79/98 Runoff=3.09 cfs 12,148 cf

Reach 1R: Existing Bioswale West 1 Avg. Flow Depth=0.27' Max Vel=2.30 fps Inflow=2.34 cfs 9,716 cf
 n=0.035 L=33.0' S=0.0227 '/' Capacity=7.36 cfs Outflow=2.32 cfs 9,716 cf

Reach 2R: Bioswale E 1 RG 3 Avg. Flow Depth=0.37' Max Vel=2.73 fps Inflow=2.16 cfs 8,117 cf
 n=0.035 L=35.0' S=0.0286 '/' Capacity=4.02 cfs Outflow=2.15 cfs 8,117 cf

Pond 1P: Existing Rain Garden 1 West Peak Elev=100.51' Storage=1,831 cf Inflow=2.32 cfs 9,716 cf
 Primary=0.31 cfs 5,683 cf Secondary=2.05 cfs 3,854 cf Outflow=2.36 cfs 9,537 cf

Pond 2P: Underground Storage w/ Porous Peak Elev=98.09' Storage=19,488 cf Inflow=6.36 cfs 26,400 cf
 Primary=0.02 cfs 3,880 cf Secondary=0.22 cfs 5,047 cf Outflow=0.24 cfs 8,927 cf

Pond 3P: Underground Storage w/ Porous Peak Elev=98.07' Storage=23,297 cf Inflow=8.07 cfs 27,403 cf
 Primary=0.02 cfs 3,898 cf Secondary=0.14 cfs 3,219 cf Outflow=0.16 cfs 7,117 cf

Pond 4P: Existing Rain Garden 2 Front Peak Elev=101.70' Storage=3,267 cf Inflow=3.14 cfs 10,551 cf
 Primary=0.36 cfs 5,772 cf Secondary=3.65 cfs 3,638 cf Outflow=4.01 cfs 9,410 cf

Pond 5P: Proposed Rain Garden 1 (South) Peak Elev=101.59' Storage=2,466 cf Inflow=2.62 cfs 9,022 cf
 Primary=0.33 cfs 5,316 cf Secondary=2.65 cfs 3,148 cf Outflow=2.98 cfs 8,463 cf

Pond 6P: Underground Storage w/ Porous Peak Elev=98.11' Storage=56,393 cf Inflow=18.61 cfs 65,510 cf
 Primary=0.02 cfs 3,902 cf Secondary=0.27 cfs 7,345 cf Outflow=0.28 cfs 11,247 cf

Pond 7P: Proposed Rain Garden 4 (North) Peak Elev=100.60' Storage=2,453 cf Inflow=3.01 cfs 10,312 cf
 Primary=0.34 cfs 5,806 cf Secondary=2.78 cfs 4,231 cf Outflow=3.12 cfs 10,037 cf

Pond 8P: Underground Storage w/ Porous Peak Elev=98.08' Storage=38,983 cf Inflow=12.81 cfs 44,559 cf
 Primary=0.02 cfs 3,908 cf Secondary=0.17 cfs 3,750 cf Outflow=0.18 cfs 7,658 cf

Pond 9P: Proposed Rain Garden 3 (North) Peak Elev=100.50' Storage=1,751 cf Inflow=2.15 cfs 8,117 cf
 Primary=0.31 cfs 5,026 cf Secondary=1.94 cfs 2,952 cf Outflow=2.25 cfs 7,978 cf

Pond 10P: Underground Storage w/ Porous Peak Elev=98.08' Storage=28,659 cf Inflow=8.75 cfs 34,619 cf
 Primary=0.02 cfs 3,905 cf Secondary=0.17 cfs 4,034 cf Outflow=0.19 cfs 7,939 cf

Pond 11P: Proposed Rain Garden 2 (East) Peak Elev=100.70' Storage=3,267 cf Inflow=3.22 cfs 12,863 cf
 Primary=0.37 cfs 7,625 cf Secondary=3.66 cfs 5,010 cf Outflow=4.03 cfs 12,635 cf

Pond 12P: Underground Storage w/ Porous Peak Elev=97.83' Storage=9,407 cf Inflow=4.03 cfs 12,635 cf
 Primary=0.02 cfs 3,624 cf Secondary=0.00 cfs 0 cf Outflow=0.02 cfs 3,624 cf

Link 1L: Offsite Flows Inflow=52.18 cfs 265,592 cf
 Primary=52.18 cfs 265,592 cf

Total Runoff Area = 1,824,942 sf Runoff Volume = 659,796 cf Average Runoff Depth = 4.34"
63.76% Pervious = 1,163,653 sf 36.24% Impervious = 661,289 sf

Summary for Subcatchment 1S: DA1: CN w/ IC areas_original

Runoff = 5.91 cfs @ 12.22 hrs, Volume= 24,837 cf, Depth= 5.31"

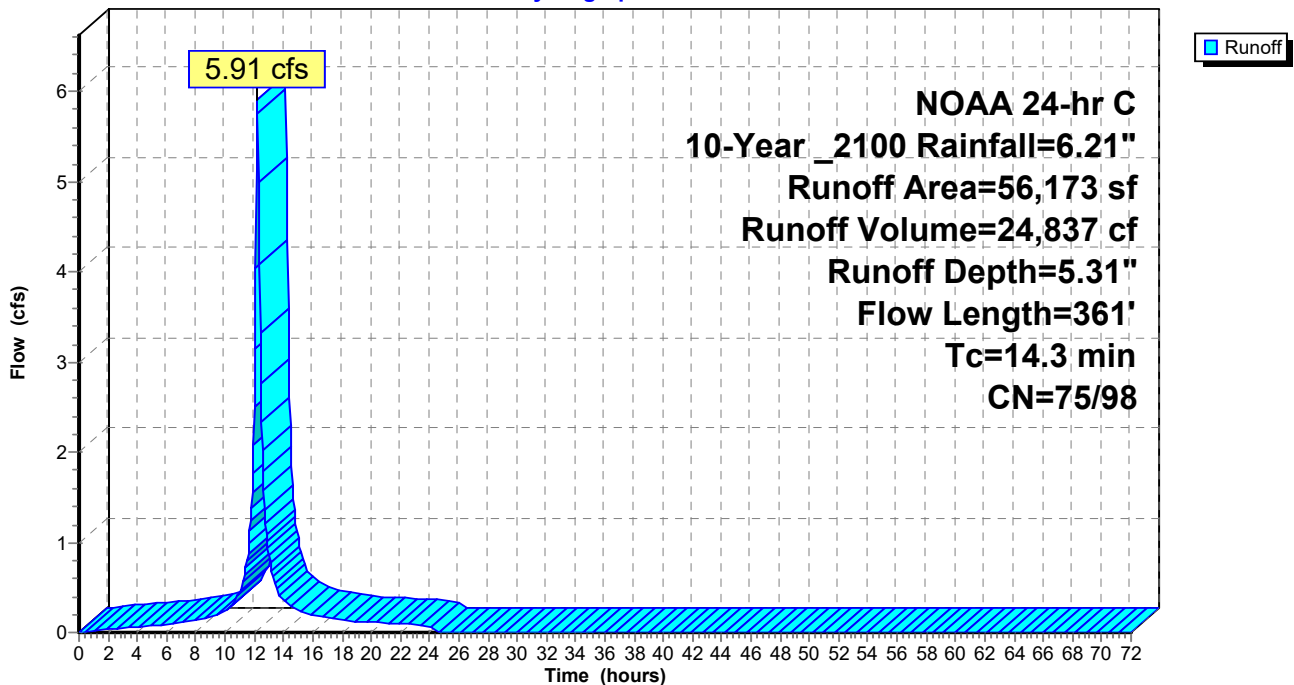
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _2100 Rainfall=6.21"

Area (sf)	CN	Description
* 2,053	79	Open space (fair) C
* 12,848	74	Open space (good) C
* 41,272	98	Impervious
56,173	92	Weighted Average
14,901	75	26.53% Pervious Area
41,272	98	73.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	100	0.0109	0.14		Sheet Flow, Sheet flow Grass: Short n= 0.150 P2= 3.34"
0.2	33	0.0280	2.69		Shallow Concentrated Flow, SCF - unpaved Unpaved Kv= 16.1 fps
1.9	228	0.0095	1.98		Shallow Concentrated Flow, SCF - Paved parking lot Paved Kv= 20.3 fps
14.3	361	Total			

Subcatchment 1S: DA1: CN w/ IC areas_original

Hydrograph



Summary for Subcatchment 1Sa: Existing RG 1_West_DA

Runoff = 2.34 cfs @ 12.22 hrs, Volume= 9,716 cf, Depth= 5.15"
 Routed to Reach 1R : Existing Bioswale West 1

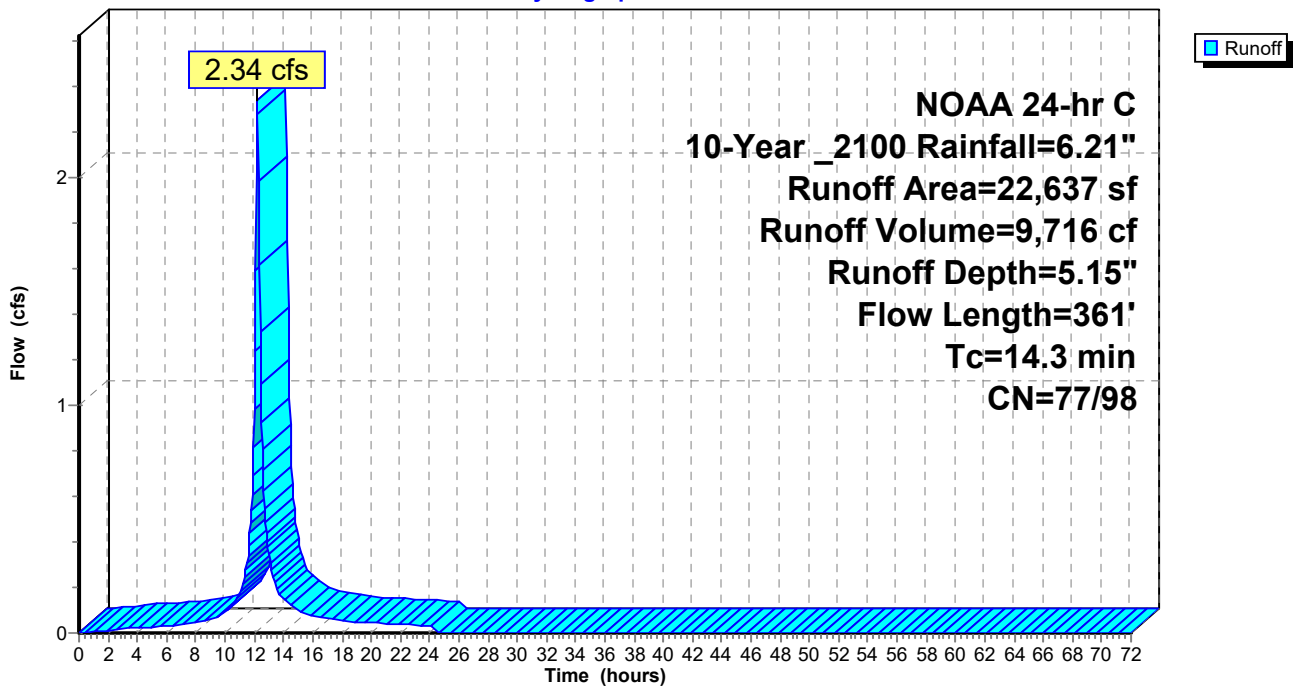
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _2100 Rainfall=6.21"

Area (sf)	CN	Description
* 5,569	79	Open space (fair) C - Portion from DA 9 the field
* 14,584	98	Impervious Parking Lot
* 2,484	74	OPen Space (Good) C - Portion from DA1
22,637	91	Weighted Average
8,053	77	35.57% Pervious Area
14,584	98	64.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	100	0.0109	0.14		Sheet Flow, Sheet flow Grass: Short n= 0.150 P2= 3.34"
0.2	33	0.0280	2.69		Shallow Concentrated Flow, SCF - unpaved Unpaved Kv= 16.1 fps
1.9	228	0.0095	1.98		Shallow Concentrated Flow, SCF - Paved parking lot Paved Kv= 20.3 fps
14.3	361	Total			

Subcatchment 1Sa: Existing RG 1_West_DA

Hydrograph



Summary for Subcatchment 1Sb: DA1: CN w/ IC areas_Remaining

Runoff = 4.04 cfs @ 12.22 hrs, Volume= 16,863 cf, Depth= 5.17"
 Routed to Pond 2P : Underground Storage w/ Porous Pavement 1

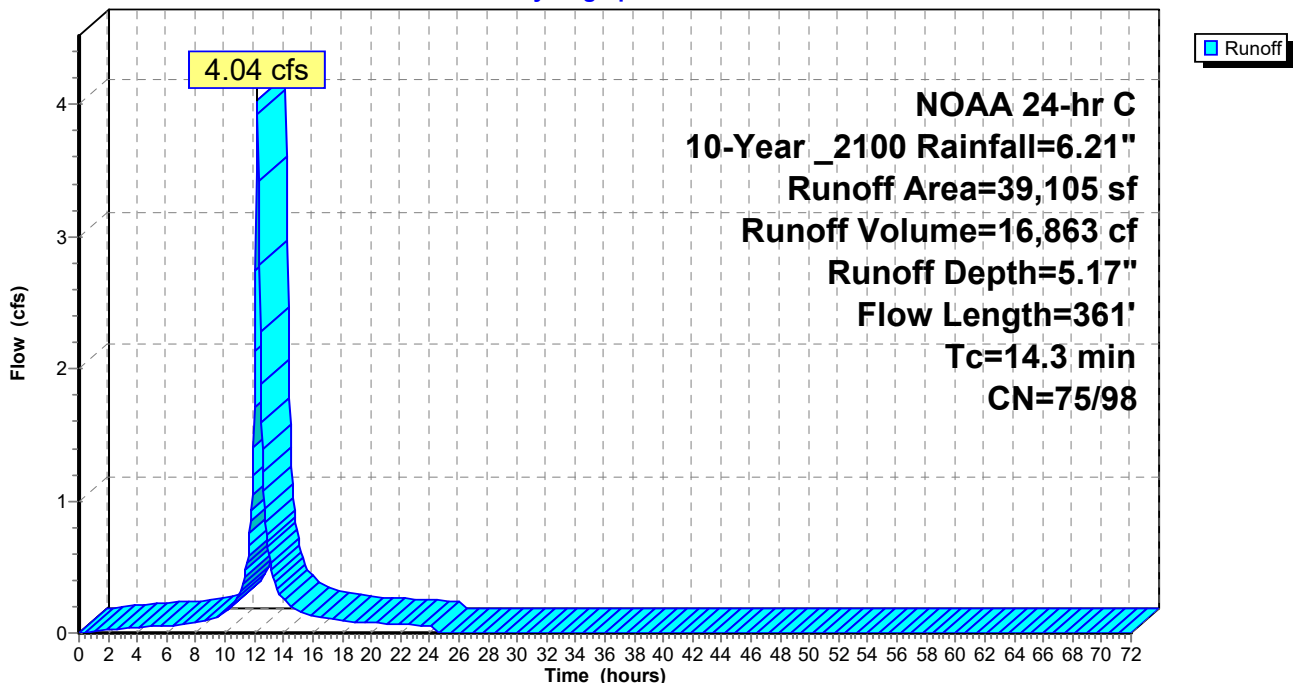
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _2100 Rainfall=6.21"

Area (sf)	CN	Description
* 2,053	79	Open space (fair) C
* 10,364	74	Open space (good) C
* 26,688	98	Impervious
39,105	91	Weighted Average
12,417	75	31.75% Pervious Area
26,688	98	68.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	100	0.0109	0.14		Sheet Flow, Sheet flow Grass: Short n= 0.150 P2= 3.34"
0.2	33	0.0280	2.69		Shallow Concentrated Flow, SCF - unpaved Unpaved Kv= 16.1 fps
1.9	228	0.0095	1.98		Shallow Concentrated Flow, SCF - Paved parking lot Paved Kv= 20.3 fps
14.3	361	Total			

Subcatchment 1Sb: DA1: CN w/ IC areas_Remaining

Hydrograph



Summary for Subcatchment 2S: DA 2: CN w/ IC areas

Runoff = 8.07 cfs @ 12.14 hrs, Volume= 27,403 cf, Depth= 5.65"
 Routed to Pond 3P : Underground Storage w/ Porous Pavement 2

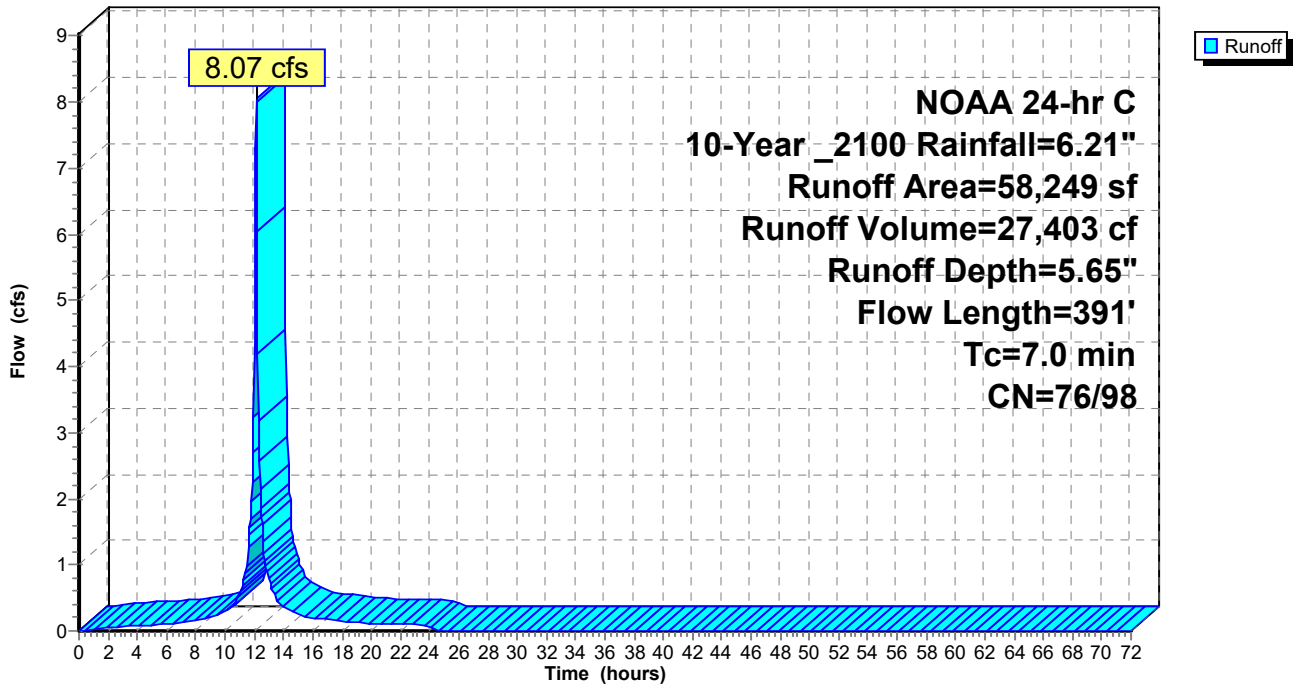
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _2100 Rainfall=6.21"

	Area (sf)	CN	Description
*	3,767	79	Open space (Fair) C
*	4,118	74	Open Space (good) C
*	50,364	98	Impervious
	58,249	95	Weighted Average
	7,885	76	13.54% Pervious Area
	50,364	98	86.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	18	0.0037	0.06		Sheet Flow, Sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
2.2	373	0.0186	2.77		Shallow Concentrated Flow, SCF _ paved Paved Kv= 20.3 fps
7.0	391	Total			

Subcatchment 2S: DA 2: CN w/ IC areas

Hydrograph



Summary for Subcatchment 3S: DA 3: CN w/ IC areas_Original

Runoff = 19.58 cfs @ 12.15 hrs, Volume= 67,305 cf, Depth= 5.09"

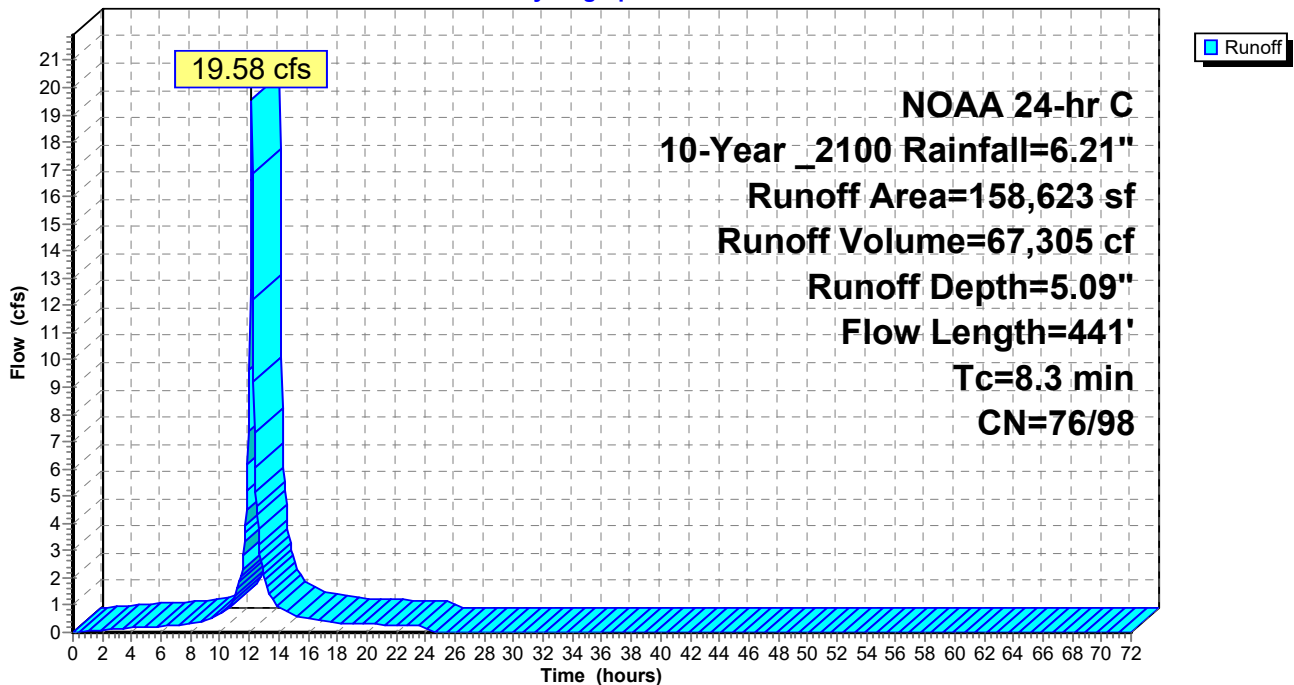
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _2100 Rainfall=6.21"

	Area (sf)	CN	Description
*	18,715	79	Open space (Fair) C
*	39,208	74	Open space (good) C
*	100,700	98	Impervious
	158,623	90	Weighted Average
	57,923	76	36.52% Pervious Area
	100,700	98	63.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	83	0.0489	0.24		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
2.5	358	0.0138	2.38		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
8.3	441	Total			

Subcatchment 3S: DA 3: CN w/ IC areas_Original

Hydrograph



Summary for Subcatchment 3Sa: Existing RG 2 Front DA

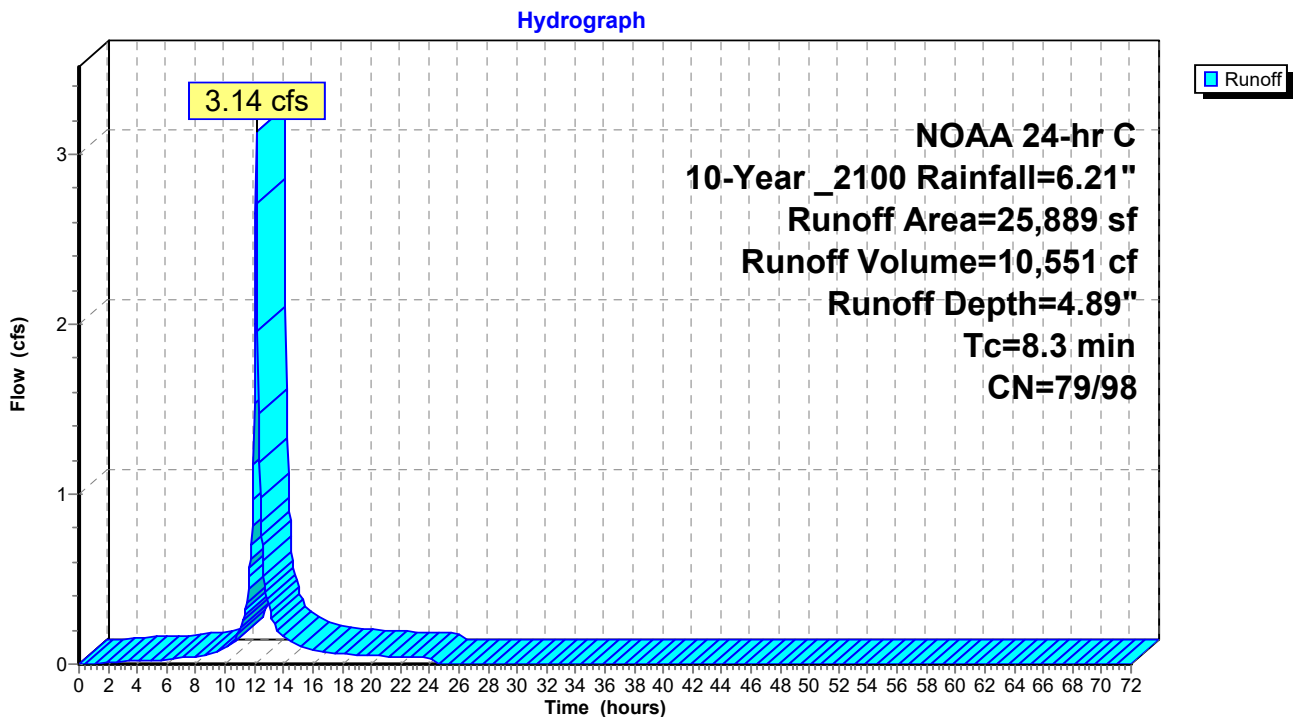
Runoff = 3.14 cfs @ 12.15 hrs, Volume= 10,551 cf, Depth= 4.89"
 Routed to Pond 4P : Existing Rain Garden 2 Front

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _2100 Rainfall=6.21"

	Area (sf)	CN	Description
*	6,507	98	Impervious Roof Top
*	966	98	Gravel surface, HSG C - Path
*	5,114	98	Impervious Sidewalk
	13,302	79	50-75% Grass cover, Fair, HSG C
	25,889	88	Weighted Average
	13,302	79	51.38% Pervious Area
	12,587	98	48.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3					Direct Entry,

Subcatchment 3Sa: Existing RG 2 Front DA



Summary for Subcatchment 3Sb: RG 1 DA

Runoff = 2.62 cfs @ 12.15 hrs, Volume= 9,022 cf, Depth= 5.06"
 Routed to Pond 5P : Proposed Rain Garden 1 (South West)

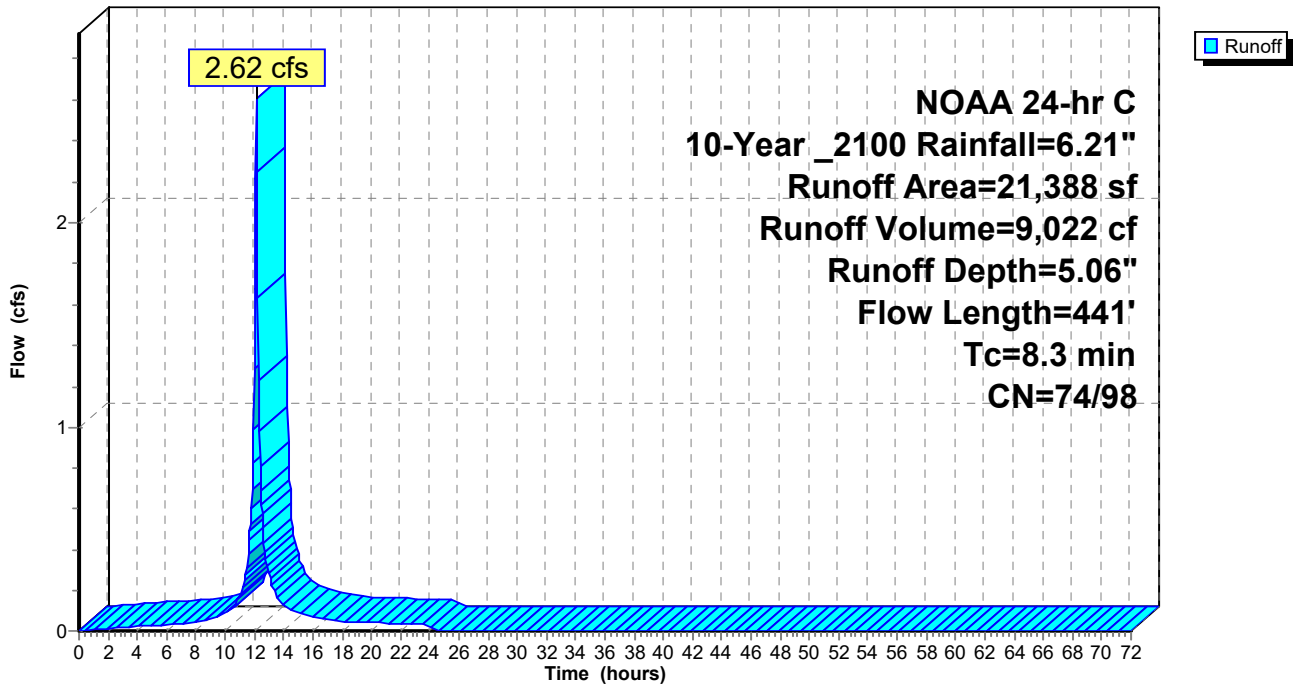
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _2100 Rainfall=6.21"

	Area (sf)	CN	Description
*	7,455	74	Open space (good) C
*	10,303	98	Impervious - Roof top
*	3,630	98	Impervious - Road / Sidewalk
	21,388	90	Weighted Average
	7,455	74	34.86% Pervious Area
	13,933	98	65.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	83	0.0489	0.24		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
2.5	358	0.0138	2.38		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
8.3	441	Total			

Subcatchment 3Sb: RG 1 DA

Hydrograph



Summary for Subcatchment 3Sc: DA 3: CN w/ IC areas Remaining

Runoff = 13.79 cfs @ 12.15 hrs, Volume= 47,636 cf, Depth= 5.13"
 Routed to Pond 6P : Underground Storage w/ Porous Pavement 3

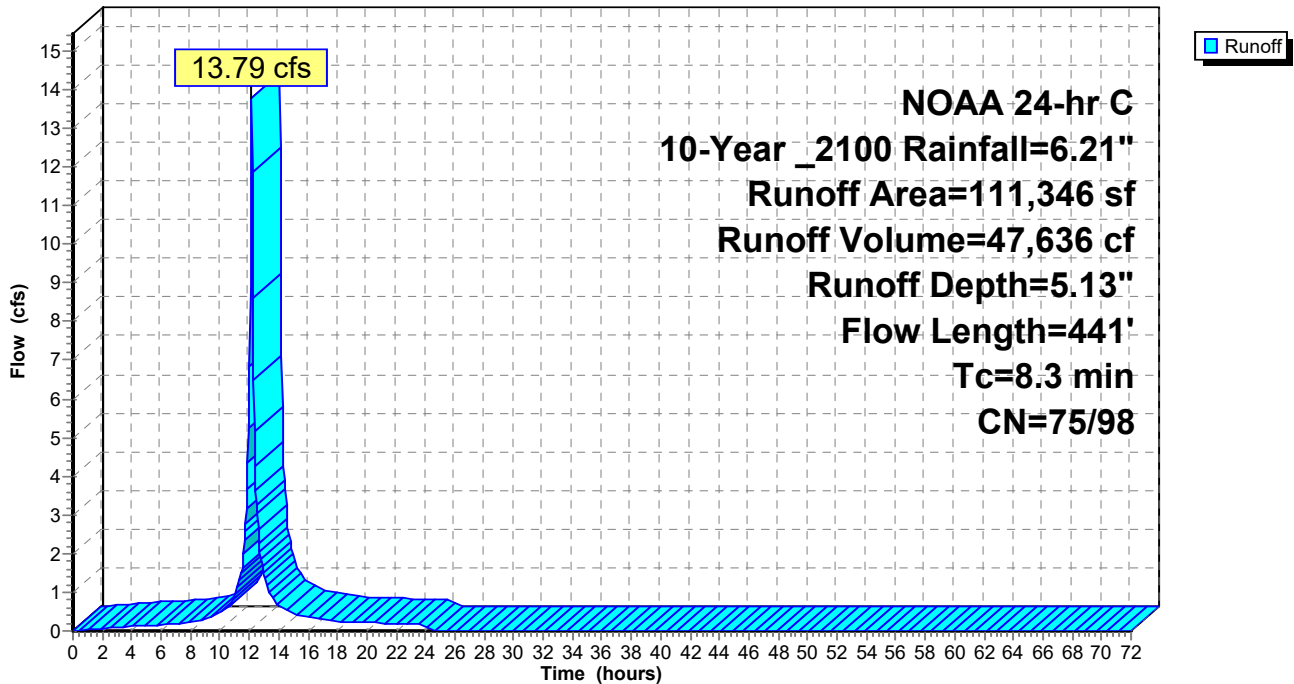
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _2100 Rainfall=6.21"

	Area (sf)	CN	Description
*	5,413	79	Open space (Fair) C
*	31,753	74	Open space (good) C
*	74,180	98	Impervious
	111,346	90	Weighted Average
	37,166	75	33.38% Pervious Area
	74,180	98	66.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	83	0.0489	0.24		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
2.5	358	0.0138	2.38		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
8.3	441	Total			

Subcatchment 3Sc: DA 3: CN w/ IC areas Remaining

Hydrograph



Summary for Subcatchment 4S: DA 4: CN w/ IC areas_original

Runoff = 11.62 cfs @ 12.15 hrs, Volume= 41,499 cf, Depth= 5.74"

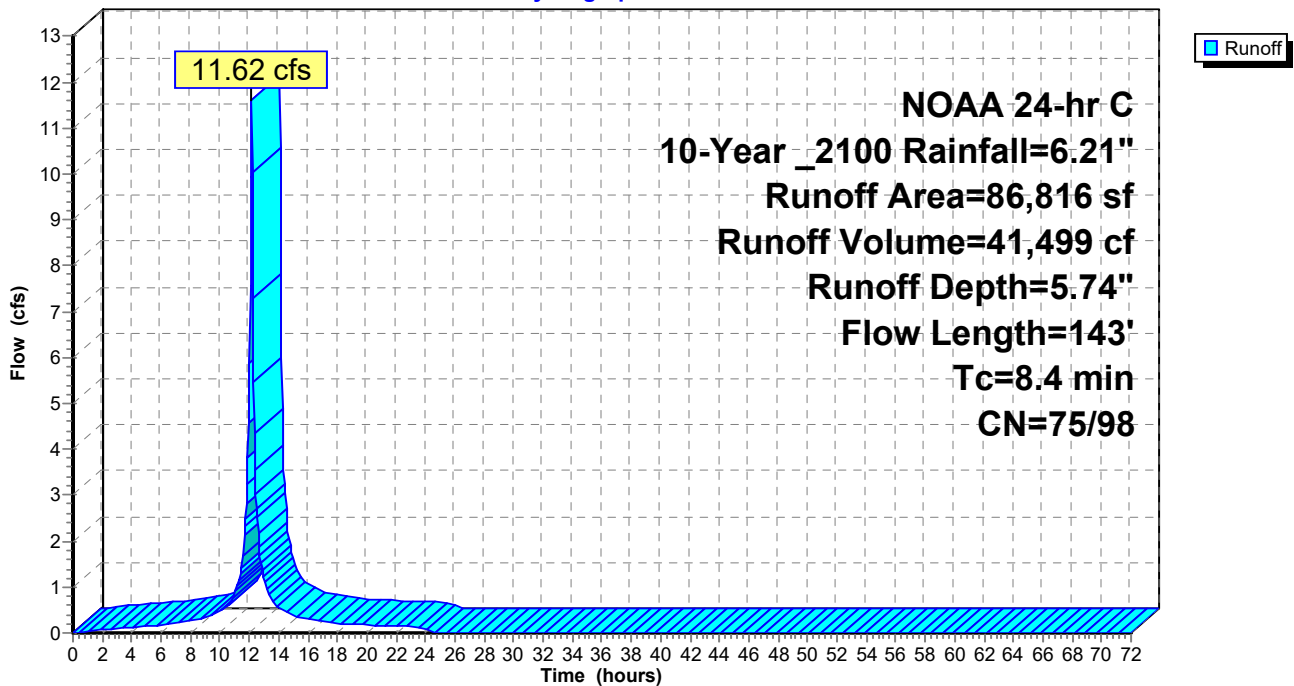
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _2100 Rainfall=6.21"

	Area (sf)	CN	Description
*	1,403	79	Open space (fair) C
*	446	84	Open space (fair) D
*	6,298	74	Open space (good) C
*	78,669	98	Impervious
	86,816	96	Weighted Average
	8,147	75	9.38% Pervious Area
	78,669	98	90.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	67	0.0144	0.14		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
0.5	76	0.0155	2.53		Shallow Concentrated Flow, SCF - Paved Paved Kv= 20.3 fps
8.4	143	Total			

Subcatchment 4S: DA 4: CN w/ IC areas_original

Hydrograph



Summary for Subcatchment 4Sa: RG 4 DA

Runoff = 3.01 cfs @ 12.15 hrs, Volume= 10,312 cf, Depth= 5.08"
 Routed to Pond 7P : Proposed Rain Garden 4 (North)

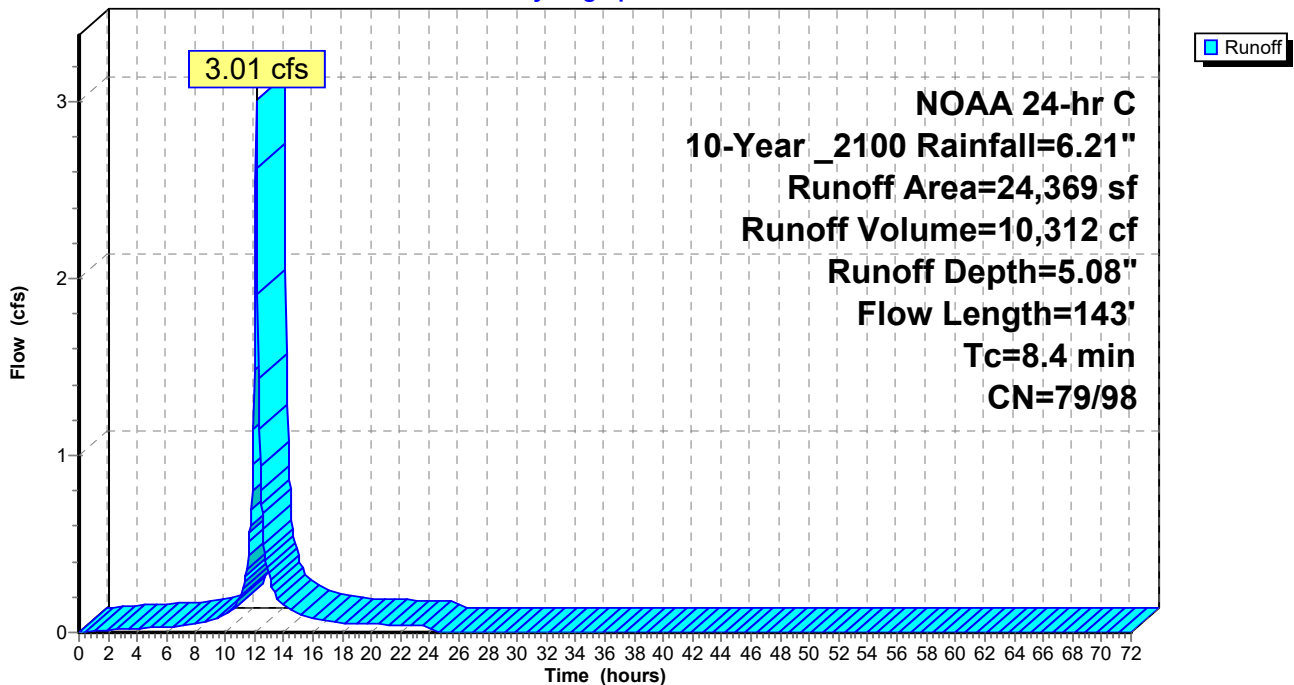
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _2100 Rainfall=6.21"

	Area (sf)	CN	Description
*	10,350	79	Open space (fair) C_from DA 8
*	14,019	98	Impervious Parkinglot
	24,369	90	Weighted Average
	10,350	79	42.47% Pervious Area
	14,019	98	57.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	67	0.0144	0.14		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
0.5	76	0.0155	2.53		Shallow Concentrated Flow, SCF - Paved Paved Kv= 20.3 fps
8.4	143	Total			

Subcatchment 4Sa: RG 4 DA

Hydrograph



Summary for Subcatchment 4Sb: DA 4: CN w/ IC areas

Runoff = 9.69 cfs @ 12.15 hrs, Volume= 34,522 cf, Depth= 5.69"
 Routed to Pond 8P : Underground Storage w/ Porous Pavement 4

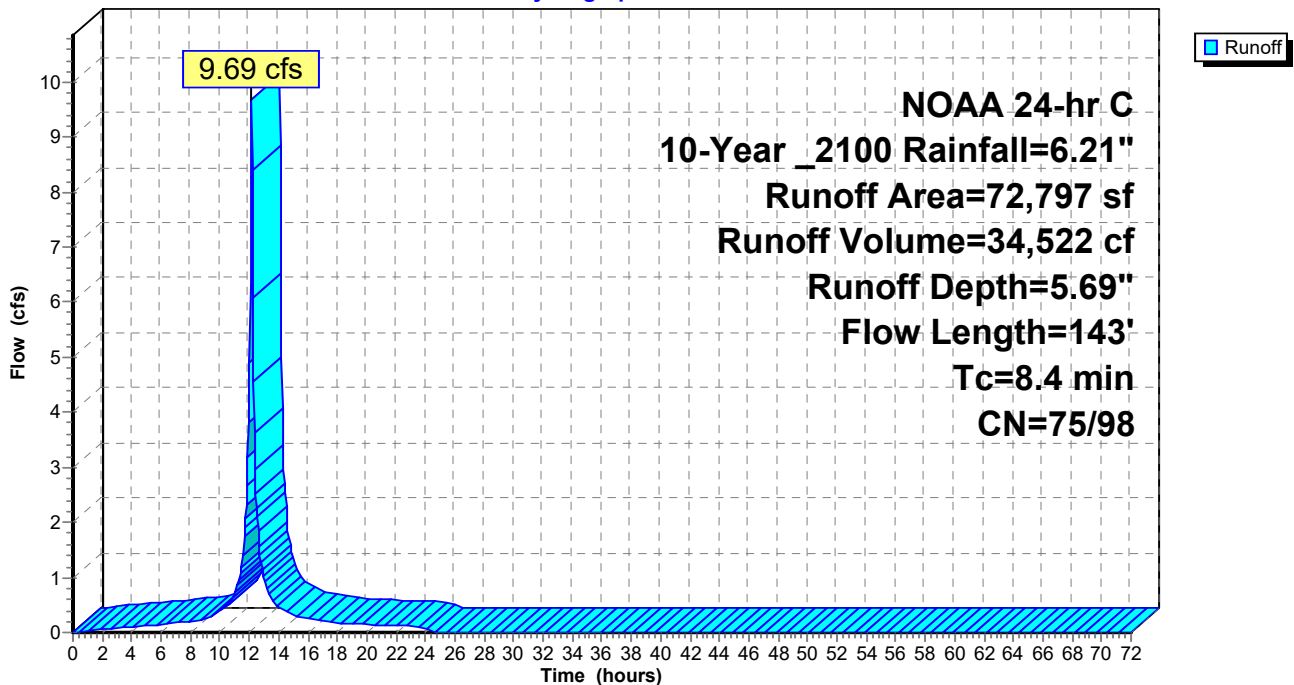
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _2100 Rainfall=6.21"

	Area (sf)	CN	Description
*	1,403	79	Open space (fair) C
*	446	84	Open space (fair) D
*	6,298	74	Open space (good) C
*	64,650	98	Impervious
	72,797	95	Weighted Average
	8,147	75	11.19% Pervious Area
	64,650	98	88.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	67	0.0144	0.14		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
0.5	76	0.0155	2.53		Shallow Concentrated Flow, SCF - Paved Paved Kv= 20.3 fps
8.4	143	Total			

Subcatchment 4Sb: DA 4: CN w/ IC areas

Hydrograph



Summary for Subcatchment 5S: DA 5: CN w/ IC areas_Original

Runoff = 8.96 cfs @ 12.19 hrs, Volume= 34,767 cf, Depth= 5.34"

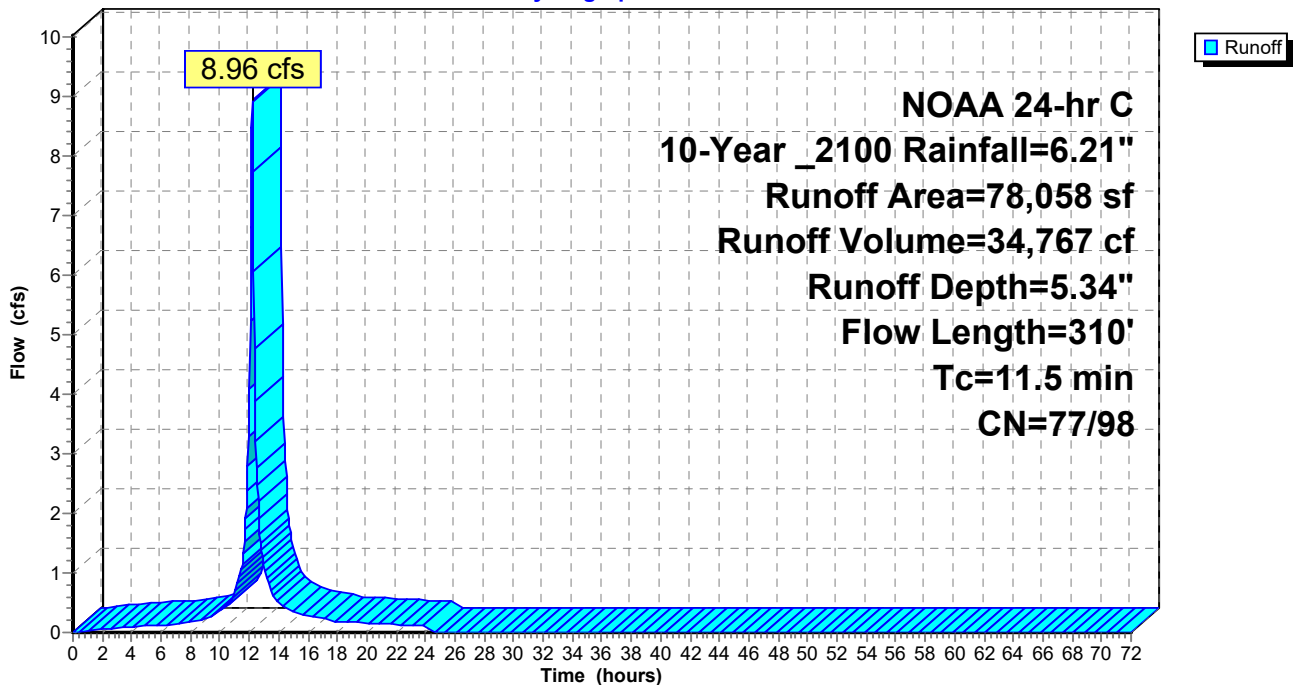
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _2100 Rainfall=6.21"

	Area (sf)	CN	Description
*	11,294	79	Open Space (Fair) C
*	9,899	74	Open Space (good) C
*	56,865	98	Impervious
	78,058	92	Weighted Average
	21,193	77	27.15% Pervious Area
	56,865	98	72.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	64	0.0105	0.12		Sheet Flow, Sheet flow -grass Grass: Short n= 0.150 P2= 3.34"
1.3	179	0.0129	2.31		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
1.5	67	0.0120	0.77		Shallow Concentrated Flow, SCF _ grass Short Grass Pasture Kv= 7.0 fps
11.5	310	Total			

Subcatchment 5S: DA 5: CN w/ IC areas_Original

Hydrograph



Summary for Subcatchment 5Sa: RG 3 DA

Runoff = 2.16 cfs @ 12.19 hrs, Volume= 8,117 cf, Depth= 4.90"
 Routed to Reach 2R : Bioswale E 1 RG 3

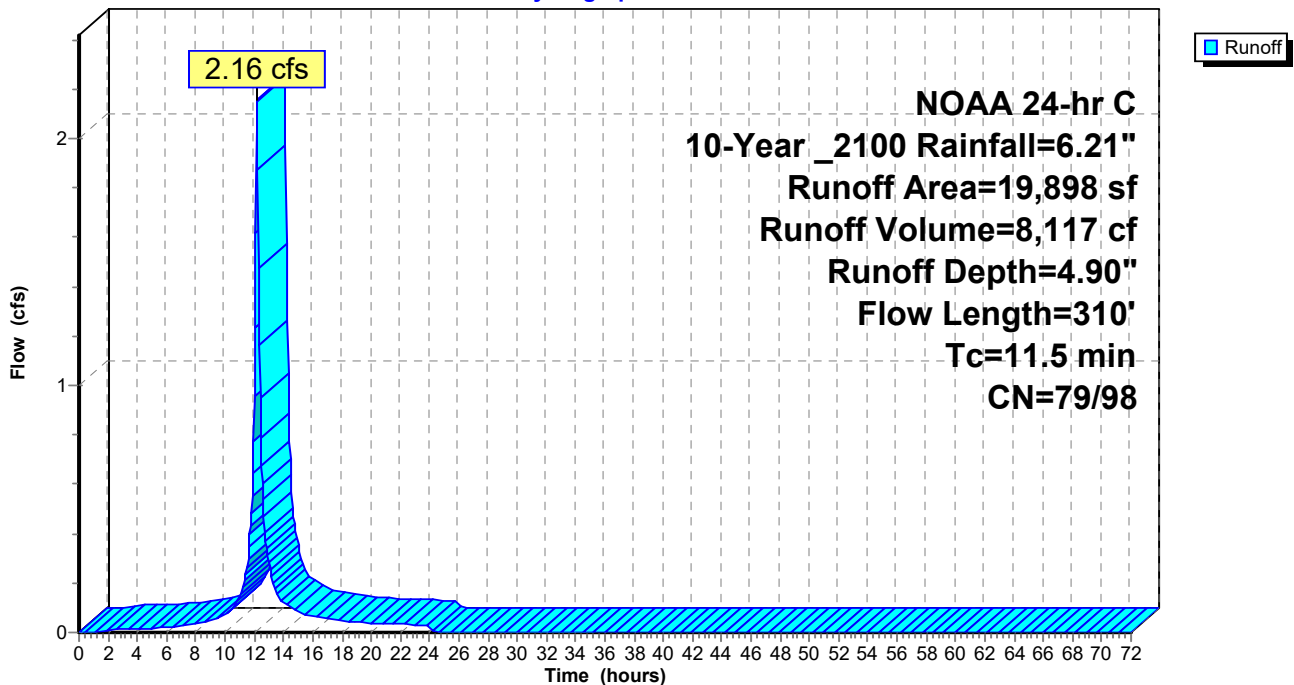
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _2100 Rainfall=6.21"

	Area (sf)	CN	Description
*	10,182	79	Open Space (Fair) C
*	9,716	98	Impervious Parking lot
	19,898	88	Weighted Average
	10,182	79	51.17% Pervious Area
	9,716	98	48.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	64	0.0105	0.12		Sheet Flow, Sheet flow -grass Grass: Short n= 0.150 P2= 3.34"
1.3	179	0.0129	2.31		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
1.5	67	0.0120	0.77		Shallow Concentrated Flow, SCF _ grass Short Grass Pasture Kv= 7.0 fps
11.5	310	Total			

Subcatchment 5Sa: RG 3 DA

Hydrograph



Summary for Subcatchment 5Sb: DA 5: CN w/ IC areas

Runoff = 6.79 cfs @ 12.19 hrs, Volume= 26,641 cf, Depth= 5.50"
 Routed to Pond 10P : Underground Storage w/ Porous Pavement 5

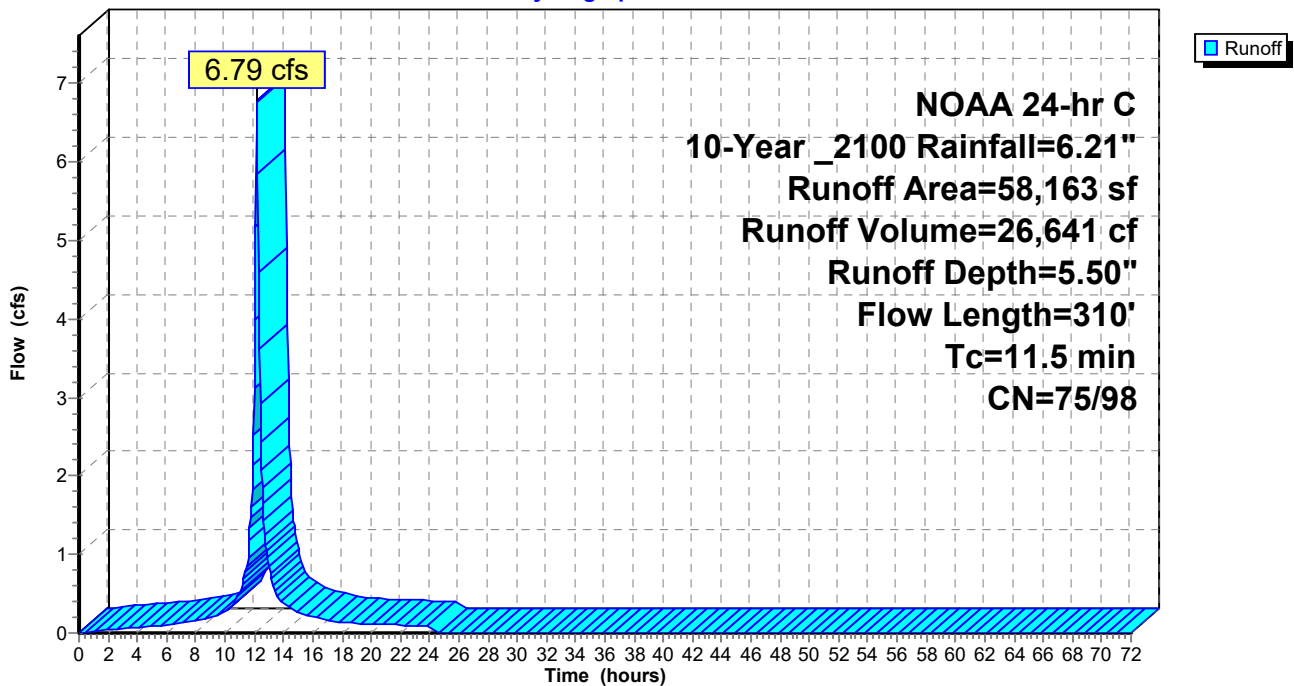
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _2100 Rainfall=6.21"

Area (sf)	CN	Description
* 1,112	79	Open Space (Fair) C
* 9,899	74	Open Space (good) C
* 47,152	98	Impervious
58,163	94	Weighted Average
11,011	75	18.93% Pervious Area
47,152	98	81.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	64	0.0105	0.12		Sheet Flow, Sheet flow -grass Grass: Short n= 0.150 P2= 3.34"
1.3	179	0.0129	2.31		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
1.5	67	0.0120	0.77		Shallow Concentrated Flow, SCF _ grass Short Grass Pasture Kv= 7.0 fps
11.5	310	Total			

Subcatchment 5Sb: DA 5: CN w/ IC areas

Hydrograph



Summary for Subcatchment 6S: DA 6: CN w/ IC areas

Runoff = 3.22 cfs @ 12.22 hrs, Volume= 12,863 cf, Depth= 4.82"
 Routed to Pond 11P : Proposed Rain Garden 2 (East)

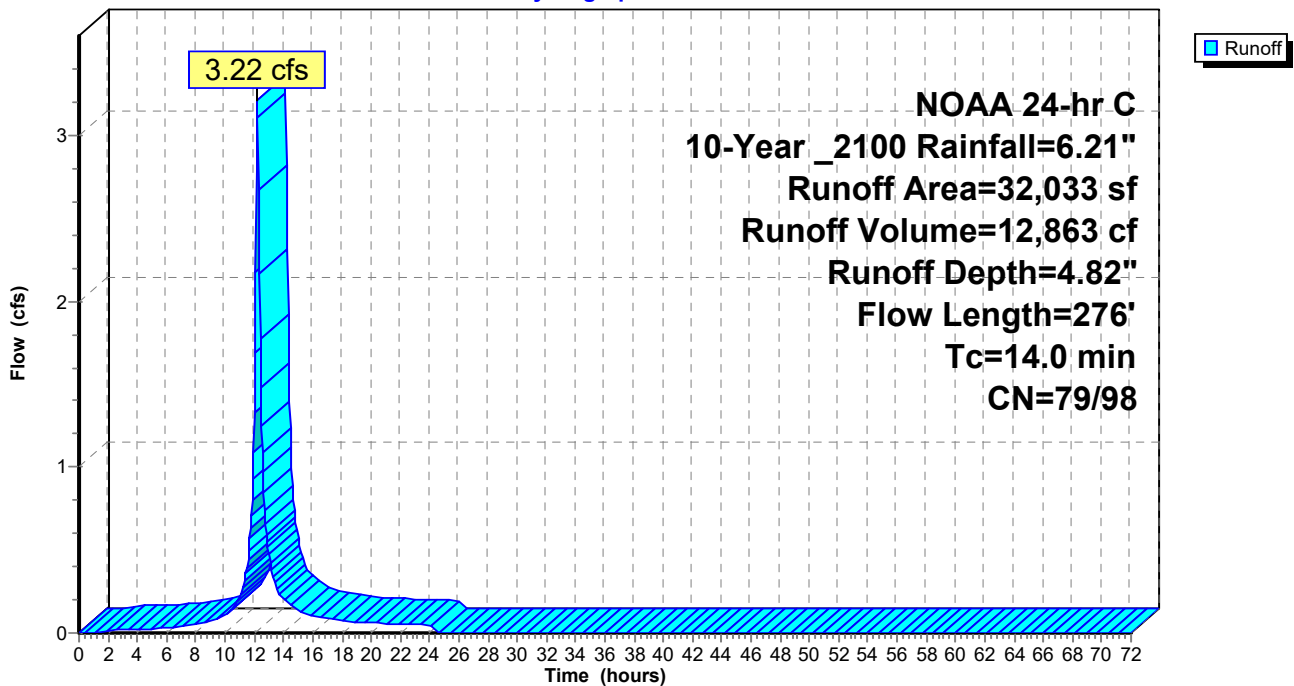
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _2100 Rainfall=6.21"

	Area (sf)	CN	Description
*	16,559	79	Open Space (fair) C
*	998	74	Open Space (good) C
*	14,476	98	Impervious
	32,033	87	Weighted Average
	17,557	79	54.81% Pervious Area
	14,476	98	45.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0098	0.13		Sheet Flow, Sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
0.5	86	0.0244	3.17		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
0.7	90	0.0178	2.15		Shallow Concentrated Flow, SCF - unpaved Unpaved Kv= 16.1 fps
14.0	276	Total			

Subcatchment 6S: DA 6: CN w/ IC areas

Hydrograph



Summary for Subcatchment 7S: DA 7 (Offsite South): CN w/ IC areas

Runoff = 9.51 cfs @ 12.23 hrs, Volume= 37,278 cf, Depth= 4.18"
 Routed to Link 1L : Offsite Flows

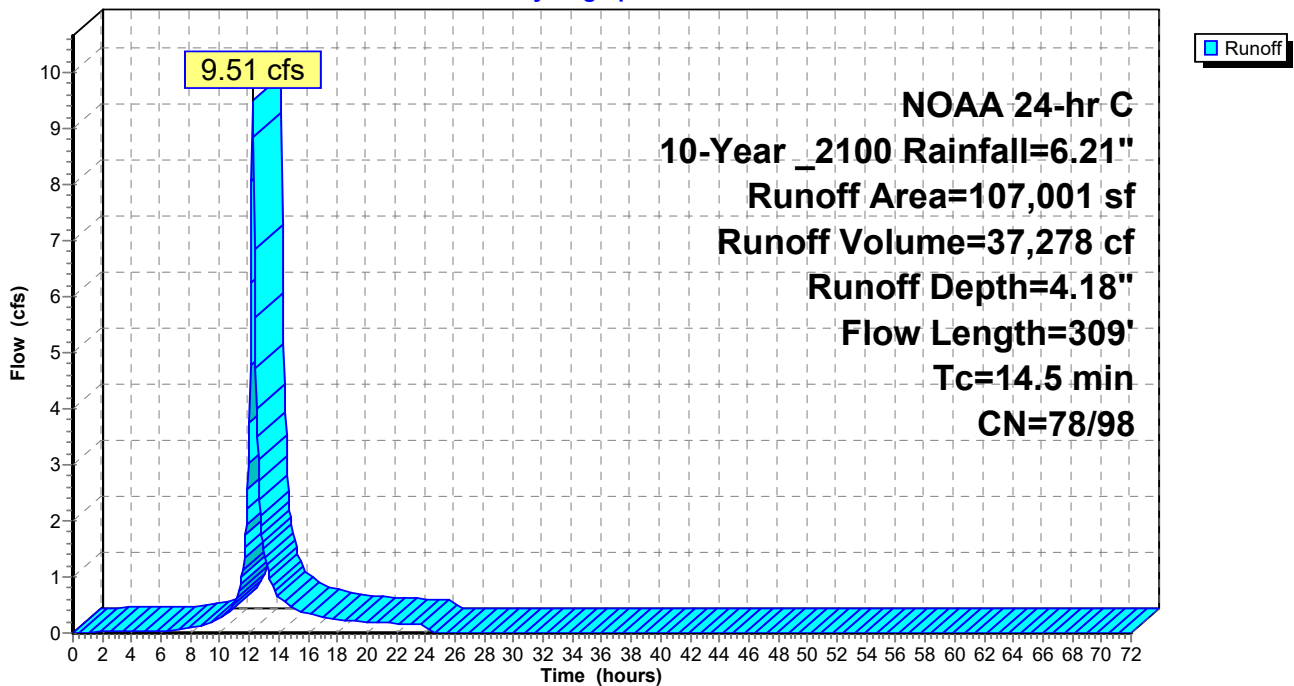
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _2100 Rainfall=6.21"

Area (sf)	CN	Description
* 70,444	79	Open Space (fair) C
* 16,401	74	Open Space (good) C
* 20,156	98	Impervious
107,001	82	Weighted Average
86,845	78	81.16% Pervious Area
20,156	98	18.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	100	0.0112	0.14		Sheet Flow, Sheet flow Grass: Short n= 0.150 P2= 3.34"
2.2	165	0.0305	1.22		Shallow Concentrated Flow, SCF _ grass Short Grass Pasture Kv= 7.0 fps
0.2	44	0.0317	3.61		Shallow Concentrated Flow, SCF _ paved Paved Kv= 20.3 fps
14.5	309	Total			

Subcatchment 7S: DA 7 (Offsite South): CN w/ IC areas

Hydrograph



Summary for Subcatchment 8S: DA 8 (Offsite North): CN w/ IC areas

Runoff = 22.69 cfs @ 12.29 hrs, Volume= 96,880 cf, Depth= 3.41"
 Routed to Link 1L : Offsite Flows

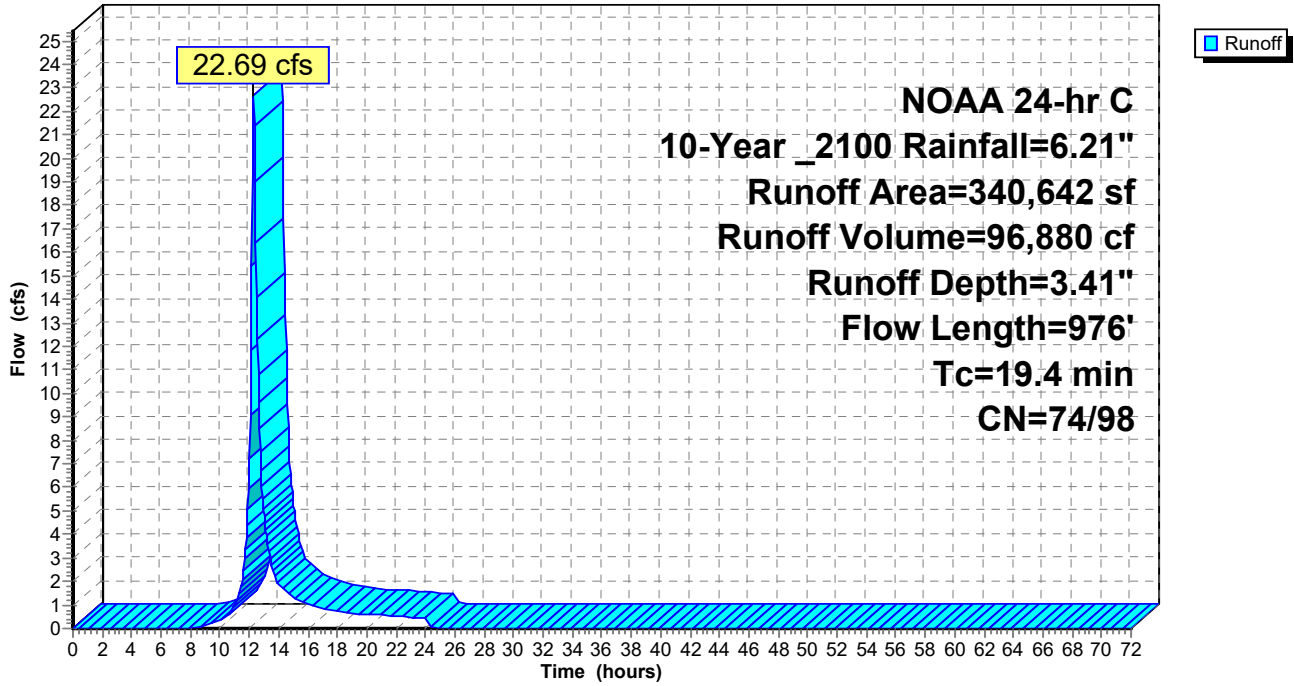
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _2100 Rainfall=6.21"

Area (sf)	CN	Description
*	2,767	70 Brush (fair) C
*	63,031	77 Brush (fair) D
*	86,643	65 Brush (good) C
*	64,708	73 Brush (good) D
*	73,083	79 Open space (Fair) C
*	30,261	84 Open space (fair) D
*	4,460	74 Open space (good) C
*	9,087	80 Open space (good) D
*	6,602	98 Impervious
340,642	75	Weighted Average
334,040	74	98.06% Pervious Area
6,602	98	1.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.0366	0.22		Sheet Flow, sheet flow Grass: Short n= 0.150 P2= 3.34"
11.9	876	0.0067	1.23		Shallow Concentrated Flow, scf - grass waterway Grassed Waterway Kv= 15.0 fps
19.4	976	Total			

Subcatchment 8S: DA 8 (Offsite North): CN w/ IC areas

Hydrograph



Summary for Subcatchment 9S: DA 9 (Offsite Field West): CN w/ IC areas

Runoff = 24.78 cfs @ 12.43 hrs, Volume= 131,435 cf, Depth= 3.29"
 Routed to Link 1L : Offsite Flows

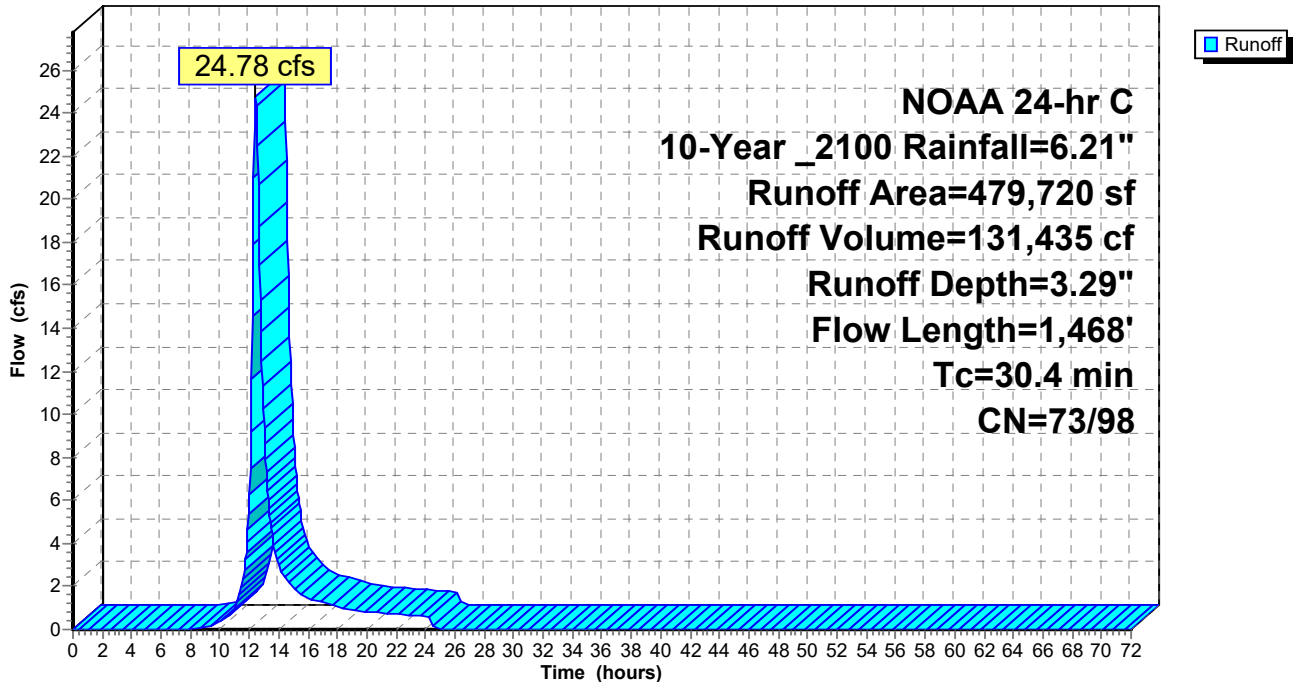
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _2100 Rainfall=6.21"

	Area (sf)	CN	Description
*	72,478	65	Brush (good) C
*	10,448	79	Open spcae (fair) C
*	392,515	74	Open Space (good) C
*	4,279	98	Impervious
	479,720	73	Weighted Average
	475,441	73	99.11% Pervious Area
	4,279	98	0.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0159	0.16		Sheet Flow, Sheet flow Grass: Short n= 0.150 P2= 3.34"
7.1	362	0.0148	0.85		Shallow Concentrated Flow, SCF - grass Short Grass Pasture Kv= 7.0 fps
12.8	1,006	0.0076	1.31		Shallow Concentrated Flow, SCF - grass waterway Grassed Waterway Kv= 15.0 fps
30.4	1,468	Total			

Subcatchment 9S: DA 9 (Offsite Field West): CN w/ IC areas

Hydrograph



Summary for Subcatchment 31S: RG 2 DA

Runoff = 3.09 cfs @ 12.22 hrs, Volume= 12,148 cf, Depth= 4.55"

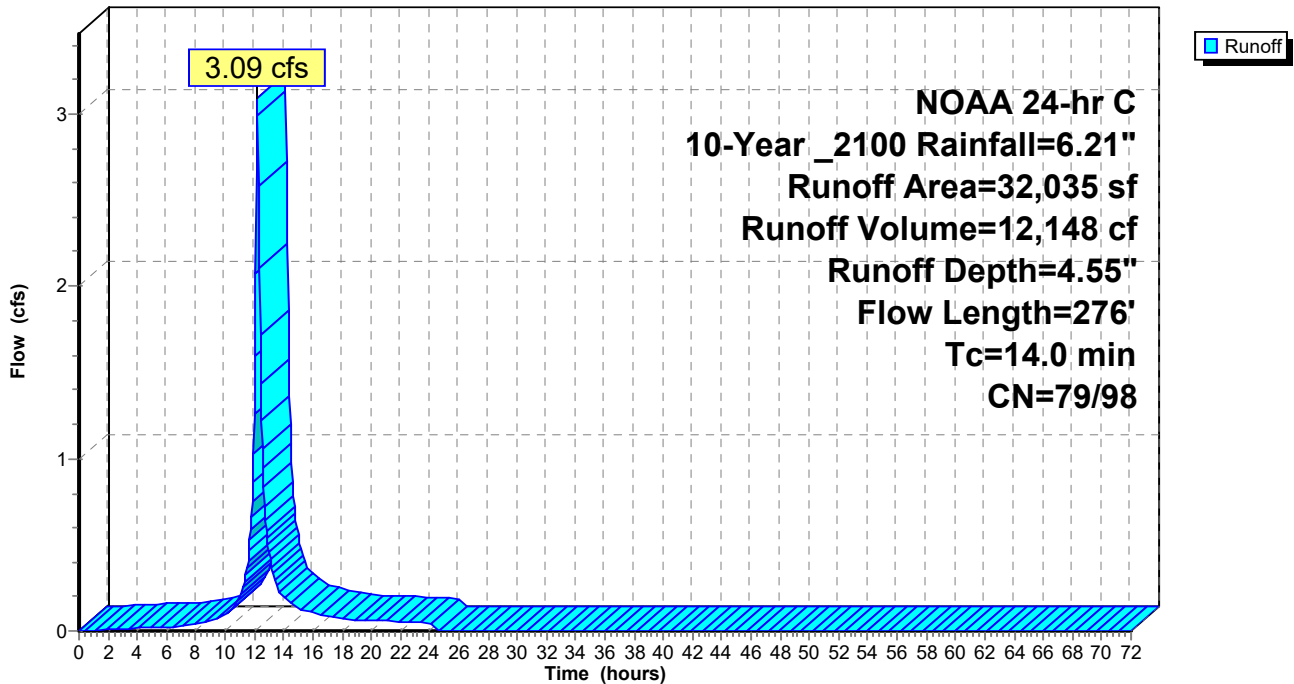
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _2100 Rainfall=6.21"

	Area (sf)	CN	Description
*	21,638	79	Open Space (fair) C
*	10,397	98	Impervious
	32,035	85	Weighted Average
	21,638	79	67.54% Pervious Area
	10,397	98	32.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0098	0.13		Sheet Flow, Sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
0.5	86	0.0244	3.17		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
0.7	90	0.0178	2.15		Shallow Concentrated Flow, SCF - unpaved Unpaved Kv= 16.1 fps
14.0	276	Total			

Subcatchment 31S: RG 2 DA

Hydrograph



Summary for Reach 1R: Existing Bioswale West 1

Inflow Area = 22,637 sf, 64.43% Impervious, Inflow Depth = 5.15" for 10-Year _2100 event
 Inflow = 2.34 cfs @ 12.22 hrs, Volume= 9,716 cf
 Outflow = 2.32 cfs @ 12.23 hrs, Volume= 9,716 cf, Atten= 1%, Lag= 0.4 min
 Routed to Pond 1P : Existing Rain Garden 1 West

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Max. Velocity= 2.30 fps, Min. Travel Time= 0.2 min
 Avg. Velocity = 0.64 fps, Avg. Travel Time= 0.9 min

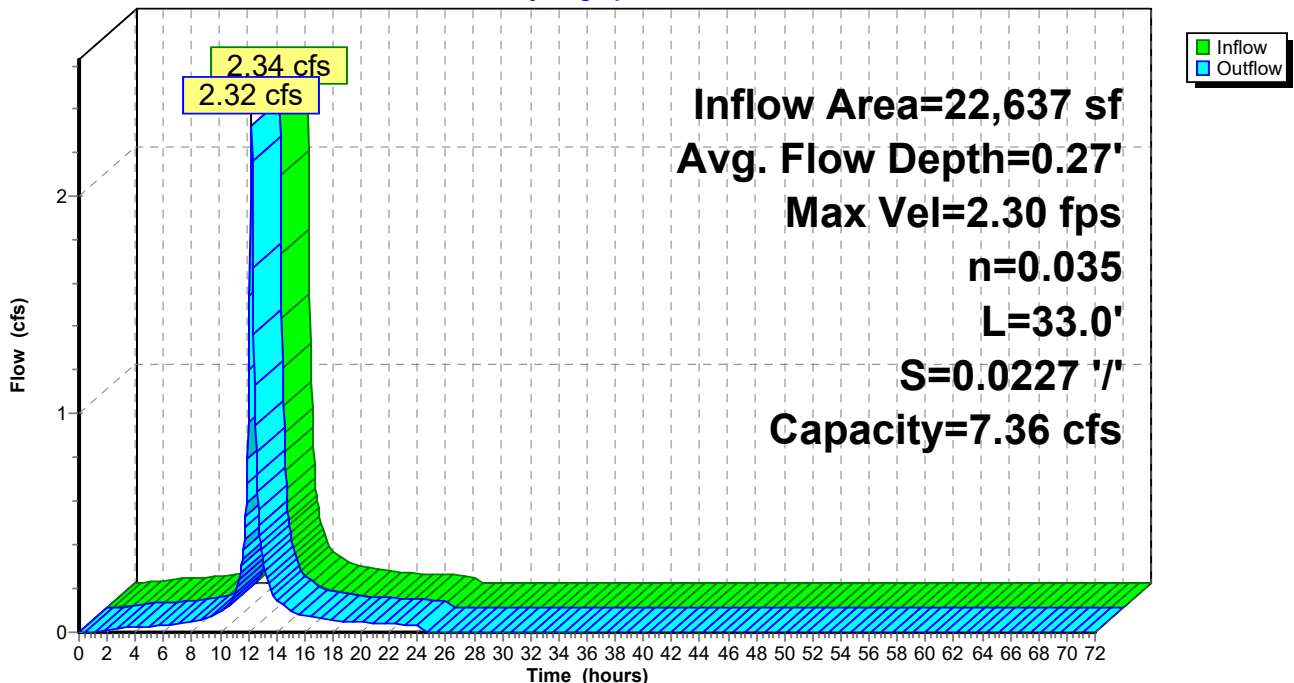
Peak Storage= 33 cf @ 12.22 hrs
 Average Depth at Peak Storage= 0.27' , Surface Width= 4.60'
 Bank-Full Depth= 0.50' Flow Area= 2.3 sf, Capacity= 7.36 cfs

3.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
 Side Slope Z-value= 3.0 ' / ' Top Width= 6.00'
 Length= 33.0' Slope= 0.0227 ' / '
 Inlet Invert= 100.75', Outlet Invert= 100.00'



Reach 1R: Existing Bioswale West 1

Hydrograph



Summary for Reach 2R: Bioswale E 1 RG 3

Inflow Area = 19,898 sf, 48.83% Impervious, Inflow Depth = 4.90" for 10-Year _2100 event
 Inflow = 2.16 cfs @ 12.19 hrs, Volume= 8,117 cf
 Outflow = 2.15 cfs @ 12.20 hrs, Volume= 8,117 cf, Atten= 1%, Lag= 0.3 min
 Routed to Pond 9P : Proposed Rain Garden 3 (North East)

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Max. Velocity= 2.73 fps, Min. Travel Time= 0.2 min
 Avg. Velocity = 0.87 fps, Avg. Travel Time= 0.7 min

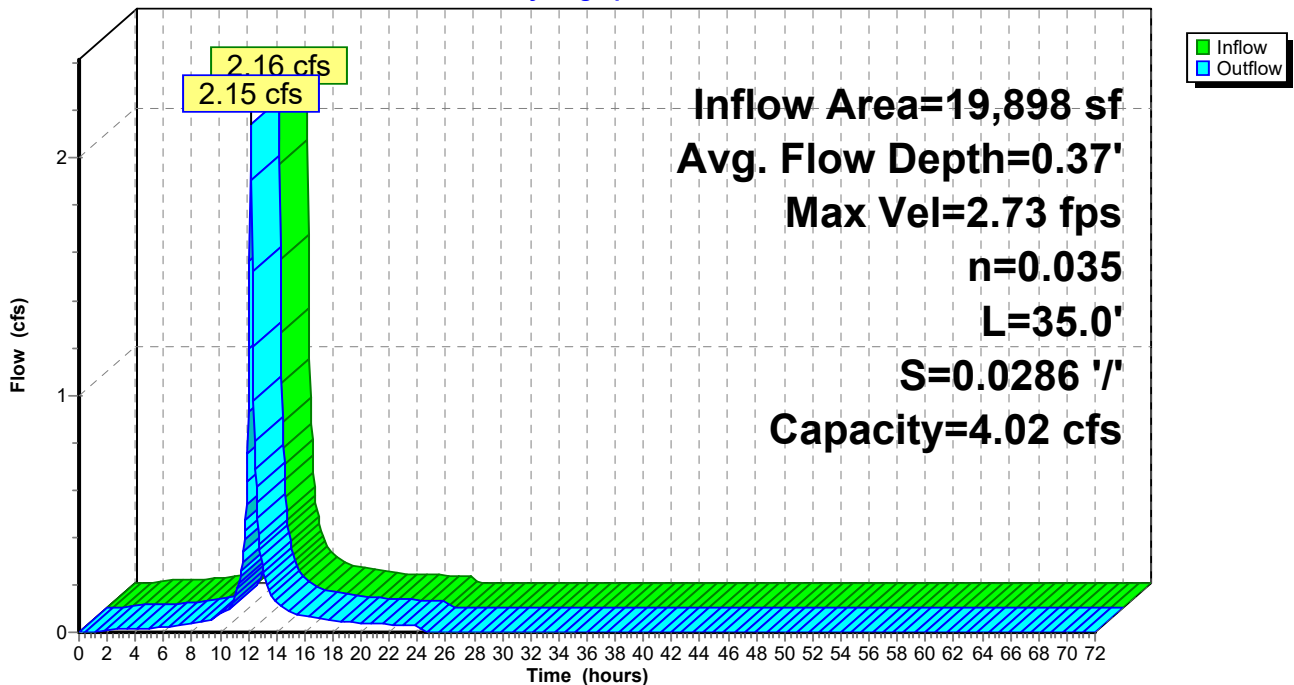
Peak Storage= 28 cf @ 12.19 hrs
 Average Depth at Peak Storage= 0.37' , Surface Width= 3.24'
 Bank-Full Depth= 0.50' Flow Area= 1.3 sf, Capacity= 4.02 cfs

1.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
 Side Slope Z-value= 3.0 '/' Top Width= 4.00'
 Length= 35.0' Slope= 0.0286 '/'
 Inlet Invert= 101.00', Outlet Invert= 100.00'



Reach 2R: Bioswale E 1 RG 3

Hydrograph



Summary for Pond 1P: Exising Rain Garden 1 West

[93] Warning: Storage range exceeded by 0.26'
 [88] Warning: Qout>Qin may require smaller dt or Finer Routing
 [62] Hint: Exceeded Reach 1R OUTLET depth by 0.24' @ 12.25 hrs

Inflow Area = 22,637 sf, 64.43% Impervious, Inflow Depth = 5.15" for 10-Year _2100 event
 Inflow = 2.32 cfs @ 12.23 hrs, Volume= 9,716 cf
 Outflow = 2.36 cfs @ 12.24 hrs, Volume= 9,537 cf, Atten= 0%, Lag= 0.6 min
 Primary = 0.31 cfs @ 12.24 hrs, Volume= 5,683 cf
 Routed to Pond 2P : Underground Storage w/ Porous Pavement 1
 Secondary = 2.05 cfs @ 12.24 hrs, Volume= 3,854 cf
 Routed to Pond 2P : Underground Storage w/ Porous Pavement 1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 100.51' @ 12.24 hrs Surf.Area= 1,750 sf Storage= 1,831 cf

Plug-Flow detention time= 318.8 min calculated for 9,530 cf (98% of inflow)
 Center-of-Mass det. time= 308.7 min (1,082.3 - 773.6)

Volume	Invert	Avail.Storage	Storage Description			
#1	98.25'	1,831 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
98.25	1,445	0.0	0	0	1,445	
99.25	1,445	35.0	506	506	1,580	
99.50	1,445	25.0	90	596	1,613	
100.00	1,750	100.0	798	1,394	1,927	
100.25	1,750	100.0	438	1,831	1,964	

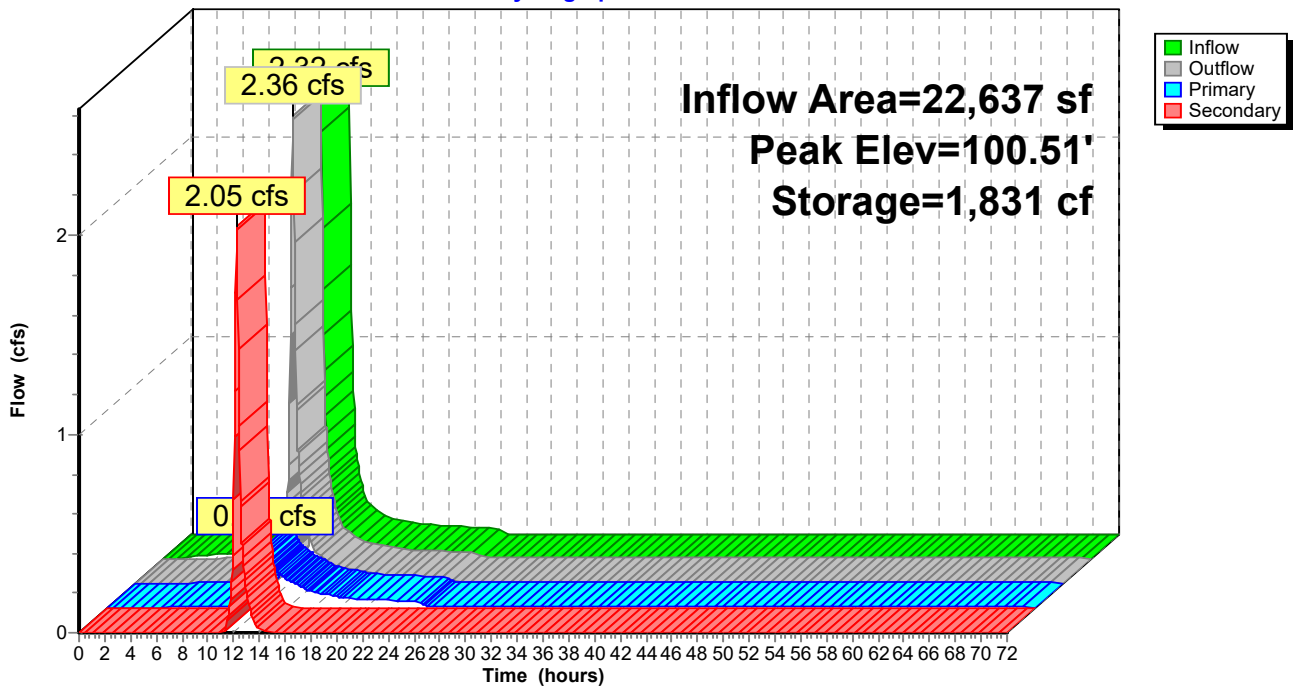
Device	Routing	Invert	Outlet Devices																
#1	Primary	98.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 98.15' / 98.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf																
#2	Device 1	98.15'	0.5" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads																
#3	Device 2	98.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 98.25' / 98.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf																
#4	Device 3	98.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads																
#5	Device 1	100.00'	4.0" Horiz. Drintech Atrium C= 0.600 Limited to weir flow at low heads																
#6	Secondary	100.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32																

Primary OutFlow Max=0.31 cfs @ 12.24 hrs HW=100.50' (Free Discharge)
 1=Culvert (Passes 0.31 cfs of 0.45 cfs potential flow)
 2=Restrictive Orifice (Orifice Controls 0.01 cfs @ 7.35 fps)
 3=4" HDPE Underdrain (Passes 0.01 cfs of 0.35 cfs potential flow)
 4=Perforations (Passes 0.01 cfs of 5.42 cfs potential flow)
 5=Draintech Atrium (Orifice Controls 0.30 cfs @ 3.41 fps)

Secondary OutFlow Max=2.00 cfs @ 12.24 hrs HW=100.50' (Free Discharge)
 6=Broad-Crested Rectangular Weir (Weir Controls 2.00 cfs @ 1.66 fps)

Pond 1P: Existing Rain Garden 1 West

Hydrograph



Summary for Pond 2P: Underground Storage w/ Porous Pavement 1

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 61,742 sf, 66.85% Impervious, Inflow Depth > 5.13" for 10-Year _2100 event
 Inflow = 6.36 cfs @ 12.23 hrs, Volume= 26,400 cf
 Outflow = 0.24 cfs @ 15.50 hrs, Volume= 8,927 cf, Atten= 96%, Lag= 196.1 min
 Primary = 0.02 cfs @ 15.50 hrs, Volume= 3,880 cf
 Secondary = 0.22 cfs @ 15.50 hrs, Volume= 5,047 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 98.09' @ 15.50 hrs Surf.Area= 13,421 sf Storage= 19,488 cf

Plug-Flow detention time= 990.6 min calculated for 8,921 cf (34% of inflow)
 Center-of-Mass det. time= 743.5 min (1,626.7 - 883.2)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	1,612 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	9,359 cf	72.75'W x 146.02'L x 3.50'H Field A
			37,179 cf Overall - 13,782 cf Embedded = 23,397 cf x 40.0% Voids
#3A	96.17'	13,782 cf	ADS_StormTech SC-740 +Cap x 300 Inside #2
			Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
			Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
			300 Chambers in 15 Rows
		24,753 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	2,798	0.0	0	0
97.67	2,798	35.0	1,469	1,469
97.83	2,798	15.0	67	1,536
98.01	2,798	15.0	76	1,612

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.02 cfs @ 15.50 hrs HW=98.09' (Free Discharge)

↑ **1=Restriction Orifice** (Orifice Controls 0.02 cfs @ 11.80 fps)

↑ **2=6" HDPE Underdrain** (Passes 0.02 cfs of 0.47 cfs potential flow)

↑ **3=Perforations** (Passes 0.02 cfs of 8.79 cfs potential flow)

Secondary OutFlow Max=0.22 cfs @ 15.50 hrs HW=98.09' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** (Weir Controls 0.22 cfs @ 0.78 fps)

Pond 2P: Underground Storage w/ Porous Pavement 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

20 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 144.02' Row Length +12.0" End Stone x 2 = 146.02' Base Length

15 Rows x 51.0" Wide + 6.0" Spacing x 14 + 12.0" Side Stone x 2 = 72.75' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

300 Chambers x 45.9 cf = 13,782.0 cf Chamber Storage

37,179.5 cf Field - 13,782.0 cf Chambers = 23,397.5 cf Stone x 40.0% Voids = 9,359.0 cf Stone Storage

Chamber Storage + Stone Storage = 23,141.0 cf = 0.531 af

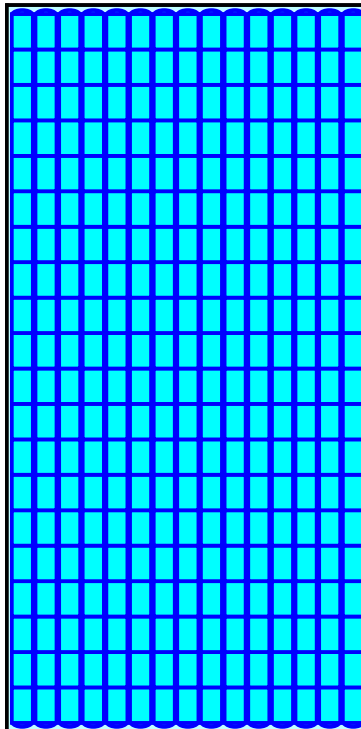
Overall Storage Efficiency = 62.2%

Overall System Size = 146.02' x 72.75' x 3.50'

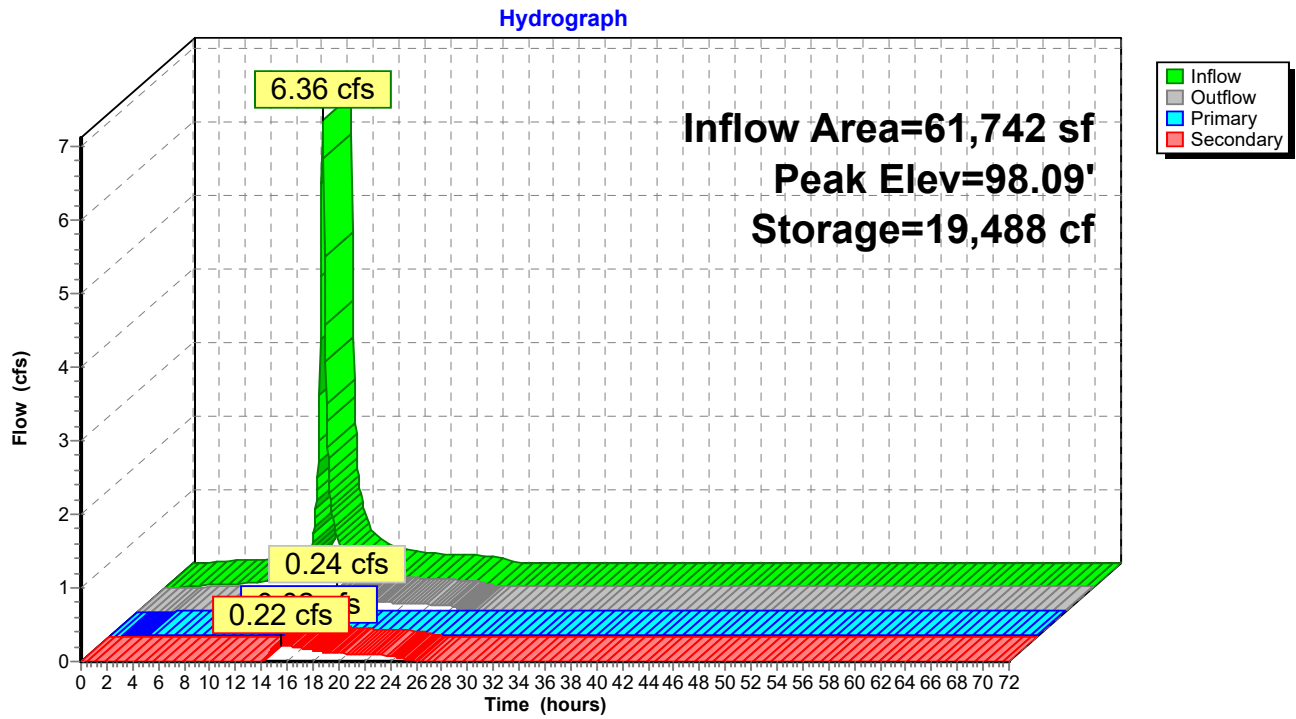
300 Chambers

1,377.0 cy Field

866.6 cy Stone



Pond 2P: Underground Storage w/ Porous Pavement 1



Summary for Pond 3P: Underground Storage w/ Porous Pavement 2

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 58,249 sf, 86.46% Impervious, Inflow Depth = 5.65" for 10-Year _2100 event
 Inflow = 8.07 cfs @ 12.14 hrs, Volume= 27,403 cf
 Outflow = 0.16 cfs @ 17.28 hrs, Volume= 7,117 cf, Atten= 98%, Lag= 308.3 min
 Primary = 0.02 cfs @ 17.28 hrs, Volume= 3,898 cf
 Secondary = 0.14 cfs @ 17.28 hrs, Volume= 3,219 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 98.07' @ 17.28 hrs Surf.Area= 23,296 sf Storage= 23,297 cf

Plug-Flow detention time= 1,242.9 min calculated for 7,112 cf (26% of inflow)
 Center-of-Mass det. time= 1,020.2 min (1,773.3 - 753.1)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	8,187 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	8,029 cf	82.25'W x 110.42'L x 3.50'H Field A
			31,786 cf Overall - 11,715 cf Embedded = 20,071 cf x 40.0% Voids
#3A	96.17'	11,715 cf	ADS_StormTech SC-740 +Cap x 255 Inside #2
			Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
			Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
			255 Chambers in 17 Rows
		27,931 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	14,214	0.0	0	0
97.67	14,214	35.0	7,462	7,462
97.83	14,214	15.0	341	7,803
98.01	14,214	15.0	384	8,187

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.02 cfs @ 17.28 hrs HW=98.07' (Free Discharge)

↑ **1=Restriction Orifice** (Orifice Controls 0.02 cfs @ 11.77 fps)

↑ **2=6" HDPE Underdrain** (Passes 0.02 cfs of 0.47 cfs potential flow)

↑ **3=Perforations** (Passes 0.02 cfs of 8.77 cfs potential flow)

Secondary OutFlow Max=0.14 cfs @ 17.28 hrs HW=98.07' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** (Weir Controls 0.14 cfs @ 0.67 fps)

Pond 3P: Underground Storage w/ Porous Pavement 2 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

15 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 108.42' Row Length +12.0" End Stone x 2 = 110.42' Base Length

17 Rows x 51.0" Wide + 6.0" Spacing x 16 + 12.0" Side Stone x 2 = 82.25' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

255 Chambers x 45.9 cf = 11,714.7 cf Chamber Storage

31,786.2 cf Field - 11,714.7 cf Chambers = 20,071.5 cf Stone x 40.0% Voids = 8,028.6 cf Stone Storage

Chamber Storage + Stone Storage = 19,743.3 cf = 0.453 af

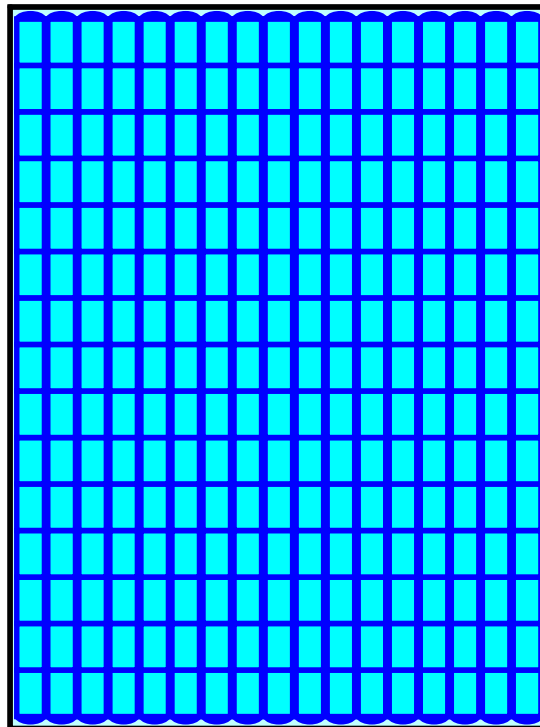
Overall Storage Efficiency = 62.1%

Overall System Size = 110.42' x 82.25' x 3.50'

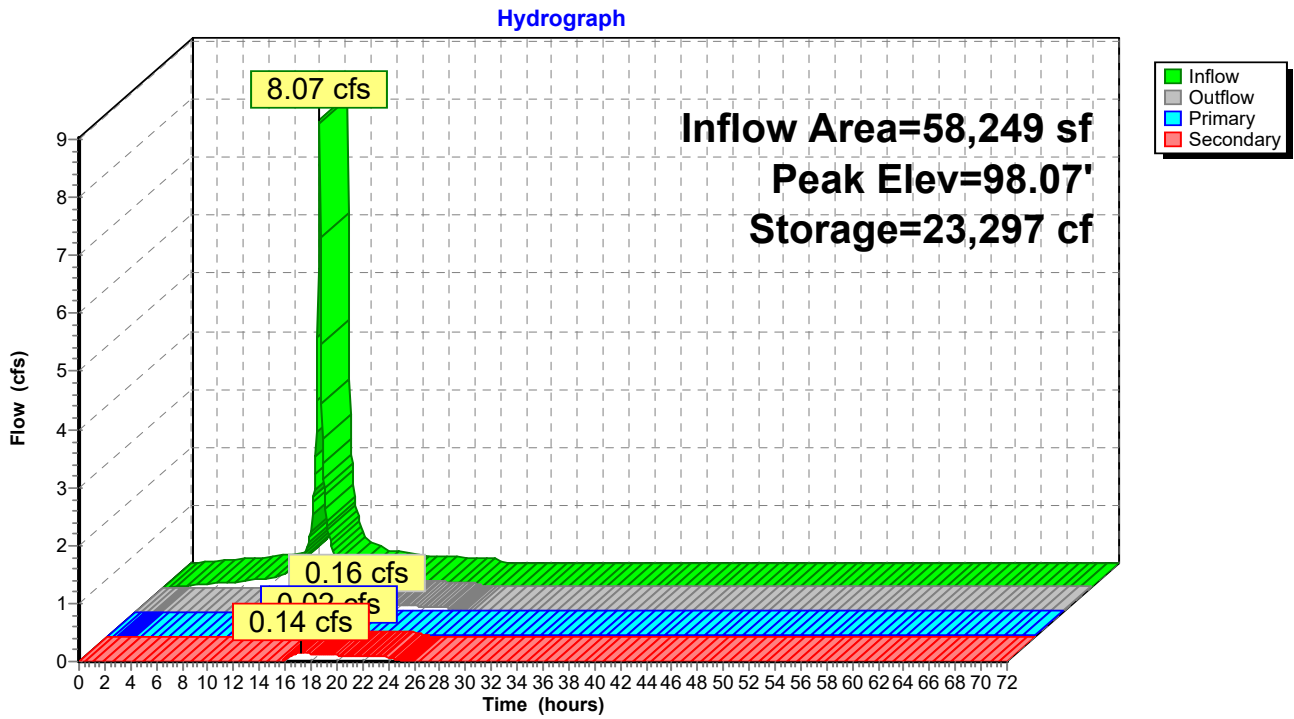
255 Chambers

1,177.3 cy Field

743.4 cy Stone



Pond 3P: Underground Storage w/ Porous Pavement 2



Summary for Pond 4P: Existing Rain Garden 2 Front

[93] Warning: Storage range exceeded by 0.45'
 [88] Warning: Qout>Qin may require smaller dt or Finer Routing
 [85] Warning: Oscillations may require smaller dt or Finer Routing (severity=2)

Inflow Area = 25,889 sf, 48.62% Impervious, Inflow Depth = 4.89" for 10-Year _2100 event
 Inflow = 3.14 cfs @ 12.15 hrs, Volume= 10,551 cf
 Outflow = 4.01 cfs @ 12.20 hrs, Volume= 9,410 cf, Atten= 0%, Lag= 2.9 min
 Primary = 0.36 cfs @ 12.20 hrs, Volume= 5,772 cf
 Routed to Pond 6P : Underground Storage w/ Porous Pavement 3
 Secondary = 3.65 cfs @ 12.20 hrs, Volume= 3,638 cf
 Routed to Pond 6P : Underground Storage w/ Porous Pavement 3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 101.70' @ 12.20 hrs Surf.Area= 3,045 sf Storage= 3,267 cf

Plug-Flow detention time= 435.7 min calculated for 9,404 cf (89% of inflow)
 Center-of-Mass det. time= 382.5 min (1,159.6 - 777.1)

Volume	Invert	Avail.Storage	Storage Description			
#1	99.25'	3,267 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
99.25	2,635	0.0	0	0	2,635	
100.25	2,635	35.0	922	922	2,817	
100.50	2,635	25.0	165	1,087	2,862	
101.00	3,045	100.0	1,419	2,506	3,283	
101.25	3,045	100.0	761	3,267	3,332	

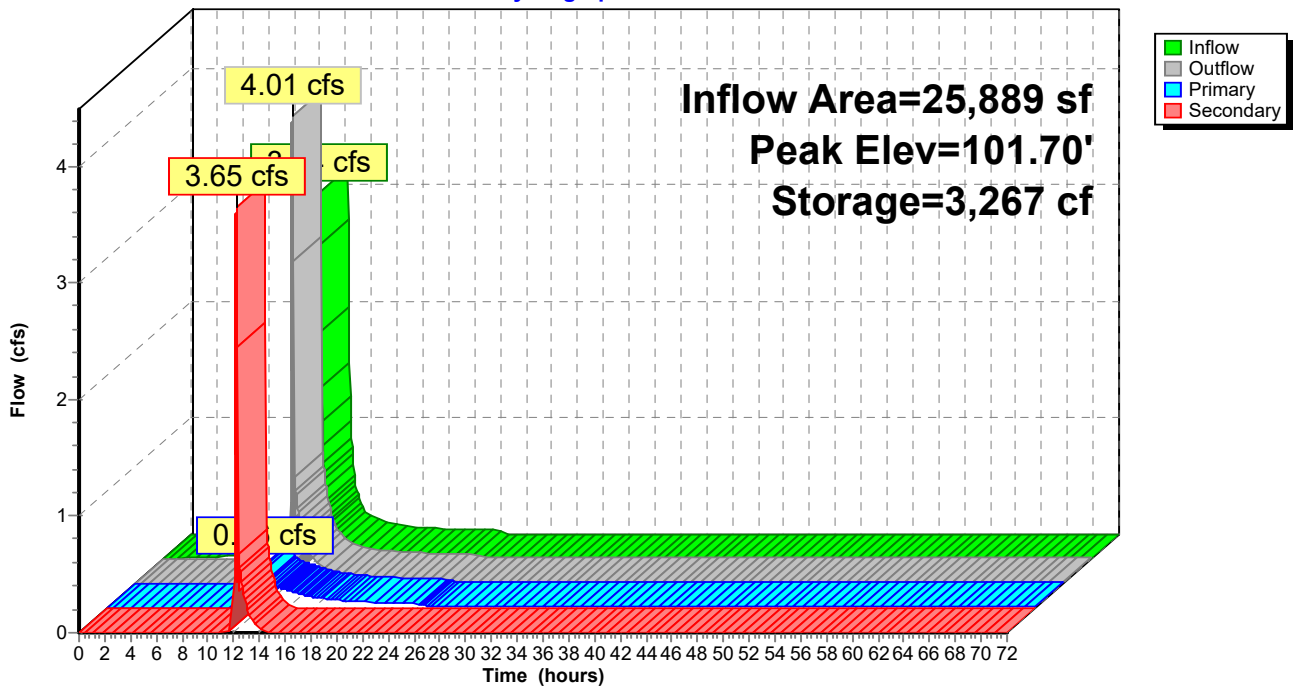
Device	Routing	Invert	Outlet Devices	
#1	Primary	99.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 99.15' / 99.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#2	Device 1	99.15'	0.5" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads	
#3	Device 2	99.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 99.25' / 99.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#4	Device 3	99.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads	
#5	Device 1	101.00'	4.0" Horiz. Drintech Atrium C= 0.600 Limited to weir flow at low heads	
#6	Secondary	101.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32	

Primary OutFlow Max=0.36 cfs @ 12.20 hrs HW=101.70' (Free Discharge)
 1=Culvert (Passes 0.36 cfs of 0.47 cfs potential flow)
 2=Restrictive Orifice (Orifice Controls 0.01 cfs @ 7.66 fps)
 3=4" HDPE Underdrain (Passes 0.01 cfs of 0.37 cfs potential flow)
 4=Perforations (Passes 0.01 cfs of 5.65 cfs potential flow)
 5=Draintech Atrium (Orifice Controls 0.35 cfs @ 4.03 fps)

Secondary OutFlow Max=3.65 cfs @ 12.20 hrs HW=101.70' (Free Discharge)
 6=Broad-Crested Rectangular Weir (Weir Controls 3.65 cfs @ 2.02 fps)

Pond 4P: Existing Rain Garden 2 Front

Hydrograph



Summary for Pond 5P: Proposed Rain Garden 1 (South West)

[93] Warning: Storage range exceeded by 0.34'
 [88] Warning: Qout>Qin may require smaller dt or Finer Routing
 [85] Warning: Oscillations may require smaller dt or Finer Routing (severity=2)

Inflow Area = 21,388 sf, 65.14% Impervious, Inflow Depth = 5.06" for 10-Year _2100 event
 Inflow = 2.62 cfs @ 12.15 hrs, Volume= 9,022 cf
 Outflow = 2.98 cfs @ 12.15 hrs, Volume= 8,463 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.33 cfs @ 12.15 hrs, Volume= 5,316 cf
 Routed to Pond 6P : Underground Storage w/ Porous Pavement 3
 Secondary = 2.65 cfs @ 12.15 hrs, Volume= 3,148 cf
 Routed to Pond 6P : Underground Storage w/ Porous Pavement 3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 101.59' @ 12.15 hrs Surf.Area= 2,325 sf Storage= 2,466 cf

Plug-Flow detention time= 430.3 min calculated for 8,463 cf (94% of inflow)
 Center-of-Mass det. time= 394.4 min (1,161.6 - 767.2)

Volume	Invert	Avail.Storage	Storage Description			
#1	99.25'	2,466 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
99.25	1,970	0.0	0	0	1,970	
100.25	1,970	35.0	690	690	2,127	
100.50	1,970	25.0	123	813	2,167	
101.00	2,325	100.0	1,073	1,885	2,531	
101.25	2,325	100.0	581	2,466	2,574	

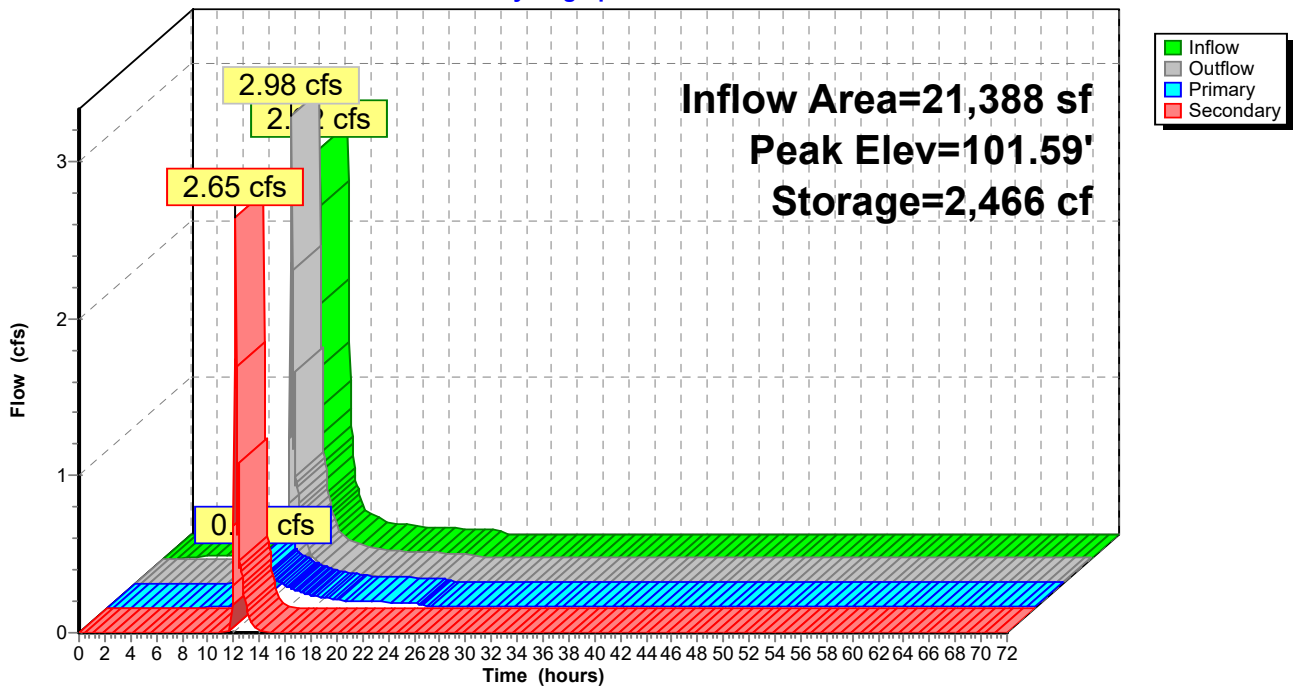
Device	Routing	Invert	Outlet Devices	
#1	Primary	99.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 99.15' / 99.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#2	Device 1	99.15'	0.5" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads	
#3	Device 2	99.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 99.25' / 99.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#4	Device 3	99.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads	
#5	Device 1	101.00'	4.0" Horiz. Draintech Atrium C= 0.600 Limited to weir flow at low heads	
#6	Secondary	101.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32	

Primary OutFlow Max=0.33 cfs @ 12.15 hrs HW=101.58' (Free Discharge)
 1=Culvert (Passes 0.33 cfs of 0.46 cfs potential flow)
 2=Restrictive Orifice (Orifice Controls 0.01 cfs @ 7.48 fps)
 3=4" HDPE Underdrain (Passes 0.01 cfs of 0.36 cfs potential flow)
 4=Perforations (Passes 0.01 cfs of 5.52 cfs potential flow)
 5=Draintech Atrium (Orifice Controls 0.32 cfs @ 3.68 fps)

Secondary OutFlow Max=2.64 cfs @ 12.15 hrs HW=101.58' (Free Discharge)
 6=Broad-Crested Rectangular Weir (Weir Controls 2.64 cfs @ 1.82 fps)

Pond 5P: Proposed Rain Garden 1 (South West)

Hydrograph



Summary for Pond 6P: Underground Storage w/ Porous Pavement 3

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 158,623 sf, 63.48% Impervious, Inflow Depth > 4.96" for 10-Year _2100 event
 Inflow = 18.61 cfs @ 12.15 hrs, Volume= 65,510 cf
 Outflow = 0.28 cfs @ 21.42 hrs, Volume= 11,247 cf, Atten= 98%, Lag= 556.3 min
 Primary = 0.02 cfs @ 21.42 hrs, Volume= 3,902 cf
 Secondary = 0.27 cfs @ 21.42 hrs, Volume= 7,345 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 98.11' @ 21.42 hrs Surf.Area= 38,014 sf Storage= 56,393 cf

Plug-Flow detention time= 1,170.0 min calculated for 11,239 cf (17% of inflow)
 Center-of-Mass det. time= 829.5 min (1,703.2 - 873.7)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	4,287 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	26,630 cf	106.00'W x 288.42'L x 3.50'H Field A 107,003 cf Overall - 40,427 cf Embedded = 66,575 cf x 40.0% Voids
#3A	96.17'	40,427 cf	ADS_StormTech SC-740 +Cap x 880 Inside #2 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 880 Chambers in 22 Rows
		71,344 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	7,442	0.0	0	0
97.67	7,442	35.0	3,907	3,907
97.83	7,442	15.0	179	4,086
98.01	7,442	15.0	201	4,287

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.02 cfs @ 21.42 hrs HW=98.11' (Free Discharge)

↑ **1=Restriction Orifice** (Orifice Controls 0.02 cfs @ 11.81 fps)

↑ **2=6" HDPE Underdrain** (Passes 0.02 cfs of 0.47 cfs potential flow)

↑ **3=Perforations** (Passes 0.02 cfs of 8.80 cfs potential flow)

Secondary OutFlow Max=0.26 cfs @ 21.42 hrs HW=98.11' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** (Weir Controls 0.26 cfs @ 0.83 fps)

Pond 6P: Underground Storage w/ Porous Pavement 3 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

40 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 286.42' Row Length +12.0" End Stone x 2 = 288.42' Base Length

22 Rows x 51.0" Wide + 6.0" Spacing x 21 + 12.0" Side Stone x 2 = 106.00' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

880 Chambers x 45.9 cf = 40,427.2 cf Chamber Storage

107,002.6 cf Field - 40,427.2 cf Chambers = 66,575.4 cf Stone x 40.0% Voids = 26,630.1 cf Stone Storage

Chamber Storage + Stone Storage = 67,057.4 cf = 1.539 af

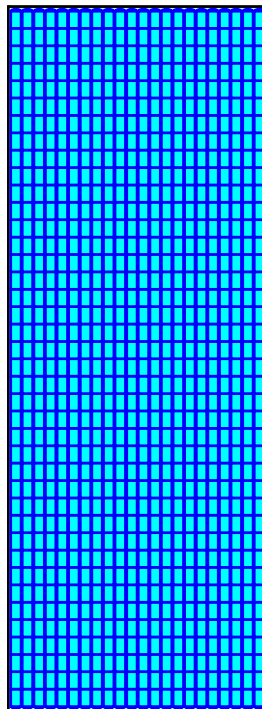
Overall Storage Efficiency = 62.7%

Overall System Size = 288.42' x 106.00' x 3.50'

880 Chambers

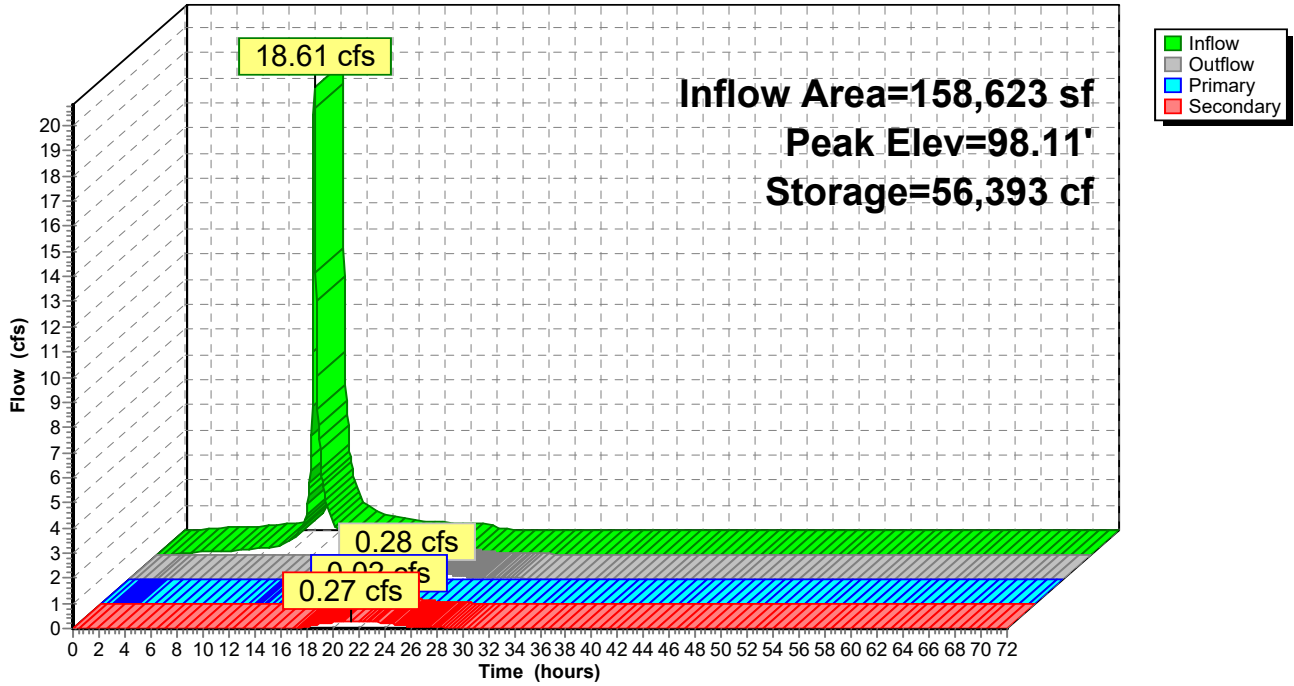
3,963.1 cy Field

2,465.8 cy Stone



Pond 6P: Underground Storage w/ Porous Pavement 3

Hydrograph



Summary for Pond 7P: Proposed Rain Garden 4 (North)

[93] Warning: Storage range exceeded by 0.35'
 [88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 24,369 sf, 57.53% Impervious, Inflow Depth = 5.08" for 10-Year _2100 event
 Inflow = 3.01 cfs @ 12.15 hrs, Volume= 10,312 cf
 Outflow = 3.12 cfs @ 12.15 hrs, Volume= 10,037 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.34 cfs @ 12.15 hrs, Volume= 5,806 cf
 Routed to Pond 8P : Underground Storage w/ Porous Pavement 4
 Secondary = 2.78 cfs @ 12.15 hrs, Volume= 4,231 cf
 Routed to Pond 8P : Underground Storage w/ Porous Pavement 4

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 100.60' @ 12.15 hrs Surf.Area= 2,435 sf Storage= 2,453 cf

Plug-Flow detention time= 350.2 min calculated for 10,030 cf (97% of inflow)
 Center-of-Mass det. time= 335.1 min (1,106.3 - 771.2)

Volume	Invert	Avail.Storage	Storage Description			
#1	98.25'	2,453 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
98.25	1,870	0.0	0	0	1,870	
99.25	1,870	35.0	655	655	2,023	
99.50	1,870	25.0	117	771	2,062	
100.00	2,435	100.0	1,073	1,845	2,633	
100.25	2,435	100.0	609	2,453	2,676	

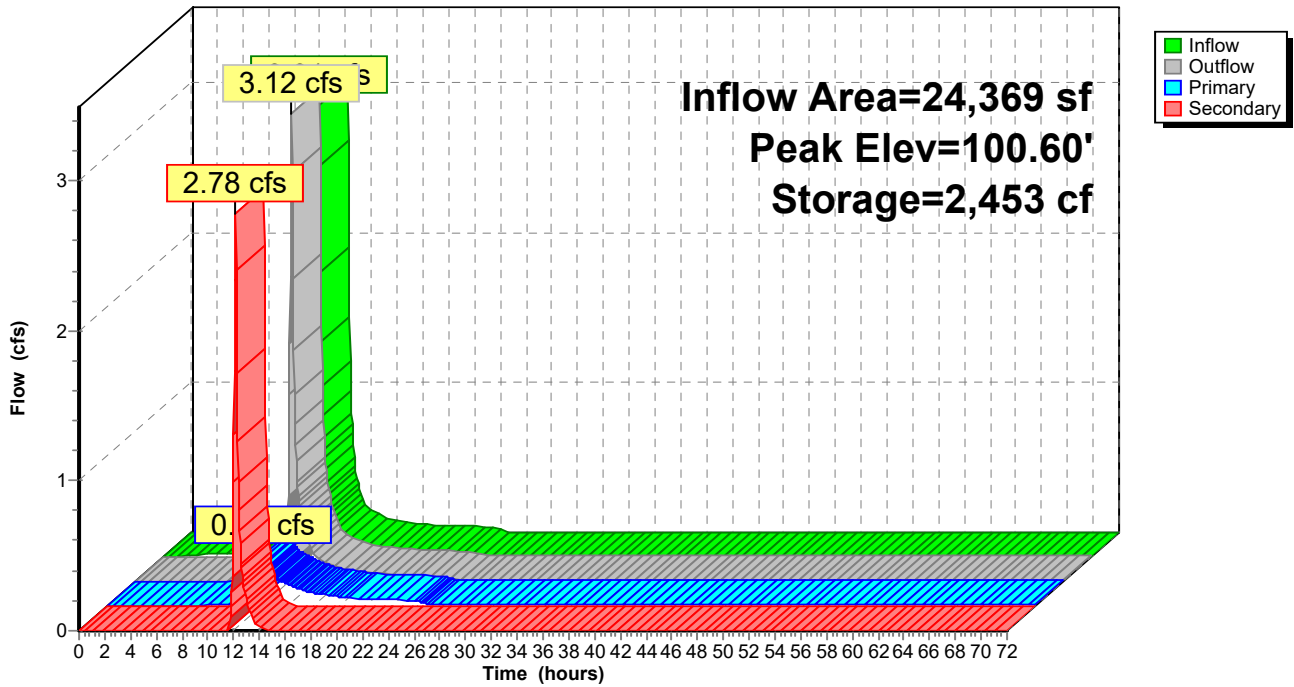
Device	Routing	Invert	Outlet Devices																
#1	Primary	98.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 98.15' / 98.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf																
#2	Device 1	98.15'	0.5" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads																
#3	Device 2	98.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 98.25' / 98.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf																
#4	Device 3	98.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads																
#5	Device 1	100.00'	4.0" Horiz. Drintech Atrium C= 0.600 Limited to weir flow at low heads																
#6	Secondary	100.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32																

Primary OutFlow Max=0.34 cfs @ 12.15 hrs HW=100.60' (Free Discharge)
 1=Culvert (Passes 0.34 cfs of 0.46 cfs potential flow)
 2=Restrictive Orifice (Orifice Controls 0.01 cfs @ 7.50 fps)
 3=4" HDPE Underdrain (Passes 0.01 cfs of 0.36 cfs potential flow)
 4=Perforations (Passes 0.01 cfs of 5.54 cfs potential flow)
 5=Draintech Atrium (Orifice Controls 0.33 cfs @ 3.73 fps)

Secondary OutFlow Max=2.76 cfs @ 12.15 hrs HW=100.60' (Free Discharge)
 6=Broad-Crested Rectangular Weir (Weir Controls 2.76 cfs @ 1.84 fps)

Pond 7P: Proposed Rain Garden 4 (North)

Hydrograph



Summary for Pond 8P: Underground Storage w/ Porous Pavement 4

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 97,166 sf, 80.96% Impervious, Inflow Depth > 5.50" for 10-Year _2100 event
 Inflow = 12.81 cfs @ 12.15 hrs, Volume= 44,559 cf
 Outflow = 0.18 cfs @ 21.01 hrs, Volume= 7,658 cf, Atten= 99%, Lag= 531.8 min
 Primary = 0.02 cfs @ 21.01 hrs, Volume= 3,908 cf
 Secondary = 0.17 cfs @ 21.01 hrs, Volume= 3,750 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 98.08' @ 21.01 hrs Surf.Area= 33,612 sf Storage= 38,983 cf

Plug-Flow detention time= 1,309.4 min calculated for 7,653 cf (17% of inflow)
 Center-of-Mass det. time= 972.6 min (1,805.3 - 832.7)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	9,112 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	15,592 cf	63.25'W x 281.30'L x 3.50'H Field A 62,272 cf Overall - 23,292 cf Embedded = 38,980 cf x 40.0% Voids
#3A	96.17'	23,292 cf	ADS_StormTech SC-740 +Cap x 507 Inside #2 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 507 Chambers in 13 Rows
		47,996 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	15,820	0.0	0	0
97.67	15,820	35.0	8,306	8,306
97.83	15,820	15.0	380	8,685
98.01	15,820	15.0	427	9,112

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.02 cfs @ 21.01 hrs HW=98.08' (Free Discharge)

↑ **1=Restriction Orifice** (Orifice Controls 0.02 cfs @ 11.78 fps)

↑ **2=6" HDPE Underdrain** (Passes 0.02 cfs of 0.47 cfs potential flow)

↑ **3=Perforations** (Passes 0.02 cfs of 8.78 cfs potential flow)

Secondary OutFlow Max=0.16 cfs @ 21.01 hrs HW=98.08' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** (Weir Controls 0.16 cfs @ 0.71 fps)

Pond 8P: Underground Storage w/ Porous Pavement 4 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

39 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 279.30' Row Length +12.0" End Stone x 2 = 281.30' Base Length

13 Rows x 51.0" Wide + 6.0" Spacing x 12 + 12.0" Side Stone x 2 = 63.25' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

507 Chambers x 45.9 cf = 23,291.6 cf Chamber Storage

62,272.0 cf Field - 23,291.6 cf Chambers = 38,980.5 cf Stone x 40.0% Voids = 15,592.2 cf Stone Storage

Chamber Storage + Stone Storage = 38,883.8 cf = 0.893 af

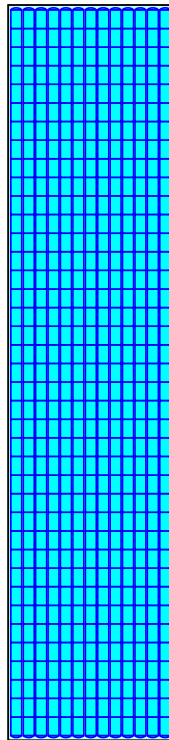
Overall Storage Efficiency = 62.4%

Overall System Size = 281.30' x 63.25' x 3.50'

507 Chambers

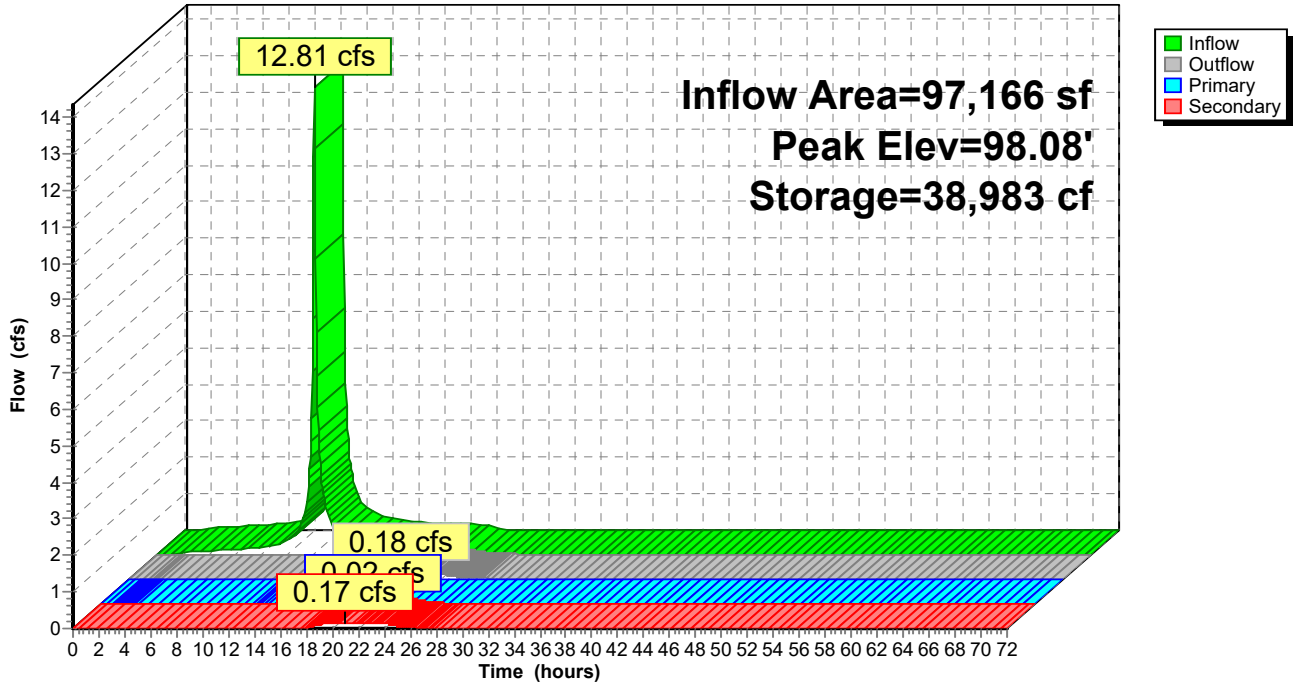
2,306.4 cy Field

1,443.7 cy Stone



Pond 8P: Underground Storage w/ Porous Pavement 4

Hydrograph



Summary for Pond 9P: Proposed Rain Garden 3 (North East)

[93] Warning: Storage range exceeded by 0.25'
 [88] Warning: Qout>Qin may require smaller dt or Finer Routing
 [85] Warning: Oscillations may require smaller dt or Finer Routing (severity=3)
 [62] Hint: Exceeded Reach 2R OUTLET depth by 0.13' @ 12.25 hrs

Inflow Area = 19,898 sf, 48.83% Impervious, Inflow Depth = 4.90" for 10-Year _2100 event
 Inflow = 2.15 cfs @ 12.20 hrs, Volume= 8,117 cf
 Outflow = 2.25 cfs @ 12.16 hrs, Volume= 7,978 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.31 cfs @ 12.16 hrs, Volume= 5,026 cf
 Routed to Pond 10P : Underground Storage w/ Porous Pavement 5
 Secondary = 1.94 cfs @ 12.16 hrs, Volume= 2,952 cf
 Routed to Pond 10P : Underground Storage w/ Porous Pavement 5

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 100.50' @ 12.16 hrs Surf.Area= 1,670 sf Storage= 1,751 cf

Plug-Flow detention time= 356.4 min calculated for 7,972 cf (98% of inflow)
 Center-of-Mass det. time= 347.2 min (1,127.8 - 780.6)

Volume	Invert	Avail.Storage	Storage Description			
#1	98.25'	1,751 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
98.25	1,385	0.0	0	0	1,385	
99.25	1,385	35.0	485	485	1,517	
99.50	1,385	25.0	87	571	1,550	
100.00	1,670	100.0	763	1,334	1,843	
100.25	1,670	100.0	418	1,751	1,879	

Device	Routing	Invert	Outlet Devices	
#1	Primary	98.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 98.15' / 98.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#2	Device 1	98.15'	0.5" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads	
#3	Device 2	98.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 98.25' / 98.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#4	Device 3	98.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads	
#5	Device 1	100.00'	4.0" Horiz. Drintech Atrium C= 0.600 Limited to weir flow at low heads	
#6	Secondary	100.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32	

Primary OutFlow Max=0.30 cfs @ 12.16 hrs HW=100.48' (Free Discharge)

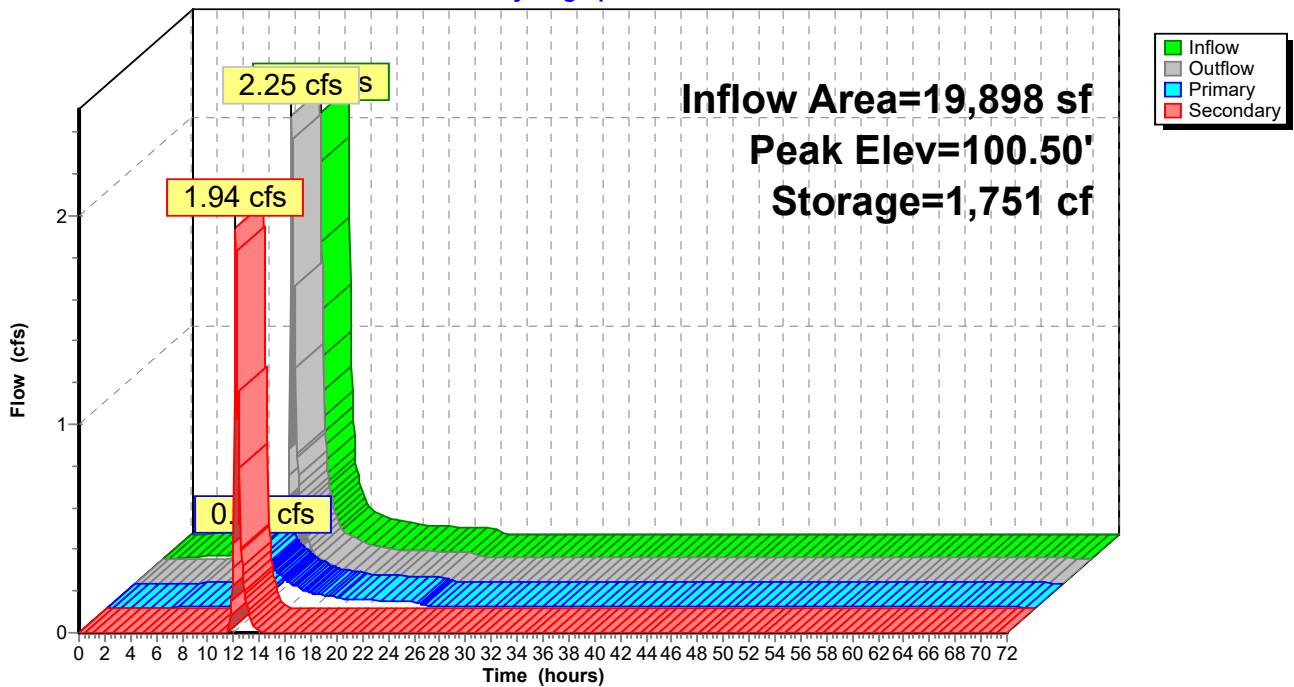
- 1=Culvert (Passes 0.30 cfs of 0.45 cfs potential flow)
- 2=Restrictive Orifice (Orifice Controls 0.01 cfs @ 7.32 fps)
 - 3=4" HDPE Underdrain (Passes 0.01 cfs of 0.35 cfs potential flow)
 - 4=Perforations (Passes 0.01 cfs of 5.39 cfs potential flow)
- 5=DrainTech Atrium (Orifice Controls 0.29 cfs @ 3.34 fps)

Secondary OutFlow Max=1.84 cfs @ 12.16 hrs HW=100.48' (Free Discharge)

- 6=Broad-Crested Rectangular Weir (Weir Controls 1.84 cfs @ 1.61 fps)

Pond 9P: Proposed Rain Garden 3 (North East)

Hydrograph



Summary for Pond 10P: Underground Storage w/ Porous Pavement 5

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 78,061 sf, 72.85% Impervious, Inflow Depth > 5.32" for 10-Year _2100 event
 Inflow = 8.75 cfs @ 12.18 hrs, Volume= 34,619 cf
 Outflow = 0.19 cfs @ 18.06 hrs, Volume= 7,939 cf, Atten= 98%, Lag= 352.9 min
 Primary = 0.02 cfs @ 18.06 hrs, Volume= 3,905 cf
 Secondary = 0.17 cfs @ 18.06 hrs, Volume= 4,034 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 98.08' @ 18.06 hrs Surf.Area= 27,852 sf Storage= 28,659 cf

Plug-Flow detention time= 1,188.0 min calculated for 7,939 cf (23% of inflow)
 Center-of-Mass det. time= 897.9 min (1,742.9 - 845.0)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	9,426 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	10,110 cf	63.25'W x 181.62'L x 3.50'H Field A
			40,205 cf Overall - 14,931 cf Embedded = 25,275 cf x 40.0% Voids
#3A	96.17'	14,931 cf	ADS_StormTech SC-740 +Cap x 325 Inside #2
			Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
			Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
			325 Chambers in 13 Rows
		34,467 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	16,365	0.0	0	0
97.67	16,365	35.0	8,592	8,592
97.83	16,365	15.0	393	8,984
98.01	16,365	15.0	442	9,426

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.02 cfs @ 18.06 hrs HW=98.08' (Free Discharge)

↑ **1=Restriction Orifice** (Orifice Controls 0.02 cfs @ 11.78 fps)

↑ **2=6" HDPE Underdrain** (Passes 0.02 cfs of 0.47 cfs potential flow)

↑ **3=Perforations** (Passes 0.02 cfs of 8.78 cfs potential flow)

Secondary OutFlow Max=0.17 cfs @ 18.06 hrs HW=98.08' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** (Weir Controls 0.17 cfs @ 0.71 fps)

Pond 10P: Underground Storage w/ Porous Pavement 5 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

25 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 179.62' Row Length +12.0" End Stone x 2 = 181.62' Base Length

13 Rows x 51.0" Wide + 6.0" Spacing x 12 + 12.0" Side Stone x 2 = 63.25' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

325 Chambers x 45.9 cf = 14,930.5 cf Chamber Storage

40,205.4 cf Field - 14,930.5 cf Chambers = 25,274.9 cf Stone x 40.0% Voids = 10,110.0 cf Stone Storage

Chamber Storage + Stone Storage = 25,040.5 cf = 0.575 af

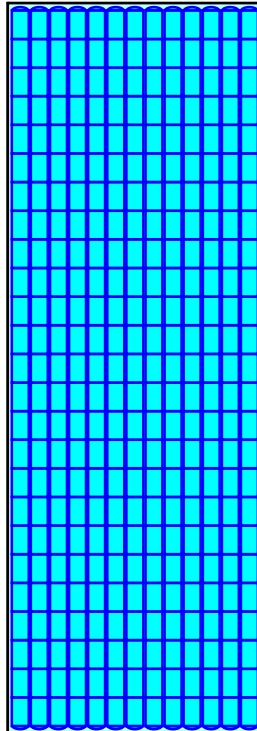
Overall Storage Efficiency = 62.3%

Overall System Size = 181.62' x 63.25' x 3.50'

325 Chambers

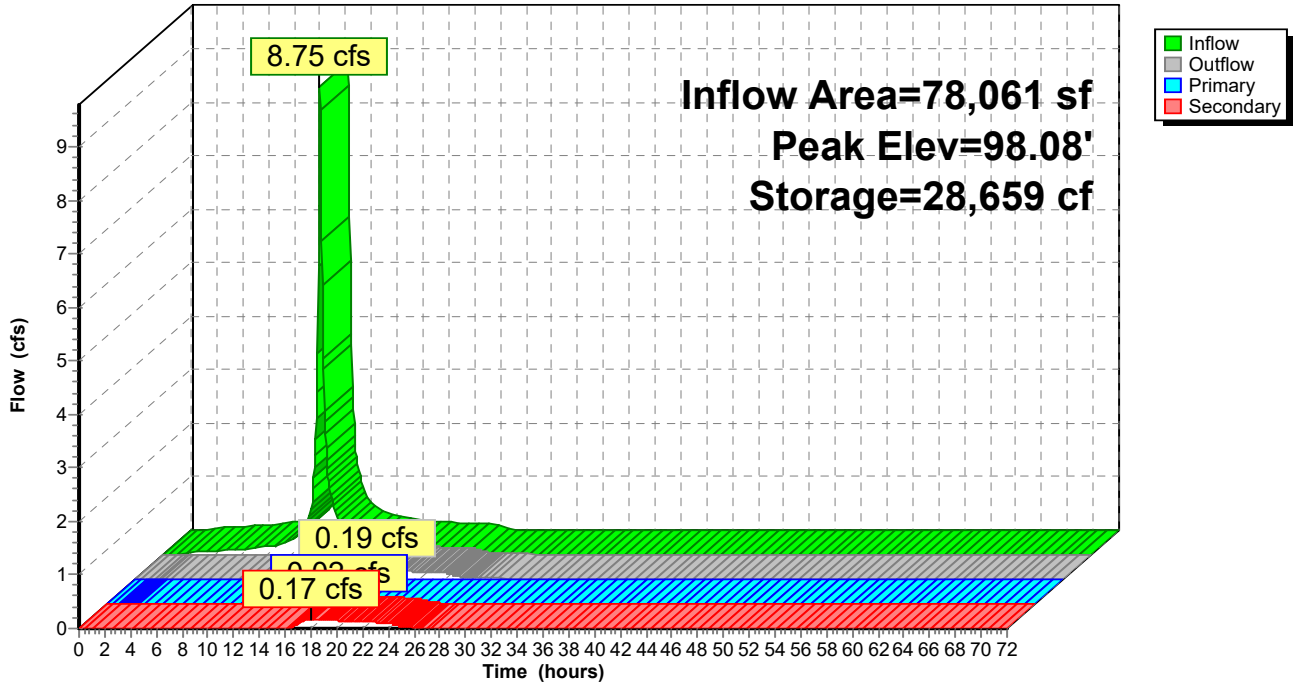
1,489.1 cy Field

936.1 cy Stone



Pond 10P: Underground Storage w/ Porous Pavement 5

Hydrograph



Summary for Pond 11P: Proposed Rain Garden 2 (East)

[93] Warning: Storage range exceeded by 0.45'
 [88] Warning: Qout>Qin may require smaller dt or Finer Routing
 [85] Warning: Oscillations may require smaller dt or Finer Routing (severity=4)

Inflow Area = 32,033 sf, 45.19% Impervious, Inflow Depth = 4.82" for 10-Year _2100 event
 Inflow = 3.22 cfs @ 12.22 hrs, Volume= 12,863 cf
 Outflow = 4.03 cfs @ 12.20 hrs, Volume= 12,635 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.37 cfs @ 12.20 hrs, Volume= 7,625 cf
 Routed to Pond 12P : Underground Storage w/ Porous Pavement 6
 Secondary = 3.66 cfs @ 12.20 hrs, Volume= 5,010 cf
 Routed to Pond 12P : Underground Storage w/ Porous Pavement 6

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 100.70' @ 12.20 hrs Surf.Area= 3,045 sf Storage= 3,267 cf

Plug-Flow detention time= 422.2 min calculated for 12,626 cf (98% of inflow)
 Center-of-Mass det. time= 412.6 min (1,197.5 - 784.9)

Volume	Invert	Avail.Storage	Storage Description			
#1	98.25'	3,267 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
98.25	2,635	0.0	0	0	2,635	
99.25	2,635	35.0	922	922	2,817	
99.50	2,635	25.0	165	1,087	2,862	
100.00	3,045	100.0	1,419	2,506	3,283	
100.25	3,045	100.0	761	3,267	3,332	

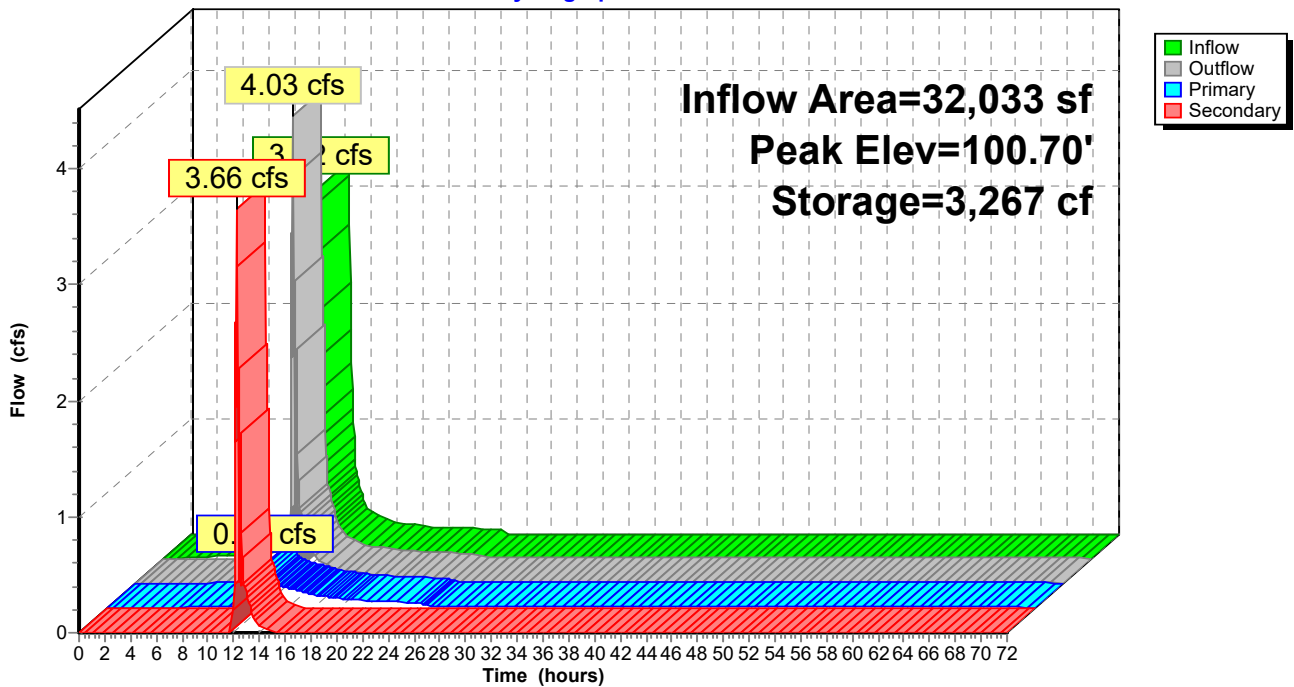
Device	Routing	Invert	Outlet Devices
#1	Primary	98.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 98.15' / 98.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf
#2	Device 1	98.15'	0.7" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads
#3	Device 2	98.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 98.25' / 98.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf
#4	Device 3	98.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#5	Device 1	100.00'	4.0" Horiz. Drintech Atrium C= 0.600 Limited to weir flow at low heads
#6	Secondary	100.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.37 cfs @ 12.20 hrs HW=100.69' (Free Discharge)
 1=Culvert (Passes 0.37 cfs of 0.47 cfs potential flow)
 2=Restrictive Orifice (Orifice Controls 0.02 cfs @ 7.63 fps)
 3=4" HDPE Underdrain (Passes 0.02 cfs of 0.37 cfs potential flow)
 4=Perforations (Passes 0.02 cfs of 5.64 cfs potential flow)
 5=Draintech Atrium (Orifice Controls 0.35 cfs @ 4.00 fps)

Secondary OutFlow Max=3.58 cfs @ 12.20 hrs HW=100.69' (Free Discharge)
 6=Broad-Crested Rectangular Weir (Weir Controls 3.58 cfs @ 2.01 fps)

Pond 11P: Proposed Rain Garden 2 (East)

Hydrograph



Summary for Pond 12P: Underground Storage w/ Porous Pavement 6

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 32,033 sf, 45.19% Impervious, Inflow Depth > 4.73" for 10-Year _2100 event
 Inflow = 4.03 cfs @ 12.20 hrs, Volume= 12,635 cf
 Outflow = 0.02 cfs @ 41.49 hrs, Volume= 3,624 cf, Atten= 100%, Lag= 1,757.4 min
 Primary = 0.02 cfs @ 41.49 hrs, Volume= 3,624 cf
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 97.83' @ 41.49 hrs Surf.Area= 8,364 sf Storage= 9,407 cf

Plug-Flow detention time= 1,679.1 min calculated for 3,624 cf (29% of inflow)
 Center-of-Mass det. time= 1,191.7 min (2,389.1 - 1,197.5)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	1,866 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	4,603 cf	25.25'W x 202.98'L x 3.50'H Field A 17,938 cf Overall - 6,432 cf Embedded = 11,506 cf x 40.0% Voids
#3A	96.17'	6,432 cf	ADS_StormTech SC-740 +Cap x 140 Inside #2 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 140 Chambers in 5 Rows
		12,900 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	3,239	0.0	0	0
97.67	3,239	35.0	1,700	1,700
97.83	3,239	15.0	78	1,778
98.01	3,239	15.0	87	1,866

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.02 cfs @ 41.49 hrs HW=97.83' (Free Discharge)

↑ **1=Restriction Orifice** (Orifice Controls 0.02 cfs @ 11.54 fps)

↑ **2=6" HDPE Underdrain** (Passes 0.02 cfs of 0.46 cfs potential flow)

↑ **3=Perforations** (Passes 0.02 cfs of 8.59 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.67' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 12P: Underground Storage w/ Porous Pavement 6 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

28 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 200.98' Row Length +12.0" End Stone x 2 = 202.98' Base Length

5 Rows x 51.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.25' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

140 Chambers x 45.9 cf = 6,431.6 cf Chamber Storage

17,938.1 cf Field - 6,431.6 cf Chambers = 11,506.5 cf Stone x 40.0% Voids = 4,602.6 cf Stone Storage

Chamber Storage + Stone Storage = 11,034.2 cf = 0.253 af

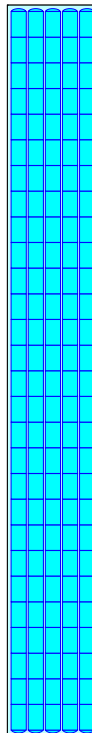
Overall Storage Efficiency = 61.5%

Overall System Size = 202.98' x 25.25' x 3.50'

140 Chambers

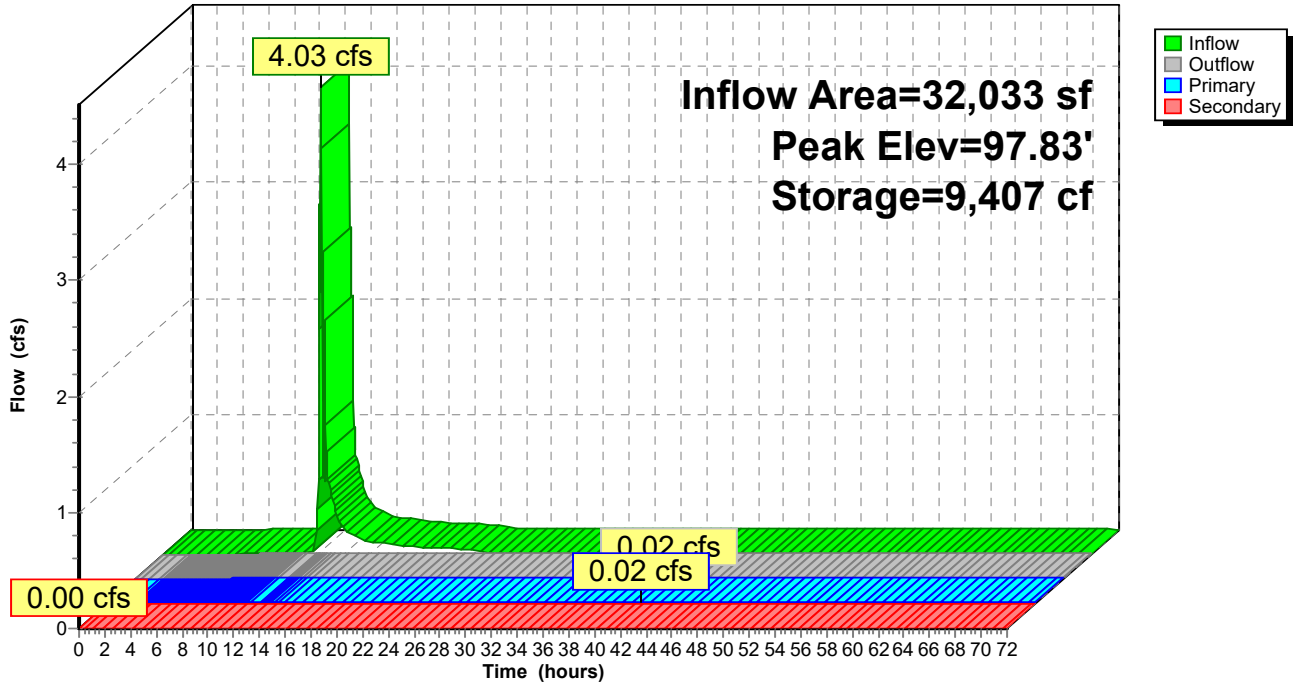
664.4 cy Field

426.2 cy Stone



Pond 12P: Underground Storage w/ Porous Pavement 6

Hydrograph



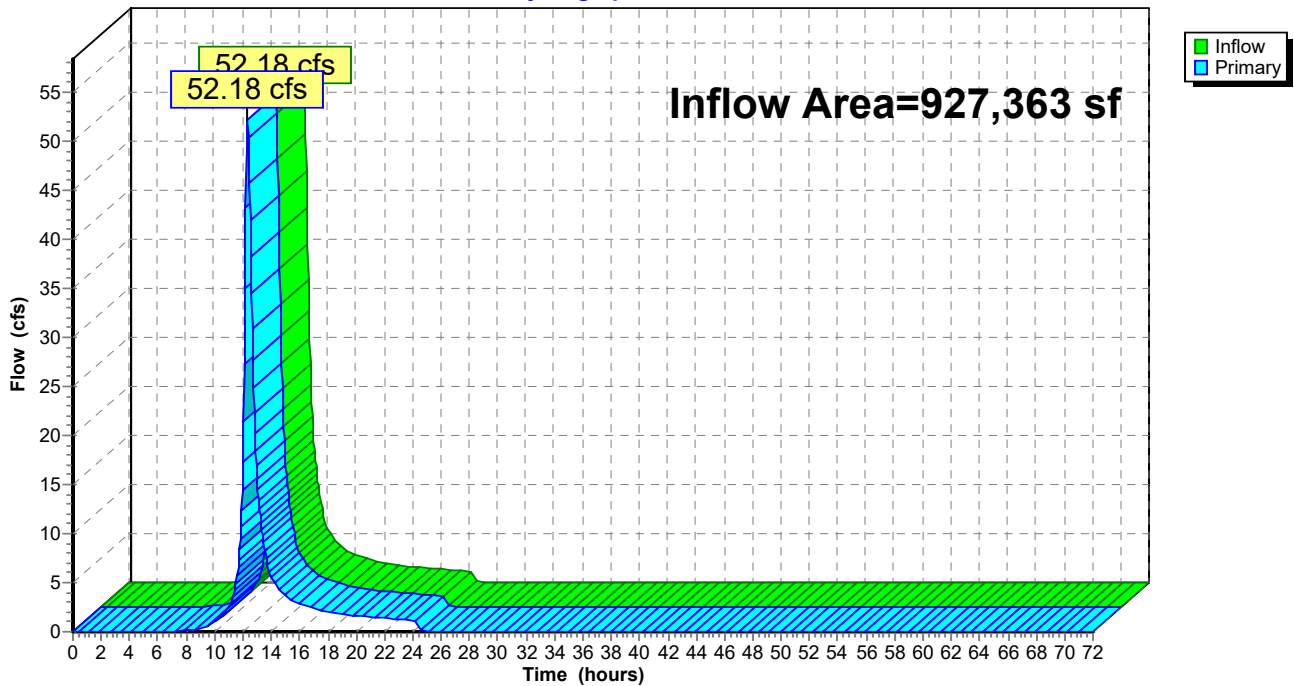
Summary for Link 1L: Offsite Flows

Inflow Area = 927,363 sf, 3.35% Impervious, Inflow Depth = 3.44" for 10-Year _2100 event
Inflow = 52.18 cfs @ 12.32 hrs, Volume= 265,592 cf
Primary = 52.18 cfs @ 12.32 hrs, Volume= 265,592 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 1L: Offsite Flows

Hydrograph



Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
 Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

- Subcatchment 1S: DA1: CN w/ IC** Runoff Area=56,173 sf 73.47% Impervious Runoff Depth=4.30"
 Flow Length=361' Tc=14.3 min CN=75/98 Runoff=4.81 cfs 20,135 cf
- Subcatchment 1Sa: Existing RG 1_West_** Runoff Area=22,637 sf 64.43% Impervious Runoff Depth=4.15"
 Flow Length=361' Tc=14.3 min CN=77/98 Runoff=1.89 cfs 7,833 cf
- Subcatchment 1Sb: DA1: CN w/ IC** Runoff Area=39,105 sf 68.25% Impervious Runoff Depth=4.18"
 Flow Length=361' Tc=14.3 min CN=75/98 Runoff=3.27 cfs 13,618 cf
- Subcatchment 2S: DA 2: CN w/ IC areas** Runoff Area=58,249 sf 86.46% Impervious Runoff Depth=4.62"
 Flow Length=391' Tc=7.0 min CN=76/98 Runoff=6.63 cfs 22,415 cf
- Subcatchment 3S: DA 3: CN w/ IC** Runoff Area=158,623 sf 63.48% Impervious Runoff Depth=4.10"
 Flow Length=441' Tc=8.3 min CN=76/98 Runoff=15.80 cfs 54,189 cf
- Subcatchment 3Sa: Existing RG 2 Front DA** Runoff Area=25,889 sf 48.62% Impervious Runoff Depth=3.90"
 Tc=8.3 min CN=79/98 Runoff=2.51 cfs 8,423 cf
- Subcatchment 3Sb: RG 1 DA** Runoff Area=21,388 sf 65.14% Impervious Runoff Depth=4.08"
 Flow Length=441' Tc=8.3 min CN=74/98 Runoff=2.11 cfs 7,264 cf
- Subcatchment 3Sc: DA 3: CN w/ IC areas** Runoff Area=111,346 sf 66.62% Impervious Runoff Depth=4.14"
 Flow Length=441' Tc=8.3 min CN=75/98 Runoff=11.15 cfs 38,421 cf
- Subcatchment 4S: DA 4: CN w/ IC** Runoff Area=86,816 sf 90.62% Impervious Runoff Depth=4.70"
 Flow Length=143' Tc=8.4 min CN=75/98 Runoff=9.58 cfs 34,025 cf
- Subcatchment 4Sa: RG 4 DA** Runoff Area=24,369 sf 57.53% Impervious Runoff Depth=4.08"
 Flow Length=143' Tc=8.4 min CN=79/98 Runoff=2.43 cfs 8,287 cf
- Subcatchment 4Sb: DA 4: CN w/ IC areas** Runoff Area=72,797 sf 88.81% Impervious Runoff Depth=4.66"
 Flow Length=143' Tc=8.4 min CN=75/98 Runoff=7.97 cfs 28,274 cf
- Subcatchment 5S: DA 5: CN w/ IC** Runoff Area=78,058 sf 72.85% Impervious Runoff Depth=4.33"
 Flow Length=310' Tc=11.5 min CN=77/98 Runoff=7.29 cfs 28,198 cf
- Subcatchment 5Sa: RG 3 DA** Runoff Area=19,898 sf 48.83% Impervious Runoff Depth=3.91"
 Flow Length=310' Tc=11.5 min CN=79/98 Runoff=1.73 cfs 6,480 cf
- Subcatchment 5Sb: DA 5: CN w/ IC areas** Runoff Area=58,163 sf 81.07% Impervious Runoff Depth=4.48"
 Flow Length=310' Tc=11.5 min CN=75/98 Runoff=5.56 cfs 21,711 cf
- Subcatchment 6S: DA 6: CN w/ IC areas** Runoff Area=32,033 sf 45.19% Impervious Runoff Depth=3.84"
 Flow Length=276' Tc=14.0 min CN=79/98 Runoff=2.57 cfs 10,240 cf
- Subcatchment 7S: DA 7 (Offsite South):** Runoff Area=107,001 sf 18.84% Impervious Runoff Depth=3.24"
 Flow Length=309' Tc=14.5 min CN=78/98 Runoff=7.38 cfs 28,880 cf

Subcatchment 8S: DA 8 (Offsite North): CN Runoff Area=340,642 sf 1.94% Impervious Runoff Depth=2.54"
 Flow Length=976' Tc=19.4 min CN=74/98 Runoff=16.83 cfs 72,092 cf

Subcatchment 9S: DA 9 (Offsite Field) Runoff Area=479,720 sf 0.89% Impervious Runoff Depth=2.43"
 Flow Length=1,468' Tc=30.4 min CN=73/98 Runoff=18.19 cfs 97,104 cf

Subcatchment 31S: RG 2 DA Runoff Area=32,035 sf 32.46% Impervious Runoff Depth=3.58"
 Flow Length=276' Tc=14.0 min CN=79/98 Runoff=2.44 cfs 9,566 cf

Reach 1R: Existing Bioswale West 1 Avg. Flow Depth=0.24' Max Vel=2.14 fps Inflow=1.89 cfs 7,833 cf
 n=0.035 L=33.0' S=0.0227 '/' Capacity=7.36 cfs Outflow=1.87 cfs 7,833 cf

Reach 2R: Bioswale E 1 RG 3 Avg. Flow Depth=0.33' Max Vel=2.58 fps Inflow=1.73 cfs 6,480 cf
 n=0.035 L=35.0' S=0.0286 '/' Capacity=4.02 cfs Outflow=1.72 cfs 6,480 cf

Pond 1P: Existing Rain Garden 1 West Peak Elev=100.48' Storage=1,831 cf Inflow=1.87 cfs 7,833 cf
 Primary=0.30 cfs 4,927 cf Secondary=1.80 cfs 2,729 cf Outflow=2.10 cfs 7,656 cf

Pond 2P: Underground Storage w/ Porous Peak Elev=98.01' Storage=18,889 cf Inflow=5.36 cfs 21,274 cf
 Primary=0.02 cfs 3,840 cf Secondary=0.00 cfs 15 cf Outflow=0.02 cfs 3,855 cf

Pond 3P: Underground Storage w/ Porous Peak Elev=97.81' Storage=21,269 cf Inflow=6.63 cfs 22,415 cf
 Primary=0.02 cfs 3,813 cf Secondary=0.00 cfs 0 cf Outflow=0.02 cfs 3,813 cf

Pond 4P: Existing Rain Garden 2 Front Peak Elev=101.68' Storage=3,267 cf Inflow=2.51 cfs 8,423 cf
 Primary=0.36 cfs 5,119 cf Secondary=3.48 cfs 2,167 cf Outflow=3.84 cfs 7,286 cf

Pond 5P: Proposed Rain Garden 1 (South) Peak Elev=101.55' Storage=2,466 cf Inflow=2.11 cfs 7,264 cf
 Primary=0.32 cfs 4,680 cf Secondary=2.37 cfs 2,029 cf Outflow=2.69 cfs 6,708 cf

Pond 6P: Underground Storage w/ Porous Peak Elev=97.74' Storage=48,662 cf Inflow=15.16 cfs 52,416 cf
 Primary=0.02 cfs 3,793 cf Secondary=0.00 cfs 0 cf Outflow=0.02 cfs 3,793 cf

Pond 7P: Proposed Rain Garden 4 (North) Peak Elev=100.47' Storage=2,453 cf Inflow=2.43 cfs 8,287 cf
 Primary=0.30 cfs 5,064 cf Secondary=1.78 cfs 2,318 cf Outflow=2.08 cfs 7,382 cf

Pond 8P: Underground Storage w/ Porous Peak Elev=97.66' Storage=33,144 cf Inflow=10.05 cfs 35,655 cf
 Primary=0.02 cfs 3,782 cf Secondary=0.00 cfs 0 cf Outflow=0.02 cfs 3,782 cf

Pond 9P: Proposed Rain Garden 3 (North) Peak Elev=100.46' Storage=1,751 cf Inflow=1.72 cfs 6,480 cf
 Primary=0.29 cfs 4,379 cf Secondary=1.65 cfs 1,964 cf Outflow=1.94 cfs 6,343 cf

Pond 10P: Underground Storage w/ Porous Peak Elev=97.77' Storage=25,689 cf Inflow=7.36 cfs 28,054 cf
 Primary=0.02 cfs 3,806 cf Secondary=0.00 cfs 0 cf Outflow=0.02 cfs 3,806 cf

Pond 11P: Proposed Rain Garden 2 (East) Peak Elev=100.61' Storage=3,267 cf Inflow=2.57 cfs 10,240 cf
 Primary=0.35 cfs 6,837 cf Secondary=2.77 cfs 3,180 cf Outflow=3.12 cfs 10,016 cf

Pond 12P: Underground Storage w/ Porous Peak Elev=97.29' Storage=6,911 cf Inflow=3.12 cfs 10,016 cf
 Primary=0.01 cfs 3,435 cf Secondary=0.00 cfs 0 cf Outflow=0.01 cfs 3,435 cf

Link 1L: Offsite Flows Inflow=38.69 cfs 198,077 cf
 Primary=38.69 cfs 198,077 cf

Total Runoff Area = 1,824,942 sf Runoff Volume = 517,157 cf Average Runoff Depth = 3.40"
63.76% Pervious = 1,163,653 sf 36.24% Impervious = 661,289 sf

Summary for Subcatchment 1S: DA1: CN w/ IC areas_original

Runoff = 4.81 cfs @ 12.22 hrs, Volume= 20,135 cf, Depth= 4.30"

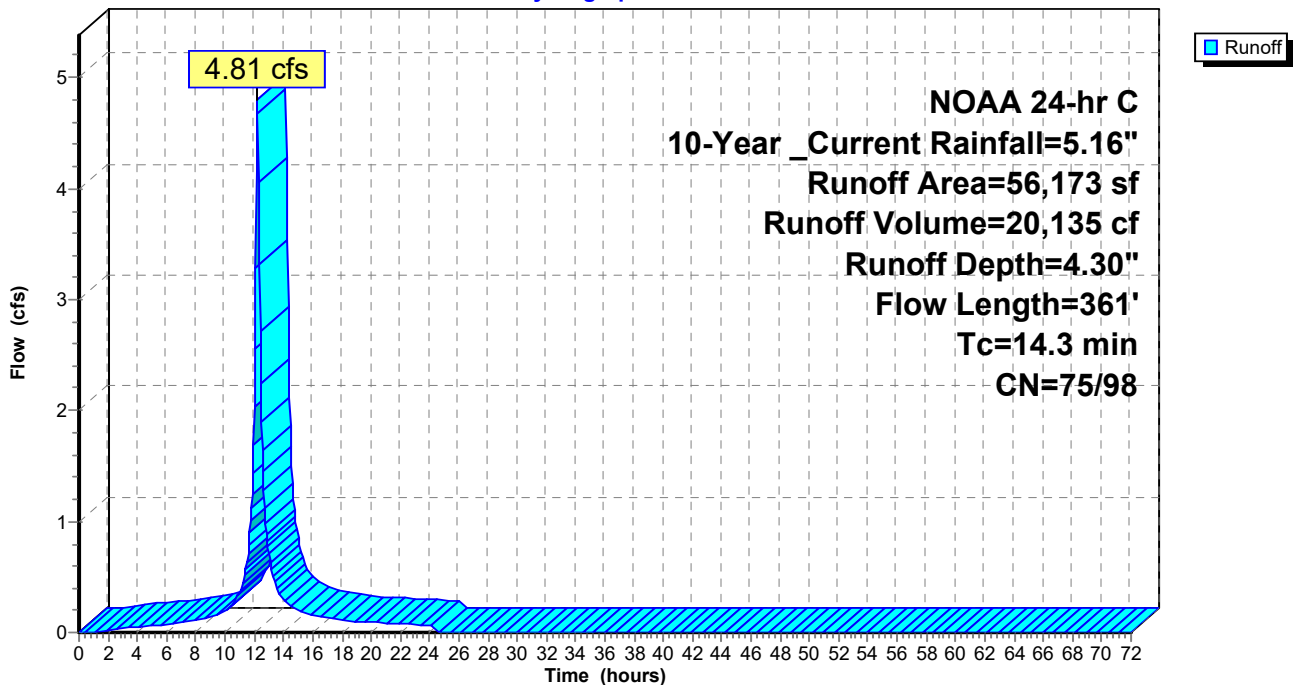
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _Current Rainfall=5.16"

Area (sf)	CN	Description
* 2,053	79	Open space (fair) C
* 12,848	74	Open space (good) C
* 41,272	98	Impervious
56,173	92	Weighted Average
14,901	75	26.53% Pervious Area
41,272	98	73.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	100	0.0109	0.14		Sheet Flow, Sheet flow Grass: Short n= 0.150 P2= 3.34"
0.2	33	0.0280	2.69		Shallow Concentrated Flow, SCF - unpaved Unpaved Kv= 16.1 fps
1.9	228	0.0095	1.98		Shallow Concentrated Flow, SCF - Paved parking lot Paved Kv= 20.3 fps
14.3	361	Total			

Subcatchment 1S: DA1: CN w/ IC areas_original

Hydrograph



Summary for Subcatchment 1Sa: Existing RG 1_West_ DA

Runoff = 1.89 cfs @ 12.22 hrs, Volume= 7,833 cf, Depth= 4.15"
 Routed to Reach 1R : Existing Bioswale West 1

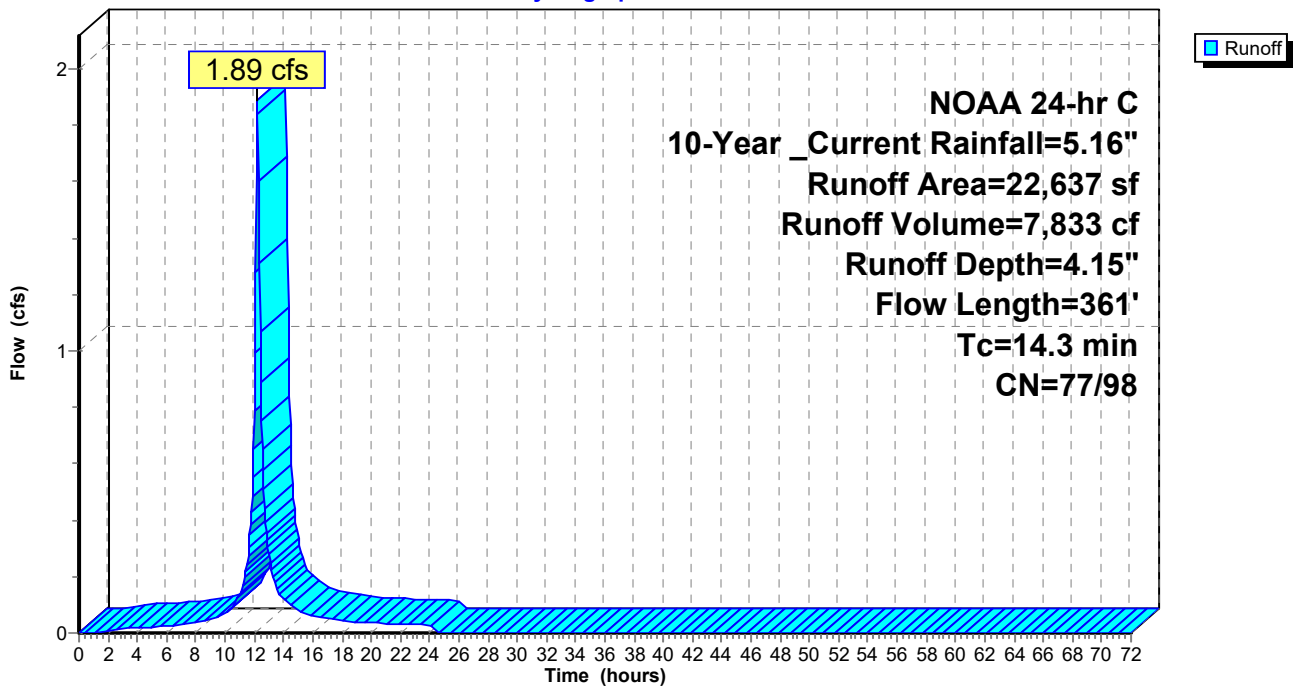
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _Current Rainfall=5.16"

	Area (sf)	CN	Description
*	5,569	79	Open space (fair) C - Portion from DA 9 the field
*	14,584	98	Impervious Parking Lot
*	2,484	74	OPen Space (Good) C - Portion from DA1
	22,637	91	Weighted Average
	8,053	77	35.57% Pervious Area
	14,584	98	64.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	100	0.0109	0.14		Sheet Flow, Sheet flow Grass: Short n= 0.150 P2= 3.34"
0.2	33	0.0280	2.69		Shallow Concentrated Flow, SCF - unpaved Unpaved Kv= 16.1 fps
1.9	228	0.0095	1.98		Shallow Concentrated Flow, SCF - Paved parking lot Paved Kv= 20.3 fps
14.3	361	Total			

Subcatchment 1Sa: Existing RG 1_West_ DA

Hydrograph



Summary for Subcatchment 1Sb: DA1: CN w/ IC areas_Remaining

Runoff = 3.27 cfs @ 12.22 hrs, Volume= 13,618 cf, Depth= 4.18"
 Routed to Pond 2P : Underground Storage w/ Porous Pavement 1

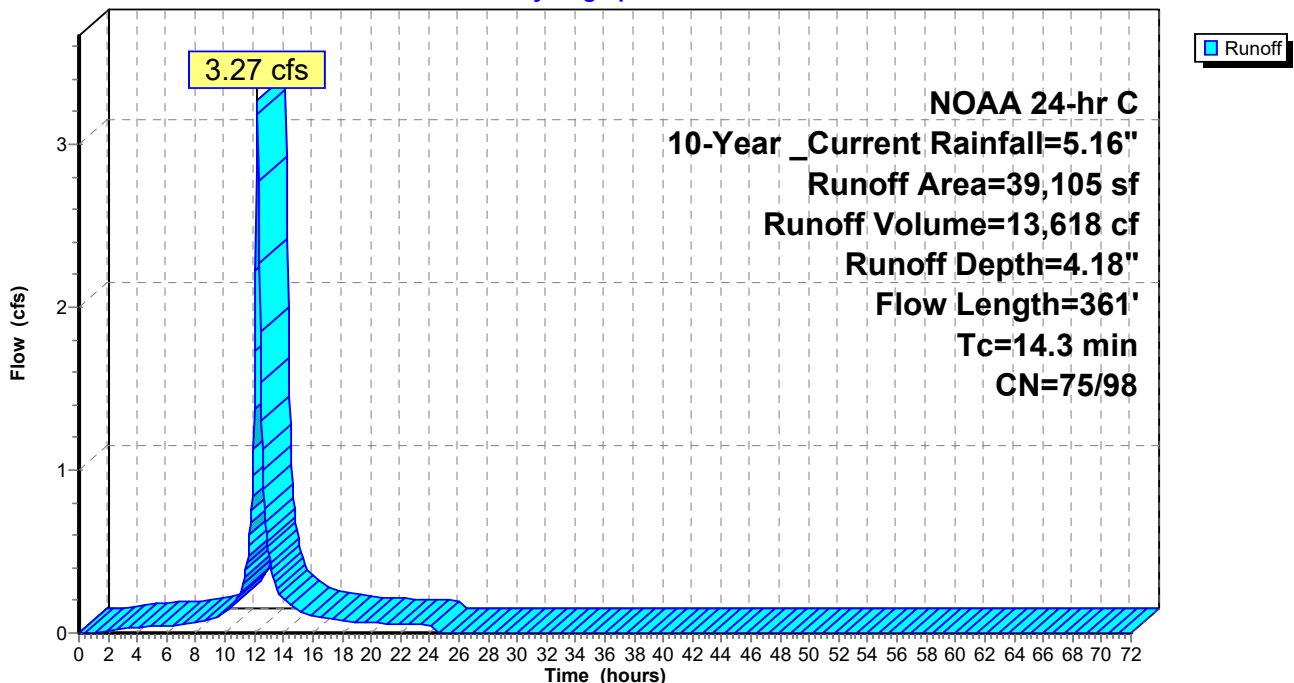
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _Current Rainfall=5.16"

	Area (sf)	CN	Description
*	2,053	79	Open space (fair) C
*	10,364	74	Open space (good) C
*	26,688	98	Impervious
	39,105	91	Weighted Average
	12,417	75	31.75% Pervious Area
	26,688	98	68.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	100	0.0109	0.14		Sheet Flow, Sheet flow Grass: Short n= 0.150 P2= 3.34"
0.2	33	0.0280	2.69		Shallow Concentrated Flow, SCF - unpaved Unpaved Kv= 16.1 fps
1.9	228	0.0095	1.98		Shallow Concentrated Flow, SCF - Paved parking lot Paved Kv= 20.3 fps
14.3	361	Total			

Subcatchment 1Sb: DA1: CN w/ IC areas_Remaining

Hydrograph



Summary for Subcatchment 2S: DA 2: CN w/ IC areas

Runoff = 6.63 cfs @ 12.14 hrs, Volume= 22,415 cf, Depth= 4.62"
 Routed to Pond 3P : Underground Storage w/ Porous Pavement 2

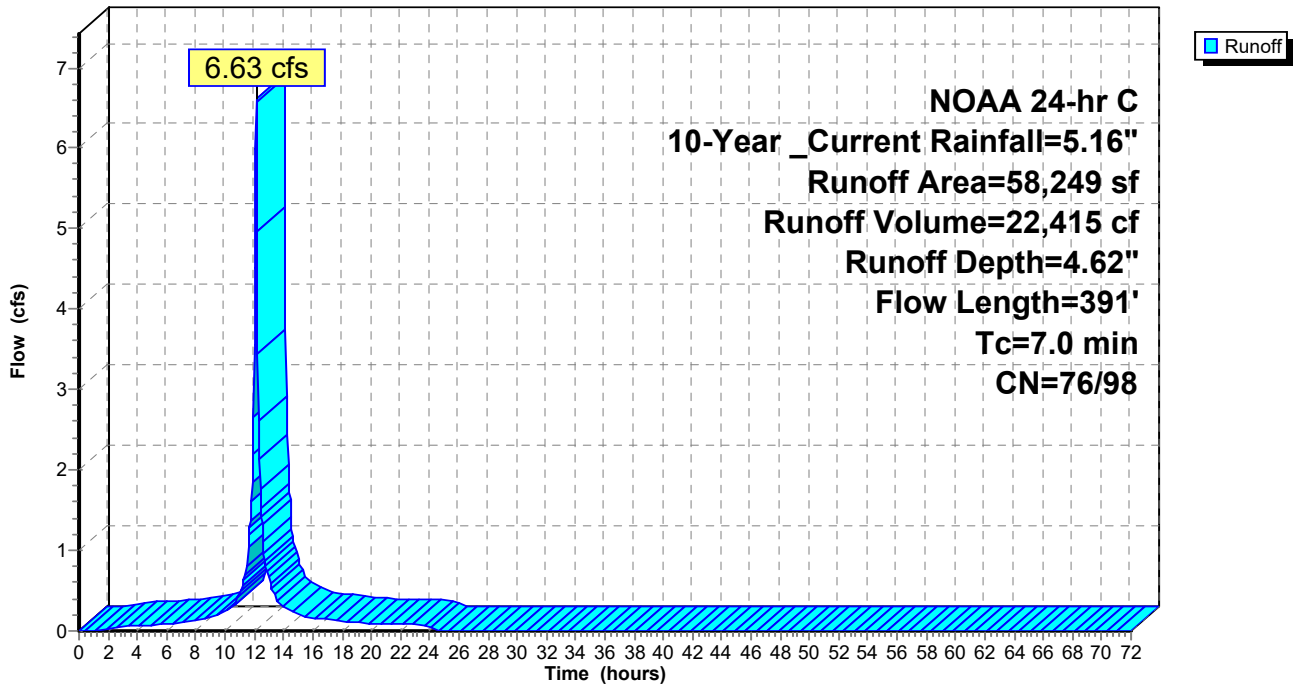
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _Current Rainfall=5.16"

Area (sf)	CN	Description
* 3,767	79	Open space (Fair) C
* 4,118	74	Open Space (good) C
* 50,364	98	Impervious
58,249	95	Weighted Average
7,885	76	13.54% Pervious Area
50,364	98	86.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	18	0.0037	0.06		Sheet Flow, Sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
2.2	373	0.0186	2.77		Shallow Concentrated Flow, SCF _ paved Paved Kv= 20.3 fps
7.0	391	Total			

Subcatchment 2S: DA 2: CN w/ IC areas

Hydrograph



Summary for Subcatchment 3S: DA 3: CN w/ IC areas_Original

Runoff = 15.80 cfs @ 12.15 hrs, Volume= 54,189 cf, Depth= 4.10"

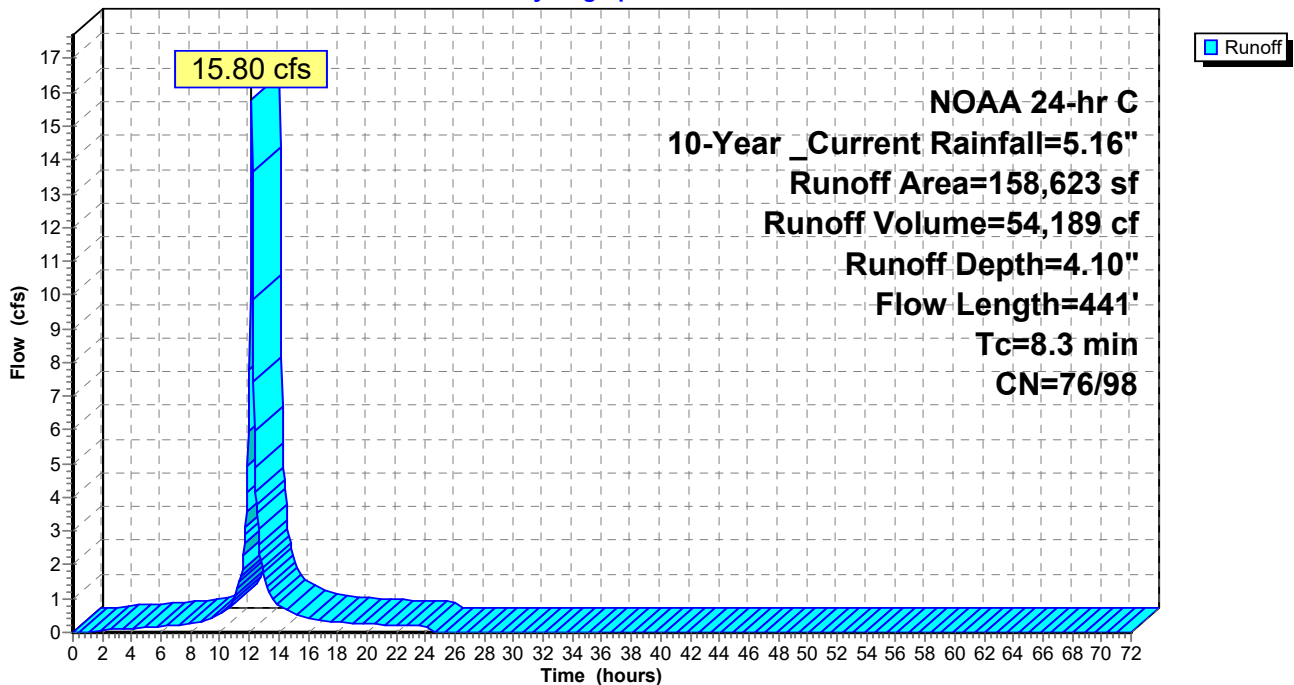
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _Current Rainfall=5.16"

	Area (sf)	CN	Description
*	18,715	79	Open space (Fair) C
*	39,208	74	Open space (good) C
*	100,700	98	Impervious
	158,623	90	Weighted Average
	57,923	76	36.52% Pervious Area
	100,700	98	63.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	83	0.0489	0.24		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
2.5	358	0.0138	2.38		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
8.3	441	Total			

Subcatchment 3S: DA 3: CN w/ IC areas_Original

Hydrograph



Summary for Subcatchment 3Sa: Existing RG 2 Front DA

Runoff = 2.51 cfs @ 12.15 hrs, Volume= 8,423 cf, Depth= 3.90"
 Routed to Pond 4P : Existing Rain Garden 2 Front

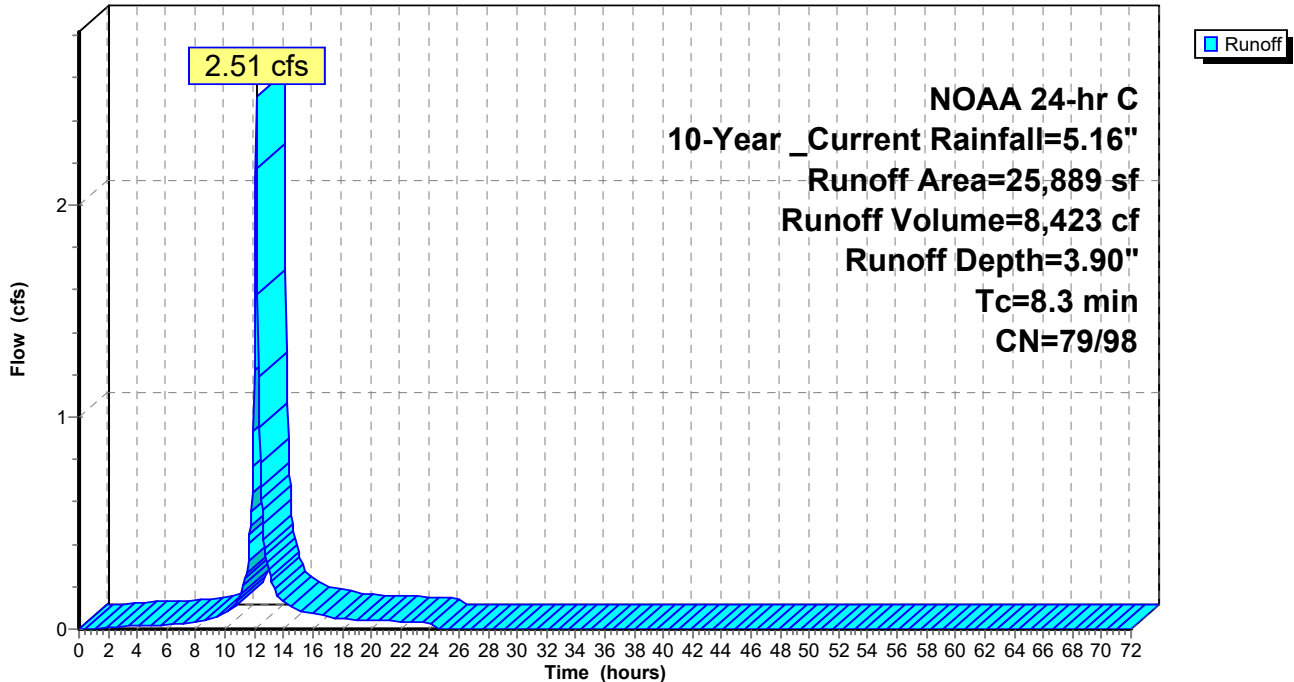
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _Current Rainfall=5.16"

	Area (sf)	CN	Description
*	6,507	98	Impervious Roof Top
*	966	98	Gravel surface, HSG C - Path
*	5,114	98	Impervious Sidewalk
	13,302	79	50-75% Grass cover, Fair, HSG C
	25,889	88	Weighted Average
	13,302	79	51.38% Pervious Area
	12,587	98	48.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3					Direct Entry,

Subcatchment 3Sa: Existing RG 2 Front DA

Hydrograph



Summary for Subcatchment 3Sb: RG 1 DA

Runoff = 2.11 cfs @ 12.15 hrs, Volume= 7,264 cf, Depth= 4.08"
 Routed to Pond 5P : Proposed Rain Garden 1 (South West)

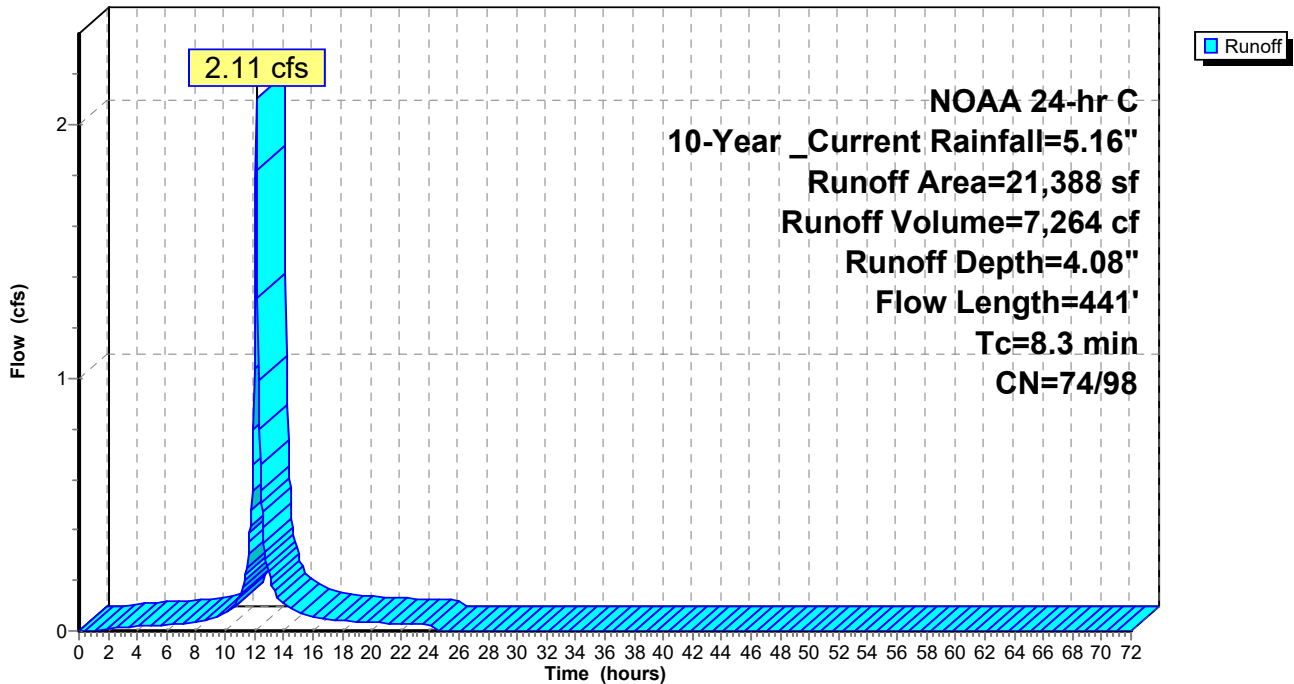
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _Current Rainfall=5.16"

	Area (sf)	CN	Description
*	7,455	74	Open space (good) C
*	10,303	98	Impervious - Roof top
*	3,630	98	Impervious - Road / Sidewalk
	21,388	90	Weighted Average
	7,455	74	34.86% Pervious Area
	13,933	98	65.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	83	0.0489	0.24		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
2.5	358	0.0138	2.38		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
8.3	441	Total			

Subcatchment 3Sb: RG 1 DA

Hydrograph



Summary for Subcatchment 3Sc: DA 3: CN w/ IC areas Remaining

Runoff = 11.15 cfs @ 12.15 hrs, Volume= 38,421 cf, Depth= 4.14"
 Routed to Pond 6P : Underground Storage w/ Porous Pavement 3

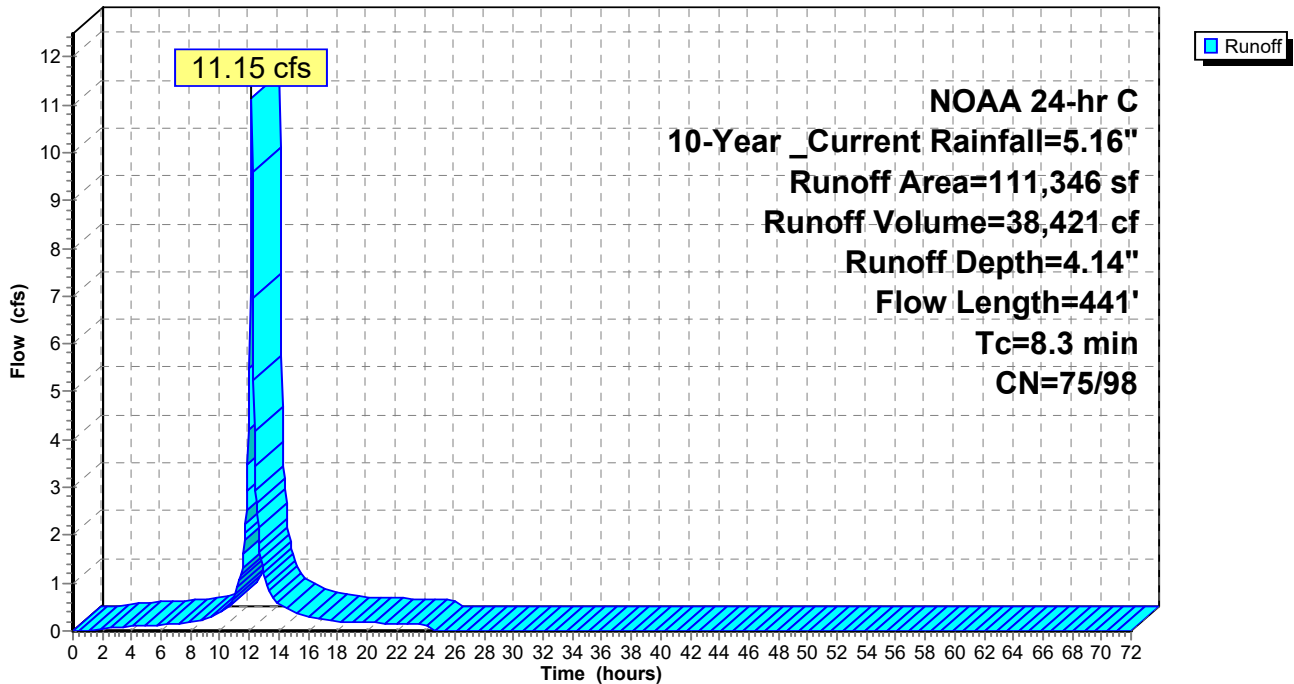
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _Current Rainfall=5.16"

	Area (sf)	CN	Description
*	5,413	79	Open space (Fair) C
*	31,753	74	Open space (good) C
*	74,180	98	Impervious
	111,346	90	Weighted Average
	37,166	75	33.38% Pervious Area
	74,180	98	66.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	83	0.0489	0.24		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
2.5	358	0.0138	2.38		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
8.3	441	Total			

Subcatchment 3Sc: DA 3: CN w/ IC areas Remaining

Hydrograph



Summary for Subcatchment 4S: DA 4: CN w/ IC areas_original

Runoff = 9.58 cfs @ 12.15 hrs, Volume= 34,025 cf, Depth= 4.70"

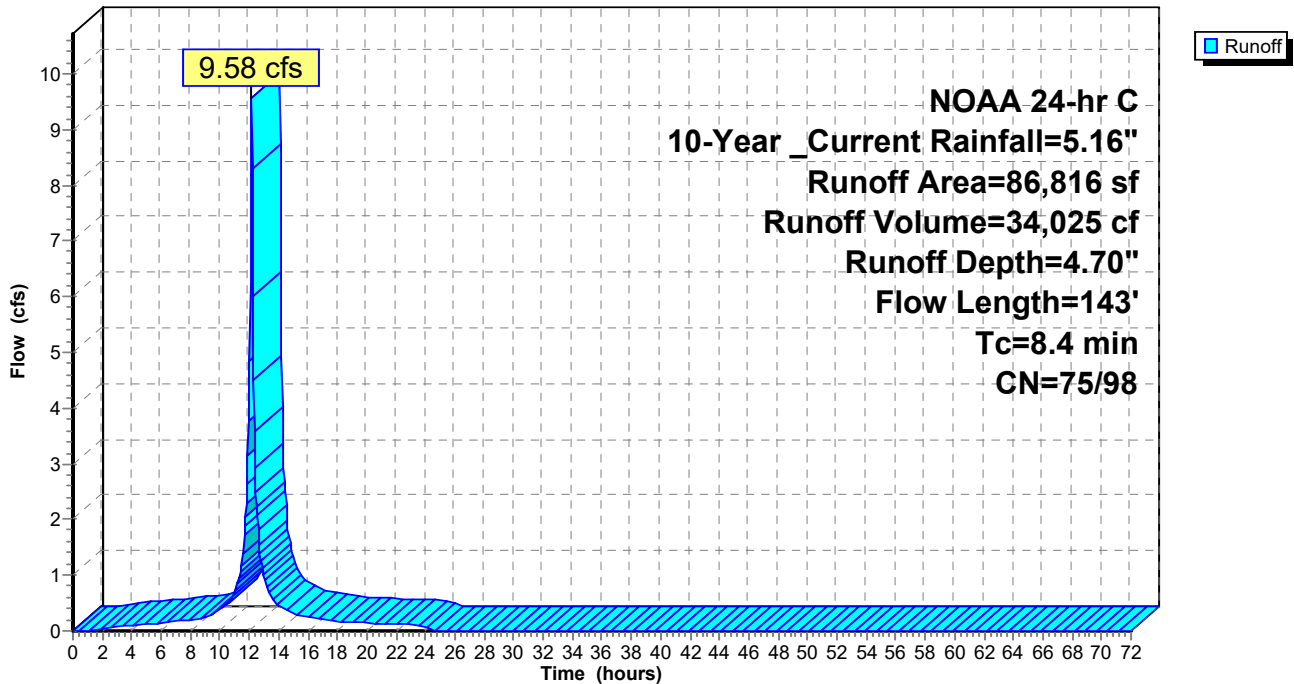
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _Current Rainfall=5.16"

	Area (sf)	CN	Description
*	1,403	79	Open space (fair) C
*	446	84	Open space (fair) D
*	6,298	74	Open space (good) C
*	78,669	98	Impervious
	86,816	96	Weighted Average
	8,147	75	9.38% Pervious Area
	78,669	98	90.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	67	0.0144	0.14		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
0.5	76	0.0155	2.53		Shallow Concentrated Flow, SCF - Paved Paved Kv= 20.3 fps
8.4	143	Total			

Subcatchment 4S: DA 4: CN w/ IC areas_original

Hydrograph



Summary for Subcatchment 4Sa: RG 4 DA

Runoff = 2.43 cfs @ 12.15 hrs, Volume= 8,287 cf, Depth= 4.08"
 Routed to Pond 7P : Proposed Rain Garden 4 (North)

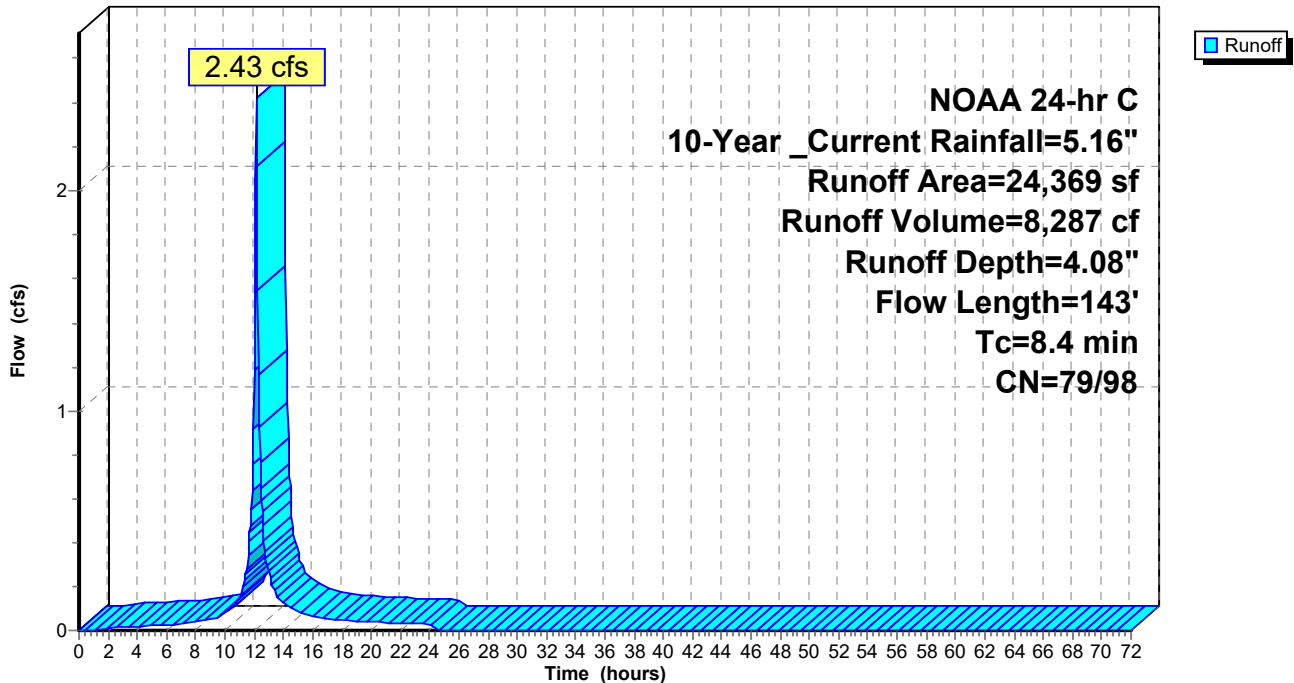
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _Current Rainfall=5.16"

	Area (sf)	CN	Description
*	10,350	79	Open space (fair) C_from DA 8
*	14,019	98	Impervious Parkinglot
	24,369	90	Weighted Average
	10,350	79	42.47% Pervious Area
	14,019	98	57.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	67	0.0144	0.14		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
0.5	76	0.0155	2.53		Shallow Concentrated Flow, SCF - Paved Paved Kv= 20.3 fps
8.4	143	Total			

Subcatchment 4Sa: RG 4 DA

Hydrograph



Summary for Subcatchment 4Sb: DA 4: CN w/ IC areas

Runoff = 7.97 cfs @ 12.15 hrs, Volume= 28,274 cf, Depth= 4.66"
 Routed to Pond 8P : Underground Storage w/ Porous Pavement 4

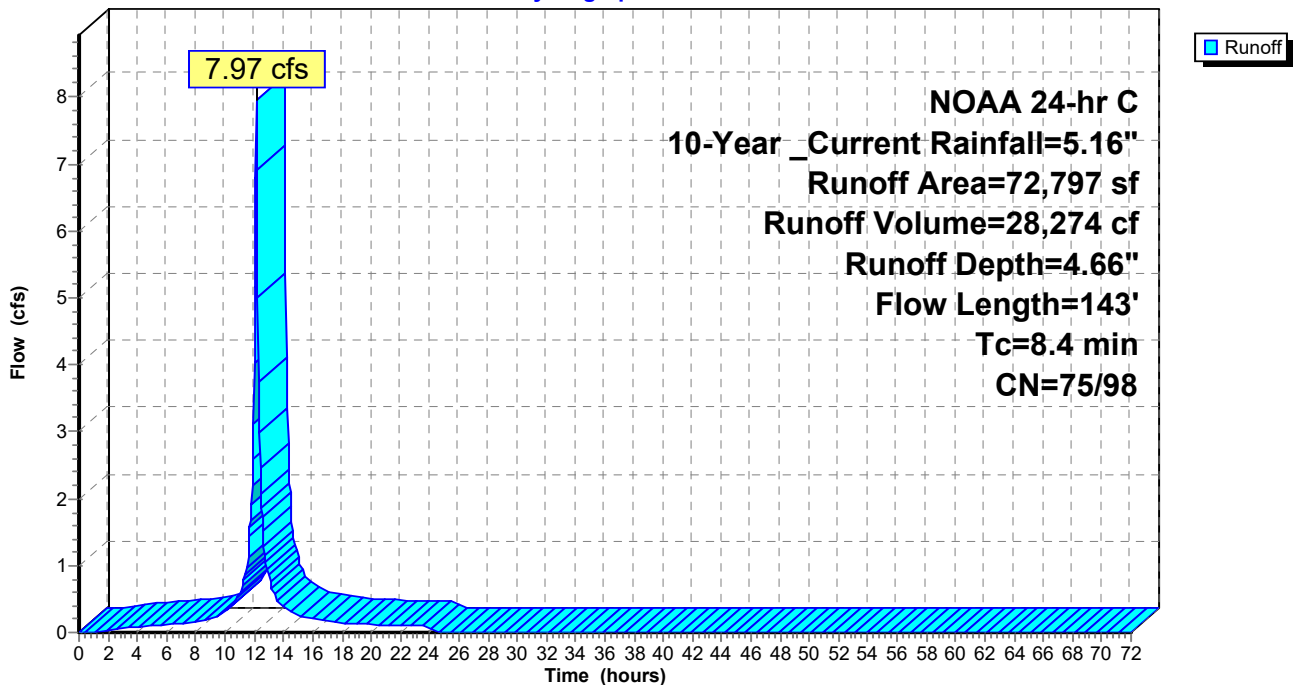
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _Current Rainfall=5.16"

	Area (sf)	CN	Description
*	1,403	79	Open space (fair) C
*	446	84	Open space (fair) D
*	6,298	74	Open space (good) C
*	64,650	98	Impervious
	72,797	95	Weighted Average
	8,147	75	11.19% Pervious Area
	64,650	98	88.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	67	0.0144	0.14		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
0.5	76	0.0155	2.53		Shallow Concentrated Flow, SCF - Paved Paved Kv= 20.3 fps
8.4	143	Total			

Subcatchment 4Sb: DA 4: CN w/ IC areas

Hydrograph



Summary for Subcatchment 5S: DA 5: CN w/ IC areas_Original

Runoff = 7.29 cfs @ 12.19 hrs, Volume= 28,198 cf, Depth= 4.33"

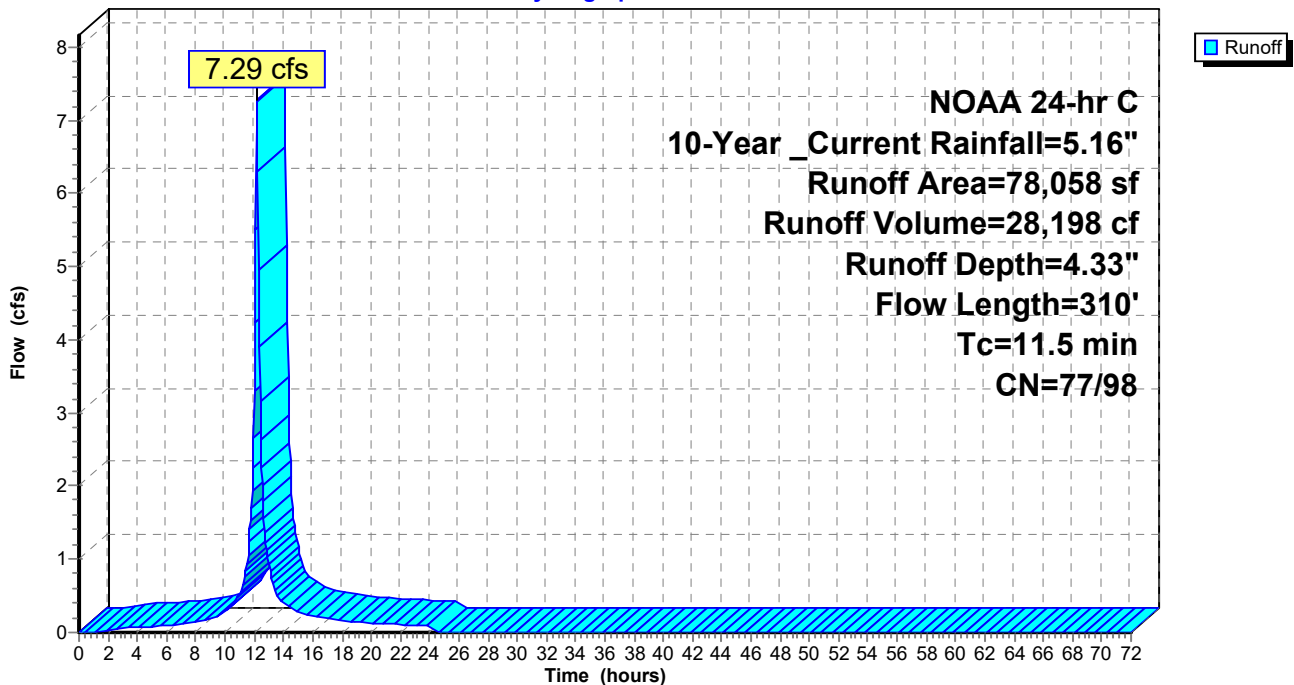
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _Current Rainfall=5.16"

	Area (sf)	CN	Description
*	11,294	79	Open Space (Fair) C
*	9,899	74	Open Space (good) C
*	56,865	98	Impervious
	78,058	92	Weighted Average
	21,193	77	27.15% Pervious Area
	56,865	98	72.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	64	0.0105	0.12		Sheet Flow, Sheet flow -grass Grass: Short n= 0.150 P2= 3.34"
1.3	179	0.0129	2.31		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
1.5	67	0.0120	0.77		Shallow Concentrated Flow, SCF _ grass Short Grass Pasture Kv= 7.0 fps
11.5	310	Total			

Subcatchment 5S: DA 5: CN w/ IC areas_Original

Hydrograph



Summary for Subcatchment 5Sa: RG 3 DA

Runoff = 1.73 cfs @ 12.19 hrs, Volume= 6,480 cf, Depth= 3.91"
 Routed to Reach 2R : Bioswale E 1 RG 3

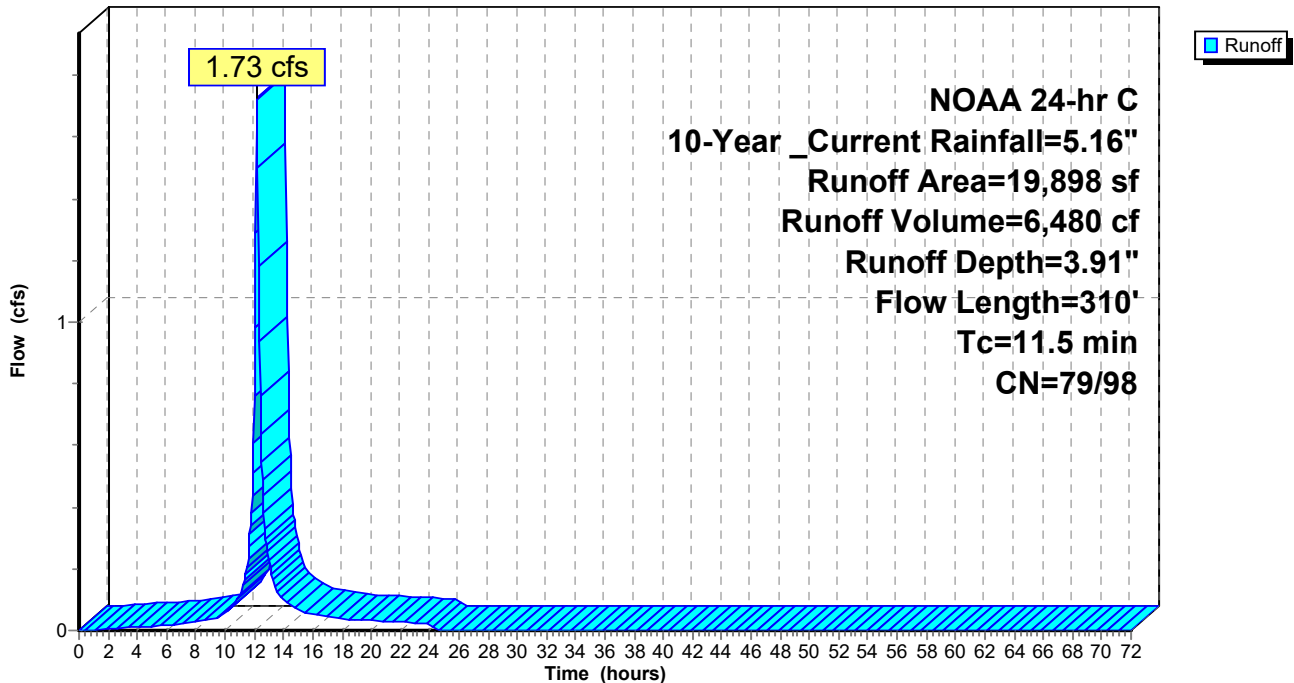
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _Current Rainfall=5.16"

	Area (sf)	CN	Description
*	10,182	79	Open Space (Fair) C
*	9,716	98	Impervious Parking lot
	19,898	88	Weighted Average
	10,182	79	51.17% Pervious Area
	9,716	98	48.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	64	0.0105	0.12		Sheet Flow, Sheet flow -grass Grass: Short n= 0.150 P2= 3.34"
1.3	179	0.0129	2.31		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
1.5	67	0.0120	0.77		Shallow Concentrated Flow, SCF _ grass Short Grass Pasture Kv= 7.0 fps
11.5	310	Total			

Subcatchment 5Sa: RG 3 DA

Hydrograph



Summary for Subcatchment 5Sb: DA 5: CN w/ IC areas

Runoff = 5.56 cfs @ 12.19 hrs, Volume= 21,711 cf, Depth= 4.48"
 Routed to Pond 10P : Underground Storage w/ Porous Pavement 5

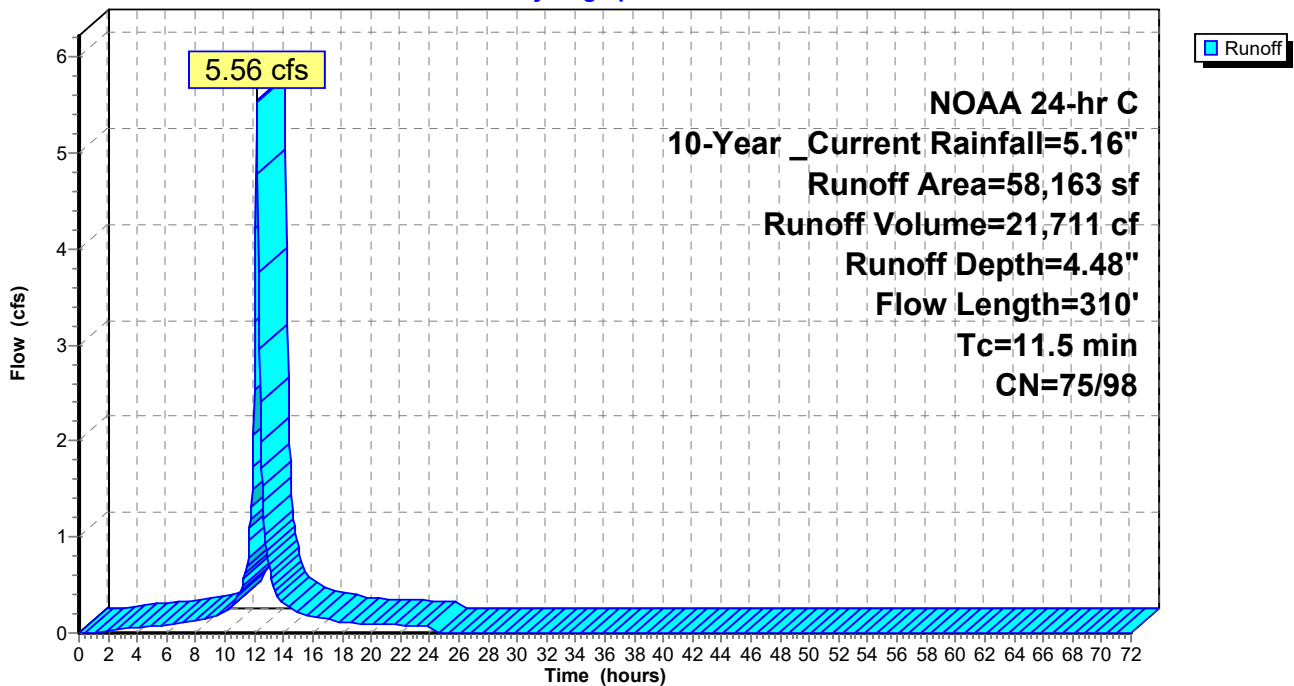
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _Current Rainfall=5.16"

Area (sf)	CN	Description
* 1,112	79	Open Space (Fair) C
* 9,899	74	Open Space (good) C
* 47,152	98	Impervious
58,163	94	Weighted Average
11,011	75	18.93% Pervious Area
47,152	98	81.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	64	0.0105	0.12		Sheet Flow, Sheet flow -grass Grass: Short n= 0.150 P2= 3.34"
1.3	179	0.0129	2.31		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
1.5	67	0.0120	0.77		Shallow Concentrated Flow, SCF _ grass Short Grass Pasture Kv= 7.0 fps
11.5	310	Total			

Subcatchment 5Sb: DA 5: CN w/ IC areas

Hydrograph



Summary for Subcatchment 6S: DA 6: CN w/ IC areas

Runoff = 2.57 cfs @ 12.22 hrs, Volume= 10,240 cf, Depth= 3.84"
 Routed to Pond 11P : Proposed Rain Garden 2 (East)

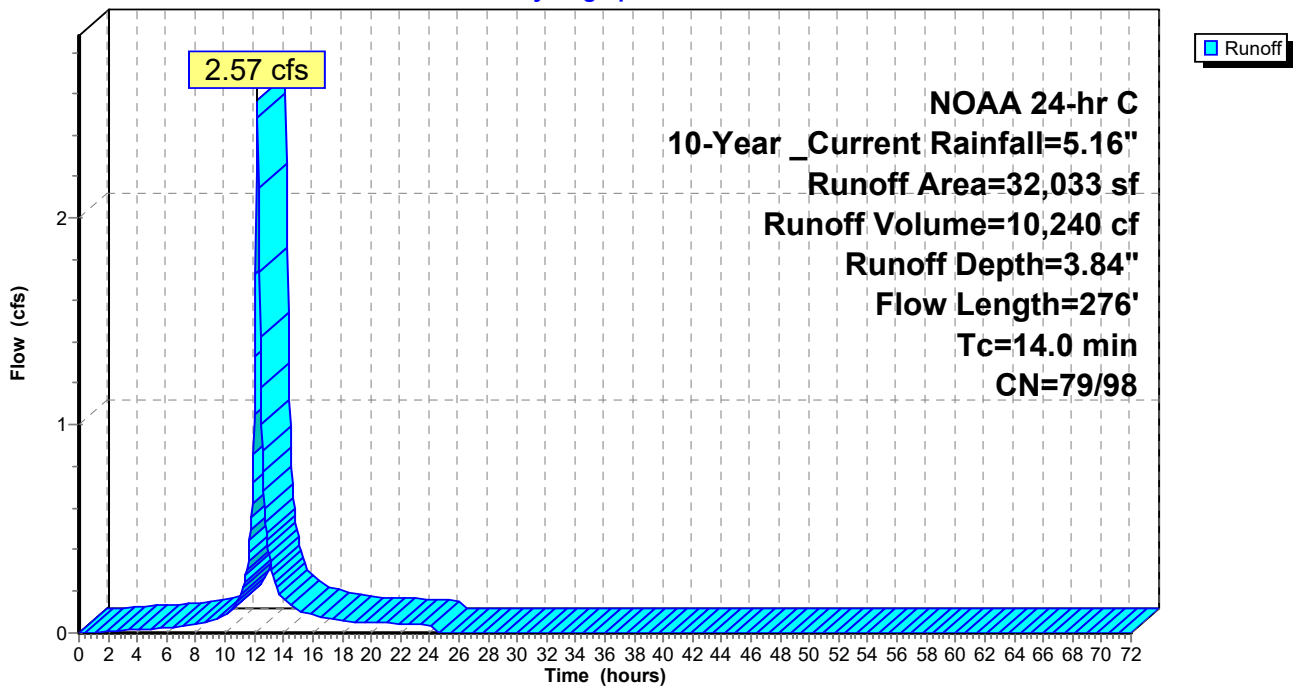
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _Current Rainfall=5.16"

	Area (sf)	CN	Description
*	16,559	79	Open Space (fair) C
*	998	74	Open Space (good) C
*	14,476	98	Impervious
	32,033	87	Weighted Average
	17,557	79	54.81% Pervious Area
	14,476	98	45.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0098	0.13		Sheet Flow, Sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
0.5	86	0.0244	3.17		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
0.7	90	0.0178	2.15		Shallow Concentrated Flow, SCF - unpaved Unpaved Kv= 16.1 fps
14.0	276	Total			

Subcatchment 6S: DA 6: CN w/ IC areas

Hydrograph



Summary for Subcatchment 7S: DA 7 (Offsite South): CN w/ IC areas

Runoff = 7.38 cfs @ 12.23 hrs, Volume= 28,880 cf, Depth= 3.24"
 Routed to Link 1L : Offsite Flows

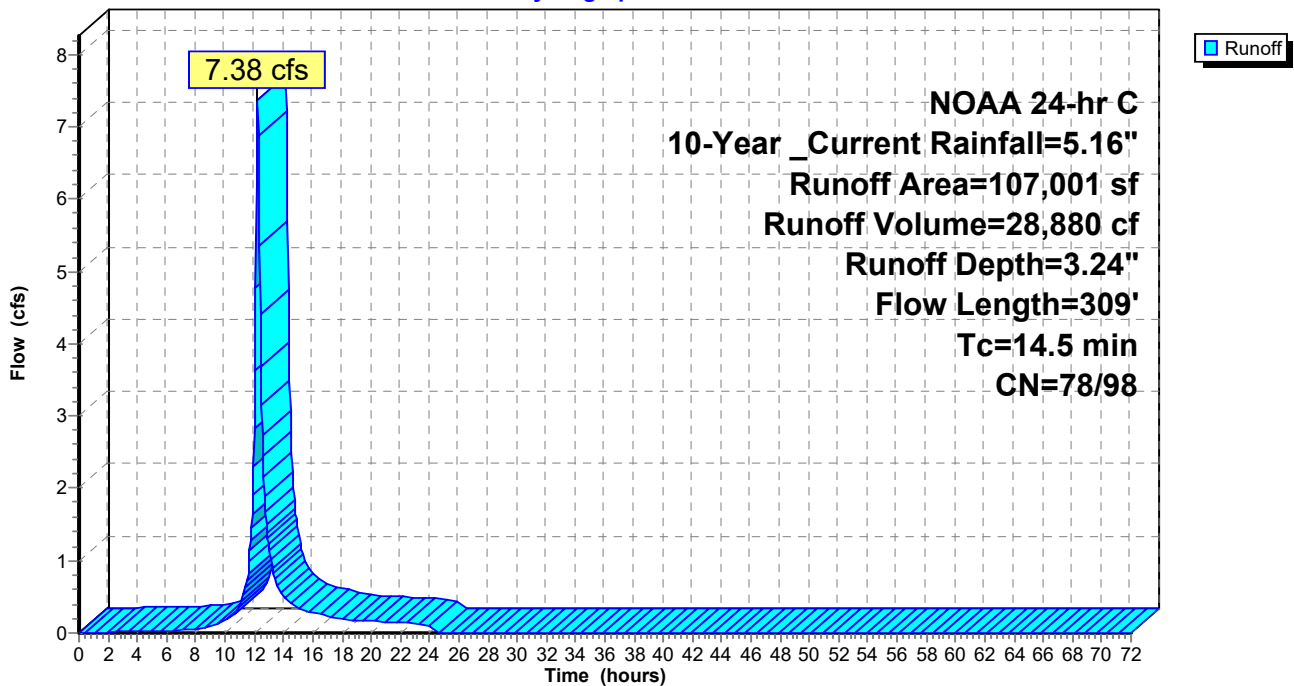
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _Current Rainfall=5.16"

Area (sf)	CN	Description
* 70,444	79	Open Space (fair) C
* 16,401	74	Open Space (good) C
* 20,156	98	Impervious
107,001	82	Weighted Average
86,845	78	81.16% Pervious Area
20,156	98	18.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	100	0.0112	0.14		Sheet Flow, Sheet flow Grass: Short n= 0.150 P2= 3.34"
2.2	165	0.0305	1.22		Shallow Concentrated Flow, SCF _ grass Short Grass Pasture Kv= 7.0 fps
0.2	44	0.0317	3.61		Shallow Concentrated Flow, SCF _ paved Paved Kv= 20.3 fps
14.5	309	Total			

Subcatchment 7S: DA 7 (Offsite South): CN w/ IC areas

Hydrograph



Summary for Subcatchment 8S: DA 8 (Offsite North): CN w/ IC areas

Runoff = 16.83 cfs @ 12.29 hrs, Volume= 72,092 cf, Depth= 2.54"
 Routed to Link 1L : Offsite Flows

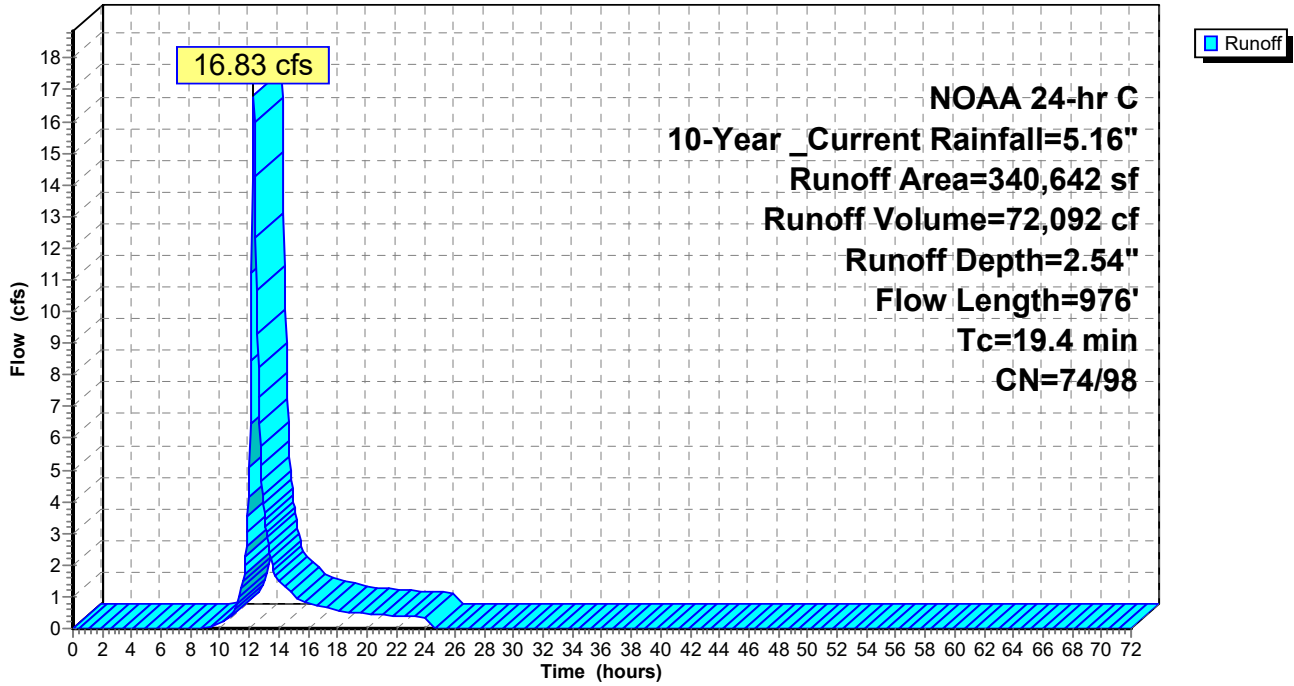
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _Current Rainfall=5.16"

Area (sf)	CN	Description
*	2,767	70 Brush (fair) C
*	63,031	77 Brush (fair) D
*	86,643	65 Brush (good) C
*	64,708	73 Brush (good) D
*	73,083	79 Open space (Fair) C
*	30,261	84 Open space (fair) D
*	4,460	74 Open space (good) C
*	9,087	80 Open space (good) D
*	6,602	98 Impervious
<hr/>		
340,642	75	Weighted Average
334,040	74	98.06% Pervious Area
6,602	98	1.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.0366	0.22		Sheet Flow, sheet flow Grass: Short n= 0.150 P2= 3.34"
11.9	876	0.0067	1.23		Shallow Concentrated Flow, scf - grass waterway Grassed Waterway Kv= 15.0 fps
<hr/>					
19.4	976	Total			

Subcatchment 8S: DA 8 (Offsite North): CN w/ IC areas

Hydrograph



Summary for Subcatchment 9S: DA 9 (Offsite Field West): CN w/ IC areas

Runoff = 18.19 cfs @ 12.44 hrs, Volume= 97,104 cf, Depth= 2.43"
 Routed to Link 1L : Offsite Flows

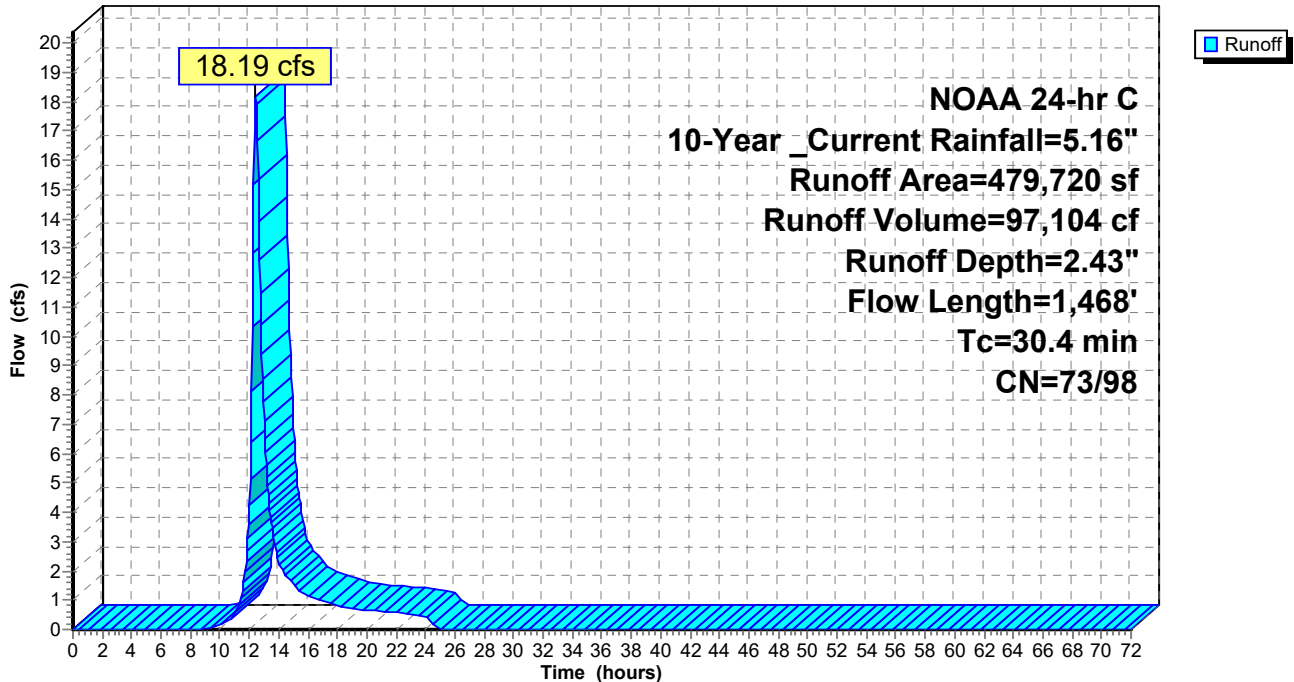
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _Current Rainfall=5.16"

	Area (sf)	CN	Description
*	72,478	65	Brush (good) C
*	10,448	79	Open spcae (fair) C
*	392,515	74	Open Space (good) C
*	4,279	98	Impervious
	479,720	73	Weighted Average
	475,441	73	99.11% Pervious Area
	4,279	98	0.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0159	0.16		Sheet Flow, Sheet flow Grass: Short n= 0.150 P2= 3.34"
7.1	362	0.0148	0.85		Shallow Concentrated Flow, SCF - grass Short Grass Pasture Kv= 7.0 fps
12.8	1,006	0.0076	1.31		Shallow Concentrated Flow, SCF - grass waterway Grassed Waterway Kv= 15.0 fps
30.4	1,468	Total			

Subcatchment 9S: DA 9 (Offsite Field West): CN w/ IC areas

Hydrograph



Summary for Subcatchment 31S: RG 2 DA

Runoff = 2.44 cfs @ 12.22 hrs, Volume= 9,566 cf, Depth= 3.58"

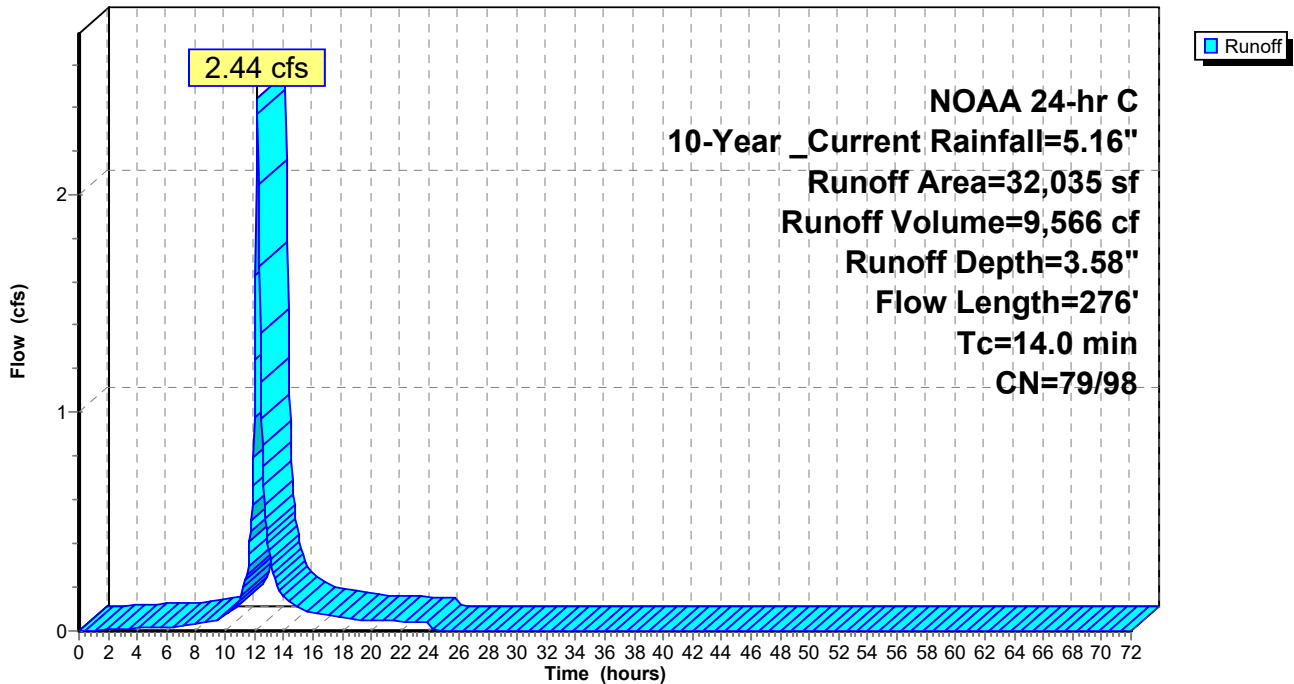
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 10-Year _Current Rainfall=5.16"

	Area (sf)	CN	Description
*	21,638	79	Open Space (fair) C
*	10,397	98	Impervious
	32,035	85	Weighted Average
	21,638	79	67.54% Pervious Area
	10,397	98	32.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0098	0.13		Sheet Flow, Sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
0.5	86	0.0244	3.17		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
0.7	90	0.0178	2.15		Shallow Concentrated Flow, SCF - unpaved Unpaved Kv= 16.1 fps
14.0	276	Total			

Subcatchment 31S: RG 2 DA

Hydrograph



Summary for Reach 1R: Existing Bioswale West 1

Inflow Area = 22,637 sf, 64.43% Impervious, Inflow Depth = 4.15" for 10-Year _Current event
 Inflow = 1.89 cfs @ 12.22 hrs, Volume= 7,833 cf
 Outflow = 1.87 cfs @ 12.23 hrs, Volume= 7,833 cf, Atten= 1%, Lag= 0.5 min
 Routed to Pond 1P : Existing Rain Garden 1 West

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Max. Velocity= 2.14 fps, Min. Travel Time= 0.3 min
 Avg. Velocity = 0.59 fps, Avg. Travel Time= 0.9 min

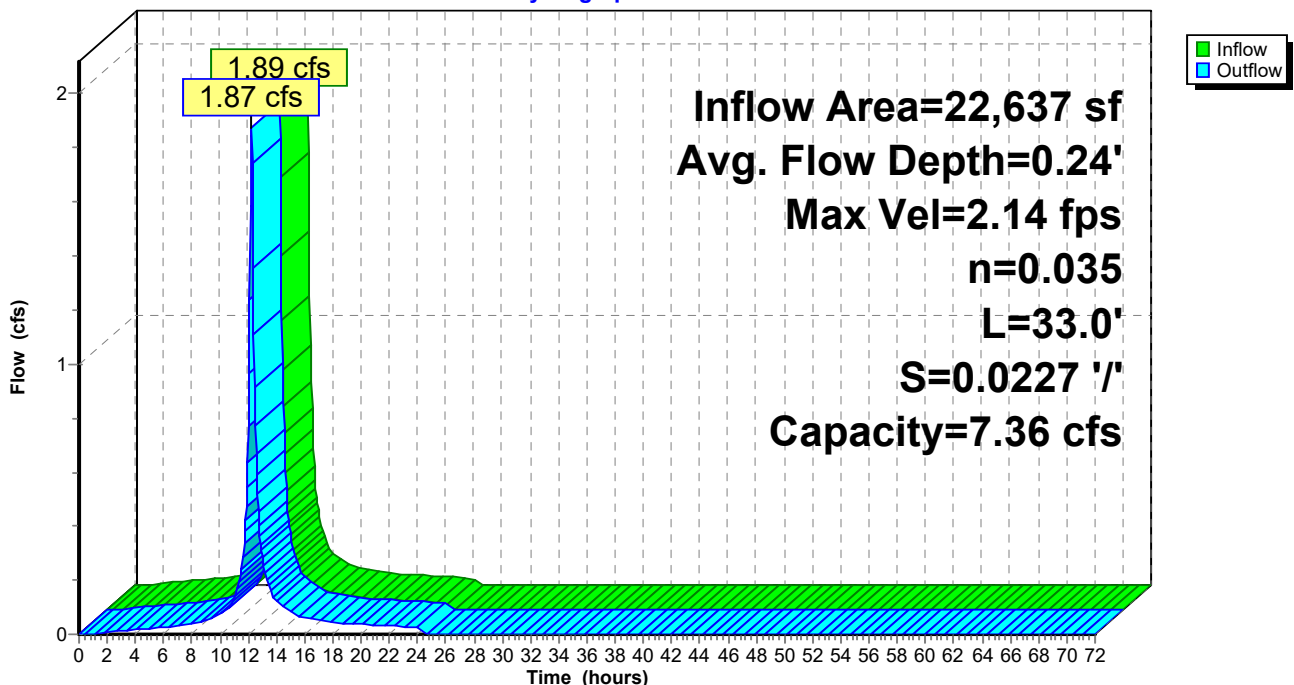
Peak Storage= 29 cf @ 12.22 hrs
 Average Depth at Peak Storage= 0.24' , Surface Width= 4.42'
 Bank-Full Depth= 0.50' Flow Area= 2.3 sf, Capacity= 7.36 cfs

3.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
 Side Slope Z-value= 3.0 '/' Top Width= 6.00'
 Length= 33.0' Slope= 0.0227 '/'
 Inlet Invert= 100.75', Outlet Invert= 100.00'



Reach 1R: Existing Bioswale West 1

Hydrograph



Summary for Reach 2R: Bioswale E 1 RG 3

Inflow Area = 19,898 sf, 48.83% Impervious, Inflow Depth = 3.91" for 10-Year _Current event
 Inflow = 1.73 cfs @ 12.19 hrs, Volume= 6,480 cf
 Outflow = 1.72 cfs @ 12.20 hrs, Volume= 6,480 cf, Atten= 1%, Lag= 0.4 min
 Routed to Pond 9P : Proposed Rain Garden 3 (North East)

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Max. Velocity= 2.58 fps, Min. Travel Time= 0.2 min
 Avg. Velocity = 0.81 fps, Avg. Travel Time= 0.7 min

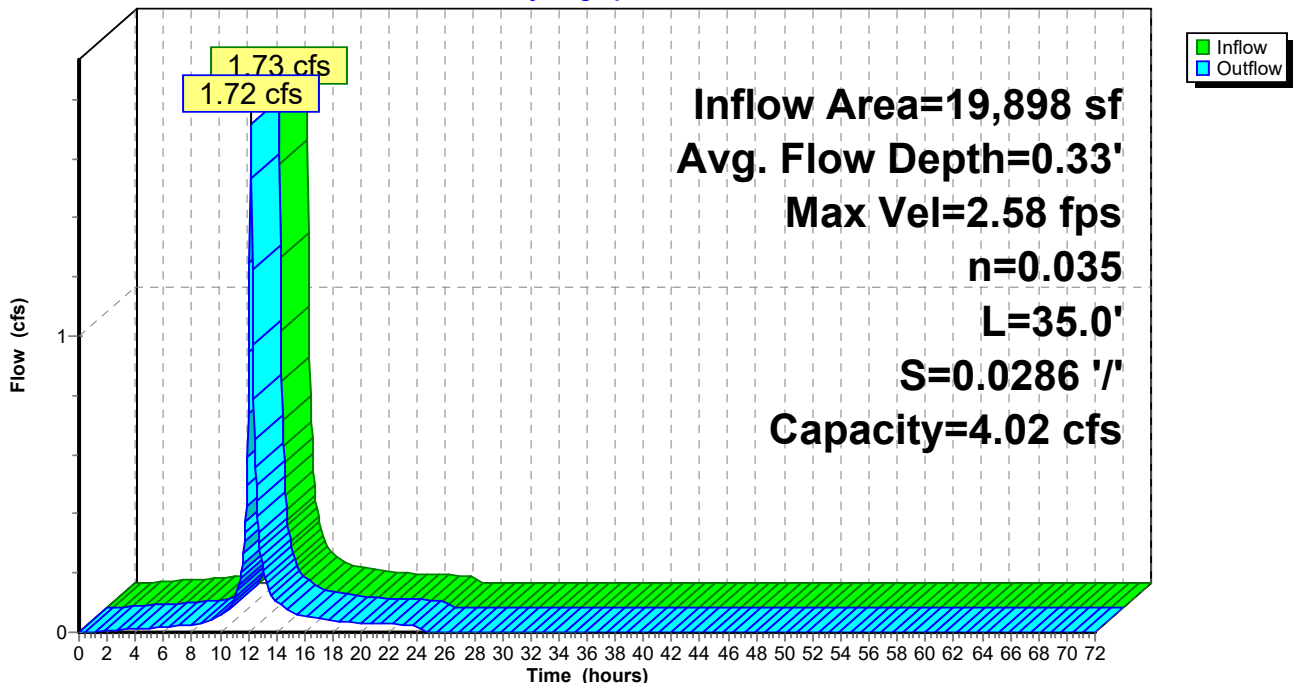
Peak Storage= 23 cf @ 12.19 hrs
 Average Depth at Peak Storage= 0.33' , Surface Width= 3.01'
 Bank-Full Depth= 0.50' Flow Area= 1.3 sf, Capacity= 4.02 cfs

1.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
 Side Slope Z-value= 3.0 '/ Top Width= 4.00'
 Length= 35.0' Slope= 0.0286 '/
 Inlet Invert= 101.00', Outlet Invert= 100.00'



Reach 2R: Bioswale E 1 RG 3

Hydrograph



Summary for Pond 1P: Exising Rain Garden 1 West

[93] Warning: Storage range exceeded by 0.23'
 [88] Warning: Qout>Qin may require smaller dt or Finer Routing
 [85] Warning: Oscillations may require smaller dt or Finer Routing (severity=2)
 [62] Hint: Exceeded Reach 1R OUTLET depth by 0.24' @ 12.20 hrs

Inflow Area = 22,637 sf, 64.43% Impervious, Inflow Depth = 4.15" for 10-Year _Current event
 Inflow = 1.87 cfs @ 12.23 hrs, Volume= 7,833 cf
 Outflow = 2.10 cfs @ 12.21 hrs, Volume= 7,656 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.30 cfs @ 12.21 hrs, Volume= 4,927 cf
 Routed to Pond 2P : Underground Storage w/ Porous Pavement 1
 Secondary = 1.80 cfs @ 12.21 hrs, Volume= 2,729 cf
 Routed to Pond 2P : Underground Storage w/ Porous Pavement 1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 100.48' @ 12.21 hrs Surf.Area= 1,750 sf Storage= 1,831 cf

Plug-Flow detention time= 387.9 min calculated for 7,656 cf (98% of inflow)
 Center-of-Mass det. time= 373.5 min (1,150.0 - 776.5)

Volume	Invert	Avail.Storage	Storage Description			
#1	98.25'	1,831 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
98.25	1,445	0.0	0	0	1,445	
99.25	1,445	35.0	506	506	1,580	
99.50	1,445	25.0	90	596	1,613	
100.00	1,750	100.0	798	1,394	1,927	
100.25	1,750	100.0	438	1,831	1,964	

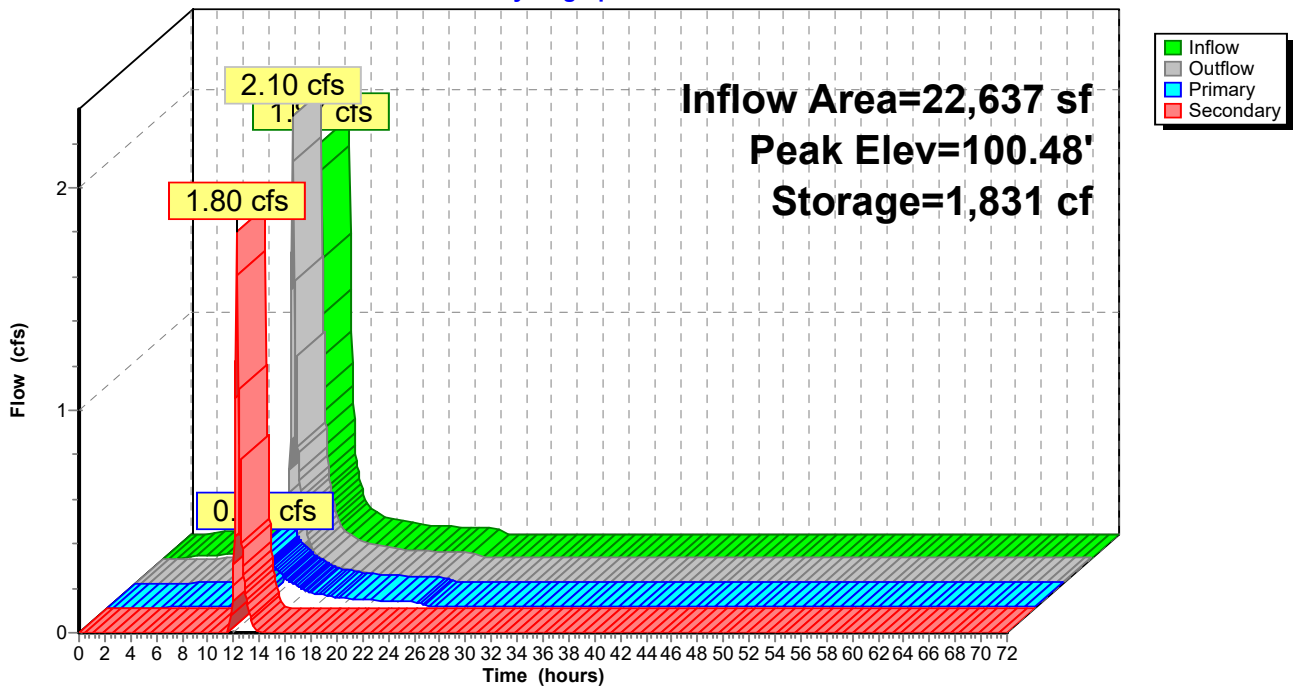
Device	Routing	Invert	Outlet Devices	
#1	Primary	98.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 98.15' / 98.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#2	Device 1	98.15'	0.5" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads	
#3	Device 2	98.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 98.25' / 98.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#4	Device 3	98.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads	
#5	Device 1	100.00'	4.0" Horiz. Drintech Atrium C= 0.600 Limited to weir flow at low heads	
#6	Secondary	100.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32	

Primary OutFlow Max=0.30 cfs @ 12.21 hrs HW=100.47' (Free Discharge)
 1=Culvert (Passes 0.30 cfs of 0.45 cfs potential flow)
 2=Restrictive Orifice (Orifice Controls 0.01 cfs @ 7.30 fps)
 3=4" HDPE Underdrain (Passes 0.01 cfs of 0.35 cfs potential flow)
 4=Perforations (Passes 0.01 cfs of 5.38 cfs potential flow)
 5=Draintech Atrium (Orifice Controls 0.29 cfs @ 3.29 fps)

Secondary OutFlow Max=1.74 cfs @ 12.21 hrs HW=100.47' (Free Discharge)
 6=Broad-Crested Rectangular Weir (Weir Controls 1.74 cfs @ 1.58 fps)

Pond 1P: Existing Rain Garden 1 West

Hydrograph



Summary for Pond 2P: Underground Storage w/ Porous Pavement 1

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 61,742 sf, 66.85% Impervious, Inflow Depth > 4.13" for 10-Year _Current event
 Inflow = 5.36 cfs @ 12.21 hrs, Volume= 21,274 cf
 Outflow = 0.02 cfs @ 24.52 hrs, Volume= 3,855 cf, Atten= 100%, Lag= 738.7 min
 Primary = 0.02 cfs @ 24.52 hrs, Volume= 3,840 cf
 Secondary = 0.00 cfs @ 24.52 hrs, Volume= 15 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 98.01' @ 24.52 hrs Surf.Area= 13,421 sf Storage= 18,889 cf

Plug-Flow detention time= 1,725.1 min calculated for 3,855 cf (18% of inflow)
 Center-of-Mass det. time= 1,379.4 min (2,288.3 - 908.9)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	1,612 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	9,359 cf	72.75'W x 146.02'L x 3.50'H Field A
			37,179 cf Overall - 13,782 cf Embedded = 23,397 cf x 40.0% Voids
#3A	96.17'	13,782 cf	ADS_StormTech SC-740 +Cap x 300 Inside #2
			Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
			Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
			300 Chambers in 15 Rows
		24,753 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	2,798	0.0	0	0
97.67	2,798	35.0	1,469	1,469
97.83	2,798	15.0	67	1,536
98.01	2,798	15.0	76	1,612

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.02 cfs @ 24.52 hrs HW=98.01' (Free Discharge)

↑ **1=Restriction Orifice** (Orifice Controls 0.02 cfs @ 11.71 fps)

↑ **2=6" HDPE Underdrain** (Passes 0.02 cfs of 0.46 cfs potential flow)

↑ **3=Perforations** (Passes 0.02 cfs of 8.72 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 24.52 hrs HW=98.01' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** (Weir Controls 0.00 cfs @ 0.19 fps)

Pond 2P: Underground Storage w/ Porous Pavement 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

20 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 144.02' Row Length +12.0" End Stone x 2 = 146.02' Base Length

15 Rows x 51.0" Wide + 6.0" Spacing x 14 + 12.0" Side Stone x 2 = 72.75' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

300 Chambers x 45.9 cf = 13,782.0 cf Chamber Storage

37,179.5 cf Field - 13,782.0 cf Chambers = 23,397.5 cf Stone x 40.0% Voids = 9,359.0 cf Stone Storage

Chamber Storage + Stone Storage = 23,141.0 cf = 0.531 af

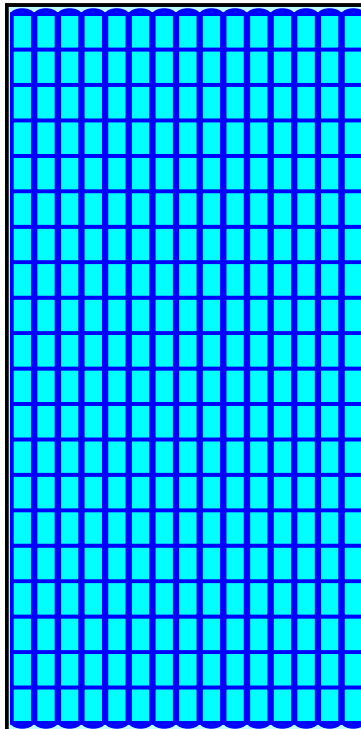
Overall Storage Efficiency = 62.2%

Overall System Size = 146.02' x 72.75' x 3.50'

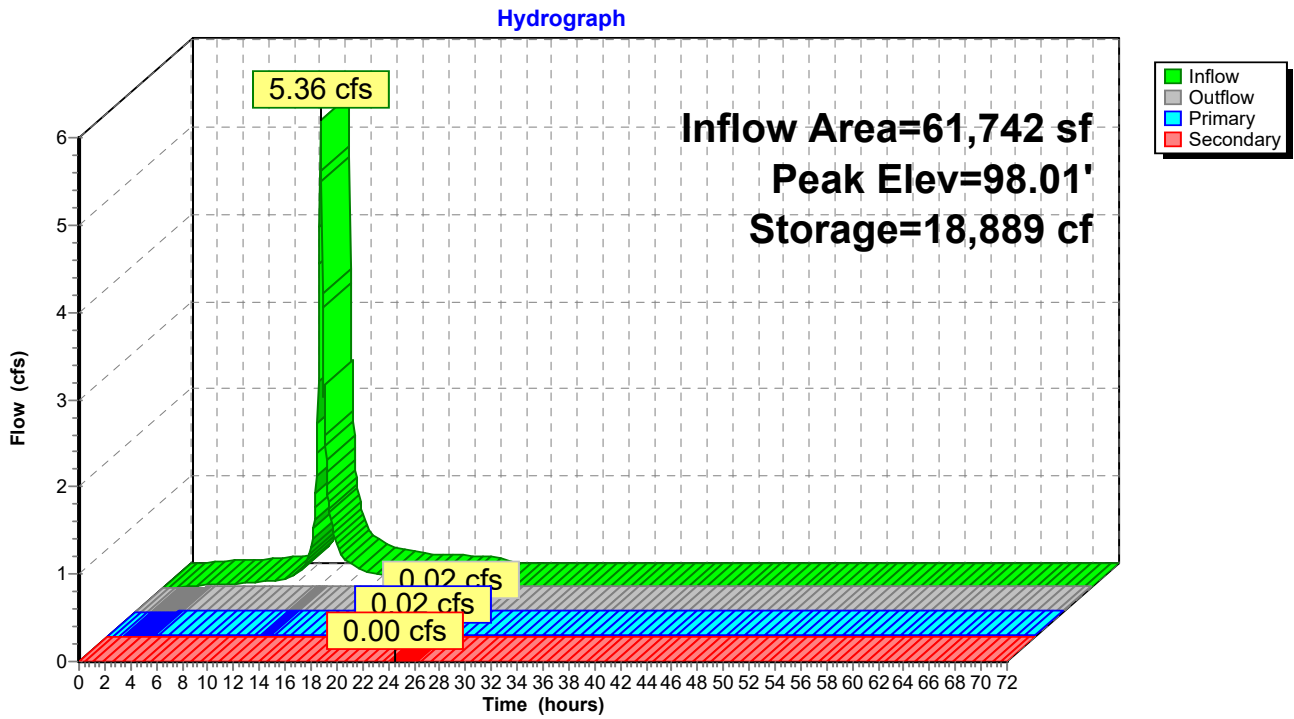
300 Chambers

1,377.0 cy Field

866.6 cy Stone



Pond 2P: Underground Storage w/ Porous Pavement 1



Summary for Pond 3P: Underground Storage w/ Porous Pavement 2

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 58,249 sf, 86.46% Impervious, Inflow Depth = 4.62" for 10-Year _Current event
 Inflow = 6.63 cfs @ 12.14 hrs, Volume= 22,415 cf
 Outflow = 0.02 cfs @ 24.16 hrs, Volume= 3,813 cf, Atten= 100%, Lag= 721.3 min
 Primary = 0.02 cfs @ 24.16 hrs, Volume= 3,813 cf
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 97.81' @ 24.16 hrs Surf.Area= 23,296 sf Storage= 21,269 cf

Plug-Flow detention time= 1,797.2 min calculated for 3,811 cf (17% of inflow)
 Center-of-Mass det. time= 1,504.7 min (2,260.7 - 756.0)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	8,187 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	8,029 cf	82.25'W x 110.42'L x 3.50'H Field A
			31,786 cf Overall - 11,715 cf Embedded = 20,071 cf x 40.0% Voids
#3A	96.17'	11,715 cf	ADS_StormTech SC-740 +Cap x 255 Inside #2
			Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
			Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
			255 Chambers in 17 Rows
		27,931 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	14,214	0.0	0	0
97.67	14,214	35.0	7,462	7,462
97.83	14,214	15.0	341	7,803
98.01	14,214	15.0	384	8,187

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.02 cfs @ 24.16 hrs HW=97.81' (Free Discharge)

↑ **1=Restriction Orifice** (Orifice Controls 0.02 cfs @ 11.51 fps)

↑ **2=6" HDPE Underdrain** (Passes 0.02 cfs of 0.46 cfs potential flow)

↑ **3=Perforations** (Passes 0.02 cfs of 8.57 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.67' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: Underground Storage w/ Porous Pavement 2 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

15 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 108.42' Row Length +12.0" End Stone x 2 = 110.42' Base Length

17 Rows x 51.0" Wide + 6.0" Spacing x 16 + 12.0" Side Stone x 2 = 82.25' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

255 Chambers x 45.9 cf = 11,714.7 cf Chamber Storage

31,786.2 cf Field - 11,714.7 cf Chambers = 20,071.5 cf Stone x 40.0% Voids = 8,028.6 cf Stone Storage

Chamber Storage + Stone Storage = 19,743.3 cf = 0.453 af

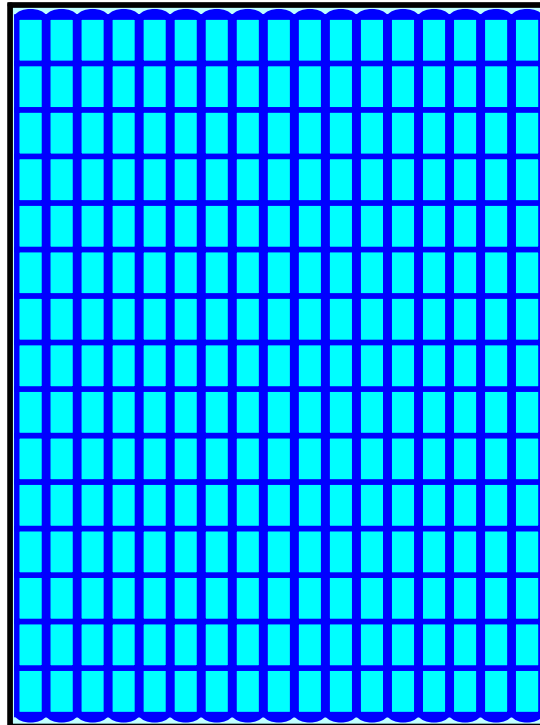
Overall Storage Efficiency = 62.1%

Overall System Size = 110.42' x 82.25' x 3.50'

255 Chambers

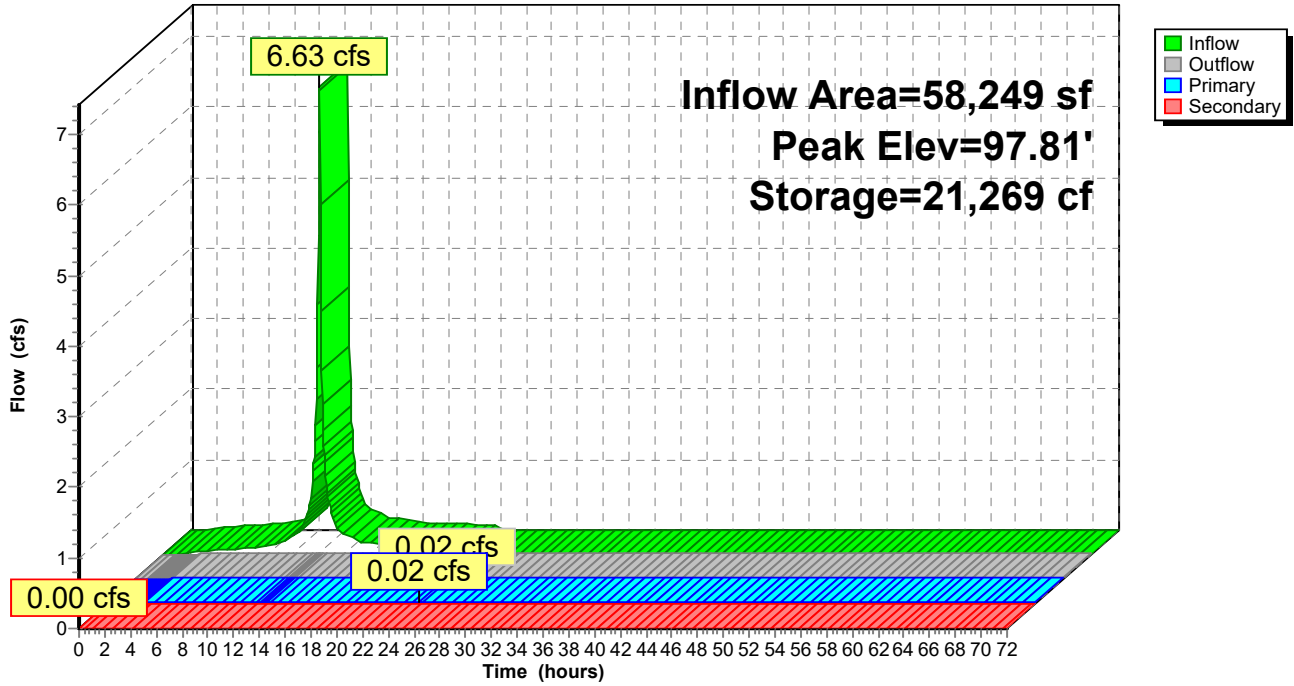
1,177.3 cy Field

743.4 cy Stone



Pond 3P: Underground Storage w/ Porous Pavement 2

Hydrograph



Summary for Pond 4P: Existing Rain Garden 2 Front

[93] Warning: Storage range exceeded by 0.43'
 [88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 25,889 sf, 48.62% Impervious, Inflow Depth = 3.90" for 10-Year _Current event
 Inflow = 2.51 cfs @ 12.15 hrs, Volume= 8,423 cf
 Outflow = 3.84 cfs @ 12.20 hrs, Volume= 7,286 cf, Atten= 0%, Lag= 2.8 min
 Primary = 0.36 cfs @ 12.20 hrs, Volume= 5,119 cf
 Routed to Pond 6P : Underground Storage w/ Porous Pavement 3
 Secondary = 3.48 cfs @ 12.20 hrs, Volume= 2,167 cf
 Routed to Pond 6P : Underground Storage w/ Porous Pavement 3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 101.68' @ 12.20 hrs Surf.Area= 3,045 sf Storage= 3,267 cf

Plug-Flow detention time= 542.2 min calculated for 7,281 cf (86% of inflow)
 Center-of-Mass det. time= 479.7 min (1,260.3 - 780.6)

Volume	Invert	Avail.Storage	Storage Description			
#1	99.25'	3,267 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
99.25	2,635	0.0	0	0	2,635	
100.25	2,635	35.0	922	922	2,817	
100.50	2,635	25.0	165	1,087	2,862	
101.00	3,045	100.0	1,419	2,506	3,283	
101.25	3,045	100.0	761	3,267	3,332	

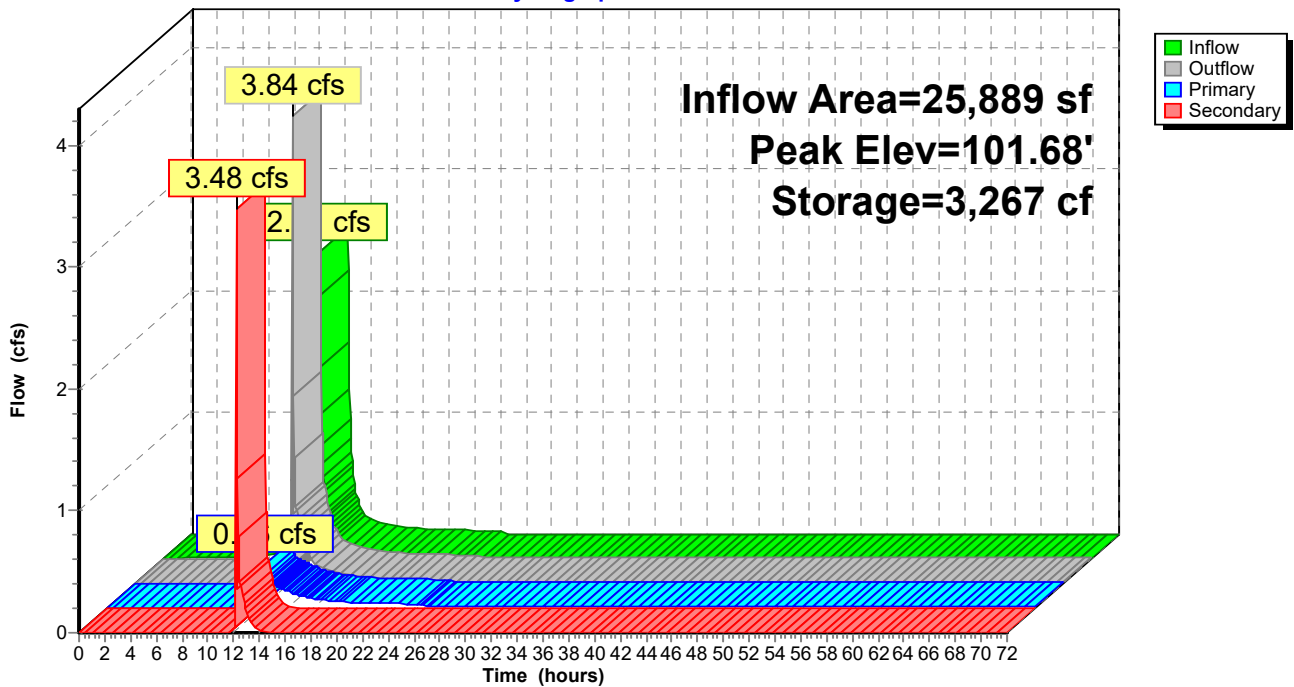
Device	Routing	Invert	Outlet Devices
#1	Primary	99.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 99.15' / 99.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf
#2	Device 1	99.15'	0.5" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads
#3	Device 2	99.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 99.25' / 99.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf
#4	Device 3	99.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#5	Device 1	101.00'	4.0" Horiz. Drintech Atrium C= 0.600 Limited to weir flow at low heads
#6	Secondary	101.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.35 cfs @ 12.20 hrs HW=101.67' (Free Discharge)
 1=Culvert (Passes 0.35 cfs of 0.47 cfs potential flow)
 2=Restrictive Orifice (Orifice Controls 0.01 cfs @ 7.60 fps)
 3=4" HDPE Underdrain (Passes 0.01 cfs of 0.37 cfs potential flow)
 4=Perforations (Passes 0.01 cfs of 5.61 cfs potential flow)
 5=Draintech Atrium (Orifice Controls 0.34 cfs @ 3.93 fps)

Secondary OutFlow Max=3.40 cfs @ 12.20 hrs HW=101.67' (Free Discharge)
 6=Broad-Crested Rectangular Weir (Weir Controls 3.40 cfs @ 1.98 fps)

Pond 4P: Existing Rain Garden 2 Front

Hydrograph



Summary for Pond 5P: Proposed Rain Garden 1 (South West)

[93] Warning: Storage range exceeded by 0.30'
 [88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 21,388 sf, 65.14% Impervious, Inflow Depth = 4.08" for 10-Year _Current event
 Inflow = 2.11 cfs @ 12.15 hrs, Volume= 7,264 cf
 Outflow = 2.69 cfs @ 12.15 hrs, Volume= 6,708 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.32 cfs @ 12.15 hrs, Volume= 4,680 cf
 Routed to Pond 6P : Underground Storage w/ Porous Pavement 3
 Secondary = 2.37 cfs @ 12.15 hrs, Volume= 2,029 cf
 Routed to Pond 6P : Underground Storage w/ Porous Pavement 3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 101.55' @ 12.15 hrs Surf.Area= 2,325 sf Storage= 2,466 cf

Plug-Flow detention time= 524.6 min calculated for 6,703 cf (92% of inflow)
 Center-of-Mass det. time= 483.7 min (1,253.5 - 769.8)

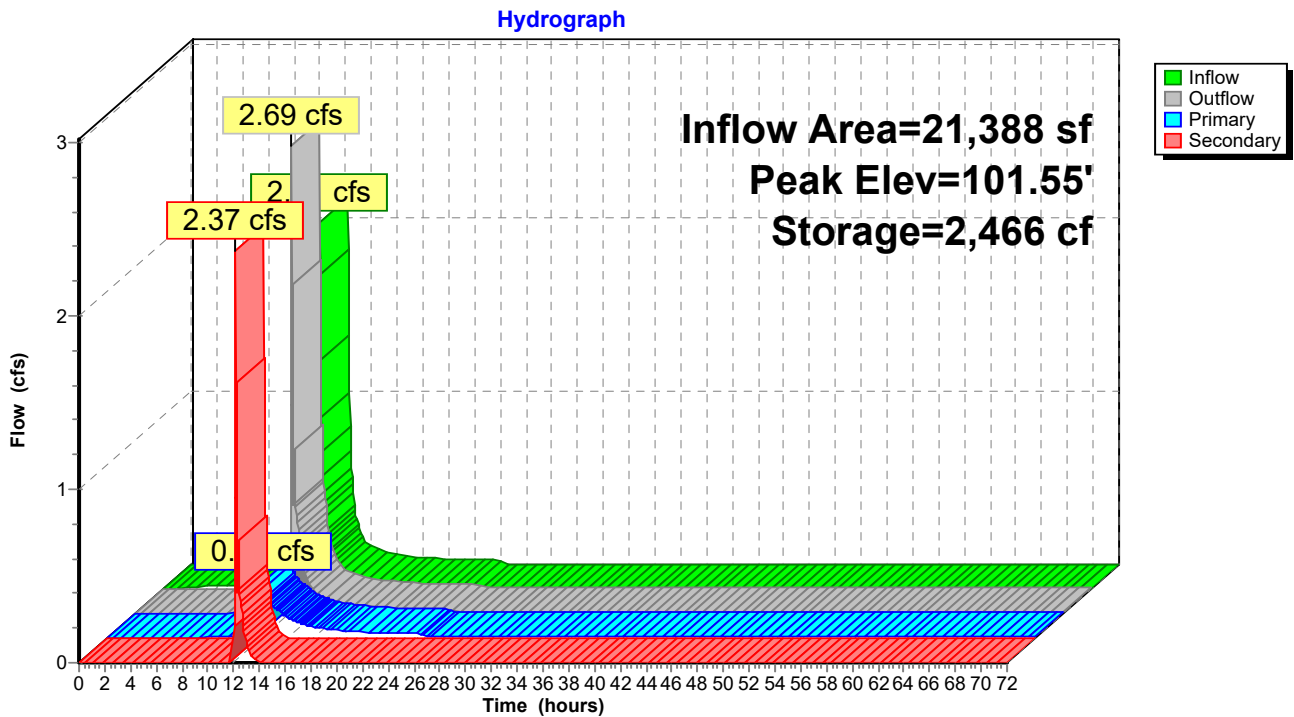
Volume	Invert	Avail.Storage	Storage Description			
#1	99.25'	2,466 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
99.25	1,970	0.0	0	0	1,970	
100.25	1,970	35.0	690	690	2,127	
100.50	1,970	25.0	123	813	2,167	
101.00	2,325	100.0	1,073	1,885	2,531	
101.25	2,325	100.0	581	2,466	2,574	

Device	Routing	Invert	Outlet Devices	
#1	Primary	99.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 99.15' / 99.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#2	Device 1	99.15'	0.5" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads	
#3	Device 2	99.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 99.25' / 99.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#4	Device 3	99.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads	
#5	Device 1	101.00'	4.0" Horiz. Drintech Atrium C= 0.600 Limited to weir flow at low heads	
#6	Secondary	101.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32	

Primary OutFlow Max=0.32 cfs @ 12.15 hrs HW=101.55' (Free Discharge)
 1=Culvert (Passes 0.32 cfs of 0.46 cfs potential flow)
 2=Restrictive Orifice (Orifice Controls 0.01 cfs @ 7.43 fps)
 3=4" HDPE Underdrain (Passes 0.01 cfs of 0.36 cfs potential flow)
 4=Perforations (Passes 0.01 cfs of 5.48 cfs potential flow)
 5=Draintech Atrium (Orifice Controls 0.31 cfs @ 3.57 fps)

Secondary OutFlow Max=2.36 cfs @ 12.15 hrs HW=101.55' (Free Discharge)
 6=Broad-Crested Rectangular Weir (Weir Controls 2.36 cfs @ 1.75 fps)

Pond 5P: Proposed Rain Garden 1 (South West)



Summary for Pond 6P: Underground Storage w/ Porous Pavement 3

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 158,623 sf, 63.48% Impervious, Inflow Depth > 3.97" for 10-Year _Current event
 Inflow = 15.16 cfs @ 12.17 hrs, Volume= 52,416 cf
 Outflow = 0.02 cfs @ 59.84 hrs, Volume= 3,793 cf, Atten= 100%, Lag= 2,859.8 min
 Primary = 0.02 cfs @ 59.84 hrs, Volume= 3,793 cf
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 97.74' @ 59.84 hrs Surf.Area= 38,014 sf Storage= 48,662 cf

Plug-Flow detention time= 1,904.4 min calculated for 3,790 cf (7% of inflow)
 Center-of-Mass det. time= 1,388.7 min (2,287.9 - 899.2)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	4,287 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	26,630 cf	106.00'W x 288.42'L x 3.50'H Field A 107,003 cf Overall - 40,427 cf Embedded = 66,575 cf x 40.0% Voids
#3A	96.17'	40,427 cf	ADS_StormTech SC-740 +Cap x 880 Inside #2 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 880 Chambers in 22 Rows
		71,344 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	7,442	0.0	0	0
97.67	7,442	35.0	3,907	3,907
97.83	7,442	15.0	179	4,086
98.01	7,442	15.0	201	4,287

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.02 cfs @ 59.84 hrs HW=97.74' (Free Discharge)

↑ **1=Restriction Orifice** (Orifice Controls 0.02 cfs @ 11.45 fps)

↑ **2=6" HDPE Underdrain** (Passes 0.02 cfs of 0.45 cfs potential flow)

↑ **3=Perforations** (Passes 0.02 cfs of 8.53 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.67' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 6P: Underground Storage w/ Porous Pavement 3 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

40 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 286.42' Row Length +12.0" End Stone x 2 = 288.42' Base Length

22 Rows x 51.0" Wide + 6.0" Spacing x 21 + 12.0" Side Stone x 2 = 106.00' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

880 Chambers x 45.9 cf = 40,427.2 cf Chamber Storage

107,002.6 cf Field - 40,427.2 cf Chambers = 66,575.4 cf Stone x 40.0% Voids = 26,630.1 cf Stone Storage

Chamber Storage + Stone Storage = 67,057.4 cf = 1.539 af

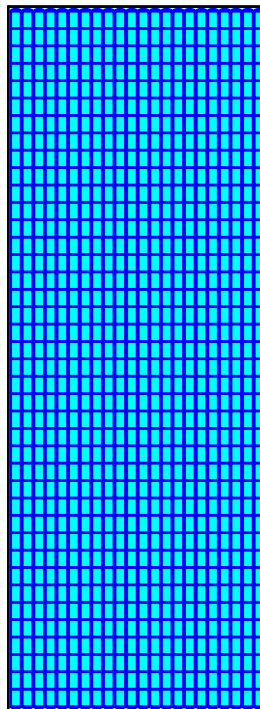
Overall Storage Efficiency = 62.7%

Overall System Size = 288.42' x 106.00' x 3.50'

880 Chambers

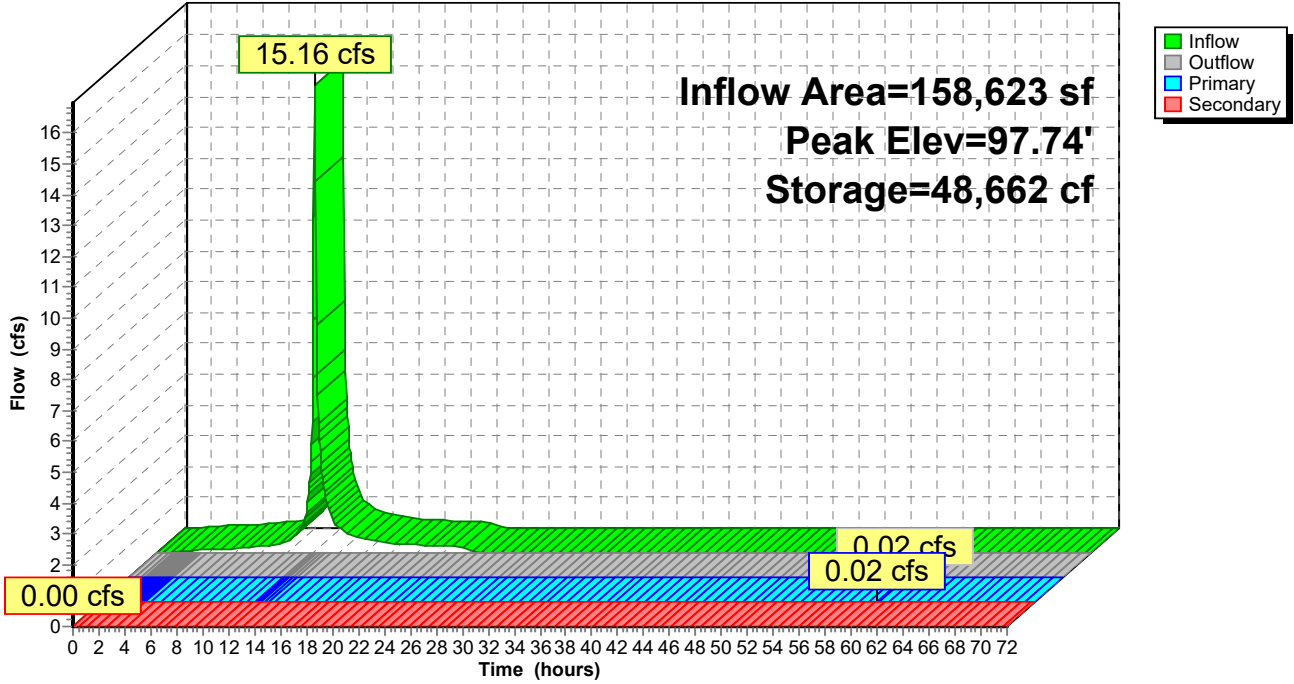
3,963.1 cy Field

2,465.8 cy Stone



Pond 6P: Underground Storage w/ Porous Pavement 3

Hydrograph



Summary for Pond 7P: Proposed Rain Garden 4 (North)

[93] Warning: Storage range exceeded by 0.22'

Inflow Area = 24,369 sf, 57.53% Impervious, Inflow Depth = 4.08" for 10-Year _Current event
 Inflow = 2.43 cfs @ 12.15 hrs, Volume= 8,287 cf
 Outflow = 2.08 cfs @ 12.15 hrs, Volume= 7,382 cf, Atten= 14%, Lag= 0.0 min
 Primary = 0.30 cfs @ 12.15 hrs, Volume= 5,064 cf
 Routed to Pond 8P : Underground Storage w/ Porous Pavement 4
 Secondary = 1.78 cfs @ 12.15 hrs, Volume= 2,318 cf
 Routed to Pond 8P : Underground Storage w/ Porous Pavement 4

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 100.47' @ 12.15 hrs Surf.Area= 2,435 sf Storage= 2,453 cf

Plug-Flow detention time= 501.4 min calculated for 7,382 cf (89% of inflow)
 Center-of-Mass det. time= 445.7 min (1,220.1 - 774.4)

Volume	Invert	Avail.Storage	Storage Description			
#1	98.25'	2,453 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
98.25	1,870	0.0	0	0	1,870	
99.25	1,870	35.0	655	655	2,023	
99.50	1,870	25.0	117	771	2,062	
100.00	2,435	100.0	1,073	1,845	2,633	
100.25	2,435	100.0	609	2,453	2,676	

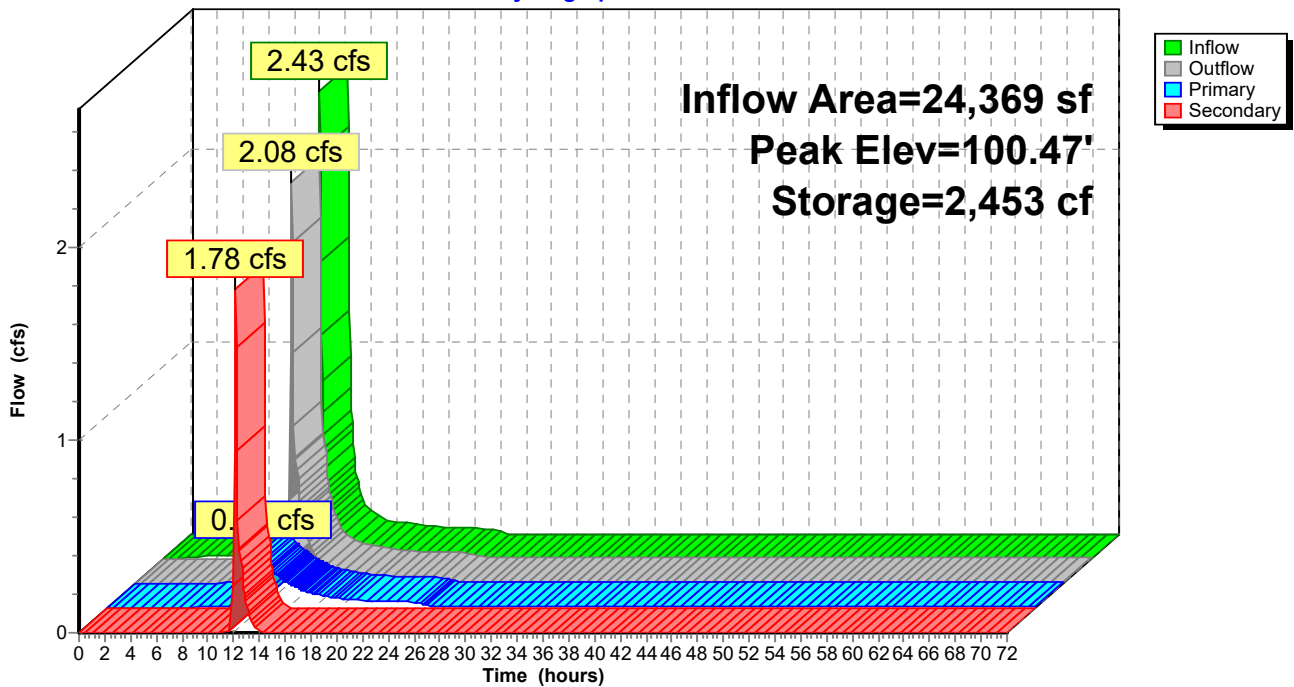
Device	Routing	Invert	Outlet Devices	
#1	Primary	98.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 98.15' / 98.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#2	Device 1	98.15'	0.5" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads	
#3	Device 2	98.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 98.25' / 98.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#4	Device 3	98.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads	
#5	Device 1	100.00'	4.0" Horiz. Drintech Atrium C= 0.600 Limited to weir flow at low heads	
#6	Secondary	100.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32	

Primary OutFlow Max=0.30 cfs @ 12.15 hrs HW=100.47' (Free Discharge)
 1=Culvert (Passes 0.30 cfs of 0.45 cfs potential flow)
 2=Restrictive Orifice (Orifice Controls 0.01 cfs @ 7.30 fps)
 3=4" HDPE Underdrain (Passes 0.01 cfs of 0.35 cfs potential flow)
 4=Perforations (Passes 0.01 cfs of 5.38 cfs potential flow)
 5=Draintech Atrium (Orifice Controls 0.29 cfs @ 3.31 fps)

Secondary OutFlow Max=1.77 cfs @ 12.15 hrs HW=100.47' (Free Discharge)
 6=Broad-Crested Rectangular Weir (Weir Controls 1.77 cfs @ 1.58 fps)

Pond 7P: Proposed Rain Garden 4 (North)

Hydrograph



Summary for Pond 8P: Underground Storage w/ Porous Pavement 4

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 97,166 sf, 80.96% Impervious, Inflow Depth > 4.40" for 10-Year _Current event
 Inflow = 10.05 cfs @ 12.15 hrs, Volume= 35,655 cf
 Outflow = 0.02 cfs @ 24.74 hrs, Volume= 3,782 cf, Atten= 100%, Lag= 755.1 min
 Primary = 0.02 cfs @ 24.74 hrs, Volume= 3,782 cf
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 97.66' @ 24.74 hrs Surf.Area= 33,612 sf Storage= 33,144 cf

Plug-Flow detention time= 1,862.2 min calculated for 3,780 cf (11% of inflow)
 Center-of-Mass det. time= 1,421.4 min (2,273.5 - 852.1)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	9,112 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	15,592 cf	63.25'W x 281.30'L x 3.50'H Field A 62,272 cf Overall - 23,292 cf Embedded = 38,980 cf x 40.0% Voids
#3A	96.17'	23,292 cf	ADS_StormTech SC-740 +Cap x 507 Inside #2 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 507 Chambers in 13 Rows
		47,996 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	15,820	0.0	0	0
97.67	15,820	35.0	8,306	8,306
97.83	15,820	15.0	380	8,685
98.01	15,820	15.0	427	9,112

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.02 cfs @ 24.74 hrs HW=97.66' (Free Discharge)

↑ **1=Restriction Orifice** (Orifice Controls 0.02 cfs @ 11.37 fps)

↑ **2=6" HDPE Underdrain** (Passes 0.02 cfs of 0.45 cfs potential flow)

↑ **3=Perforations** (Passes 0.02 cfs of 8.46 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.67' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 8P: Underground Storage w/ Porous Pavement 4 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

39 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 279.30' Row Length +12.0" End Stone x 2 =
281.30' Base Length

13 Rows x 51.0" Wide + 6.0" Spacing x 12 + 12.0" Side Stone x 2 = 63.25' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

507 Chambers x 45.9 cf = 23,291.6 cf Chamber Storage

62,272.0 cf Field - 23,291.6 cf Chambers = 38,980.5 cf Stone x 40.0% Voids = 15,592.2 cf Stone Storage

Chamber Storage + Stone Storage = 38,883.8 cf = 0.893 af

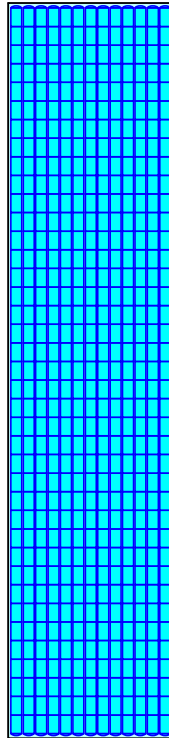
Overall Storage Efficiency = 62.4%

Overall System Size = 281.30' x 63.25' x 3.50'

507 Chambers

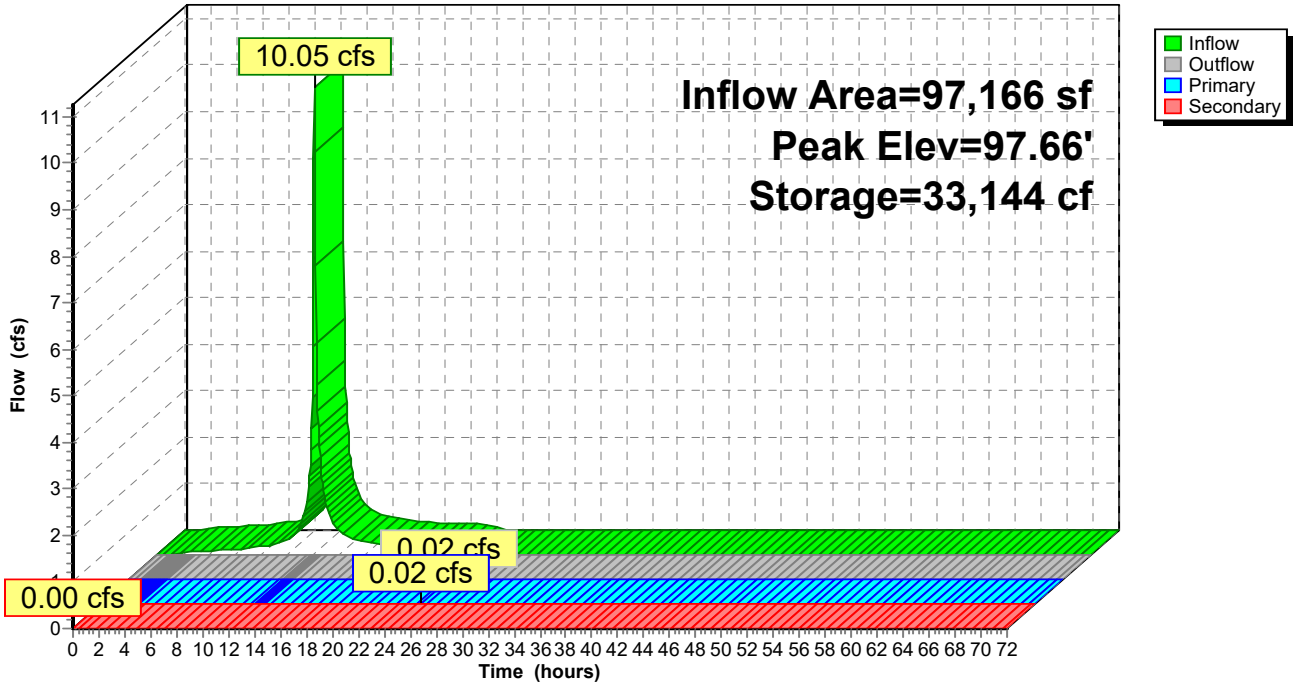
2,306.4 cy Field

1,443.7 cy Stone



Pond 8P: Underground Storage w/ Porous Pavement 4

Hydrograph



Summary for Pond 9P: Proposed Rain Garden 3 (North East)

- [93] Warning: Storage range exceeded by 0.21'
- [88] Warning: Qout>Qin may require smaller dt or Finer Routing
- [85] Warning: Oscillations may require smaller dt or Finer Routing (severity=1)
- [62] Hint: Exceeded Reach 2R OUTLET depth by 0.13' @ 12.25 hrs

Inflow Area = 19,898 sf, 48.83% Impervious, Inflow Depth = 3.91" for 10-Year _Current event
 Inflow = 1.72 cfs @ 12.20 hrs, Volume= 6,480 cf
 Outflow = 1.94 cfs @ 12.15 hrs, Volume= 6,343 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.29 cfs @ 12.15 hrs, Volume= 4,379 cf
 Routed to Pond 10P : Underground Storage w/ Porous Pavement 5
 Secondary = 1.65 cfs @ 12.15 hrs, Volume= 1,964 cf
 Routed to Pond 10P : Underground Storage w/ Porous Pavement 5

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 100.46' @ 12.15 hrs Surf.Area= 1,670 sf Storage= 1,751 cf

Plug-Flow detention time= 438.8 min calculated for 6,343 cf (98% of inflow)
 Center-of-Mass det. time= 425.3 min (1,209.5 - 784.1)

Volume	Invert	Avail.Storage	Storage Description			
#1	98.25'	1,751 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
98.25	1,385	0.0	0	0	1,385	
99.25	1,385	35.0	485	485	1,517	
99.50	1,385	25.0	87	571	1,550	
100.00	1,670	100.0	763	1,334	1,843	
100.25	1,670	100.0	418	1,751	1,879	

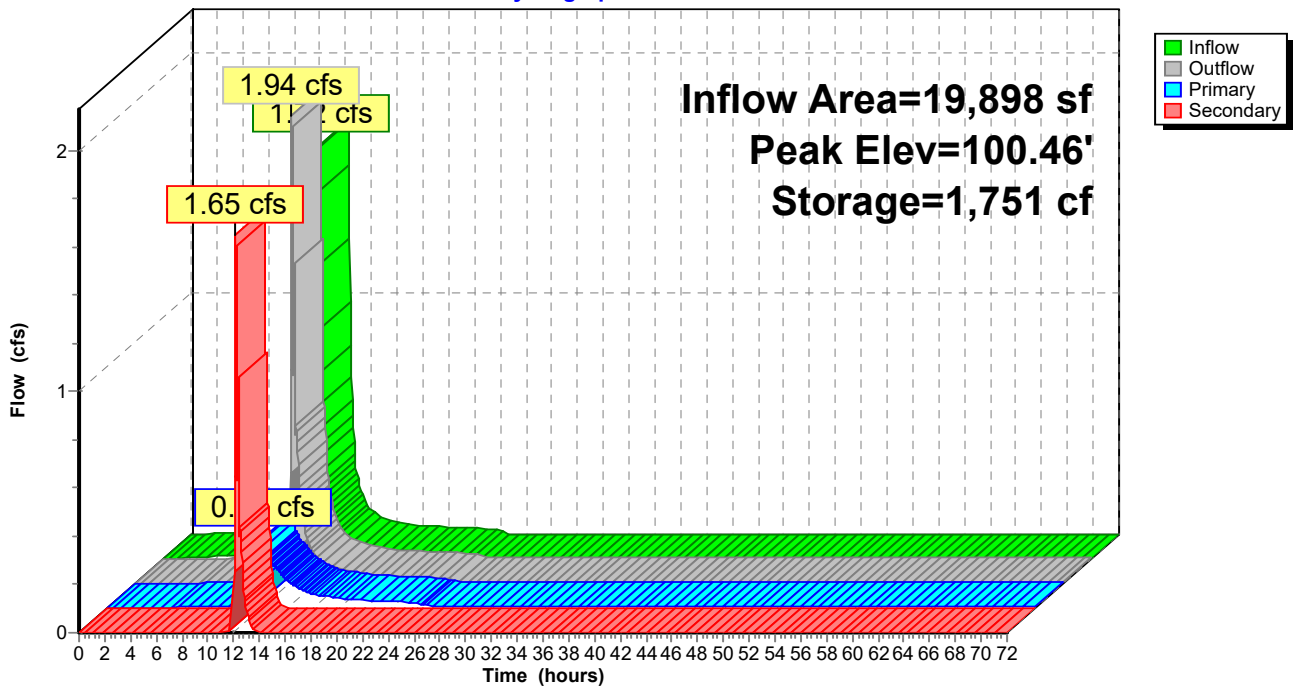
Device	Routing	Invert	Outlet Devices							
#1	Primary	98.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 98.15' / 98.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf							
#2	Device 1	98.15'	0.5" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads							
#3	Device 2	98.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 98.25' / 98.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf							
#4	Device 3	98.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads							
#5	Device 1	100.00'	4.0" Horiz. Drintech Atrium C= 0.600 Limited to weir flow at low heads							
#6	Secondary	100.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32							

Primary OutFlow Max=0.29 cfs @ 12.15 hrs HW=100.46' (Free Discharge)
 1=Culvert (Passes 0.29 cfs of 0.44 cfs potential flow)
 2=Restrictive Orifice (Orifice Controls 0.01 cfs @ 7.28 fps)
 3=4" HDPE Underdrain (Passes 0.01 cfs of 0.35 cfs potential flow)
 4=Perforations (Passes 0.01 cfs of 5.36 cfs potential flow)
 5=Draintech Atrium (Orifice Controls 0.28 cfs @ 3.25 fps)

Secondary OutFlow Max=1.65 cfs @ 12.15 hrs HW=100.46' (Free Discharge)
 6=Broad-Crested Rectangular Weir (Weir Controls 1.65 cfs @ 1.55 fps)

Pond 9P: Proposed Rain Garden 3 (North East)

Hydrograph



Summary for Pond 10P: Underground Storage w/ Porous Pavement 5

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 78,061 sf, 72.85% Impervious, Inflow Depth > 4.31" for 10-Year _Current event
 Inflow = 7.36 cfs @ 12.17 hrs, Volume= 28,054 cf
 Outflow = 0.02 cfs @ 24.51 hrs, Volume= 3,806 cf, Atten= 100%, Lag= 740.8 min
 Primary = 0.02 cfs @ 24.51 hrs, Volume= 3,806 cf
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 97.77' @ 24.51 hrs Surf.Area= 27,852 sf Storage= 25,689 cf

Plug-Flow detention time= 1,802.2 min calculated for 3,804 cf (14% of inflow)
 Center-of-Mass det. time= 1,409.6 min (2,273.6 - 864.0)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	9,426 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	10,110 cf	63.25'W x 181.62'L x 3.50'H Field A
			40,205 cf Overall - 14,931 cf Embedded = 25,275 cf x 40.0% Voids
#3A	96.17'	14,931 cf	ADS_StormTech SC-740 +Cap x 325 Inside #2
			Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
			Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
			325 Chambers in 13 Rows
		34,467 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	16,365	0.0	0	0
97.67	16,365	35.0	8,592	8,592
97.83	16,365	15.0	393	8,984
98.01	16,365	15.0	442	9,426

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.02 cfs @ 24.51 hrs HW=97.77' (Free Discharge)

↑ **1=Restriction Orifice** (Orifice Controls 0.02 cfs @ 11.47 fps)

↑ **2=6" HDPE Underdrain** (Passes 0.02 cfs of 0.45 cfs potential flow)

↑ **3=Perforations** (Passes 0.02 cfs of 8.54 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.67' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 10P: Underground Storage w/ Porous Pavement 5 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

25 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 179.62' Row Length +12.0" End Stone x 2 = 181.62' Base Length

13 Rows x 51.0" Wide + 6.0" Spacing x 12 + 12.0" Side Stone x 2 = 63.25' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

325 Chambers x 45.9 cf = 14,930.5 cf Chamber Storage

40,205.4 cf Field - 14,930.5 cf Chambers = 25,274.9 cf Stone x 40.0% Voids = 10,110.0 cf Stone Storage

Chamber Storage + Stone Storage = 25,040.5 cf = 0.575 af

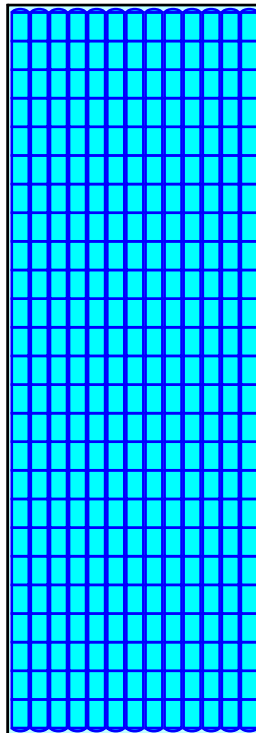
Overall Storage Efficiency = 62.3%

Overall System Size = 181.62' x 63.25' x 3.50'

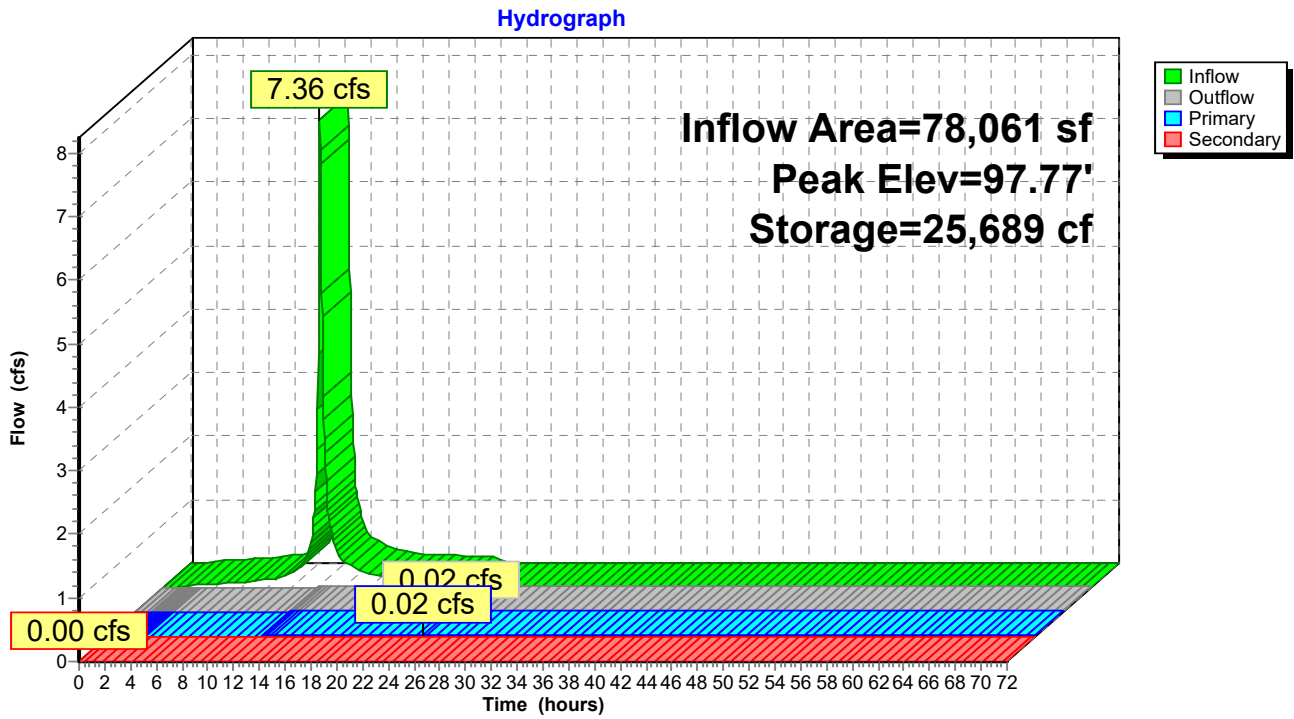
325 Chambers

1,489.1 cy Field

936.1 cy Stone



Pond 10P: Underground Storage w/ Porous Pavement 5



Summary for Pond 11P: Proposed Rain Garden 2 (East)

[93] Warning: Storage range exceeded by 0.36'
 [88] Warning: Qout>Qin may require smaller dt or Finer Routing
 [85] Warning: Oscillations may require smaller dt or Finer Routing (severity=2)

Inflow Area = 32,033 sf, 45.19% Impervious, Inflow Depth = 3.84" for 10-Year _Current event
 Inflow = 2.57 cfs @ 12.22 hrs, Volume= 10,240 cf
 Outflow = 3.12 cfs @ 12.21 hrs, Volume= 10,016 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.35 cfs @ 12.21 hrs, Volume= 6,837 cf
 Routed to Pond 12P : Underground Storage w/ Porous Pavement 6
 Secondary = 2.77 cfs @ 12.21 hrs, Volume= 3,180 cf
 Routed to Pond 12P : Underground Storage w/ Porous Pavement 6

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 100.61' @ 12.21 hrs Surf.Area= 3,045 sf Storage= 3,267 cf

Plug-Flow detention time= 521.5 min calculated for 10,016 cf (98% of inflow)
 Center-of-Mass det. time= 507.8 min (1,296.2 - 788.5)

Volume	Invert	Avail.Storage	Storage Description			
#1	98.25'	3,267 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
98.25	2,635	0.0	0	0	2,635	
99.25	2,635	35.0	922	922	2,817	
99.50	2,635	25.0	165	1,087	2,862	
100.00	3,045	100.0	1,419	2,506	3,283	
100.25	3,045	100.0	761	3,267	3,332	

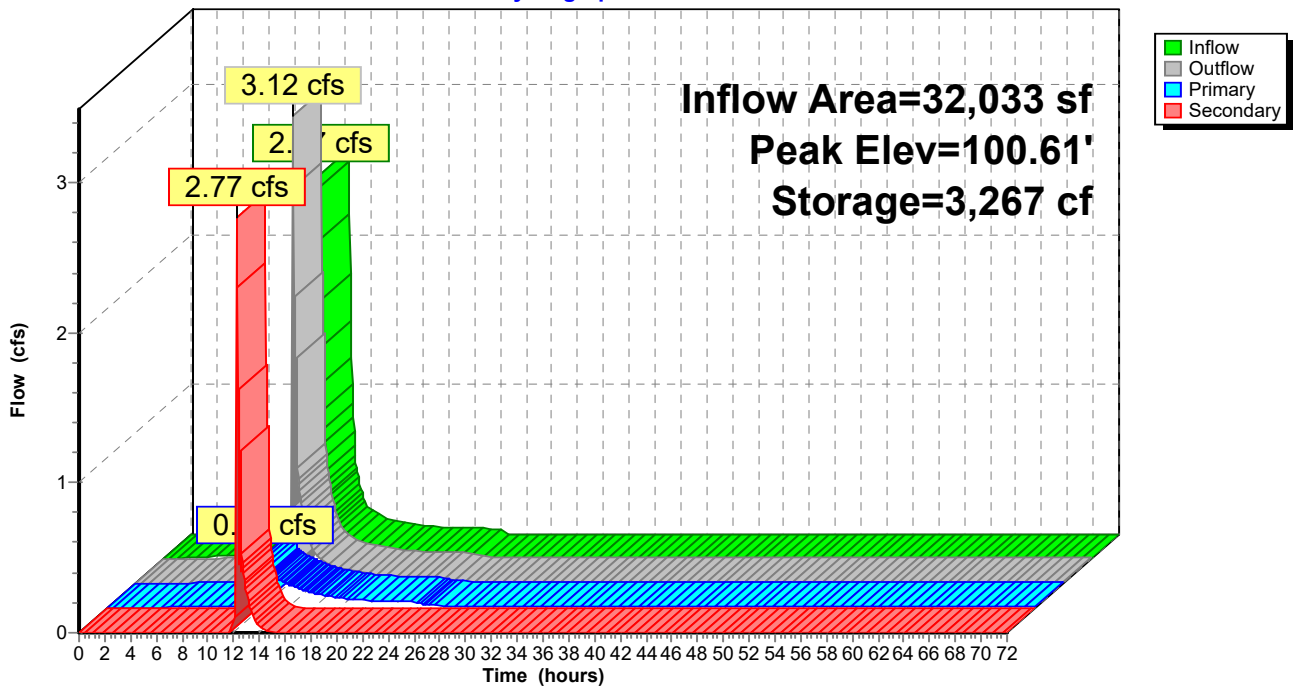
Device	Routing	Invert	Outlet Devices
#1	Primary	98.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 98.15' / 98.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf
#2	Device 1	98.15'	0.7" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads
#3	Device 2	98.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 98.25' / 98.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf
#4	Device 3	98.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#5	Device 1	100.00'	4.0" Horiz. Drintech Atrium C= 0.600 Limited to weir flow at low heads
#6	Secondary	100.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.33 cfs @ 12.21 hrs HW=100.56' (Free Discharge)
 1=Culvert (Passes 0.33 cfs of 0.46 cfs potential flow)
 2=Restrictive Orifice (Orifice Controls 0.02 cfs @ 7.42 fps)
 3=4" HDPE Underdrain (Passes 0.02 cfs of 0.36 cfs potential flow)
 4=Perforations (Passes 0.02 cfs of 5.48 cfs potential flow)
 5=Draintech Atrium (Orifice Controls 0.31 cfs @ 3.59 fps)

Secondary OutFlow Max=2.48 cfs @ 12.21 hrs HW=100.56' (Free Discharge)
 6=Broad-Crested Rectangular Weir (Weir Controls 2.48 cfs @ 1.78 fps)

Pond 11P: Proposed Rain Garden 2 (East)

Hydrograph



Summary for Pond 12P: Underground Storage w/ Porous Pavement 6

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 32,033 sf, 45.19% Impervious, Inflow Depth > 3.75" for 10-Year _Current event
 Inflow = 3.12 cfs @ 12.21 hrs, Volume= 10,016 cf
 Outflow = 0.01 cfs @ 48.23 hrs, Volume= 3,435 cf, Atten= 100%, Lag= 2,161.1 min
 Primary = 0.01 cfs @ 48.23 hrs, Volume= 3,435 cf
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 97.29' @ 48.23 hrs Surf.Area= 8,364 sf Storage= 6,911 cf

Plug-Flow detention time= 1,676.0 min calculated for 3,433 cf (34% of inflow)
 Center-of-Mass det. time= 1,103.0 min (2,399.2 - 1,296.2)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	1,866 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	4,603 cf	25.25'W x 202.98'L x 3.50'H Field A 17,938 cf Overall - 6,432 cf Embedded = 11,506 cf x 40.0% Voids
#3A	96.17'	6,432 cf	ADS_StormTech SC-740 +Cap x 140 Inside #2 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 140 Chambers in 5 Rows
		12,900 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	3,239	0.0	0	0
97.67	3,239	35.0	1,700	1,700
97.83	3,239	15.0	78	1,778
98.01	3,239	15.0	87	1,866

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.01 cfs @ 48.23 hrs HW=97.29' (Free Discharge)

↑ **1=Restriction Orifice** (Orifice Controls 0.01 cfs @ 10.98 fps)

↑ **2=6" HDPE Underdrain** (Passes 0.01 cfs of 0.43 cfs potential flow)

↑ **3=Perforations** (Passes 0.01 cfs of 8.17 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.67' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 12P: Underground Storage w/ Porous Pavement 6 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

28 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 200.98' Row Length +12.0" End Stone x 2 = 202.98' Base Length

5 Rows x 51.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.25' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

140 Chambers x 45.9 cf = 6,431.6 cf Chamber Storage

17,938.1 cf Field - 6,431.6 cf Chambers = 11,506.5 cf Stone x 40.0% Voids = 4,602.6 cf Stone Storage

Chamber Storage + Stone Storage = 11,034.2 cf = 0.253 af

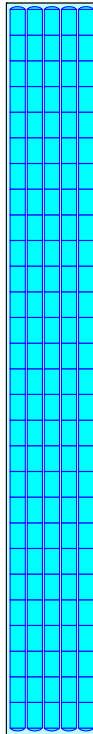
Overall Storage Efficiency = 61.5%

Overall System Size = 202.98' x 25.25' x 3.50'

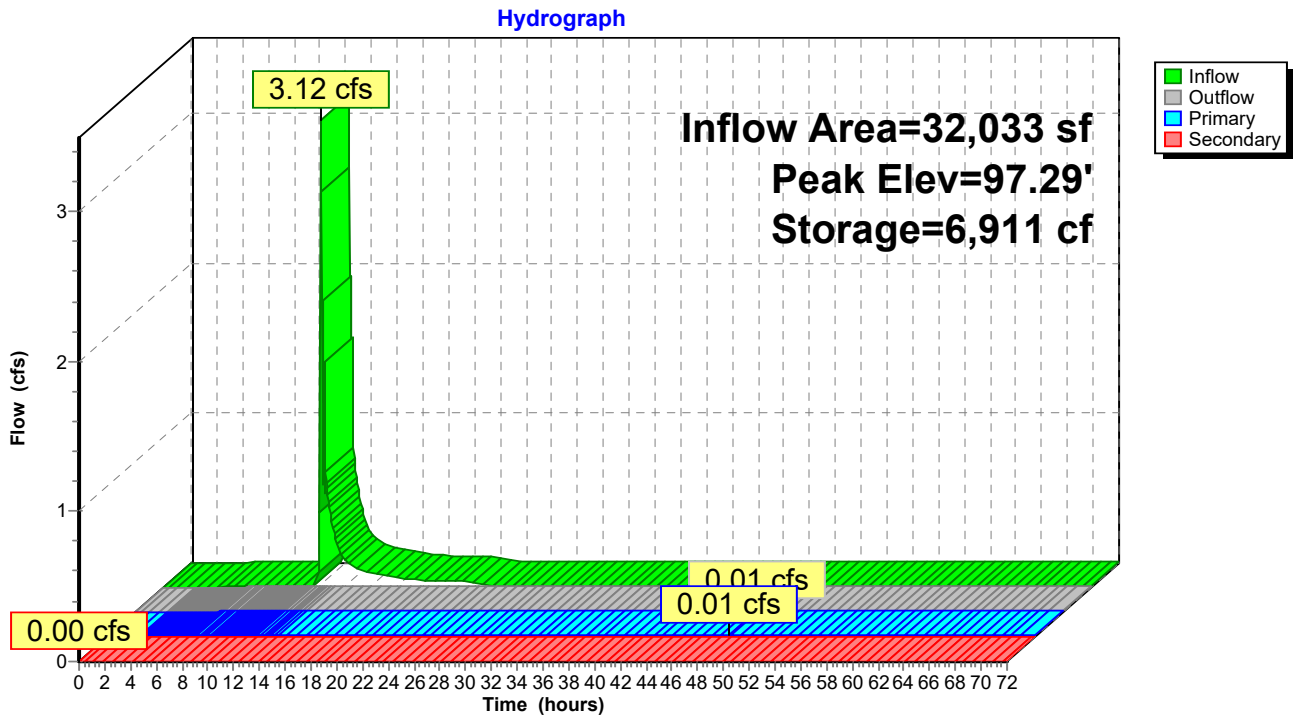
140 Chambers

664.4 cy Field

426.2 cy Stone



Pond 12P: Underground Storage w/ Porous Pavement 6



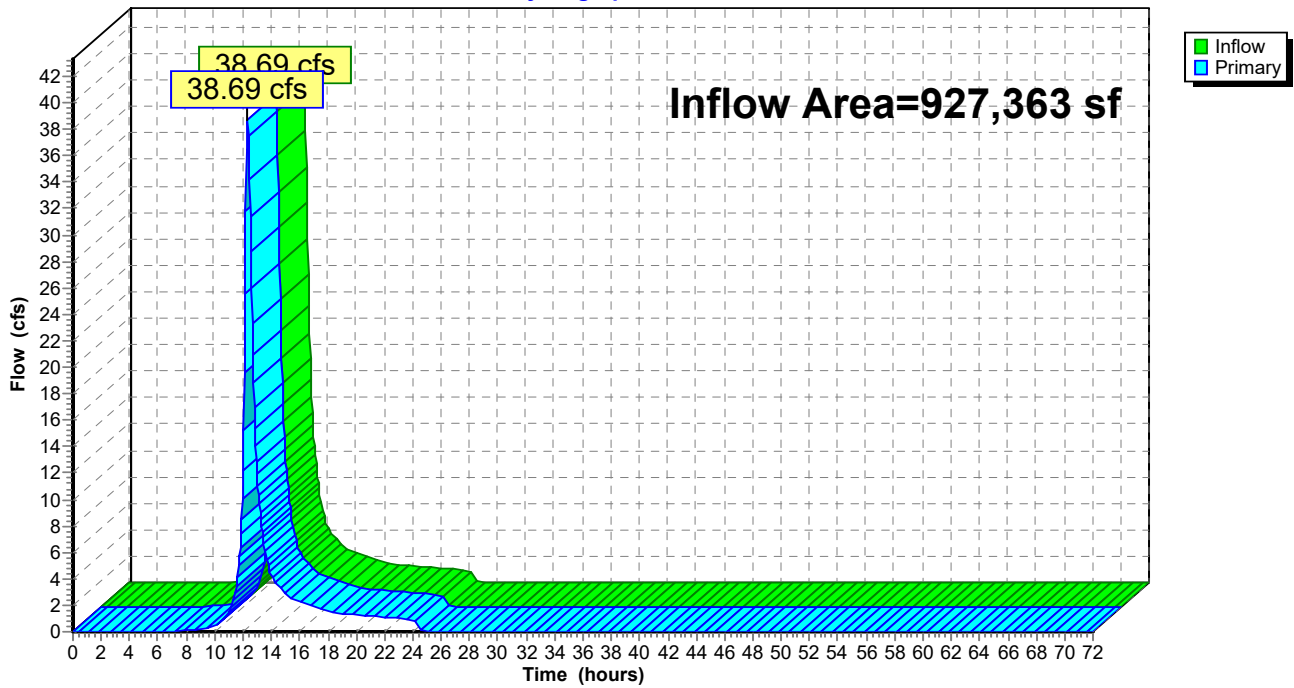
Summary for Link 1L: Offsite Flows

Inflow Area = 927,363 sf, 3.35% Impervious, Inflow Depth = 2.56" for 10-Year _Current event
Inflow = 38.69 cfs @ 12.32 hrs, Volume= 198,077 cf
Primary = 38.69 cfs @ 12.32 hrs, Volume= 198,077 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 1L: Offsite Flows

Hydrograph



Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
 Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

- Subcatchment 1S: DA1: CN w/ IC** Runoff Area=56,173 sf 73.47% Impervious Runoff Depth=11.11"
 Flow Length=361' Tc=14.3 min CN=75/98 Runoff=12.23 cfs 52,009 cf
- Subcatchment 1Sa: Existing RG 1_West_** Runoff Area=22,637 sf 64.43% Impervious Runoff Depth=10.94"
 Flow Length=361' Tc=14.3 min CN=77/98 Runoff=4.90 cfs 20,633 cf
- Subcatchment 1Sb: DA1: CN w/ IC** Runoff Area=39,105 sf 68.25% Impervious Runoff Depth=10.95"
 Flow Length=361' Tc=14.3 min CN=75/98 Runoff=8.45 cfs 35,694 cf
- Subcatchment 2S: DA 2: CN w/ IC areas** Runoff Area=58,249 sf 86.46% Impervious Runoff Depth=11.52"
 Flow Length=391' Tc=7.0 min CN=76/98 Runoff=16.21 cfs 55,920 cf
- Subcatchment 3S: DA 3: CN w/ IC** Runoff Area=158,623 sf 63.48% Impervious Runoff Depth=10.86"
 Flow Length=441' Tc=8.3 min CN=76/98 Runoff=41.14 cfs 143,567 cf
- Subcatchment 3Sa: Existing RG 2 Front** Runoff Area=25,889 sf 48.62% Impervious Runoff Depth=10.65"
 Tc=8.3 min CN=79/98 Runoff=6.68 cfs 22,972 cf
- Subcatchment 3Sb: RG 1 DA** Runoff Area=21,388 sf 65.14% Impervious Runoff Depth=10.81"
 Flow Length=441' Tc=8.3 min CN=74/98 Runoff=5.52 cfs 19,268 cf
- Subcatchment 3Sc: DA 3: CN w/ IC areas** Runoff Area=111,346 sf 66.62% Impervious Runoff Depth=10.90"
 Flow Length=441' Tc=8.3 min CN=75/98 Runoff=28.90 cfs 101,179 cf
- Subcatchment 4S: DA 4: CN w/ IC** Runoff Area=86,816 sf 90.62% Impervious Runoff Depth=11.63"
 Flow Length=143' Tc=8.4 min CN=75/98 Runoff=23.20 cfs 84,111 cf
- Subcatchment 4Sa: RG 4 DA** Runoff Area=24,369 sf 57.53% Impervious Runoff Depth=10.87"
 Flow Length=143' Tc=8.4 min CN=79/98 Runoff=6.32 cfs 22,067 cf
- Subcatchment 4Sb: DA 4: CN w/ IC areas** Runoff Area=72,797 sf 88.81% Impervious Runoff Depth=11.57"
 Flow Length=143' Tc=8.4 min CN=75/98 Runoff=19.41 cfs 70,199 cf
- Subcatchment 5S: DA 5: CN w/ IC** Runoff Area=78,058 sf 72.85% Impervious Runoff Depth=11.17"
 Flow Length=310' Tc=11.5 min CN=77/98 Runoff=18.43 cfs 72,643 cf
- Subcatchment 5Sa: RG 3 DA** Runoff Area=19,898 sf 48.83% Impervious Runoff Depth=10.65"
 Flow Length=310' Tc=11.5 min CN=79/98 Runoff=4.60 cfs 17,665 cf
- Subcatchment 5Sb: DA 5: CN w/ IC areas** Runoff Area=58,163 sf 81.07% Impervious Runoff Depth=11.34"
 Flow Length=310' Tc=11.5 min CN=75/98 Runoff=13.82 cfs 54,959 cf
- Subcatchment 6S: DA 6: CN w/ IC areas** Runoff Area=32,033 sf 45.19% Impervious Runoff Depth=10.56"
 Flow Length=276' Tc=14.0 min CN=79/98 Runoff=6.91 cfs 28,199 cf
- Subcatchment 7S: DA 7 (Offsite South):** Runoff Area=107,001 sf 18.84% Impervious Runoff Depth=9.81"
 Flow Length=309' Tc=14.5 min CN=78/98 Runoff=21.82 cfs 87,434 cf

Subcatchment 8S: DA 8 (Offsite North): CN Runoff Area=340,642 sf 1.94% Impervious Runoff Depth=8.82"
 Flow Length=976' Tc=19.4 min CN=74/98 Runoff=57.48 cfs 250,371 cf

Subcatchment 9S: DA 9 (Offsite Field) Runoff Area=479,720 sf 0.89% Impervious Runoff Depth=8.65"
 Flow Length=1,468' Tc=30.4 min CN=73/98 Runoff=64.44 cfs 345,655 cf

Subcatchment 31S: RG 2 DA Runoff Area=32,035 sf 32.46% Impervious Runoff Depth=10.25"
 Flow Length=276' Tc=14.0 min CN=79/98 Runoff=6.82 cfs 27,367 cf

Reach 1R: Existing Bioswale West 1 Avg. Flow Depth=0.40' Max Vel=2.89 fps Inflow=4.90 cfs 20,633 cf
 n=0.035 L=33.0' S=0.0227 '/' Capacity=7.36 cfs Outflow=4.87 cfs 20,633 cf

Reach 2R: Bioswale E 1 RG 3 Avg. Flow Depth=0.53' Max Vel=3.32 fps Inflow=4.60 cfs 17,665 cf
 n=0.035 L=35.0' S=0.0286 '/' Capacity=4.02 cfs Outflow=4.58 cfs 17,665 cf

Pond 1P: Existing Rain Garden 1 West Peak Elev=100.79' Storage=1,831 cf Inflow=4.87 cfs 20,633 cf
 Primary=0.38 cfs 9,492 cf Secondary=4.50 cfs 10,957 cf Outflow=4.88 cfs 20,449 cf

Pond 2P: Underground Storage w/ Porous Peak Elev=99.11' Storage=24,498 cf Inflow=13.29 cfs 56,143 cf
 Primary=0.02 cfs 3,953 cf Secondary=9.41 cfs 34,699 cf Outflow=9.43 cfs 38,652 cf

Pond 3P: Underground Storage w/ Porous Peak Elev=99.21' Storage=27,931 cf Inflow=16.21 cfs 55,920 cf
 Primary=0.02 cfs 3,964 cf Secondary=10.69 cfs 31,648 cf Outflow=10.70 cfs 35,612 cf

Pond 4P: Existing Rain Garden 2 Front Peak Elev=101.97' Storage=3,267 cf Inflow=6.68 cfs 22,972 cf
 Primary=0.42 cfs 9,281 cf Secondary=6.37 cfs 12,536 cf Outflow=6.79 cfs 21,818 cf

Pond 5P: Proposed Rain Garden 1 (South) Peak Elev=101.87' Storage=2,466 cf Inflow=5.52 cfs 19,268 cf
 Primary=0.40 cfs 8,765 cf Secondary=5.27 cfs 9,935 cf Outflow=5.67 cfs 18,700 cf

Pond 6P: Underground Storage w/ Peak Elev=100.26' Storage=71,344 cf Inflow=41.36 cfs 141,696 cf
 Primary=0.02 cfs 3,985 cf Secondary=30.16 cfs 83,445 cf Outflow=30.18 cfs 87,430 cf

Pond 7P: Proposed Rain Garden 4 (North) Peak Elev=100.92' Storage=2,453 cf Inflow=6.32 cfs 22,067 cf
 Primary=0.41 cfs 9,513 cf Secondary=5.85 cfs 11,723 cf Outflow=6.26 cfs 21,237 cf

Pond 8P: Underground Storage w/ Porous Peak Elev=99.23' Storage=47,996 cf Inflow=25.67 cfs 91,436 cf
 Primary=0.02 cfs 3,983 cf Secondary=11.09 cfs 50,531 cf Outflow=11.11 cfs 54,513 cf

Pond 9P: Proposed Rain Garden 3 (North) Peak Elev=100.77' Storage=1,751 cf Inflow=4.58 cfs 17,665 cf
 Primary=0.38 cfs 8,484 cf Secondary=4.26 cfs 9,037 cf Outflow=4.64 cfs 17,521 cf

Pond 10P: Underground Storage w/ Peak Elev=99.42' Storage=34,467 cf Inflow=18.45 cfs 72,480 cf
 Primary=0.02 cfs 3,976 cf Secondary=14.16 cfs 41,807 cf Outflow=14.17 cfs 45,783 cf

Pond 11P: Proposed Rain Garden 2 (East) Peak Elev=100.98' Storage=3,267 cf Inflow=6.91 cfs 28,199 cf
 Primary=0.44 cfs 11,675 cf Secondary=6.48 cfs 16,284 cf Outflow=6.91 cfs 27,959 cf

Pond 12P: Underground Storage w/ Porous Peak Elev=98.56' Storage=11,644 cf Inflow=6.91 cfs 27,959 cf
 Primary=0.02 cfs 3,804 cf Secondary=3.29 cfs 14,500 cf Outflow=3.31 cfs 18,304 cf

Link 1L: Offsite Flows Inflow=132.65 cfs 683,460 cf
 Primary=132.65 cfs 683,460 cf

Total Runoff Area = 1,824,942 sf Runoff Volume = 1,511,912 cf Average Runoff Depth = 9.94"
63.76% Pervious = 1,163,653 sf 36.24% Impervious = 661,289 sf

Summary for Subcatchment 1S: DA1: CN w/ IC areas_original

Runoff = 12.23 cfs @ 12.22 hrs, Volume= 52,009 cf, Depth=11.11"

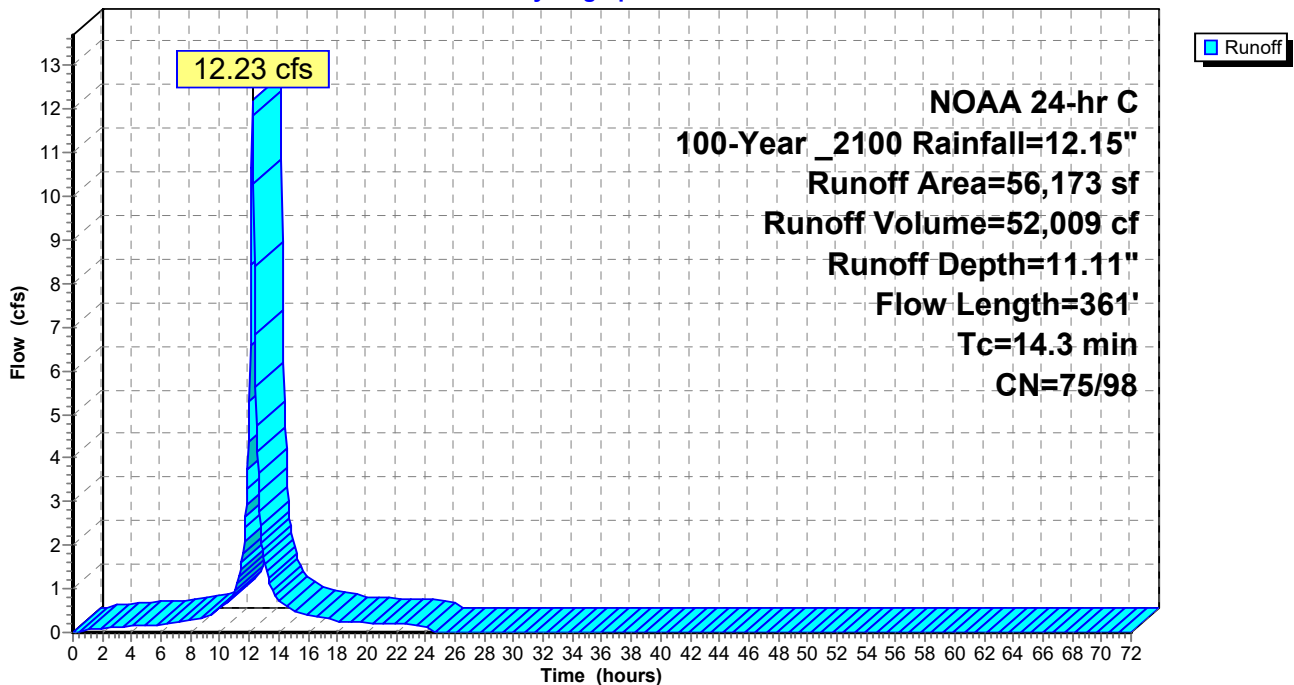
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _2100 Rainfall=12.15"

Area (sf)	CN	Description
* 2,053	79	Open space (fair) C
* 12,848	74	Open space (good) C
* 41,272	98	Impervious
56,173	92	Weighted Average
14,901	75	26.53% Pervious Area
41,272	98	73.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	100	0.0109	0.14		Sheet Flow, Sheet flow Grass: Short n= 0.150 P2= 3.34"
0.2	33	0.0280	2.69		Shallow Concentrated Flow, SCF - unpaved Unpaved Kv= 16.1 fps
1.9	228	0.0095	1.98		Shallow Concentrated Flow, SCF - Paved parking lot Paved Kv= 20.3 fps
14.3	361	Total			

Subcatchment 1S: DA1: CN w/ IC areas_original

Hydrograph



Summary for Subcatchment 1Sa: Existing RG 1_West_ DA

Runoff = 4.90 cfs @ 12.22 hrs, Volume= 20,633 cf, Depth=10.94"
 Routed to Reach 1R : Existing Bioswale West 1

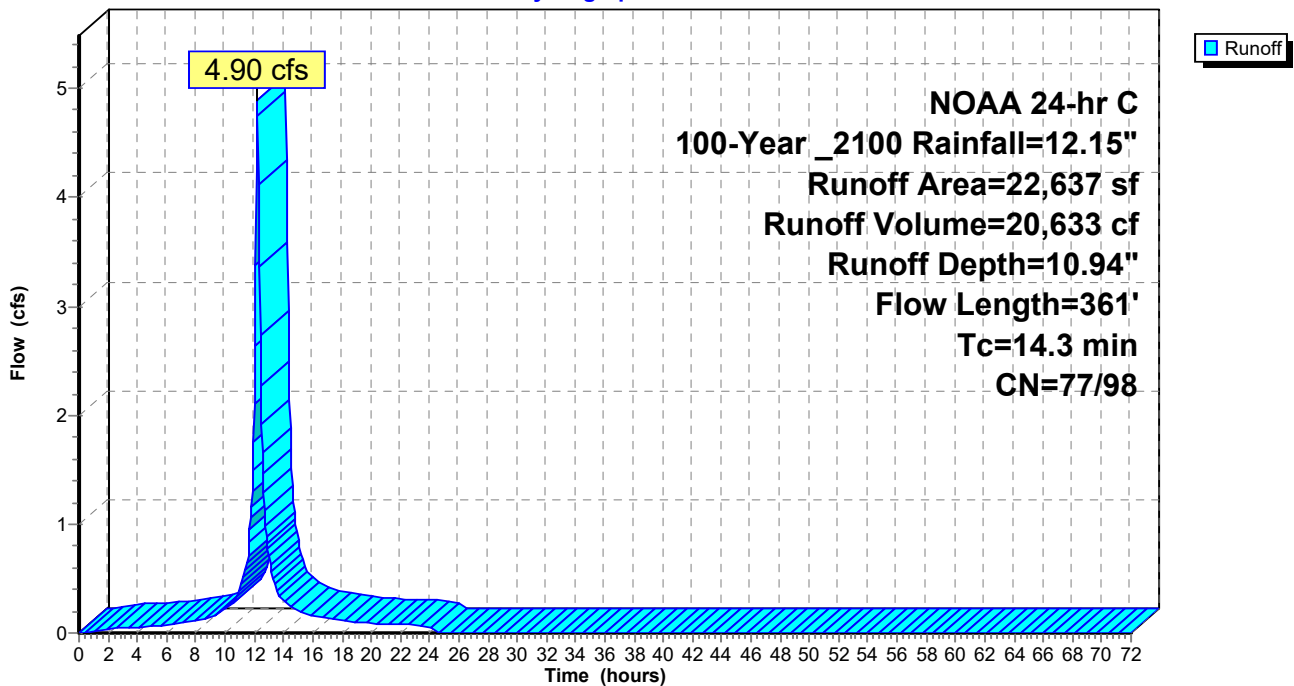
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _2100 Rainfall=12.15"

	Area (sf)	CN	Description
*	5,569	79	Open space (fair) C - Portion from DA 9 the field
*	14,584	98	Impervious Parking Lot
*	2,484	74	OPen Space (Good) C - Portion from DA1
	22,637	91	Weighted Average
	8,053	77	35.57% Pervious Area
	14,584	98	64.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	100	0.0109	0.14		Sheet Flow, Sheet flow Grass: Short n= 0.150 P2= 3.34"
0.2	33	0.0280	2.69		Shallow Concentrated Flow, SCF - unpaved Unpaved Kv= 16.1 fps
1.9	228	0.0095	1.98		Shallow Concentrated Flow, SCF - Paved parking lot Paved Kv= 20.3 fps
14.3	361	Total			

Subcatchment 1Sa: Existing RG 1_West_ DA

Hydrograph



Summary for Subcatchment 1Sb: DA1: CN w/ IC areas_Remaining

Runoff = 8.45 cfs @ 12.22 hrs, Volume= 35,694 cf, Depth=10.95"
 Routed to Pond 2P : Underground Storage w/ Porous Pavement 1

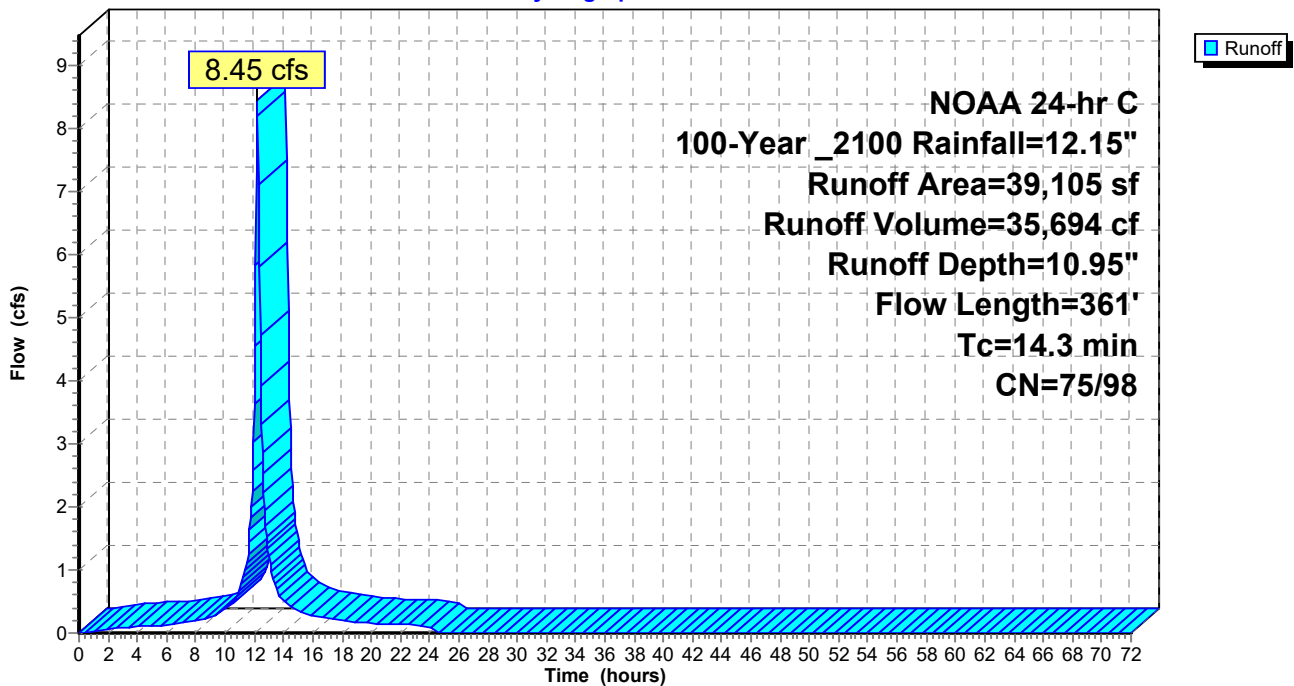
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _2100 Rainfall=12.15"

Area (sf)	CN	Description
* 2,053	79	Open space (fair) C
* 10,364	74	Open space (good) C
* 26,688	98	Impervious
39,105	91	Weighted Average
12,417	75	31.75% Pervious Area
26,688	98	68.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	100	0.0109	0.14		Sheet Flow, Sheet flow Grass: Short n= 0.150 P2= 3.34"
0.2	33	0.0280	2.69		Shallow Concentrated Flow, SCF - unpaved Unpaved Kv= 16.1 fps
1.9	228	0.0095	1.98		Shallow Concentrated Flow, SCF - Paved parking lot Paved Kv= 20.3 fps
14.3	361	Total			

Subcatchment 1Sb: DA1: CN w/ IC areas_Remaining

Hydrograph



Summary for Subcatchment 2S: DA 2: CN w/ IC areas

Runoff = 16.21 cfs @ 12.14 hrs, Volume= 55,920 cf, Depth=11.52"
 Routed to Pond 3P : Underground Storage w/ Porous Pavement 2

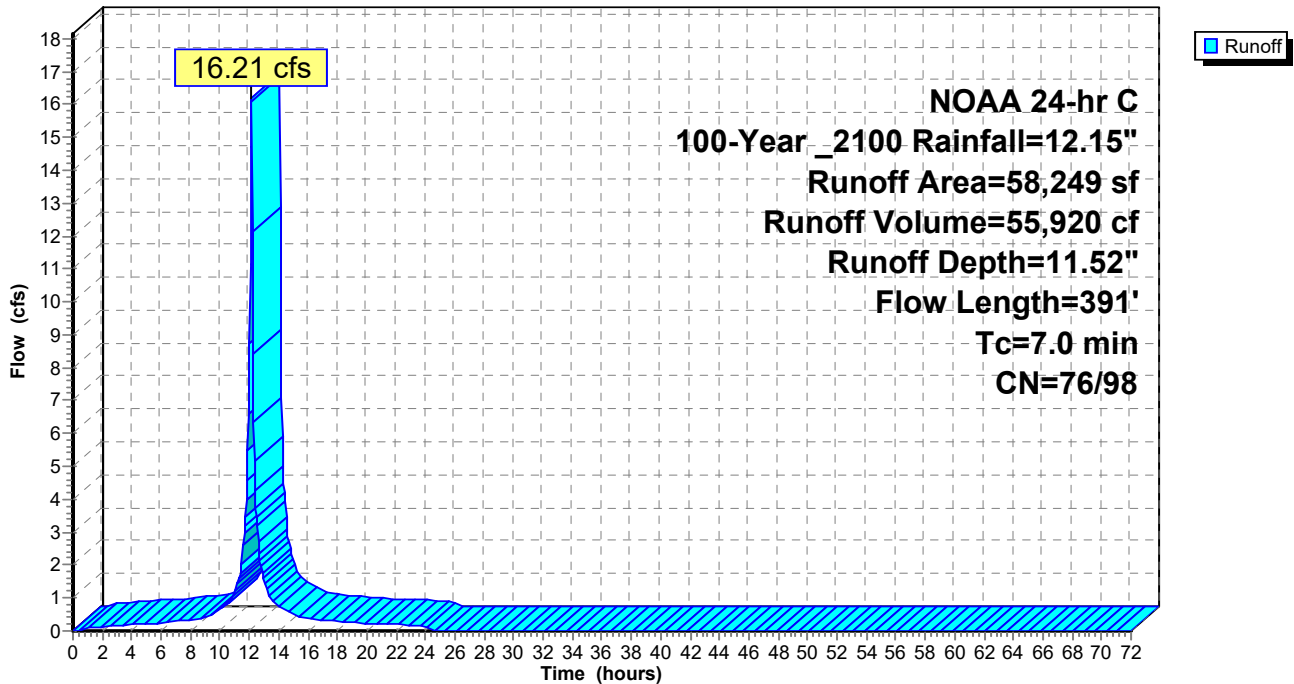
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _2100 Rainfall=12.15"

	Area (sf)	CN	Description
*	3,767	79	Open space (Fair) C
*	4,118	74	Open Space (good) C
*	50,364	98	Impervious
	58,249	95	Weighted Average
	7,885	76	13.54% Pervious Area
	50,364	98	86.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	18	0.0037	0.06		Sheet Flow, Sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
2.2	373	0.0186	2.77		Shallow Concentrated Flow, SCF _ paved Paved Kv= 20.3 fps
7.0	391	Total			

Subcatchment 2S: DA 2: CN w/ IC areas

Hydrograph



Summary for Subcatchment 3S: DA 3: CN w/ IC areas_Original

Runoff = 41.14 cfs @ 12.15 hrs, Volume= 143,567 cf, Depth=10.86"

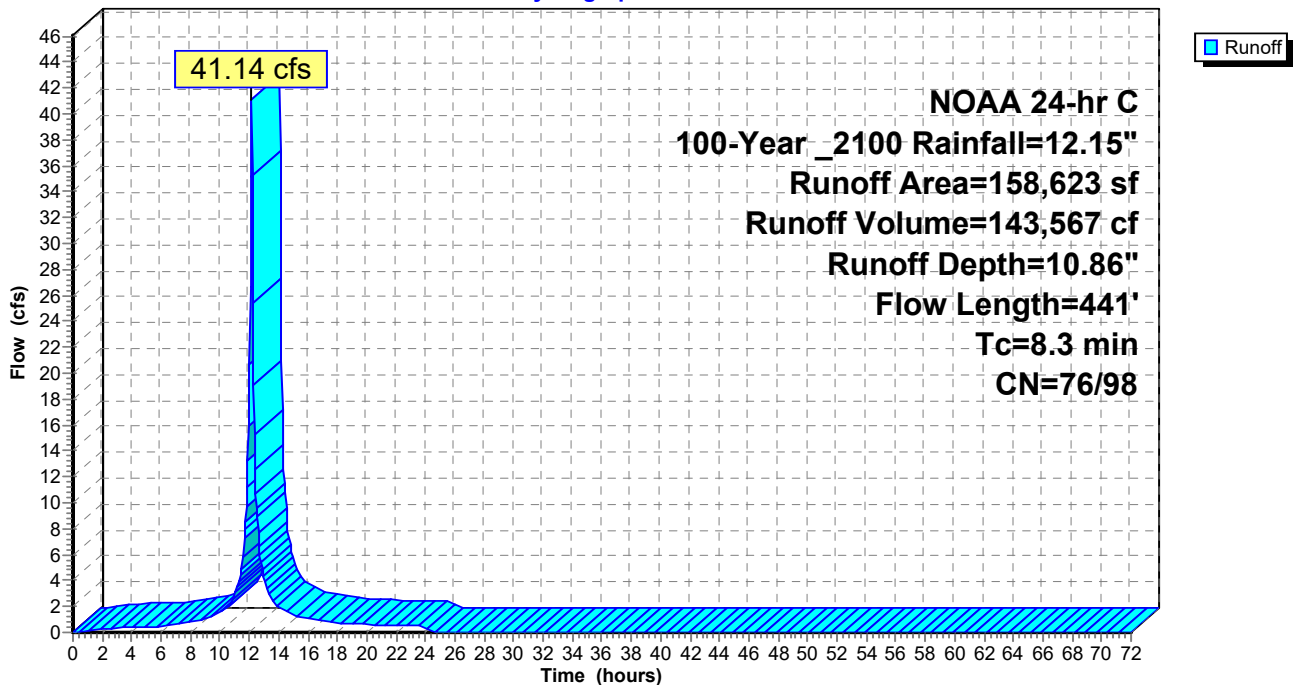
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _2100 Rainfall=12.15"

	Area (sf)	CN	Description
*	18,715	79	Open space (Fair) C
*	39,208	74	Open space (good) C
*	100,700	98	Impervious
	158,623	90	Weighted Average
	57,923	76	36.52% Pervious Area
	100,700	98	63.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	83	0.0489	0.24		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
2.5	358	0.0138	2.38		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
8.3	441	Total			

Subcatchment 3S: DA 3: CN w/ IC areas_Original

Hydrograph



Summary for Subcatchment 3Sa: Existing RG 2 Front DA

Runoff = 6.68 cfs @ 12.15 hrs, Volume= 22,972 cf, Depth=10.65"
 Routed to Pond 4P : Existing Rain Garden 2 Front

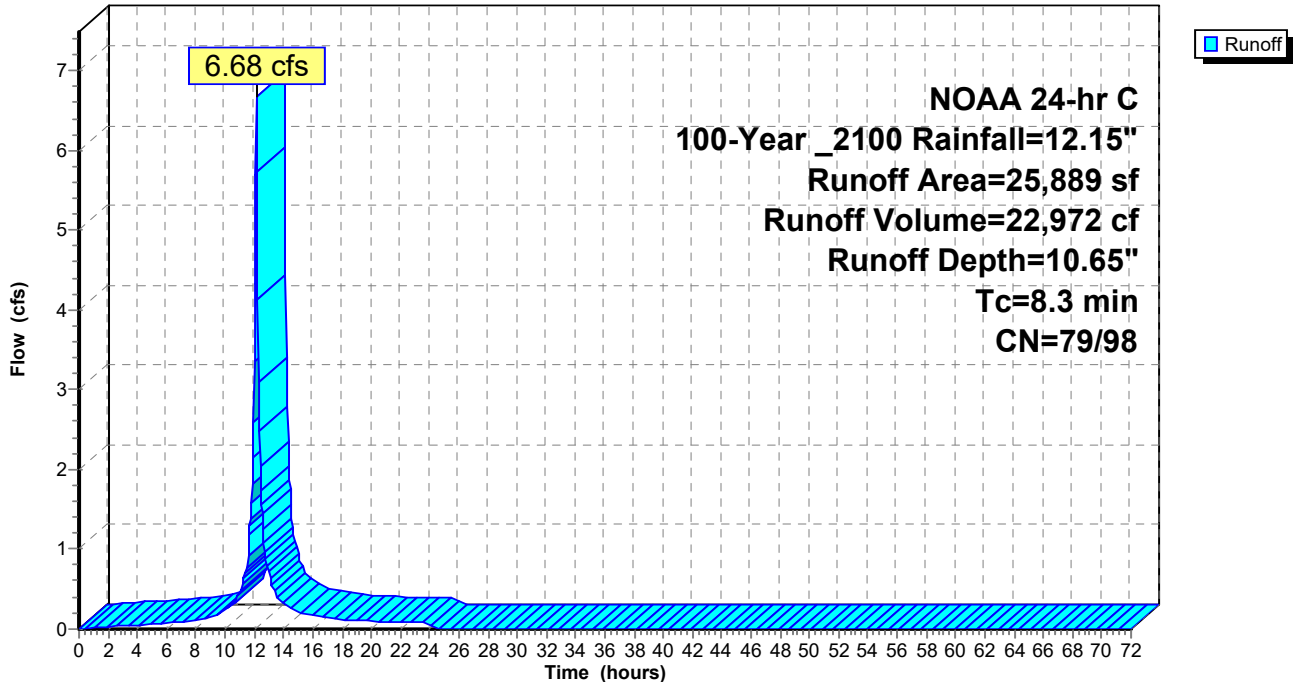
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _2100 Rainfall=12.15"

	Area (sf)	CN	Description
*	6,507	98	Impervious Roof Top
*	966	98	Gravel surface, HSG C - Path
*	5,114	98	Impervious Sidewalk
	13,302	79	50-75% Grass cover, Fair, HSG C
	25,889	88	Weighted Average
	13,302	79	51.38% Pervious Area
	12,587	98	48.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3					Direct Entry,

Subcatchment 3Sa: Existing RG 2 Front DA

Hydrograph



Summary for Subcatchment 3Sb: RG 1 DA

Runoff = 5.52 cfs @ 12.15 hrs, Volume= 19,268 cf, Depth=10.81"
 Routed to Pond 5P : Proposed Rain Garden 1 (South West)

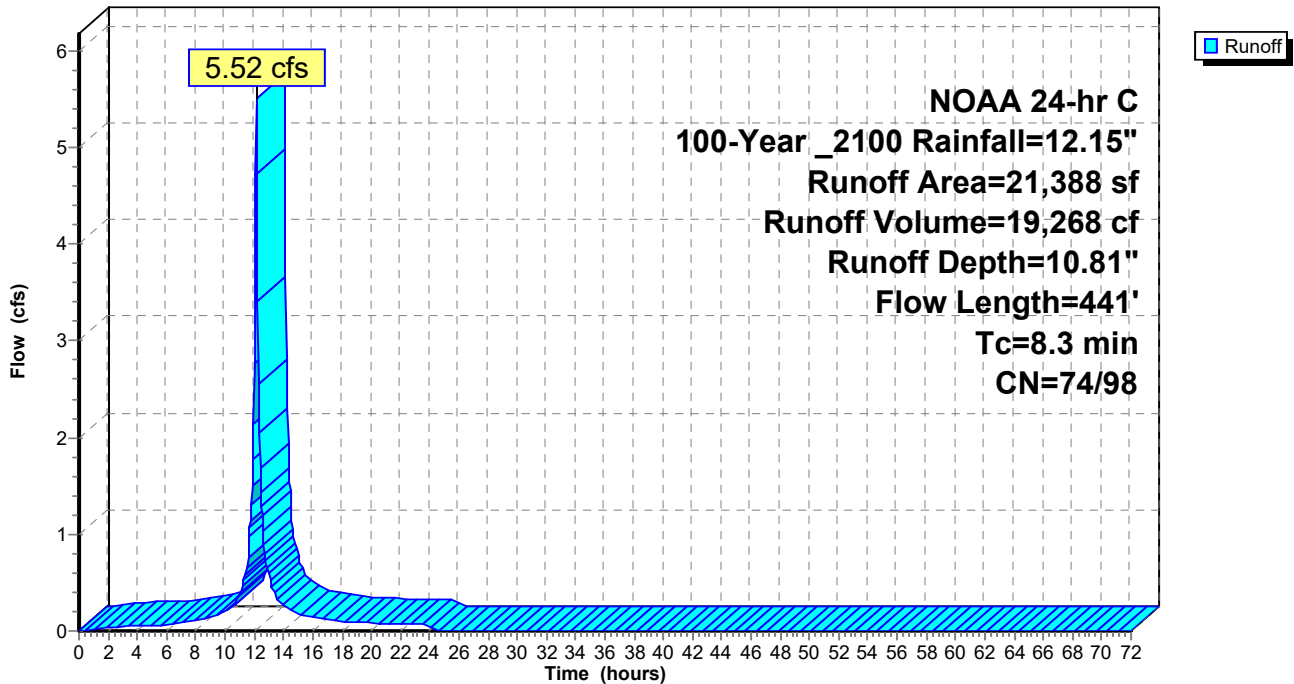
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _2100 Rainfall=12.15"

	Area (sf)	CN	Description
*	7,455	74	Open space (good) C
*	10,303	98	Impervious - Roof top
*	3,630	98	Impervious - Road / Sidewalk
	21,388	90	Weighted Average
	7,455	74	34.86% Pervious Area
	13,933	98	65.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	83	0.0489	0.24		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
2.5	358	0.0138	2.38		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
8.3	441	Total			

Subcatchment 3Sb: RG 1 DA

Hydrograph



Summary for Subcatchment 3Sc: DA 3: CN w/ IC areas Remaining

Runoff = 28.90 cfs @ 12.15 hrs, Volume= 101,179 cf, Depth=10.90"
 Routed to Pond 6P : Underground Storage w/ Porous Pavement 3

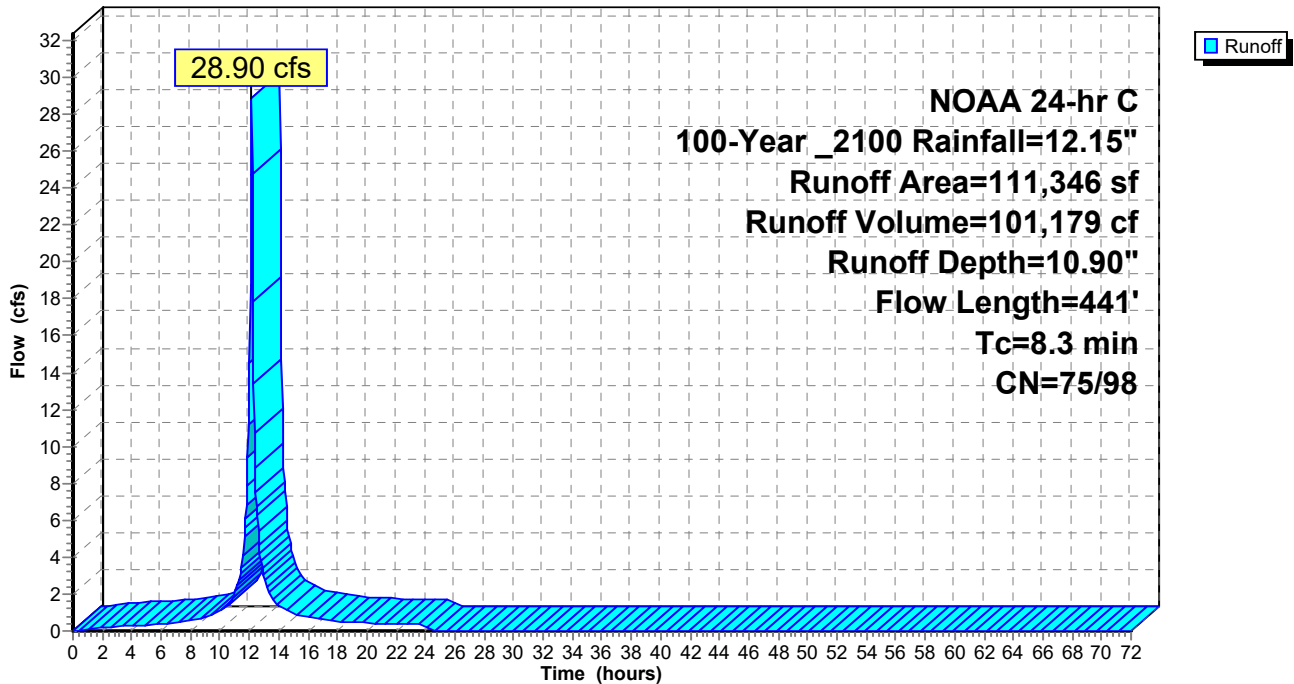
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _2100 Rainfall=12.15"

	Area (sf)	CN	Description
*	5,413	79	Open space (Fair) C
*	31,753	74	Open space (good) C
*	74,180	98	Impervious
	111,346	90	Weighted Average
	37,166	75	33.38% Pervious Area
	74,180	98	66.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	83	0.0489	0.24		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
2.5	358	0.0138	2.38		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
8.3	441	Total			

Subcatchment 3Sc: DA 3: CN w/ IC areas Remaining

Hydrograph



Summary for Subcatchment 4S: DA 4: CN w/ IC areas_original

Runoff = 23.20 cfs @ 12.15 hrs, Volume= 84,111 cf, Depth=11.63"

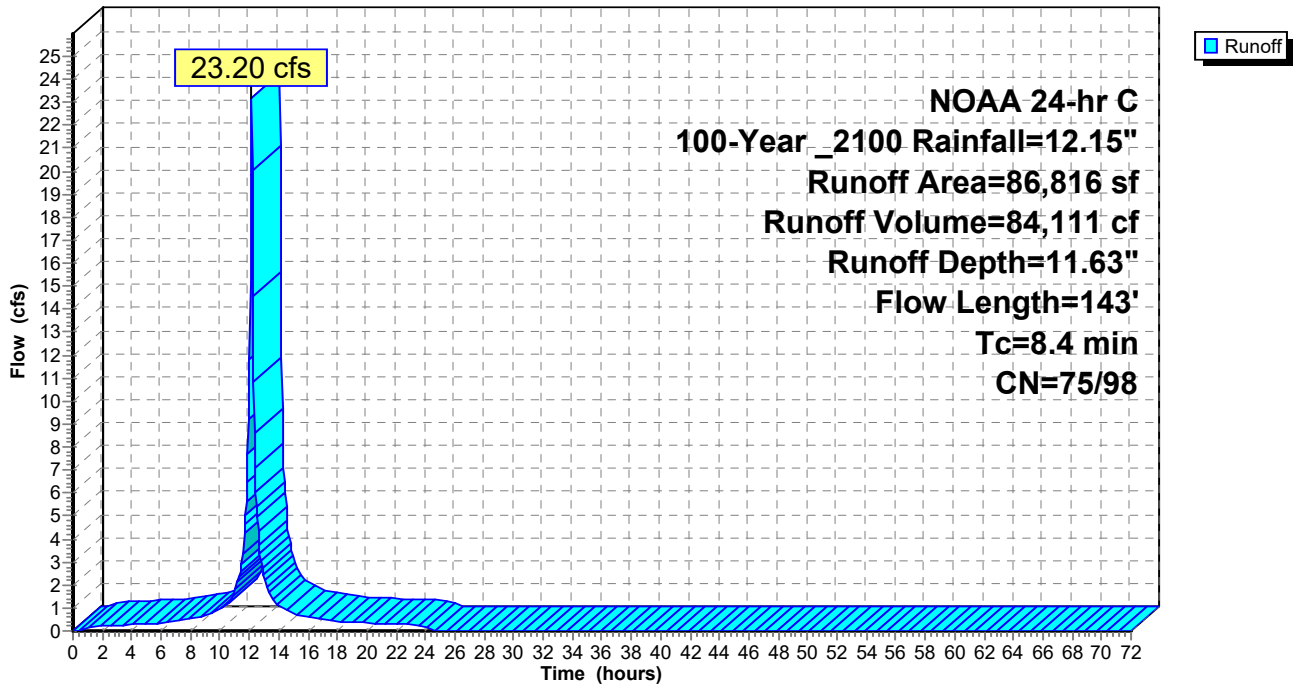
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _2100 Rainfall=12.15"

	Area (sf)	CN	Description
*	1,403	79	Open space (fair) C
*	446	84	Open space (fair) D
*	6,298	74	Open space (good) C
*	78,669	98	Impervious
	86,816	96	Weighted Average
	8,147	75	9.38% Pervious Area
	78,669	98	90.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	67	0.0144	0.14		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
0.5	76	0.0155	2.53		Shallow Concentrated Flow, SCF - Paved Paved Kv= 20.3 fps
8.4	143	Total			

Subcatchment 4S: DA 4: CN w/ IC areas_original

Hydrograph



Summary for Subcatchment 4Sa: RG 4 DA

Runoff = 6.32 cfs @ 12.15 hrs, Volume= 22,067 cf, Depth=10.87"
 Routed to Pond 7P : Proposed Rain Garden 4 (North)

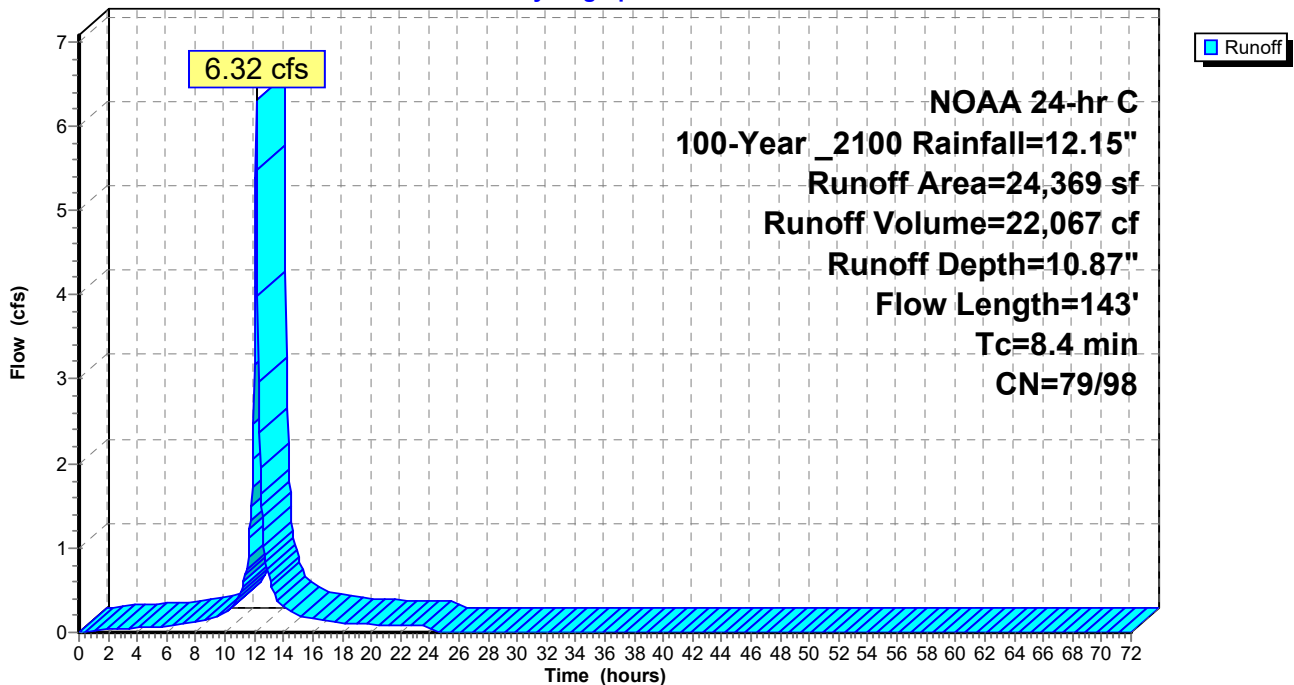
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _2100 Rainfall=12.15"

	Area (sf)	CN	Description
*	10,350	79	Open space (fair) C_from DA 8
*	14,019	98	Impervious Parkinglot
	24,369	90	Weighted Average
	10,350	79	42.47% Pervious Area
	14,019	98	57.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	67	0.0144	0.14		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
0.5	76	0.0155	2.53		Shallow Concentrated Flow, SCF - Paved Paved Kv= 20.3 fps
8.4	143	Total			

Subcatchment 4Sa: RG 4 DA

Hydrograph



Summary for Subcatchment 4Sb: DA 4: CN w/ IC areas

Runoff = 19.41 cfs @ 12.15 hrs, Volume= 70,199 cf, Depth=11.57"
 Routed to Pond 8P : Underground Storage w/ Porous Pavement 4

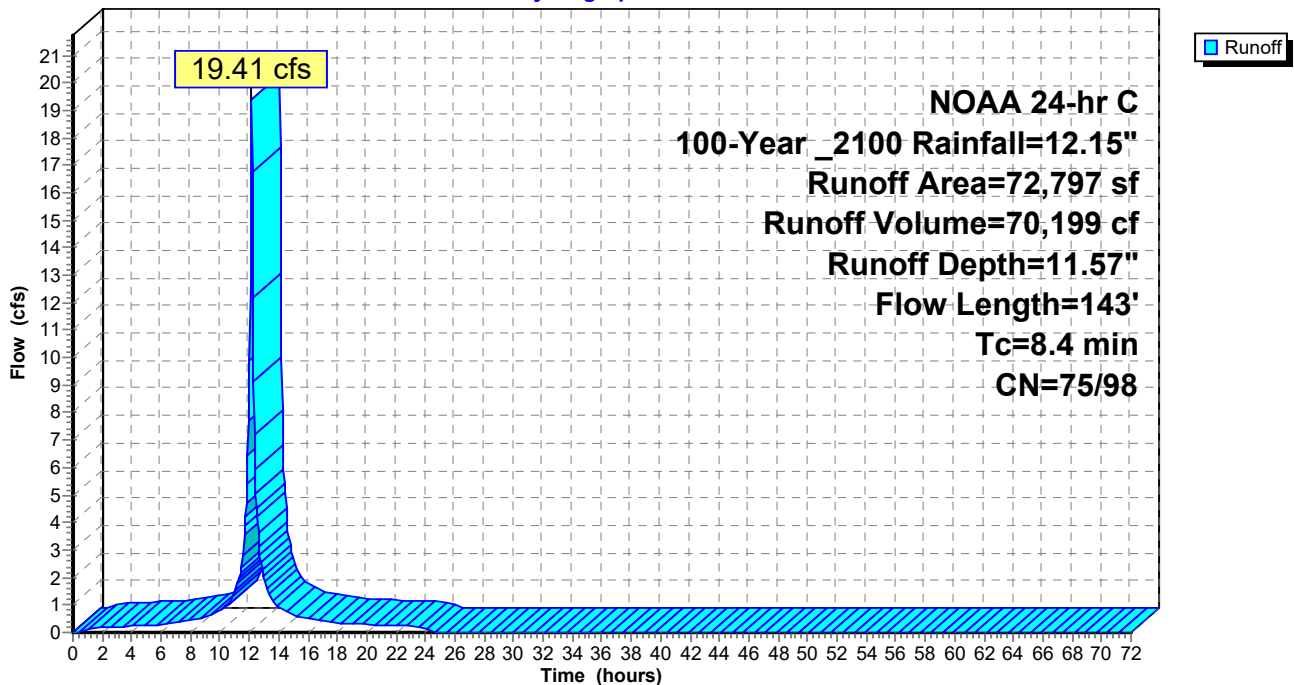
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _2100 Rainfall=12.15"

	Area (sf)	CN	Description
*	1,403	79	Open space (fair) C
*	446	84	Open space (fair) D
*	6,298	74	Open space (good) C
*	64,650	98	Impervious
	72,797	95	Weighted Average
	8,147	75	11.19% Pervious Area
	64,650	98	88.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	67	0.0144	0.14		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
0.5	76	0.0155	2.53		Shallow Concentrated Flow, SCF - Paved Paved Kv= 20.3 fps
8.4	143	Total			

Subcatchment 4Sb: DA 4: CN w/ IC areas

Hydrograph



Summary for Subcatchment 5S: DA 5: CN w/ IC areas_Original

Runoff = 18.43 cfs @ 12.19 hrs, Volume= 72,643 cf, Depth=11.17"

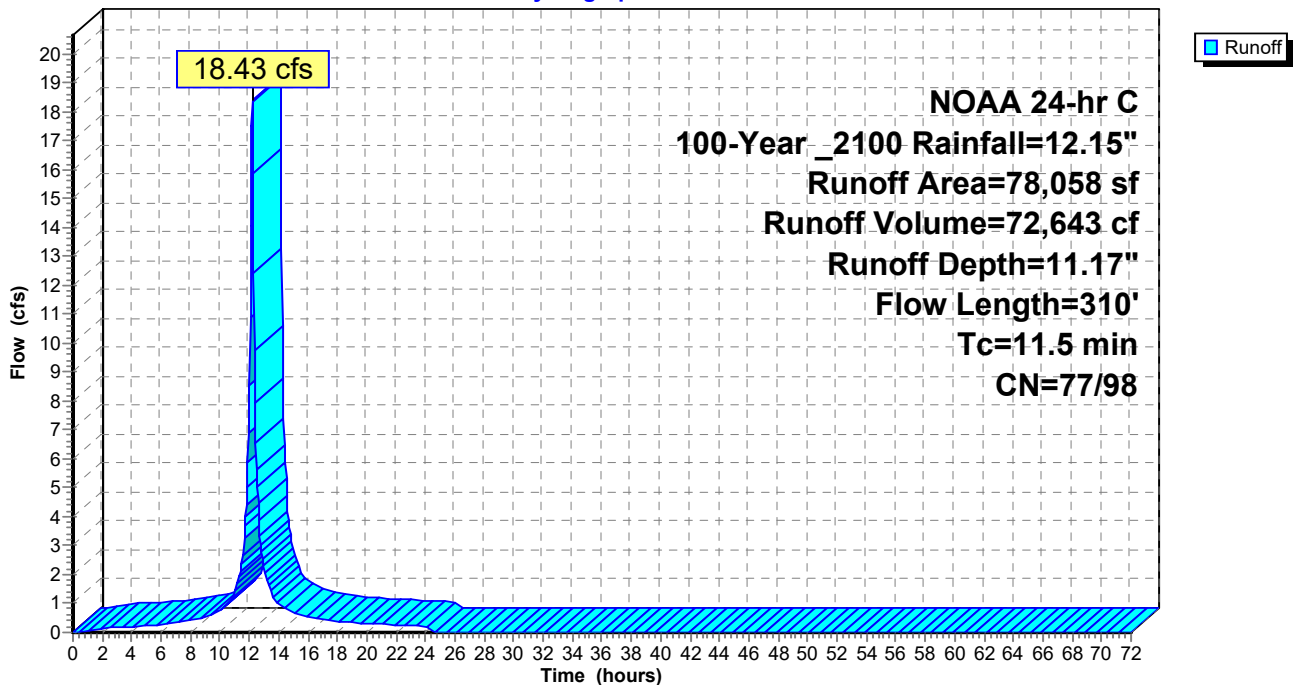
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _2100 Rainfall=12.15"

	Area (sf)	CN	Description
*	11,294	79	Open Space (Fair) C
*	9,899	74	Open Space (good) C
*	56,865	98	Impervious
	78,058	92	Weighted Average
	21,193	77	27.15% Pervious Area
	56,865	98	72.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	64	0.0105	0.12		Sheet Flow, Sheet flow -grass Grass: Short n= 0.150 P2= 3.34"
1.3	179	0.0129	2.31		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
1.5	67	0.0120	0.77		Shallow Concentrated Flow, SCF _ grass Short Grass Pasture Kv= 7.0 fps
11.5	310	Total			

Subcatchment 5S: DA 5: CN w/ IC areas_Original

Hydrograph



Summary for Subcatchment 5Sa: RG 3 DA

Runoff = 4.60 cfs @ 12.19 hrs, Volume= 17,665 cf, Depth=10.65"
 Routed to Reach 2R : Bioswale E 1 RG 3

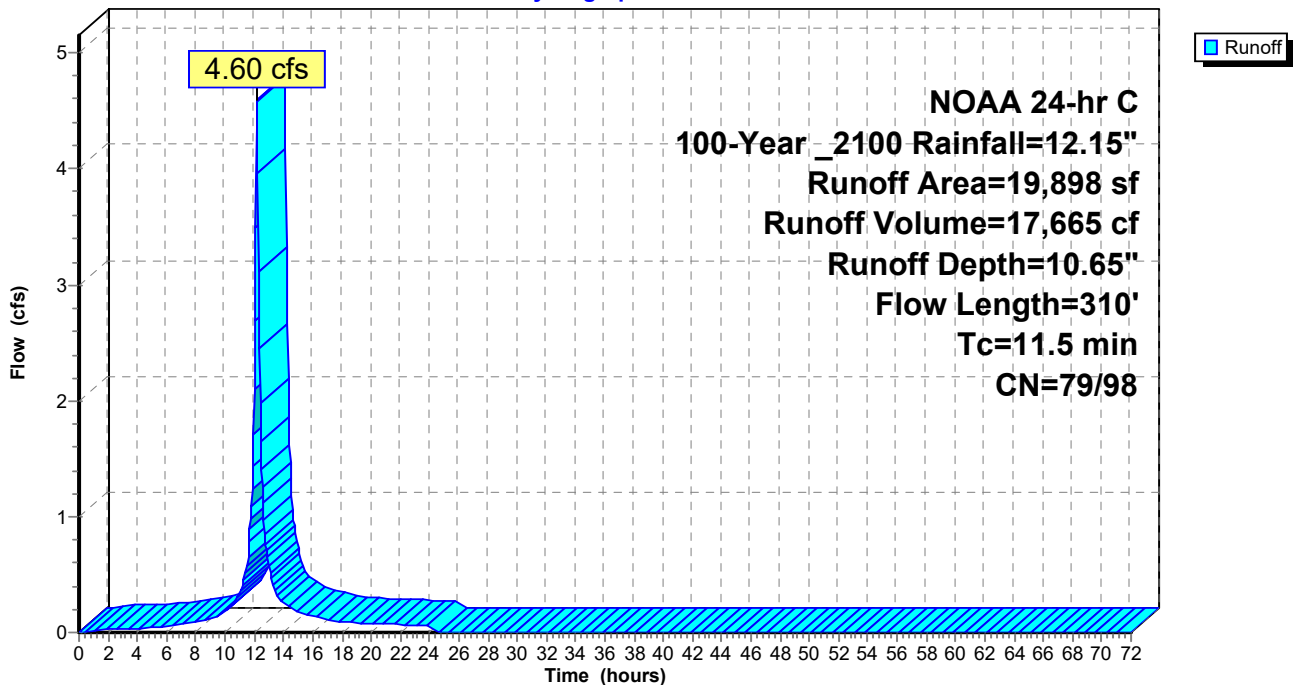
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _2100 Rainfall=12.15"

	Area (sf)	CN	Description
*	10,182	79	Open Space (Fair) C
*	9,716	98	Impervious Parking lot
	19,898	88	Weighted Average
	10,182	79	51.17% Pervious Area
	9,716	98	48.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	64	0.0105	0.12		Sheet Flow, Sheet flow -grass Grass: Short n= 0.150 P2= 3.34"
1.3	179	0.0129	2.31		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
1.5	67	0.0120	0.77		Shallow Concentrated Flow, SCF _ grass Short Grass Pasture Kv= 7.0 fps
11.5	310	Total			

Subcatchment 5Sa: RG 3 DA

Hydrograph



Summary for Subcatchment 5Sb: DA 5: CN w/ IC areas

Runoff = 13.82 cfs @ 12.19 hrs, Volume= 54,959 cf, Depth=11.34"
 Routed to Pond 10P : Underground Storage w/ Porous Pavement 5

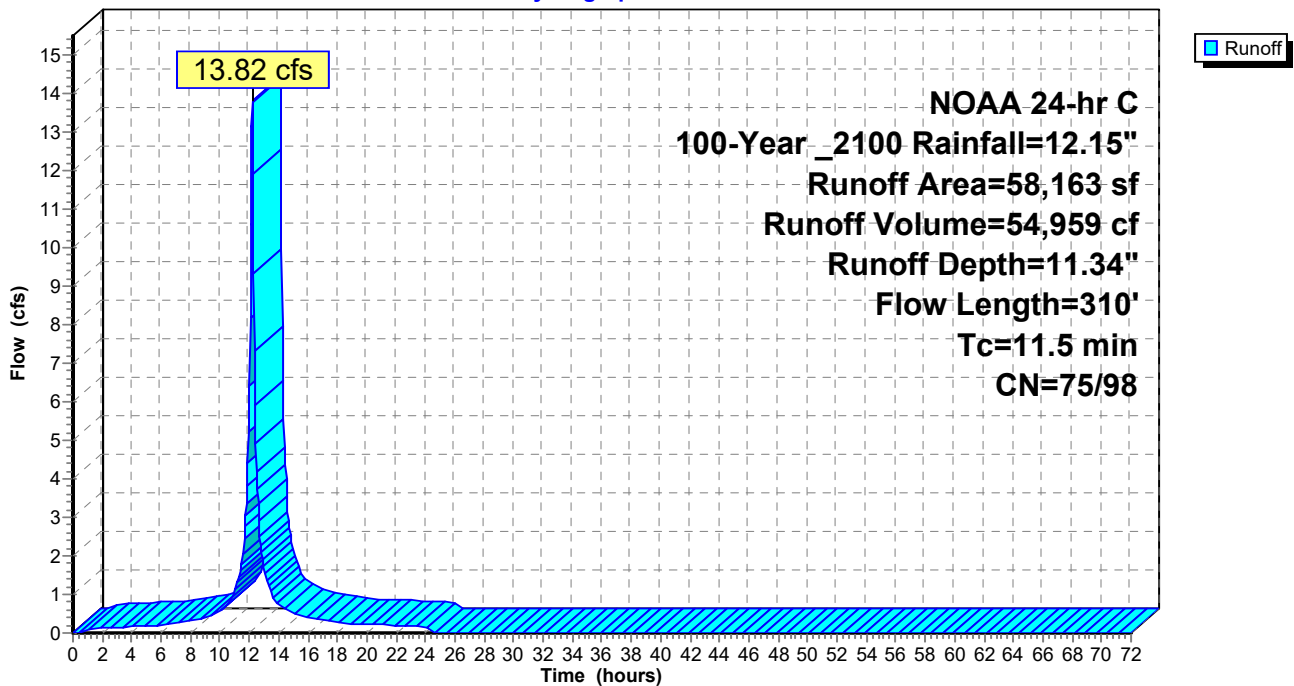
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _2100 Rainfall=12.15"

Area (sf)	CN	Description
* 1,112	79	Open Space (Fair) C
* 9,899	74	Open Space (good) C
* 47,152	98	Impervious
58,163	94	Weighted Average
11,011	75	18.93% Pervious Area
47,152	98	81.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	64	0.0105	0.12		Sheet Flow, Sheet flow -grass Grass: Short n= 0.150 P2= 3.34"
1.3	179	0.0129	2.31		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
1.5	67	0.0120	0.77		Shallow Concentrated Flow, SCF _ grass Short Grass Pasture Kv= 7.0 fps
11.5	310	Total			

Subcatchment 5Sb: DA 5: CN w/ IC areas

Hydrograph



Summary for Subcatchment 6S: DA 6: CN w/ IC areas

Runoff = 6.91 cfs @ 12.21 hrs, Volume= 28,199 cf, Depth=10.56"
 Routed to Pond 11P : Proposed Rain Garden 2 (East)

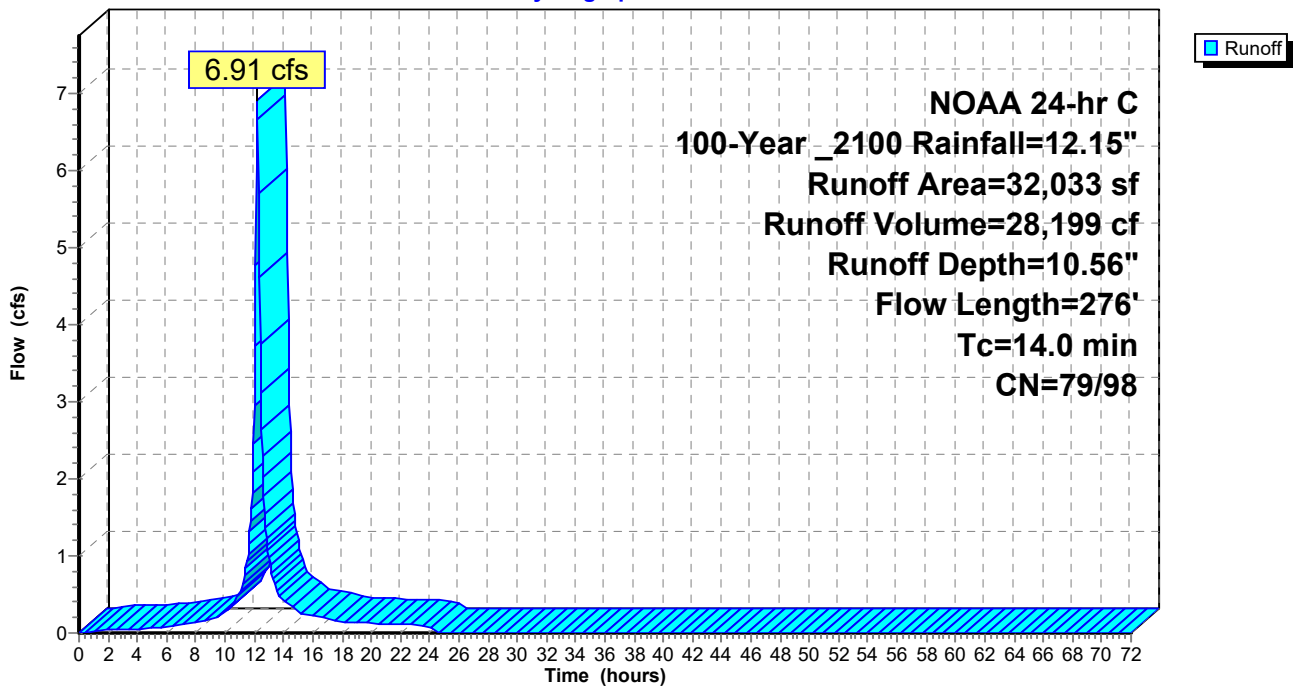
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _2100 Rainfall=12.15"

	Area (sf)	CN	Description
*	16,559	79	Open Space (fair) C
*	998	74	Open Space (good) C
*	14,476	98	Impervious
	32,033	87	Weighted Average
	17,557	79	54.81% Pervious Area
	14,476	98	45.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0098	0.13		Sheet Flow, Sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
0.5	86	0.0244	3.17		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
0.7	90	0.0178	2.15		Shallow Concentrated Flow, SCF - unpaved Unpaved Kv= 16.1 fps
14.0	276	Total			

Subcatchment 6S: DA 6: CN w/ IC areas

Hydrograph



Summary for Subcatchment 7S: DA 7 (Offsite South): CN w/ IC areas

Runoff = 21.82 cfs @ 12.22 hrs, Volume= 87,434 cf, Depth= 9.81"
 Routed to Link 1L : Offsite Flows

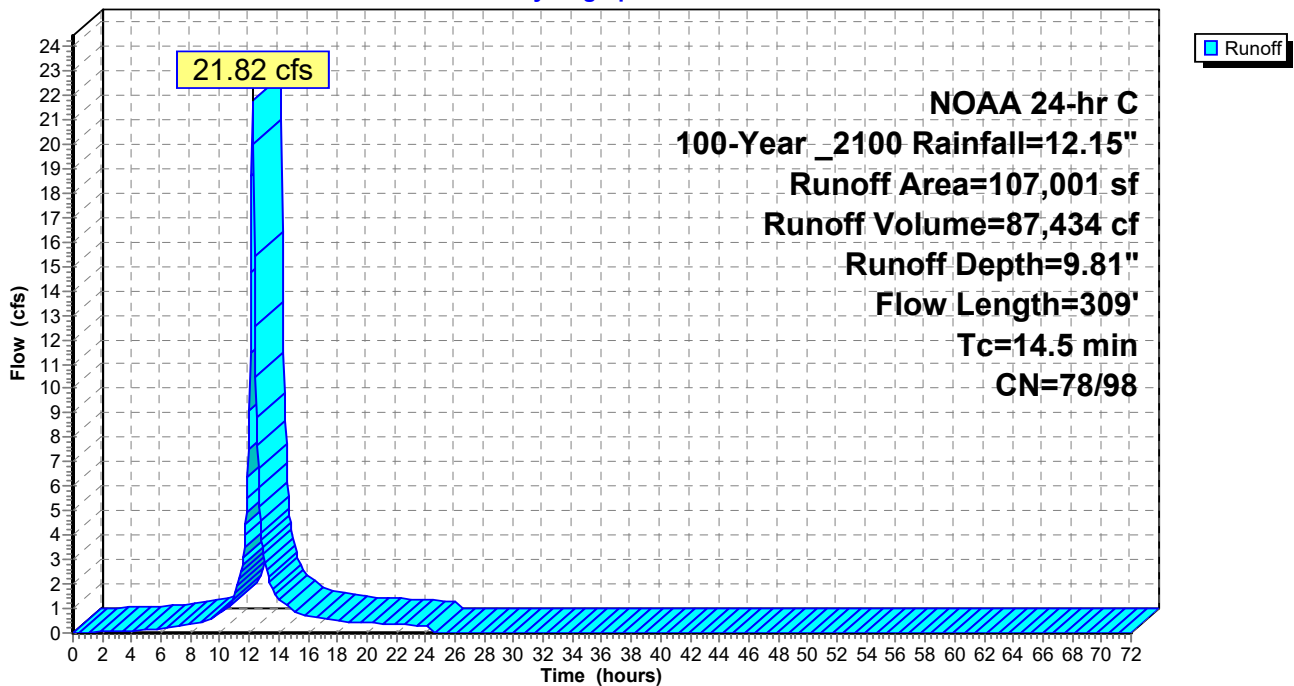
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _2100 Rainfall=12.15"

	Area (sf)	CN	Description
*	70,444	79	Open Space (fair) C
*	16,401	74	Open Space (good) C
*	20,156	98	Impervious
	107,001	82	Weighted Average
	86,845	78	81.16% Pervious Area
	20,156	98	18.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	100	0.0112	0.14		Sheet Flow, Sheet flow Grass: Short n= 0.150 P2= 3.34"
2.2	165	0.0305	1.22		Shallow Concentrated Flow, SCF _ grass Short Grass Pasture Kv= 7.0 fps
0.2	44	0.0317	3.61		Shallow Concentrated Flow, SCF _ paved Paved Kv= 20.3 fps
14.5	309	Total			

Subcatchment 7S: DA 7 (Offsite South): CN w/ IC areas

Hydrograph



Summary for Subcatchment 8S: DA 8 (Offsite North): CN w/ IC areas

Runoff = 57.48 cfs @ 12.28 hrs, Volume= 250,371 cf, Depth= 8.82"
 Routed to Link 1L : Offsite Flows

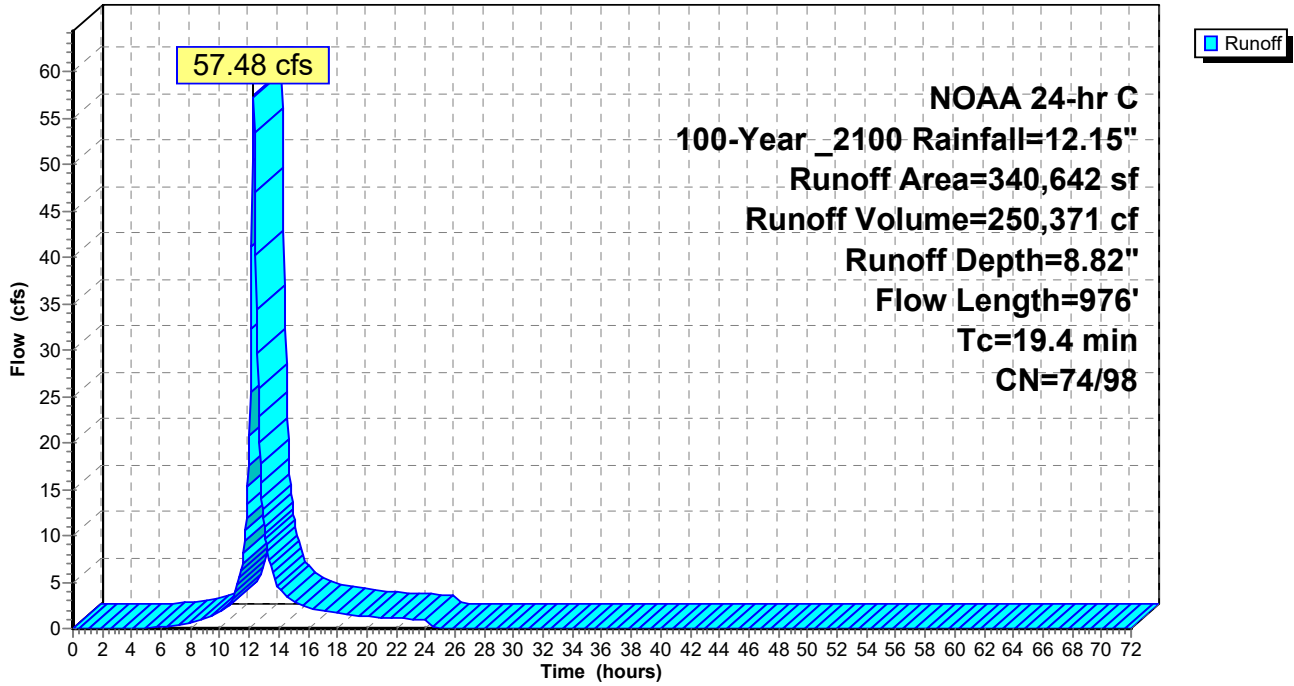
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _2100 Rainfall=12.15"

Area (sf)	CN	Description
*	2,767	70 Brush (fair) C
*	63,031	77 Brush (fair) D
*	86,643	65 Brush (good) C
*	64,708	73 Brush (good) D
*	73,083	79 Open space (Fair) C
*	30,261	84 Open space (fair) D
*	4,460	74 Open space (good) C
*	9,087	80 Open space (good) D
*	6,602	98 Impervious
340,642	75	Weighted Average
334,040	74	98.06% Pervious Area
6,602	98	1.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.0366	0.22		Sheet Flow, sheet flow Grass: Short n= 0.150 P2= 3.34"
11.9	876	0.0067	1.23		Shallow Concentrated Flow, scf - grass waterway Grassed Waterway Kv= 15.0 fps
19.4	976	Total			

Subcatchment 8S: DA 8 (Offsite North): CN w/ IC areas

Hydrograph



Summary for Subcatchment 9S: DA 9 (Offsite Field West): CN w/ IC areas

Runoff = 64.44 cfs @ 12.42 hrs, Volume= 345,655 cf, Depth= 8.65"
 Routed to Link 1L : Offsite Flows

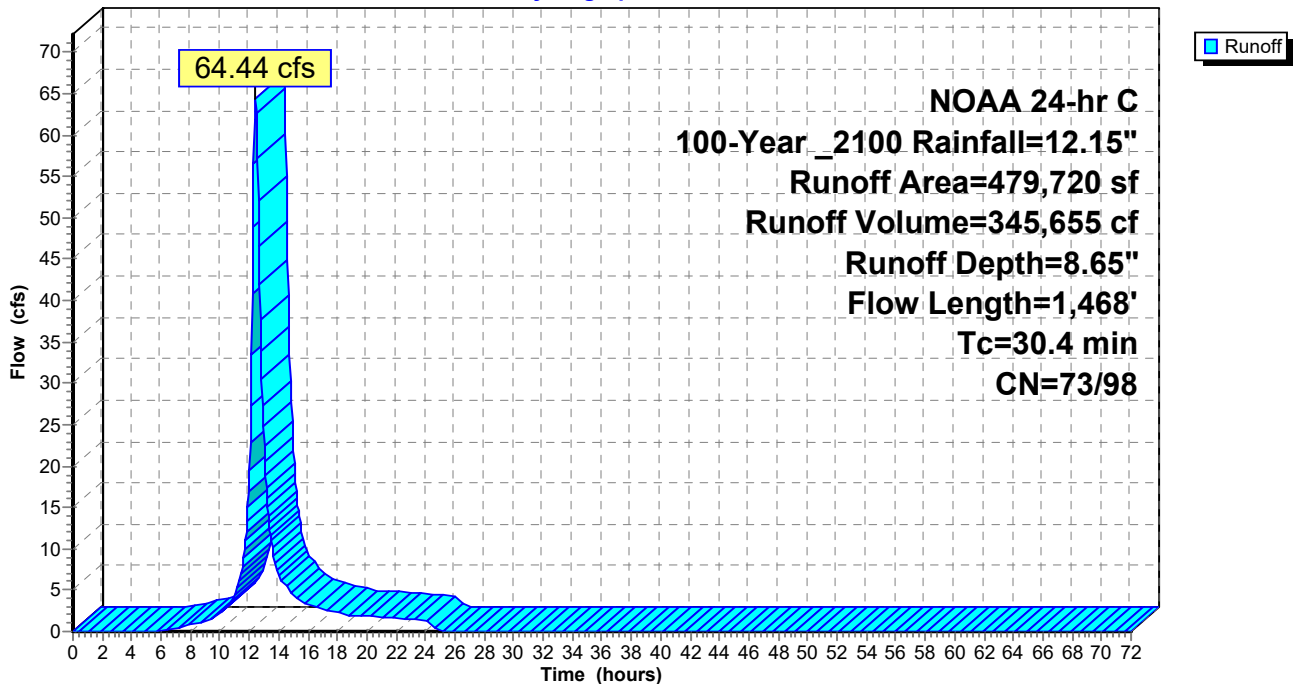
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _2100 Rainfall=12.15"

	Area (sf)	CN	Description
*	72,478	65	Brush (good) C
*	10,448	79	Open spcae (fair) C
*	392,515	74	Open Space (good) C
*	4,279	98	Impervious
	479,720	73	Weighted Average
	475,441	73	99.11% Pervious Area
	4,279	98	0.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0159	0.16		Sheet Flow, Sheet flow Grass: Short n= 0.150 P2= 3.34"
7.1	362	0.0148	0.85		Shallow Concentrated Flow, SCF - grass Short Grass Pasture Kv= 7.0 fps
12.8	1,006	0.0076	1.31		Shallow Concentrated Flow, SCF - grass waterway Grassed Waterway Kv= 15.0 fps
30.4	1,468	Total			

Subcatchment 9S: DA 9 (Offsite Field West): CN w/ IC areas

Hydrograph



Summary for Subcatchment 31S: RG 2 DA

Runoff = 6.82 cfs @ 12.21 hrs, Volume= 27,367 cf, Depth=10.25"

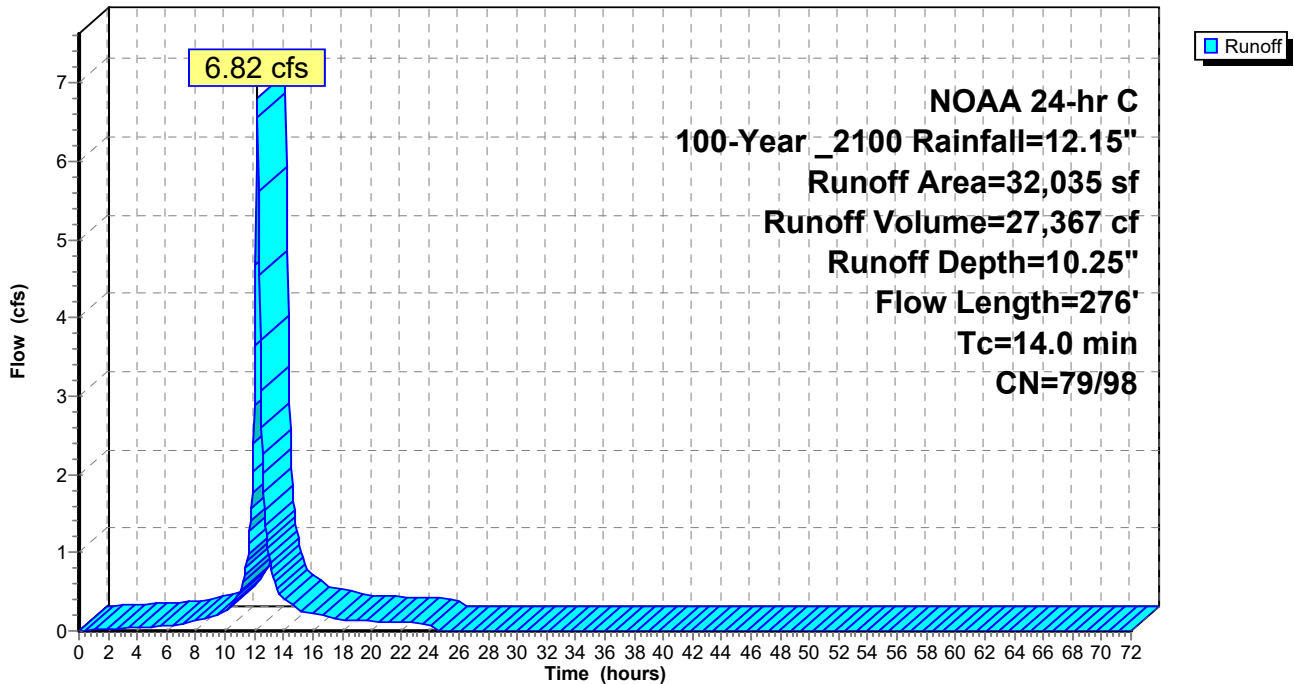
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _2100 Rainfall=12.15"

	Area (sf)	CN	Description
*	21,638	79	Open Space (fair) C
*	10,397	98	Impervious
	32,035	85	Weighted Average
	21,638	79	67.54% Pervious Area
	10,397	98	32.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0098	0.13		Sheet Flow, Sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
0.5	86	0.0244	3.17		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
0.7	90	0.0178	2.15		Shallow Concentrated Flow, SCF - unpaved Unpaved Kv= 16.1 fps
14.0	276	Total			

Subcatchment 31S: RG 2 DA

Hydrograph



Summary for Reach 1R: Existing Bioswale West 1

Inflow Area = 22,637 sf, 64.43% Impervious, Inflow Depth = 10.94" for 100-Year _2100 event
 Inflow = 4.90 cfs @ 12.22 hrs, Volume= 20,633 cf
 Outflow = 4.87 cfs @ 12.22 hrs, Volume= 20,633 cf, Atten= 1%, Lag= 0.3 min
 Routed to Pond 1P : Existing Rain Garden 1 West

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Max. Velocity= 2.89 fps, Min. Travel Time= 0.2 min
 Avg. Velocity = 0.84 fps, Avg. Travel Time= 0.7 min

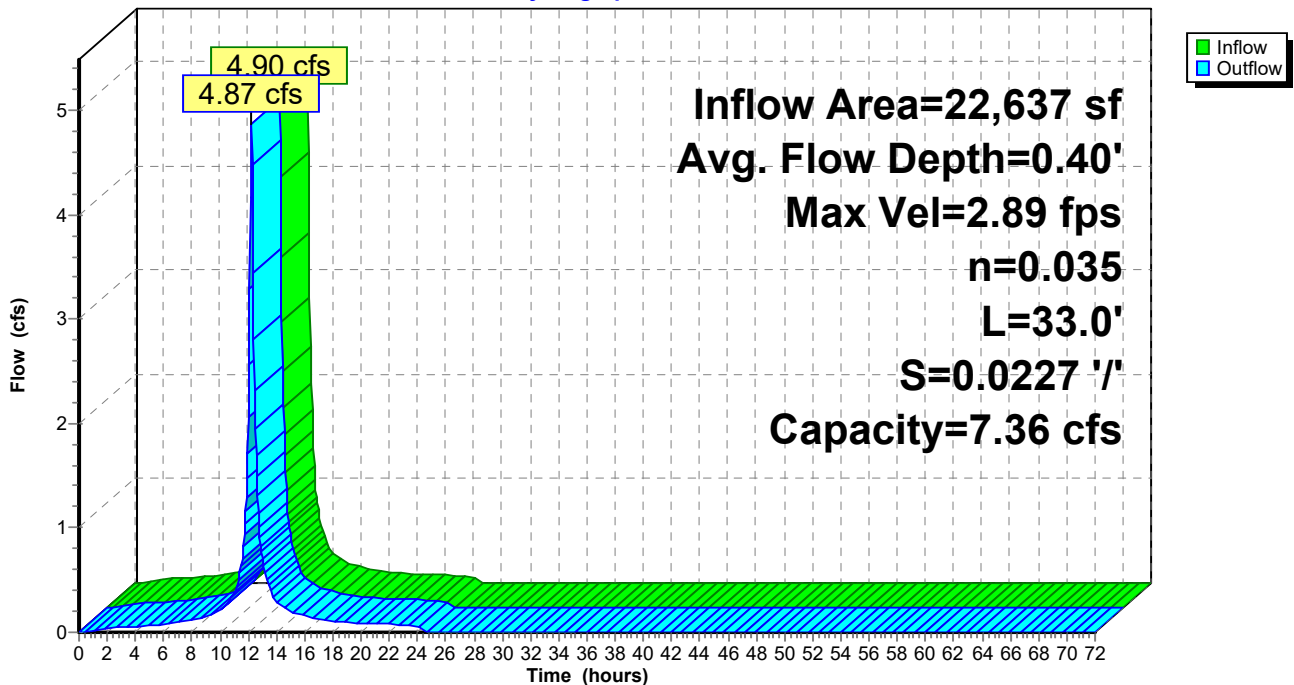
Peak Storage= 56 cf @ 12.22 hrs
 Average Depth at Peak Storage= 0.40' , Surface Width= 5.41'
 Bank-Full Depth= 0.50' Flow Area= 2.3 sf, Capacity= 7.36 cfs

3.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
 Side Slope Z-value= 3.0 '/ Top Width= 6.00'
 Length= 33.0' Slope= 0.0227 '/
 Inlet Invert= 100.75', Outlet Invert= 100.00'



Reach 1R: Existing Bioswale West 1

Hydrograph



Summary for Reach 2R: Bioswale E 1 RG 3

[91] Warning: Storage range exceeded by 0.03'
[55] Hint: Peak inflow is 114% of Manning's capacity

Inflow Area = 19,898 sf, 48.83% Impervious, Inflow Depth = 10.65" for 100-Year _2100 event
Inflow = 4.60 cfs @ 12.19 hrs, Volume= 17,665 cf
Outflow = 4.58 cfs @ 12.19 hrs, Volume= 17,665 cf, Atten= 0%, Lag= 0.3 min
Routed to Pond 9P : Proposed Rain Garden 3 (North East)

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.32 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.13 fps, Avg. Travel Time= 0.5 min

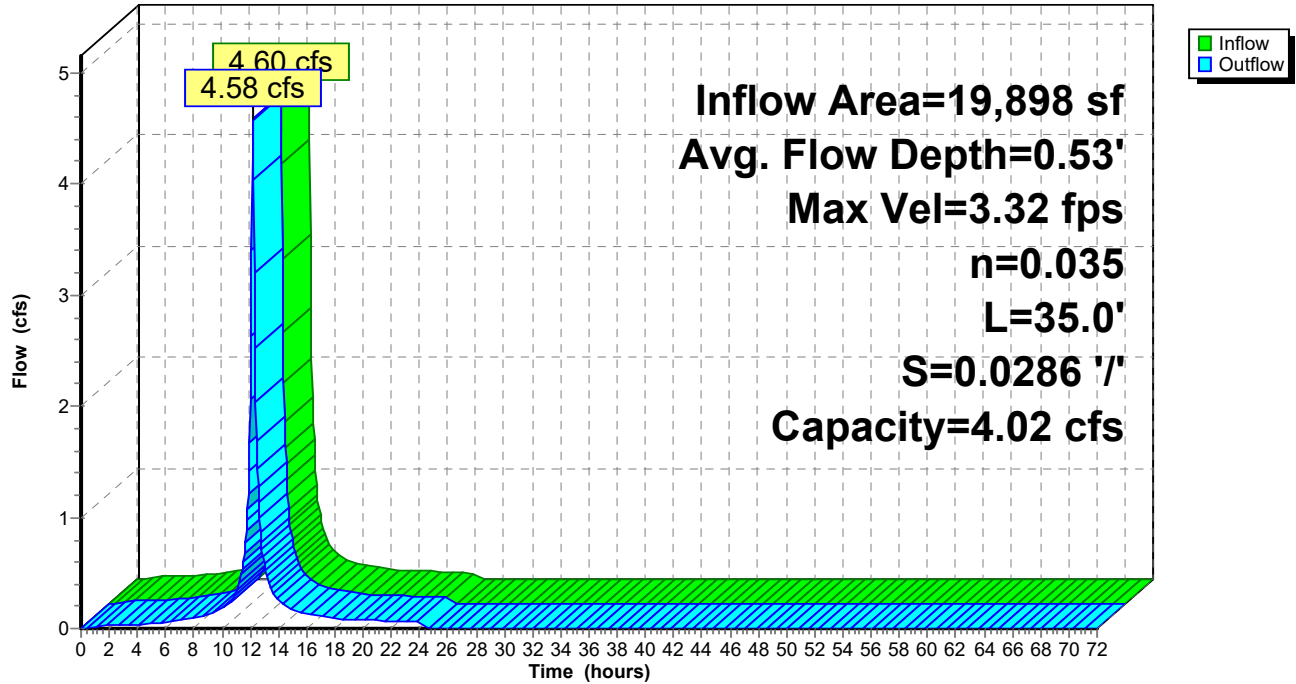
Peak Storage= 48 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.53' , Surface Width= 4.20'
Bank-Full Depth= 0.50' Flow Area= 1.3 sf, Capacity= 4.02 cfs

1.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 3.0 '/' Top Width= 4.00'
Length= 35.0' Slope= 0.0286 '/'
Inlet Invert= 101.00', Outlet Invert= 100.00'



Reach 2R: Bioswale E 1 RG 3

Hydrograph



Summary for Pond 1P: Exising Rain Garden 1 West

[93] Warning: Storage range exceeded by 0.54'
 [88] Warning: Qout>Qin may require smaller dt or Finer Routing
 [62] Hint: Exceeded Reach 1R OUTLET depth by 0.39' @ 12.25 hrs

Inflow Area = 22,637 sf, 64.43% Impervious, Inflow Depth = 10.94" for 100-Year _2100 event
 Inflow = 4.87 cfs @ 12.22 hrs, Volume= 20,633 cf
 Outflow = 4.88 cfs @ 12.23 hrs, Volume= 20,449 cf, Atten= 0%, Lag= 0.3 min
 Primary = 0.38 cfs @ 12.23 hrs, Volume= 9,492 cf
 Routed to Pond 2P : Underground Storage w/ Porous Pavement 1
 Secondary = 4.50 cfs @ 12.23 hrs, Volume= 10,957 cf
 Routed to Pond 2P : Underground Storage w/ Porous Pavement 1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 100.79' @ 12.23 hrs Surf.Area= 1,750 sf Storage= 1,831 cf

Plug-Flow detention time= 166.8 min calculated for 20,449 cf (99% of inflow)
 Center-of-Mass det. time= 160.8 min (924.0 - 763.3)

Volume	Invert	Avail.Storage	Storage Description			
#1	98.25'	1,831 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
98.25	1,445	0.0	0	0	1,445	
99.25	1,445	35.0	506	506	1,580	
99.50	1,445	25.0	90	596	1,613	
100.00	1,750	100.0	798	1,394	1,927	
100.25	1,750	100.0	438	1,831	1,964	

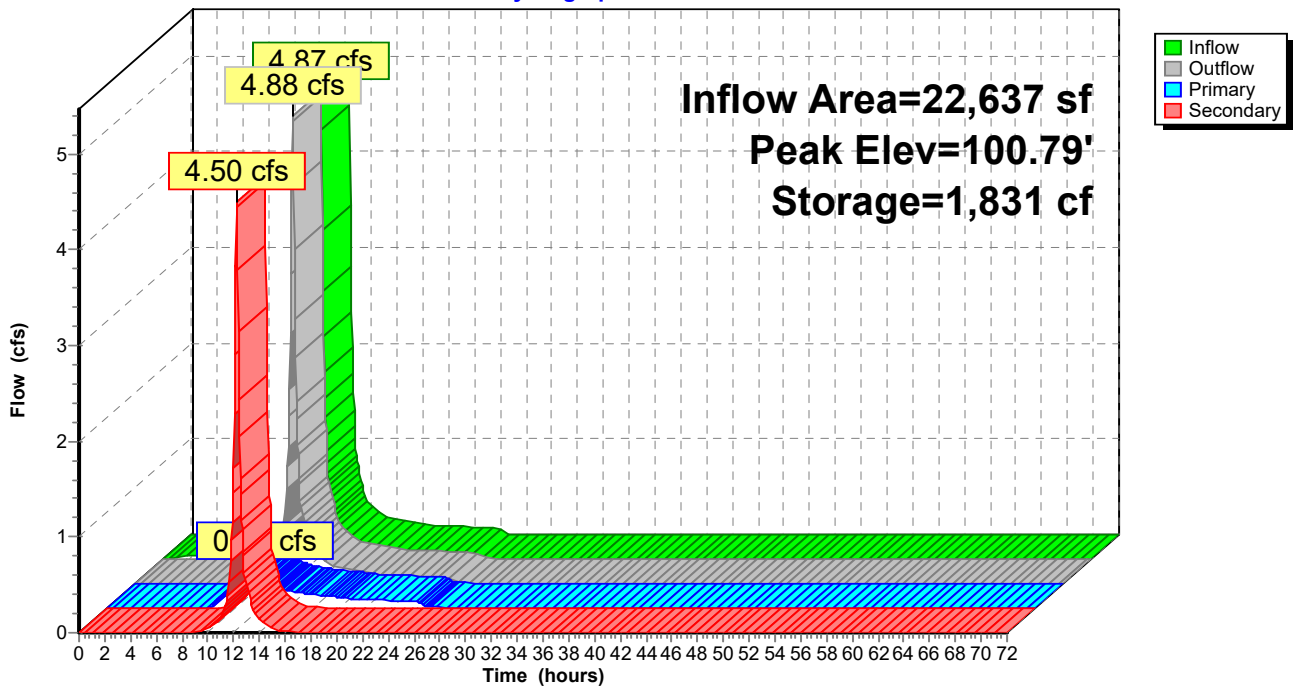
Device	Routing	Invert	Outlet Devices	
#1	Primary	98.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 98.15' / 98.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#2	Device 1	98.15'	0.5" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads	
#3	Device 2	98.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 98.25' / 98.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#4	Device 3	98.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads	
#5	Device 1	100.00'	4.0" Horiz. Drintech Atrium C= 0.600 Limited to weir flow at low heads	
#6	Secondary	100.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32	

Primary OutFlow Max=0.38 cfs @ 12.23 hrs HW=100.78' (Free Discharge)
 1=Culvert (Passes 0.38 cfs of 0.48 cfs potential flow)
 2=Restrictive Orifice (Orifice Controls 0.01 cfs @ 7.78 fps)
 3=4" HDPE Underdrain (Passes 0.01 cfs of 0.38 cfs potential flow)
 4=Perforations (Passes 0.01 cfs of 5.75 cfs potential flow)
 5=Draintech Atrium (Orifice Controls 0.37 cfs @ 4.26 fps)

Secondary OutFlow Max=4.41 cfs @ 12.23 hrs HW=100.78' (Free Discharge)
 6=Broad-Crested Rectangular Weir (Weir Controls 4.41 cfs @ 2.15 fps)

Pond 1P: Existing Rain Garden 1 West

Hydrograph



Summary for Pond 2P: Underground Storage w/ Porous Pavement 1

[44] Hint: Outlet device #3 is below defined storage
 [79] Warning: Submerged Pond 1P Primary device # 1 INLET by 0.96'

Inflow Area = 61,742 sf, 66.85% Impervious, Inflow Depth > 10.91" for 100-Year _2100 event
 Inflow = 13.29 cfs @ 12.22 hrs, Volume= 56,143 cf
 Outflow = 9.43 cfs @ 12.35 hrs, Volume= 38,652 cf, Atten= 29%, Lag= 8.0 min
 Primary = 0.02 cfs @ 12.35 hrs, Volume= 3,953 cf
 Secondary = 9.41 cfs @ 12.35 hrs, Volume= 34,699 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 99.11' @ 12.35 hrs Surf.Area= 13,421 sf Storage= 24,498 cf

Plug-Flow detention time= 340.2 min calculated for 38,625 cf (69% of inflow)
 Center-of-Mass det. time= 201.4 min (1,021.9 - 820.5)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	1,612 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	9,359 cf	72.75'W x 146.02'L x 3.50'H Field A 37,179 cf Overall - 13,782 cf Embedded = 23,397 cf x 40.0% Voids
#3A	96.17'	13,782 cf	ADS_StormTech SC-740 +Cap x 300 Inside #2 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 300 Chambers in 15 Rows
		24,753 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	2,798	0.0	0	0
97.67	2,798	35.0	1,469	1,469
97.83	2,798	15.0	67	1,536
98.01	2,798	15.0	76	1,612

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.02 cfs @ 12.35 hrs HW=99.11' (Free Discharge)

↑ **1=Restriction Orifice** (Orifice Controls 0.02 cfs @ 12.75 fps)

↑ **2=6" HDPE Underdrain** (Passes 0.02 cfs of 0.50 cfs potential flow)

↑ **3=Perforations** (Passes 0.02 cfs of 9.51 cfs potential flow)

Secondary OutFlow Max=9.36 cfs @ 12.35 hrs HW=99.11' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** (Weir Controls 9.36 cfs @ 2.82 fps)

Pond 2P: Underground Storage w/ Porous Pavement 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

20 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 144.02' Row Length +12.0" End Stone x 2 = 146.02' Base Length

15 Rows x 51.0" Wide + 6.0" Spacing x 14 + 12.0" Side Stone x 2 = 72.75' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

300 Chambers x 45.9 cf = 13,782.0 cf Chamber Storage

37,179.5 cf Field - 13,782.0 cf Chambers = 23,397.5 cf Stone x 40.0% Voids = 9,359.0 cf Stone Storage

Chamber Storage + Stone Storage = 23,141.0 cf = 0.531 af

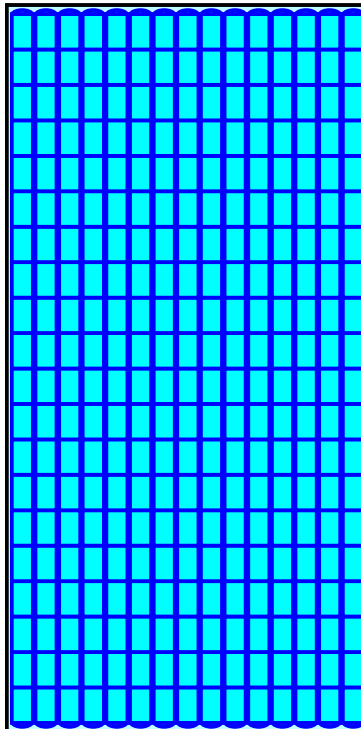
Overall Storage Efficiency = 62.2%

Overall System Size = 146.02' x 72.75' x 3.50'

300 Chambers

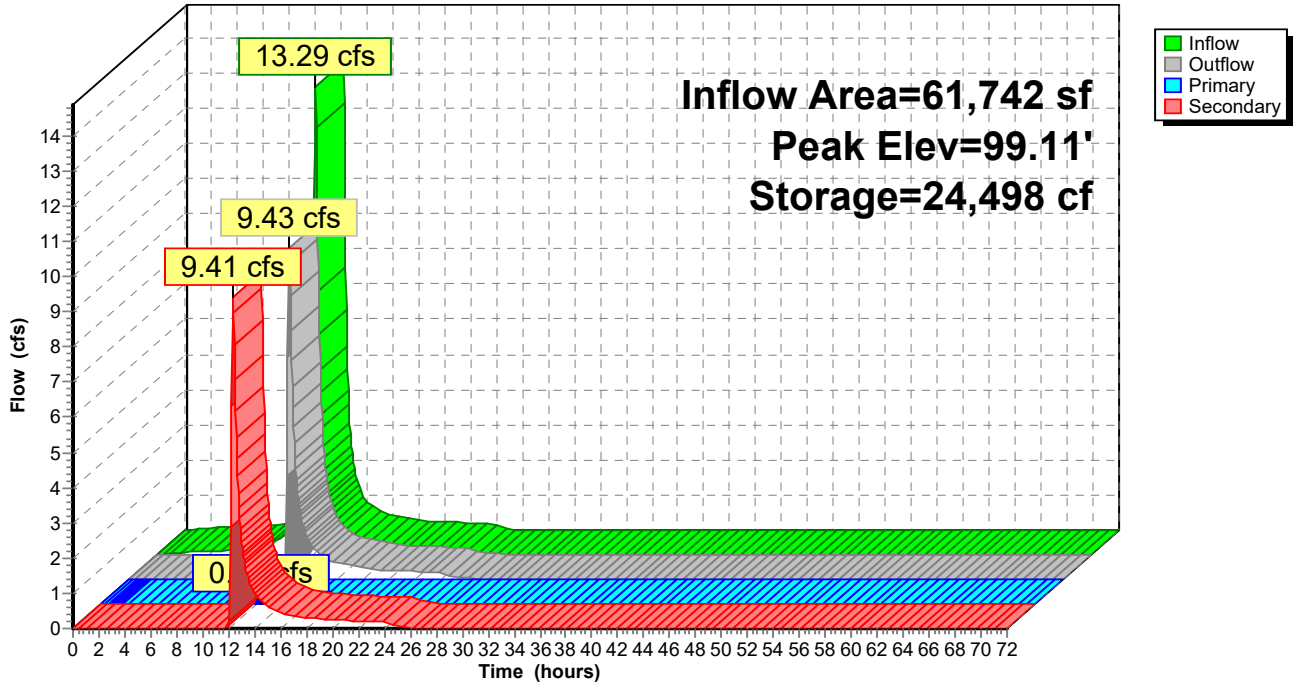
1,377.0 cy Field

866.6 cy Stone



Pond 2P: Underground Storage w/ Porous Pavement 1

Hydrograph



Summary for Pond 3P: Underground Storage w/ Porous Pavement 2

[44] Hint: Outlet device #3 is below defined storage

[93] Warning: Storage range exceeded by 0.04'

Inflow Area = 58,249 sf, 86.46% Impervious, Inflow Depth = 11.52" for 100-Year _2100 event
 Inflow = 16.21 cfs @ 12.14 hrs, Volume= 55,920 cf
 Outflow = 10.70 cfs @ 12.22 hrs, Volume= 35,612 cf, Atten= 34%, Lag= 5.2 min
 Primary = 0.02 cfs @ 12.22 hrs, Volume= 3,964 cf
 Secondary = 10.69 cfs @ 12.22 hrs, Volume= 31,648 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 99.21' @ 12.22 hrs Surf.Area= 23,296 sf Storage= 27,931 cf

Plug-Flow detention time= 389.6 min calculated for 35,612 cf (64% of inflow)
 Center-of-Mass det. time= 279.5 min (1,024.1 - 744.6)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	8,187 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	8,029 cf	82.25'W x 110.42'L x 3.50'H Field A 31,786 cf Overall - 11,715 cf Embedded = 20,071 cf x 40.0% Voids
#3A	96.17'	11,715 cf	ADS_StormTech SC-740 +Cap x 255 Inside #2 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 255 Chambers in 17 Rows
		27,931 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	14,214	0.0	0	0
97.67	14,214	35.0	7,462	7,462
97.83	14,214	15.0	341	7,803
98.01	14,214	15.0	384	8,187

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.02 cfs @ 12.22 hrs HW=99.17' (Free Discharge)

↑ **1=Restriction Orifice** (Orifice Controls 0.02 cfs @ 12.81 fps)

↑ **2=6" HDPE Underdrain** (Passes 0.02 cfs of 0.51 cfs potential flow)

↑ **3=Perforations** (Passes 0.02 cfs of 9.55 cfs potential flow)

Secondary OutFlow Max=10.23 cfs @ 12.22 hrs HW=99.17' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** (Weir Controls 10.23 cfs @ 2.91 fps)

Pond 3P: Underground Storage w/ Porous Pavement 2 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

15 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 108.42' Row Length +12.0" End Stone x 2 = 110.42' Base Length

17 Rows x 51.0" Wide + 6.0" Spacing x 16 + 12.0" Side Stone x 2 = 82.25' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

255 Chambers x 45.9 cf = 11,714.7 cf Chamber Storage

31,786.2 cf Field - 11,714.7 cf Chambers = 20,071.5 cf Stone x 40.0% Voids = 8,028.6 cf Stone Storage

Chamber Storage + Stone Storage = 19,743.3 cf = 0.453 af

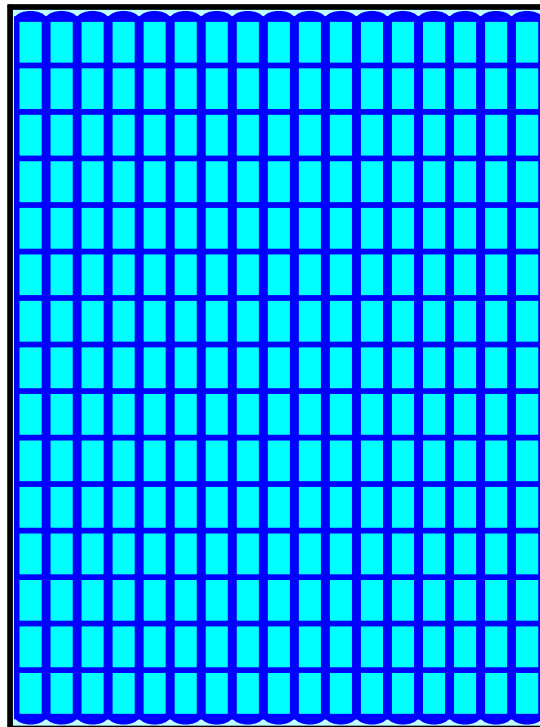
Overall Storage Efficiency = 62.1%

Overall System Size = 110.42' x 82.25' x 3.50'

255 Chambers

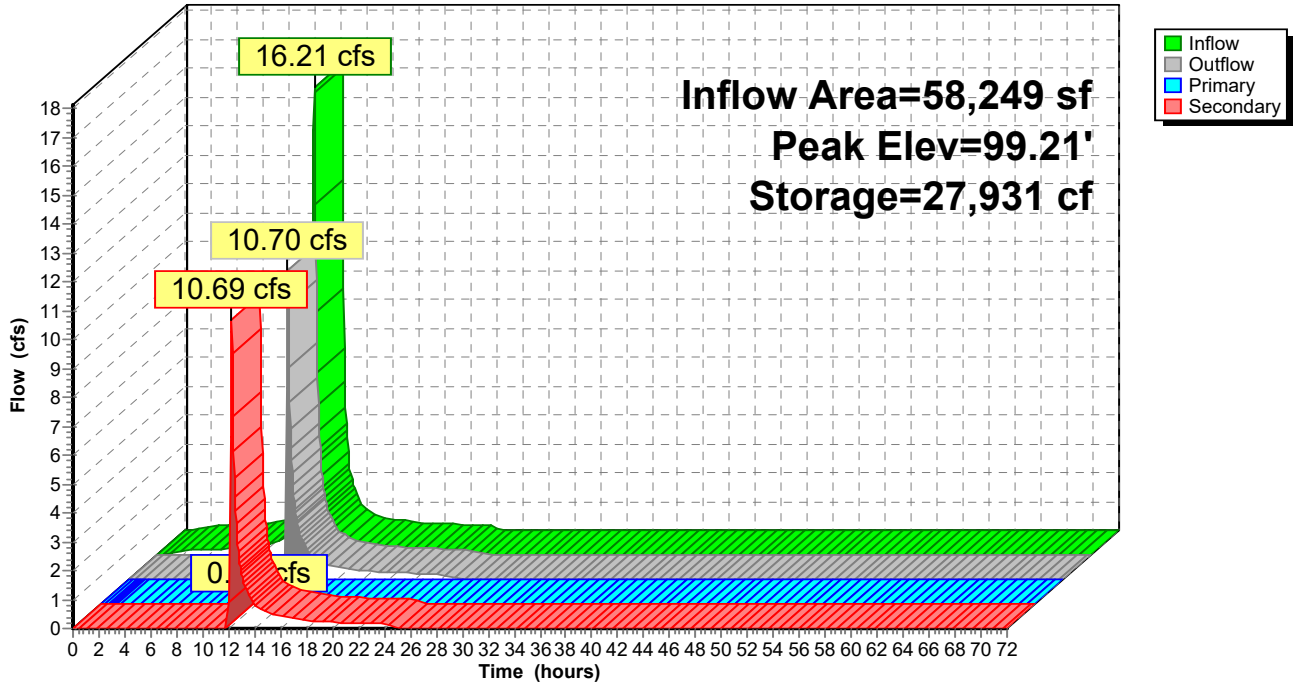
1,177.3 cy Field

743.4 cy Stone



Pond 3P: Underground Storage w/ Porous Pavement 2

Hydrograph



Summary for Pond 4P: Existing Rain Garden 2 Front

[93] Warning: Storage range exceeded by 0.72'
 [88] Warning: Qout>Qin may require smaller dt or Finer Routing
 [85] Warning: Oscillations may require smaller dt or Finer Routing (severity=4)

Inflow Area = 25,889 sf, 48.62% Impervious, Inflow Depth = 10.65" for 100-Year _2100 event
 Inflow = 6.68 cfs @ 12.15 hrs, Volume= 22,972 cf
 Outflow = 6.79 cfs @ 12.15 hrs, Volume= 21,818 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.42 cfs @ 12.15 hrs, Volume= 9,281 cf
 Routed to Pond 6P : Underground Storage w/ Porous Pavement 3
 Secondary = 6.37 cfs @ 12.15 hrs, Volume= 12,536 cf
 Routed to Pond 6P : Underground Storage w/ Porous Pavement 3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 101.97' @ 12.15 hrs Surf.Area= 3,045 sf Storage= 3,267 cf

Plug-Flow detention time= 217.4 min calculated for 21,803 cf (95% of inflow)
 Center-of-Mass det. time= 189.4 min (954.0 - 764.6)

Volume	Invert	Avail.Storage	Storage Description			
#1	99.25'	3,267 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
99.25	2,635	0.0	0	0	2,635	
100.25	2,635	35.0	922	922	2,817	
100.50	2,635	25.0	165	1,087	2,862	
101.00	3,045	100.0	1,419	2,506	3,283	
101.25	3,045	100.0	761	3,267	3,332	

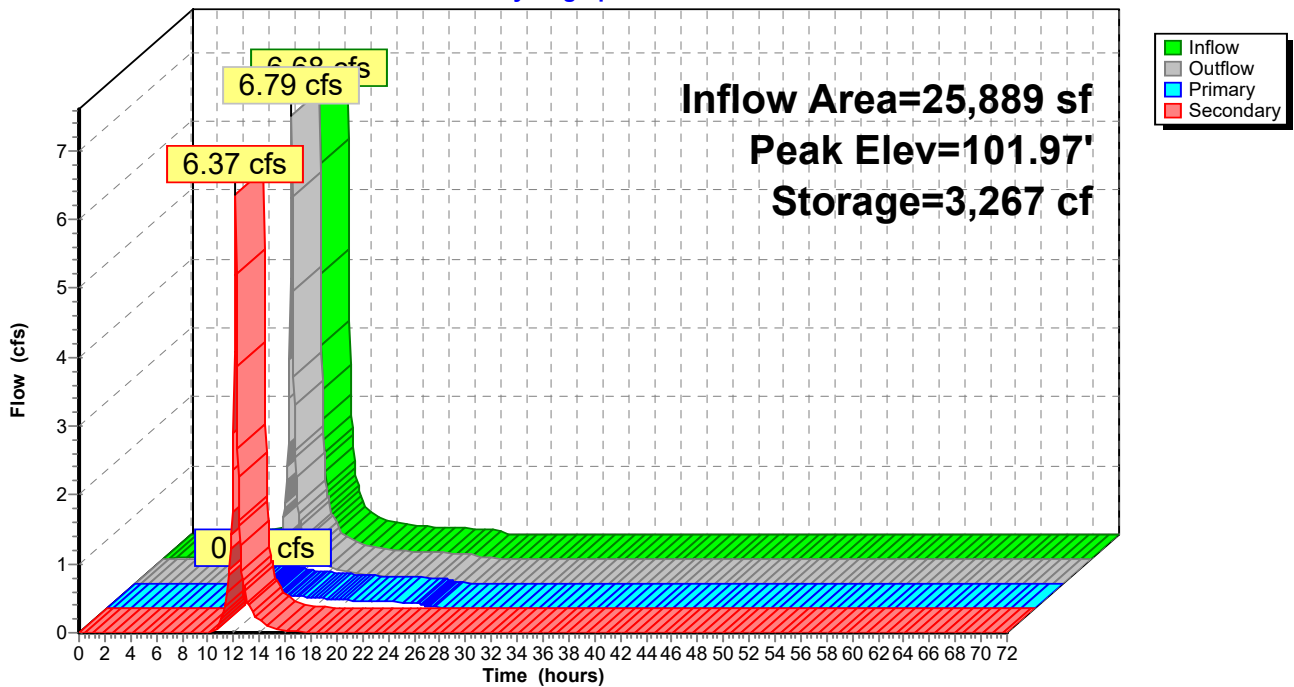
Device	Routing	Invert	Outlet Devices
#1	Primary	99.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 99.15' / 99.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf
#2	Device 1	99.15'	0.5" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads
#3	Device 2	99.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 99.25' / 99.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf
#4	Device 3	99.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#5	Device 1	101.00'	4.0" Horiz. Drintech Atrium C= 0.600 Limited to weir flow at low heads
#6	Secondary	101.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.42 cfs @ 12.15 hrs HW=101.97' (Free Discharge)
 1=Culvert (Passes 0.42 cfs of 0.50 cfs potential flow)
 2=Restrictive Orifice (Orifice Controls 0.01 cfs @ 8.05 fps)
 3=4" HDPE Underdrain (Passes 0.01 cfs of 0.39 cfs potential flow)
 4=Perforations (Passes 0.01 cfs of 5.95 cfs potential flow)
 5=Draintech Atrium (Orifice Controls 0.41 cfs @ 4.74 fps)

Secondary OutFlow Max=6.36 cfs @ 12.15 hrs HW=101.97' (Free Discharge)
 6=Broad-Crested Rectangular Weir (Weir Controls 6.36 cfs @ 2.44 fps)

Pond 4P: Existing Rain Garden 2 Front

Hydrograph



Summary for Pond 5P: Proposed Rain Garden 1 (South West)

[93] Warning: Storage range exceeded by 0.62'
 [88] Warning: Qout>Qin may require smaller dt or Finer Routing
 [85] Warning: Oscillations may require smaller dt or Finer Routing (severity=5)

Inflow Area = 21,388 sf, 65.14% Impervious, Inflow Depth = 10.81" for 100-Year _2100 event
 Inflow = 5.52 cfs @ 12.15 hrs, Volume= 19,268 cf
 Outflow = 5.67 cfs @ 12.15 hrs, Volume= 18,700 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.40 cfs @ 12.15 hrs, Volume= 8,765 cf
 Routed to Pond 6P : Underground Storage w/ Porous Pavement 3
 Secondary = 5.27 cfs @ 12.15 hrs, Volume= 9,935 cf
 Routed to Pond 6P : Underground Storage w/ Porous Pavement 3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 101.87' @ 12.15 hrs Surf.Area= 2,325 sf Storage= 2,466 cf

Plug-Flow detention time= 220.3 min calculated for 18,700 cf (97% of inflow)
 Center-of-Mass det. time= 201.5 min (959.3 - 757.8)

Volume	Invert	Avail.Storage	Storage Description			
#1	99.25'	2,466 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
99.25	1,970	0.0	0	0	1,970	
100.25	1,970	35.0	690	690	2,127	
100.50	1,970	25.0	123	813	2,167	
101.00	2,325	100.0	1,073	1,885	2,531	
101.25	2,325	100.0	581	2,466	2,574	

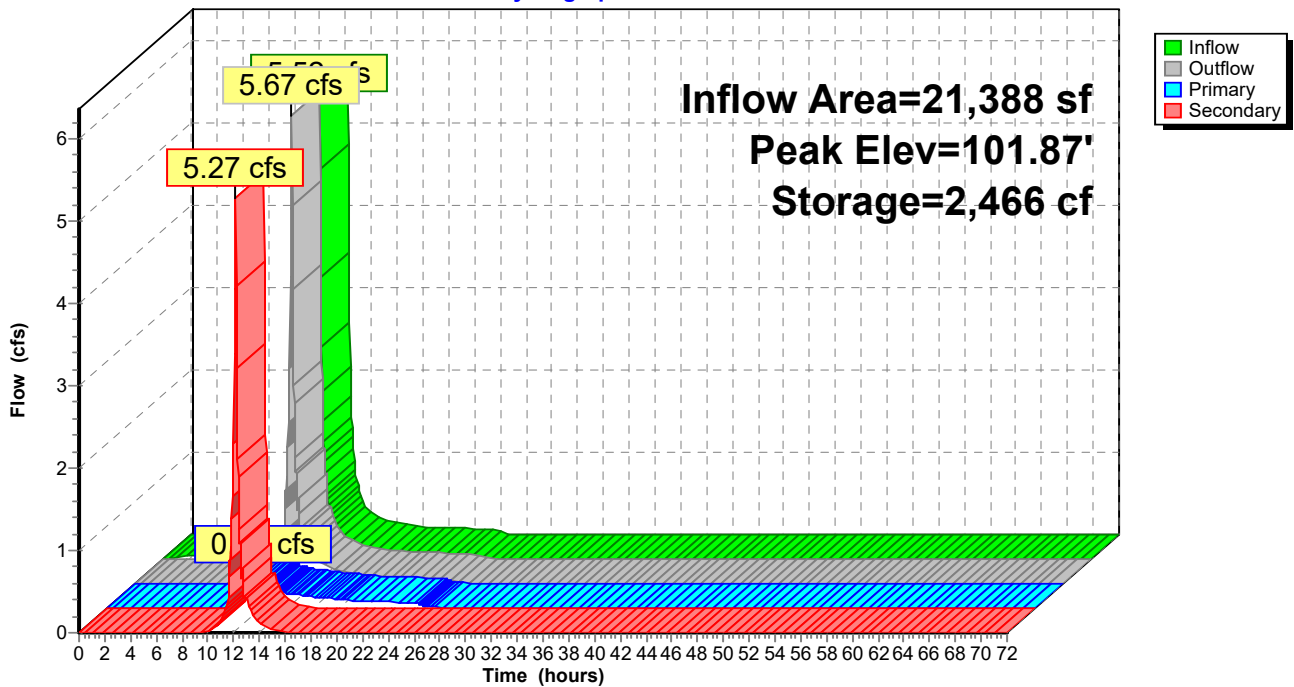
Device	Routing	Invert	Outlet Devices	
#1	Primary	99.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 99.15' / 99.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#2	Device 1	99.15'	0.5" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads	
#3	Device 2	99.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 99.25' / 99.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#4	Device 3	99.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads	
#5	Device 1	101.00'	4.0" Horiz. Drintech Atrium C= 0.600 Limited to weir flow at low heads	
#6	Secondary	101.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32	

Primary OutFlow Max=0.40 cfs @ 12.15 hrs HW=101.87' (Free Discharge)
 1=Culvert (Passes 0.40 cfs of 0.49 cfs potential flow)
 2=Restrictive Orifice (Orifice Controls 0.01 cfs @ 7.91 fps)
 3=4" HDPE Underdrain (Passes 0.01 cfs of 0.38 cfs potential flow)
 4=Perforations (Passes 0.01 cfs of 5.84 cfs potential flow)
 5=Draintech Atrium (Orifice Controls 0.39 cfs @ 4.49 fps)

Secondary OutFlow Max=5.26 cfs @ 12.15 hrs HW=101.87' (Free Discharge)
 6=Broad-Crested Rectangular Weir (Weir Controls 5.26 cfs @ 2.28 fps)

Pond 5P: Proposed Rain Garden 1 (South West)

Hydrograph



Summary for Pond 6P: Underground Storage w/ Porous Pavement 3

[44] Hint: Outlet device #3 is below defined storage
 [93] Warning: Storage range exceeded by 1.09'
 [79] Warning: Submerged Pond 4P Primary device # 1 INLET by 1.11'
 [79] Warning: Submerged Pond 5P Primary device # 1 INLET by 1.11'

Inflow Area = 158,623 sf, 63.48% Impervious, Inflow Depth > 10.72" for 100-Year _2100 event
 Inflow = 41.36 cfs @ 12.15 hrs, Volume= 141,696 cf
 Outflow = 30.18 cfs @ 12.30 hrs, Volume= 87,430 cf, Atten= 27%, Lag= 9.0 min
 Primary = 0.02 cfs @ 12.30 hrs, Volume= 3,985 cf
 Secondary = 30.16 cfs @ 12.30 hrs, Volume= 83,445 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 100.26' @ 12.30 hrs Surf.Area= 38,014 sf Storage= 71,344 cf

Plug-Flow detention time= 321.7 min calculated for 87,369 cf (62% of inflow)
 Center-of-Mass det. time= 174.7 min (988.5 - 813.8)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	4,287 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	26,630 cf	106.00'W x 288.42'L x 3.50'H Field A 107,003 cf Overall - 40,427 cf Embedded = 66,575 cf x 40.0% Voids
#3A	96.17'	40,427 cf	ADS_StormTech SC-740 +Cap x 880 Inside #2 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 880 Chambers in 22 Rows
		71,344 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	7,442	0.0	0	0
97.67	7,442	35.0	3,907	3,907
97.83	7,442	15.0	179	4,086
98.01	7,442	15.0	201	4,287

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.02 cfs @ 12.30 hrs HW=100.26' (Free Discharge)

↑ **1=Restriction Orifice** (Orifice Controls 0.02 cfs @ 13.76 fps)

↑ **2=6" HDPE Underdrain** (Passes 0.02 cfs of 0.54 cfs potential flow)

↑ **3=Perforations** (Passes 0.02 cfs of 10.27 cfs potential flow)

Secondary OutFlow Max=30.12 cfs @ 12.30 hrs HW=100.26' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** (Weir Controls 30.12 cfs @ 4.45 fps)

Pond 6P: Underground Storage w/ Porous Pavement 3 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

40 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 286.42' Row Length +12.0" End Stone x 2 = 288.42' Base Length

22 Rows x 51.0" Wide + 6.0" Spacing x 21 + 12.0" Side Stone x 2 = 106.00' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

880 Chambers x 45.9 cf = 40,427.2 cf Chamber Storage

107,002.6 cf Field - 40,427.2 cf Chambers = 66,575.4 cf Stone x 40.0% Voids = 26,630.1 cf Stone Storage

Chamber Storage + Stone Storage = 67,057.4 cf = 1.539 af

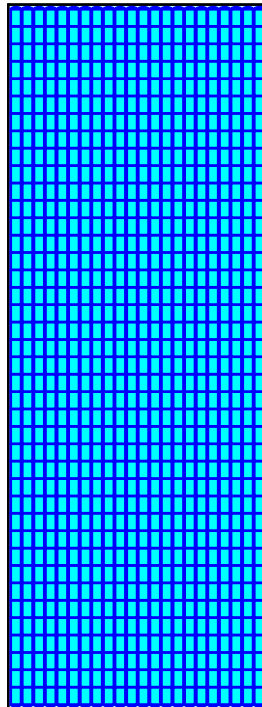
Overall Storage Efficiency = 62.7%

Overall System Size = 288.42' x 106.00' x 3.50'

880 Chambers

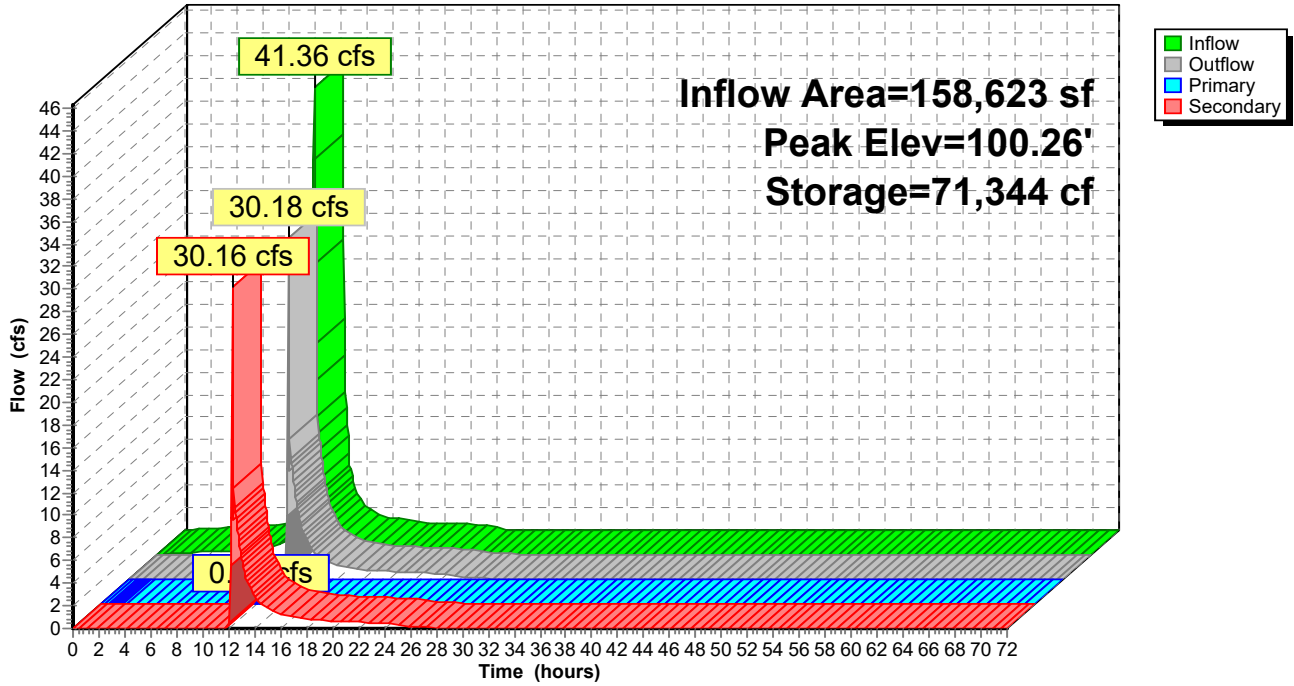
3,963.1 cy Field

2,465.8 cy Stone



Pond 6P: Underground Storage w/ Porous Pavement 3

Hydrograph



Summary for Pond 7P: Proposed Rain Garden 4 (North)

[93] Warning: Storage range exceeded by 0.67'

Inflow Area = 24,369 sf, 57.53% Impervious, Inflow Depth = 10.87" for 100-Year _2100 event
 Inflow = 6.32 cfs @ 12.15 hrs, Volume= 22,067 cf
 Outflow = 6.26 cfs @ 12.15 hrs, Volume= 21,237 cf, Atten= 1%, Lag= 0.0 min
 Primary = 0.41 cfs @ 12.15 hrs, Volume= 9,513 cf
 Routed to Pond 8P : Underground Storage w/ Porous Pavement 4
 Secondary = 5.85 cfs @ 12.15 hrs, Volume= 11,723 cf
 Routed to Pond 8P : Underground Storage w/ Porous Pavement 4

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 100.92' @ 12.15 hrs Surf.Area= 2,435 sf Storage= 2,453 cf

Plug-Flow detention time= 203.5 min calculated for 21,237 cf (96% of inflow)
 Center-of-Mass det. time= 180.2 min (940.1 - 759.9)

Volume	Invert	Avail.Storage	Storage Description			
#1	98.25'	2,453 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
98.25	1,870	0.0	0	0	1,870	
99.25	1,870	35.0	655	655	2,023	
99.50	1,870	25.0	117	771	2,062	
100.00	2,435	100.0	1,073	1,845	2,633	
100.25	2,435	100.0	609	2,453	2,676	

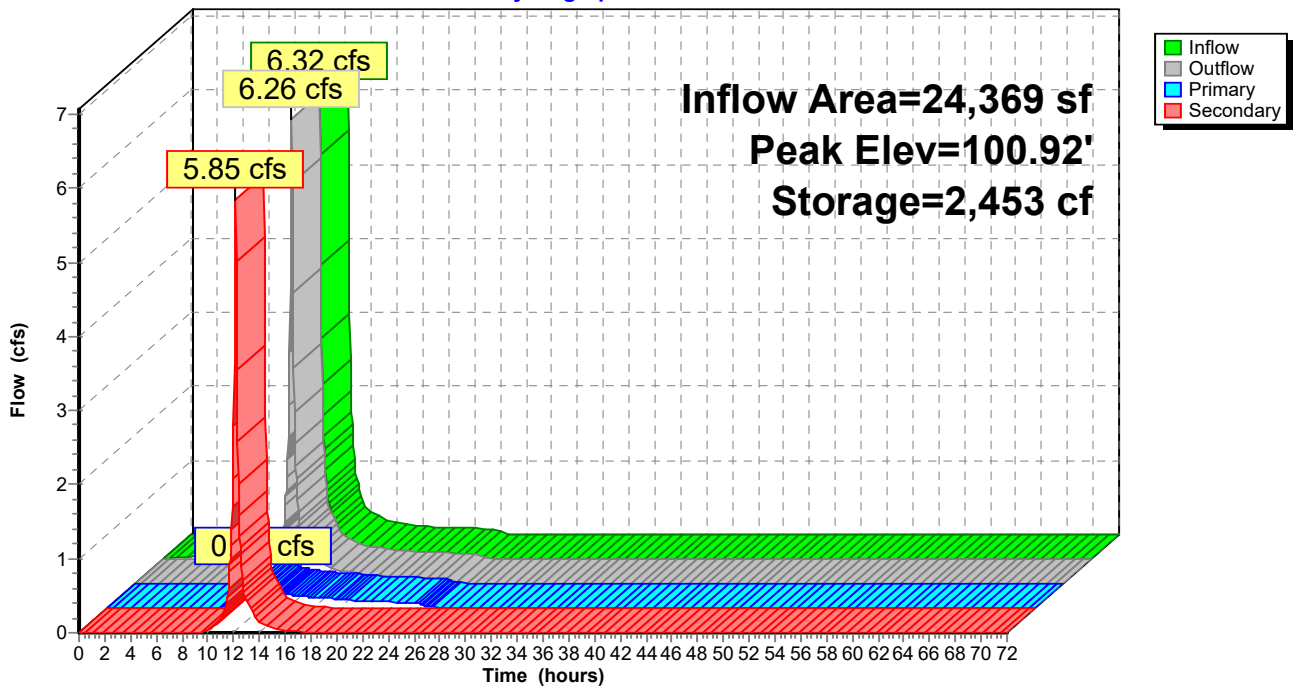
Device	Routing	Invert	Outlet Devices																
#1	Primary	98.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 98.15' / 98.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf																
#2	Device 1	98.15'	0.5" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads																
#3	Device 2	98.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 98.25' / 98.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf																
#4	Device 3	98.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads																
#5	Device 1	100.00'	4.0" Horiz. Drintech Atrium C= 0.600 Limited to weir flow at low heads																
#6	Secondary	100.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32																

Primary OutFlow Max=0.41 cfs @ 12.15 hrs HW=100.92' (Free Discharge)
 1=Culvert (Passes 0.41 cfs of 0.49 cfs potential flow)
 2=Restrictive Orifice (Orifice Controls 0.01 cfs @ 7.99 fps)
 3=4" HDPE Underdrain (Passes 0.01 cfs of 0.39 cfs potential flow)
 4=Perforations (Passes 0.01 cfs of 5.90 cfs potential flow)
 5=Draintech Atrium (Orifice Controls 0.40 cfs @ 4.62 fps)

Secondary OutFlow Max=5.82 cfs @ 12.15 hrs HW=100.92' (Free Discharge)
 6=Broad-Crested Rectangular Weir (Weir Controls 5.82 cfs @ 2.36 fps)

Pond 7P: Proposed Rain Garden 4 (North)

Hydrograph



Summary for Pond 8P: Underground Storage w/ Porous Pavement 4

[44] Hint: Outlet device #3 is below defined storage
 [93] Warning: Storage range exceeded by 0.06'
 [79] Warning: Submerged Pond 7P Primary device # 1 INLET by 1.07'

Inflow Area = 97,166 sf, 80.96% Impervious, Inflow Depth > 11.29" for 100-Year _2100 event
 Inflow = 25.67 cfs @ 12.15 hrs, Volume= 91,436 cf
 Outflow = 11.11 cfs @ 12.32 hrs, Volume= 54,513 cf, Atten= 57%, Lag= 10.0 min
 Primary = 0.02 cfs @ 12.32 hrs, Volume= 3,983 cf
 Secondary = 11.09 cfs @ 12.32 hrs, Volume= 50,531 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 99.23' @ 12.32 hrs Surf.Area= 33,612 sf Storage= 47,996 cf

Plug-Flow detention time= 356.2 min calculated for 54,513 cf (60% of inflow)
 Center-of-Mass det. time= 211.4 min (1,001.6 - 790.2)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	9,112 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	15,592 cf	63.25'W x 281.30'L x 3.50'H Field A 62,272 cf Overall - 23,292 cf Embedded = 38,980 cf x 40.0% Voids
#3A	96.17'	23,292 cf	ADS_StormTech SC-740 +Cap x 507 Inside #2 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 507 Chambers in 13 Rows
		47,996 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	15,820	0.0	0	0
97.67	15,820	35.0	8,306	8,306
97.83	15,820	15.0	380	8,685
98.01	15,820	15.0	427	9,112

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.02 cfs @ 12.32 hrs HW=99.21' (Free Discharge)

↑ **1=Restriction Orifice** (Orifice Controls 0.02 cfs @ 12.85 fps)

↑ **2=6" HDPE Underdrain** (Passes 0.02 cfs of 0.51 cfs potential flow)

↑ **3=Perforations** (Passes 0.02 cfs of 9.58 cfs potential flow)

Secondary OutFlow Max=10.80 cfs @ 12.32 hrs HW=99.21' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** (Weir Controls 10.80 cfs @ 2.97 fps)

Pond 8P: Underground Storage w/ Porous Pavement 4 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

39 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 279.30' Row Length +12.0" End Stone x 2 = 281.30' Base Length

13 Rows x 51.0" Wide + 6.0" Spacing x 12 + 12.0" Side Stone x 2 = 63.25' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

507 Chambers x 45.9 cf = 23,291.6 cf Chamber Storage

62,272.0 cf Field - 23,291.6 cf Chambers = 38,980.5 cf Stone x 40.0% Voids = 15,592.2 cf Stone Storage

Chamber Storage + Stone Storage = 38,883.8 cf = 0.893 af

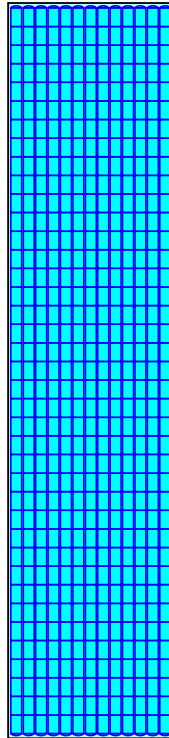
Overall Storage Efficiency = 62.4%

Overall System Size = 281.30' x 63.25' x 3.50'

507 Chambers

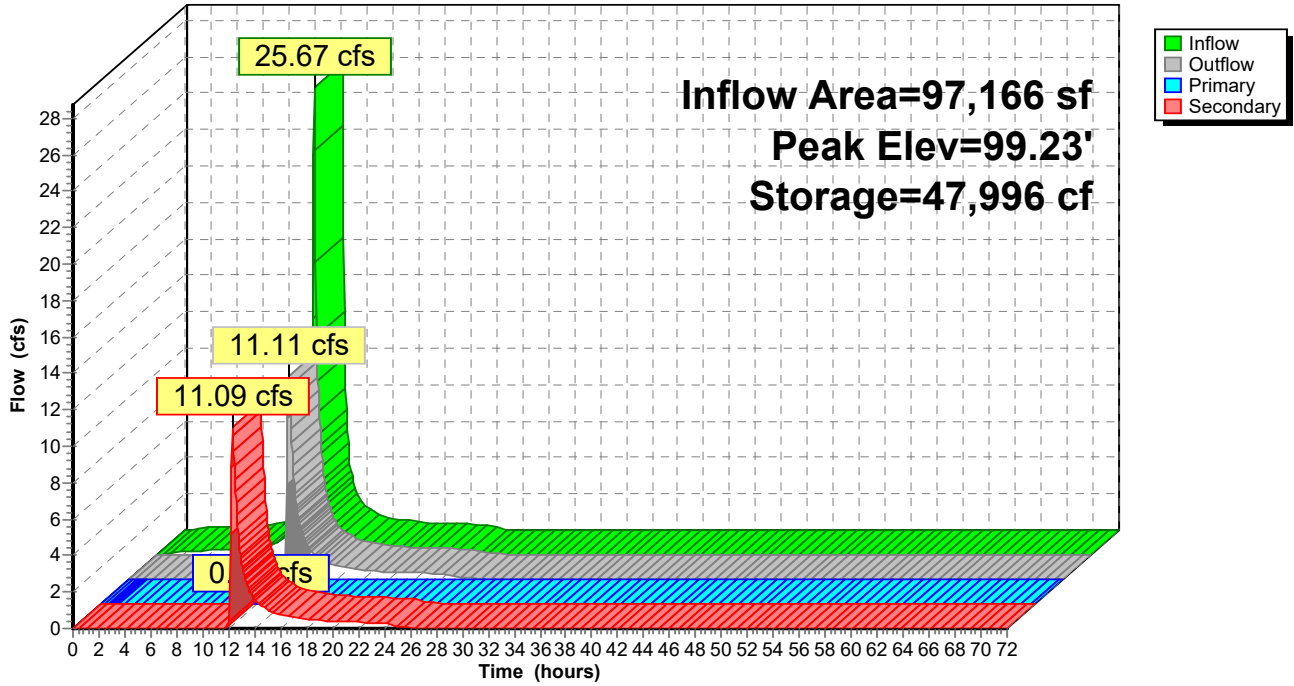
2,306.4 cy Field

1,443.7 cy Stone



Pond 8P: Underground Storage w/ Porous Pavement 4

Hydrograph



Summary for Pond 9P: Proposed Rain Garden 3 (North East)

[93] Warning: Storage range exceeded by 0.52'
 [88] Warning: Qout>Qin may require smaller dt or Finer Routing
 [62] Hint: Exceeded Reach 2R OUTLET depth by 0.23' @ 12.20 hrs

Inflow Area = 19,898 sf, 48.83% Impervious, Inflow Depth = 10.65" for 100-Year _2100 event
 Inflow = 4.58 cfs @ 12.19 hrs, Volume= 17,665 cf
 Outflow = 4.64 cfs @ 12.19 hrs, Volume= 17,521 cf, Atten= 0%, Lag= 0.1 min
 Primary = 0.38 cfs @ 12.19 hrs, Volume= 8,484 cf
 Routed to Pond 10P : Underground Storage w/ Porous Pavement 5
 Secondary = 4.26 cfs @ 12.19 hrs, Volume= 9,037 cf
 Routed to Pond 10P : Underground Storage w/ Porous Pavement 5

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 100.77' @ 12.19 hrs Surf.Area= 1,670 sf Storage= 1,751 cf

Plug-Flow detention time= 180.0 min calculated for 17,509 cf (99% of inflow)
 Center-of-Mass det. time= 176.5 min (944.5 - 768.0)

Volume	Invert	Avail.Storage	Storage Description			
#1	98.25'	1,751 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
98.25	1,385	0.0	0	0	1,385	
99.25	1,385	35.0	485	485	1,517	
99.50	1,385	25.0	87	571	1,550	
100.00	1,670	100.0	763	1,334	1,843	
100.25	1,670	100.0	418	1,751	1,879	

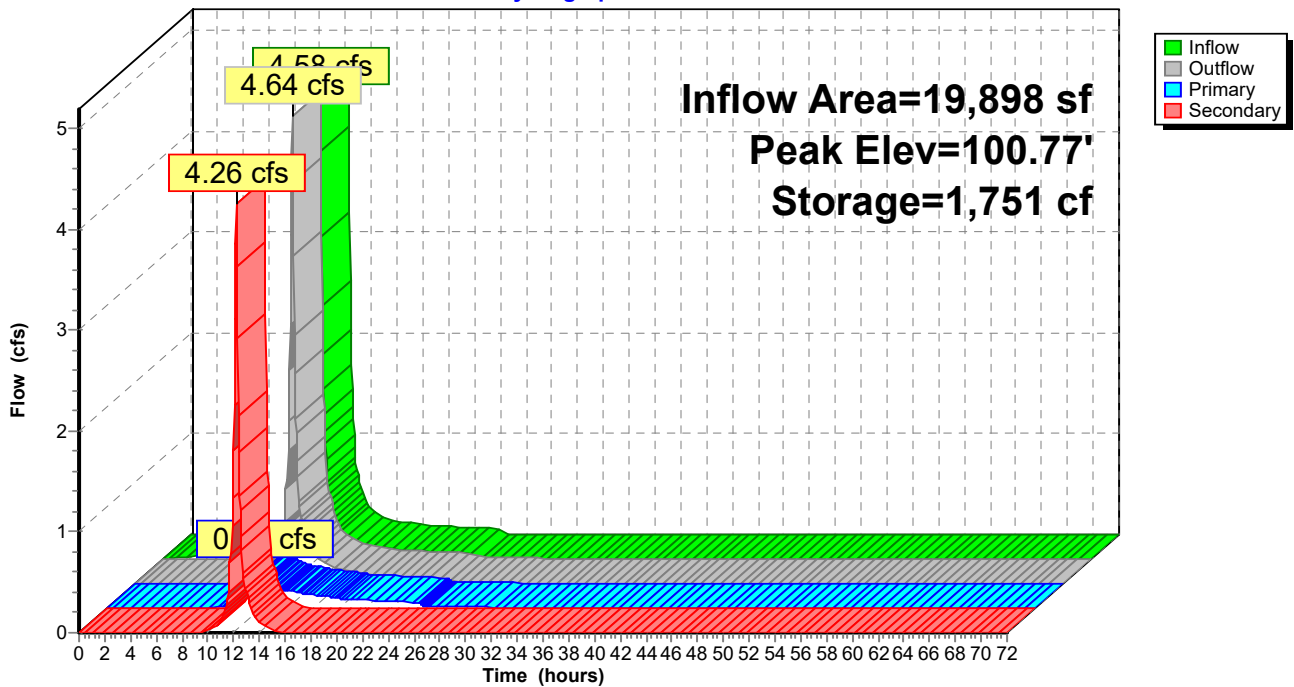
Device	Routing	Invert	Outlet Devices
#1	Primary	98.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 98.15' / 98.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf
#2	Device 1	98.15'	0.5" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads
#3	Device 2	98.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 98.25' / 98.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf
#4	Device 3	98.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#5	Device 1	100.00'	4.0" Horiz. Drintech Atrium C= 0.600 Limited to weir flow at low heads
#6	Secondary	100.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.38 cfs @ 12.19 hrs HW=100.76' (Free Discharge)
 1=Culvert (Passes 0.38 cfs of 0.48 cfs potential flow)
 2=Restrictive Orifice (Orifice Controls 0.01 cfs @ 7.75 fps)
 3=4" HDPE Underdrain (Passes 0.01 cfs of 0.38 cfs potential flow)
 4=Perforations (Passes 0.01 cfs of 5.72 cfs potential flow)
 5=Draintech Atrium (Orifice Controls 0.37 cfs @ 4.20 fps)

Secondary OutFlow Max=4.21 cfs @ 12.19 hrs HW=100.76' (Free Discharge)
 6=Broad-Crested Rectangular Weir (Weir Controls 4.21 cfs @ 2.12 fps)

Pond 9P: Proposed Rain Garden 3 (North East)

Hydrograph



Summary for Pond 10P: Underground Storage w/ Porous Pavement 5

[44] Hint: Outlet device #3 is below defined storage
 [93] Warning: Storage range exceeded by 0.25'
 [79] Warning: Submerged Pond 9P Primary device # 1 INLET by 1.27'

Inflow Area = 78,061 sf, 72.85% Impervious, Inflow Depth > 11.14" for 100-Year _2100 event
 Inflow = 18.45 cfs @ 12.19 hrs, Volume= 72,480 cf
 Outflow = 14.17 cfs @ 12.30 hrs, Volume= 45,783 cf, Atten= 23%, Lag= 6.8 min
 Primary = 0.02 cfs @ 12.30 hrs, Volume= 3,976 cf
 Secondary = 14.16 cfs @ 12.30 hrs, Volume= 41,807 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 99.42' @ 12.30 hrs Surf.Area= 27,852 sf Storage= 34,467 cf

Plug-Flow detention time= 345.5 min calculated for 45,751 cf (63% of inflow)
 Center-of-Mass det. time= 207.3 min (1,005.6 - 798.3)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	9,426 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	10,110 cf	63.25'W x 181.62'L x 3.50'H Field A 40,205 cf Overall - 14,931 cf Embedded = 25,275 cf x 40.0% Voids
#3A	96.17'	14,931 cf	ADS_StormTech SC-740 +Cap x 325 Inside #2 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 325 Chambers in 13 Rows
		34,467 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	16,365	0.0	0	0
97.67	16,365	35.0	8,592	8,592
97.83	16,365	15.0	393	8,984
98.01	16,365	15.0	442	9,426

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.02 cfs @ 12.30 hrs HW=99.40' (Free Discharge)

↑ **1=Restriction Orifice** (Orifice Controls 0.02 cfs @ 13.02 fps)

↑ **2=6" HDPE Underdrain** (Passes 0.02 cfs of 0.51 cfs potential flow)

↑ **3=Perforations** (Passes 0.02 cfs of 9.71 cfs potential flow)

Secondary OutFlow Max=13.88 cfs @ 12.30 hrs HW=99.41' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** (Weir Controls 13.88 cfs @ 3.29 fps)

Pond 10P: Underground Storage w/ Porous Pavement 5 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

25 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 179.62' Row Length +12.0" End Stone x 2 = 181.62' Base Length

13 Rows x 51.0" Wide + 6.0" Spacing x 12 + 12.0" Side Stone x 2 = 63.25' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

325 Chambers x 45.9 cf = 14,930.5 cf Chamber Storage

40,205.4 cf Field - 14,930.5 cf Chambers = 25,274.9 cf Stone x 40.0% Voids = 10,110.0 cf Stone Storage

Chamber Storage + Stone Storage = 25,040.5 cf = 0.575 af

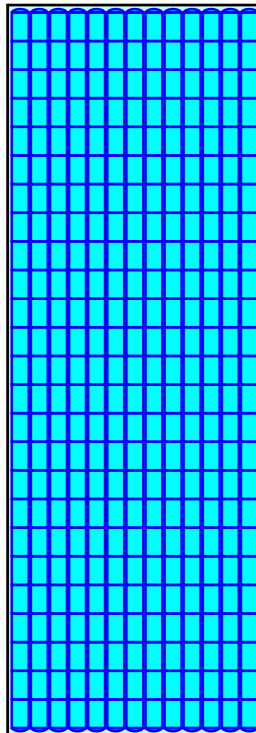
Overall Storage Efficiency = 62.3%

Overall System Size = 181.62' x 63.25' x 3.50'

325 Chambers

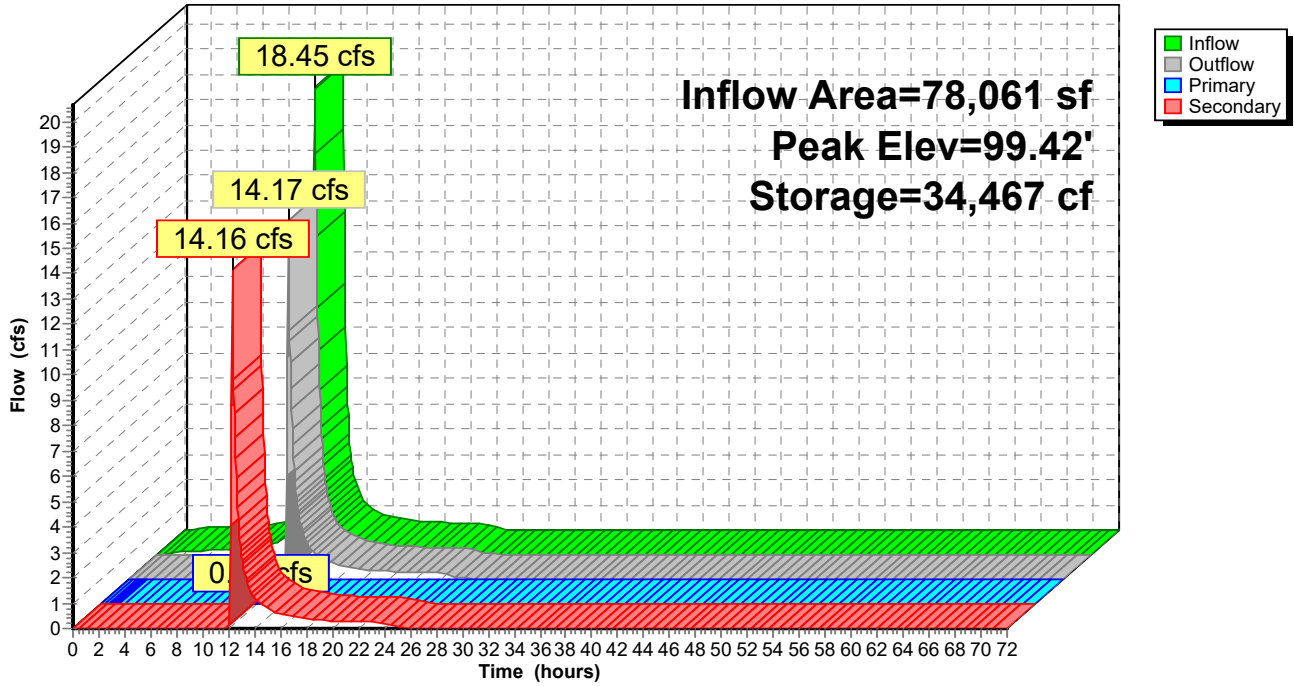
1,489.1 cy Field

936.1 cy Stone



Pond 10P: Underground Storage w/ Porous Pavement 5

Hydrograph



Summary for Pond 11P: Proposed Rain Garden 2 (East)

[93] Warning: Storage range exceeded by 0.73'

[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=8)

Inflow Area = 32,033 sf, 45.19% Impervious, Inflow Depth = 10.56" for 100-Year _2100 event
 Inflow = 6.91 cfs @ 12.21 hrs, Volume= 28,199 cf
 Outflow = 6.91 cfs @ 12.23 hrs, Volume= 27,959 cf, Atten= 0%, Lag= 0.7 min
 Primary = 0.44 cfs @ 12.23 hrs, Volume= 11,675 cf
 Routed to Pond 12P : Underground Storage w/ Porous Pavement 6
 Secondary = 6.48 cfs @ 12.23 hrs, Volume= 16,284 cf
 Routed to Pond 12P : Underground Storage w/ Porous Pavement 6

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 100.98' @ 12.23 hrs Surf.Area= 3,045 sf Storage= 3,267 cf

Plug-Flow detention time= 214.0 min calculated for 27,959 cf (99% of inflow)
 Center-of-Mass det. time= 208.4 min (980.1 - 771.8)

Volume	Invert	Avail.Storage	Storage Description			
#1	98.25'	3,267 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
98.25	2,635	0.0	0	0	2,635	
99.25	2,635	35.0	922	922	2,817	
99.50	2,635	25.0	165	1,087	2,862	
100.00	3,045	100.0	1,419	2,506	3,283	
100.25	3,045	100.0	761	3,267	3,332	

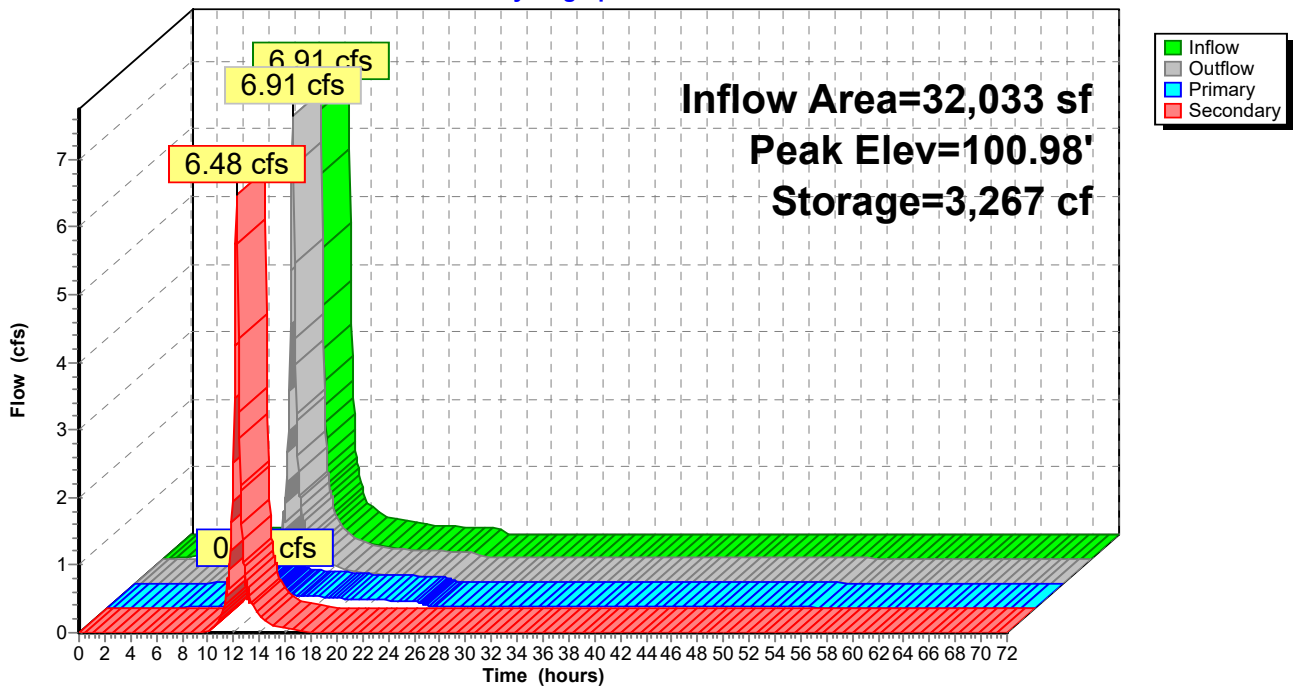
Device	Routing	Invert	Outlet Devices
#1	Primary	98.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 98.15' / 98.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf
#2	Device 1	98.15'	0.7" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads
#3	Device 2	98.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 98.25' / 98.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf
#4	Device 3	98.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#5	Device 1	100.00'	4.0" Horiz. Drintech Atrium C= 0.600 Limited to weir flow at low heads
#6	Secondary	100.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.43 cfs @ 12.23 hrs HW=100.97' (Free Discharge)
 1=Culvert (Passes 0.43 cfs of 0.50 cfs potential flow)
 2=Restrictive Orifice (Orifice Controls 0.02 cfs @ 8.04 fps)
 3=4" HDPE Underdrain (Passes 0.02 cfs of 0.39 cfs potential flow)
 4=Perforations (Passes 0.02 cfs of 5.95 cfs potential flow)
 5=Draintech Atrium (Orifice Controls 0.41 cfs @ 4.73 fps)

Secondary OutFlow Max=6.33 cfs @ 12.23 hrs HW=100.97' (Free Discharge)
 6=Broad-Crested Rectangular Weir (Weir Controls 6.33 cfs @ 2.44 fps)

Pond 11P: Proposed Rain Garden 2 (East)

Hydrograph



Summary for Pond 12P: Underground Storage w/ Porous Pavement 6

[44] Hint: Outlet device #3 is below defined storage
 [79] Warning: Submerged Pond 11P Primary device # 1 INLET by 0.41'

Inflow Area = 32,033 sf, 45.19% Impervious, Inflow Depth > 10.47" for 100-Year _2100 event
 Inflow = 6.91 cfs @ 12.23 hrs, Volume= 27,959 cf
 Outflow = 3.31 cfs @ 12.44 hrs, Volume= 18,304 cf, Atten= 52%, Lag= 13.1 min
 Primary = 0.02 cfs @ 12.44 hrs, Volume= 3,804 cf
 Secondary = 3.29 cfs @ 12.44 hrs, Volume= 14,500 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 98.56' @ 12.44 hrs Surf.Area= 8,364 sf Storage= 11,644 cf

Plug-Flow detention time= 481.3 min calculated for 18,291 cf (65% of inflow)
 Center-of-Mass det. time= 227.9 min (1,208.0 - 980.1)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	1,866 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	4,603 cf	25.25'W x 202.98'L x 3.50'H Field A 17,938 cf Overall - 6,432 cf Embedded = 11,506 cf x 40.0% Voids
#3A	96.17'	6,432 cf	ADS_StormTech SC-740 +Cap x 140 Inside #2 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 140 Chambers in 5 Rows
		12,900 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	3,239	0.0	0	0
97.67	3,239	35.0	1,700	1,700
97.83	3,239	15.0	78	1,778
98.01	3,239	15.0	87	1,866

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.02 cfs @ 12.44 hrs HW=98.56' (Free Discharge)

↑ **1=Restriction Orifice** (Orifice Controls 0.02 cfs @ 12.25 fps)

↑ **2=6" HDPE Underdrain** (Passes 0.02 cfs of 0.48 cfs potential flow)

↑ **3=Perforations** (Passes 0.02 cfs of 9.13 cfs potential flow)

Secondary OutFlow Max=3.27 cfs @ 12.44 hrs HW=98.56' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** (Weir Controls 3.27 cfs @ 1.95 fps)

Pond 12P: Underground Storage w/ Porous Pavement 6 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

28 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 200.98' Row Length +12.0" End Stone x 2 = 202.98' Base Length

5 Rows x 51.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.25' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

140 Chambers x 45.9 cf = 6,431.6 cf Chamber Storage

17,938.1 cf Field - 6,431.6 cf Chambers = 11,506.5 cf Stone x 40.0% Voids = 4,602.6 cf Stone Storage

Chamber Storage + Stone Storage = 11,034.2 cf = 0.253 af

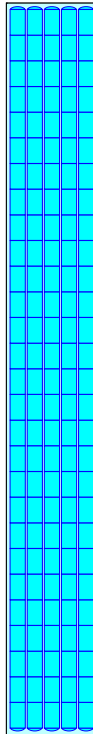
Overall Storage Efficiency = 61.5%

Overall System Size = 202.98' x 25.25' x 3.50'

140 Chambers

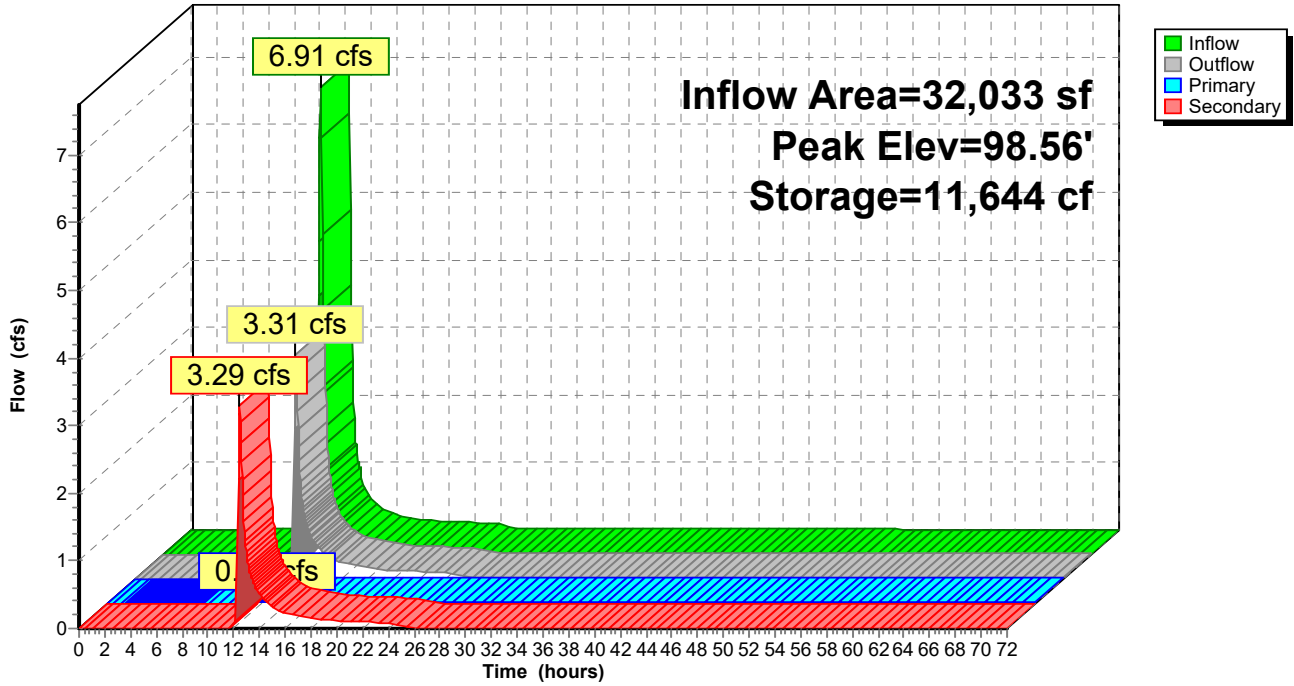
664.4 cy Field

426.2 cy Stone



Pond 12P: Underground Storage w/ Porous Pavement 6

Hydrograph



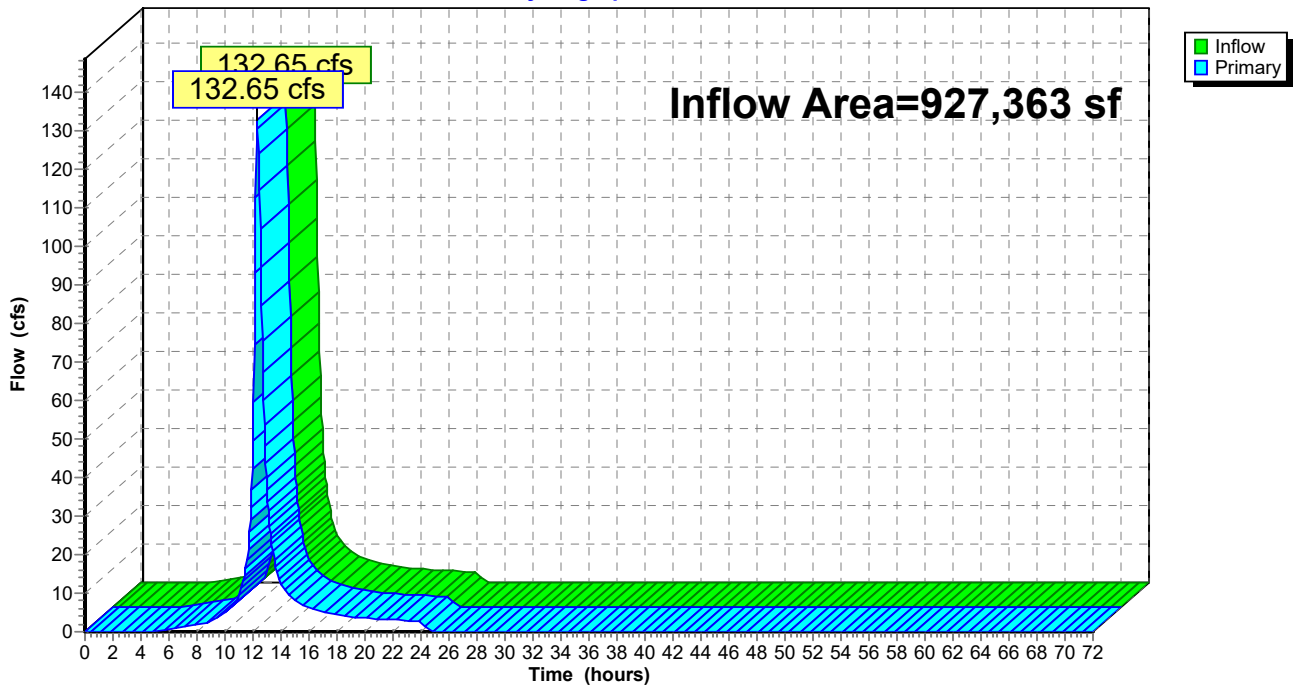
Summary for Link 1L: Offsite Flows

Inflow Area = 927,363 sf, 3.35% Impervious, Inflow Depth = 8.84" for 100-Year _2100 event
Inflow = 132.65 cfs @ 12.31 hrs, Volume= 683,460 cf
Primary = 132.65 cfs @ 12.31 hrs, Volume= 683,460 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 1L: Offsite Flows

Hydrograph



Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
 Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

- Subcatchment 1S: DA1: CN w/ IC** Runoff Area=56,173 sf 73.47% Impervious Runoff Depth=7.97"
 Flow Length=361' Tc=14.3 min CN=75/98 Runoff=8.82 cfs 37,290 cf
- Subcatchment 1Sa: Existing RG 1_West_** Runoff Area=22,637 sf 64.43% Impervious Runoff Depth=7.80"
 Flow Length=361' Tc=14.3 min CN=77/98 Runoff=3.52 cfs 14,714 cf
- Subcatchment 1Sb: DA1: CN w/ IC** Runoff Area=39,105 sf 68.25% Impervious Runoff Depth=7.82"
 Flow Length=361' Tc=14.3 min CN=75/98 Runoff=6.07 cfs 25,482 cf
- Subcatchment 2S: DA 2: CN w/ IC areas** Runoff Area=58,249 sf 86.46% Impervious Runoff Depth=8.35"
 Flow Length=391' Tc=7.0 min CN=76/98 Runoff=11.82 cfs 40,516 cf
- Subcatchment 3S: DA 3: CN w/ IC** Runoff Area=158,623 sf 63.48% Impervious Runoff Depth=7.73"
 Flow Length=441' Tc=8.3 min CN=76/98 Runoff=29.52 cfs 102,192 cf
- Subcatchment 3Sa: Existing RG 2 Front DA** Runoff Area=25,889 sf 48.62% Impervious Runoff Depth=7.52"
 Tc=8.3 min CN=79/98 Runoff=4.77 cfs 16,228 cf
- Subcatchment 3Sb: RG 1 DA** Runoff Area=21,388 sf 65.14% Impervious Runoff Depth=7.69"
 Flow Length=441' Tc=8.3 min CN=74/98 Runoff=3.95 cfs 13,706 cf
- Subcatchment 3Sc: DA 3: CN w/ IC areas** Runoff Area=111,346 sf 66.62% Impervious Runoff Depth=7.77"
 Flow Length=441' Tc=8.3 min CN=75/98 Runoff=20.75 cfs 72,134 cf
- Subcatchment 4S: DA 4: CN w/ IC** Runoff Area=86,816 sf 90.62% Impervious Runoff Depth=8.45"
 Flow Length=143' Tc=8.4 min CN=75/98 Runoff=16.96 cfs 61,108 cf
- Subcatchment 4Sa: RG 4 DA** Runoff Area=24,369 sf 57.53% Impervious Runoff Depth=7.73"
 Flow Length=143' Tc=8.4 min CN=79/98 Runoff=4.54 cfs 15,693 cf
- Subcatchment 4Sb: DA 4: CN w/ IC areas** Runoff Area=72,797 sf 88.81% Impervious Runoff Depth=8.40"
 Flow Length=143' Tc=8.4 min CN=75/98 Runoff=14.17 cfs 50,933 cf
- Subcatchment 5S: DA 5: CN w/ IC** Runoff Area=78,058 sf 72.85% Impervious Runoff Depth=8.02"
 Flow Length=310' Tc=11.5 min CN=77/98 Runoff=13.33 cfs 52,139 cf
- Subcatchment 5Sa: RG 3 DA** Runoff Area=19,898 sf 48.83% Impervious Runoff Depth=7.53"
 Flow Length=310' Tc=11.5 min CN=79/98 Runoff=3.29 cfs 12,481 cf
- Subcatchment 5Sb: DA 5: CN w/ IC areas** Runoff Area=58,163 sf 81.07% Impervious Runoff Depth=8.18"
 Flow Length=310' Tc=11.5 min CN=75/98 Runoff=10.03 cfs 39,643 cf
- Subcatchment 6S: DA 6: CN w/ IC areas** Runoff Area=32,033 sf 45.19% Impervious Runoff Depth=7.44"
 Flow Length=276' Tc=14.0 min CN=79/98 Runoff=4.92 cfs 19,868 cf
- Subcatchment 7S: DA 7 (Offsite South):** Runoff Area=107,001 sf 18.84% Impervious Runoff Depth=6.73"
 Flow Length=309' Tc=14.5 min CN=78/98 Runoff=15.19 cfs 60,044 cf

Subcatchment 8S: DA 8 (Offsite North): CN Runoff Area=340,642 sf 1.94% Impervious Runoff Depth=5.84"
 Flow Length=976' Tc=19.4 min CN=74/98 Runoff=38.58 cfs 165,783 cf

Subcatchment 9S: DA 9 (Offsite Field) Runoff Area=479,720 sf 0.89% Impervious Runoff Depth=5.69"
 Flow Length=1,468' Tc=30.4 min CN=73/98 Runoff=42.84 cfs 227,369 cf

Subcatchment 31S: RG 2 DA Runoff Area=32,035 sf 32.46% Impervious Runoff Depth=7.15"
 Flow Length=276' Tc=14.0 min CN=79/98 Runoff=4.81 cfs 19,083 cf

Reach 1R: Existing Bioswale West 1 Avg. Flow Depth=0.34' Max Vel=2.61 fps Inflow=3.52 cfs 14,714 cf
 n=0.035 L=33.0' S=0.0227 '/' Capacity=7.36 cfs Outflow=3.50 cfs 14,714 cf

Reach 2R: Bioswale E 1 RG 3 Avg. Flow Depth=0.46' Max Vel=3.05 fps Inflow=3.29 cfs 12,481 cf
 n=0.035 L=35.0' S=0.0286 '/' Capacity=4.02 cfs Outflow=3.27 cfs 12,481 cf

Pond 1P: Existing Rain Garden 1 West Peak Elev=100.66' Storage=1,831 cf Inflow=3.50 cfs 14,714 cf
 Primary=0.35 cfs 7,571 cf Secondary=3.24 cfs 6,962 cf Outflow=3.59 cfs 14,532 cf

Pond 2P: Underground Storage w/ Porous Peak Elev=98.49' Storage=21,820 cf Inflow=9.60 cfs 40,014 cf
 Primary=0.02 cfs 3,923 cf Secondary=2.69 cfs 18,608 cf Outflow=2.71 cfs 22,531 cf

Pond 3P: Underground Storage w/ Porous Peak Elev=98.43' Storage=25,186 cf Inflow=11.82 cfs 40,516 cf
 Primary=0.02 cfs 3,938 cf Secondary=2.25 cfs 16,279 cf Outflow=2.26 cfs 20,217 cf

Pond 4P: Existing Rain Garden 2 Front Peak Elev=101.76' Storage=3,267 cf Inflow=4.77 cfs 16,228 cf
 Primary=0.38 cfs 7,457 cf Secondary=4.19 cfs 7,622 cf Outflow=4.57 cfs 15,079 cf

Pond 5P: Proposed Rain Garden 1 (South) Peak Elev=101.70' Storage=2,466 cf Inflow=3.95 cfs 13,706 cf
 Primary=0.36 cfs 6,965 cf Secondary=3.60 cfs 6,176 cf Outflow=3.96 cfs 13,141 cf

Pond 6P: Underground Storage w/ Peak Elev=98.51' Storage=63,177 cf Inflow=29.28 cfs 100,354 cf
 Primary=0.02 cfs 3,954 cf Secondary=2.86 cfs 42,135 cf Outflow=2.88 cfs 46,089 cf

Pond 7P: Proposed Rain Garden 4 (North) Peak Elev=100.74' Storage=2,453 cf Inflow=4.54 cfs 15,693 cf
 Primary=0.37 cfs 7,590 cf Secondary=4.05 cfs 7,163 cf Outflow=4.42 cfs 14,753 cf

Pond 8P: Underground Storage w/ Porous Peak Elev=98.40' Storage=42,317 cf Inflow=18.59 cfs 65,687 cf
 Primary=0.02 cfs 3,954 cf Secondary=1.99 cfs 24,818 cf Outflow=2.00 cfs 28,773 cf

Pond 9P: Proposed Rain Garden 3 (North) Peak Elev=100.63' Storage=1,751 cf Inflow=3.27 cfs 12,481 cf
 Primary=0.34 cfs 6,695 cf Secondary=2.98 cfs 5,645 cf Outflow=3.33 cfs 12,339 cf

Pond 10P: Underground Storage w/ Peak Elev=98.47' Storage=31,164 cf Inflow=13.35 cfs 51,982 cf
 Primary=0.02 cfs 3,948 cf Secondary=2.49 cfs 21,343 cf Outflow=2.51 cfs 25,292 cf

Pond 11P: Proposed Rain Garden 2 (East) Peak Elev=100.80' Storage=3,267 cf Inflow=4.92 cfs 19,868 cf
 Primary=0.40 cfs 9,603 cf Secondary=4.53 cfs 10,029 cf Outflow=4.93 cfs 19,632 cf

Pond 12P: Underground Storage w/ Porous Peak Elev=98.16' Storage=10,586 cf Inflow=4.93 cfs 19,632 cf
 Primary=0.02 cfs 3,755 cf Secondary=0.50 cfs 6,228 cf Outflow=0.52 cfs 9,983 cf

Link 1L: Offsite Flows Inflow=88.88 cfs 453,197 cf
 Primary=88.88 cfs 453,197 cf

Total Runoff Area = 1,824,942 sf Runoff Volume = 1,046,407 cf Average Runoff Depth = 6.88"
63.76% Pervious = 1,163,653 sf 36.24% Impervious = 661,289 sf

Summary for Subcatchment 1S: DA1: CN w/ IC areas_original

Runoff = 8.82 cfs @ 12.22 hrs, Volume= 37,290 cf, Depth= 7.97"

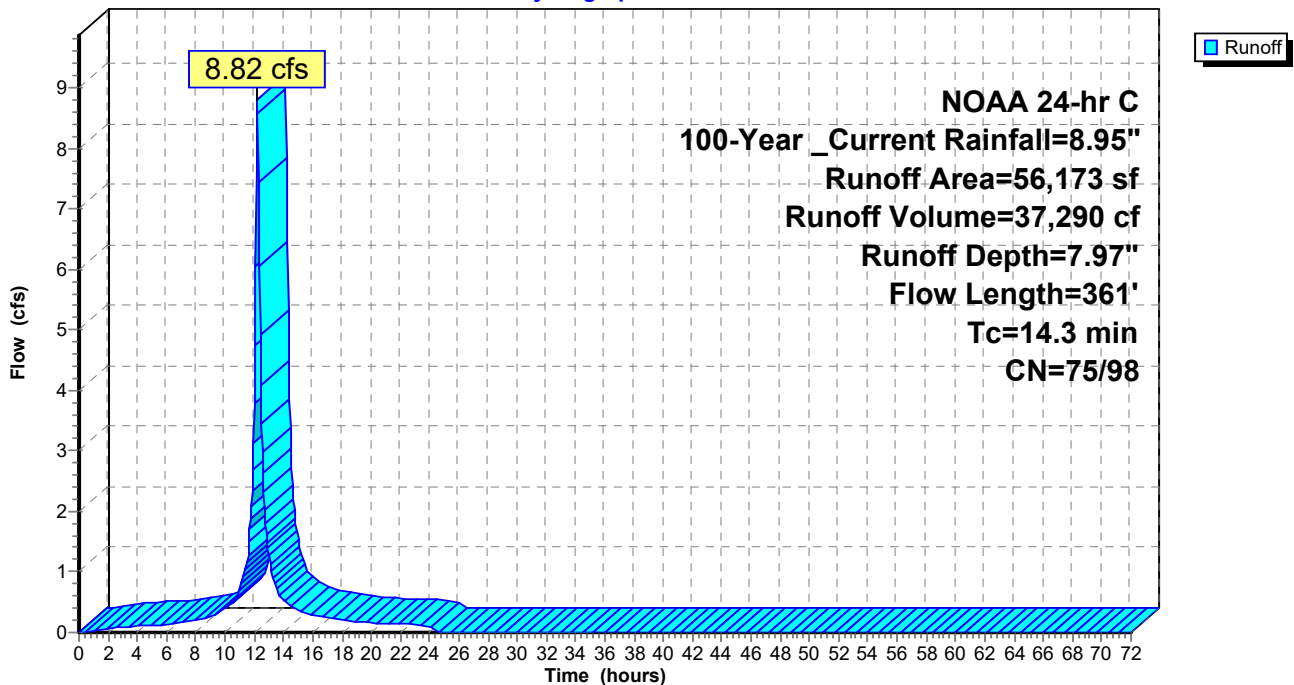
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _Current Rainfall=8.95"

Area (sf)	CN	Description
* 2,053	79	Open space (fair) C
* 12,848	74	Open space (good) C
* 41,272	98	Impervious
56,173	92	Weighted Average
14,901	75	26.53% Pervious Area
41,272	98	73.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	100	0.0109	0.14		Sheet Flow, Sheet flow Grass: Short n= 0.150 P2= 3.34"
0.2	33	0.0280	2.69		Shallow Concentrated Flow, SCF - unpaved Unpaved Kv= 16.1 fps
1.9	228	0.0095	1.98		Shallow Concentrated Flow, SCF - Paved parking lot Paved Kv= 20.3 fps
14.3	361	Total			

Subcatchment 1S: DA1: CN w/ IC areas_original

Hydrograph



Summary for Subcatchment 1Sa: Existing RG 1_West_DA

Runoff = 3.52 cfs @ 12.22 hrs, Volume= 14,714 cf, Depth= 7.80"
 Routed to Reach 1R : Existing Bioswale West 1

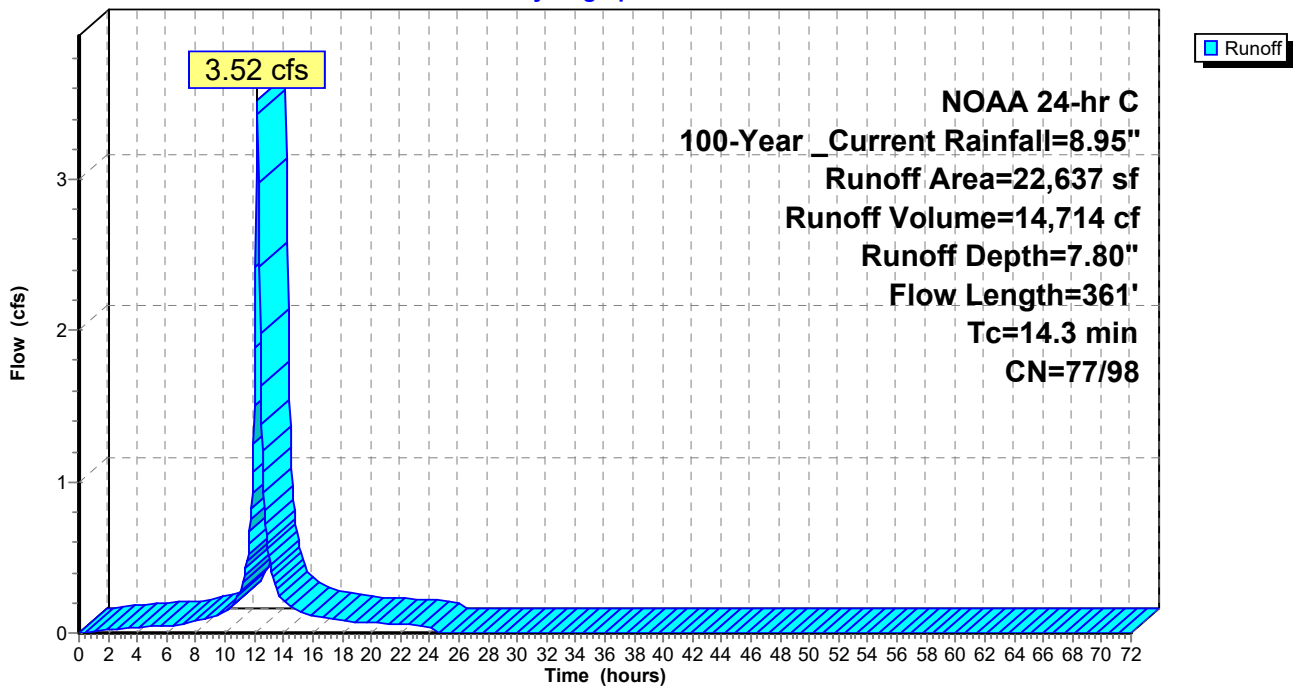
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _Current Rainfall=8.95"

	Area (sf)	CN	Description
*	5,569	79	Open space (fair) C - Portion from DA 9 the field
*	14,584	98	Impervious Parking Lot
*	2,484	74	OPen Space (Good) C - Portion from DA1
	22,637	91	Weighted Average
	8,053	77	35.57% Pervious Area
	14,584	98	64.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	100	0.0109	0.14		Sheet Flow, Sheet flow Grass: Short n= 0.150 P2= 3.34"
0.2	33	0.0280	2.69		Shallow Concentrated Flow, SCF - unpaved Unpaved Kv= 16.1 fps
1.9	228	0.0095	1.98		Shallow Concentrated Flow, SCF - Paved parking lot Paved Kv= 20.3 fps
14.3	361	Total			

Subcatchment 1Sa: Existing RG 1_West_DA

Hydrograph



Summary for Subcatchment 1Sb: DA1: CN w/ IC areas_Remaining

Runoff = 6.07 cfs @ 12.22 hrs, Volume= 25,482 cf, Depth= 7.82"
 Routed to Pond 2P : Underground Storage w/ Porous Pavement 1

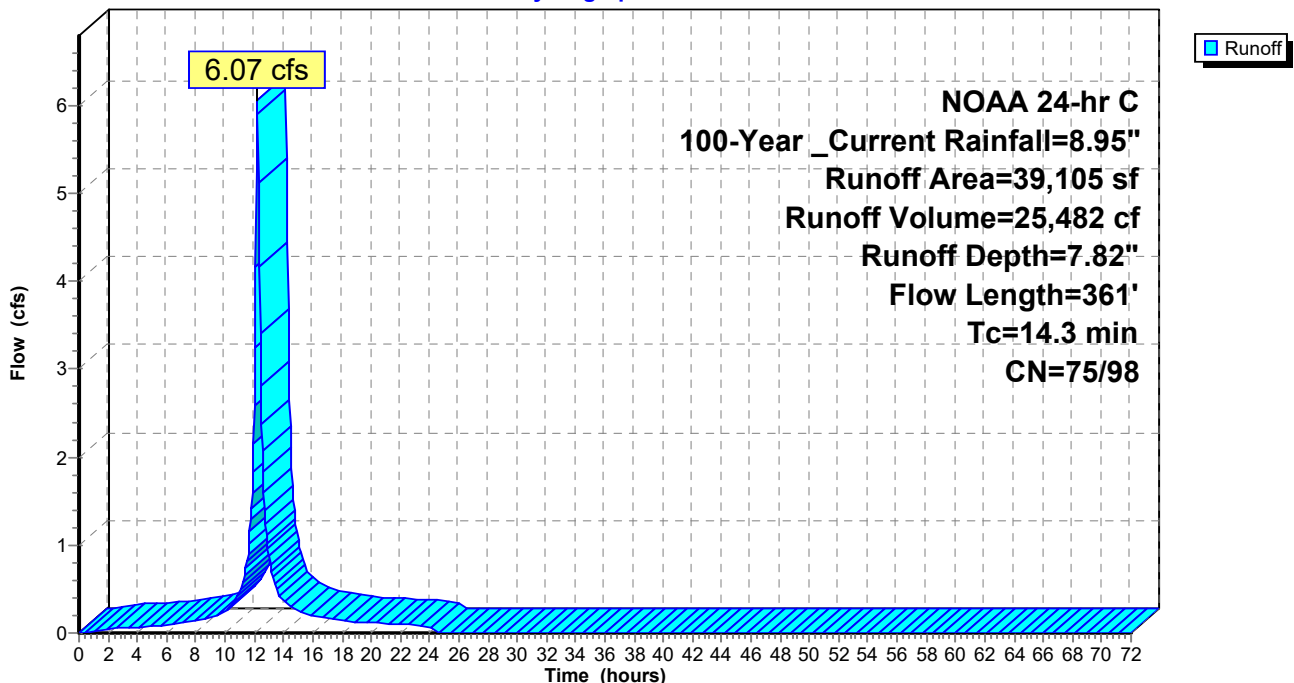
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _Current Rainfall=8.95"

	Area (sf)	CN	Description
*	2,053	79	Open space (fair) C
*	10,364	74	Open space (good) C
*	26,688	98	Impervious
	39,105	91	Weighted Average
	12,417	75	31.75% Pervious Area
	26,688	98	68.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.2	100	0.0109	0.14		Sheet Flow, Sheet flow Grass: Short n= 0.150 P2= 3.34"
0.2	33	0.0280	2.69		Shallow Concentrated Flow, SCF - unpaved Unpaved Kv= 16.1 fps
1.9	228	0.0095	1.98		Shallow Concentrated Flow, SCF - Paved parking lot Paved Kv= 20.3 fps
14.3	361	Total			

Subcatchment 1Sb: DA1: CN w/ IC areas_Remaining

Hydrograph



Summary for Subcatchment 2S: DA 2: CN w/ IC areas

Runoff = 11.82 cfs @ 12.14 hrs, Volume= 40,516 cf, Depth= 8.35"
 Routed to Pond 3P : Underground Storage w/ Porous Pavement 2

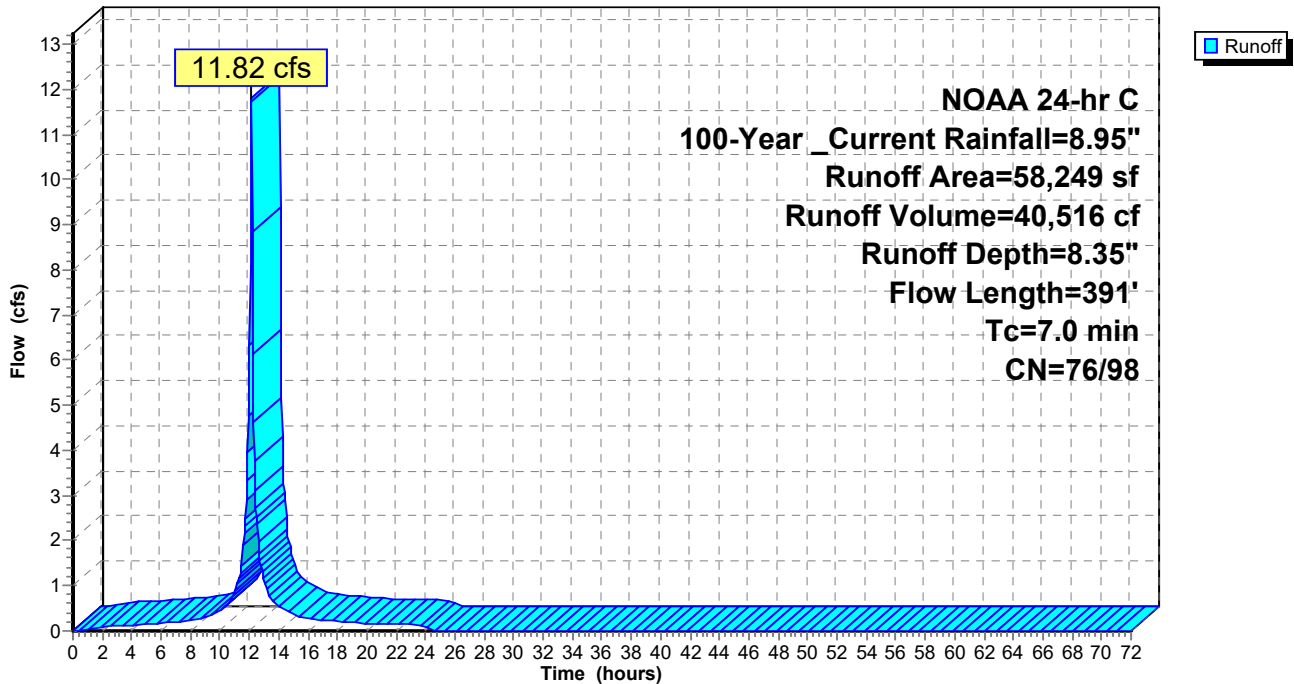
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _Current Rainfall=8.95"

	Area (sf)	CN	Description
*	3,767	79	Open space (Fair) C
*	4,118	74	Open Space (good) C
*	50,364	98	Impervious
	58,249	95	Weighted Average
	7,885	76	13.54% Pervious Area
	50,364	98	86.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	18	0.0037	0.06		Sheet Flow, Sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
2.2	373	0.0186	2.77		Shallow Concentrated Flow, SCF _ paved Paved Kv= 20.3 fps
7.0	391	Total			

Subcatchment 2S: DA 2: CN w/ IC areas

Hydrograph



Summary for Subcatchment 3S: DA 3: CN w/ IC areas_Original

Runoff = 29.52 cfs @ 12.15 hrs, Volume= 102,192 cf, Depth= 7.73"

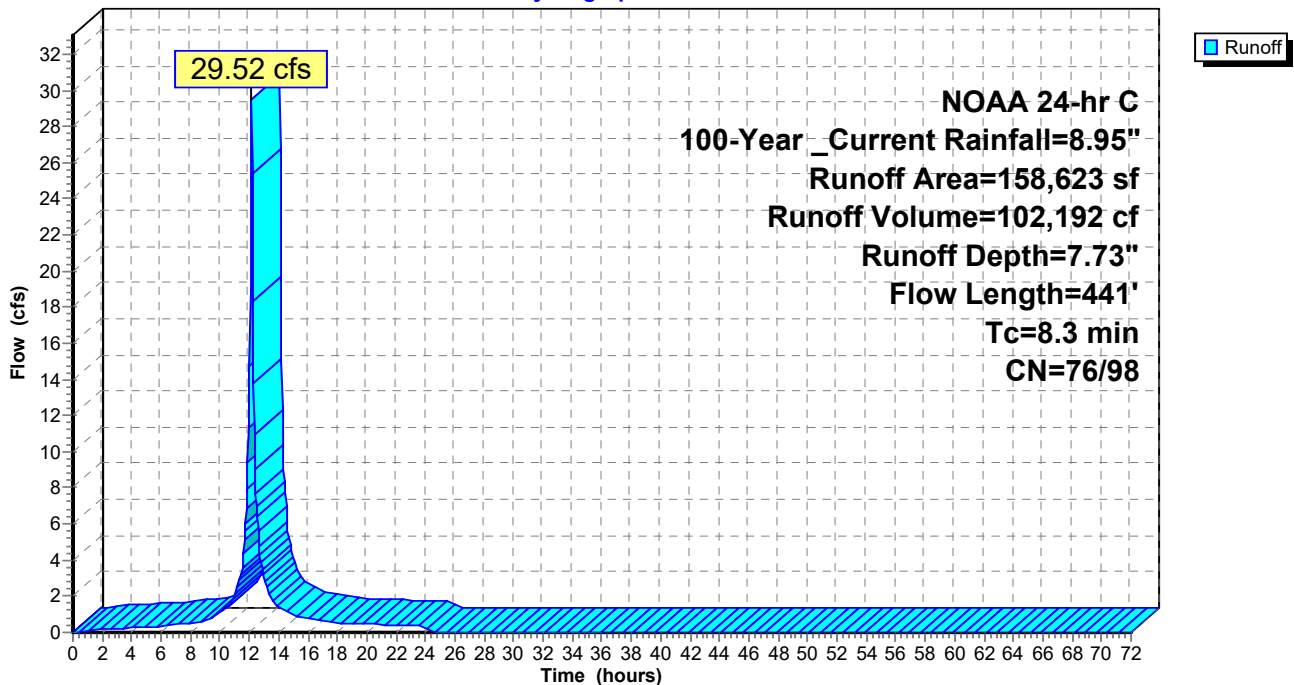
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _Current Rainfall=8.95"

	Area (sf)	CN	Description
*	18,715	79	Open space (Fair) C
*	39,208	74	Open space (good) C
*	100,700	98	Impervious
	158,623	90	Weighted Average
	57,923	76	36.52% Pervious Area
	100,700	98	63.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	83	0.0489	0.24		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
2.5	358	0.0138	2.38		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
8.3	441	Total			

Subcatchment 3S: DA 3: CN w/ IC areas_Original

Hydrograph



Summary for Subcatchment 3Sa: Existing RG 2 Front DA

Runoff = 4.77 cfs @ 12.15 hrs, Volume= 16,228 cf, Depth= 7.52"
 Routed to Pond 4P : Existing Rain Garden 2 Front

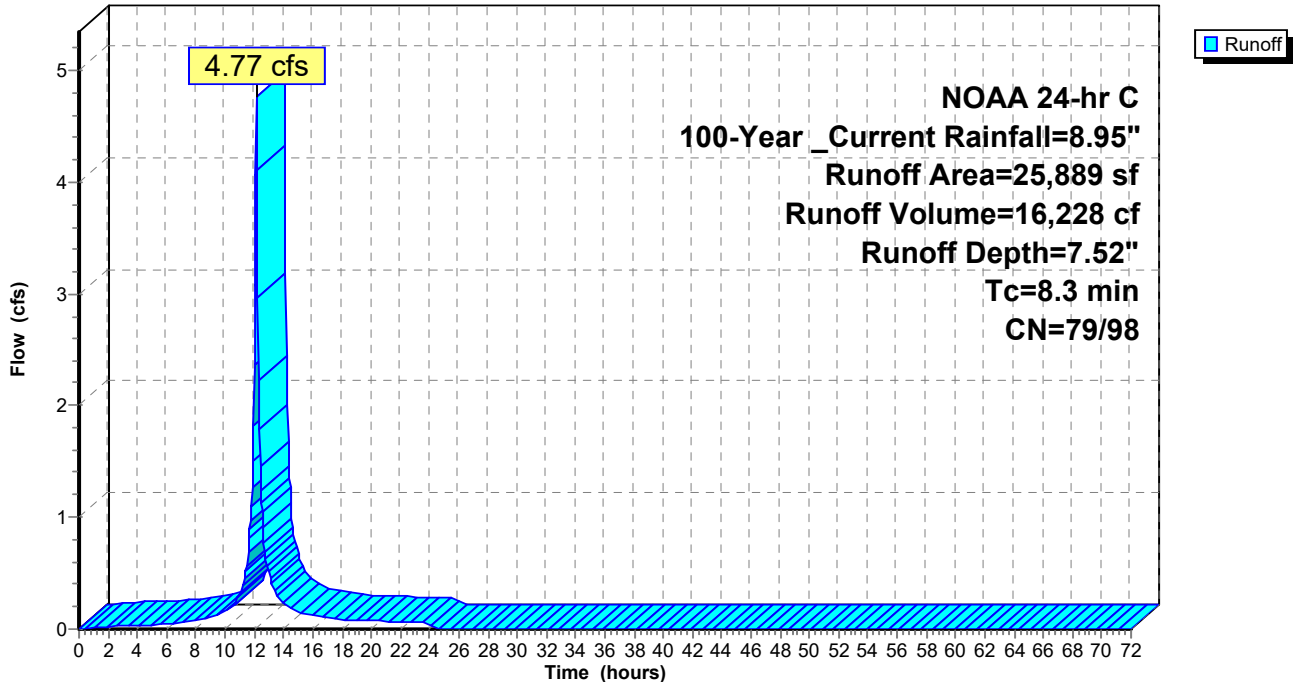
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _Current Rainfall=8.95"

	Area (sf)	CN	Description
*	6,507	98	Impervious Roof Top
*	966	98	Gravel surface, HSG C - Path
*	5,114	98	Impervious Sidewalk
	13,302	79	50-75% Grass cover, Fair, HSG C
	25,889	88	Weighted Average
	13,302	79	51.38% Pervious Area
	12,587	98	48.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3					Direct Entry,

Subcatchment 3Sa: Existing RG 2 Front DA

Hydrograph



Summary for Subcatchment 3Sb: RG 1 DA

Runoff = 3.95 cfs @ 12.15 hrs, Volume= 13,706 cf, Depth= 7.69"
 Routed to Pond 5P : Proposed Rain Garden 1 (South West)

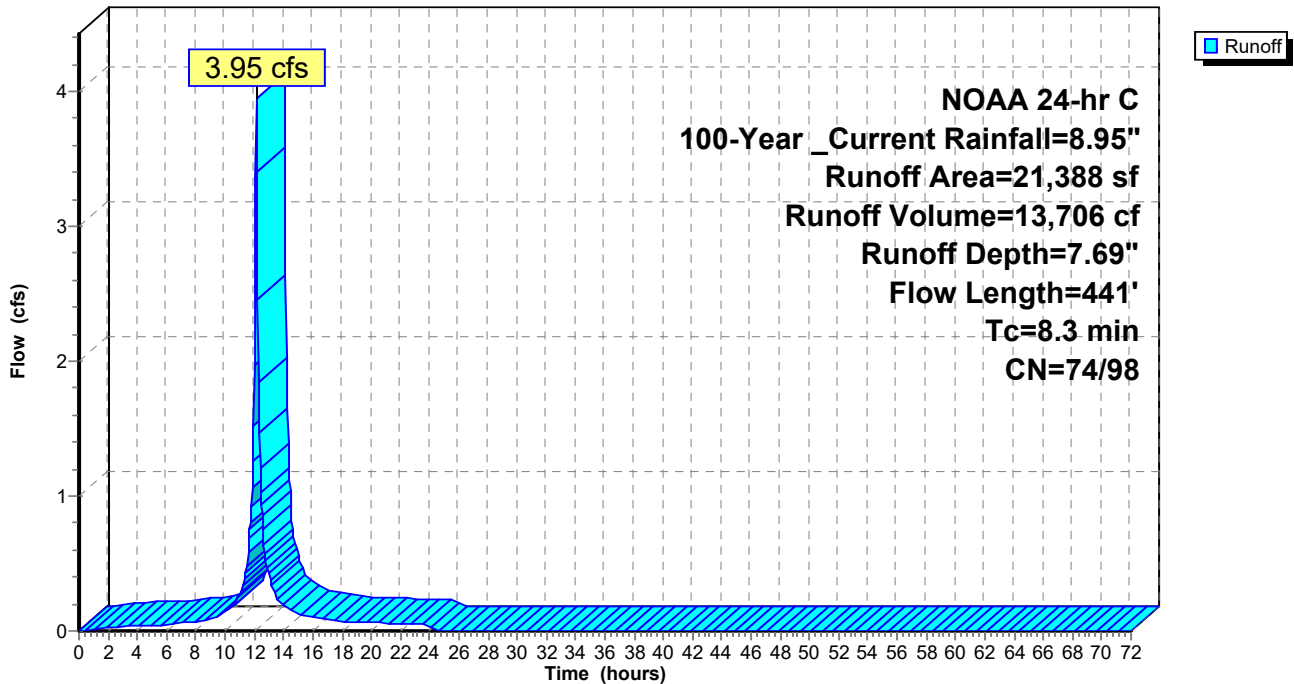
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _Current Rainfall=8.95"

	Area (sf)	CN	Description
*	7,455	74	Open space (good) C
*	10,303	98	Impervious - Roof top
*	3,630	98	Impervious - Road / Sidewalk
	21,388	90	Weighted Average
	7,455	74	34.86% Pervious Area
	13,933	98	65.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	83	0.0489	0.24		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
2.5	358	0.0138	2.38		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
8.3	441	Total			

Subcatchment 3Sb: RG 1 DA

Hydrograph



Summary for Subcatchment 3Sc: DA 3: CN w/ IC areas Remaining

Runoff = 20.75 cfs @ 12.15 hrs, Volume= 72,134 cf, Depth= 7.77"
 Routed to Pond 6P : Underground Storage w/ Porous Pavement 3

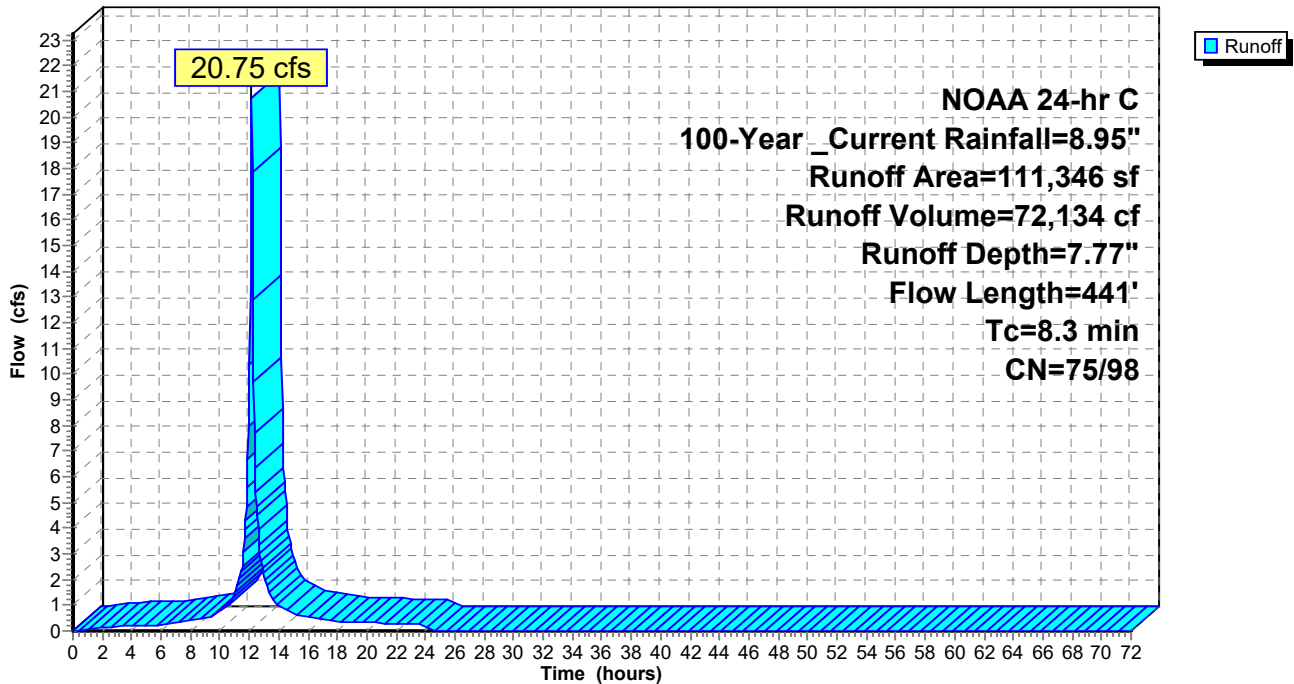
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _Current Rainfall=8.95"

	Area (sf)	CN	Description
*	5,413	79	Open space (Fair) C
*	31,753	74	Open space (good) C
*	74,180	98	Impervious
	111,346	90	Weighted Average
	37,166	75	33.38% Pervious Area
	74,180	98	66.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.8	83	0.0489	0.24		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
2.5	358	0.0138	2.38		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
8.3	441	Total			

Subcatchment 3Sc: DA 3: CN w/ IC areas Remaining

Hydrograph



Summary for Subcatchment 4S: DA 4: CN w/ IC areas_original

Runoff = 16.96 cfs @ 12.15 hrs, Volume= 61,108 cf, Depth= 8.45"

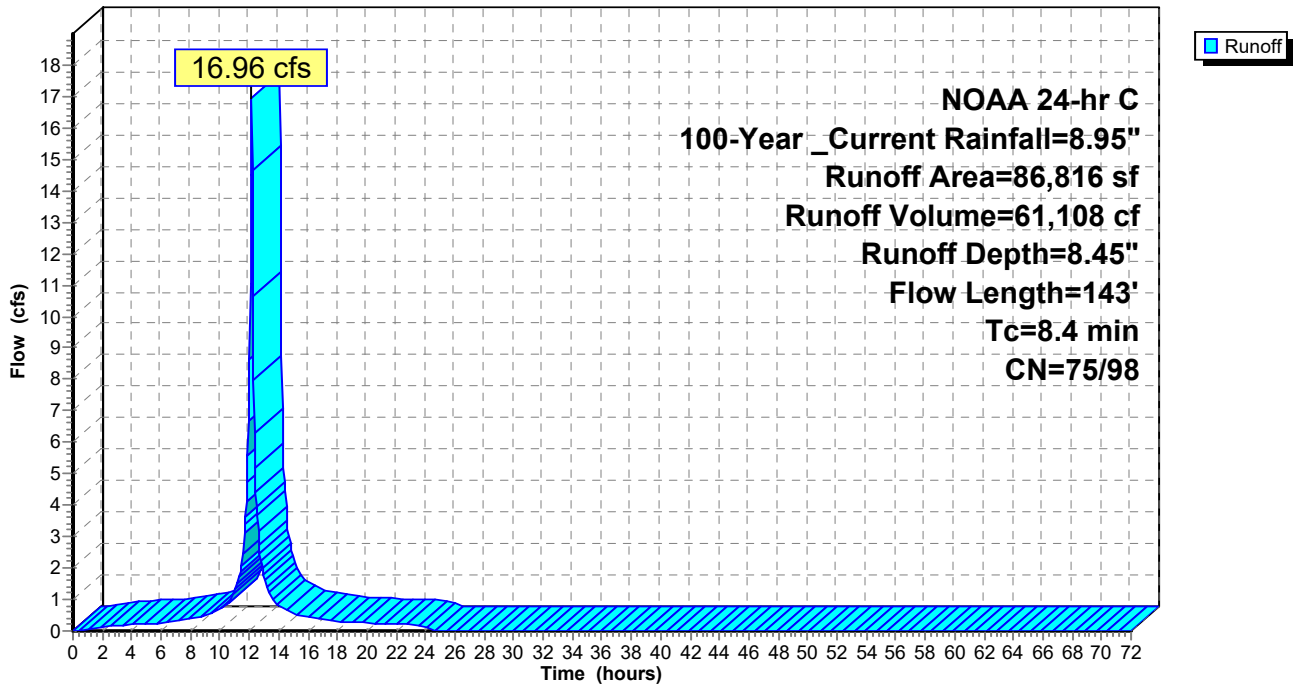
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _Current Rainfall=8.95"

	Area (sf)	CN	Description
*	1,403	79	Open space (fair) C
*	446	84	Open space (fair) D
*	6,298	74	Open space (good) C
*	78,669	98	Impervious
	86,816	96	Weighted Average
	8,147	75	9.38% Pervious Area
	78,669	98	90.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	67	0.0144	0.14		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
0.5	76	0.0155	2.53		Shallow Concentrated Flow, SCF - Paved Paved Kv= 20.3 fps
8.4	143	Total			

Subcatchment 4S: DA 4: CN w/ IC areas_original

Hydrograph



Summary for Subcatchment 4Sa: RG 4 DA

Runoff = 4.54 cfs @ 12.15 hrs, Volume= 15,693 cf, Depth= 7.73"
 Routed to Pond 7P : Proposed Rain Garden 4 (North)

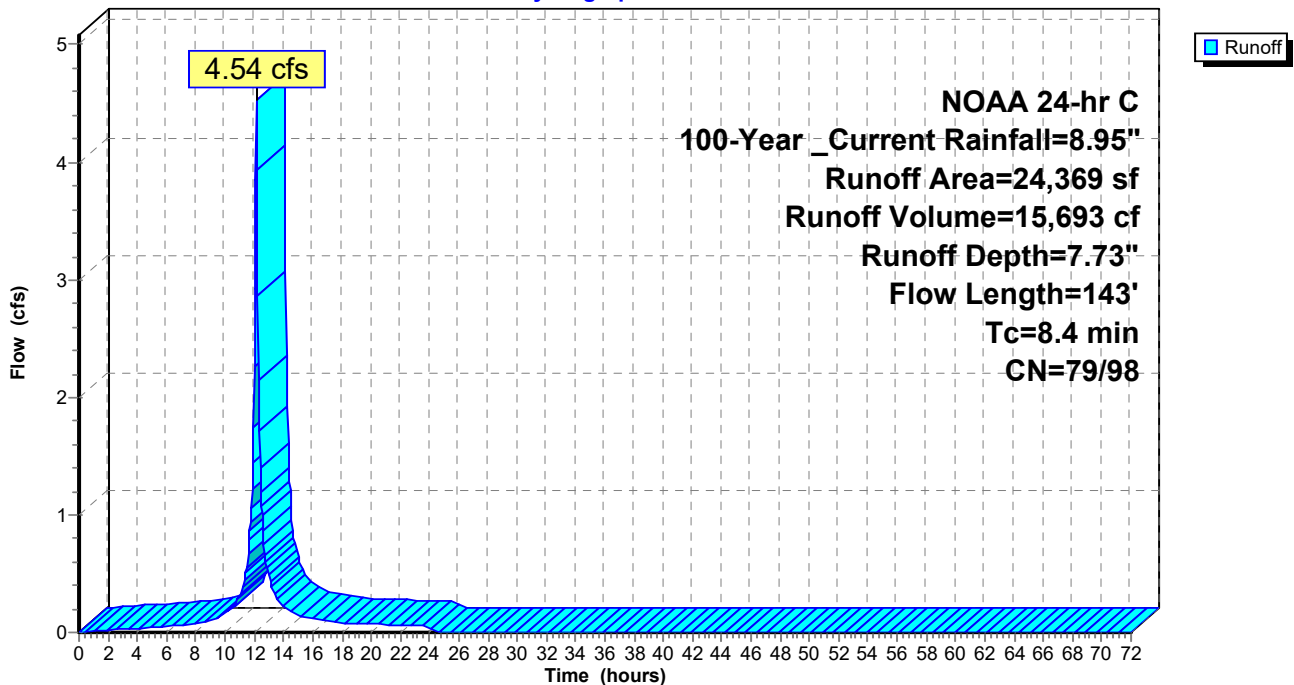
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _Current Rainfall=8.95"

	Area (sf)	CN	Description
*	10,350	79	Open space (fair) C_from DA 8
*	14,019	98	Impervious Parkinglot
	24,369	90	Weighted Average
	10,350	79	42.47% Pervious Area
	14,019	98	57.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	67	0.0144	0.14		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
0.5	76	0.0155	2.53		Shallow Concentrated Flow, SCF - Paved Paved Kv= 20.3 fps
8.4	143	Total			

Subcatchment 4Sa: RG 4 DA

Hydrograph



Summary for Subcatchment 4Sb: DA 4: CN w/ IC areas

Runoff = 14.17 cfs @ 12.15 hrs, Volume= 50,933 cf, Depth= 8.40"
 Routed to Pond 8P : Underground Storage w/ Porous Pavement 4

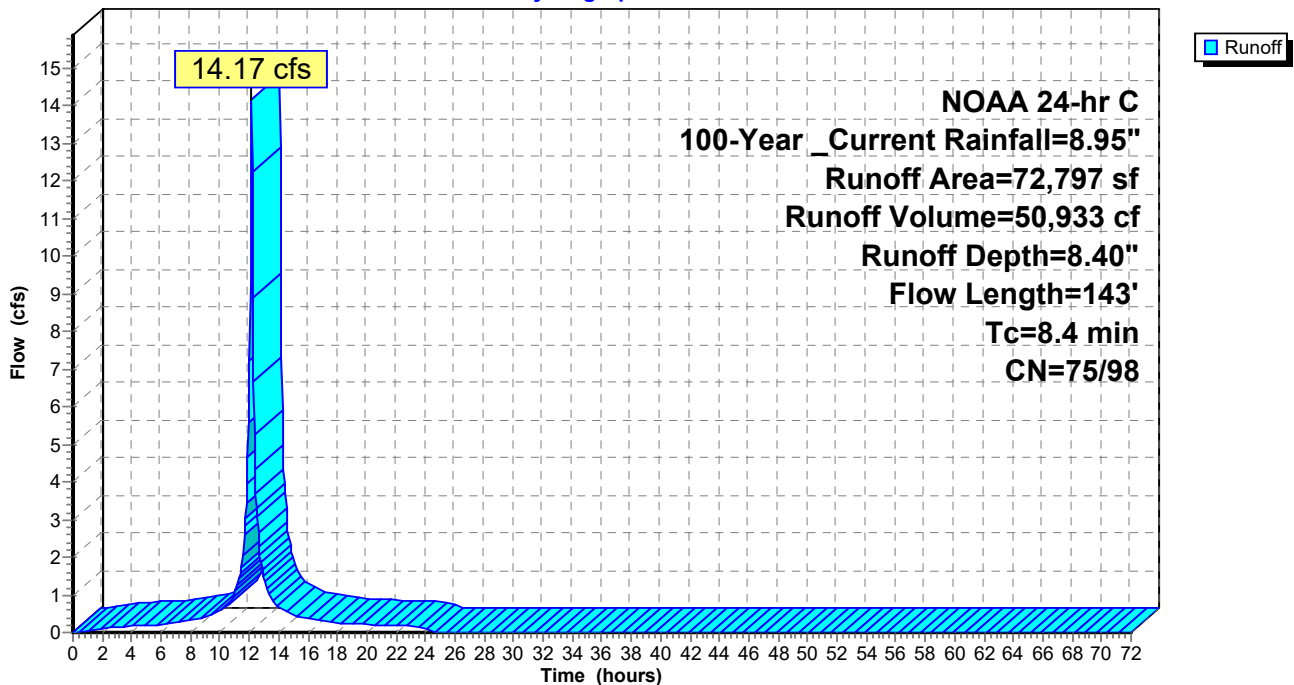
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _Current Rainfall=8.95"

	Area (sf)	CN	Description
*	1,403	79	Open space (fair) C
*	446	84	Open space (fair) D
*	6,298	74	Open space (good) C
*	64,650	98	Impervious
	72,797	95	Weighted Average
	8,147	75	11.19% Pervious Area
	64,650	98	88.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	67	0.0144	0.14		Sheet Flow, sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
0.5	76	0.0155	2.53		Shallow Concentrated Flow, SCF - Paved Paved Kv= 20.3 fps
8.4	143	Total			

Subcatchment 4Sb: DA 4: CN w/ IC areas

Hydrograph



Summary for Subcatchment 5S: DA 5: CN w/ IC areas_Original

Runoff = 13.33 cfs @ 12.19 hrs, Volume= 52,139 cf, Depth= 8.02"

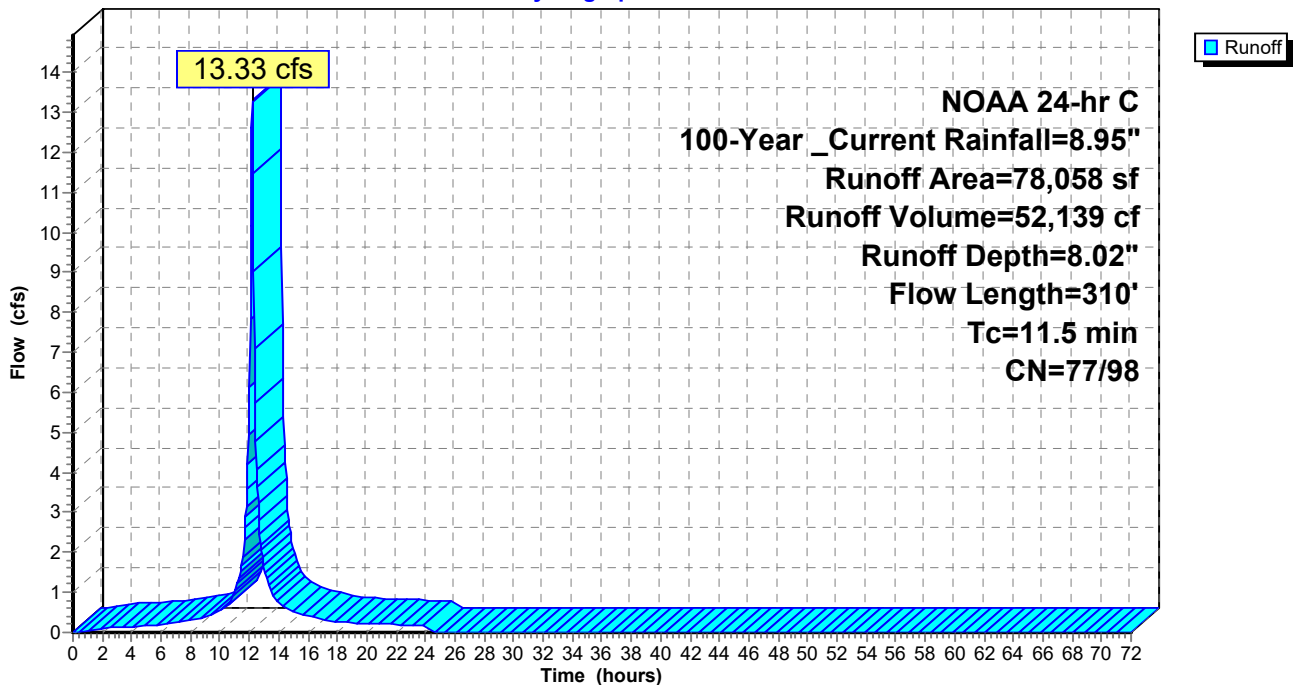
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _Current Rainfall=8.95"

	Area (sf)	CN	Description
*	11,294	79	Open Space (Fair) C
*	9,899	74	Open Space (good) C
*	56,865	98	Impervious
	78,058	92	Weighted Average
	21,193	77	27.15% Pervious Area
	56,865	98	72.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	64	0.0105	0.12		Sheet Flow, Sheet flow -grass Grass: Short n= 0.150 P2= 3.34"
1.3	179	0.0129	2.31		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
1.5	67	0.0120	0.77		Shallow Concentrated Flow, SCF _ grass Short Grass Pasture Kv= 7.0 fps
11.5	310	Total			

Subcatchment 5S: DA 5: CN w/ IC areas_Original

Hydrograph



Summary for Subcatchment 5Sa: RG 3 DA

Runoff = 3.29 cfs @ 12.19 hrs, Volume= 12,481 cf, Depth= 7.53"
 Routed to Reach 2R : Bioswale E 1 RG 3

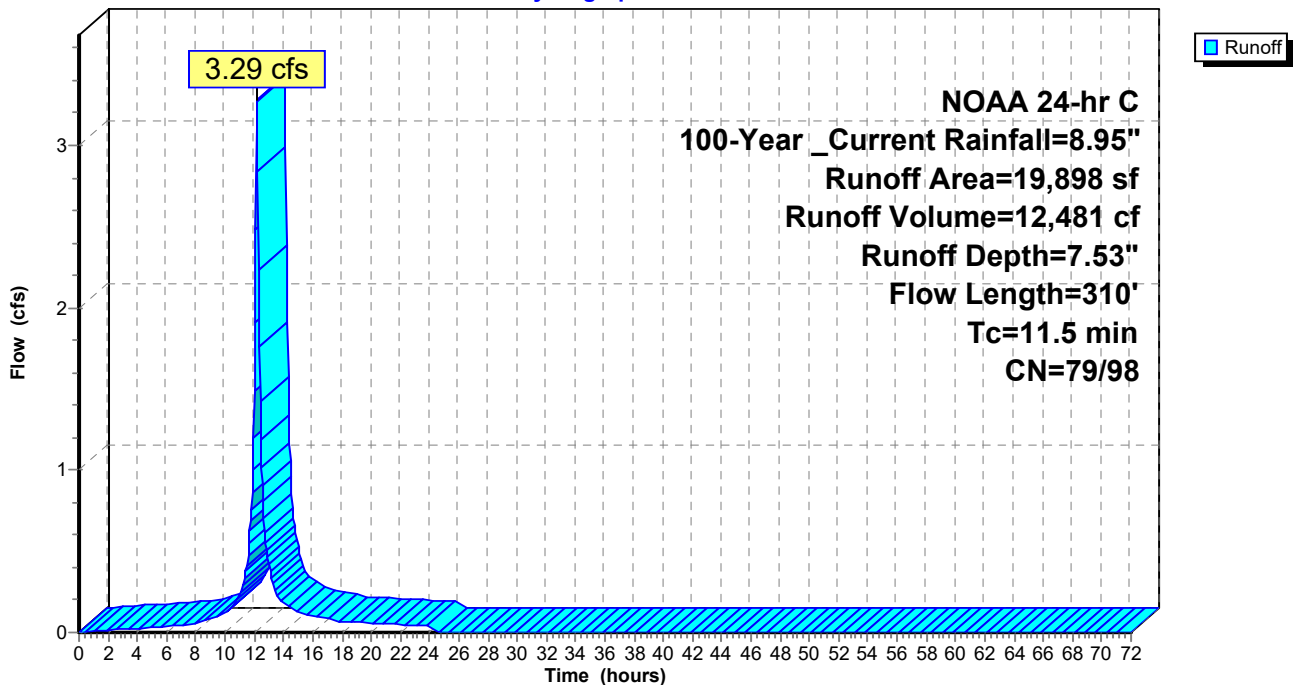
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _Current Rainfall=8.95"

	Area (sf)	CN	Description
*	10,182	79	Open Space (Fair) C
*	9,716	98	Impervious Parking lot
	19,898	88	Weighted Average
	10,182	79	51.17% Pervious Area
	9,716	98	48.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	64	0.0105	0.12		Sheet Flow, Sheet flow -grass Grass: Short n= 0.150 P2= 3.34"
1.3	179	0.0129	2.31		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
1.5	67	0.0120	0.77		Shallow Concentrated Flow, SCF _ grass Short Grass Pasture Kv= 7.0 fps
11.5	310	Total			

Subcatchment 5Sa: RG 3 DA

Hydrograph



Summary for Subcatchment 5Sb: DA 5: CN w/ IC areas

Runoff = 10.03 cfs @ 12.19 hrs, Volume= 39,643 cf, Depth= 8.18"
 Routed to Pond 10P : Underground Storage w/ Porous Pavement 5

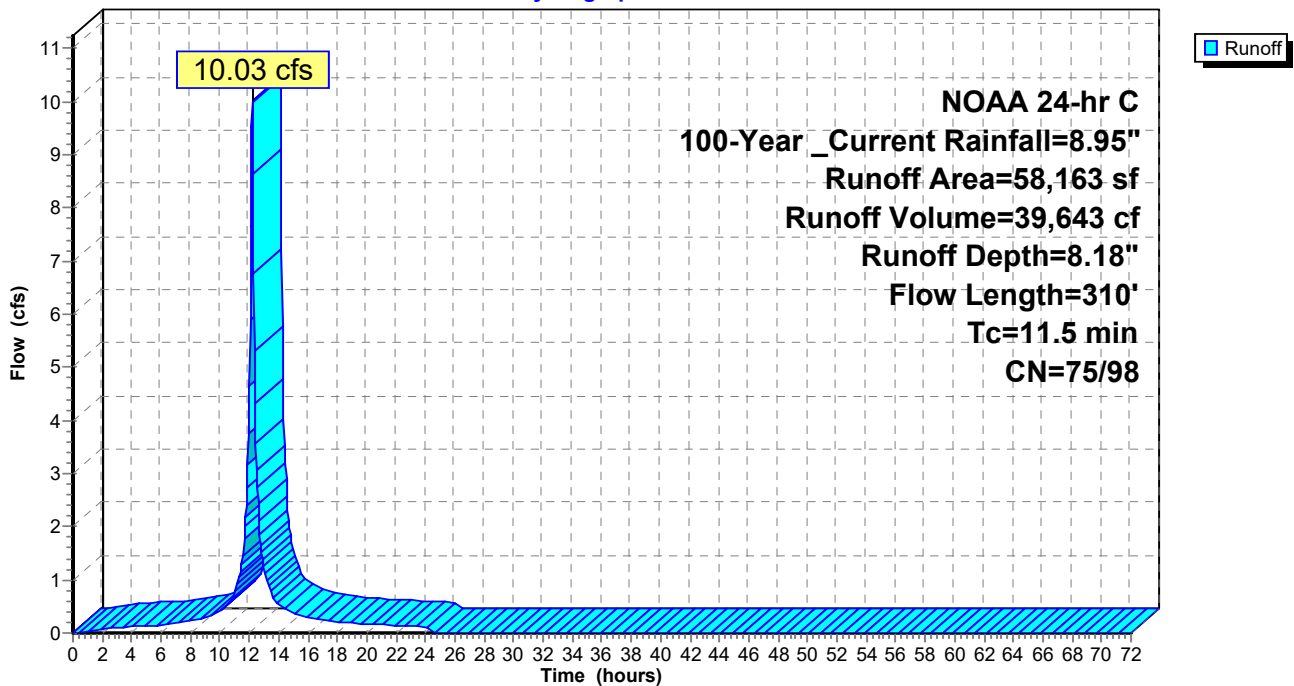
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _Current Rainfall=8.95"

Area (sf)	CN	Description
* 1,112	79	Open Space (Fair) C
* 9,899	74	Open Space (good) C
* 47,152	98	Impervious
58,163	94	Weighted Average
11,011	75	18.93% Pervious Area
47,152	98	81.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	64	0.0105	0.12		Sheet Flow, Sheet flow -grass Grass: Short n= 0.150 P2= 3.34"
1.3	179	0.0129	2.31		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
1.5	67	0.0120	0.77		Shallow Concentrated Flow, SCF _ grass Short Grass Pasture Kv= 7.0 fps
11.5	310	Total			

Subcatchment 5Sb: DA 5: CN w/ IC areas

Hydrograph



Summary for Subcatchment 6S: DA 6: CN w/ IC areas

Runoff = 4.92 cfs @ 12.22 hrs, Volume= 19,868 cf, Depth= 7.44"
 Routed to Pond 11P : Proposed Rain Garden 2 (East)

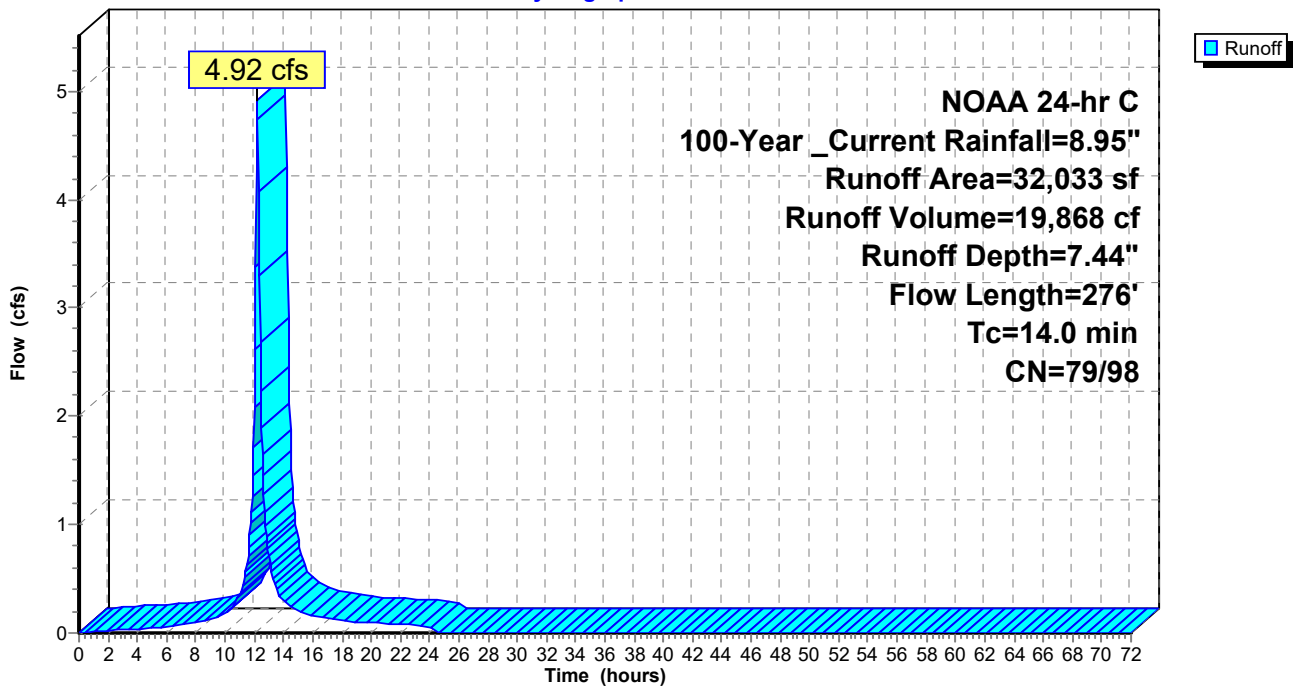
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _Current Rainfall=8.95"

	Area (sf)	CN	Description
*	16,559	79	Open Space (fair) C
*	998	74	Open Space (good) C
*	14,476	98	Impervious
	32,033	87	Weighted Average
	17,557	79	54.81% Pervious Area
	14,476	98	45.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0098	0.13		Sheet Flow, Sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
0.5	86	0.0244	3.17		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
0.7	90	0.0178	2.15		Shallow Concentrated Flow, SCF - unpaved Unpaved Kv= 16.1 fps
14.0	276	Total			

Subcatchment 6S: DA 6: CN w/ IC areas

Hydrograph



Summary for Subcatchment 7S: DA 7 (Offsite South): CN w/ IC areas

Runoff = 15.19 cfs @ 12.22 hrs, Volume= 60,044 cf, Depth= 6.73"
 Routed to Link 1L : Offsite Flows

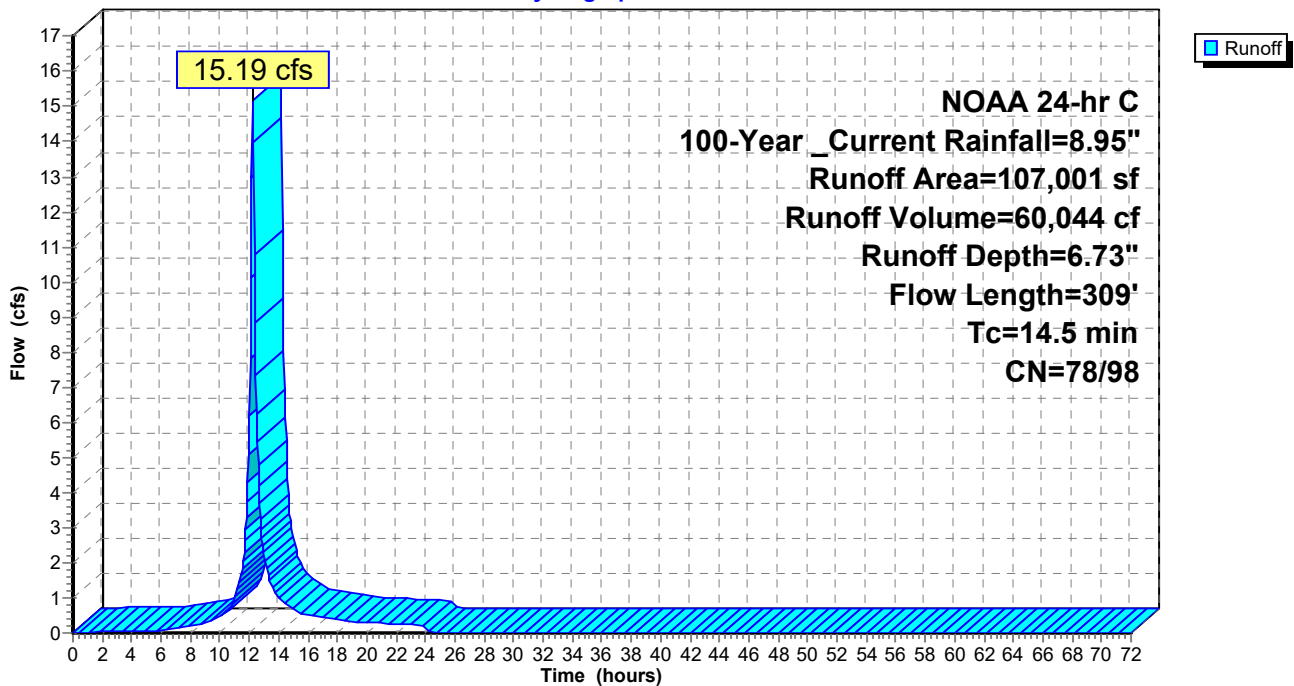
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _Current Rainfall=8.95"

	Area (sf)	CN	Description
*	70,444	79	Open Space (fair) C
*	16,401	74	Open Space (good) C
*	20,156	98	Impervious
	107,001	82	Weighted Average
	86,845	78	81.16% Pervious Area
	20,156	98	18.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	100	0.0112	0.14		Sheet Flow, Sheet flow Grass: Short n= 0.150 P2= 3.34"
2.2	165	0.0305	1.22		Shallow Concentrated Flow, SCF _ grass Short Grass Pasture Kv= 7.0 fps
0.2	44	0.0317	3.61		Shallow Concentrated Flow, SCF _ paved Paved Kv= 20.3 fps
14.5	309	Total			

Subcatchment 7S: DA 7 (Offsite South): CN w/ IC areas

Hydrograph



Summary for Subcatchment 8S: DA 8 (Offsite North): CN w/ IC areas

Runoff = 38.58 cfs @ 12.29 hrs, Volume= 165,783 cf, Depth= 5.84"
 Routed to Link 1L : Offsite Flows

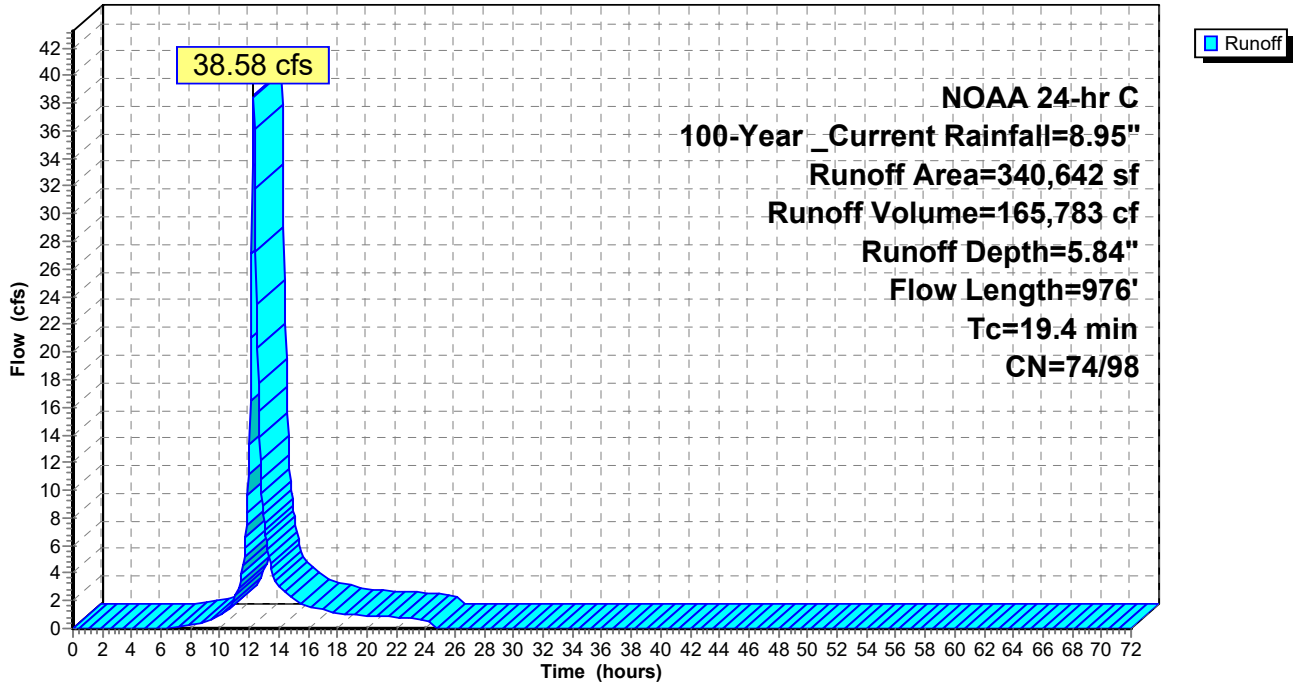
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _Current Rainfall=8.95"

Area (sf)	CN	Description
*	2,767	70 Brush (fair) C
*	63,031	77 Brush (fair) D
*	86,643	65 Brush (good) C
*	64,708	73 Brush (good) D
*	73,083	79 Open space (Fair) C
*	30,261	84 Open space (fair) D
*	4,460	74 Open space (good) C
*	9,087	80 Open space (good) D
*	6,602	98 Impervious
340,642	75	Weighted Average
334,040	74	98.06% Pervious Area
6,602	98	1.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	100	0.0366	0.22		Sheet Flow, sheet flow Grass: Short n= 0.150 P2= 3.34"
11.9	876	0.0067	1.23		Shallow Concentrated Flow, scf - grass waterway Grassed Waterway Kv= 15.0 fps
19.4	976	Total			

Subcatchment 8S: DA 8 (Offsite North): CN w/ IC areas

Hydrograph



Summary for Subcatchment 9S: DA 9 (Offsite Field West): CN w/ IC areas

Runoff = 42.84 cfs @ 12.42 hrs, Volume= 227,369 cf, Depth= 5.69"
 Routed to Link 1L : Offsite Flows

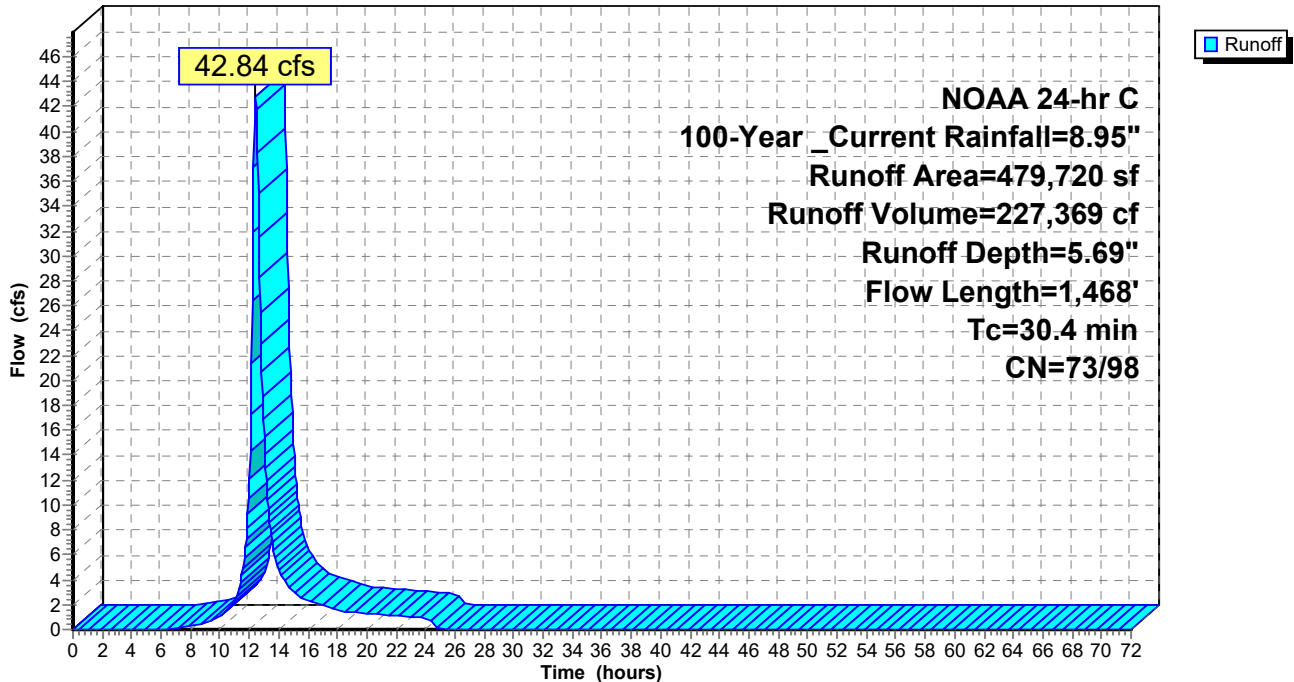
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _Current Rainfall=8.95"

	Area (sf)	CN	Description
*	72,478	65	Brush (good) C
*	10,448	79	Open spcae (fair) C
*	392,515	74	Open Space (good) C
*	4,279	98	Impervious
	479,720	73	Weighted Average
	475,441	73	99.11% Pervious Area
	4,279	98	0.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0159	0.16		Sheet Flow, Sheet flow Grass: Short n= 0.150 P2= 3.34"
7.1	362	0.0148	0.85		Shallow Concentrated Flow, SCF - grass Short Grass Pasture Kv= 7.0 fps
12.8	1,006	0.0076	1.31		Shallow Concentrated Flow, SCF - grass waterway Grassed Waterway Kv= 15.0 fps
30.4	1,468	Total			

Subcatchment 9S: DA 9 (Offsite Field West): CN w/ IC areas

Hydrograph



Summary for Subcatchment 31S: RG 2 DA

Runoff = 4.81 cfs @ 12.22 hrs, Volume= 19,083 cf, Depth= 7.15"

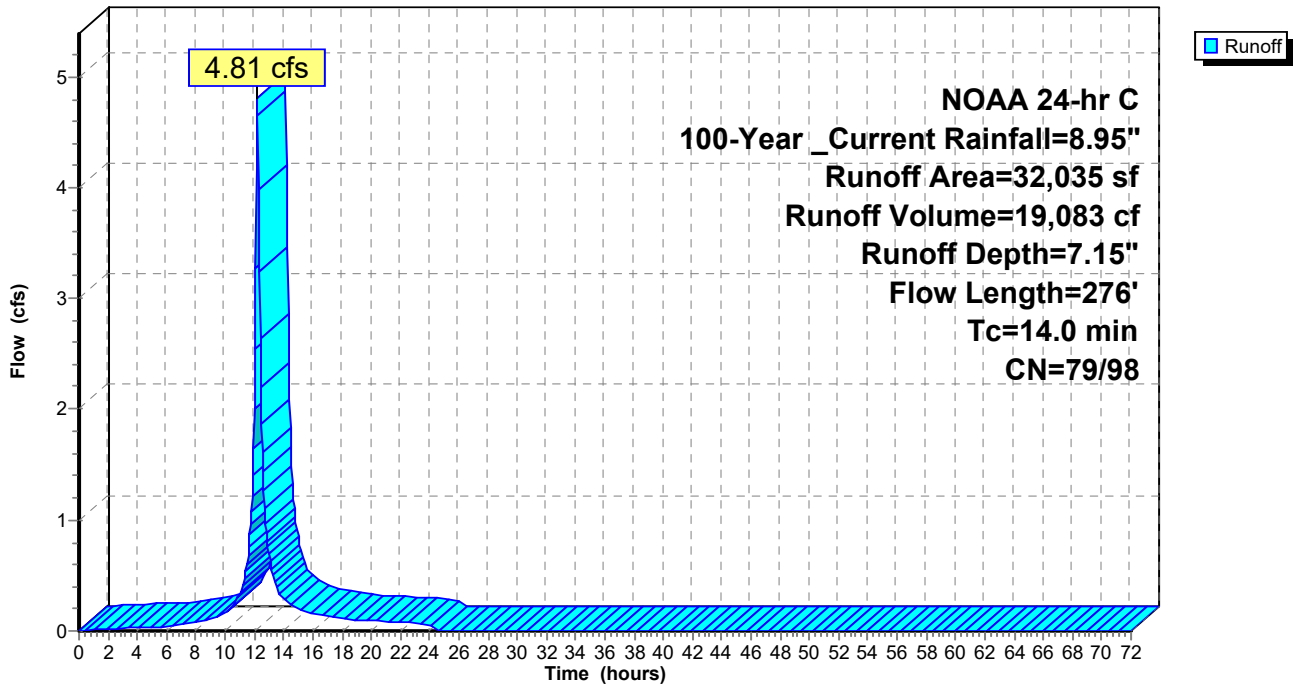
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05
 NOAA 24-hr C 100-Year _Current Rainfall=8.95"

	Area (sf)	CN	Description
*	21,638	79	Open Space (fair) C
*	10,397	98	Impervious
	32,035	85	Weighted Average
	21,638	79	67.54% Pervious Area
	10,397	98	32.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0098	0.13		Sheet Flow, Sheet flow - grass Grass: Short n= 0.150 P2= 3.34"
0.5	86	0.0244	3.17		Shallow Concentrated Flow, SCF - paved Paved Kv= 20.3 fps
0.7	90	0.0178	2.15		Shallow Concentrated Flow, SCF - unpaved Unpaved Kv= 16.1 fps
14.0	276	Total			

Subcatchment 31S: RG 2 DA

Hydrograph



Summary for Reach 1R: Existing Bioswale West 1

Inflow Area = 22,637 sf, 64.43% Impervious, Inflow Depth = 7.80" for 100-Year _Current event
 Inflow = 3.52 cfs @ 12.22 hrs, Volume= 14,714 cf
 Outflow = 3.50 cfs @ 12.22 hrs, Volume= 14,714 cf, Atten= 1%, Lag= 0.4 min
 Routed to Pond 1P : Existing Rain Garden 1 West

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Max. Velocity= 2.61 fps, Min. Travel Time= 0.2 min
 Avg. Velocity = 0.74 fps, Avg. Travel Time= 0.7 min

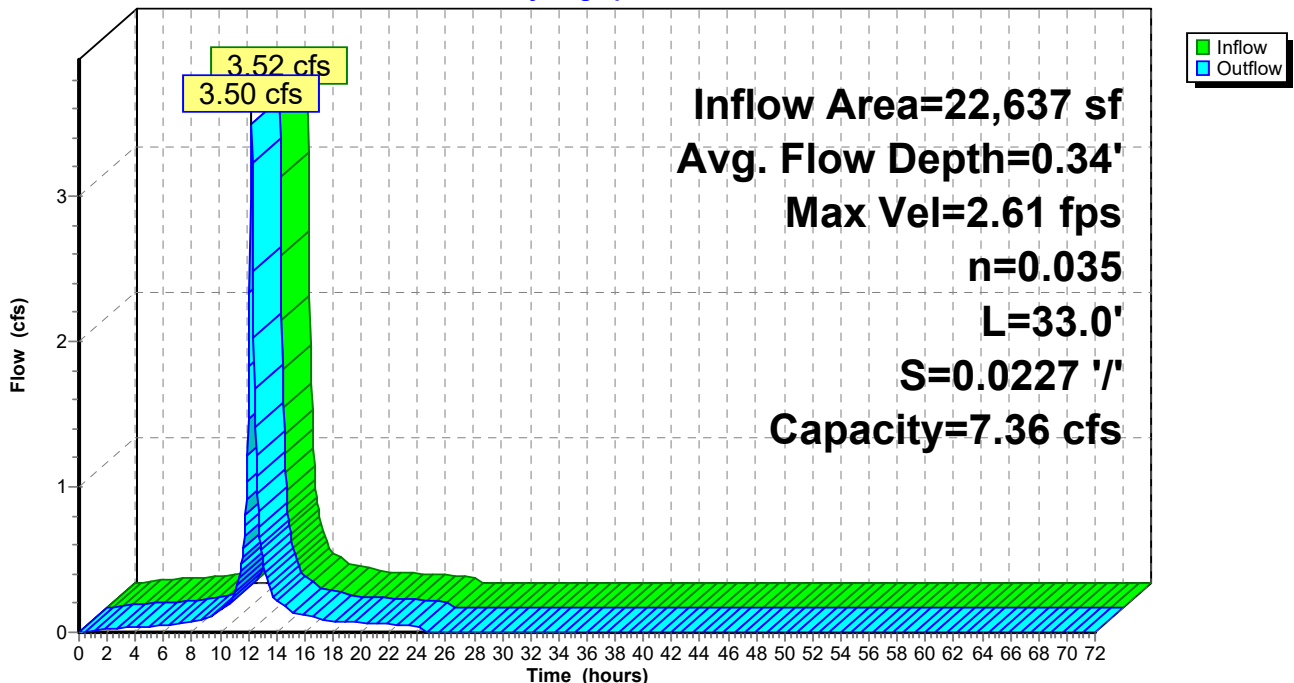
Peak Storage= 44 cf @ 12.22 hrs
 Average Depth at Peak Storage= 0.34' , Surface Width= 5.01'
 Bank-Full Depth= 0.50' Flow Area= 2.3 sf, Capacity= 7.36 cfs

3.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
 Side Slope Z-value= 3.0 '/ Top Width= 6.00'
 Length= 33.0' Slope= 0.0227 '/
 Inlet Invert= 100.75', Outlet Invert= 100.00'



Reach 1R: Existing Bioswale West 1

Hydrograph



Summary for Reach 2R: Bioswale E 1 RG 3

Inflow Area = 19,898 sf, 48.83% Impervious, Inflow Depth = 7.53" for 100-Year _Current event
 Inflow = 3.29 cfs @ 12.19 hrs, Volume= 12,481 cf
 Outflow = 3.27 cfs @ 12.19 hrs, Volume= 12,481 cf, Atten= 0%, Lag= 0.3 min
 Routed to Pond 9P : Proposed Rain Garden 3 (North East)

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Max. Velocity= 3.05 fps, Min. Travel Time= 0.2 min
 Avg. Velocity= 1.01 fps, Avg. Travel Time= 0.6 min

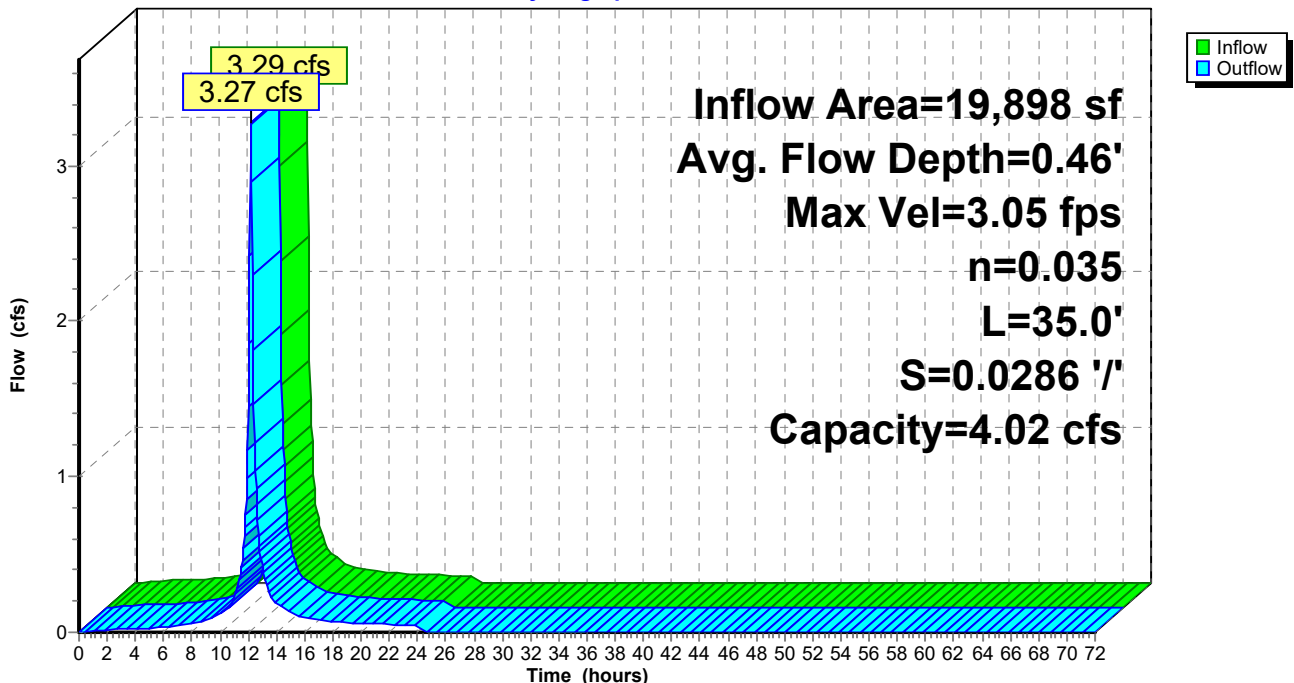
Peak Storage= 38 cf @ 12.19 hrs
 Average Depth at Peak Storage= 0.46' , Surface Width= 3.73'
 Bank-Full Depth= 0.50' Flow Area= 1.3 sf, Capacity= 4.02 cfs

1.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
 Side Slope Z-value= 3.0 '/ Top Width= 4.00'
 Length= 35.0' Slope= 0.0286 '/
 Inlet Invert= 101.00', Outlet Invert= 100.00'



Reach 2R: Bioswale E 1 RG 3

Hydrograph



Summary for Pond 1P: Existing Rain Garden 1 West

- [93] Warning: Storage range exceeded by 0.41'
- [88] Warning: Qout>Qin may require smaller dt or Finer Routing
- [85] Warning: Oscillations may require smaller dt or Finer Routing (severity=3)
- [62] Hint: Exceeded Reach 1R OUTLET depth by 0.32' @ 12.25 hrs

Inflow Area = 22,637 sf, 64.43% Impervious, Inflow Depth = 7.80" for 100-Year _Current event
 Inflow = 3.50 cfs @ 12.22 hrs, Volume= 14,714 cf
 Outflow = 3.59 cfs @ 12.24 hrs, Volume= 14,532 cf, Atten= 0%, Lag= 0.9 min
 Primary = 0.35 cfs @ 12.24 hrs, Volume= 7,571 cf
 Routed to Pond 2P : Underground Storage w/ Porous Pavement 1
 Secondary = 3.24 cfs @ 12.24 hrs, Volume= 6,962 cf
 Routed to Pond 2P : Underground Storage w/ Porous Pavement 1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 100.66' @ 12.24 hrs Surf.Area= 1,750 sf Storage= 1,831 cf

Plug-Flow detention time= 223.5 min calculated for 14,532 cf (99% of inflow)
 Center-of-Mass det. time= 215.3 min (983.2 - 767.8)

Volume	Invert	Avail.Storage	Storage Description			
#1	98.25'	1,831 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
98.25	1,445	0.0	0	0	1,445	
99.25	1,445	35.0	506	506	1,580	
99.50	1,445	25.0	90	596	1,613	
100.00	1,750	100.0	798	1,394	1,927	
100.25	1,750	100.0	438	1,831	1,964	

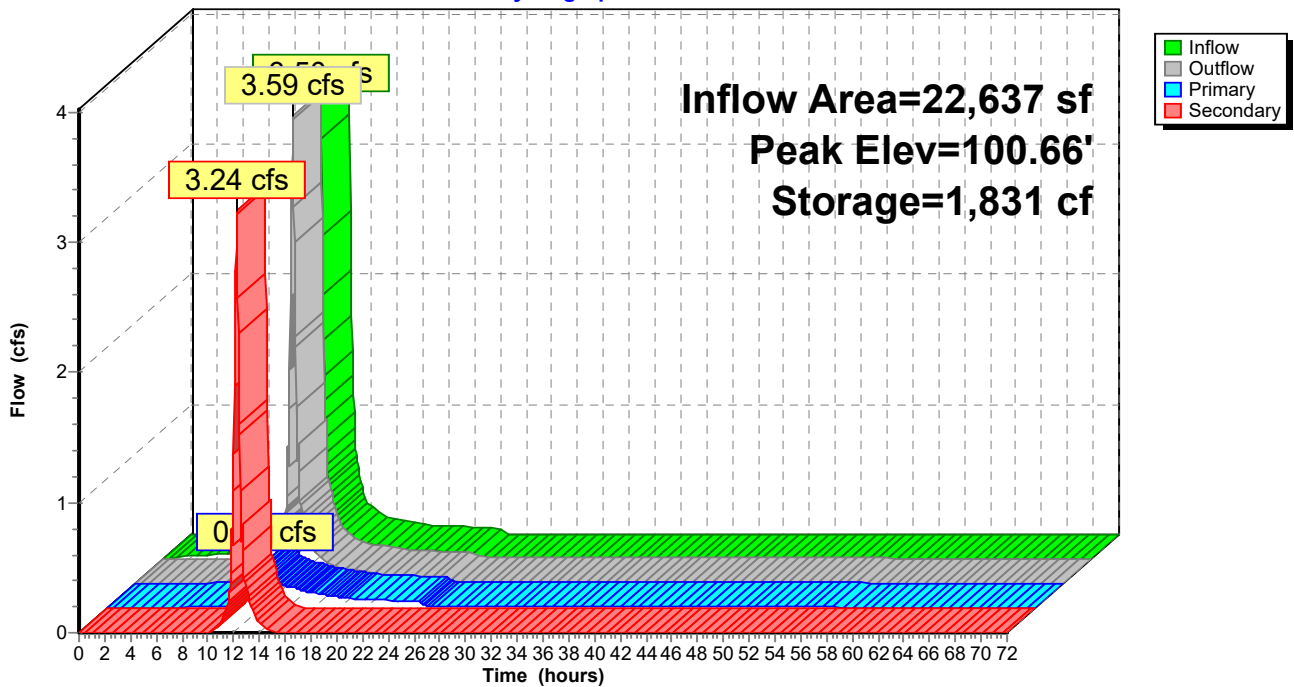
Device	Routing	Invert	Outlet Devices	
#1	Primary	98.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 98.15' / 98.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#2	Device 1	98.15'	0.5" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads	
#3	Device 2	98.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 98.25' / 98.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#4	Device 3	98.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads	
#5	Device 1	100.00'	4.0" Horiz. Drintech Atrium C= 0.600 Limited to weir flow at low heads	
#6	Secondary	100.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32	

Primary OutFlow Max=0.35 cfs @ 12.24 hrs HW=100.65' (Free Discharge)
 1=Culvert (Passes 0.35 cfs of 0.47 cfs potential flow)
 2=Restrictive Orifice (Orifice Controls 0.01 cfs @ 7.58 fps)
 3=4" HDPE Underdrain (Passes 0.01 cfs of 0.37 cfs potential flow)
 4=Perforations (Passes 0.01 cfs of 5.59 cfs potential flow)
 5=Draintech Atrium (Orifice Controls 0.34 cfs @ 3.87 fps)

Secondary OutFlow Max=3.16 cfs @ 12.24 hrs HW=100.65' (Free Discharge)
 6=Broad-Crested Rectangular Weir (Weir Controls 3.16 cfs @ 1.93 fps)

Pond 1P: Existing Rain Garden 1 West

Hydrograph



Summary for Pond 2P: Underground Storage w/ Porous Pavement 1

[44] Hint: Outlet device #3 is below defined storage
 [79] Warning: Submerged Pond 1P Primary device # 1 INLET by 0.34'

Inflow Area = 61,742 sf, 66.85% Impervious, Inflow Depth > 7.78" for 100-Year _Current event
 Inflow = 9.60 cfs @ 12.23 hrs, Volume= 40,014 cf
 Outflow = 2.71 cfs @ 12.63 hrs, Volume= 22,531 cf, Atten= 72%, Lag= 24.0 min
 Primary = 0.02 cfs @ 12.63 hrs, Volume= 3,923 cf
 Secondary = 2.69 cfs @ 12.63 hrs, Volume= 18,608 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 98.49' @ 12.63 hrs Surf.Area= 13,421 sf Storage= 21,820 cf

Plug-Flow detention time= 491.9 min calculated for 22,515 cf (56% of inflow)
 Center-of-Mass det. time= 318.6 min (1,163.1 - 844.5)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	1,612 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	9,359 cf	72.75'W x 146.02'L x 3.50'H Field A 37,179 cf Overall - 13,782 cf Embedded = 23,397 cf x 40.0% Voids
#3A	96.17'	13,782 cf	ADS_StormTech SC-740 +Cap x 300 Inside #2 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 300 Chambers in 15 Rows
		24,753 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	2,798	0.0	0	0
97.67	2,798	35.0	1,469	1,469
97.83	2,798	15.0	67	1,536
98.01	2,798	15.0	76	1,612

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.02 cfs @ 12.63 hrs HW=98.49' (Free Discharge)

↑ **1=Restriction Orifice** (Orifice Controls 0.02 cfs @ 12.18 fps)

↑ **2=6" HDPE Underdrain** (Passes 0.02 cfs of 0.48 cfs potential flow)

↑ **3=Perforations** (Passes 0.02 cfs of 9.08 cfs potential flow)

Secondary OutFlow Max=2.68 cfs @ 12.63 hrs HW=98.49' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** (Weir Controls 2.68 cfs @ 1.83 fps)

Pond 2P: Underground Storage w/ Porous Pavement 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

20 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 144.02' Row Length +12.0" End Stone x 2 = 146.02' Base Length

15 Rows x 51.0" Wide + 6.0" Spacing x 14 + 12.0" Side Stone x 2 = 72.75' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

300 Chambers x 45.9 cf = 13,782.0 cf Chamber Storage

37,179.5 cf Field - 13,782.0 cf Chambers = 23,397.5 cf Stone x 40.0% Voids = 9,359.0 cf Stone Storage

Chamber Storage + Stone Storage = 23,141.0 cf = 0.531 af

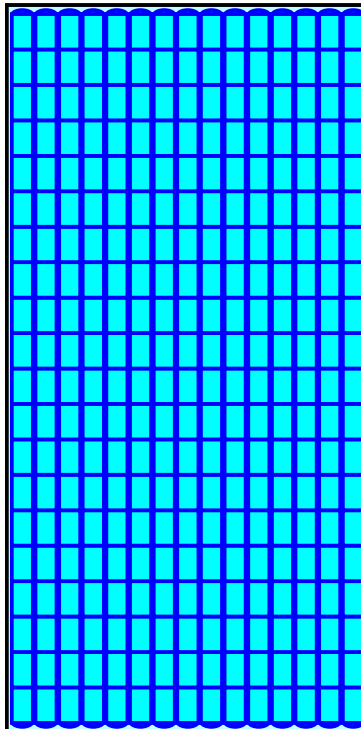
Overall Storage Efficiency = 62.2%

Overall System Size = 146.02' x 72.75' x 3.50'

300 Chambers

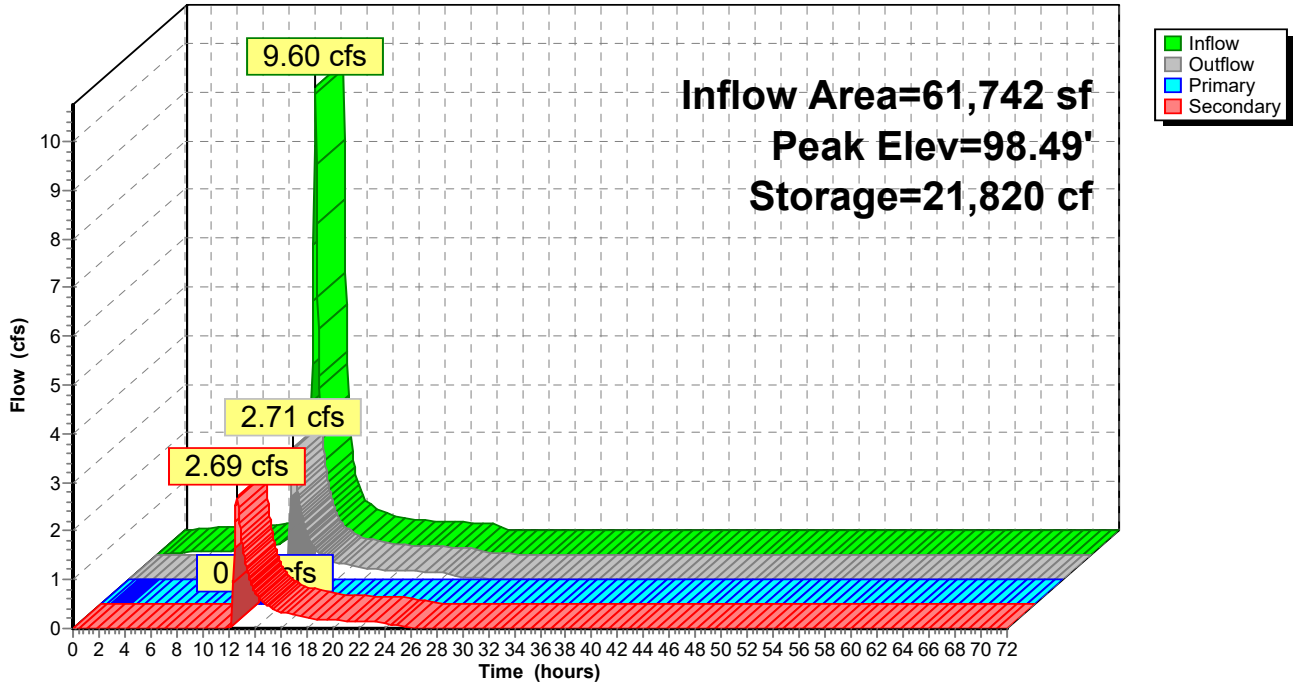
1,377.0 cy Field

866.6 cy Stone



Pond 2P: Underground Storage w/ Porous Pavement 1

Hydrograph



Summary for Pond 3P: Underground Storage w/ Porous Pavement 2

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 58,249 sf, 86.46% Impervious, Inflow Depth = 8.35" for 100-Year _Current event
 Inflow = 11.82 cfs @ 12.14 hrs, Volume= 40,516 cf
 Outflow = 2.26 cfs @ 12.56 hrs, Volume= 20,217 cf, Atten= 81%, Lag= 25.4 min
 Primary = 0.02 cfs @ 12.56 hrs, Volume= 3,938 cf
 Secondary = 2.25 cfs @ 12.56 hrs, Volume= 16,279 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 98.43' @ 12.56 hrs Surf.Area= 23,296 sf Storage= 25,186 cf

Plug-Flow detention time= 569.6 min calculated for 20,203 cf (50% of inflow)
 Center-of-Mass det. time= 436.0 min (1,184.2 - 748.2)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	8,187 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	8,029 cf	82.25'W x 110.42'L x 3.50'H Field A
			31,786 cf Overall - 11,715 cf Embedded = 20,071 cf x 40.0% Voids
#3A	96.17'	11,715 cf	ADS_StormTech SC-740 +Cap x 255 Inside #2
			Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
			Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap
			255 Chambers in 17 Rows
		27,931 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	14,214	0.0	0	0
97.67	14,214	35.0	7,462	7,462
97.83	14,214	15.0	341	7,803
98.01	14,214	15.0	384	8,187

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.02 cfs @ 12.56 hrs HW=98.43' (Free Discharge)

↑ **1=Restriction Orifice** (Orifice Controls 0.02 cfs @ 12.13 fps)

↑ **2=6" HDPE Underdrain** (Passes 0.02 cfs of 0.48 cfs potential flow)

↑ **3=Perforations** (Passes 0.02 cfs of 9.04 cfs potential flow)

Secondary OutFlow Max=2.24 cfs @ 12.56 hrs HW=98.43' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** (Weir Controls 2.24 cfs @ 1.72 fps)

Pond 3P: Underground Storage w/ Porous Pavement 2 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

15 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 108.42' Row Length +12.0" End Stone x 2 =
110.42' Base Length

17 Rows x 51.0" Wide + 6.0" Spacing x 16 + 12.0" Side Stone x 2 = 82.25' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

255 Chambers x 45.9 cf = 11,714.7 cf Chamber Storage

31,786.2 cf Field - 11,714.7 cf Chambers = 20,071.5 cf Stone x 40.0% Voids = 8,028.6 cf Stone Storage

Chamber Storage + Stone Storage = 19,743.3 cf = 0.453 af

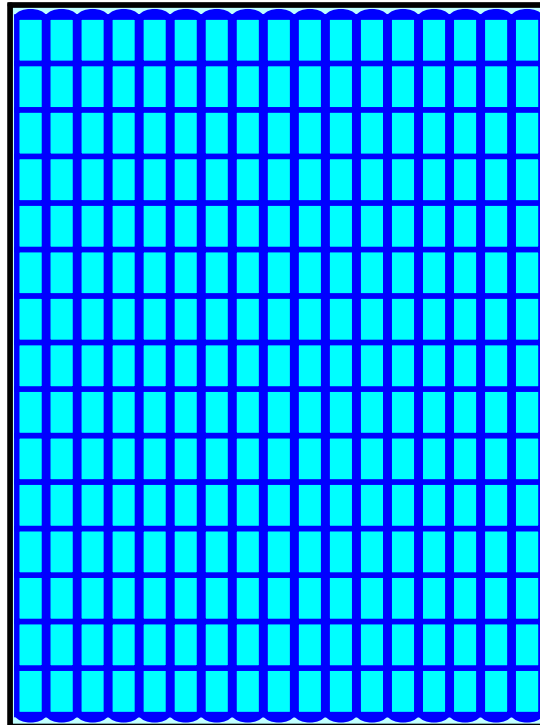
Overall Storage Efficiency = 62.1%

Overall System Size = 110.42' x 82.25' x 3.50'

255 Chambers

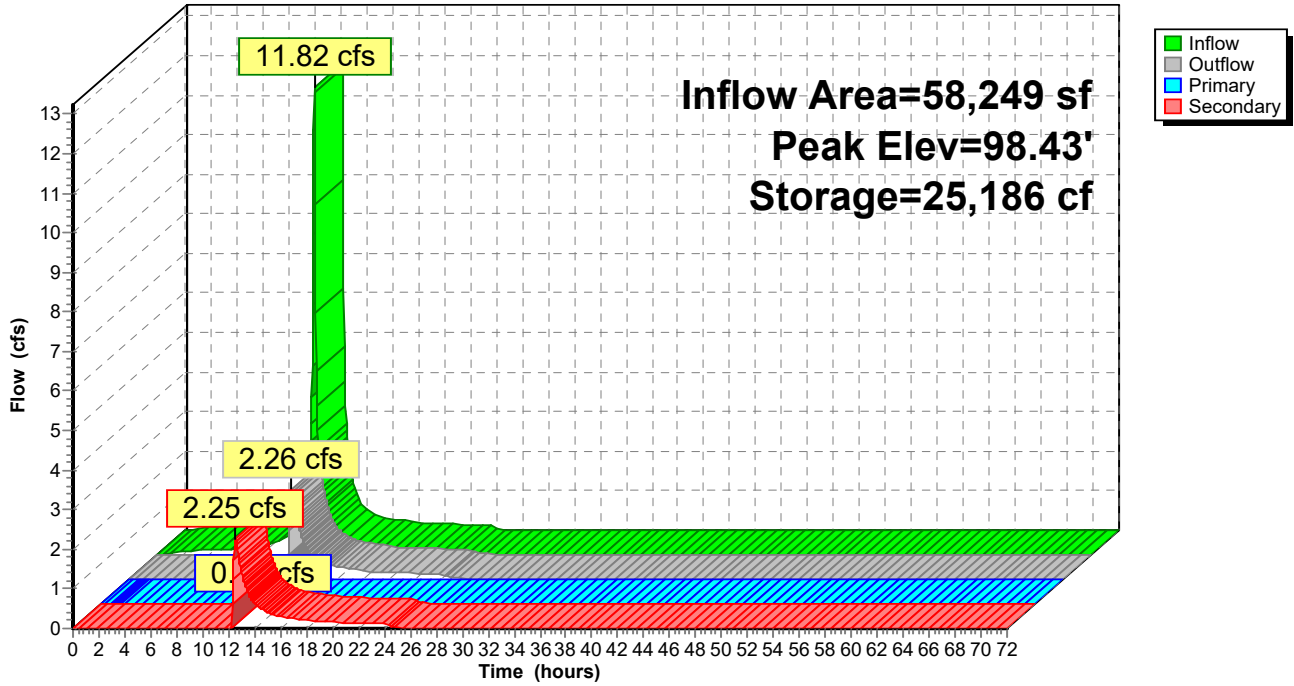
1,177.3 cy Field

743.4 cy Stone



Pond 3P: Underground Storage w/ Porous Pavement 2

Hydrograph



Summary for Pond 4P: Existing Rain Garden 2 Front

[93] Warning: Storage range exceeded by 0.51'

[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=4)

Inflow Area = 25,889 sf, 48.62% Impervious, Inflow Depth = 7.52" for 100-Year _Current event
 Inflow = 4.77 cfs @ 12.15 hrs, Volume= 16,228 cf
 Outflow = 4.57 cfs @ 12.15 hrs, Volume= 15,079 cf, Atten= 4%, Lag= 0.1 min
 Primary = 0.38 cfs @ 12.15 hrs, Volume= 7,457 cf
 Routed to Pond 6P : Underground Storage w/ Porous Pavement 3
 Secondary = 4.19 cfs @ 12.15 hrs, Volume= 7,622 cf
 Routed to Pond 6P : Underground Storage w/ Porous Pavement 3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 101.76' @ 12.15 hrs Surf.Area= 3,045 sf Storage= 3,267 cf

Plug-Flow detention time= 296.1 min calculated for 15,079 cf (93% of inflow)
 Center-of-Mass det. time= 256.2 min (1,026.5 - 770.2)

Volume	Invert	Avail.Storage	Storage Description			
#1	99.25'	3,267 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
99.25	2,635	0.0	0	0	2,635	
100.25	2,635	35.0	922	922	2,817	
100.50	2,635	25.0	165	1,087	2,862	
101.00	3,045	100.0	1,419	2,506	3,283	
101.25	3,045	100.0	761	3,267	3,332	

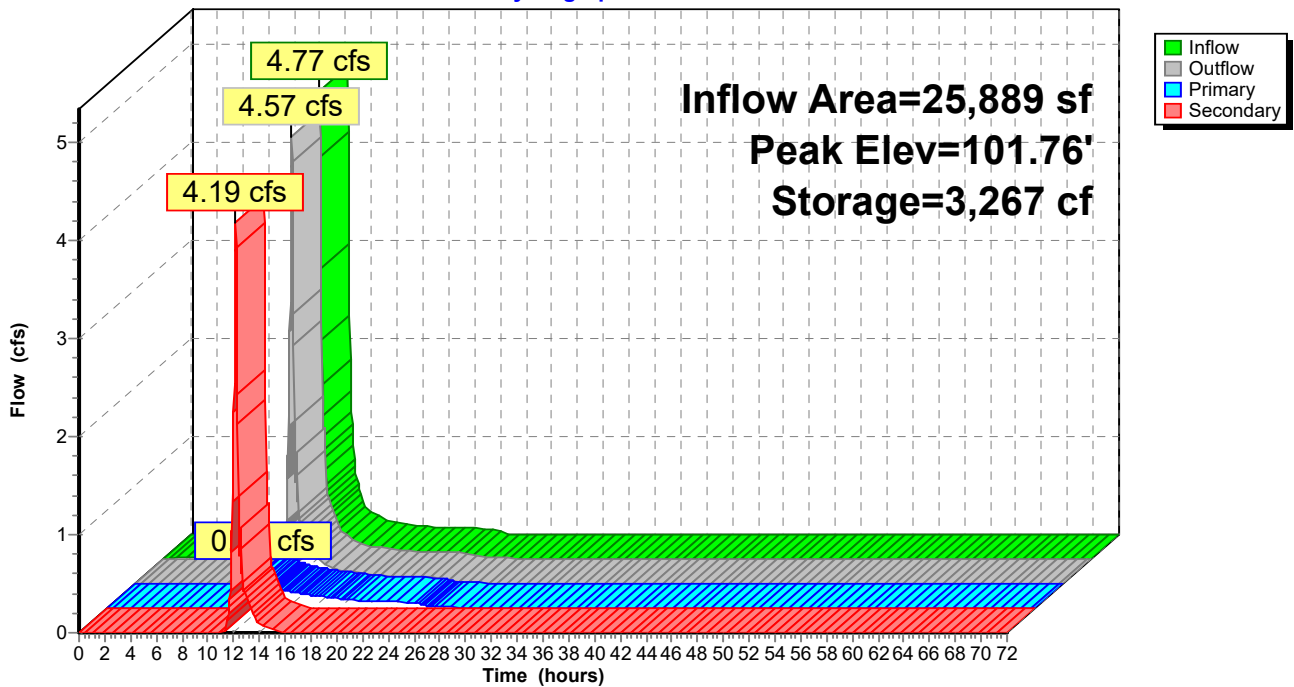
Device	Routing	Invert	Outlet Devices	
#1	Primary	99.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 99.15' / 99.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#2	Device 1	99.15'	0.5" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads	
#3	Device 2	99.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 99.25' / 99.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#4	Device 3	99.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads	
#5	Device 1	101.00'	4.0" Horiz. Drintech Atrium C= 0.600 Limited to weir flow at low heads	
#6	Secondary	101.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32	

Primary OutFlow Max=0.38 cfs @ 12.15 hrs HW=101.76' (Free Discharge)
 1=Culvert (Passes 0.38 cfs of 0.48 cfs potential flow)
 2=Restrictive Orifice (Orifice Controls 0.01 cfs @ 7.75 fps)
 3=4" HDPE Underdrain (Passes 0.01 cfs of 0.38 cfs potential flow)
 4=Perforations (Passes 0.01 cfs of 5.72 cfs potential flow)
 5=Draintech Atrium (Orifice Controls 0.37 cfs @ 4.19 fps)

Secondary OutFlow Max=4.18 cfs @ 12.15 hrs HW=101.76' (Free Discharge)
 6=Broad-Crested Rectangular Weir (Weir Controls 4.18 cfs @ 2.12 fps)

Pond 4P: Existing Rain Garden 2 Front

Hydrograph



Summary for Pond 5P: Proposed Rain Garden 1 (South West)

[93] Warning: Storage range exceeded by 0.45'
 [88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 21,388 sf, 65.14% Impervious, Inflow Depth = 7.69" for 100-Year _Current event
 Inflow = 3.95 cfs @ 12.15 hrs, Volume= 13,706 cf
 Outflow = 3.96 cfs @ 12.15 hrs, Volume= 13,141 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.36 cfs @ 12.15 hrs, Volume= 6,965 cf
 Routed to Pond 6P : Underground Storage w/ Porous Pavement 3
 Secondary = 3.60 cfs @ 12.15 hrs, Volume= 6,176 cf
 Routed to Pond 6P : Underground Storage w/ Porous Pavement 3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 101.70' @ 12.15 hrs Surf.Area= 2,325 sf Storage= 2,466 cf

Plug-Flow detention time= 296.2 min calculated for 13,141 cf (96% of inflow)
 Center-of-Mass det. time= 270.9 min (1,032.9 - 762.0)

Volume	Invert	Avail.Storage	Storage Description			
#1	99.25'	2,466 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
99.25	1,970	0.0	0	0	1,970	
100.25	1,970	35.0	690	690	2,127	
100.50	1,970	25.0	123	813	2,167	
101.00	2,325	100.0	1,073	1,885	2,531	
101.25	2,325	100.0	581	2,466	2,574	

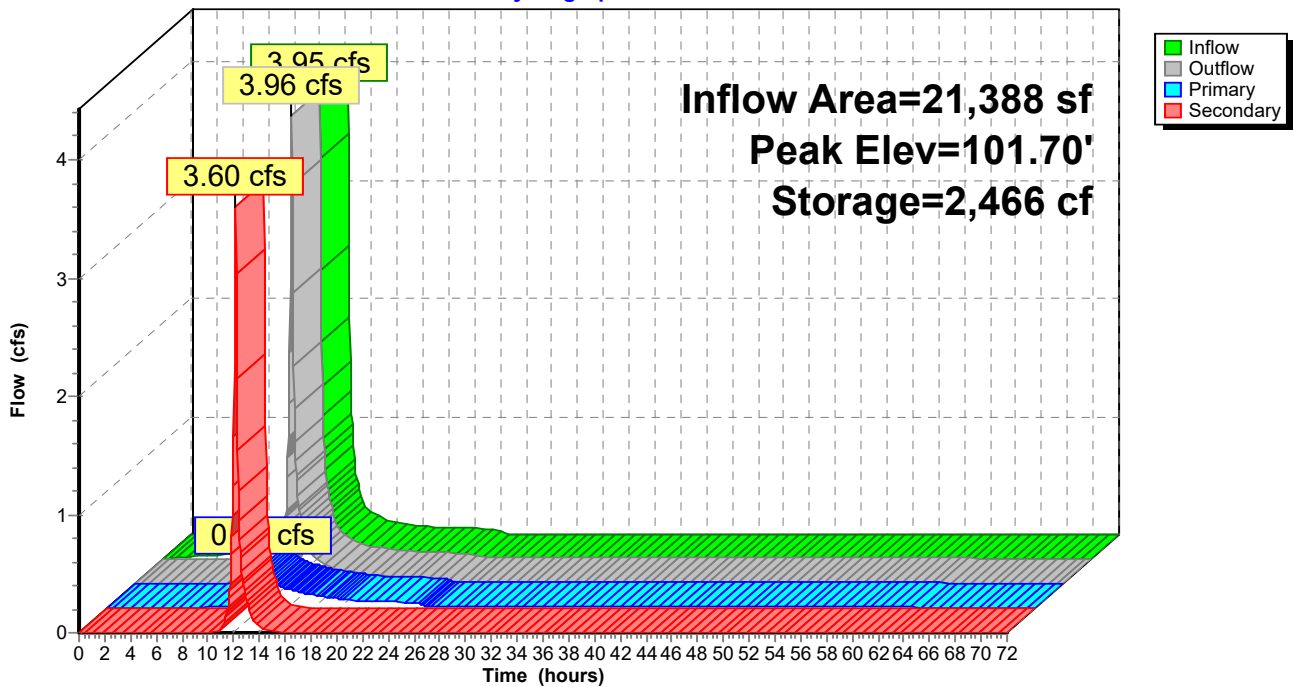
Device	Routing	Invert	Outlet Devices							
#1	Primary	99.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 99.15' / 99.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf							
#2	Device 1	99.15'	0.5" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads							
#3	Device 2	99.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 99.25' / 99.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf							
#4	Device 3	99.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads							
#5	Device 1	101.00'	4.0" Horiz. Drintech Atrium C= 0.600 Limited to weir flow at low heads							
#6	Secondary	101.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32							

Primary OutFlow Max=0.36 cfs @ 12.15 hrs HW=101.69' (Free Discharge)
 1=Culvert (Passes 0.36 cfs of 0.47 cfs potential flow)
 2=Restrictive Orifice (Orifice Controls 0.01 cfs @ 7.65 fps)
 3=4" HDPE Underdrain (Passes 0.01 cfs of 0.37 cfs potential flow)
 4=Perforations (Passes 0.01 cfs of 5.65 cfs potential flow)
 5=Draintech Atrium (Orifice Controls 0.35 cfs @ 4.01 fps)

Secondary OutFlow Max=3.59 cfs @ 12.15 hrs HW=101.69' (Free Discharge)
 6=Broad-Crested Rectangular Weir (Weir Controls 3.59 cfs @ 2.01 fps)

Pond 5P: Proposed Rain Garden 1 (South West)

Hydrograph



Summary for Pond 6P: Underground Storage w/ Porous Pavement 3

[44] Hint: Outlet device #3 is below defined storage

Inflow Area = 158,623 sf, 63.48% Impervious, Inflow Depth > 7.59" for 100-Year _Current event
 Inflow = 29.28 cfs @ 12.15 hrs, Volume= 100,354 cf
 Outflow = 2.88 cfs @ 13.11 hrs, Volume= 46,089 cf, Atten= 90%, Lag= 57.8 min
 Primary = 0.02 cfs @ 13.11 hrs, Volume= 3,954 cf
 Secondary = 2.86 cfs @ 13.11 hrs, Volume= 42,135 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 98.51' @ 13.11 hrs Surf.Area= 38,014 sf Storage= 63,177 cf

Plug-Flow detention time= 475.9 min calculated for 46,057 cf (46% of inflow)
 Center-of-Mass det. time= 287.4 min (1,123.8 - 836.4)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	4,287 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	26,630 cf	106.00'W x 288.42'L x 3.50'H Field A 107,003 cf Overall - 40,427 cf Embedded = 66,575 cf x 40.0% Voids
#3A	96.17'	40,427 cf	ADS_StormTech SC-740 +Cap x 880 Inside #2 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 880 Chambers in 22 Rows
		71,344 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	7,442	0.0	0	0
97.67	7,442	35.0	3,907	3,907
97.83	7,442	15.0	179	4,086
98.01	7,442	15.0	201	4,287

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.02 cfs @ 13.11 hrs HW=98.51' (Free Discharge)

↑ **1=Restriction Orifice** (Orifice Controls 0.02 cfs @ 12.20 fps)

↑ **2=6" HDPE Underdrain** (Passes 0.02 cfs of 0.48 cfs potential flow)

↑ **3=Perforations** (Passes 0.02 cfs of 9.09 cfs potential flow)

Secondary OutFlow Max=2.86 cfs @ 13.11 hrs HW=98.51' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** (Weir Controls 2.86 cfs @ 1.87 fps)

Pond 6P: Underground Storage w/ Porous Pavement 3 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

40 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 286.42' Row Length +12.0" End Stone x 2 = 288.42' Base Length

22 Rows x 51.0" Wide + 6.0" Spacing x 21 + 12.0" Side Stone x 2 = 106.00' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

880 Chambers x 45.9 cf = 40,427.2 cf Chamber Storage

107,002.6 cf Field - 40,427.2 cf Chambers = 66,575.4 cf Stone x 40.0% Voids = 26,630.1 cf Stone Storage

Chamber Storage + Stone Storage = 67,057.4 cf = 1.539 af

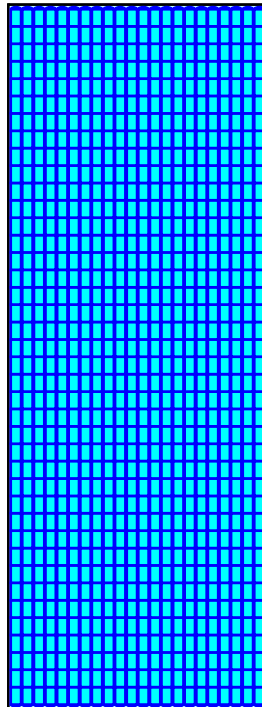
Overall Storage Efficiency = 62.7%

Overall System Size = 288.42' x 106.00' x 3.50'

880 Chambers

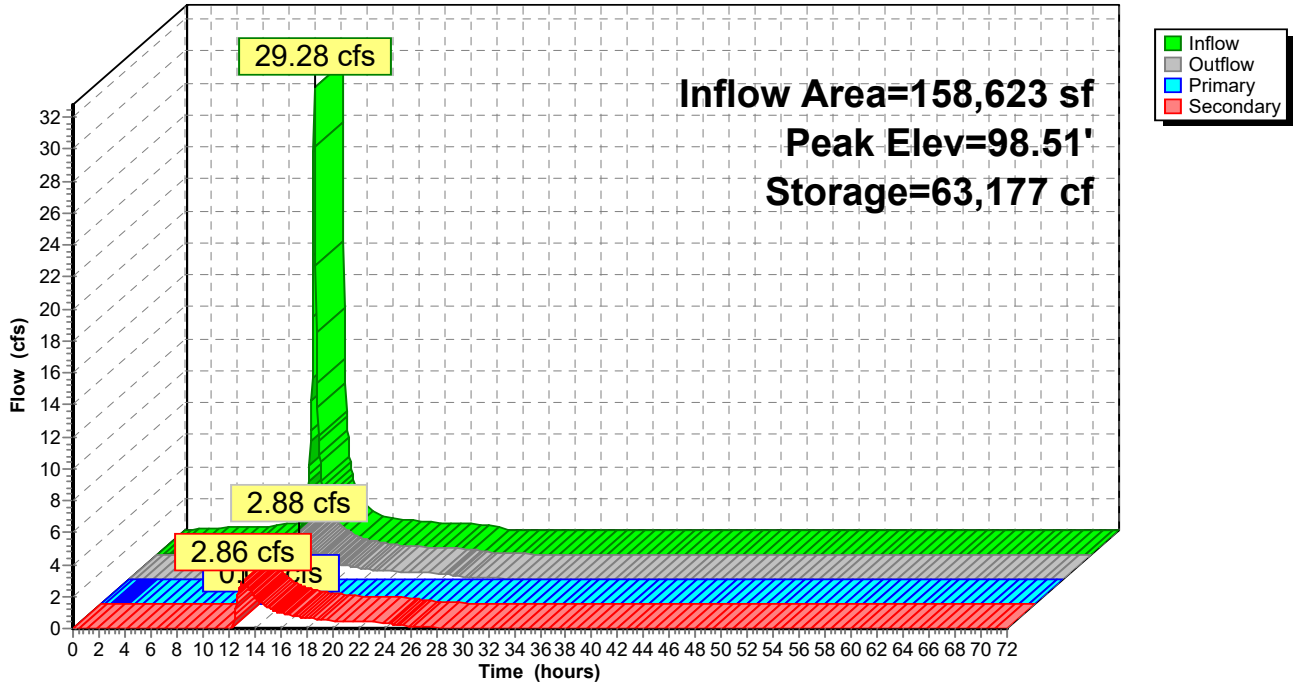
3,963.1 cy Field

2,465.8 cy Stone



Pond 6P: Underground Storage w/ Porous Pavement 3

Hydrograph



Summary for Pond 7P: Proposed Rain Garden 4 (North)

[93] Warning: Storage range exceeded by 0.49'

Inflow Area = 24,369 sf, 57.53% Impervious, Inflow Depth = 7.73" for 100-Year _Current event
 Inflow = 4.54 cfs @ 12.15 hrs, Volume= 15,693 cf
 Outflow = 4.42 cfs @ 12.15 hrs, Volume= 14,753 cf, Atten= 3%, Lag= 0.0 min
 Primary = 0.37 cfs @ 12.15 hrs, Volume= 7,590 cf
 Routed to Pond 8P : Underground Storage w/ Porous Pavement 4
 Secondary = 4.05 cfs @ 12.15 hrs, Volume= 7,163 cf
 Routed to Pond 8P : Underground Storage w/ Porous Pavement 4

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 100.74' @ 12.15 hrs Surf.Area= 2,435 sf Storage= 2,453 cf

Plug-Flow detention time= 280.2 min calculated for 14,753 cf (94% of inflow)
 Center-of-Mass det. time= 245.4 min (1,010.3 - 764.9)

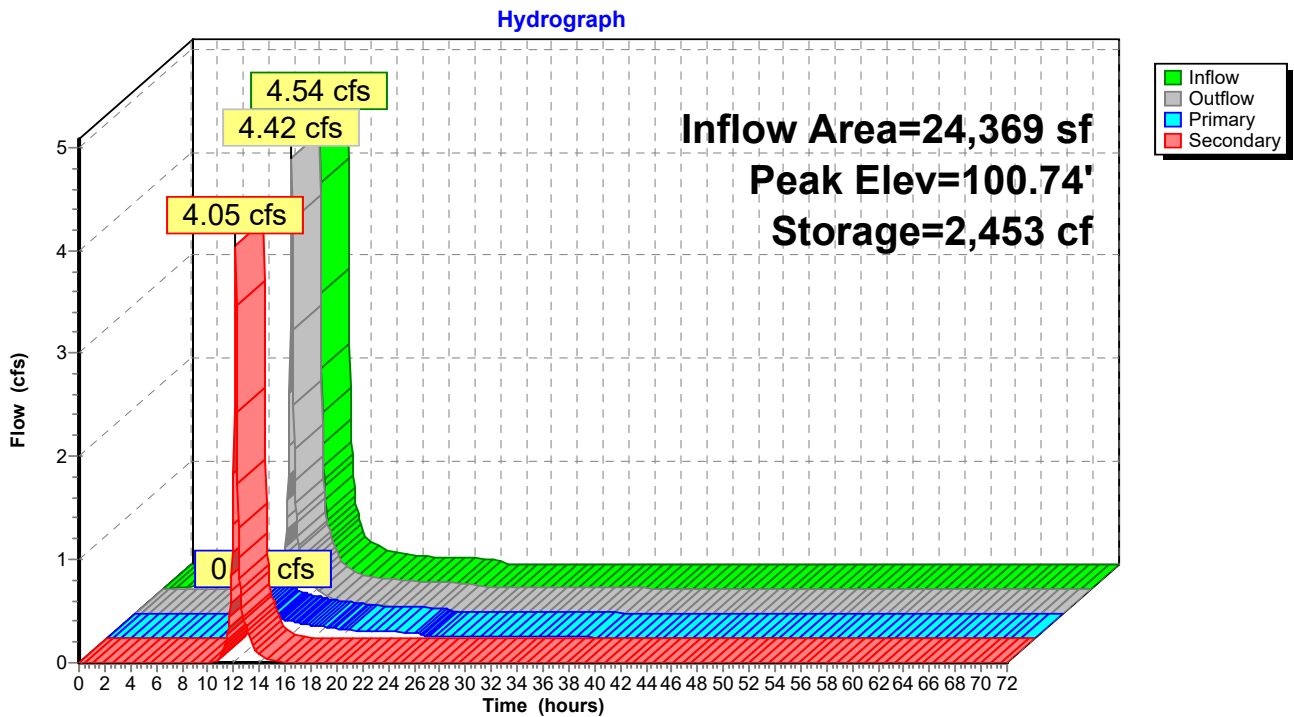
Volume	Invert	Avail.Storage	Storage Description			
#1	98.25'	2,453 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
98.25	1,870	0.0	0	0	1,870	
99.25	1,870	35.0	655	655	2,023	
99.50	1,870	25.0	117	771	2,062	
100.00	2,435	100.0	1,073	1,845	2,633	
100.25	2,435	100.0	609	2,453	2,676	

Device	Routing	Invert	Outlet Devices							
#1	Primary	98.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 98.15' / 98.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf							
#2	Device 1	98.15'	0.5" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads							
#3	Device 2	98.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 98.25' / 98.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf							
#4	Device 3	98.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads							
#5	Device 1	100.00'	4.0" Horiz. Drintech Atrium C= 0.600 Limited to weir flow at low heads							
#6	Secondary	100.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32							

Primary OutFlow Max=0.37 cfs @ 12.15 hrs HW=100.74' (Free Discharge)
 1=Culvert (Passes 0.37 cfs of 0.48 cfs potential flow)
 2=Restrictive Orifice (Orifice Controls 0.01 cfs @ 7.72 fps)
 3=4" HDPE Underdrain (Passes 0.01 cfs of 0.37 cfs potential flow)
 4=Perforations (Passes 0.01 cfs of 5.70 cfs potential flow)
 5=Draintech Atrium (Orifice Controls 0.36 cfs @ 4.15 fps)

Secondary OutFlow Max=4.02 cfs @ 12.15 hrs HW=100.74' (Free Discharge)
 6=Broad-Crested Rectangular Weir (Weir Controls 4.02 cfs @ 2.09 fps)

Pond 7P: Proposed Rain Garden 4 (North)



Summary for Pond 8P: Underground Storage w/ Porous Pavement 4

[44] Hint: Outlet device #3 is below defined storage
 [79] Warning: Submerged Pond 7P Primary device # 1 INLET by 0.25'

Inflow Area = 97,166 sf, 80.96% Impervious, Inflow Depth > 8.11" for 100-Year _Current event
 Inflow = 18.59 cfs @ 12.15 hrs, Volume= 65,687 cf
 Outflow = 2.00 cfs @ 13.01 hrs, Volume= 28,773 cf, Atten= 89%, Lag= 51.4 min
 Primary = 0.02 cfs @ 13.01 hrs, Volume= 3,954 cf
 Secondary = 1.99 cfs @ 13.01 hrs, Volume= 24,818 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 98.40' @ 13.01 hrs Surf.Area= 33,612 sf Storage= 42,317 cf

Plug-Flow detention time= 534.8 min calculated for 28,753 cf (44% of inflow)
 Center-of-Mass det. time= 350.1 min (1,157.2 - 807.2)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	9,112 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	15,592 cf	63.25'W x 281.30'L x 3.50'H Field A 62,272 cf Overall - 23,292 cf Embedded = 38,980 cf x 40.0% Voids
#3A	96.17'	23,292 cf	ADS_StormTech SC-740 +Cap x 507 Inside #2 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 507 Chambers in 13 Rows
		47,996 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	15,820	0.0	0	0
97.67	15,820	35.0	8,306	8,306
97.83	15,820	15.0	380	8,685
98.01	15,820	15.0	427	9,112

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.02 cfs @ 13.01 hrs HW=98.40' (Free Discharge)

↑ **1=Restriction Orifice** (Orifice Controls 0.02 cfs @ 12.09 fps)

↑ **2=6" HDPE Underdrain** (Passes 0.02 cfs of 0.48 cfs potential flow)

↑ **3=Perforations** (Passes 0.02 cfs of 9.01 cfs potential flow)

Secondary OutFlow Max=1.98 cfs @ 13.01 hrs HW=98.40' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** (Weir Controls 1.98 cfs @ 1.65 fps)

Pond 8P: Underground Storage w/ Porous Pavement 4 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

39 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 279.30' Row Length +12.0" End Stone x 2 =
281.30' Base Length

13 Rows x 51.0" Wide + 6.0" Spacing x 12 + 12.0" Side Stone x 2 = 63.25' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

507 Chambers x 45.9 cf = 23,291.6 cf Chamber Storage

62,272.0 cf Field - 23,291.6 cf Chambers = 38,980.5 cf Stone x 40.0% Voids = 15,592.2 cf Stone Storage

Chamber Storage + Stone Storage = 38,883.8 cf = 0.893 af

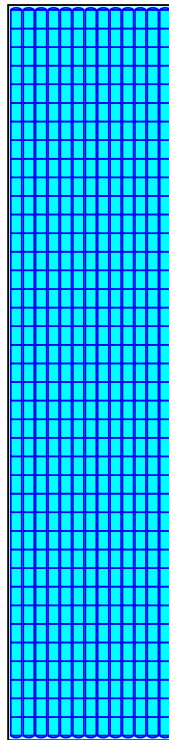
Overall Storage Efficiency = 62.4%

Overall System Size = 281.30' x 63.25' x 3.50'

507 Chambers

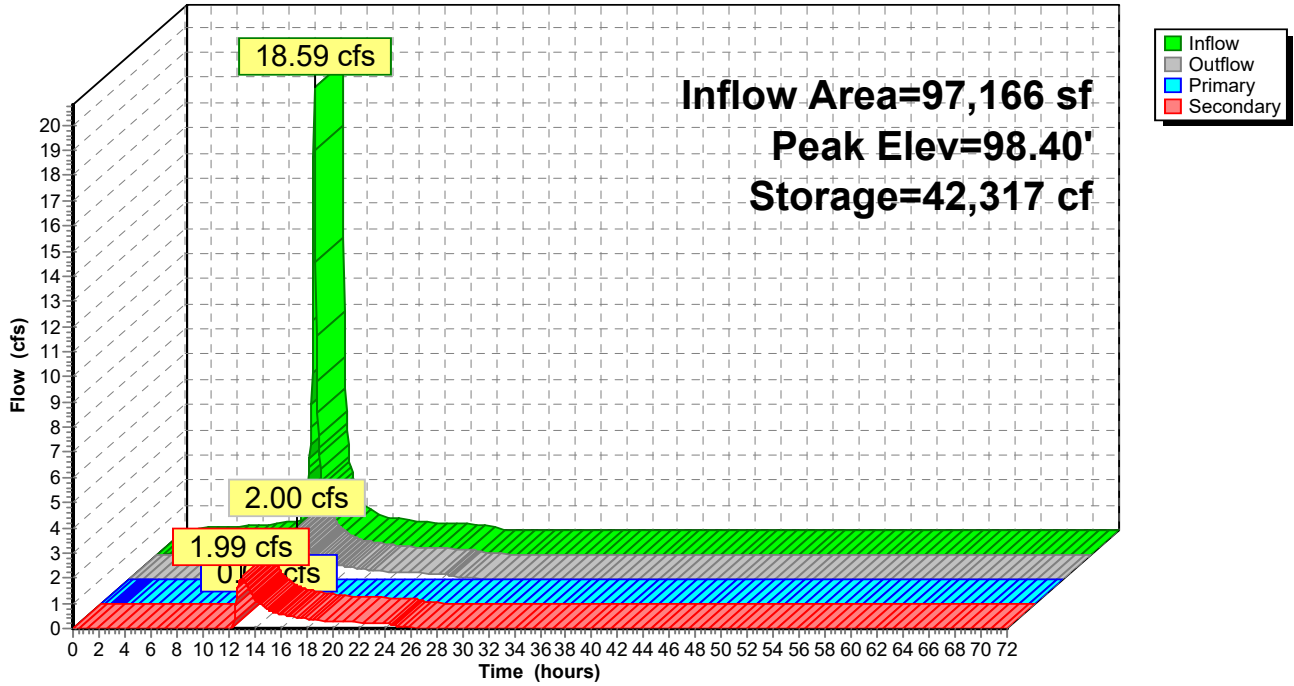
2,306.4 cy Field

1,443.7 cy Stone



Pond 8P: Underground Storage w/ Porous Pavement 4

Hydrograph



Summary for Pond 9P: Proposed Rain Garden 3 (North East)

[93] Warning: Storage range exceeded by 0.38'
 [88] Warning: Qout>Qin may require smaller dt or Finer Routing
 [62] Hint: Exceeded Reach 2R OUTLET depth by 0.17' @ 12.20 hrs

Inflow Area = 19,898 sf, 48.83% Impervious, Inflow Depth = 7.53" for 100-Year _Current event
 Inflow = 3.27 cfs @ 12.19 hrs, Volume= 12,481 cf
 Outflow = 3.33 cfs @ 12.20 hrs, Volume= 12,339 cf, Atten= 0%, Lag= 0.1 min
 Primary = 0.34 cfs @ 12.20 hrs, Volume= 6,695 cf
 Routed to Pond 10P : Underground Storage w/ Porous Pavement 5
 Secondary = 2.98 cfs @ 12.20 hrs, Volume= 5,645 cf
 Routed to Pond 10P : Underground Storage w/ Porous Pavement 5

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 100.63' @ 12.20 hrs Surf.Area= 1,670 sf Storage= 1,751 cf

Plug-Flow detention time= 243.7 min calculated for 12,330 cf (99% of inflow)
 Center-of-Mass det. time= 238.1 min (1,011.7 - 773.6)

Volume	Invert	Avail.Storage	Storage Description			
#1	98.25'	1,751 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
98.25	1,385	0.0	0	0	1,385	
99.25	1,385	35.0	485	485	1,517	
99.50	1,385	25.0	87	571	1,550	
100.00	1,670	100.0	763	1,334	1,843	
100.25	1,670	100.0	418	1,751	1,879	

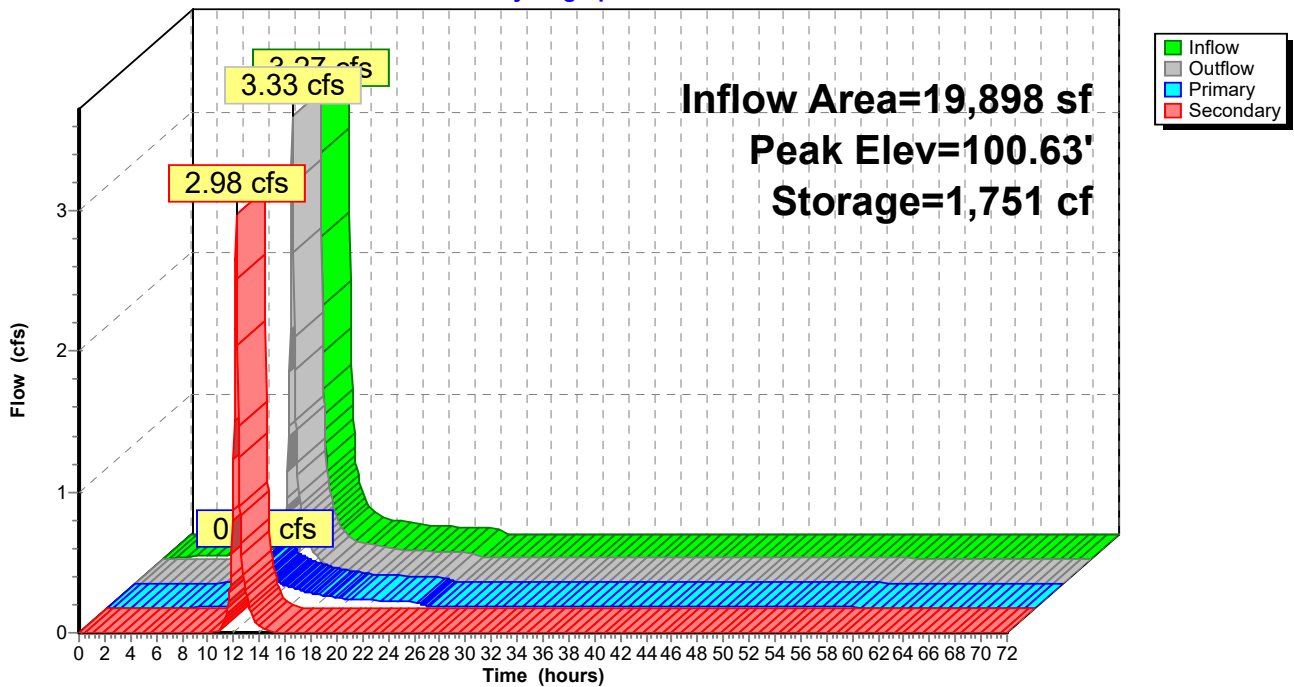
Device	Routing	Invert	Outlet Devices	
#1	Primary	98.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 98.15' / 98.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#2	Device 1	98.15'	0.5" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads	
#3	Device 2	98.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 98.25' / 98.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf	
#4	Device 3	98.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads	
#5	Device 1	100.00'	4.0" Horiz. Drintech Atrium C= 0.600 Limited to weir flow at low heads	
#6	Secondary	100.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32	

Primary OutFlow Max=0.34 cfs @ 12.20 hrs HW=100.62' (Free Discharge)
 1=Culvert (Passes 0.34 cfs of 0.46 cfs potential flow)
 2=Restrictive Orifice (Orifice Controls 0.01 cfs @ 7.54 fps)
 3=4" HDPE Underdrain (Passes 0.01 cfs of 0.36 cfs potential flow)
 4=Perforations (Passes 0.01 cfs of 5.56 cfs potential flow)
 5=Draintech Atrium (Orifice Controls 0.33 cfs @ 3.80 fps)

Secondary OutFlow Max=2.95 cfs @ 12.20 hrs HW=100.62' (Free Discharge)
 6=Broad-Crested Rectangular Weir (Weir Controls 2.95 cfs @ 1.89 fps)

Pond 9P: Proposed Rain Garden 3 (North East)

Hydrograph



Summary for Pond 10P: Underground Storage w/ Porous Pavement 5

[44] Hint: Outlet device #3 is below defined storage
 [79] Warning: Submerged Pond 9P Primary device # 1 INLET by 0.32'

Inflow Area = 78,061 sf, 72.85% Impervious, Inflow Depth > 7.99" for 100-Year _Current event
 Inflow = 13.35 cfs @ 12.19 hrs, Volume= 51,982 cf
 Outflow = 2.51 cfs @ 12.70 hrs, Volume= 25,292 cf, Atten= 81%, Lag= 30.9 min
 Primary = 0.02 cfs @ 12.70 hrs, Volume= 3,948 cf
 Secondary = 2.49 cfs @ 12.70 hrs, Volume= 21,343 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 98.47' @ 12.70 hrs Surf.Area= 27,852 sf Storage= 31,164 cf

Plug-Flow detention time= 514.4 min calculated for 25,292 cf (49% of inflow)
 Center-of-Mass det. time= 337.5 min (1,153.7 - 816.2)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	9,426 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	10,110 cf	63.25'W x 181.62'L x 3.50'H Field A 40,205 cf Overall - 14,931 cf Embedded = 25,275 cf x 40.0% Voids
#3A	96.17'	14,931 cf	ADS_StormTech SC-740 +Cap x 325 Inside #2 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 325 Chambers in 13 Rows
		34,467 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	16,365	0.0	0	0
97.67	16,365	35.0	8,592	8,592
97.83	16,365	15.0	393	8,984
98.01	16,365	15.0	442	9,426

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.02 cfs @ 12.70 hrs HW=98.47' (Free Discharge)

↑ **1=Restriction Orifice** (Orifice Controls 0.02 cfs @ 12.16 fps)

↑ **2=6" HDPE Underdrain** (Passes 0.02 cfs of 0.48 cfs potential flow)

↑ **3=Perforations** (Passes 0.02 cfs of 9.06 cfs potential flow)

Secondary OutFlow Max=2.49 cfs @ 12.70 hrs HW=98.47' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** (Weir Controls 2.49 cfs @ 1.78 fps)

Pond 10P: Underground Storage w/ Porous Pavement 5 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

25 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 179.62' Row Length +12.0" End Stone x 2 = 181.62' Base Length

13 Rows x 51.0" Wide + 6.0" Spacing x 12 + 12.0" Side Stone x 2 = 63.25' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

325 Chambers x 45.9 cf = 14,930.5 cf Chamber Storage

40,205.4 cf Field - 14,930.5 cf Chambers = 25,274.9 cf Stone x 40.0% Voids = 10,110.0 cf Stone Storage

Chamber Storage + Stone Storage = 25,040.5 cf = 0.575 af

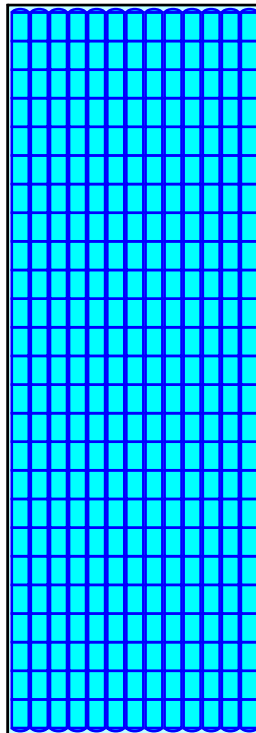
Overall Storage Efficiency = 62.3%

Overall System Size = 181.62' x 63.25' x 3.50'

325 Chambers

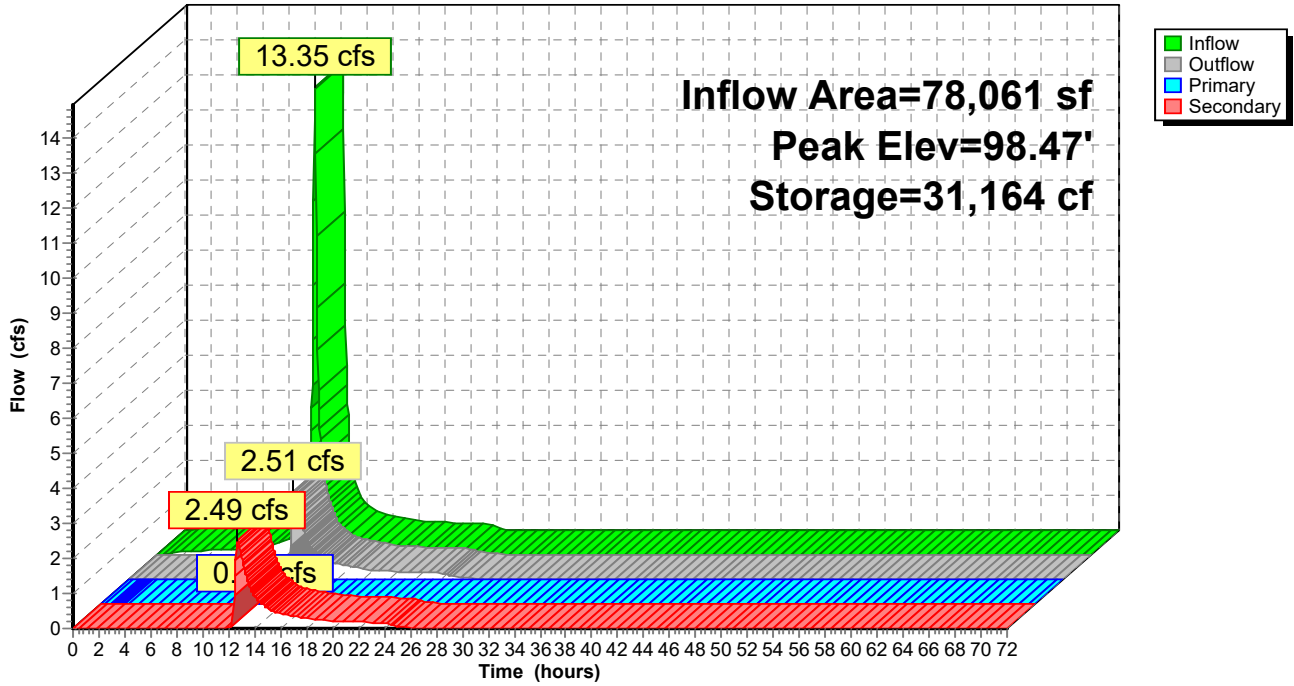
1,489.1 cy Field

936.1 cy Stone



Pond 10P: Underground Storage w/ Porous Pavement 5

Hydrograph



Summary for Pond 11P: Proposed Rain Garden 2 (East)

[93] Warning: Storage range exceeded by 0.55'
 [88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 32,033 sf, 45.19% Impervious, Inflow Depth = 7.44" for 100-Year _Current event
 Inflow = 4.92 cfs @ 12.22 hrs, Volume= 19,868 cf
 Outflow = 4.93 cfs @ 12.21 hrs, Volume= 19,632 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.40 cfs @ 12.21 hrs, Volume= 9,603 cf
 Routed to Pond 12P : Underground Storage w/ Porous Pavement 6
 Secondary = 4.53 cfs @ 12.21 hrs, Volume= 10,029 cf
 Routed to Pond 12P : Underground Storage w/ Porous Pavement 6

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 100.80' @ 12.21 hrs Surf.Area= 3,045 sf Storage= 3,267 cf

Plug-Flow detention time= 287.3 min calculated for 19,619 cf (99% of inflow)
 Center-of-Mass det. time= 281.3 min (1,059.0 - 777.7)

Volume	Invert	Avail.Storage	Storage Description			
#1	98.25'	3,267 cf	Custom Stage Data (Conic) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
98.25	2,635	0.0	0	0	2,635	
99.25	2,635	35.0	922	922	2,817	
99.50	2,635	25.0	165	1,087	2,862	
100.00	3,045	100.0	1,419	2,506	3,283	
100.25	3,045	100.0	761	3,267	3,332	

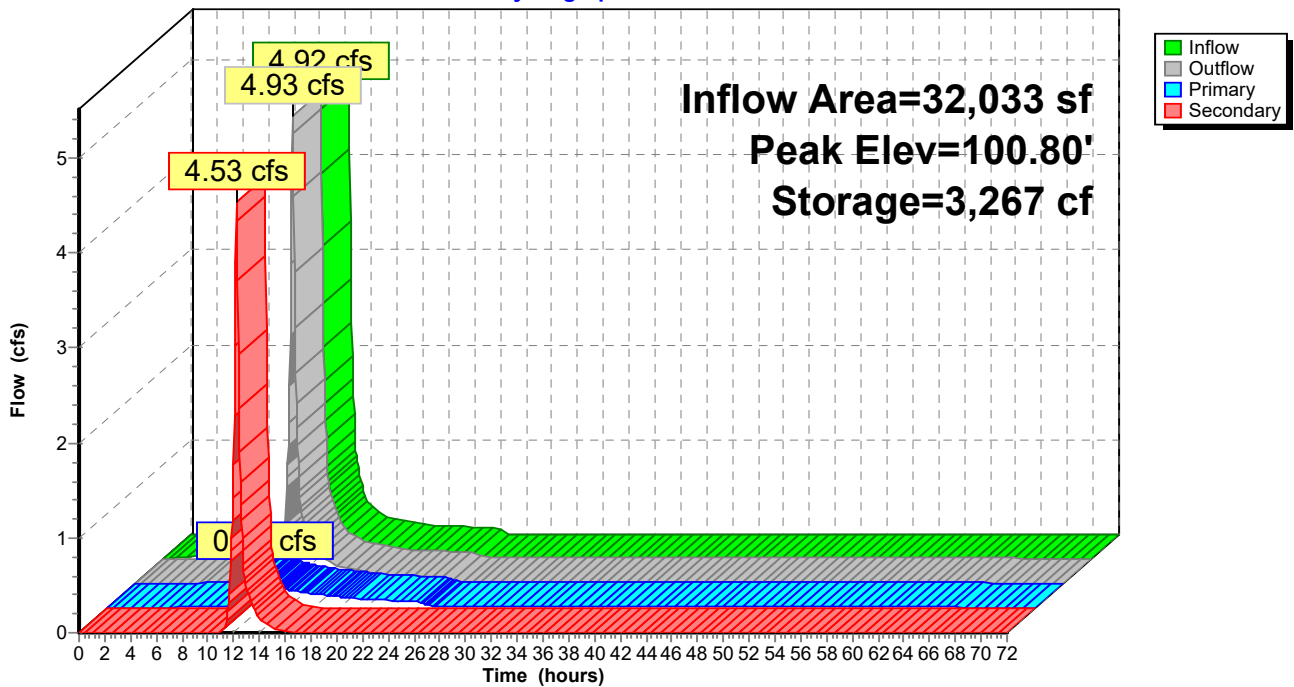
Device	Routing	Invert	Outlet Devices
#1	Primary	98.15'	4.0" Round Culvert L= 11.0' Ke= 0.500 Inlet / Outlet Invert= 98.15' / 98.09' S= 0.0055 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf
#2	Device 1	98.15'	0.7" Vert. Restrictive Orifice C= 0.600 Limited to weir flow at low heads
#3	Device 2	98.25'	4.0" Round 4" HDPE Underdrain L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 98.25' / 98.15' S= 0.0050 '/ Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.09 sf
#4	Device 3	98.25'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#5	Device 1	100.00'	4.0" Horiz. Drintech Atrium C= 0.600 Limited to weir flow at low heads
#6	Secondary	100.10'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.39 cfs @ 12.21 hrs HW=100.79' (Free Discharge)
 1=Culvert (Passes 0.39 cfs of 0.48 cfs potential flow)
 2=Restrictive Orifice (Orifice Controls 0.02 cfs @ 7.78 fps)
 3=4" HDPE Underdrain (Passes 0.02 cfs of 0.38 cfs potential flow)
 4=Perforations (Passes 0.02 cfs of 5.75 cfs potential flow)
 5=Draintech Atrium (Orifice Controls 0.37 cfs @ 4.27 fps)

Secondary OutFlow Max=4.45 cfs @ 12.21 hrs HW=100.79' (Free Discharge)
 6=Broad-Crested Rectangular Weir (Weir Controls 4.45 cfs @ 2.16 fps)

Pond 11P: Proposed Rain Garden 2 (East)

Hydrograph



Summary for Pond 12P: Underground Storage w/ Porous Pavement 6

[44] Hint: Outlet device #3 is below defined storage
 [79] Warning: Submerged Pond 11P Primary device # 1 INLET by 0.01'

Inflow Area = 32,033 sf, 45.19% Impervious, Inflow Depth > 7.35" for 100-Year _Current event
 Inflow = 4.93 cfs @ 12.21 hrs, Volume= 19,632 cf
 Outflow = 0.52 cfs @ 13.45 hrs, Volume= 9,983 cf, Atten= 90%, Lag= 74.1 min
 Primary = 0.02 cfs @ 13.45 hrs, Volume= 3,755 cf
 Secondary = 0.50 cfs @ 13.45 hrs, Volume= 6,228 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 98.16' @ 13.45 hrs Surf.Area= 8,364 sf Storage= 10,586 cf

Plug-Flow detention time= 797.6 min calculated for 9,976 cf (51% of inflow)
 Center-of-Mass det. time= 461.0 min (1,520.0 - 1,059.0)

Volume	Invert	Avail.Storage	Storage Description
#1	96.17'	1,866 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2A	95.67'	4,603 cf	25.25'W x 202.98'L x 3.50'H Field A 17,938 cf Overall - 6,432 cf Embedded = 11,506 cf x 40.0% Voids
#3A	96.17'	6,432 cf	ADS_StormTech SC-740 +Cap x 140 Inside #2 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 140 Chambers in 5 Rows
		12,900 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
96.17	3,239	0.0	0	0
97.67	3,239	35.0	1,700	1,700
97.83	3,239	15.0	78	1,778
98.01	3,239	15.0	87	1,866

Device	Routing	Invert	Outlet Devices
#1	Primary	92.07'	0.5" Vert. Restriction Orifice C= 0.600 Limited to weir flow at low heads
#2	Device 1	92.17'	6.0" Round 6" HDPE Underdrain L= 359.0' Ke= 0.500 Inlet / Outlet Invert= 92.17' / 90.37' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.20 sf
#3	Device 2	92.17'	0.9" x 0.1" Horiz. Perforations X 400.00 columns X 3 rows C= 0.600 Limited to weir flow at low heads
#4	Secondary	98.00'	3.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.02 cfs @ 13.45 hrs HW=98.16' (Free Discharge)

↑ **1=Restriction Orifice** (Orifice Controls 0.02 cfs @ 11.86 fps)

↑ **2=6" HDPE Underdrain** (Passes 0.02 cfs of 0.47 cfs potential flow)

↑ **3=Perforations** (Passes 0.02 cfs of 8.84 cfs potential flow)

Secondary OutFlow Max=0.50 cfs @ 13.45 hrs HW=98.16' (Free Discharge)

↑ **4=Broad-Crested Rectangular Weir** (Weir Controls 0.50 cfs @ 1.02 fps)

Pond 12P: Underground Storage w/ Porous Pavement 6 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

28 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 200.98' Row Length +12.0" End Stone x 2 = 202.98' Base Length

5 Rows x 51.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.25' Base Width

6.0" Stone Base + 30.0" Chamber Height + 6.0" Stone Cover = 3.50' Field Height

140 Chambers x 45.9 cf = 6,431.6 cf Chamber Storage

17,938.1 cf Field - 6,431.6 cf Chambers = 11,506.5 cf Stone x 40.0% Voids = 4,602.6 cf Stone Storage

Chamber Storage + Stone Storage = 11,034.2 cf = 0.253 af

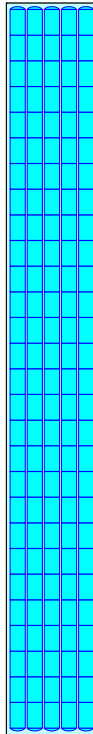
Overall Storage Efficiency = 61.5%

Overall System Size = 202.98' x 25.25' x 3.50'

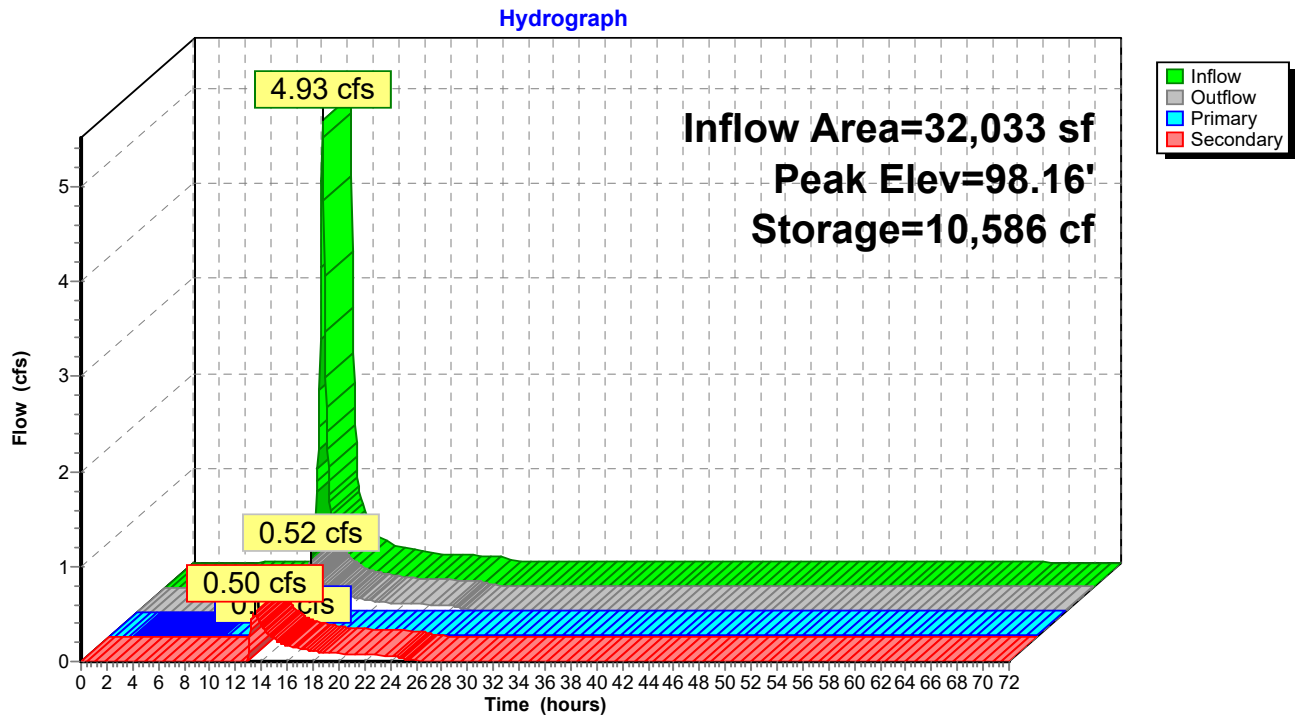
140 Chambers

664.4 cy Field

426.2 cy Stone



Pond 12P: Underground Storage w/ Porous Pavement 6



Summary for Link 1L: Offsite Flows

Inflow Area = 927,363 sf, 3.35% Impervious, Inflow Depth = 5.86" for 100-Year _Current event
Inflow = 88.88 cfs @ 12.32 hrs, Volume= 453,197 cf
Primary = 88.88 cfs @ 12.32 hrs, Volume= 453,197 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 1L: Offsite Flows

Hydrograph

