DRAINAGE REPORT

Prepared for

AMERICAN STORAGE CENTERS, LLC
551 WESTCOTT ROAD (SR 607)
KILLINGLY, CT

December 2020
Revised to January 2022

Prepared for

Proposed Mini-Storage Facility

Prepared by

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Civil Engineering & Surveying

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Introduction

American Storage Centers, LLC has submitted a proposal to the Town of Killingly to construct 6 new buildings and utilize an existing 12,000 square foot building for leasable storage. The property originally housed ñBuy-Riteò lumber and hardware and has been used more recently as an indoor sports center. The majority of the site has been previously disturbed but there is not currently any formalized drainage on the property; all stormwater runoff sheet flows essentially to the north. The re-developed site will flow in essentially the same direction.

Summary

According to the USDA-SCS Soil Survey, the site consists substantially of Merrimac fine sandy loams, with a lesser portion of Woodbridge soils. According to the NRCS Web Soil Survey, these soils are associated with hydrologic soil groups A & C. Test pits and a percolation test excavated in the area of a proposed stormwater retention/infiltration basin indicate that the soil survey is accurate. The proposed drainage design will maintain the existing drainage patterns for post development conditions but curbing, catch basins with drywells and 2 stormwater retention/infiltration basins will be constructed. Both basins are capable of storing and infiltrating up to a 10-year design storm and provide significant reductions for the 25-year thru 100-year storms. Overflow from basin 1 for the 50-year and 100-year storms will sheet flow north across a paved parking area toward basin 2. Overflow from basin 2 for the 25-year through 50-years storms will flow off site to the north as all drainage currently does. Both basins will be constructed with stand pipes to provide a mechanism for infiltration during conditions of frozen ground.

The calculations utilized HydroCAD® Stormwater Modeling System, a computer model, to analyze pre-and post-development drainage conditions, and to aid in the design of the stormwater detention system. The model used the Soil Conservation Service TR-20 method with a Type III 24-hour rainfall to calculate the runoff. The 2 through 100-year frequency storms were analyzed to evaluate peak runoff for pre-and post-construction conditions. Table 1 summarizes our findings for pre and post construction flows toward the adjacent property:

Table 1. Summary of Existing & Proposed Peak Flows to Adjacent Property

Design Storm	Depth (in)	Existing peak	Proposed peak	Difference
2-Year	3.86	5.91 CFS	0.0 CFS	-5.91 CFS
5-Year	4.32	8.79 CFS	0.0 CFS	-8.79 CFS
10-Year	5.09	11.25 CFS	0.0 CFS	-11.25 CFS
25-Year	6.16	14.73 CFS	0.00 CFS	-14.73 CFS
50-Year	6.95	17.31 CFS	2.26 CFS	-15.05 CFS
100-Year	7.80	20.10 CFS	7.16 CFS	-12.94 CFS

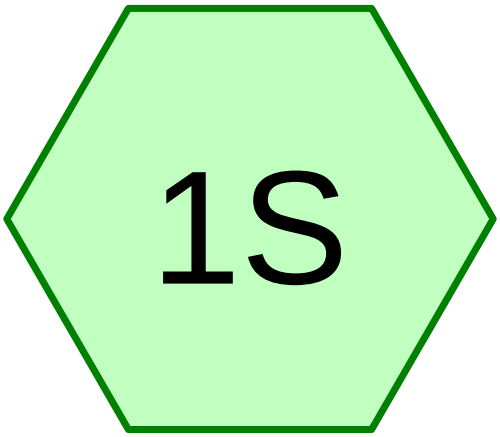
The reductions in peak runoff rates demonstrated for all design storms are the result of intercepting all runoff and discharging it to the proposed stormwater basins. Based upon test pits excavated across the basin limits, it was determined that the basin will be excavated into well drained sands and gravels. Based upon the NRCS Web Soil Survey, these soils exhibit a saturated hydraulic conductivity of 112 micrometers per second when averaged over the first 8ô

of depth. This converts to approximately 16 inches per hour and although percolation testing cannot be directly correlated with infiltration, the measured percolation rate of 2.1 minutes per inch translates to nearly 30 inches per hour. For the purposes of the calculations, we have assumed a conservative rate of 8 inches per hour.

It should also be noted that monitoring of groundwater levels was conducted in 2017 in an attempt to determine if there was a hydraulic gradient on the site to design a much larger septic system. The PVC pipes were installed at a depth of 8ô and no water was detected throughout the monitoring season.

HYDROCAD CALCULATIONS

EXISTING CONDITIONS



Drainage Area 1

Subcat Reach Pond Link

Routing Diagram for Existing Conditions
Prepared by Killingly Engineering Associates, LLC, Printed 1/14/2022

Summary for Subcatchment 1S: Drainage Area 1

Runoff = 5.91 cfs @ 12.17 hrs, Volume= 0.483 af, Depth> 1.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.39"

	Area (sf)	CN	Description
	17,540	73	Woods, Fair, HSG C
	15,400	36	Woods, Fair, HSG A
*	59,860	98	Impervious
*	14,930	89	Gravel Surface, HSG C
*	60,955	76	Gravel Surface, HSG A
	168,685	81	Weighted Average
	108,825		64.51% Pervious Area
	59,860		35.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	488	0.0200	0.66		**Lag/CN Method, Tc 1**

Summary for Subcatchment 1S: Drainage Area 1

Runoff = 8.79 cfs @ 12.17 hrs, Volume= 0.719 af, Depth> 2.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-year Rainfall=4.32"

	Area (sf)	CN	Description
	17,540	73	Woods, Fair, HSG C
	15,400	36	Woods, Fair, HSG A
*	59,860	98	Impervious
*	14,930	89	Gravel Surface, HSG C
*	60,955	76	Gravel Surface, HSG A
	168,685	81	Weighted Average
	108,825		64.51% Pervious Area
	59,860		35.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	488	0.0200	0.66		**Lag/CN Method, Tc 1**

Summary for Subcatchment 1S: Drainage Area 1

Runoff = 11.25 cfs @ 12.17 hrs, Volume= 0.924 af, Depth> 2.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.09"

	Area (sf)	CN	Description
	17,540	73	Woods, Fair, HSG C
	15,400	36	Woods, Fair, HSG A
*	59,860	98	Impervious
*	14,930	89	Gravel Surface, HSG C
*	60,955	76	Gravel Surface, HSG A
	168,685	81	Weighted Average
	108,825		64.51% Pervious Area
	59,860		35.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	488	0.0200	0.66		**Lag/CN Method, Tc 1**

Summary for Subcatchment 1S: Drainage Area 1

Runoff = 14.73 cfs @ 12.17 hrs, Volume= 1.219 af, Depth> 3.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.16"

	Area (sf)	CN	Description
	17,540	73	Woods, Fair, HSG C
	15,400	36	Woods, Fair, HSG A
*	59,860	98	Impervious
*	14,930	89	Gravel Surface, HSG C
*	60,955	76	Gravel Surface, HSG A
	168,685	81	Weighted Average
	108,825		64.51% Pervious Area
	59,860		35.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	488	0.0200	0.66		**Lag/CN Method, Tc 1**

Summary for Subcatchment 1S: Drainage Area 1

Runoff = 17.31 cfs @ 12.17 hrs, Volume= 1.442 af, Depth> 4.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=6.95"

	Area (sf)	CN	Description
	17,540	73	Woods, Fair, HSG C
	15,400	36	Woods, Fair, HSG A
*	59,860	98	Impervious
*	14,930	89	Gravel Surface, HSG C
*	60,955	76	Gravel Surface, HSG A
	168,685	81	Weighted Average
	108,825		64.51% Pervious Area
	59,860		35.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	488	0.0200	0.66		**Lag/CN Method, Tc 1**

Summary for Subcatchment 1S: Drainage Area 1

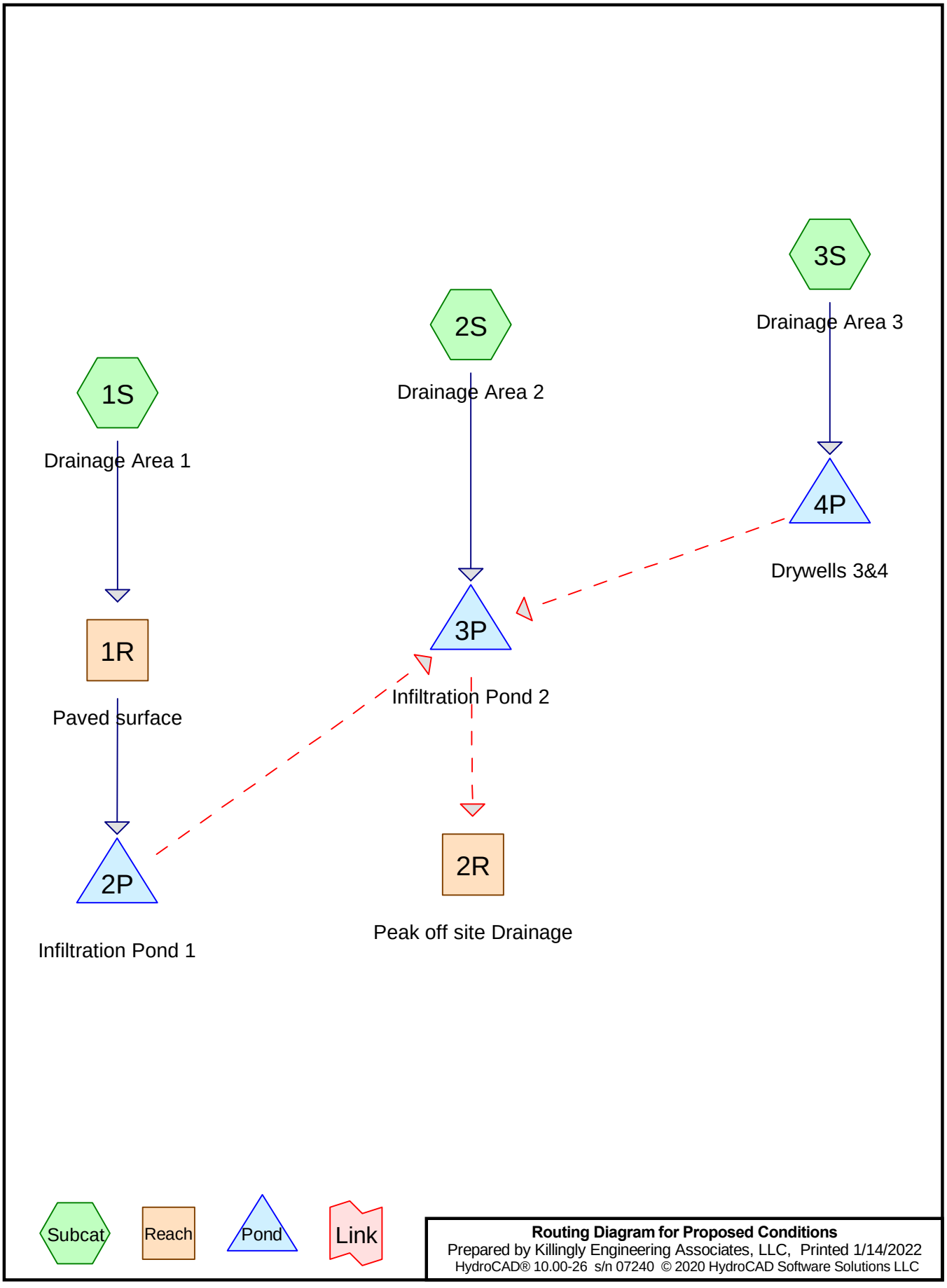
Runoff = 20.10 cfs @ 12.17 hrs, Volume= 1.685 af, Depth> 5.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.80"

	Area (sf)	CN	Description
	17,540	73	Woods, Fair, HSG C
	15,400	36	Woods, Fair, HSG A
*	59,860	98	Impervious
*	14,930	89	Gravel Surface, HSG C
*	60,955	76	Gravel Surface, HSG A
	168,685	81	Weighted Average
	108,825		64.51% Pervious Area
	59,860		35.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	488	0.0200	0.66		**Lag/CN Method, Tc 1**

PROPOSED CONDITIONS



Routing Diagram for Proposed Conditions
Prepared by Killingly Engineering Associates, LLC, Printed 1/14/2022

Summary for Subcatchment 1S: Drainage Area 1

Runoff = 0.43 cfs @ 12.20 hrs, Volume= 0.038 af, Depth> 0.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.39"

	Area (sf)	CN	Description
*	11,762	98	Impervious
	9,067	39	>75% Grass cover, Good, HSG A
	20,829	72	Weighted Average
	9,067		43.53% Pervious Area
	11,762		56.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	350	0.0170	0.44		**Lag/CN Method, Tc-1**

Summary for Subcatchment 2S: Drainage Area 2

Runoff = 2.48 cfs @ 12.30 hrs, Volume= 0.249 af, Depth> 1.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.39"

	Area (sf)	CN	Description
*	57,518	98	Paved parking, roof
*	15,183	76	Crushed stone surface, HSG A
	27,760	39	>75% Grass cover, Good, HSG A
	100,461	78	Weighted Average
	42,943		42.75% Pervious Area
	57,518		57.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.9	550	0.0100	0.44		**Lag/CN Method, Tc-2**

Summary for Subcatchment 3S: Drainage Area 3

Runoff = 1.98 cfs @ 12.17 hrs, Volume= 0.162 af, Depth> 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.39"

	Area (sf)	CN	Description
*	27,767	98	Paved & roof
*	14,989	76	Crushed stone
*	4,639	39	>75% Grass cover/Landscape, Good, HSG A
	47,395	85	Weighted Average
	19,628		41.41% Pervious Area
	27,767		58.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	440	0.0130	0.60		**Lag/CN Method, Tc-3**

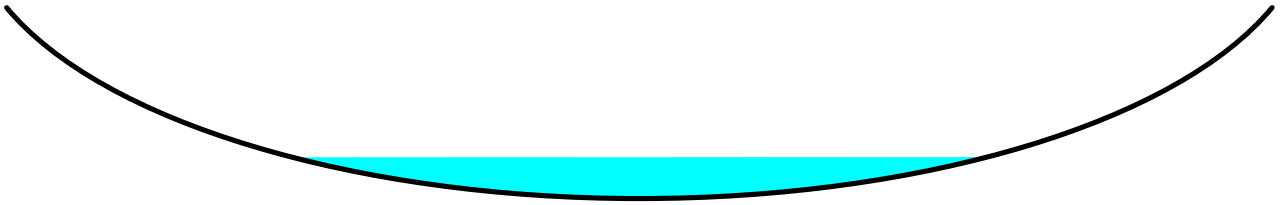
Summary for Reach 1R: Paved surface

Inflow Area = 0.478 ac, 56.47% Impervious, Inflow Depth > 0.95" for 2-year event
Inflow = 0.43 cfs @ 12.20 hrs, Volume= 0.038 af
Outflow = 0.41 cfs @ 12.31 hrs, Volume= 0.038 af, Atten= 6%, Lag= 6.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.84 fps, Min. Travel Time= 3.7 min
Avg. Velocity = 0.39 fps, Avg. Travel Time= 7.9 min

Peak Storage= 90 cf @ 12.25 hrs
Average Depth at Peak Storage= 0.07'
Bank-Full Depth= 0.30' Flow Area= 4.8 sf, Capacity= 11.21 cfs

24.00' x 0.30' deep Parabolic Channel, n= 0.016 Asphalt, rough
Length= 185.0' Slope= 0.0054 '/'
Inlet Invert= 385.00', Outlet Invert= 384.00'



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Summary for Reach 2R: Peak off site Drainage

Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 2P: Infiltration Pond 1

Inflow Area = 0.478 ac, 56.47% Impervious, Inflow Depth > 0.95" for 2-year event
Inflow = 0.41 cfs @ 12.31 hrs, Volume= 0.038 af
Outflow = 0.23 cfs @ 12.20 hrs, Volume= 0.038 af, Atten= 43%, Lag= 0.0 min
Discarded = 0.23 cfs @ 12.20 hrs, Volume= 0.038 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 380.35' @ 12.61 hrs Surf.Area= 1,250 sf Storage= 177 cf

Plug-Flow detention time= 4.6 min calculated for 0.038 af (100% of inflow)
Center-of-Mass det. time= 4.3 min (837.4 - 833.1)

Volume	Invert	Avail.Storage	Storage Description
#1	380.00'	1,450 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3,625 cf Overall x 40.0% Voids
#2	383.00'	1,369 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		2,819 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
380.00	1,250	0	0
382.90	1,250	3,625	3,625

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
383.00	510	0	0
384.00	1,050	780	780
384.50	1,305	589	1,369

Device	Routing	Invert	Outlet Devices
#1	Discarded	380.00'	**8.000 in/hr Exfiltration over Surface area**
#2	Secondary	384.00'	**10.0' long x 4.0' 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 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Discarded OutFlow Max=0.23 cfs @ 12.20 hrs HW=380.05' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.23 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=380.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 3P: Infiltration Pond 2

Inflow Area = 2.306 ac, 57.25% Impervious, Inflow Depth > 2.06" for 2-year event
Inflow = 4.15 cfs @ 12.22 hrs, Volume= 0.395 af
Outflow = 1.45 cfs @ 12.72 hrs, Volume= 0.395 af, Atten= 65%, Lag= 30.3 min
Discarded = 1.45 cfs @ 12.72 hrs, Volume= 0.395 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 381.48' @ 12.72 hrs Surf.Area= 7,834 sf Storage= 5,299 cf

Plug-Flow detention time= 53.1 min calculated for 0.394 af (100% of inflow)
Center-of-Mass det. time= 52.5 min (867.4 - 814.9)

Volume	Invert	Avail.Storage	Storage Description
#1	378.00'	2,895 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
			7,238 cf Overall x 40.0% Voids
#2	381.00'	19,572 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		22,467 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
378.00	2,496	0	0
380.90	2,496	7,238	7,238

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
381.00	4,620	0	0
382.00	6,108	5,364	5,364
384.00	8,100	14,208	19,572

Device	Routing	Invert	Outlet Devices
#1	Discarded	378.00'	**8.000 in/hr Exfiltration over Surface area**
#2	Secondary	383.80'	**24.0' long x 6.0' 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 4.00 4.50 5.00 5.50
			Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Discarded OutFlow Max=1.45 cfs @ 12.72 hrs HW=381.48' (Free Discharge)
1=Exfiltration (Exfiltration Controls 1.45 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=378.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 4P: Drywells 3&4

Inflow Area = 1.088 ac, 58.59% Impervious, Inflow Depth > 1.79" for 2-year event
Inflow = 1.98 cfs @ 12.17 hrs, Volume= 0.162 af
Outflow = 2.00 cfs @ 12.18 hrs, Volume= 0.146 af, Atten= 0%, Lag= 0.8 min
Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Secondary = 2.00 cfs @ 12.18 hrs, Volume= 0.146 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 385.24' @ 12.18 hrs Surf.Area= 0.004 ac Storage= 0.016 af

Plug-Flow detention time= 47.4 min calculated for 0.146 af (90% of inflow)
Center-of-Mass det. time= 16.6 min (810.0 - 793.4)

Volume	Invert	Avail.Storage	Storage Description
#1	375.80'	0.002 af	**10.00'D x 6.00'H Vertical Cone/Cylinder** x 2 0.022 af Overall - 0.016 af Embedded = 0.005 af x 40.0% Voids
#2	375.80'	0.014 af	**8.00'D x 6.00'H Vertical Cone/Cylinder** x 2 Inside #1 0.016 af Overall - 4.0" Wall Thickness = 0.014 af
		0.016 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	378.00'	**8.000 in/hr Exfiltration over Surface area above 378.00'** Excluded Surface area = 0.004 ac
#2	Secondary	384.90'	**4.0' long x 4.0' 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 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=375.80' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.00 cfs)

Secondary OutFlow Max=1.94 cfs @ 12.18 hrs HW=385.24' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 1.94 cfs @ 1.44 fps)

Summary for Subcatchment 1S: Drainage Area 1

Runoff = 0.72 cfs @ 12.20 hrs, Volume= 0.062 af, Depth> 1.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-year Rainfall=4.32"

	Area (sf)	CN	Description
*	11,762	98	Impervious
	9,067	39	>75% Grass cover, Good, HSG A
	20,829	72	Weighted Average
	9,067		43.53% Pervious Area
	11,762		56.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	350	0.0170	0.44		**Lag/CN Method, Tc-1**

Summary for Subcatchment 2S: Drainage Area 2

Runoff = 3.81 cfs @ 12.30 hrs, Volume= 0.381 af, Depth> 1.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-year Rainfall=4.32"

	Area (sf)	CN	Description
*	57,518	98	Paved parking, roof
*	15,183	76	Crushed stone surface, HSG A
	27,760	39	>75% Grass cover, Good, HSG A
	100,461	78	Weighted Average
	42,943		42.75% Pervious Area
	57,518		57.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.9	550	0.0100	0.44		**Lag/CN Method, Tc-2**

Summary for Subcatchment 3S: Drainage Area 3

Runoff = 2.83 cfs @ 12.17 hrs, Volume= 0.233 af, Depth> 2.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-year Rainfall=4.32"

	Area (sf)	CN	Description
*	27,767	98	Paved & roof
*	14,989	76	Crushed stone
*	4,639	39	>75% Grass cover/Landscape, Good, HSG A
	47,395	85	Weighted Average
	19,628		41.41% Pervious Area
	27,767		58.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	440	0.0130	0.60		**Lag/CN Method, Tc-3**

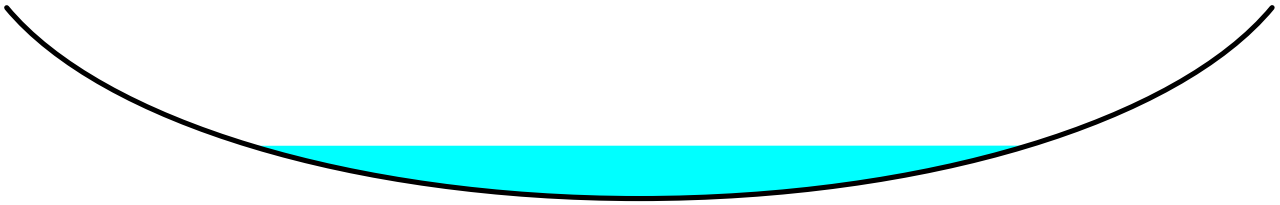
Summary for Reach 1R: Paved surface

Inflow Area = 0.478 ac, 56.47% Impervious, Inflow Depth > 1.55" for 5-year event
Inflow = 0.72 cfs @ 12.20 hrs, Volume= 0.062 af
Outflow = 0.69 cfs @ 12.29 hrs, Volume= 0.061 af, Atten= 4%, Lag= 5.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.99 fps, Min. Travel Time= 3.1 min
Avg. Velocity = 0.43 fps, Avg. Travel Time= 7.2 min

Peak Storage= 130 cf @ 12.24 hrs
Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 0.30' Flow Area= 4.8 sf, Capacity= 11.21 cfs

24.00' x 0.30' deep Parabolic Channel, n= 0.016 Asphalt, rough
Length= 185.0' Slope= 0.0054 '/'
Inlet Invert= 385.00', Outlet Invert= 384.00'



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Summary for Reach 2R: Peak off site Drainage

Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 2P: Infiltration Pond 1

Inflow Area = 0.478 ac, 56.47% Impervious, Inflow Depth > 1.54" for 5-year event
Inflow = 0.69 cfs @ 12.29 hrs, Volume= 0.061 af
Outflow = 0.23 cfs @ 12.10 hrs, Volume= 0.061 af, Atten= 67%, Lag= 0.0 min
Discarded = 0.23 cfs @ 12.10 hrs, Volume= 0.061 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 381.18' @ 12.74 hrs Surf.Area= 1,250 sf Storage= 589 cf

Plug-Flow detention time= 16.1 min calculated for 0.061 af (100% of inflow)
Center-of-Mass det. time= 15.8 min (837.2 - 821.4)

Volume	Invert	Avail.Storage	Storage Description
#1	380.00'	1,450 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3,625 cf Overall x 40.0% Voids
#2	383.00'	1,369 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		2,819 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
380.00	1,250	0	0
382.90	1,250	3,625	3,625

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
383.00	510	0	0
384.00	1,050	780	780
384.50	1,305	589	1,369

Device	Routing	Invert	Outlet Devices
#1	Discarded	380.00'	**8.000 in/hr Exfiltration over Surface area**
#2	Secondary	384.00'	**10.0' long x 4.0' 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 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Discarded OutFlow Max=0.23 cfs @ 12.10 hrs HW=380.05' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.23 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=380.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 3P: Infiltration Pond 2

Inflow Area = 2.306 ac, 57.25% Impervious, Inflow Depth > 3.11" for 5-year event
Inflow = 6.23 cfs @ 12.21 hrs, Volume= 0.598 af
Outflow = 1.62 cfs @ 12.83 hrs, Volume= 0.597 af, Atten= 74%, Lag= 36.7 min
Discarded = 1.62 cfs @ 12.83 hrs, Volume= 0.597 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 382.17' @ 12.83 hrs Surf.Area= 8,771 sf Storage= 9,295 cf

Plug-Flow detention time= 64.5 min calculated for 0.597 af (100% of inflow)
Center-of-Mass det. time= 64.1 min (869.3 - 805.2)

Volume	Invert	Avail.Storage	Storage Description
#1	378.00'	2,895 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
			7,238 cf Overall x 40.0% Voids
#2	381.00'	19,572 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		22,467 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
378.00	2,496	0	0
380.90	2,496	7,238	7,238

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
381.00	4,620	0	0
382.00	6,108	5,364	5,364
384.00	8,100	14,208	19,572

Device	Routing	Invert	Outlet Devices
#1	Discarded	378.00'	**8.000 in/hr Exfiltration over Surface area**
#2	Secondary	383.80'	**24.0' long x 6.0' 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 4.00 4.50 5.00 5.50
			Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Discarded OutFlow Max=1.62 cfs @ 12.83 hrs HW=382.17' (Free Discharge)
1=Exfiltration (Exfiltration Controls 1.62 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=378.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 4P: Drywells 3&4

Inflow Area = 1.088 ac, 58.59% Impervious, Inflow Depth > 2.57" for 5-year event
Inflow = 2.83 cfs @ 12.17 hrs, Volume= 0.233 af
Outflow = 2.88 cfs @ 12.19 hrs, Volume= 0.217 af, Atten= 0%, Lag= 1.0 min
Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Secondary = 2.88 cfs @ 12.19 hrs, Volume= 0.217 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 385.33' @ 12.19 hrs Surf.Area= 0.004 ac Storage= 0.016 af

Plug-Flow detention time= 37.5 min calculated for 0.216 af (93% of inflow)
Center-of-Mass det. time= 14.6 min (799.6 - 785.0)

Volume	Invert	Avail.Storage	Storage Description
#1	375.80'	0.002 af	**10.00'D x 6.00'H Vertical Cone/Cylinder** x 2 0.022 af Overall - 0.016 af Embedded = 0.005 af x 40.0% Voids
#2	375.80'	0.014 af	**8.00'D x 6.00'H Vertical Cone/Cylinder** x 2 Inside #1 0.016 af Overall - 4.0" Wall Thickness = 0.014 af
		0.016 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	378.00'	**8.000 in/hr Exfiltration over Surface area above 378.00'** Excluded Surface area = 0.004 ac
#2	Secondary	384.90'	**4.0' long x 4.0' 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 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=375.80' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.00 cfs)

Secondary OutFlow Max=2.79 cfs @ 12.19 hrs HW=385.32' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 2.79 cfs @ 1.66 fps)

Summary for Subcatchment 1S: Drainage Area 1

Runoff = 0.99 cfs @ 12.19 hrs, Volume= 0.083 af, Depth> 2.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.09"

	Area (sf)	CN	Description
*	11,762	98	Impervious
	9,067	39	>75% Grass cover, Good, HSG A
	20,829	72	Weighted Average
	9,067		43.53% Pervious Area
	11,762		56.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	350	0.0170	0.44		**Lag/CN Method, Tc-1**

Summary for Subcatchment 2S: Drainage Area 2

Runoff = 4.97 cfs @ 12.29 hrs, Volume= 0.497 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.09"

	Area (sf)	CN	Description
*	57,518	98	Paved parking, roof
*	15,183	76	Crushed stone surface, HSG A
	27,760	39	>75% Grass cover, Good, HSG A
	100,461	78	Weighted Average
	42,943		42.75% Pervious Area
	57,518		57.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.9	550	0.0100	0.44		**Lag/CN Method, Tc-2**

Summary for Subcatchment 3S: Drainage Area 3

Runoff = 3.53 cfs @ 12.17 hrs, Volume= 0.294 af, Depth> 3.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.09"

	Area (sf)	CN	Description
*	27,767	98	Paved & roof
*	14,989	76	Crushed stone
*	4,639	39	>75% Grass cover/Landscape, Good, HSG A
	47,395	85	Weighted Average
	19,628		41.41% Pervious Area
	27,767		58.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	440	0.0130	0.60		**Lag/CN Method, Tc-3**

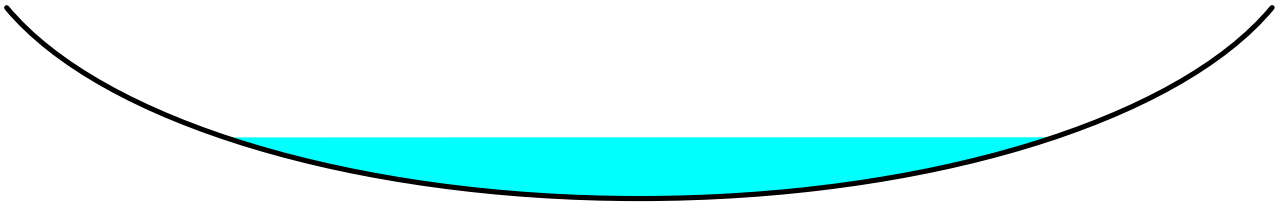
Summary for Reach 1R: Paved surface

Inflow Area = 0.478 ac, 56.47% Impervious, Inflow Depth > 2.09" for 10-year event
Inflow = 0.99 cfs @ 12.19 hrs, Volume= 0.083 af
Outflow = 0.96 cfs @ 12.27 hrs, Volume= 0.083 af, Atten= 3%, Lag= 4.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.09 fps, Min. Travel Time= 2.8 min
Avg. Velocity = 0.46 fps, Avg. Travel Time= 6.7 min

Peak Storage= 161 cf @ 12.23 hrs
Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 0.30' Flow Area= 4.8 sf, Capacity= 11.21 cfs

24.00' x 0.30' deep Parabolic Channel, n= 0.016 Asphalt, rough
Length= 185.0' Slope= 0.0054 '/'
Inlet Invert= 385.00', Outlet Invert= 384.00'



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Summary for Reach 2R: Peak off site Drainage

Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 2P: Infiltration Pond 1

Inflow Area = 0.478 ac, 56.47% Impervious, Inflow Depth > 2.08" for 10-year event
Inflow = 0.96 cfs @ 12.27 hrs, Volume= 0.083 af
Outflow = 0.23 cfs @ 12.00 hrs, Volume= 0.083 af, Atten= 76%, Lag= 0.0 min
Discarded = 0.23 cfs @ 12.00 hrs, Volume= 0.083 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 382.04' @ 12.83 hrs Surf.Area= 1,250 sf Storage= 1,021 cf

Plug-Flow detention time= 31.2 min calculated for 0.083 af (100% of inflow)
Center-of-Mass det. time= 30.9 min (845.3 - 814.3)

Volume	Invert	Avail.Storage	Storage Description
#1	380.00'	1,450 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3,625 cf Overall x 40.0% Voids
#2	383.00'	1,369 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		2,819 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
380.00	1,250	0	0
382.90	1,250	3,625	3,625

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
383.00	510	0	0
384.00	1,050	780	780
384.50	1,305	589	1,369

Device	Routing	Invert	Outlet Devices
#1	Discarded	380.00'	**8.000 in/hr Exfiltration over Surface area**
#2	Secondary	384.00'	**10.0' long x 4.0' 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 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Discarded OutFlow Max=0.23 cfs @ 12.00 hrs HW=380.05' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.23 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=380.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 3P: Infiltration Pond 2

Inflow Area = 2.306 ac, 57.25% Impervious, Inflow Depth > 4.03" for 10-year event
Inflow = 7.98 cfs @ 12.22 hrs, Volume= 0.775 af
Outflow = 1.73 cfs @ 12.91 hrs, Volume= 0.768 af, Atten= 78%, Lag= 41.8 min
Discarded = 1.73 cfs @ 12.91 hrs, Volume= 0.768 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 382.74' @ 12.91 hrs Surf.Area= 9,344 sf Storage= 13,074 cf

Plug-Flow detention time= 79.5 min calculated for 0.768 af (99% of inflow)
Center-of-Mass det. time= 76.2 min (875.2 - 799.0)

Volume	Invert	Avail.Storage	Storage Description
#1	378.00'	2,895 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
			7,238 cf Overall x 40.0% Voids
#2	381.00'	19,572 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		22,467 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
378.00	2,496	0	0
380.90	2,496	7,238	7,238

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
381.00	4,620	0	0
382.00	6,108	5,364	5,364
384.00	8,100	14,208	19,572

Device	Routing	Invert	Outlet Devices
#1	Discarded	378.00'	**8.000 in/hr Exfiltration over Surface area**
#2	Secondary	383.80'	**24.0' long x 6.0' 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 4.00 4.50 5.00 5.50
			Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Discarded OutFlow Max=1.73 cfs @ 12.91 hrs HW=382.74' (Free Discharge)
1=Exfiltration (Exfiltration Controls 1.73 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=378.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 4P: Drywells 3&4

Inflow Area = 1.088 ac, 58.59% Impervious, Inflow Depth > 3.24" for 10-year event
Inflow = 3.53 cfs @ 12.17 hrs, Volume= 0.294 af
Outflow = 3.56 cfs @ 12.18 hrs, Volume= 0.278 af, Atten= 0%, Lag= 0.9 min
Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Secondary = 3.56 cfs @ 12.18 hrs, Volume= 0.278 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 385.39' @ 12.18 hrs Surf.Area= 0.004 ac Storage= 0.016 af

Plug-Flow detention time= 32.2 min calculated for 0.277 af (94% of inflow)
Center-of-Mass det. time= 13.3 min (792.9 - 779.6)

Volume	Invert	Avail.Storage	Storage Description
#1	375.80'	0.002 af	**10.00'D x 6.00'H Vertical Cone/Cylinder** x 2 0.022 af Overall - 0.016 af Embedded = 0.005 af x 40.0% Voids
#2	375.80'	0.014 af	**8.00'D x 6.00'H Vertical Cone/Cylinder** x 2 Inside #1 0.016 af Overall - 4.0" Wall Thickness = 0.014 af
		0.016 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	378.00'	**8.000 in/hr Exfiltration over Surface area above 378.00'** Excluded Surface area = 0.004 ac
#2	Secondary	384.90'	**4.0' long x 4.0' 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 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=375.80' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.00 cfs)

Secondary OutFlow Max=3.46 cfs @ 12.18 hrs HW=385.38' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 3.46 cfs @ 1.80 fps)

Summary for Subcatchment 1S: Drainage Area 1

Runoff = 1.37 cfs @ 12.19 hrs, Volume= 0.115 af, Depth> 2.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.16"

	Area (sf)	CN	Description
*	11,762	98	Impervious
	9,067	39	>75% Grass cover, Good, HSG A
	20,829	72	Weighted Average
	9,067		43.53% Pervious Area
	11,762		56.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	350	0.0170	0.44		**Lag/CN Method, Tc-1**

Summary for Subcatchment 2S: Drainage Area 2

Runoff = 6.63 cfs @ 12.29 hrs, Volume= 0.666 af, Depth> 3.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.16"

	Area (sf)	CN	Description
*	57,518	98	Paved parking, roof
*	15,183	76	Crushed stone surface, HSG A
	27,760	39	>75% Grass cover, Good, HSG A
	100,461	78	Weighted Average
	42,943		42.75% Pervious Area
	57,518		57.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.9	550	0.0100	0.44		**Lag/CN Method, Tc-2**

Summary for Subcatchment 3S: Drainage Area 3

Runoff = 4.52 cfs @ 12.17 hrs, Volume= 0.380 af, Depth> 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.16"

	Area (sf)	CN	Description
*	27,767	98	Paved & roof
*	14,989	76	Crushed stone
*	4,639	39	>75% Grass cover/Landscape, Good, HSG A
	47,395	85	Weighted Average
	19,628		41.41% Pervious Area
	27,767		58.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	440	0.0130	0.60		**Lag/CN Method, Tc-3**

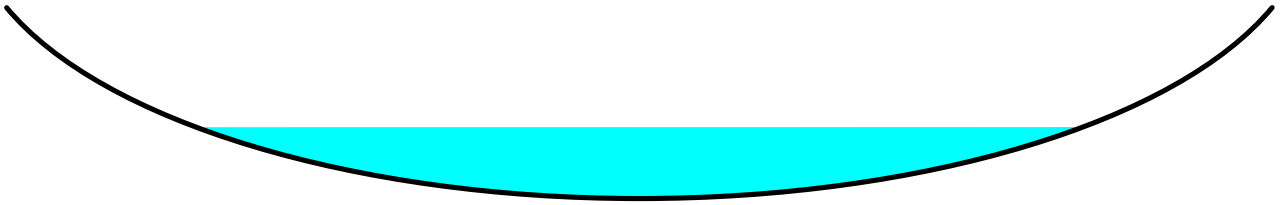
Summary for Reach 1R: Paved surface

Inflow Area = 0.478 ac, 56.47% Impervious, Inflow Depth > 2.90" for 25-year event
Inflow = 1.37 cfs @ 12.19 hrs, Volume= 0.115 af
Outflow = 1.33 cfs @ 12.27 hrs, Volume= 0.115 af, Atten= 3%, Lag= 4.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.21 fps, Min. Travel Time= 2.5 min
Avg. Velocity = 0.49 fps, Avg. Travel Time= 6.3 min

Peak Storage= 204 cf @ 12.22 hrs
Average Depth at Peak Storage= 0.11'
Bank-Full Depth= 0.30' Flow Area= 4.8 sf, Capacity= 11.21 cfs

24.00' x 0.30' deep Parabolic Channel, n= 0.016 Asphalt, rough
Length= 185.0' Slope= 0.0054 '/'
Inlet Invert= 385.00', Outlet Invert= 384.00'



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Summary for Reach 2R: Peak off site Drainage

Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 2P: Infiltration Pond 1

Inflow Area = 0.478 ac, 56.47% Impervious, Inflow Depth > 2.88" for 25-year event
Inflow = 1.33 cfs @ 12.27 hrs, Volume= 0.115 af
Outflow = 0.35 cfs @ 12.77 hrs, Volume= 0.115 af, Atten= 74%, Lag= 30.3 min
Discarded = 0.35 cfs @ 12.77 hrs, Volume= 0.115 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 383.24' @ 12.77 hrs Surf.Area= 1,892 sf Storage= 1,591 cf

Plug-Flow detention time= 48.6 min calculated for 0.115 af (100% of inflow)
Center-of-Mass det. time= 48.4 min (855.0 - 806.6)

Volume	Invert	Avail.Storage	Storage Description
#1	380.00'	1,450 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3,625 cf Overall x 40.0% Voids
#2	383.00'	1,369 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		2,819 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
380.00	1,250	0	0
382.90	1,250	3,625	3,625

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
383.00	510	0	0
384.00	1,050	780	780
384.50	1,305	589	1,369

Device	Routing	Invert	Outlet Devices
#1	Discarded	380.00'	**8.000 in/hr Exfiltration over Surface area**
#2	Secondary	384.00'	**10.0' long x 4.0' 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 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Discarded OutFlow Max=0.35 cfs @ 12.77 hrs HW=383.24' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.35 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=380.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 3P: Infiltration Pond 2

Inflow Area = 2.306 ac, 57.25% Impervious, Inflow Depth > 5.36" for 25-year event
Inflow = 10.41 cfs @ 12.22 hrs, Volume= 1.030 af
Outflow = 1.88 cfs @ 13.02 hrs, Volume= 0.996 af, Atten= 82%, Lag= 47.6 min
Discarded = 1.88 cfs @ 13.02 hrs, Volume= 0.996 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 383.57' @ 13.02 hrs Surf.Area= 10,165 sf Storage= 19,055 cf

Plug-Flow detention time= 105.6 min calculated for 0.996 af (97% of inflow)
Center-of-Mass det. time= 93.3 min (885.3 - 792.0)

Volume	Invert	Avail.Storage	Storage Description
#1	378.00'	2,895 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
			7,238 cf Overall x 40.0% Voids
#2	381.00'	19,572 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		22,467 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
378.00	2,496	0	0
380.90	2,496	7,238	7,238

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
381.00	4,620	0	0
382.00	6,108	5,364	5,364
384.00	8,100	14,208	19,572

Device	Routing	Invert	Outlet Devices
#1	Discarded	378.00'	**8.000 in/hr Exfiltration over Surface area**
#2	Secondary	383.80'	**24.0' long x 6.0' 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 4.00 4.50 5.00 5.50
			Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Discarded OutFlow Max=1.88 cfs @ 13.02 hrs HW=383.57' (Free Discharge)
1=Exfiltration (Exfiltration Controls 1.88 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=378.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 4P: Drywells 3&4

Inflow Area = 1.088 ac, 58.59% Impervious, Inflow Depth > 4.19" for 25-year event
Inflow = 4.52 cfs @ 12.17 hrs, Volume= 0.380 af
Outflow = 4.51 cfs @ 12.17 hrs, Volume= 0.364 af, Atten= 0%, Lag= 0.1 min
Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Secondary = 4.51 cfs @ 12.17 hrs, Volume= 0.364 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 385.46' @ 12.17 hrs Surf.Area= 0.004 ac Storage= 0.016 af

Plug-Flow detention time= 27.3 min calculated for 0.364 af (96% of inflow)
Center-of-Mass det. time= 11.7 min (785.2 - 773.4)

Volume	Invert	Avail.Storage	Storage Description
#1	375.80'	0.002 af	**10.00'D x 6.00'H Vertical Cone/Cylinder** x 2 0.022 af Overall - 0.016 af Embedded = 0.005 af x 40.0% Voids
#2	375.80'	0.014 af	**8.00'D x 6.00'H Vertical Cone/Cylinder** x 2 Inside #1 0.016 af Overall - 4.0" Wall Thickness = 0.014 af
		0.016 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	378.00'	**8.000 in/hr Exfiltration over Surface area above 378.00'** Excluded Surface area = 0.004 ac
#2	Secondary	384.90'	**4.0' long x 4.0' 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 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=375.80' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.00 cfs)

Secondary OutFlow Max=4.43 cfs @ 12.17 hrs HW=385.46' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 4.43 cfs @ 1.99 fps)

Summary for Subcatchment 1S: Drainage Area 1

Runoff = 1.67 cfs @ 12.19 hrs, Volume= 0.140 af, Depth> 3.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=6.95"

	Area (sf)	CN	Description
*	11,762	98	Impervious
	9,067	39	>75% Grass cover, Good, HSG A
	20,829	72	Weighted Average
	9,067		43.53% Pervious Area
	11,762		56.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	350	0.0170	0.44		**Lag/CN Method, Tc-1**

Summary for Subcatchment 2S: Drainage Area 2

Runoff = 7.88 cfs @ 12.29 hrs, Volume= 0.795 af, Depth> 4.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=6.95"

	Area (sf)	CN	Description
*	57,518	98	Paved parking, roof
*	15,183	76	Crushed stone surface, HSG A
	27,760	39	>75% Grass cover, Good, HSG A
	100,461	78	Weighted Average
	42,943		42.75% Pervious Area
	57,518		57.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.9	550	0.0100	0.44		**Lag/CN Method, Tc-2**

Summary for Subcatchment 3S: Drainage Area 3

Runoff = 5.25 cfs @ 12.17 hrs, Volume= 0.445 af, Depth> 4.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=6.95"

	Area (sf)	CN	Description
*	27,767	98	Paved & roof
*	14,989	76	Crushed stone
*	4,639	39	>75% Grass cover/Landscape, Good, HSG A
	47,395	85	Weighted Average
	19,628		41.41% Pervious Area
	27,767		58.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	440	0.0130	0.60		**Lag/CN Method, Tc-3**

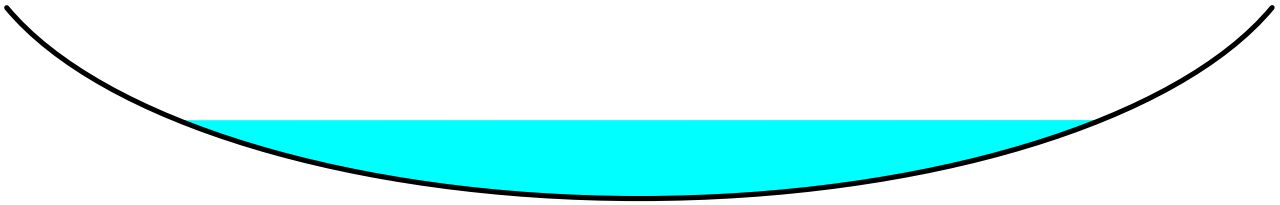
Summary for Reach 1R: Paved surface

Inflow Area = 0.478 ac, 56.47% Impervious, Inflow Depth > 3.52" for 50-year event
Inflow = 1.67 cfs @ 12.19 hrs, Volume= 0.140 af
Outflow = 1.62 cfs @ 12.26 hrs, Volume= 0.140 af, Atten= 3%, Lag= 4.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.29 fps, Min. Travel Time= 2.4 min
Avg. Velocity = 0.51 fps, Avg. Travel Time= 6.0 min

Peak Storage= 234 cf @ 12.22 hrs
Average Depth at Peak Storage= 0.12'
Bank-Full Depth= 0.30' Flow Area= 4.8 sf, Capacity= 11.21 cfs

24.00' x 0.30' deep Parabolic Channel, n= 0.016 Asphalt, rough
Length= 185.0' Slope= 0.0054 '/'
Inlet Invert= 385.00', Outlet Invert= 384.00'



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Summary for Reach 2R: Peak off site Drainage

Inflow = 2.26 cfs @ 12.71 hrs, Volume= 0.061 af
Outflow = 2.26 cfs @ 12.71 hrs, Volume= 0.061 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 2P: Infiltration Pond 1

Inflow Area = 0.478 ac, 56.47% Impervious, Inflow Depth > 3.51" for 50-year event
Inflow = 1.62 cfs @ 12.26 hrs, Volume= 0.140 af
Outflow = 0.40 cfs @ 12.78 hrs, Volume= 0.140 af, Atten= 75%, Lag= 30.9 min
Discarded = 0.40 cfs @ 12.78 hrs, Volume= 0.140 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 383.77' @ 12.78 hrs Surf.Area= 2,178 sf Storage= 2,007 cf

Plug-Flow detention time= 53.1 min calculated for 0.139 af (100% of inflow)
Center-of-Mass det. time= 52.7 min (854.7 - 801.9)

Volume	Invert	Avail.Storage	Storage Description
#1	380.00'	1,450 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
			3,625 cf Overall x 40.0% Voids
#2	383.00'	1,369 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		2,819 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
380.00	1,250	0	0
382.90	1,250	3,625	3,625

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
383.00	510	0	0
384.00	1,050	780	780
384.50	1,305	589	1,369

Device	Routing	Invert	Outlet Devices
#1	Discarded	380.00'	**8.000 in/hr Exfiltration over Surface area**
#2	Secondary	384.00'	**10.0' long x 4.0' 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 4.00 4.50 5.00 5.50
			Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Discarded OutFlow Max=0.40 cfs @ 12.78 hrs HW=383.77' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.40 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=380.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 3P: Infiltration Pond 2

Inflow Area = 2.306 ac, 57.25% Impervious, Inflow Depth > 6.37" for 50-year event
Inflow = 12.30 cfs @ 12.22 hrs, Volume= 1.224 af
Outflow = 4.20 cfs @ 12.71 hrs, Volume= 1.176 af, Atten= 66%, Lag= 29.5 min
Discarded = 1.95 cfs @ 12.71 hrs, Volume= 1.115 af
Secondary = 2.26 cfs @ 12.71 hrs, Volume= 0.061 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 383.91' @ 12.71 hrs Surf.Area= 10,511 sf Storage= 21,778 cf

Plug-Flow detention time= 109.5 min calculated for 1.172 af (96% of inflow)
Center-of-Mass det. time= 94.9 min (882.8 - 787.8)

Volume	Invert	Avail.Storage	Storage Description
#1	378.00'	2,895 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
			7,238 cf Overall x 40.0% Voids
#2	381.00'	19,572 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		22,467 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
378.00	2,496	0	0
380.90	2,496	7,238	7,238

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
381.00	4,620	0	0
382.00	6,108	5,364	5,364
384.00	8,100	14,208	19,572

Device	Routing	Invert	Outlet Devices
#1	Discarded	378.00'	**8.000 in/hr Exfiltration over Surface area**
#2	Secondary	383.80'	**24.0' long x 6.0' 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 4.00 4.50 5.00 5.50
			Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Discarded OutFlow Max=1.95 cfs @ 12.71 hrs HW=383.91' (Free Discharge)
1=Exfiltration (Exfiltration Controls 1.95 cfs)

Secondary OutFlow Max=2.16 cfs @ 12.71 hrs HW=383.91' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 2.16 cfs @ 0.80 fps)

Summary for Pond 4P: Drywells 3&4

Inflow Area = 1.088 ac, 58.59% Impervious, Inflow Depth > 4.91" for 50-year event
Inflow = 5.25 cfs @ 12.17 hrs, Volume= 0.445 af
Outflow = 5.21 cfs @ 12.17 hrs, Volume= 0.429 af, Atten= 1%, Lag= 0.4 min
Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Secondary = 5.21 cfs @ 12.17 hrs, Volume= 0.429 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 385.52' @ 12.17 hrs Surf.Area= 0.004 ac Storage= 0.016 af

Plug-Flow detention time= 25.0 min calculated for 0.429 af (96% of inflow)
Center-of-Mass det. time= 11.0 min (780.7 - 769.7)

Volume	Invert	Avail.Storage	Storage Description
#1	375.80'	0.002 af	**10.00'D x 6.00'H Vertical Cone/Cylinder** x 2 0.022 af Overall - 0.016 af Embedded = 0.005 af x 40.0% Voids
#2	375.80'	0.014 af	**8.00'D x 6.00'H Vertical Cone/Cylinder** x 2 Inside #1 0.016 af Overall - 4.0" Wall Thickness = 0.014 af
		0.016 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	378.00'	**8.000 in/hr Exfiltration over Surface area above 378.00'** Excluded Surface area = 0.004 ac
#2	Secondary	384.90'	**4.0' long x 4.0' 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 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=375.80' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.00 cfs)

Secondary OutFlow Max=5.14 cfs @ 12.17 hrs HW=385.51' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 5.14 cfs @ 2.10 fps)

Summary for Subcatchment 1S: Drainage Area 1

Runoff = 1.99 cfs @ 12.19 hrs, Volume= 0.168 af, Depth> 4.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.80"

	Area (sf)	CN	Description
*	11,762	98	Impervious
	9,067	39	>75% Grass cover, Good, HSG A
	20,829	72	Weighted Average
	9,067		43.53% Pervious Area
	11,762		56.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	350	0.0170	0.44		**Lag/CN Method, Tc-1**

Summary for Subcatchment 2S: Drainage Area 2

Runoff = 9.23 cfs @ 12.28 hrs, Volume= 0.936 af, Depth> 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.80"

	Area (sf)	CN	Description
*	57,518	98	Paved parking, roof
*	15,183	76	Crushed stone surface, HSG A
	27,760	39	>75% Grass cover, Good, HSG A
	100,461	78	Weighted Average
	42,943		42.75% Pervious Area
	57,518		57.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.9	550	0.0100	0.44		**Lag/CN Method, Tc-2**

Summary for Subcatchment 3S: Drainage Area 3

Runoff = 6.03 cfs @ 12.17 hrs, Volume= 0.515 af, Depth> 5.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.80"

	Area (sf)	CN	Description
*	27,767	98	Paved & roof
*	14,989	76	Crushed stone
*	4,639	39	>75% Grass cover/Landscape, Good, HSG A
	47,395	85	Weighted Average
	19,628		41.41% Pervious Area
	27,767		58.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	440	0.0130	0.60		**Lag/CN Method, Tc-3**

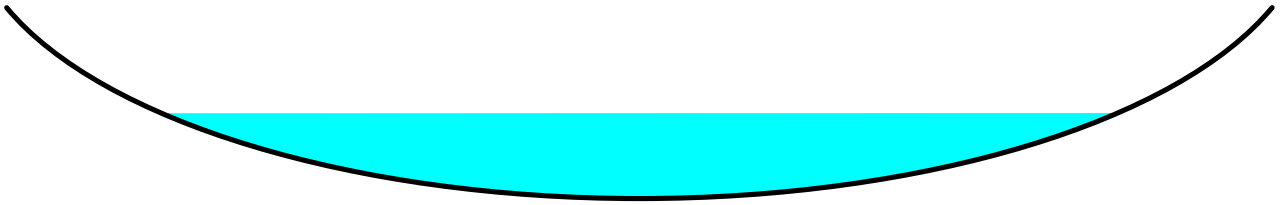
Summary for Reach 1R: Paved surface

Inflow Area = 0.478 ac, 56.47% Impervious, Inflow Depth > 4.21" for 100-year event
Inflow = 1.99 cfs @ 12.19 hrs, Volume= 0.168 af
Outflow = 1.93 cfs @ 12.26 hrs, Volume= 0.167 af, Atten= 3%, Lag= 4.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.36 fps, Min. Travel Time= 2.3 min
Avg. Velocity = 0.53 fps, Avg. Travel Time= 5.8 min

Peak Storage= 265 cf @ 12.21 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 0.30' Flow Area= 4.8 sf, Capacity= 11.21 cfs

24.00' x 0.30' deep Parabolic Channel, n= 0.016 Asphalt, rough
Length= 185.0' Slope= 0.0054 '/'
Inlet Invert= 385.00', Outlet Invert= 384.00'



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Summary for Reach 2R: Peak off site Drainage

Inflow = 7.16 cfs @ 12.51 hrs, Volume= 0.190 af
Outflow = 7.16 cfs @ 12.51 hrs, Volume= 0.190 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 2P: Infiltration Pond 1

Inflow Area = 0.478 ac, 56.47% Impervious, Inflow Depth > 4.20" for 100-year event
Inflow = 1.93 cfs @ 12.26 hrs, Volume= 0.167 af
Outflow = 0.87 cfs @ 12.60 hrs, Volume= 0.167 af, Atten= 55%, Lag= 20.8 min
Discarded = 0.43 cfs @ 12.60 hrs, Volume= 0.161 af
Secondary = 0.44 cfs @ 12.60 hrs, Volume= 0.007 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 384.07' @ 12.60 hrs Surf.Area= 2,335 sf Storage= 2,303 cf

Plug-Flow detention time= 54.2 min calculated for 0.167 af (100% of inflow)
Center-of-Mass det. time= 53.8 min (851.4 - 797.6)

Volume	Invert	Avail.Storage	Storage Description
#1	380.00'	1,450 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 3,625 cf Overall x 40.0% Voids
#2	383.00'	1,369 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		2,819 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
380.00	1,250	0	0
382.90	1,250	3,625	3,625

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
383.00	510	0	0
384.00	1,050	780	780
384.50	1,305	589	1,369

Device	Routing	Invert	Outlet Devices
#1	Discarded	380.00'	**8.000 in/hr Exfiltration over Surface area**
#2	Secondary	384.00'	**10.0' long x 4.0' 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 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Discarded OutFlow Max=0.43 cfs @ 12.60 hrs HW=384.07' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.43 cfs)

Secondary OutFlow Max=0.42 cfs @ 12.60 hrs HW=384.07' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 0.42 cfs @ 0.62 fps)

Summary for Pond 3P: Infiltration Pond 2

Inflow Area = 2.306 ac, 57.25% Impervious, Inflow Depth > 7.50" for 100-year event
Inflow = 14.28 cfs @ 12.22 hrs, Volume= 1.442 af
Outflow = 9.13 cfs @ 12.51 hrs, Volume= 1.386 af, Atten= 36%, Lag= 17.3 min
Discarded = 1.96 cfs @ 12.50 hrs, Volume= 1.196 af
Secondary = 7.16 cfs @ 12.51 hrs, Volume= 0.190 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 384.05' @ 12.51 hrs Surf.Area= 10,596 sf Storage= 22,467 cf

Plug-Flow detention time= 101.7 min calculated for 1.386 af (96% of inflow)
Center-of-Mass det. time= 87.3 min (871.0 - 783.8)

Volume	Invert	Avail.Storage	Storage Description
#1	378.00'	2,895 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
			7,238 cf Overall x 40.0% Voids
#2	381.00'	19,572 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
		22,467 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
378.00	2,496	0	0
380.90	2,496	7,238	7,238

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
381.00	4,620	0	0
382.00	6,108	5,364	5,364
384.00	8,100	14,208	19,572

Device	Routing	Invert	Outlet Devices
#1	Discarded	378.00'	**8.000 in/hr Exfiltration over Surface area**
#2	Secondary	383.80'	**24.0' long x 6.0' 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 4.00 4.50 5.00 5.50
			Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Discarded OutFlow Max=1.96 cfs @ 12.50 hrs HW=384.04' (Free Discharge)
1=Exfiltration (Exfiltration Controls 1.96 cfs)

Secondary OutFlow Max=6.65 cfs @ 12.51 hrs HW=384.04' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 6.65 cfs @ 1.17 fps)

Summary for Pond 4P: Drywells 3&4

Inflow Area = 1.088 ac, 58.59% Impervious, Inflow Depth > 5.68" for 100-year event
Inflow = 6.03 cfs @ 12.17 hrs, Volume= 0.515 af
Outflow = 6.02 cfs @ 12.17 hrs, Volume= 0.499 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Secondary = 6.02 cfs @ 12.17 hrs, Volume= 0.499 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 385.58' @ 12.17 hrs Surf.Area= 0.004 ac Storage= 0.016 af

Plug-Flow detention time= 22.2 min calculated for 0.497 af (97% of inflow)
Center-of-Mass det. time= 10.1 min (776.4 - 766.3)

Volume	Invert	Avail.Storage	Storage Description
#1	375.80'	0.002 af	**10.00'D x 6.00'H Vertical Cone/Cylinder** x 2 0.022 af Overall - 0.016 af Embedded = 0.005 af x 40.0% Voids
#2	375.80'	0.014 af	**8.00'D x 6.00'H Vertical Cone/Cylinder** x 2 Inside #1 0.016 af Overall - 4.0" Wall Thickness = 0.014 af
		0.016 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	378.00'	**8.000 in/hr Exfiltration over Surface area above 378.00'** Excluded Surface area = 0.004 ac
#2	Secondary	384.90'	**4.0' long x 4.0' 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 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=375.81' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.00 cfs)

Secondary OutFlow Max=5.91 cfs @ 12.17 hrs HW=385.57' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 5.91 cfs @ 2.20 fps)

SUPPORTING DOCUMENTATION

NOAA Point Precipitation Estimates
Web Soil Survey

NOAA Atlas 14, Volume 10, Version 3
Location name: Danielson, Connecticut, USA*
Latitude: 41.7955°, Longitude: -71.8495°
Elevation: 386.84 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.334** (0.258-0.427)	**0.399** (0.308-0.510)	**0.505** (0.389-0.648)	**0.592** (0.453-0.764)	**0.713** (0.528-0.954)	**0.805** (0.584-1.10)	**0.899** (0.633-1.27)	**1.00** (0.673-1.44)	**1.15** (0.741-1.70)	**1.26** (0.797-1.91)
10-min	**0.474** (0.366-0.605)	**0.565** (0.436-0.723)	**0.715** (0.549-0.916)	**0.839** (0.641-1.08)	**1.01** (0.748-1.35)	**1.14** (0.827-1.56)	**1.27** (0.897-1.79)	**1.42** (0.953-2.05)	**1.62** (1.05-2.41)	**1.78** (1.13-2.71)
15-min	**0.557** (0.430-0.712)	**0.665** (0.513-0.850)	**0.841** (0.646-1.08)	**0.987** (0.754-1.27)	**1.19** (0.880-1.59)	**1.34** (0.973-1.83)	**1.50** (1.06-2.11)	**1.67** (1.12-2.41)	**1.91** (1.24-2.84)	**2.10** (1.33-3.18)
30-min	**0.770** (0.594-0.984)	**0.919** (0.709-1.18)	**1.16** (0.894-1.49)	**1.37** (1.04-1.76)	**1.64** (1.22-2.20)	**1.86** (1.35-2.53)	**2.07** (1.46-2.92)	**2.31** (1.55-3.33)	**2.64** (1.71-3.94)	**2.91** (1.84-4.41)
60-min	**0.983** (0.759-1.25)	**1.17** (0.905-1.50)	**1.49** (1.14-1.91)	**1.74** (1.33-2.25)	**2.10** (1.56-2.81)	**2.37** (1.72-3.24)	**2.65** (1.87-3.73)	**2.95** (1.99-4.26)	**3.38** (2.19-5.03)	**3.72** (2.35-5.64)
2-hr	**1.26** (0.981-1.61)	**1.51** (1.17-1.92)	**1.90** (1.47-2.43)	**2.23** (1.72-2.86)	**2.69** (2.01-3.59)	**3.03** (2.22-4.12)	**3.39** (2.41-4.78)	**3.80** (2.56-5.45)	**4.40** (2.86-6.51)	**4.90** (3.11-7.38)
3-hr	**1.46** (1.14-1.85)	**1.74** (1.36-2.21)	**2.20** (1.71-2.80)	**2.58** (1.99-3.30)	**3.10** (2.32-4.13)	**3.49** (2.57-4.75)	**3.91** (2.80-5.51)	**4.40** (2.97-6.28)	**5.11** (3.33-7.54)	**5.72** (3.64-8.58)
6-hr	**1.87** (1.47-2.36)	**2.23** (1.75-2.81)	**2.82** (2.19-3.56)	**3.30** (2.56-4.20)	**3.97** (2.99-5.27)	**4.47** (3.30-6.05)	**5.01** (3.60-7.02)	**5.64** (3.82-8.00)	**6.58** (4.29-9.64)	**7.37** (4.70-11.0)
12-hr	**2.37** (1.86-2.96)	**2.82** (2.22-3.54)	**3.57** (2.80-4.49)	**4.19** (3.27-5.30)	**5.05** (3.82-6.65)	**5.69** (4.22-7.64)	**6.37** (4.60-8.87)	**7.17** (4.88-10.1)	**8.35** (5.47-12.2)	**9.35** (5.98-13.8)
24-hr	**2.82** (2.23-3.51)	**3.39** (2.68-4.22)	**4.32** (3.41-5.40)	**5.09** (3.99-6.40)	**6.16** (4.68-8.06)	**6.95** (5.18-9.28)	**7.80** (5.66-10.8)	**8.79** (6.00-12.3)	**10.3** (6.74-14.8)	**11.5** (7.38-16.9)
2-day	**3.18** (2.54-3.94)	**3.86** (3.07-4.79)	**4.97** (3.94-6.18)	**5.89** (4.64-7.36)	**7.16** (5.47-9.33)	**8.10** (6.07-10.8)	**9.11** (6.65-12.6)	**10.3** (7.07-14.4)	**12.1** (7.99-17.4)	**13.7** (8.80-20.0)
3-day	**3.45** (2.76-4.26)	**4.19** (3.34-5.17)	**5.39** (4.29-6.68)	**6.39** (5.06-7.96)	**7.77** (5.96-10.1)	**8.79** (6.61-11.7)	**9.89** (7.25-13.6)	**11.2** (7.70-15.6)	**13.2** (8.71-18.9)	**14.9** (9.60-21.7)
4-day	**3.70** (2.96-4.55)	**4.48** (3.58-5.52)	**5.75** (4.59-7.11)	**6.81** (5.40-8.46)	**8.27** (6.35-10.7)	**9.35** (7.04-12.4)	**10.5** (7.72-14.4)	**11.9** (8.19-16.5)	**14.0** (9.28-20.0)	**15.8** (10.2-23.0)
7-day	**4.39** (3.53-5.37)	**5.26** (4.22-6.45)	**6.68** (5.35-8.22)	**7.87** (6.26-9.72)	**9.49** (7.33-12.2)	**10.7** (8.10-14.1)	**12.0** (8.84-16.4)	**13.6** (9.36-18.7)	**15.9** (10.6-22.6)	**17.9** (11.6-25.9)
10-day	**5.08** (4.10-6.20)	**6.00** (4.84-7.34)	**7.51** (6.03-9.21)	**8.76** (7.00-10.8)	**10.5** (8.11-13.4)	**11.8** (8.91-15.4)	**13.1** (9.68-17.8)	**14.8** (10.2-20.2)	**17.2** (11.4-24.3)	**19.2** (12.5-27.7)
20-day	**7.26** (5.90-8.82)	**8.25** (6.68-10.0)	**9.85** (7.96-12.0)	**11.2** (8.98-13.7)	**13.0** (10.1-16.5)	**14.4** (10.9-18.6)	**15.8** (11.6-21.0)	**17.4** (12.1-23.6)	**19.5** (13.0-27.4)	**21.2** (13.8-30.3)
30-day	**9.10** (7.41-11.0)	**10.1** (8.22-12.2)	**11.7** (9.52-14.3)	**13.1** (10.6-16.0)	**15.0** (11.6-18.8)	**16.5** (12.5-21.0)	**17.9** (13.0-23.4)	**19.3** (13.5-26.1)	**21.2** (14.2-29.5)	**22.5** (14.7-32.0)
45-day	**11.4** (9.28-13.7)	**12.4** (10.1-15.0)	**14.1** (11.5-17.1)	**15.5** (12.5-18.9)	**17.4** (13.6-21.8)	**19.0** (14.4-24.0)	**20.4** (14.9-26.5)	**21.7** (15.2-29.3)	**23.3** (15.7-32.4)	**24.4** (15.9-34.5)
60-day	**13.2** (10.8-15.9)	**14.3** (11.7-17.2)	**16.1** (13.1-19.4)	**17.5** (14.2-21.2)	**19.5** (15.2-24.3)	**21.1** (16.0-26.6)	**22.6** (16.4-29.1)	**23.8** (16.8-32.0)	**25.3** (17.0-35.0)	**26.2** (17.1-37.0)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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PF graphical

Hydrologic Soil Group—State of Connecticut
(American Storage)

Map Scale: 1:1,150 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 15 30 60 90

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut
Survey Area Data: Version 21, Sep 7, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 16, 2020—Oct 1, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
34A	Merrimac fine sandy loam, 0 to 3 percent slopes	A	2.7	80.7%
47C	Woodbridge fine sandy loam, 3 to 15 percent slopes, extremely stony	C/D	0.6	19.3%
Totals for Area of Interest			**3.3**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

DRAINAGE AREA PLAN

AREA = 3.872 ACRES
(168,685 S.F.)

n/f
Janette Dufresne
Map 214, Lot 4
RURAL DEVELOPMENT ZONE

N 15°29'06" W
412.00'

n/f
Janette Dufresne
Map 214, Lot 4
RURAL DEVELOPMENT ZONE

n/f
Janette Dufresne
Map 214, Lot 4
RURAL DEVELOPMENT ZONE

S 74°30'32" W
412.00'

N 74°30'31" E
393.14'

S 15°29'29" E
433.00'

20,829 S.F. (1)

(2) 100,461 S.F.

(3) 47,395 S.F.

1 STORY METAL BUILDING
FF = 386.1
(12,000 S.F.)

LEAN TO

BUILDING OVERHANG

AC UNIT

AC UNIT

PROPANE TANKS

WELL

EXISTING TREELINE

PROPOSED ENTRY KIOSK

PROPOSED GATE

PROPOSED EXIT SENSOR

PROPOSED GATE

RECLAIMED PAVEMENT PILES

SCATTERED STONE

BOULDER (TYP.)

DIRT PILE

DIRT PILE

TP-1

TP-2

CHD PNT

IP FND (HIT)

115.00'

POLE 694

386.90

318.90'

SNET Ø 1695

386.09

385.26

384.91

384.59

CL&P 1104

384.48

CHD FND (HIT)

383.91

383.62

IP FND (HIT)

383.22

CHD FND (HIT)

C1

C2

C3

WESTCOTT ROAD (SR 607)

CL&P 1103

n/f
Rolgate, Inc.
Map 214, Lot 6
GENERAL COMMERCIAL ZONE

COMERCIAL BUILDING

n/f
Kevin S. Griffiths
&
Paula C. Griffiths
Map 203, Lot 21
RURAL DEVELOPMENT ZONE

NAD 83

30 15 0 30
GRAPHIC SCALE IN FEET

APPROVED BY THE TOWN OF
KILLINGLY PLANNING AND ZONING COMMISSION

Special Permit No: _____

Applicant: AMERICAN STORAGE CENTERS, LLC

Date Approved: _____

Chairman: _____

Date: _____

DATE	DESCRIPTION

REVISIONS

PLAN SHOWING PROPOSED DRAINAGE AREAS

PREPARED FOR

AMERICAN STORAGE CENTERS, LLC

551 WESTCOTT ROAD (SR 607)
KILLINGLY, CONNECTICUT

Killingly Engineering Associates
Civil Engineering & Surveying
114 Westcott Road
P.O. Box 421
Killingly, Connecticut 06241
(860) 779-7299
www.killinglyengineering.com

DATE: 11/22/2021	DRAWN: NET
SCALE: 1" = 30'	DESIGN: NET
SHEET: 2 OF 2	CHK BY: ---
DWG. No: CLIENT FILE	JOB No: 17157

NORMAND E. THIBEAULT, JR., P.E. DATE

K:\17157\Drawings\2021 Mini Storgae\Proposed Drainage.dwg Jan 14, 2022 - 12:21 PM