STORMWATER MANAGEMENT REPORT

BLUE STONE CATHY LANE

BLOCK 163.01, LOTS 3.01 & 3.07

TOWNSHIP OF FLORENCE
BURLINGTON COUNTY, NEW JERSEY

Prepared for:
Blue Stone Cathy Lane, LLC
61 Cathy Lane
Florence, NJ 08505

Prepared by:

PAULUS, SOKOLOWSKI & SARTOR, LLC

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Section

Description of Project Site

Paulus, Sokolowski, and Sartor (PS&S) has prepared this Stormwater Management Report for the proposed project, Blue Stone Cathy Lane, which includes the conversion of an existing facility to a truck repair shop with an expansion of the existing parking area. The proposed improvements will also include a stormwater management system, consisting of one (1) above ground small-scale infiltration basin, and one (1) below-ground small-scale infiltration basin to address the stormwater management requirements.

The facility is located on Block 163.01, Lots 3.01 & 3.07 in the township of Florence, Burlington County, New Jersey. The site is located in the HC Highway Commercial District. The overall project will include a disturbance of approximately 3.06 acres.

This report has been prepared to present design objectives, methodology, and calculations related to the design of the stormwater conveyance system, stormwater quantity control, stormwater quality control, and groundwater recharge measures proposed for the project. The measures were designed based on NJDEP Stormwater Regulations and Florence Municipal Codes. For the purposes of this report, all references to the Rules refer to the NJDEP Stormwater Management Regulations and the Moorestown Municipal Codes.

Soil Classification

The USDA WebSoil Survey indicates that there are two types of soils within the project site. A Custom Soil Resource Report is also provided in the appendix. The soil types within the project site are classified as Hydrologic Soil Groups A, C, & B/D.

Soil Symbol	Soil Name	HSG Group
AdmA	Adelphia fine sandy loam, 0-2% slopes	C
AdmB	Adelphia fine sandy loam, 2-5% slopes	C
GabB	Galestown sand, 0-5% slopes	A
ShsA	Shrewsbury fine sandy loam, 0-2% slopes	B/D

Stormwater Management Objective

The stormwater management methodology for the proposed site improvements is to route the post development storms through the designed stormwater management facilities to meet the current stormwater regulations. The project site will experience an increase in stormwater runoff due to the proposed development. The project site drainage shed will be divided to allow the surface runoff to be contained within the on-site stormwater management facilities, managing the on-site increase of runoff. The drainage shed will be captured by surface flow and conveyed to the stormwater management facilities.

The AutoCAD Storm and Sanitary Analysis computer program was used for the storm routings and the TR-55 was used to calculate the runoff volumes and compute the hydrographs. The water quality design storm is a 1.25-inch rainfall with a two-hour duration. The NOAA Region C rainfall distribution and the Delmarva unit hydrograph were also utilized. Pervious and impervious areas were routed separately and no minimum time of concentration was utilized.

Pre-Development

For the pre-development analysis, the site was broken up into three drainage sheds as determined by the limits of the proposed site improvements and the general contour of the land as indicated on the Pre-Development Drainage Map. At large the stormwater runoff presently flows north to south towards two on-site wetlands areas.

To compute the pre-development hydrographs, the time of concentration (Tc) was taken from the furthest high point, using the current surface covers, to the lowest point within the drainage shed as shown on the Pre-Development Drainage Map. The storm events were routed over the drainage sheds and the tables below represent the total pre-development peak volumes and flows of the various storm events.

XDA-1

This drainage shed consists of approximately 0.617 ac and flows to an existing low point in the northwestern portion of the site. Outflows from the existing low point then drain to West Wetlands point of analysis. The shed consists of pervious surfaces entirely.

XDA-2

This drainage shed consists of approximately 5.720 ac total and flows to the West Wetlands point of analysis located along the southwestern border of the site. The shed consists of 1.704 ac of impervious surfaces, and 4.016 ac of pervious surfaces.

Table One
Pre-Development Peak Flows to West Wetlands

Storm Event	Pre-Dev. Peak Outflow (cfs)	Required Reductions (%)	Post-Dev. Allowable Peak Flow (cfs)
2-Yr (Current)	5.70	50	2.85
2-Yr (Future)	7.26	50	3.81
10-Yr (Current)	10.61	75	7.69
10-Yr (Future)	13.18	75	9.89
100-Yr (Current)	21.75	80	17.40
100-Yr (Future)	29.36	80	23.49

XDA-3

This drainage shed consists of approximately 5.487 ac total and flows to the South Wetlands point of analysis located along the southeastern border of the site. The shed consists of 2.123 ac of impervious surfaces, and 4.016 ac of pervious surfaces.

Table Two
Pre-Development Peak Flows to South Wetlands

Storm Event	Pre-Dev. Peak Outflow (cfs)	Required Reductions (%)	Post-Dev. Allowable Peak Flow (cfs)
2-Yr (Current)	6.10	50	3.05
2-Yr (Future)	7.68	50	3.84
10-Yr (Current)	11.04	75	8.28
10-Yr (Future)	13.58	75	10.19
100-Yr (Current)	22.05	80	17.64
100-Yr (Future)	29.57	80	23.66

Post Development

The site improvements will include an expansion of the existing truck parking and associated stormwater management features. The proposed site improvements will create approximately 1.76 acres of new impervious surfaces. A Post-Development Drainage Map is included in Section E of this report.

The new impervious surface runoff will be collected by storm inlets within the project area and conveyed to the proposed above and below-ground infiltration basins. Pervious and impervious surfaces were routed separately in the calculations. The stormwater management facilities have been designed to meet the stormwater regulations and will meet the requirements for green infrastructure. No minimum time of concentration was utilized in the routings for all drainage sheds.

West Wetlands

The area directed to the West Wetlands point of analysis consists of 3.165 ac, with 1.140 ac being impervious surfaces. The impervious surfaces are all existing and are will not be disturbed. Therefore, the impervious surface runoff does not require water quality treatment, and the runoff generated by this area will flow overland directly to the point of analysis.

Table Three
Post-Development Peak Flows to West Wetlands

Storm Event	Allowable Peak Flow (cfs)	Proposed Peak Flow (cfs)
2-Yr (Current)	2.85	2.59
2-Yr (Future)	3.81	3.23
10-Yr (Current)	7.96	4.58
10-Yr (Future)	9.89	5.59
100-Yr (Current)	17.40	8.93
100-Yr (Future)	23.49	11.79

ADS Aquabox System

An ADS Aquabox System will be utilized to collect runoff from the parking expension area. The system will consist of a 31.5" tall single layer of Aquabox modules with a bottom of stone invert of 41.50. The system will collect an area of 2.309 acres, with 1.662 ac being impervious surfaces. The basin itself is 0.25 acres This system will provide 80% TSS reduction with the 6" crushed stone layer and will contain the entire water quality design storm without outflow to meet NJDEP green infrastructure requirements as set forth in Chapter 9.7 of the BMP manual. Outflow from this system flows to Infiltration Basin 1.

Infiltration Basin #1

This basin will be excavated to an elevation of 42.00 and have a top of berm at elevation of 46.00. This basin will collect an area of 2.041 acres, with 1.338 being impervious surfaces. The basin itself is 0.275 acres. This system will provide 80% TSS reduction with the 6" sand layer and will contain the entire water quality design storm without outflow to meet NJDEP green infrastructure requirements as set forth in Chapter 9.7 of the BMP manual. Outflow from this basin flows to the existing storm sewer system within Cathy Lane, and ultimately to the South Wetlands point of analysis.

Table Four
Post-Development Peak Flows to South Wetlands

Storm Event	Allowable Peak Flow (cfs)	Proposed Peak Flow (cfs)
2-Yr (Current)	3.05	2.86
2-Yr (Future)	3.84	3.72
10-Yr (Current)	8.28	6.34
10-Yr (Future)	10.19	8.14
100-Yr (Current)	17.64	14.71
100-Yr (Future)	23.66	23.52

Green Infrastructure & Best Management Practices

Green Infrastructure & Water Quality

According to the New Jersey Stormwater Best Management Practices requirements, TSS must be reduced by a minimum of eighty percent before allowing to be released from the stormwater management facility. This TSS removal rate is determined by using the water quality design storm and the various methods provided in the BMP's. The designed bioretention basins will retain the entire water quality storm event therefore and will provide and exceed the required reduction for the post development drainage shed. Each basin is to be constructed with a 6-inch layer of sand per the specifications in Chapter 9.7 of the NJDEP BMP Manual. This sand layer (bottom) will intercept silts, sediments and debris which can be removed from the basins and be easily restored.

Groundwater Recharge

The Stormwater Management Rules, N.J.A.C. 7:8-5.4(a)2 require that 100% of the project site's average annual predeveloped groundwater recharge volume be maintained after development. The NJDEP Ground Water Recharge Spread Sheet, based on GSR-32 calculations, was used to determine pre-development and post development site groundwater recharge volumes.

Based on the GSR-32 spreadsheet, the recharge deficit volume is 92,381 CF. The analysis of the storage volumes provided for the proposed basins will provide the required recharge volume of by providing storage below the lowest orifice in each basin as outlined below.

Table Five
Groundwater Recharge Summary

Infiltration System	Infiltration Area (SF)	Impervious Cover in Drainage Area (SF)	Storage Below Lowest Orifice (in)	Total Recharge Provided (CF)
ADS Aquabox System	16,382	72,396	7.5	157,600
Infiltration Basin 1	5,375	58,283	10.1	136,500
			Total Recharge Provided (CF)	294,100
			Total Recharge Required (CF)	92,381

Basin Dewatering

Per the NJDEP Best Management Practices Manual, bioretention basins are required to drain within 72 hours in accordance with the New Jersey Storm Water Best Management Practices. The analysis is provided in the appendix. The dewatering of the basins was analyzed using the 100-year storm and the time to dewater was taken from the elevation of each orifice. A maximum permeability rate of 10 in/hr was used in all dewatering time calculations. All basins dewatered well within the permitted timeframe.

Infiltration Basin 1:

$t = \frac{5{,}174 \text{ CF} \times 12 \text{ in./hr}}{5{,}375 \text{ SF} \times 0.38 \text{ in./hr.}} = 30.40 \text{ hr}$

ADS Aquabox System:

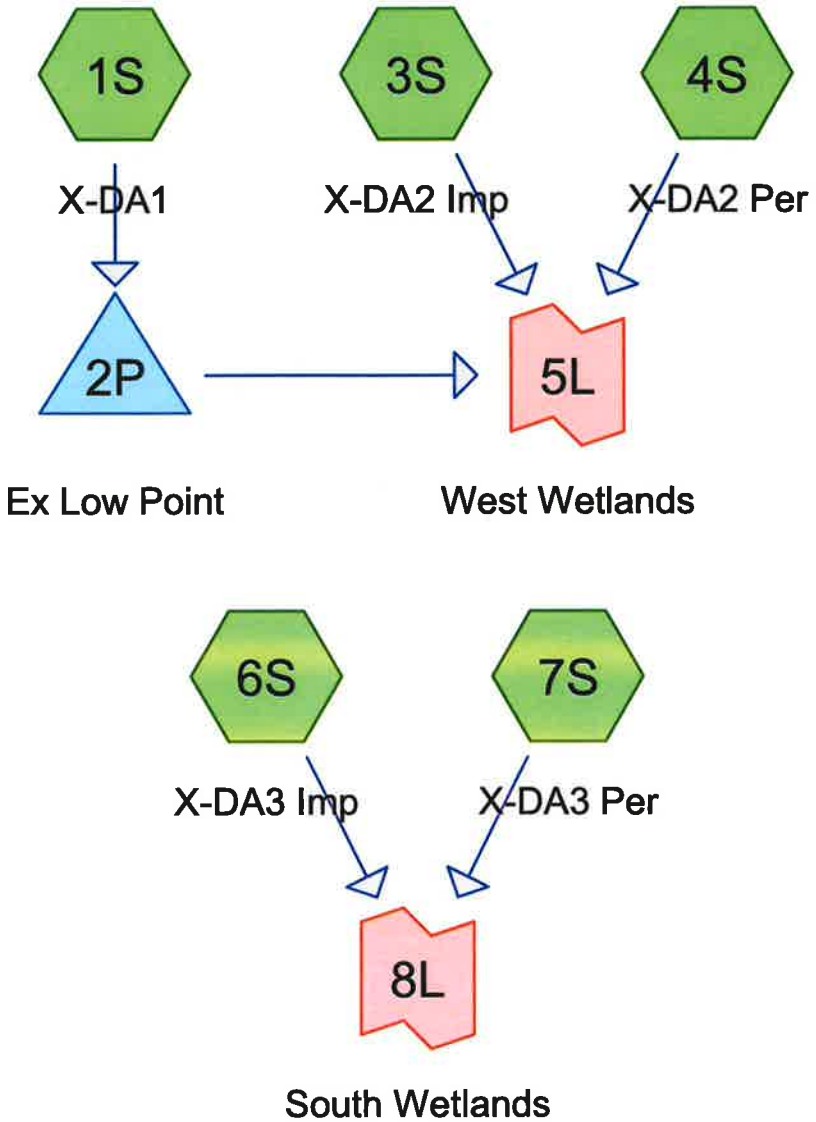
$t = \frac{12{,}815 \text{ CF} \times 12 \text{ in./hr}}{16{,}069 \text{ SF} \times 0.55 \text{ in./hr.}} = 17.39 \text{ hr}$

Groundwater Mounding

A groundwater mounding analysis was prepared for each stormwater management facility to ensure that any mound would not impact each facility. This analysis is included in Section D of this report.

PRE DEVELOPMENT

Existing Conditions



Subcat Reach Pond Link

Routing Diagram for 0701.006C - HydroCAD Analysis
Prepared by PS&S, Printed 3/24/2026

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	002 Yr Current	NOAA 24-hr	C	Default	24.00	1	3.30	2
2	002 Yr Future	NOAA 24-hr	C	Default	24.00	1	3.90	2
3	010 Yr Current	NOAA 24-hr	C	Default	24.00	1	5.09	2
4	010 Yr Future	NOAA 24-hr	C	Default	24.00	1	5.95	2
5	100 Yr Current	NOAA 24-hr	C	Default	24.00	1	8.68	2
6	100 Yr Future	NOAA 24-hr	C	Default	24.00	1	11.02	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.255	39	>75% Grass cover, Good, HSG A (1S, 7S)
0.064	61	>75% Grass cover, Good, HSG B (4S)
3.163	74	>75% Grass cover, Good, HSG C (4S, 7S)
3.827	98	Paved parking, HSG A (3S, 6S)
0.535	30	Woods, Good, HSG A (1S, 4S)
1.114	55	Woods, Good, HSG B (4S, 7S)
2.866	70	Woods, Good, HSG C (4S, 7S)
11.824	**76**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
4.617	HSG A	1S, 3S, 4S, 6S, 7S
1.178	HSG B	4S, 7S
6.029	HSG C	4S, 7S
0.000	HSG D	
0.000	Other	
11.824		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.255	0.064	3.163	0.000	0.000	3.482	>75% Grass cover, Good	1S, 4S, 7S
3.827	0.000	0.000	0.000	0.000	3.827	Paved parking	3S, 6S
0.535	1.114	2.866	0.000	0.000	4.515	Woods, Good	1S, 4S, 7S
4.617	**1.178**	**6.029**	**0.000**	**0.000**	**11.824**	**TOTAL AREA**	

Time span=0.00-30.00 hrs, dt=0.10 hrs, 301 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: X-DA1 Runoff Area=0.617 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=218' Slope=0.0388 '/' Tc=3.7 min CN=WQ Runoff=0.00 cfs 0.000 af

Subcatchment 3S: X-DA2 Imp Runoff Area=1.704 ac 100.00% Impervious Runoff Depth=3.07"
Flow Length=397' Tc=5.6 min CN=98 Runoff=4.55 cfs 0.436 af

Subcatchment 4S: X-DA2 Per Runoff Area=4.016 ac 0.00% Impervious Runoff Depth=0.90"
Flow Length=662' Tc=17.4 min CN=WQ Runoff=2.00 cfs 0.300 af

Subcatchment 6S: X-DA3 Imp Runoff Area=2.123 ac 100.00% Impervious Runoff Depth=3.07"
Flow Length=1,073' Tc=9.4 min CN=98 Runoff=4.87 cfs 0.543 af

Subcatchment 7S: X-DA3 Per Runoff Area=3.364 ac 0.00% Impervious Runoff Depth=0.83"
Flow Length=1,074' Tc=17.3 min CN=WQ Runoff=1.52 cfs 0.231 af

Pond 2P: Ex Low Point Peak Elev=48.00' Storage=1 cf Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Link 5L: West Wetlands Inflow=5.70 cfs 0.736 af
Primary=5.70 cfs 0.736 af

Link 8L: South Wetlands Inflow=6.10 cfs 0.774 af
Primary=6.10 cfs 0.774 af

Total Runoff Area = 11.824 ac Runoff Volume = 1.510 af Average Runoff Depth = 1.53"
67.63% Pervious = 7.997 ac 32.37% Impervious = 3.827 ac

Summary for Subcatchment 1S: X-DA1

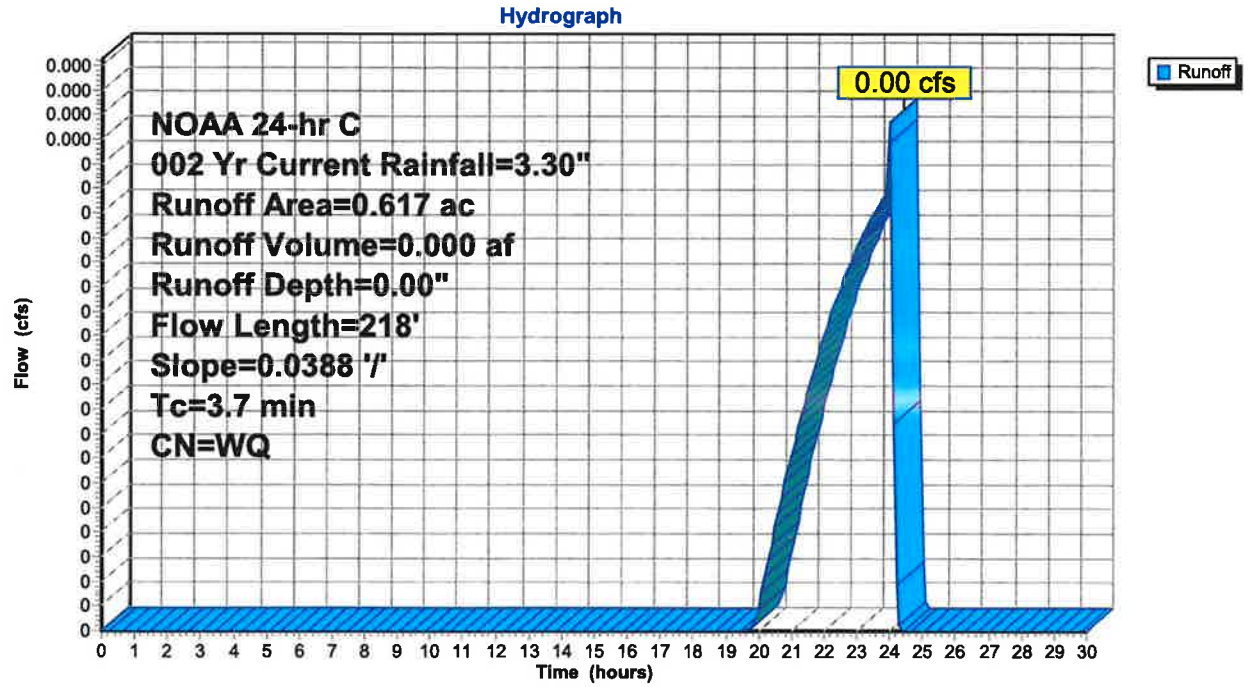
Runoff = 0.00 cfs @ 23.96 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond 2P : Ex Low Point

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 002 Yr Current Rainfall=3.30"

Area (ac)	CN	Description
0.492	30	Woods, Good, HSG A
0.125	39	>75% Grass cover, Good, HSG A
0.617		Weighted Average
0.617		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	218	0.0388	0.98		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps

Subcatchment 1S: X-DA1



Summary for Subcatchment 3S: X-DA2 Imp

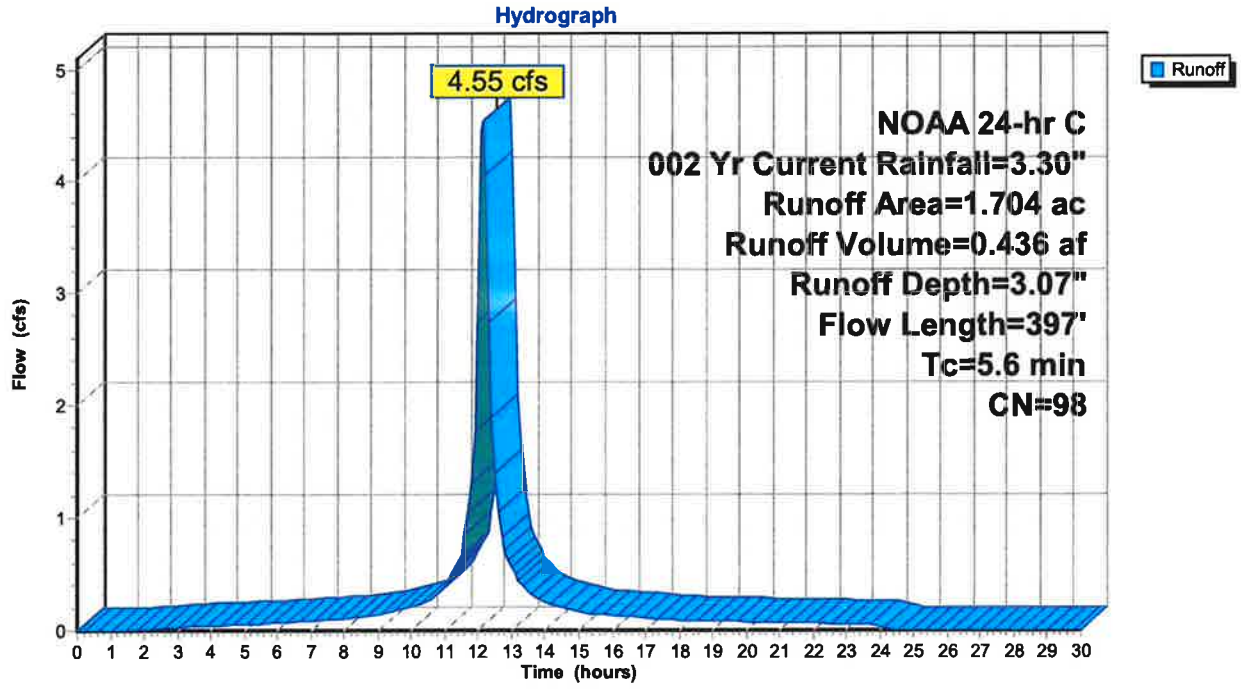
Runoff = 4.55 cfs @ 12.13 hrs, Volume= 0.436 af, Depth= 3.07"
Routed to Link 5L : West Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 002 Yr Current Rainfall=3.30"

Area (ac)	CN	Description
1.704	98	Paved parking, HSG A
1.704		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	100	0.0064	0.89		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
1.2	195	0.0178	2.71		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	102	0.0178	0.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.6	397	Total			

Subcatchment 3S: X-DA2 Imp



Summary for Subcatchment 4S: X-DA2 Per

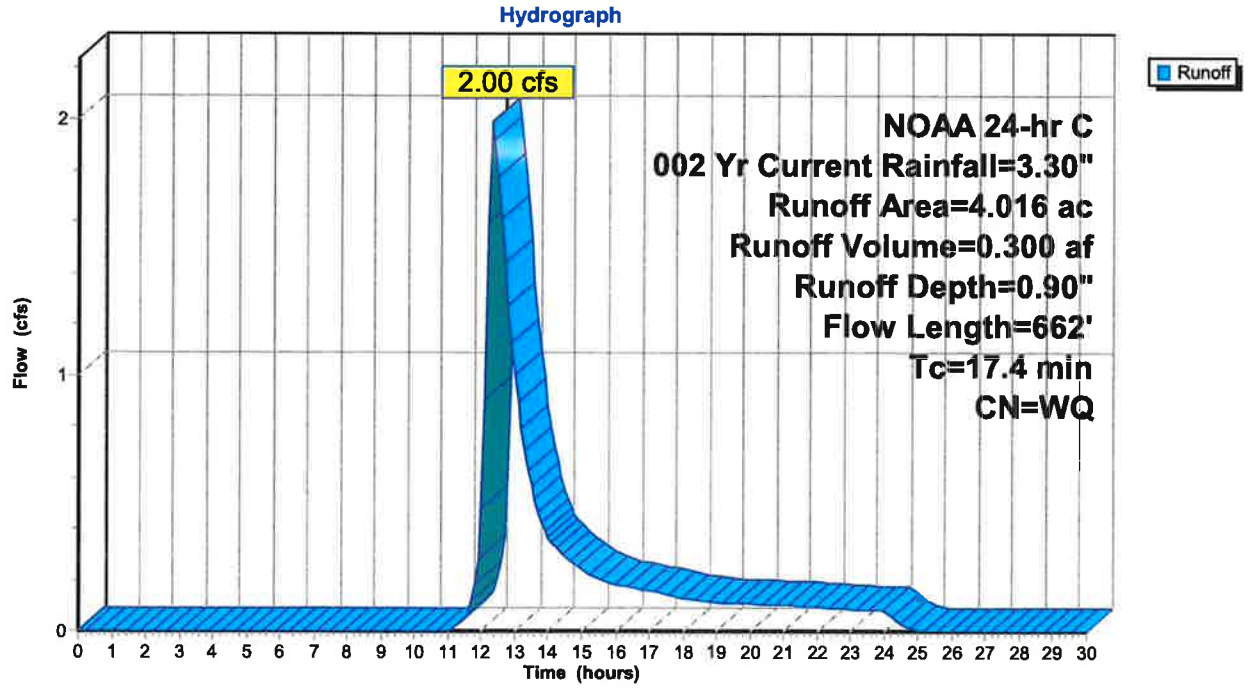
Runoff = 2.00 cfs @ 12.34 hrs, Volume= 0.300 af, Depth= 0.90"
Routed to Link 5L : West Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 002 Yr Current Rainfall=3.30"

Area (ac)	CN	Description
0.043	30	Woods, Good, HSG A
0.627	55	Woods, Good, HSG B
1.050	70	Woods, Good, HSG C
0.064	61	>75% Grass cover, Good, HSG B
2.232	74	>75% Grass cover, Good, HSG C
4.016		Weighted Average
4.016		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	90	0.0287	0.22		**Sheet Flow,** Range n= 0.130 P2= 3.30"
4.7	346	0.0066	1.22		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.9	226	0.0162	0.64		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.4	662	Total			

Subcatchment 4S: X-DA2 Per



Summary for Subcatchment 6S: X-DA3 Imp

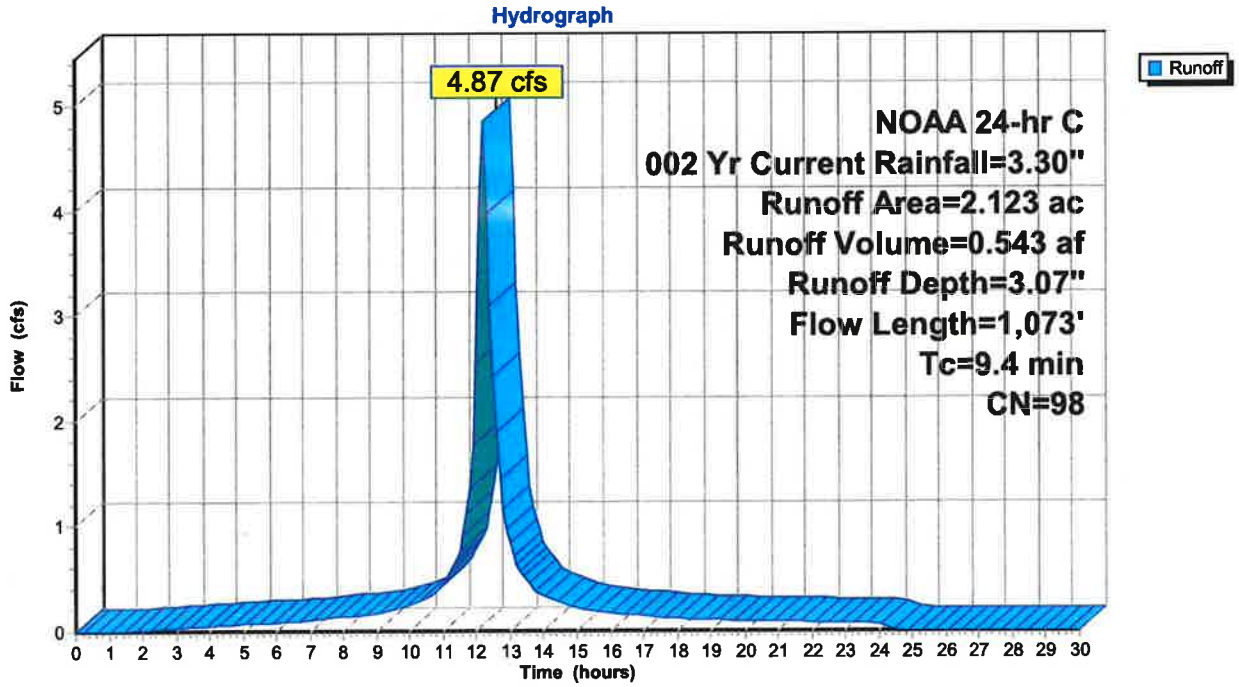
Runoff = 4.87 cfs @ 12.20 hrs, Volume= 0.543 af, Depth= 3.07"
Routed to Link 8L : South Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 002 Yr Current Rainfall=3.30"

Area (ac)	CN	Description
2.123	98	Paved parking, HSG A
2.123		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	58	0.0026	0.55		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
2.9	543	0.0229	3.07		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.7	434	0.0057	1.53		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	38	0.0200	4.31	4.39	**Pipe Channel,** 15.0" x 12.0", R=12.0"/20.0" Pipe Arch Area= 1.0 sf Perim= 3.6' r= n= 0.021
9.4	1,073	Total			

Subcatchment 6S: X-DA3 Imp



Summary for Subcatchment 7S: X-DA3 Per

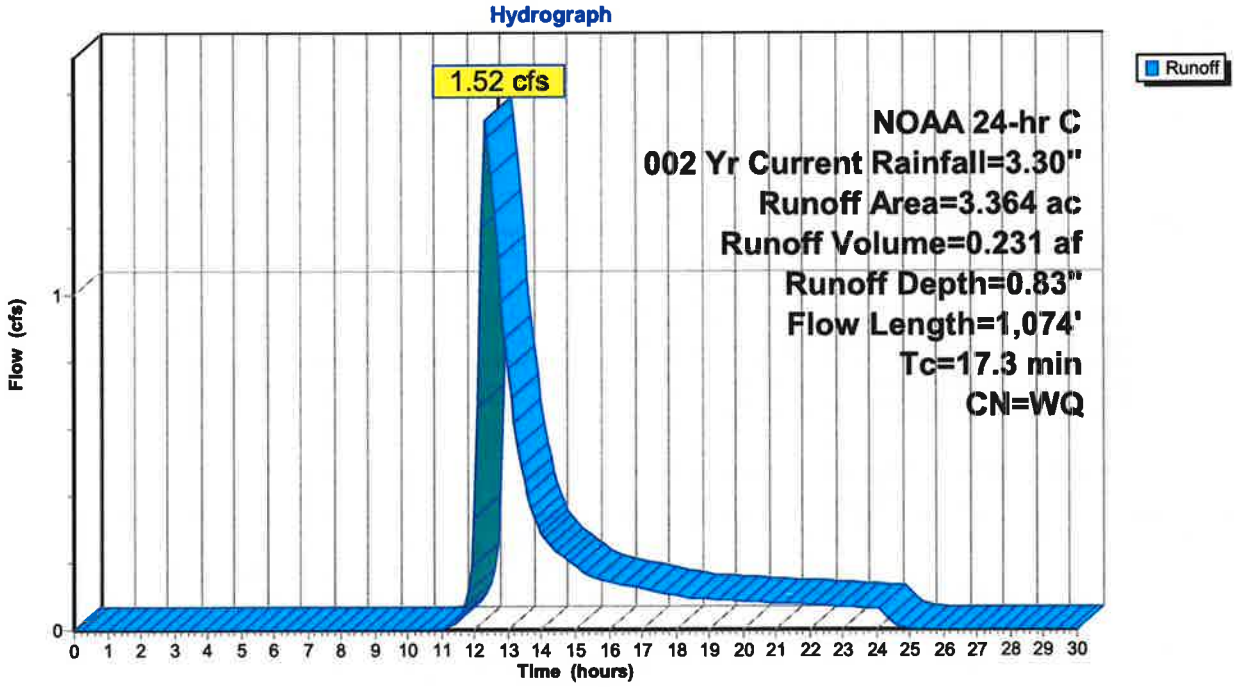
Runoff = 1.52 cfs @ 12.34 hrs, Volume= 0.231 af, Depth= 0.83"
Routed to Link 8L : South Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 002 Yr Current Rainfall=3.30"

Area (ac)	CN	Description
1.816	70	Woods, Good, HSG C
0.487	55	Woods, Good, HSG B
0.130	39	>75% Grass cover, Good, HSG A
0.931	74	>75% Grass cover, Good, HSG C
3.364		Weighted Average
3.364		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	59	0.0070	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
2.9	543	0.0229	3.07		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.7	434	0.0057	1.53		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	38	0.0200	4.31	4.39	**Pipe Channel,** 15.0" x 12.0", R=12.0"/20.0" Pipe Arch Area= 1.0 sf Perim= 3.6' r= n= 0.021
17.3	1,074	Total			

Subcatchment 7S: X-DA3 Per



Summary for Pond 2P: Ex Low Point

Inflow Area = 0.617 ac, 0.00% Impervious, Inflow Depth = 0.00" for 002 Yr Current event
Inflow = 0.00 cfs @ 23.96 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 5L : West Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Peak Elev= 48.00' @ 24.50 hrs Surf.Area= 298 sf Storage= 1 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

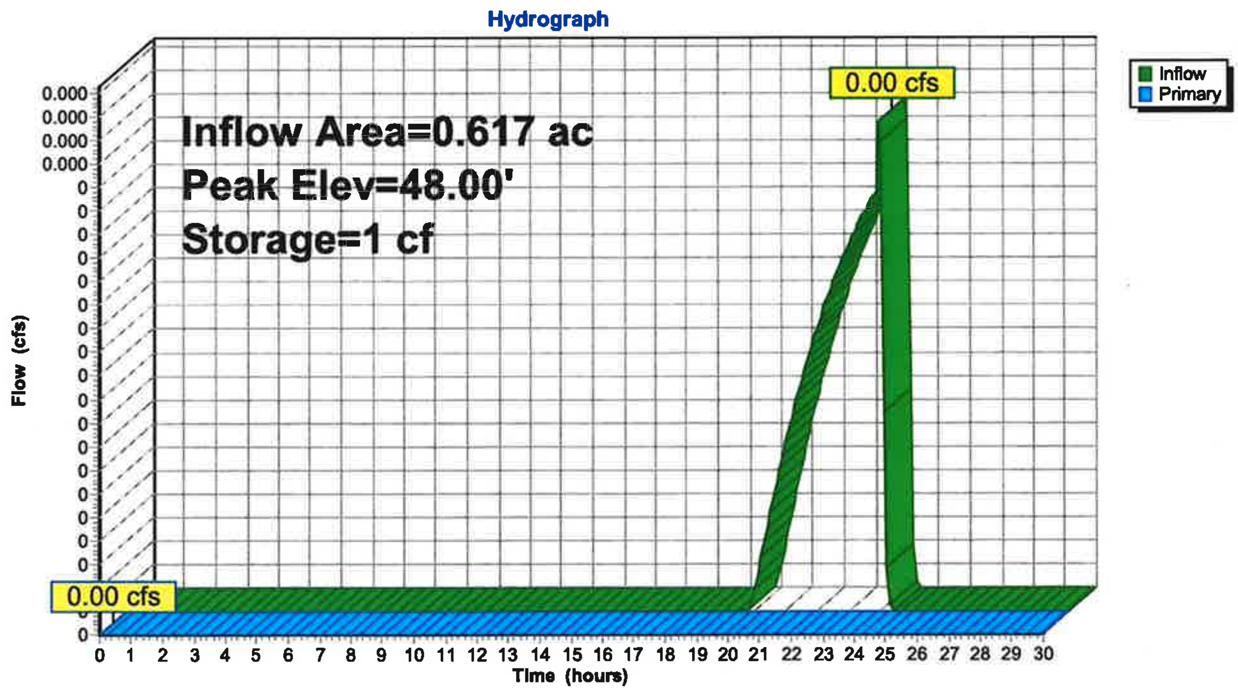
Volume	Invert	Avail.Storage	Storage Description
#1	48.00'	8,383 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
48.00	295	0	0
49.00	1,332	814	814
50.00	4,340	2,836	3,650
51.00	5,126	4,733	8,383

Device	Routing	Invert	Outlet Devices
#1	Primary	50.00'	**90.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=48.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2P: Ex Low Point

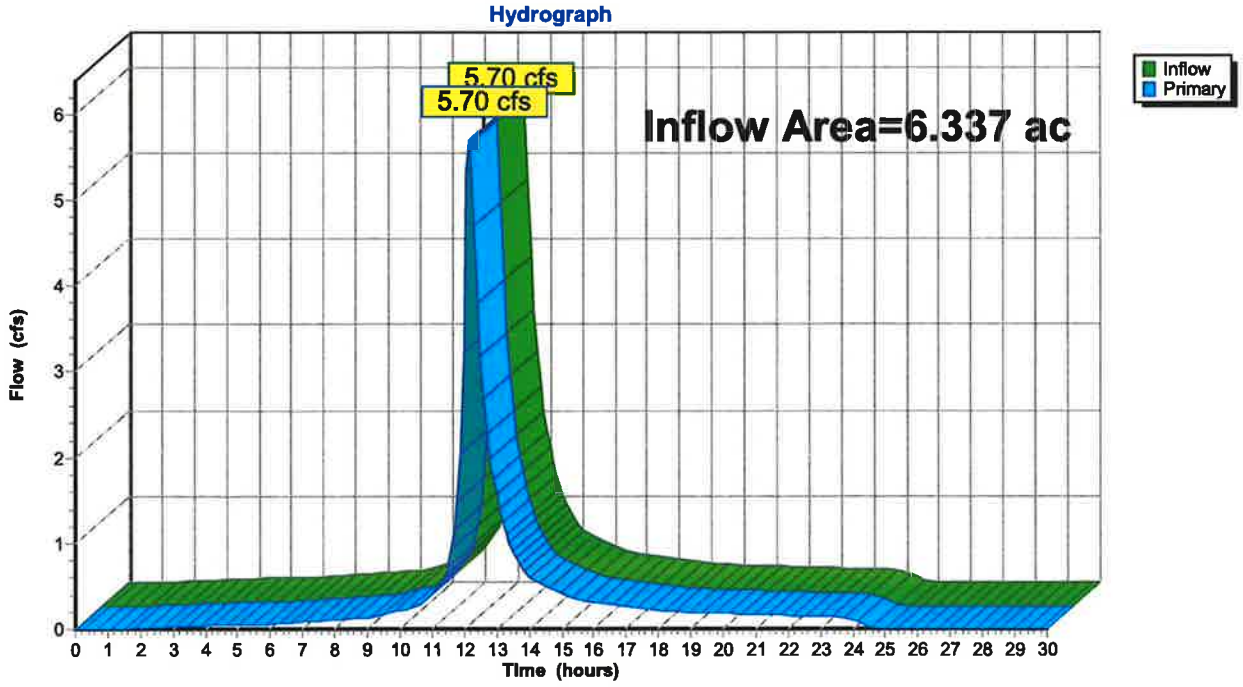


Summary for Link 5L: West Wetlands

Inflow Area = 6.337 ac, 26.89% Impervious, Inflow Depth = 1.39" for 002 Yr Current event
Inflow = 5.70 cfs @ 12.17 hrs, Volume= 0.736 af
Primary = 5.70 cfs @ 12.17 hrs, Volume= 0.736 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 15L

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs

Link 5L: West Wetlands

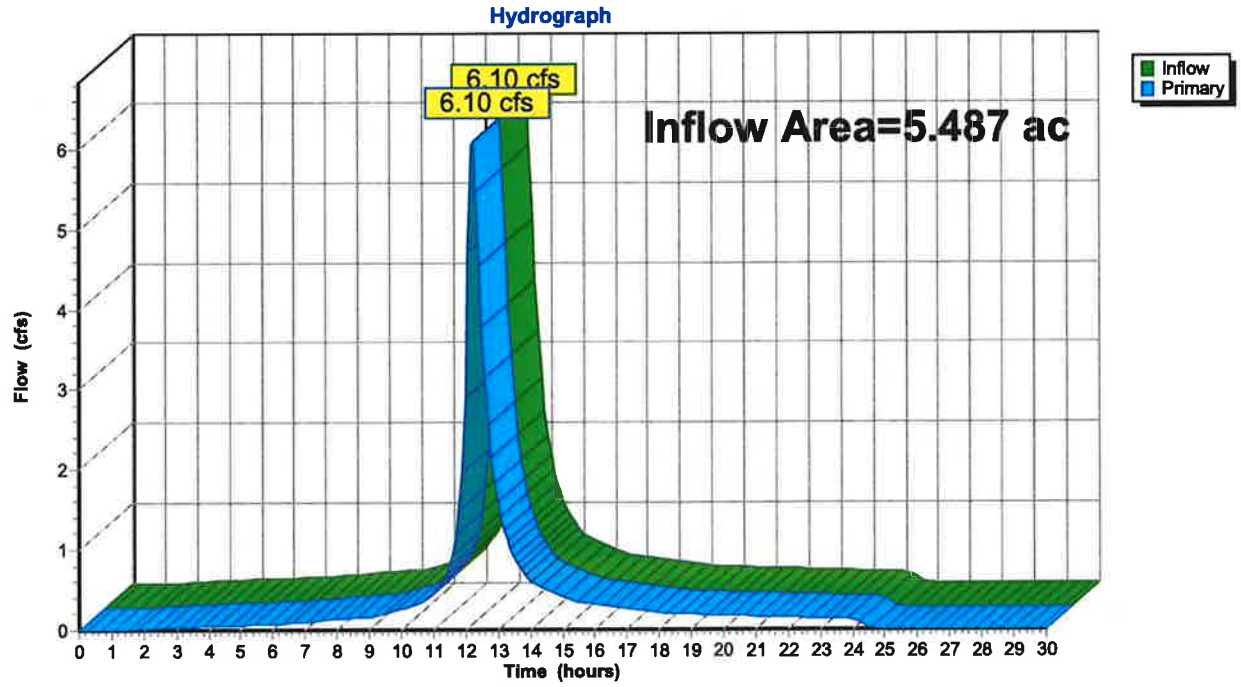


Summary for Link 8L: South Wetlands

Inflow Area = 5.487 ac, 38.69% Impervious, Inflow Depth = 1.69" for 002 Yr Current event
Inflow = 6.10 cfs @ 12.22 hrs, Volume= 0.774 af
Primary = 6.10 cfs @ 12.22 hrs, Volume= 0.774 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 15L

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs

Link 8L: South Wetlands



Time span=0.00-30.00 hrs, dt=0.10 hrs, 301 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: X-DA1 Runoff Area=0.617 ac 0.00% Impervious Runoff Depth=0.01"
Flow Length=218' Slope=0.0388 '/' Tc=3.7 min CN=WQ Runoff=0.00 cfs 0.000 af

Subcatchment 3S: X-DA2 Imp Runoff Area=1.704 ac 100.00% Impervious Runoff Depth=3.67"
Flow Length=397' Tc=5.6 min CN=98 Runoff=5.40 cfs 0.520 af

Subcatchment 4S: X-DA2 Per Runoff Area=4.016 ac 0.00% Impervious Runoff Depth=1.27"
Flow Length=662' Tc=17.4 min CN=WQ Runoff=2.94 cfs 0.424 af

Subcatchment 6S: X-DA3 Imp Runoff Area=2.123 ac 100.00% Impervious Runoff Depth=3.67"
Flow Length=1,073' Tc=9.4 min CN=98 Runoff=5.77 cfs 0.648 af

Subcatchment 7S: X-DA3 Per Runoff Area=3.364 ac 0.00% Impervious Runoff Depth=1.18"
Flow Length=1,074' Tc=17.3 min CN=WQ Runoff=2.27 cfs 0.330 af

Pond 2P: Ex Low Point Peak Elev=48.05' Storage=16 cf Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Link 5L: West Wetlands Inflow=7.26 cfs 0.944 af
Primary=7.26 cfs 0.944 af

Link 8L: South Wetlands Inflow=7.68 cfs 0.978 af
Primary=7.68 cfs 0.978 af

Total Runoff Area = 11.824 ac Runoff Volume = 1.923 af Average Runoff Depth = 1.95"
67.63% Pervious = 7.997 ac 32.37% Impervious = 3.827 ac

Summary for Subcatchment 1S: X-DA1

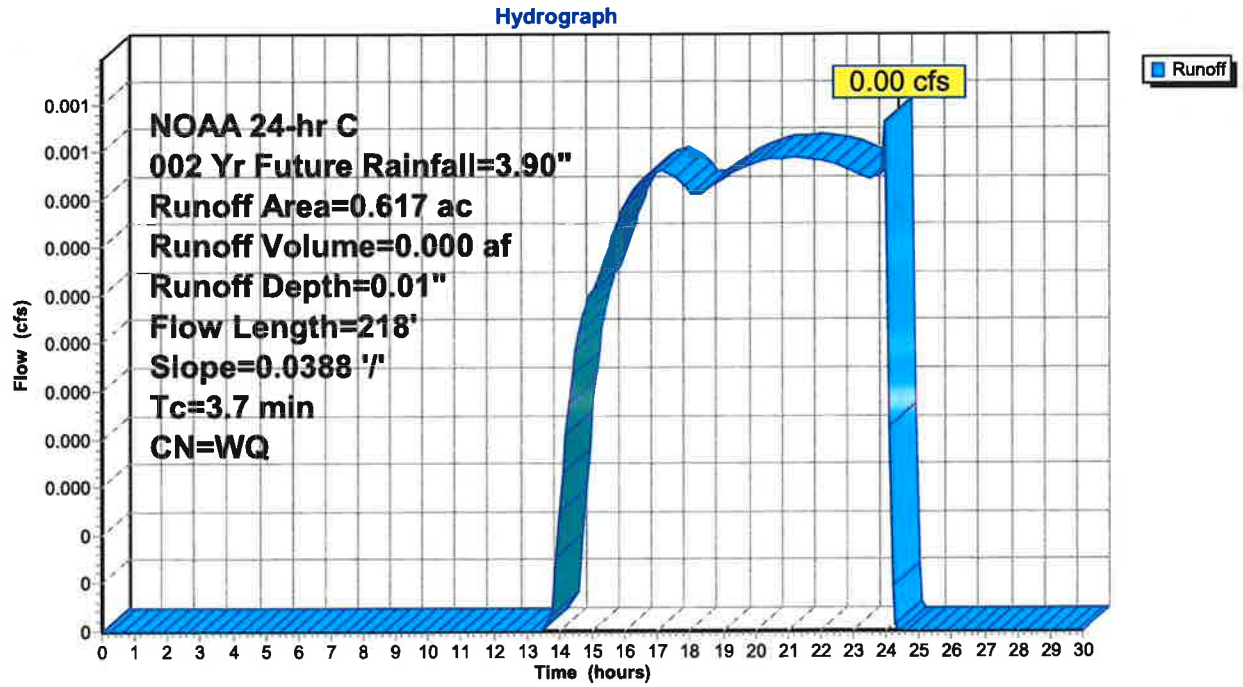
Runoff = 0.00 cfs @ 23.96 hrs, Volume= 0.000 af, Depth= 0.01"
Routed to Pond 2P : Ex Low Point

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 002 Yr Future Rainfall=3.90"

Area (ac)	CN	Description
0.492	30	Woods, Good, HSG A
0.125	39	>75% Grass cover, Good, HSG A
0.617		Weighted Average
0.617		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	218	0.0388	0.98		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps

Subcatchment 1S: X-DA1



Summary for Subcatchment 3S: X-DA2 Imp

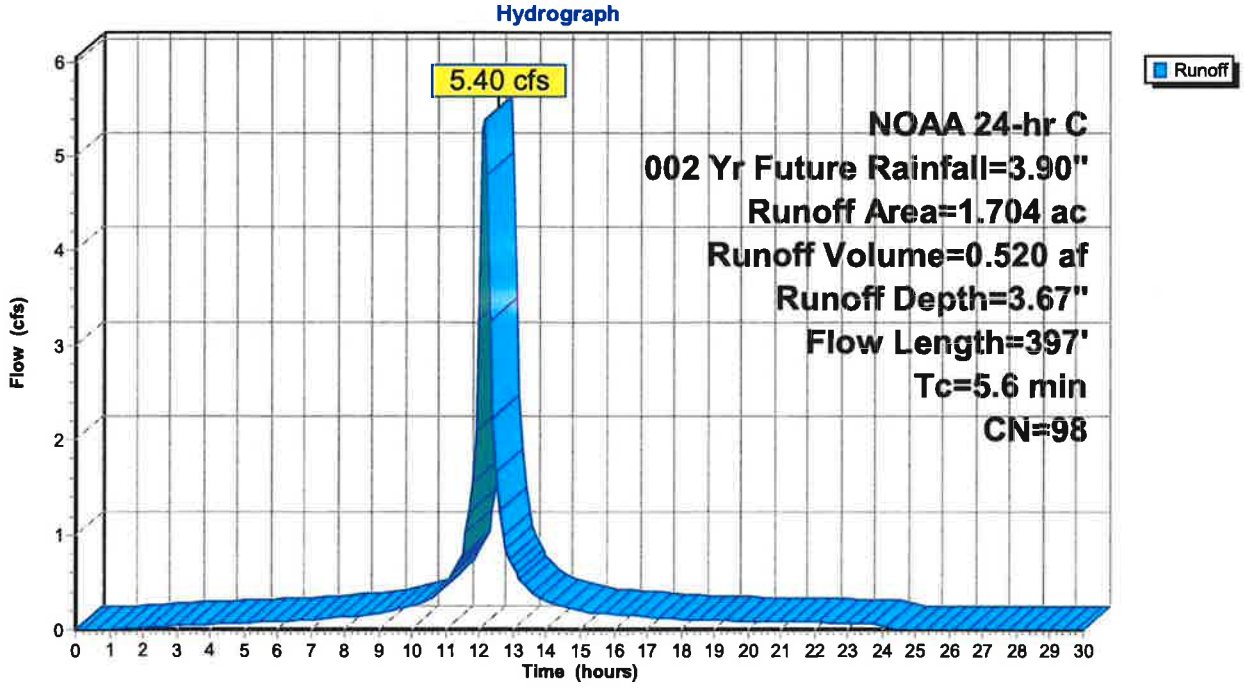
Runoff = 5.40 cfs @ 12.13 hrs, Volume= 0.520 af, Depth= 3.67"
Routed to Link 5L : West Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 002 Yr Future Rainfall=3.90"

Area (ac)	CN	Description
1.704	98	Paved parking, HSG A
1.704		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	100	0.0064	0.89		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
1.2	195	0.0178	2.71		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	102	0.0178	0.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.6	397	Total			

Subcatchment 3S: X-DA2 Imp



Summary for Subcatchment 4S: X-DA2 Per

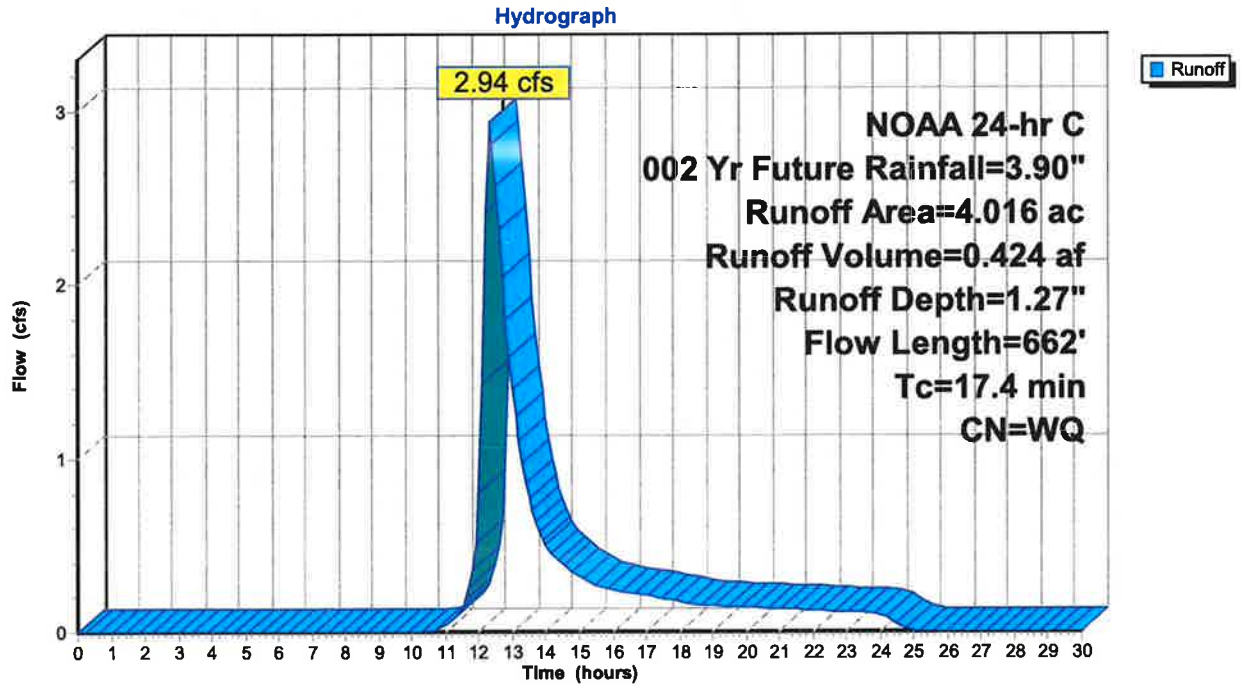
Runoff = 2.94 cfs @ 12.33 hrs, Volume= 0.424 af, Depth= 1.27"
Routed to Link 5L : West Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 002 Yr Future Rainfall=3.90"

Area (ac)	CN	Description
0.043	30	Woods, Good, HSG A
0.627	55	Woods, Good, HSG B
1.050	70	Woods, Good, HSG C
0.064	61	>75% Grass cover, Good, HSG B
2.232	74	>75% Grass cover, Good, HSG C
4.016		Weighted Average
4.016		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	90	0.0287	0.22		**Sheet Flow,** Range n= 0.130 P2= 3.30"
4.7	346	0.0066	1.22		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.9	226	0.0162	0.64		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.4	662	Total			

Subcatchment 4S: X-DA2 Per



Summary for Subcatchment 6S: X-DA3 Imp

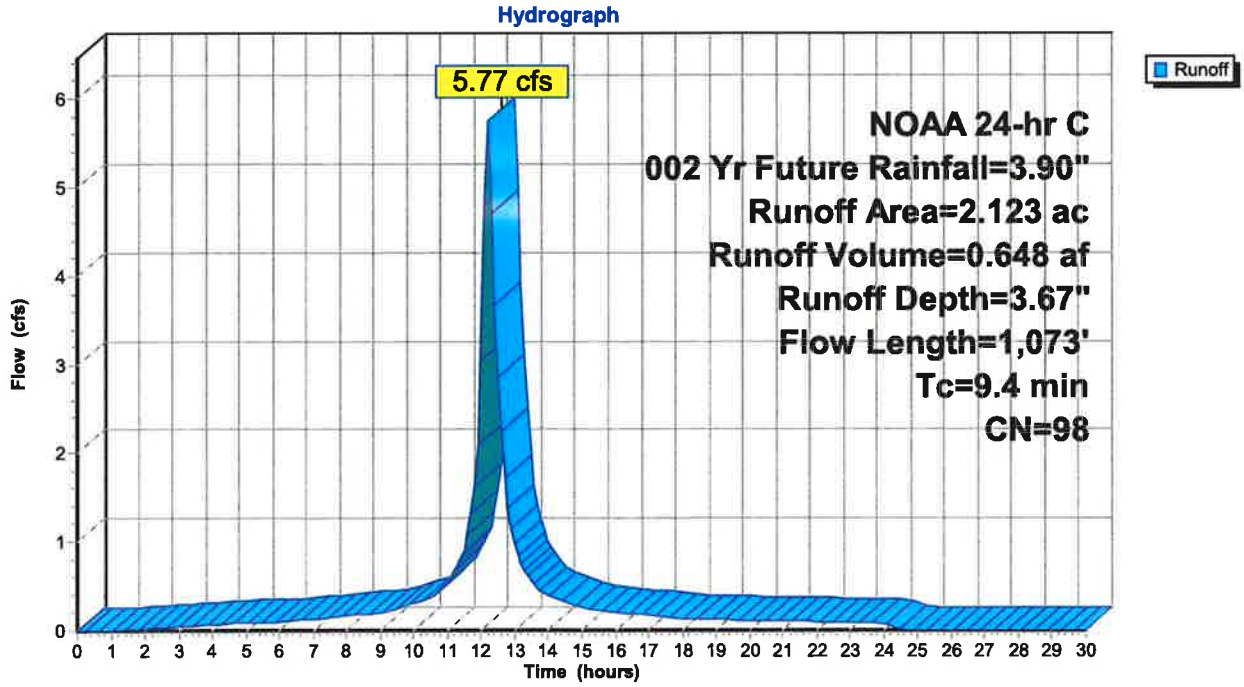
Runoff = 5.77 cfs @ 12.20 hrs, Volume= 0.648 af, Depth= 3.67"
Routed to Link 8L : South Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 002 Yr Future Rainfall=3.90"

Area (ac)	CN	Description
2.123	98	Paved parking, HSG A
2.123		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	58	0.0026	0.55		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
2.9	543	0.0229	3.07		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.7	434	0.0057	1.53		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	38	0.0200	4.31	4.39	**Pipe Channel,** 15.0" x 12.0", R=12.0"/20.0" Pipe Arch Area= 1.0 sf Perim= 3.6' r= n= 0.021
9.4	1,073	Total			

Subcatchment 6S: X-DA3 Imp



Summary for Subcatchment 7S: X-DA3 Per

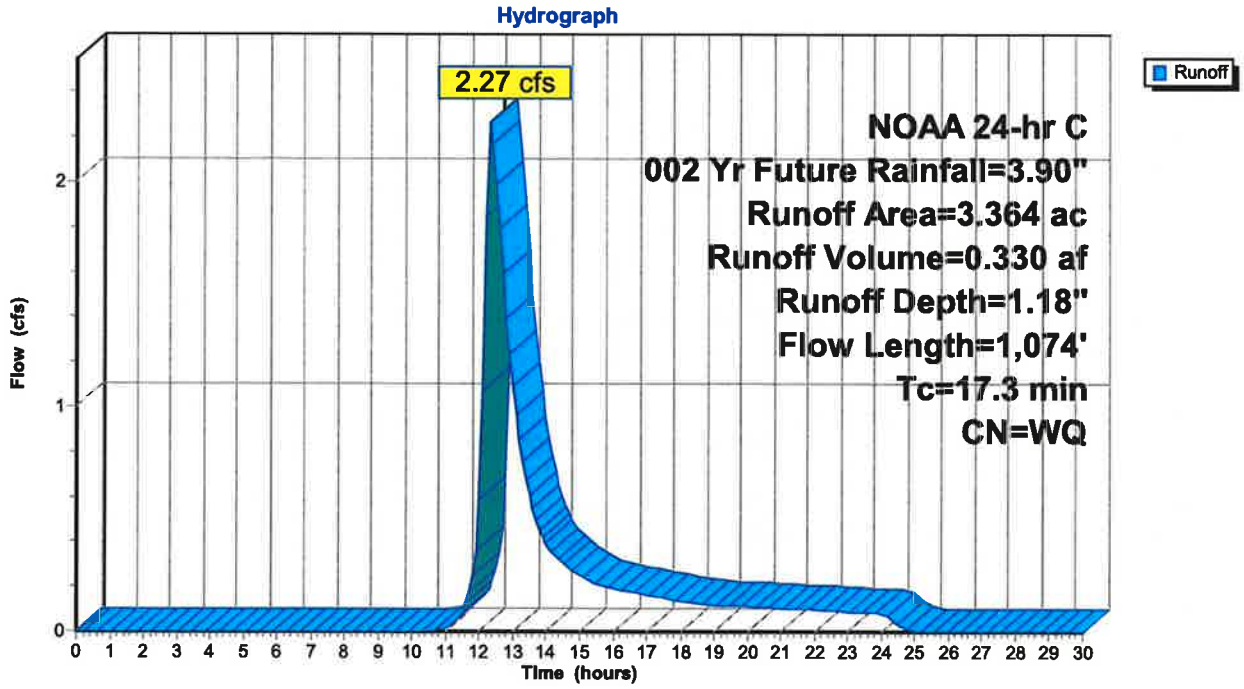
Runoff = 2.27 cfs @ 12.33 hrs, Volume= 0.330 af, Depth= 1.18"
Routed to Link 8L : South Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 002 Yr Future Rainfall=3.90"

Area (ac)	CN	Description
1.816	70	Woods, Good, HSG C
0.487	55	Woods, Good, HSG B
0.130	39	>75% Grass cover, Good, HSG A
0.931	74	>75% Grass cover, Good, HSG C
3.364		Weighted Average
3.364		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	59	0.0070	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
2.9	543	0.0229	3.07		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.7	434	0.0057	1.53		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	38	0.0200	4.31	4.39	**Pipe Channel,** 15.0" x 12.0", R=12.0"/20.0" Pipe Arch Area= 1.0 sf Perim= 3.6' r= n= 0.021
17.3	1,074	Total			

Subcatchment 7S: X-DA3 Per



Summary for Pond 2P: Ex Low Point

Inflow Area = 0.617 ac, 0.00% Impervious, Inflow Depth = 0.01" for 002 Yr Future event
Inflow = 0.00 cfs @ 23.96 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 5L : West Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Peak Elev= 48.05' @ 24.50 hrs Surf.Area= 348 sf Storage= 16 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

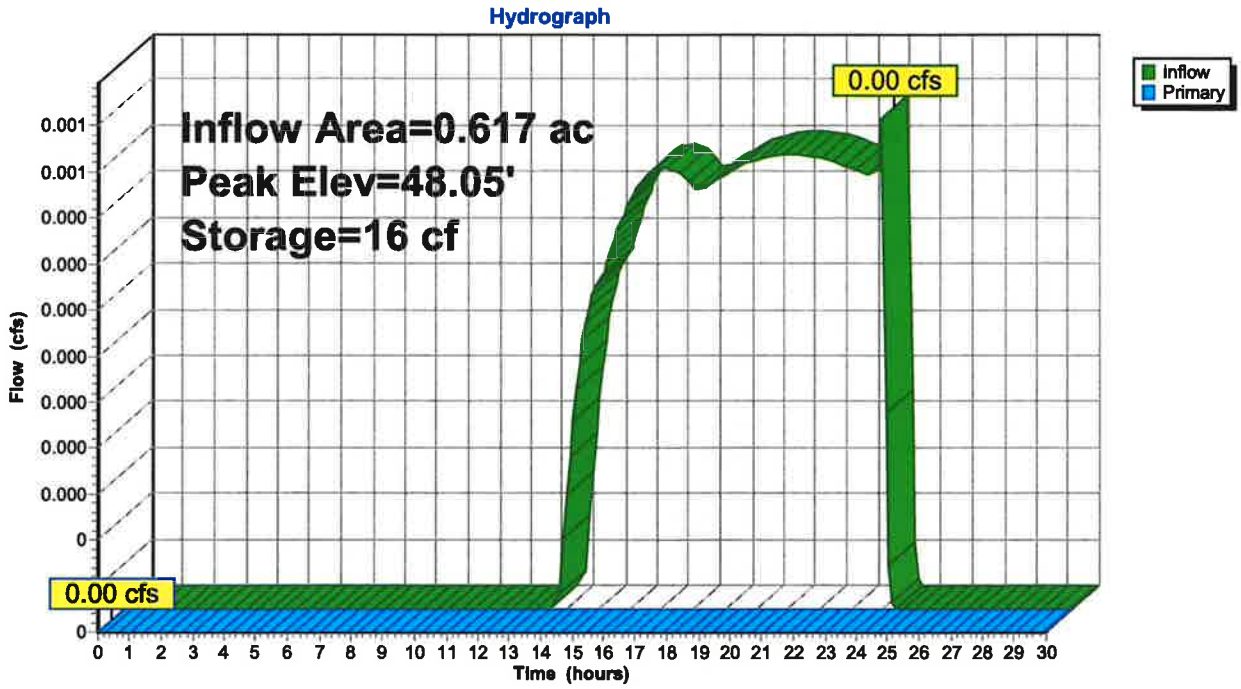
Volume	Invert	Avail.Storage	Storage Description
#1	48.00'	8,383 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
48.00	295	0	0
49.00	1,332	814	814
50.00	4,340	2,836	3,650
51.00	5,126	4,733	8,383

Device	Routing	Invert	Outlet Devices
#1	Primary	50.00'	**90.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=48.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2P: Ex Low Point

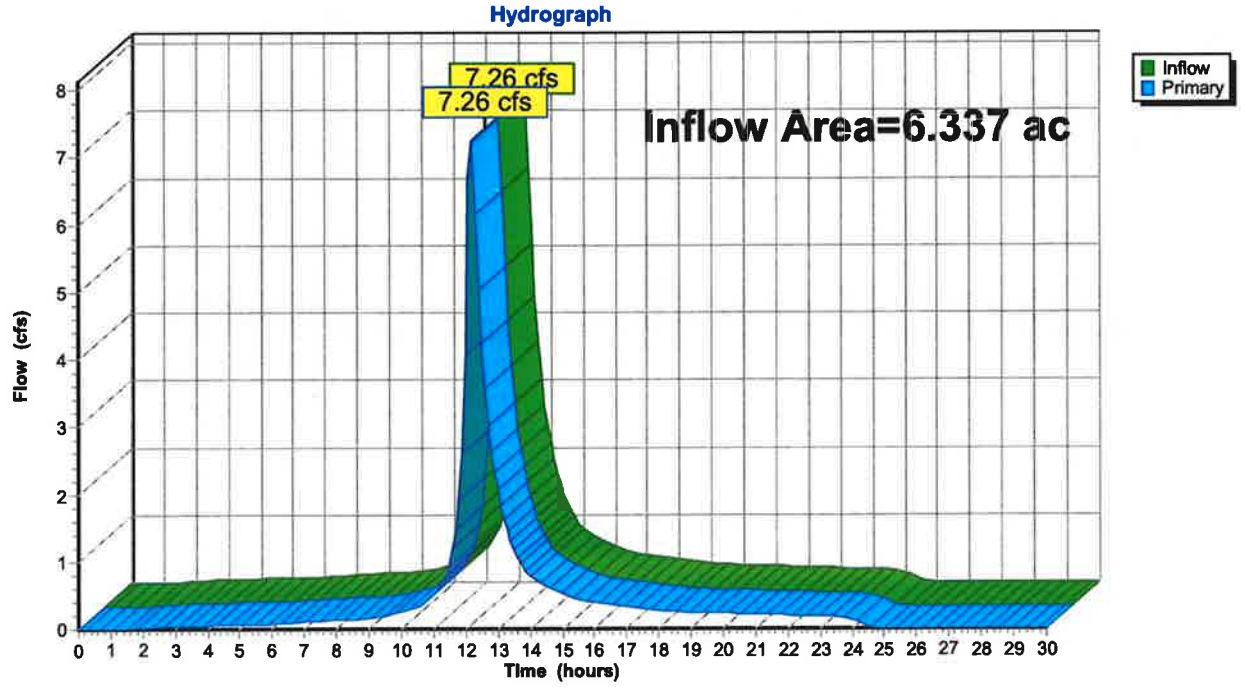


Summary for Link 5L: West Wetlands

Inflow Area = 6.337 ac, 26.89% Impervious, Inflow Depth = 1.79" for 002 Yr Future event
Inflow = 7.26 cfs @ 12.18 hrs, Volume= 0.944 af
Primary = 7.26 cfs @ 12.18 hrs, Volume= 0.944 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 15L

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs

Link 5L: West Wetlands

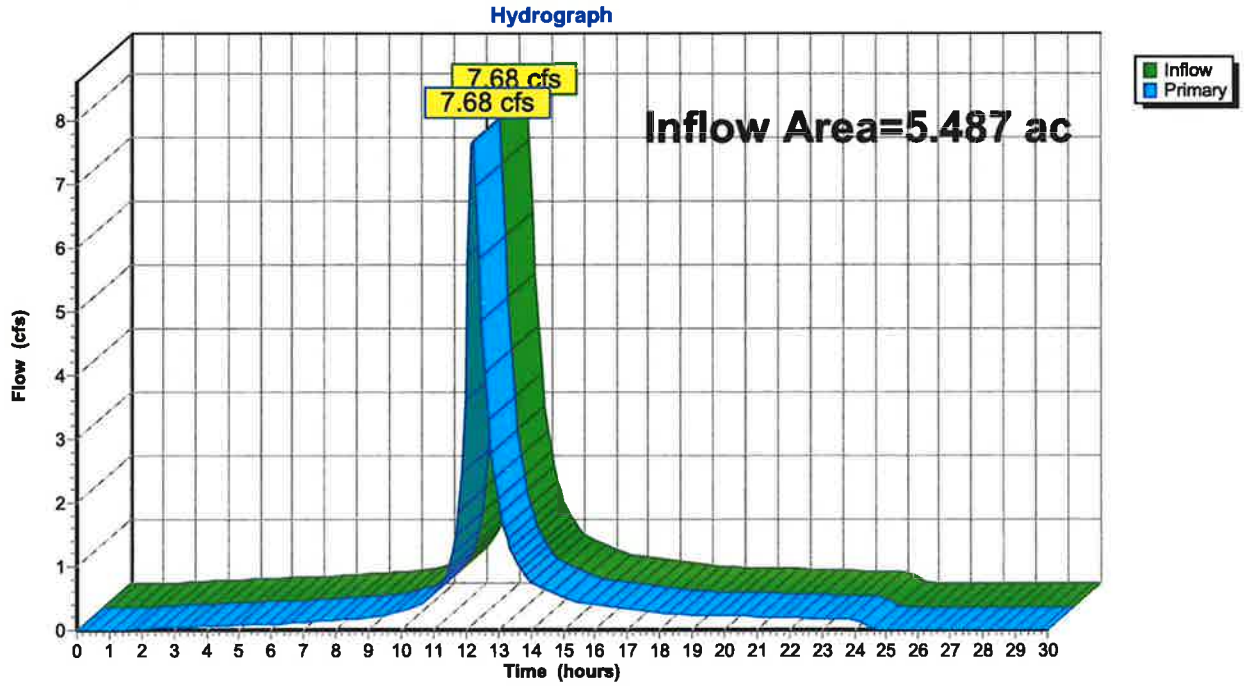


Summary for Link 8L: South Wetlands

Inflow Area = 5.487 ac, 38.69% Impervious, Inflow Depth = 2.14" for 002 Yr Future event
Inflow = 7.68 cfs @ 12.22 hrs, Volume= 0.978 af
Primary = 7.68 cfs @ 12.22 hrs, Volume= 0.978 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 15L

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs

Link 8L: South Wetlands



Time span=0.00-30.00 hrs, dt=0.10 hrs, 301 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: X-DA1 Runoff Area=0.617 ac 0.00% Impervious Runoff Depth=0.05"
Flow Length=218' Slope=0.0388 '/' Tc=3.7 min CN=WQ Runoff=0.01 cfs 0.003 af

Subcatchment 3S: X-DA2 Imp Runoff Area=1.704 ac 100.00% Impervious Runoff Depth=4.85"
Flow Length=397' Tc=5.6 min CN=98 Runoff=7.07 cfs 0.689 af

Subcatchment 4S: X-DA2 Per Runoff Area=4.016 ac 0.00% Impervious Runoff Depth=2.09"
Flow Length=662' Tc=17.4 min CN=WQ Runoff=5.06 cfs 0.698 af

Subcatchment 6S: X-DA3 Imp Runoff Area=2.123 ac 100.00% Impervious Runoff Depth=4.85"
Flow Length=1,073' Tc=9.4 min CN=98 Runoff=7.56 cfs 0.859 af

Subcatchment 7S: X-DA3 Per Runoff Area=3.364 ac 0.00% Impervious Runoff Depth=1.97"
Flow Length=1,074' Tc=17.3 min CN=WQ Runoff=3.98 cfs 0.551 af

Pond 2P: Ex Low Point Peak Elev=48.26' Storage=113 cf Inflow=0.01 cfs 0.003 af
Outflow=0.00 cfs 0.000 af

Link 5L: West Wetlands Inflow=10.61 cfs 1.387 af
Primary=10.61 cfs 1.387 af

Link 8L: South Wetlands Inflow=11.04 cfs 1.410 af
Primary=11.04 cfs 1.410 af

Total Runoff Area = 11.824 ac Runoff Volume = 2.800 af Average Runoff Depth = 2.84"
67.63% Pervious = 7.997 ac 32.37% Impervious = 3.827 ac

Summary for Subcatchment 1S: X-DA1

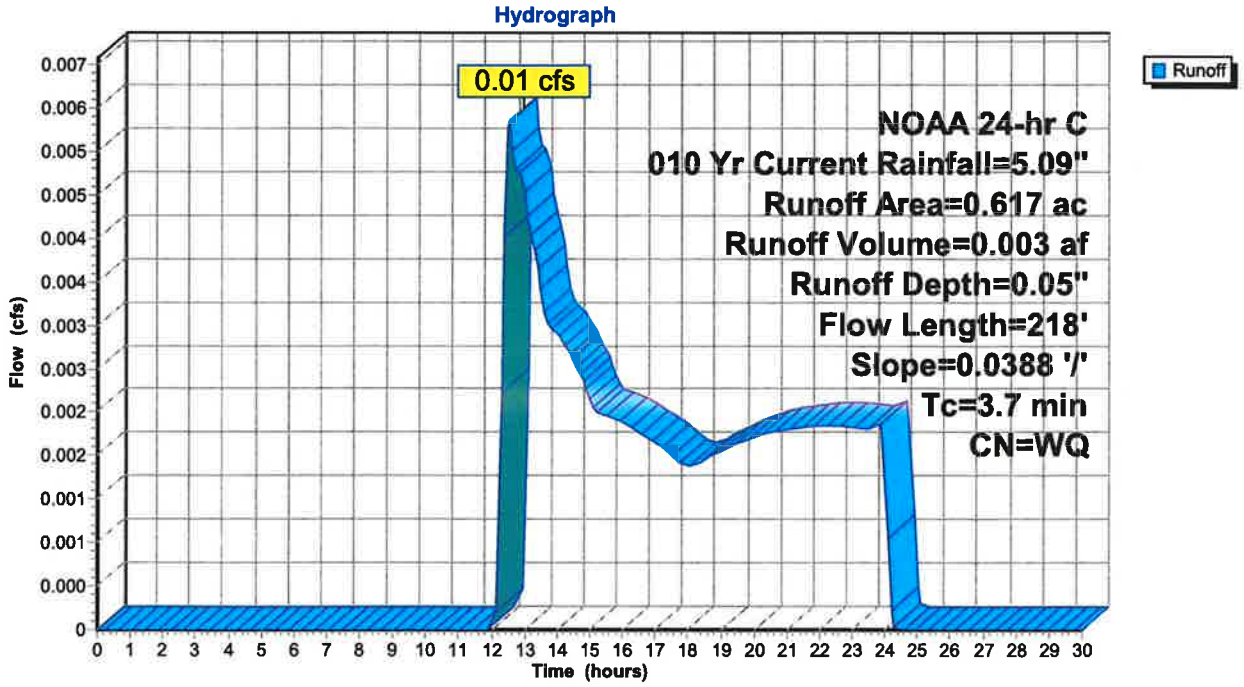
Runoff = 0.01 cfs @ 12.53 hrs, Volume= 0.003 af, Depth= 0.05"
Routed to Pond 2P : Ex Low Point

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 010 Yr Current Rainfall=5.09"

Area (ac)	CN	Description
0.492	30	Woods, Good, HSG A
0.125	39	>75% Grass cover, Good, HSG A
0.617		Weighted Average
0.617		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	218	0.0388	0.98		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps

Subcatchment 1S: X-DA1



Summary for Subcatchment 3S: X-DA2 Imp

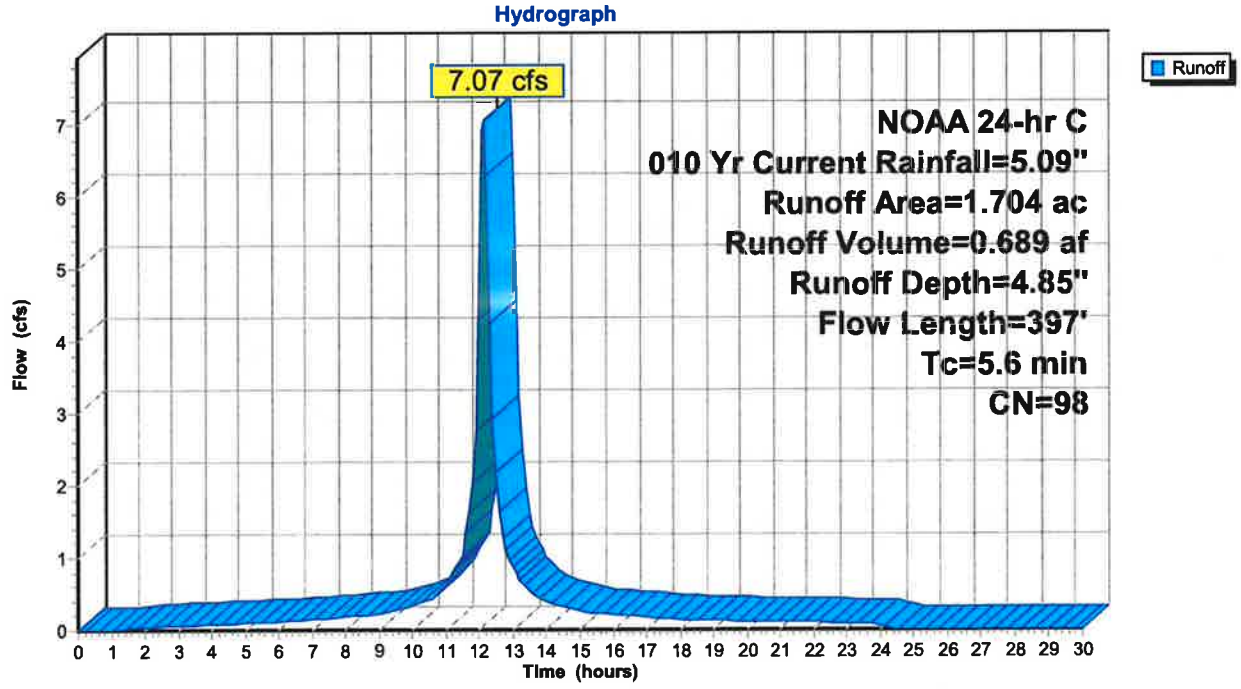
Runoff = 7.07 cfs @ 12.13 hrs, Volume= 0.689 af, Depth= 4.85"
Routed to Link 5L : West Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 010 Yr Current Rainfall=5.09"

Area (ac)	CN	Description
1.704	98	Paved parking, HSG A
1.704		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	100	0.0064	0.89		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
1.2	195	0.0178	2.71		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	102	0.0178	0.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.6	397	Total			

Subcatchment 3S: X-DA2 Imp



Summary for Subcatchment 4S: X-DA2 Per

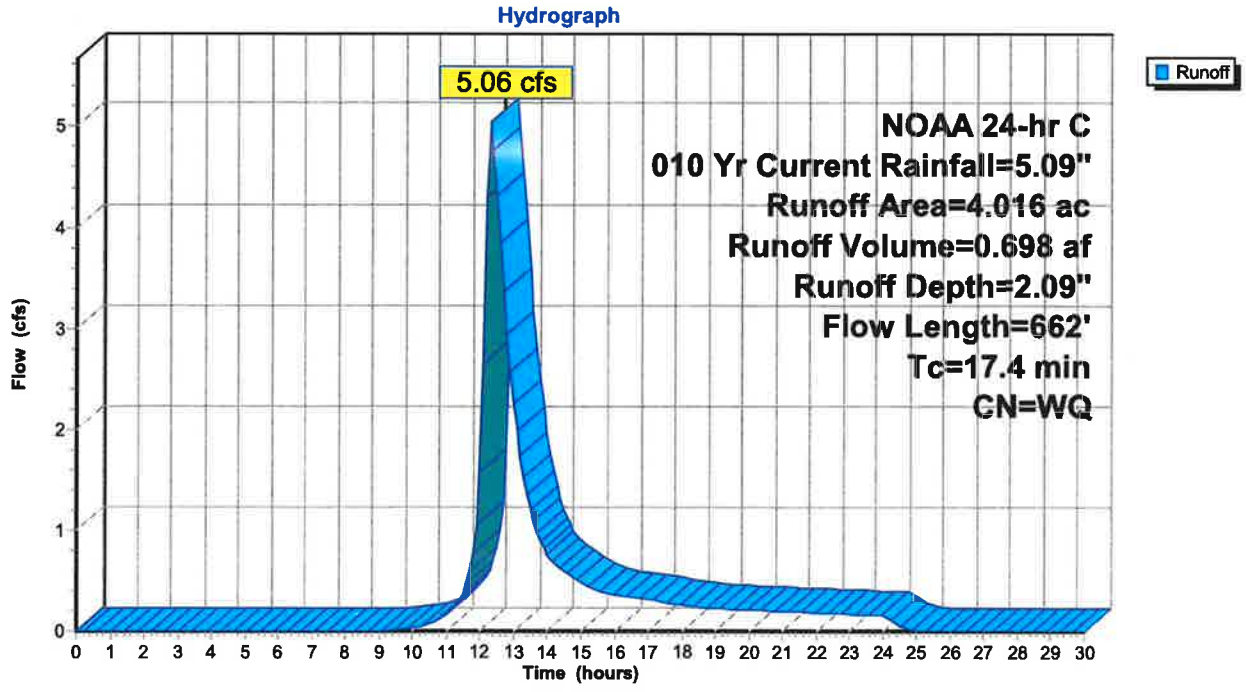
Runoff = 5.06 cfs @ 12.32 hrs, Volume= 0.698 af, Depth= 2.09"
Routed to Link 5L : West Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 010 Yr Current Rainfall=5.09"

Area (ac)	CN	Description
0.043	30	Woods, Good, HSG A
0.627	55	Woods, Good, HSG B
1.050	70	Woods, Good, HSG C
0.064	61	>75% Grass cover, Good, HSG B
2.232	74	>75% Grass cover, Good, HSG C
4.016		Weighted Average
4.016		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	90	0.0287	0.22		**Sheet Flow,** Range n= 0.130 P2= 3.30"
4.7	346	0.0066	1.22		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.9	226	0.0162	0.64		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.4	662	Total			

Subcatchment 4S: X-DA2 Per



Summary for Subcatchment 6S: X-DA3 Imp

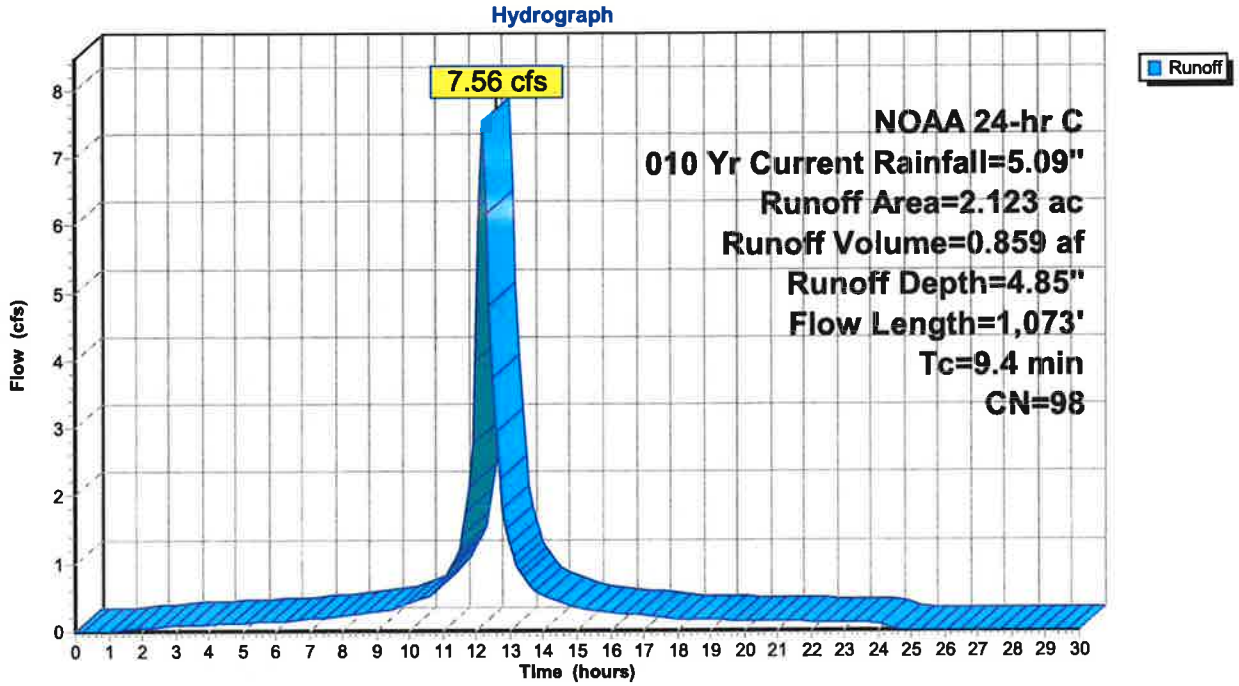
Runoff = 7.56 cfs @ 12.20 hrs, Volume= 0.859 af, Depth= 4.85"
Routed to Link 8L : South Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 010 Yr Current Rainfall=5.09"

Area (ac)	CN	Description
2.123	98	Paved parking, HSG A
2.123		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	58	0.0026	0.55		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
2.9	543	0.0229	3.07		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.7	434	0.0057	1.53		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	38	0.0200	4.31	4.39	**Pipe Channel,** 15.0" x 12.0", R=12.0"/20.0" Pipe Arch Area= 1.0 sf Perim= 3.6' r= n= 0.021
9.4	1,073	Total			

Subcatchment 6S: X-DA3 Imp



Summary for Subcatchment 7S: X-DA3 Per

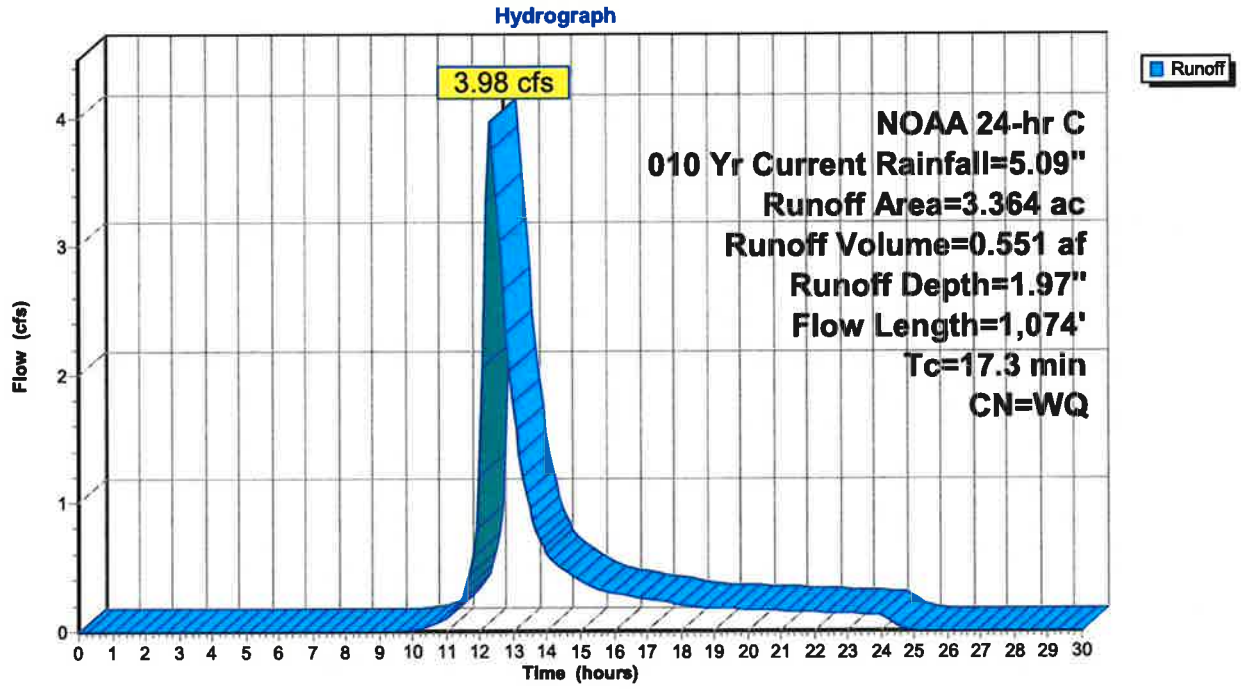
Runoff = 3.98 cfs @ 12.33 hrs, Volume= 0.551 af, Depth= 1.97"
Routed to Link 8L : South Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 010 Yr Current Rainfall=5.09"

Area (ac)	CN	Description
1.816	70	Woods, Good, HSG C
0.487	55	Woods, Good, HSG B
0.130	39	>75% Grass cover, Good, HSG A
0.931	74	>75% Grass cover, Good, HSG C
3.364		Weighted Average
3.364		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	59	0.0070	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
2.9	543	0.0229	3.07		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.7	434	0.0057	1.53		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	38	0.0200	4.31	4.39	**Pipe Channel,** 15.0" x 12.0", R=12.0"/20.0" Pipe Arch Area= 1.0 sf Perim= 3.6' r= n= 0.021
17.3	1,074	Total			

Subcatchment 7S: X-DA3 Per



Summary for Pond 2P: Ex Low Point

Inflow Area = 0.617 ac, 0.00% Impervious, Inflow Depth = 0.05" for 010 Yr Current event
Inflow = 0.01 cfs @ 12.53 hrs, Volume= 0.003 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 5L : West Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Peak Elev= 48.26' @ 24.50 hrs Surf.Area= 566 sf Storage= 113 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

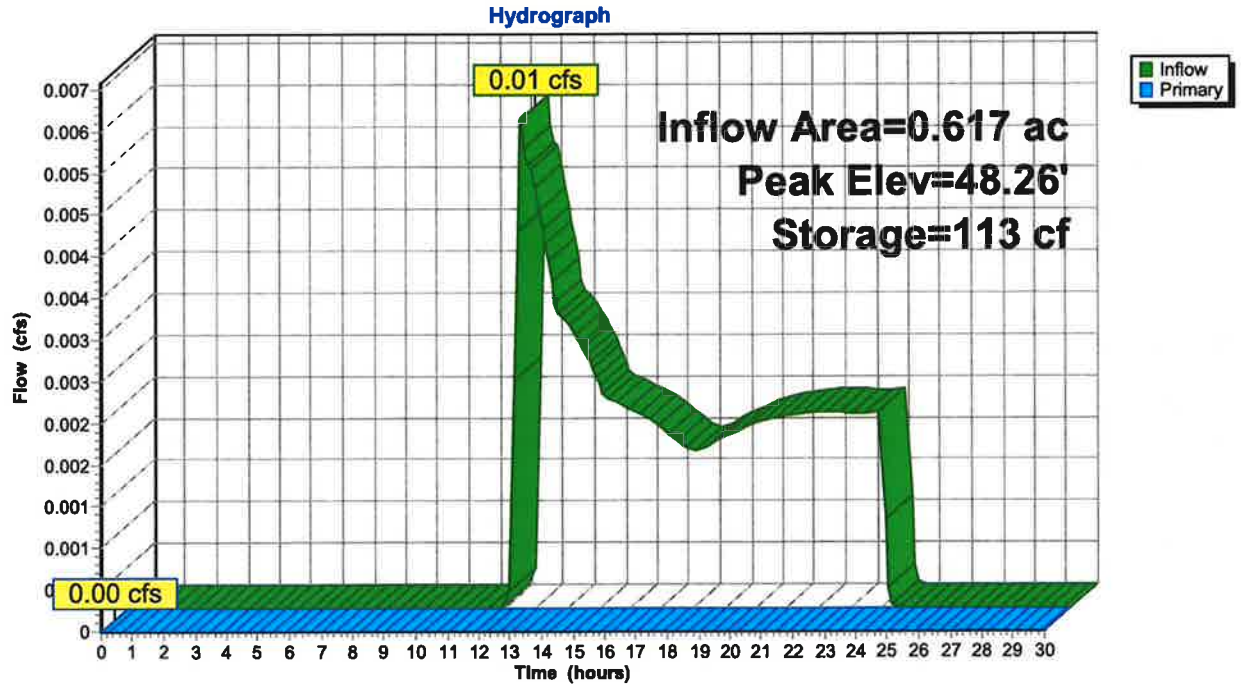
Volume	Invert	Avail.Storage	Storage Description
#1	48.00'	8,383 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
48.00	295	0	0
49.00	1,332	814	814
50.00	4,340	2,836	3,650
51.00	5,126	4,733	8,383

Device	Routing	Invert	Outlet Devices
#1	Primary	50.00'	**90.0' long x 10.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=48.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2P: Ex Low Point

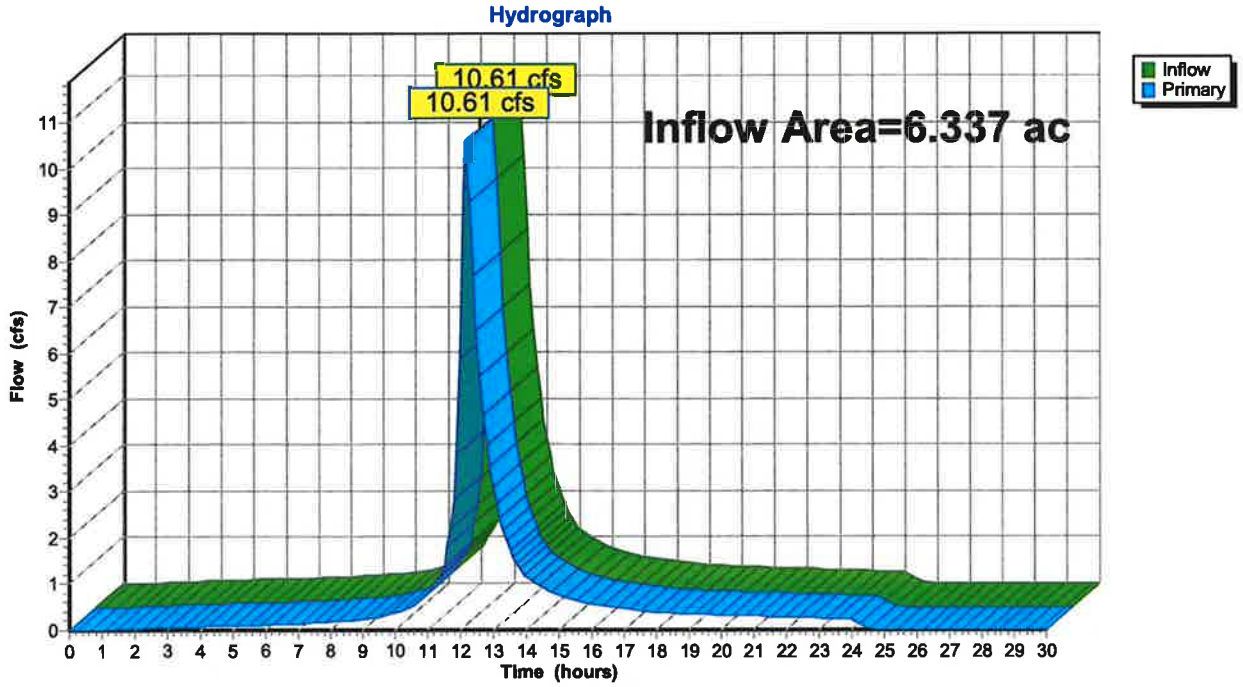


Summary for Link 5L: West Wetlands

Inflow Area = 6.337 ac, 26.89% Impervious, Inflow Depth = 2.63" for 010 Yr Current event
Inflow = 10.61 cfs @ 12.19 hrs, Volume= 1.387 af
Primary = 10.61 cfs @ 12.19 hrs, Volume= 1.387 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 15L

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs

Link 5L: West Wetlands

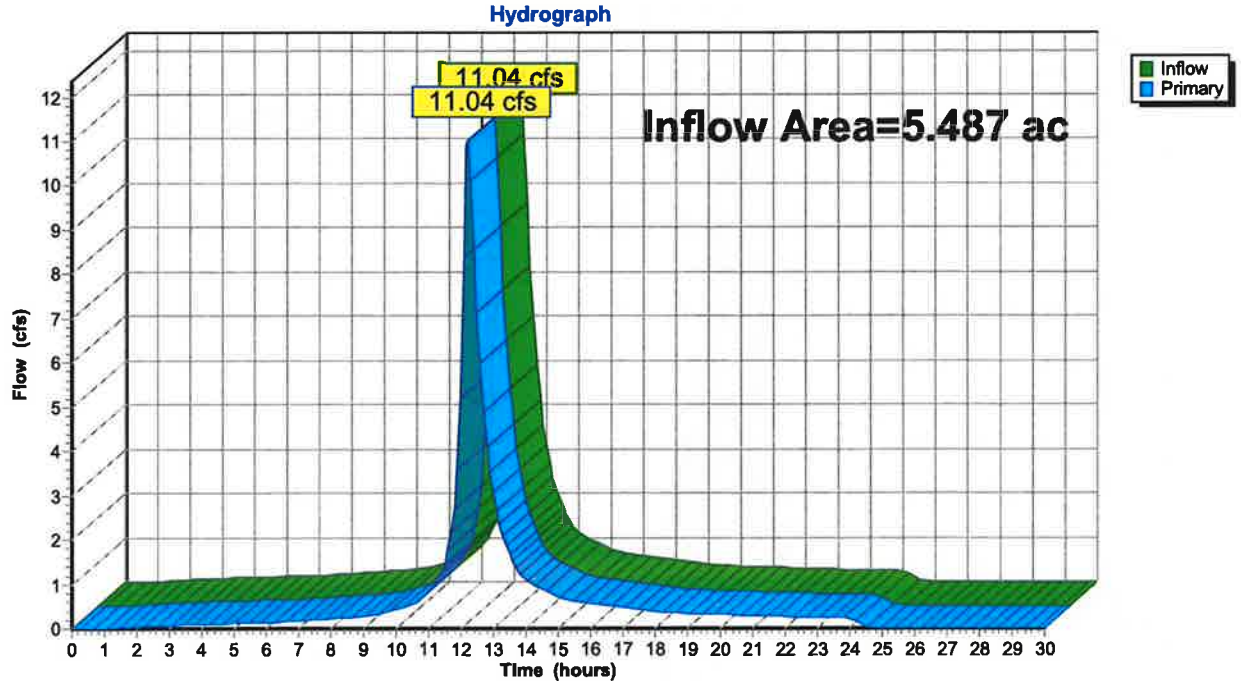


Summary for Link 8L: South Wetlands

Inflow Area = 5.487 ac, 38.69% Impervious, Inflow Depth = 3.08" for 010 Yr Current event
Inflow = 11.04 cfs @ 12.23 hrs, Volume= 1.410 af
Primary = 11.04 cfs @ 12.23 hrs, Volume= 1.410 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 15L

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs

Link 8L: South Wetlands



Time span=0.00-30.00 hrs, dt=0.10 hrs, 301 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: X-DA1 Runoff Area=0.617 ac 0.00% Impervious Runoff Depth=0.14"
Flow Length=218' Slope=0.0388 '/' Tc=3.7 min CN=WQ Runoff=0.02 cfs 0.007 af

Subcatchment 3S: X-DA2 Imp Runoff Area=1.704 ac 100.00% Impervious Runoff Depth=5.71"
Flow Length=397' Tc=5.6 min CN=98 Runoff=8.28 cfs 0.811 af

Subcatchment 4S: X-DA2 Per Runoff Area=4.016 ac 0.00% Impervious Runoff Depth=2.73"
Flow Length=662' Tc=17.4 min CN=WQ Runoff=6.73 cfs 0.915 af

Subcatchment 6S: X-DA3 Imp Runoff Area=2.123 ac 100.00% Impervious Runoff Depth=5.71"
Flow Length=1,073' Tc=9.4 min CN=98 Runoff=8.85 cfs 1.011 af

Subcatchment 7S: X-DA3 Per Runoff Area=3.364 ac 0.00% Impervious Runoff Depth=2.60"
Flow Length=1,074' Tc=17.3 min CN=WQ Runoff=5.33 cfs 0.727 af

Pond 2P: Ex Low Point Peak Elev=48.55' Storage=315 cf Inflow=0.02 cfs 0.007 af
Outflow=0.00 cfs 0.000 af

Link 5L: West Wetlands Inflow=13.18 cfs 1.726 af
Primary=13.18 cfs 1.726 af

Link 8L: South Wetlands Inflow=13.58 cfs 1.738 af
Primary=13.58 cfs 1.738 af

Total Runoff Area = 11.824 ac Runoff Volume = 3.471 af Average Runoff Depth = 3.52"
67.63% Pervious = 7.997 ac 32.37% Impervious = 3.827 ac

Summary for Subcatchment 1S: X-DA1

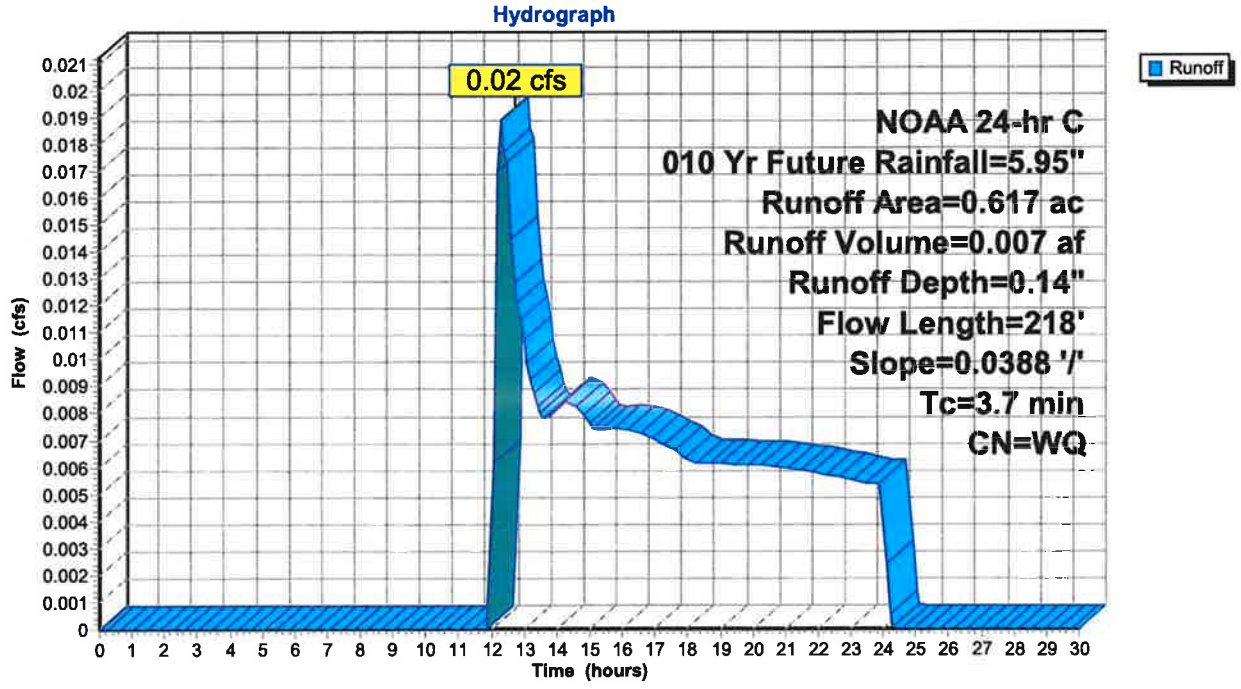
Runoff = 0.02 cfs @ 12.31 hrs, Volume= 0.007 af, Depth= 0.14"
Routed to Pond 2P : Ex Low Point

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 010 Yr Future Rainfall=5.95"

Area (ac)	CN	Description
0.492	30	Woods, Good, HSG A
0.125	39	>75% Grass cover, Good, HSG A
0.617		Weighted Average
0.617		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	218	0.0388	0.98		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps

Subcatchment 1S: X-DA1



Summary for Subcatchment 3S: X-DA2 Imp

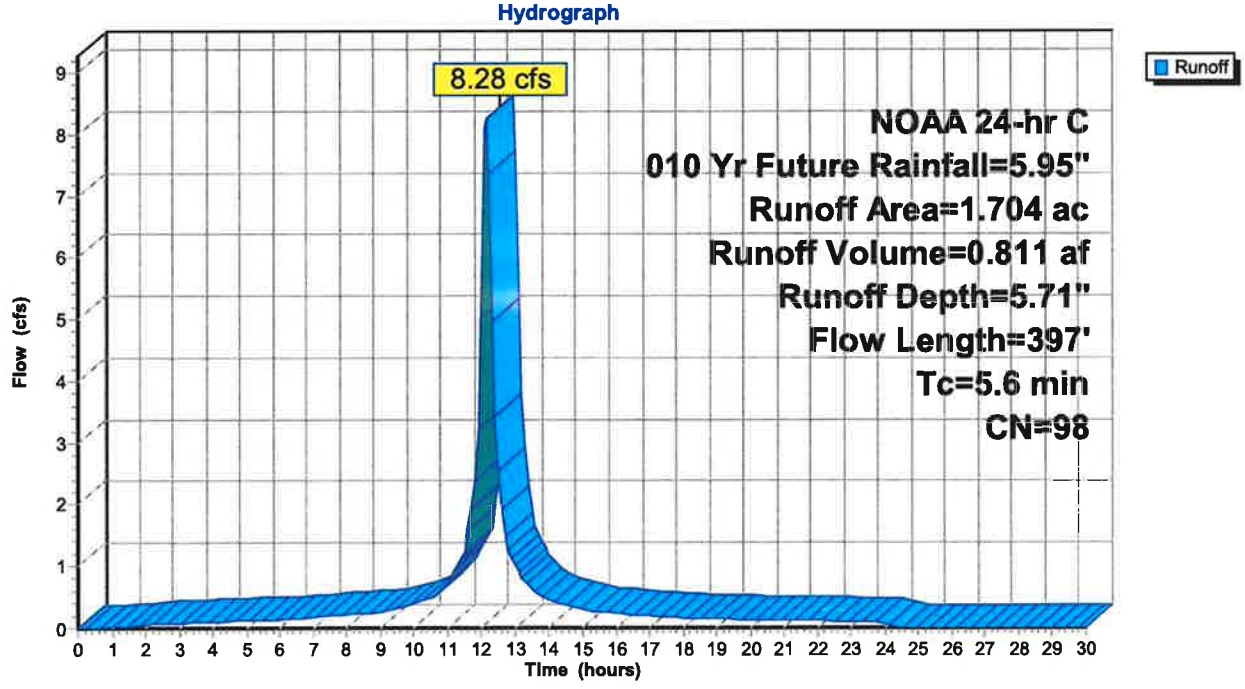
Runoff = 8.28 cfs @ 12.13 hrs, Volume= 0.811 af, Depth= 5.71"
Routed to Link 5L : West Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 010 Yr Future Rainfall=5.95"

Area (ac)	CN	Description
1.704	98	Paved parking, HSG A
1.704		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	100	0.0064	0.89		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
1.2	195	0.0178	2.71		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	102	0.0178	0.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.6	397	Total			

Subcatchment 3S: X-DA2 Imp



Summary for Subcatchment 4S: X-DA2 Per

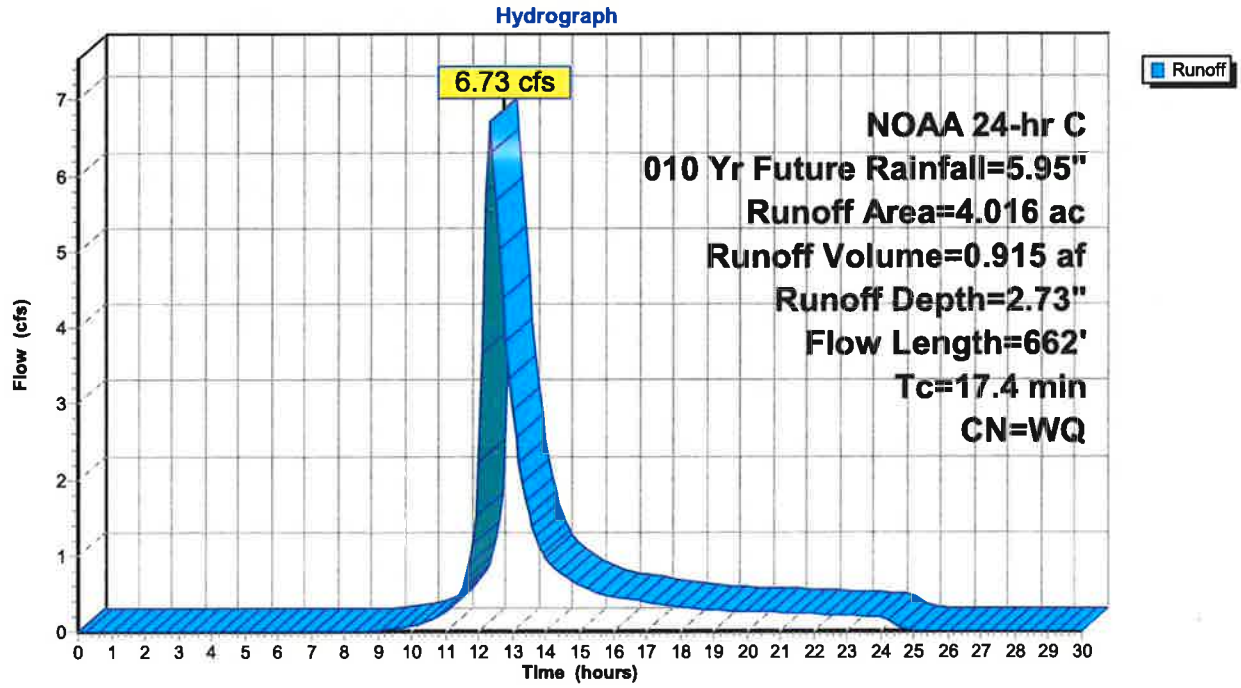
Runoff = 6.73 cfs @ 12.32 hrs, Volume= 0.915 af, Depth= 2.73"
Routed to Link 5L : West Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 010 Yr Future Rainfall=5.95"

Area (ac)	CN	Description
0.043	30	Woods, Good, HSG A
0.627	55	Woods, Good, HSG B
1.050	70	Woods, Good, HSG C
0.064	61	>75% Grass cover, Good, HSG B
2.232	74	>75% Grass cover, Good, HSG C
4.016		Weighted Average
4.016		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	90	0.0287	0.22		**Sheet Flow,** Range n= 0.130 P2= 3.30"
4.7	346	0.0066	1.22		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.9	226	0.0162	0.64		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.4	662	Total			

Subcatchment 4S: X-DA2 Per



Summary for Subcatchment 6S: X-DA3 Imp

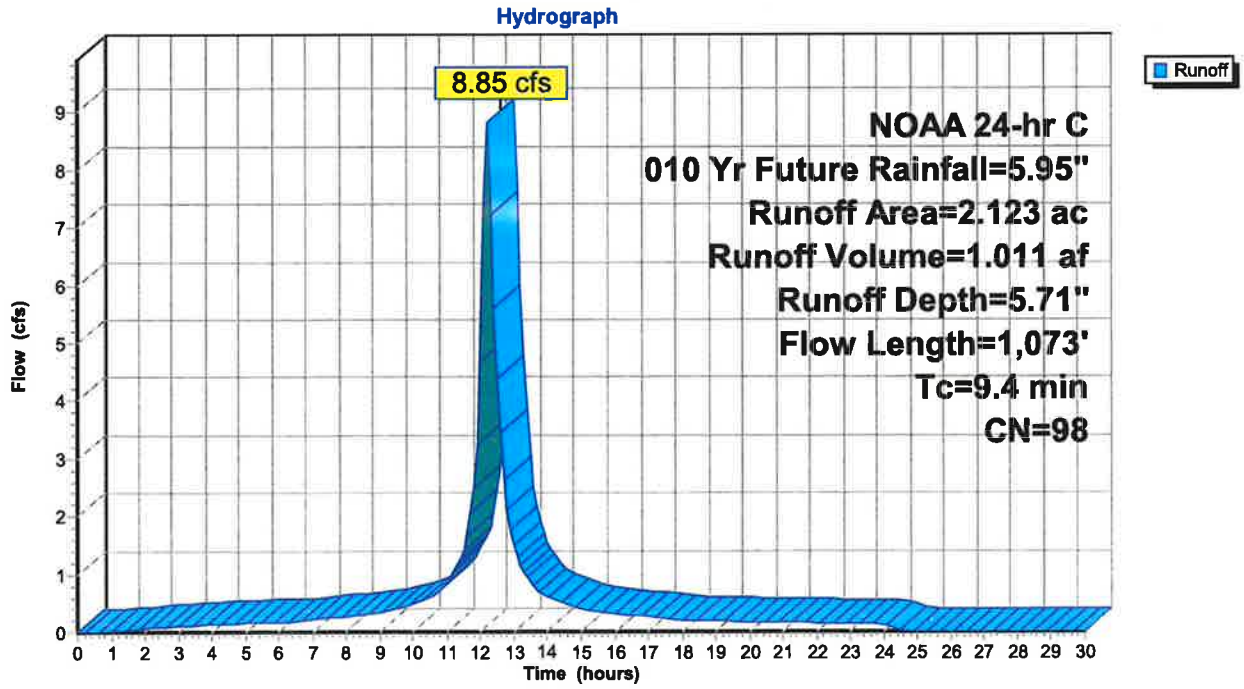
Runoff = 8.85 cfs @ 12.20 hrs, Volume= 1.011 af, Depth= 5.71"
Routed to Link 8L : South Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 010 Yr Future Rainfall=5.95"

Area (ac)	CN	Description
2.123	98	Paved parking, HSG A
2.123		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	58	0.0026	0.55		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
2.9	543	0.0229	3.07		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.7	434	0.0057	1.53		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	38	0.0200	4.31	4.39	**Pipe Channel,** 15.0" x 12.0", R=12.0"/20.0" Pipe Arch Area= 1.0 sf Perim= 3.6' r= n= 0.021
9.4	1,073	Total			

Subcatchment 6S: X-DA3 Imp



Summary for Subcatchment 7S: X-DA3 Per

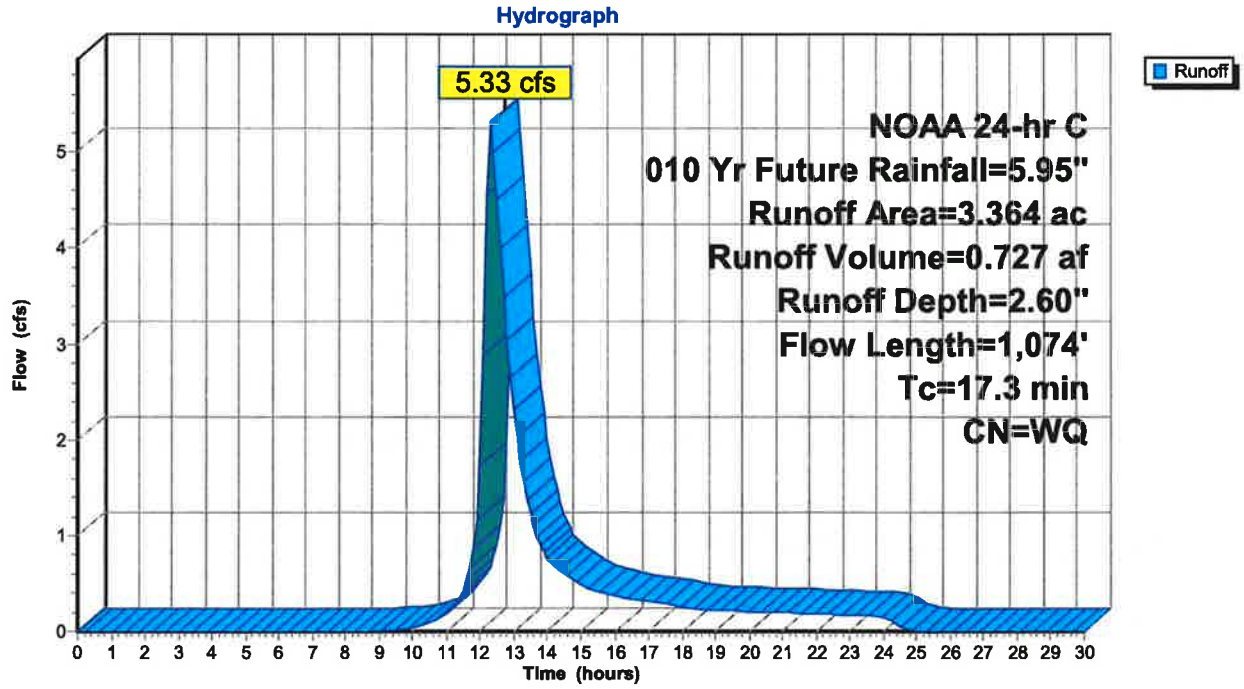
Runoff = 5.33 cfs @ 12.32 hrs, Volume= 0.727 af, Depth= 2.60"
Routed to Link 8L : South Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 010 Yr Future Rainfall=5.95"

Area (ac)	CN	Description
1.816	70	Woods, Good, HSG C
0.487	55	Woods, Good, HSG B
0.130	39	>75% Grass cover, Good, HSG A
0.931	74	>75% Grass cover, Good, HSG C
3.364		Weighted Average
3.364		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	59	0.0070	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
2.9	543	0.0229	3.07		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.7	434	0.0057	1.53		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	38	0.0200	4.31	4.39	**Pipe Channel,** 15.0" x 12.0", R=12.0"/20.0" Pipe Arch Area= 1.0 sf Perim= 3.6' r= n= 0.021
17.3	1,074	Total			

Subcatchment 7S: X-DA3 Per



Summary for Pond 2P: Ex Low Point

Inflow Area = 0.617 ac, 0.00% Impervious, Inflow Depth = 0.14" for 010 Yr Future event
Inflow = 0.02 cfs @ 12.31 hrs, Volume= 0.007 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 5L : West Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Peak Elev= 48.55' @ 24.50 hrs Surf.Area= 861 sf Storage= 315 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

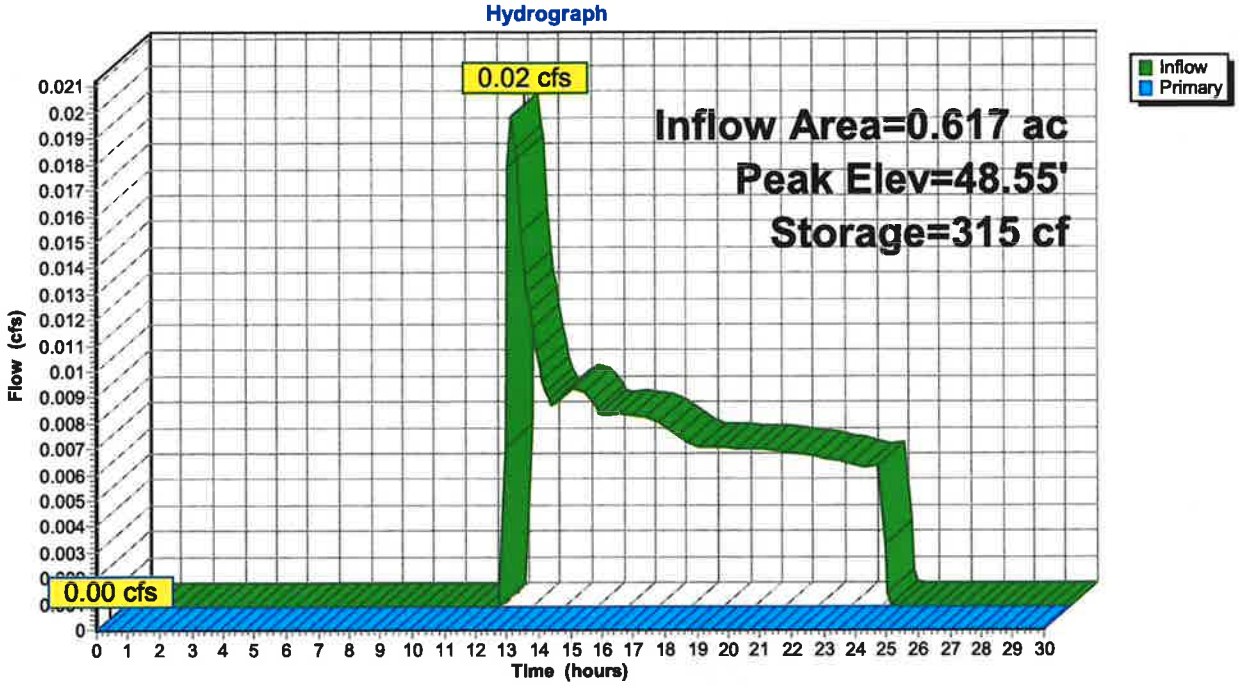
Volume	Invert	Avail.Storage	Storage Description
#1	48.00'	8,383 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
48.00	295	0	0
49.00	1,332	814	814
50.00	4,340	2,836	3,650
51.00	5,126	4,733	8,383

Device	Routing	Invert	Outlet Devices
#1	Primary	50.00'	**90.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=48.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2P: Ex Low Point

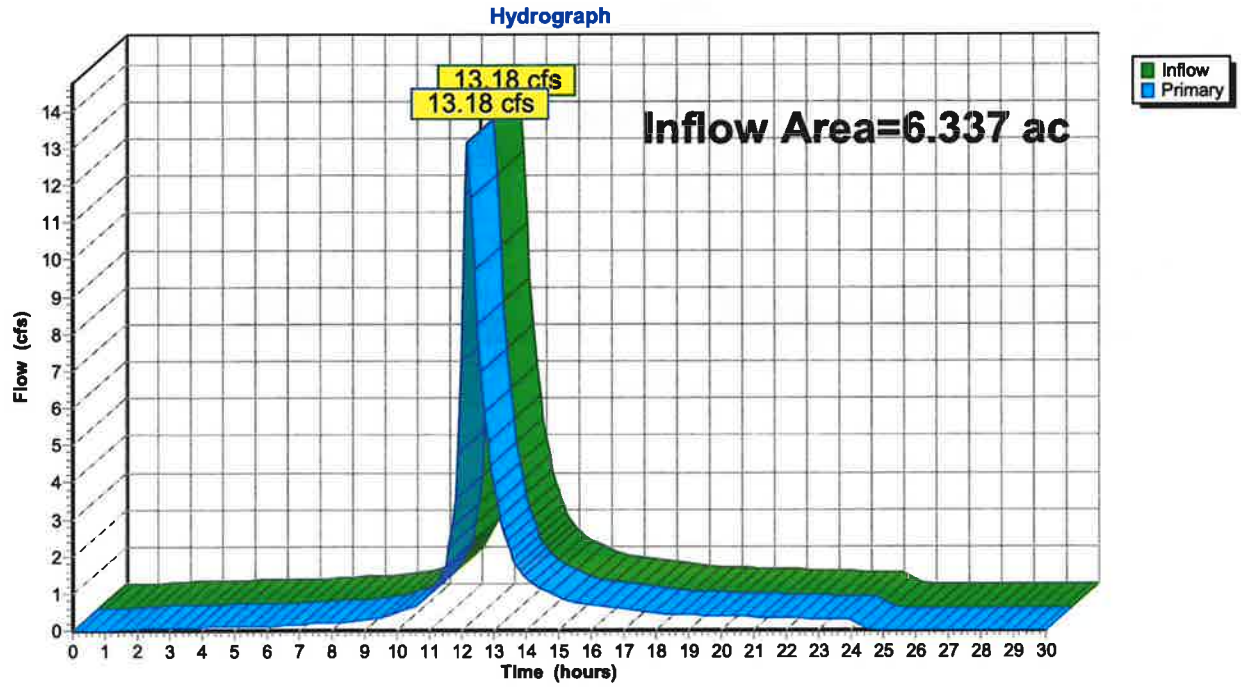


Summary for Link 5L: West Wetlands

Inflow Area = 6.337 ac, 26.89% Impervious, Inflow Depth = 3.27" for 010 Yr Future event
Inflow = 13.18 cfs @ 12.20 hrs, Volume= 1.726 af
Primary = 13.18 cfs @ 12.20 hrs, Volume= 1.726 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 15L

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs

Link 5L: West Wetlands

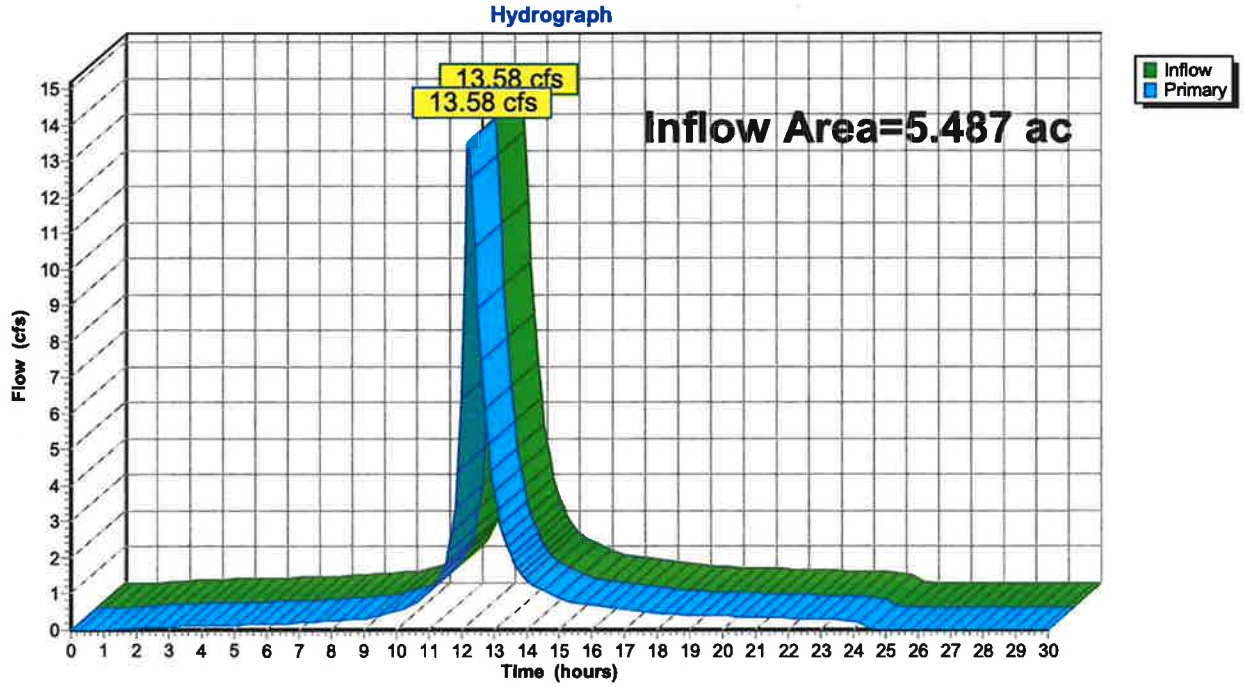


Summary for Link 8L: South Wetlands

Inflow Area = 5.487 ac, 38.69% Impervious, Inflow Depth = 3.80" for 010 Yr Future event
Inflow = 13.58 cfs @ 12.23 hrs, Volume= 1.738 af
Primary = 13.58 cfs @ 12.23 hrs, Volume= 1.738 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 15L

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs

Link 8L: South Wetlands



Time span=0.00-30.00 hrs, dt=0.10 hrs, 301 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: X-DA1 Runoff Area=0.617 ac 0.00% Impervious Runoff Depth=0.76"
Flow Length=218' Slope=0.0388 '/' Tc=3.7 min CN=WQ Runoff=0.22 cfs 0.039 af

Subcatchment 3S: X-DA2 Imp Runoff Area=1.704 ac 100.00% Impervious Runoff Depth=8.44"
Flow Length=397' Tc=5.6 min CN=98 Runoff=12.11 cfs 1.198 af

Subcatchment 4S: X-DA2 Per Runoff Area=4.016 ac 0.00% Impervious Runoff Depth=4.98"
Flow Length=662' Tc=17.4 min CN=WQ Runoff=12.41 cfs 1.666 af

Subcatchment 6S: X-DA3 Imp Runoff Area=2.123 ac 100.00% Impervious Runoff Depth=8.44"
Flow Length=1,073' Tc=9.4 min CN=98 Runoff=12.94 cfs 1.493 af

Subcatchment 7S: X-DA3 Per Runoff Area=3.364 ac 0.00% Impervious Runoff Depth=4.79"
Flow Length=1,074' Tc=17.3 min CN=WQ Runoff=10.01 cfs 1.343 af

Pond 2P: Ex Low Point Peak Elev=49.45' Storage=1,712 cf Inflow=0.22 cfs 0.039 af
Outflow=0.00 cfs 0.000 af

Link 5L: West Wetlands Inflow=21.75 cfs 2.864 af
Primary=21.75 cfs 2.864 af

Link 8L: South Wetlands Inflow=22.05 cfs 2.836 af
Primary=22.05 cfs 2.836 af

Total Runoff Area = 11.824 ac Runoff Volume = 5.739 af Average Runoff Depth = 5.82"
67.63% Pervious = 7.997 ac 32.37% Impervious = 3.827 ac

Summary for Subcatchment 1S: X-DA1

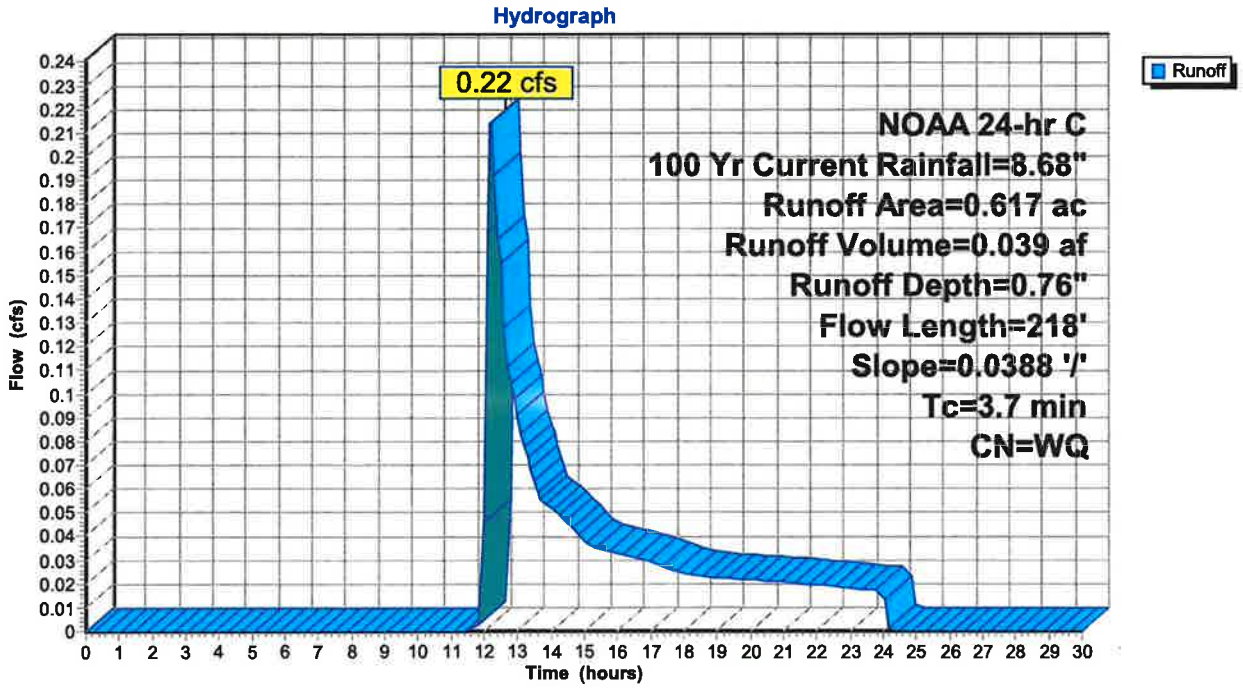
Runoff = 0.22 cfs @ 12.22 hrs, Volume= 0.039 af, Depth= 0.76"
Routed to Pond 2P : Ex Low Point

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 100 Yr Current Rainfall=8.68"

Area (ac)	CN	Description
0.492	30	Woods, Good, HSG A
0.125	39	>75% Grass cover, Good, HSG A
0.617		Weighted Average
0.617		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	218	0.0388	0.98		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps

Subcatchment 1S: X-DA1



Summary for Subcatchment 3S: X-DA2 Imp

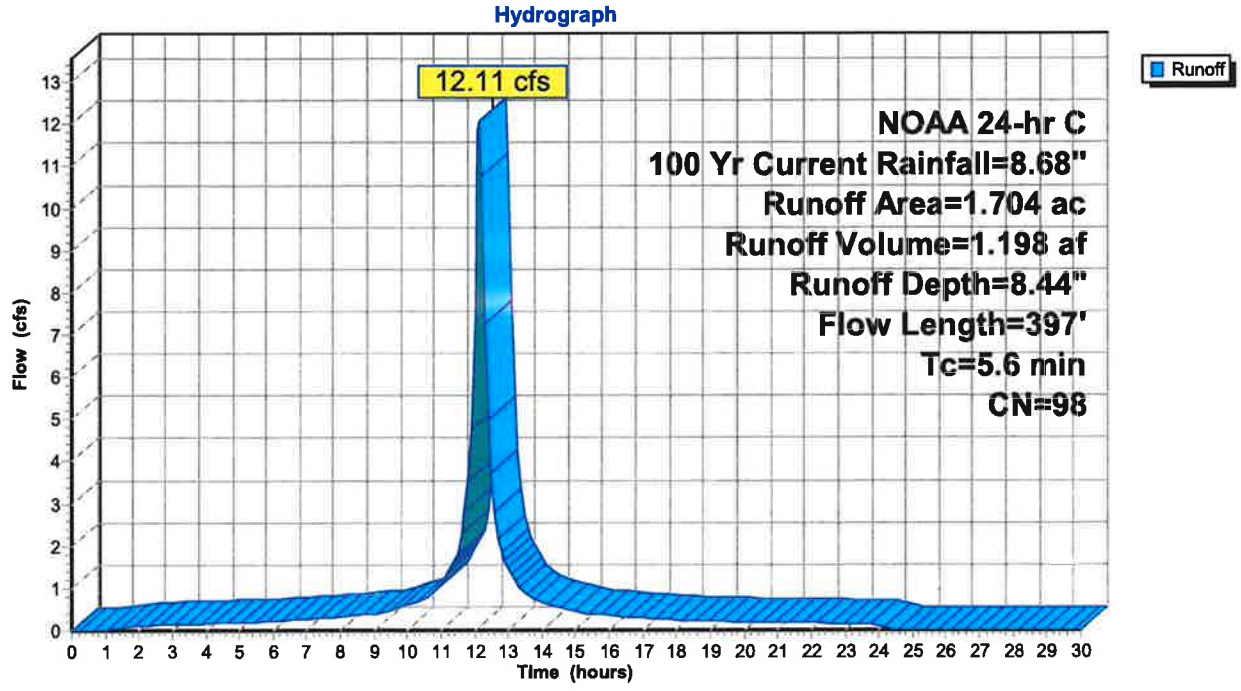
Runoff = 12.11 cfs @ 12.13 hrs, Volume= 1.198 af, Depth= 8.44"
Routed to Link 5L : West Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 100 Yr Current Rainfall=8.68"

Area (ac)	CN	Description
1.704	98	Paved parking, HSG A
1.704		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	100	0.0064	0.89		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
1.2	195	0.0178	2.71		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	102	0.0178	0.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.6	397	Total			

Subcatchment 3S: X-DA2 Imp



Summary for Subcatchment 4S: X-DA2 Per

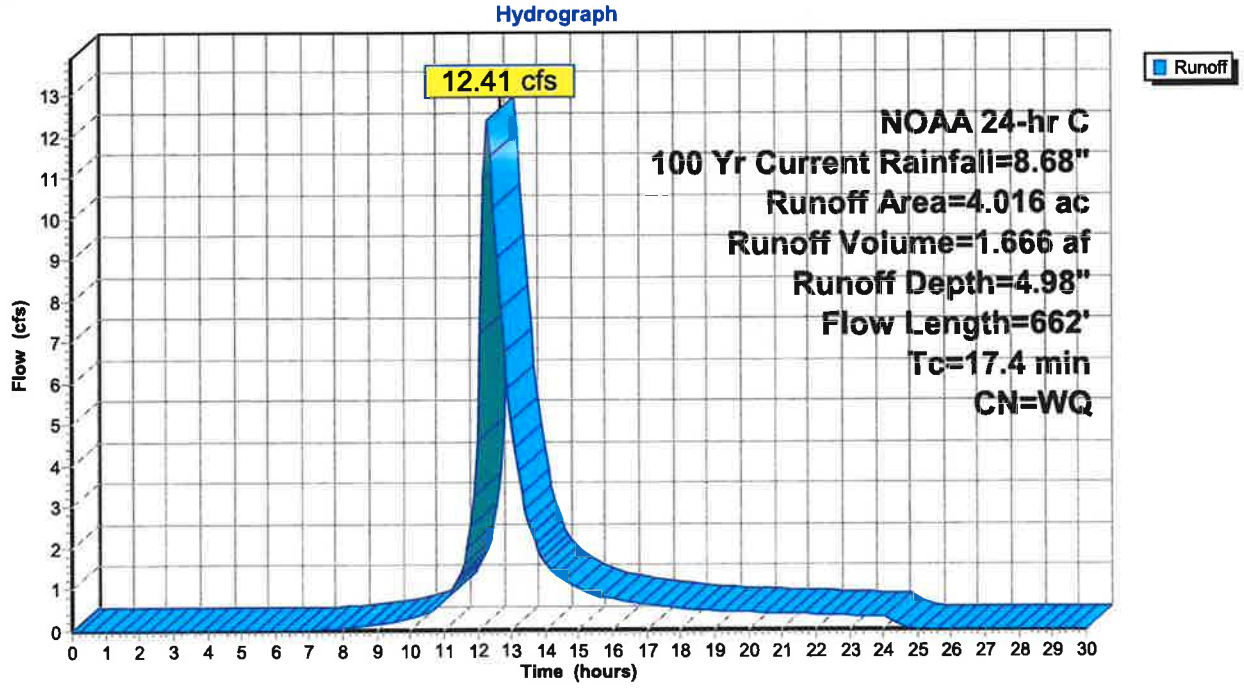
Runoff = 12.41 cfs @ 12.31 hrs, Volume= 1.666 af, Depth= 4.98"
Routed to Link 5L : West Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 100 Yr Current Rainfall=8.68"

Area (ac)	CN	Description
0.043	30	Woods, Good, HSG A
0.627	55	Woods, Good, HSG B
1.050	70	Woods, Good, HSG C
0.064	61	>75% Grass cover, Good, HSG B
2.232	74	>75% Grass cover, Good, HSG C
4.016		Weighted Average
4.016		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	90	0.0287	0.22		**Sheet Flow,** Range n= 0.130 P2= 3.30"
4.7	346	0.0066	1.22		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.9	226	0.0162	0.64		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.4	662	Total			

Subcatchment 4S: X-DA2 Per



Summary for Subcatchment 6S: X-DA3 Imp

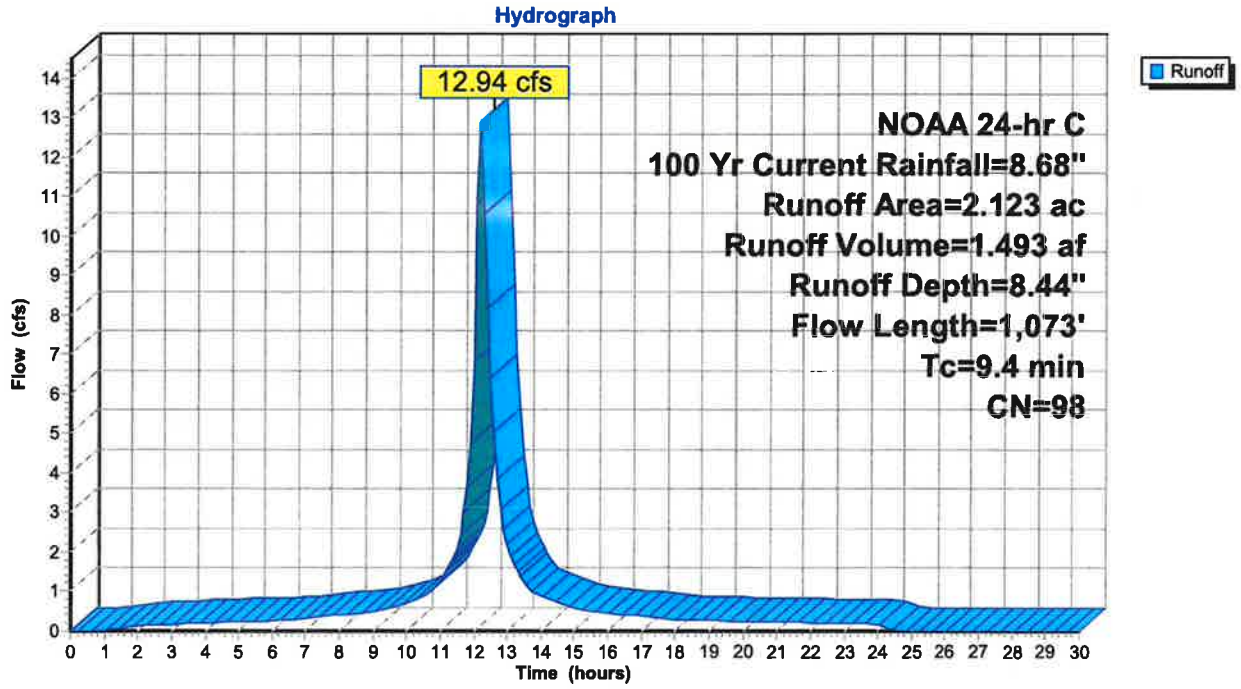
Runoff = 12.94 cfs @ 12.20 hrs, Volume= 1.493 af, Depth= 8.44"
Routed to Link 8L : South Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 100 Yr Current Rainfall=8.68"

Area (ac)	CN	Description
2.123	98	Paved parking, HSG A
2.123		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	58	0.0026	0.55		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
2.9	543	0.0229	3.07		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.7	434	0.0057	1.53		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	38	0.0200	4.31	4.39	**Pipe Channel,** 15.0" x 12.0", R=12.0"/20.0" Pipe Arch Area= 1.0 sf Perim= 3.6' r= n= 0.021
9.4	1,073	Total			

Subcatchment 6S: X-DA3 Imp



Summary for Subcatchment 7S: X-DA3 Per

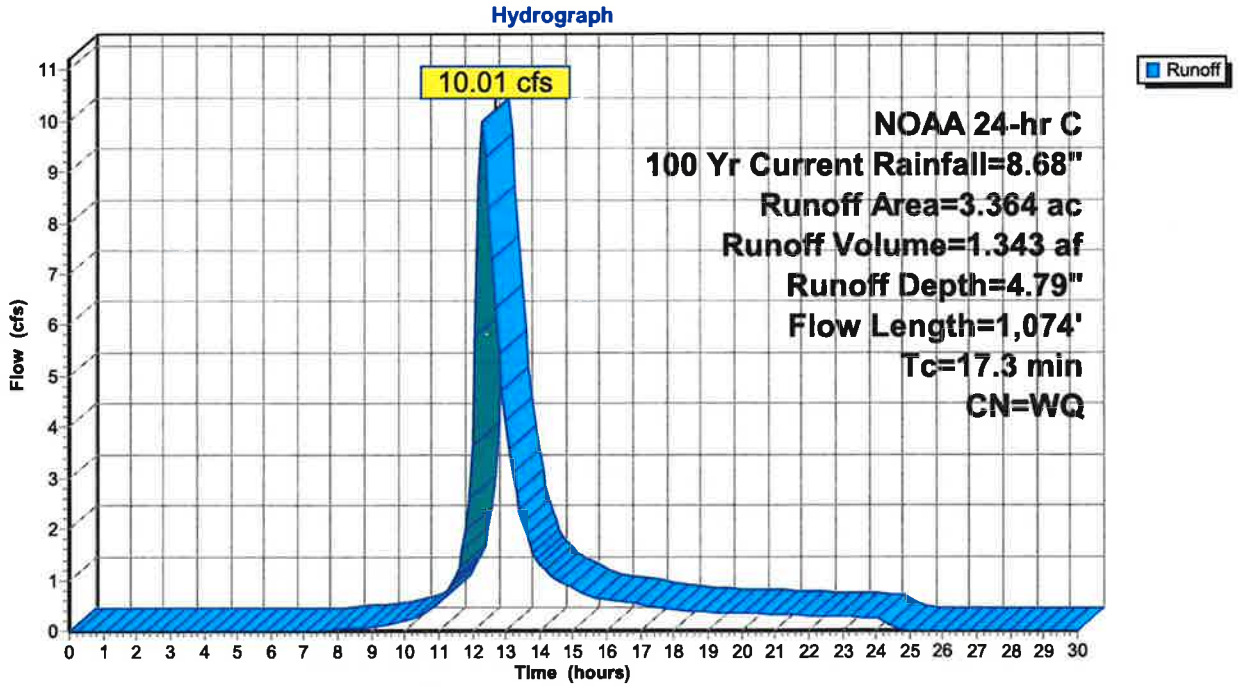
Runoff = 10.01 cfs @ 12.31 hrs, Volume= 1.343 af, Depth= 4.79"
Routed to Link 8L : South Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 100 Yr Current Rainfall=8.68"

Area (ac)	CN	Description
1.816	70	Woods, Good, HSG C
0.487	55	Woods, Good, HSG B
0.130	39	>75% Grass cover, Good, HSG A
0.931	74	>75% Grass cover, Good, HSG C
3.364		Weighted Average
3.364		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	59	0.0070	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
2.9	543	0.0229	3.07		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.7	434	0.0057	1.53		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	38	0.0200	4.31	4.39	**Pipe Channel,** 15.0" x 12.0", R=12.0"/20.0" Pipe Arch Area= 1.0 sf Perim= 3.6' r= n= 0.021
17.3	1,074	Total			

Subcatchment 7S: X-DA3 Per



Summary for Pond 2P: Ex Low Point

Inflow Area = 0.617 ac, 0.00% Impervious, Inflow Depth = 0.76" for 100 Yr Current event
Inflow = 0.22 cfs @ 12.22 hrs, Volume= 0.039 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 5L : West Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Peak Elev= 49.45' @ 24.50 hrs Surf.Area= 2,679 sf Storage= 1,712 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

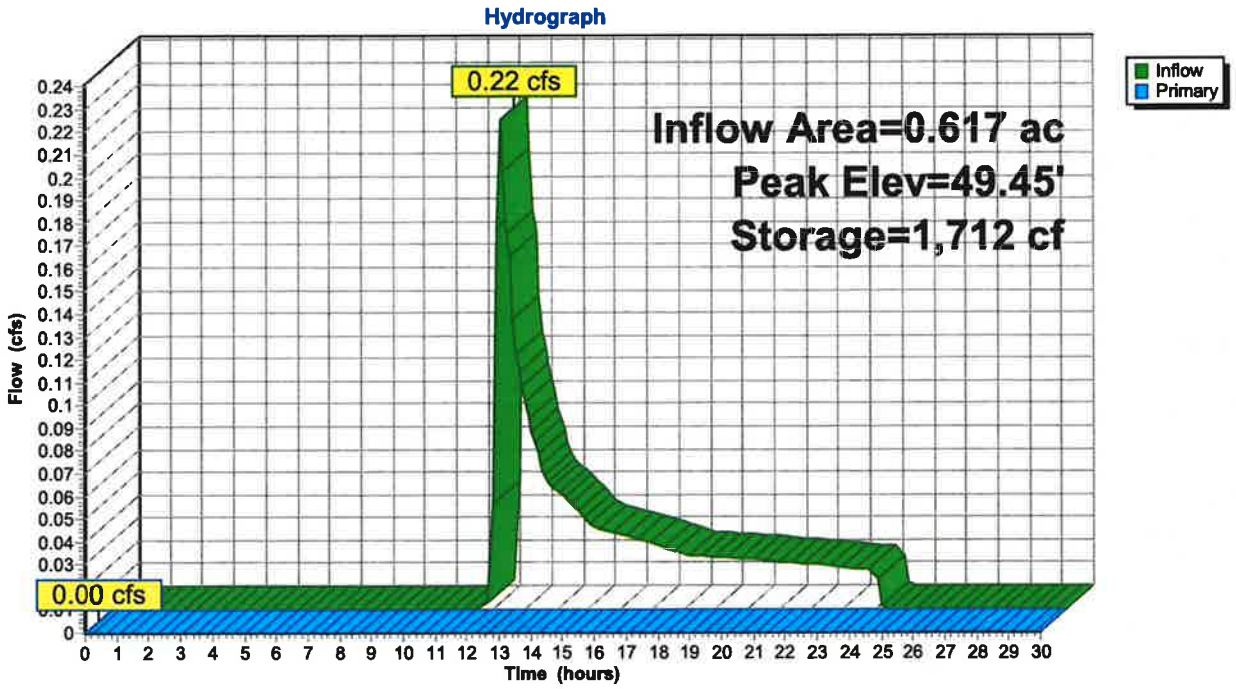
Volume	Invert	Avail.Storage	Storage Description
#1	48.00'	8,383 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
48.00	295	0	0
49.00	1,332	814	814
50.00	4,340	2,836	3,650
51.00	5,126	4,733	8,383

Device	Routing	Invert	Outlet Devices
#1	Primary	50.00'	**90.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=48.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2P: Ex Low Point

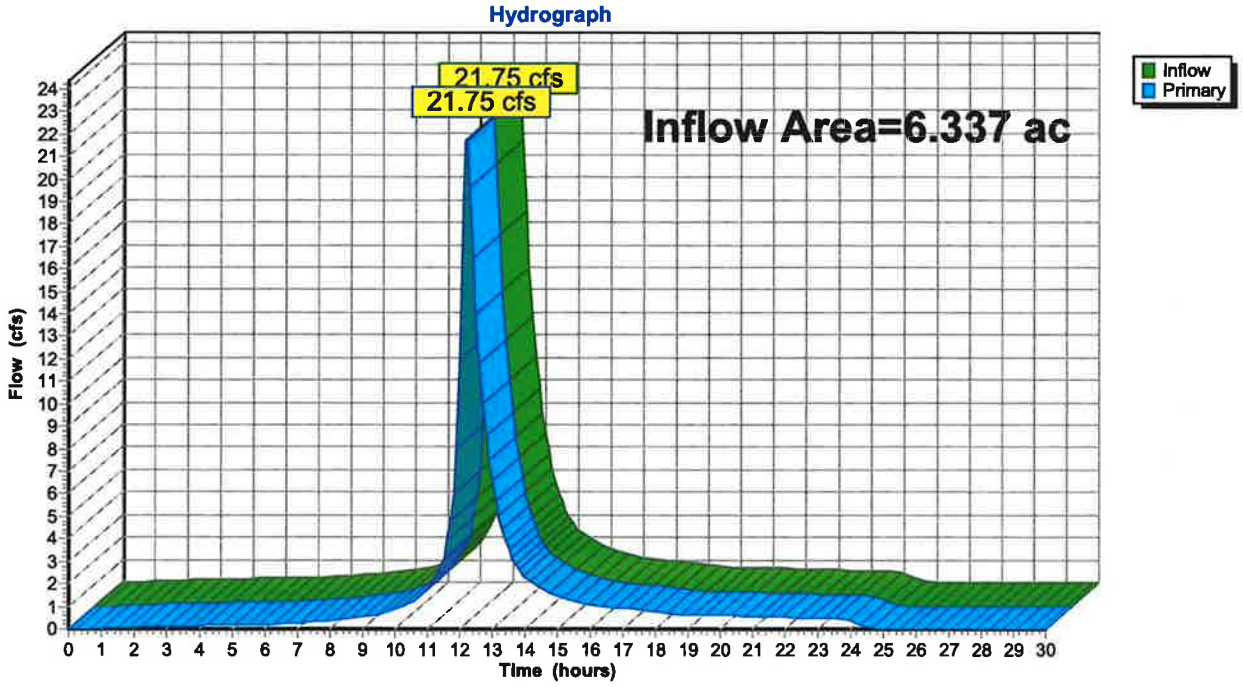


Summary for Link 5L: West Wetlands

Inflow Area = 6.337 ac, 26.89% Impervious, Inflow Depth = 5.42" for 100 Yr Current event
Inflow = 21.75 cfs @ 12.21 hrs, Volume= 2.864 af
Primary = 21.75 cfs @ 12.21 hrs, Volume= 2.864 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 15L

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs

Link 5L: West Wetlands

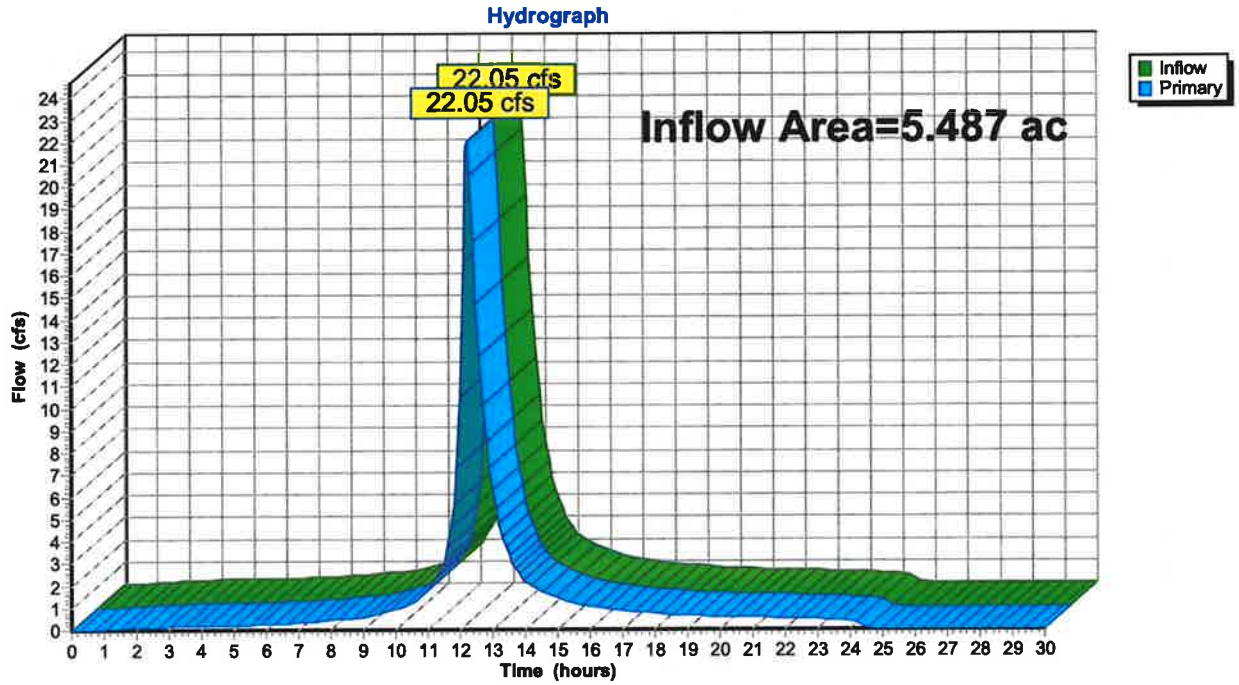


Summary for Link 8L: South Wetlands

Inflow Area = 5.487 ac, 38.69% Impervious, Inflow Depth = 6.20" for 100 Yr Current event
Inflow = 22.05 cfs @ 12.23 hrs, Volume= 2.836 af
Primary = 22.05 cfs @ 12.23 hrs, Volume= 2.836 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 15L

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs

Link 8L: South Wetlands



Time span=0.00-30.00 hrs, dt=0.10 hrs, 301 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: X-DA1 Runoff Area=0.617 ac 0.00% Impervious Runoff Depth=1.62"
Flow Length=218' Slope=0.0388 '/' Tc=3.7 min CN=WQ Runoff=0.76 cfs 0.083 af

Subcatchment 3S: X-DA2 Imp Runoff Area=1.704 ac 100.00% Impervious Runoff Depth=10.78"
Flow Length=397' Tc=5.6 min CN=98 Runoff=15.38 cfs 1.531 af

Subcatchment 4S: X-DA2 Per Runoff Area=4.016 ac 0.00% Impervious Runoff Depth=7.04"
Flow Length=662' Tc=17.4 min CN=WQ Runoff=17.52 cfs 2.355 af

Subcatchment 6S: X-DA3 Imp Runoff Area=2.123 ac 100.00% Impervious Runoff Depth=10.78"
Flow Length=1,073' Tc=9.4 min CN=98 Runoff=16.45 cfs 1.907 af

Subcatchment 7S: X-DA3 Per Runoff Area=3.364 ac 0.00% Impervious Runoff Depth=6.82"
Flow Length=1,074' Tc=17.3 min CN=WQ Runoff=14.26 cfs 1.911 af

Pond 2P: Ex Low Point Peak Elev=50.00' Storage=3,629 cf Inflow=0.76 cfs 0.083 af
Outflow=0.00 cfs 0.000 af

Link 5L: West Wetlands Inflow=29.36 cfs 3.886 af
Primary=29.36 cfs 3.886 af

Link 8L: South Wetlands Inflow=29.57 cfs 3.818 af
Primary=29.57 cfs 3.818 af

Total Runoff Area = 11.824 ac Runoff Volume = 7.787 af Average Runoff Depth = 7.90"
67.63% Pervious = 7.997 ac 32.37% Impervious = 3.827 ac

Summary for Subcatchment 1S: X-DA1

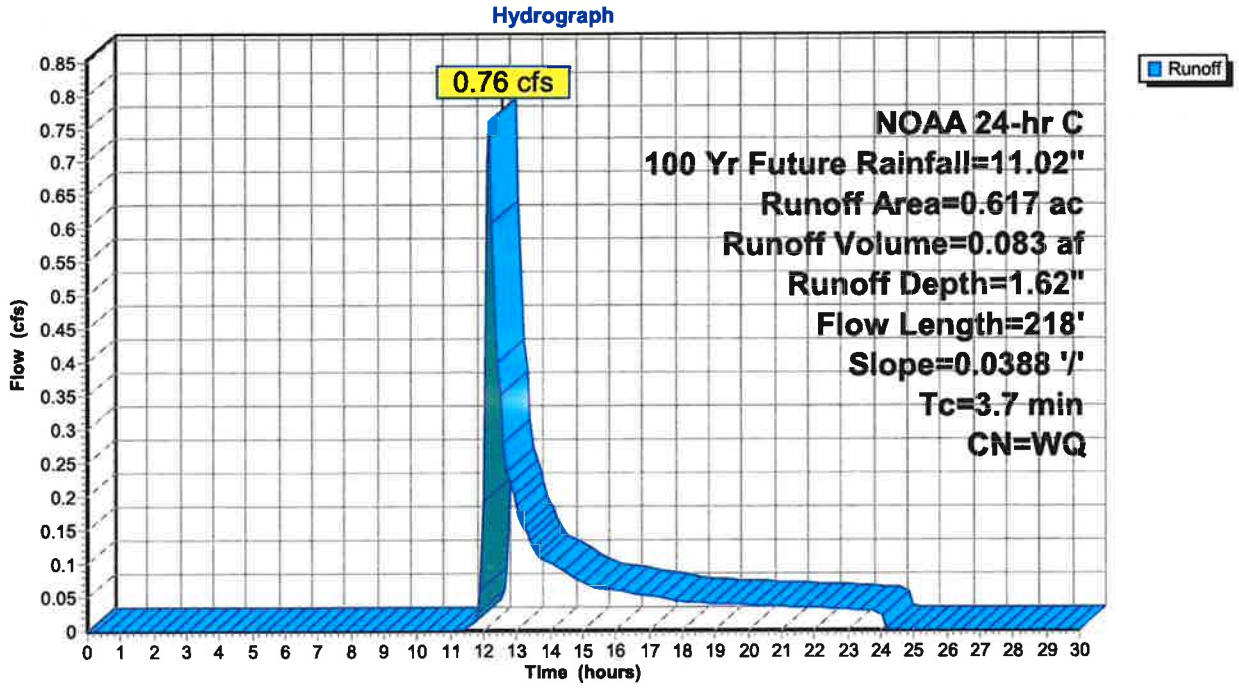
Runoff = 0.76 cfs @ 12.15 hrs, Volume= 0.083 af, Depth= 1.62"
Routed to Pond 2P : Ex Low Point

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 100 Yr Future Rainfall=11.02"

Area (ac)	CN	Description
0.492	30	Woods, Good, HSG A
0.125	39	>75% Grass cover, Good, HSG A
0.617		Weighted Average
0.617		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	218	0.0388	0.98		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps

Subcatchment 1S: X-DA1



Summary for Subcatchment 3S: X-DA2 Imp

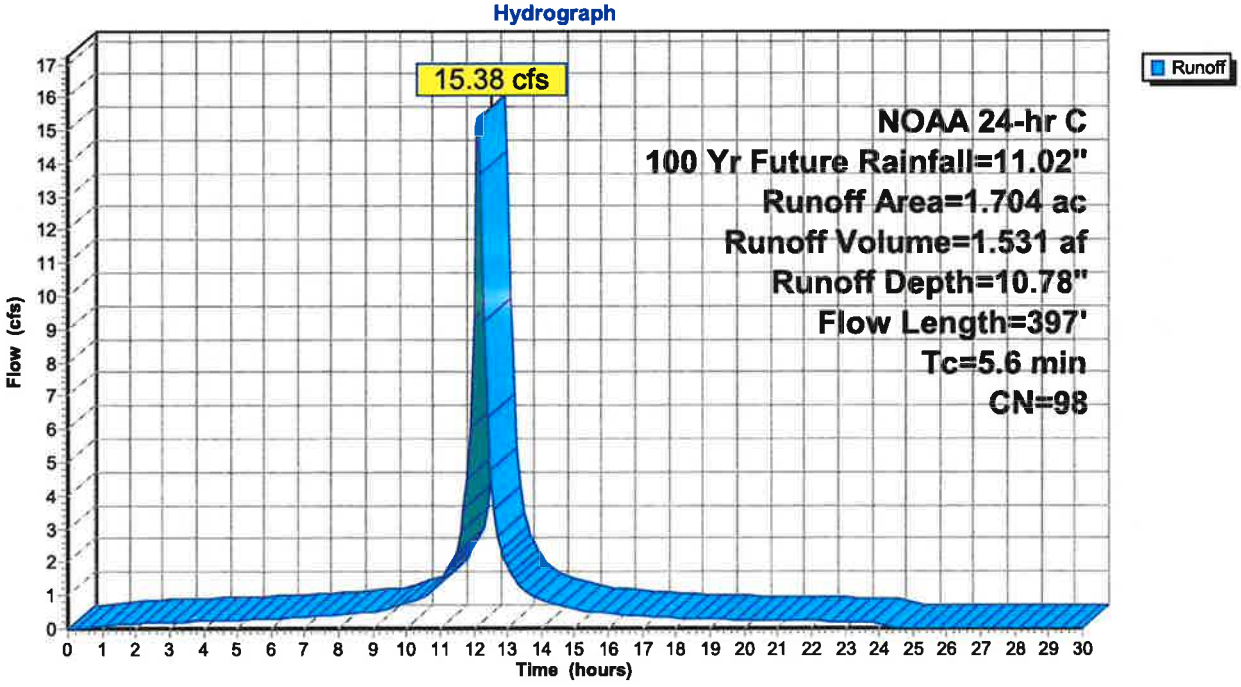
Runoff = 15.38 cfs @ 12.13 hrs, Volume= 1.531 af, Depth=10.78"
Routed to Link 5L : West Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 100 Yr Future Rainfall=11.02"

Area (ac)	CN	Description
1.704	98	Paved parking, HSG A
1.704		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	100	0.0064	0.89		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
1.2	195	0.0178	2.71		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	102	0.0178	0.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.6	397	Total			

Subcatchment 3S: X-DA2 Imp



Summary for Subcatchment 4S: X-DA2 Per

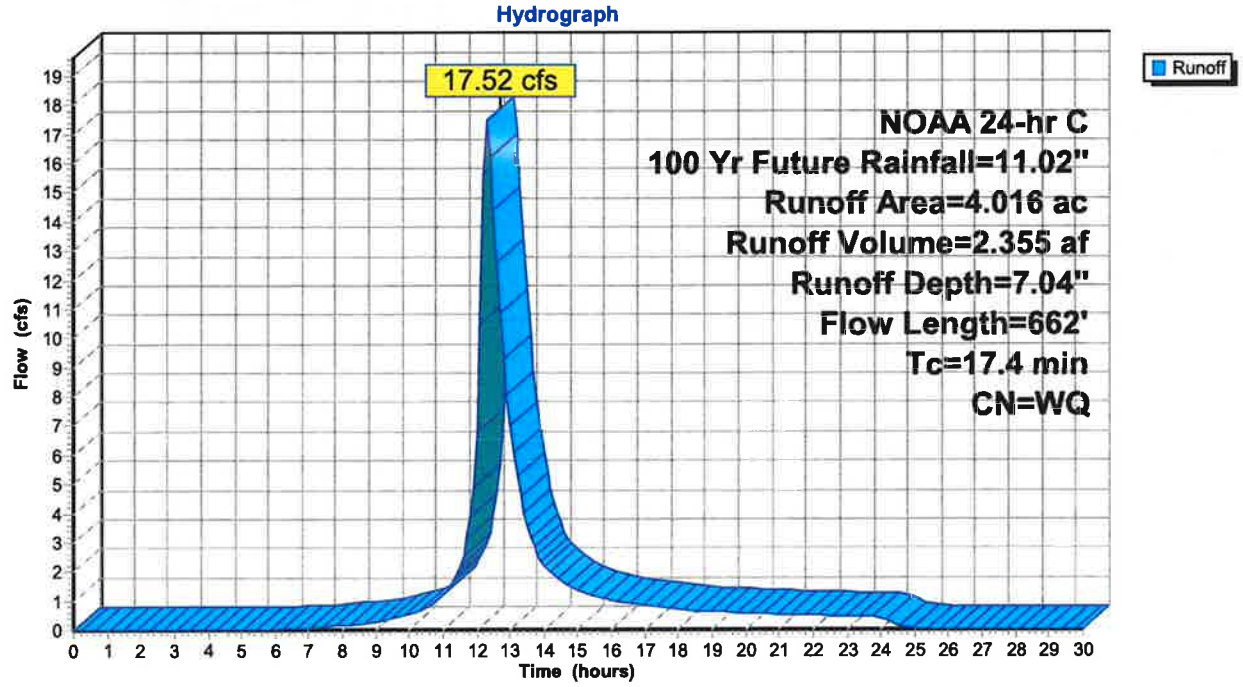
Runoff = 17.52 cfs @ 12.31 hrs, Volume= 2.355 af, Depth= 7.04"
Routed to Link 5L : West Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 100 Yr Future Rainfall=11.02"

Area (ac)	CN	Description
0.043	30	Woods, Good, HSG A
0.627	55	Woods, Good, HSG B
1.050	70	Woods, Good, HSG C
0.064	61	>75% Grass cover, Good, HSG B
2.232	74	>75% Grass cover, Good, HSG C
4.016		Weighted Average
4.016		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	90	0.0287	0.22		**Sheet Flow,** Range n= 0.130 P2= 3.30"
4.7	346	0.0066	1.22		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
5.9	226	0.0162	0.64		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.4	662	Total			

Subcatchment 4S: X-DA2 Per



Summary for Subcatchment 6S: X-DA3 Imp

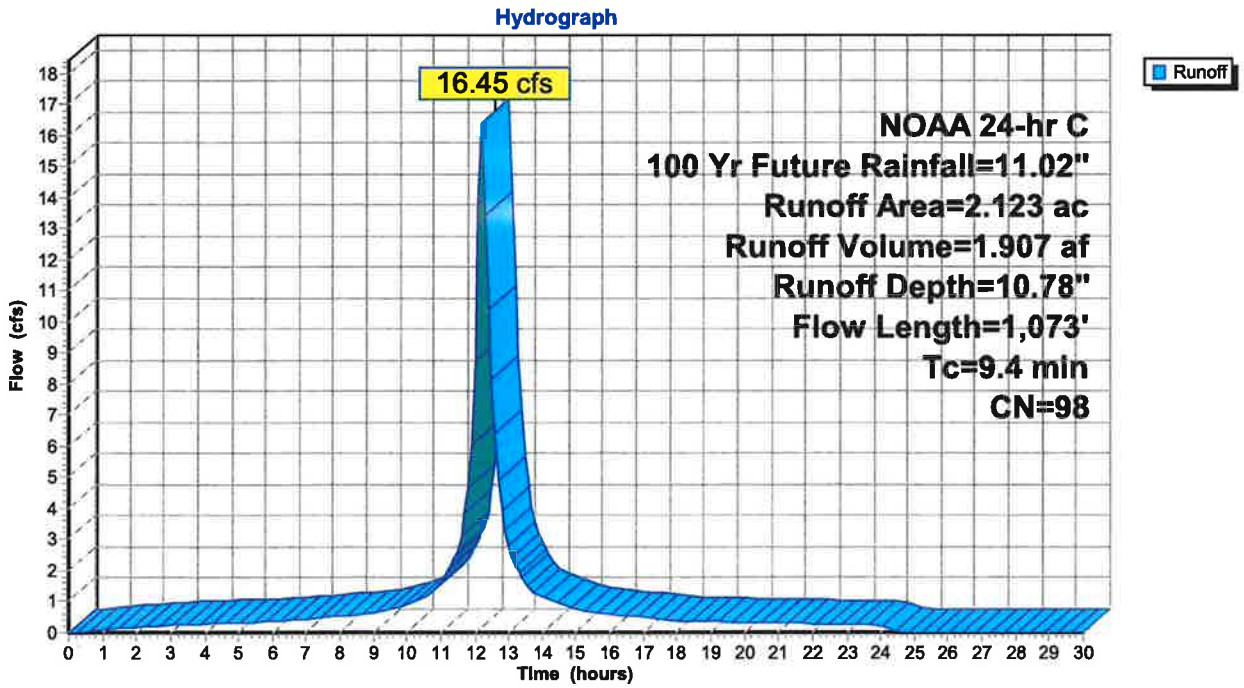
Runoff = 16.45 cfs @ 12.20 hrs, Volume= 1.907 af, Depth=10.78"
Routed to Link 8L : South Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 100 Yr Future Rainfall=11.02"

Area (ac)	CN	Description
2.123	98	Paved parking, HSG A
2.123		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	58	0.0026	0.55		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
2.9	543	0.0229	3.07		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.7	434	0.0057	1.53		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	38	0.0200	4.31	4.39	**Pipe Channel,** 15.0" x 12.0", R=12.0"/20.0" Pipe Arch Area= 1.0 sf Perim= 3.6' r= n= 0.021
9.4	1,073	Total			

Subcatchment 6S: X-DA3 Imp



Summary for Subcatchment 7S: X-DA3 Per

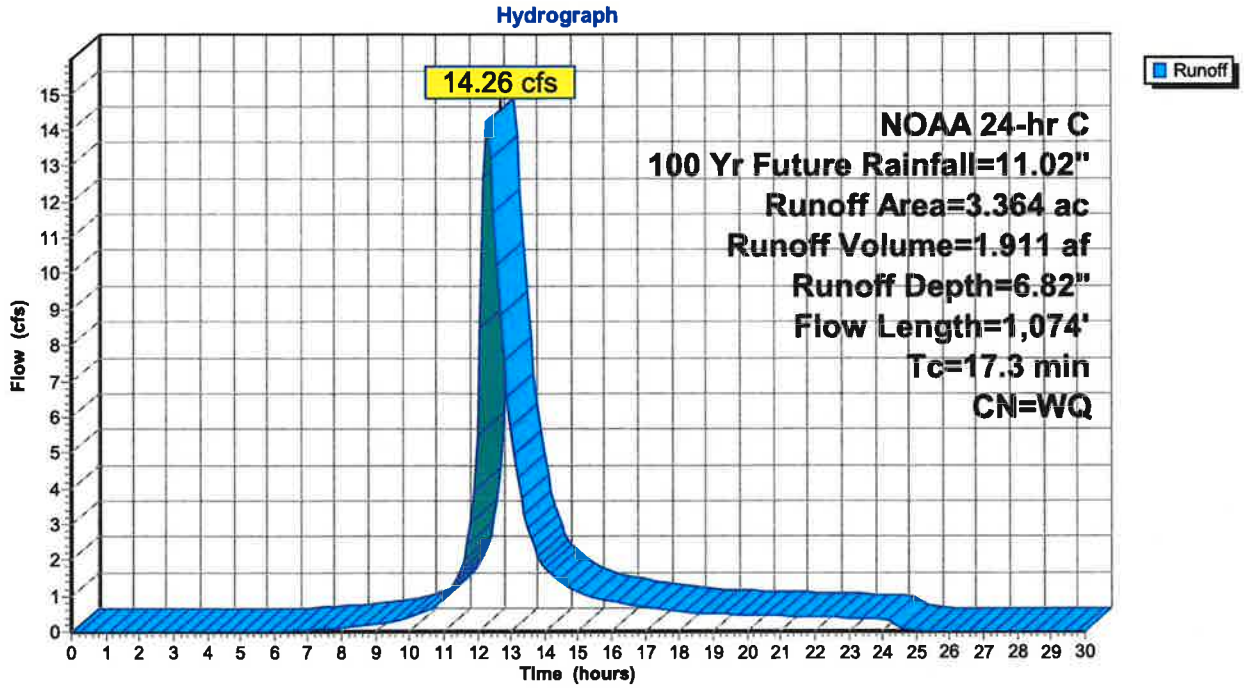
Runoff = 14.26 cfs @ 12.31 hrs, Volume= 1.911 af, Depth= 6.82"
Routed to Link 8L : South Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 100 Yr Future Rainfall=11.02"

Area (ac)	CN	Description
1.816	70	Woods, Good, HSG C
0.487	55	Woods, Good, HSG B
0.130	39	>75% Grass cover, Good, HSG A
0.931	74	>75% Grass cover, Good, HSG C
3.364		Weighted Average
3.364		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	59	0.0070	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
2.9	543	0.0229	3.07		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.7	434	0.0057	1.53		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	38	0.0200	4.31	4.39	**Pipe Channel,** 15.0" x 12.0", R=12.0"/20.0" Pipe Arch Area= 1.0 sf Perim= 3.6' r= n= 0.021
17.3	1,074	Total			

Subcatchment 7S: X-DA3 Per



Summary for Pond 2P: Ex Low Point

Inflow Area = 0.617 ac, 0.00% Impervious, Inflow Depth = 1.62" for 100 Yr Future event
Inflow = 0.76 cfs @ 12.15 hrs, Volume= 0.083 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 5L : West Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Peak Elev= 50.00' @ 24.50 hrs Surf.Area= 4,326 sf Storage= 3,629 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

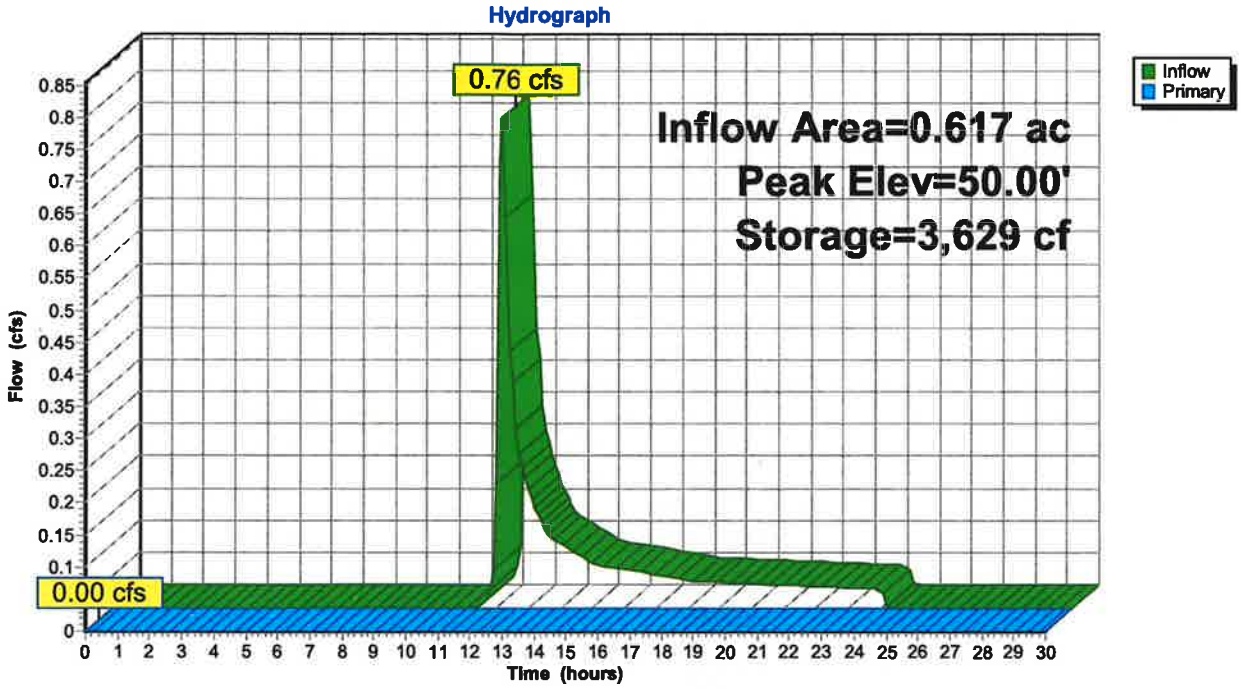
Volume	Invert	Avail.Storage	Storage Description
#1	48.00'	8,383 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
48.00	295	0	0
49.00	1,332	814	814
50.00	4,340	2,836	3,650
51.00	5,126	4,733	8,383

Device	Routing	Invert	Outlet Devices
#1	Primary	50.00'	**90.0' long x 10.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=48.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 2P: Ex Low Point

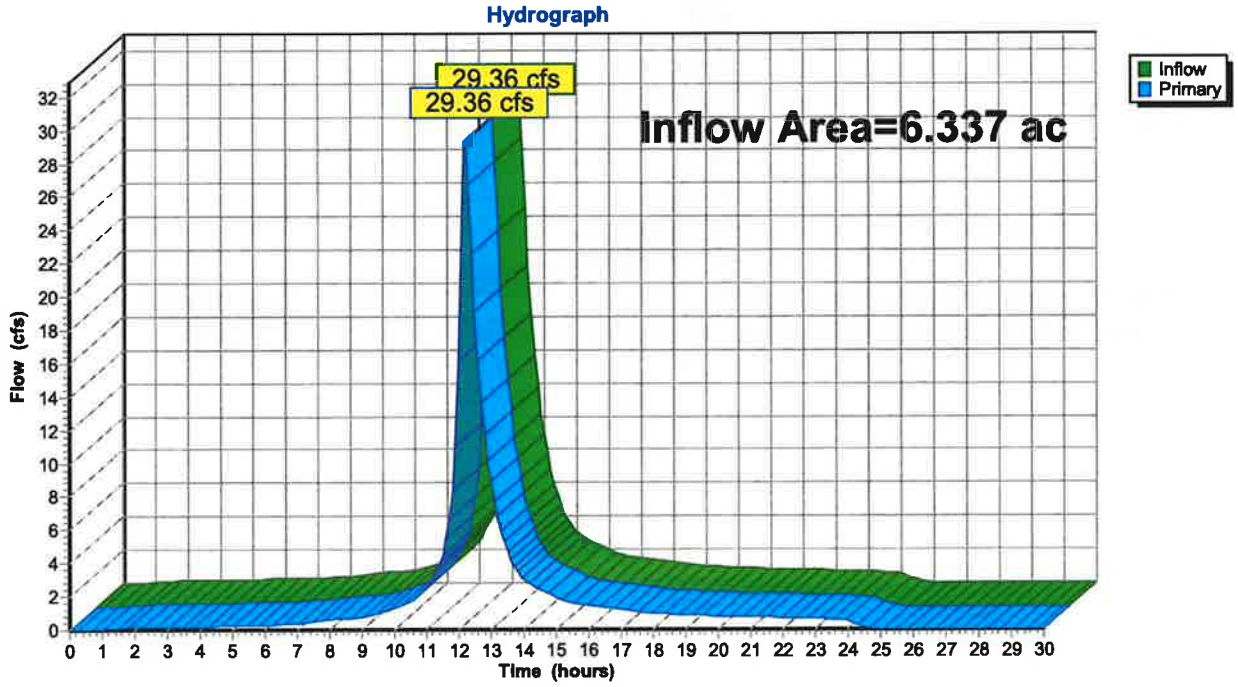


Summary for Link 5L: West Wetlands

Inflow Area = 6.337 ac, 26.89% Impervious, Inflow Depth = 7.36" for 100 Yr Future event
Inflow = 29.36 cfs @ 12.21 hrs, Volume= 3.886 af
Primary = 29.36 cfs @ 12.21 hrs, Volume= 3.886 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 15L

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs

Link 5L: West Wetlands

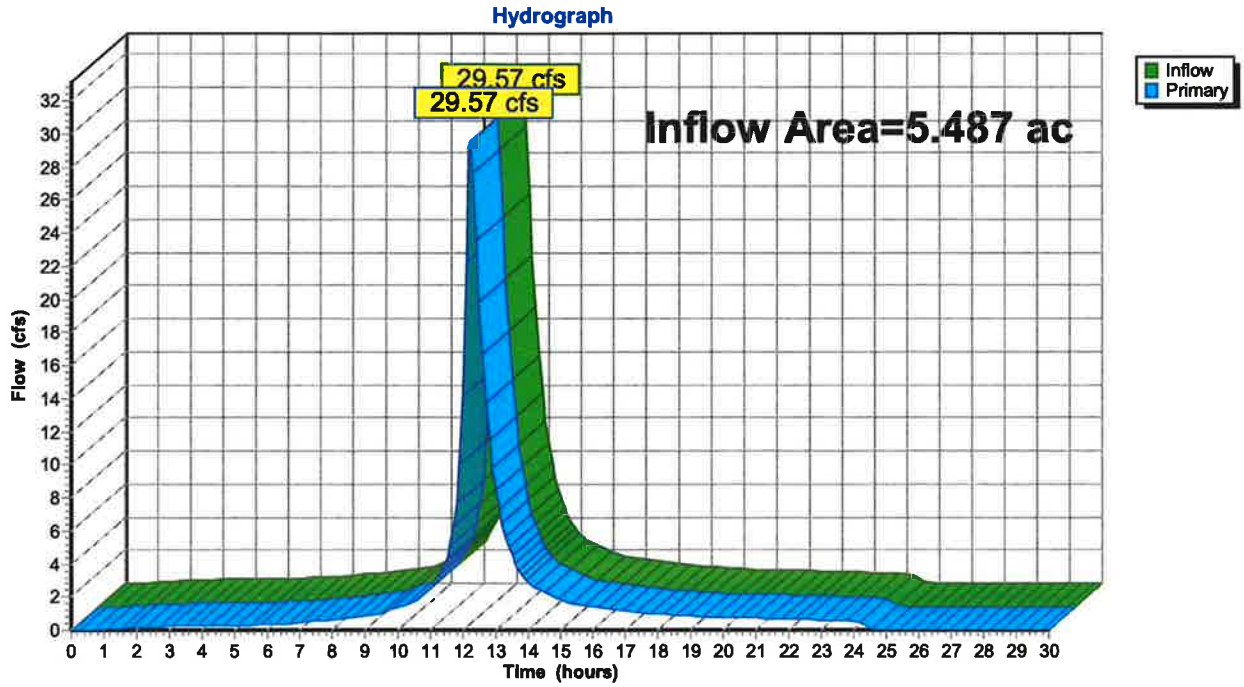


Summary for Link 8L: South Wetlands

Inflow Area = 5.487 ac, 38.69% Impervious, Inflow Depth = 8.35" for 100 Yr Future event
Inflow = 29.57 cfs @ 12.23 hrs, Volume= 3.818 af
Primary = 29.57 cfs @ 12.23 hrs, Volume= 3.818 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 15L

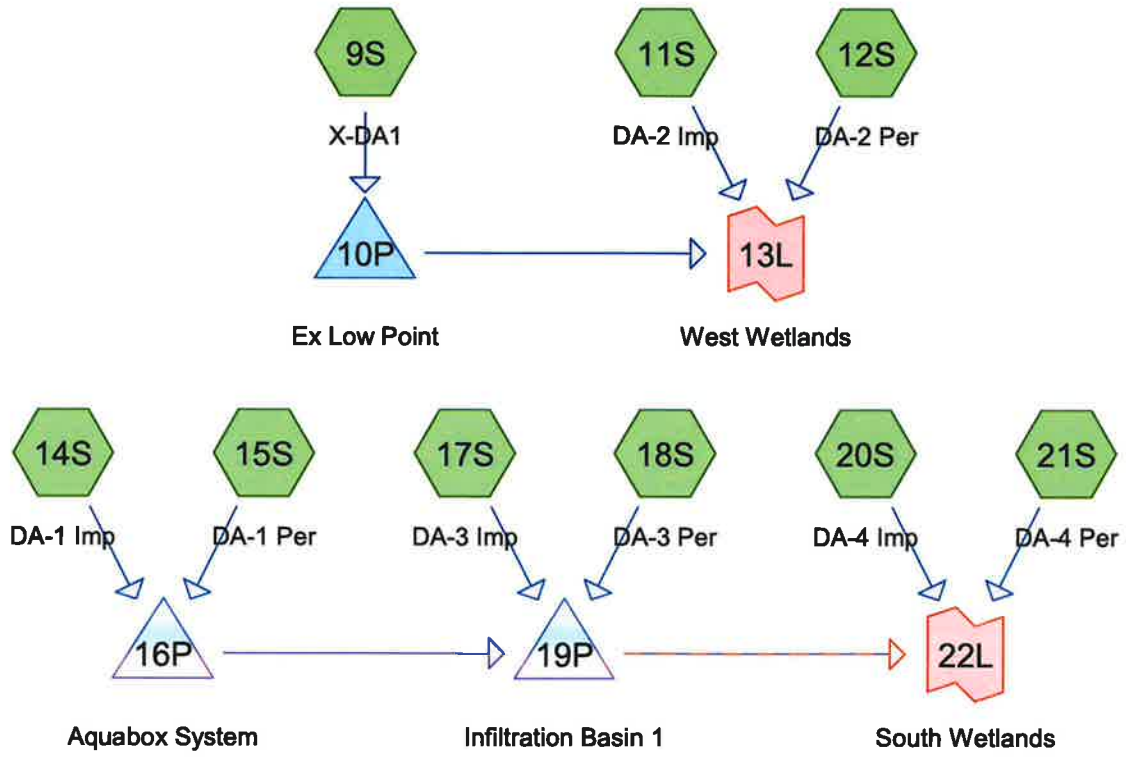
Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs

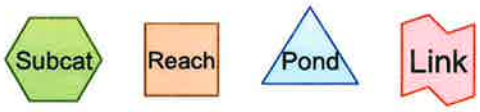
Link 8L: South Wetlands



POST DEVELOPMENT

Proposed Conditions





Routing Diagram for 0701.006C - HydroCAD Analysis
Prepared by PS&S, Printed 3/26/2026

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	002 Yr Current	NOAA 24-hr	C	Default	24.00	1	3.30	2
2	002 Yr Future	NOAA 24-hr	C	Default	24.00	1	3.90	2
3	010 Yr Current	NOAA 24-hr	C	Default	24.00	1	5.09	2
4	010 Yr Future	NOAA 24-hr	C	Default	24.00	1	5.95	2
5	100 Yr Current	NOAA 24-hr	C	Default	24.00	1	8.68	2
6	100 Yr Future	NOAA 24-hr	C	Default	24.00	1	11.02	2
7	NJ-WQ	NJ DEP 2-hr		Default	2.00	1	1.25	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.255	39	>75% Grass cover, Good, HSG A (9S, 18S)
1.696	74	>75% Grass cover, Good, HSG C (15S, 18S, 21S)
4.974	98	Paved parking, HSG A (11S, 14S, 17S, 20S)
0.492	30	Woods, Good, HSG A (9S)
3.049	70	Woods, Good, HSG C (12S, 21S)
1.359	77	Woods, Good, HSG D (12S, 21S)
11.825	**81**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
5.721	HSG A	9S, 11S, 14S, 17S, 18S, 20S
0.000	HSG B	
4.745	HSG C	12S, 15S, 18S, 21S
1.359	HSG D	12S, 21S
0.000	Other	
11.825		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.255	0.000	1.696	0.000	0.000	1.951	>75% Grass cover, Good	9S, 15S, 18S, 21S
4.974	0.000	0.000	0.000	0.000	4.974	Paved parking	11S, 14S, 17S, 20S
0.492	0.000	3.049	1.359	0.000	4.900	Woods, Good	9S, 12S, 21S
5.721	**0.000**	**4.745**	**1.359**	**0.000**	**11.825**	**TOTAL AREA**	

Time span=0.00-30.00 hrs, dt=0.10 hrs, 301 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 9S: X-DA1 Runoff Area=0.617 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=218' Slope=0.0388 '/' Tc=3.7 min CN=WQ Runoff=0.00 cfs 0.000 af

Subcatchment 11S: DA-2 Imp Runoff Area=1.140 ac 100.00% Impervious Runoff Depth=3.07"
Flow Length=548' Tc=14.1 min CN=98 Runoff=2.21 cfs 0.291 af

Subcatchment 12S: DA-2 Per Runoff Area=2.025 ac 0.00% Impervious Runoff Depth=1.06"
Flow Length=561' Tc=37.1 min CN=WQ Runoff=0.79 cfs 0.179 af

Subcatchment 14S: DA-1 Imp Runoff Area=1.662 ac 100.00% Impervious Runoff Depth=3.07"
Flow Length=378' Tc=3.1 min CN=98 Runoff=5.28 cfs 0.425 af

Subcatchment 15S: DA-1 Per Runoff Area=0.647 ac 0.00% Impervious Runoff Depth=1.10"
Flow Length=389' Tc=7.4 min CN=74 Runoff=0.62 cfs 0.060 af

Subcatchment 17S: DA-3 Imp Runoff Area=1.338 ac 100.00% Impervious Runoff Depth=3.07"
Flow Length=980' Tc=6.2 min CN=98 Runoff=3.44 cfs 0.342 af

Subcatchment 18S: DA-3 Per Runoff Area=0.703 ac 0.00% Impervious Runoff Depth=0.90"
Flow Length=971' Tc=17.3 min CN=WQ Runoff=0.37 cfs 0.053 af

Subcatchment 20S: DA-4 Imp Runoff Area=0.834 ac 100.00% Impervious Runoff Depth=3.07"
Flow Length=319' Tc=3.3 min CN=98 Runoff=2.62 cfs 0.213 af

Subcatchment 21S: DA-4 Per Runoff Area=2.859 ac 0.00% Impervious Runoff Depth=0.99"
Flow Length=350' Tc=40.0 min CN=WQ Runoff=0.97 cfs 0.236 af

Pond 10P: Ex Low Point Peak Elev=48.00' Storage=1 cf Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Pond 16P: Aquabox System Peak Elev=43.13' Storage=20,287 cf Inflow=5.78 cfs 0.484 af
Outflow=0.13 cfs 0.049 af

Pond 19P: Infiltration Basin 1 Peak Elev=43.48' Storage=9,693 cf Inflow=3.62 cfs 0.444 af
Primary=1.00 cfs 0.296 af Secondary=0.00 cfs 0.000 af Outflow=1.00 cfs 0.296 af

Link 13L: West Wetlands Inflow=2.59 cfs 0.470 af
Primary=2.59 cfs 0.470 af

Link 22L: South Wetlands Inflow=2.86 cfs 0.745 af
Primary=2.86 cfs 0.745 af

Total Runoff Area = 11.825 ac Runoff Volume = 1.798 af Average Runoff Depth = 1.82"
57.94% Pervious = 6.851 ac 42.06% Impervious = 4.974 ac

Summary for Subcatchment 9S: X-DA1

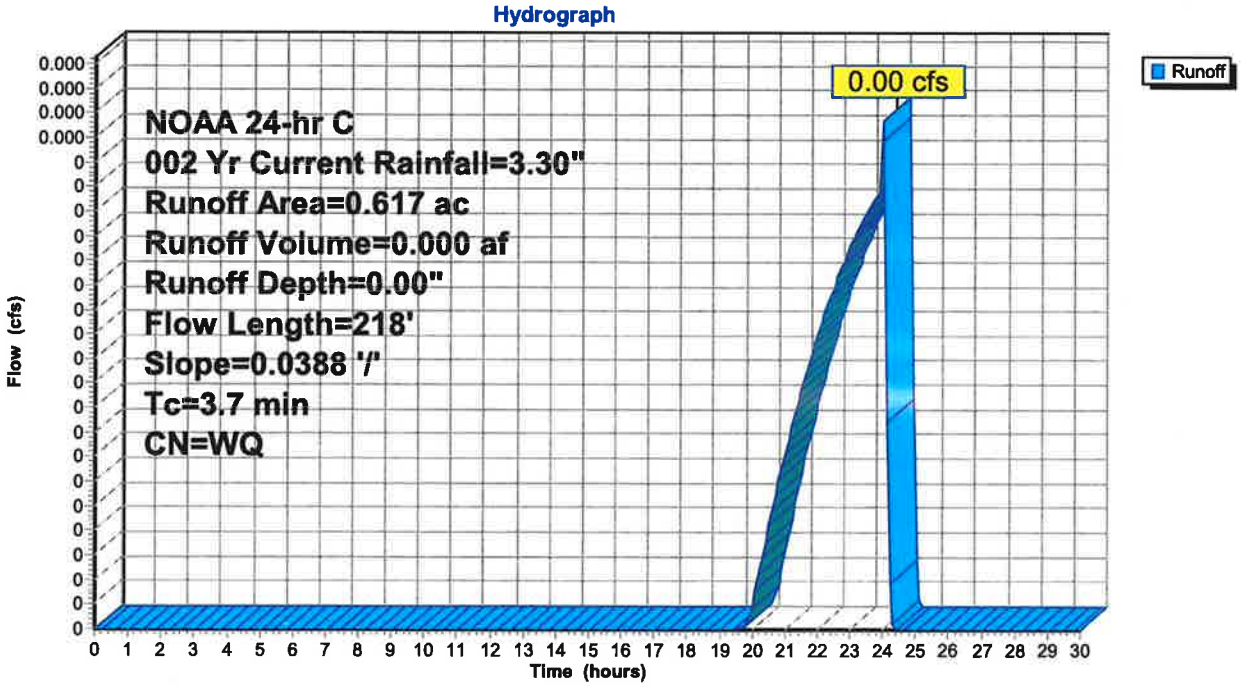
Runoff = 0.00 cfs @ 23.96 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond 10P : Ex Low Point

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 002 Yr Current Rainfall=3.30"

Area (ac)	CN	Description
0.492	30	Woods, Good, HSG A
0.125	39	>75% Grass cover, Good, HSG A
0.617		Weighted Average
0.617		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	218	0.0388	0.98		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps

Subcatchment 9S: X-DA1



Summary for Subcatchment 11S: DA-2 Imp

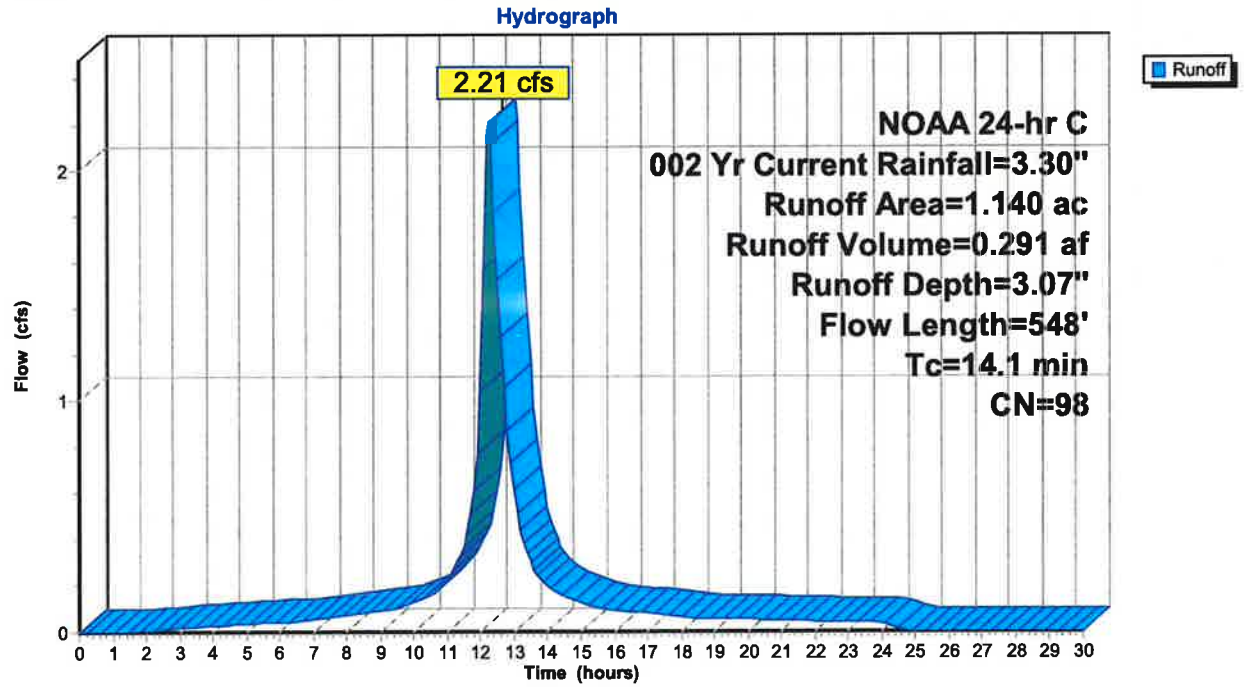
Runoff = 2.21 cfs @ 12.24 hrs, Volume= 0.291 af, Depth= 3.07"
Routed to Link 13L : West Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 002 Yr Current Rainfall=3.30"

Area (ac)	CN	Description
1.140	98	Paved parking, HSG A
1.140		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	100	0.0039	0.73		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
1.1	185	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
10.7	263	0.0067	0.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.1	548	Total			

Subcatchment 11S: DA-2 Imp



Summary for Subcatchment 12S: DA-2 Per

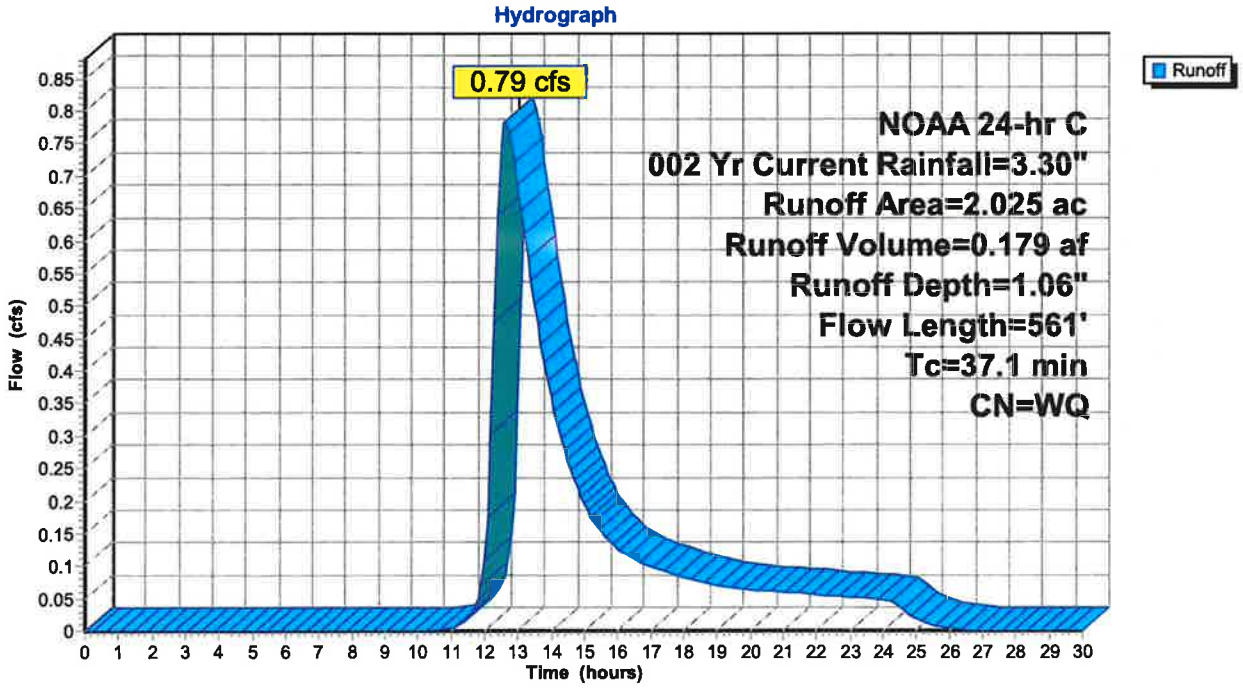
Runoff = 0.79 cfs @ 12.64 hrs, Volume= 0.179 af, Depth= 1.06"
Routed to Link 13L : West Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 002 Yr Current Rainfall=3.30"

Area (ac)	CN	Description
0.872	77	Woods, Good, HSG D
1.153	70	Woods, Good, HSG C
2.025		Weighted Average
2.025		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0230	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
2.4	149	0.0418	1.02		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.7	312	0.0050	0.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
37.1	561	Total			

Subcatchment 12S: DA-2 Per



Summary for Subcatchment 14S: DA-1 Imp

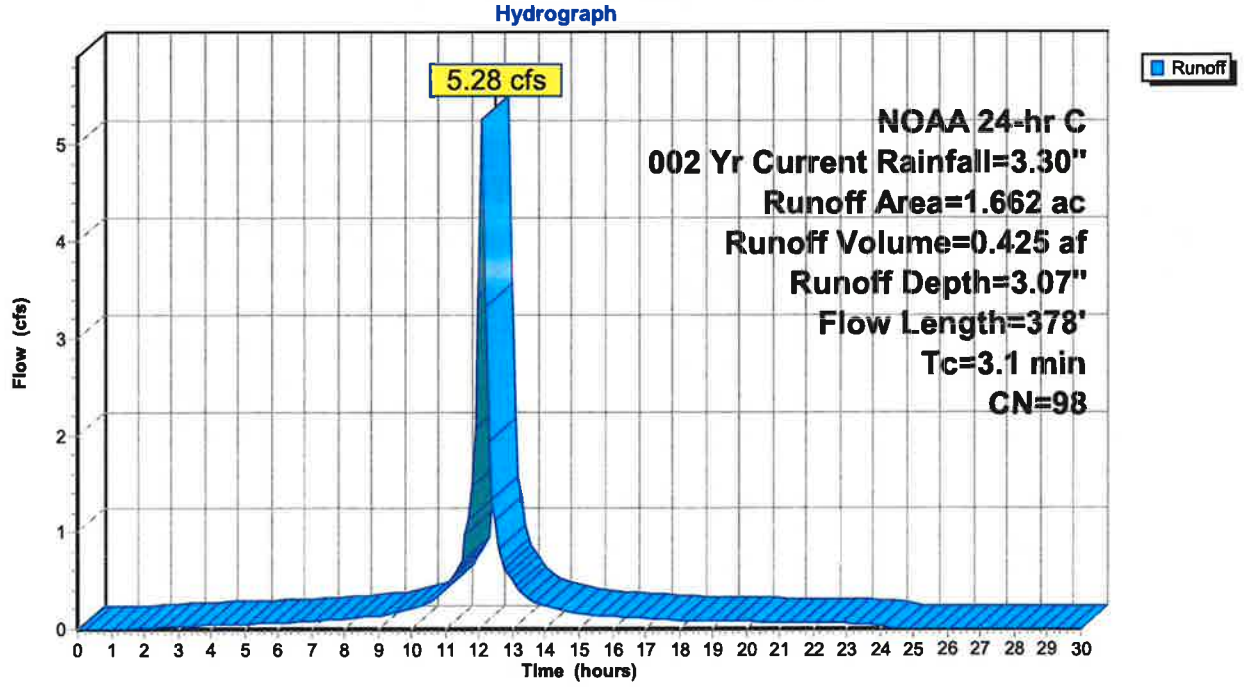
Runoff = 5.28 cfs @ 12.10 hrs, Volume= 0.425 af, Depth= 3.07"
Routed to Pond 16P : Aquabox System

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 002 Yr Current Rainfall=3.30"

Area (ac)	CN	Description
1.662	98	Paved parking, HSG A
1.662		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	100	0.0062	0.87		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
0.6	94	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	184	0.0075	5.15	9.10	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
3.1	378	Total			

Subcatchment 14S: DA-1 Imp



Summary for Subcatchment 15S: DA-1 Per

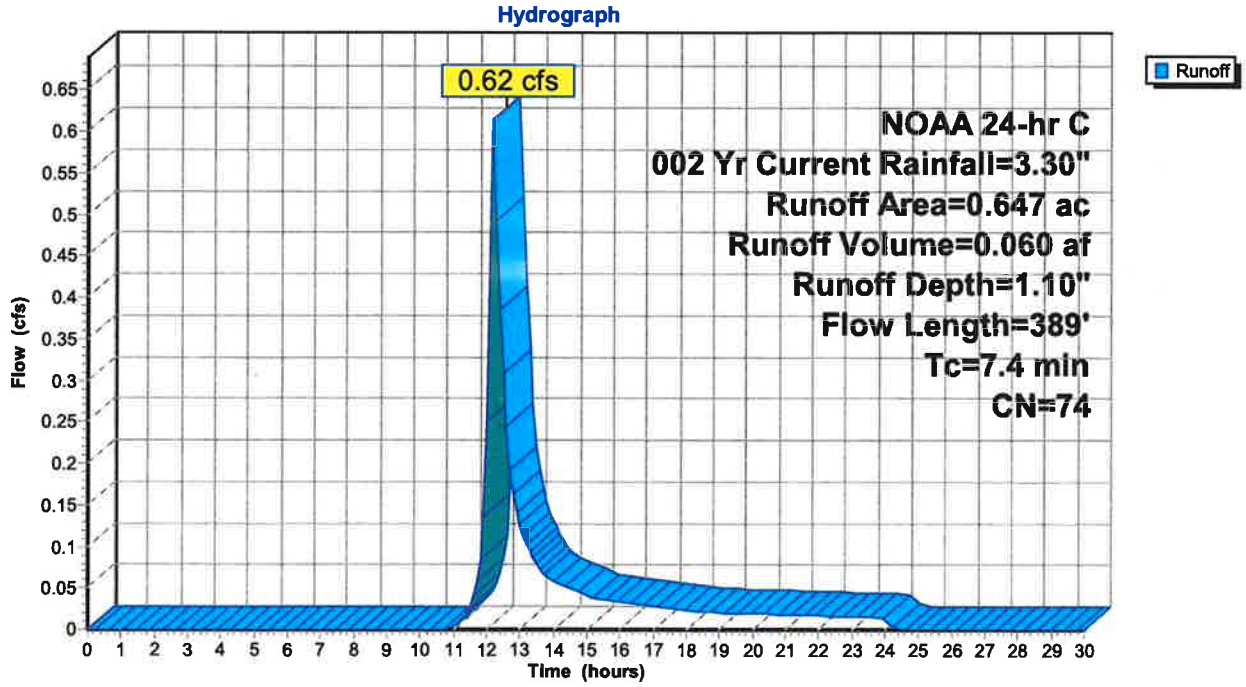
Runoff = 0.62 cfs @ 12.20 hrs, Volume= 0.060 af, Depth= 1.10"
Routed to Pond 16P : Aquabox System

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 002 Yr Current Rainfall=3.30"

Area (ac)	CN	Description
0.647	74	>75% Grass cover, Good, HSG C
0.647		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	79	0.0380	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
0.6	126	0.0320	3.63		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	184	0.0075	5.15	9.10	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
7.4	389	Total			

Subcatchment 15S: DA-1 Per



Summary for Subcatchment 17S: DA-3 Imp

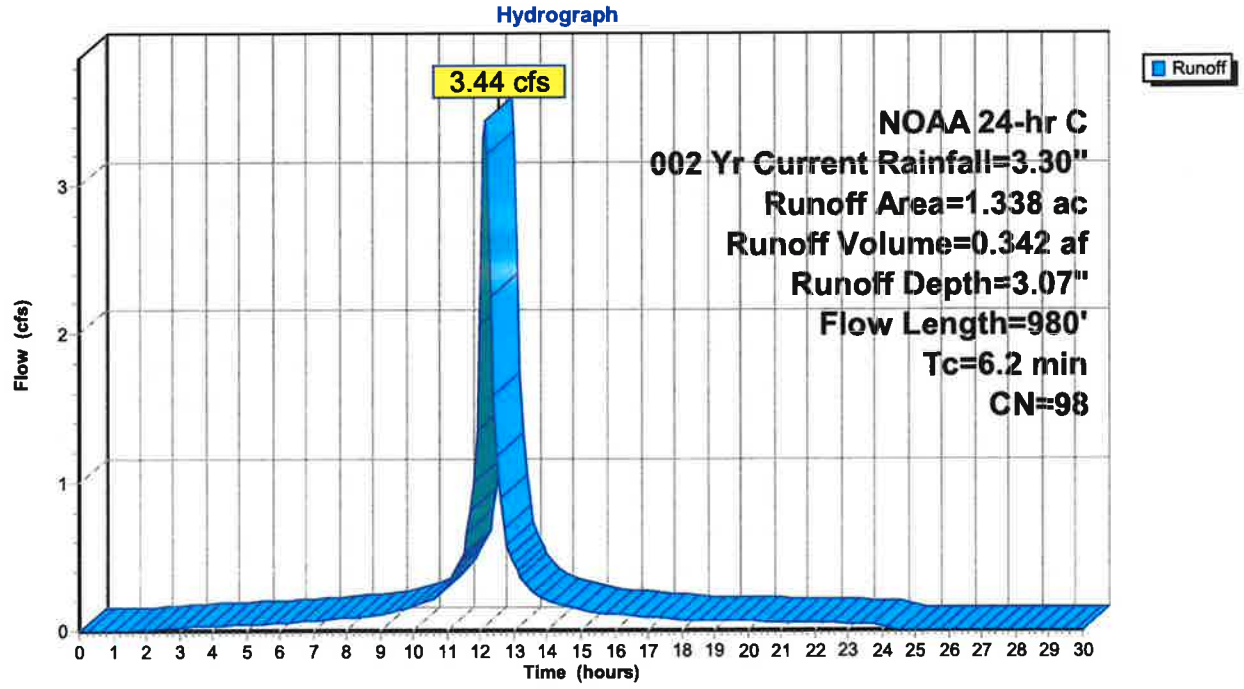
Runoff = 3.44 cfs @ 12.14 hrs, Volume= 0.342 af, Depth= 3.07"
Routed to Pond 19P : Infiltration Basin 1

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 002 Yr Current Rainfall=3.30"

Area (ac)	CN	Description
1.338	98	Paved parking, HSG A
1.338		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	49	0.0136	1.04		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
4.9	780	0.0170	2.65		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	151	0.0084	5.45	9.63	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
6.2	980	Total			

Subcatchment 17S: DA-3 Imp



Summary for Subcatchment 18S: DA-3 Per

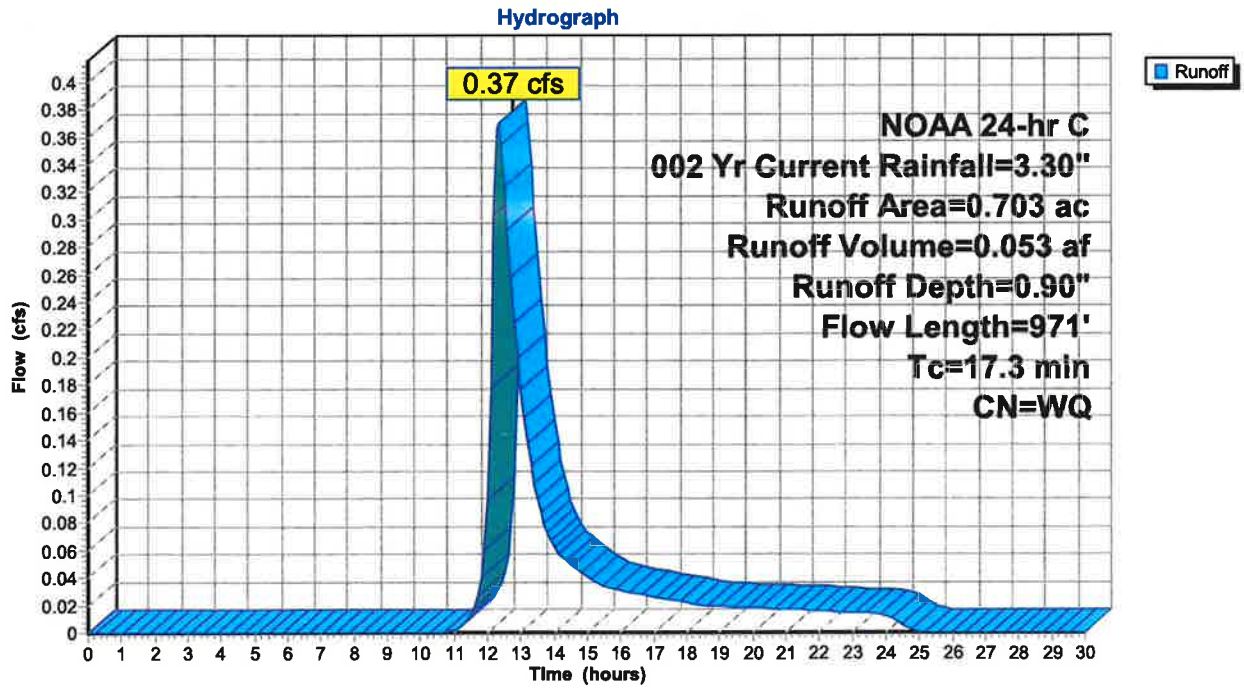
Runoff = 0.37 cfs @ 12.33 hrs, Volume= 0.053 af, Depth= 0.90"
Routed to Pond 19P : Infiltration Basin 1

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 002 Yr Current Rainfall=3.30"

Area (ac)	CN	Description
0.130	39	>75% Grass cover, Good, HSG A
0.573	74	>75% Grass cover, Good, HSG C
0.703		Weighted Average
0.703		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	100	0.0110	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
4.5	720	0.0170	2.65		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	151	0.0084	5.45	9.63	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
17.3	971	Total			

Subcatchment 18S: DA-3 Per



Summary for Subcatchment 20S: DA-4 Imp

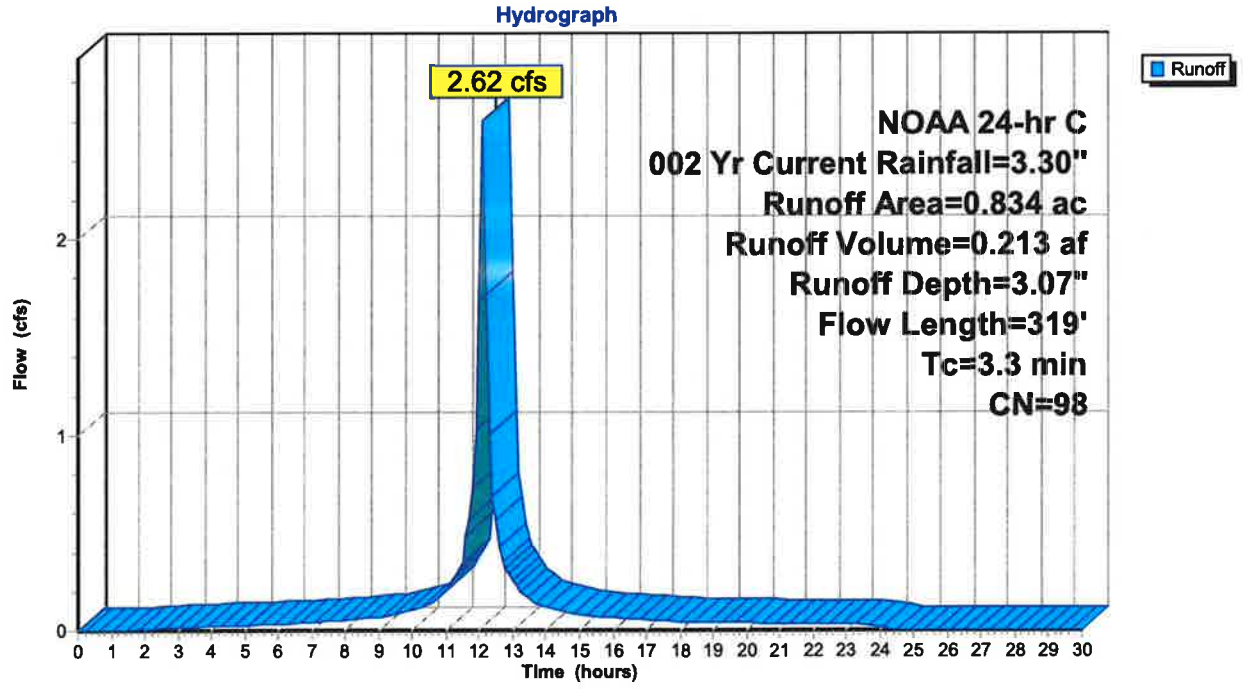
Runoff = 2.62 cfs @ 12.10 hrs, Volume= 0.213 af, Depth= 3.07"
Routed to Link 22L : South Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 002 Yr Current Rainfall=3.30"

Area (ac)	CN	Description
0.834	98	Paved parking, HSG A
0.834		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0110	1.10		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
1.7	181	0.0076	1.77		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	38	0.0200	4.31	4.39	**Pipe Channel,** 15.0" x 12.0", R=12.0"/20.0" Pipe Arch Area= 1.0 sf Perim= 3.6' r= n= 0.021
3.3	319	Total			

Subcatchment 20S: DA-4 Imp



Summary for Subcatchment 21S: DA-4 Per

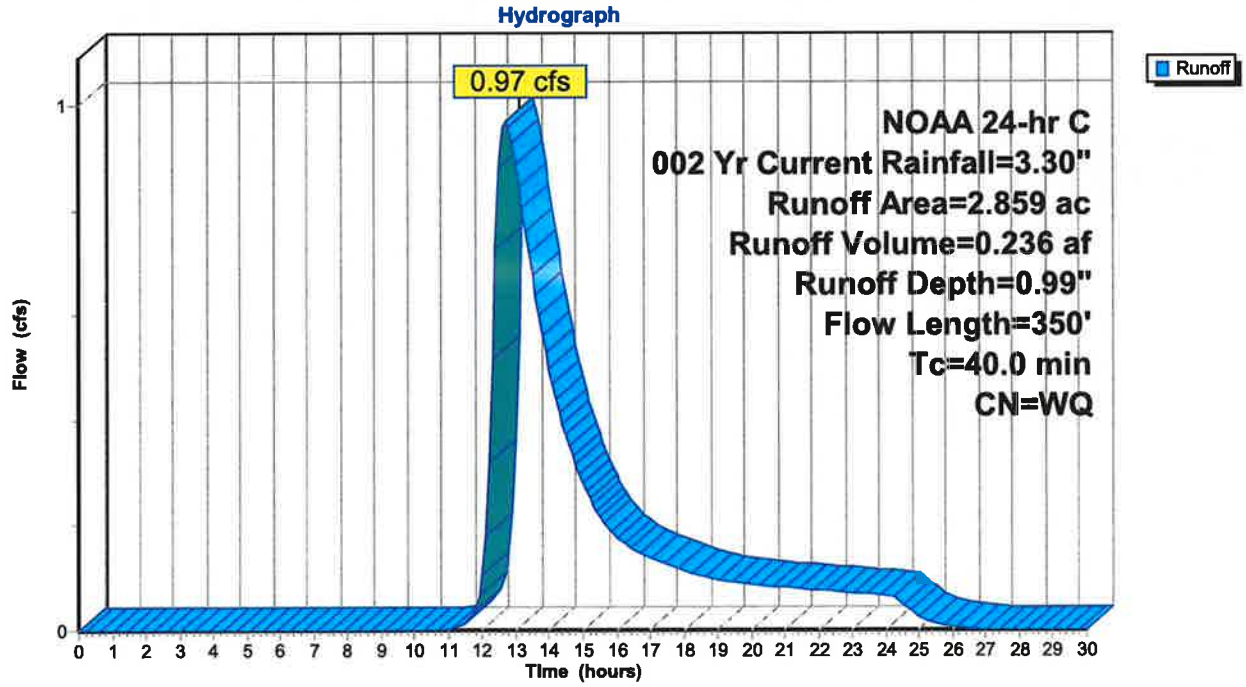
Runoff = 0.97 cfs @ 12.70 hrs, Volume= 0.236 af, Depth= 0.99"
Routed to Link 22L : South Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 002 Yr Current Rainfall=3.30"

Area (ac)	CN	Description
1.896	70	Woods, Good, HSG C
0.487	77	Woods, Good, HSG D
0.476	74	>75% Grass cover, Good, HSG C
2.859		Weighted Average
2.859		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.5	100	0.0087	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
10.5	250	0.0063	0.40		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
40.0	350	Total			

Subcatchment 21S: DA-4 Per



Summary for Pond 10P: Ex Low Point

Inflow Area = 0.617 ac, 0.00% Impervious, Inflow Depth = 0.00" for 002 Yr Current event
Inflow = 0.00 cfs @ 23.96 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 13L : West Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Peak Elev= 48.00' @ 24.50 hrs Surf.Area= 298 sf Storage= 1 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

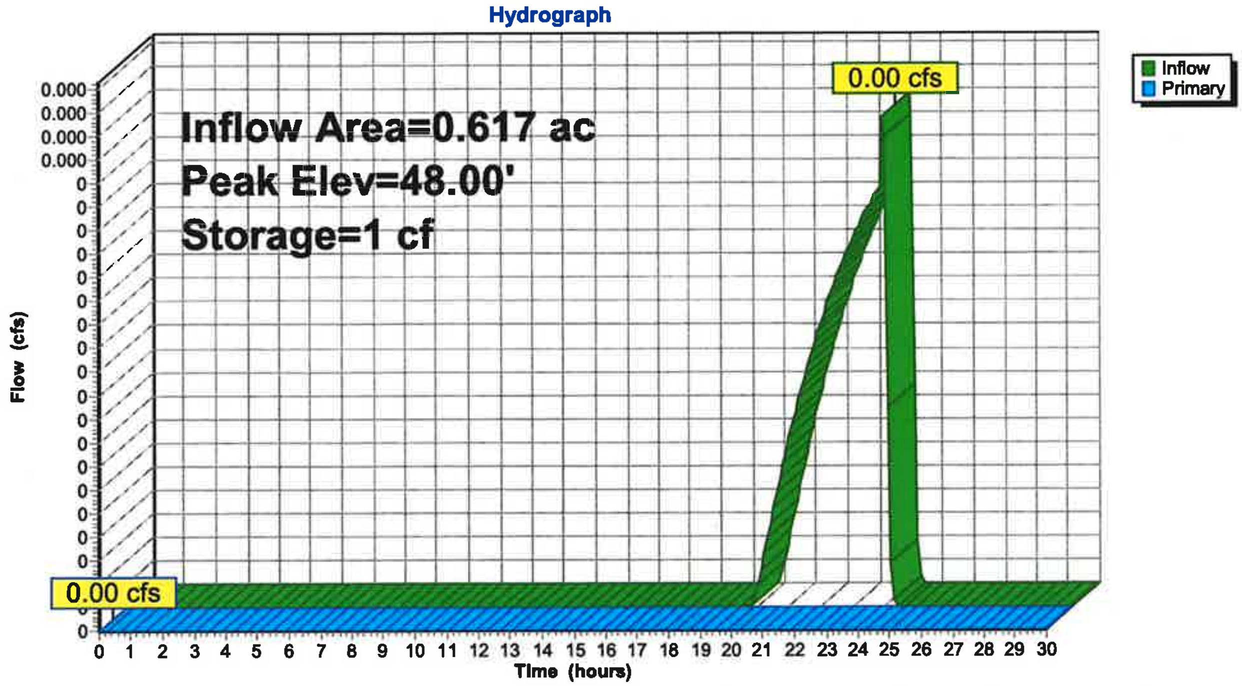
Volume	Invert	Avail.Storage	Storage Description
#1	48.00'	8,383 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
48.00	295	0	0
49.00	1,332	814	814
50.00	4,340	2,836	3,650
51.00	5,126	4,733	8,383

Device	Routing	Invert	Outlet Devices
#1	Primary	50.00'	**90.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=48.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 10P: Ex Low Point



Summary for Pond 16P: Aquabox System

Inflow Area = 2.309 ac, 71.98% Impervious, Inflow Depth = 2.52" for 002 Yr Current event
Inflow = 5.78 cfs @ 12.10 hrs, Volume= 0.484 af
Outflow = 0.13 cfs @ 24.44 hrs, Volume= 0.049 af, Atten= 98%, Lag= 740.3 min
Primary = 0.13 cfs @ 24.44 hrs, Volume= 0.049 af
Routed to Pond 19P : Infiltration Basin 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Peak Elev= 43.13' @ 24.06 hrs Surf.Area= 16,068 sf Storage= 20,287 cf

Plug-Flow detention time= 1,093.0 min calculated for 0.049 af (10% of inflow)
Center-of-Mass det. time= 738.7 min (1,508.7 - 770.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	41.50'	7,088 cf	**63.52'W x 252.98'L x 3.62'H Field A** 58,243 cf Overall - 40,524 cf Embedded = 17,719 cf x 40.0% Voids
#2A	42.00'	38,862 cf	**ADS Aquabox 1** x 2550 Inside #1 Inside= 29.5"W x 31.5"H => 6.19 sf x 2.46'L = 15.2 cf Outside= 29.5"W x 31.5"H => 6.46 sf x 2.46'L = 15.9 cf 2550 Chambers in 25 Rows
		45,950 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	42.63'	**24.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.16 cfs @ 24.44 hrs HW=43.13' TW=43.13' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 0.16 cfs @ 0.26 fps)

Pond 16P: Aquabox System - Chamber Wizard Field A

Chamber Model = ADS Aquabox 1 (ADS Aquabox)
Inside= 29.5"W x 31.5"H => 6.19 sf x 2.46'L = 15.2 cf
Outside= 29.5"W x 31.5"H => 6.46 sf x 2.46'L = 15.9 cf

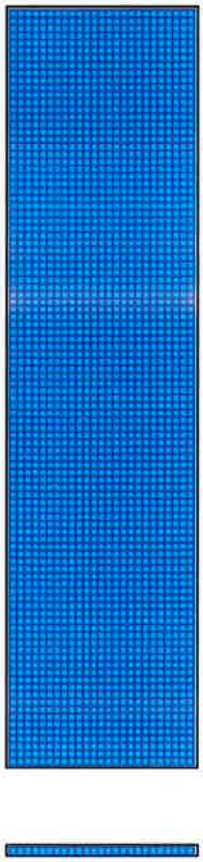
102 Chambers/Row x 2.46' Long = 250.98' Row Length +12.0" End Stone x 2 = 252.98' Base Length
25 Rows x 29.5" Wide + 12.0" Side Stone x 2 = 63.52' Base Width
6.0" Stone Base + 31.5" Chamber Height + 6.0" Stone Cover = 3.62' Field Height

2,550 Chambers x 15.2 cf = 38,862.1 cf Chamber Storage
2,550 Chambers x 15.9 cf = 40,523.6 cf Displacement

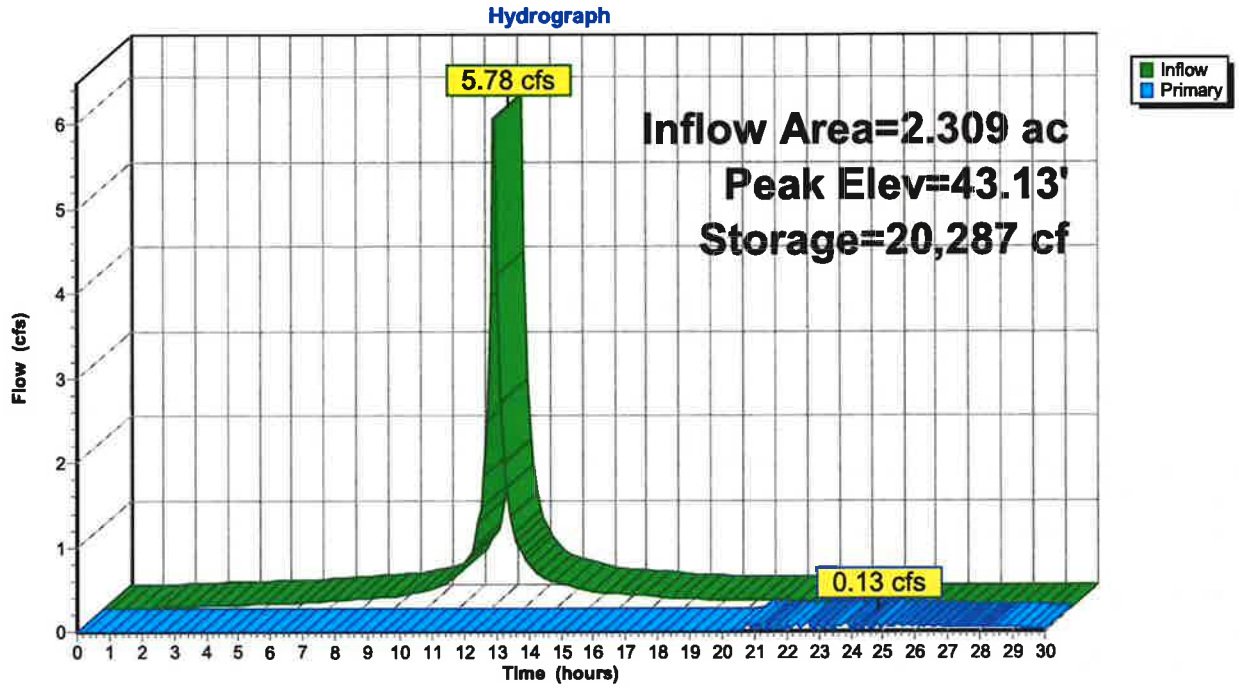
58,243.0 cf Field - 40,523.6 cf Chambers = 17,719.4 cf Stone x 40.0% Voids = 7,087.8 cf Stone Storage

Chamber Storage + Stone Storage = 45,949.9 cf = 1.055 af
Overall Storage Efficiency = 78.9%
Overall System Size = 252.98' x 63.52' x 3.62'

2,550 Chambers
2,157.1 cy Field
656.3 cy Stone



Pond 16P: Aquabox System



Summary for Pond 19P: Infiltration Basin 1

Inflow Area = 4.350 ac, 68.97% Impervious, Inflow Depth > 1.22" for 002 Yr Current event
Inflow = 3.62 cfs @ 12.15 hrs, Volume= 0.444 af
Outflow = 1.00 cfs @ 12.69 hrs, Volume= 0.296 af, Atten= 72%, Lag= 32.2 min
Primary = 1.00 cfs @ 12.69 hrs, Volume= 0.296 af
Routed to Link 22L : South Wetlands
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 22L : South Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Peak Elev= 43.48' @ 12.69 hrs Surf.Area= 7,716 sf Storage= 9,693 cf

Plug-Flow detention time= 372.0 min calculated for 0.296 af (67% of inflow)
Center-of-Mass det. time= 199.6 min (1,058.1 - 858.5)

Volume	Invert	Avail.Storage	Storage Description
#1	42.00'	34,406 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

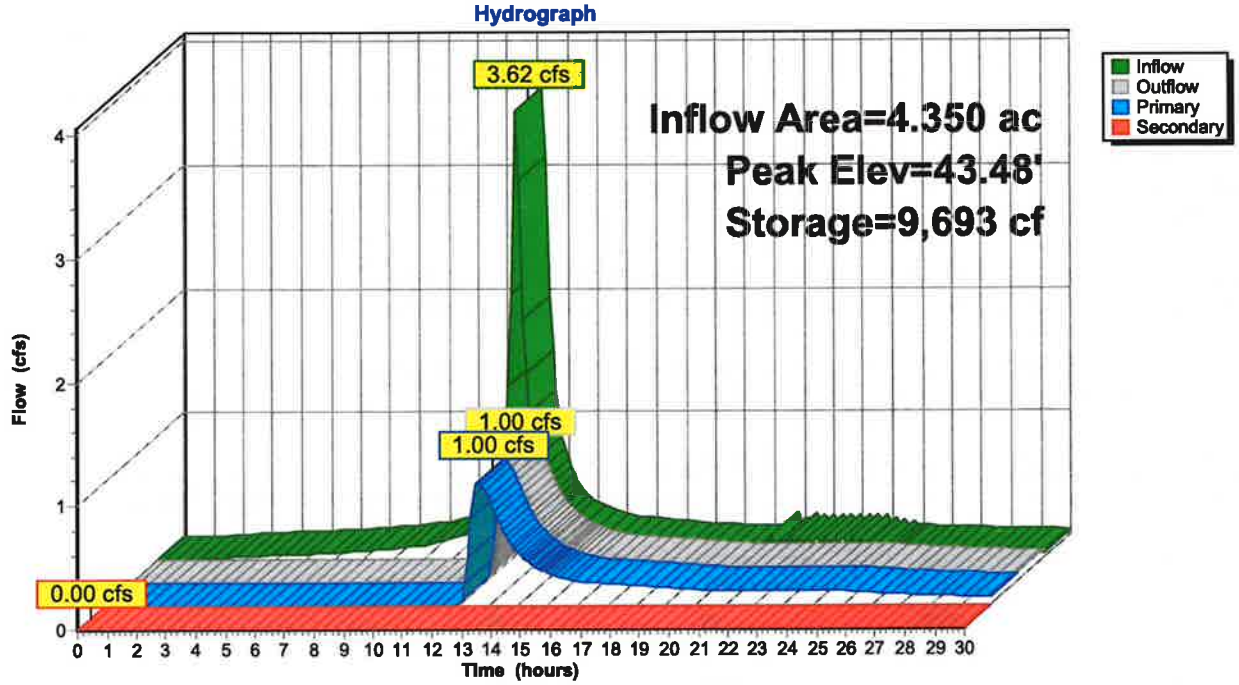
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
42.00	5,375	0	0
43.00	6,931	6,153	6,153
44.00	8,555	7,743	13,896
45.00	10,241	9,398	23,294
46.00	11,983	11,112	34,406

Device	Routing	Invert	Outlet Devices
#1	Secondary	45.50'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	44.75'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	43.25'	**2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Primary	42.87'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.00 cfs @ 12.69 hrs HW=43.48' TW=0.00' (Dynamic Tailwater)
- **2=Orifice/Grate** (Controls 0.00 cfs)
- **3=Sharp-Crested Rectangular Weir** (Weir Controls 0.72 cfs @ 1.58 fps)
- **4=Orifice/Grate** (Orifice Controls 0.28 cfs @ 3.22 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.00' TW=0.00' (Dynamic Tailwater)
- **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 19P: Infiltration Basin 1

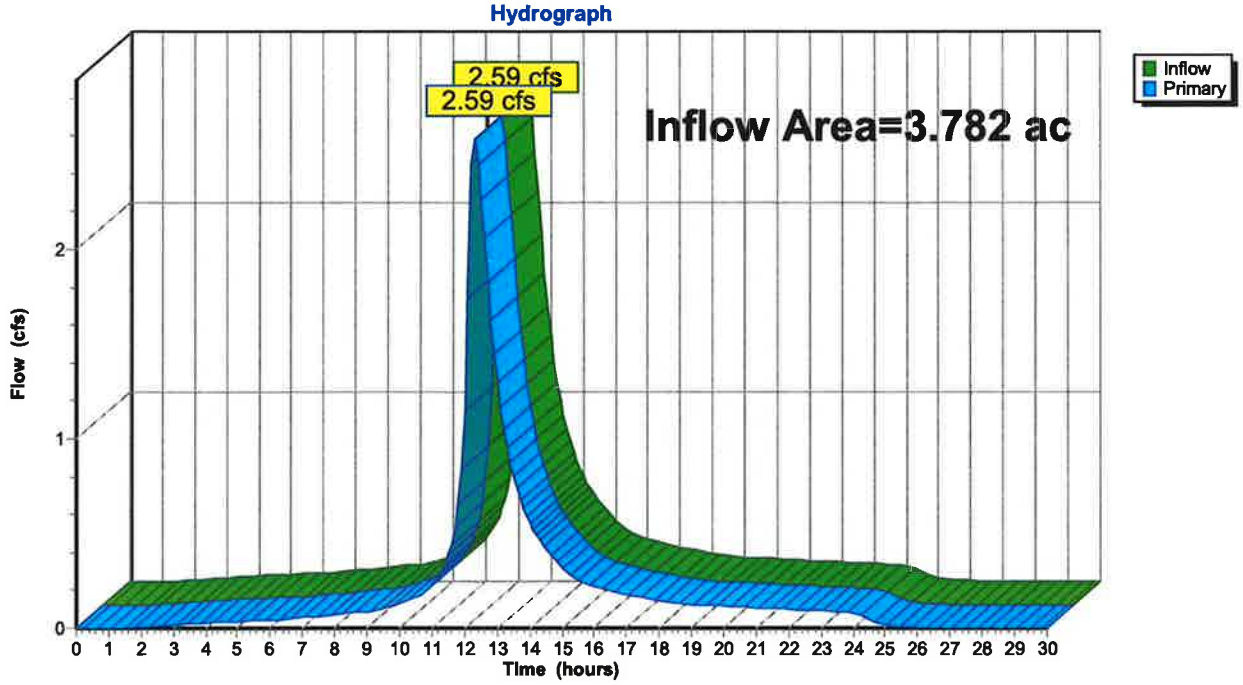


Summary for Link 13L: West Wetlands

Inflow Area = 3.782 ac, 30.14% Impervious, Inflow Depth = 1.49" for 002 Yr Current event
Inflow = 2.59 cfs @ 12.30 hrs, Volume= 0.470 af
Primary = 2.59 cfs @ 12.30 hrs, Volume= 0.470 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs

Link 13L: West Wetlands

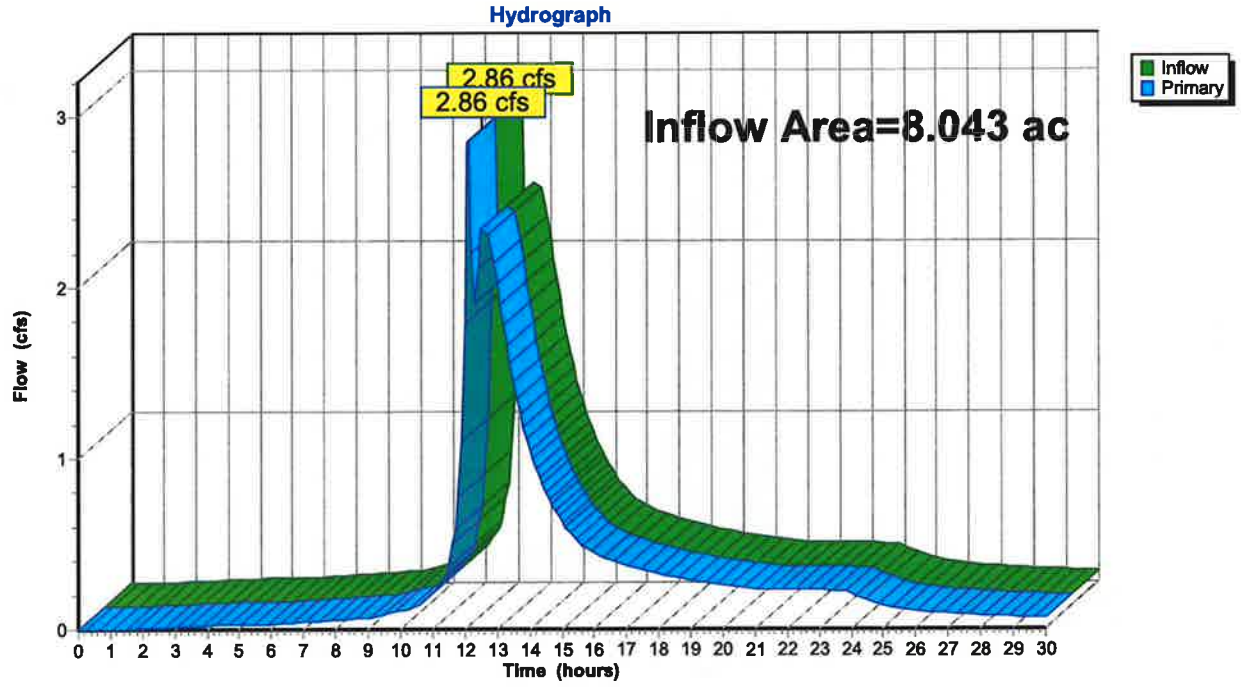


Summary for Link 22L: South Wetlands

Inflow Area = 8.043 ac, 47.67% Impervious, Inflow Depth > 1.11" for 002 Yr Current event
Inflow = 2.86 cfs @ 12.11 hrs, Volume= 0.745 af
Primary = 2.86 cfs @ 12.11 hrs, Volume= 0.745 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs

Link 22L: South Wetlands



Time span=0.00-30.00 hrs, dt=0.10 hrs, 301 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 9S: X-DA1 Runoff Area=0.617 ac 0.00% Impervious Runoff Depth=0.01"
Flow Length=218' Slope=0.0388 '/' Tc=3.7 min CN=WQ Runoff=0.00 cfs 0.000 af

Subcatchment 11S: DA-2 Imp Runoff Area=1.140 ac 100.00% Impervious Runoff Depth=3.67"
Flow Length=548' Tc=14.1 min CN=98 Runoff=2.63 cfs 0.348 af

Subcatchment 12S: DA-2 Per Runoff Area=2.025 ac 0.00% Impervious Runoff Depth=1.47"
Flow Length=561' Tc=37.1 min CN=WQ Runoff=1.13 cfs 0.247 af

Subcatchment 14S: DA-1 Imp Runoff Area=1.662 ac 100.00% Impervious Runoff Depth=3.67"
Flow Length=378' Tc=3.1 min CN=98 Runoff=6.26 cfs 0.508 af

Subcatchment 15S: DA-1 Per Runoff Area=0.647 ac 0.00% Impervious Runoff Depth=1.52"
Flow Length=389' Tc=7.4 min CN=74 Runoff=0.87 cfs 0.082 af

Subcatchment 17S: DA-3 Imp Runoff Area=1.338 ac 100.00% Impervious Runoff Depth=3.67"
Flow Length=980' Tc=6.2 min CN=98 Runoff=4.08 cfs 0.409 af

Subcatchment 18S: DA-3 Per Runoff Area=0.703 ac 0.00% Impervious Runoff Depth=1.25"
Flow Length=971' Tc=17.3 min CN=WQ Runoff=0.53 cfs 0.073 af

Subcatchment 20S: DA-4 Imp Runoff Area=0.834 ac 100.00% Impervious Runoff Depth=3.67"
Flow Length=319' Tc=3.3 min CN=98 Runoff=3.10 cfs 0.255 af

Subcatchment 21S: DA-4 Per Runoff Area=2.859 ac 0.00% Impervious Runoff Depth=1.39"
Flow Length=350' Tc=40.0 min CN=WQ Runoff=1.42 cfs 0.330 af

Pond 10P: Ex Low Point Peak Elev=48.05' Storage=16 cf Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Pond 16P: Aquabox System Peak Elev=43.29' Storage=22,564 cf Inflow=6.99 cfs 0.590 af
Outflow=0.23 cfs 0.132 af

Pond 19P: Infiltration Basin 1 Peak Elev=43.62' Storage=10,750 cf Inflow=4.37 cfs 0.613 af
Primary=1.73 cfs 0.455 af Secondary=0.00 cfs 0.000 af Outflow=1.73 cfs 0.455 af

Link 13L: West Wetlands Inflow=3.23 cfs 0.596 af
Primary=3.23 cfs 0.596 af

Link 22L: South Wetlands Inflow=3.72 cfs 1.040 af
Primary=3.72 cfs 1.040 af

Total Runoff Area = 11.825 ac Runoff Volume = 2.253 af Average Runoff Depth = 2.29"
57.94% Pervious = 6.851 ac 42.06% Impervious = 4.974 ac

Summary for Subcatchment 9S: X-DA1

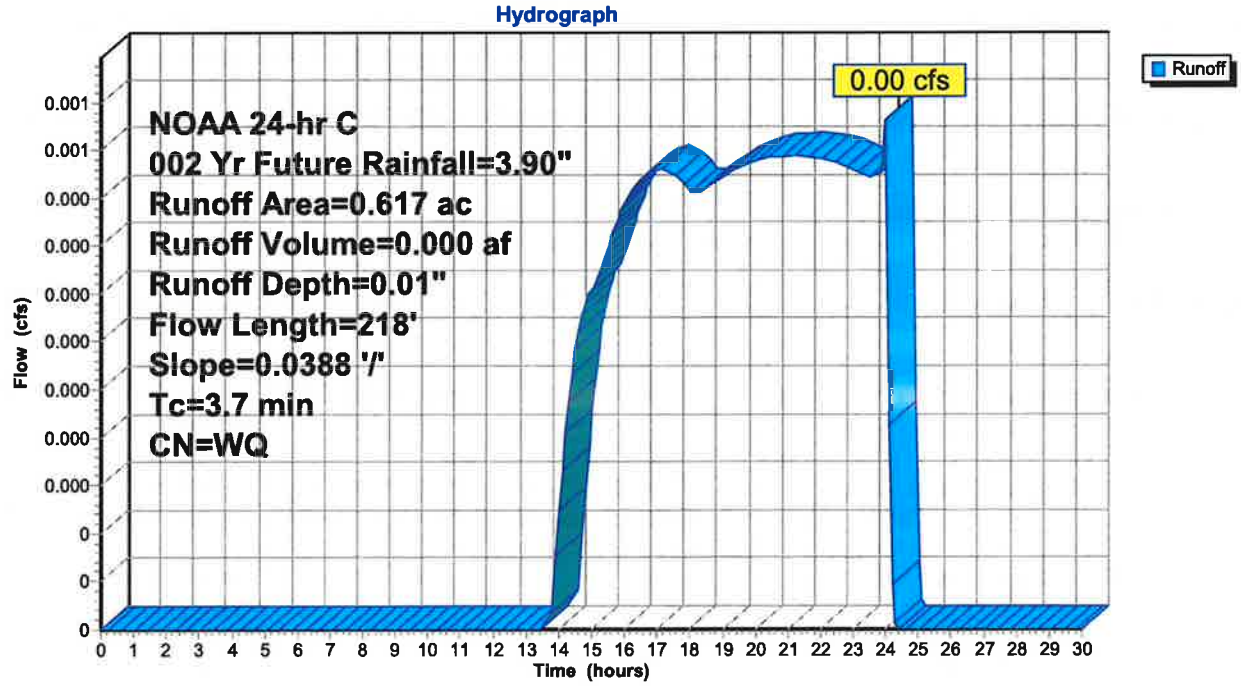
Runoff = 0.00 cfs @ 23.96 hrs, Volume= 0.000 af, Depth= 0.01"
Routed to Pond 10P : Ex Low Point

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 002 Yr Future Rainfall=3.90"

Area (ac)	CN	Description
0.492	30	Woods, Good, HSG A
0.125	39	>75% Grass cover, Good, HSG A
0.617		Weighted Average
0.617		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	218	0.0388	0.98		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps

Subcatchment 9S: X-DA1



Summary for Subcatchment 11S: DA-2 Imp

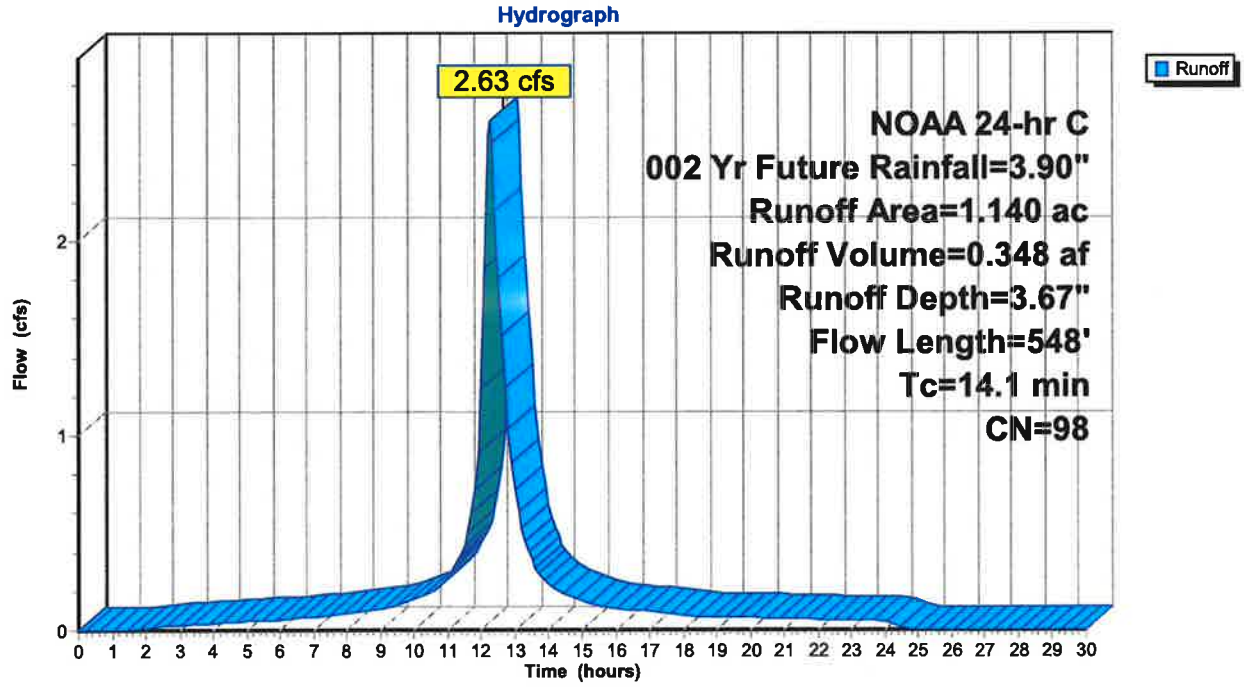
Runoff = 2.63 cfs @ 12.24 hrs, Volume= 0.348 af, Depth= 3.67"
Routed to Link 13L : West Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 002 Yr Future Rainfall=3.90"

Area (ac)	CN	Description
1.140	98	Paved parking, HSG A
1.140		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	100	0.0039	0.73		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
1.1	185	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
10.7	263	0.0067	0.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.1	548	Total			

Subcatchment 11S: DA-2 Imp



Summary for Subcatchment 12S: DA-2 Per

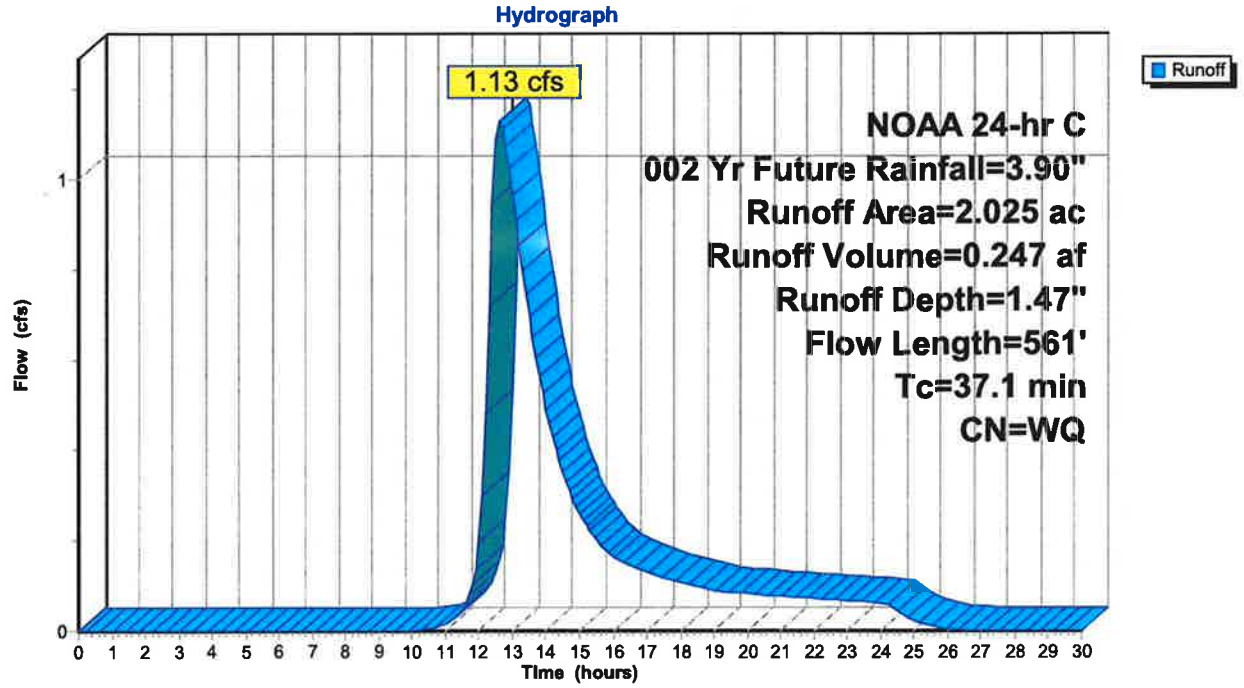
Runoff = 1.13 cfs @ 12.62 hrs, Volume= 0.247 af, Depth= 1.47"
Routed to Link 13L : West Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 002 Yr Future Rainfall=3.90"

Area (ac)	CN	Description
0.872	77	Woods, Good, HSG D
1.153	70	Woods, Good, HSG C
2.025		Weighted Average
2.025		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0230	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
2.4	149	0.0418	1.02		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.7	312	0.0050	0.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
37.1	561	Total			

Subcatchment 12S: DA-2 Per



Summary for Subcatchment 14S: DA-1 Imp

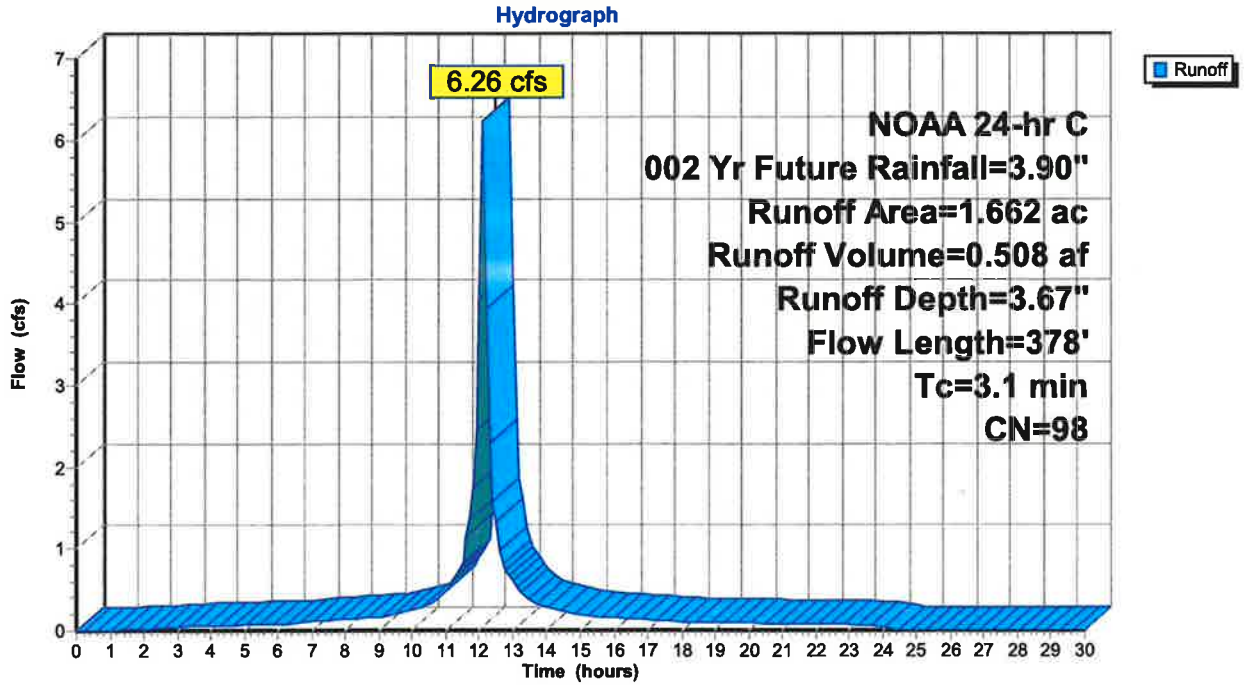
Runoff = 6.26 cfs @ 12.10 hrs, Volume= 0.508 af, Depth= 3.67"
Routed to Pond 16P : Aquabox System

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 002 Yr Future Rainfall=3.90"

Area (ac)	CN	Description
1.662	98	Paved parking, HSG A
1.662		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	100	0.0062	0.87		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
0.6	94	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	184	0.0075	5.15	9.10	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
3.1	378	Total			

Subcatchment 14S: DA-1 Imp



Summary for Subcatchment 15S: DA-1 Per

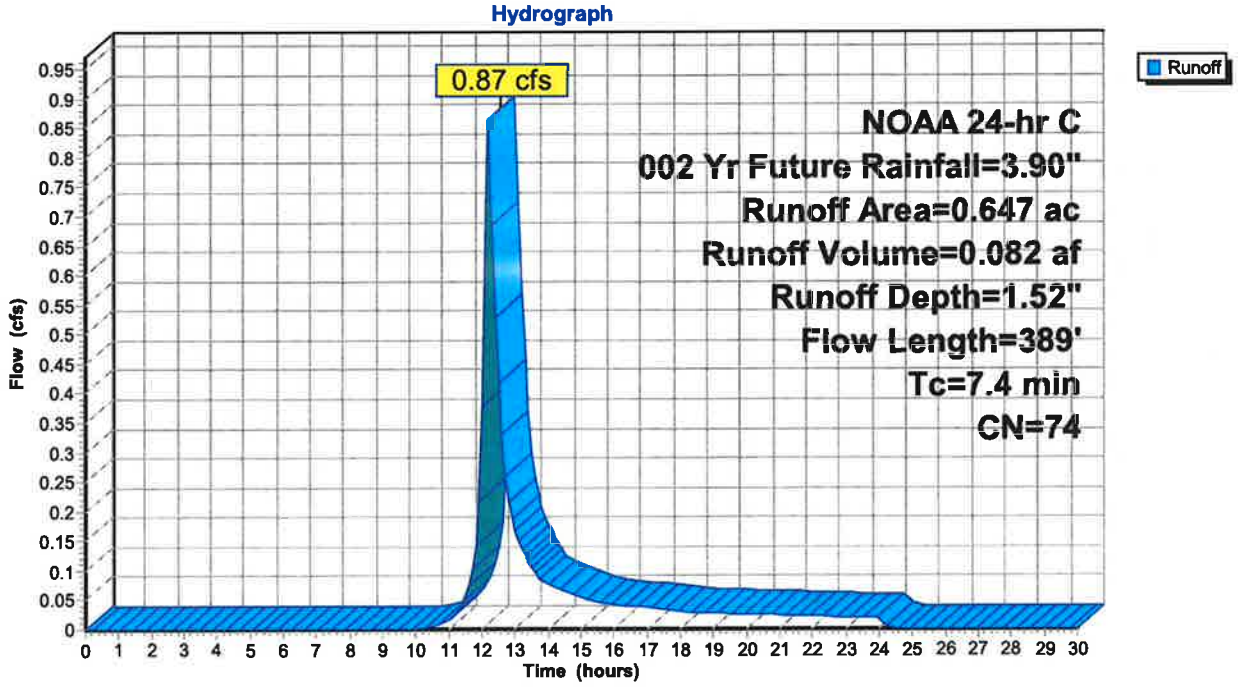
Runoff = 0.87 cfs @ 12.19 hrs, Volume= 0.082 af, Depth= 1.52"
Routed to Pond 16P : Aquabox System

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 002 Yr Future Rainfall=3.90"

Area (ac)	CN	Description
0.647	74	>75% Grass cover, Good, HSG C
0.647		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	79	0.0380	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
0.6	126	0.0320	3.63		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	184	0.0075	5.15	9.10	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
7.4	389	Total			

Subcatchment 15S: DA-1 Per



Summary for Subcatchment 17S: DA-3 Imp

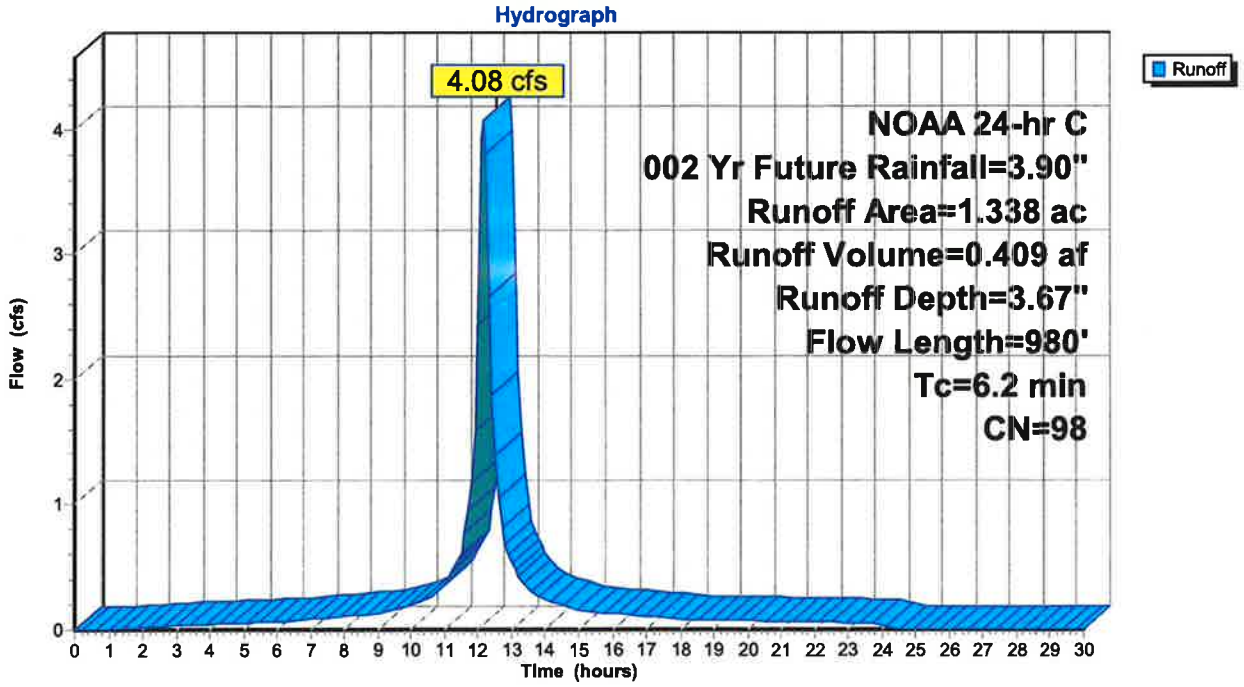
Runoff = 4.08 cfs @ 12.14 hrs, Volume= 0.409 af, Depth= 3.67"
Routed to Pond 19P : Infiltration Basin 1

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 002 Yr Future Rainfall=3.90"

Area (ac)	CN	Description
1.338	98	Paved parking, HSG A
1.338		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	49	0.0136	1.04		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
4.9	780	0.0170	2.65		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	151	0.0084	5.45	9.63	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
6.2	980	Total			

Subcatchment 17S: DA-3 Imp



Summary for Subcatchment 18S: DA-3 Per

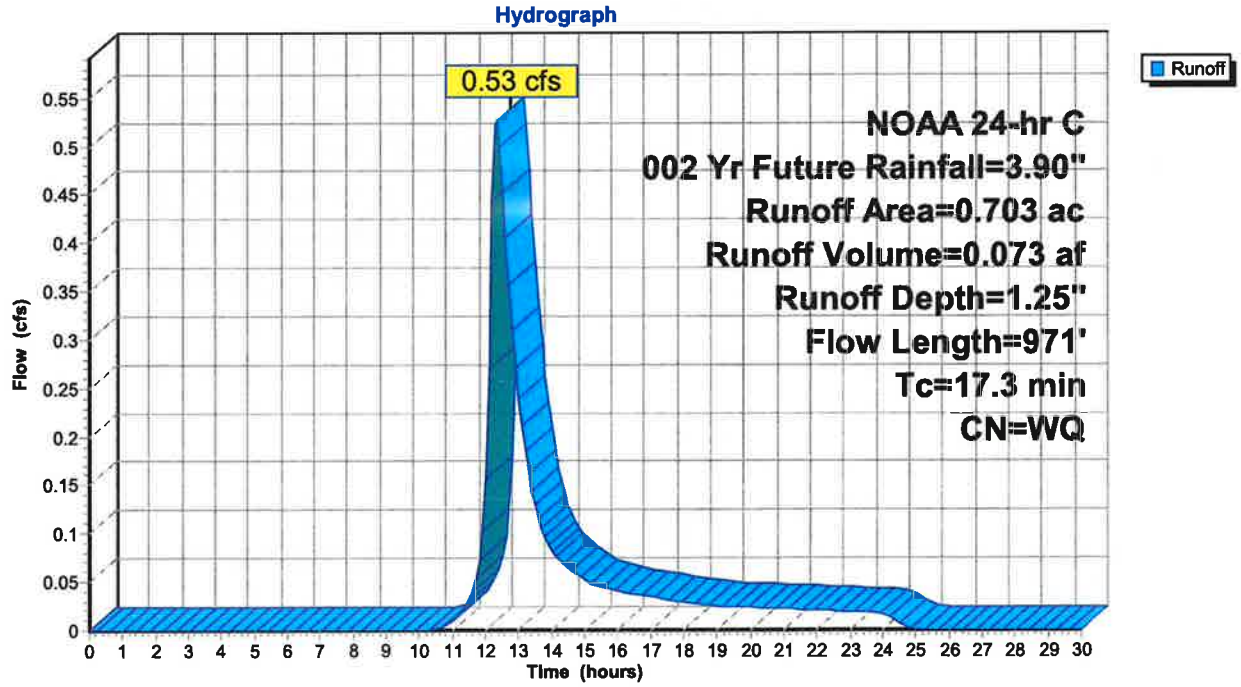
Runoff = 0.53 cfs @ 12.33 hrs, Volume= 0.073 af, Depth= 1.25"
Routed to Pond 19P : Infiltration Basin 1

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 002 Yr Future Rainfall=3.90"

Area (ac)	CN	Description
0.130	39	>75% Grass cover, Good, HSG A
0.573	74	>75% Grass cover, Good, HSG C
0.703		Weighted Average
0.703		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	100	0.0110	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
4.5	720	0.0170	2.65		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	151	0.0084	5.45	9.63	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
17.3	971	Total			

Subcatchment 18S: DA-3 Per



Summary for Subcatchment 20S: DA-4 Imp

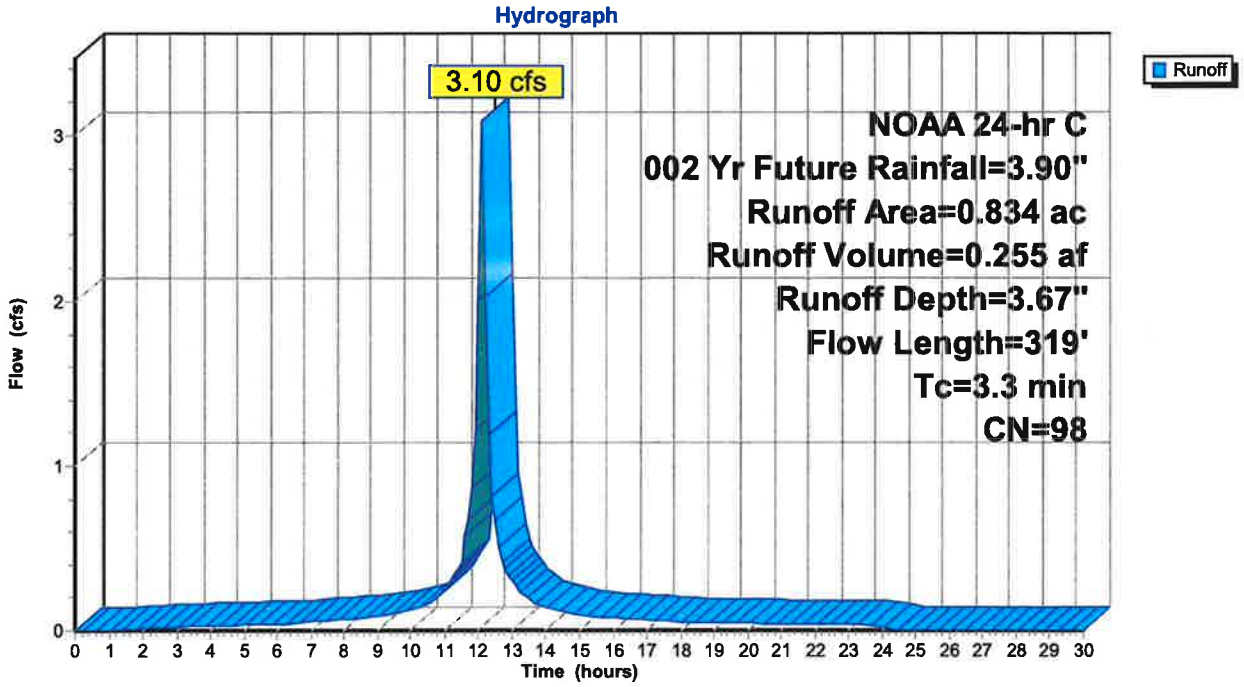
Runoff = 3.10 cfs @ 12.10 hrs, Volume= 0.255 af, Depth= 3.67"
Routed to Link 22L : South Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 002 Yr Future Rainfall=3.90"

Area (ac)	CN	Description
0.834	98	Paved parking, HSG A
0.834		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0110	1.10		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
1.7	181	0.0076	1.77		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	38	0.0200	4.31	4.39	**Pipe Channel,** 15.0" x 12.0", R=12.0"/20.0" Pipe Arch Area= 1.0 sf Perim= 3.6' r= n= 0.021
3.3	319	Total			

Subcatchment 20S: DA-4 Imp



Summary for Subcatchment 21S: DA-4 Per

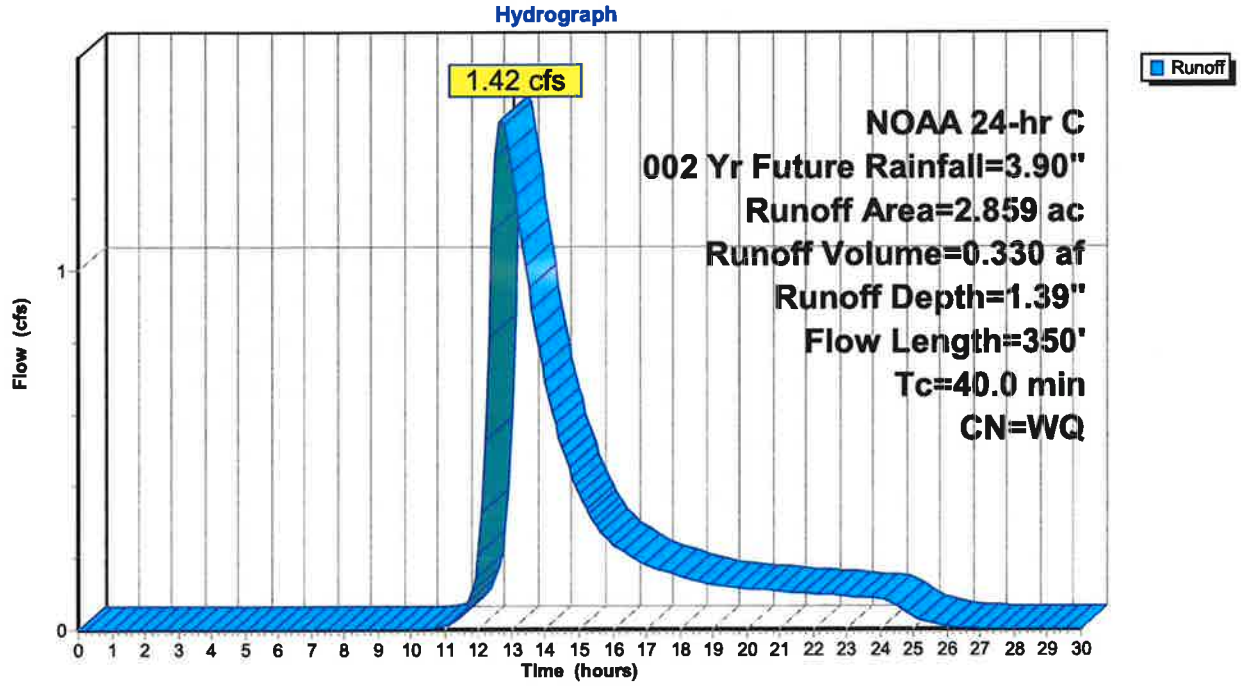
Runoff = 1.42 cfs @ 12.67 hrs, Volume= 0.330 af, Depth= 1.39"
Routed to Link 22L : South Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 002 Yr Future Rainfall=3.90"

Area (ac)	CN	Description
1.896	70	Woods, Good, HSG C
0.487	77	Woods, Good, HSG D
0.476	74	>75% Grass cover, Good, HSG C
2.859		Weighted Average
2.859		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.5	100	0.0087	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
10.5	250	0.0063	0.40		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
40.0	350	Total			

Subcatchment 21S: DA-4 Per



Summary for Pond 10P: Ex Low Point

Inflow Area = 0.617 ac, 0.00% Impervious, Inflow Depth = 0.01" for 002 Yr Future event
Inflow = 0.00 cfs @ 23.96 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 13L : West Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Peak Elev= 48.05' @ 24.50 hrs Surf.Area= 348 sf Storage= 16 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

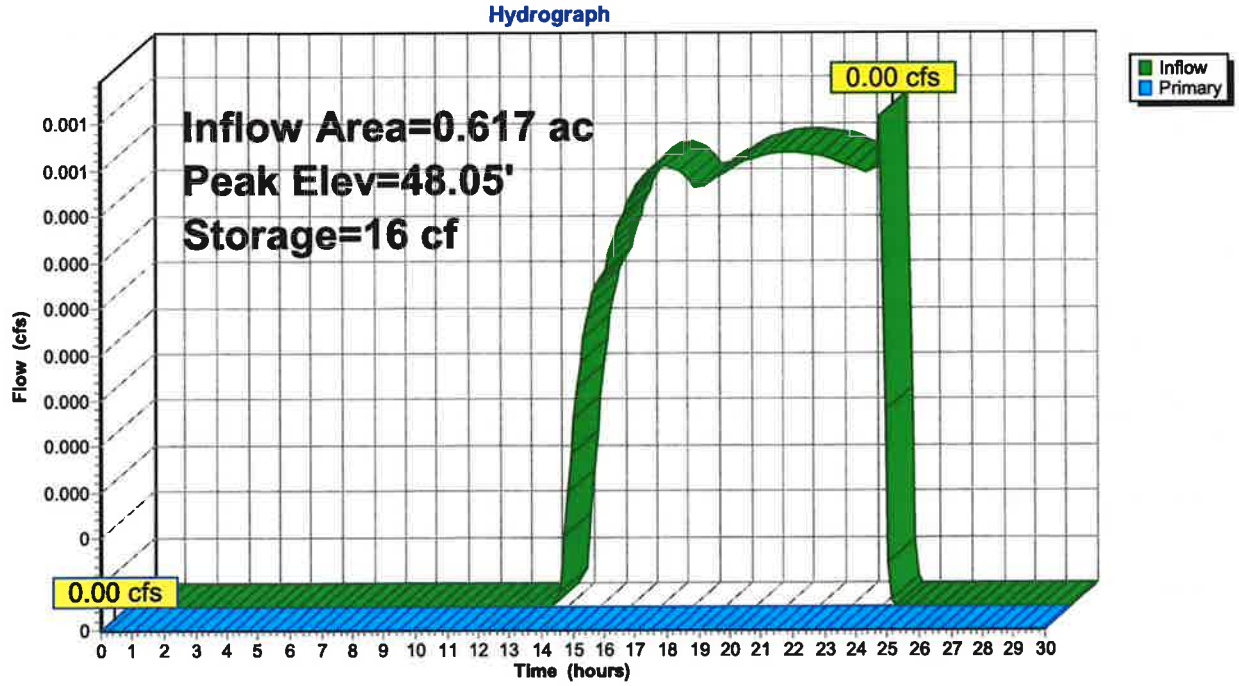
Volume	Invert	Avail.Storage	Storage Description
#1	48.00'	8,383 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
48.00	295	0	0
49.00	1,332	814	814
50.00	4,340	2,836	3,650
51.00	5,126	4,733	8,383

Device	Routing	Invert	Outlet Devices
#1	Primary	50.00'	**90.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=48.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 10P: Ex Low Point



Summary for Pond 16P: Aquabox System

Inflow Area = 2.309 ac, 71.98% Impervious, Inflow Depth = 3.07" for 002 Yr Future event
Inflow = 6.99 cfs @ 12.10 hrs, Volume= 0.590 af
Outflow = 0.23 cfs @ 18.55 hrs, Volume= 0.132 af, Atten= 97%, Lag= 386.5 min
Primary = 0.23 cfs @ 18.55 hrs, Volume= 0.132 af
Routed to Pond 19P : Infiltration Basin 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Peak Elev= 43.29' @ 18.18 hrs Surf.Area= 16,068 sf Storage= 22,564 cf

Plug-Flow detention time= 828.8 min calculated for 0.132 af (22% of inflow)
Center-of-Mass det. time= 598.7 min (1,366.2 - 767.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	41.50'	7,088 cf	**63.52'W x 252.98'L x 3.62'H Field A** 58,243 cf Overall - 40,524 cf Embedded = 17,719 cf x 40.0% Voids
#2A	42.00'	38,862 cf	**ADS Aquabox 1** x 2550 Inside #1 Inside= 29.5"W x 31.5"H => 6.19 sf x 2.46'L = 15.2 cf Outside= 29.5"W x 31.5"H => 6.46 sf x 2.46'L = 15.9 cf 2550 Chambers in 25 Rows
		45,950 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	42.63'	**24.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.17 cfs @ 18.55 hrs HW=43.28' TW=43.28' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 0.17 cfs @ 0.19 fps)

Pond 16P: Aquabox System - Chamber Wizard Field A

Chamber Model = ADS Aquabox 1 (ADS Aquabox)
Inside= 29.5"W x 31.5"H => 6.19 sf x 2.46'L = 15.2 cf
Outside= 29.5"W x 31.5"H => 6.46 sf x 2.46'L = 15.9 cf

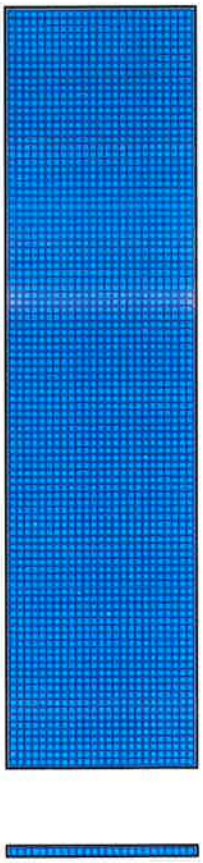
102 Chambers/Row x 2.46' Long = 250.98' Row Length +12.0" End Stone x 2 = 252.98' Base Length
25 Rows x 29.5" Wide + 12.0" Side Stone x 2 = 63.52' Base Width
6.0" Stone Base + 31.5" Chamber Height + 6.0" Stone Cover = 3.62' Field Height

2,550 Chambers x 15.2 cf = 38,862.1 cf Chamber Storage
2,550 Chambers x 15.9 cf = 40,523.6 cf Displacement

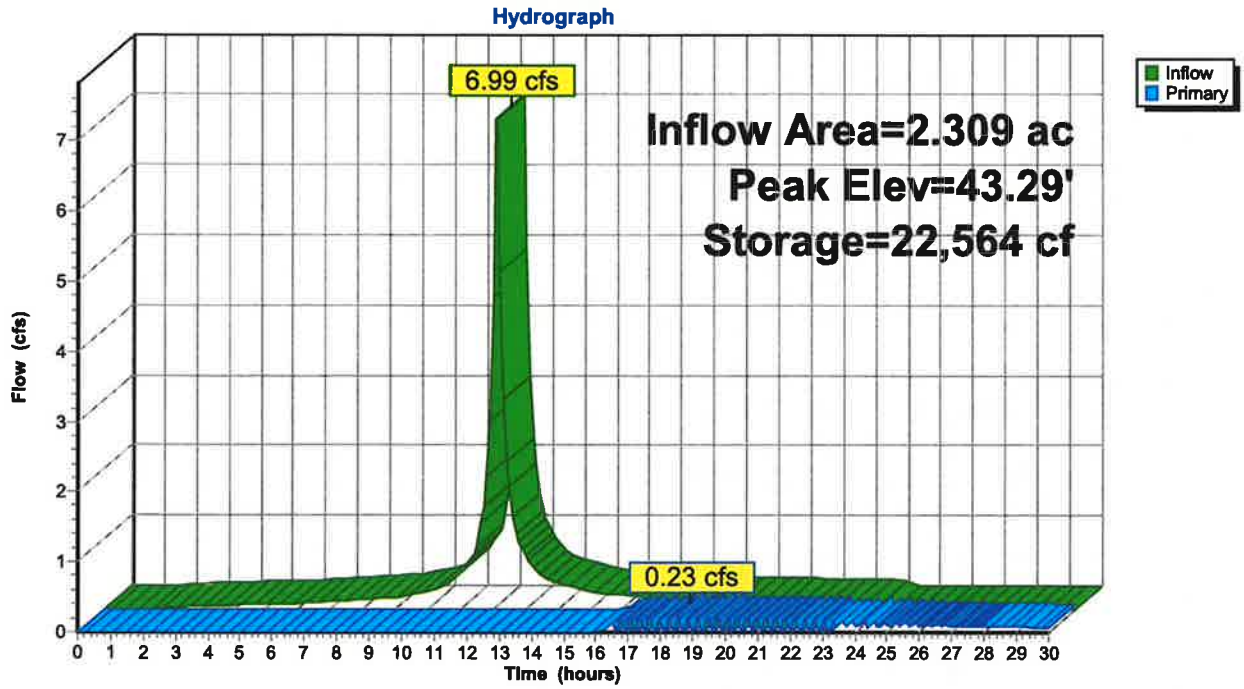
58,243.0 cf Field - 40,523.6 cf Chambers = 17,719.4 cf Stone x 40.0% Voids = 7,087.8 cf Stone Storage

Chamber Storage + Stone Storage = 45,949.9 cf = 1.055 af
Overall Storage Efficiency = 78.9%
Overall System Size = 252.98' x 63.52' x 3.62'

2,550 Chambers
2,157.1 cy Field
656.3 cy Stone



Pond 16P: Aquabox System



Summary for Pond 19P: Infiltration Basin 1

Inflow Area = 4.350 ac, 68.97% Impervious, Inflow Depth > 1.69" for 002 Yr Future event
Inflow = 4.37 cfs @ 12.15 hrs, Volume= 0.613 af
Outflow = 1.73 cfs @ 12.54 hrs, Volume= 0.455 af, Atten= 60%, Lag= 23.1 min
Primary = 1.73 cfs @ 12.54 hrs, Volume= 0.455 af
Routed to Link 22L : South Wetlands
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 22L : South Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Peak Elev= 43.62' @ 12.54 hrs Surf.Area= 7,935 sf Storage= 10,750 cf

Plug-Flow detention time= 332.1 min calculated for 0.453 af (74% of inflow)
Center-of-Mass det. time= 169.7 min (1,071.9 - 902.2)

Volume	Invert	Avail.Storage	Storage Description
#1	42.00'	34,406 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

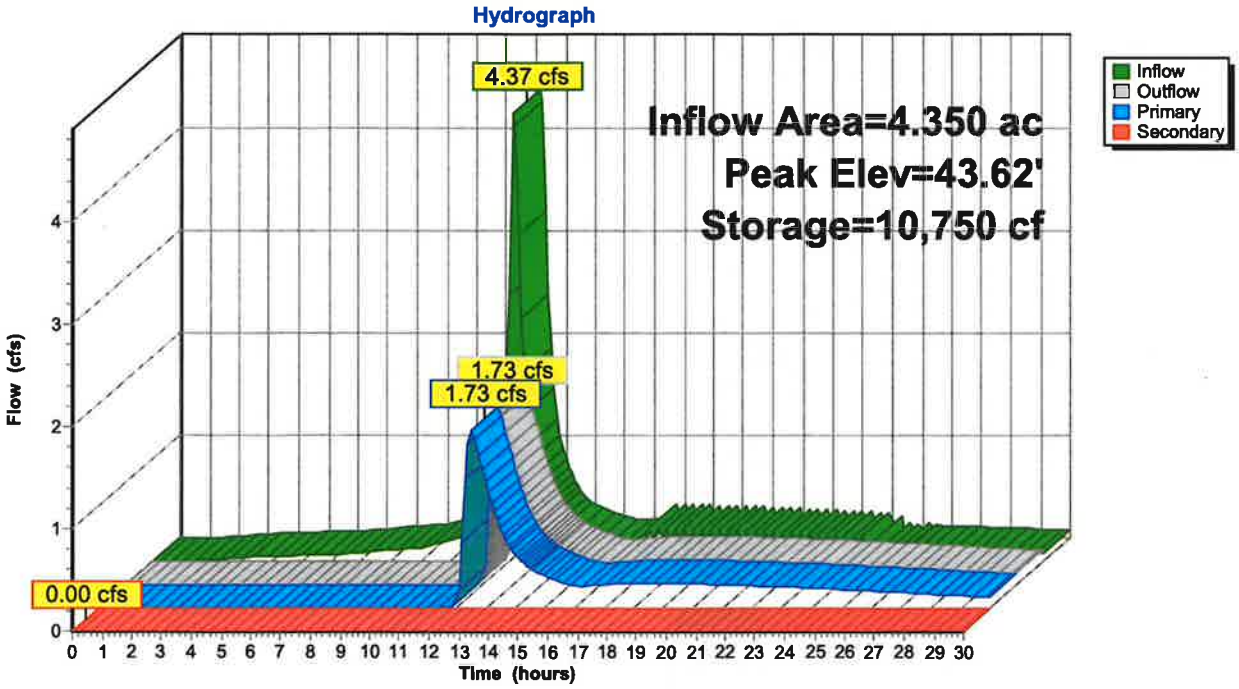
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
42.00	5,375	0	0
43.00	6,931	6,153	6,153
44.00	8,555	7,743	13,896
45.00	10,241	9,398	23,294
46.00	11,983	11,112	34,406

Device	Routing	Invert	Outlet Devices
#1	Secondary	45.50'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	44.75'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	43.25'	**2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Primary	42.87'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.71 cfs @ 12.54 hrs HW=43.62' TW=0.00' (Dynamic Tailwater)
- **2=Orifice/Grate** (Controls 0.00 cfs)
- **3=Sharp-Crested Rectangular Weir** (Weir Controls 1.39 cfs @ 1.98 fps)
- **4=Orifice/Grate** (Orifice Controls 0.32 cfs @ 3.66 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.00' TW=0.00' (Dynamic Tailwater)
- **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 19P: Infiltration Basin 1

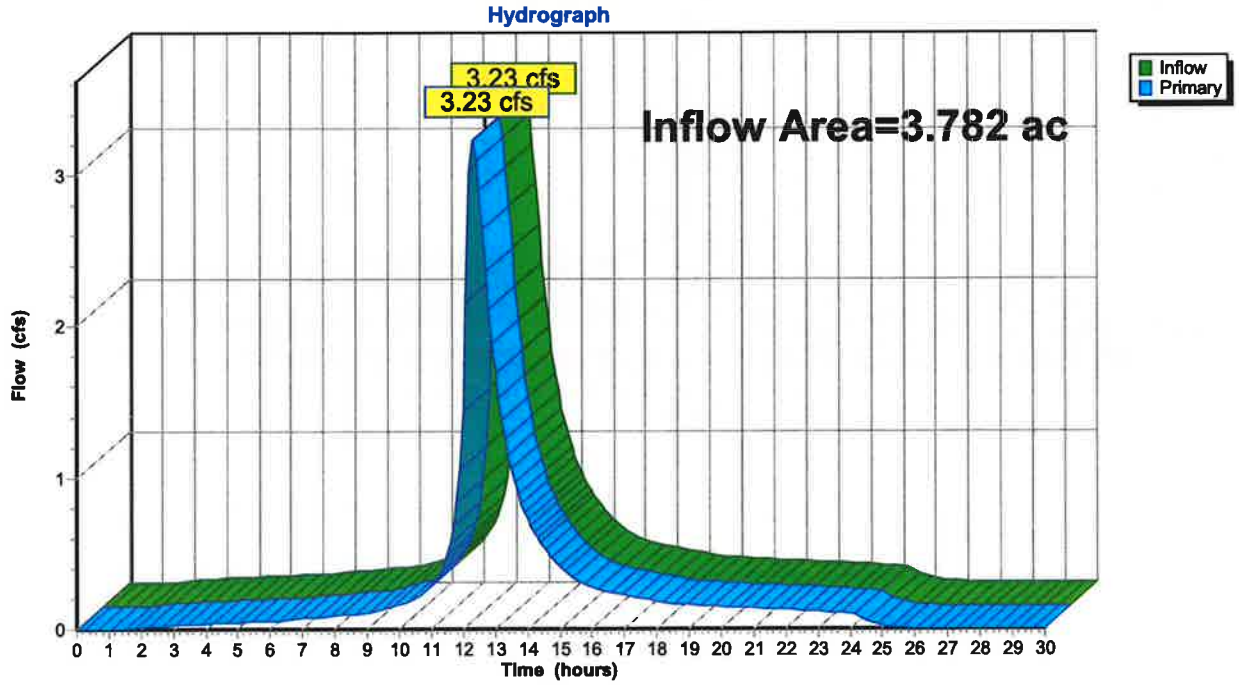


Summary for Link 13L: West Wetlands

Inflow Area = 3.782 ac, 30.14% Impervious, Inflow Depth = 1.89" for 002 Yr Future event
Inflow = 3.23 cfs @ 12.31 hrs, Volume= 0.596 af
Primary = 3.23 cfs @ 12.31 hrs, Volume= 0.596 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs

Link 13L: West Wetlands

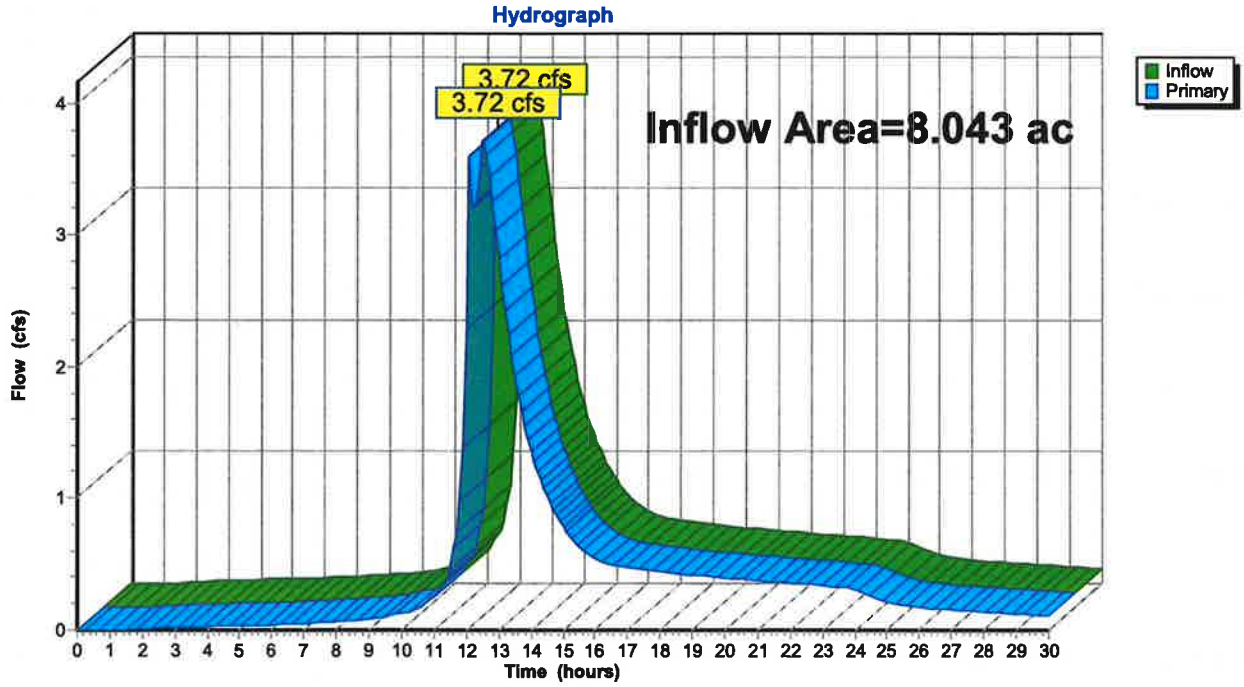


Summary for Link 22L: South Wetlands

Inflow Area = 8.043 ac, 47.67% Impervious, Inflow Depth > 1.55" for 002 Yr Future event
Inflow = 3.72 cfs @ 12.52 hrs, Volume= 1.040 af
Primary = 3.72 cfs @ 12.52 hrs, Volume= 1.040 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs

Link 22L: South Wetlands



Time span=0.00-30.00 hrs, dt=0.10 hrs, 301 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 9S: X-DA1 Runoff Area=0.617 ac 0.00% Impervious Runoff Depth=0.05"
Flow Length=218' Slope=0.0388 '/' Tc=3.7 min CN=WQ Runoff=0.01 cfs 0.003 af

Subcatchment 11S: DA-2 Imp Runoff Area=1.140 ac 100.00% Impervious Runoff Depth=4.85"
Flow Length=548' Tc=14.1 min CN=98 Runoff=3.44 cfs 0.461 af

Subcatchment 12S: DA-2 Per Runoff Area=2.025 ac 0.00% Impervious Runoff Depth=2.36"
Flow Length=561' Tc=37.1 min CN=WQ Runoff=1.89 cfs 0.398 af

Subcatchment 14S: DA-1 Imp Runoff Area=1.662 ac 100.00% Impervious Runoff Depth=4.85"
Flow Length=378' Tc=3.1 min CN=98 Runoff=8.19 cfs 0.672 af

Subcatchment 15S: DA-1 Per Runoff Area=0.647 ac 0.00% Impervious Runoff Depth=2.44"
Flow Length=389' Tc=7.4 min CN=74 Runoff=1.41 cfs 0.131 af

Subcatchment 17S: DA-3 Imp Runoff Area=1.338 ac 100.00% Impervious Runoff Depth=4.85"
Flow Length=980' Tc=6.2 min CN=98 Runoff=5.35 cfs 0.541 af

Subcatchment 18S: DA-3 Per Runoff Area=0.703 ac 0.00% Impervious Runoff Depth=2.03"
Flow Length=971' Tc=17.3 min CN=WQ Runoff=0.87 cfs 0.119 af

Subcatchment 20S: DA-4 Imp Runoff Area=0.834 ac 100.00% Impervious Runoff Depth=4.85"
Flow Length=319' Tc=3.3 min CN=98 Runoff=4.06 cfs 0.337 af

Subcatchment 21S: DA-4 Per Runoff Area=2.859 ac 0.00% Impervious Runoff Depth=2.26"
Flow Length=350' Tc=40.0 min CN=WQ Runoff=2.43 cfs 0.538 af

Pond 10P: Ex Low Point Peak Elev=48.26' Storage=113 cf Inflow=0.01 cfs 0.003 af
Outflow=0.00 cfs 0.000 af

Pond 16P: Aquabox System Peak Elev=43.54' Storage=26,389 cf Inflow=9.41 cfs 0.803 af
Outflow=0.88 cfs 0.339 af

Pond 19P: Infiltration Basin 1 Peak Elev=43.85' Storage=12,628 cf Inflow=5.88 cfs 0.999 af
Primary=3.23 cfs 0.837 af Secondary=0.00 cfs 0.000 af Outflow=3.23 cfs 0.837 af

Link 13L: West Wetlands Inflow=4.58 cfs 0.859 af
Primary=4.58 cfs 0.859 af

Link 22L: South Wetlands Inflow=6.34 cfs 1.713 af
Primary=6.34 cfs 1.713 af

Total Runoff Area = 11.825 ac Runoff Volume = 3.201 af Average Runoff Depth = 3.25"
57.94% Pervious = 6.851 ac 42.06% Impervious = 4.974 ac

Summary for Subcatchment 9S: X-DA1

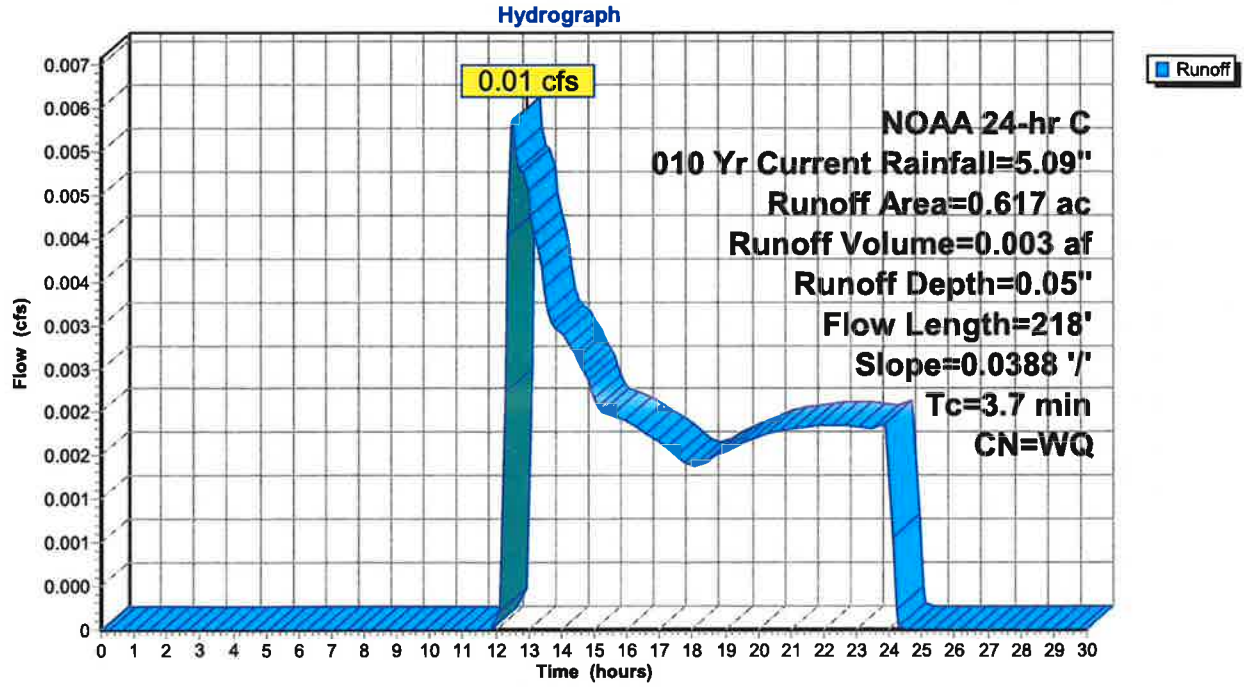
Runoff = 0.01 cfs @ 12.53 hrs, Volume= 0.003 af, Depth= 0.05"
Routed to Pond 10P : Ex Low Point

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 010 Yr Current Rainfall=5.09"

Area (ac)	CN	Description
0.492	30	Woods, Good, HSG A
0.125	39	>75% Grass cover, Good, HSG A
0.617		Weighted Average
0.617		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	218	0.0388	0.98		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps

Subcatchment 9S: X-DA1



Summary for Subcatchment 11S: DA-2 Imp

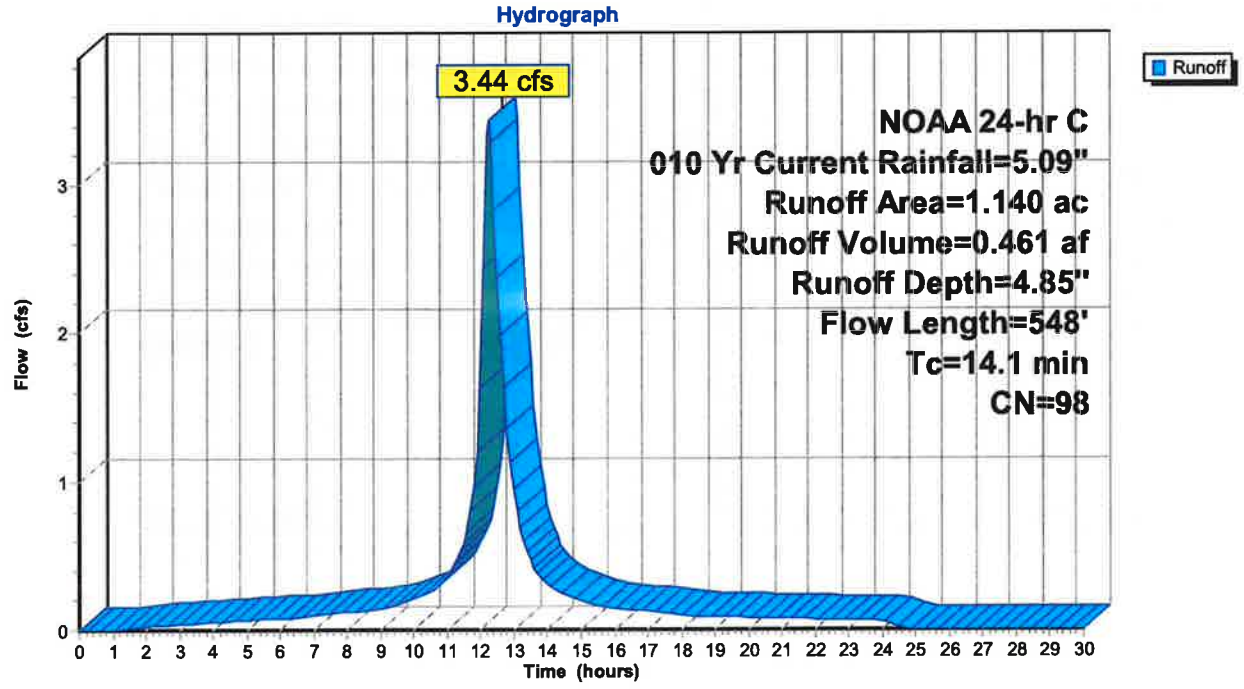
Runoff = 3.44 cfs @ 12.24 hrs, Volume= 0.461 af, Depth= 4.85"
Routed to Link 13L : West Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 010 Yr Current Rainfall=5.09"

Area (ac)	CN	Description
1.140	98	Paved parking, HSG A
1.140		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	100	0.0039	0.73		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
1.1	185	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
10.7	263	0.0067	0.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.1	548	Total			

Subcatchment 11S: DA-2 Imp



Summary for Subcatchment 12S: DA-2 Per

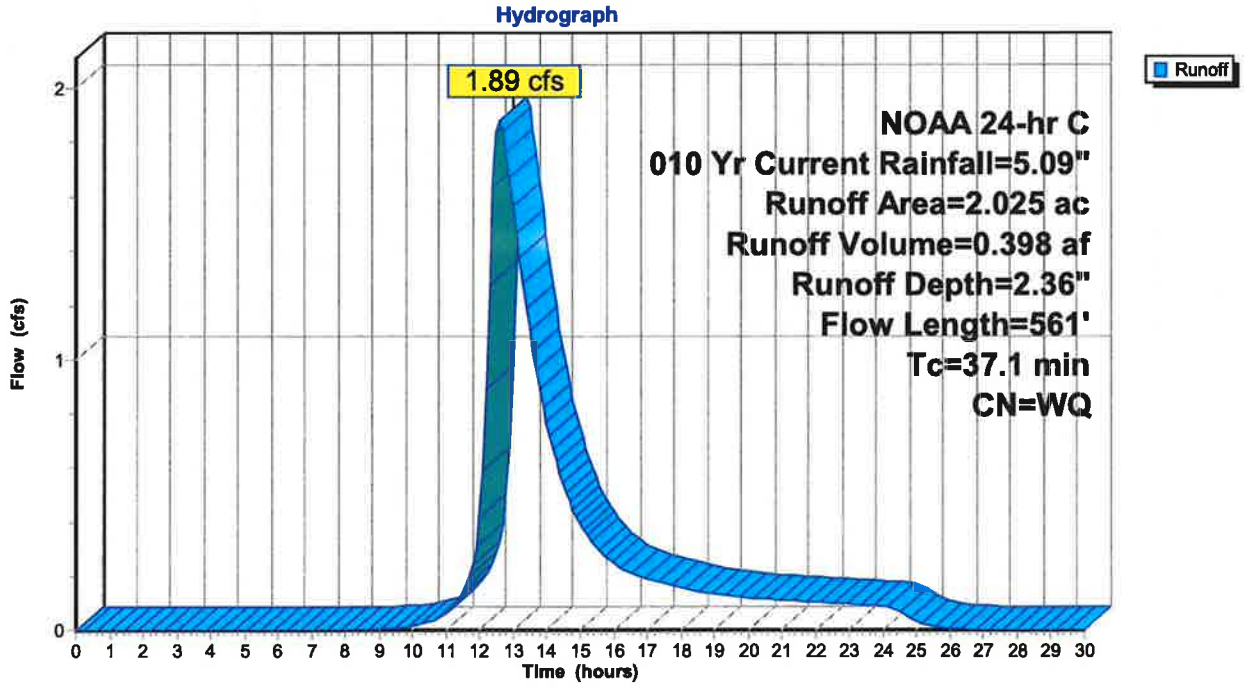
Runoff = 1.89 cfs @ 12.60 hrs, Volume= 0.398 af, Depth= 2.36"
Routed to Link 13L : West Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 010 Yr Current Rainfall=5.09"

Area (ac)	CN	Description
0.872	77	Woods, Good, HSG D
1.153	70	Woods, Good, HSG C
2.025		Weighted Average
2.025		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0230	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
2.4	149	0.0418	1.02		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.7	312	0.0050	0.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
37.1	561	Total			

Subcatchment 12S: DA-2 Per



Summary for Subcatchment 14S: DA-1 Imp

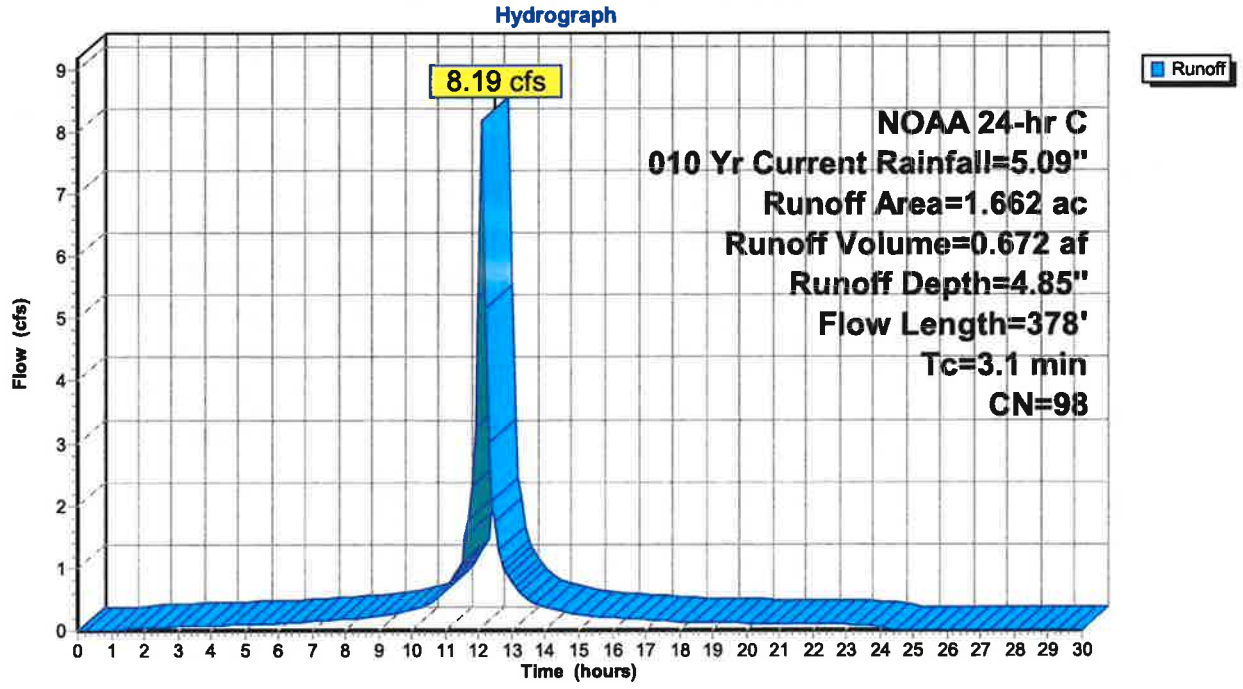
Runoff = 8.19 cfs @ 12.10 hrs, Volume= 0.672 af, Depth= 4.85"
Routed to Pond 16P : Aquabox System

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 010 Yr Current Rainfall=5.09"

Area (ac)	CN	Description
1.662	98	Paved parking, HSG A
1.662		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	100	0.0062	0.87		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
0.6	94	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	184	0.0075	5.15	9.10	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
3.1	378	Total			

Subcatchment 14S: DA-1 Imp



Summary for Subcatchment 15S: DA-1 Per

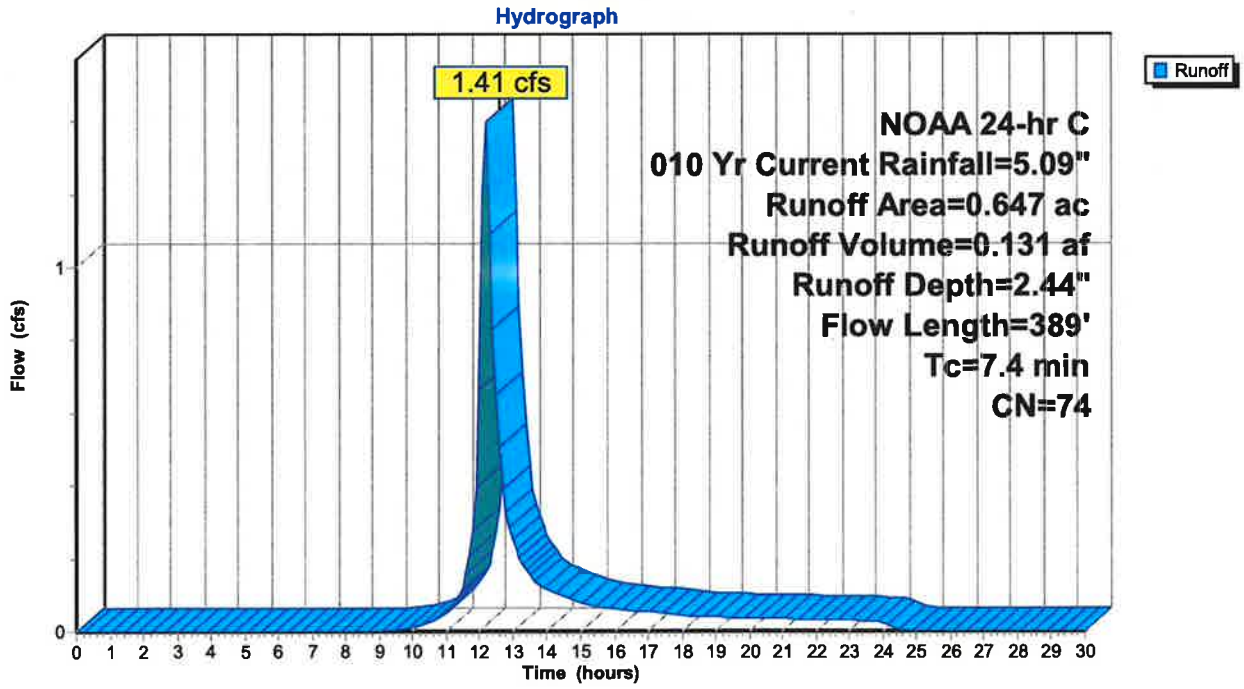
Runoff = 1.41 cfs @ 12.19 hrs, Volume= 0.131 af, Depth= 2.44"
Routed to Pond 16P : Aquabox System

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 010 Yr Current Rainfall=5.09"

Area (ac)	CN	Description
0.647	74	>75% Grass cover, Good, HSG C
0.647		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	79	0.0380	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
0.6	126	0.0320	3.63		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	184	0.0075	5.15	9.10	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
7.4	389	Total			

Subcatchment 15S: DA-1 Per



Summary for Subcatchment 17S: DA-3 Imp

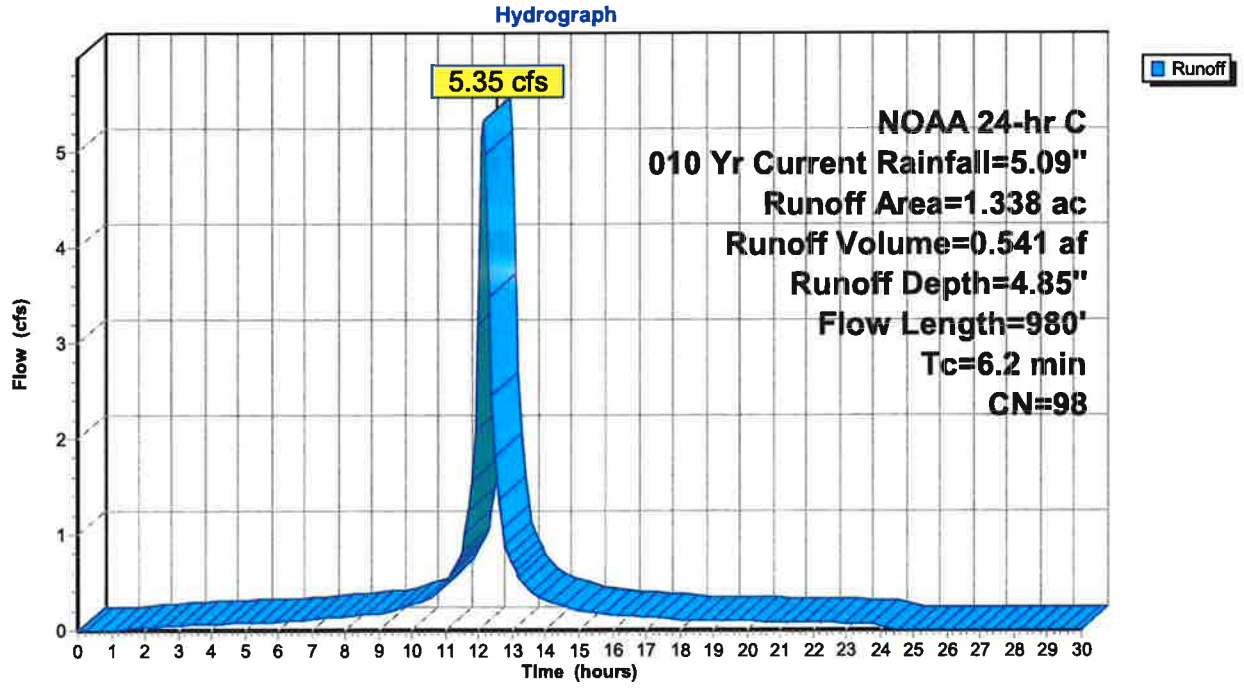
Runoff = 5.35 cfs @ 12.14 hrs, Volume= 0.541 af, Depth= 4.85"
Routed to Pond 19P : Infiltration Basin 1

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 010 Yr Current Rainfall=5.09"

Area (ac)	CN	Description
1.338	98	Paved parking, HSG A
1.338		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	49	0.0136	1.04		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
4.9	780	0.0170	2.65		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	151	0.0084	5.45	9.63	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
6.2	980	Total			

Subcatchment 17S: DA-3 Imp



Summary for Subcatchment 18S: DA-3 Per

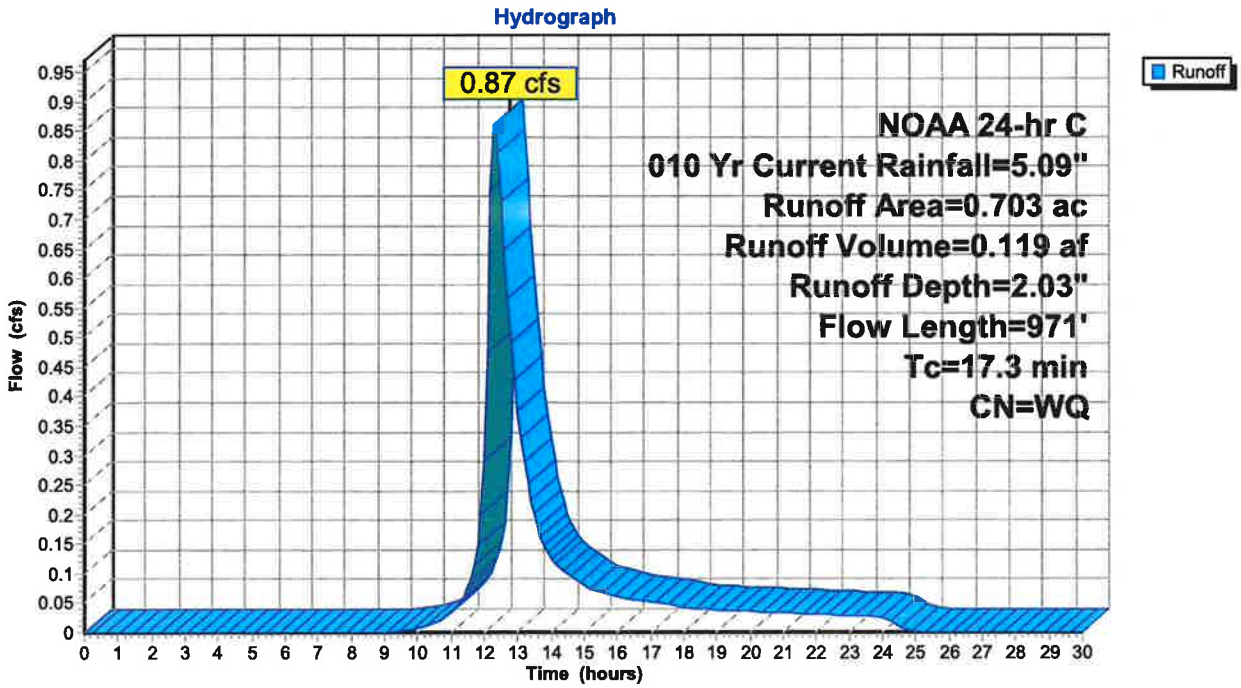
Runoff = 0.87 cfs @ 12.32 hrs, Volume= 0.119 af, Depth= 2.03"
Routed to Pond 19P : Infiltration Basin 1

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 010 Yr Current Rainfall=5.09"

Area (ac)	CN	Description
0.130	39	>75% Grass cover, Good, HSG A
0.573	74	>75% Grass cover, Good, HSG C
0.703		Weighted Average
0.703		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	100	0.0110	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
4.5	720	0.0170	2.65		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	151	0.0084	5.45	9.63	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
17.3	971	Total			

Subcatchment 18S: DA-3 Per



Summary for Subcatchment 20S: DA-4 Imp

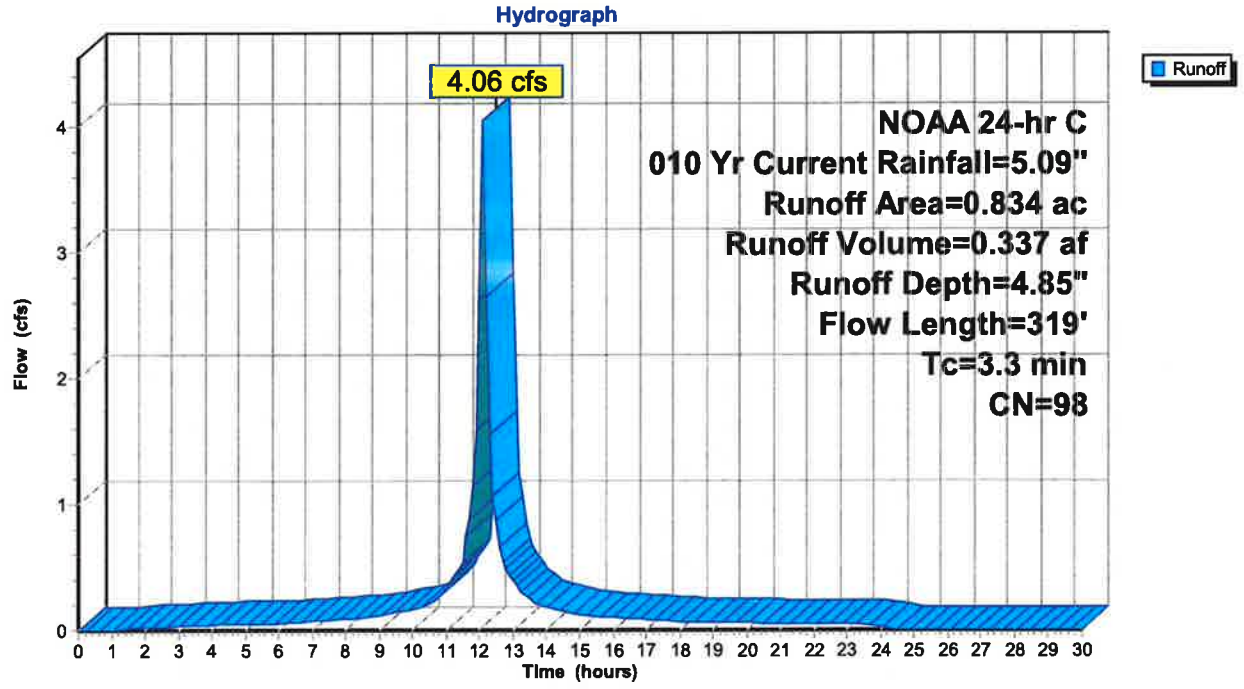
Runoff = 4.06 cfs @ 12.10 hrs, Volume= 0.337 af, Depth= 4.85"
Routed to Link 22L : South Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 010 Yr Current Rainfall=5.09"

Area (ac)	CN	Description
0.834	98	Paved parking, HSG A
0.834		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0110	1.10		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
1.7	181	0.0076	1.77		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	38	0.0200	4.31	4.39	**Pipe Channel,** 15.0" x 12.0", R=12.0"/20.0" Pipe Arch Area= 1.0 sf Perim= 3.6' r= n= 0.021
3.3	319	Total			

Subcatchment 20S: DA-4 Imp



Summary for Subcatchment 21S: DA-4 Per

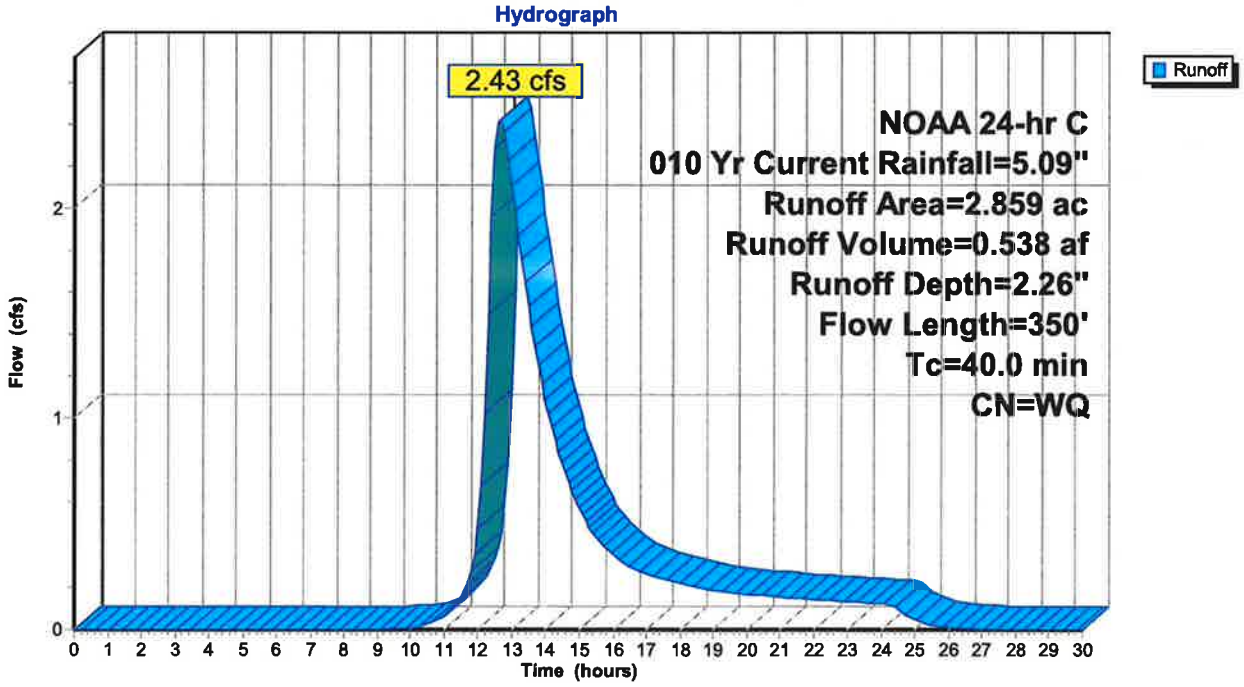
Runoff = 2.43 cfs @ 12.64 hrs, Volume= 0.538 af, Depth= 2.26"
Routed to Link 22L : South Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 010 Yr Current Rainfall=5.09"

Area (ac)	CN	Description
1.896	70	Woods, Good, HSG C
0.487	77	Woods, Good, HSG D
0.476	74	>75% Grass cover, Good, HSG C
2.859		Weighted Average
2.859		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.5	100	0.0087	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
10.5	250	0.0063	0.40		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
40.0	350	Total			

Subcatchment 21S: DA-4 Per



Summary for Pond 10P: Ex Low Point

Inflow Area = 0.617 ac, 0.00% Impervious, Inflow Depth = 0.05" for 010 Yr Current event
Inflow = 0.01 cfs @ 12.53 hrs, Volume= 0.003 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 13L : West Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Peak Elev= 48.26' @ 24.50 hrs Surf.Area= 566 sf Storage= 113 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

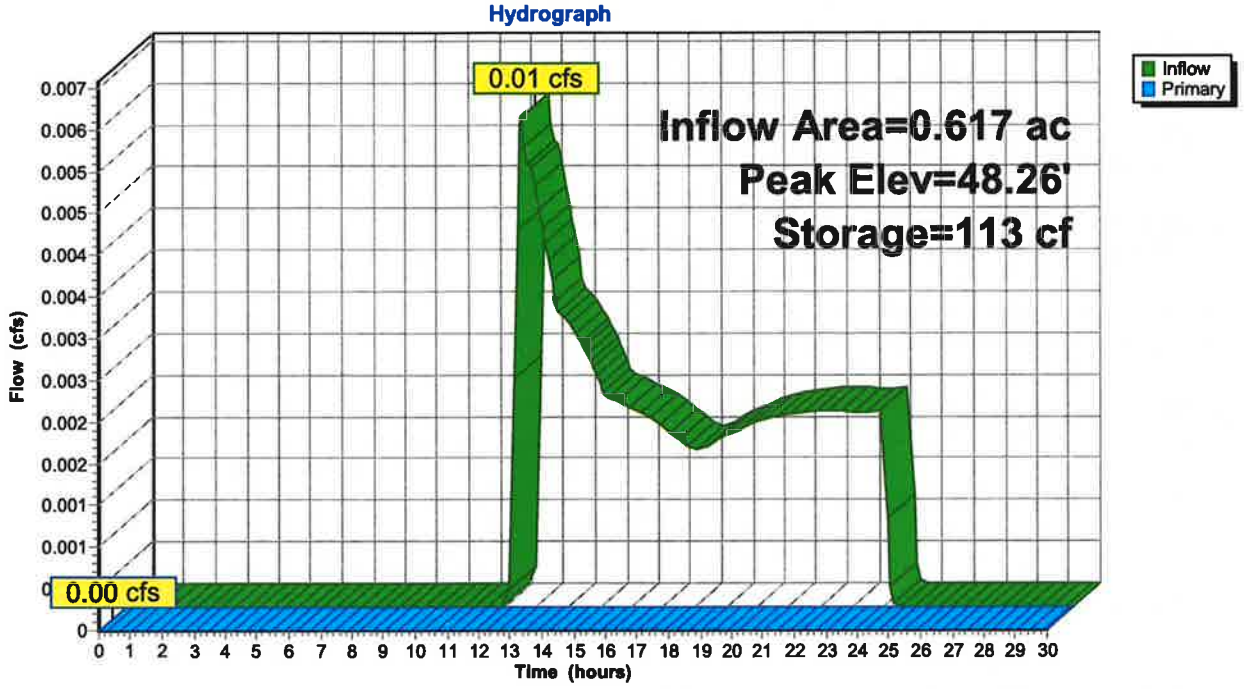
Volume	Invert	Avail.Storage	Storage Description
#1	48.00'	8,383 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
48.00	295	0	0
49.00	1,332	814	814
50.00	4,340	2,836	3,650
51.00	5,126	4,733	8,383

Device	Routing	Invert	Outlet Devices
#1	Primary	50.00'	**90.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=48.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 10P: Ex Low Point



Summary for Pond 16P: Aquabox System

Inflow Area = 2.309 ac, 71.98% Impervious, Inflow Depth = 4.18" for 010 Yr Current event
Inflow = 9.41 cfs @ 12.10 hrs, Volume= 0.803 af
Outflow = 0.88 cfs @ 13.55 hrs, Volume= 0.339 af, Atten= 91%, Lag= 86.8 min
Primary = 0.88 cfs @ 13.55 hrs, Volume= 0.339 af
Routed to Pond 19P : Infiltration Basin 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Peak Elev= 43.54' @ 13.51 hrs Surf.Area= 16,068 sf Storage= 26,389 cf

Plug-Flow detention time= 519.1 min calculated for 0.339 af (42% of inflow)
Center-of-Mass det. time= 370.7 min (1,134.5 - 763.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	41.50'	7,088 cf	**63.52'W x 252.98'L x 3.62'H Field A** 58,243 cf Overall - 40,524 cf Embedded = 17,719 cf x 40.0% Voids
#2A	42.00'	38,862 cf	**ADS Aquabox 1** x 2550 Inside #1 Inside= 29.5"W x 31.5"H => 6.19 sf x 2.46'L = 15.2 cf Outside= 29.5"W x 31.5"H => 6.46 sf x 2.46'L = 15.9 cf 2550 Chambers in 25 Rows
		45,950 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	42.63'	**24.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.75 cfs @ 13.55 hrs HW=43.54' TW=43.52' (Dynamic Tailwater)
↑**1=Orifice/Grate** (Orifice Controls 0.75 cfs @ 0.54 fps)

Pond 16P: Aquabox System - Chamber Wizard Field A

Chamber Model = ADS Aquabox 1 (ADS Aquabox)
Inside= 29.5"W x 31.5"H => 6.19 sf x 2.46'L = 15.2 cf
Outside= 29.5"W x 31.5"H => 6.46 sf x 2.46'L = 15.9 cf

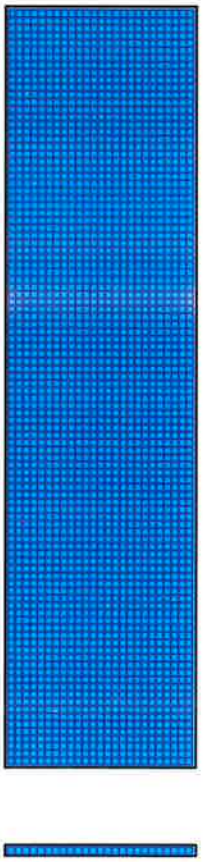
102 Chambers/Row x 2.46' Long = 250.98' Row Length +12.0" End Stone x 2 = 252.98' Base Length
25 Rows x 29.5" Wide + 12.0" Side Stone x 2 = 63.52' Base Width
6.0" Stone Base + 31.5" Chamber Height + 6.0" Stone Cover = 3.62' Field Height

2,550 Chambers x 15.2 cf = 38,862.1 cf Chamber Storage
2,550 Chambers x 15.9 cf = 40,523.6 cf Displacement

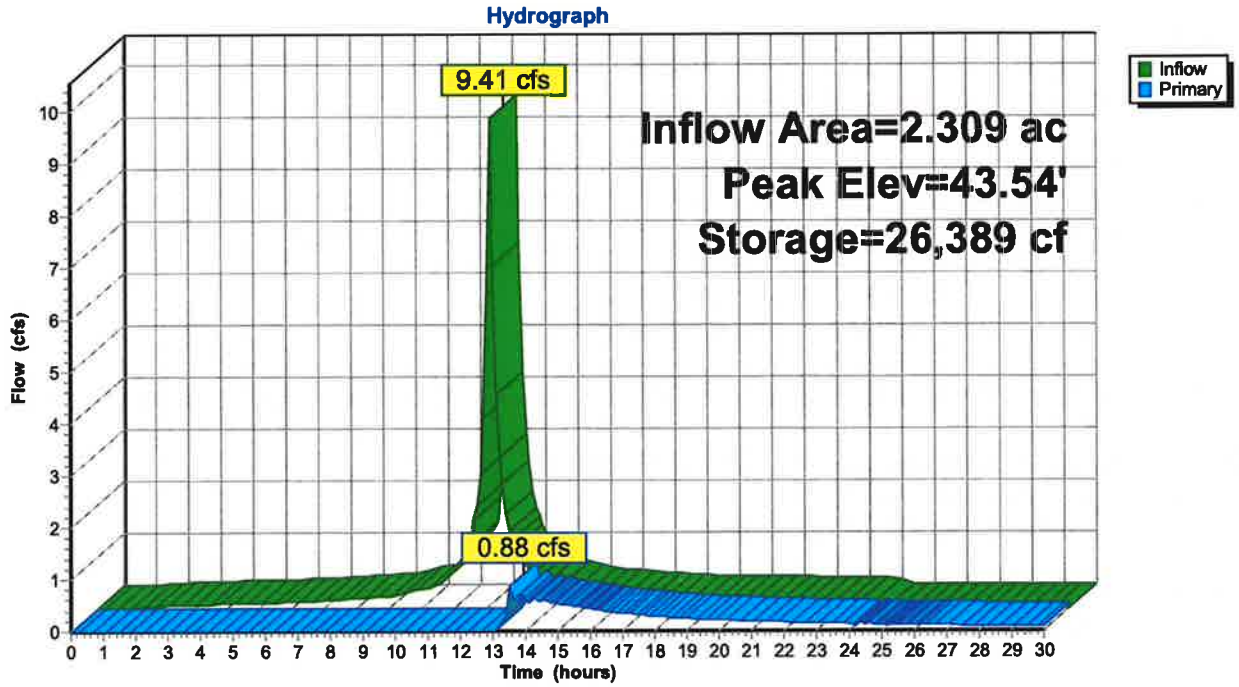
58,243.0 cf Field - 40,523.6 cf Chambers = 17,719.4 cf Stone x 40.0% Voids = 7,087.8 cf Stone Storage

Chamber Storage + Stone Storage = 45,949.9 cf = 1.055 af
Overall Storage Efficiency = 78.9%
Overall System Size = 252.98' x 63.52' x 3.62'

2,550 Chambers
2,157.1 cy Field
656.3 cy Stone



Pond 16P: Aquabox System



Summary for Pond 19P: Infiltration Basin 1

Inflow Area = 4.350 ac, 68.97% Impervious, Inflow Depth > 2.76" for 010 Yr Current event
Inflow = 5.88 cfs @ 12.16 hrs, Volume= 0.999 af
Outflow = 3.23 cfs @ 12.42 hrs, Volume= 0.837 af, Atten= 45%, Lag= 15.9 min
Primary = 3.23 cfs @ 12.42 hrs, Volume= 0.837 af
Routed to Link 22L : South Wetlands
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 22L : South Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Peak Elev= 43.85' @ 12.42 hrs Surf.Area= 8,311 sf Storage= 12,628 cf

Plug-Flow detention time= 212.7 min calculated for 0.834 af (84% of inflow)
Center-of-Mass det. time= 114.3 min (1,009.8 - 895.4)

Volume	Invert	Avail.Storage	Storage Description
#1	42.00'	34,406 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

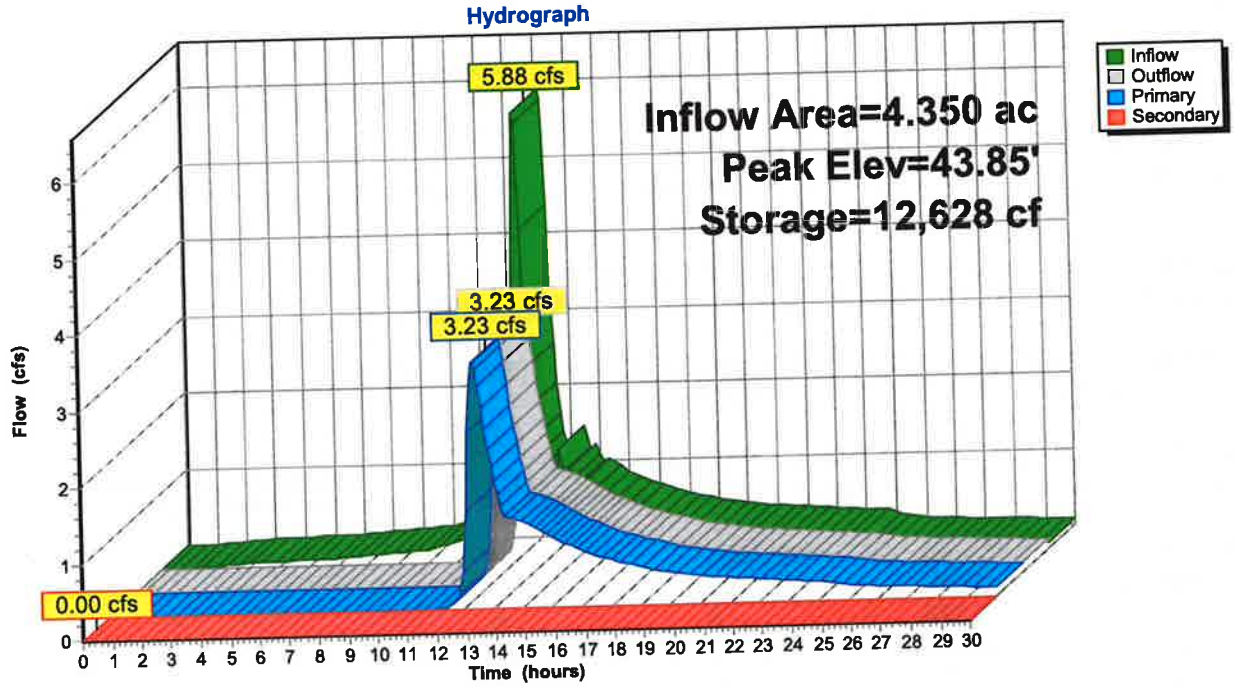
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
42.00	5,375	0	0
43.00	6,931	6,153	6,153
44.00	8,555	7,743	13,896
45.00	10,241	9,398	23,294
46.00	11,983	11,112	34,406

Device	Routing	Invert	Outlet Devices
#1	Secondary	45.50'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	44.75'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	43.25'	**2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Primary	42.87'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.21 cfs @ 12.42 hrs HW=43.85' TW=0.00' (Dynamic Tailwater)
- **2=Orifice/Grate** (Controls 0.00 cfs)
- **3=Sharp-Crested Rectangular Weir** (Weir Controls 2.83 cfs @ 2.52 fps)
- **4=Orifice/Grate** (Orifice Controls 0.38 cfs @ 4.33 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.00' TW=0.00' (Dynamic Tailwater)
- **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 19P: Infiltration Basin 1

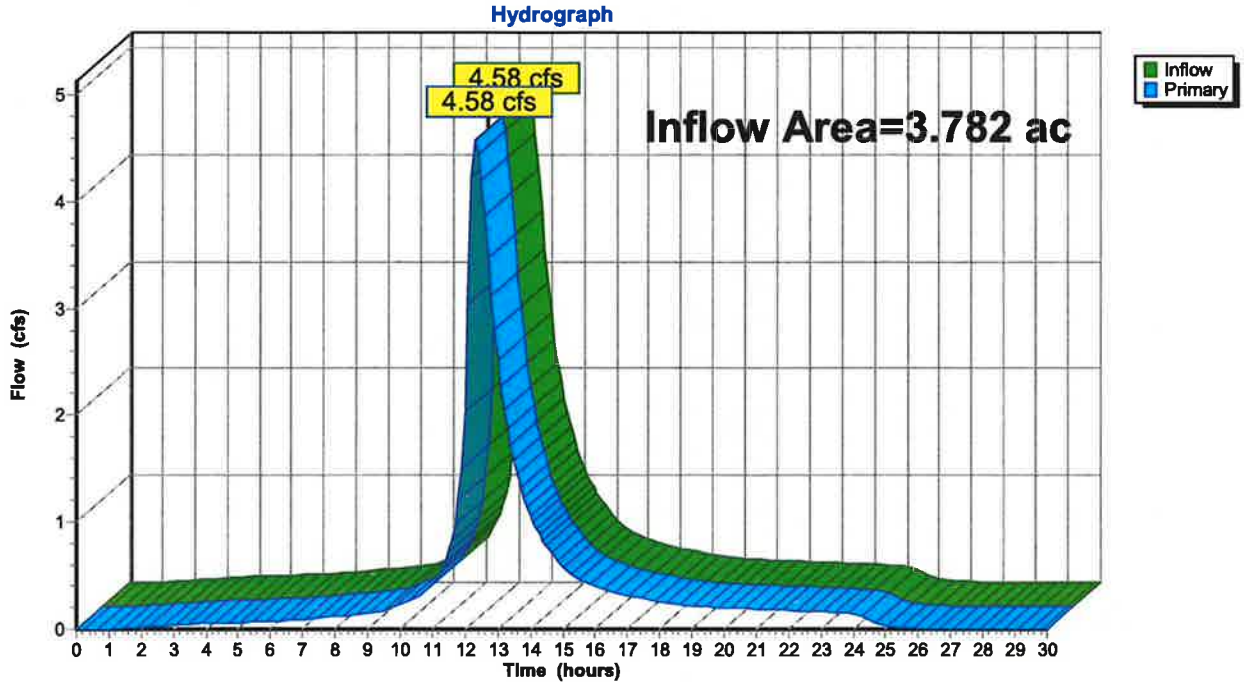


Summary for Link 13L: West Wetlands

Inflow Area = 3.782 ac, 30.14% Impervious, Inflow Depth = 2.73" for 010 Yr Current event
Inflow = 4.58 cfs @ 12.32 hrs, Volume= 0.859 af
Primary = 4.58 cfs @ 12.32 hrs, Volume= 0.859 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs

Link 13L: West Wetlands

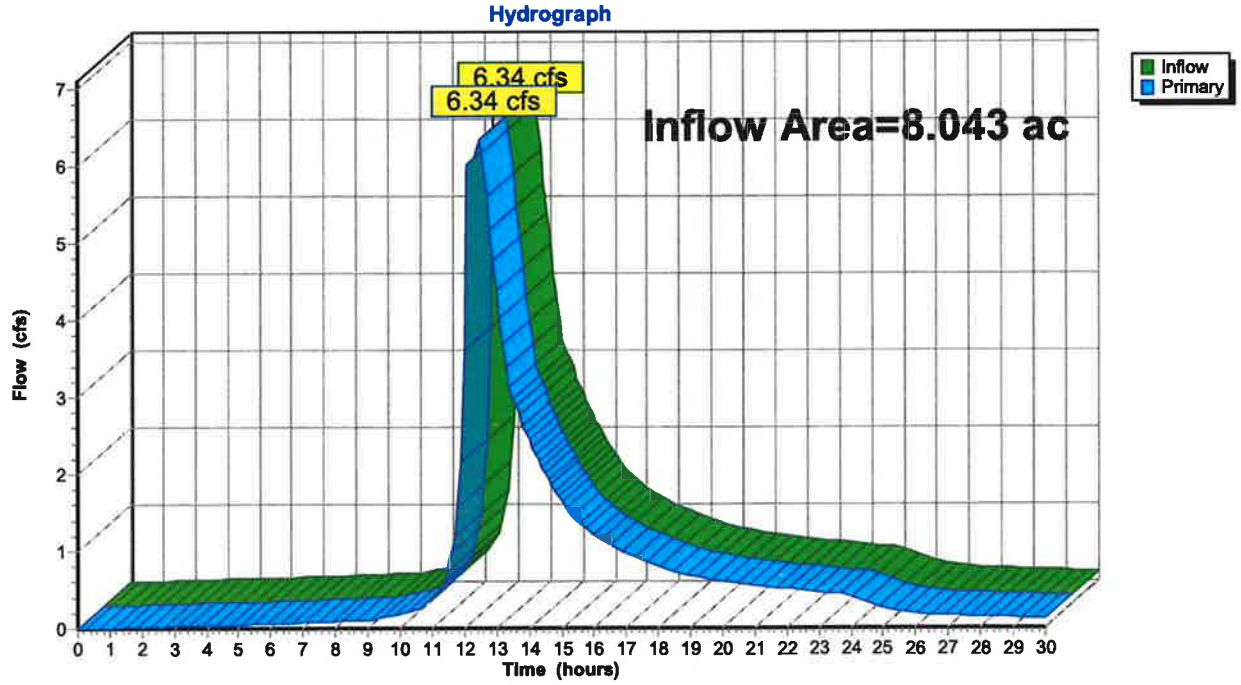


Summary for Link 22L: South Wetlands

Inflow Area = 8.043 ac, 47.67% Impervious, Inflow Depth > 2.56" for 010 Yr Current event
Inflow = 6.34 cfs @ 12.47 hrs, Volume= 1.713 af
Primary = 6.34 cfs @ 12.47 hrs, Volume= 1.713 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs

Link 22L: South Wetlands



Time span=0.00-30.00 hrs, dt=0.10 hrs, 301 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 9S: X-DA1 Runoff Area=0.617 ac 0.00% Impervious Runoff Depth=0.14"
Flow Length=218' Slope=0.0388 '/' Tc=3.7 min CN=WQ Runoff=0.02 cfs 0.007 af

Subcatchment 11S: DA-2 Imp Runoff Area=1.140 ac 100.00% Impervious Runoff Depth=5.71"
Flow Length=548' Tc=14.1 min CN=98 Runoff=4.03 cfs 0.543 af

Subcatchment 12S: DA-2 Per Runoff Area=2.025 ac 0.00% Impervious Runoff Depth=3.05"
Flow Length=561' Tc=37.1 min CN=WQ Runoff=2.47 cfs 0.515 af

Subcatchment 14S: DA-1 Imp Runoff Area=1.662 ac 100.00% Impervious Runoff Depth=5.71"
Flow Length=378' Tc=3.1 min CN=98 Runoff=9.59 cfs 0.791 af

Subcatchment 15S: DA-1 Per Runoff Area=0.647 ac 0.00% Impervious Runoff Depth=3.14"
Flow Length=389' Tc=7.4 min CN=74 Runoff=1.82 cfs 0.169 af

Subcatchment 17S: DA-3 Imp Runoff Area=1.338 ac 100.00% Impervious Runoff Depth=5.71"
Flow Length=980' Tc=6.2 min CN=98 Runoff=6.26 cfs 0.637 af

Subcatchment 18S: DA-3 Per Runoff Area=0.703 ac 0.00% Impervious Runoff Depth=2.64"
Flow Length=971' Tc=17.3 min CN=WQ Runoff=1.13 cfs 0.155 af

Subcatchment 20S: DA-4 Imp Runoff Area=0.834 ac 100.00% Impervious Runoff Depth=5.71"
Flow Length=319' Tc=3.3 min CN=98 Runoff=4.76 cfs 0.397 af

Subcatchment 21S: DA-4 Per Runoff Area=2.859 ac 0.00% Impervious Runoff Depth=2.94"
Flow Length=350' Tc=40.0 min CN=WQ Runoff=3.21 cfs 0.701 af

Pond 10P: Ex Low Point Peak Elev=48.55' Storage=315 cf Inflow=0.02 cfs 0.007 af
Outflow=0.00 cfs 0.000 af

Pond 16P: Aquabox System Peak Elev=43.77' Storage=29,862 cf Inflow=11.19 cfs 0.961 af
Outflow=1.65 cfs 0.493 af

Pond 19P: Infiltration Basin 1 Peak Elev=43.99' Storage=13,778 cf Inflow=6.98 cfs 1.285 af
Primary=4.24 cfs 1.122 af Secondary=0.00 cfs 0.000 af Outflow=4.24 cfs 1.122 af

Link 13L: West Wetlands Inflow=5.59 cfs 1.058 af
Primary=5.59 cfs 1.058 af

Link 22L: South Wetlands Inflow=8.14 cfs 2.220 af
Primary=8.14 cfs 2.220 af

Total Runoff Area = 11.825 ac Runoff Volume = 3.915 af Average Runoff Depth = 3.97"
57.94% Pervious = 6.851 ac 42.06% Impervious = 4.974 ac

Summary for Subcatchment 9S: X-DA1

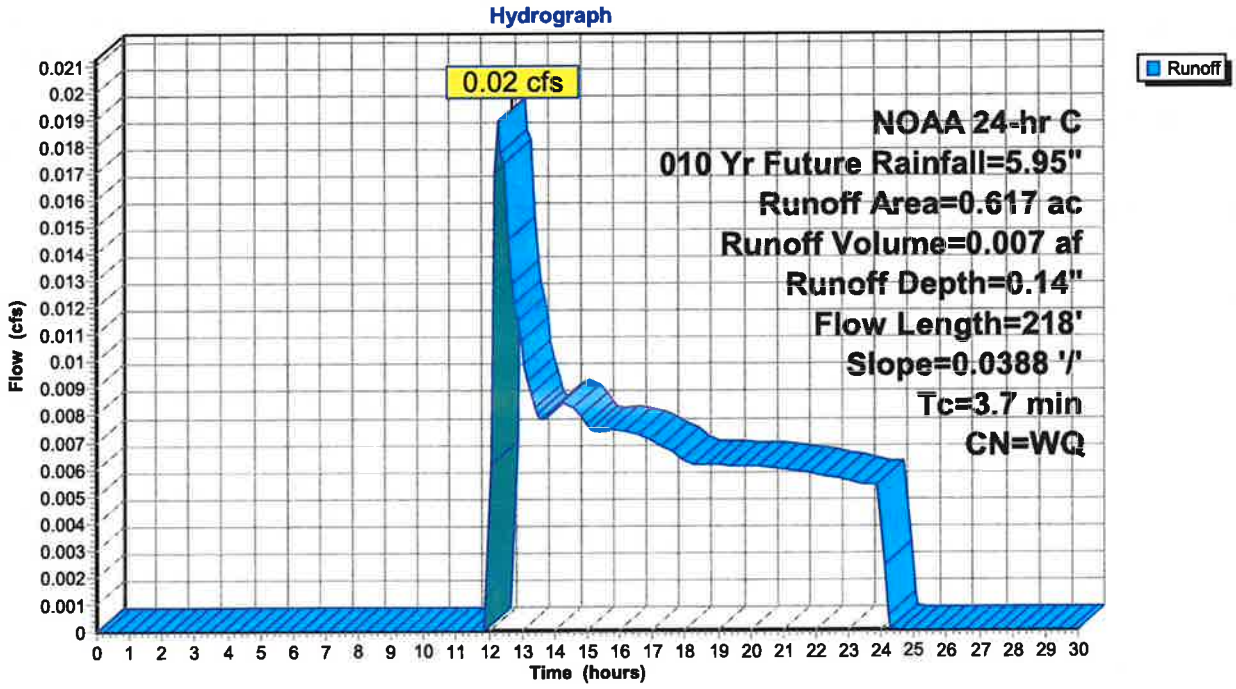
Runoff = 0.02 cfs @ 12.31 hrs, Volume= 0.007 af, Depth= 0.14"
Routed to Pond 10P : Ex Low Point

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 010 Yr Future Rainfall=5.95"

Area (ac)	CN	Description
0.492	30	Woods, Good, HSG A
0.125	39	>75% Grass cover, Good, HSG A
0.617		Weighted Average
0.617		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	218	0.0388	0.98		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps

Subcatchment 9S: X-DA1



Summary for Subcatchment 11S: DA-2 Imp

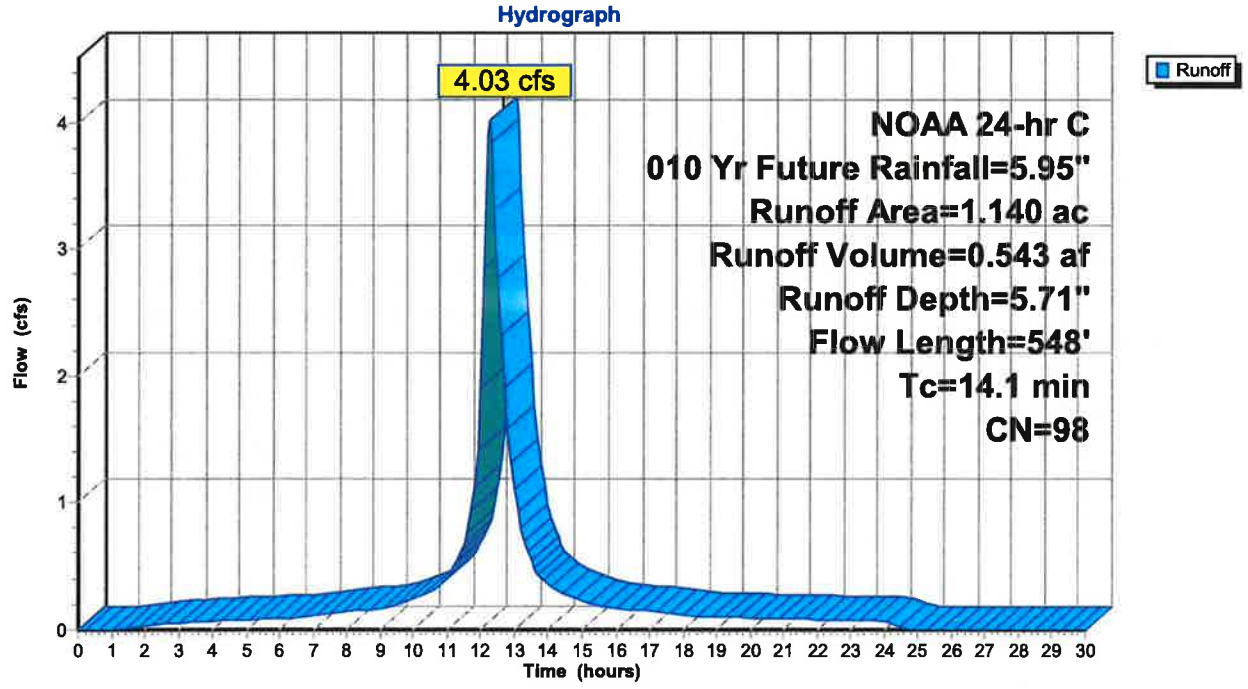
Runoff = 4.03 cfs @ 12.24 hrs, Volume= 0.543 af, Depth= 5.71"
Routed to Link 13L : West Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 010 Yr Future Rainfall=5.95"

Area (ac)	CN	Description
1.140	98	Paved parking, HSG A
1.140		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	100	0.0039	0.73		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
1.1	185	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
10.7	263	0.0067	0.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.1	548	Total			

Subcatchment 11S: DA-2 Imp



Summary for Subcatchment 12S: DA-2 Per

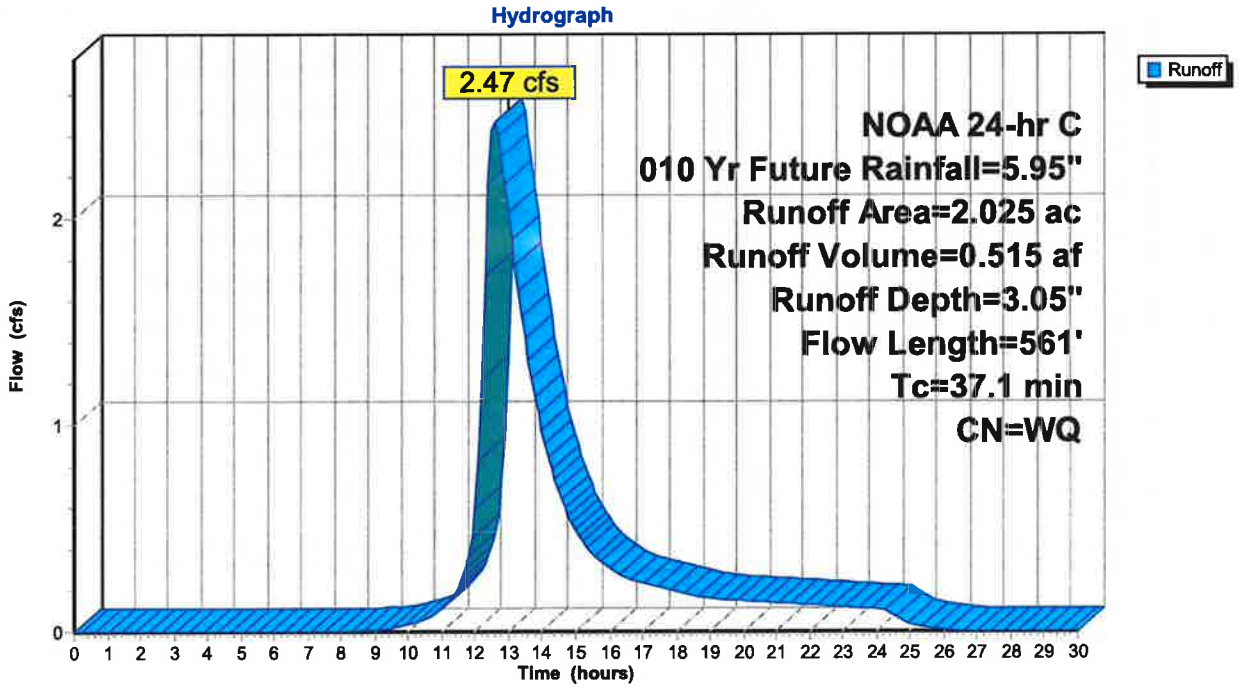
Runoff = 2.47 cfs @ 12.59 hrs, Volume= 0.515 af, Depth= 3.05"
Routed to Link 13L : West Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 010 Yr Future Rainfall=5.95"

Area (ac)	CN	Description
0.872	77	Woods, Good, HSG D
1.153	70	Woods, Good, HSG C
2.025		Weighted Average
2.025		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0230	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
2.4	149	0.0418	1.02		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.7	312	0.0050	0.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
37.1	561	Total			

Subcatchment 12S: DA-2 Per



Summary for Subcatchment 14S: DA-1 Imp

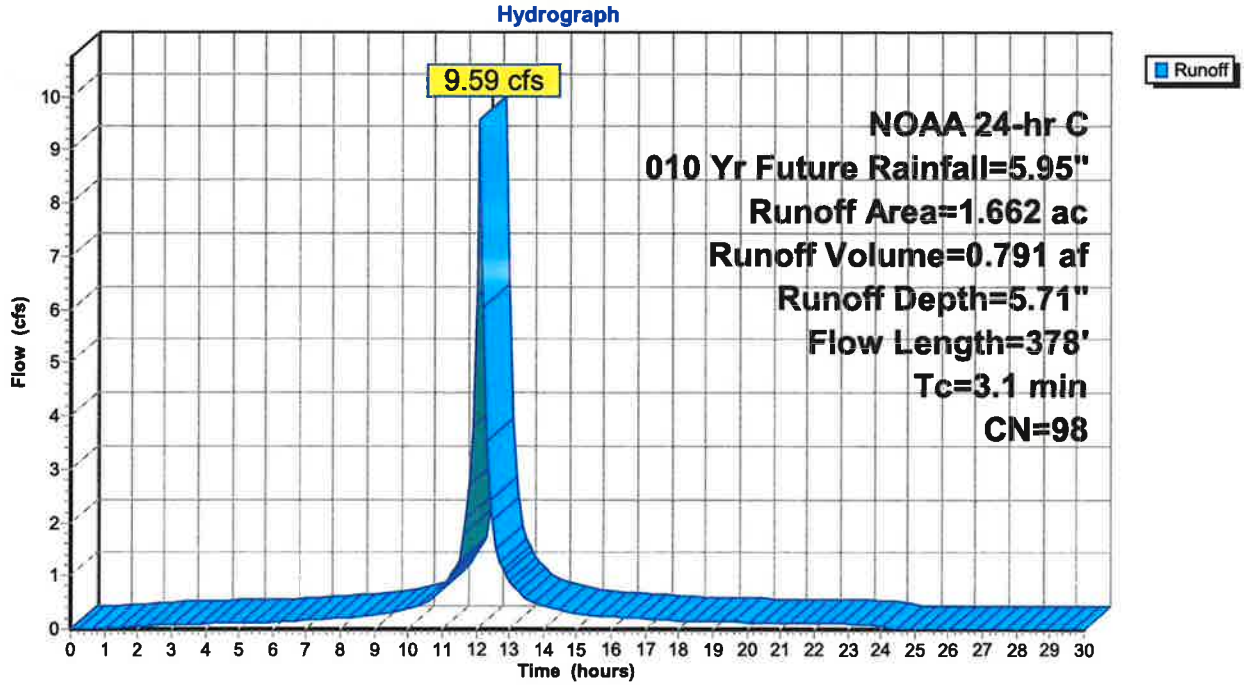
Runoff = 9.59 cfs @ 12.10 hrs, Volume= 0.791 af, Depth= 5.71"
Routed to Pond 16P : Aquabox System

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 010 Yr Future Rainfall=5.95"

Area (ac)	CN	Description
1.662	98	Paved parking, HSG A
1.662		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	100	0.0062	0.87		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
0.6	94	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	184	0.0075	5.15	9.10	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
3.1	378	Total			

Subcatchment 14S: DA-1 Imp



Summary for Subcatchment 15S: DA-1 Per

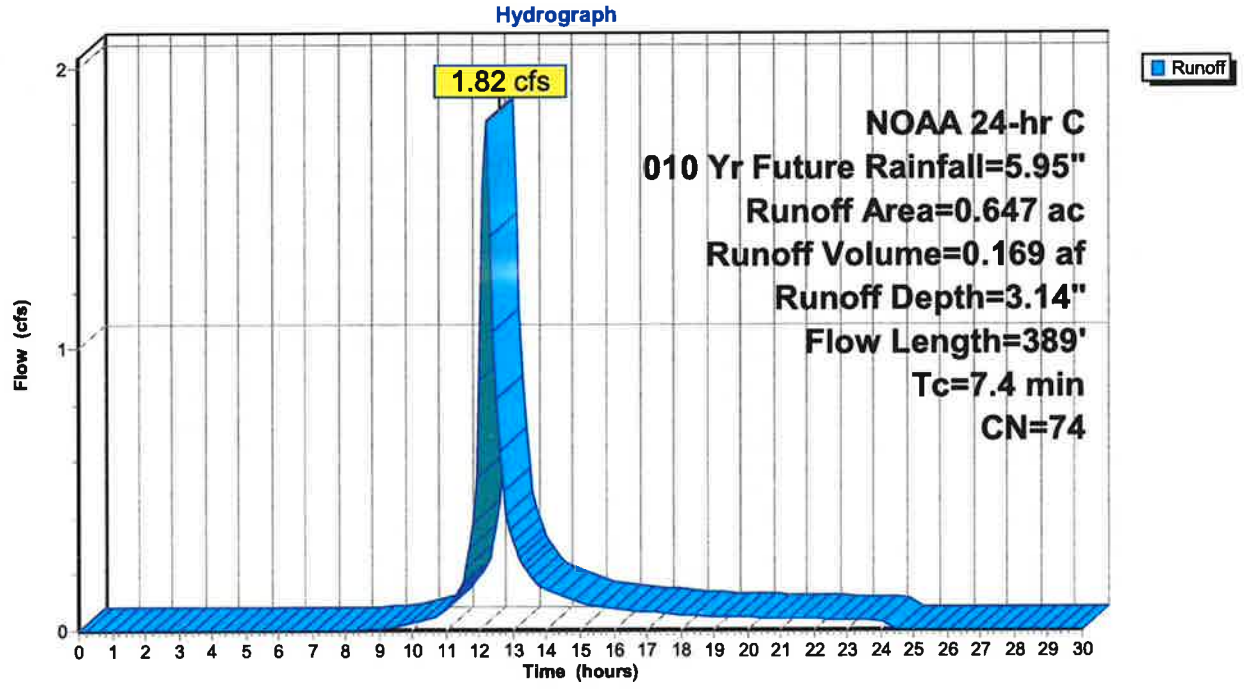
Runoff = 1.82 cfs @ 12.19 hrs, Volume= 0.169 af, Depth= 3.14"
Routed to Pond 16P : Aquabox System

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 010 Yr Future Rainfall=5.95"

Area (ac)	CN	Description
0.647	74	>75% Grass cover, Good, HSG C
0.647		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	79	0.0380	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
0.6	126	0.0320	3.63		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	184	0.0075	5.15	9.10	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
7.4	389	Total			

Subcatchment 15S: DA-1 Per



Summary for Subcatchment 17S: DA-3 Imp

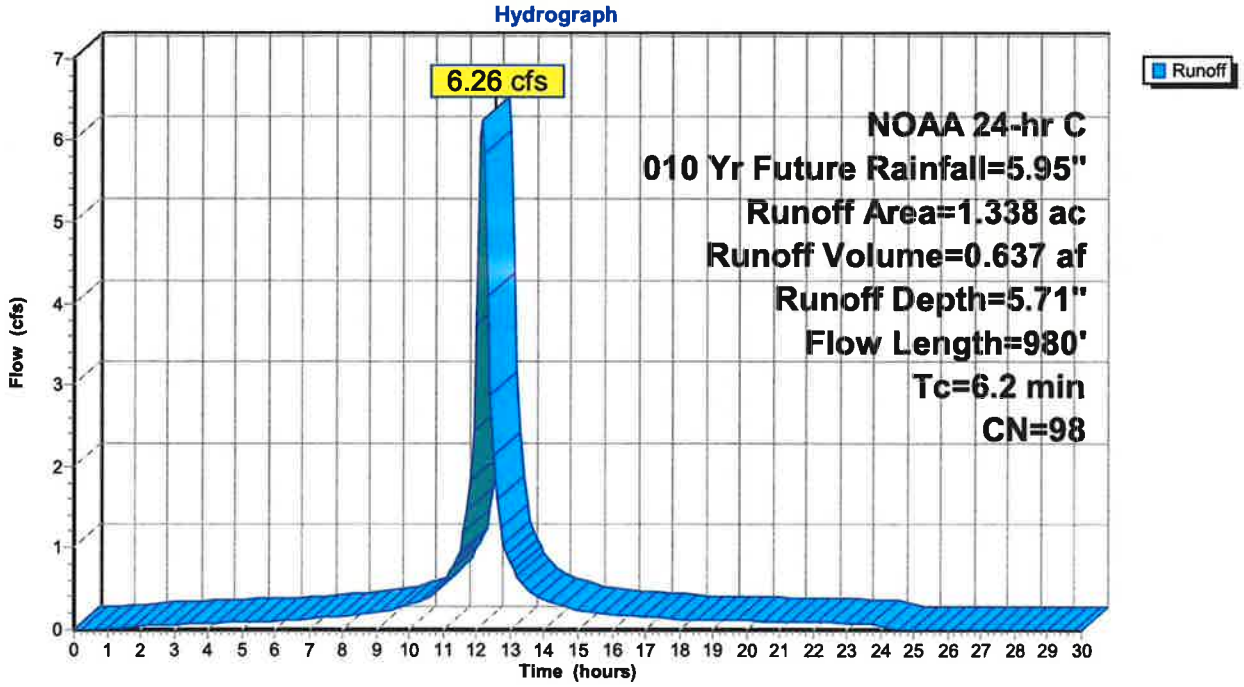
Runoff = 6.26 cfs @ 12.14 hrs, Volume= 0.637 af, Depth= 5.71"
Routed to Pond 19P : Infiltration Basin 1

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 010 Yr Future Rainfall=5.95"

Area (ac)	CN	Description
1.338	98	Paved parking, HSG A
1.338		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	49	0.0136	1.04		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
4.9	780	0.0170	2.65		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	151	0.0084	5.45	9.63	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
6.2	980	Total			

Subcatchment 17S: DA-3 Imp



Summary for Subcatchment 18S: DA-3 Per

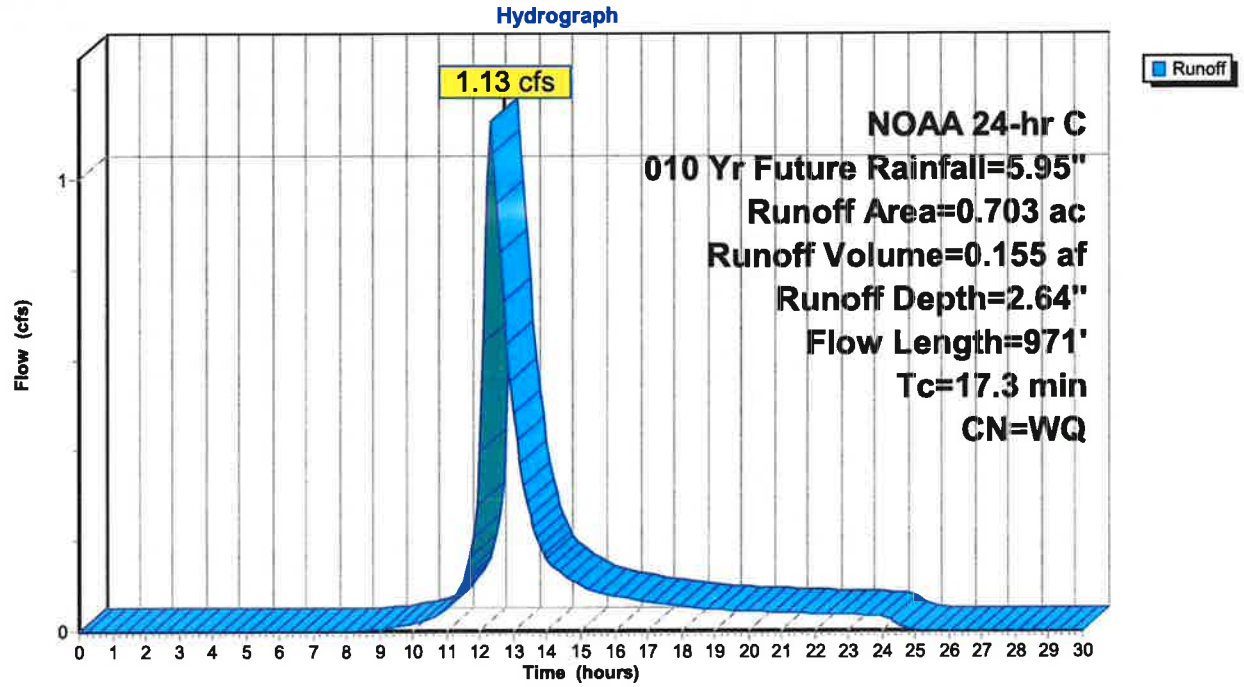
Runoff = 1.13 cfs @ 12.32 hrs, Volume= 0.155 af, Depth= 2.64"
Routed to Pond 19P : Infiltration Basin 1

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 010 Yr Future Rainfall=5.95"

Area (ac)	CN	Description
0.130	39	>75% Grass cover, Good, HSG A
0.573	74	>75% Grass cover, Good, HSG C
0.703		Weighted Average
0.703		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	100	0.0110	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
4.5	720	0.0170	2.65		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	151	0.0084	5.45	9.63	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
17.3	971	Total			

Subcatchment 18S: DA-3 Per



Summary for Subcatchment 20S: DA-4 Imp

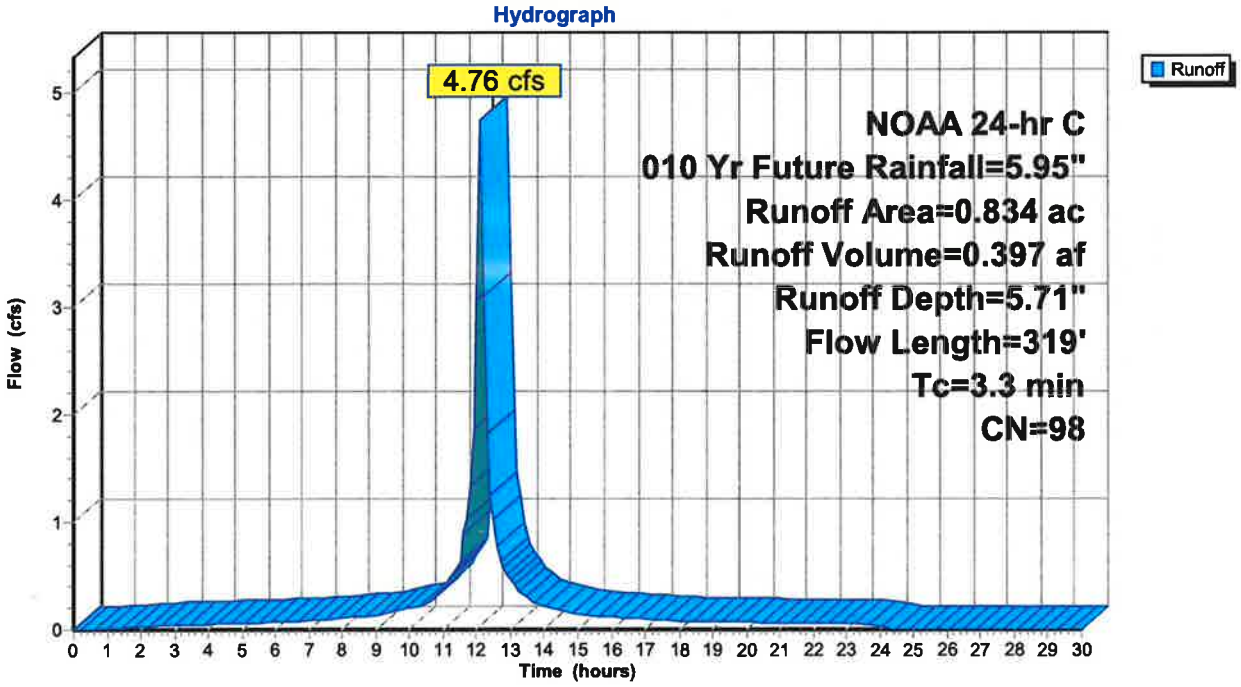
Runoff = 4.76 cfs @ 12.10 hrs, Volume= 0.397 af, Depth= 5.71"
Routed to Link 22L : South Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 010 Yr Future Rainfall=5.95"

Area (ac)	CN	Description
0.834	98	Paved parking, HSG A
0.834		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0110	1.10		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
1.7	181	0.0076	1.77		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	38	0.0200	4.31	4.39	**Pipe Channel,** 15.0" x 12.0", R=12.0"/20.0" Pipe Arch Area= 1.0 sf Perim= 3.6' r= n= 0.021
3.3	319	Total			

Subcatchment 20S: DA-4 Imp



Summary for Subcatchment 21S: DA-4 Per

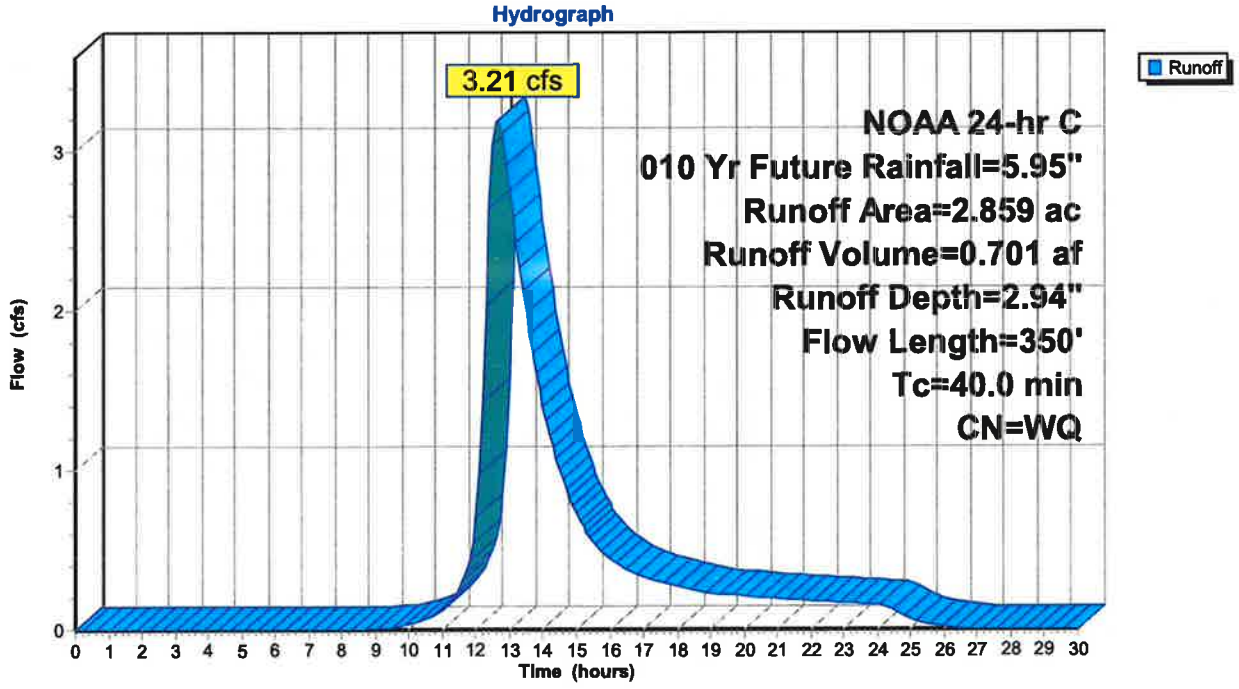
Runoff = 3.21 cfs @ 12.63 hrs, Volume= 0.701 af, Depth= 2.94"
Routed to Link 22L : South Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 010 Yr Future Rainfall=5.95"

Area (ac)	CN	Description
1.896	70	Woods, Good, HSG C
0.487	77	Woods, Good, HSG D
0.476	74	>75% Grass cover, Good, HSG C
2.859		Weighted Average
2.859		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.5	100	0.0087	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
10.5	250	0.0063	0.40		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
40.0	350	Total			

Subcatchment 21S: DA-4 Per



Summary for Pond 10P: Ex Low Point

Inflow Area = 0.617 ac, 0.00% Impervious, Inflow Depth = 0.14" for 010 Yr Future event
Inflow = 0.02 cfs @ 12.31 hrs, Volume= 0.007 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 13L : West Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Peak Elev= 48.55' @ 24.50 hrs Surf.Area= 861 sf Storage= 315 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

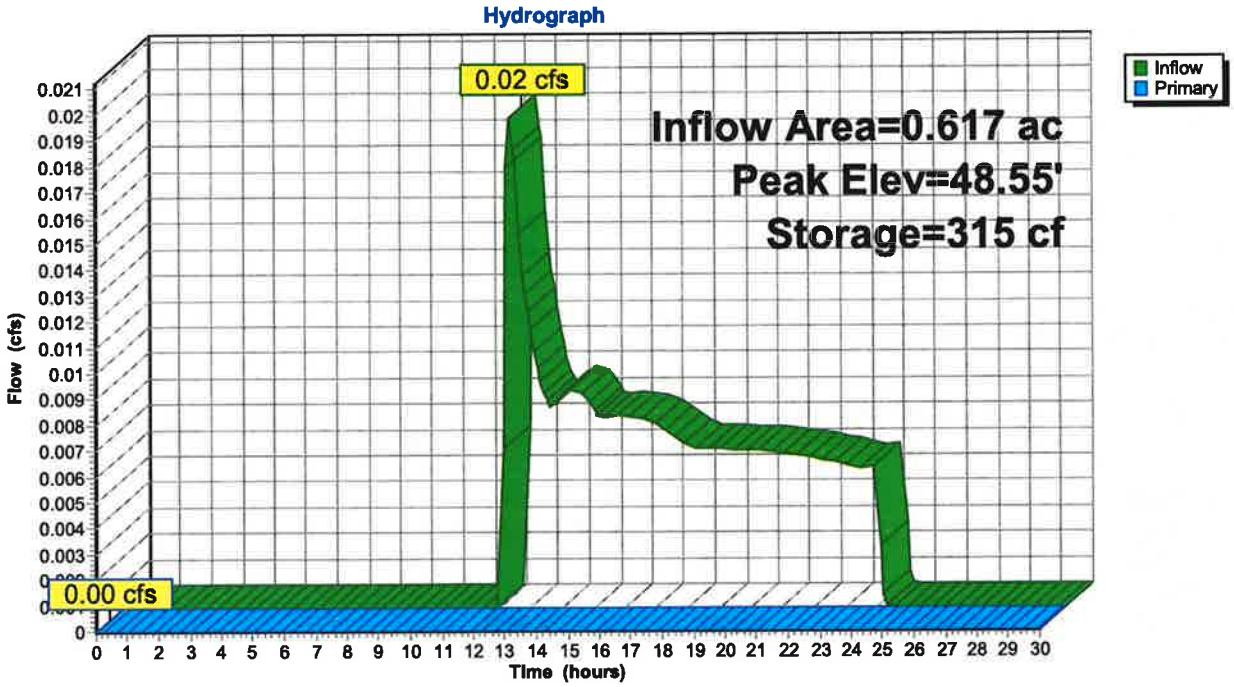
Volume	Invert	Avail.Storage	Storage Description
#1	48.00'	8,383 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
48.00	295	0	0
49.00	1,332	814	814
50.00	4,340	2,836	3,650
51.00	5,126	4,733	8,383

Device	Routing	Invert	Outlet Devices
#1	Primary	50.00'	**90.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=48.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 10P: Ex Low Point



Summary for Pond 16P: Aquabox System

Inflow Area = 2.309 ac, 71.98% Impervious, Inflow Depth = 4.99" for 010 Yr Future event
Inflow = 11.19 cfs @ 12.10 hrs, Volume= 0.961 af
Outflow = 1.65 cfs @ 13.10 hrs, Volume= 0.493 af, Atten= 85%, Lag= 59.8 min
Primary = 1.65 cfs @ 13.10 hrs, Volume= 0.493 af
Routed to Pond 19P : Infiltration Basin 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Peak Elev= 43.77' @ 13.03 hrs Surf.Area= 16,068 sf Storage= 29,862 cf

Plug-Flow detention time= 431.8 min calculated for 0.493 af (51% of inflow)
Center-of-Mass det. time= 303.3 min (1,064.9 - 761.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	41.50'	7,088 cf	**63.52'W x 252.98'L x 3.62'H Field A** 58,243 cf Overall - 40,524 cf Embedded = 17,719 cf x 40.0% Voids
#2A	42.00'	38,862 cf	**ADS Aquabox 1** x 2550 Inside #1 Inside= 29.5"W x 31.5"H => 6.19 sf x 2.46'L = 15.2 cf Outside= 29.5"W x 31.5"H => 6.46 sf x 2.46'L = 15.9 cf 2550 Chambers in 25 Rows
		45,950 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	42.63'	**24.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.43 cfs @ 13.10 hrs HW=43.76' TW=43.74' (Dynamic Tailwater)
↑**1=Orifice/Grate** (Orifice Controls 1.43 cfs @ 0.78 fps)

Pond 16P: Aquabox System - Chamber Wizard Field A

Chamber Model = ADS Aquabox 1 (ADS Aquabox)
Inside= 29.5"W x 31.5"H => 6.19 sf x 2.46'L = 15.2 cf
Outside= 29.5"W x 31.5"H => 6.46 sf x 2.46'L = 15.9 cf

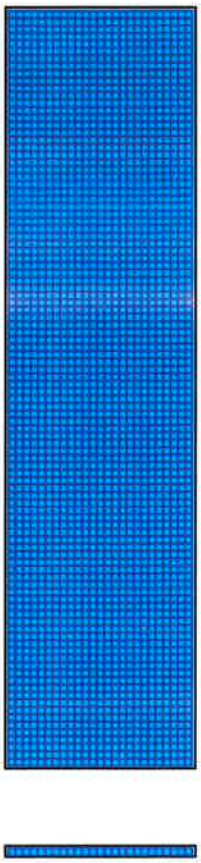
102 Chambers/Row x 2.46' Long = 250.98' Row Length +12.0" End Stone x 2 = 252.98' Base Length
25 Rows x 29.5" Wide + 12.0" Side Stone x 2 = 63.52' Base Width
6.0" Stone Base + 31.5" Chamber Height + 6.0" Stone Cover = 3.62' Field Height

2,550 Chambers x 15.2 cf = 38,862.1 cf Chamber Storage
2,550 Chambers x 15.9 cf = 40,523.6 cf Displacement

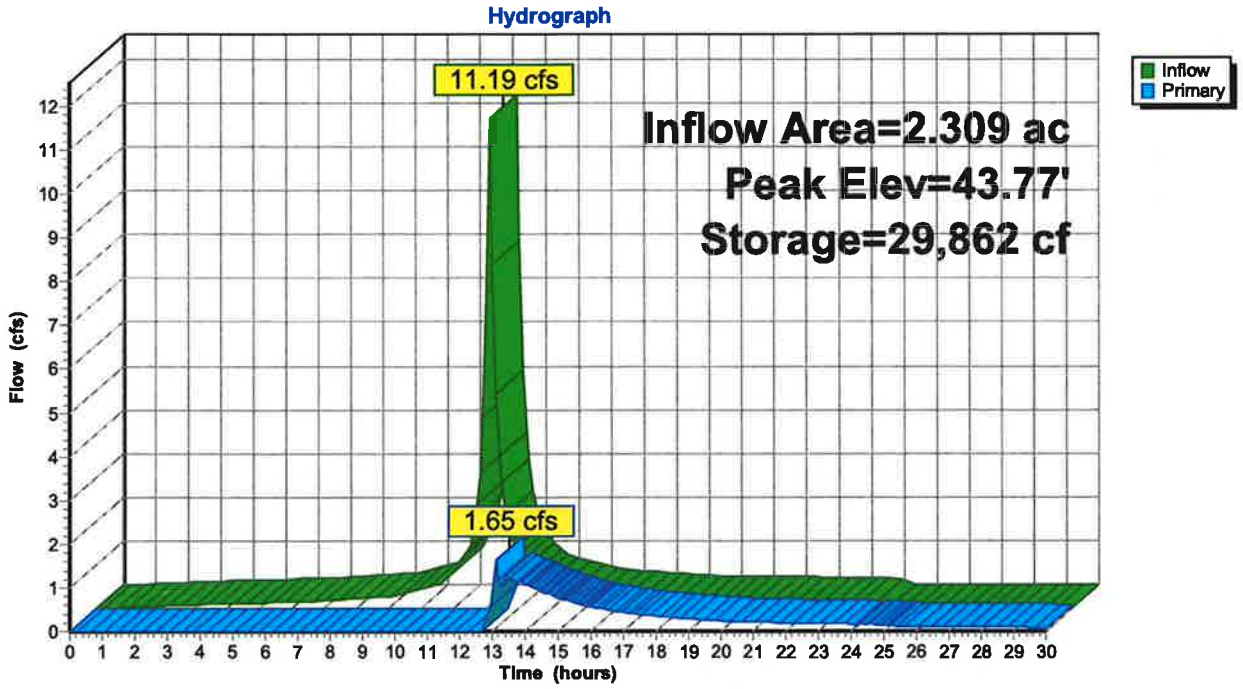
58,243.0 cf Field - 40,523.6 cf Chambers = 17,719.4 cf Stone x 40.0% Voids = 7,087.8 cf Stone Storage

Chamber Storage + Stone Storage = 45,949.9 cf = 1.055 af
Overall Storage Efficiency = 78.9%
Overall System Size = 252.98' x 63.52' x 3.62'

2,550 Chambers
2,157.1 cy Field
656.3 cy Stone



Pond 16P: Aquabox System



Summary for Pond 19P: Infiltration Basin 1

Inflow Area = 4.350 ac, 68.97% Impervious, Inflow Depth > 3.54" for 010 Yr Future event
Inflow = 6.98 cfs @ 12.16 hrs, Volume= 1.285 af
Outflow = 4.24 cfs @ 12.39 hrs, Volume= 1.122 af, Atten= 39%, Lag= 13.9 min
Primary = 4.24 cfs @ 12.39 hrs, Volume= 1.122 af
Routed to Link 22L : South Wetlands
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 22L : South Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Peak Elev= 43.99' @ 12.39 hrs Surf.Area= 8,533 sf Storage= 13,778 cf

Plug-Flow detention time= 173.6 min calculated for 1.122 af (87% of inflow)
Center-of-Mass det. time= 94.7 min (978.6 - 883.8)

Volume	Invert	Avail.Storage	Storage Description
#1	42.00'	34,406 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

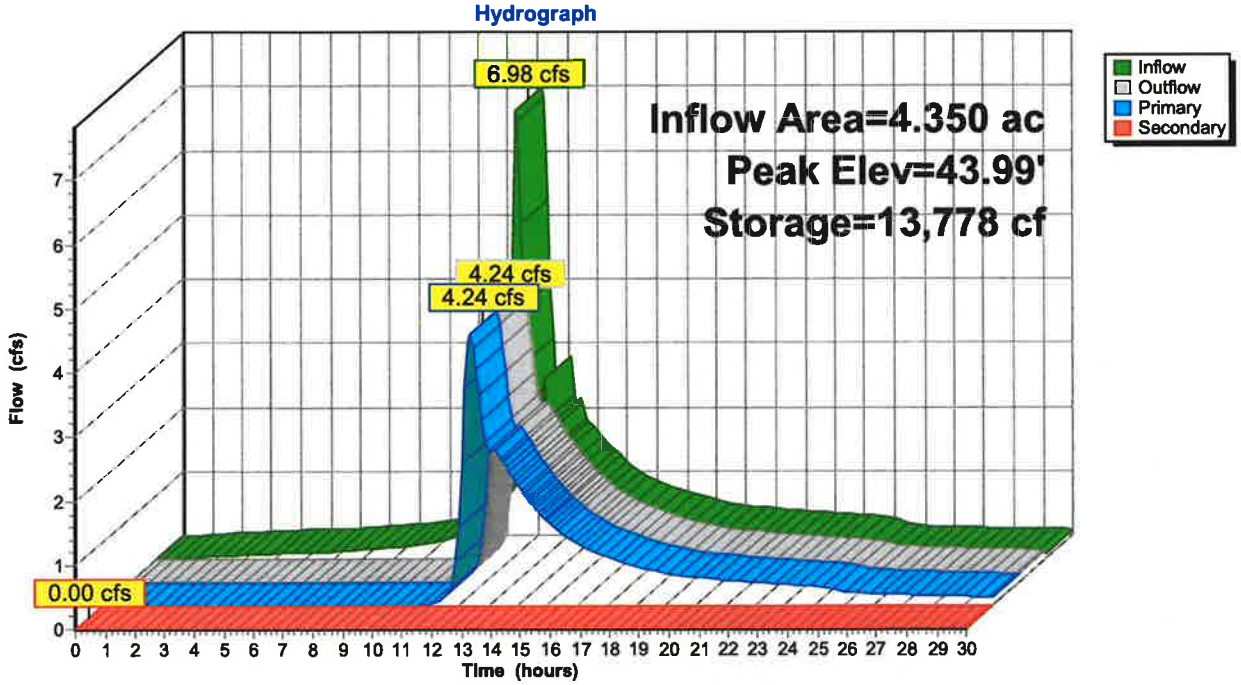
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
42.00	5,375	0	0
43.00	6,931	6,153	6,153
44.00	8,555	7,743	13,896
45.00	10,241	9,398	23,294
46.00	11,983	11,112	34,406

Device	Routing	Invert	Outlet Devices
#1	Secondary	45.50'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	44.75'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	43.25'	**2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Primary	42.87'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.22 cfs @ 12.39 hrs HW=43.98' TW=0.00' (Dynamic Tailwater)
- **2=Orifice/Grate** (Controls 0.00 cfs)
- **3=Sharp-Crested Rectangular Weir** (Weir Controls 3.81 cfs @ 2.80 fps)
- **4=Orifice/Grate** (Orifice Controls 0.41 cfs @ 4.69 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.00' TW=0.00' (Dynamic Tailwater)
- **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 19P: Infiltration Basin 1

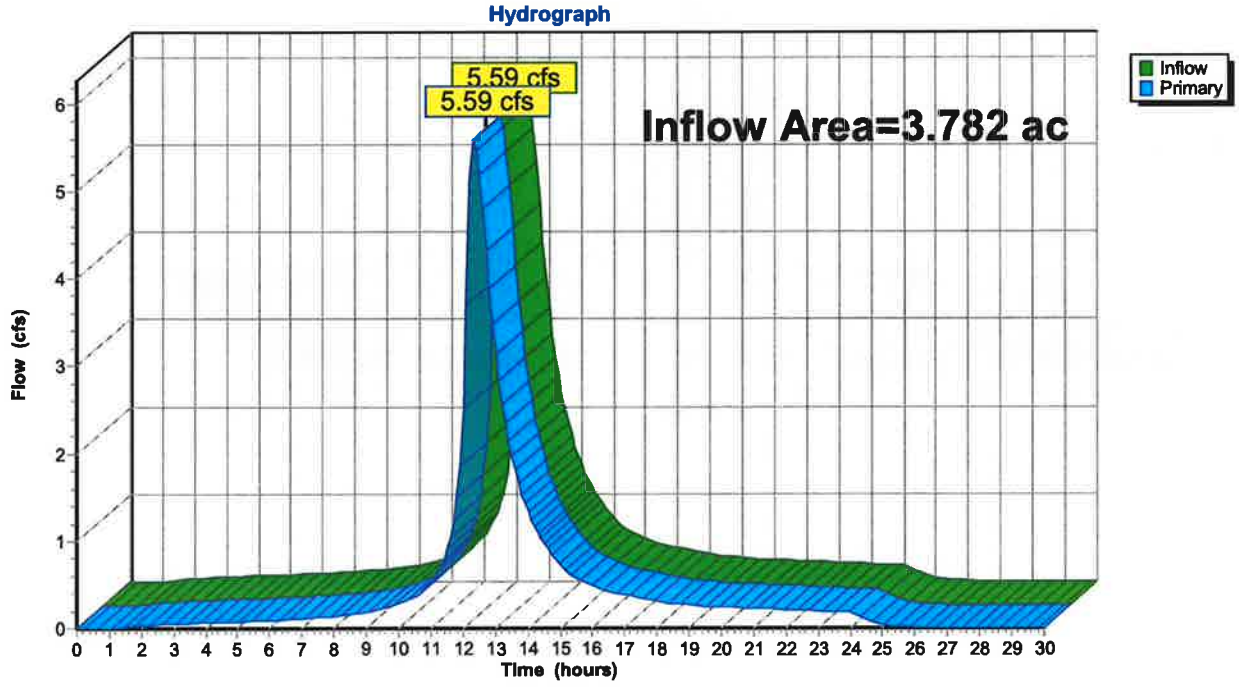


Summary for Link 13L: West Wetlands

Inflow Area = 3.782 ac, 30.14% Impervious, Inflow Depth = 3.36" for 010 Yr Future event
Inflow = 5.59 cfs @ 12.33 hrs, Volume= 1.058 af
Primary = 5.59 cfs @ 12.33 hrs, Volume= 1.058 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs

Link 13L: West Wetlands

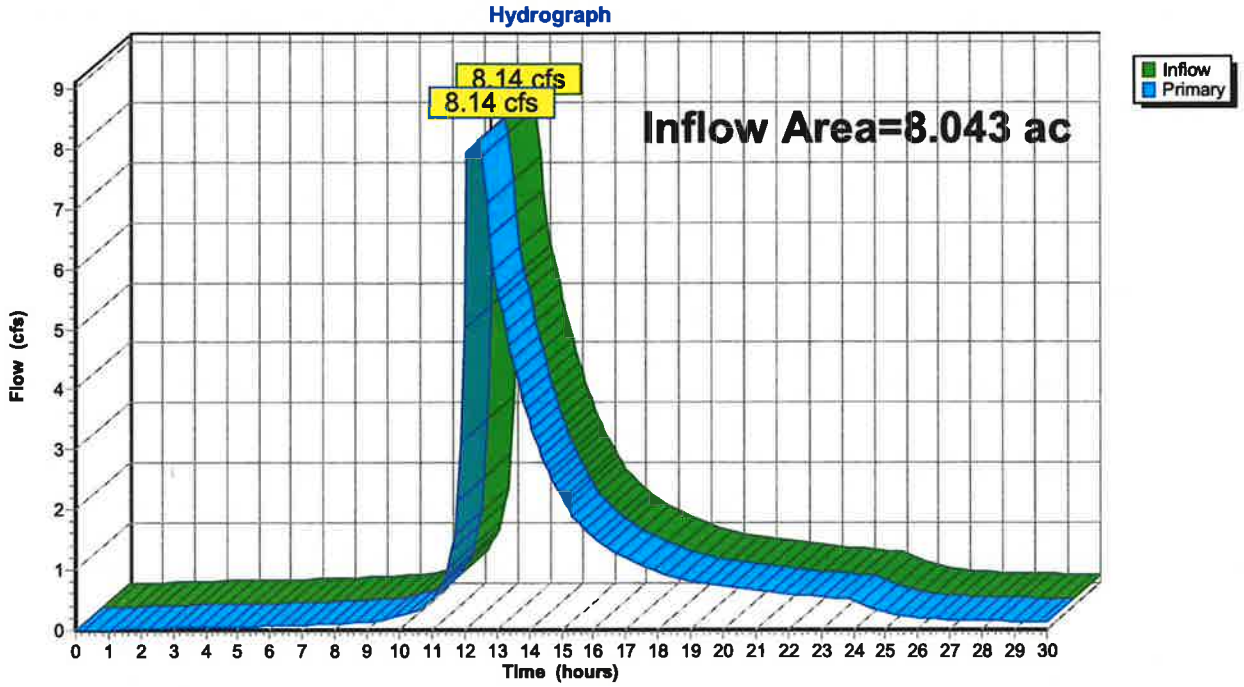


Summary for Link 22L: South Wetlands

Inflow Area = 8.043 ac, 47.67% Impervious, Inflow Depth > 3.31" for 010 Yr Future event
Inflow = 8.14 cfs @ 12.45 hrs, Volume= 2.220 af
Primary = 8.14 cfs @ 12.45 hrs, Volume= 2.220 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs

Link 22L: South Wetlands



Time span=0.00-30.00 hrs, dt=0.10 hrs, 301 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 9S: X-DA1 Runoff Area=0.617 ac 0.00% Impervious Runoff Depth=0.76"
Flow Length=218' Slope=0.0388 '/' Tc=3.7 min CN=WQ Runoff=0.22 cfs 0.039 af

Subcatchment 11S: DA-2 Imp Runoff Area=1.140 ac 100.00% Impervious Runoff Depth=8.44"
Flow Length=548' Tc=14.1 min CN=98 Runoff=5.90 cfs 0.802 af

Subcatchment 12S: DA-2 Per Runoff Area=2.025 ac 0.00% Impervious Runoff Depth=5.42"
Flow Length=561' Tc=37.1 min CN=WQ Runoff=4.44 cfs 0.914 af

Subcatchment 14S: DA-1 Imp Runoff Area=1.662 ac 100.00% Impervious Runoff Depth=8.44"
Flow Length=378' Tc=3.1 min CN=98 Runoff=14.02 cfs 1.169 af

Subcatchment 15S: DA-1 Per Runoff Area=0.647 ac 0.00% Impervious Runoff Depth=5.54"
Flow Length=389' Tc=7.4 min CN=74 Runoff=3.18 cfs 0.299 af

Subcatchment 17S: DA-3 Imp Runoff Area=1.338 ac 100.00% Impervious Runoff Depth=8.44"
Flow Length=980' Tc=6.2 min CN=98 Runoff=9.16 cfs 0.941 af

Subcatchment 18S: DA-3 Per Runoff Area=0.703 ac 0.00% Impervious Runoff Depth=4.78"
Flow Length=971' Tc=17.3 min CN=WQ Runoff=2.07 cfs 0.280 af

Subcatchment 20S: DA-4 Imp Runoff Area=0.834 ac 100.00% Impervious Runoff Depth=8.44"
Flow Length=319' Tc=3.3 min CN=98 Runoff=6.95 cfs 0.587 af

Subcatchment 21S: DA-4 Per Runoff Area=2.859 ac 0.00% Impervious Runoff Depth=5.28"
Flow Length=350' Tc=40.0 min CN=WQ Runoff=5.85 cfs 1.258 af

Pond 10P: Ex Low Point Peak Elev=49.45' Storage=1,712 cf Inflow=0.22 cfs 0.039 af
Outflow=0.00 cfs 0.000 af

Pond 16P: Aquabox System Peak Elev=44.44' Storage=40,010 cf Inflow=16.87 cfs 1.468 af
Outflow=3.63 cfs 0.994 af

Pond 19P: Infiltration Basin 1 Peak Elev=44.40' Storage=17,420 cf Inflow=11.87 cfs 2.215 af
Primary=7.60 cfs 2.050 af Secondary=0.00 cfs 0.000 af Outflow=7.60 cfs 2.050 af

Link 13L: West Wetlands Inflow=8.93 cfs 1.716 af
Primary=8.93 cfs 1.716 af

Link 22L: South Wetlands Inflow=14.71 cfs 3.894 af
Primary=14.71 cfs 3.894 af

Total Runoff Area = 11.825 ac Runoff Volume = 6.289 af Average Runoff Depth = 6.38"
57.94% Pervious = 6.851 ac 42.06% Impervious = 4.974 ac

Summary for Subcatchment 9S: X-DA1

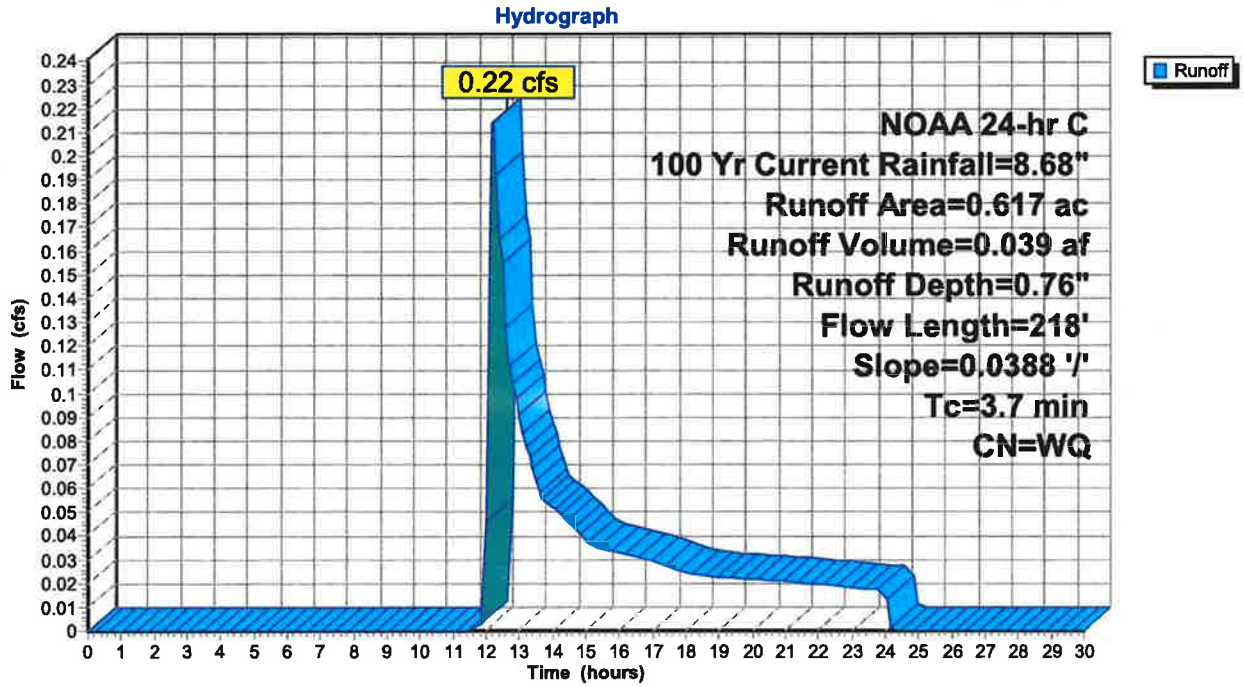
Runoff = 0.22 cfs @ 12.22 hrs, Volume= 0.039 af, Depth= 0.76"
Routed to Pond 10P : Ex Low Point

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 100 Yr Current Rainfall=8.68"

Area (ac)	CN	Description
0.492	30	Woods, Good, HSG A
0.125	39	>75% Grass cover, Good, HSG A
0.617		Weighted Average
0.617		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	218	0.0388	0.98		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps

Subcatchment 9S: X-DA1



Summary for Subcatchment 11S: DA-2 Imp

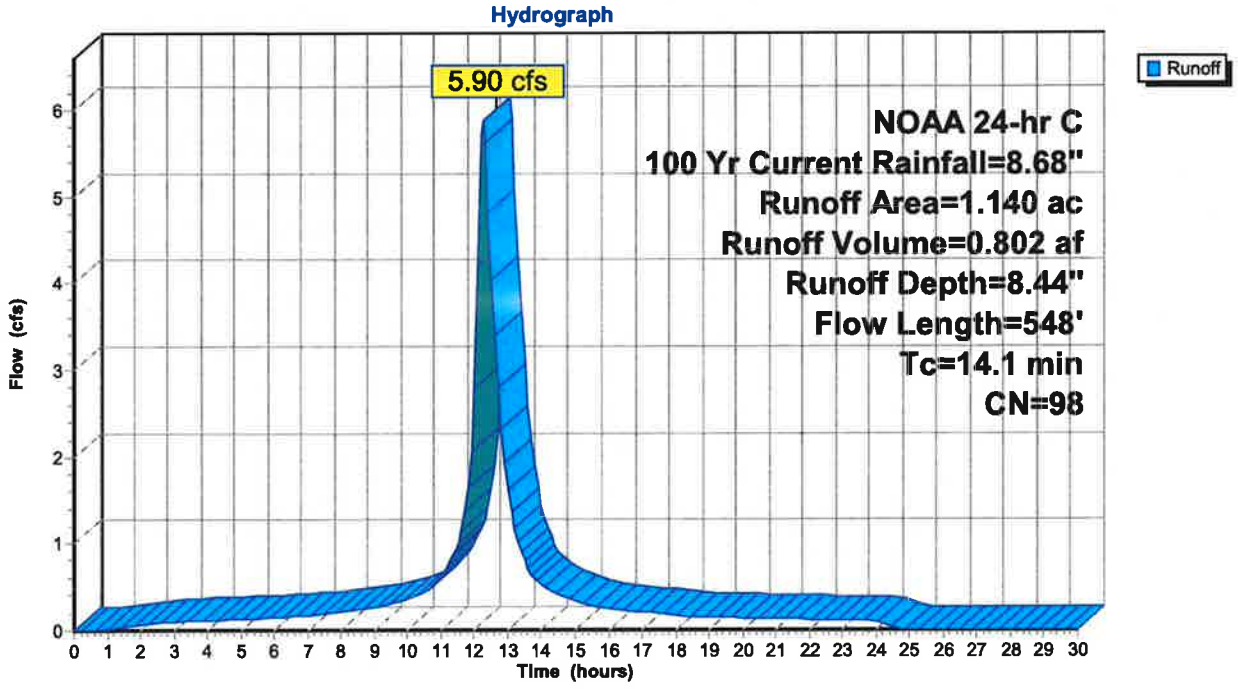
Runoff = 5.90 cfs @ 12.24 hrs, Volume= 0.802 af, Depth= 8.44"
Routed to Link 13L : West Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 100 Yr Current Rainfall=8.68"

Area (ac)	CN	Description
1.140	98	Paved parking, HSG A
1.140		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	100	0.0039	0.73		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
1.1	185	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
10.7	263	0.0067	0.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.1	548	Total			

Subcatchment 11S: DA-2 Imp



Summary for Subcatchment 12S: DA-2 Per

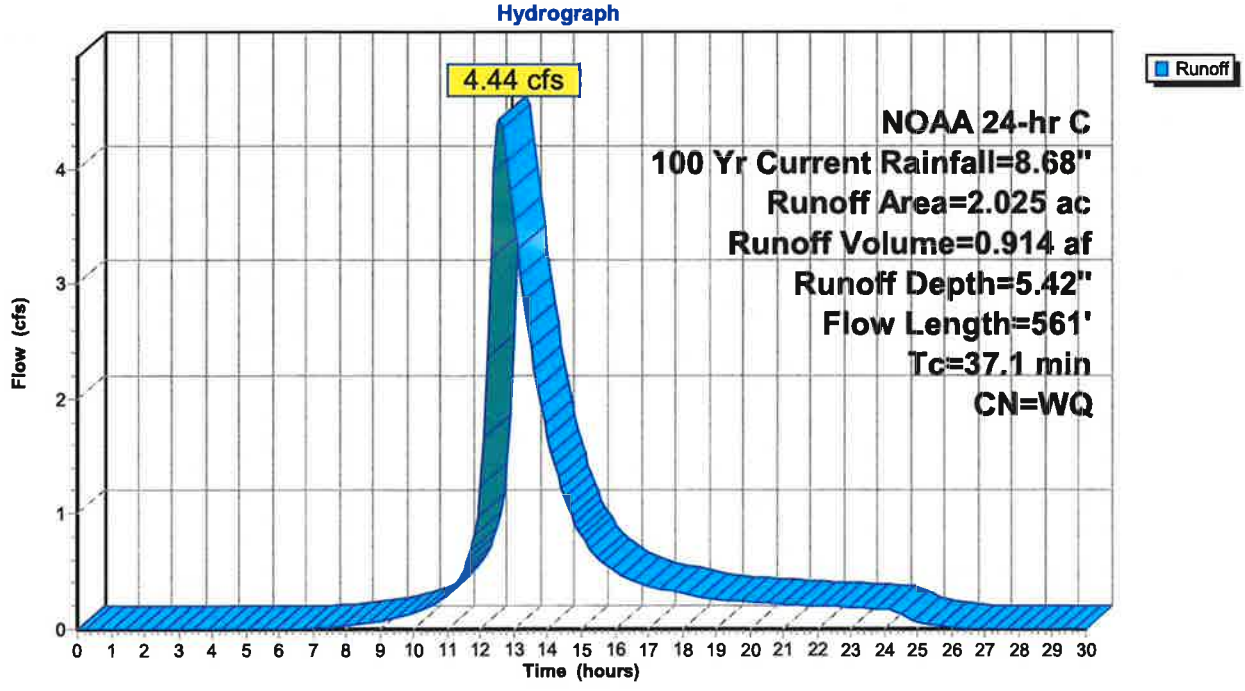
Runoff = 4.44 cfs @ 12.57 hrs, Volume= 0.914 af, Depth= 5.42"
Routed to Link 13L : West Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 100 Yr Current Rainfall=8.68"

Area (ac)	CN	Description
0.872	77	Woods, Good, HSG D
1.153	70	Woods, Good, HSG C
2.025		Weighted Average
2.025		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0230	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
2.4	149	0.0418	1.02		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.7	312	0.0050	0.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
37.1	561	Total			

Subcatchment 12S: DA-2 Per



Summary for Subcatchment 14S: DA-1 Imp

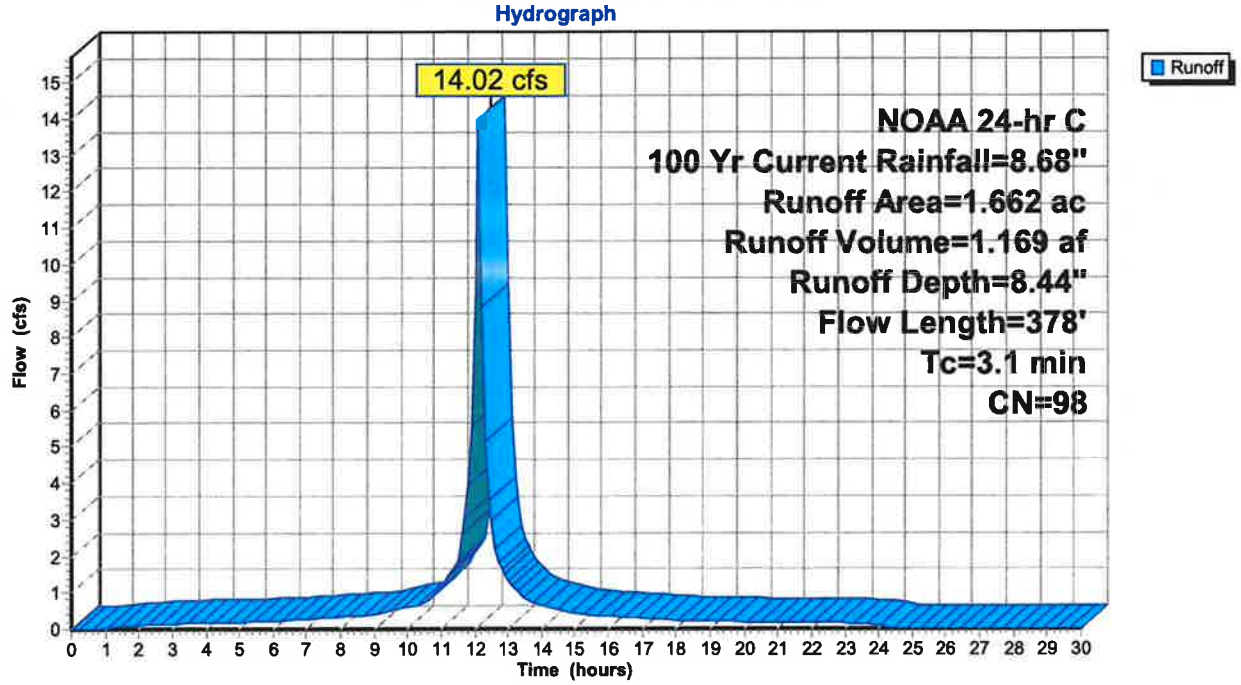
Runoff = 14.02 cfs @ 12.10 hrs, Volume= 1.169 af, Depth= 8.44"
Routed to Pond 16P : Aquabox System

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 100 Yr Current Rainfall=8.68"

Area (ac)	CN	Description
1.662	98	Paved parking, HSG A
1.662		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	100	0.0062	0.87		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
0.6	94	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	184	0.0075	5.15	9.10	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
3.1	378	Total			

Subcatchment 14S: DA-1 Imp



Summary for Subcatchment 15S: DA-1 Per

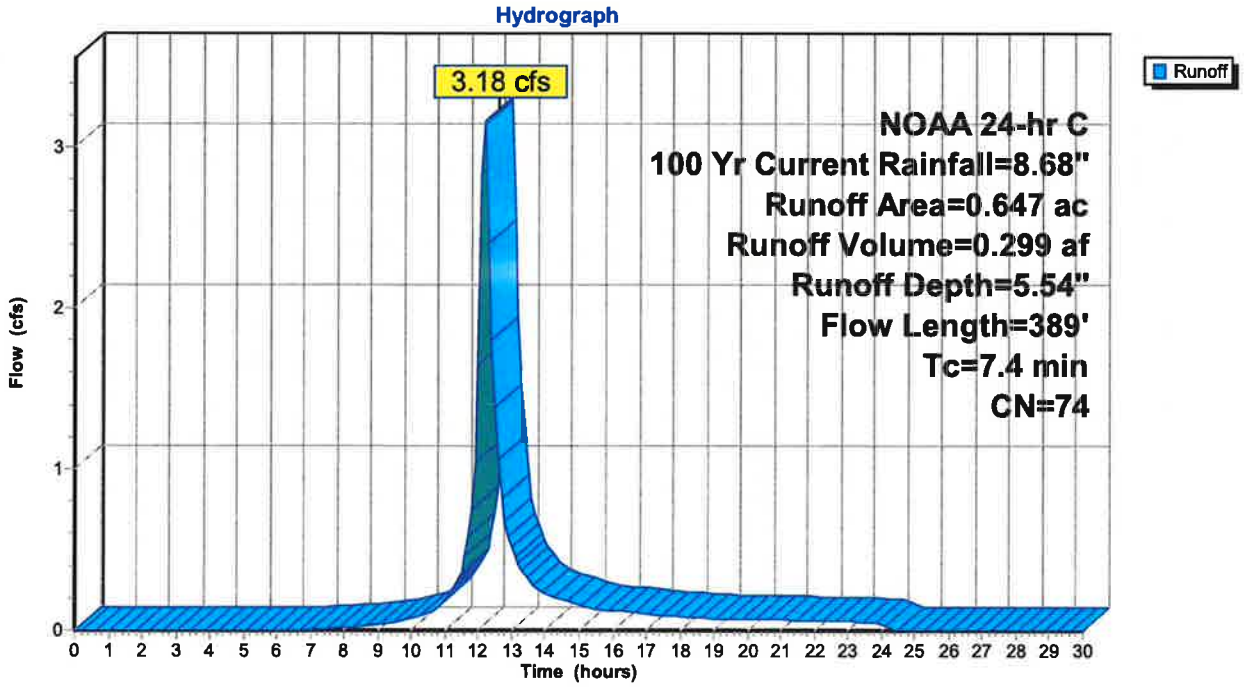
Runoff = 3.18 cfs @ 12.18 hrs, Volume= 0.299 af, Depth= 5.54"
Routed to Pond 16P : Aquabox System

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 100 Yr Current Rainfall=8.68"

Area (ac)	CN	Description
0.647	74	>75% Grass cover, Good, HSG C
0.647		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	79	0.0380	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
0.6	126	0.0320	3.63		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	184	0.0075	5.15	9.10	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
7.4	389	Total			

Subcatchment 15S: DA-1 Per



Summary for Subcatchment 17S: DA-3 Imp

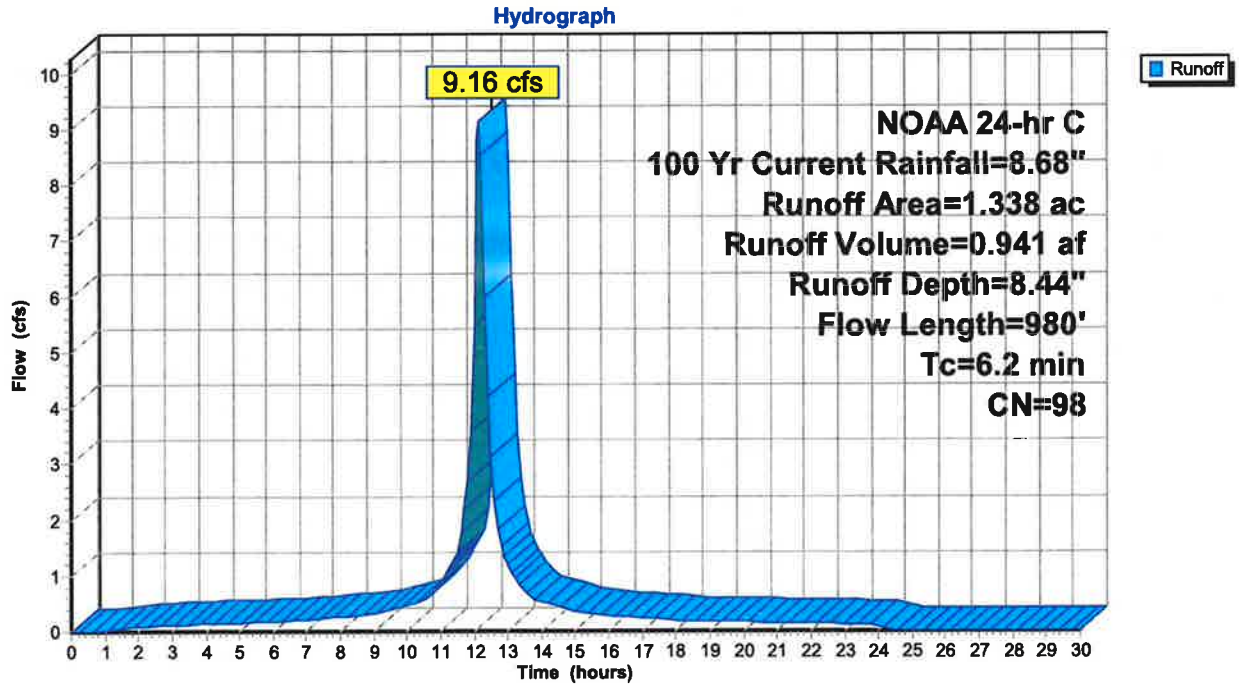
Runoff = 9.16 cfs @ 12.14 hrs, Volume= 0.941 af, Depth= 8.44"
Routed to Pond 19P : Infiltration Basin 1

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 100 Yr Current Rainfall=8.68"

Area (ac)	CN	Description
1.338	98	Paved parking, HSG A
1.338		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	49	0.0136	1.04		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
4.9	780	0.0170	2.65		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	151	0.0084	5.45	9.63	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
6.2	980	Total			

Subcatchment 17S: DA-3 Imp



Summary for Subcatchment 18S: DA-3 Per

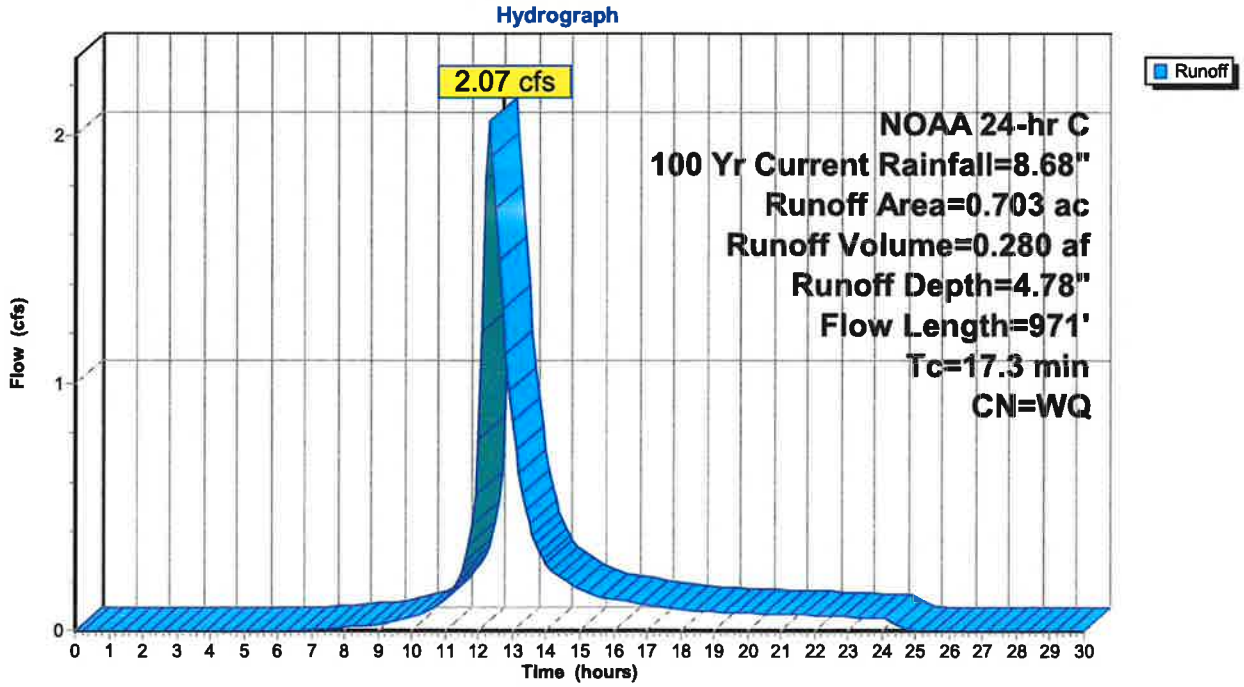
Runoff = 2.07 cfs @ 12.31 hrs, Volume= 0.280 af, Depth= 4.78"
Routed to Pond 19P : Infiltration Basin 1

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 100 Yr Current Rainfall=8.68"

Area (ac)	CN	Description
0.130	39	>75% Grass cover, Good, HSG A
0.573	74	>75% Grass cover, Good, HSG C
0.703		Weighted Average
0.703		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	100	0.0110	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
4.5	720	0.0170	2.65		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	151	0.0084	5.45	9.63	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
17.3	971	Total			

Subcatchment 18S: DA-3 Per



Summary for Subcatchment 20S: DA-4 Imp

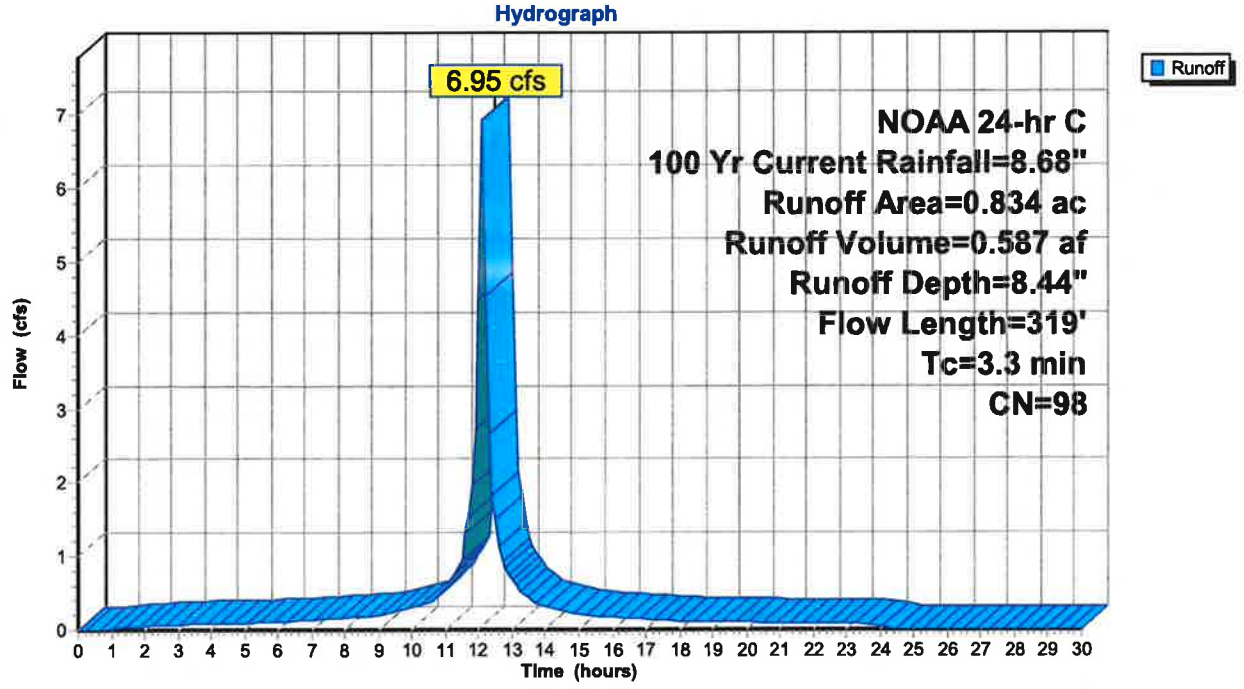
Runoff = 6.95 cfs @ 12.10 hrs, Volume= 0.587 af, Depth= 8.44"
Routed to Link 22L : South Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 100 Yr Current Rainfall=8.68"

Area (ac)	CN	Description
0.834	98	Paved parking, HSG A
0.834		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0110	1.10		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
1.7	181	0.0076	1.77		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	38	0.0200	4.31	4.39	**Pipe Channel,** 15.0" x 12.0", R=12.0"/20.0" Pipe Arch Area= 1.0 sf Perim= 3.6' r= n= 0.021
3.3	319	Total			

Subcatchment 20S: DA-4 Imp



Summary for Subcatchment 21S: DA-4 Per

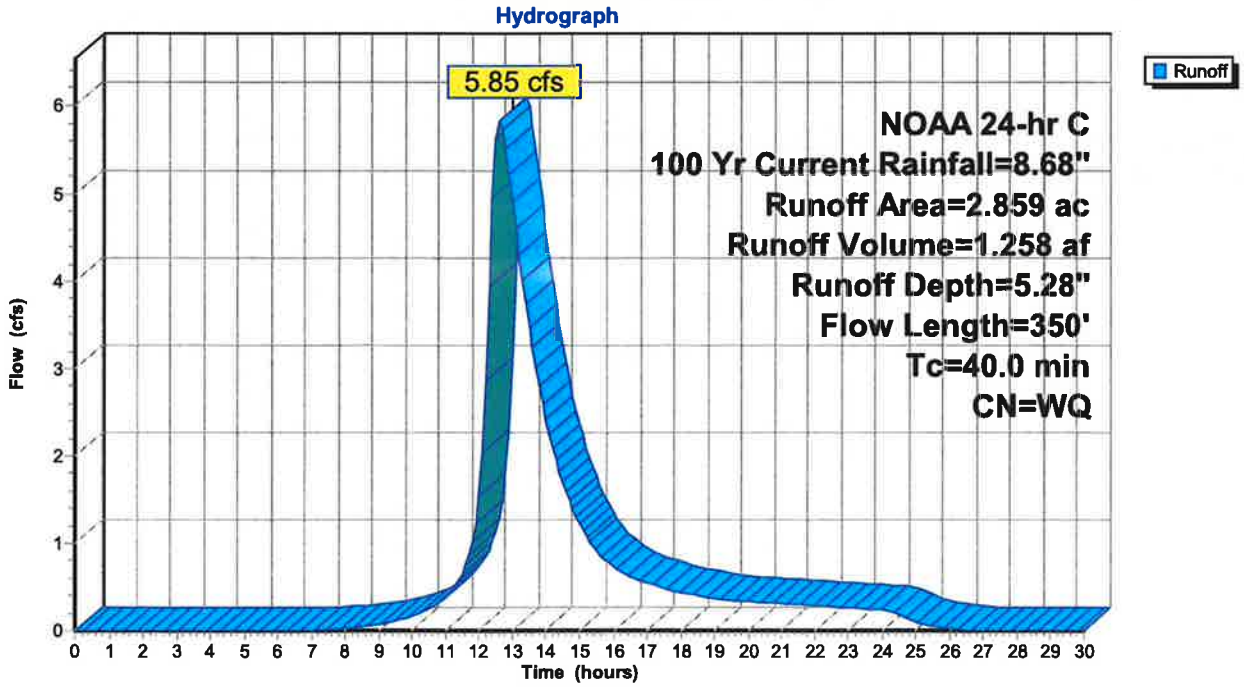
Runoff = 5.85 cfs @ 12.62 hrs, Volume= 1.258 af, Depth= 5.28"
Routed to Link 22L : South Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 100 Yr Current Rainfall=8.68"

Area (ac)	CN	Description
1.896	70	Woods, Good, HSG C
0.487	77	Woods, Good, HSG D
0.476	74	>75% Grass cover, Good, HSG C
2.859		Weighted Average
2.859		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.5	100	0.0087	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
10.5	250	0.0063	0.40		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
40.0	350	Total			

Subcatchment 21S: DA-4 Per



Summary for Pond 10P: Ex Low Point

Inflow Area = 0.617 ac, 0.00% Impervious, Inflow Depth = 0.76" for 100 Yr Current event
Inflow = 0.22 cfs @ 12.22 hrs, Volume= 0.039 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 13L : West Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Peak Elev= 49.45' @ 24.50 hrs Surf.Area= 2,679 sf Storage= 1,712 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

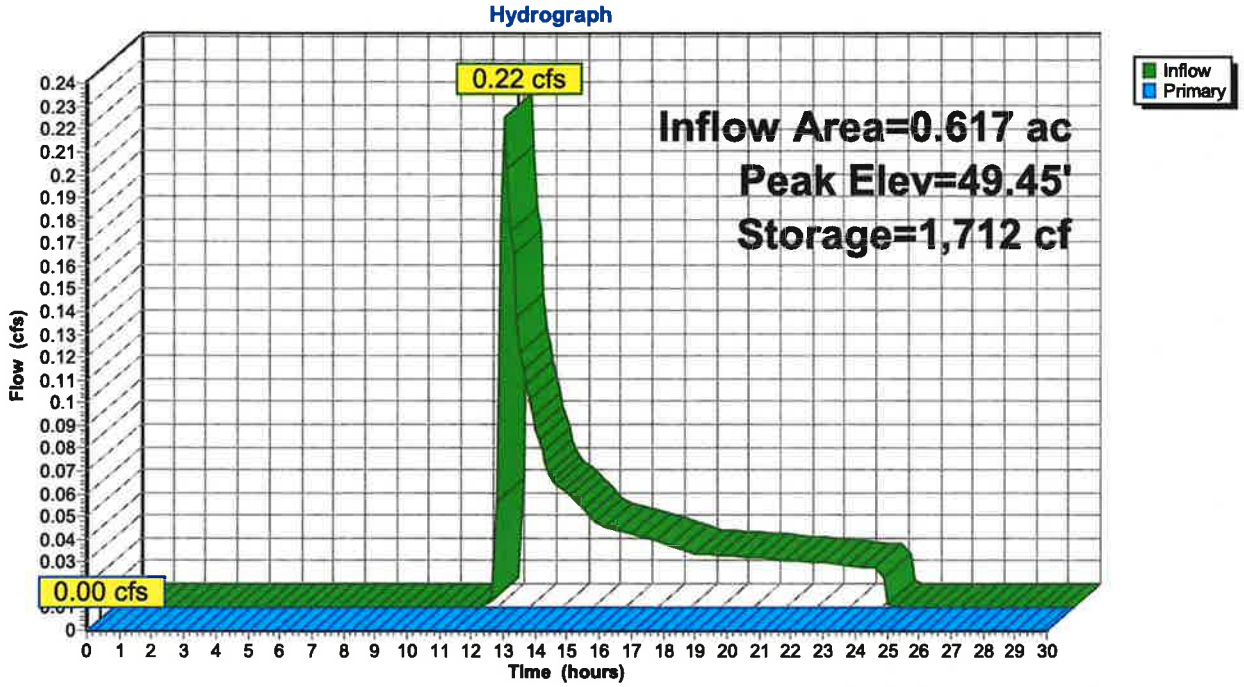
Volume	Invert	Avail.Storage	Storage Description
#1	48.00'	8,383 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
48.00	295	0	0
49.00	1,332	814	814
50.00	4,340	2,836	3,650
51.00	5,126	4,733	8,383

Device	Routing	Invert	Outlet Devices
#1	Primary	50.00'	**90.0' long x 10.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=48.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 10P: Ex Low Point



Summary for Pond 16P: Aquabox System

Inflow Area = 2.309 ac, 71.98% Impervious, Inflow Depth = 7.63" for 100 Yr Current event
Inflow = 16.87 cfs @ 12.11 hrs, Volume= 1.468 af
Outflow = 3.63 cfs @ 12.90 hrs, Volume= 0.994 af, Atten= 78%, Lag= 47.7 min
Primary = 3.63 cfs @ 12.90 hrs, Volume= 0.994 af
Routed to Pond 19P : Infiltration Basin 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Peak Elev= 44.44' @ 12.62 hrs Surf.Area= 16,068 sf Storage= 40,010 cf

Plug-Flow detention time= 315.1 min calculated for 0.991 af (68% of inflow)
Center-of-Mass det. time= 215.6 min (972.3 - 756.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	41.50'	7,088 cf	**63.52'W x 252.98'L x 3.62'H Field A** 58,243 cf Overall - 40,524 cf Embedded = 17,719 cf x 40.0% Voids
#2A	42.00'	38,862 cf	**ADS Aquabox 1** x 2550 Inside #1 Inside= 29.5"W x 31.5"H => 6.19 sf x 2.46'L = 15.2 cf Outside= 29.5"W x 31.5"H => 6.46 sf x 2.46'L = 15.9 cf 2550 Chambers in 25 Rows
		45,950 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	42.63'	**24.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.43 cfs @ 12.90 hrs HW=44.39' TW=44.29' (Dynamic Tailwater)
↑**1=Orifice/Grate** (Orifice Controls 4.43 cfs @ 1.51 fps)

Pond 16P: Aquabox System - Chamber Wizard Field A

Chamber Model = ADS Aquabox 1 (ADS Aquabox)
Inside= 29.5"W x 31.5"H => 6.19 sf x 2.46'L = 15.2 cf
Outside= 29.5"W x 31.5"H => 6.46 sf x 2.46'L = 15.9 cf

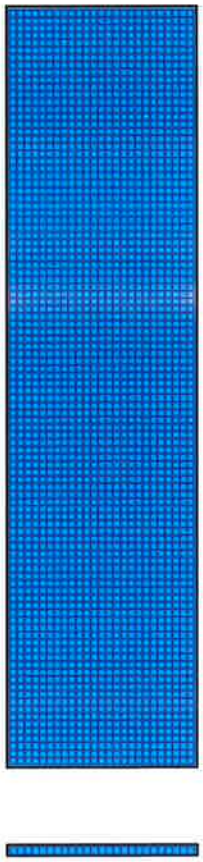
102 Chambers/Row x 2.46' Long = 250.98' Row Length +12.0" End Stone x 2 = 252.98' Base Length
25 Rows x 29.5" Wide + 12.0" Side Stone x 2 = 63.52' Base Width
6.0" Stone Base + 31.5" Chamber Height + 6.0" Stone Cover = 3.62' Field Height

2,550 Chambers x 15.2 cf = 38,862.1 cf Chamber Storage
2,550 Chambers x 15.9 cf = 40,523.6 cf Displacement

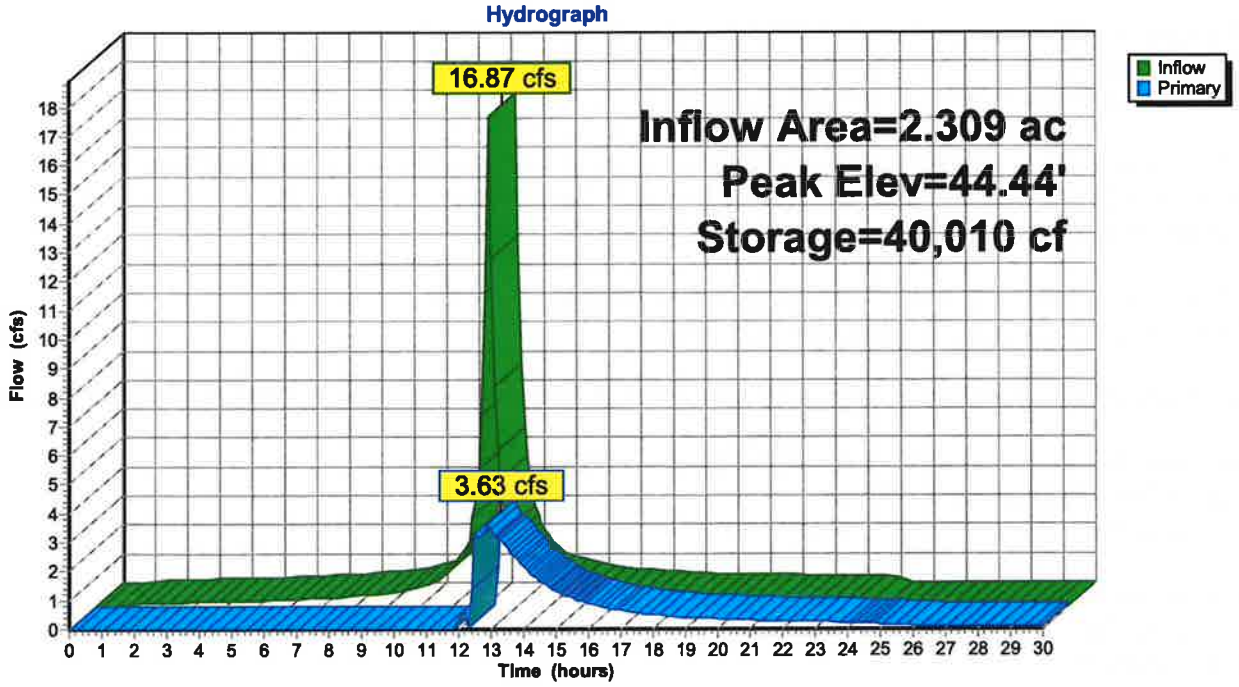
58,243.0 cf Field - 40,523.6 cf Chambers = 17,719.4 cf Stone x 40.0% Voids = 7,087.8 cf Stone Storage

Chamber Storage + Stone Storage = 45,949.9 cf = 1.055 af
Overall Storage Efficiency = 78.9%
Overall System Size = 252.98' x 63.52' x 3.62'

2,550 Chambers
2,157.1 cy Field
656.3 cy Stone



Pond 16P: Aquabox System



Summary for Pond 19P: Infiltration Basin 1

Inflow Area = 4.350 ac, 68.97% Impervious, Inflow Depth > 6.11" for 100 Yr Current event
Inflow = 11.87 cfs @ 12.18 hrs, Volume= 2.215 af
Outflow = 7.60 cfs @ 12.56 hrs, Volume= 2.050 af, Atten= 36%, Lag= 22.7 min
Primary = 7.60 cfs @ 12.56 hrs, Volume= 2.050 af
Routed to Link 22L : South Wetlands
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 22L : South Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Peak Elev= 44.40' @ 12.56 hrs Surf.Area= 9,223 sf Storage= 17,420 cf

Plug-Flow detention time= 115.5 min calculated for 2.050 af (93% of inflow)
Center-of-Mass det. time= 67.2 min (926.4 - 859.2)

Volume	Invert	Avail.Storage	Storage Description
#1	42.00'	34,406 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

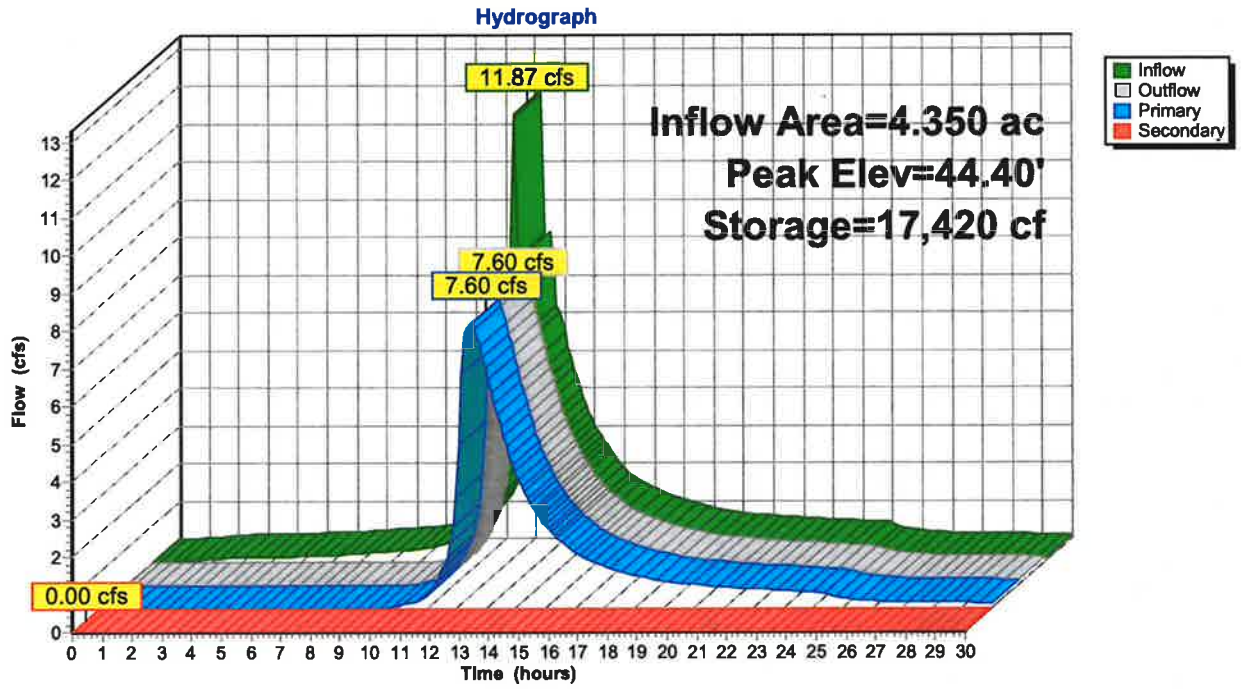
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
42.00	5,375	0	0
43.00	6,931	6,153	6,153
44.00	8,555	7,743	13,896
45.00	10,241	9,398	23,294
46.00	11,983	11,112	34,406

Device	Routing	Invert	Outlet Devices
#1	Secondary	45.50'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	44.75'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	43.25'	**2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Primary	42.87'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.56 cfs @ 12.56 hrs HW=44.39' TW=0.00' (Dynamic Tailwater)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)
—**3=Sharp-Crested Rectangular Weir** (Weir Controls 7.07 cfs @ 3.50 fps)
└—**4=Orifice/Grate** (Orifice Controls 0.49 cfs @ 5.61 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 19P: Infiltration Basin 1

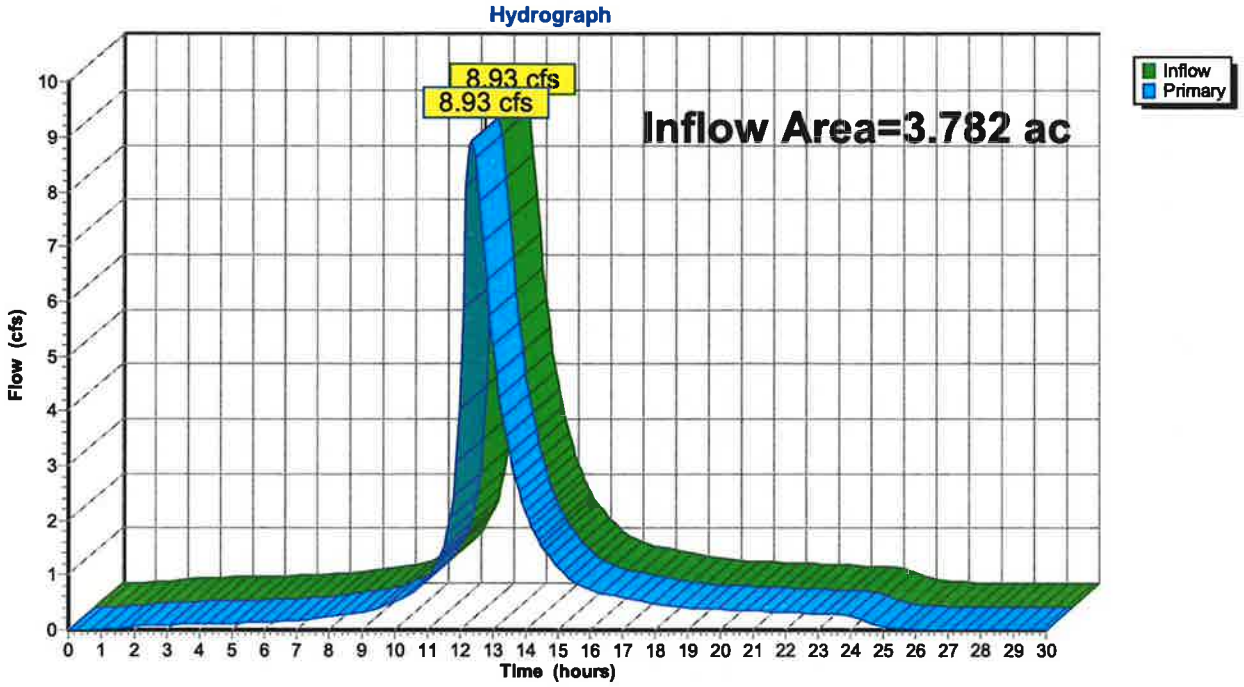


Summary for Link 13L: West Wetlands

Inflow Area = 3.782 ac, 30.14% Impervious, Inflow Depth = 5.45" for 100 Yr Current event
Inflow = 8.93 cfs @ 12.35 hrs, Volume= 1.716 af
Primary = 8.93 cfs @ 12.35 hrs, Volume= 1.716 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs

Link 13L: West Wetlands

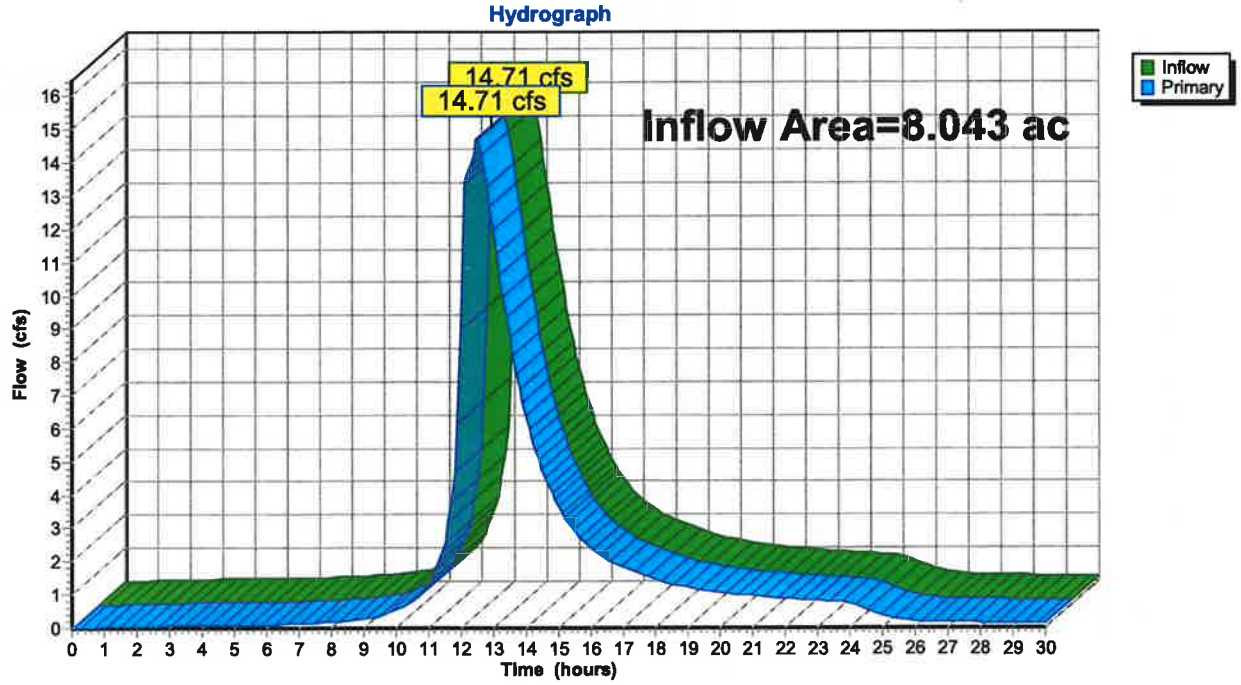


Summary for Link 22L: South Wetlands

Inflow Area = 8.043 ac, 47.67% Impervious, Inflow Depth > 5.81" for 100 Yr Current event
Inflow = 14.71 cfs @ 12.53 hrs, Volume= 3.894 af
Primary = 14.71 cfs @ 12.53 hrs, Volume= 3.894 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs

Link 22L: South Wetlands



Time span=0.00-30.00 hrs, dt=0.10 hrs, 301 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 9S: X-DA1 Runoff Area=0.617 ac 0.00% Impervious Runoff Depth=1.62"
Flow Length=218' Slope=0.0388 '/' Tc=3.7 min CN=WQ Runoff=0.76 cfs 0.083 af

Subcatchment 11S: DA-2 Imp Runoff Area=1.140 ac 100.00% Impervious Runoff Depth=10.78"
Flow Length=548' Tc=14.1 min CN=98 Runoff=7.49 cfs 1.024 af

Subcatchment 12S: DA-2 Per Runoff Area=2.025 ac 0.00% Impervious Runoff Depth=7.56"
Flow Length=561' Tc=37.1 min CN=WQ Runoff=6.19 cfs 1.276 af

Subcatchment 14S: DA-1 Imp Runoff Area=1.662 ac 100.00% Impervious Runoff Depth=10.78"
Flow Length=378' Tc=3.1 min CN=98 Runoff=17.82 cfs 1.493 af

Subcatchment 15S: DA-1 Per Runoff Area=0.647 ac 0.00% Impervious Runoff Depth=7.70"
Flow Length=389' Tc=7.4 min CN=74 Runoff=4.36 cfs 0.415 af

Subcatchment 17S: DA-3 Imp Runoff Area=1.338 ac 100.00% Impervious Runoff Depth=10.78"
Flow Length=980' Tc=6.2 min CN=98 Runoff=11.64 cfs 1.202 af

Subcatchment 18S: DA-3 Per Runoff Area=0.703 ac 0.00% Impervious Runoff Depth=6.76"
Flow Length=971' Tc=17.3 min CN=WQ Runoff=2.92 cfs 0.396 af

Subcatchment 20S: DA-4 Imp Runoff Area=0.834 ac 100.00% Impervious Runoff Depth=10.78"
Flow Length=319' Tc=3.3 min CN=98 Runoff=8.83 cfs 0.749 af

Subcatchment 21S: DA-4 Per Runoff Area=2.859 ac 0.00% Impervious Runoff Depth=7.40"
Flow Length=350' Tc=40.0 min CN=WQ Runoff=8.20 cfs 1.763 af

Pond 10P: Ex Low Point Peak Elev=50.00' Storage=3,629 cf Inflow=0.76 cfs 0.083 af
Outflow=0.00 cfs 0.000 af

Pond 16P: Aquabox System Peak Elev=45.03' Storage=45,332 cf Inflow=21.77 cfs 1.908 af
Outflow=6.20 cfs 1.431 af

Pond 19P: Infiltration Basin 1 Peak Elev=44.89' Storage=22,165 cf Inflow=19.82 cfs 3.029 af
Primary=14.50 cfs 2.861 af Secondary=0.00 cfs 0.000 af Outflow=14.50 cfs 2.861 af

Link 13L: West Wetlands Inflow=11.79 cfs 2.299 af
Primary=11.79 cfs 2.299 af

Link 22L: South Wetlands Inflow=23.52 cfs 5.374 af
Primary=23.52 cfs 5.374 af

Total Runoff Area = 11.825 ac Runoff Volume = 8.401 af Average Runoff Depth = 8.53"
57.94% Pervious = 6.851 ac 42.06% Impervious = 4.974 ac

Summary for Subcatchment 9S: X-DA1

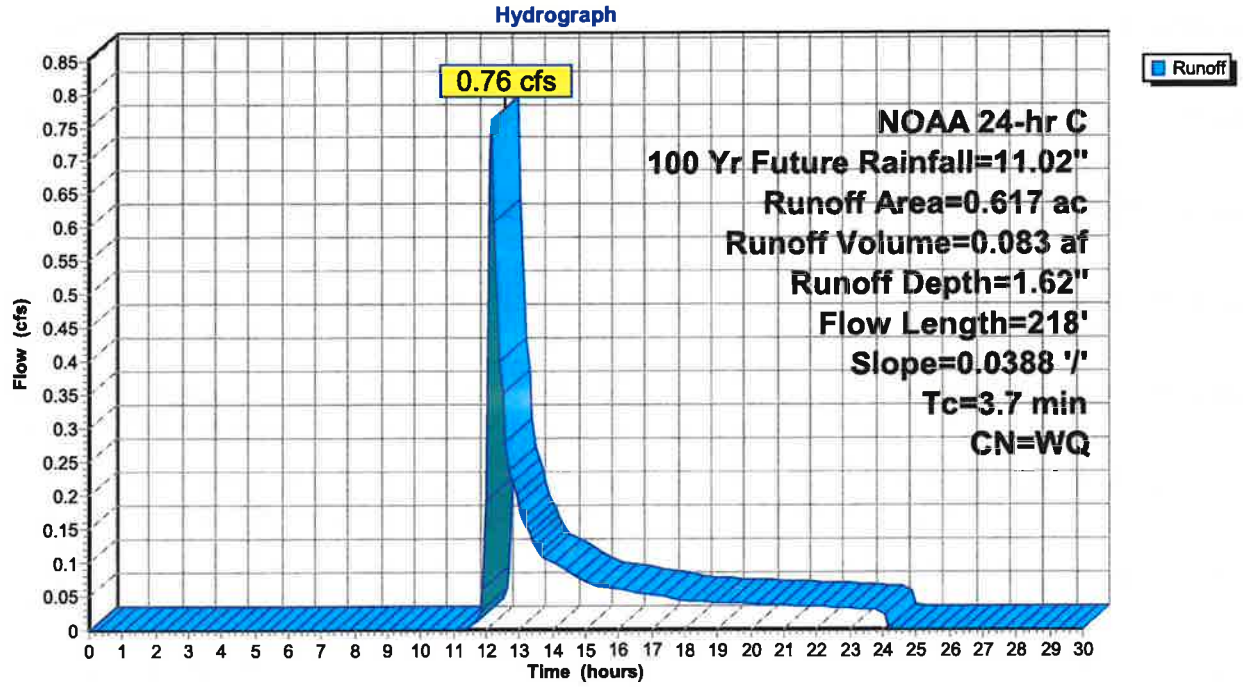
Runoff = 0.76 cfs @ 12.15 hrs, Volume= 0.083 af, Depth= 1.62"
Routed to Pond 10P : Ex Low Point

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 100 Yr Future Rainfall=11.02"

Area (ac)	CN	Description
0.492	30	Woods, Good, HSG A
0.125	39	>75% Grass cover, Good, HSG A
0.617		Weighted Average
0.617		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	218	0.0388	0.98		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps

Subcatchment 9S: X-DA1



Summary for Subcatchment 11S: DA-2 Imp

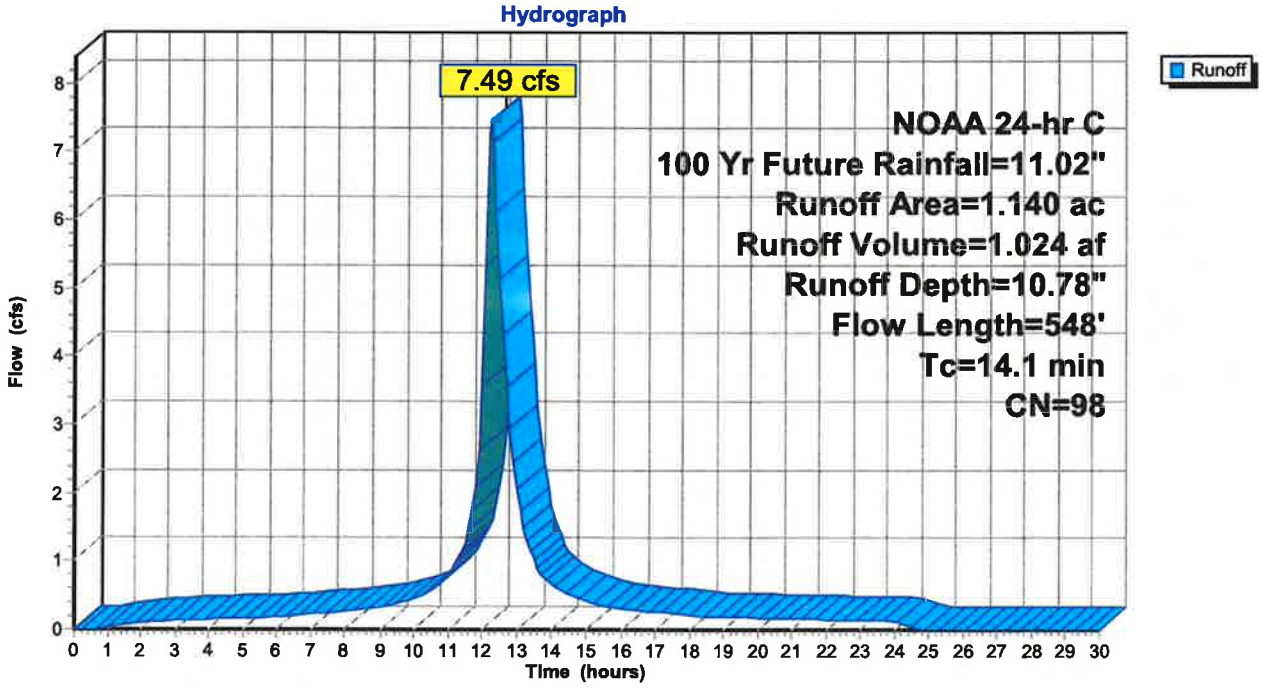
Runoff = 7.49 cfs @ 12.24 hrs, Volume= 1.024 af, Depth=10.78"
Routed to Link 13L : West Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 100 Yr Future Rainfall=11.02"

Area (ac)	CN	Description
1.140	98	Paved parking, HSG A
1.140		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	100	0.0039	0.73		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
1.1	185	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
10.7	263	0.0067	0.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.1	548	Total			

Subcatchment 11S: DA-2 Imp



Pond 16P: Aquabox System - Chamber Wizard Field A

Chamber Model = ADS Aquabox 1 (ADS Aquabox)
Inside= 29.5"W x 31.5"H => 6.19 sf x 2.46'L = 15.2 cf
Outside= 29.5"W x 31.5"H => 6.46 sf x 2.46'L = 15.9 cf

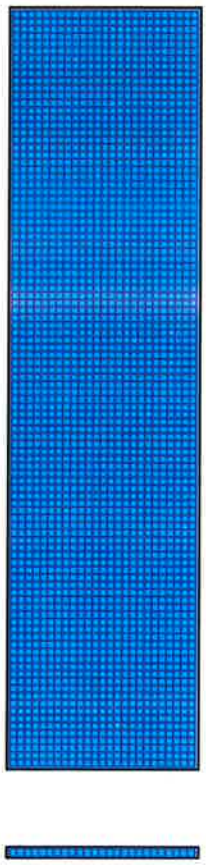
102 Chambers/Row x 2.46' Long = 250.98' Row Length +12.0" End Stone x 2 = 252.98' Base Length
25 Rows x 29.5" Wide + 12.0" Side Stone x 2 = 63.52' Base Width
6.0" Stone Base + 31.5" Chamber Height + 6.0" Stone Cover = 3.62' Field Height

2,550 Chambers x 15.2 cf = 38,862.1 cf Chamber Storage
2,550 Chambers x 15.9 cf = 40,523.6 cf Displacement

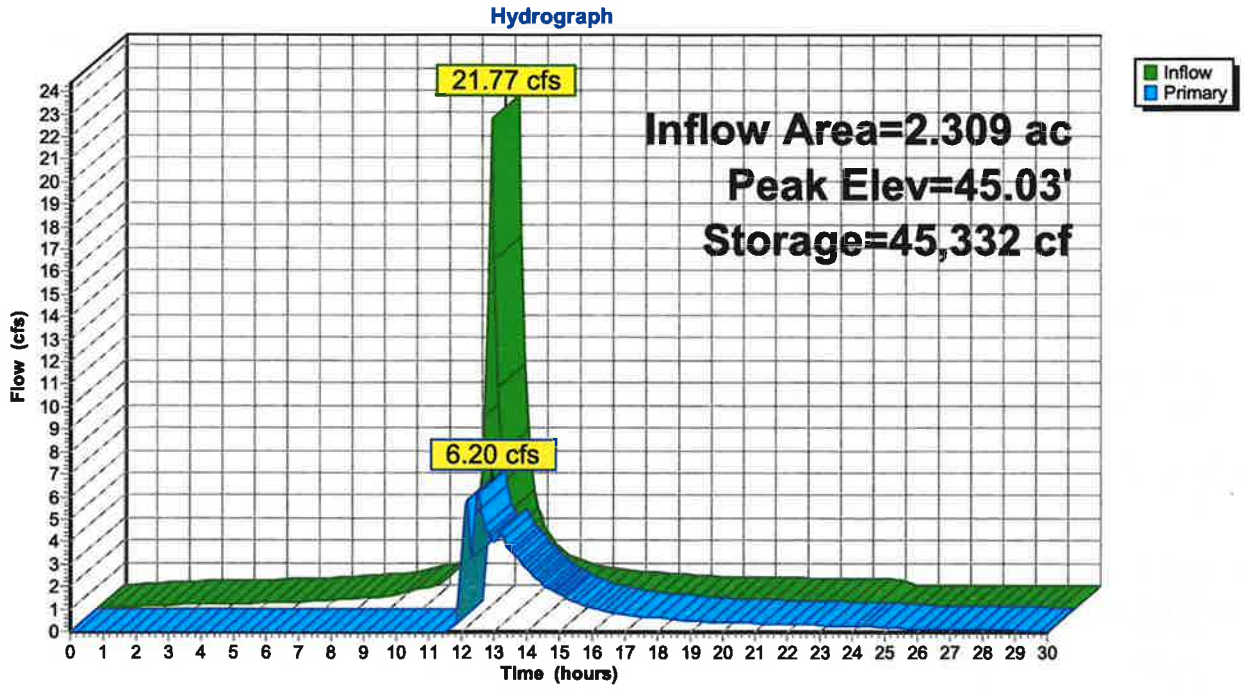
58,243.0 cf Field - 40,523.6 cf Chambers = 17,719.4 cf Stone x 40.0% Voids = 7,087.8 cf Stone Storage

Chamber Storage + Stone Storage = 45,949.9 cf = 1.055 af
Overall Storage Efficiency = 78.9%
Overall System Size = 252.98' x 63.52' x 3.62'

2,550 Chambers
2,157.1 cy Field
656.3 cy Stone



Pond 16P: Aquabox System



Summary for Pond 19P: Infiltration Basin 1

Inflow Area = 4.350 ac, 68.97% Impervious, Inflow Depth > 8.36" for 100 Yr Future event
Inflow = 19.82 cfs @ 12.16 hrs, Volume= 3.029 af
Outflow = 14.50 cfs @ 12.34 hrs, Volume= 2.861 af, Atten= 27%, Lag= 10.6 min
Primary = 14.50 cfs @ 12.34 hrs, Volume= 2.861 af
Routed to Link 22L : South Wetlands
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 22L : South Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Peak Elev= 44.89' @ 12.34 hrs Surf.Area= 10,053 sf Storage= 22,165 cf

Plug-Flow detention time= 93.0 min calculated for 2.861 af (94% of inflow)
Center-of-Mass det. time= 56.4 min (901.9 - 845.5)

Volume	Invert	Avail.Storage	Storage Description
#1	42.00'	34,406 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

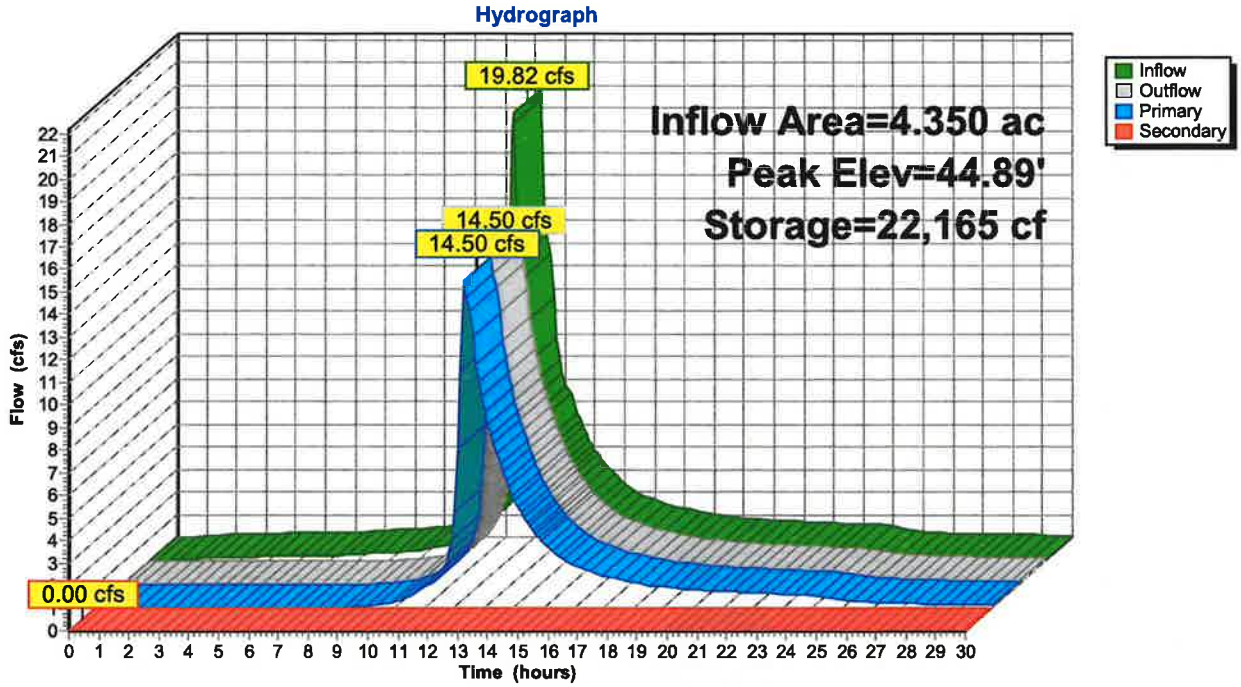
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
42.00	5,375	0	0
43.00	6,931	6,153	6,153
44.00	8,555	7,743	13,896
45.00	10,241	9,398	23,294
46.00	11,983	11,112	34,406

Device	Routing	Invert	Outlet Devices
#1	Secondary	45.50'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	44.75'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	43.25'	**2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Primary	42.87'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=14.00 cfs @ 12.34 hrs HW=44.87' TW=0.00' (Dynamic Tailwater)
- **2=Orifice/Grate** (Weir Controls 2.14 cfs @ 1.13 fps)
- **3=Sharp-Crested Rectangular Weir** (Weir Controls 11.29 cfs @ 4.16 fps)
- **4=Orifice/Grate** (Orifice Controls 0.57 cfs @ 6.52 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.00' TW=0.00' (Dynamic Tailwater)
- **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 19P: Infiltration Basin 1

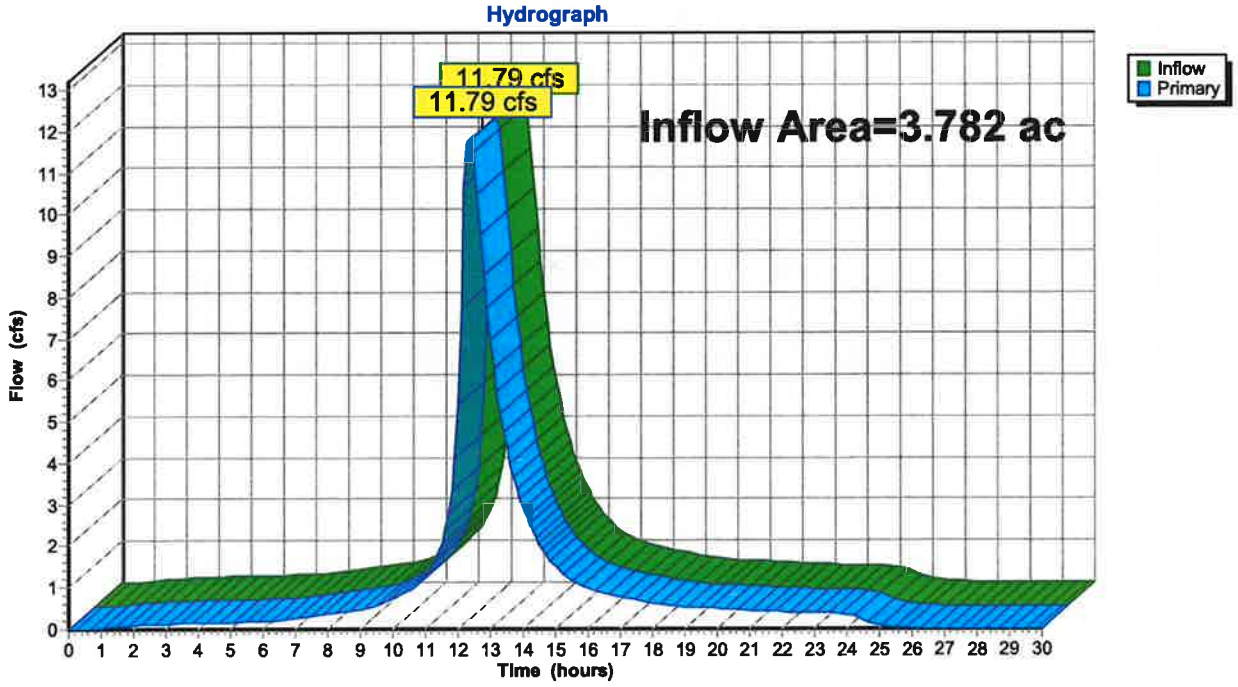


Summary for Link 13L: West Wetlands

Inflow Area = 3.782 ac, 30.14% Impervious, Inflow Depth = 7.30" for 100 Yr Future event
Inflow = 11.79 cfs @ 12.35 hrs, Volume= 2.299 af
Primary = 11.79 cfs @ 12.35 hrs, Volume= 2.299 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs

Link 13L: West Wetlands

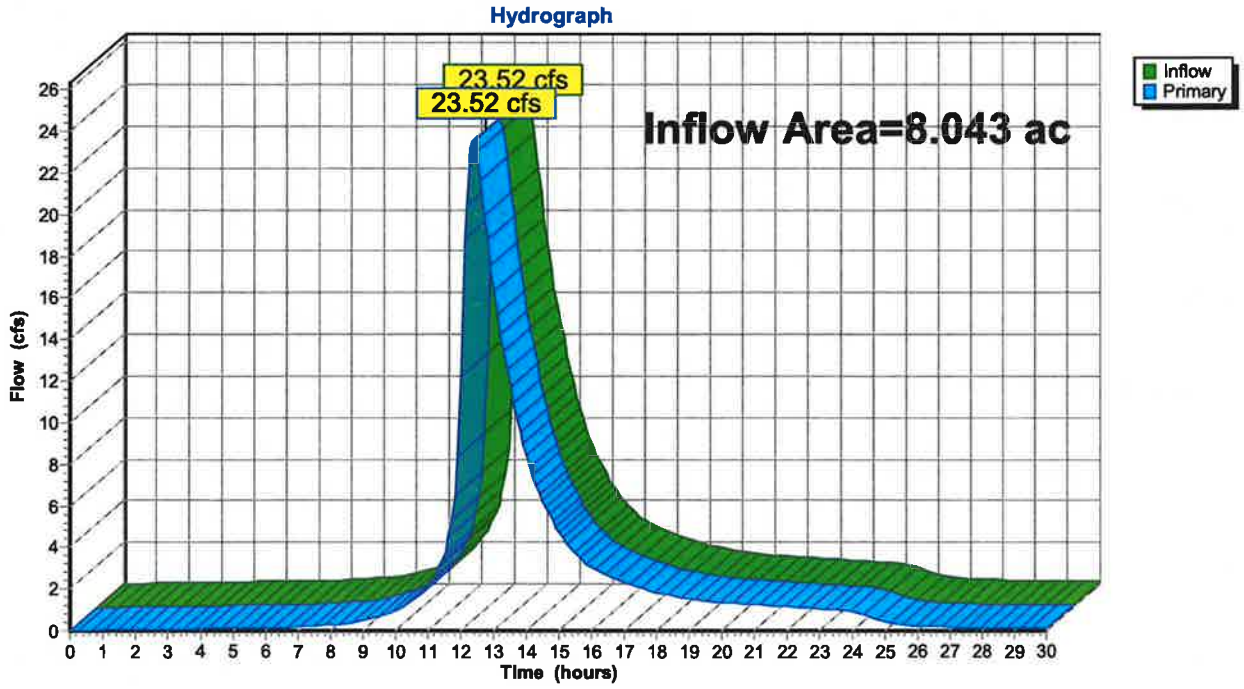


Summary for Link 22L: South Wetlands

Inflow Area = 8.043 ac, 47.67% Impervious, Inflow Depth > 8.02" for 100 Yr Future event
Inflow = 23.52 cfs @ 12.34 hrs, Volume= 5.374 af
Primary = 23.52 cfs @ 12.34 hrs, Volume= 5.374 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs

Link 22L: South Wetlands



Time span=0.00-30.00 hrs, dt=0.10 hrs, 301 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 9S: X-DA1 Runoff Area=0.617 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=218' Slope=0.0388 '/' Tc=3.7 min CN=WQ Runoff=0.00 cfs 0.000 af

Subcatchment 11S: DA-2 Imp Runoff Area=1.140 ac 100.00% Impervious Runoff Depth=1.03"
Flow Length=548' Tc=14.1 min CN=98 Runoff=1.74 cfs 0.098 af

Subcatchment 12S: DA-2 Per Runoff Area=2.025 ac 0.00% Impervious Runoff Depth=0.07"
Flow Length=561' Tc=37.1 min CN=WQ Runoff=0.10 cfs 0.012 af

Subcatchment 14S: DA-1 Imp Runoff Area=1.662 ac 100.00% Impervious Runoff Depth=1.03"
Flow Length=378' Tc=3.1 min CN=98 Runoff=4.43 cfs 0.143 af

Subcatchment 15S: DA-1 Per Runoff Area=0.647 ac 0.00% Impervious Runoff Depth=0.07"
Flow Length=389' Tc=7.4 min CN=74 Runoff=0.07 cfs 0.004 af

Subcatchment 17S: DA-3 Imp Runoff Area=1.338 ac 100.00% Impervious Runoff Depth=1.03"
Flow Length=980' Tc=6.2 min CN=98 Runoff=2.99 cfs 0.115 af

Subcatchment 18S: DA-3 Per Runoff Area=0.703 ac 0.00% Impervious Runoff Depth=0.06"
Flow Length=971' Tc=17.3 min CN=WQ Runoff=0.04 cfs 0.004 af

Subcatchment 20S: DA-4 Imp Runoff Area=0.834 ac 100.00% Impervious Runoff Depth=1.03"
Flow Length=319' Tc=3.3 min CN=98 Runoff=2.21 cfs 0.072 af

Subcatchment 21S: DA-4 Per Runoff Area=2.859 ac 0.00% Impervious Runoff Depth=0.05"
Flow Length=350' Tc=40.0 min CN=WQ Runoff=0.11 cfs 0.013 af

Pond 10P: Ex Low Point Peak Elev=48.00' Storage=0 cf Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Pond 16P: Aquabox System Peak Elev=42.21' Storage=6,415 cf Inflow=4.44 cfs 0.147 af
Outflow=0.00 cfs 0.000 af

Pond 19P: Infiltration Basin 1 Peak Elev=42.86' Storage=5,178 cf Inflow=2.99 cfs 0.119 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Link 13L: West Wetlands Inflow=1.75 cfs 0.110 af
Primary=1.75 cfs 0.110 af

Link 22L: South Wetlands Inflow=2.21 cfs 0.085 af
Primary=2.21 cfs 0.085 af

Total Runoff Area = 11.825 ac Runoff Volume = 0.461 af Average Runoff Depth = 0.47"
57.94% Pervious = 6.851 ac 42.06% Impervious = 4.974 ac

Summary for Subcatchment 9S: X-DA1

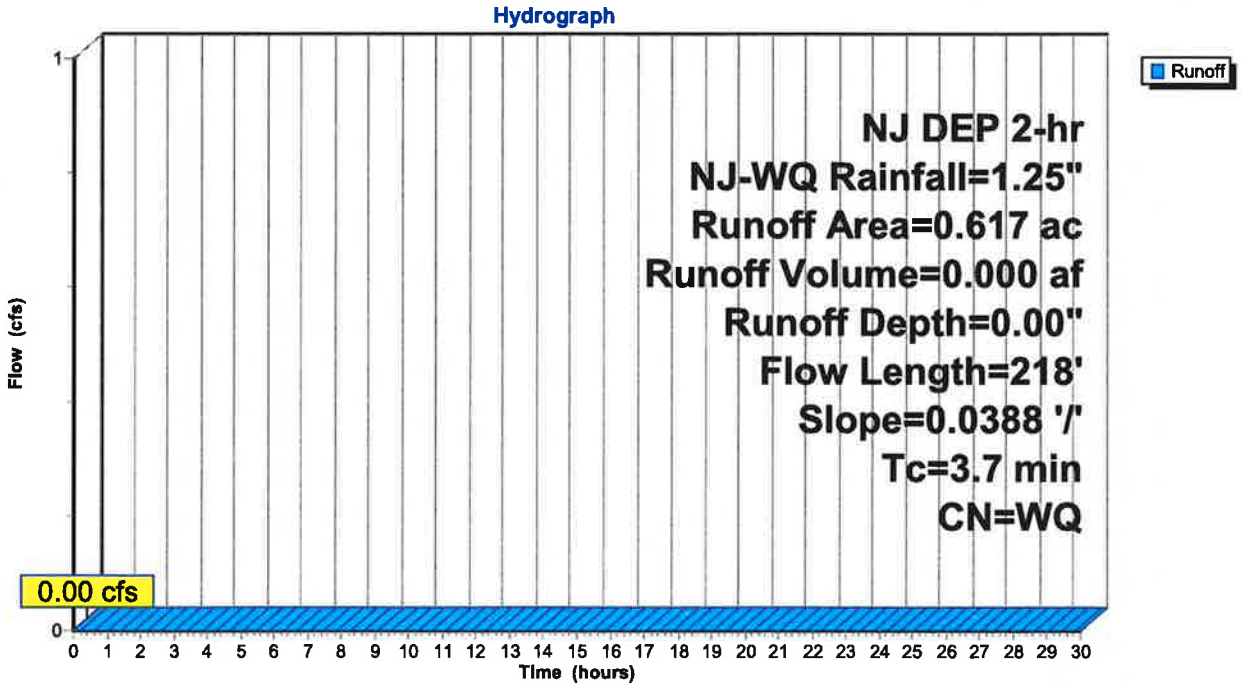
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond 10P : Ex Low Point

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NJ DEP 2-hr NJ-WQ Rainfall=1.25"

Area (ac)	CN	Description
0.492	30	Woods, Good, HSG A
0.125	39	>75% Grass cover, Good, HSG A
0.617		Weighted Average
0.617		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	218	0.0388	0.98		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps

Subcatchment 9S: X-DA1



Summary for Subcatchment 11S: DA-2 Imp

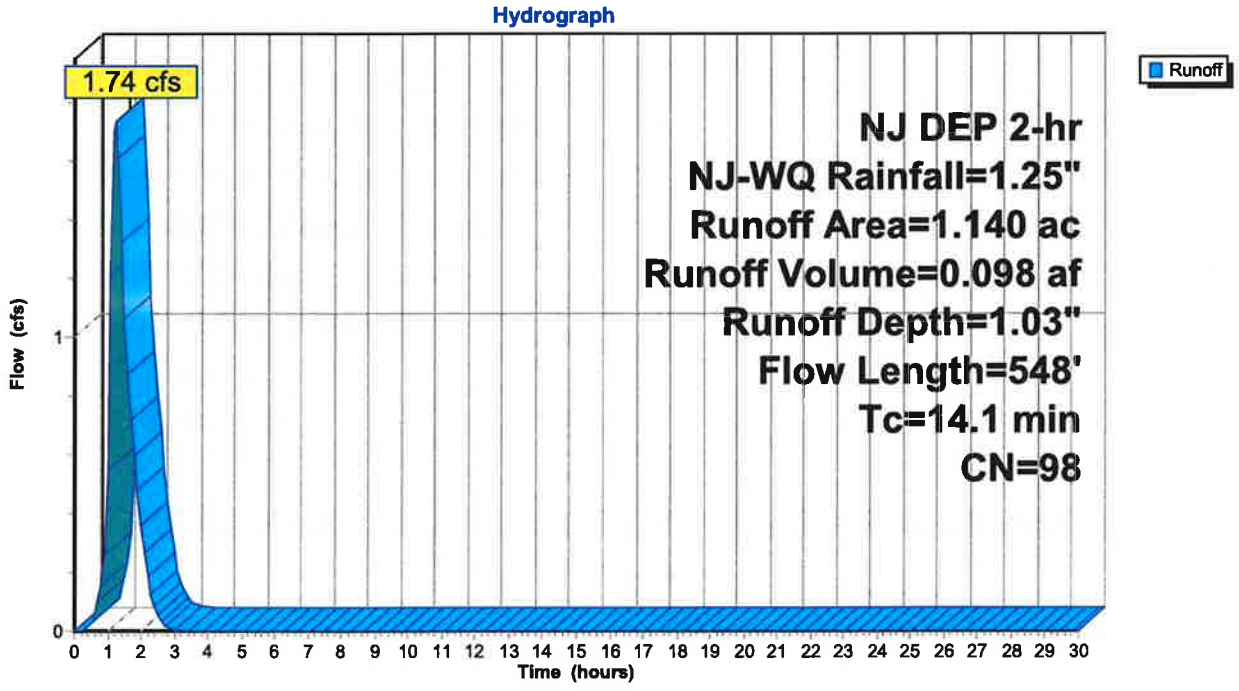
Runoff = 1.74 cfs @ 1.23 hrs, Volume= 0.098 af, Depth= 1.03"
Routed to Link 13L : West Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NJ DEP 2-hr NJ-WQ Rainfall=1.25"

Area (ac)	CN	Description
1.140	98	Paved parking, HSG A
1.140		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	100	0.0039	0.73		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
1.1	185	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
10.7	263	0.0067	0.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.1	548	Total			

Subcatchment 11S: DA-2 Imp



Summary for Subcatchment 12S: DA-2 Per

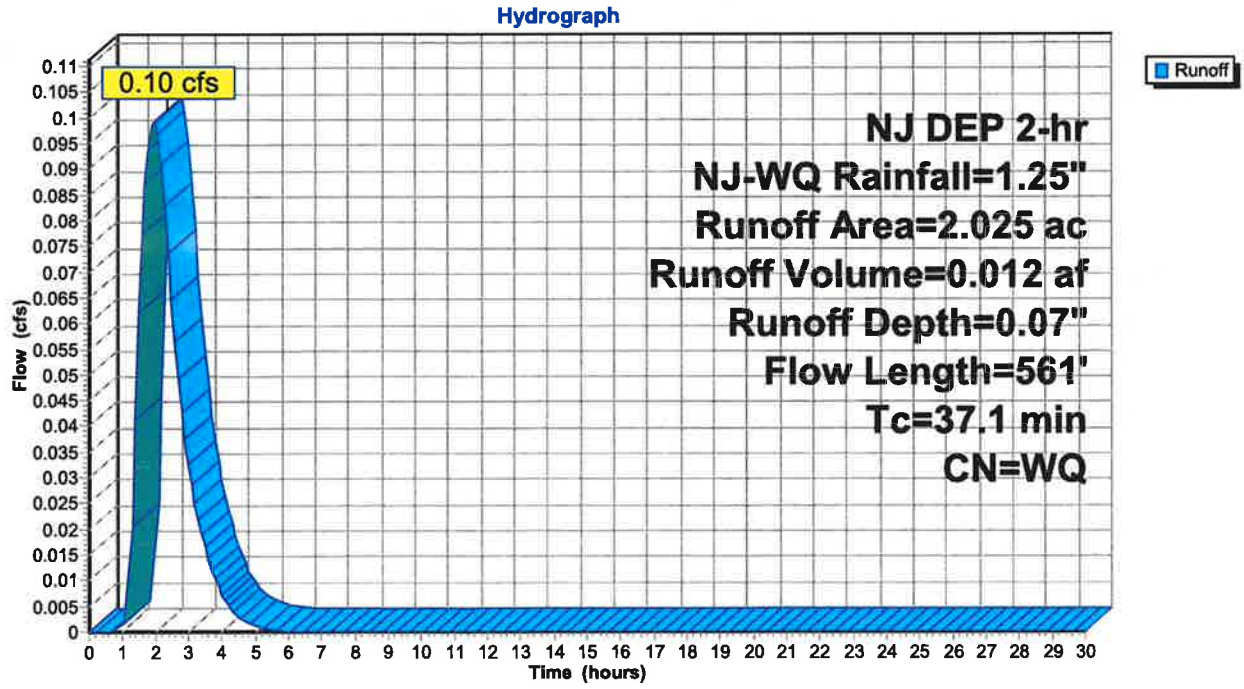
Runoff = 0.10 cfs @ 1.98 hrs, Volume= 0.012 af, Depth= 0.07"
Routed to Link 13L : West Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NJ DEP 2-hr NJ-WQ Rainfall=1.25"

Area (ac)	CN	Description
0.872	77	Woods, Good, HSG D
1.153	70	Woods, Good, HSG C
2.025		Weighted Average
2.025		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0230	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
2.4	149	0.0418	1.02		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.7	312	0.0050	0.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
37.1	561	Total			

Subcatchment 12S: DA-2 Per



Summary for Subcatchment 14S: DA-1 Imp

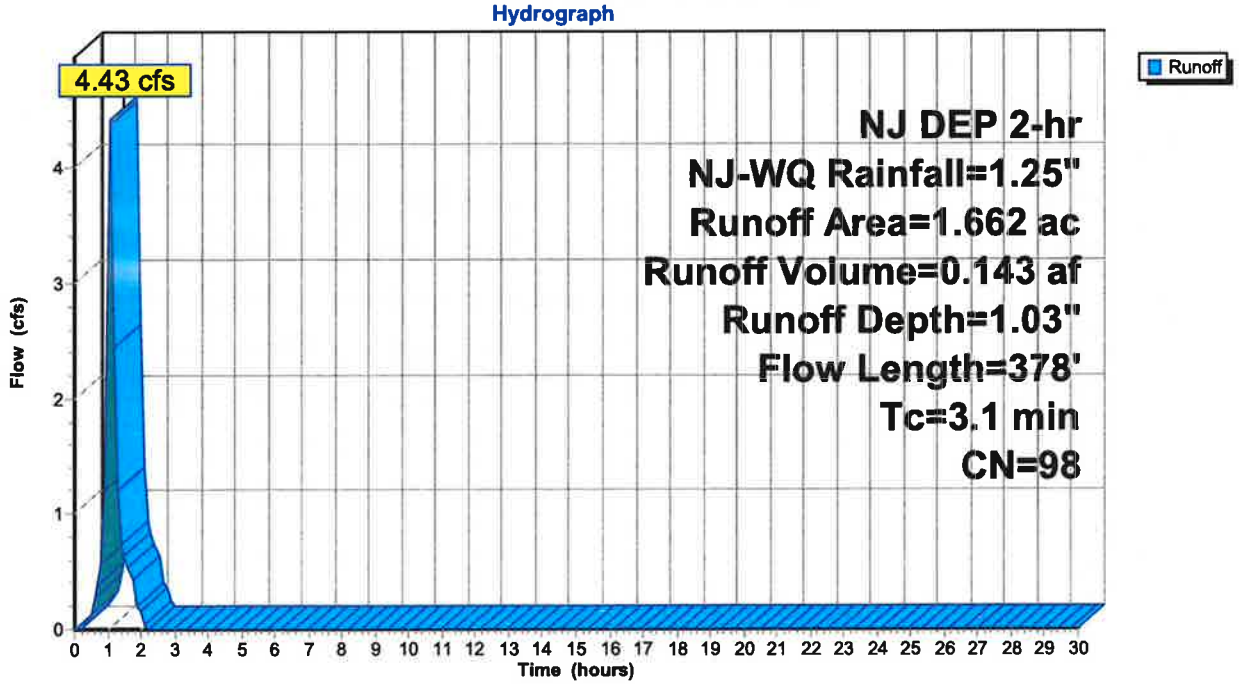
Runoff = 4.43 cfs @ 1.08 hrs, Volume= 0.143 af, Depth= 1.03"
Routed to Pond 16P : Aquabox System

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NJ DEP 2-hr NJ-WQ Rainfall=1.25"

Area (ac)	CN	Description
1.662	98	Paved parking, HSG A
1.662		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	100	0.0062	0.87		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
0.6	94	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	184	0.0075	5.15	9.10	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
3.1	378	Total			

Subcatchment 14S: DA-1 Imp



Summary for Subcatchment 15S: DA-1 Per

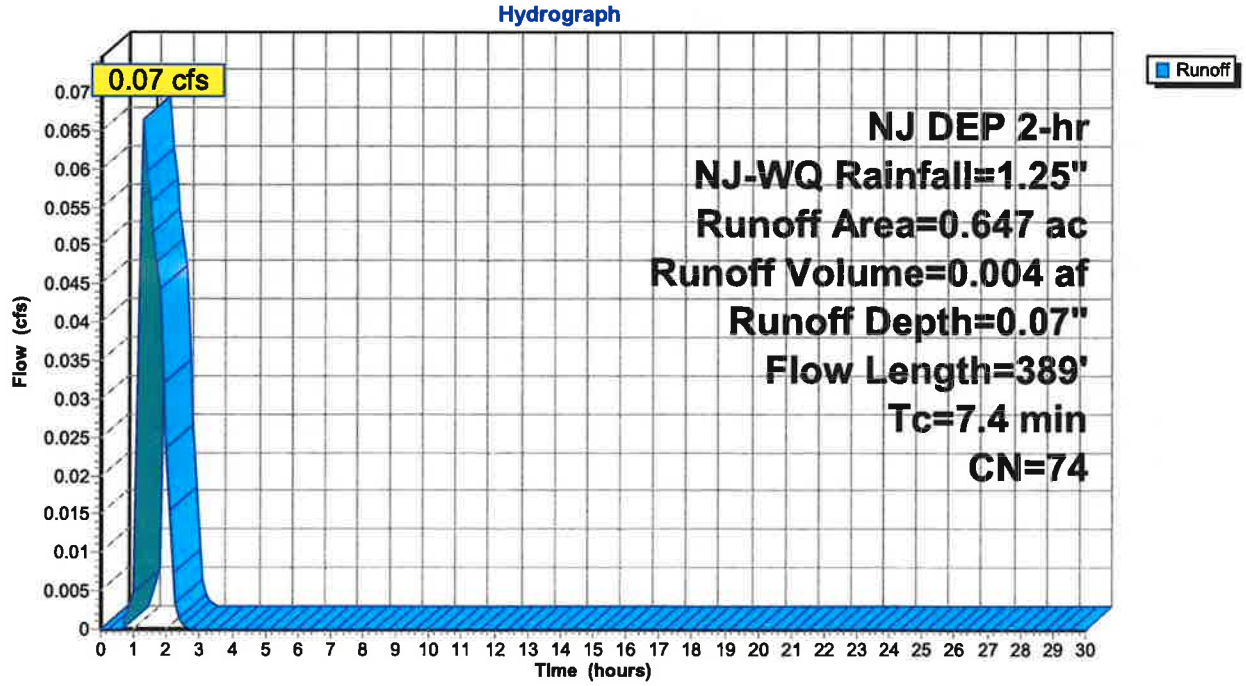
Runoff = 0.07 cfs @ 1.31 hrs, Volume= 0.004 af, Depth= 0.07"
Routed to Pond 16P : Aquabox System

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NJ DEP 2-hr NJ-WQ Rainfall=1.25"

Area (ac)	CN	Description
0.647	74	>75% Grass cover, Good, HSG C
0.647		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	79	0.0380	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
0.6	126	0.0320	3.63		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	184	0.0075	5.15	9.10	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
7.4	389	Total			

Subcatchment 15S: DA-1 Per



Summary for Subcatchment 17S: DA-3 Imp

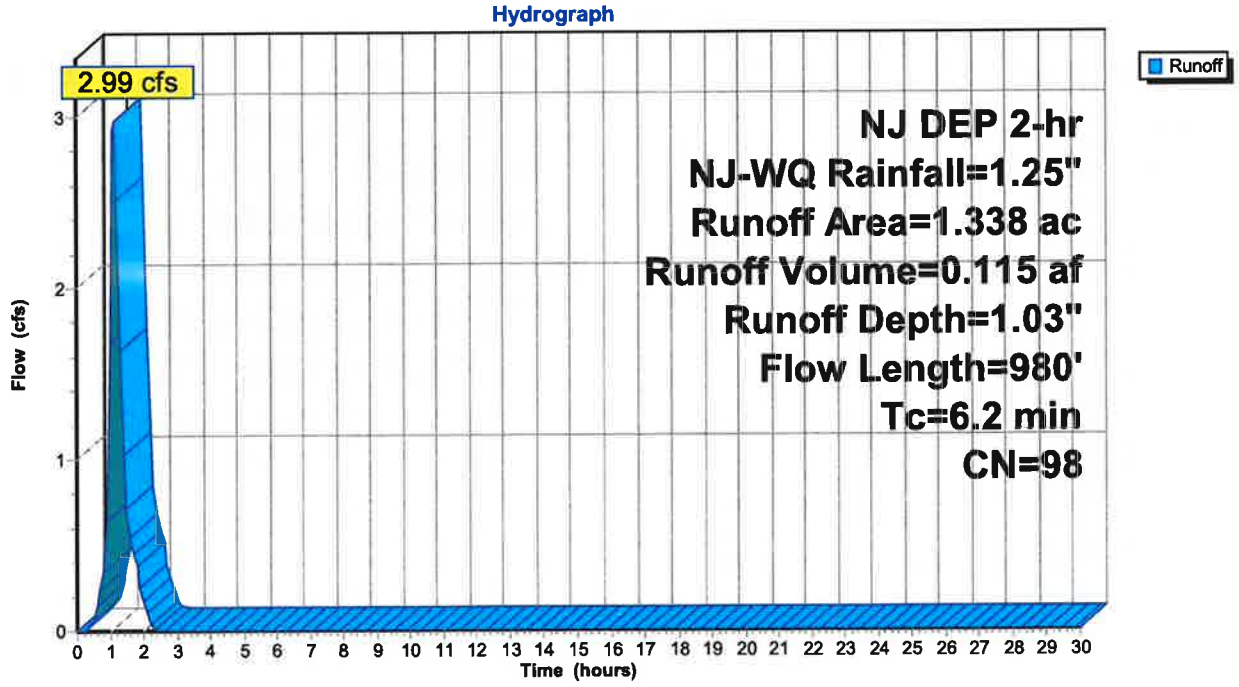
Runoff = 2.99 cfs @ 1.13 hrs, Volume= 0.115 af, Depth= 1.03"
Routed to Pond 19P : Infiltration Basin 1

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NJ DEP 2-hr NJ-WQ Rainfall=1.25"

Area (ac)	CN	Description
1.338	98	Paved parking, HSG A
1.338		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	49	0.0136	1.04		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
4.9	780	0.0170	2.65		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	151	0.0084	5.45	9.63	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
6.2	980	Total			

Subcatchment 17S: DA-3 Imp



Summary for Subcatchment 18S: DA-3 Per

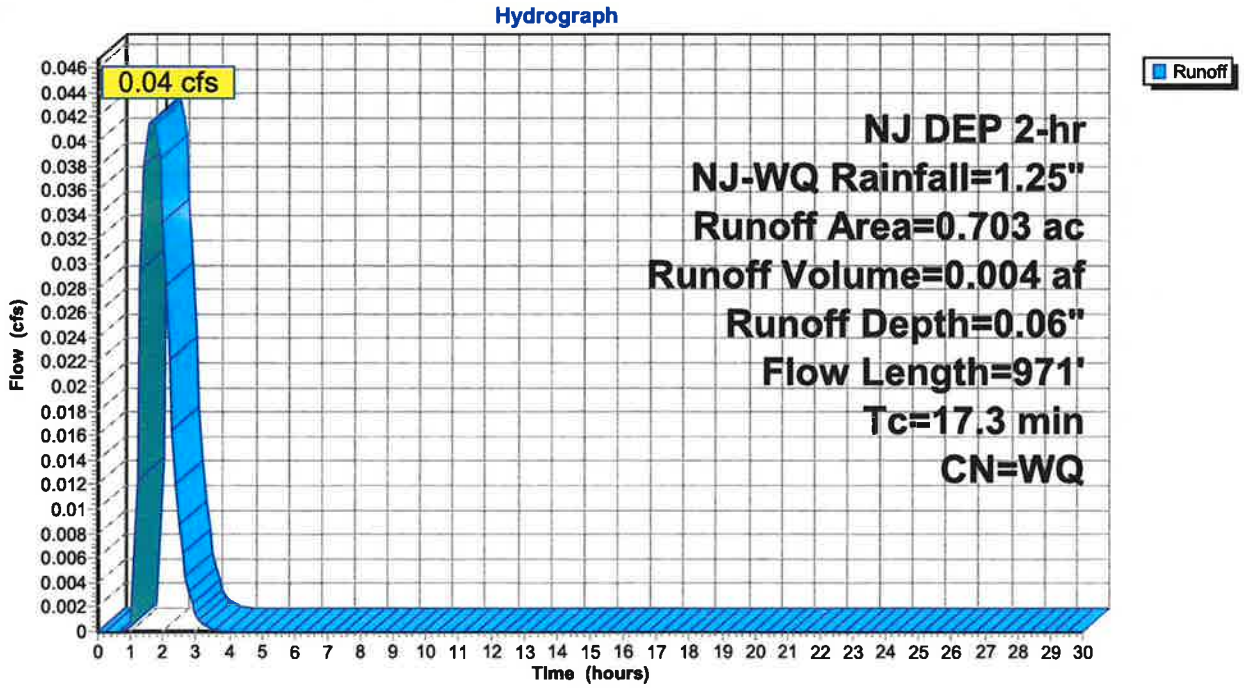
Runoff = 0.04 cfs @ 1.67 hrs, Volume= 0.004 af, Depth= 0.06"
Routed to Pond 19P : Infiltration Basin 1

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NJ DEP 2-hr NJ-WQ Rainfall=1.25"

Area (ac)	CN	Description
0.130	39	>75% Grass cover, Good, HSG A
0.573	74	>75% Grass cover, Good, HSG C
0.703		Weighted Average
0.703		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	100	0.0110	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
4.5	720	0.0170	2.65		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	151	0.0084	5.45	9.63	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
17.3	971	Total			

Subcatchment 18S: DA-3 Per



Summary for Subcatchment 20S: DA-4 Imp

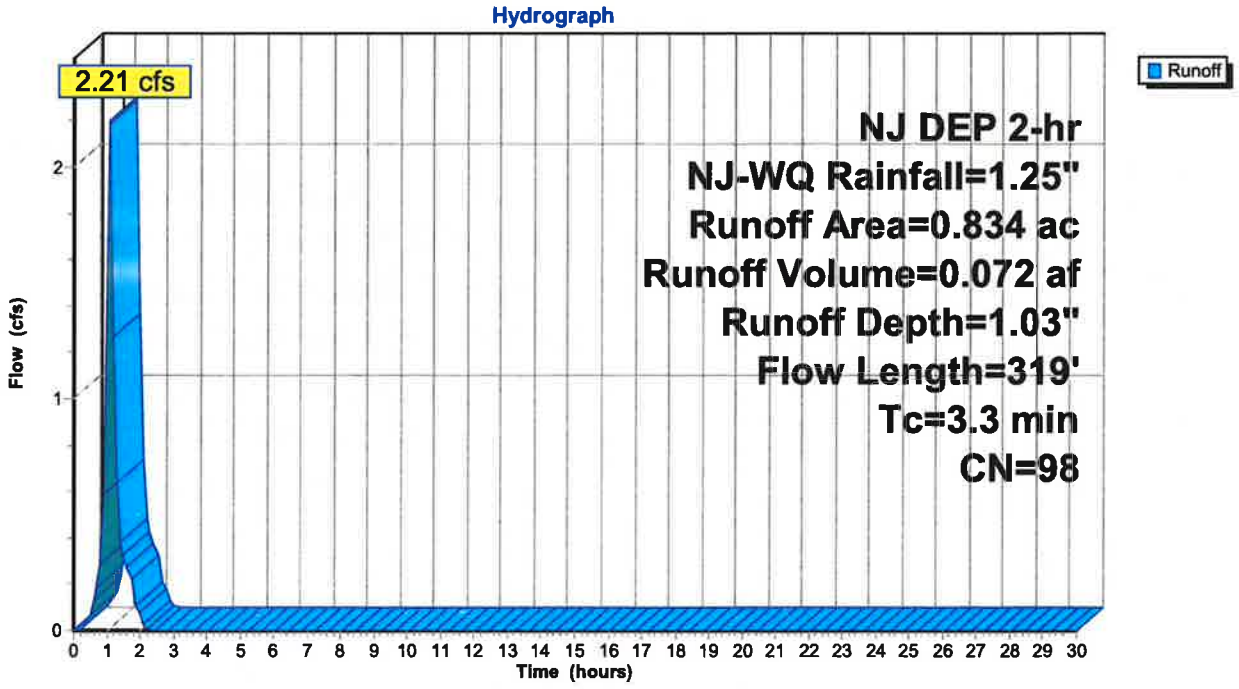
Runoff = 2.21 cfs @ 1.09 hrs, Volume= 0.072 af, Depth= 1.03"
Routed to Link 22L : South Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NJ DEP 2-hr NJ-WQ Rainfall=1.25"

Area (ac)	CN	Description
0.834	98	Paved parking, HSG A
0.834		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0110	1.10		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
1.7	181	0.0076	1.77		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	38	0.0200	4.31	4.39	**Pipe Channel,** 15.0" x 12.0", R=12.0"/20.0" Pipe Arch Area= 1.0 sf Perim= 3.6' r= n= 0.021
3.3	319	Total			

Subcatchment 20S: DA-4 Imp



Summary for Subcatchment 21S: DA-4 Per

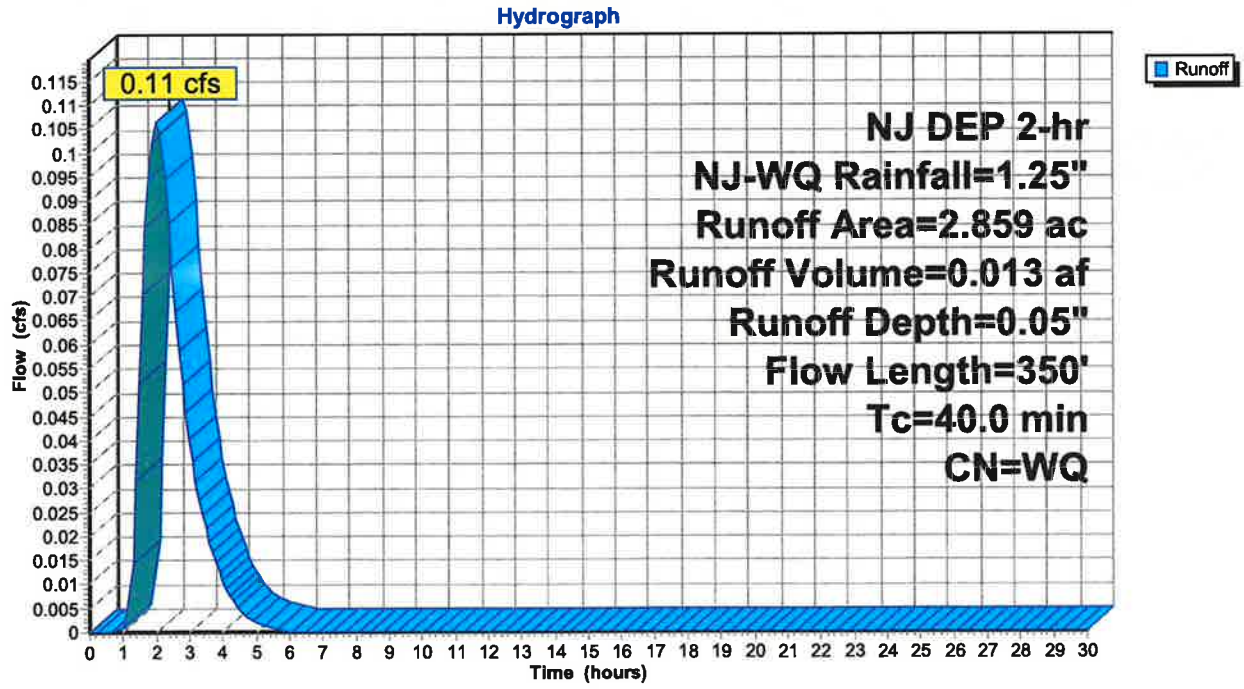
Runoff = 0.11 cfs @ 2.05 hrs, Volume= 0.013 af, Depth= 0.05"
Routed to Link 22L : South Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NJ DEP 2-hr NJ-WQ Rainfall=1.25"

Area (ac)	CN	Description
1.896	70	Woods, Good, HSG C
0.487	77	Woods, Good, HSG D
0.476	74	>75% Grass cover, Good, HSG C
2.859		Weighted Average
2.859		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.5	100	0.0087	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
10.5	250	0.0063	0.40		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
40.0	350	Total			

Subcatchment 21S: DA-4 Per



Summary for Pond 10P: Ex Low Point

Inflow Area = 0.617 ac, 0.00% Impervious, Inflow Depth = 0.00" for NJ-WQ event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 13L : West Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Peak Elev= 48.00' @ 0.00 hrs Surf.Area= 295 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

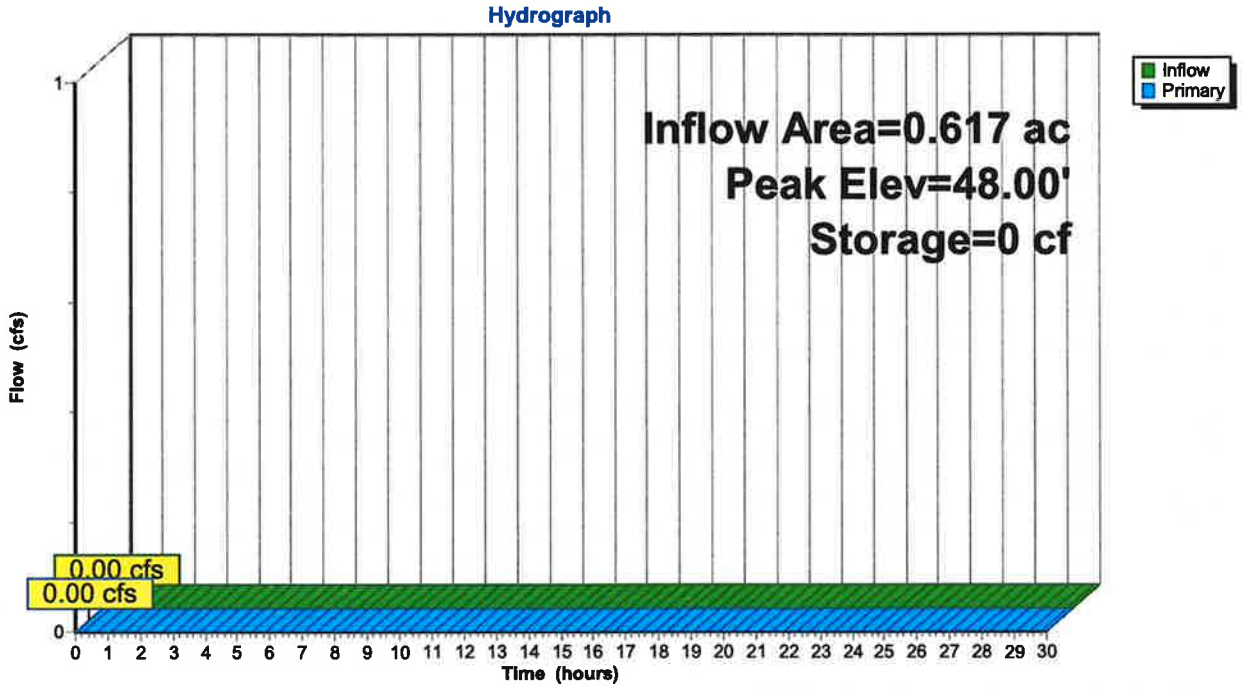
Volume	Invert	Avail.Storage	Storage Description
#1	48.00'	8,383 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
48.00	295	0	0
49.00	1,332	814	814
50.00	4,340	2,836	3,650
51.00	5,126	4,733	8,383

Device	Routing	Invert	Outlet Devices
#1	Primary	50.00'	**90.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=48.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 10P: Ex Low Point



Summary for Pond 16P: Aquabox System

Inflow Area = 2.309 ac, 71.98% Impervious, Inflow Depth = 0.77" for NJ-WQ event
Inflow = 4.44 cfs @ 1.08 hrs, Volume= 0.147 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 19P : Infiltration Basin 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Peak Elev= 42.21' @ 2.90 hrs Surf.Area= 16,068 sf Storage= 6,415 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1A	41.50'	7,088 cf	**63.52'W x 252.98'L x 3.62'H Field A** 58,243 cf Overall - 40,524 cf Embedded = 17,719 cf x 40.0% Voids
#2A	42.00'	38,862 cf	**ADS Aquabox 1** x 2550 Inside #1 Inside= 29.5"W x 31.5"H => 6.19 sf x 2.46'L = 15.2 cf Outside= 29.5"W x 31.5"H => 6.46 sf x 2.46'L = 15.9 cf 2550 Chambers in 25 Rows
		45,950 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	42.63'	**24.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=41.50' TW=42.00' (Dynamic Tailwater)
↑**1=Orifice/Grate** (Controls 0.00 cfs)

Pond 16P: Aquabox System - Chamber Wizard Field A

Chamber Model = ADS Aquabox 1 (ADS Aquabox)
Inside= 29.5"W x 31.5"H => 6.19 sf x 2.46'L = 15.2 cf
Outside= 29.5"W x 31.5"H => 6.46 sf x 2.46'L = 15.9 cf

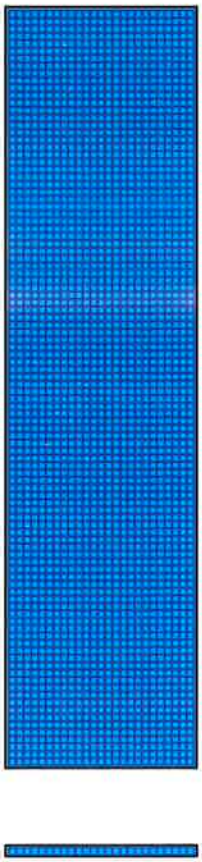
102 Chambers/Row x 2.46' Long = 250.98' Row Length +12.0" End Stone x 2 = 252.98' Base Length
25 Rows x 29.5" Wide + 12.0" Side Stone x 2 = 63.52' Base Width
6.0" Stone Base + 31.5" Chamber Height + 6.0" Stone Cover = 3.62' Field Height

2,550 Chambers x 15.2 cf = 38,862.1 cf Chamber Storage
2,550 Chambers x 15.9 cf = 40,523.6 cf Displacement

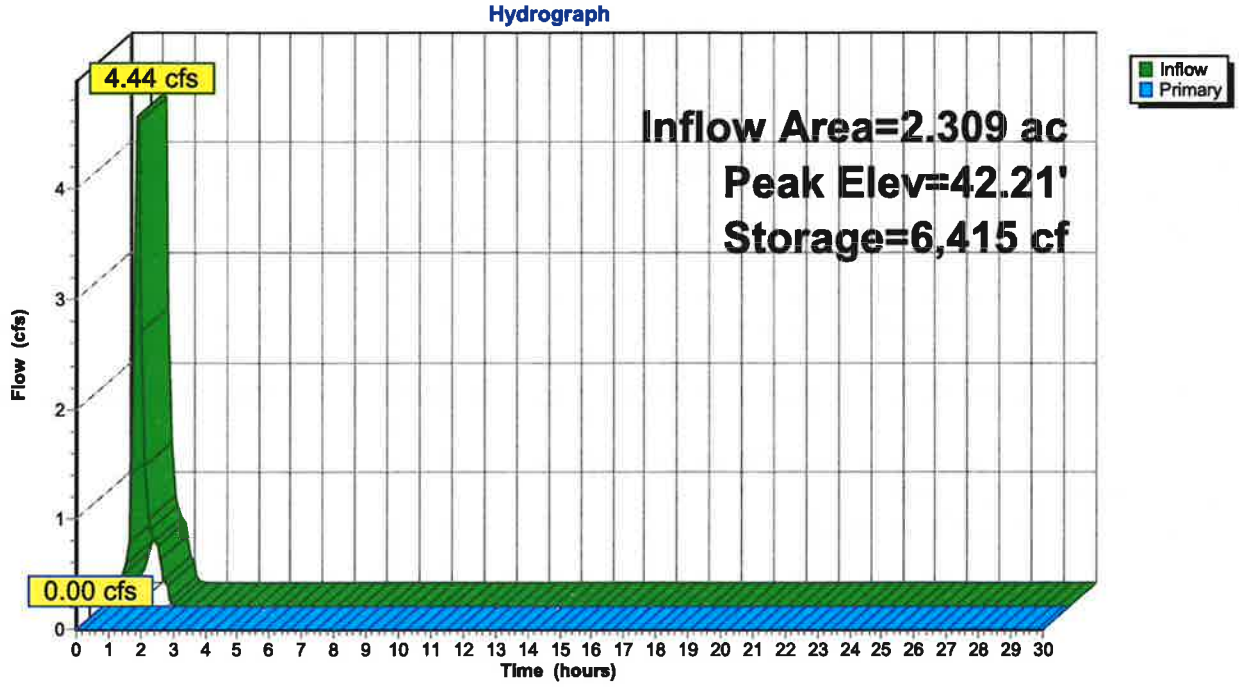
58,243.0 cf Field - 40,523.6 cf Chambers = 17,719.4 cf Stone x 40.0% Voids = 7,087.8 cf Stone Storage

Chamber Storage + Stone Storage = 45,949.9 cf = 1.055 af
Overall Storage Efficiency = 78.9%
Overall System Size = 252.98' x 63.52' x 3.62'

2,550 Chambers
2,157.1 cy Field
656.3 cy Stone



Pond 16P: Aquabox System



Summary for Pond 19P: Infiltration Basin 1

Inflow Area = 4.350 ac, 68.97% Impervious, Inflow Depth = 0.33" for NJ-WQ event
Inflow = 2.99 cfs @ 1.13 hrs, Volume= 0.119 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 22L : South Wetlands
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 22L : South Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Peak Elev= 42.86' @ 4.00 hrs Surf.Area= 6,709 sf Storage= 5,178 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	42.00'	34,406 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

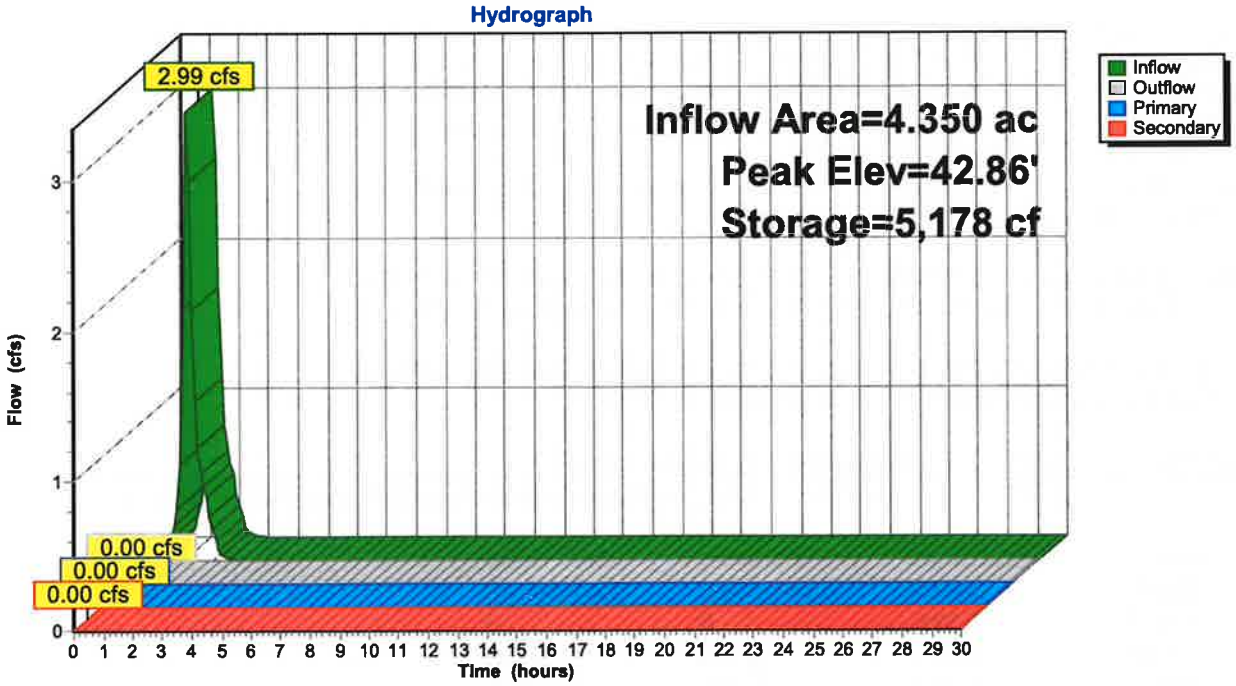
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
42.00	5,375	0	0
43.00	6,931	6,153	6,153
44.00	8,555	7,743	13,896
45.00	10,241	9,398	23,294
46.00	11,983	11,112	34,406

Device	Routing	Invert	Outlet Devices
#1	Secondary	45.50'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	44.75'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	43.25'	**2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Primary	42.87'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.00' TW=0.00' (Dynamic Tailwater)
- **2=Orifice/Grate** (Controls 0.00 cfs)
- **3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
- **4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=42.00' TW=0.00' (Dynamic Tailwater)
- **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 19P: Infiltration Basin 1

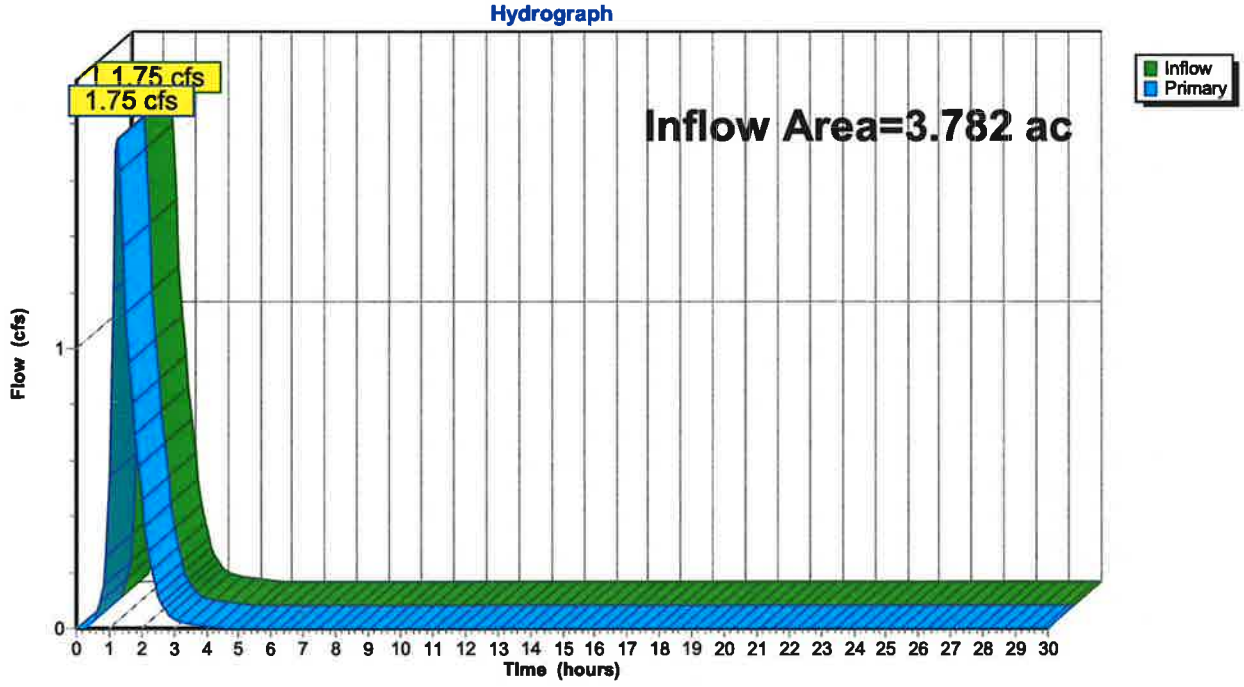


Summary for Link 13L: West Wetlands

Inflow Area = 3.782 ac, 30.14% Impervious, Inflow Depth = 0.35" for NJ-WQ event
Inflow = 1.75 cfs @ 1.24 hrs, Volume= 0.110 af
Primary = 1.75 cfs @ 1.24 hrs, Volume= 0.110 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs

Link 13L: West Wetlands

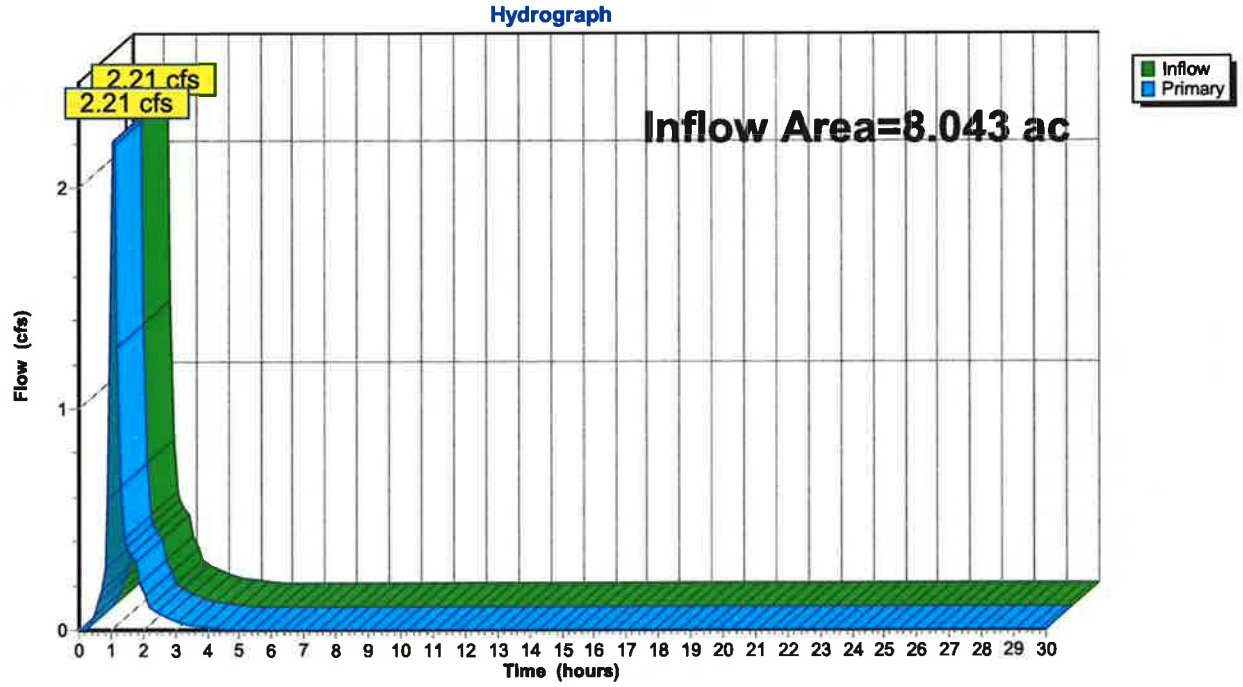


Summary for Link 22L: South Wetlands

Inflow Area = 8.043 ac, 47.67% Impervious, Inflow Depth = 0.13" for NJ-WQ event
Inflow = 2.21 cfs @ 1.09 hrs, Volume= 0.085 af
Primary = 2.21 cfs @ 1.09 hrs, Volume= 0.085 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs

Link 22L: South Wetlands



APPENDIX

NEW JERSEY SOIL EROSION & SEDIMENT CONTROL STANDARDS
FOR CONDUIT OUTLET PROTECTION

HGMG

100 Year Storm — Date: 03/24/26

Structure: HW 101 — Page: 1

DESIGN CRITERIA:

Design Storm	100	yr
Flow Rate, Q=	6.2	CFS
Culvert Horiz Dim.=	2.00	Ft
Tailwater Depth=	0.40	Ft
Filter Fabric Used?	Y	(Y/N)
D(50) min.	6	in

APRON DIMENSIONS:

Length	17.95	Ft
Width @ Culvert	6.00	Ft
Width @ End	23.95	Ft
D(50) calc.	3	in
D(50) to be used	6	in
Thickness	12	in

SCOUR HOLE DIMENSIONS:

Culvert Vert Dim.=	2.00	Ft
Depth of Hole	1.00	Ft
Length of Bottom	6.00	Ft
Width of Bottom	4.00	Ft
Length of Scour Hole	12.00	Ft
Width of Scour Hole	10.00	Ft
D(50) calc.	2	in
D(50) to be used	6	in
Thickness	12	in

SCOUR HOLE DIMENSIONS:

Culvert Vert Dim.=	2.00	Ft
Depth of Hole	2.00	Ft
Length of Bottom	6.00	Ft
Width of Bottom	4.00	Ft
Length of Scour Hole	18.00	Ft
Width of Scour Hole	16.00	Ft
D(50) calc.	1	in
D(50) to be used	6	in
Thickness	12	in

NOTE: Use boxed dimensions.

NEW JERSEY SOIL EROSION & SEDIMENT CONTROL STANDARDS
FOR CONDUIT OUTLET PROTECTION

HGMG

25 Year Storm — Date: 03/24/26

Structure: HW 102 — Page: 2

DESIGN CRITERIA:

Design Storm	25	yr
Flow Rate, Q=	7.0	CFS
Culvert Horiz Dim.=	1.50	Ft
Tailwater Depth=	0.30	Ft
Filter Fabric Used?	Y	(Y/N)
D(50) min.	6	in

APRON DIMENSIONS:

Length	17.40	Ft
Width @ Culvert	4.50	Ft
Width @ End	21.90	Ft
D(50) calc.	6	in
D(50) to be used	6	in
Thickness	13	in

SCOUR HOLE DIMENSIONS:

Culvert Vert Dim.=	1.50	Ft
Depth of Hole	0.75	Ft
Length of Bottom	4.50	Ft
Width of Bottom	3.00	Ft
Length of Scour Hole	9.00	Ft
Width of Scour Hole	7.50	Ft
D(50) calc.	4	in
D(50) to be used	6	in
Thickness	12	in

SCOUR HOLE DIMENSIONS:

Culvert Vert Dim.=	1.50	Ft
Depth of Hole	1.50	Ft
Length of Bottom	4.50	Ft
Width of Bottom	3.00	Ft
Length of Scour Hole	13.50	Ft
Width of Scour Hole	12.00	Ft
D(50) calc.	3	in
D(50) to be used	6	in
Thickness	12	in

NOTE: Use boxed dimensions.

STORM SEWER COMPUTATION SHEET

JOB NAME: Blue Stone Cathy Lane — LOTS: 3.01 & 3.07 — BLOCK: 163.01

SUBDIVISION OR LOCATION: Florence Township

COMPUTED BY: C. Kaminskas — DATE: 03/24/26 — SHEET No.: 1 OF 1

CHECKED BY: M. Malinowski — DATE: 03/24/26 — STORM FREQUENCY: 25

LOCATION (DRAINAGE AREA No.)	INLET STATION - FROM	INLET STATION - TO	DRAINAGE AREA						TIME			INTENSITY (In./Hr)	LENGTH OF PIPE "L" (ft)	SLOPE OF PIPE (Ft/Ft)	TYPE OF PIPE	SIZE OF PIPE (In)	MANNINGS N VALUE	FULL VELOCITY (Ft/S)	ACTUAL VELOCITY (Ft/S)	FULL CAPACITY OF PIPE (cfs)	ACTUAL CAPACITY OF PIPE (cfs)	UPPER INVERT	LOWER INVERT	GRATE INLET CAPACITY (cfs)	UPPER GRATE GRADE	PIPE COVER (not including pipe wall thickness)
			AREA (Acres)	PAVING AREA 0.95	LAWN AREA 0.25	TOTAL "C"	A x C	SUM A x C (Acres)	TIME OF CONCENT. (OVERLAND)	TIME OF CONCENT. (PIPE)	SUM Tc (Min)																
	101	102	0.62	0.43	0.19	0.735	0.46	0.46	10	0.6	11.2	6.20	110	0.0046	RCP	18	0.013	4.02	2.13	7.10	2.83	42.89	42.38	2.83	45.19	0.80
	102	HW102	0.84	0.67	0.17	0.808	0.68	1.14	10	0.4	11.6	6.20	38	0.0046	RCP	18	0.013	4.02	2.13	7.10	7.04	42.22	42.05	4.21	45.17	1.45
	201	202	1.54	1.27	0.27	0.827	1.27	1.27	10	0.6	11.2	6.20	151	0.0057	RCP	18	0.013	4.47	2.37	7.90	7.90	43.44	42.58	7.90	45.76	0.82
	202	Aquabox	0.76	0.39	0.37	0.609	0.46	1.74	10	0.4	11.6	6.20	26	0.0031	RCP	24	0.013	4.00	2.12	12.57	10.77	42.08	42.00	2.87	46.57	2.49

EMERGENCY SPILLWAY STABILITY DESIGN-BASIN #1

In accordance with the *Standards for Soil Erosion and Sediment Control in New Jersey*, design criteria for grassed waterways allows for a maximum permissible velocity of 2.0 feet per second for the most erodible soil with a vegetated cover and 3.0 feet per second for a sod cover. The emergency spillway is to be designed in accordance to the Residential Site Improvement Standards.

Storm Event	Peak Outflow	Maximum Elevation
100 Year	17.95 cfs	45.99

The design of the emergency spillway will be based on the 100-year inflow to the basin. The design assumes the outlet control structure is malfunctioning and will not allow any storm water discharge. Therefore, only the one-hundred-year storm will pass through the emergency spillway with the above noted peak outflow.

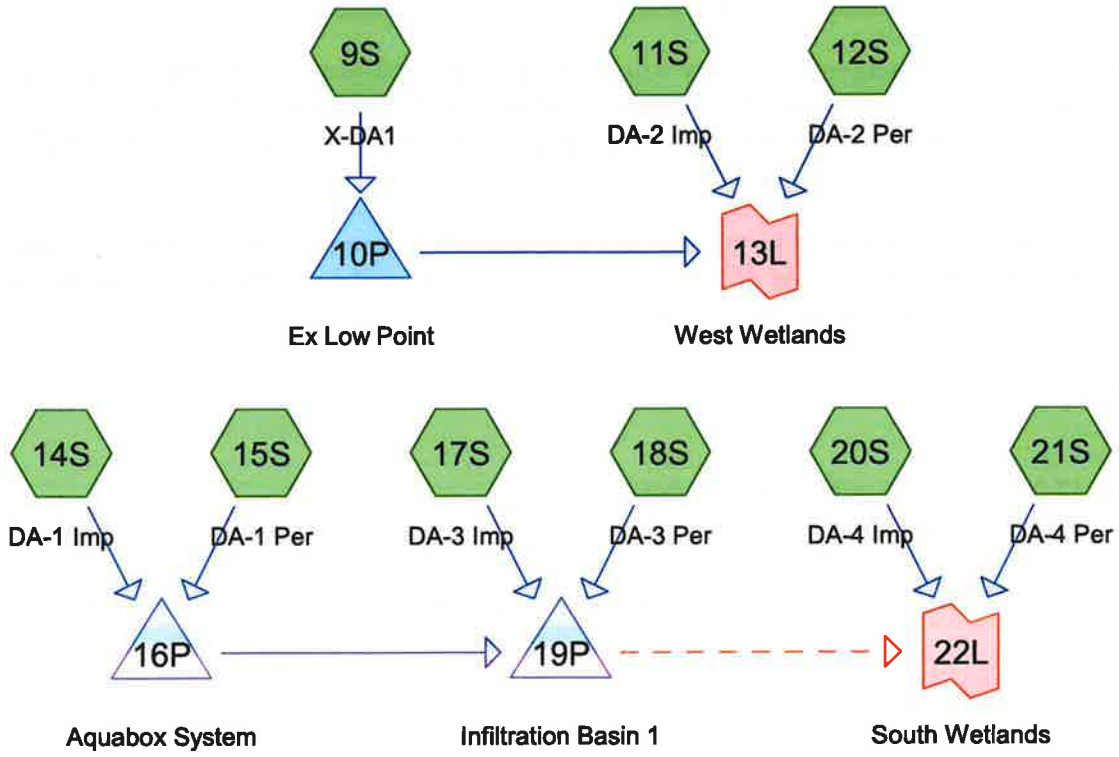
The emergency spillway will be 20 feet wide with side slopes not exceeding three horizontal to one vertical, and will be at a height of 0.99 feet (45.50 to 45.99) minimum. The stability of the bank for overflow as directed towards the drive is as follows:

Velocity of Overflow

$V_{100} = Q / A$
= 17.95 CFS / (20 width x 0.49 ft depth)
= 1.83 feet / second

Therefore, additional soil stabilization will not be required other than seeded vegetation.

Spillway Analysis



Subcat Reach Pond Link

Routing Diagram for 0701.006C - Spillway Analysis
Prepared by PS&S, Printed 3/26/2026

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.255	39	>75% Grass cover, Good, HSG A (9S, 18S)
1.696	74	>75% Grass cover, Good, HSG C (15S, 18S, 21S)
4.974	98	Paved parking, HSG A (11S, 14S, 17S, 20S)
0.492	30	Woods, Good, HSG A (9S)
3.049	70	Woods, Good, HSG C (12S, 21S)
1.359	77	Woods, Good, HSG D (12S, 21S)
11.825	**81**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
5.721	HSG A	9S, 11S, 14S, 17S, 18S, 20S
0.000	HSG B	
4.745	HSG C	12S, 15S, 18S, 21S
1.359	HSG D	12S, 21S
0.000	Other	
11.825		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.255	0.000	1.696	0.000	0.000	1.951	>75% Grass cover, Good	9S, 15S, 18S, 21S
4.974	0.000	0.000	0.000	0.000	4.974	Paved parking	11S, 14S, 17S, 20S
0.492	0.000	3.049	1.359	0.000	4.900	Woods, Good	9S, 12S, 21S
5.721	**0.000**	**4.745**	**1.359**	**0.000**	**11.825**	**TOTAL AREA**	

Time span=0.00-30.00 hrs, dt=0.10 hrs, 301 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 9S: X-DA1 Runoff Area=0.617 ac 0.00% Impervious Runoff Depth=1.62"
Flow Length=218' Slope=0.0388 '/' Tc=3.7 min CN=WQ Runoff=0.76 cfs 0.083 af

Subcatchment 11S: DA-2 Imp Runoff Area=1.140 ac 100.00% Impervious Runoff Depth=10.78"
Flow Length=548' Tc=14.1 min CN=98 Runoff=7.49 cfs 1.024 af

Subcatchment 12S: DA-2 Per Runoff Area=2.025 ac 0.00% Impervious Runoff Depth=7.56"
Flow Length=561' Tc=37.1 min CN=WQ Runoff=6.19 cfs 1.276 af

Subcatchment 14S: DA-1 Imp Runoff Area=1.662 ac 100.00% Impervious Runoff Depth=10.78"
Flow Length=378' Tc=3.1 min CN=98 Runoff=17.82 cfs 1.493 af

Subcatchment 15S: DA-1 Per Runoff Area=0.647 ac 0.00% Impervious Runoff Depth=7.70"
Flow Length=389' Tc=7.4 min CN=74 Runoff=4.36 cfs 0.415 af

Subcatchment 17S: DA-3 Imp Runoff Area=1.338 ac 100.00% Impervious Runoff Depth=10.78"
Flow Length=980' Tc=6.2 min CN=98 Runoff=11.64 cfs 1.202 af

Subcatchment 18S: DA-3 Per Runoff Area=0.703 ac 0.00% Impervious Runoff Depth=6.76"
Flow Length=971' Tc=17.3 min CN=WQ Runoff=2.92 cfs 0.396 af

Subcatchment 20S: DA-4 Imp Runoff Area=0.834 ac 100.00% Impervious Runoff Depth=10.78"
Flow Length=319' Tc=3.3 min CN=98 Runoff=8.83 cfs 0.749 af

Subcatchment 21S: DA-4 Per Runoff Area=2.859 ac 0.00% Impervious Runoff Depth=7.40"
Flow Length=350' Tc=40.0 min CN=WQ Runoff=8.20 cfs 1.763 af

Pond 10P: Ex Low Point Peak Elev=50.00' Storage=3,629 cf Inflow=0.76 cfs 0.083 af
Outflow=0.00 cfs 0.000 af

Pond 16P: Aquabox System Peak Elev=46.92' Storage=45,950 cf Inflow=21.77 cfs 1.908 af
Outflow=16.54 cfs 0.854 af

Pond 19P: Infiltration Basin 1 Peak Elev=45.99' Storage=34,282 cf Inflow=27.15 cfs 2.452 af
Outflow=17.95 cfs 1.794 af

Link 13L: West Wetlands Inflow=11.79 cfs 2.299 af
Primary=11.79 cfs 2.299 af

Link 22L: South Wetlands Inflow=27.18 cfs 4.307 af
Primary=27.18 cfs 4.307 af

Total Runoff Area = 11.825 ac Runoff Volume = 8.401 af Average Runoff Depth = 8.53"
57.94% Pervious = 6.851 ac 42.06% Impervious = 4.974 ac

Summary for Subcatchment 9S: X-DA1

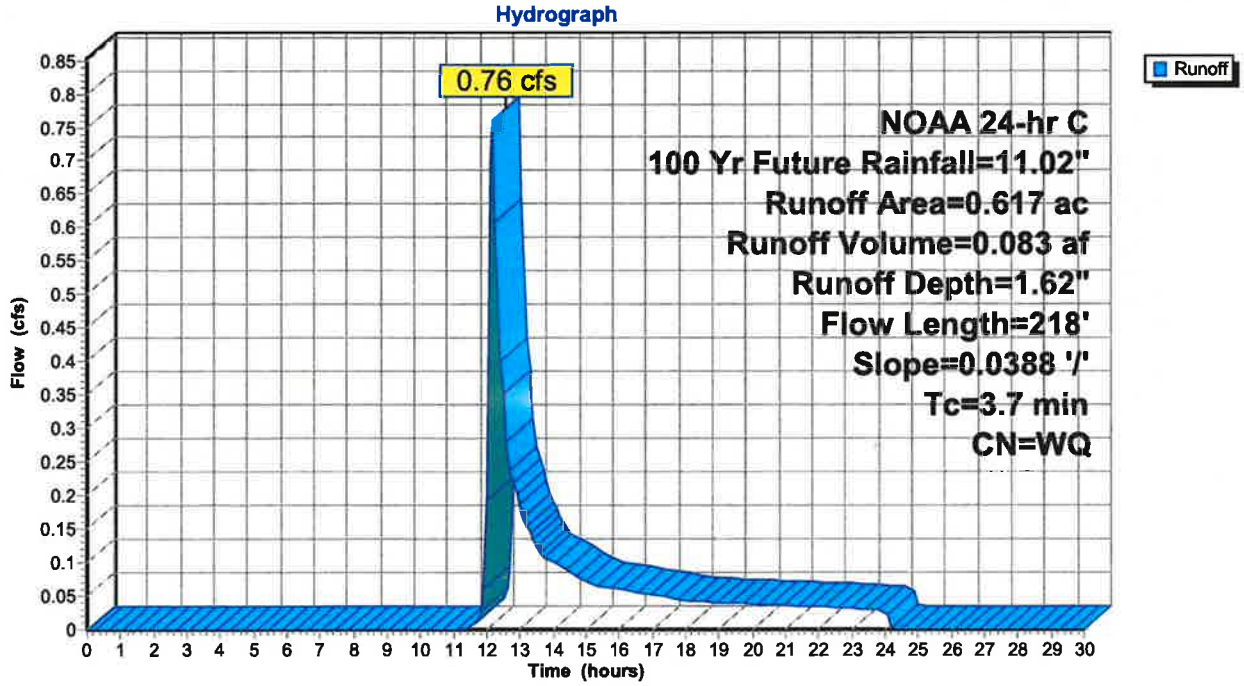
Runoff = 0.76 cfs @ 12.15 hrs, Volume= 0.083 af, Depth= 1.62"
Routed to Pond 10P : Ex Low Point

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 100 Yr Future Rainfall=11.02"

Area (ac)	CN	Description
0.492	30	Woods, Good, HSG A
0.125	39	>75% Grass cover, Good, HSG A
0.617		Weighted Average
0.617		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	218	0.0388	0.98		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps

Subcatchment 9S: X-DA1



Summary for Subcatchment 11S: DA-2 Imp

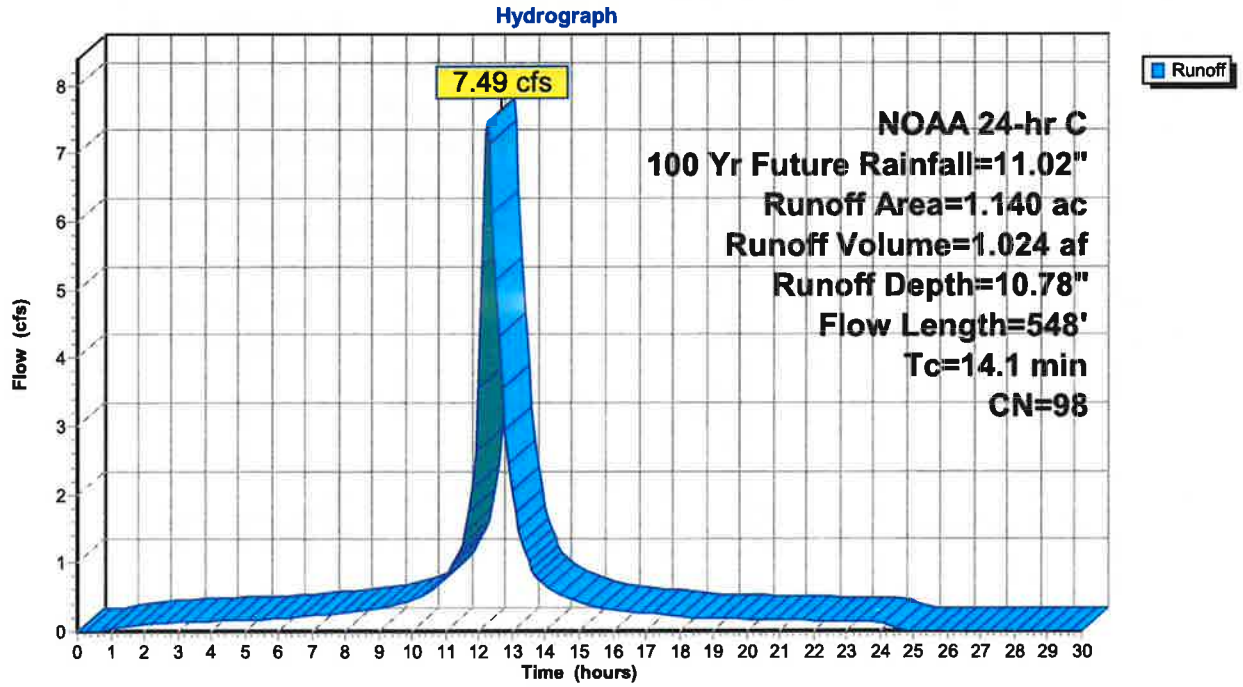
Runoff = 7.49 cfs @ 12.24 hrs, Volume= 1.024 af, Depth=10.78"
Routed to Link 13L : West Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 100 Yr Future Rainfall=11.02"

Area (ac)	CN	Description
1.140	98	Paved parking, HSG A
1.140		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	100	0.0039	0.73		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
1.1	185	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
10.7	263	0.0067	0.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.1	548	Total			

Subcatchment 11S: DA-2 Imp



Summary for Subcatchment 12S: DA-2 Per

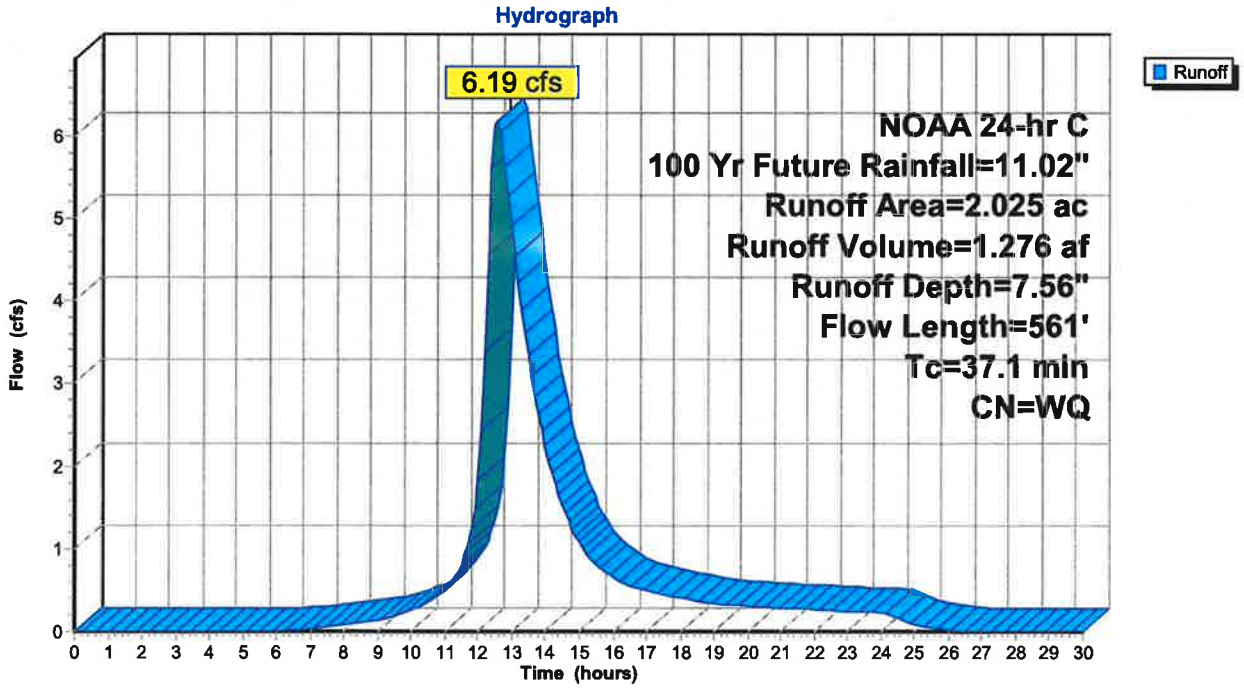
Runoff = 6.19 cfs @ 12.56 hrs, Volume= 1.276 af, Depth= 7.56"
Routed to Link 13L : West Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 100 Yr Future Rainfall=11.02"

Area (ac)	CN	Description
0.872	77	Woods, Good, HSG D
1.153	70	Woods, Good, HSG C
2.025		Weighted Average
2.025		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	100	0.0230	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
2.4	149	0.0418	1.02		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.7	312	0.0050	0.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
37.1	561	Total			

Subcatchment 12S: DA-2 Per



Summary for Subcatchment 14S: DA-1 Imp

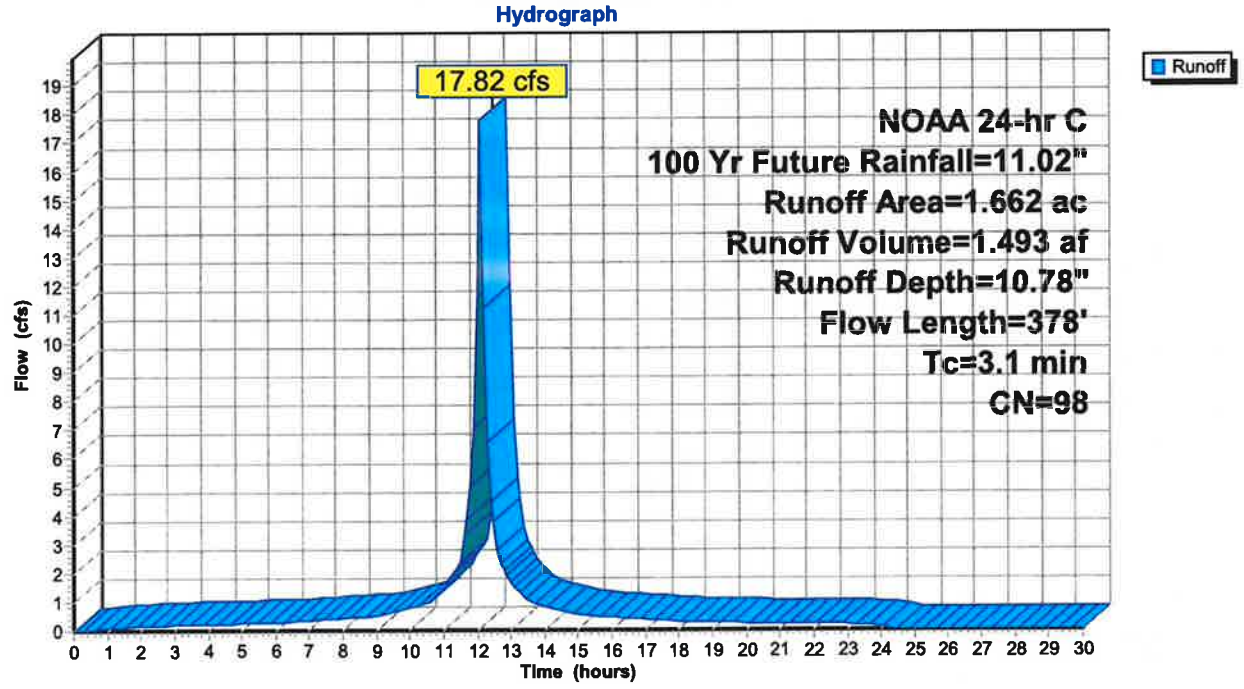
Runoff = 17.82 cfs @ 12.10 hrs, Volume= 1.493 af, Depth=10.78"
Routed to Pond 16P : Aquabox System

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 100 Yr Future Rainfall=11.02"

Area (ac)	CN	Description
1.662	98	Paved parking, HSG A
1.662		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	100	0.0062	0.87		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
0.6	94	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	184	0.0075	5.15	9.10	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
3.1	378	Total			

Subcatchment 14S: DA-1 Imp



Summary for Subcatchment 15S: DA-1 Per

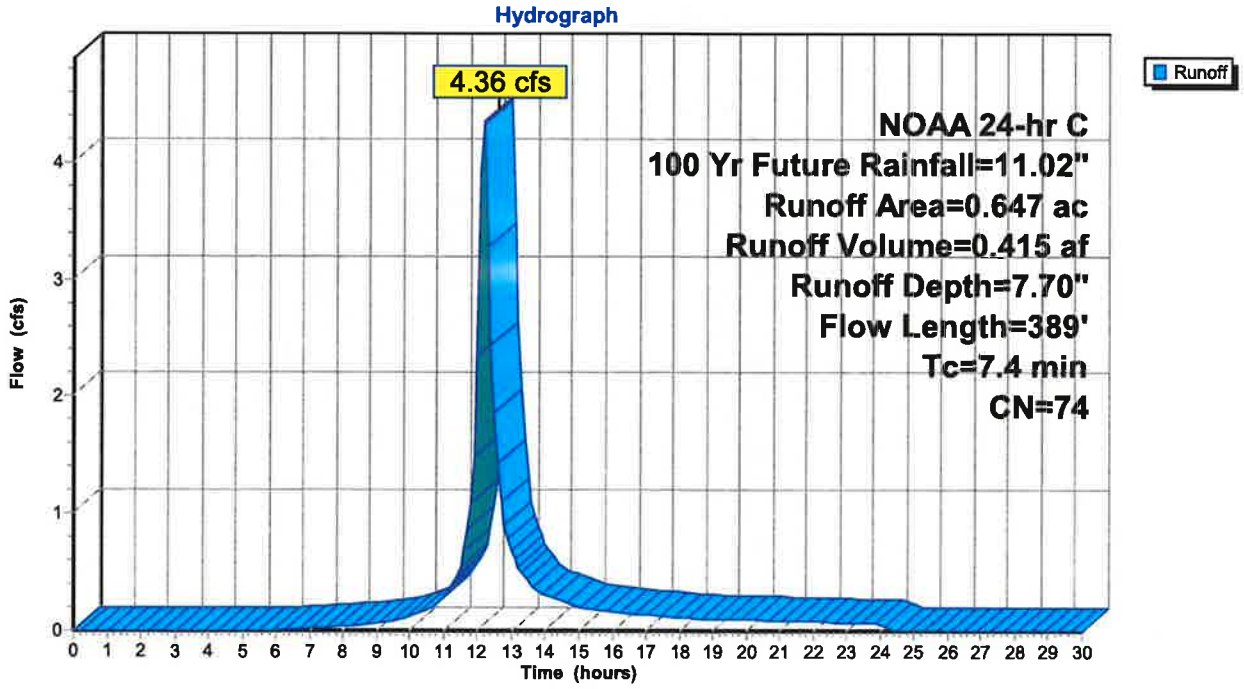
Runoff = 4.36 cfs @ 12.18 hrs, Volume= 0.415 af, Depth= 7.70"
Routed to Pond 16P : Aquabox System

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 100 Yr Future Rainfall=11.02"

Area (ac)	CN	Description
0.647	74	>75% Grass cover, Good, HSG C
0.647		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	79	0.0380	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
0.6	126	0.0320	3.63		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.6	184	0.0075	5.15	9.10	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
7.4	389	Total			

Subcatchment 15S: DA-1 Per



Summary for Subcatchment 17S: DA-3 Imp

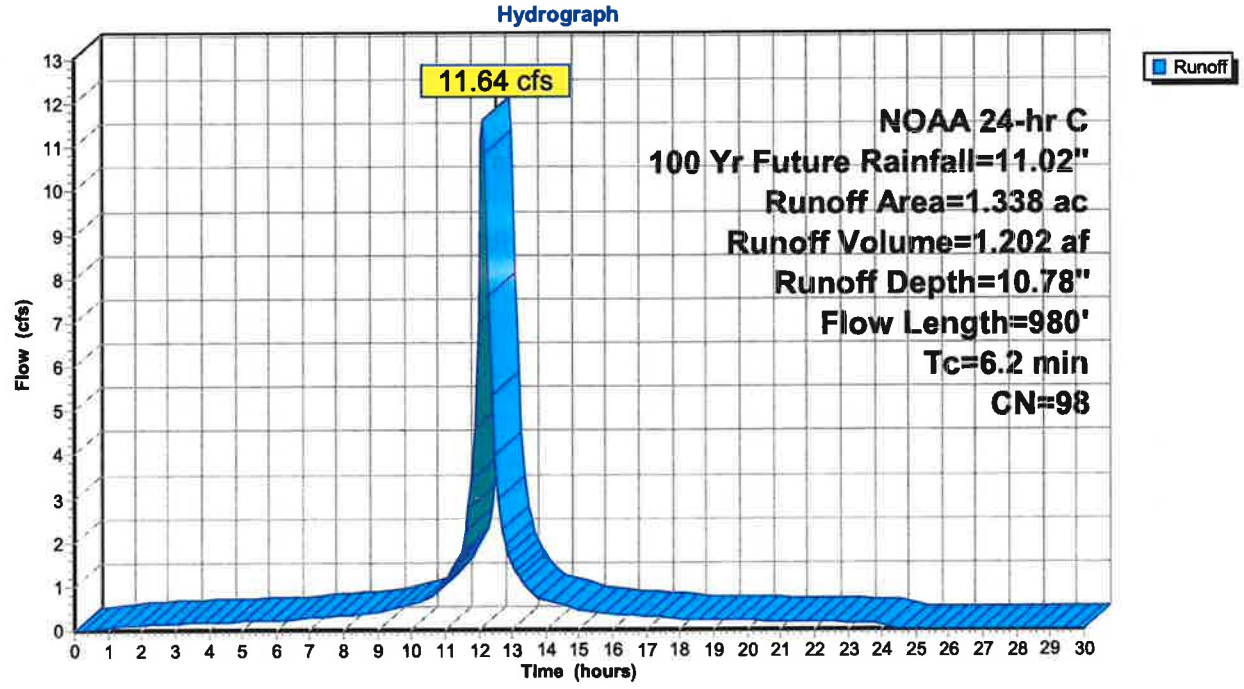
Runoff = 11.64 cfs @ 12.14 hrs, Volume= 1.202 af, Depth=10.78"
Routed to Pond 19P : Infiltration Basin 1

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 100 Yr Future Rainfall=11.02"

Area (ac)	CN	Description
1.338	98	Paved parking, HSG A
1.338		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	49	0.0136	1.04		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
4.9	780	0.0170	2.65		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	151	0.0084	5.45	9.63	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
6.2	980	Total			

Subcatchment 17S: DA-3 Imp



Summary for Subcatchment 18S: DA-3 Per

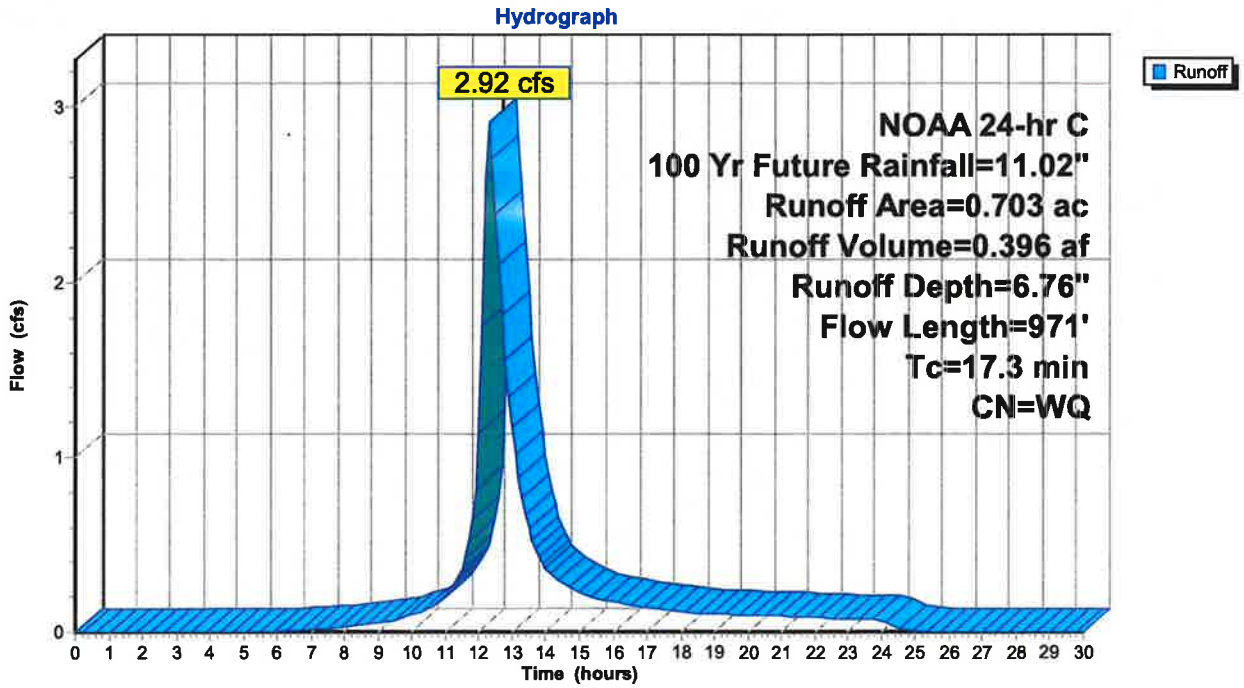
Runoff = 2.92 cfs @ 12.31 hrs, Volume= 0.396 af, Depth= 6.76"
Routed to Pond 19P : Infiltration Basin 1

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 100 Yr Future Rainfall=11.02"

Area (ac)	CN	Description
0.130	39	>75% Grass cover, Good, HSG A
0.573	74	>75% Grass cover, Good, HSG C
0.703		Weighted Average
0.703		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	100	0.0110	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
4.5	720	0.0170	2.65		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	151	0.0084	5.45	9.63	**Pipe Channel, RCP_Round 18"** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
17.3	971	Total			

Subcatchment 18S: DA-3 Per



Summary for Subcatchment 20S: DA-4 Imp

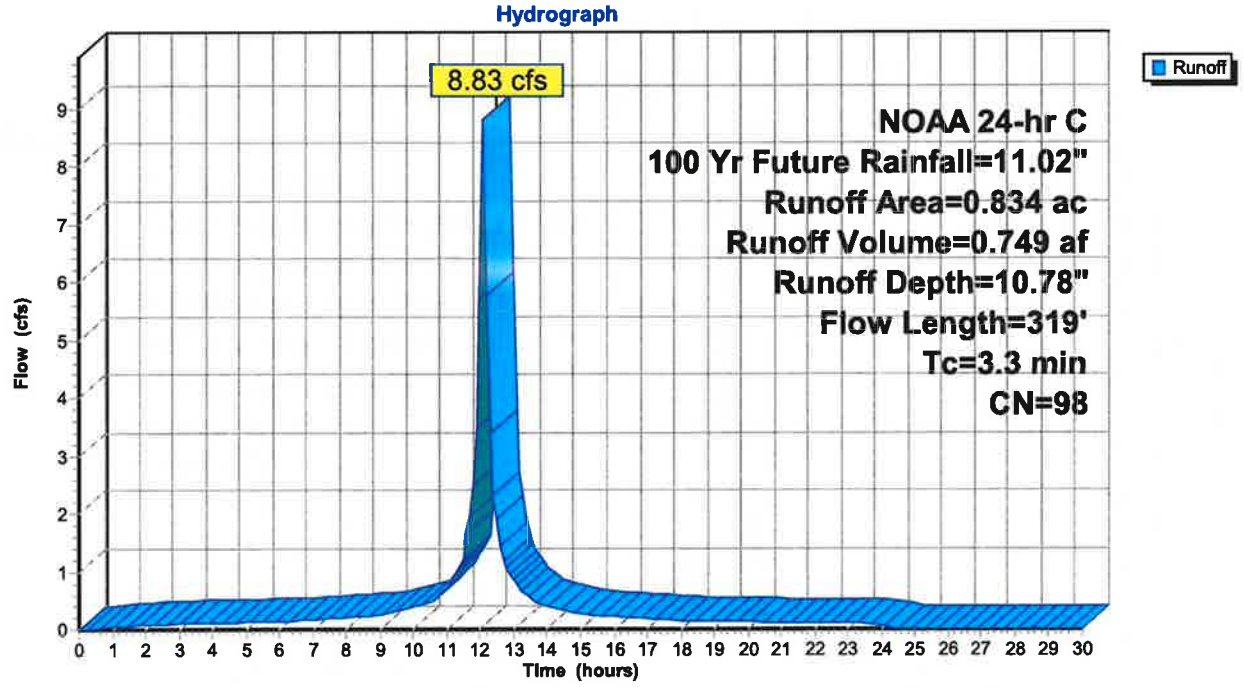
Runoff = 8.83 cfs @ 12.10 hrs, Volume= 0.749 af, Depth=10.78"
Routed to Link 22L : South Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 100 Yr Future Rainfall=11.02"

Area (ac)	CN	Description
0.834	98	Paved parking, HSG A
0.834		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	100	0.0110	1.10		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
1.7	181	0.0076	1.77		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	38	0.0200	4.31	4.39	**Pipe Channel,** 15.0" x 12.0", R=12.0"/20.0" Pipe Arch Area= 1.0 sf Perim= 3.6' r= n= 0.021
3.3	319	Total			

Subcatchment 20S: DA-4 Imp



Summary for Subcatchment 21S: DA-4 Per

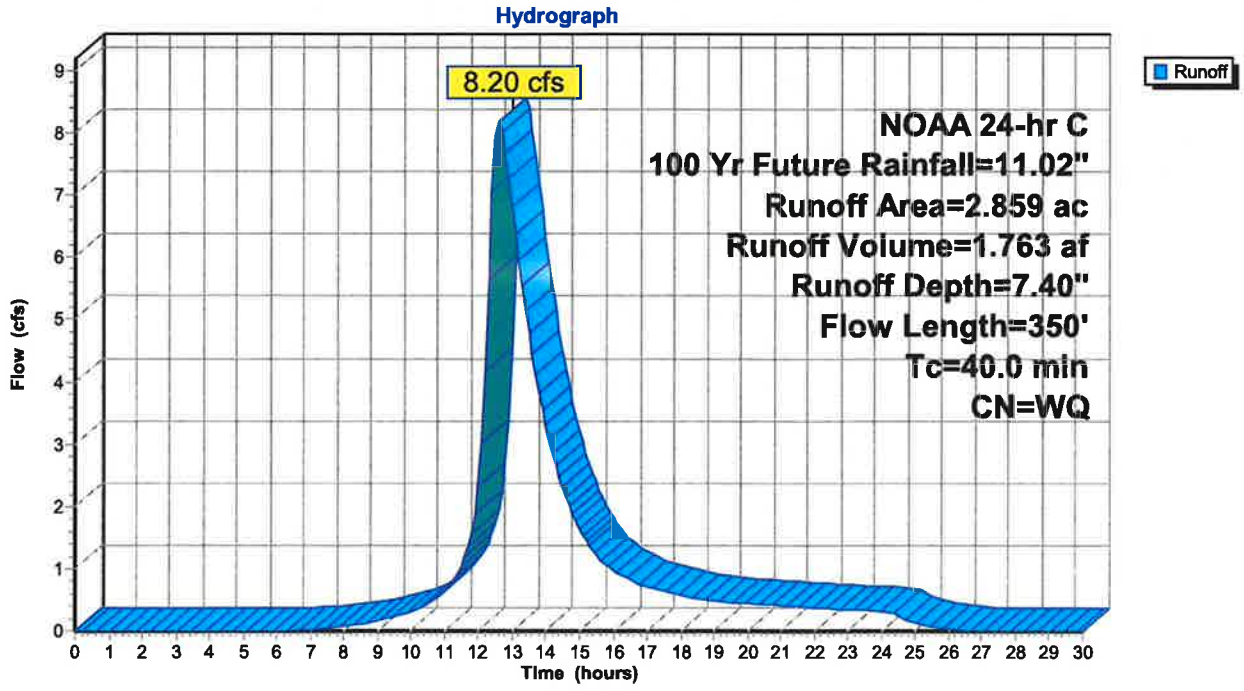
Runoff = 8.20 cfs @ 12.61 hrs, Volume= 1.763 af, Depth= 7.40"
Routed to Link 22L : South Wetlands

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-Q, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
NOAA 24-hr C 100 Yr Future Rainfall=11.02"

Area (ac)	CN	Description
1.896	70	Woods, Good, HSG C
0.487	77	Woods, Good, HSG D
0.476	74	>75% Grass cover, Good, HSG C
2.859		Weighted Average
2.859		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.5	100	0.0087	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
10.5	250	0.0063	0.40		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
40.0	350	Total			

Subcatchment 21S: DA-4 Per



Summary for Pond 10P: Ex Low Point

Inflow Area = 0.617 ac, 0.00% Impervious, Inflow Depth = 1.62" for 100 Yr Future event
Inflow = 0.76 cfs @ 12.15 hrs, Volume= 0.083 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 13L : West Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Peak Elev= 50.00' @ 24.50 hrs Surf.Area= 4,326 sf Storage= 3,629 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

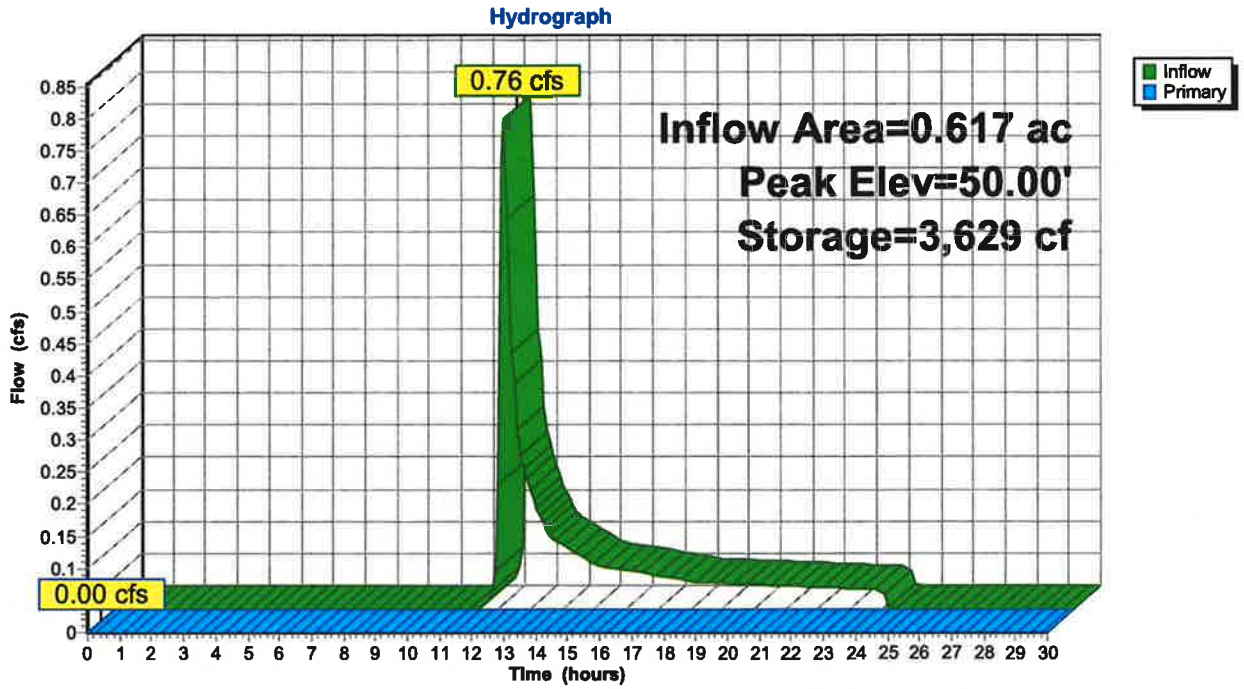
Volume	Invert	Avail.Storage	Storage Description
#1	48.00'	8,383 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
48.00	295	0	0
49.00	1,332	814	814
50.00	4,340	2,836	3,650
51.00	5,126	4,733	8,383

Device	Routing	Invert	Outlet Devices
#1	Primary	50.00'	**90.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=48.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 10P: Ex Low Point



Summary for Pond 16P: Aquabox System

Inflow Area = 2.309 ac, 71.98% Impervious, Inflow Depth = 9.92" for 100 Yr Future event
Inflow = 21.77 cfs @ 12.11 hrs, Volume= 1.908 af
Outflow = 16.54 cfs @ 12.30 hrs, Volume= 0.854 af, Atten= 24%, Lag= 11.7 min
Primary = 16.54 cfs @ 12.30 hrs, Volume= 0.854 af
Routed to Pond 19P : Infiltration Basin 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Peak Elev= 46.92' @ 12.32 hrs Surf.Area= 16,068 sf Storage= 45,950 cf

Plug-Flow detention time= 298.3 min calculated for 0.851 af (45% of inflow)
Center-of-Mass det. time= 153.4 min (907.0 - 753.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	41.50'	7,088 cf	**63.52'W x 252.98'L x 3.62'H Field A** 58,243 cf Overall - 40,524 cf Embedded = 17,719 cf x 40.0% Voids
#2A	42.00'	38,862 cf	**ADS Aquabox 1** x 2550 Inside #1 Inside= 29.5"W x 31.5"H => 6.19 sf x 2.46'L = 15.2 cf Outside= 29.5"W x 31.5"H => 6.46 sf x 2.46'L = 15.9 cf 2550 Chambers in 25 Rows
		45,950 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	42.63'	**24.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=14.23 cfs @ 12.30 hrs HW=46.86' TW=45.98' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 14.23 cfs @ 4.53 fps)

Pond 16P: Aquabox System - Chamber Wizard Field A

Chamber Model = ADS Aquabox 1 (ADS Aquabox)
Inside= 29.5"W x 31.5"H => 6.19 sf x 2.46'L = 15.2 cf
Outside= 29.5"W x 31.5"H => 6.46 sf x 2.46'L = 15.9 cf

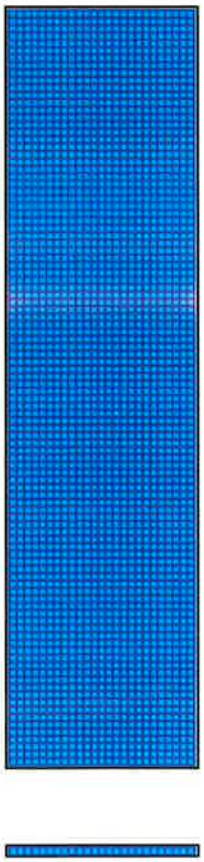
102 Chambers/Row x 2.46' Long = 250.98' Row Length +12.0" End Stone x 2 = 252.98' Base Length
25 Rows x 29.5" Wide + 12.0" Side Stone x 2 = 63.52' Base Width
6.0" Stone Base + 31.5" Chamber Height + 6.0" Stone Cover = 3.62' Field Height

2,550 Chambers x 15.2 cf = 38,862.1 cf Chamber Storage
2,550 Chambers x 15.9 cf = 40,523.6 cf Displacement

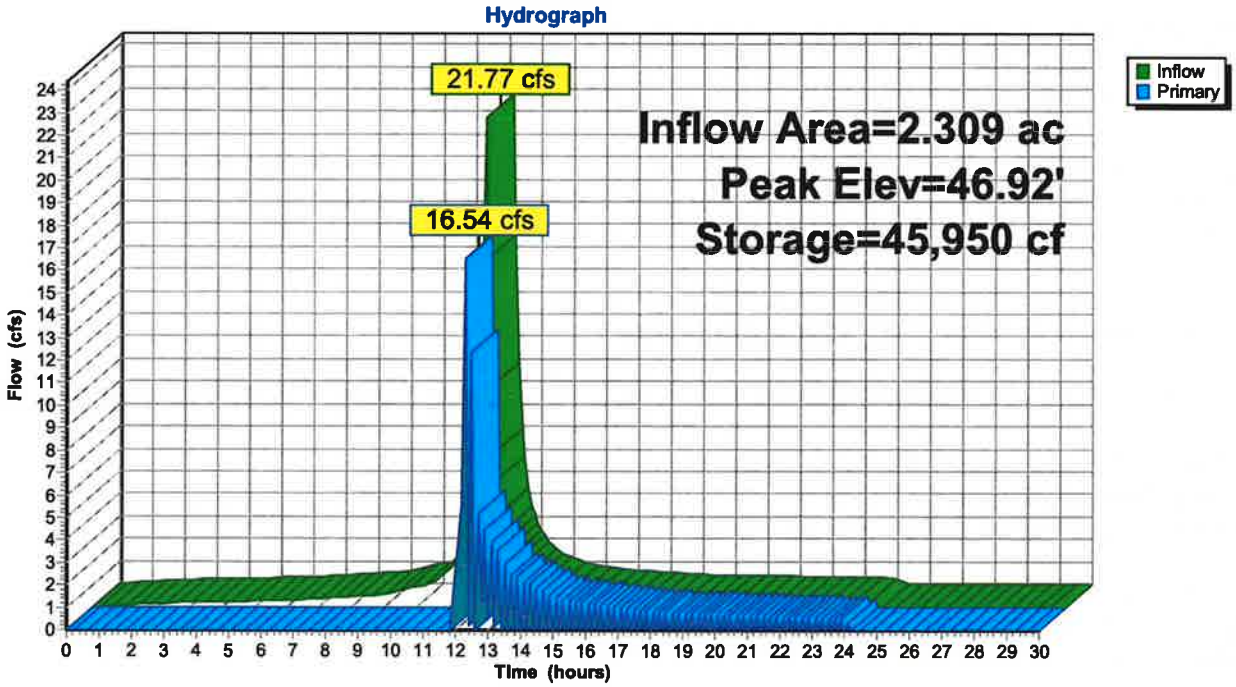
58,243.0 cf Field - 40,523.6 cf Chambers = 17,719.4 cf Stone x 40.0% Voids = 7,087.8 cf Stone Storage

Chamber Storage + Stone Storage = 45,949.9 cf = 1.055 af
Overall Storage Efficiency = 78.9%
Overall System Size = 252.98' x 63.52' x 3.62'

2,550 Chambers
2,157.1 cy Field
656.3 cy Stone



Pond 16P: Aquabox System



Summary for Pond 19P: Infiltration Basin 1

Inflow Area = 4.350 ac, 68.97% Impervious, Inflow Depth = 6.76" for 100 Yr Future event
Inflow = 27.15 cfs @ 12.29 hrs, Volume= 2.452 af
Outflow = 17.95 cfs @ 12.36 hrs, Volume= 1.794 af, Atten= 34%, Lag= 4.2 min
Secondary = 17.95 cfs @ 12.36 hrs, Volume= 1.794 af
Routed to Link 22L : South Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs
Peak Elev= 45.99' @ 12.36 hrs Surf.Area= 11,965 sf Storage= 34,282 cf

Plug-Flow detention time= 189.1 min calculated for 1.788 af (73% of inflow)
Center-of-Mass det. time= 86.5 min (900.7 - 814.2)

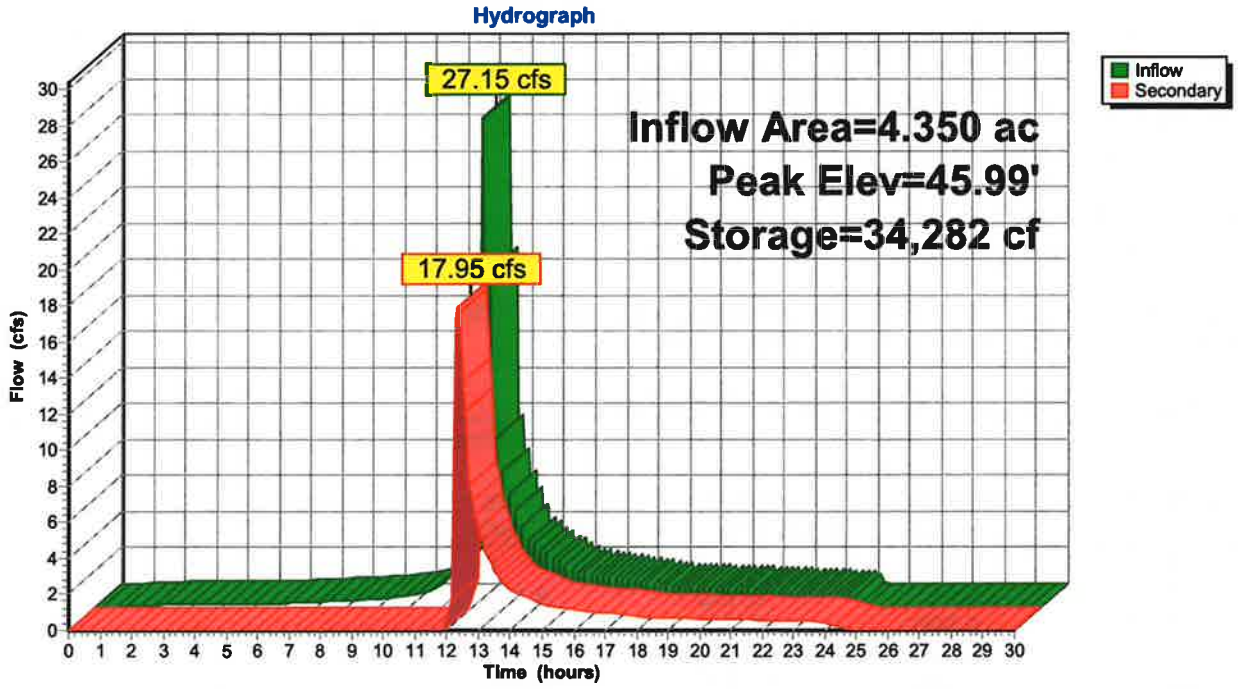
Volume	Invert	Avail.Storage	Storage Description
#1	42.00'	34,406 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
42.00	5,375	0	0
43.00	6,931	6,153	6,153
44.00	8,555	7,743	13,896
45.00	10,241	9,398	23,294
46.00	11,983	11,112	34,406

Device	Routing	Invert	Outlet Devices
#1	Secondary	45.50'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Secondary OutFlow Max=17.44 cfs @ 12.36 hrs HW=45.98' TW=0.00' (Dynamic Tailwater)
↳**1=Broad-Crested Rectangular Weir** (Weir Controls 17.44 cfs @ 1.81 fps)

Pond 19P: Infiltration Basin 1

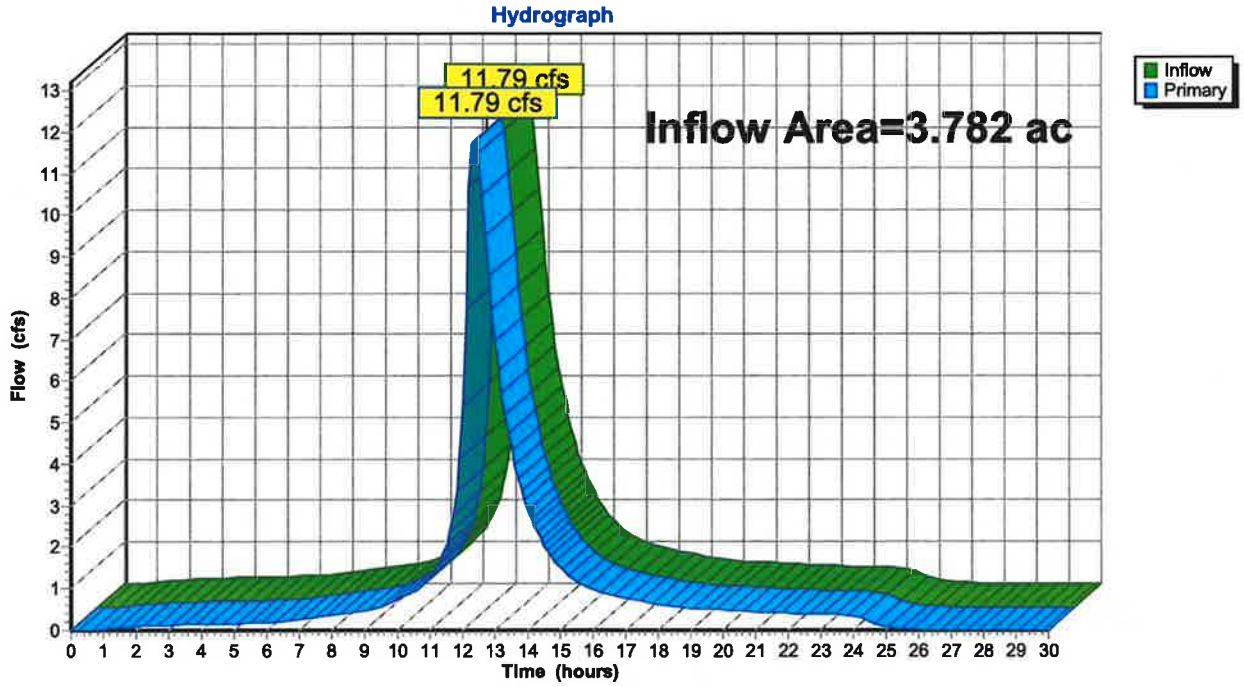


Summary for Link 13L: West Wetlands

Inflow Area = 3.782 ac, 30.14% Impervious, Inflow Depth = 7.30" for 100 Yr Future event
Inflow = 11.79 cfs @ 12.35 hrs, Volume= 2.299 af
Primary = 11.79 cfs @ 12.35 hrs, Volume= 2.299 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs

Link 13L: West Wetlands

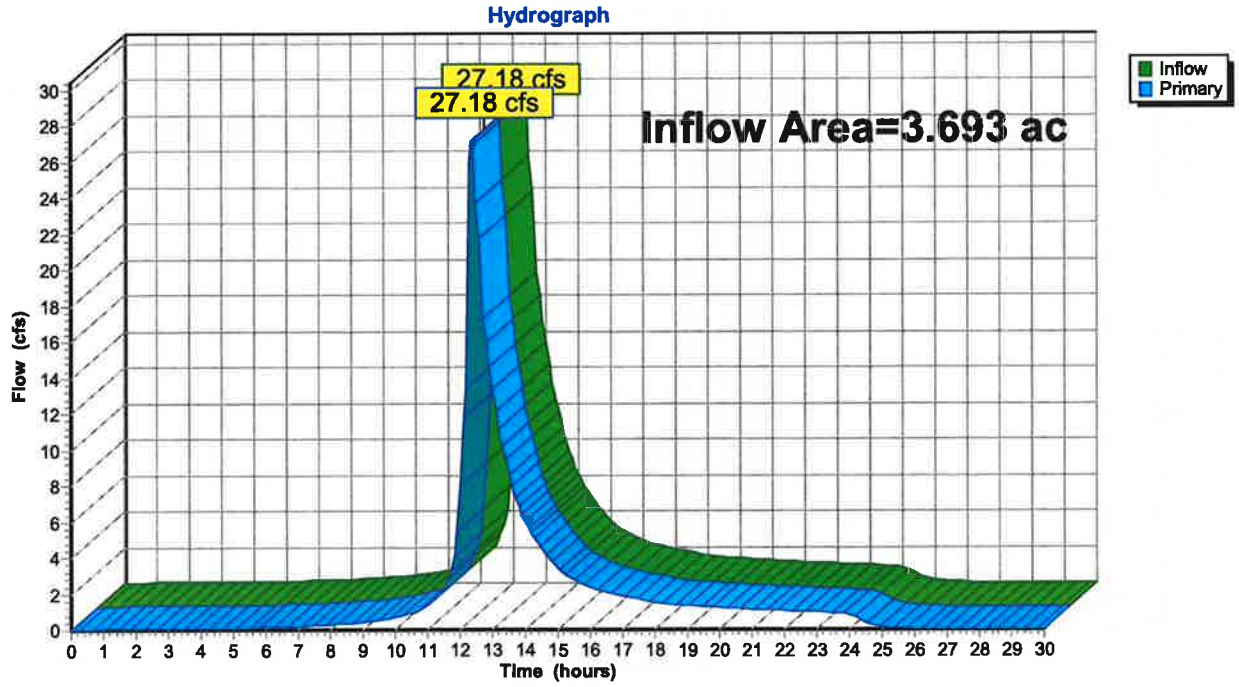


Summary for Link 22L: South Wetlands

Inflow Area = 3.693 ac, 22.58% Impervious, Inflow Depth = 13.99" for 100 Yr Future event
Inflow = 27.18 cfs @ 12.37 hrs, Volume= 4.307 af
Primary = 27.18 cfs @ 12.37 hrs, Volume= 4.307 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.10 hrs

Link 22L: South Wetlands



GEO-TECHNOLOGY ASSOCIATES, INC.

GEOTECHNICAL AND
ENVIRONMENTAL CONSULTANTS

A Practicing Geoprofessional Business Association Member Firm

February 9, 2026

Blue Stone Cathy Lane LLC
61 Cathy Lane
Florence, NJ 08518

Attn: Kuldeep S. Waraich

Re: Preliminary Stormwater Management Testing
61 Cathy Lane
Township of Florence, Burlington County, New Jersey

Dear Kuldeep:

In accordance with our agreement dated December 1, 2025, Geo-Technology Associates, Inc. (GTA) has performed test pits and preliminary in-situ infiltration testing for the planning and design of stormwater management (SWM) facilities in the Township of Florence, Burlington County, New Jersey. The site is located at 61 Cathy Lane and is identified as Lot 3.01 in Block 163.01 on the Township of Florence tax map.

A survey plan prepared by Stout & Caldwell Engineers, LLC titled "Plan of Survey" last revised May 16, 2024, was provided to GTA. The plan indicates the site boundaries, existing site features, and existing topography. The plan was marked up to show the requested locations of 6 test pit excavations within the proposed SWM basin areas.

Test Pit Exploration

On January 16, 2026, GTA observed and logged the excavation of 6 test pits and performed preliminary in-situ infiltration testing at the requested locations. The test pits were excavated by Neighbors Property Management using a Bobcat E60 excavator and extended to a depth of approximately 13 feet below the existing ground surface. In-situ infiltration testing was performed adjacent to each of the test pits using a double-ring infiltrometer. The exploration locations were selected by the Client's civil engineer, Paulus, Sokolowski and Sartor, LLC (PS&S), and located in the field by GTA using a hand-held GPS unit and existing site features as reference. The approximate locations of the explorations performed for this study are shown on the attached Exploration Location Plan. Detailed descriptions of the subsurface conditions encountered in the test pits are indicated on the Logs of Test Pits, which are also attached. The ground surface elevations indicated on the logs were obtained by interpolating between topographic contours indicated on the plan provided to us and should be considered approximate.

Existing Conditions

At the time of GTA's exploration, the site was occupied by a trucking facility consisting of three single-story buildings with an asphalt paved parking area and a stone/gravel lot and driveway in the southern central portion of the site.

Subsurface Conditions

A 6- to 8-inch-thick layer of topsoil was encountered at the ground surface in the test pits performed for this study. Below the surficial materials, the native soils consisted predominantly of interlayered loamy sands, sandy loams, sandy clay loams, sandy clays, and clays.

Groundwater was observed in the all test pits performed for this study at depths ranging from approximately 9 to 10½ feet below the ground surface. Long-term groundwater readings were not obtained because the test pits were backfilled upon completion for safety considerations. The test pits were performed during the "wet season" defined by the NJDEP as January through April, therefore, we believe the observed groundwater is representative of the seasonal high water table (SHWT) at the explored locations.

Infiltration Testing

Preliminary in-situ infiltration tests were performed at each of the test pits using a double-ring infiltrometer in general accordance with Chapter 12 of the NJDEP Stormwater Best Management Practices Manual (Chapter 12). The results of the infiltration tests are summarized in the following table.

SUMMARY OF INFILTRATION TEST RESULTS

Test Pit Location	Approx. Test Depth (ft.)	Approx. Test Elevation (ft.)	USDA Classification	Measured Infiltration Rate (in/hr)
TP-1	6	43	Clay	0.0
TP-2	5	43.5	Sandy Clay Loam	0.2
TP-2	7	41.5	Sandy Clay	0.0
TP-3	5	45	Sandy Loam	1.1
TP-3	9	41	Sandy Clay	0.0
TP-4	5	43.5	Sandy Clay Loam	0.4
TP-5	5	43	Sandy Loam	6.4
TP-6	5	42	Sandy Loam	1.7

Note: A factor of safety of at least 2 should be applied to the measured infiltration rates for design purposes.

The primary conditions that affect the capacity of soil to infiltrate water are the soil gradation and density properties and the presence of hydraulically restrictive layers such as silt or clay (fines), rock, or groundwater, each of which would restrict the flow of water into the underlying aquifer. The subsurface

profile at the site generally consisted of interlayered loamy sands, sandy loams, sandy clay loams, sandy clays, and clays.

The infiltration testing performed for this study resulted in measured infiltration rates ranging from about 0.0 to 6.4 inches per hour.

LIMITATIONS

This letter, including all supporting test pit logs, field data, and other documents prepared by GTA in connection with this project have been prepared for the exclusive use of Blue Stone Cathy Lane LLC pursuant to the agreement between GTA and the Client. All terms and conditions set forth in the Agreement and the General Provisions attached thereto are incorporated herein by reference. No warranty, express or implied, is made herein. Use and reproduction of this letter by any other person without the expressed written permission of GTA and the Client is unauthorized and such use is at the sole risk of the user. Test pits indicate soil conditions only at specific locations and times and only at the depths penetrated. They do not necessarily reflect strata or variations that may exist between the exploration locations.

GTA is not responsible for any claims, damages, or liability associated with interpretation of subsurface data or reuse of the subsurface data without the expressed written authorization of Geo-Technology Associates, Inc.

This letter and the attached logs are instruments of service. The subject matter of this report is limited to the facts and matters stated herein. Absence of a reference to any other conditions or subject matter shall not be construed by the reader to imply approval by the writer.

GTA appreciates the opportunity to have been of assistance to you on this project. Please contact our office at (732) 271-9301 if you have questions or require additional information. Please note that, unless you make other arrangements, GTA will discard all soil samples obtained from the explorations 60 days after the date of this report.

Sincerely,

GEO-TECHNOLOGY ASSOCIATES, INC.

Kyle T. Plaza, P.E.
Associate

Robert Dykstra, P.E.
Vice President

Attachments:

Site Location Map
Exploration Location Plan
Logs of Test Pits (6 pages)

Note: Site boundary is approximate.

SITE LOCATION MAP

61 CATHY LANE

Township of Florence,
Burlington County, New Jersey

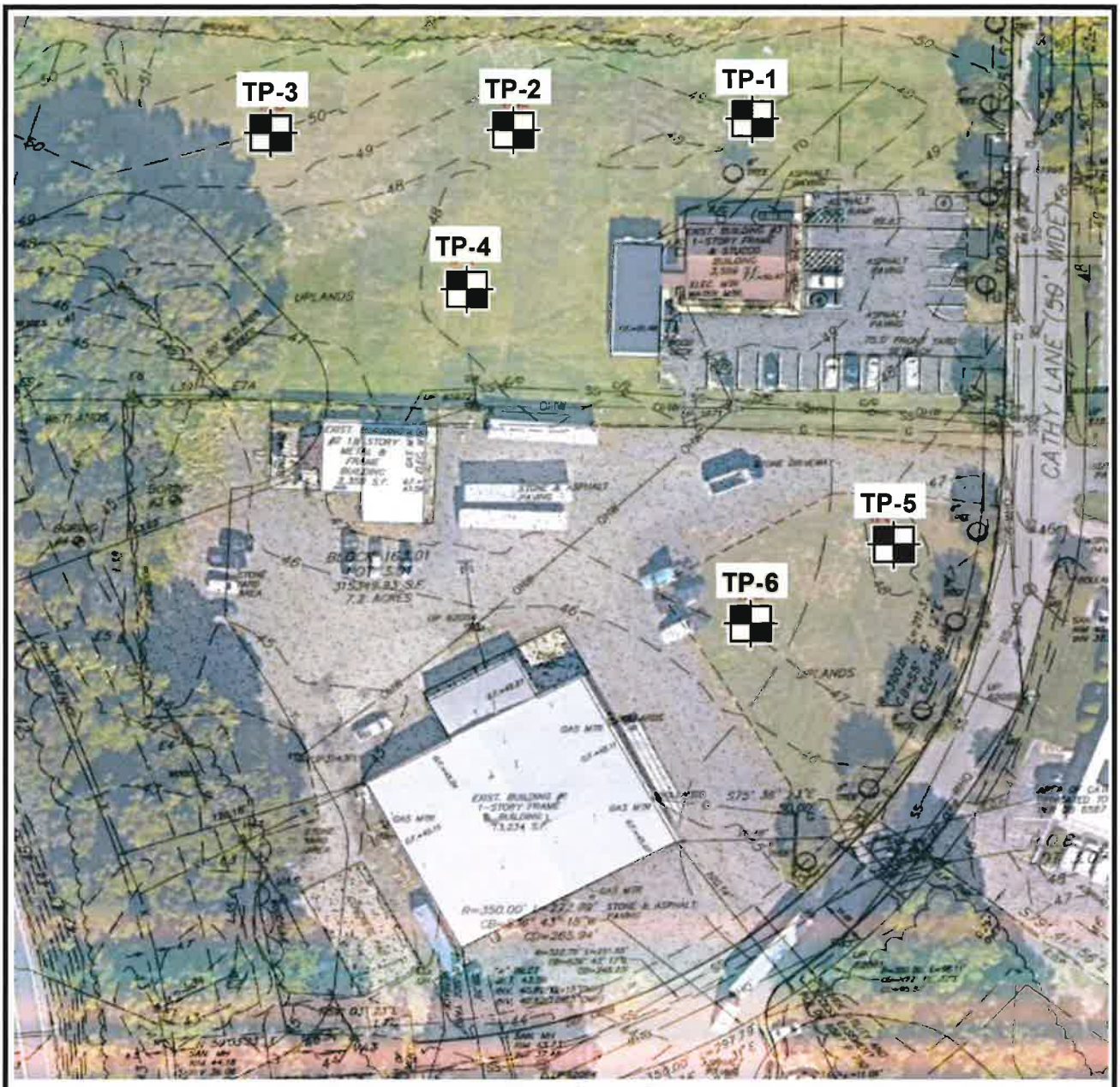
Prepared For: Blue Stone Cathy Lane LLC

14 Worlds Fair Drive, Suite A
Somerset, New Jersey 08873
(732) 271-9301
fax (732) 271-9306

GEO-TECHNOLOGY ASSOCIATES, INC.

SOURCE: Google Maps		
SCALE: NTS	DATE: FEB. 2026	PROJECT#: 31253305

Figure 1



Base plan prepared by Stout & Caldwell Engineers, LLC "Plan of Survey" last revised May 16, 2024

LEGEND:

TP-X Indicates the numbers and approximate locations of test pits performed for this study.

EXPLORATION LOCATION PLAN

14 Worlds Fair Drive, Suite A
Somerset, New Jersey 08873
(732) 271-9301
fax (732) 271-9306

GEO-TECHNOLOGY ASSOCIATES, INC.

61 CATHY LANE

Township of Florence,
Burlington County, New Jersey

Prepared For: Blue Stone Cathy Lane LLC

DESIGN BY: *	DRAWN BY: VP	REVIEWED BY: KTP
SCALE: NTS	DATE: FEB. 2026	PROJECT #: 31253305

Figure 2

LOG OF TEST PIT NO. TP-1

PROJECT: **61 Cathy Lane**
PROJECT LOCATION: **Township of Florence, Burlington County, NJ**
CLIENT: **Blue Stone Cathy Lane LLC**

PROJECT NO.: **31253305**

DATE STARTED: **1/16/2025**
DATE COMPLETED: **1/16/2025**
CONTRACTOR: **Neighbors Property Management**
EQUIPMENT: **Bobcat E60**

GROUNDWATER ENCOUNTERED: **10.5 Ft.**
GROUND SURFACE ELEVATION: **49 Ft.**
DATUM: **Topo**
LOGGED BY: **VP**
CHECKED BY: **KTP**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
48.5	0			6 In. of Topsoil	
	2	SM		Brown (10YR 5/3), very moist, single grain, loose, Sandy Loam	
46.0	4	SC		Gray (5Y 6/1), moist, single grain to subangular blocky, loose to friable, Sandy Clay Loam	
44.0	6	SM		Dark yellow-brown (10YR 3/4), moist, 15% gravel, single grain, loose, Sandy Loam	
43.0	8	CL		Very dark gray (10YR 3/1), moist, massive, firm to very firm, Clay	Infiltration Rate = 0.0 in/hr at 6 Ft.
38.5	10	SP-SM		Dark yellow-brown (10YR 4/6), wet, single grain, loose, Loamy Sand	▼
36.0	12			Test pit complete at 13 Ft. Seasonal high water table encountered at 10-1/2 Ft.	
	14				
	16				
	18				

NOTES: **Location and elevation are approximate.**
Backfilled on completion

GEO-TECHNOLOGY ASSOCIATES, INC.
14 Worlds Fair Drive, Suite A
Somerset, NJ 08873

LOG OF TEST PIT NO. TP-1

LOG OF TEST PIT NO. TP-2

PROJECT: **61 Cathy Lane**
PROJECT LOCATION: **Township of Florence, Burlington County, NJ**
CLIENT: **Blue Stone Cathy Lane LLC**

PROJECT NO.: **31253305**

DATE STARTED: **1/16/2025**
DATE COMPLETED: **1/16/2025**
CONTRACTOR: **Neighbors Property Management**
EQUIPMENT: **Bobcat E60**

GROUNDWATER ENCOUNTERED: **9 Ft.**
GROUND SURFACE ELEVATION: **48.5 Ft.**
DATUM: **Topo**
LOGGED BY: **VP**
CHECKED BY: **KTP**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
	0				
				8 In. of Topsoil	
47.8		SC		Brown (10YR 5/3), moist, single grain to subangular blocky, loose to friable, Sandy Clay Loam	
	2				
	4				
				- Light olive-brown (5Y 6/2) at 5 Ft.	Infiltration Rate = 0.2 in/hr at 5 Ft.
	6				
41.5		CL		Dark gray-brown (10YR 4/2), moist, 10% gravel, angular blocky, firm, Sandy Clay	Infiltration Rate = 0.0 in/hr at 7 Ft.
	8				
39.5		SP-SM		Strong brown (7.5YR 4/6), wet, single grain, loose, Loamy Sand	
	10				
				- Gray (10YR 6/1) at 11 Ft.	
	12				
35.5				Test pit complete at 13 Ft. Seasonal high water table encountered at 9 Ft.	
	14				
	16				
	18				

NOTES: **Location and elevation are approximate.**
Backfilled on completion

GEO-TECHNOLOGY ASSOCIATES, INC.
14 Worlds Fair Drive, Suite A
Somerset, NJ 08873

LOG OF TEST PIT NO. TP-2

Sheet 1 of 1

LOG OF TEST PIT NO. TP-3

PROJECT: **61 Cathy Lane**
PROJECT LOCATION: **Township of Florence, Burlington County, NJ**
CLIENT: **Blue Stone Cathy Lane LLC**

PROJECT NO.: **31253305**

DATE STARTED: **1/16/2025**
DATE COMPLETED: **1/16/2025**
CONTRACTOR: **Neighbors Property Management**
EQUIPMENT: **Bobcat E60**

GROUNDWATER ENCOUNTERED: **10.5 Ft.**
GROUND SURFACE ELEVATION: **50 Ft.**
DATUM: **Topo**
LOGGED BY: **VP**
CHECKED BY: **KTP**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
	0				
49.5				6 In. of Topsoil	
		SM		Dark yellow-brown (10YR 4/4), moist, single grain, loose, Sandy Loam	
	2				
47.0		SC		Brown (7.5YR 4/4), moist, single grain to subangular blocky, loose to friable, Sandy Clay Loam	
	4				
45.0		SM		Gray-brown (10YR 5/2), moist, single grain, loose, Sandy Loam	Infiltration Rate = 1.1 in/hr at 5 Ft.
	6				
	8			- Dark yellow-brown (10YR 4/4) with 15% gravel at 8 Ft.	
41.0		CL		Dark gray-brown (10YR 4/2), moist, 10% gravel, angular blocky, firm, Sandy Clay with iron deposits	Infiltration Rate = 0.0 in/hr at 9 Ft.
	10				▼
39.5		SP-SM		Light gray-brown (10YR 6/2), wet, single grain, loose, Loamy Sand	
	12			- Yellow-brown (10YR 5/6) at 12 Ft.	
37.0				Test pit complete at 13 Ft. Seasonal high water table encountered at 10-1/2 Ft.	
	14				
	16				
	18				

NOTES: **Location and elevation are approximate.**
Backfilled on completion

GEO-TECHNOLOGY ASSOCIATES, INC.
14 Worlds Fair Drive, Suite A
Somerset, NJ 08873

LOG OF TEST PIT NO. TP-3

LOG OF TEST PIT NO. TP-4

PROJECT: **61 Cathy Lane**
PROJECT LOCATION: **Township of Florence, Burlington County, NJ**
CLIENT: **Blue Stone Cathy Lane LLC**

PROJECT NO.: **31253305**

DATE STARTED: **1/16/2025**
DATE COMPLETED: **1/16/2025**
CONTRACTOR: **Neighbors Property Management**
EQUIPMENT: **Bobcat E60**

GROUNDWATER ENCOUNTERED: **9 Ft.**
GROUND SURFACE ELEVATION: **48.5 Ft.**
DATUM: **Topo**
LOGGED BY: **VP**
CHECKED BY: **KTP**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
	0				
				8 In. of Topsoil	
47.8		SM		Dark brown (10YR 3/3), moist, single grain, loose, Sandy Loam	
	2				
46.0		CL		Very dark gray (10YR 3/1), moist, 10% gravel, angular blocky, friable, Sandy Clay	
44.5	4	SC		Gray (10YR 6/1), moist to very moist, single grain to subangular blocky, loose to friable, Sandy Clay Loam	Infiltration Rate = 0.4 in/hr at 5 Ft.
	6				
40.5	8	SP-SM		Strong brown (10YR 4/6), moist to very moist, single grain, loose, Loamy Sand	
39.5		CL		Very dark gray (10YR 3/1), wet, angular blocky to massive, firm, Sandy Clay	
	10				
	12				
35.5				Test pit complete at 13 Ft. Seasonal high water table encountered at 9 Ft.	
	14				
	16				
	18				

NOTES: **Location and elevation are approximate.**
Backfilled on completion

GEO-TECHNOLOGY ASSOCIATES, INC.
14 Worlds Fair Drive, Suite A
Somerset, NJ 08873

LOG OF TEST PIT NO. TP-4

LOG OF TEST PIT NO. TP-5

PROJECT: **61 Cathy Lane**
PROJECT LOCATION: **Township of Florence, Burlington County, NJ**
CLIENT: **Blue Stone Cathy Lane LLC**

PROJECT NO.: **31253305**

DATE STARTED: **1/16/2025**
DATE COMPLETED: **1/16/2025**
CONTRACTOR: **Neighbors Property Management**
EQUIPMENT: **Bobcat E60**

GROUNDWATER ENCOUNTERED: **10.5 Ft.**
GROUND SURFACE ELEVATION: **48 Ft.**
DATUM: **Topo**
LOGGED BY: **VP**
CHECKED BY: **KTP**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
	0				
47.3				8 In. of Topsoil	
		SM		Brown (7.5YR 4/4), moist, single grain, loose, Sandy Loam	
	2				
	4				
	6				Infiltration Rate = 6.4 in/hr at 5 Ft.
	8			- Dark yellow-brown (10YR 3/4), 15% gravel at 8 Ft.	
	10				
37.5		CL		Gray (10YR 5/1), wet, angular blocky, friable to firm, Sandy Clay	
	12				
35.0				Test pit complete at 13 Ft. Seasonal high water table encountered at 10-1/2 Ft.	
	14				
	16				
	18				

NOTES: **Location and elevation are approximate.**

GEO-TECHNOLOGY ASSOCIATES, INC.
14 Worlds Fair Drive, Suite A
Somerset, NJ 08873

LOG OF TEST PIT NO. TP-5

LOG OF TEST PIT NO. TP-6

PROJECT: **61 Cathy Lane**
PROJECT LOCATION: **Township of Florence, Burlington County, NJ**
CLIENT: **Blue Stone Cathy Lane LLC**

DATE STARTED: **1/16/2025**
DATE COMPLETED: **1/16/2025**
CONTRACTOR: **Neighbors Property Management**
EQUIPMENT: **Bobcat E60**

PROJECT NO.: **31253305**
GROUNDWATER ENCOUNTERED: **10 Ft.**
GROUND SURFACE ELEVATION: **47 Ft.**
DATUM: **Topo**
LOGGED BY: **VP**
CHECKED BY: **KTP**

ELEVATION (ft.)	DEPTH (ft.)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
	0				
46.3				8 In. of Topsoil	
	2	SC		Brown (7.5YR 5/2), moist, single grain to subangular blocky, loose to friable, Sandy Clay Loam	
	4				
42.5		SM		Brown (7.5YR 4/3), moist, single grain, loose, Sandy Loam	Infiltration Rate = 1.7 in/hr at 5 Ft.
	6				
	8			- 15% gravel at 8 Ft.	
37.0	10	CL		Very dark gray (10YR 3/1), wet, 10% gravel, subangular blocky, friable, Sandy Clay with iron deposits	▼
	12				
34.0				Test pit complete at 13 Ft. Seasonal high water table encountered at 10 Ft.	
	14				
	16				
	18				

NOTES: **Location and elevation are approximate.**

GEO-TECHNOLOGY ASSOCIATES, INC.
14 Worlds Fair Drive, Suite A
Somerset, NJ 08873

LOG OF TEST PIT NO. TP-6

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Burlington County, New Jersey

March 5, 2026

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

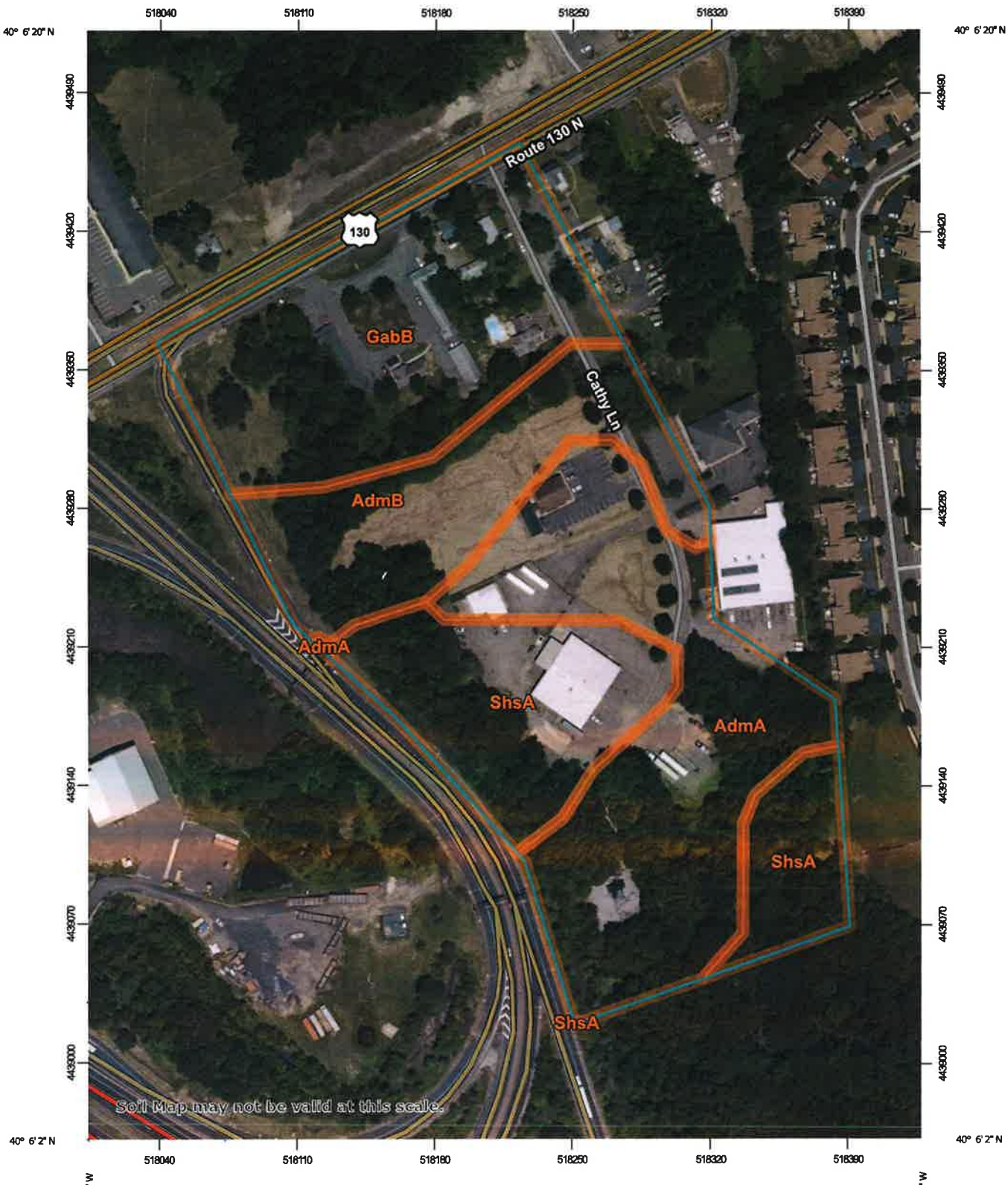
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:2,730 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 40 80 160 240

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

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

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

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 1:24,000.

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: Burlington County, New Jersey
Survey Area Data: Version 22, Aug 28, 2025

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

Date(s) aerial images were photographed: Jun 4, 2022—Jul 22, 2022

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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres In AOI	Percent of AOI
AdmA	Adelphia fine sandy loam, 0 to 2 percent slopes	6.3	32.0%
AdmB	Adelphia fine sandy loam, 2 to 5 percent slopes	3.4	17.6%
GabB	Galestown sand, 0 to 5 percent slopes	5.6	28.7%
ShsA	Shrewsbury fine sandy loam, 0 to 2 percent slopes	4.3	21.8%
Totals for Area of Interest		**19.6**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Burlington County, New Jersey

AdmA—Adelphia fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: rdy5
Landscape: North altantic coastal plains
Elevation: 20 to 150 feet
Mean annual precipitation: 28 to 59 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 161 to 231 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Adelphia and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Adelphia

Setting

Landscape: North altantic coastal plains
Landform: Low interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Glauconite bearing eolian deposits and/or glauconite bearing fluviomarine deposits

Typical profile

Ap - 0 to 10 inches: fine sandy loam
E - 10 to 14 inches: fine sandy loam
Bt - 14 to 30 inches: sandy clay loam
C - 30 to 60 inches: stratified loamy sand to sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: About 18 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Ecological site: F149AY130NJ - Moist Loamy Upland
Hydric soil rating: No

Minor Components

Shrewsbury

Percent of map unit: 5 percent
Landscape: North atlantic coastal plains
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: F149AY090NJ - Coastal Plain Hardwood Swamp
Hydric soil rating: Yes

Pemberton

Percent of map unit: 5 percent
Landscape: North atlantic coastal plains
Landform: Flats, Low hills
Down-slope shape: Linear, convex
Across-slope shape: Linear
Ecological site: F149AY130NJ - Moist Loamy Upland
Hydric soil rating: No

Collington

Percent of map unit: 5 percent
Landscape: North atlantic coastal plains
Landform: Broad interfluves, Flats
Down-slope shape: Convex, linear
Across-slope shape: Linear
Ecological site: F149AY170MD - Well Drained Fine-Loamy Upland
Hydric soil rating: No

AdmB—Adelphia fine sandy loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: rdy6
Landscape: North altantic coastal plains
Elevation: 0 to 180 feet
Mean annual precipitation: 28 to 59 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 161 to 231 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Adelphia and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Adelphia

Setting

Landscape: North altantic coastal plains
Landform: Low hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Glauconite bearing eolian deposits and/or glauconite bearing fluviomarine deposits

Typical profile

Ap - 0 to 10 inches: fine sandy loam
E - 10 to 14 inches: fine sandy loam
Bt - 14 to 30 inches: sandy clay loam
C - 30 to 60 inches: stratified loamy sand to sandy loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: About 18 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Ecological site: F149AY130NJ - Moist Loamy Upland
Hydric soil rating: No

Minor Components

Freehold

Percent of map unit: 5 percent
Landscape: North atlantic coastal plains
Landform: Flats, Low hills
Landform position (two-dimensional): Summit
Down-slope shape: Linear, convex
Across-slope shape: Linear
Ecological site: F149AY170MD - Well Drained Fine-Loamy Upland
Hydric soil rating: No

Shrewsbury

Percent of map unit: 5 percent
Landscape: North atlantic coastal plains
Landform: Flats
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F149AY090NJ - Coastal Plain Hardwood Swamp

Hydric soil rating: Yes

Collington

Percent of map unit: 5 percent
Landscape: North atlantic coastal plains
Landform: Low hills
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F149AY170MD - Well Drained Fine-Loamy Upland
Hydric soil rating: No

GabB—Galestown sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: rf1r
Landscape: North atlantic coastal plains
Elevation: 10 to 150 feet
Mean annual precipitation: 28 to 59 inches
Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 161 to 231 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Galestown and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Galestown

Setting

Landscape: North atlantic coastal plains
Landform: Upland terraces, Broad ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve, riser, tread
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Sandy eolian deposits and/or fluviomarine deposits

Typical profile

Ap - 0 to 10 inches: sand
A - 10 to 23 inches: loamy sand
Bt - 23 to 30 inches: loamy sand
BC - 30 to 38 inches: loamy sand
C - 38 to 60 inches: sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: F153DY170NJ - Sandy, Excessively Drained Upland
Hydric soil rating: No

Minor Components

Aura

Percent of map unit: 5 percent
Landscape: Coastal plains
Landform: Low hills
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F153DY160NJ - Well Drained Coarse-Loamy Upland
Hydric soil rating: No

Galloway

Percent of map unit: 5 percent
Landscape: North atlantic coastal plains
Landform: Flats, Dunes
Landform position (three-dimensional): Riser, dip
Down-slope shape: Linear
Across-slope shape: Linear, convex
Ecological site: F153DY150NJ - Moist Sandy Upland
Hydric soil rating: No

Downer

Percent of map unit: 5 percent
Landscape: Coastal plains
Landform: Low hills
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F153DY160NJ - Well Drained Coarse-Loamy Upland
Hydric soil rating: No

ShsA—Shrewsbury fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: rf60
Landscape: North atlantic coastal plains
Elevation: 0 to 200 feet
Mean annual precipitation: 28 to 59 inches

Mean annual air temperature: 46 to 79 degrees F
Frost-free period: 161 to 231 days
Farmland classification: Farmland of statewide importance, if drained

Map Unit Composition

Shrewsbury and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Shrewsbury

Setting

Landscape: North atlantic coastal plains
Landform: Flats
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fine-loamy marine deposits containing moderate amounts of glauconite

Typical profile

Ap - 0 to 10 inches: fine sandy loam
E - 10 to 14 inches: fine sandy loam
Btg1 - 14 to 24 inches: sandy clay loam
Btg2 - 24 to 32 inches: sandy clay loam
C - 32 to 60 inches: stratified loamy sand to sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Ecological site: F149AY090NJ - Coastal Plain Hardwood Swamp
Hydric soil rating: Yes

Minor Components

Holmdel

Percent of map unit: 5 percent
Landscape: North atlantic coastal plains
Landform: Flats
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F149AY130NJ - Moist Loamy Upland
Hydric soil rating: No

Keansburg

Percent of map unit: 5 percent
Landscape: North atlantic coastal plains
Landform: Low flats, Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Ecological site: F149AY090NJ - Coastal Plain Hardwood Swamp
Hydric soil rating: Yes

Adelphia

Percent of map unit: 5 percent
Landscape: North altantic coastal plains
Landform: Low interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F149AY130NJ - Moist Loamy Upland
Hydric soil rating: No

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New Jersey Groundwater Recharge Spreadsheet Version 2.0 November 2003

Annual Groundwater Recharge Analysis (based on GSR-32)

Select Township ↓	Average Annual P (in)	Climatic Factor
BURLINGTON CO., FLORENCE TWP	45.7	1.43

Project Name:	**Blue Stone Cathy Lane**
Description:	
Analysis Date:	**03/24/26**

Pre-Developed Conditions

Land Segment	Area (acres)	TR-55 Land Cover	Soil	Annual Recharge (in)	Annual Recharge (cu.ft)
1	0.26	Open space	Galestown	15.3	14,416
2	0.06	Open space	Shrewsbury	0.0	-
3	3.07	Open space	Adelphia	13.1	146,254
4	0.54	Woods	Galestown	14.5	28,502
5	1.2	Woods	Shrewsbury	0.0	-
6	2.87	Woods	Adelphia	13.2	137,049
7	3.5	Impervious areas	Adelphia	0.0	-
8					
9					
10					
11					
12					
13					
14					
15					
Total =	11.5			Total Annual Recharge (in)	Total Annual Recharge (cu-ft)
				7.8	326,221

Post-Developed Conditions

Land Segment	Area (acres)	TR-55 Land Cover	Soil	Annual Recharge (In)	Annual Recharge (cu.ft)
1	0.13	Open space	Galestown	15.3	7,208
2	1.7	Open space	Adelphia	13.1	80,986
3	1.36	Woods	Shrewsbury	0.0	-
4	3.05	Woods	Adelphia	13.2	145,644
5	5.26	Impervious areas	Adelphia	0.0	-
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
Total =	11.5			Total Annual Recharge (in)	Total Annual Recharge (cu.ft)
				5.8	233,840

Annual Recharge Requirements Calculation ↓

% of Pre-Developed Annual Recharge to Preserve =	100%	Total Impervious Area (sq.ft)
		229,128
Post-Development Annual Recharge Deficit=	***92,381***	(cubic feet)

Recharge Efficiency Parameters Calculations (area averages)

RWC= 5.24	(in)	DRWC= 1.29	(in)
ERWC = 1.49	(in)	EDRWC= 0.37	(in)

Procedure to fill the Pre-Development and Post-Development Conditions Tables

For each land segment, first enter the area, then select TR-55 Land Cover, then select Soil. Start from the top of the table and proceed downward. Don't leave blank rows (with A=0) in between your segment entries. Rows with A=0 will not be displayed or used in calculations. For impervious areas outside of standard lots select "Impervious Areas" as the Land Cover. Soil type for impervious areas are only required if an infiltration facility will be built within these areas.

Project Name	Description	Analysis Date	BMP or LID Type
Blue Stone Cathy Lane	0	03/24/26	Aquabox System

Recharge BMP Input Parameters

Parameter	Symbol	Value	Unit
BMP Area	ABMP	16382.0	sq.ft
BMP Effective Depth, this is the design variable	dBMP	7.5	in
Upper level of the BMP surface (negative if above ground)	dBMPu	24.0	in
Depth of lower surface of BMP, must be>=dBMPu	dEXC	31.5	in
Post-development Land Segment Location of BMP, Input Zero if Location is distributed or undetermined	SegBMP	0	unitless

Root Zone Water capacity Calculated Parameters

Parameter	Symbol	Value	Unit
Empty Portion of RWC under Post-D Natural Recharge	ERWC	1.49	in
ERWC Modified to consider dEXC	EDRWC	0.60	in
Empty Portion of RWC under Infilt. BMP	RERWC	0.48	in

Recharge Design Parameters

Parameter	Symbol	Value	Unit
Inches of Runoff to capture	Qdesign	1.70	in
Inches of Rainfall to capture	Pdesign	1.93	in
Recharge Provided Avg. over Imp. Area		26.1	in
Runoff Captured Avg. over imp. Area		34.1	in

BMP Calculated Size Parameters

ABMP/Aimp	Aratio	0.23	unitless
BMP Volume	VBMP	10,169	cu.ft

CALCULATION CHECK MESSAGES

Volume Balance-> OK
dBMP Check—> OK
dEXC Check—> OK

BMP Location—> Location is selected as distributed or undetermined

Parameters from Annual Recharge Worksheet

Parameter	Symbol	Value	Unit
Post-D Deficit Recharge (or desired recharge volume)	Vdef	157,600	cu.ft
Post-D Impervious Area (or target Impervious Area)	Aimp	72,396	sq.ft
Root Zone Water Capacity	RWC	5.24	in
RWC Modified to consider dEXC	DRWC	2.09	in
Climatic Factor	C-factor	1.43	no units
Average Annual P	Pavg	45.7	in
Recharge Requirement over Imp. Area	dr	8.3	in

System Performance Calculated Parameters

Parameter		Value	Unit
Annual BMP Recharge Volume		157,600	cu.ft
Avg BMP Recharge Efficiency		76.6%	Represents % Infiltration Recharged
%Rainfall became Runoff		77.9%	%
%Runoff Infiltrated		95.8%	%
%Runoff Recharged		23.2%	%
%Rainfall Recharged		18.1%	%

OTHER NOTES

Pdesign is accurate only after BMP dimensions are updated to make rech volume= deficit volume. The portion of BMP infiltration prior to filling and the area occupied by BMP are ignored in these calculations. Results are sensetive to dBMP, make sure dBMP selected is small enough for BMP to empty in less than 3 days. For land Segment Location of BMP if you select "Impervious areas" RWC will be minimal but not zero as determined by the soil type and a shallow root zone for this Land Cover allowing consideration of lateral flow and other losses

How to solve for different recharge volumes: By default the spreadsheet assigns the values of total deficit recharge volume "Vdef" and total proposed impervious area "Aimp" from the "Annual Recharge" sheet to "Vdef" and "Aimp" on this page. This allows solution for a single BMP to handle the entire recharge requirement assuming the runoff from entire impervious area is available to the BMP.
To solve for a smaller BMP or a LID-IMP to recharge only part of the recharge requirement, set Vdef to your target value and Aimp to impervious area directly connected to your infiltration facility and then solve for ABMP or dBMP. To go back to the default configuration clik the "Default Vdef & Aimp" button.

Project Name	Description	Analysis Date	BMP or LID Type
Blue Stone Cathy Lane	0	03/24/26	Infiltration Basin 1

Recharge BMP Input Parameters

Parameter	Symbol	Value	Unit
BMP Area	ABMP	5375.0	sq.ft
BMP Effective Depth, this is the design variable	dBMP	10.1	in
Upper level of the BMP surface (negative if above ground)	dBMPu	37.6	in
Depth of lower surface of BMP, must be>=dBMPu	dEXC	48.0	in
Post-development Land Segment Location of BMP, Input Zero if Location is distributed or undetermined	SegBMP	0	unitless

Root Zone Water capacity Calculated Parameters

Parameter	Symbol	Value	Unit
Empty Portion of RWC under Post-D Natural Recharge	ERWC	1.49	in
ERWC Modified to consider dEXC	EDRWC	0.37	in
Empty Portion of RWC under Infilt. BMP	RERWC	0.29	in

Recharge Design Parameters

Parameter	Symbol	Value	Unit
Inches of Runoff to capture	Qdesign	0.93	in
Inches of Rainfall to capture	Pdesign	1.13	in
Recharge Provided Avg. over Imp. Area		28.1	in
Runoff Captured Avg. over imp. Area		30.2	in

BMP Calculated Size Parameters

ABMP/Aimp	Aratio	0.09	unitless
BMP Volume	VBMP	4,507	cu.ft

Parameters from Annual Recharge Worksheet

Post-D Deficit Recharge (or desired recharge volume)	Vdef	136,500	cu.ft
Post-D Impervious Area (or target Impervious Area)	Aimp	58,283	sq.ft
Root Zone Water Capacity	RWC	5.24	in
RWC Modified to consider dEXC	DRWC	1.29	in
Climatic Factor	C-factor	1.43	no units
Average Annual P	Pavg	45.7	in
Recharge Requirement over Imp. Area	dr	7.1	in

System Performance Calculated Parameters

Annual BMP Recharge Volume		136,500	cu.ft
Avg BMP Recharge Efficiency		93.0%	Represents % Infiltration Recharged
%Rainfall became Runoff		77.9%	%
%Runoff Infiltrated		84.9%	%
%Runoff Recharged		20.1%	%
%Rainfall Recharged		15.8%	%

CALCULATION CHECK MESSAGES

Volume Balance-> OK
dBMP Check--> OK
dEXC Check--> OK

BMP Location--> Location is selected as distributed or undetermined

OTHER NOTES

Pdesign is accurate only after BMP dimensions are updated to make rech volume= deficit volume. The portion of BMP infiltration prior to filling and the area occupied by BMP are ignored in these calculations. Results are sensetive to dBMP, make sure dBMP selected is small enough for BMP to empty in less than 3 days. For land Segment Location of BMP if you select "Impervious areas" RWC will be minimal but not zero as determined by the soil type and a shallow root zone for this Land Cover allowing consideration of lateral flow and other losses

How to solve for different recharge volumes: By default the spreadsheet assigns the values of total deficit recharge volume "Vdef" and total proposed impervious area "Aimp" from the "Annual Recharge" sheet to "Vdef" and "Aimp" on this page. This allows solution for a single BMP to handle the entire recharge requirement assuming the runoff from entire impervious area is available to the BMP.
To solve for a smaller BMP or a LID-IMP to recharge only part of the recharge requirement, set Vdef to your target value and Aimp to impervious area directly connected to your infiltration facility and then solve for ABMP or dBMP. To go back to the default configuration clik the "Default Vdef & Aimp" button.

Groundwater Mounding Analyses

The tested permeability rate for the basins ranged from less than 1 in/hr. to over 20 in/hr. A maximum rate of 10.0 in/hr. was used for those basins with soil replacement. For basins which did not meet the mounding requirements using existing soil conditions, the recharge rate was adjusted in accordance with Chapter 13 of the BMP manual.

t = Duration of infiltration period (hrs.)
V = Volume of Runoff to be infiltrated (CF) below the lowest orifice
A = Infiltration Area (SF)
R = Recharge Rate (in./hr.)

t = Vx12 in/ft / (A)(R)

Infiltration Basin #1

V = 5,174 CF
A = 5,375 SF
R (design, vertical) = 0.85 in./hr.
Kh (design, horizontal) = 4.25 in/hr.

$$t = \frac{5{,}174 \text{ CF} \times 12 \text{ in./hr.}}{5{,}375 \text{ SF} \times 0.85 \text{ in./hr.}}$$

t = 13.60 hr.

The first trial yielded a mound which impacted the bottom of the basin. In accordance with Chapter 13 of the NJDEP Manual, several trials are permitted where the recharge rate may be reduced, as long as the time does not exceed the maximum permitted 72-hour timeframe.

Trial	R value (in/hr.)	T value (hr.)	Maximum Mound (ft)
1	0.85	13.60	5.063
2	0.38	30.40	3.877

Maximum mound = 3.877 ft so it will not impact the BMP as the bottom elevation of 41.50 is 4.0 ft above the SHWT elevation of 37.50.

ADS Aquabox System

V = 12,174 CF
A = 16,069 SF
R (design, vertical) = 0.10 in./hr.
Kh (design, horizontal) = 0.5 in/hr.

$$t = \frac{12{,}174 \text{ CF} \times 12 \text{ in./hr.}}{16{,}069 \text{ SF} \times 0.10 \text{ in./hr.}}$$

t = 95.72 hr.

The initial trial yielded a drain down time greater than the allowable 72 hours. Therefore, soil replacement will be necessary to provide the necessary infiltration rates to ensure the system fully drains within the 72 hour time frame.

R (design, vertical) = 10.00 in./hr.
Kh (design, horizontal) = 50.00 in./hr.

$$t = \frac{12{,}174 \text{ CF} \times 12 \text{ in./hr.}}{16{,}069 \text{ SF} \times 0.10 \text{ in./hr.}}$$

t = 0.95 hr.

The first trial yielded a mound which impacted the bottom of the basin. In accordance with Chapter 13 of the NJDEP Manual, several trials are permitted where the recharge rate may be reduced, as long as the time does not exceed the maximum permitted 72-hour timeframe.

Trial	R value (in/hr.)	T value (hr.)	Maximum Mound (ft)
1	10.00	0.93	4.735
2	0.55	17.39	2.000

Maximum mound = 2.000 ft so it will not impact the BMP as the bottom elevation of 41.50 is 2.0 ft above the SHWT elevation of 39.50.

Infiltration Basin 1

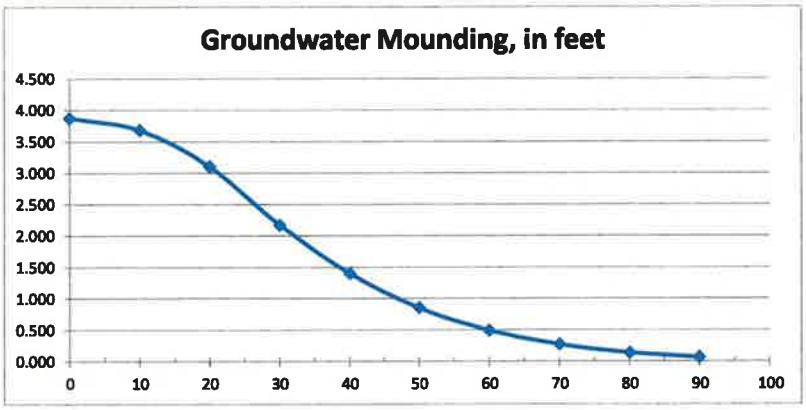
Input Values

0.38	R	Recharge rate (permeability rate) (in/hr)
0.150	Sy	Specific yield, Sy (dimensionless) default value is 0.15; max value is 0.2 provided that a lab test data is submitted
4.25	Kh	Horizontal hydraulic conductivity (in/hr) Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan
24.500	x	1/2 length of basin (x direction, in feet)
55.000	y	1/2 width of basin (y direction, in feet)
30.40	t	Duration of infiltration period (hours)
10.00	hi(0)	Initial thickness of saturated zone (feet)

13.877	h(max)	Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
3.877	Δh(max)	Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
3.877	0
3.690	10
3.110	20
2.179	30
1.408	40
0.860	50
0.498	60
0.274	70
0.144	80
0.072	90

Re-Calculate Now



Disclaimer

This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.

ADS Aquabox System

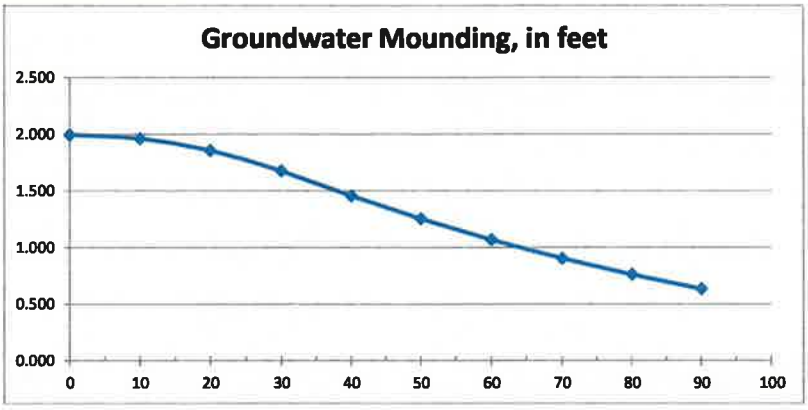
Input Values

0.55	*R*	Recharge rate (permeability rate) (in/hr)
0.150	Sy	Specific yield, Sy (dimensionless) default value is 0.15; max value is 0.2 provided that a lab test data is submitted
50.00	Kh	Horizontal hydraulic conductivity (in/hr) Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan
31.750	x	1/2 length of basin (x direction, in feet)
129.000	y	1/2 width of basin (y direction, in feet)
17.39	t	Duration of infiltration period (hours)
10.00	hi(0)	Initial thickness of saturated zone (feet)

12.000	h(max)	Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
2.000	Δh(max)	Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
2.000	0
1.965	10
1.859	20
1.680	30
1.459	40
1.255	50
1.071	60
0.907	70
0.762	80
0.635	90

Re-Calculate Now



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Attachment D – Major Development Stormwater Summary

General Information

1. Project Name: Blue Stone Cathy Lane
2. Municipality: Florence Twp. County: Burlington Block(s): 163.01 Lot(s): 3.01 & 3.07
3. Site Location (State Plane Coordinates – NAD83): E: 412,065 N: 462,732
4. Date of Final Approval for Construction by Municipality: TBD
   Date of Certificate of Occupancy: TBD
5. Project Type (check all that apply):
   Residential ☐ Commercial ☑ Industrial ☑ Other (please specify) _____
6. Soil Conservation District Project Number: TBD
7. Did project require an NJDEP Land Use Permit? Yes ◉ No ○ Land Use Permit #:
8. Did project require the use of any mitigation measures? Yes ○ No ◉
   If yes, which standard was mitigated? _____

Site Design Specifications

1. Area of Disturbance (acres): 3.06 Area of Proposed Impervious (acres): 1.76
2. List all Hydrologic Soil Groups: A, C, B/D
3. Please Identify the Amount of Each Best Management Practices (BMPs) Utilized in Design Below:
   Bioretention Systems ___ Constructed Wetlands ___ Dry Wells ___ Extended Detention Basins ___
   Infiltration Basins 2 Combination Infiltration/Detention Basins ___ Manufactured Treatment Devices ___
   Pervious Paving Systems ___ Sand Filters ___ Vegetative Filter Strips ___ Wet Ponds ___
   Grass Swales ___ Subsurface Gravel Wetlands ___ Other _____

Storm Event Information

Storm Event - Rainfall (inches and duration): 2 yr.: 3.30 10 yr.: 5.09
100 yr.: 8.68 WQDS: 1.25

Runoff Computation Method:
NRCS: Dimensionless Unit Hydrograph ☐ NRCS: Delmarva Unit Hydrograph ☑ Rational ☐ Modified Rational ☐
Other: _____

Basin Specifications (answer all that apply)

If more than one basin, attach multiple sheets

1. Type of Basin: **Infiltration Basin** Surface/Subsurface (select one): Surface ◉ Subsurface ○
2. Owner (select one):
   ○ Public ◉ Private: If so, Name: **TBD** Phone number:
3. Basin Construction Completion Date: **TBD**
4. Drain Down Time (hr.): 30.4
5. Design Soil Permeability (in./hr.): 0.38
6. Seasonal High Water Table Depth from Bottom of Basin (ft.): **> 2 ft** Date Obtained: **01/26**
7. Groundwater Recharge Methodology (select one): 2 Year Difference ○ NJGRS ◉ Other ○ NA ○
8. Groundwater Mounding Analysis (select one): Yes ◉ No ○ If, Yes Methodology Used: **Hantush Spreadsheet**
9. Maintenance Plan Submitted: Yes ◉ No ○ Is the Basin Deed Restricted: Yes ○ No ◉

Comments:

Name of Person Filling Out This Form: _____ Signature: _____

Title: _____ Date: _____ 2/2/2018

Basin Specifications (answer all that apply) *If more than one basin, attach multiple sheets*				
1. Type of Basin: ADS Aquabox System		Surface/Subsurface (select one): Surface ○		Subsurface ◉
2. Owner (select one): ○ Public	◉ Private: If so, Name: TBD		Phone number:	
3. Basin Construction Completion Date: TBD				
4. Drain Down Time (hr.): 17.4				
5. Design Soil Permeability (in./hr.): 0.55				
6. Seasonal High Water Table Depth from Bottom of Basin (ft.): >2 ft		Date Obtained: 01/26		
7. Groundwater Recharge Methodology (select one):	2 Year Difference ○	NJGRS ◉	Other ○	NA ○
8. Groundwater Mounding Analysis (select one): Yes ◉	No ○	If, Yes Methodology Used: Hantush Spreadsheet		
9. Maintenance Plan Submitted: Yes ◉	No ○	Is the Basin Deed Restricted: Yes ○		No ◉

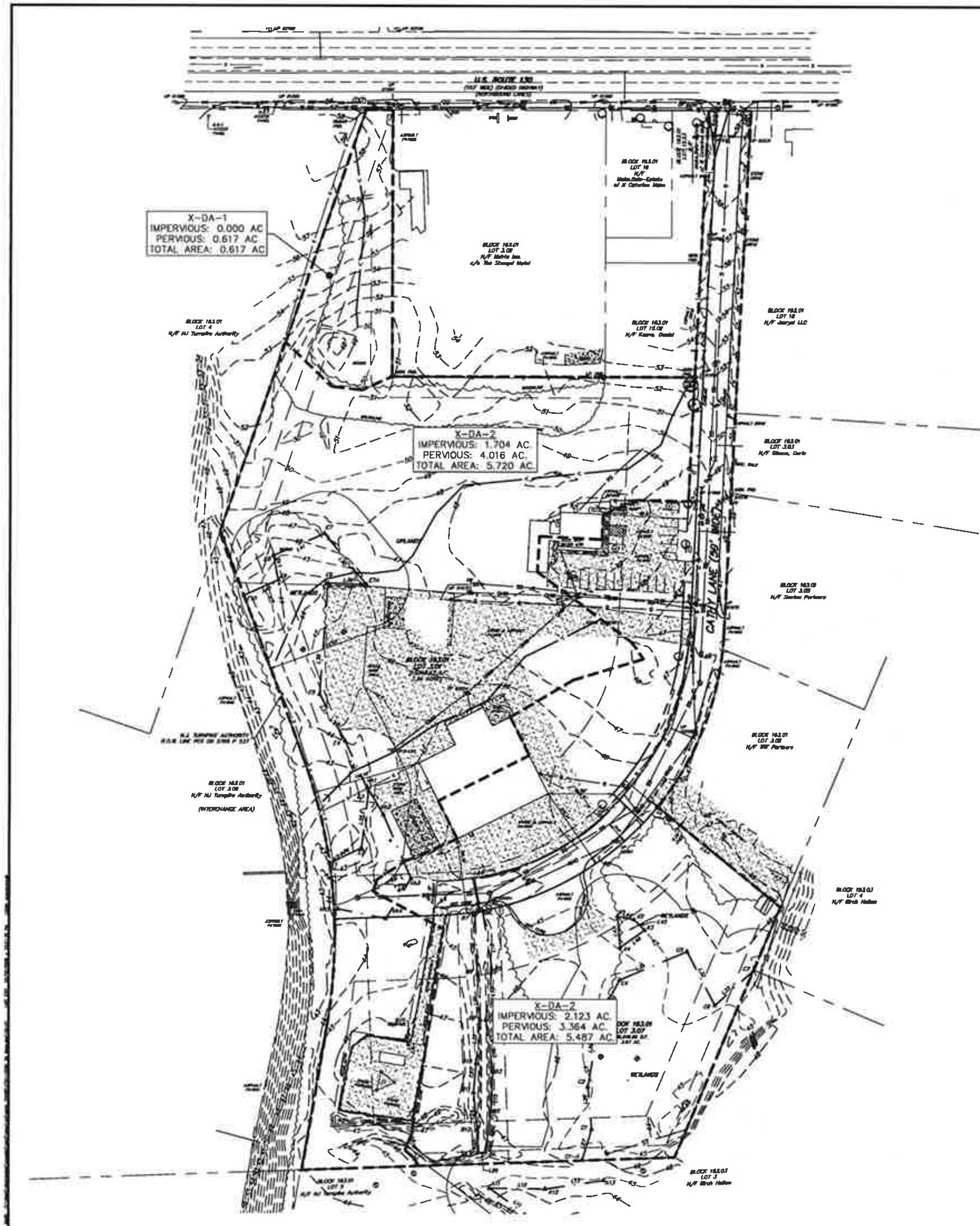
Basin Specifications (answer all that apply) *If more than one basin, attach multiple sheets*				
1. Type of Basin:		Surface/Subsurface (select one): Surface ◉		Subsurface ○
2. Owner (select one): ○ Public	◉ Private: If so, Name:		Phone number:	
3. Basin Construction Completion Date:				
4. Drain Down Time (hr.):				
5. Design Soil Permeability (in./hr.):				
6. Seasonal High Water Table Depth from Bottom of Basin (ft.):		Date Obtained:		
7. Groundwater Recharge Methodology (select one):	2 Year Difference ○	NJGRS ○	Other ○	NA ◉
8. Groundwater Mounding Analysis (select one): Yes ◉	No ○	If, Yes Methodology Used: et		
9. Maintenance Plan Submitted: Yes ◉	No ○	Is the Basin Deed Restricted: Yes ○		No ◉

Basin Specifications (answer all that apply) *If more than one basin, attach multiple sheets*				
1. Type of Basin:		Surface/Subsurface (select one): Surface ◉		Subsurface ○
2. Owner (select one): ○ Public	◉ Private: If so, Name:		Phone number:	
3. Basin Construction Completion Date:				
4. Drain Down Time (hr.):				
5. Design Soil Permeability (in./hr.):				
6. Seasonal High Water Table Depth from Bottom of Basin (ft.):		Date Obtained:		
7. Groundwater Recharge Methodology (select one):	2 Year Difference ○	NJGRS ○	Other ○	NA ◉
8. Groundwater Mounding Analysis (select one): Yes ◉	No ○	If, Yes Methodology Used: et		
9. Maintenance Plan Submitted: Yes ◉	No ○	Is the Basin Deed Restricted: Yes ○		No ◉

Name of Person Filling Out This Form: _____ Signature: _____

Title: _____ Date: _____

DRAINAGE MAPS



REV./ ISSUE	DATE	DESCRIPTION

CONSULTANT

CONSULTANT

ORIENTATION / KEY PLAN

GRAPHIC SCALE
(IN FEET)
1 inch = 80 ft.

CLIENT

BLUE STONE
CATHY LANE LLC

61 CATHY LANE
FLORENCE NJ, 08505

PAULUS, SOKOLOWSKI AND SARTOR, LLC
1418 ROUTE 70 EAST
SUITE 300
CHERRY HILL, NJ 08034

MARK E. MALINOWSKI, P.E.
PROFESSIONAL ENGINEER
N.J. LIC. NO. 24GE03663800

SIGNATURE

PROJECT

BLUE STONE
CATHY LANE LLC

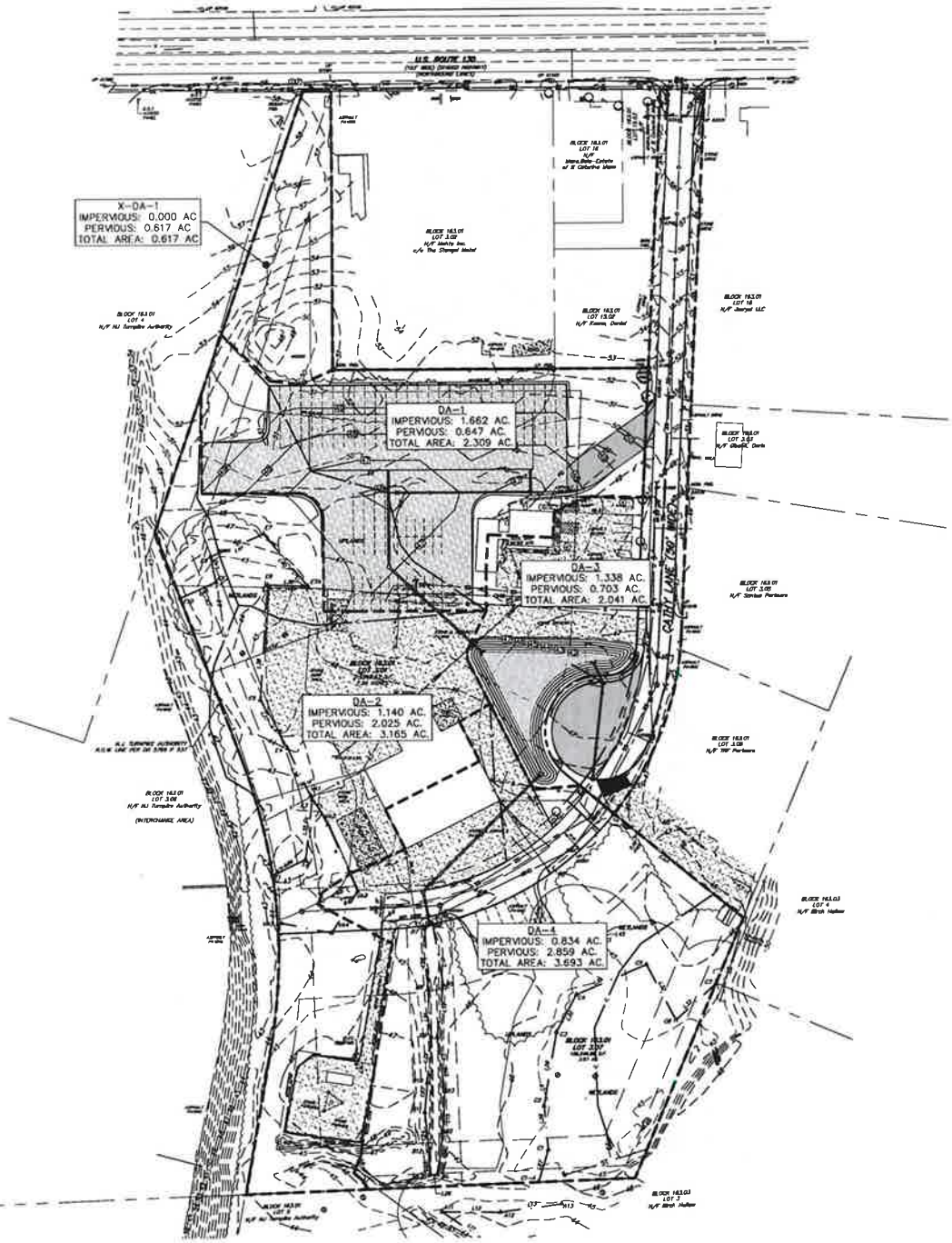
61 CATHY LANE
FLORENCE NJ, 08505

SHEET TITLE

PRE-DEVELOPMENT
DRAINAGE AREA MAP

SHEET NO.

DA-01



REV. #	DATE	DESCRIPTION

CONSULTANT

CONSULTANT

ORIENTATION / KEY PLAN

GRAPHIC SCALE

(IN FEET)
1 inch = 60 ft.

CLIENT

BLUE STONE
CATHY LANE LLC

61 CATHY LANE
FLORENCE NJ, 08505

MARK E. MALINOWSKI, P.E.
PROFESSIONAL ENGINEER
N.J. LIC. NO. 24GE03663900

PROJECT

BLUE STONE
CATHY LANE LLC

61 CATHY LANE
FLORENCE NJ, 08505

SHEET TITLE

POST-DEVELOPMENT
DRAINAGE AREA MAP

SHEET NO.

DA-02