

Stormwater Management Report

Wilbur Avenue Subdivision

Manchester Township

Ocean County, New Jersey

Block 59, Lots 649, 650, 651, 652

July 13, 2026

Project #23172



Prepared by: Yosef Portnoy, P.E., P.P., C.M.E., C.F.M.

N.J.P.E. License # GE53583

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Introduction

This report has been prepared in support of an application for a project known as Wilbur Avenue Subdivision. The report has been prepared in accordance with the requirements of the Stormwater Management Rules at N.J.A.C. 7:8 and local ordinances.

For details of the proposed design refer to the following documents:

Document:	Title:	Prepared by:
Site Plan	Preliminary and Final Major Subdivision for Wilbur Avenue	Civil Core Consulting

Project Location

Street:	Wilbur Avenue
Municipality:	Manchester Township
County:	Ocean
Blocks/Lots:	Block 59, Lots 649, 650, 651, 652, 3240, 3250, & 3260

Existing Conditions

The site is located along the north side of Wilbur Avenue just east of the intersection of Stevens Way. The existing site contains grassy areas and a single-family house along Wilbur Avenue. The northern portion of the property is wooded and contains a stream. Wetlands are located surrounding the stream. The majority of the site drains towards the stream along the rear of the site. A small portion in the front of the site runs off towards Wilbur Avenue.

Soils

Per the NRCS Web Soil Survey the project site and tributary drainage areas consist of the following soils:

Map Unit	Name	HSG Rating
DocBO	Downer loamy sand, 0 to 5 percent slopes, Northern Tidewater Area	A
DoeBO	Downer sandy loam, 2 to 5 percent slopes, Northern Tidewater Area	A
EveC	Evesboro sand, 5 to 10 percent slopes	A
MakAd	Manahawkin muck, 0 to 2 percent slopes, frequently flooded, Northern Tidewater Area	A/D

A geotechnical investigation was performed by Structures and Foundations PC. The results of the investigation can be found in the report titled "Stormwater Management Investigation & Percolation Testing Services Report, Proposed Development, 3260 Wilbur Avenue, Manchester, NJ, 08759", dated 05/15/2024.

Proposed Development

The applicant proposes to develop the site with a cul-de-sac and 14 lot subdivision. For details of the proposed design refer to the Preliminary and Final Major Subdivision plan.

Stormwater Analysis

In support of the proposed development, the existing and proposed hydrology was modeled using HydroCAD software. The drainage areas were delineated based on their hydrological and hydraulic characteristics. The maximum sheet flow time of concentrations are based on McKuen Spice criteria.

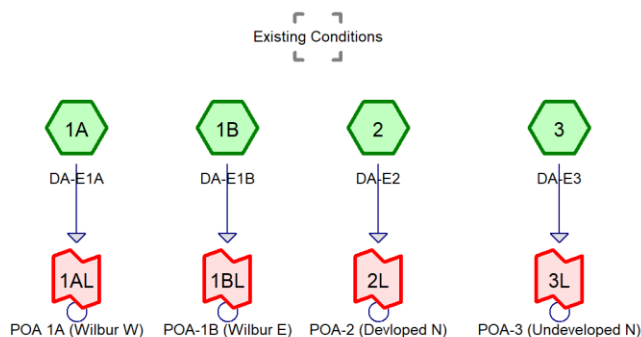
Method:	TR-55
Unit Hydrograph:	Delmarva
Storm Distribution:	D
Rainfall Source:	NOAA Atlas 14
2-year Rainfall:	3.42 in.
10-year Rainfall:	5.38 in.
25-year Rainfall:	6.68 in.
100-year Rainfall:	9.20 in.

Applicability

Existing Hydrology

The existing site runs off untreated and unretained. POA 1A and 1B run off into Wilbur Street, 1A flows into a storm inlet across Wilbur, 1B flows down Wilbur to the East. POA 2 and 3 runoff into the stream that runs through the North of the site and into the property to the East. rear of the site and to Wilbur Road. The existing points of analysis, drainage areas, and runoff are summarized in the tables below.

Existing Network Diagram:



EXISTING POINTS OF ANALYSIS (POA)	
POA	Description
POA 1A	A point on Wilbur Avenue on the west part of the site, across from an inlet.
POA 1B	Wilbur Avenue on the Southeast corner of the site.
POA 2	The edge of the proposed developed area which drains to the stream in the North the site
POA 3	The proposed undeveloped area which drains to the stream in the North and runs off to the East

Existing Drainage Areas		
Drainage Area	Point of Analysis	Description
DA E1A	POA 1A	The area is located southwest at the front of the site. The area contains wood and contains a portion of the existing house and lawn. The runoff from this area drains unretained to Wilbur Avenue.
DA E1B	POA 1B	This area is located southeast of the site, facing Wilbur Avenue. The area is partially wooded and partially grassed. The runoff drains unretained to Wilbur Avenue.
DA E2	POA 2	The area is in the middle of the site. The area is mostly lawn and wooded but also contains a portion of the existing house. The runoff from this area drains towards the stream in the North of the site.
DA E3	POA 3	This area is in the North of the site. The area is partially wooded and partially grass area. The area contains a stream that runs along the rear of the site. The runoff from this area drains unretained to the stream which runs off the site to the East.

A subarea (DA E2 SUBA) of DA E2 was analyzed separately for the SCD Failure Scenario Analysis. The Point of Analysis POA E2 SUBA is the location the proposed Basin B will outfall, and the drainage area is the portion of EDA 2 which drains to this point.

The results of the existing conditions analysis are contained in the Appendix and summarized below:

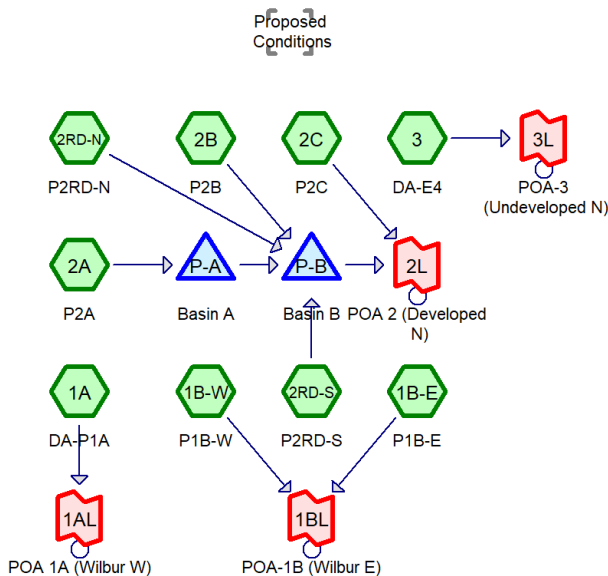
Existing Runoff Peak Flow (cfs)			
	2-Year	10-Year	100-Year
POA 1A	0.07	0.11	0.77
POA 1B	0.00	0.02	0.66
POA 2	0.14	0.23	4.63
POA 3	1.68	8.75	29.42
POA E2 SUBA	0.14	0.22	-

Proposed Hydrology

The runoff from the driveways will be treated and retained in the porous pavement driveways basin. The runoff from the roofs will be treated by leaf screens and routed to the porous pavement driveways. The yards along Wilbur Avenue will drain to Wilbur Avenue. The backyards of the lots fronting Wilbur Ave and on the South of the proposed road will drain to infiltration Basin A. The proposed road, the rear yards on the west of the proposed roads, and the front yards along the road will be routed to infiltration Basin B. The remaining lawn areas run off will flow to the undeveloped North portion of the site, and flow offsite unretained.

The proposed points of analysis and drainage areas are summarized in the tables below.

Proposed Network Diagram:



PROPOSED DRAINAGE AREAS		
DRAINAGE AREA	POINT OF ANALYSIS	DESCRIPTION
DA-P1A	POA-1A	This area contains lawns and is located on the southwest corner of the site. The runoff flows unretained to Wilbur Avenue.
DA-P1B-W	POA-1B	This area contains lawns and is located on the southeast of the site, to the west of the proposed road. The runoff flows unretained to Wilbur Avenue.
DA-P1B-E	POA-1B	This area contains lawns and is located on the southeast of the site, to the east of the proposed road. The runoff flows unretained to Wilbur Avenue.
DA-P2A	POA-2	This area contains lawns and Basin A and is located in the southwest towards the middle of the site, between Wilbur Avenue and the proposed road. The runoff from this area drains to Basin A.
DA-P2B	POA-2	The area contains lawns and is located towards the south of the site, along the proposed road and the rear yards along the west of the proposed road. The runoff from this area is routed to Basin B.
DA-P2RD-S	POA-2	The area contains the south portion of the right of way and is located on the south side of the site along Wilbur Avenue. The runoff is routed to Basin B.
DA-P2RD-N	POA-2	The area contains most of the right of way and is located in the middle of the site. The runoff from this area is routed to Basin B.
DA 3	POA 3	This area is located in the North of the site. The area is partially wooded and partially grass area. The area contains a stream that runs along the rear of the site. The runoff from this area drains unretained to the stream which runs off the site to the East.

Proposed Stormwater Management Design

The report demonstrates that the required reductions for the stormwater runoff have been achieved. The stormwater runoff for the site will be reduced by using infiltration basins and porous pavement. An infiltration basin (Basin A) has been proposed to provide water quantity control and groundwater recharge to the backyards between Wilbur Avenue. An infiltration basin (Basin B) has been proposed to provide water quality and quantity control, and groundwater

recharge for the front yards along the proposed roads and the proposed road itself. Each driveway has been proposed as a porous pavement basin to provide water quality and quantity control, and groundwater recharge to the roofs and driveways. All these basins have been modeled in HydroCAD.

The peak runoff from the site is summarized below.

Existing Runoff Peak Flow (cfs)			
	2-Year	10-Year	100-Year
POA 1A	0.00	0.03	0.51
POA 1B	0.00	0.02	0.42
POA 2	0.00	0.15	1.48

Compliance

Water Quality

In accordance with N.J.A.C. 7:8-5.5(b) stormwater management measures shall be designed to reduce the post-construction load of total suspended solids (TSS) in stormwater runoff generated from the water quality design storm by eighty percent TSS removal of the anticipated load, expressed as an annual average for the stormwater runoff from the net increase of motor vehicle surface. The existing site does not contain paved motor vehicle surface; therefore, the entire proposed motor vehicle surface will be treated to 80% TSS removal.

The entire proposed road drains into the small-scale surface infiltration Basin B, which will treat the water to reach the required 80% TSS removal requirement. A pretreatment forebay has been proposed for the basin. The forebay will consist of a gabion wall surrounding the basin inflow area. The forebay has been sized based on 10% of the water quality storm as summarized below:

WQ VOLUME	10% WQ VOLUME	FOREBAY HEIGHT	FOREBAY AREA	FOREBAY VOLUME
3,230 cf	323 cf	1 ft	385 sf	385 cf

The runoff from the driveways will be treated through porous pavement to provide 80% TSS removal.

The runoff from the roofs will be treated with leaf screens.

The runoff from the lawns does not need to be treated, since there is no runoff in the WQDS.

Water Quantity

N.J.A.C. 7:8-5.6 outlines the requirements to demonstrate that the proposed development will not result in stormwater runoff quantity impacts.

The proposed development has been designed to reduce peak rates of runoff in compliance with N.J.A.C. 7:8-5.6(b)3.:

Design stormwater management measures so that the post-construction peak runoff rates for the current and projected two-, 10-, and 100-year storm events, as defined and determined pursuant to N.J.A.C. 7:8-5.7(c) and (d), respectively, are 50, 75, and 80 percent, respectively, of the pre-construction peak runoff rates. The percentages apply only to the post-construction stormwater runoff that is attributable to the portion of the site on which the proposed development or project is to be constructed.

The runoff from the lawn areas of the in DA-P2A will be routed to the small-scale infiltration Basin A located in the backyards of the interior lots, and all the stormwater runoff will be infiltrated to provide water quantity attenuation.

The runoff from the road and the lawn areas in DA-P2B will be routed to the small-scale infiltration basin located the northeast of the proposed road, and will be infiltrated to provide water quantity attenuation.

PEAK RUNOFF COMPARISON (CFS)					
POA	STORM (year)	EXISTING PEAK (cfs)	ALLOWABLE DISCHARGE	ALLOWABLE DISCHARGE (cfs)	PROPOSED DISCHARGE (cfs)
1A	2	0.07	50%	0.04	0.00
	10	0.11	75%	0.08	0.03
	100	0.77	80%	0.62	0.51
1B	2	0.00	50%	0	0.00
	10	0.02	75%	0.02	0.02
	100	0.66	80%	0.53	0.42
2	2	0.14	50%	0.07	0.00
	10	0.23	75%	0.17	0.15
	100	4.63	80%	3.7	1.48

Groundwater Recharge

In accordance with N.J.A.C. 7:8-5.4(b), Groundwater recharge can be met by infiltrating the increase in runoff from the 2-year storm event. The proposed GI will fully infiltrate the increased runoff from a 2-year storm event therefore the requirement is met.

Existing 2-year runoff from site: 0.404 af.

Proposed 2-year runoff from site: 0.376 af.

Green Infrastructure

In accordance with N.J.A.C. 7:8-5.3 groundwater recharge, stormwater runoff quality, and stormwater runoff quantity standards must be met using green infrastructure (GI). Green infrastructure is defined as a stormwater management measure that manages stormwater close to its source by either treating stormwater runoff through infiltration into subsoil, treating stormwater runoff through filtration by vegetation or soil; or storing stormwater runoff for reuse.

The proposed stormwater management complies with the NJDEP criteria for Green Infrastructure as demonstrated below.

INFILTRATION BASINS									
BASIN NAME	SHWT ELEV.	DISTANCE FROM SHWT (min 2 ft)	DESIGN HYDRAULIC CONDUCTIVITY (min 1 in/hr)	BASIN BOTTOM ELEV.	LOWEST ORIFICE ELEV.	WQDS ELEV.	WQDS VOLUME	TRIBUTARY DRAINAGE AREA (2.5 ac max)	100 YR PEAK ELEV.
Basin A	67.0	7.83 ft	10 in/hr	75.33	77.10	N/A	N/A	2.07 ac	76.35
Basin B	63.5	3.0 ft	5.75 in/hr	67	67.65	67.62	3,230 cf	2.48 ac	70.00

POROUS PAVEMENT BASINS								
BASIN NAME	SHWT	BASIN BOTTOM ELEV	DISTANCE FROM SHWT (min 2 ft)	DESIGN HYDR. COND. (min 1 in/hr)	BASIN DEPTH (ft)	100 YR PEAK DEPTH (ft)	TRIBUTARY DRAINAGE RATIO (3:1 max)	STONE BED VOL. (min WQDS vol)
Typical Driveway Basin	Below 70.5	73.5 – 80.2	>3.0 ft	>3.2 in/hr	2.5	1.99	3:1	875 cf

Groundwater Mounding Analysis

In accordance with N.J.A.C. 7:8-5.2(h) whenever the stormwater management design includes one or more BMPs that will infiltrate stormwater into subsoil, the design engineer shall assess the hydraulic impact on the groundwater table and design the site, to avoid adverse hydraulic impacts.

A groundwater mounding analysis has been prepared for the proposed green infrastructure (GI) using the USGS Hantush spreadsheet in accordance with NJDEP BMP Manual Chapter 13. The proposed GI has been modeled using infiltration for all storm events. Therefore, the groundwater mounding analysis has been performed for the 100-year future infiltration volume as calculated by HydroCAD.

GROUNDWATER MOUNDING MODELING CRITERIA		
Criteria	Value	Notes
R-Recharge Rate	See below	Per Geotech
Sy-Specific Yield	0.15	Default
Kh-Horizontal conductivity	5xR	Coastal Plains
hi-Initial Thickness of saturated zone	See Below	Per Soil Boring results

GROUNDWATER MOUNDING MODELING RESULTS								
BASIN	100 YR EXFIL. VOLUME (cf)	INFILT. AREA (sf)	R (in/hr)	KH (in/hr)	DURATION OF INFILT. (hr)	HI ₍₀₎ (ft)	DEPTH TO SHWT (ft)	GW MOUND HEIGHT (ft)
Basin A	13,067	1,875	10.0	50.0	8.36	71.0	> 8.33	1.701
Basin B	30,788	5,140	3.1	28.75	23.19	63.0	3.5	2.917
Typ. Porous Pavement	2,987	1,000	3.2	16.0	11.20	66.0	> 3.0	1.101

Storm Sewer Design

The proposed storm sewers have been designed in accordance with Township requirements. The storm sewer design is based on the Rational method using the New Jersey Intensity-Duration-Frequency table and a minimum time of concentration of 10 minutes. The storm sewers were designed to convey the 25-year storm event.

Storm sewer calculations are included in the Appendix.

Soil Erosion and Sediment Control

Soil erosion and sediment control measures have been designed in accordance with the Standards for Soil Erosion and Sediment Control in New Jersey and are shown on the plan. These include stormwater management, silt fence, inlet protection, stabilized construction access, and temporary and permanent stabilization.

Point Discharge Stability

The Standards for Soil Erosion and Sediment Control require that the Point of Discharge Stability Analysis be performed as a failure analysis assuming no infiltration or dead storage to demonstrate no erosion will occur. This can be achieved by retaining pre-developed peak flow rate, demonstration that the requirements from Table 21-1 are fulfilled, or ensuring that the point discharge channel is stable under the design discharge.

The only point discharge is the outlet from Basin B. The existing conditions peak runoff at the location of the discharge outfall has been analyzed and the runoff in the failure condition does not exceed the predeveloped runoff rate. The results of the analysis are summarized below, and the HydroCAD model is included in the Appendix.

PEAK RUNOFF COMPARISON – FAILURE ANALYSIS						
	2-Year (cfs)			10-Year (cfs)		
	Existing	Required	Proposed	Existing	Required	Proposed
POA E2 SUBA	0.14	0.14	0.14	0.22	0.22	0.21

Downstream Stability Analysis

Downstream stability can be satisfied by reducing the post development peak flow rates to 50% of the predevelopment peak for a 2-year storm and 75% of the predevelopment peak for a 10-year storm, infiltration can be included in the analysis. These are the same conditions and requirements as in the quantity analysis above. The designed stormwater management system will reduce the peak flows by the required amount as was indicated in the above analysis.

Conclusion

The proposed development and stormwater management measures have been designed in compliance with the applicable Township, NJDEP, and Soil Conservation District regulations with regard to stormwater quantity, quality, and groundwater recharge requirements.

Appendix A – Soil Map

Hydrologic Soil Group—Ocean County, New Jersey



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points

 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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: Ocean County, New Jersey
 Survey Area Data: Version 21, Aug 29, 2023

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

Date(s) aerial images were photographed: Apr 13, 2021—Sep 14, 2021

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
DocBO	Downer loamy sand, 0 to 5 percent slopes, Northern Tidewater Area	A	3.8	16.6%
DoeBO	Downer sandy loam, 2 to 5 percent slopes, Northern Tidewater Area	A	8.1	35.1%
EveC	Evesboro sand, 5 to 10 percent slopes	A	4.3	18.7%
MakAd	Manahawkin muck, 0 to 2 percent slopes, frequently flooded, Northern Tidewater Area	A/D	6.8	29.6%
Totals for Area of Interest			23.0	100.0%

Description

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

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

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

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

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

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

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

Rating Options

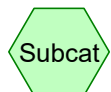
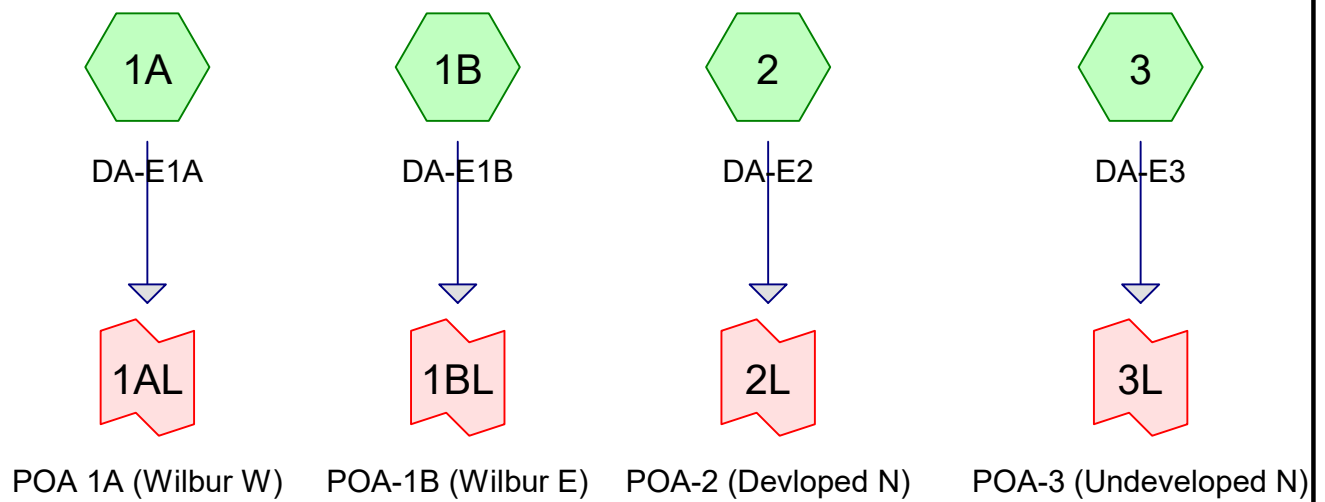
Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Appendix B – Existing Conditions Analysis

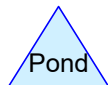
Existing Conditions



Subcat



Reach



Pond



Link

Routing Diagram for Existing Conditions 2024-06-17
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Existing Conditions 2024-06-17

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2 YR	NOAA 24-hr	D	Default	24.00	1	3.42	2
2	10 YR	NOAA 24-hr	D	Default	24.00	1	5.33	2
3	100 YR	NOAA 24-hr	D	Default	24.00	1	9.20	2

Existing Conditions 2024-06-17

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Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
344,995	39	>75% Grass cover, Good, HSG A (1A, 1B, 2, 3)
4,792	98	Roofs, HSG A (1A, 2)
254,826	30	Woods, Good, HSG A (1A, 1B, 2, 3)
261,796	77	Woods, Good, HSG D (3)
866,408	48	TOTAL AREA

Existing Conditions 2024-06-17

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Wilbur Avenue Subdivision, Manchester, NJ

NOAA 24-hr D 2 YR Rainfall=3.42"

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Summary for Subcatchment 1A: DA-E1A

Runoff = 0.07 cfs @ 12.25 hrs, Volume= 463 cf, Depth= 0.06"
Routed to Link 1AL : POA 1A (Wilbur W)

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 2 YR Rainfall=3.42"

Area (ac)	CN	Description
1.290	30	Woods, Good, HSG A
0.040	98	Roofs, HSG A
0.680	39	>75% Grass cover, Good, HSG A
2.010	34	Weighted Average
1.970	33	98.01% Pervious Area
0.040	98	1.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	22	0.0080	0.04		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.42" Using McCuen-Spiess flow length
4.7	200	0.0200	0.71		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.8	205	0.0160	1.90		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
15.4	427	Total			

Existing Conditions 2024-06-17

Prepared by Civil Core Consulting

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Wilbur Avenue Subdivision, Manchester, NJ

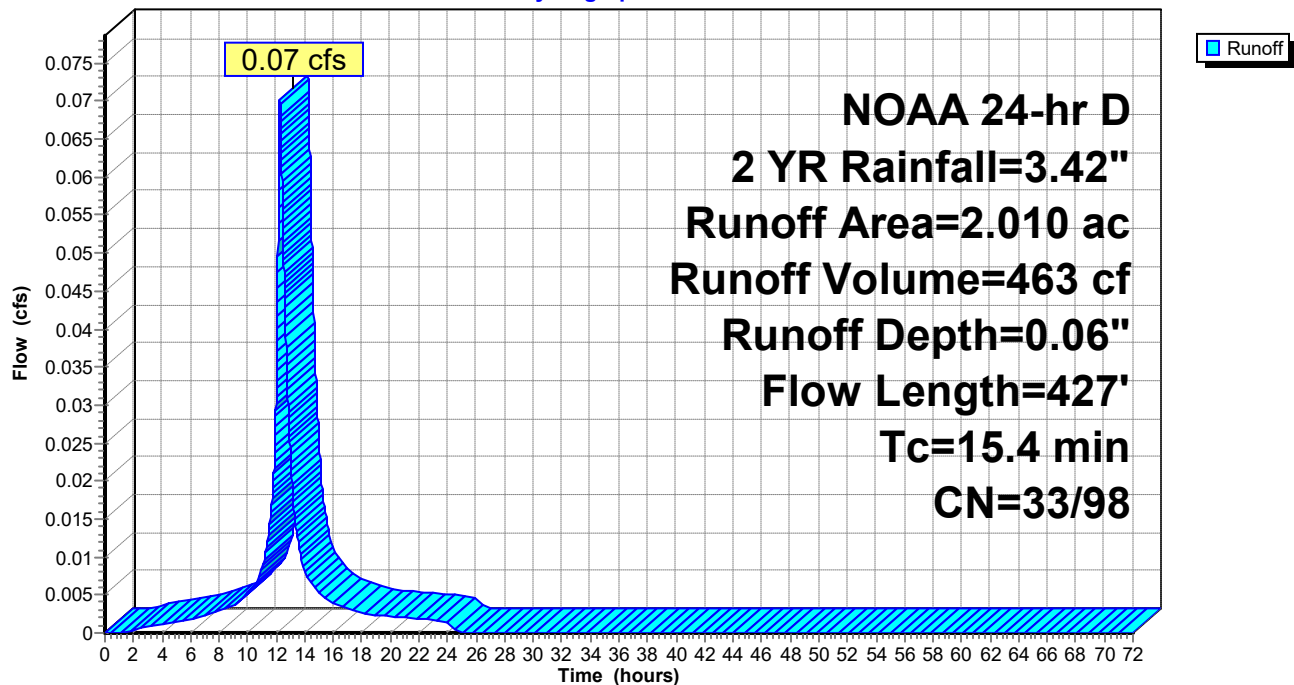
NOAA 24-hr D 2 YR Rainfall=3.42"

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Subcatchment 1A: DA-E1A

Hydrograph



Existing Conditions 2024-06-17

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Hydrograph for Subcatchment 1A: DA-E1A

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.08	0.00	0.01	0.00
4.00	0.18	0.00	0.06	0.00
6.00	0.29	0.00	0.14	0.00
8.00	0.44	0.00	0.27	0.00
10.00	0.68	0.00	0.48	0.01
12.00	1.64	0.00	1.42	0.03
14.00	2.74	0.00	2.51	0.01
16.00	2.98	0.00	2.74	0.00
18.00	3.13	0.00	2.90	0.00
20.00	3.24	0.00	3.01	0.00
22.00	3.34	0.00	3.10	0.00
24.00	3.42	0.00	3.19	0.00
26.00	3.42	0.00	3.19	0.00
28.00	3.42	0.00	3.19	0.00
30.00	3.42	0.00	3.19	0.00
32.00	3.42	0.00	3.19	0.00
34.00	3.42	0.00	3.19	0.00
36.00	3.42	0.00	3.19	0.00
38.00	3.42	0.00	3.19	0.00
40.00	3.42	0.00	3.19	0.00
42.00	3.42	0.00	3.19	0.00
44.00	3.42	0.00	3.19	0.00
46.00	3.42	0.00	3.19	0.00
48.00	3.42	0.00	3.19	0.00
50.00	3.42	0.00	3.19	0.00
52.00	3.42	0.00	3.19	0.00
54.00	3.42	0.00	3.19	0.00
56.00	3.42	0.00	3.19	0.00
58.00	3.42	0.00	3.19	0.00
60.00	3.42	0.00	3.19	0.00
62.00	3.42	0.00	3.19	0.00
64.00	3.42	0.00	3.19	0.00
66.00	3.42	0.00	3.19	0.00
68.00	3.42	0.00	3.19	0.00
70.00	3.42	0.00	3.19	0.00
72.00	3.42	0.00	3.19	0.00

Existing Conditions 2024-06-17

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Wilbur Avenue Subdivision, Manchester, NJ

NOAA 24-hr D 2 YR Rainfall=3.42"

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Summary for Subcatchment 1B: DA-E1B

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
Routed to Link 1BL : POA-1B (Wilbur E)

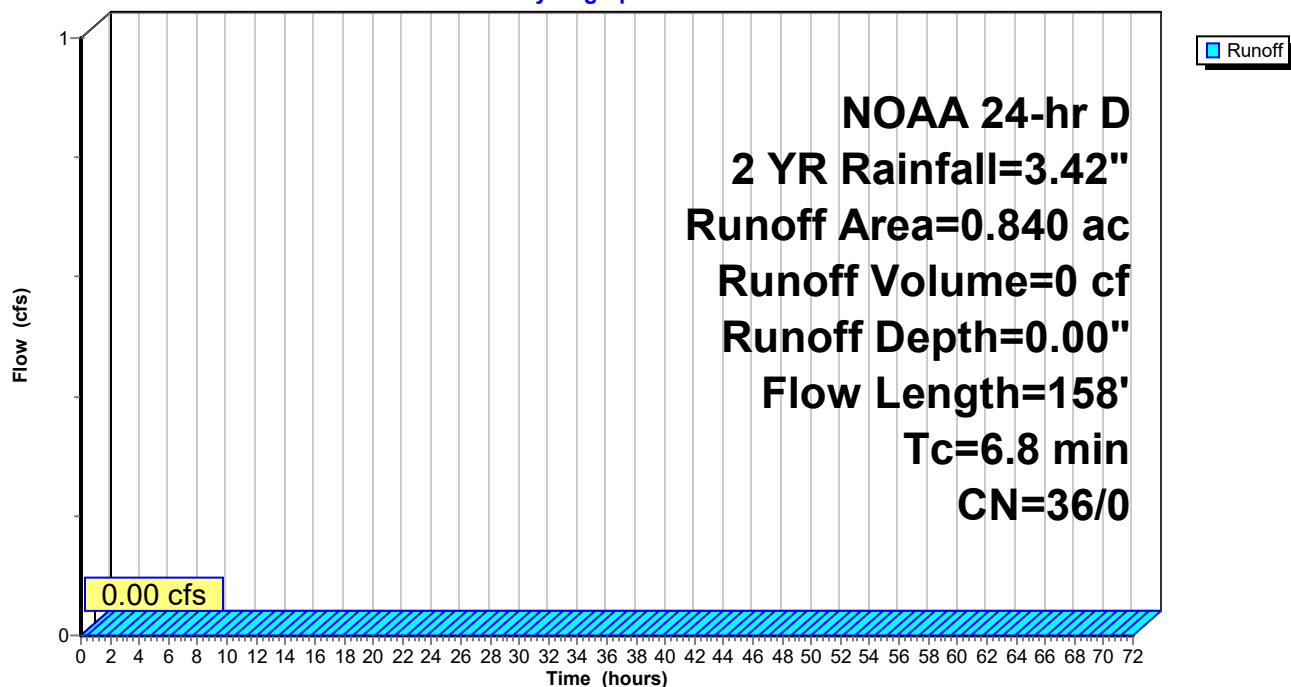
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 2 YR Rainfall=3.42"

Area (ac)	CN	Description
0.320	30	Woods, Good, HSG A
0.520	39	>75% Grass cover, Good, HSG A
0.840	36	Weighted Average
0.840	36	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	68	0.0330	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.42"
1.1	90	0.0710	1.33		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
6.8	158	Total			

Subcatchment 1B: DA-E1B

Hydrograph



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Hydrograph for Subcatchment 1B: DA-E1B

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.08	0.00	0.00	0.00
4.00	0.18	0.00	0.00	0.00
6.00	0.29	0.00	0.00	0.00
8.00	0.44	0.00	0.00	0.00
10.00	0.68	0.00	0.00	0.00
12.00	1.64	0.00	0.00	0.00
14.00	2.74	0.00	0.00	0.00
16.00	2.98	0.00	0.00	0.00
18.00	3.13	0.00	0.00	0.00
20.00	3.24	0.00	0.00	0.00
22.00	3.34	0.00	0.00	0.00
24.00	3.42	0.00	0.00	0.00
26.00	3.42	0.00	0.00	0.00
28.00	3.42	0.00	0.00	0.00
30.00	3.42	0.00	0.00	0.00
32.00	3.42	0.00	0.00	0.00
34.00	3.42	0.00	0.00	0.00
36.00	3.42	0.00	0.00	0.00
38.00	3.42	0.00	0.00	0.00
40.00	3.42	0.00	0.00	0.00
42.00	3.42	0.00	0.00	0.00
44.00	3.42	0.00	0.00	0.00
46.00	3.42	0.00	0.00	0.00
48.00	3.42	0.00	0.00	0.00
50.00	3.42	0.00	0.00	0.00
52.00	3.42	0.00	0.00	0.00
54.00	3.42	0.00	0.00	0.00
56.00	3.42	0.00	0.00	0.00
58.00	3.42	0.00	0.00	0.00
60.00	3.42	0.00	0.00	0.00
62.00	3.42	0.00	0.00	0.00
64.00	3.42	0.00	0.00	0.00
66.00	3.42	0.00	0.00	0.00
68.00	3.42	0.00	0.00	0.00
70.00	3.42	0.00	0.00	0.00
72.00	3.42	0.00	0.00	0.00

Existing Conditions 2024-06-17

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NOAA 24-hr D 2 YR Rainfall=3.42"

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Summary for Subcatchment 2: DA-E2

Runoff = 0.14 cfs @ 12.20 hrs, Volume= 810 cf, Depth= 0.04"
Routed to Link 2L : POA-2 (Developed N)

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 2 YR Rainfall=3.42"

Area (ac)	CN	Description
1.440	30	Woods, Good, HSG A
0.210	30	Woods, Good, HSG A
0.070	98	Roofs, HSG A
4.650	39	>75% Grass cover, Good, HSG A
6.370	37	Weighted Average
6.300	37	98.90% Pervious Area
0.070	98	1.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	92	0.0190	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.42" Using McCuen-Spiess flow length
1.4	100	0.0270	1.15		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.3	162	0.0820	2.00		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
11.7	354	Total			

Existing Conditions 2024-06-17

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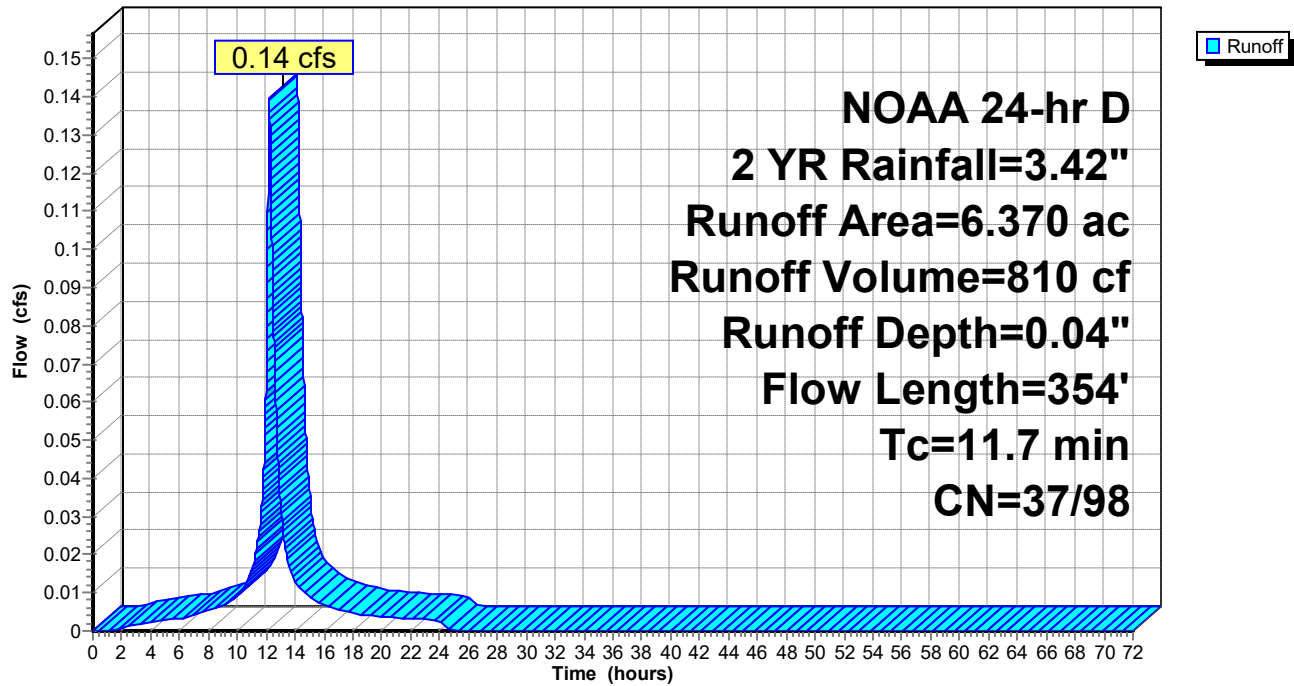
NOAA 24-hr D 2 YR Rainfall=3.42"

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Subcatchment 2: DA-E2

Hydrograph



Existing Conditions 2024-06-17

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Hydrograph for Subcatchment 2: DA-E2

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.08	0.00	0.01	0.00
4.00	0.18	0.00	0.06	0.00
6.00	0.29	0.00	0.14	0.00
8.00	0.44	0.00	0.27	0.01
10.00	0.68	0.00	0.48	0.01
12.00	1.64	0.00	1.42	0.07
14.00	2.74	0.00	2.51	0.01
16.00	2.98	0.00	2.74	0.01
18.00	3.13	0.00	2.90	0.00
20.00	3.24	0.00	3.01	0.00
22.00	3.34	0.00	3.10	0.00
24.00	3.42	0.00	3.19	0.00
26.00	3.42	0.00	3.19	0.00
28.00	3.42	0.00	3.19	0.00
30.00	3.42	0.00	3.19	0.00
32.00	3.42	0.00	3.19	0.00
34.00	3.42	0.00	3.19	0.00
36.00	3.42	0.00	3.19	0.00
38.00	3.42	0.00	3.19	0.00
40.00	3.42	0.00	3.19	0.00
42.00	3.42	0.00	3.19	0.00
44.00	3.42	0.00	3.19	0.00
46.00	3.42	0.00	3.19	0.00
48.00	3.42	0.00	3.19	0.00
50.00	3.42	0.00	3.19	0.00
52.00	3.42	0.00	3.19	0.00
54.00	3.42	0.00	3.19	0.00
56.00	3.42	0.00	3.19	0.00
58.00	3.42	0.00	3.19	0.00
60.00	3.42	0.00	3.19	0.00
62.00	3.42	0.00	3.19	0.00
64.00	3.42	0.00	3.19	0.00
66.00	3.42	0.00	3.19	0.00
68.00	3.42	0.00	3.19	0.00
70.00	3.42	0.00	3.19	0.00
72.00	3.42	0.00	3.19	0.00

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NOAA 24-hr D 2 YR Rainfall=3.42"

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Summary for Subcatchment 3: DA-E3

Runoff = 1.68 cfs @ 12.34 hrs, Volume= 16,344 cf, Depth= 0.42"
Routed to Link 3L : POA-3 (Undeveloped N)

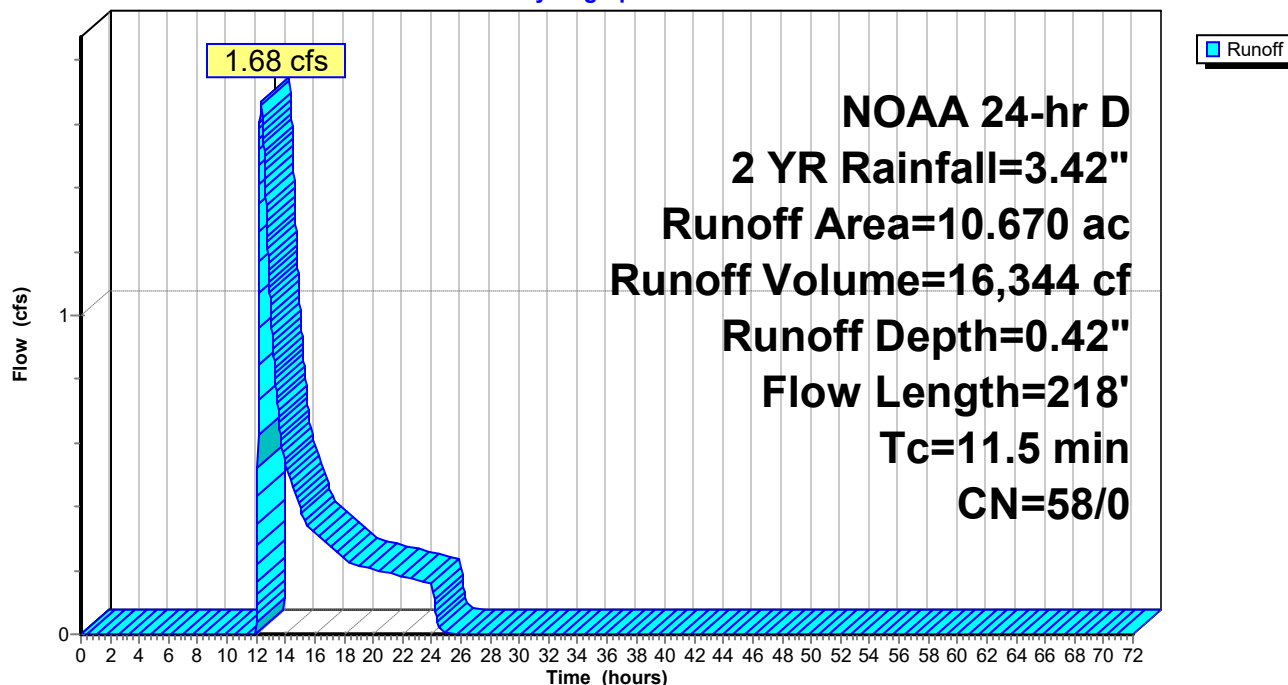
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.1
NOAA 24-hr D 2 YR Rainfall=3.42"

Area (ac)	CN	Description
6.010	77	Woods, Good, HSG D
2.590	30	Woods, Good, HSG A
2.070	39	>75% Grass cover, Good, HSG A
10.670	58	Weighted Average
10.670	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	35	0.0071	0.06		Sheet Flow, Grass: Dense n= 0.240 P2= 3.42" Using McCuen-Spiess flow length
1.9	148	0.0700	1.32		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.6	35	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
11.5	218	Total			

Subcatchment 3: DA-E3

Hydrograph



Existing Conditions 2024-06-17

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Hydrograph for Subcatchment 3: DA-E3

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.08	0.00	0.00	0.00
4.00	0.18	0.00	0.00	0.00
6.00	0.29	0.00	0.00	0.00
8.00	0.44	0.00	0.00	0.00
10.00	0.68	0.00	0.00	0.00
12.00	1.64	0.00	0.00	0.02
14.00	2.74	0.20	0.00	0.53
16.00	2.98	0.27	0.00	0.32
18.00	3.13	0.32	0.00	0.24
20.00	3.24	0.36	0.00	0.20
22.00	3.34	0.39	0.00	0.18
24.00	3.42	0.42	0.00	0.16
26.00	3.42	0.42	0.00	0.00
28.00	3.42	0.42	0.00	0.00
30.00	3.42	0.42	0.00	0.00
32.00	3.42	0.42	0.00	0.00
34.00	3.42	0.42	0.00	0.00
36.00	3.42	0.42	0.00	0.00
38.00	3.42	0.42	0.00	0.00
40.00	3.42	0.42	0.00	0.00
42.00	3.42	0.42	0.00	0.00
44.00	3.42	0.42	0.00	0.00
46.00	3.42	0.42	0.00	0.00
48.00	3.42	0.42	0.00	0.00
50.00	3.42	0.42	0.00	0.00
52.00	3.42	0.42	0.00	0.00
54.00	3.42	0.42	0.00	0.00
56.00	3.42	0.42	0.00	0.00
58.00	3.42	0.42	0.00	0.00
60.00	3.42	0.42	0.00	0.00
62.00	3.42	0.42	0.00	0.00
64.00	3.42	0.42	0.00	0.00
66.00	3.42	0.42	0.00	0.00
68.00	3.42	0.42	0.00	0.00
70.00	3.42	0.42	0.00	0.00
72.00	3.42	0.42	0.00	0.00

Existing Conditions 2024-06-17

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NOAA 24-hr D 2 YR Rainfall=3.42"

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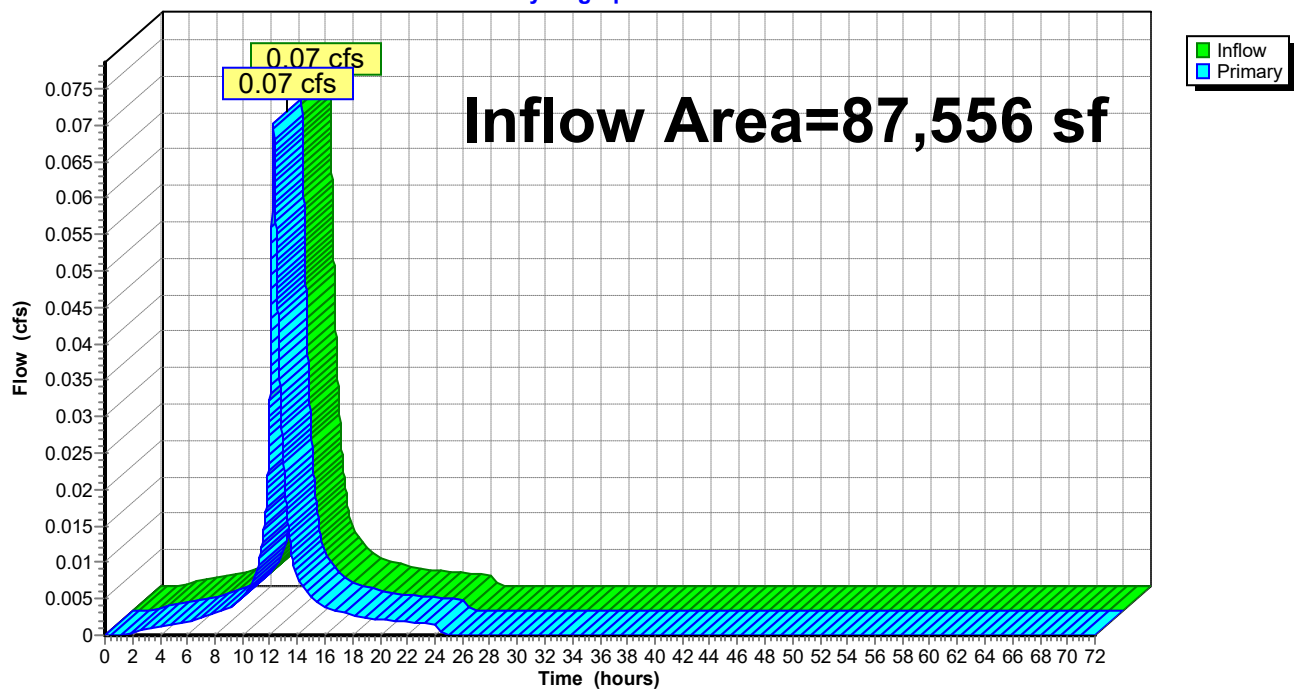
Summary for Link 1AL: POA 1A (Wilbur W)

Inflow Area = 87,556 sf, 1.99% Impervious, Inflow Depth = 0.06" for 2 YR event
Inflow = 0.07 cfs @ 12.25 hrs, Volume= 463 cf
Primary = 0.07 cfs @ 12.25 hrs, Volume= 463 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 4L

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 1AL: POA 1A (Wilbur W)

Hydrograph



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NOAA 24-hr D 2 YR Rainfall=3.42"

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Hydrograph for Link 1AL: POA 1A (Wilbur W)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
10.00	0.01	0.00	0.01	61.00	0.00	0.00	0.00
11.00	0.01	0.00	0.01	62.00	0.00	0.00	0.00
12.00	0.03	0.00	0.03	63.00	0.00	0.00	0.00
13.00	0.02	0.00	0.02	64.00	0.00	0.00	0.00
14.00	0.01	0.00	0.01	65.00	0.00	0.00	0.00
15.00	0.01	0.00	0.01	66.00	0.00	0.00	0.00
16.00	0.00	0.00	0.00	67.00	0.00	0.00	0.00
17.00	0.00	0.00	0.00	68.00	0.00	0.00	0.00
18.00	0.00	0.00	0.00	69.00	0.00	0.00	0.00
19.00	0.00	0.00	0.00	70.00	0.00	0.00	0.00
20.00	0.00	0.00	0.00	71.00	0.00	0.00	0.00
21.00	0.00	0.00	0.00	72.00	0.00	0.00	0.00
22.00	0.00	0.00	0.00				
23.00	0.00	0.00	0.00				
24.00	0.00	0.00	0.00				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

Existing Conditions 2024-06-17

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NOAA 24-hr D 2 YR Rainfall=3.42"

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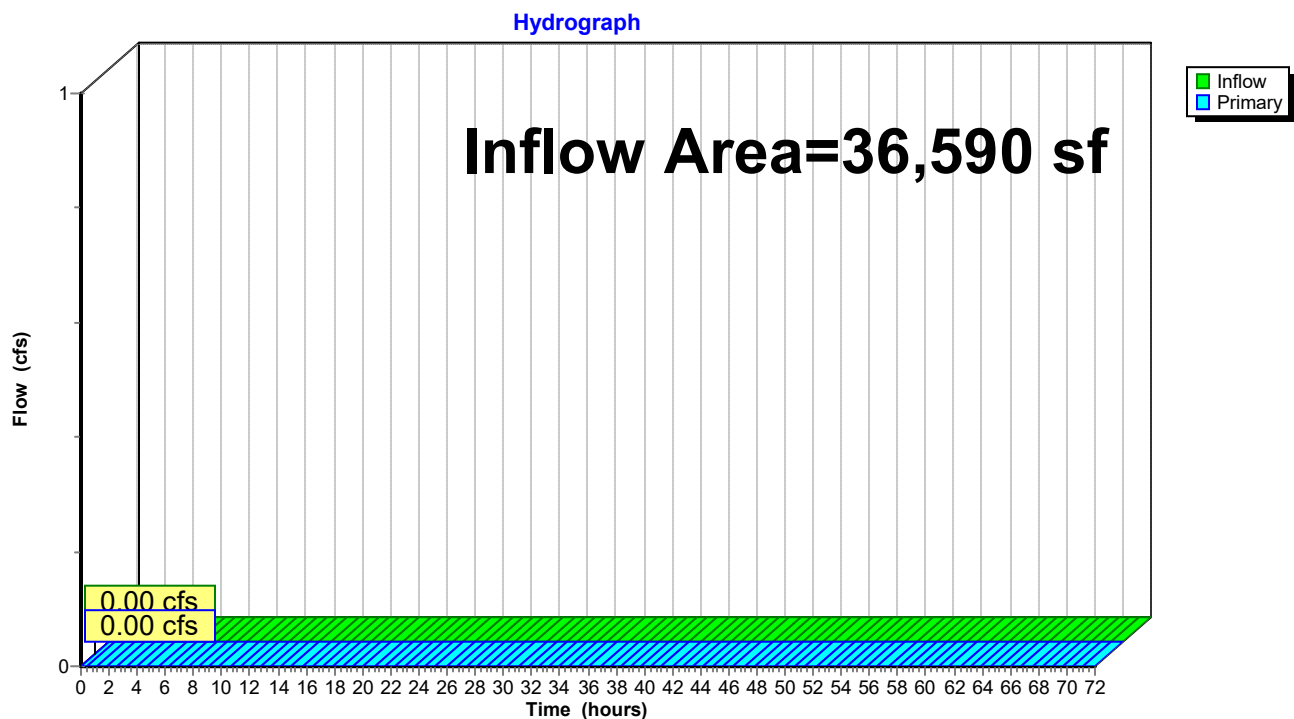
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Summary for Link 1BL: POA-1B (Wilbur E)

Inflow Area = 36,590 sf, 0.00% Impervious, Inflow Depth = 0.00" for 2 YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 4L

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 1BL: POA-1B (Wilbur E)



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Hydrograph for Link 1BL: POA-1B (Wilbur E)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	63.00	0.00	0.00	0.00
13.00	0.00	0.00	0.00	64.00	0.00	0.00	0.00
14.00	0.00	0.00	0.00	65.00	0.00	0.00	0.00
15.00	0.00	0.00	0.00	66.00	0.00	0.00	0.00
16.00	0.00	0.00	0.00	67.00	0.00	0.00	0.00
17.00	0.00	0.00	0.00	68.00	0.00	0.00	0.00
18.00	0.00	0.00	0.00	69.00	0.00	0.00	0.00
19.00	0.00	0.00	0.00	70.00	0.00	0.00	0.00
20.00	0.00	0.00	0.00	71.00	0.00	0.00	0.00
21.00	0.00	0.00	0.00	72.00	0.00	0.00	0.00
22.00	0.00	0.00	0.00				
23.00	0.00	0.00	0.00				
24.00	0.00	0.00	0.00				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

Existing Conditions 2024-06-17

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Wilbur Avenue Subdivision, Manchester, NJ

NOAA 24-hr D 2 YR Rainfall=3.42"

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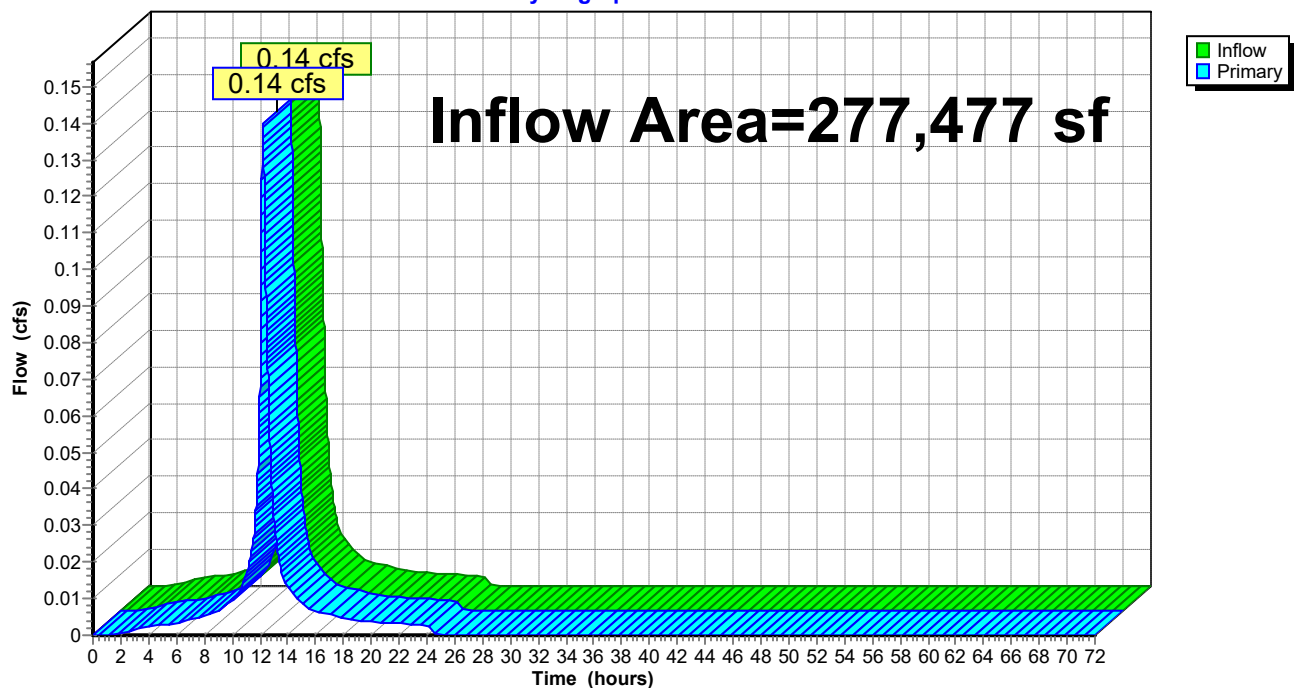
Summary for Link 2L: POA-2 (Devloped N)

Inflow Area = 277,477 sf, 1.10% Impervious, Inflow Depth = 0.04" for 2 YR event
Inflow = 0.14 cfs @ 12.20 hrs, Volume= 810 cf
Primary = 0.14 cfs @ 12.20 hrs, Volume= 810 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 4L

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 2L: POA-2 (Devloped N)

Hydrograph



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Hydrograph for Link 2L: POA-2 (Developed N)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
8.00	0.01	0.00	0.01	59.00	0.00	0.00	0.00
9.00	0.01	0.00	0.01	60.00	0.00	0.00	0.00
10.00	0.01	0.00	0.01	61.00	0.00	0.00	0.00
11.00	0.02	0.00	0.02	62.00	0.00	0.00	0.00
12.00	0.07	0.00	0.07	63.00	0.00	0.00	0.00
13.00	0.03	0.00	0.03	64.00	0.00	0.00	0.00
14.00	0.01	0.00	0.01	65.00	0.00	0.00	0.00
15.00	0.01	0.00	0.01	66.00	0.00	0.00	0.00
16.00	0.01	0.00	0.01	67.00	0.00	0.00	0.00
17.00	0.01	0.00	0.01	68.00	0.00	0.00	0.00
18.00	0.00	0.00	0.00	69.00	0.00	0.00	0.00
19.00	0.00	0.00	0.00	70.00	0.00	0.00	0.00
20.00	0.00	0.00	0.00	71.00	0.00	0.00	0.00
21.00	0.00	0.00	0.00	72.00	0.00	0.00	0.00
22.00	0.00	0.00	0.00				
23.00	0.00	0.00	0.00				
24.00	0.00	0.00	0.00				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

Existing Conditions 2024-06-17

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NOAA 24-hr D 2 YR Rainfall=3.42"

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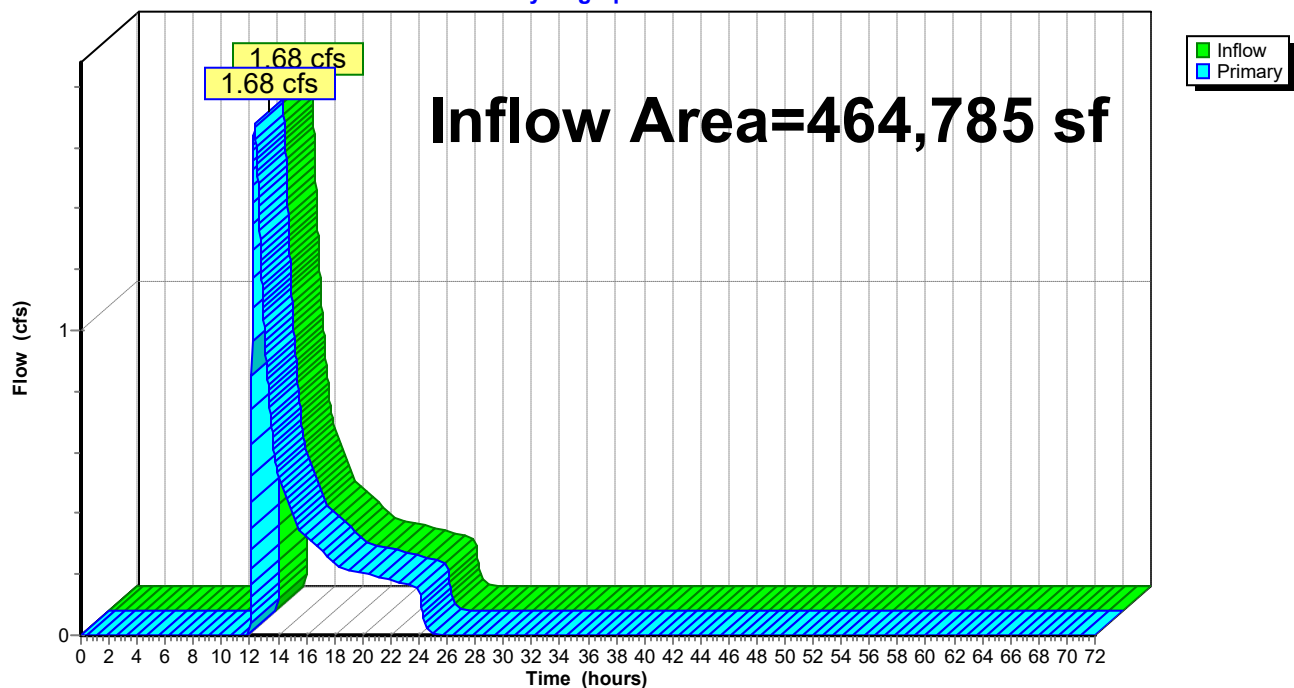
Summary for Link 3L: POA-3 (Undeveloped N)

Inflow Area = 464,785 sf, 0.00% Impervious, Inflow Depth = 0.42" for 2 YR event
Inflow = 1.68 cfs @ 12.34 hrs, Volume= 16,344 cf
Primary = 1.68 cfs @ 12.34 hrs, Volume= 16,344 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 4L

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 3L: POA-3 (Undeveloped N)

Hydrograph



Existing Conditions 2024-06-17

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Hydrograph for Link 3L: POA-3 (Undeveloped N)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
12.00	0.02	0.00	0.02	63.00	0.00	0.00	0.00
13.00	1.02	0.00	1.02	64.00	0.00	0.00	0.00
14.00	0.53	0.00	0.53	65.00	0.00	0.00	0.00
15.00	0.40	0.00	0.40	66.00	0.00	0.00	0.00
16.00	0.32	0.00	0.32	67.00	0.00	0.00	0.00
17.00	0.28	0.00	0.28	68.00	0.00	0.00	0.00
18.00	0.24	0.00	0.24	69.00	0.00	0.00	0.00
19.00	0.21	0.00	0.21	70.00	0.00	0.00	0.00
20.00	0.20	0.00	0.20	71.00	0.00	0.00	0.00
21.00	0.19	0.00	0.19	72.00	0.00	0.00	0.00
22.00	0.18	0.00	0.18				
23.00	0.17	0.00	0.17				
24.00	0.16	0.00	0.16				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

Existing Conditions 2024-06-17

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Wilbur Avenue Subdivision, Manchester, NJ

NOAA 24-hr D 10 YR Rainfall=5.33"

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Summary for Subcatchment 1A: DA-E1A

Runoff = 0.11 cfs @ 12.25 hrs, Volume= 1,274 cf, Depth= 0.17"
Routed to Link 1AL : POA 1A (Wilbur W)

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 10 YR Rainfall=5.33"

Area (ac)	CN	Description
1.290	30	Woods, Good, HSG A
0.040	98	Roofs, HSG A
0.680	39	>75% Grass cover, Good, HSG A
2.010	34	Weighted Average
1.970	33	98.01% Pervious Area
0.040	98	1.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	22	0.0080	0.04		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.42" Using McCuen-Spiess flow length
4.7	200	0.0200	0.71		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.8	205	0.0160	1.90		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
15.4	427	Total			

Existing Conditions 2024-06-17

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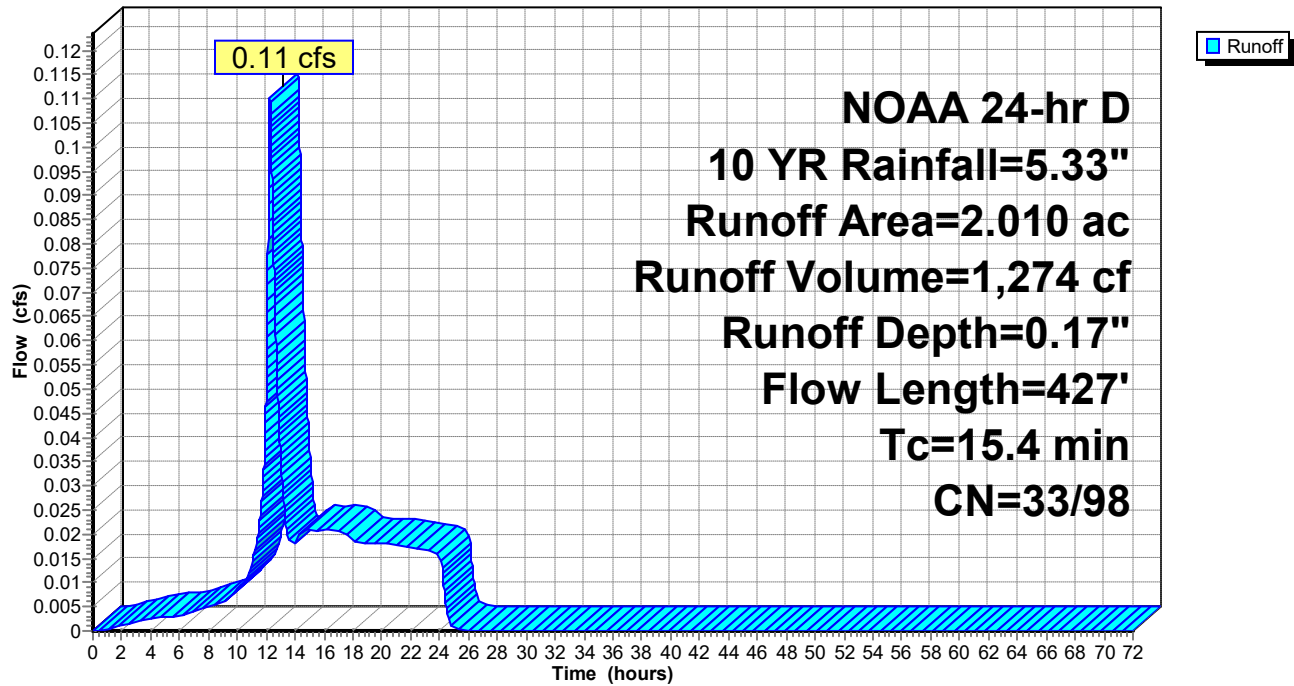
NOAA 24-hr D 10 YR Rainfall=5.33"

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Subcatchment 1A: DA-E1A

Hydrograph



Existing Conditions 2024-06-17

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Hydrograph for Subcatchment 1A: DA-E1A

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.13	0.00	0.03	0.00
4.00	0.28	0.00	0.13	0.00
6.00	0.46	0.00	0.28	0.00
8.00	0.69	0.00	0.50	0.01
10.00	1.06	0.00	0.85	0.01
12.00	2.55	0.00	2.32	0.05
14.00	4.27	0.00	4.04	0.02
16.00	4.64	0.02	4.40	0.02
18.00	4.87	0.03	4.64	0.02
20.00	5.05	0.05	4.81	0.02
22.00	5.20	0.06	4.96	0.02
24.00	5.33	0.07	5.09	0.02
26.00	5.33	0.07	5.09	0.00
28.00	5.33	0.07	5.09	0.00
30.00	5.33	0.07	5.09	0.00
32.00	5.33	0.07	5.09	0.00
34.00	5.33	0.07	5.09	0.00
36.00	5.33	0.07	5.09	0.00
38.00	5.33	0.07	5.09	0.00
40.00	5.33	0.07	5.09	0.00
42.00	5.33	0.07	5.09	0.00
44.00	5.33	0.07	5.09	0.00
46.00	5.33	0.07	5.09	0.00
48.00	5.33	0.07	5.09	0.00
50.00	5.33	0.07	5.09	0.00
52.00	5.33	0.07	5.09	0.00
54.00	5.33	0.07	5.09	0.00
56.00	5.33	0.07	5.09	0.00
58.00	5.33	0.07	5.09	0.00
60.00	5.33	0.07	5.09	0.00
62.00	5.33	0.07	5.09	0.00
64.00	5.33	0.07	5.09	0.00
66.00	5.33	0.07	5.09	0.00
68.00	5.33	0.07	5.09	0.00
70.00	5.33	0.07	5.09	0.00
72.00	5.33	0.07	5.09	0.00

Existing Conditions 2024-06-17

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Wilbur Avenue Subdivision, Manchester, NJ

NOAA 24-hr D 10 YR Rainfall=5.33"

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Summary for Subcatchment 1B: DA-E1B

Runoff = 0.02 cfs @ 13.36 hrs, Volume= 491 cf, Depth= 0.16"
Routed to Link 1BL : POA-1B (Wilbur E)

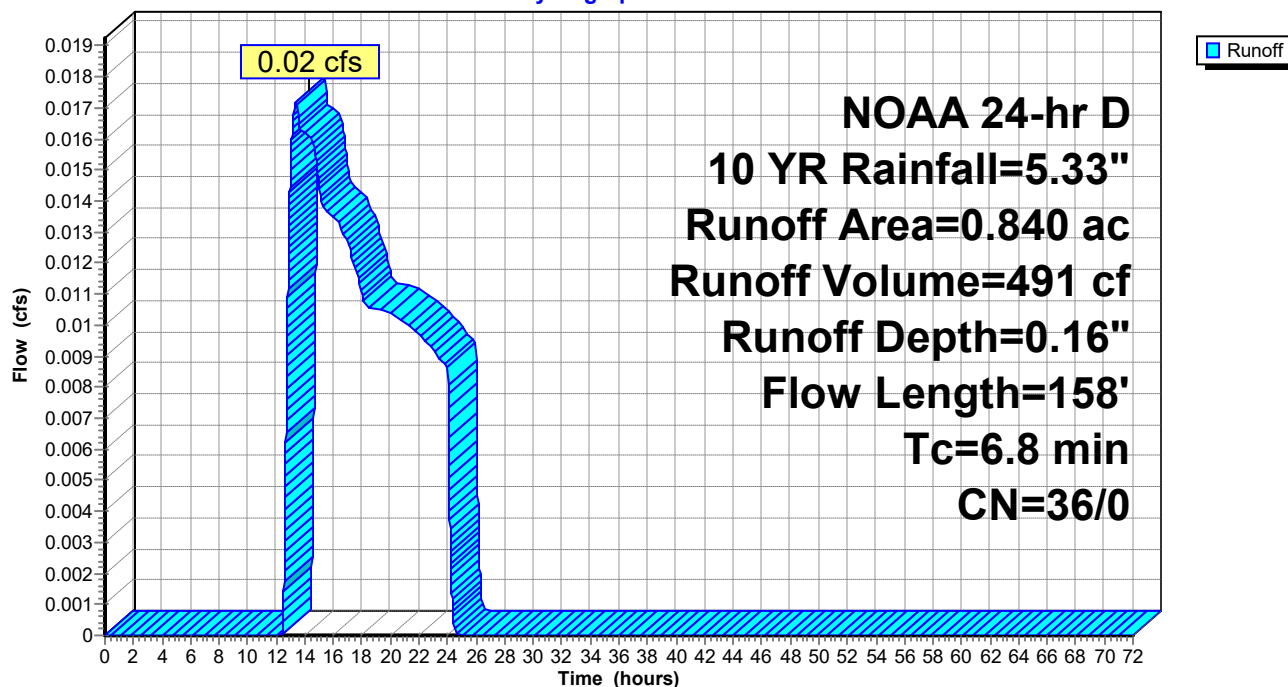
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10 YR Rainfall=5.33"

Area (ac)	CN	Description
0.320	30	Woods, Good, HSG A
0.520	39	>75% Grass cover, Good, HSG A
0.840	36	Weighted Average
0.840	36	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	68	0.0330	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.42"
1.1	90	0.0710	1.33		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
6.8	158	Total			

Subcatchment 1B: DA-E1B

Hydrograph



Existing Conditions 2024-06-17

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Hydrograph for Subcatchment 1B: DA-E1B

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.13	0.00	0.00	0.00
4.00	0.28	0.00	0.00	0.00
6.00	0.46	0.00	0.00	0.00
8.00	0.69	0.00	0.00	0.00
10.00	1.06	0.00	0.00	0.00
12.00	2.55	0.00	0.00	0.00
14.00	4.27	0.03	0.00	0.02
16.00	4.64	0.06	0.00	0.01
18.00	4.87	0.09	0.00	0.01
20.00	5.05	0.12	0.00	0.01
22.00	5.20	0.14	0.00	0.01
24.00	5.33	0.16	0.00	0.01
26.00	5.33	0.16	0.00	0.00
28.00	5.33	0.16	0.00	0.00
30.00	5.33	0.16	0.00	0.00
32.00	5.33	0.16	0.00	0.00
34.00	5.33	0.16	0.00	0.00
36.00	5.33	0.16	0.00	0.00
38.00	5.33	0.16	0.00	0.00
40.00	5.33	0.16	0.00	0.00
42.00	5.33	0.16	0.00	0.00
44.00	5.33	0.16	0.00	0.00
46.00	5.33	0.16	0.00	0.00
48.00	5.33	0.16	0.00	0.00
50.00	5.33	0.16	0.00	0.00
52.00	5.33	0.16	0.00	0.00
54.00	5.33	0.16	0.00	0.00
56.00	5.33	0.16	0.00	0.00
58.00	5.33	0.16	0.00	0.00
60.00	5.33	0.16	0.00	0.00
62.00	5.33	0.16	0.00	0.00
64.00	5.33	0.16	0.00	0.00
66.00	5.33	0.16	0.00	0.00
68.00	5.33	0.16	0.00	0.00
70.00	5.33	0.16	0.00	0.00
72.00	5.33	0.16	0.00	0.00

Existing Conditions 2024-06-17

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NOAA 24-hr D 10 YR Rainfall=5.33"

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Summary for Subcatchment 2: DA-E2

Runoff = 0.22 cfs @ 12.20 hrs, Volume= 5,764 cf, Depth= 0.25"
Routed to Link 2L : POA-2 (Developed N)

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 10 YR Rainfall=5.33"

Area (ac)	CN	Description
1.440	30	Woods, Good, HSG A
0.210	30	Woods, Good, HSG A
0.070	98	Roofs, HSG A
4.650	39	>75% Grass cover, Good, HSG A
6.370	37	Weighted Average
6.300	37	98.90% Pervious Area
0.070	98	1.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	92	0.0190	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.42" Using McCuen-Spiess flow length
1.4	100	0.0270	1.15		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.3	162	0.0820	2.00		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
11.7	354	Total			

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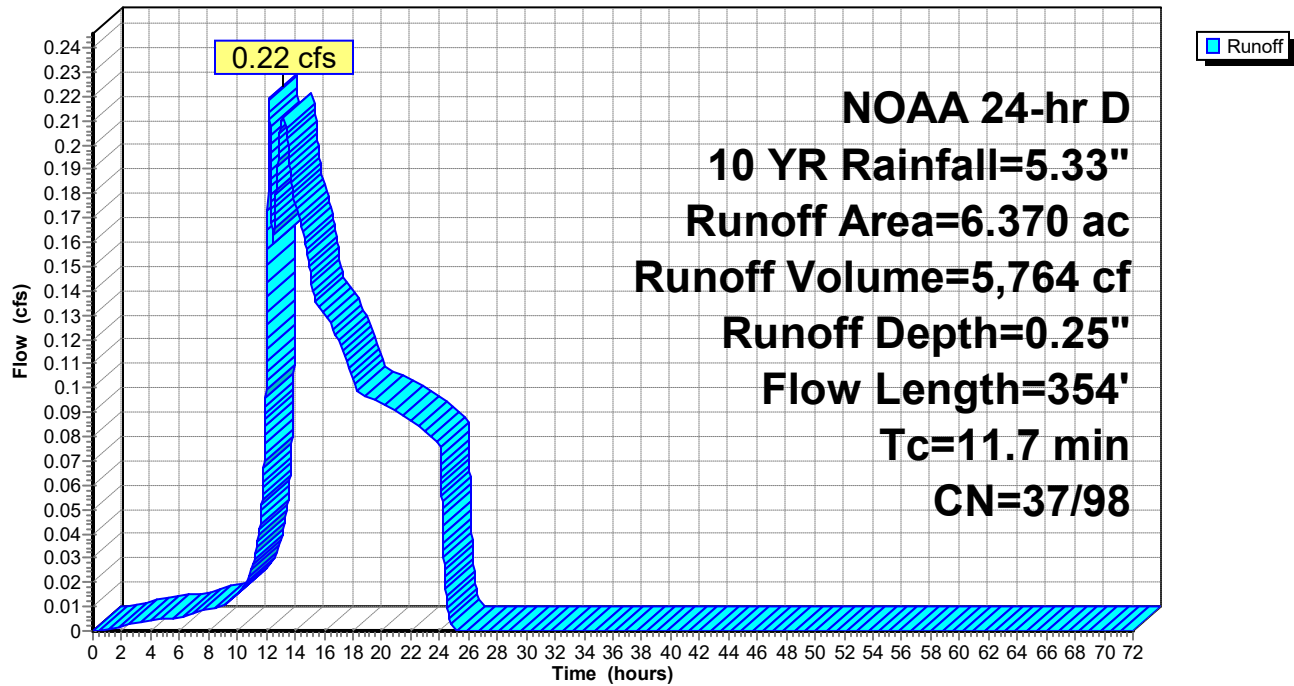
NOAA 24-hr D 10 YR Rainfall=5.33"

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Subcatchment 2: DA-E2

Hydrograph



Existing Conditions 2024-06-17

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Hydrograph for Subcatchment 2: DA-E2

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.13	0.00	0.03	0.00
4.00	0.28	0.00	0.13	0.00
6.00	0.46	0.00	0.28	0.01
8.00	0.69	0.00	0.50	0.01
10.00	1.06	0.00	0.85	0.02
12.00	2.55	0.00	2.32	0.11
14.00	4.27	0.04	4.04	0.18
16.00	4.64	0.08	4.40	0.13
18.00	4.87	0.12	4.64	0.10
20.00	5.05	0.14	4.81	0.09
22.00	5.20	0.17	4.96	0.09
24.00	5.33	0.20	5.09	0.08
26.00	5.33	0.20	5.09	0.00
28.00	5.33	0.20	5.09	0.00
30.00	5.33	0.20	5.09	0.00
32.00	5.33	0.20	5.09	0.00
34.00	5.33	0.20	5.09	0.00
36.00	5.33	0.20	5.09	0.00
38.00	5.33	0.20	5.09	0.00
40.00	5.33	0.20	5.09	0.00
42.00	5.33	0.20	5.09	0.00
44.00	5.33	0.20	5.09	0.00
46.00	5.33	0.20	5.09	0.00
48.00	5.33	0.20	5.09	0.00
50.00	5.33	0.20	5.09	0.00
52.00	5.33	0.20	5.09	0.00
54.00	5.33	0.20	5.09	0.00
56.00	5.33	0.20	5.09	0.00
58.00	5.33	0.20	5.09	0.00
60.00	5.33	0.20	5.09	0.00
62.00	5.33	0.20	5.09	0.00
64.00	5.33	0.20	5.09	0.00
66.00	5.33	0.20	5.09	0.00
68.00	5.33	0.20	5.09	0.00
70.00	5.33	0.20	5.09	0.00
72.00	5.33	0.20	5.09	0.00

Existing Conditions 2024-06-17

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Wilbur Avenue Subdivision, Manchester, NJ

NOAA 24-hr D 10 YR Rainfall=5.33"

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Summary for Subcatchment 3: DA-E3

Runoff = 8.75 cfs @ 12.22 hrs, Volume= 52,468 cf, Depth= 1.35"
Routed to Link 3L : POA-3 (Undeveloped N)

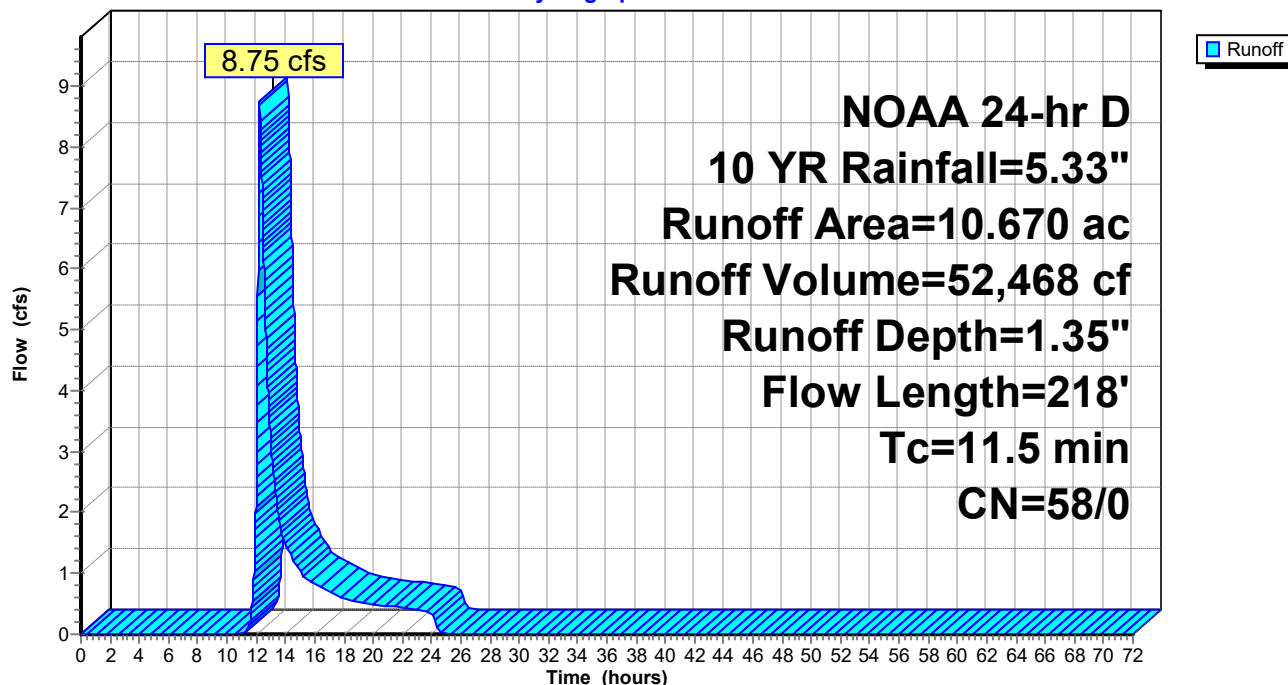
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10 YR Rainfall=5.33"

Area (ac)	CN	Description
6.010	77	Woods, Good, HSG D
2.590	30	Woods, Good, HSG A
2.070	39	>75% Grass cover, Good, HSG A
10.670	58	Weighted Average
10.670	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	35	0.0071	0.06		Sheet Flow, Grass: Dense n= 0.240 P2= 3.42" Using McCuen-Spiess flow length
1.9	148	0.0700	1.32		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.6	35	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
11.5	218	Total			

Subcatchment 3: DA-E3

Hydrograph



Existing Conditions 2024-06-17

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Hydrograph for Subcatchment 3: DA-E3

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.13	0.00	0.00	0.00
4.00	0.28	0.00	0.00	0.00
6.00	0.46	0.00	0.00	0.00
8.00	0.69	0.00	0.00	0.00
10.00	1.06	0.00	0.00	0.00
12.00	2.55	0.15	0.00	2.42
14.00	4.27	0.79	0.00	1.45
16.00	4.64	0.98	0.00	0.82
18.00	4.87	1.10	0.00	0.59
20.00	5.05	1.20	0.00	0.50
22.00	5.20	1.28	0.00	0.44
24.00	5.33	1.35	0.00	0.37
26.00	5.33	1.35	0.00	0.00
28.00	5.33	1.35	0.00	0.00
30.00	5.33	1.35	0.00	0.00
32.00	5.33	1.35	0.00	0.00
34.00	5.33	1.35	0.00	0.00
36.00	5.33	1.35	0.00	0.00
38.00	5.33	1.35	0.00	0.00
40.00	5.33	1.35	0.00	0.00
42.00	5.33	1.35	0.00	0.00
44.00	5.33	1.35	0.00	0.00
46.00	5.33	1.35	0.00	0.00
48.00	5.33	1.35	0.00	0.00
50.00	5.33	1.35	0.00	0.00
52.00	5.33	1.35	0.00	0.00
54.00	5.33	1.35	0.00	0.00
56.00	5.33	1.35	0.00	0.00
58.00	5.33	1.35	0.00	0.00
60.00	5.33	1.35	0.00	0.00
62.00	5.33	1.35	0.00	0.00
64.00	5.33	1.35	0.00	0.00
66.00	5.33	1.35	0.00	0.00
68.00	5.33	1.35	0.00	0.00
70.00	5.33	1.35	0.00	0.00
72.00	5.33	1.35	0.00	0.00

Existing Conditions 2024-06-17

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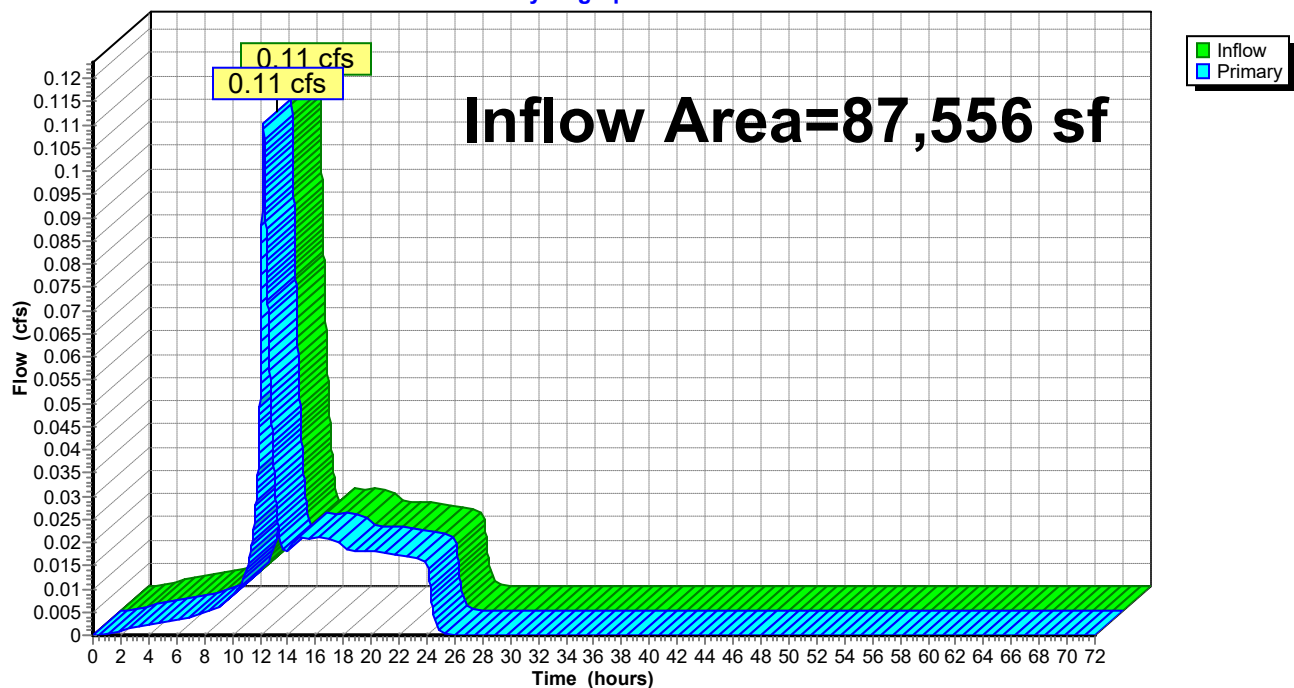
Summary for Link 1AL: POA 1A (Wilbur W)

Inflow Area = 87,556 sf, 1.99% Impervious, Inflow Depth = 0.17" for 10 YR event
Inflow = 0.11 cfs @ 12.25 hrs, Volume= 1,274 cf
Primary = 0.11 cfs @ 12.25 hrs, Volume= 1,274 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 4L

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 1AL: POA 1A (Wilbur W)

Hydrograph



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NOAA 24-hr D 10 YR Rainfall=5.33"

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Hydrograph for Link 1AL: POA 1A (Wilbur W)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
8.00	0.01	0.00	0.01	59.00	0.00	0.00	0.00
9.00	0.01	0.00	0.01	60.00	0.00	0.00	0.00
10.00	0.01	0.00	0.01	61.00	0.00	0.00	0.00
11.00	0.01	0.00	0.01	62.00	0.00	0.00	0.00
12.00	0.05	0.00	0.05	63.00	0.00	0.00	0.00
13.00	0.04	0.00	0.04	64.00	0.00	0.00	0.00
14.00	0.02	0.00	0.02	65.00	0.00	0.00	0.00
15.00	0.02	0.00	0.02	66.00	0.00	0.00	0.00
16.00	0.02	0.00	0.02	67.00	0.00	0.00	0.00
17.00	0.02	0.00	0.02	68.00	0.00	0.00	0.00
18.00	0.02	0.00	0.02	69.00	0.00	0.00	0.00
19.00	0.02	0.00	0.02	70.00	0.00	0.00	0.00
20.00	0.02	0.00	0.02	71.00	0.00	0.00	0.00
21.00	0.02	0.00	0.02	72.00	0.00	0.00	0.00
22.00	0.02	0.00	0.02				
23.00	0.02	0.00	0.02				
24.00	0.02	0.00	0.02				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

Existing Conditions 2024-06-17

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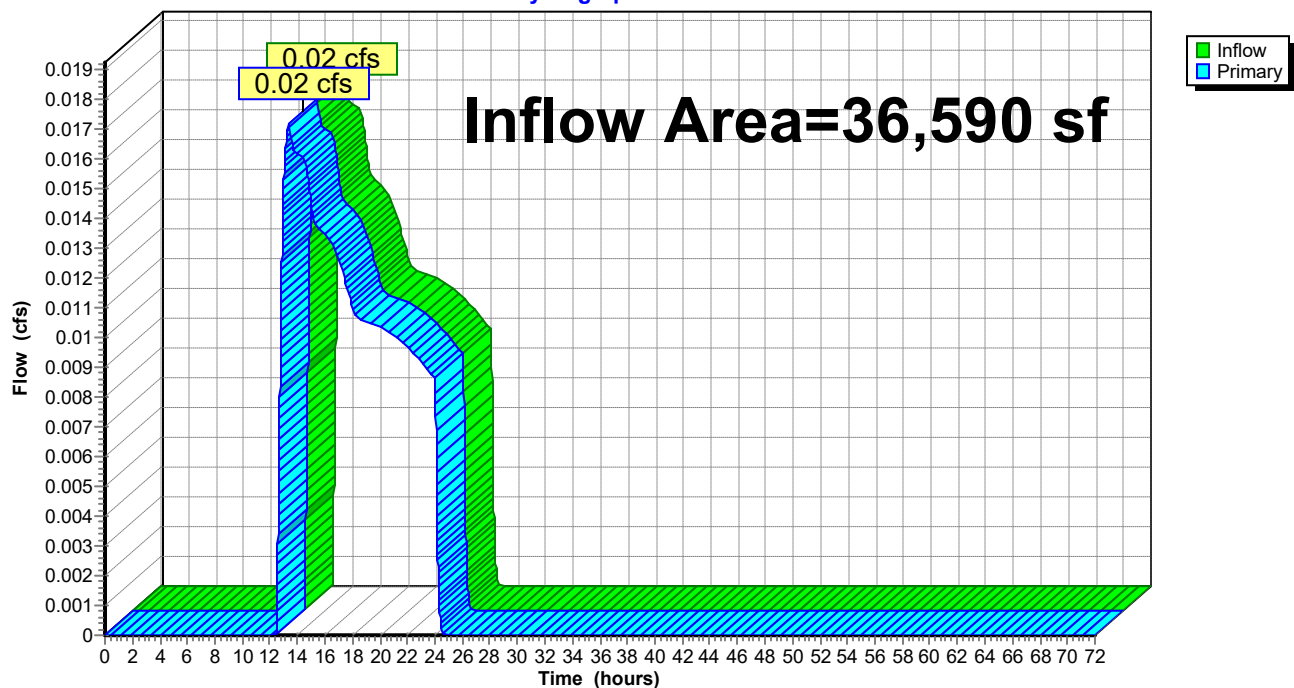
Summary for Link 1BL: POA-1B (Wilbur E)

Inflow Area = 36,590 sf, 0.00% Impervious, Inflow Depth = 0.16" for 10 YR event
Inflow = 0.02 cfs @ 13.36 hrs, Volume= 491 cf
Primary = 0.02 cfs @ 13.36 hrs, Volume= 491 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 4L

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 1BL: POA-1B (Wilbur E)

Hydrograph



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Hydrograph for Link 1BL: POA-1B (Wilbur E)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	63.00	0.00	0.00	0.00
13.00	0.02	0.00	0.02	64.00	0.00	0.00	0.00
14.00	0.02	0.00	0.02	65.00	0.00	0.00	0.00
15.00	0.01	0.00	0.01	66.00	0.00	0.00	0.00
16.00	0.01	0.00	0.01	67.00	0.00	0.00	0.00
17.00	0.01	0.00	0.01	68.00	0.00	0.00	0.00
18.00	0.01	0.00	0.01	69.00	0.00	0.00	0.00
19.00	0.01	0.00	0.01	70.00	0.00	0.00	0.00
20.00	0.01	0.00	0.01	71.00	0.00	0.00	0.00
21.00	0.01	0.00	0.01	72.00	0.00	0.00	0.00
22.00	0.01	0.00	0.01				
23.00	0.01	0.00	0.01				
24.00	0.01	0.00	0.01				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

Existing Conditions 2024-06-17

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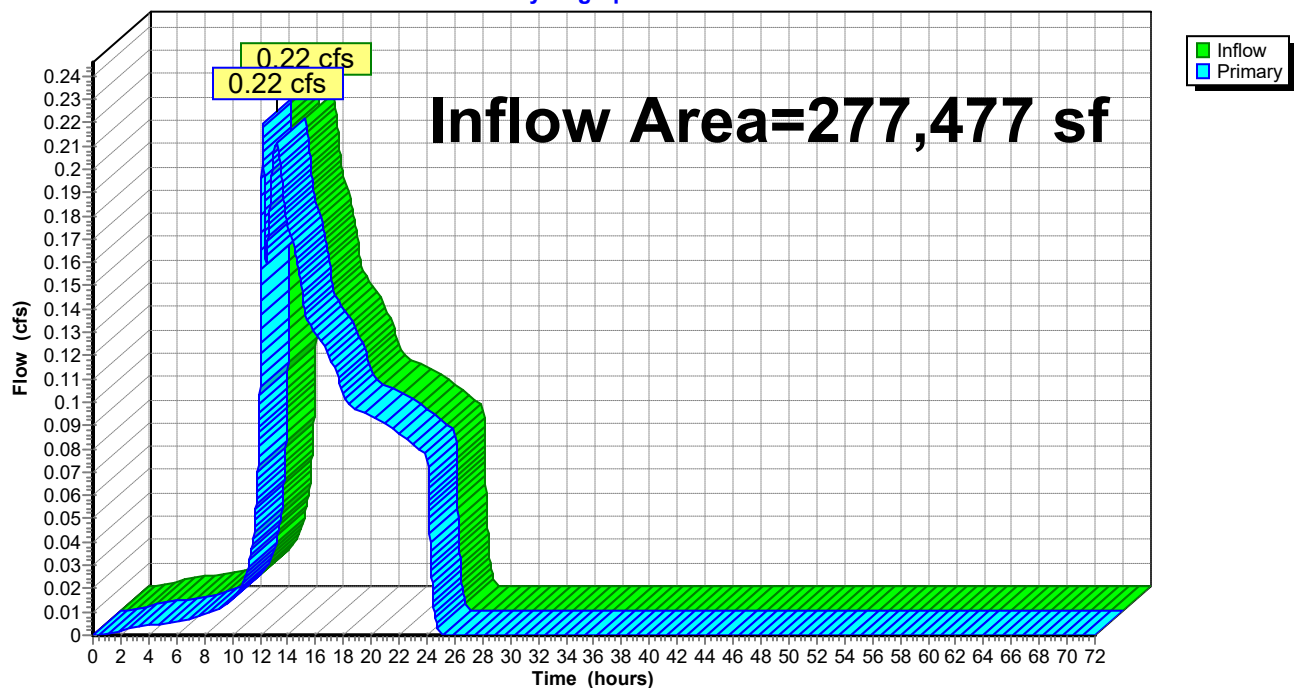
Summary for Link 2L: POA-2 (Developed N)

Inflow Area = 277,477 sf, 1.10% Impervious, Inflow Depth = 0.25" for 10 YR event
Inflow = 0.22 cfs @ 12.20 hrs, Volume= 5,764 cf
Primary = 0.22 cfs @ 12.20 hrs, Volume= 5,764 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 4L

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 2L: POA-2 (Developed N)

Hydrograph



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Hydrograph for Link 2L: POA-2 (Developed N)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
5.00	0.01	0.00	0.01	56.00	0.00	0.00	0.00
6.00	0.01	0.00	0.01	57.00	0.00	0.00	0.00
7.00	0.01	0.00	0.01	58.00	0.00	0.00	0.00
8.00	0.01	0.00	0.01	59.00	0.00	0.00	0.00
9.00	0.01	0.00	0.01	60.00	0.00	0.00	0.00
10.00	0.02	0.00	0.02	61.00	0.00	0.00	0.00
11.00	0.03	0.00	0.03	62.00	0.00	0.00	0.00
12.00	0.11	0.00	0.11	63.00	0.00	0.00	0.00
13.00	0.21	0.00	0.21	64.00	0.00	0.00	0.00
14.00	0.18	0.00	0.18	65.00	0.00	0.00	0.00
15.00	0.15	0.00	0.15	66.00	0.00	0.00	0.00
16.00	0.13	0.00	0.13	67.00	0.00	0.00	0.00
17.00	0.12	0.00	0.12	68.00	0.00	0.00	0.00
18.00	0.10	0.00	0.10	69.00	0.00	0.00	0.00
19.00	0.10	0.00	0.10	70.00	0.00	0.00	0.00
20.00	0.09	0.00	0.09	71.00	0.00	0.00	0.00
21.00	0.09	0.00	0.09	72.00	0.00	0.00	0.00
22.00	0.09	0.00	0.09				
23.00	0.08	0.00	0.08				
24.00	0.08	0.00	0.08				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

Existing Conditions 2024-06-17

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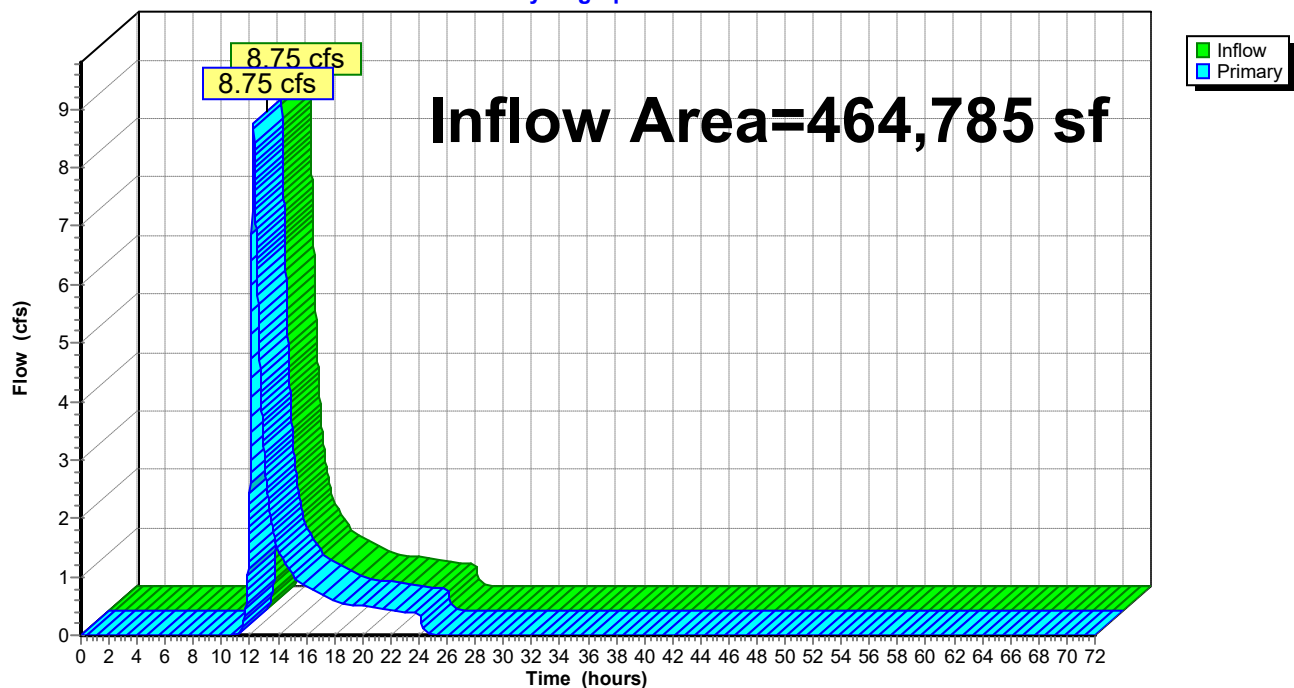
Summary for Link 3L: POA-3 (Undeveloped N)

Inflow Area = 464,785 sf, 0.00% Impervious, Inflow Depth = 1.35" for 10 YR event
Inflow = 8.75 cfs @ 12.22 hrs, Volume= 52,468 cf
Primary = 8.75 cfs @ 12.22 hrs, Volume= 52,468 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 4L

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 3L: POA-3 (Undeveloped N)

Hydrograph



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Hydrograph for Link 3L: POA-3 (Undeveloped N)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
12.00	2.42	0.00	2.42	63.00	0.00	0.00	0.00
13.00	3.15	0.00	3.15	64.00	0.00	0.00	0.00
14.00	1.45	0.00	1.45	65.00	0.00	0.00	0.00
15.00	1.04	0.00	1.04	66.00	0.00	0.00	0.00
16.00	0.82	0.00	0.82	67.00	0.00	0.00	0.00
17.00	0.71	0.00	0.71	68.00	0.00	0.00	0.00
18.00	0.59	0.00	0.59	69.00	0.00	0.00	0.00
19.00	0.52	0.00	0.52	70.00	0.00	0.00	0.00
20.00	0.50	0.00	0.50	71.00	0.00	0.00	0.00
21.00	0.47	0.00	0.47	72.00	0.00	0.00	0.00
22.00	0.44	0.00	0.44				
23.00	0.40	0.00	0.40				
24.00	0.37	0.00	0.37				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

Existing Conditions 2024-06-17

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Wilbur Avenue Subdivision, Manchester, NJ

NOAA 24-hr D 100 YR Rainfall=9.20"

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Summary for Subcatchment 1A: DA-E1A

Runoff = 0.77 cfs @ 12.39 hrs, Volume= 8,725 cf, Depth= 1.20"
 Routed to Link 1AL : POA 1A (Wilbur W)

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100 YR Rainfall=9.20"

Area (ac)	CN	Description
1.290	30	Woods, Good, HSG A
0.040	98	Roofs, HSG A
0.680	39	>75% Grass cover, Good, HSG A
2.010	34	Weighted Average
1.970	33	98.01% Pervious Area
0.040	98	1.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	22	0.0080	0.04		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.42" Using McCuen-Spiess flow length
4.7	200	0.0200	0.71		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.8	205	0.0160	1.90		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
15.4	427	Total			

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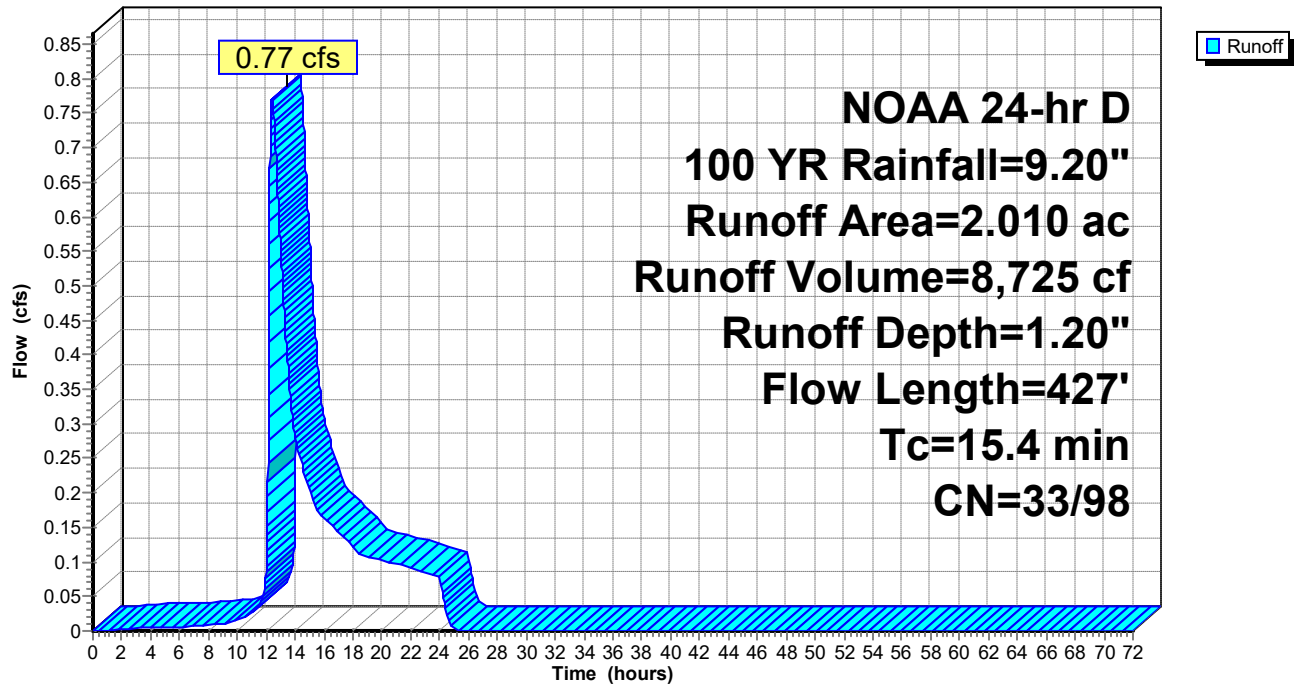
NOAA 24-hr D 100 YR Rainfall=9.20"

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Subcatchment 1A: DA-E1A

Hydrograph



Existing Conditions 2024-06-17

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Hydrograph for Subcatchment 1A: DA-E1A

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.22	0.00	0.08	0.00
4.00	0.48	0.00	0.30	0.00
6.00	0.79	0.00	0.58	0.01
8.00	1.19	0.00	0.98	0.01
10.00	1.82	0.00	1.60	0.02
12.00	4.41	0.01	4.17	0.09
14.00	7.38	0.47	7.14	0.28
16.00	8.01	0.64	7.77	0.16
18.00	8.41	0.77	8.17	0.12
20.00	8.72	0.87	8.48	0.10
22.00	8.98	0.96	8.74	0.09
24.00	9.20	1.04	8.96	0.08
26.00	9.20	1.04	8.96	0.00
28.00	9.20	1.04	8.96	0.00
30.00	9.20	1.04	8.96	0.00
32.00	9.20	1.04	8.96	0.00
34.00	9.20	1.04	8.96	0.00
36.00	9.20	1.04	8.96	0.00
38.00	9.20	1.04	8.96	0.00
40.00	9.20	1.04	8.96	0.00
42.00	9.20	1.04	8.96	0.00
44.00	9.20	1.04	8.96	0.00
46.00	9.20	1.04	8.96	0.00
48.00	9.20	1.04	8.96	0.00
50.00	9.20	1.04	8.96	0.00
52.00	9.20	1.04	8.96	0.00
54.00	9.20	1.04	8.96	0.00
56.00	9.20	1.04	8.96	0.00
58.00	9.20	1.04	8.96	0.00
60.00	9.20	1.04	8.96	0.00
62.00	9.20	1.04	8.96	0.00
64.00	9.20	1.04	8.96	0.00
66.00	9.20	1.04	8.96	0.00
68.00	9.20	1.04	8.96	0.00
70.00	9.20	1.04	8.96	0.00
72.00	9.20	1.04	8.96	0.00

Existing Conditions 2024-06-17

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Wilbur Avenue Subdivision, Manchester, NJ

NOAA 24-hr D 100 YR Rainfall=9.20"

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Summary for Subcatchment 1B: DA-E1B

Runoff = 0.66 cfs @ 12.17 hrs, Volume= 4,148 cf, Depth= 1.36"
Routed to Link 1BL : POA-1B (Wilbur E)

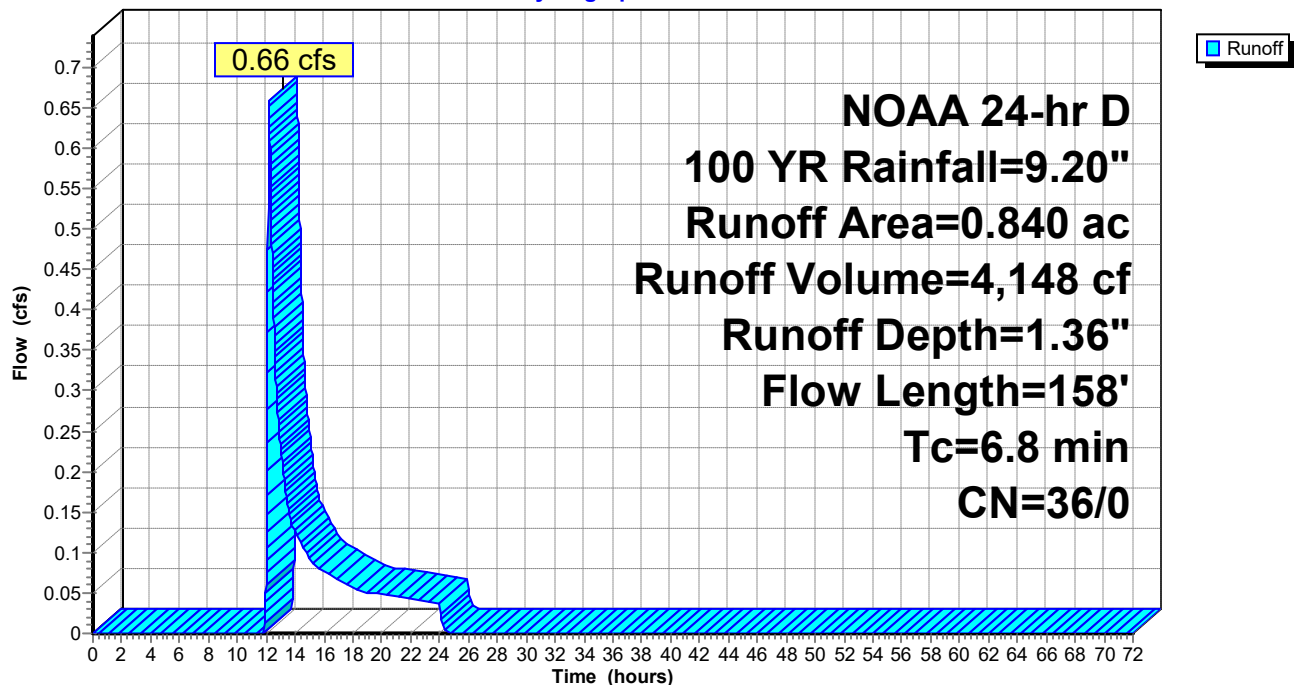
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100 YR Rainfall=9.20"

Area (ac)	CN	Description
0.320	30	Woods, Good, HSG A
0.520	39	>75% Grass cover, Good, HSG A
0.840	36	Weighted Average
0.840	36	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.7	68	0.0330	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.42"
1.1	90	0.0710	1.33		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
6.8	158				Total

Subcatchment 1B: DA-E1B

Hydrograph



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Hydrograph for Subcatchment 1B: DA-E1B

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.22	0.00	0.00	0.00
4.00	0.48	0.00	0.00	0.00
6.00	0.79	0.00	0.00	0.00
8.00	1.19	0.00	0.00	0.00
10.00	1.82	0.00	0.00	0.00
12.00	4.41	0.04	0.00	0.09
14.00	7.38	0.68	0.00	0.12
16.00	8.01	0.89	0.00	0.08
18.00	8.41	1.04	0.00	0.06
20.00	8.72	1.16	0.00	0.05
22.00	8.98	1.27	0.00	0.04
24.00	9.20	1.36	0.00	0.04
26.00	9.20	1.36	0.00	0.00
28.00	9.20	1.36	0.00	0.00
30.00	9.20	1.36	0.00	0.00
32.00	9.20	1.36	0.00	0.00
34.00	9.20	1.36	0.00	0.00
36.00	9.20	1.36	0.00	0.00
38.00	9.20	1.36	0.00	0.00
40.00	9.20	1.36	0.00	0.00
42.00	9.20	1.36	0.00	0.00
44.00	9.20	1.36	0.00	0.00
46.00	9.20	1.36	0.00	0.00
48.00	9.20	1.36	0.00	0.00
50.00	9.20	1.36	0.00	0.00
52.00	9.20	1.36	0.00	0.00
54.00	9.20	1.36	0.00	0.00
56.00	9.20	1.36	0.00	0.00
58.00	9.20	1.36	0.00	0.00
60.00	9.20	1.36	0.00	0.00
62.00	9.20	1.36	0.00	0.00
64.00	9.20	1.36	0.00	0.00
66.00	9.20	1.36	0.00	0.00
68.00	9.20	1.36	0.00	0.00
70.00	9.20	1.36	0.00	0.00
72.00	9.20	1.36	0.00	0.00

Existing Conditions 2024-06-17

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Wilbur Avenue Subdivision, Manchester, NJ

NOAA 24-hr D 100 YR Rainfall=9.20"

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Summary for Subcatchment 2: DA-E2

Runoff = 4.63 cfs @ 12.25 hrs, Volume= 35,924 cf, Depth= 1.55"
 Routed to Link 2L : POA-2 (Developed N)

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 NOAA 24-hr D 100 YR Rainfall=9.20"

Area (ac)	CN	Description
1.440	30	Woods, Good, HSG A
0.210	30	Woods, Good, HSG A
0.070	98	Roofs, HSG A
4.650	39	>75% Grass cover, Good, HSG A
6.370	37	Weighted Average
6.300	37	98.90% Pervious Area
0.070	98	1.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	92	0.0190	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.42" Using McCuen-Spiess flow length
1.4	100	0.0270	1.15		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.3	162	0.0820	2.00		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
11.7	354	Total			

Existing Conditions 2024-06-17

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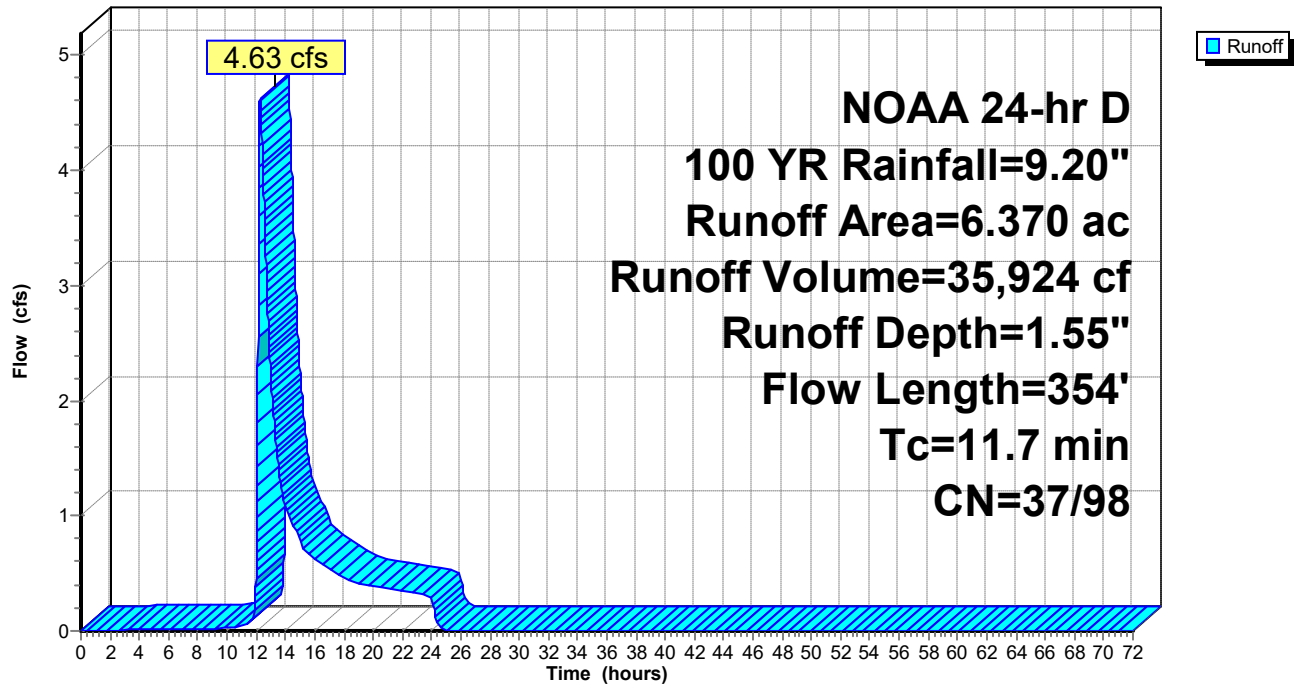
NOAA 24-hr D 100 YR Rainfall=9.20"

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Subcatchment 2: DA-E2

Hydrograph



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Hydrograph for Subcatchment 2: DA-E2

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.22	0.00	0.08	0.01
4.00	0.48	0.00	0.30	0.01
6.00	0.79	0.00	0.58	0.01
8.00	1.19	0.00	0.98	0.02
10.00	1.82	0.00	1.60	0.03
12.00	4.41	0.06	4.17	0.60
14.00	7.38	0.75	7.14	1.08
16.00	8.01	0.98	7.77	0.63
18.00	8.41	1.14	8.17	0.46
20.00	8.72	1.26	8.48	0.39
22.00	8.98	1.37	8.74	0.35
24.00	9.20	1.47	8.96	0.30
26.00	9.20	1.47	8.96	0.00
28.00	9.20	1.47	8.96	0.00
30.00	9.20	1.47	8.96	0.00
32.00	9.20	1.47	8.96	0.00
34.00	9.20	1.47	8.96	0.00
36.00	9.20	1.47	8.96	0.00
38.00	9.20	1.47	8.96	0.00
40.00	9.20	1.47	8.96	0.00
42.00	9.20	1.47	8.96	0.00
44.00	9.20	1.47	8.96	0.00
46.00	9.20	1.47	8.96	0.00
48.00	9.20	1.47	8.96	0.00
50.00	9.20	1.47	8.96	0.00
52.00	9.20	1.47	8.96	0.00
54.00	9.20	1.47	8.96	0.00
56.00	9.20	1.47	8.96	0.00
58.00	9.20	1.47	8.96	0.00
60.00	9.20	1.47	8.96	0.00
62.00	9.20	1.47	8.96	0.00
64.00	9.20	1.47	8.96	0.00
66.00	9.20	1.47	8.96	0.00
68.00	9.20	1.47	8.96	0.00
70.00	9.20	1.47	8.96	0.00
72.00	9.20	1.47	8.96	0.00

Existing Conditions 2024-06-17

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NOAA 24-hr D 100 YR Rainfall=9.20"

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Summary for Subcatchment 3: DA-E3

Runoff = 29.42 cfs @ 12.22 hrs, Volume= 155,230 cf, Depth= 4.01"
Routed to Link 3L : POA-3 (Undeveloped N)

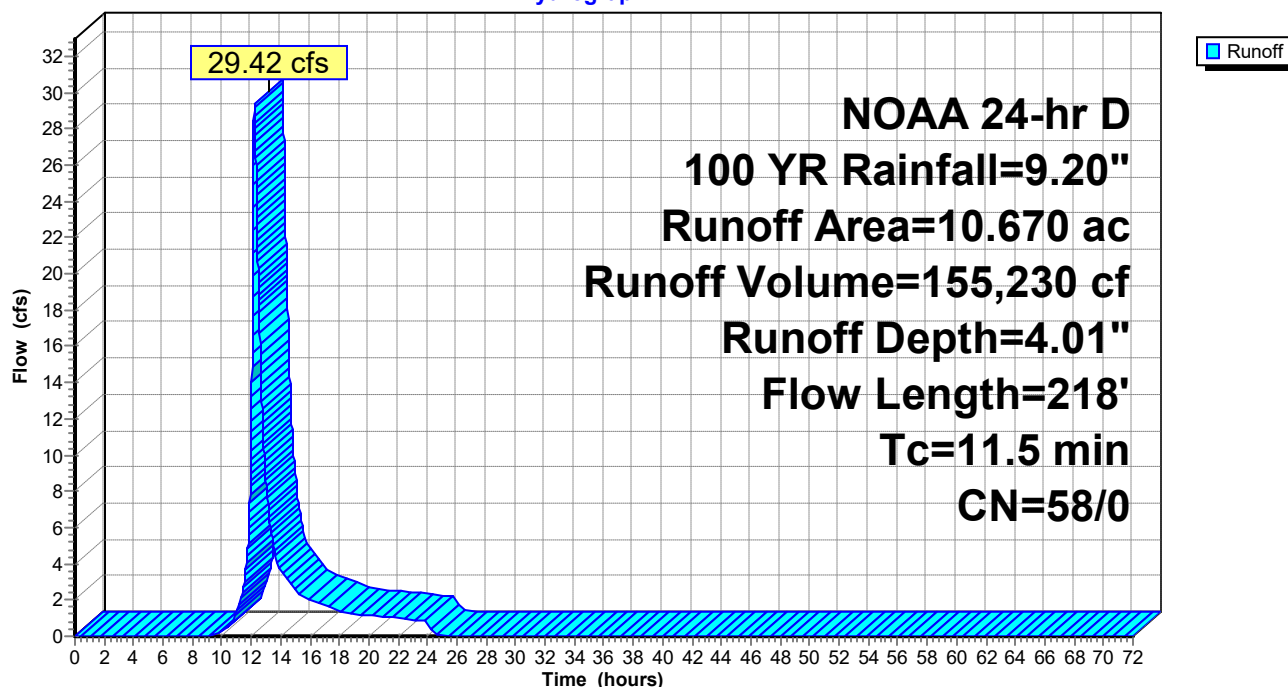
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100 YR Rainfall=9.20"

Area (ac)	CN	Description
6.010	77	Woods, Good, HSG D
2.590	30	Woods, Good, HSG A
2.070	39	>75% Grass cover, Good, HSG A
10.670	58	Weighted Average
10.670	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	35	0.0071	0.06		Sheet Flow, Grass: Dense n= 0.240 P2= 3.42" Using McCuen-Spiess flow length
1.9	148	0.0700	1.32		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.6	35	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
11.5	218	Total			

Subcatchment 3: DA-E3

Hydrograph



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Hydrograph for Subcatchment 3: DA-E3

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.22	0.00	0.00	0.00
4.00	0.48	0.00	0.00	0.00
6.00	0.79	0.00	0.00	0.00
8.00	1.19	0.00	0.00	0.00
10.00	1.82	0.02	0.00	0.29
12.00	4.41	0.86	0.00	11.34
14.00	7.38	2.67	0.00	3.66
16.00	8.01	3.12	0.00	2.00
18.00	8.41	3.42	0.00	1.39
20.00	8.72	3.64	0.00	1.16
22.00	8.98	3.84	0.00	1.01
24.00	9.20	4.01	0.00	0.85
26.00	9.20	4.01	0.00	0.00
28.00	9.20	4.01	0.00	0.00
30.00	9.20	4.01	0.00	0.00
32.00	9.20	4.01	0.00	0.00
34.00	9.20	4.01	0.00	0.00
36.00	9.20	4.01	0.00	0.00
38.00	9.20	4.01	0.00	0.00
40.00	9.20	4.01	0.00	0.00
42.00	9.20	4.01	0.00	0.00
44.00	9.20	4.01	0.00	0.00
46.00	9.20	4.01	0.00	0.00
48.00	9.20	4.01	0.00	0.00
50.00	9.20	4.01	0.00	0.00
52.00	9.20	4.01	0.00	0.00
54.00	9.20	4.01	0.00	0.00
56.00	9.20	4.01	0.00	0.00
58.00	9.20	4.01	0.00	0.00
60.00	9.20	4.01	0.00	0.00
62.00	9.20	4.01	0.00	0.00
64.00	9.20	4.01	0.00	0.00
66.00	9.20	4.01	0.00	0.00
68.00	9.20	4.01	0.00	0.00
70.00	9.20	4.01	0.00	0.00
72.00	9.20	4.01	0.00	0.00

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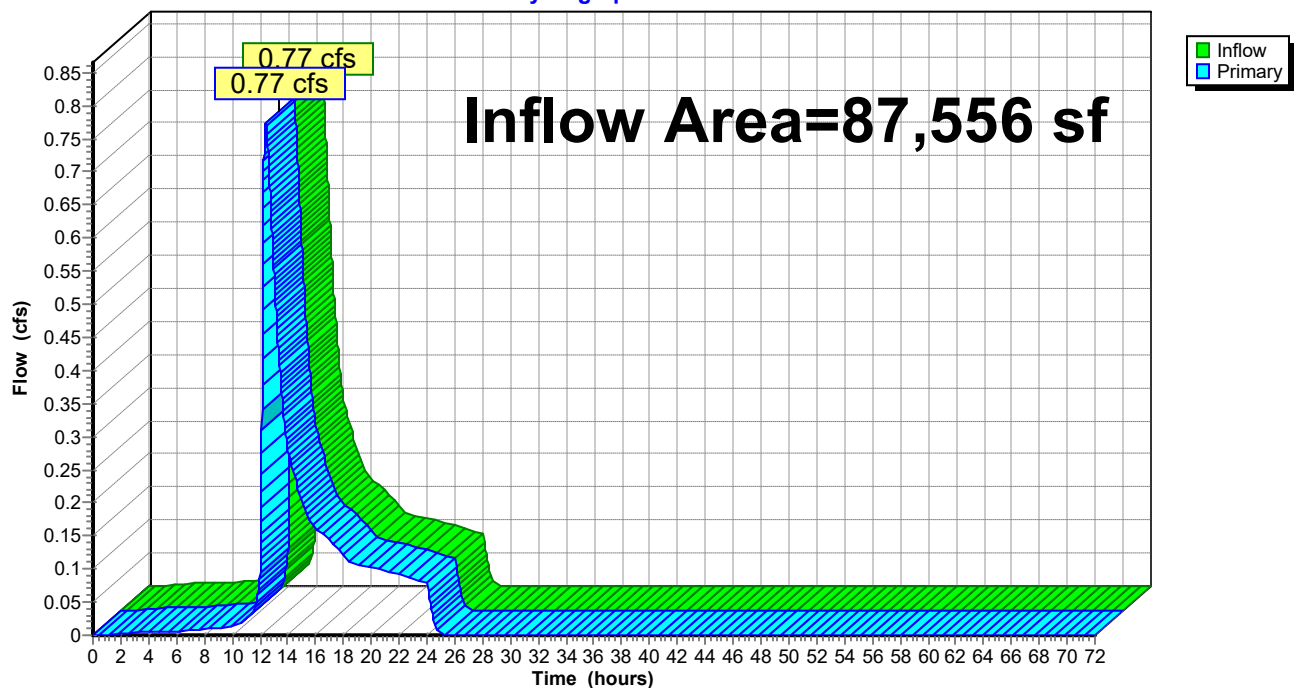
Summary for Link 1AL: POA 1A (Wilbur W)

Inflow Area = 87,556 sf, 1.99% Impervious, Inflow Depth = 1.20" for 100 YR event
Inflow = 0.77 cfs @ 12.39 hrs, Volume= 8,725 cf
Primary = 0.77 cfs @ 12.39 hrs, Volume= 8,725 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 4L

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 1AL: POA 1A (Wilbur W)

Hydrograph



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NOAA 24-hr D 100 YR Rainfall=9.20"

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Hydrograph for Link 1AL: POA 1A (Wilbur W)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
5.00	0.01	0.00	0.01	56.00	0.00	0.00	0.00
6.00	0.01	0.00	0.01	57.00	0.00	0.00	0.00
7.00	0.01	0.00	0.01	58.00	0.00	0.00	0.00
8.00	0.01	0.00	0.01	59.00	0.00	0.00	0.00
9.00	0.01	0.00	0.01	60.00	0.00	0.00	0.00
10.00	0.02	0.00	0.02	61.00	0.00	0.00	0.00
11.00	0.02	0.00	0.02	62.00	0.00	0.00	0.00
12.00	0.09	0.00	0.09	63.00	0.00	0.00	0.00
13.00	0.55	0.00	0.55	64.00	0.00	0.00	0.00
14.00	0.28	0.00	0.28	65.00	0.00	0.00	0.00
15.00	0.20	0.00	0.20	66.00	0.00	0.00	0.00
16.00	0.16	0.00	0.16	67.00	0.00	0.00	0.00
17.00	0.14	0.00	0.14	68.00	0.00	0.00	0.00
18.00	0.12	0.00	0.12	69.00	0.00	0.00	0.00
19.00	0.11	0.00	0.11	70.00	0.00	0.00	0.00
20.00	0.10	0.00	0.10	71.00	0.00	0.00	0.00
21.00	0.10	0.00	0.10	72.00	0.00	0.00	0.00
22.00	0.09	0.00	0.09				
23.00	0.09	0.00	0.09				
24.00	0.08	0.00	0.08				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

Existing Conditions 2024-06-17

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Wilbur Avenue Subdivision, Manchester, NJ

NOAA 24-hr D 100 YR Rainfall=9.20"

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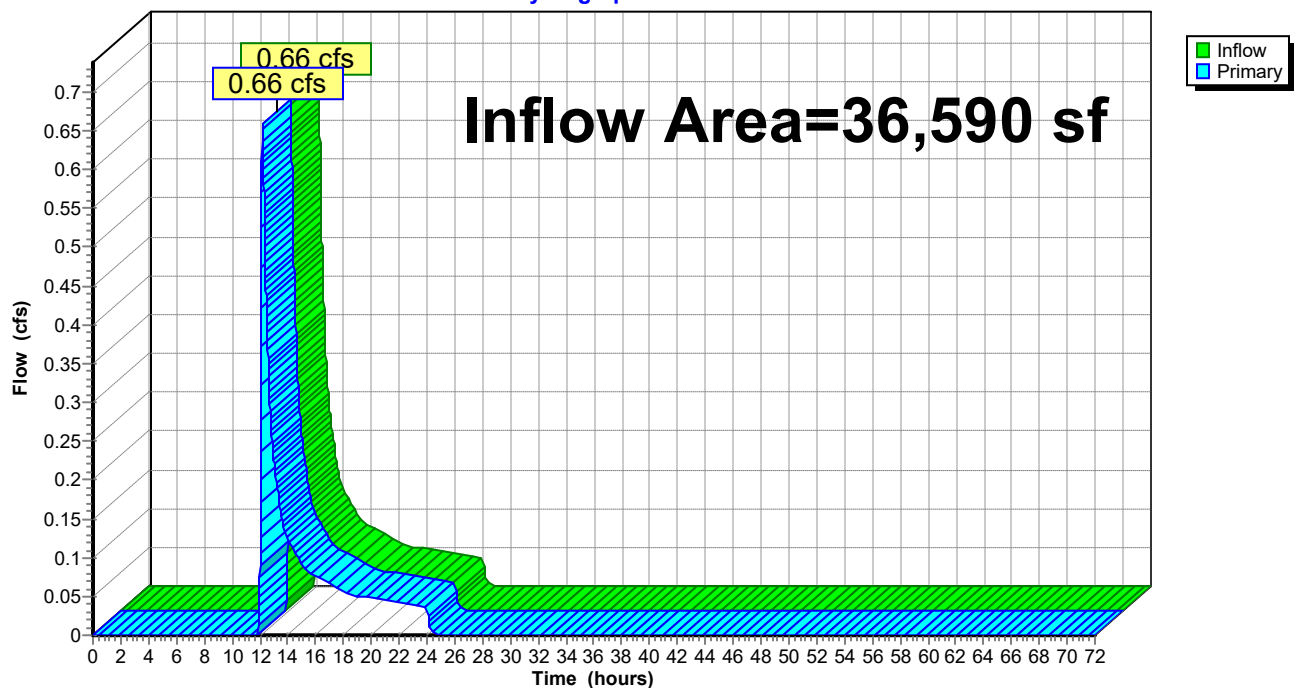
Summary for Link 1BL: POA-1B (Wilbur E)

Inflow Area = 36,590 sf, 0.00% Impervious, Inflow Depth = 1.36" for 100 YR event
Inflow = 0.66 cfs @ 12.17 hrs, Volume= 4,148 cf
Primary = 0.66 cfs @ 12.17 hrs, Volume= 4,148 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 4L

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 1BL: POA-1B (Wilbur E)

Hydrograph



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NOAA 24-hr D 100 YR Rainfall=9.20"

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Hydrograph for Link 1BL: POA-1B (Wilbur E)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
12.00	0.09	0.00	0.09	63.00	0.00	0.00	0.00
13.00	0.23	0.00	0.23	64.00	0.00	0.00	0.00
14.00	0.12	0.00	0.12	65.00	0.00	0.00	0.00
15.00	0.09	0.00	0.09	66.00	0.00	0.00	0.00
16.00	0.08	0.00	0.08	67.00	0.00	0.00	0.00
17.00	0.07	0.00	0.07	68.00	0.00	0.00	0.00
18.00	0.06	0.00	0.06	69.00	0.00	0.00	0.00
19.00	0.05	0.00	0.05	70.00	0.00	0.00	0.00
20.00	0.05	0.00	0.05	71.00	0.00	0.00	0.00
21.00	0.05	0.00	0.05	72.00	0.00	0.00	0.00
22.00	0.04	0.00	0.04				
23.00	0.04	0.00	0.04				
24.00	0.04	0.00	0.04				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

Existing Conditions 2024-06-17

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NOAA 24-hr D 100 YR Rainfall=9.20"

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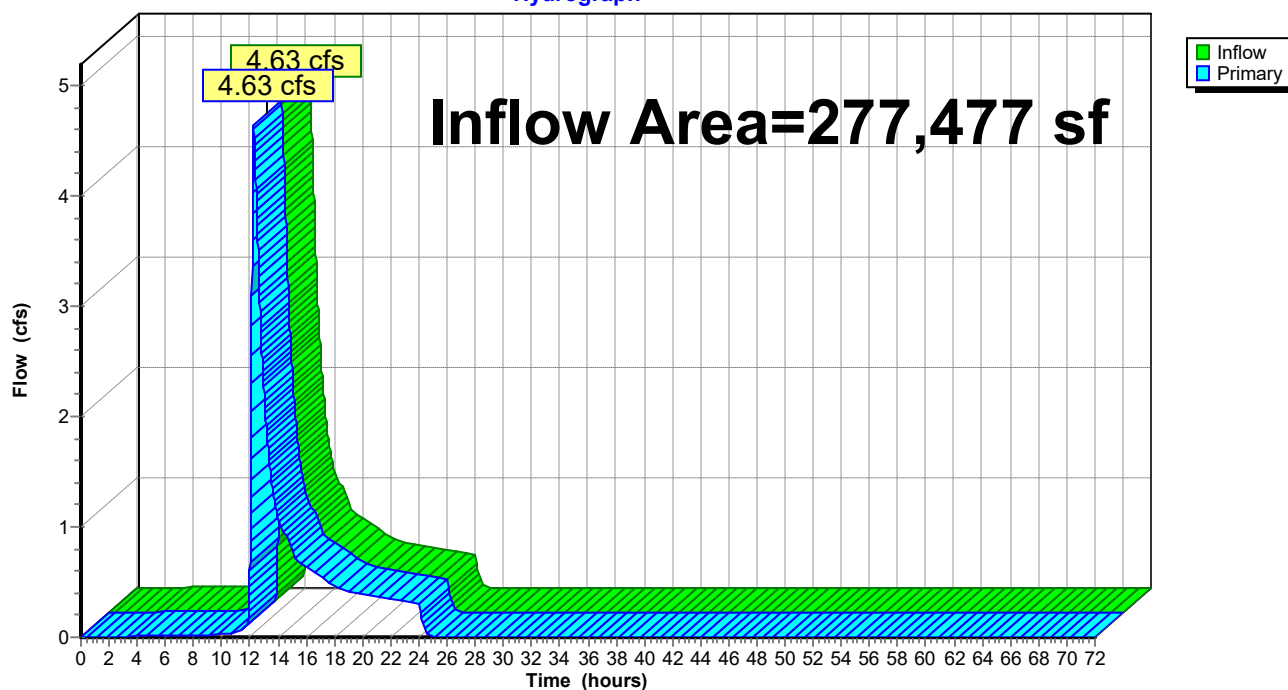
Summary for Link 2L: POA-2 (Developed N)

Inflow Area = 277,477 sf, 1.10% Impervious, Inflow Depth = 1.55" for 100 YR event
Inflow = 4.63 cfs @ 12.25 hrs, Volume= 35,924 cf
Primary = 4.63 cfs @ 12.25 hrs, Volume= 35,924 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 4L

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 2L: POA-2 (Developed N)

Hydrograph



Existing Conditions 2024-06-17

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Hydrograph for Link 2L: POA-2 (Developed N)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.01	0.00	0.01	53.00	0.00	0.00	0.00
3.00	0.01	0.00	0.01	54.00	0.00	0.00	0.00
4.00	0.01	0.00	0.01	55.00	0.00	0.00	0.00
5.00	0.01	0.00	0.01	56.00	0.00	0.00	0.00
6.00	0.01	0.00	0.01	57.00	0.00	0.00	0.00
7.00	0.01	0.00	0.01	58.00	0.00	0.00	0.00
8.00	0.02	0.00	0.02	59.00	0.00	0.00	0.00
9.00	0.02	0.00	0.02	60.00	0.00	0.00	0.00
10.00	0.03	0.00	0.03	61.00	0.00	0.00	0.00
11.00	0.05	0.00	0.05	62.00	0.00	0.00	0.00
12.00	0.60	0.00	0.60	63.00	0.00	0.00	0.00
13.00	2.20	0.00	2.20	64.00	0.00	0.00	0.00
14.00	1.08	0.00	1.08	65.00	0.00	0.00	0.00
15.00	0.79	0.00	0.79	66.00	0.00	0.00	0.00
16.00	0.63	0.00	0.63	67.00	0.00	0.00	0.00
17.00	0.55	0.00	0.55	68.00	0.00	0.00	0.00
18.00	0.46	0.00	0.46	69.00	0.00	0.00	0.00
19.00	0.41	0.00	0.41	70.00	0.00	0.00	0.00
20.00	0.39	0.00	0.39	71.00	0.00	0.00	0.00
21.00	0.37	0.00	0.37	72.00	0.00	0.00	0.00
22.00	0.35	0.00	0.35				
23.00	0.32	0.00	0.32				
24.00	0.30	0.00	0.30				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

Existing Conditions 2024-06-17

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NOAA 24-hr D 100 YR Rainfall=9.20"

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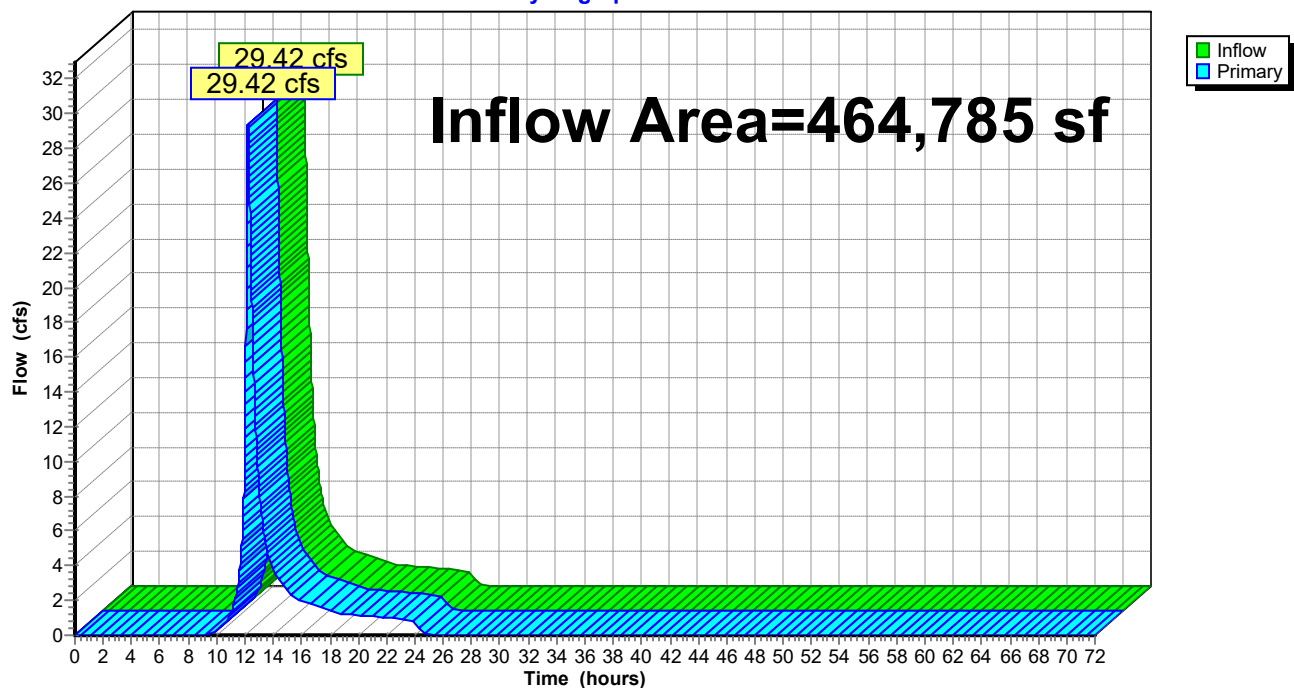
Summary for Link 3L: POA-3 (Undeveloped N)

Inflow Area = 464,785 sf, 0.00% Impervious, Inflow Depth = 4.01" for 100 YR event
Inflow = 29.42 cfs @ 12.22 hrs, Volume= 155,230 cf
Primary = 29.42 cfs @ 12.22 hrs, Volume= 155,230 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 4L

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 3L: POA-3 (Undeveloped N)

Hydrograph



Existing Conditions 2024-06-17

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Hydrograph for Link 3L: POA-3 (Undeveloped N)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
10.00	0.29	0.00	0.29	61.00	0.00	0.00	0.00
11.00	1.25	0.00	1.25	62.00	0.00	0.00	0.00
12.00	11.34	0.00	11.34	63.00	0.00	0.00	0.00
13.00	8.49	0.00	8.49	64.00	0.00	0.00	0.00
14.00	3.66	0.00	3.66	65.00	0.00	0.00	0.00
15.00	2.55	0.00	2.55	66.00	0.00	0.00	0.00
16.00	2.00	0.00	2.00	67.00	0.00	0.00	0.00
17.00	1.70	0.00	1.70	68.00	0.00	0.00	0.00
18.00	1.39	0.00	1.39	69.00	0.00	0.00	0.00
19.00	1.24	0.00	1.24	70.00	0.00	0.00	0.00
20.00	1.16	0.00	1.16	71.00	0.00	0.00	0.00
21.00	1.09	0.00	1.09	72.00	0.00	0.00	0.00
22.00	1.01	0.00	1.01				
23.00	0.93	0.00	0.93				
24.00	0.85	0.00	0.85				
25.00	0.01	0.00	0.01				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

Existing Conditions 2024-06-17

Multi-Event Tables

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Events for Subcatchment 1A: DA-E1A

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2 YR	3.42	0.07	463	0.06
10 YR	5.33	0.11	1,274	0.17
100 YR	9.20	0.77	8,725	1.20

Existing Conditions 2024-06-17***Multi-Event Tables***

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Events for Subcatchment 1B: DA-E1B

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2 YR	3.42	0.00	0	0.00
10 YR	5.33	0.02	491	0.16
100 YR	9.20	0.66	4,148	1.36

Existing Conditions 2024-06-17***Multi-Event Tables***

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Events for Subcatchment 2: DA-E2

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2 YR	3.42	0.14	810	0.04
10 YR	5.33	0.22	5,764	0.25
100 YR	9.20	4.63	35,924	1.55

Existing Conditions 2024-06-17

Multi-Event Tables

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Events for Subcatchment 3: DA-E3

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2 YR	3.42	1.68	16,344	0.42
10 YR	5.33	8.75	52,468	1.35
100 YR	9.20	29.42	155,230	4.01

Existing Conditions 2024-06-17

Multi-Event Tables

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Events for Link 1AL: POA 1A (Wilbur W)

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2 YR	0.07	0.07	0.00
10 YR	0.11	0.11	0.00
100 YR	0.77	0.77	0.00

Existing Conditions 2024-06-17

Multi-Event Tables

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Events for Link 1BL: POA-1B (Wilbur E)

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2 YR	0.00	0.00	0.00
10 YR	0.02	0.02	0.00
100 YR	0.66	0.66	0.00

Existing Conditions 2024-06-17

Multi-Event Tables

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Events for Link 2L: POA-2 (Developed N)

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2 YR	0.14	0.14	0.00
10 YR	0.22	0.22	0.00
100 YR	4.63	4.63	0.00

Existing Conditions 2024-06-17***Multi-Event Tables***

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Events for Link 3L: POA-3 (Undeveloped N)

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2 YR	1.68	1.68	0.00
10 YR	8.75	8.75	0.00
100 YR	29.42	29.42	0.00

Existing Conditions 2024-06-17

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- 18 Link 2L: POA-2 (Developed N)
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10 YR Event

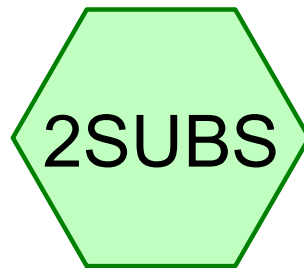
- 22 Subcat 1A: DA-E1A
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100 YR Event

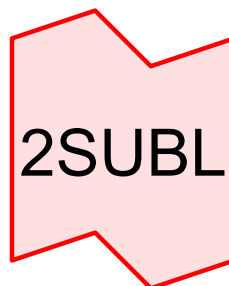
- 40 Subcat 1A: DA-E1A
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Multi-Event Tables

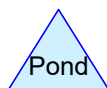
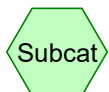
- 58 Subcat 1A: DA-E1A
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DA-E2-SUBA



POA-SUB2 (Basin B
Outlet)



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Page 2

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2 YR	NOAA 24-hr	D	Default	24.00	1	3.42	2
2	10 YR	NOAA 24-hr	D	Default	24.00	1	5.33	2
3	100 YR	NOAA 24-hr	D	Default	24.00	1	9.20	2

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Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
94,961	39	>75% Grass cover, Good, HSG A (2SUBS)
3,049	98	Roofs, HSG A (2SUBS)
98,010	41	TOTAL AREA

Existing Conditions 2024-06-17

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Wilbur Avenue Subdivision, Manchester, NJ

NOAA 24-hr D 2 YR Rainfall=3.42"

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Summary for Subcatchment 2SUBS: DA-E2-SUBA

Runoff = 0.14 cfs @ 12.20 hrs, Volume= 852 cf, Depth= 0.10"
Routed to Link 2SUBL : POA-SUB2 (Basin B Outlet)

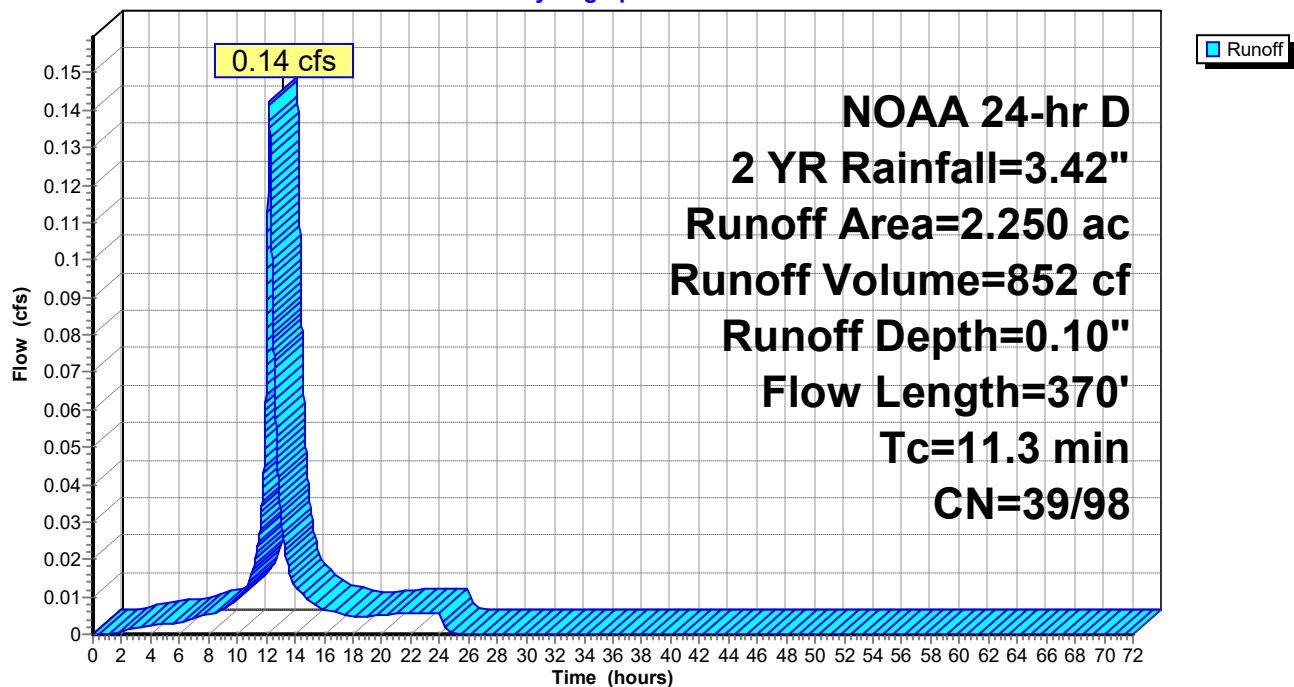
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.10 hrs
NOAA 24-hr D 2 YR Rainfall=3.42"

Area (ac)	CN	Description
0.000	30	Woods, Good, HSG A
0.070	98	Roofs, HSG A
2.180	39	>75% Grass cover, Good, HSG A
2.250	41	Weighted Average
2.180	39	96.89% Pervious Area
0.070	98	3.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	100	0.0260	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.42"
1.5	108	0.0280	1.17		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.3	162	0.0820	2.00		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
11.3	370	Total			

Subcatchment 2SUBS: DA-E2-SUBA

Hydrograph



Existing Conditions 2024-06-17

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Hydrograph for Subcatchment 2SUBS: DA-E2-SUBA

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.08	0.00	0.01	0.00
4.00	0.18	0.00	0.06	0.00
6.00	0.29	0.00	0.14	0.00
8.00	0.44	0.00	0.27	0.01
10.00	0.68	0.00	0.48	0.01
12.00	1.64	0.00	1.42	0.07
14.00	2.74	0.00	2.51	0.01
16.00	2.98	0.00	2.74	0.01
18.00	3.13	0.00	2.90	0.00
20.00	3.24	0.00	3.01	0.01
22.00	3.34	0.00	3.10	0.01
24.00	3.42	0.01	3.19	0.01
26.00	3.42	0.01	3.19	0.00
28.00	3.42	0.01	3.19	0.00
30.00	3.42	0.01	3.19	0.00
32.00	3.42	0.01	3.19	0.00
34.00	3.42	0.01	3.19	0.00
36.00	3.42	0.01	3.19	0.00
38.00	3.42	0.01	3.19	0.00
40.00	3.42	0.01	3.19	0.00
42.00	3.42	0.01	3.19	0.00
44.00	3.42	0.01	3.19	0.00
46.00	3.42	0.01	3.19	0.00
48.00	3.42	0.01	3.19	0.00
50.00	3.42	0.01	3.19	0.00
52.00	3.42	0.01	3.19	0.00
54.00	3.42	0.01	3.19	0.00
56.00	3.42	0.01	3.19	0.00
58.00	3.42	0.01	3.19	0.00
60.00	3.42	0.01	3.19	0.00
62.00	3.42	0.01	3.19	0.00
64.00	3.42	0.01	3.19	0.00
66.00	3.42	0.01	3.19	0.00
68.00	3.42	0.01	3.19	0.00
70.00	3.42	0.01	3.19	0.00
72.00	3.42	0.01	3.19	0.00

Existing Conditions 2024-06-17

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Wilbur Avenue Subdivision, Manchester, NJ

NOAA 24-hr D 2 YR Rainfall=3.42"

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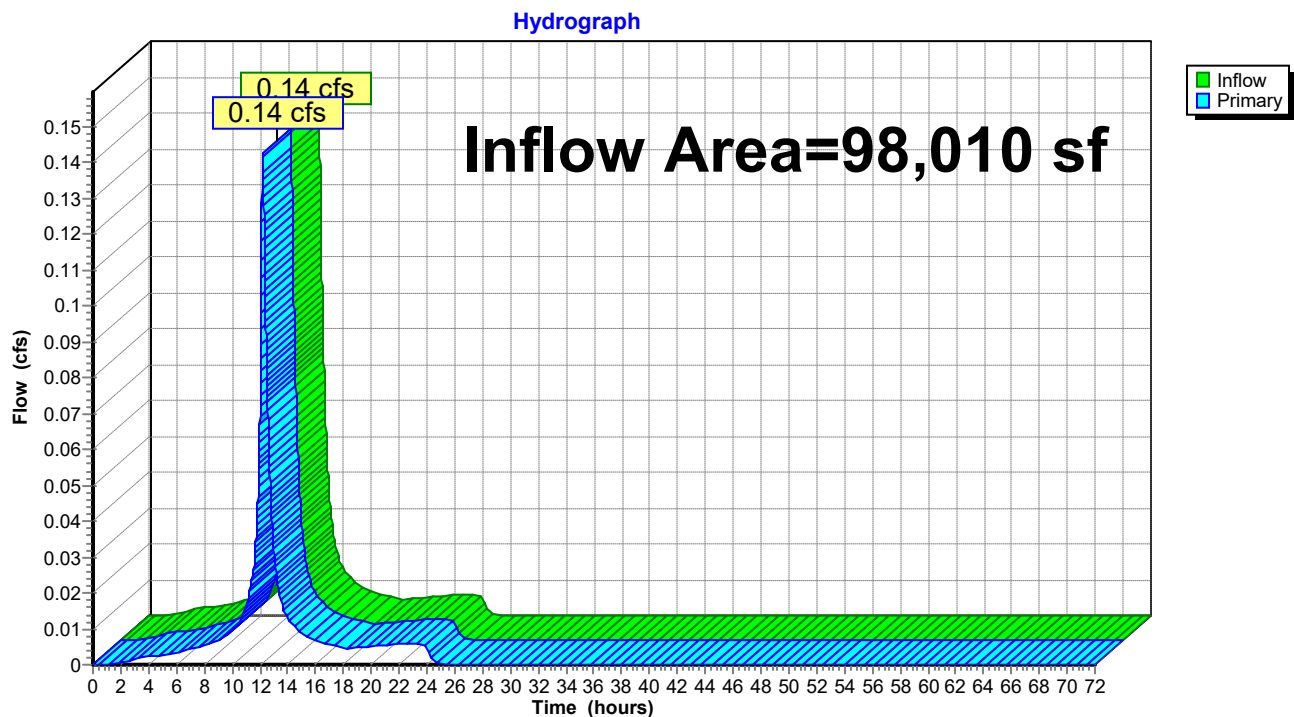
Page 6

Summary for Link 2SUBL: POA-SUB2 (Basin B Outlet)

Inflow Area = 98,010 sf, 3.11% Impervious, Inflow Depth = 0.10" for 2 YR event
Inflow = 0.14 cfs @ 12.20 hrs, Volume= 852 cf
Primary = 0.14 cfs @ 12.20 hrs, Volume= 852 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 2SUBL: POA-SUB2 (Basin B Outlet)



Existing Conditions 2024-06-17

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Wilbur Avenue Subdivision, Manchester, NJ

NOAA 24-hr D 2 YR Rainfall=3.42"

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Hydrograph for Link 2SUBL: POA-SUB2 (Basin B Outlet)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
8.00	0.01	0.00	0.01	59.00	0.00	0.00	0.00
9.00	0.01	0.00	0.01	60.00	0.00	0.00	0.00
10.00	0.01	0.00	0.01	61.00	0.00	0.00	0.00
11.00	0.02	0.00	0.02	62.00	0.00	0.00	0.00
12.00	0.07	0.00	0.07	63.00	0.00	0.00	0.00
13.00	0.03	0.00	0.03	64.00	0.00	0.00	0.00
14.00	0.01	0.00	0.01	65.00	0.00	0.00	0.00
15.00	0.01	0.00	0.01	66.00	0.00	0.00	0.00
16.00	0.01	0.00	0.01	67.00	0.00	0.00	0.00
17.00	0.01	0.00	0.01	68.00	0.00	0.00	0.00
18.00	0.00	0.00	0.00	69.00	0.00	0.00	0.00
19.00	0.00	0.00	0.00	70.00	0.00	0.00	0.00
20.00	0.01	0.00	0.01	71.00	0.00	0.00	0.00
21.00	0.01	0.00	0.01	72.00	0.00	0.00	0.00
22.00	0.01	0.00	0.01				
23.00	0.01	0.00	0.01				
24.00	0.01	0.00	0.01				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

Existing Conditions 2024-06-17

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Wilbur Avenue Subdivision, Manchester, NJ

NOAA 24-hr D 10 YR Rainfall=5.33"

Printed 7/13/2026

Page 8

Summary for Subcatchment 2SUBS: DA-E2-SUBA

Runoff = 0.23 cfs @ 12.21 hrs, Volume= 3,444 cf, Depth= 0.42"
Routed to Link 2SUBL : POA-SUB2 (Basin B Outlet)

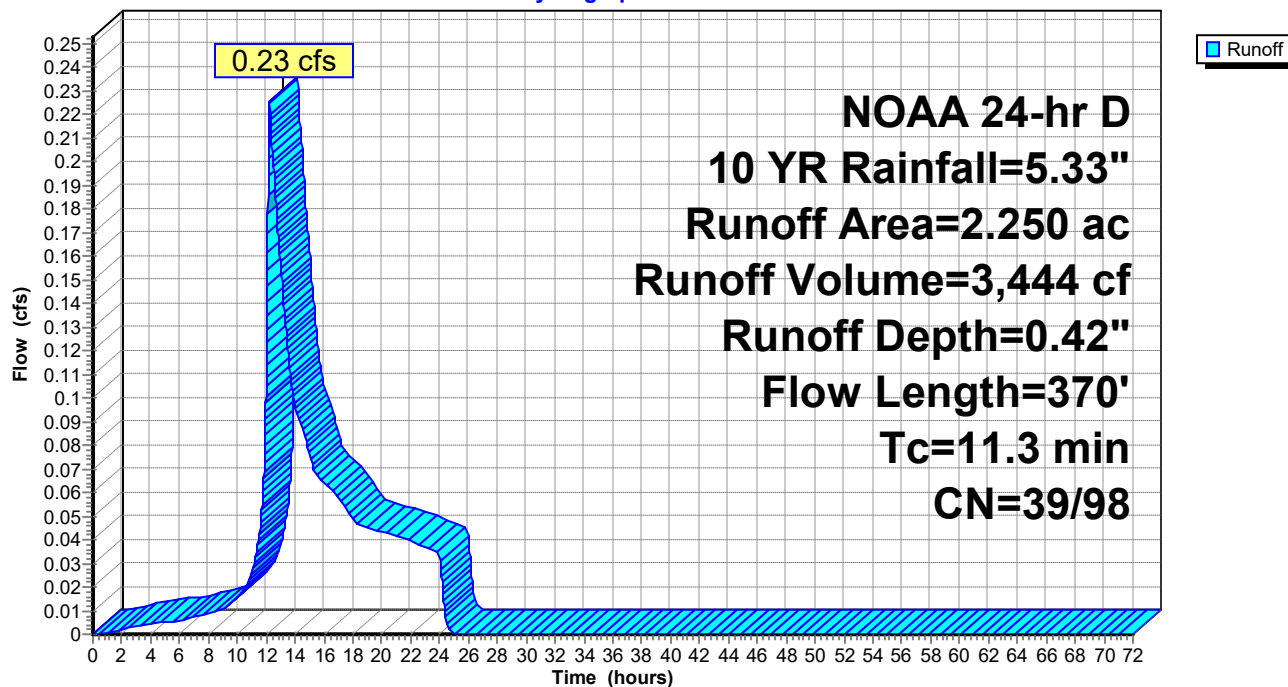
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 10 YR Rainfall=5.33"

Area (ac)	CN	Description
0.000	30	Woods, Good, HSG A
0.070	98	Roofs, HSG A
2.180	39	>75% Grass cover, Good, HSG A
2.250	41	Weighted Average
2.180	39	96.89% Pervious Area
0.070	98	3.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	100	0.0260	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.42"
1.5	108	0.0280	1.17		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.3	162	0.0820	2.00		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
11.3	370	Total			

Subcatchment 2SUBS: DA-E2-SUBA

Hydrograph



Existing Conditions 2024-06-17

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Hydrograph for Subcatchment 2SUBS: DA-E2-SUBA

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.13	0.00	0.03	0.00
4.00	0.28	0.00	0.13	0.00
6.00	0.46	0.00	0.28	0.01
8.00	0.69	0.00	0.50	0.01
10.00	1.06	0.00	0.85	0.02
12.00	2.55	0.00	2.32	0.11
14.00	4.27	0.08	4.04	0.10
16.00	4.64	0.13	4.40	0.06
18.00	4.87	0.18	4.64	0.05
20.00	5.05	0.21	4.81	0.04
22.00	5.20	0.24	4.96	0.04
24.00	5.33	0.27	5.09	0.03
26.00	5.33	0.27	5.09	0.00
28.00	5.33	0.27	5.09	0.00
30.00	5.33	0.27	5.09	0.00
32.00	5.33	0.27	5.09	0.00
34.00	5.33	0.27	5.09	0.00
36.00	5.33	0.27	5.09	0.00
38.00	5.33	0.27	5.09	0.00
40.00	5.33	0.27	5.09	0.00
42.00	5.33	0.27	5.09	0.00
44.00	5.33	0.27	5.09	0.00
46.00	5.33	0.27	5.09	0.00
48.00	5.33	0.27	5.09	0.00
50.00	5.33	0.27	5.09	0.00
52.00	5.33	0.27	5.09	0.00
54.00	5.33	0.27	5.09	0.00
56.00	5.33	0.27	5.09	0.00
58.00	5.33	0.27	5.09	0.00
60.00	5.33	0.27	5.09	0.00
62.00	5.33	0.27	5.09	0.00
64.00	5.33	0.27	5.09	0.00
66.00	5.33	0.27	5.09	0.00
68.00	5.33	0.27	5.09	0.00
70.00	5.33	0.27	5.09	0.00
72.00	5.33	0.27	5.09	0.00

Existing Conditions 2024-06-17

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Wilbur Avenue Subdivision, Manchester, NJ

NOAA 24-hr D 10 YR Rainfall=5.33"

Printed 7/13/2026

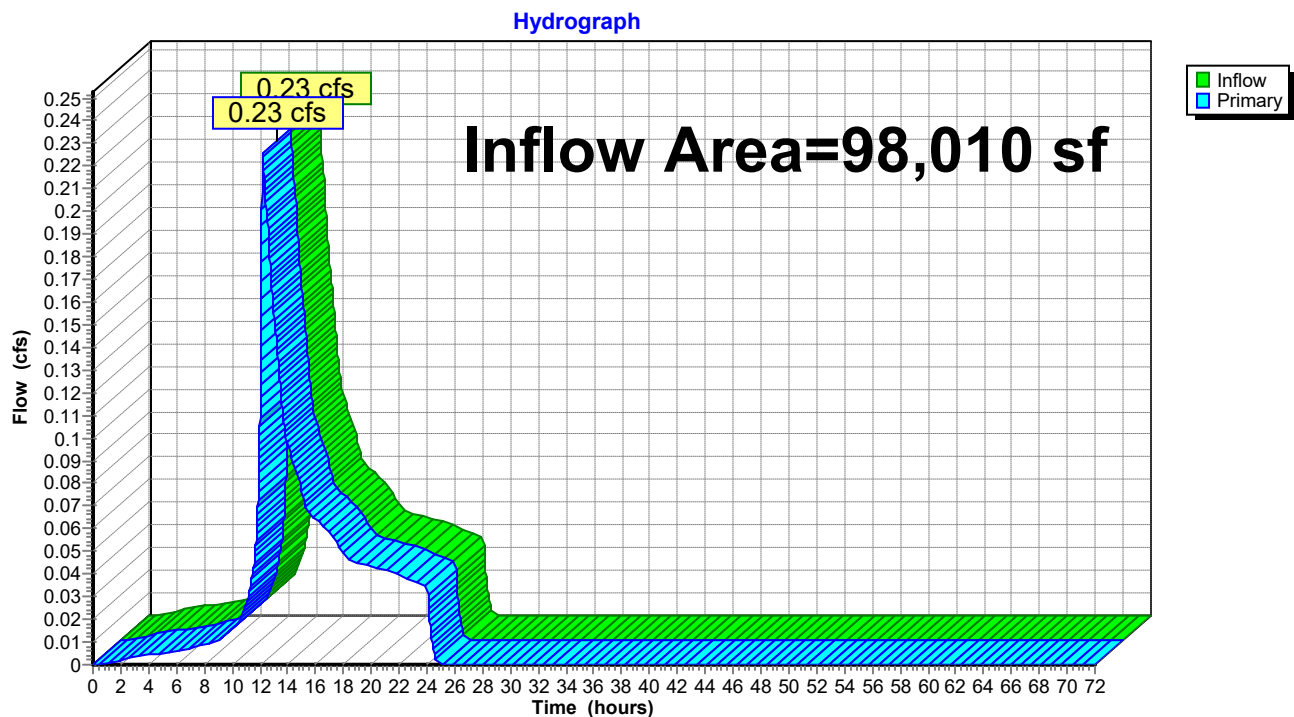
Page 10

Summary for Link 2SUBL: POA-SUB2 (Basin B Outlet)

Inflow Area = 98,010 sf, 3.11% Impervious, Inflow Depth = 0.42" for 10 YR event
Inflow = 0.23 cfs @ 12.21 hrs, Volume= 3,444 cf
Primary = 0.23 cfs @ 12.21 hrs, Volume= 3,444 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 2SUBL: POA-SUB2 (Basin B Outlet)



Existing Conditions 2024-06-17

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Hydrograph for Link 2SUBL: POA-SUB2 (Basin B Outlet)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
5.00	0.01	0.00	0.01	56.00	0.00	0.00	0.00
6.00	0.01	0.00	0.01	57.00	0.00	0.00	0.00
7.00	0.01	0.00	0.01	58.00	0.00	0.00	0.00
8.00	0.01	0.00	0.01	59.00	0.00	0.00	0.00
9.00	0.01	0.00	0.01	60.00	0.00	0.00	0.00
10.00	0.02	0.00	0.02	61.00	0.00	0.00	0.00
11.00	0.03	0.00	0.03	62.00	0.00	0.00	0.00
12.00	0.11	0.00	0.11	63.00	0.00	0.00	0.00
13.00	0.16	0.00	0.16	64.00	0.00	0.00	0.00
14.00	0.10	0.00	0.10	65.00	0.00	0.00	0.00
15.00	0.08	0.00	0.08	66.00	0.00	0.00	0.00
16.00	0.06	0.00	0.06	67.00	0.00	0.00	0.00
17.00	0.06	0.00	0.06	68.00	0.00	0.00	0.00
18.00	0.05	0.00	0.05	69.00	0.00	0.00	0.00
19.00	0.05	0.00	0.05	70.00	0.00	0.00	0.00
20.00	0.04	0.00	0.04	71.00	0.00	0.00	0.00
21.00	0.04	0.00	0.04	72.00	0.00	0.00	0.00
22.00	0.04	0.00	0.04				
23.00	0.04	0.00	0.04				
24.00	0.03	0.00	0.03				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

Existing Conditions 2024-06-17

Prepared by Civil Core Consulting

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Wilbur Avenue Subdivision, Manchester, NJ

NOAA 24-hr D 100 YR Rainfall=9.20"

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Summary for Subcatchment 2SUBS: DA-E2-SUBA

Runoff = 2.31 cfs @ 12.23 hrs, Volume= 15,713 cf, Depth= 1.92"
Routed to Link 2SUBL : POA-SUB2 (Basin B Outlet)

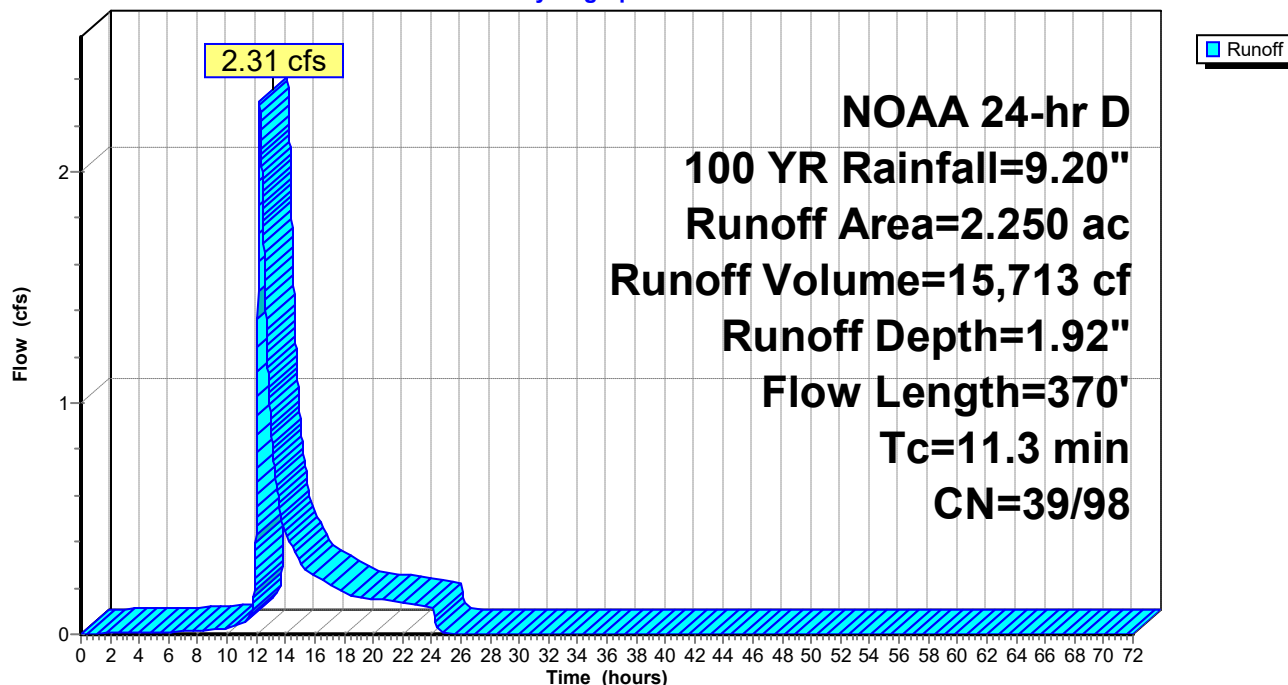
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100 YR Rainfall=9.20"

Area (ac)	CN	Description
0.000	30	Woods, Good, HSG A
0.070	98	Roofs, HSG A
2.180	39	>75% Grass cover, Good, HSG A
2.250	41	Weighted Average
2.180	39	96.89% Pervious Area
0.070	98	3.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	100	0.0260	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.42"
1.5	108	0.0280	1.17		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.3	162	0.0820	2.00		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
11.3	370	Total			

Subcatchment 2SUBS: DA-E2-SUBA

Hydrograph



Existing Conditions 2024-06-17

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Hydrograph for Subcatchment 2SUBS: DA-E2-SUBA

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.22	0.00	0.08	0.01
4.00	0.48	0.00	0.30	0.01
6.00	0.79	0.00	0.58	0.01
8.00	1.19	0.00	0.98	0.02
10.00	1.82	0.00	1.60	0.03
12.00	4.41	0.10	4.17	0.51
14.00	7.38	0.91	7.14	0.44
16.00	8.01	1.16	7.77	0.25
18.00	8.41	1.34	8.17	0.18
20.00	8.72	1.47	8.48	0.15
22.00	8.98	1.59	8.74	0.14
24.00	9.20	1.70	8.96	0.12
26.00	9.20	1.70	8.96	0.00
28.00	9.20	1.70	8.96	0.00
30.00	9.20	1.70	8.96	0.00
32.00	9.20	1.70	8.96	0.00
34.00	9.20	1.70	8.96	0.00
36.00	9.20	1.70	8.96	0.00
38.00	9.20	1.70	8.96	0.00
40.00	9.20	1.70	8.96	0.00
42.00	9.20	1.70	8.96	0.00
44.00	9.20	1.70	8.96	0.00
46.00	9.20	1.70	8.96	0.00
48.00	9.20	1.70	8.96	0.00
50.00	9.20	1.70	8.96	0.00
52.00	9.20	1.70	8.96	0.00
54.00	9.20	1.70	8.96	0.00
56.00	9.20	1.70	8.96	0.00
58.00	9.20	1.70	8.96	0.00
60.00	9.20	1.70	8.96	0.00
62.00	9.20	1.70	8.96	0.00
64.00	9.20	1.70	8.96	0.00
66.00	9.20	1.70	8.96	0.00
68.00	9.20	1.70	8.96	0.00
70.00	9.20	1.70	8.96	0.00
72.00	9.20	1.70	8.96	0.00

Existing Conditions 2024-06-17

Prepared by Civil Core Consulting

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Wilbur Avenue Subdivision, Manchester, NJ

NOAA 24-hr D 100 YR Rainfall=9.20"

Printed 7/13/2026

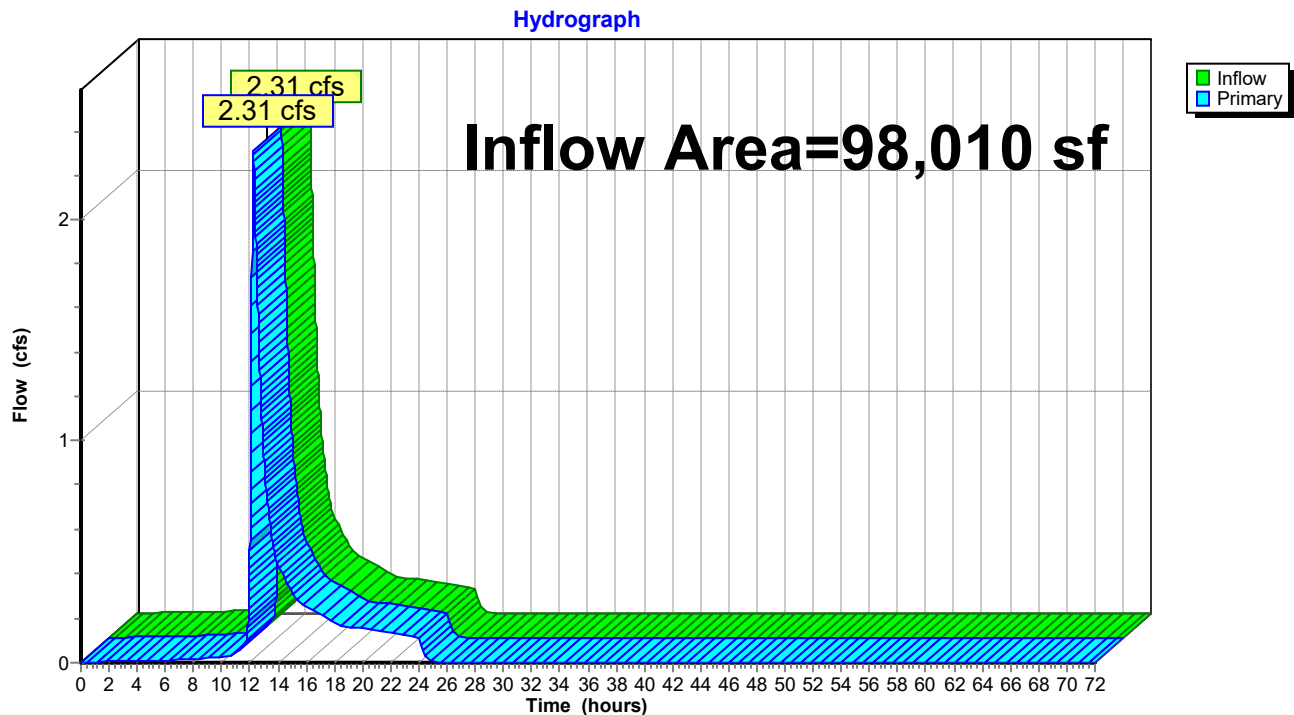
Page 14

Summary for Link 2SUBL: POA-SUB2 (Basin B Outlet)

Inflow Area = 98,010 sf, 3.11% Impervious, Inflow Depth = 1.92" for 100 YR event
Inflow = 2.31 cfs @ 12.23 hrs, Volume= 15,713 cf
Primary = 2.31 cfs @ 12.23 hrs, Volume= 15,713 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 2SUBL: POA-SUB2 (Basin B Outlet)



Existing Conditions 2024-06-17

Prepared by Civil Core Consulting

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Wilbur Avenue Subdivision, Manchester, NJ

NOAA 24-hr D 100 YR Rainfall=9.20"

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Hydrograph for Link 2SUBL: POA-SUB2 (Basin B Outlet)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.01	0.00	0.01	53.00	0.00	0.00	0.00
3.00	0.01	0.00	0.01	54.00	0.00	0.00	0.00
4.00	0.01	0.00	0.01	55.00	0.00	0.00	0.00
5.00	0.01	0.00	0.01	56.00	0.00	0.00	0.00
6.00	0.01	0.00	0.01	57.00	0.00	0.00	0.00
7.00	0.01	0.00	0.01	58.00	0.00	0.00	0.00
8.00	0.02	0.00	0.02	59.00	0.00	0.00	0.00
9.00	0.02	0.00	0.02	60.00	0.00	0.00	0.00
10.00	0.03	0.00	0.03	61.00	0.00	0.00	0.00
11.00	0.05	0.00	0.05	62.00	0.00	0.00	0.00
12.00	0.51	0.00	0.51	63.00	0.00	0.00	0.00
13.00	0.91	0.00	0.91	64.00	0.00	0.00	0.00
14.00	0.44	0.00	0.44	65.00	0.00	0.00	0.00
15.00	0.32	0.00	0.32	66.00	0.00	0.00	0.00
16.00	0.25	0.00	0.25	67.00	0.00	0.00	0.00
17.00	0.22	0.00	0.22	68.00	0.00	0.00	0.00
18.00	0.18	0.00	0.18	69.00	0.00	0.00	0.00
19.00	0.16	0.00	0.16	70.00	0.00	0.00	0.00
20.00	0.15	0.00	0.15	71.00	0.00	0.00	0.00
21.00	0.15	0.00	0.15	72.00	0.00	0.00	0.00
22.00	0.14	0.00	0.14				
23.00	0.13	0.00	0.13				
24.00	0.12	0.00	0.12				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

Existing Conditions 2024-06-17***Multi-Event Tables***

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Events for Subcatchment 2SUBS: DA-E2-SUBA

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2 YR	3.42	0.14	852	0.10
10 YR	5.33	0.23	3,444	0.42
100 YR	9.20	2.31	15,713	1.92

Existing Conditions 2024-06-17**Multi-Event Tables**

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Events for Link 2SUBL: POA-SUB2 (Basin B Outlet)

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2 YR	0.14	0.14	0.00
10 YR	0.23	0.23	0.00
100 YR	2.31	2.31	0.00

Existing Conditions 2024-06-17

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Wilbur Avenue Subdivision, Manchester, NJ

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10 YR Event

- 8 Subcat 2SUBS: DA-E2-SUBA
- 10 Link 2SUBL: POA-SUB2 (Basin B Outlet)

100 YR Event

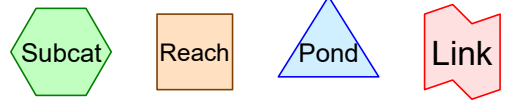
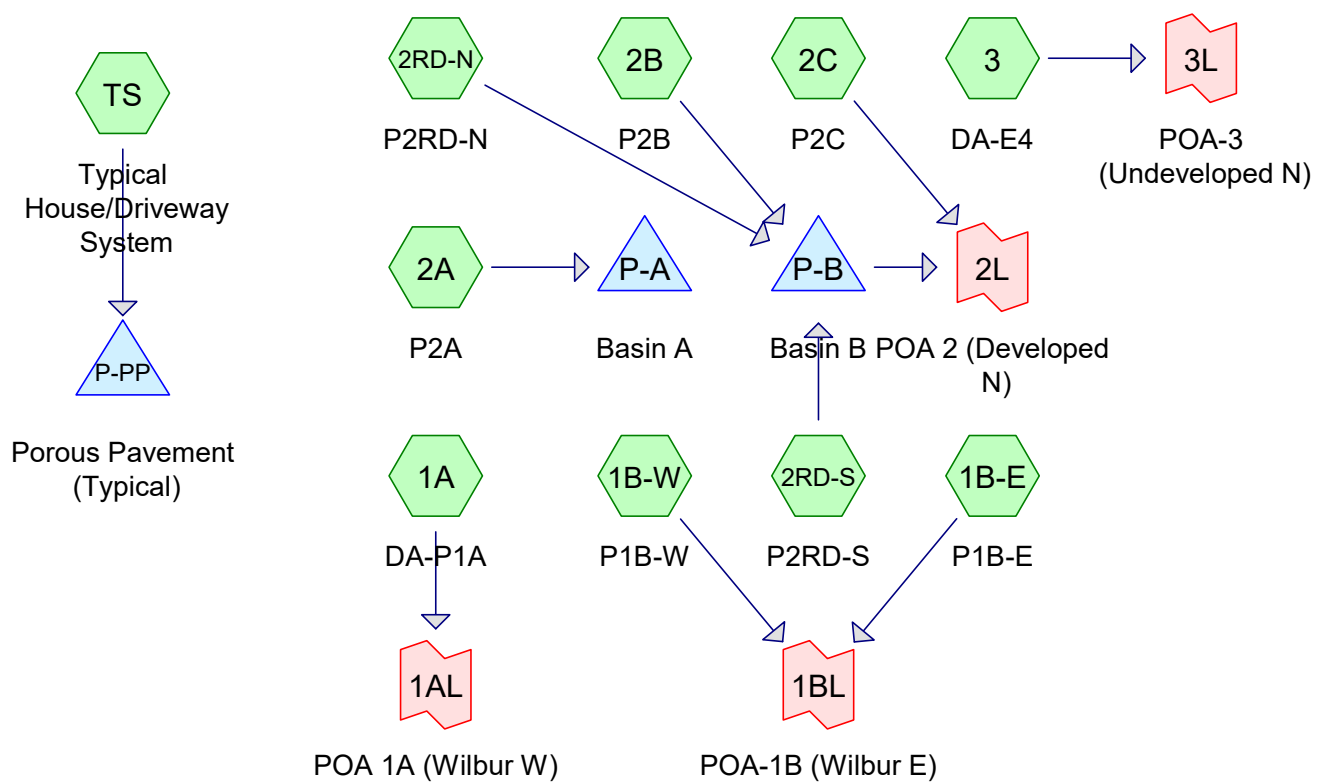
- 12 Subcat 2SUBS: DA-E2-SUBA
- 14 Link 2SUBL: POA-SUB2 (Basin B Outlet)

Multi-Event Tables

- 16 Subcat 2SUBS: DA-E2-SUBA
- 17 Link 2SUBL: POA-SUB2 (Basin B Outlet)

Appendix C – Proposed Conditions Analysis

Proposed
Conditions



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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2 YR	NOAA 24-hr	D	Default	24.00	1	3.42	2
2	10 YR	NOAA 24-hr	D	Default	24.00	1	5.38	2
3	100 YR	NOAA 24-hr	D	Default	24.00	1	9.20	2

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Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
356,321	39	>75% Grass cover, Good, HSG A (1A, 1B-E, 1B-W, 2A, 2B, 2C, 2RD-N, 2RD-S, 3)
39,640	30	Meadow, non-grazed, HSG A (1B-E, 2C)
50,462	98	Paved parking, HSG A (2RD-N, 2RD-S, TS)
39,000	98	Unconnected roofs, HSG A (TS)
112,820	30	Woods, Good, HSG A (3)
261,796	77	Woods, Good, HSG D (3)
860,038	55	TOTAL AREA

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NOAA 24-hr D 2 YR Rainfall=3.42"

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Summary for Subcatchment 1A: DA-P1A

Runoff = 0.00 cfs @ 24.01 hrs, Volume= 10 cf, Depth= 0.01"
Routed to Link 1AL : POA 1A (Wilbur W)

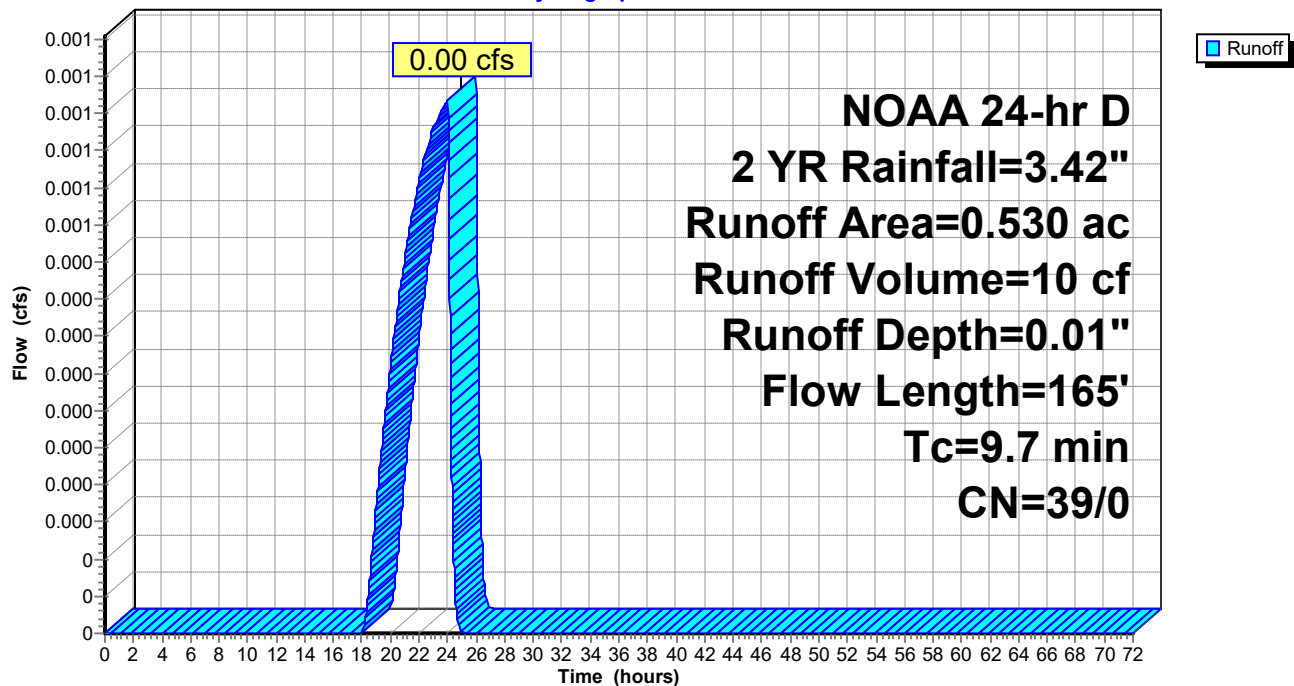
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 2 YR Rainfall=3.42"

Area (ac)	CN	Description
0.530	39	>75% Grass cover, Good, HSG A
0.530	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	100	0.0270	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.42"
1.3	65	0.0150	0.86		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
9.7	165	Total			

Subcatchment 1A: DA-P1A

Hydrograph



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NOAA 24-hr D 2 YR Rainfall=3.42"

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Hydrograph for Subcatchment 1A: DA-P1A

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.08	0.00	0.00	0.00
4.00	0.18	0.00	0.00	0.00
6.00	0.29	0.00	0.00	0.00
8.00	0.44	0.00	0.00	0.00
10.00	0.68	0.00	0.00	0.00
12.00	1.64	0.00	0.00	0.00
14.00	2.74	0.00	0.00	0.00
16.00	2.98	0.00	0.00	0.00
18.00	3.13	0.00	0.00	0.00
20.00	3.24	0.00	0.00	0.00
22.00	3.34	0.00	0.00	0.00
24.00	3.42	0.01	0.00	0.00
26.00	3.42	0.01	0.00	0.00
28.00	3.42	0.01	0.00	0.00
30.00	3.42	0.01	0.00	0.00
32.00	3.42	0.01	0.00	0.00
34.00	3.42	0.01	0.00	0.00
36.00	3.42	0.01	0.00	0.00
38.00	3.42	0.01	0.00	0.00
40.00	3.42	0.01	0.00	0.00
42.00	3.42	0.01	0.00	0.00
44.00	3.42	0.01	0.00	0.00
46.00	3.42	0.01	0.00	0.00
48.00	3.42	0.01	0.00	0.00
50.00	3.42	0.01	0.00	0.00
52.00	3.42	0.01	0.00	0.00
54.00	3.42	0.01	0.00	0.00
56.00	3.42	0.01	0.00	0.00
58.00	3.42	0.01	0.00	0.00
60.00	3.42	0.01	0.00	0.00
62.00	3.42	0.01	0.00	0.00
64.00	3.42	0.01	0.00	0.00
66.00	3.42	0.01	0.00	0.00
68.00	3.42	0.01	0.00	0.00
70.00	3.42	0.01	0.00	0.00
72.00	3.42	0.01	0.00	0.00

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NOAA 24-hr D 2 YR Rainfall=3.42"

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Summary for Subcatchment 1B-E: P1B-E

Runoff = 0.00 cfs @ 24.07 hrs, Volume= 0 cf, Depth= 0.00"
Routed to Link 1BL : POA-1B (Wilbur E)

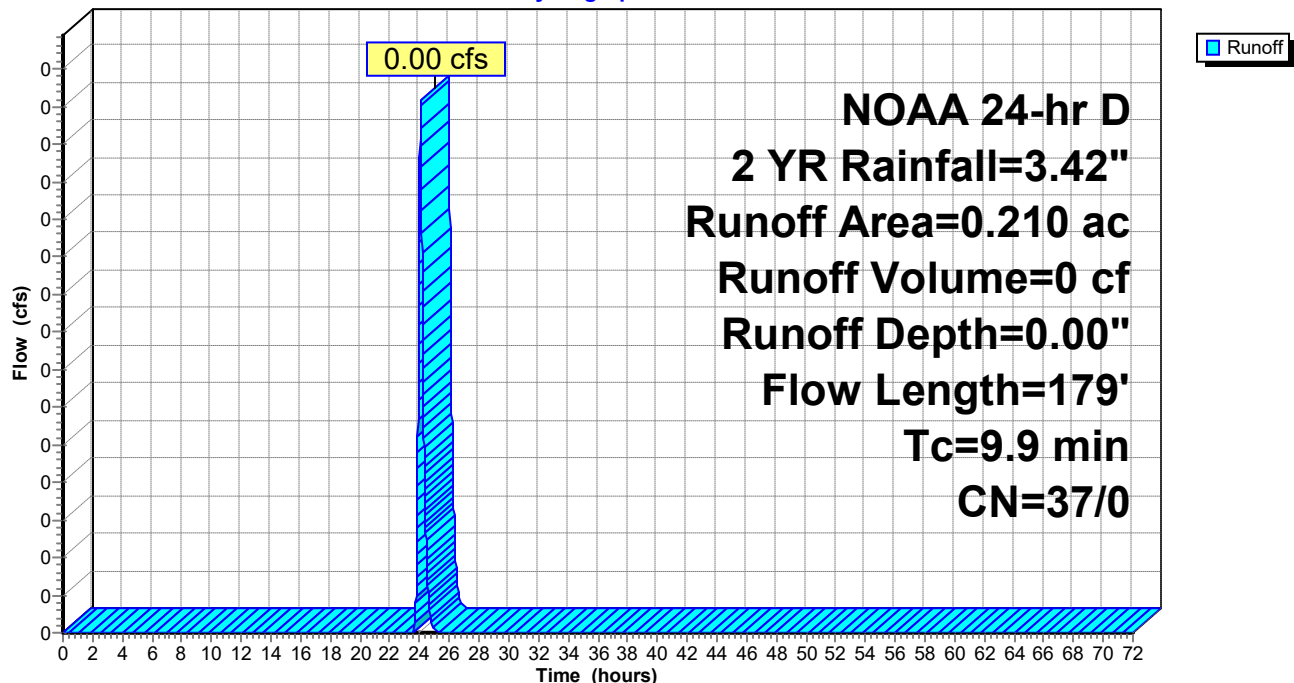
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2 YR Rainfall=3.42"

Area (ac)	CN	Description
0.160	39	>75% Grass cover, Good, HSG A
0.050	30	Meadow, non-grazed, HSG A
0.210	37	Weighted Average
0.210	37	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	99	0.0220	0.18		Sheet Flow, Grass: Short n= 0.150 P2= 3.42" Using McCuen-Spiess flow length
0.6	35	0.0220	1.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.3	45	0.1100	2.32		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
9.9	179	Total			

Subcatchment 1B-E: P1B-E

Hydrograph



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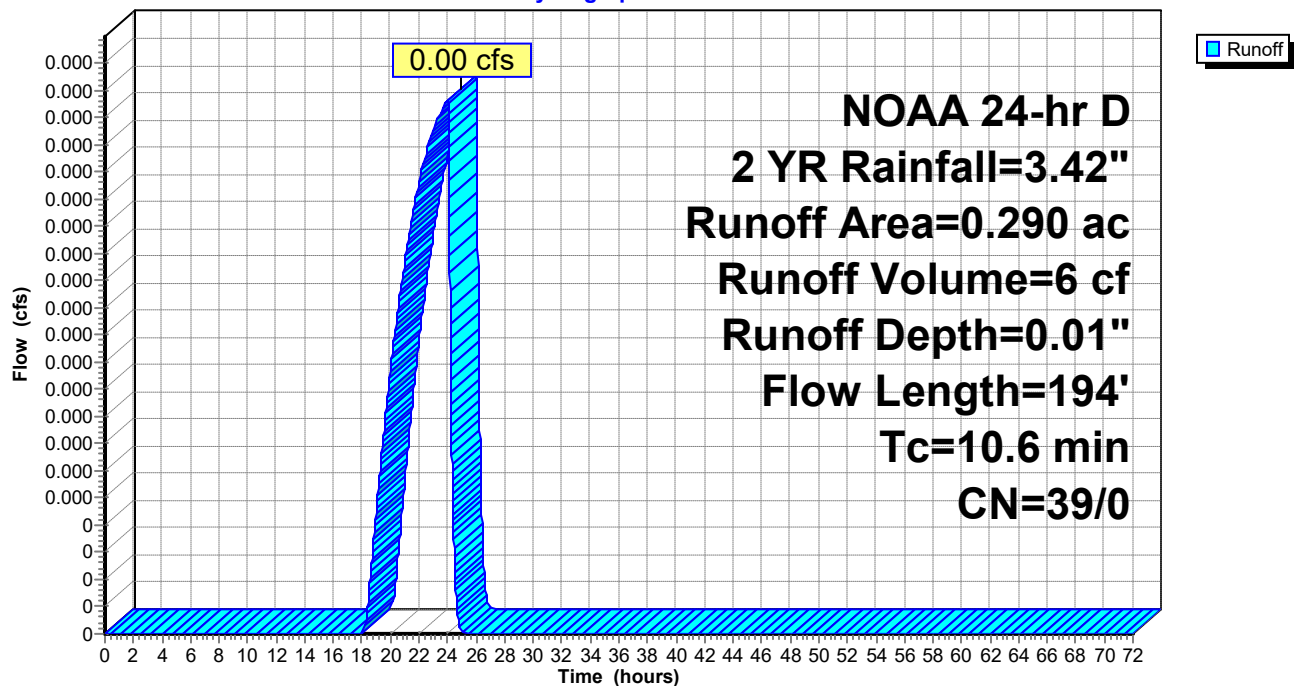
NOAA 24-hr D 2 YR Rainfall=3.42"

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Hydrograph for Subcatchment 1B-E: P1B-E

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.08	0.00	0.00	0.00
4.00	0.18	0.00	0.00	0.00
6.00	0.29	0.00	0.00	0.00
8.00	0.44	0.00	0.00	0.00
10.00	0.68	0.00	0.00	0.00
12.00	1.64	0.00	0.00	0.00
14.00	2.74	0.00	0.00	0.00
16.00	2.98	0.00	0.00	0.00
18.00	3.13	0.00	0.00	0.00
20.00	3.24	0.00	0.00	0.00
22.00	3.34	0.00	0.00	0.00
24.00	3.42	0.00	0.00	0.00
26.00	3.42	0.00	0.00	0.00
28.00	3.42	0.00	0.00	0.00
30.00	3.42	0.00	0.00	0.00
32.00	3.42	0.00	0.00	0.00
34.00	3.42	0.00	0.00	0.00
36.00	3.42	0.00	0.00	0.00
38.00	3.42	0.00	0.00	0.00
40.00	3.42	0.00	0.00	0.00
42.00	3.42	0.00	0.00	0.00
44.00	3.42	0.00	0.00	0.00
46.00	3.42	0.00	0.00	0.00
48.00	3.42	0.00	0.00	0.00
50.00	3.42	0.00	0.00	0.00
52.00	3.42	0.00	0.00	0.00
54.00	3.42	0.00	0.00	0.00
56.00	3.42	0.00	0.00	0.00
58.00	3.42	0.00	0.00	0.00
60.00	3.42	0.00	0.00	0.00
62.00	3.42	0.00	0.00	0.00
64.00	3.42	0.00	0.00	0.00
66.00	3.42	0.00	0.00	0.00
68.00	3.42	0.00	0.00	0.00
70.00	3.42	0.00	0.00	0.00
72.00	3.42	0.00	0.00	0.00



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Hydrograph for Subcatchment 1B-W: P1B-W

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.08	0.00	0.00	0.00
4.00	0.18	0.00	0.00	0.00
6.00	0.29	0.00	0.00	0.00
8.00	0.44	0.00	0.00	0.00
10.00	0.68	0.00	0.00	0.00
12.00	1.64	0.00	0.00	0.00
14.00	2.74	0.00	0.00	0.00
16.00	2.98	0.00	0.00	0.00
18.00	3.13	0.00	0.00	0.00
20.00	3.24	0.00	0.00	0.00
22.00	3.34	0.00	0.00	0.00
24.00	3.42	0.01	0.00	0.00
26.00	3.42	0.01	0.00	0.00
28.00	3.42	0.01	0.00	0.00
30.00	3.42	0.01	0.00	0.00
32.00	3.42	0.01	0.00	0.00
34.00	3.42	0.01	0.00	0.00
36.00	3.42	0.01	0.00	0.00
38.00	3.42	0.01	0.00	0.00
40.00	3.42	0.01	0.00	0.00
42.00	3.42	0.01	0.00	0.00
44.00	3.42	0.01	0.00	0.00
46.00	3.42	0.01	0.00	0.00
48.00	3.42	0.01	0.00	0.00
50.00	3.42	0.01	0.00	0.00
52.00	3.42	0.01	0.00	0.00
54.00	3.42	0.01	0.00	0.00
56.00	3.42	0.01	0.00	0.00
58.00	3.42	0.01	0.00	0.00
60.00	3.42	0.01	0.00	0.00
62.00	3.42	0.01	0.00	0.00
64.00	3.42	0.01	0.00	0.00
66.00	3.42	0.01	0.00	0.00
68.00	3.42	0.01	0.00	0.00
70.00	3.42	0.01	0.00	0.00
72.00	3.42	0.01	0.00	0.00

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NOAA 24-hr D 2 YR Rainfall=3.42"

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Summary for Subcatchment 2A: P2A

Runoff = 0.00 cfs @ 24.02 hrs, Volume= 41 cf, Depth= 0.01"
Routed to Pond P-A : Basin A

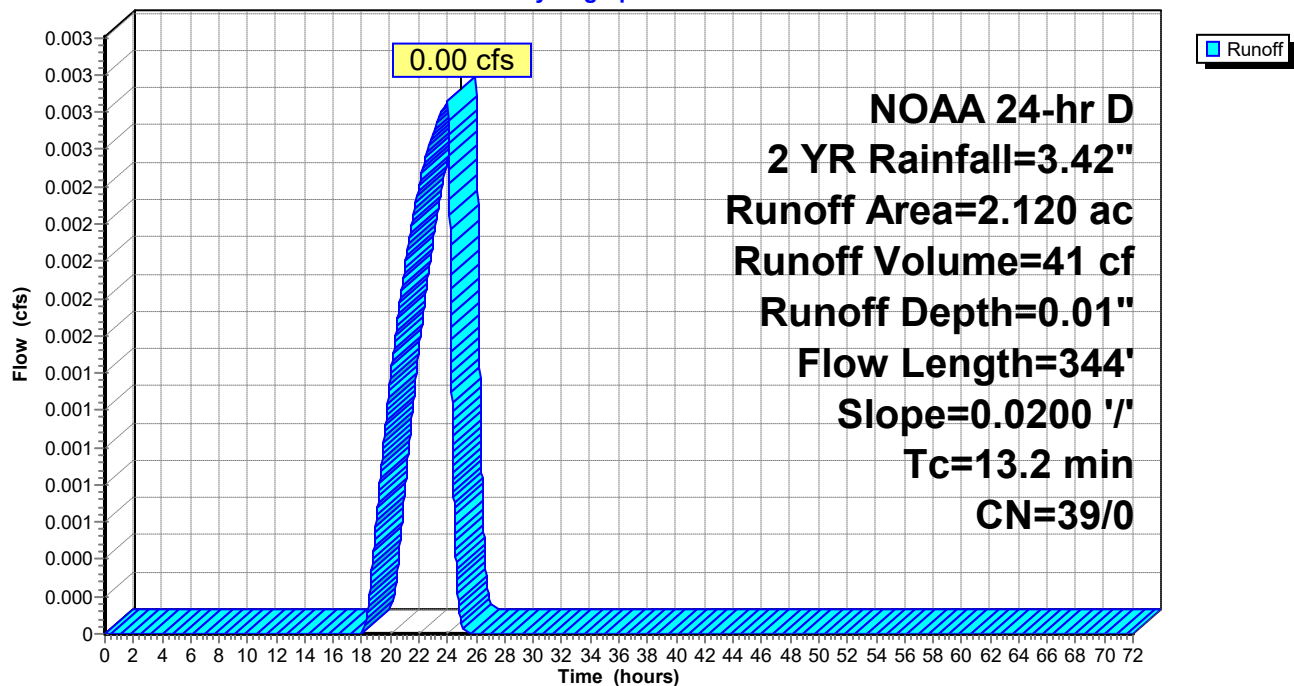
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 2 YR Rainfall=3.42"

Area (ac)	CN	Description
2.120	39	>75% Grass cover, Good, HSG A
2.120	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	94	0.0200	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.42" Using McCuen-Spiess flow length
4.2	250	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
13.2	344	Total			

Subcatchment 2A: P2A

Hydrograph



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NOAA 24-hr D 2 YR Rainfall=3.42"

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Hydrograph for Subcatchment 2A: P2A

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.08	0.00	0.00	0.00
4.00	0.18	0.00	0.00	0.00
6.00	0.29	0.00	0.00	0.00
8.00	0.44	0.00	0.00	0.00
10.00	0.68	0.00	0.00	0.00
12.00	1.64	0.00	0.00	0.00
14.00	2.74	0.00	0.00	0.00
16.00	2.98	0.00	0.00	0.00
18.00	3.13	0.00	0.00	0.00
20.00	3.24	0.00	0.00	0.00
22.00	3.34	0.00	0.00	0.00
24.00	3.42	0.01	0.00	0.00
26.00	3.42	0.01	0.00	0.00
28.00	3.42	0.01	0.00	0.00
30.00	3.42	0.01	0.00	0.00
32.00	3.42	0.01	0.00	0.00
34.00	3.42	0.01	0.00	0.00
36.00	3.42	0.01	0.00	0.00
38.00	3.42	0.01	0.00	0.00
40.00	3.42	0.01	0.00	0.00
42.00	3.42	0.01	0.00	0.00
44.00	3.42	0.01	0.00	0.00
46.00	3.42	0.01	0.00	0.00
48.00	3.42	0.01	0.00	0.00
50.00	3.42	0.01	0.00	0.00
52.00	3.42	0.01	0.00	0.00
54.00	3.42	0.01	0.00	0.00
56.00	3.42	0.01	0.00	0.00
58.00	3.42	0.01	0.00	0.00
60.00	3.42	0.01	0.00	0.00
62.00	3.42	0.01	0.00	0.00
64.00	3.42	0.01	0.00	0.00
66.00	3.42	0.01	0.00	0.00
68.00	3.42	0.01	0.00	0.00
70.00	3.42	0.01	0.00	0.00
72.00	3.42	0.01	0.00	0.00

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NOAA 24-hr D 2 YR Rainfall=3.42"

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Summary for Subcatchment 2B: P2B

Runoff = 0.00 cfs @ 24.02 hrs, Volume= 27 cf, Depth= 0.01"
Routed to Pond P-B : Basin B

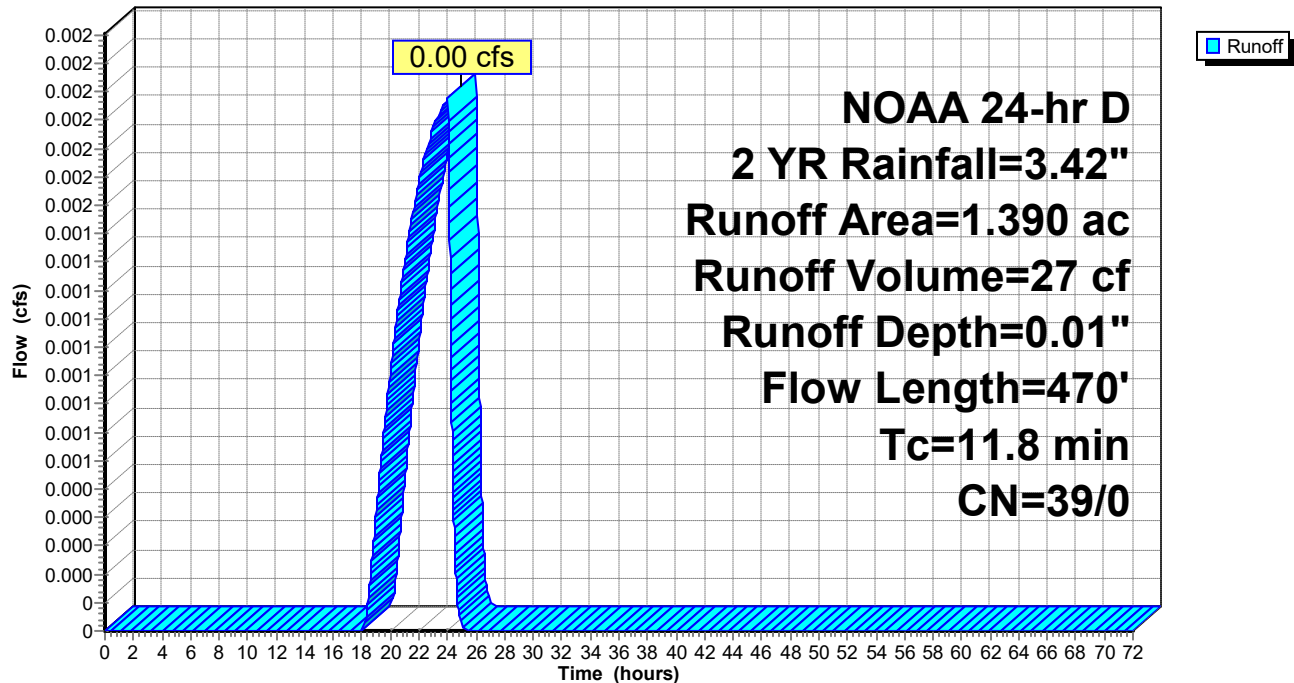
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2 YR Rainfall=3.42"

Area (ac)	CN	Description
1.390	39	>75% Grass cover, Good, HSG A
1.390	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.0310	0.21		Sheet Flow, Grass: Short n= 0.150 P2= 3.42"
3.4	205	0.0210	1.01		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.4	165	0.0100	6.22	7.63	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
11.8	470	Total			

Subcatchment 2B: P2B

Hydrograph



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Wilbur Avenue Subdivision, Manchester, NJ

NOAA 24-hr D 2 YR Rainfall=3.42"

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Hydrograph for Subcatchment 2B: P2B

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.08	0.00	0.00	0.00
4.00	0.18	0.00	0.00	0.00
6.00	0.29	0.00	0.00	0.00
8.00	0.44	0.00	0.00	0.00
10.00	0.68	0.00	0.00	0.00
12.00	1.64	0.00	0.00	0.00
14.00	2.74	0.00	0.00	0.00
16.00	2.98	0.00	0.00	0.00
18.00	3.13	0.00	0.00	0.00
20.00	3.24	0.00	0.00	0.00
22.00	3.34	0.00	0.00	0.00
24.00	3.42	0.01	0.00	0.00
26.00	3.42	0.01	0.00	0.00
28.00	3.42	0.01	0.00	0.00
30.00	3.42	0.01	0.00	0.00
32.00	3.42	0.01	0.00	0.00
34.00	3.42	0.01	0.00	0.00
36.00	3.42	0.01	0.00	0.00
38.00	3.42	0.01	0.00	0.00
40.00	3.42	0.01	0.00	0.00
42.00	3.42	0.01	0.00	0.00
44.00	3.42	0.01	0.00	0.00
46.00	3.42	0.01	0.00	0.00
48.00	3.42	0.01	0.00	0.00
50.00	3.42	0.01	0.00	0.00
52.00	3.42	0.01	0.00	0.00
54.00	3.42	0.01	0.00	0.00
56.00	3.42	0.01	0.00	0.00
58.00	3.42	0.01	0.00	0.00
60.00	3.42	0.01	0.00	0.00
62.00	3.42	0.01	0.00	0.00
64.00	3.42	0.01	0.00	0.00
66.00	3.42	0.01	0.00	0.00
68.00	3.42	0.01	0.00	0.00
70.00	3.42	0.01	0.00	0.00
72.00	3.42	0.01	0.00	0.00

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NOAA 24-hr D 2 YR Rainfall=3.42"

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Summary for Subcatchment 2C: P2C

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
Routed to Link 2L : POA 2 (Developed N)

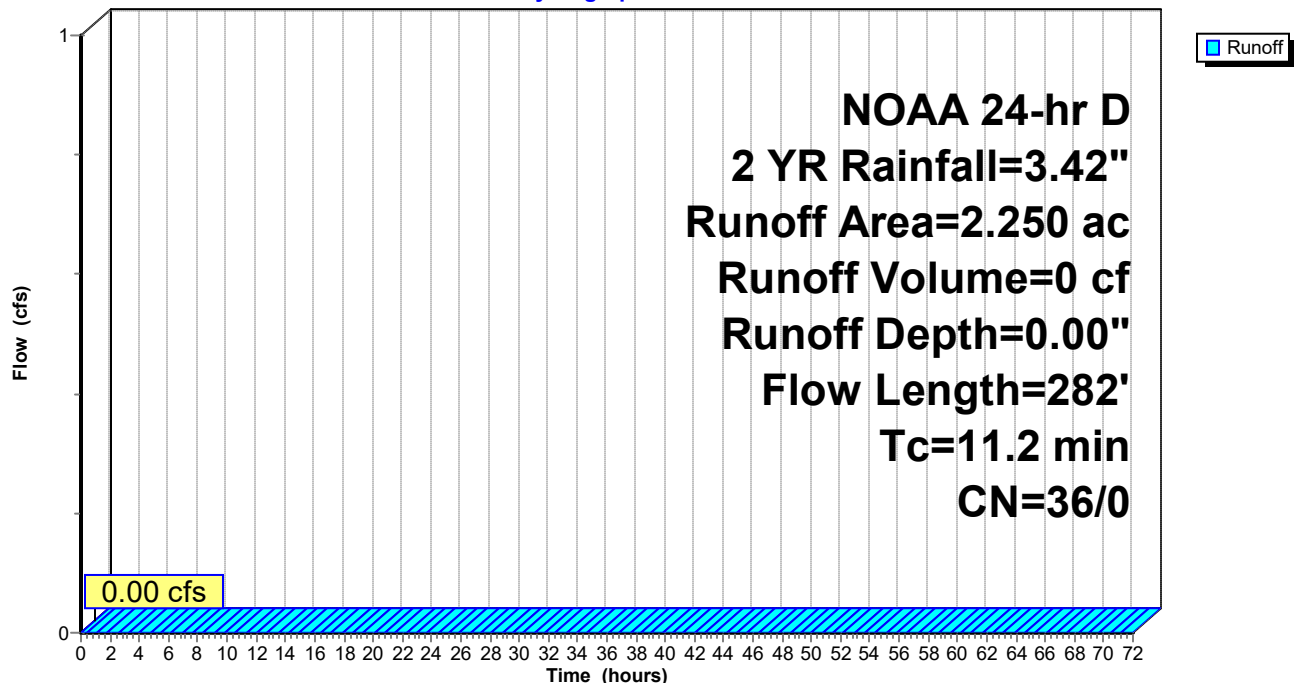
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 2 YR Rainfall=3.42"

Area (ac)	CN	Description
1.390	39	>75% Grass cover, Good, HSG A
0.860	30	Meadow, non-grazed, HSG A
2.250	36	Weighted Average
2.250	36	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	87	0.0170	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 3.42" Using McCuen-Spiess flow length
1.8	135	0.0320	1.25		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.4	60	0.2200	2.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
11.2	282	Total			

Subcatchment 2C: P2C

Hydrograph



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NOAA 24-hr D 2 YR Rainfall=3.42"

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Hydrograph for Subcatchment 2C: P2C

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.08	0.00	0.00	0.00
4.00	0.18	0.00	0.00	0.00
6.00	0.29	0.00	0.00	0.00
8.00	0.44	0.00	0.00	0.00
10.00	0.68	0.00	0.00	0.00
12.00	1.64	0.00	0.00	0.00
14.00	2.74	0.00	0.00	0.00
16.00	2.98	0.00	0.00	0.00
18.00	3.13	0.00	0.00	0.00
20.00	3.24	0.00	0.00	0.00
22.00	3.34	0.00	0.00	0.00
24.00	3.42	0.00	0.00	0.00
26.00	3.42	0.00	0.00	0.00
28.00	3.42	0.00	0.00	0.00
30.00	3.42	0.00	0.00	0.00
32.00	3.42	0.00	0.00	0.00
34.00	3.42	0.00	0.00	0.00
36.00	3.42	0.00	0.00	0.00
38.00	3.42	0.00	0.00	0.00
40.00	3.42	0.00	0.00	0.00
42.00	3.42	0.00	0.00	0.00
44.00	3.42	0.00	0.00	0.00
46.00	3.42	0.00	0.00	0.00
48.00	3.42	0.00	0.00	0.00
50.00	3.42	0.00	0.00	0.00
52.00	3.42	0.00	0.00	0.00
54.00	3.42	0.00	0.00	0.00
56.00	3.42	0.00	0.00	0.00
58.00	3.42	0.00	0.00	0.00
60.00	3.42	0.00	0.00	0.00
62.00	3.42	0.00	0.00	0.00
64.00	3.42	0.00	0.00	0.00
66.00	3.42	0.00	0.00	0.00
68.00	3.42	0.00	0.00	0.00
70.00	3.42	0.00	0.00	0.00
72.00	3.42	0.00	0.00	0.00

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NOAA 24-hr D 2 YR Rainfall=3.42"

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Summary for Subcatchment 2RD-N: P2RD-N

Runoff = 2.03 cfs @ 12.14 hrs, Volume= 8,911 cf, Depth= 2.53"
Routed to Pond P-B : Basin B

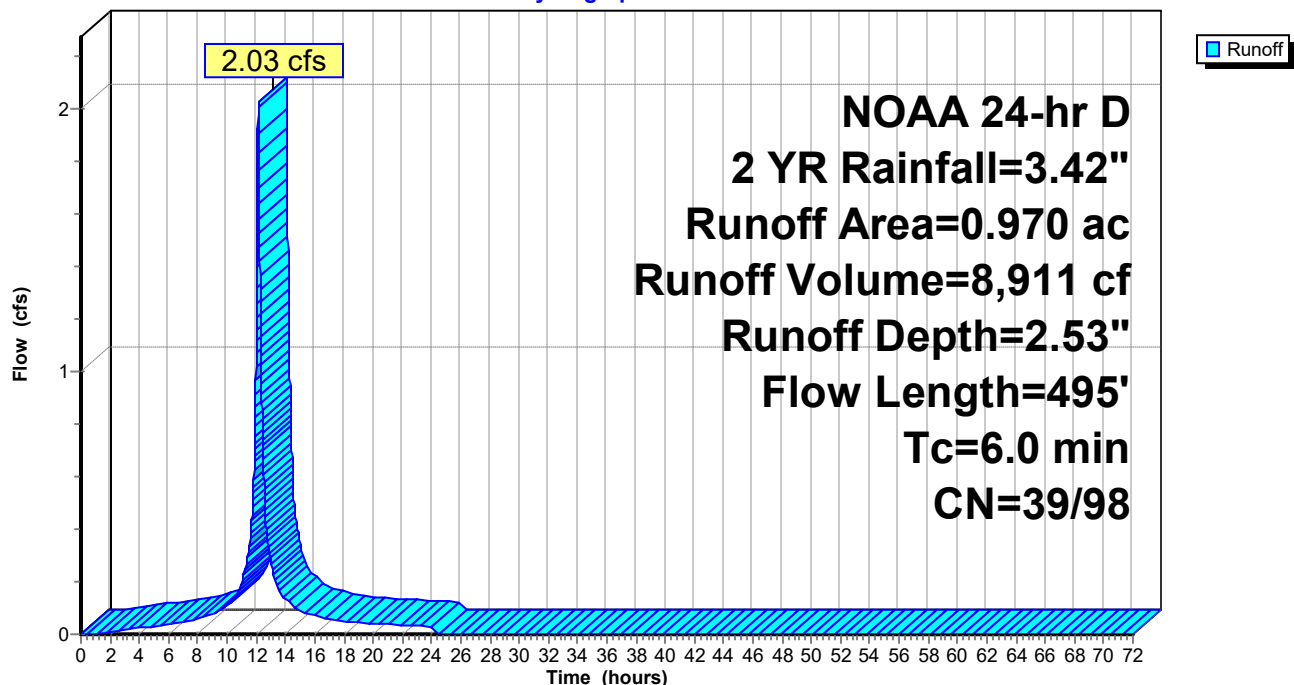
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2 YR Rainfall=3.42"

Area (ac)	CN	Description
0.770	98	Paved parking, HSG A
0.200	39	>75% Grass cover, Good, HSG A
0.970	86	Weighted Average
0.200	39	20.62% Pervious Area
0.770	98	79.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0210	1.05		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.42"
1.8	310	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.4	165	0.0100	6.22	7.63	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
2.5	495	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 2RD-N: P2RD-N

Hydrograph



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NOAA 24-hr D 2 YR Rainfall=3.42"

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Hydrograph for Subcatchment 2RD-N: P2RD-N

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.08	0.00	0.01	0.01
4.00	0.18	0.00	0.06	0.03
6.00	0.29	0.00	0.14	0.04
8.00	0.44	0.00	0.27	0.06
10.00	0.68	0.00	0.48	0.11
12.00	1.64	0.00	1.42	1.12
14.00	2.74	0.00	2.51	0.13
16.00	2.98	0.00	2.74	0.07
18.00	3.13	0.00	2.90	0.05
20.00	3.24	0.00	3.01	0.04
22.00	3.34	0.00	3.10	0.04
24.00	3.42	0.01	3.19	0.03
26.00	3.42	0.01	3.19	0.00
28.00	3.42	0.01	3.19	0.00
30.00	3.42	0.01	3.19	0.00
32.00	3.42	0.01	3.19	0.00
34.00	3.42	0.01	3.19	0.00
36.00	3.42	0.01	3.19	0.00
38.00	3.42	0.01	3.19	0.00
40.00	3.42	0.01	3.19	0.00
42.00	3.42	0.01	3.19	0.00
44.00	3.42	0.01	3.19	0.00
46.00	3.42	0.01	3.19	0.00
48.00	3.42	0.01	3.19	0.00
50.00	3.42	0.01	3.19	0.00
52.00	3.42	0.01	3.19	0.00
54.00	3.42	0.01	3.19	0.00
56.00	3.42	0.01	3.19	0.00
58.00	3.42	0.01	3.19	0.00
60.00	3.42	0.01	3.19	0.00
62.00	3.42	0.01	3.19	0.00
64.00	3.42	0.01	3.19	0.00
66.00	3.42	0.01	3.19	0.00
68.00	3.42	0.01	3.19	0.00
70.00	3.42	0.01	3.19	0.00
72.00	3.42	0.01	3.19	0.00

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NOAA 24-hr D 2 YR Rainfall=3.42"

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Summary for Subcatchment 2RD-S: P2RD-S

Runoff = 0.24 cfs @ 12.14 hrs, Volume= 1,042 cf, Depth= 2.39"
Routed to Pond P-B : Basin B

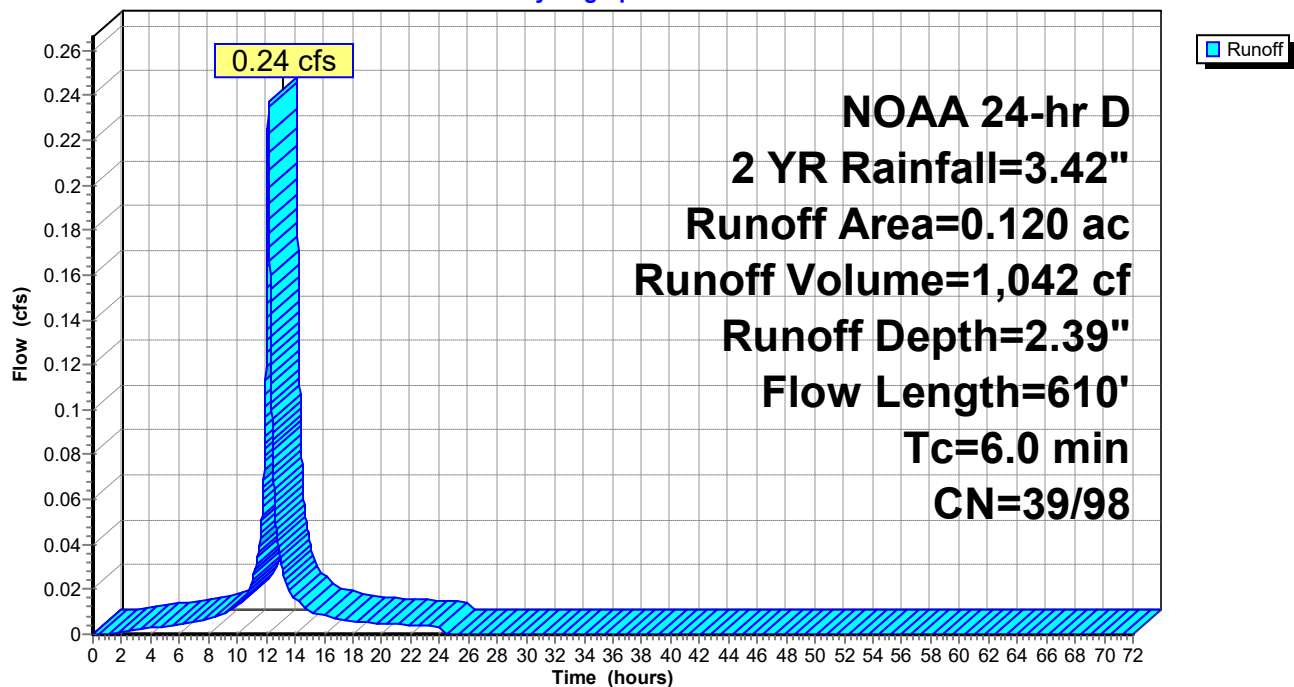
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2 YR Rainfall=3.42"

Area (ac)	CN	Description
0.090	98	Paved parking, HSG A
0.030	39	>75% Grass cover, Good, HSG A
0.120	83	Weighted Average
0.030	39	25.00% Pervious Area
0.090	98	75.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	1.03		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.42"
0.6	85	0.0160	2.57		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.6	505	0.0075	5.39	6.61	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
2.5	610	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 2RD-S: P2RD-S

Hydrograph



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Hydrograph for Subcatchment 2RD-S: P2RD-S

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.08	0.00	0.01	0.00
4.00	0.18	0.00	0.06	0.00
6.00	0.29	0.00	0.14	0.00
8.00	0.44	0.00	0.27	0.01
10.00	0.68	0.00	0.48	0.01
12.00	1.64	0.00	1.42	0.13
14.00	2.74	0.00	2.51	0.02
16.00	2.98	0.00	2.74	0.01
18.00	3.13	0.00	2.90	0.01
20.00	3.24	0.00	3.01	0.00
22.00	3.34	0.00	3.10	0.00
24.00	3.42	0.01	3.19	0.00
26.00	3.42	0.01	3.19	0.00
28.00	3.42	0.01	3.19	0.00
30.00	3.42	0.01	3.19	0.00
32.00	3.42	0.01	3.19	0.00
34.00	3.42	0.01	3.19	0.00
36.00	3.42	0.01	3.19	0.00
38.00	3.42	0.01	3.19	0.00
40.00	3.42	0.01	3.19	0.00
42.00	3.42	0.01	3.19	0.00
44.00	3.42	0.01	3.19	0.00
46.00	3.42	0.01	3.19	0.00
48.00	3.42	0.01	3.19	0.00
50.00	3.42	0.01	3.19	0.00
52.00	3.42	0.01	3.19	0.00
54.00	3.42	0.01	3.19	0.00
56.00	3.42	0.01	3.19	0.00
58.00	3.42	0.01	3.19	0.00
60.00	3.42	0.01	3.19	0.00
62.00	3.42	0.01	3.19	0.00
64.00	3.42	0.01	3.19	0.00
66.00	3.42	0.01	3.19	0.00
68.00	3.42	0.01	3.19	0.00
70.00	3.42	0.01	3.19	0.00
72.00	3.42	0.01	3.19	0.00

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NOAA 24-hr D 2 YR Rainfall=3.42"

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Summary for Subcatchment 3: DA-E4

Runoff = 1.68 cfs @ 12.34 hrs, Volume= 16,344 cf, Depth= 0.42"
Routed to Link 3L : POA-3 (Undeveloped N)

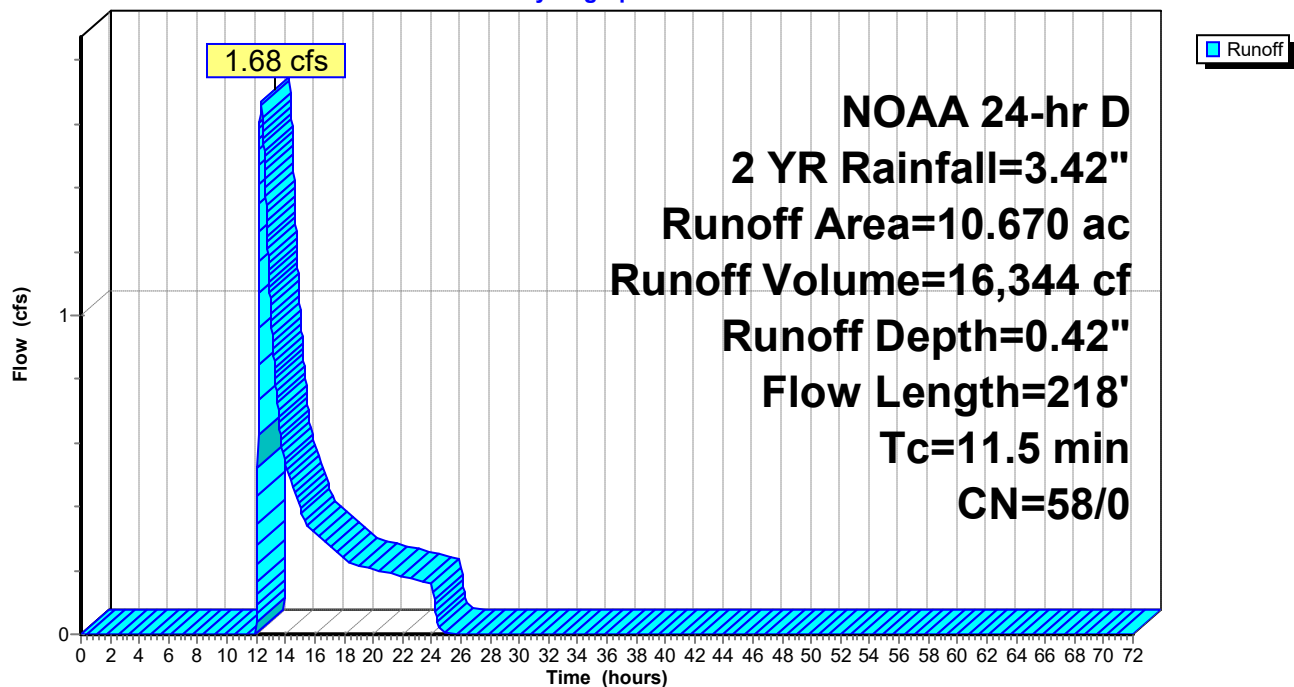
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2 YR Rainfall=3.42"

Area (ac)	CN	Description
6.010	77	Woods, Good, HSG D
2.590	30	Woods, Good, HSG A
2.070	39	>75% Grass cover, Good, HSG A
10.670	58	Weighted Average
10.670	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	35	0.0071	0.06		Sheet Flow, Grass: Dense n= 0.240 P2= 3.42" Using McCuen-Spiess flow length
1.9	148	0.0700	1.32		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.6	35	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
11.5	218	Total			

Subcatchment 3: DA-E4

Hydrograph



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NOAA 24-hr D 2 YR Rainfall=3.42"

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Hydrograph for Subcatchment 3: DA-E4

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.08	0.00	0.00	0.00
4.00	0.18	0.00	0.00	0.00
6.00	0.29	0.00	0.00	0.00
8.00	0.44	0.00	0.00	0.00
10.00	0.68	0.00	0.00	0.00
12.00	1.64	0.00	0.00	0.02
14.00	2.74	0.20	0.00	0.53
16.00	2.98	0.27	0.00	0.32
18.00	3.13	0.32	0.00	0.24
20.00	3.24	0.36	0.00	0.20
22.00	3.34	0.39	0.00	0.18
24.00	3.42	0.42	0.00	0.16
26.00	3.42	0.42	0.00	0.00
28.00	3.42	0.42	0.00	0.00
30.00	3.42	0.42	0.00	0.00
32.00	3.42	0.42	0.00	0.00
34.00	3.42	0.42	0.00	0.00
36.00	3.42	0.42	0.00	0.00
38.00	3.42	0.42	0.00	0.00
40.00	3.42	0.42	0.00	0.00
42.00	3.42	0.42	0.00	0.00
44.00	3.42	0.42	0.00	0.00
46.00	3.42	0.42	0.00	0.00
48.00	3.42	0.42	0.00	0.00
50.00	3.42	0.42	0.00	0.00
52.00	3.42	0.42	0.00	0.00
54.00	3.42	0.42	0.00	0.00
56.00	3.42	0.42	0.00	0.00
58.00	3.42	0.42	0.00	0.00
60.00	3.42	0.42	0.00	0.00
62.00	3.42	0.42	0.00	0.00
64.00	3.42	0.42	0.00	0.00
66.00	3.42	0.42	0.00	0.00
68.00	3.42	0.42	0.00	0.00
70.00	3.42	0.42	0.00	0.00
72.00	3.42	0.42	0.00	0.00

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NOAA 24-hr D 2 YR Rainfall=3.42"

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Summary for Subcatchment TS: Typical House/Driveway System

Runoff = 3.15 cfs @ 12.14 hrs, Volume= 13,809 cf, Depth= 3.19"
Routed to Pond P-PP : Porous Pavement (Typical)

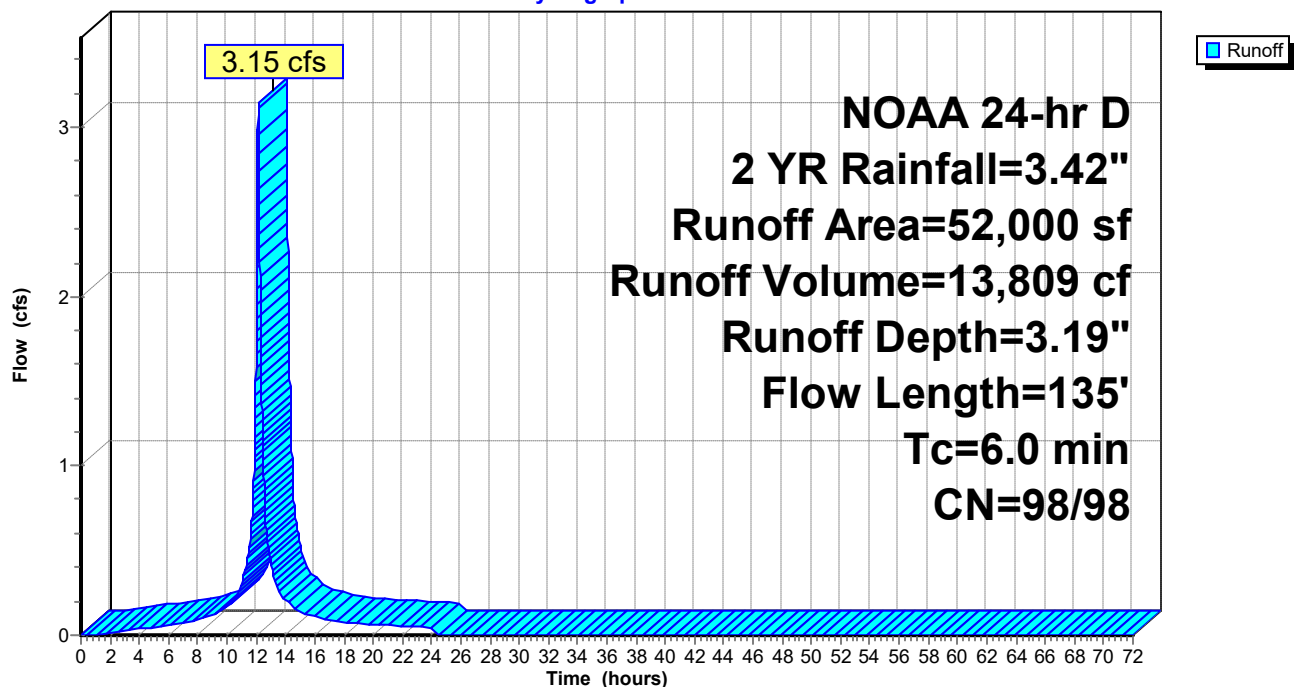
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.1
NOAA 24-hr D 2 YR Rainfall=3.42"

Area (sf)	CN	Description
39,000	98	Unconnected roofs, HSG A
13,000	98	Paved parking, HSG A
52,000	98	Weighted Average
39,000	98	75.00% Pervious Area
13,000	98	25.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	25	0.2200	2.81		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.42"
0.6	110	0.0050	2.89	1.01	Pipe Channel, 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.011
0.7	135	Total, Increased to minimum Tc = 6.0 min			

Subcatchment TS: Typical House/Driveway System

Hydrograph



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NOAA 24-hr D 2 YR Rainfall=3.42"

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Hydrograph for Subcatchment TS: Typical House/Driveway System

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.08	0.01	0.01	0.01
4.00	0.18	0.06	0.06	0.04
6.00	0.29	0.14	0.14	0.06
8.00	0.44	0.27	0.27	0.09
10.00	0.68	0.48	0.48	0.17
12.00	1.64	1.42	1.42	1.74
14.00	2.74	2.51	2.51	0.20
16.00	2.98	2.74	2.74	0.11
18.00	3.13	2.90	2.90	0.08
20.00	3.24	3.01	3.01	0.06
22.00	3.34	3.10	3.10	0.05
24.00	3.42	3.19	3.19	0.05
26.00	3.42	3.19	3.19	0.00
28.00	3.42	3.19	3.19	0.00
30.00	3.42	3.19	3.19	0.00
32.00	3.42	3.19	3.19	0.00
34.00	3.42	3.19	3.19	0.00
36.00	3.42	3.19	3.19	0.00
38.00	3.42	3.19	3.19	0.00
40.00	3.42	3.19	3.19	0.00
42.00	3.42	3.19	3.19	0.00
44.00	3.42	3.19	3.19	0.00
46.00	3.42	3.19	3.19	0.00
48.00	3.42	3.19	3.19	0.00
50.00	3.42	3.19	3.19	0.00
52.00	3.42	3.19	3.19	0.00
54.00	3.42	3.19	3.19	0.00
56.00	3.42	3.19	3.19	0.00
58.00	3.42	3.19	3.19	0.00
60.00	3.42	3.19	3.19	0.00
62.00	3.42	3.19	3.19	0.00
64.00	3.42	3.19	3.19	0.00
66.00	3.42	3.19	3.19	0.00
68.00	3.42	3.19	3.19	0.00
70.00	3.42	3.19	3.19	0.00
72.00	3.42	3.19	3.19	0.00

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Summary for Pond P-A: Basin A

Inflow Area = 92,347 sf, 0.00% Impervious, Inflow Depth = 0.01" for 2 YR event
 Inflow = 0.00 cfs @ 24.02 hrs, Volume= 41 cf
 Outflow = 0.00 cfs @ 24.03 hrs, Volume= 41 cf, Atten= 0%, Lag= 0.7 min
 Discarded = 0.00 cfs @ 24.03 hrs, Volume= 41 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 75.33' @ 24.03 hrs Surf.Area= 0.043 ac Storage= 0.000 af

Plug-Flow detention time= 1.6 min calculated for 41 cf (100% of inflow)

Center-of-Mass det. time= 1.6 min (1,326.6 - 1,325.1)

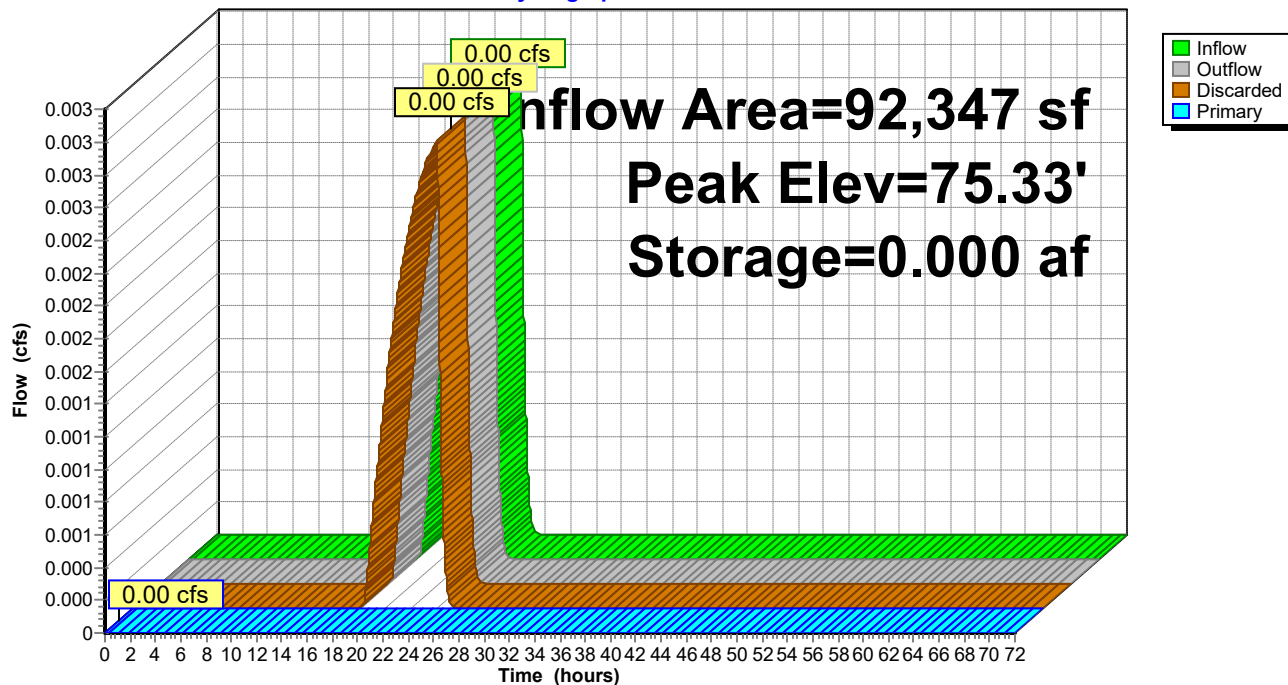
Volume	Invert	Avail.Storage	Storage Description
#1	75.33'	0.142 af	15.00'W x 125.00'L x 2.17'H Prismatic Z=3.0

Device	Routing	Invert	Outlet Devices
#1	Discarded	75.33'	10.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 67.00'
#2	Primary	72.61'	12.0" Round Culvert L= 288.0' Ke= 0.600 Inlet / Outlet Invert= 72.61' / 69.74' S= 0.0100 ' / Cc= 0.900 n= 0.011, Flow Area= 0.79 sf
#3	Device 2	77.10'	2.5" Vert. Orifice C= 0.600 Limited to weir flow at low heads
#4	Device 2	77.40'	24.0" x 24.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.43 cfs @ 24.03 hrs HW=75.33' (Free Discharge)↑ **1=Exfiltration** (Controls 0.43 cfs)**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=75.33' (Free Discharge)↑ **2=Culvert** (Passes 0.00 cfs of 4.75 cfs potential flow)↑ **3=Orifice** (Controls 0.00 cfs)↑ **4=Grate** (Controls 0.00 cfs)

Pond P-A: Basin A

Hydrograph



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Hydrograph for Pond P-A: Basin A

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.000	75.33	0.00	0.00	0.00
2.00	0.00	0.000	75.33	0.00	0.00	0.00
4.00	0.00	0.000	75.33	0.00	0.00	0.00
6.00	0.00	0.000	75.33	0.00	0.00	0.00
8.00	0.00	0.000	75.33	0.00	0.00	0.00
10.00	0.00	0.000	75.33	0.00	0.00	0.00
12.00	0.00	0.000	75.33	0.00	0.00	0.00
14.00	0.00	0.000	75.33	0.00	0.00	0.00
16.00	0.00	0.000	75.33	0.00	0.00	0.00
18.00	0.00	0.000	75.33	0.00	0.00	0.00
20.00	0.00	0.000	75.33	0.00	0.00	0.00
22.00	0.00	0.000	75.33	0.00	0.00	0.00
24.00	0.00	0.000	75.33	0.00	0.00	0.00
26.00	0.00	0.000	75.33	0.00	0.00	0.00
28.00	0.00	0.000	75.33	0.00	0.00	0.00
30.00	0.00	0.000	75.33	0.00	0.00	0.00
32.00	0.00	0.000	75.33	0.00	0.00	0.00
34.00	0.00	0.000	75.33	0.00	0.00	0.00
36.00	0.00	0.000	75.33	0.00	0.00	0.00
38.00	0.00	0.000	75.33	0.00	0.00	0.00
40.00	0.00	0.000	75.33	0.00	0.00	0.00
42.00	0.00	0.000	75.33	0.00	0.00	0.00
44.00	0.00	0.000	75.33	0.00	0.00	0.00
46.00	0.00	0.000	75.33	0.00	0.00	0.00
48.00	0.00	0.000	75.33	0.00	0.00	0.00
50.00	0.00	0.000	75.33	0.00	0.00	0.00
52.00	0.00	0.000	75.33	0.00	0.00	0.00
54.00	0.00	0.000	75.33	0.00	0.00	0.00
56.00	0.00	0.000	75.33	0.00	0.00	0.00
58.00	0.00	0.000	75.33	0.00	0.00	0.00
60.00	0.00	0.000	75.33	0.00	0.00	0.00
62.00	0.00	0.000	75.33	0.00	0.00	0.00
64.00	0.00	0.000	75.33	0.00	0.00	0.00
66.00	0.00	0.000	75.33	0.00	0.00	0.00
68.00	0.00	0.000	75.33	0.00	0.00	0.00
70.00	0.00	0.000	75.33	0.00	0.00	0.00
72.00	0.00	0.000	75.33	0.00	0.00	0.00

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Summary for Pond P-B: Basin B

Inflow Area = 108,029 sf, 34.68% Impervious, Inflow Depth = 1.11" for 2 YR event
 Inflow = 2.27 cfs @ 12.14 hrs, Volume= 9,980 cf
 Outflow = 0.37 cfs @ 12.83 hrs, Volume= 9,980 cf, Atten= 84%, Lag= 41.4 min
 Discarded = 0.37 cfs @ 12.83 hrs, Volume= 9,980 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to Link 2L : POA 2 (Developed N)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 67.56' @ 12.83 hrs Surf.Area= 5,135 sf Storage= 2,844 cf

Plug-Flow detention time= 53.6 min calculated for 9,978 cf (100% of inflow)
 Center-of-Mass det. time= 53.6 min (815.9 - 762.3)

Volume	Invert	Avail.Storage	Storage Description
#1	67.00'	24,905 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
67.00	5,000	0	0
68.00	5,240	5,120	5,120
69.00	5,490	5,365	10,485
70.00	5,700	5,595	16,080
71.00	5,900	5,800	21,880
71.50	6,200	3,025	24,905

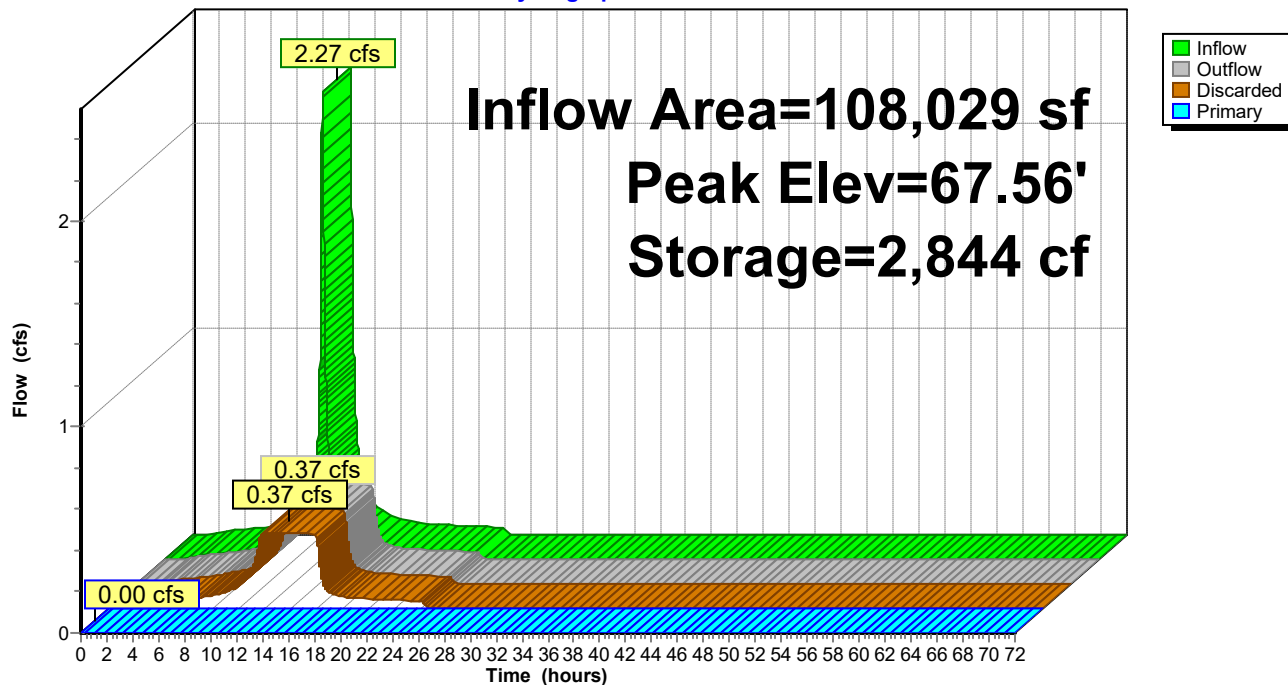
Device	Routing	Invert	Outlet Devices
#1	Primary	67.65'	Reg-U-Flo CH 3.0-in
#2	Primary	70.75'	24.0" x 24.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#3	Discarded	67.00'	3.100 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.37 cfs @ 12.83 hrs HW=67.56' (Free Discharge)
 ↑ **3=Exfiltration** (Exfiltration Controls 0.37 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=67.00' (Free Discharge)
 ↑ **1=Reg-U-Flo CH 3.0-in** (Controls 0.00 cfs)
 ↑ **2=Grate** (Controls 0.00 cfs)

Pond P-B: Basin B

Hydrograph



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Hydrograph for Pond P-B: Basin B

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	67.00	0.00	0.00	0.00
2.00	0.01	7	67.00	0.01	0.01	0.00
4.00	0.03	24	67.00	0.03	0.03	0.00
6.00	0.04	36	67.01	0.04	0.04	0.00
8.00	0.07	59	67.01	0.06	0.06	0.00
10.00	0.13	105	67.02	0.11	0.11	0.00
12.00	1.25	754	67.15	0.36	0.36	0.00
14.00	0.15	2,240	67.44	0.37	0.37	0.00
16.00	0.08	387	67.08	0.36	0.36	0.00
18.00	0.05	54	67.01	0.06	0.06	0.00
20.00	0.05	44	67.01	0.05	0.05	0.00
22.00	0.04	39	67.01	0.04	0.04	0.00
24.00	0.03	33	67.01	0.04	0.04	0.00
26.00	0.00	0	67.00	0.00	0.00	0.00
28.00	0.00	0	67.00	0.00	0.00	0.00
30.00	0.00	0	67.00	0.00	0.00	0.00
32.00	0.00	0	67.00	0.00	0.00	0.00
34.00	0.00	0	67.00	0.00	0.00	0.00
36.00	0.00	0	67.00	0.00	0.00	0.00
38.00	0.00	0	67.00	0.00	0.00	0.00
40.00	0.00	0	67.00	0.00	0.00	0.00
42.00	0.00	0	67.00	0.00	0.00	0.00
44.00	0.00	0	67.00	0.00	0.00	0.00
46.00	0.00	0	67.00	0.00	0.00	0.00
48.00	0.00	0	67.00	0.00	0.00	0.00
50.00	0.00	0	67.00	0.00	0.00	0.00
52.00	0.00	0	67.00	0.00	0.00	0.00
54.00	0.00	0	67.00	0.00	0.00	0.00
56.00	0.00	0	67.00	0.00	0.00	0.00
58.00	0.00	0	67.00	0.00	0.00	0.00
60.00	0.00	0	67.00	0.00	0.00	0.00
62.00	0.00	0	67.00	0.00	0.00	0.00
64.00	0.00	0	67.00	0.00	0.00	0.00
66.00	0.00	0	67.00	0.00	0.00	0.00
68.00	0.00	0	67.00	0.00	0.00	0.00
70.00	0.00	0	67.00	0.00	0.00	0.00
72.00	0.00	0	67.00	0.00	0.00	0.00

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Summary for Pond P-PP: Porous Pavement (Typical)

Inflow Area = 52,000 sf, 25.00% Impervious, Inflow Depth = 3.19" for 2 YR event
 Inflow = 3.15 cfs @ 12.14 hrs, Volume= 13,809 cf
 Outflow = 1.09 cfs @ 12.45 hrs, Volume= 13,809 cf, Atten= 65%, Lag= 18.6 min
 Discarded = 1.09 cfs @ 12.45 hrs, Volume= 13,809 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 70.39' @ 12.45 hrs Surf.Area= 13,000 sf Storage= 2,019 cf

Plug-Flow detention time= 9.4 min calculated for 13,807 cf (100% of inflow)
 Center-of-Mass det. time= 9.4 min (769.9 - 760.5)

Volume	Invert	Avail.Storage	Storage Description
#1	70.00'	10,400 cf	20.00'W x 50.00'L x 2.00'H Stone Bed x 13 26,000 cf Overall x 40.0% Voids
#2	72.00'	975 cf	20.00'W x 50.00'L x 0.50'H Pavement x 13 -Impervious 6,500 cf Overall x 15.0% Voids
		11,375 cf	Total Available Storage

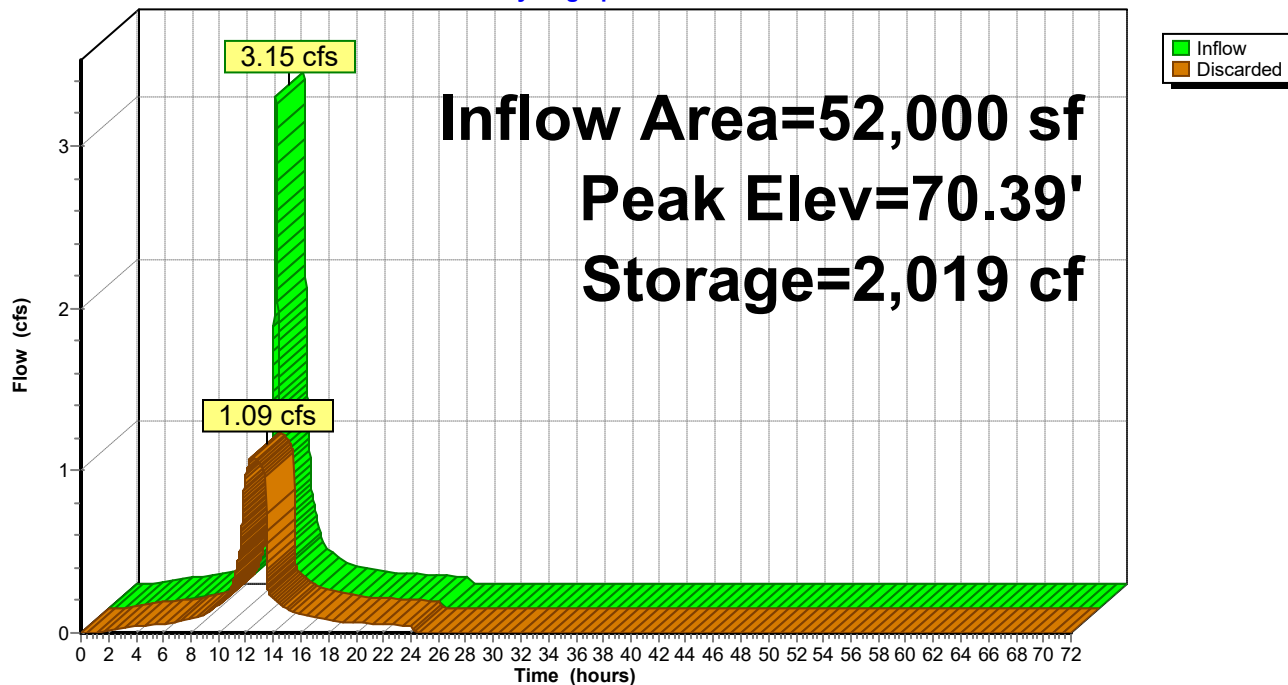
Device	Routing	Invert	Outlet Devices
#1	Discarded	70.00'	3.200 in/hr Exfiltration over Horizontal area Conductivity to Groundwater Elevation = 67.00'

Discarded OutFlow Max=1.09 cfs @ 12.45 hrs HW=70.39' (Free Discharge)

↑ **1=Exfiltration** (Controls 1.09 cfs)

Pond P-PP: Porous Pavement (Typical)

Hydrograph



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Hydrograph for Pond P-PP: Porous Pavement (Typical)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Discarded (cfs)
0.00	0.00	0	70.00	0.00
2.00	0.01	2	70.00	0.01
4.00	0.04	5	70.00	0.04
6.00	0.06	8	70.00	0.06
8.00	0.09	13	70.00	0.09
10.00	0.17	23	70.00	0.17
12.00	1.74	282	70.05	0.98
14.00	0.20	28	70.01	0.21
16.00	0.11	15	70.00	0.11
18.00	0.08	10	70.00	0.08
20.00	0.06	9	70.00	0.06
22.00	0.05	7	70.00	0.05
24.00	0.05	6	70.00	0.05
26.00	0.00	0	70.00	0.00
28.00	0.00	0	70.00	0.00
30.00	0.00	0	70.00	0.00
32.00	0.00	0	70.00	0.00
34.00	0.00	0	70.00	0.00
36.00	0.00	0	70.00	0.00
38.00	0.00	0	70.00	0.00
40.00	0.00	0	70.00	0.00
42.00	0.00	0	70.00	0.00
44.00	0.00	0	70.00	0.00
46.00	0.00	0	70.00	0.00
48.00	0.00	0	70.00	0.00
50.00	0.00	0	70.00	0.00
52.00	0.00	0	70.00	0.00
54.00	0.00	0	70.00	0.00
56.00	0.00	0	70.00	0.00
58.00	0.00	0	70.00	0.00
60.00	0.00	0	70.00	0.00
62.00	0.00	0	70.00	0.00
64.00	0.00	0	70.00	0.00
66.00	0.00	0	70.00	0.00
68.00	0.00	0	70.00	0.00
70.00	0.00	0	70.00	0.00
72.00	0.00	0	70.00	0.00

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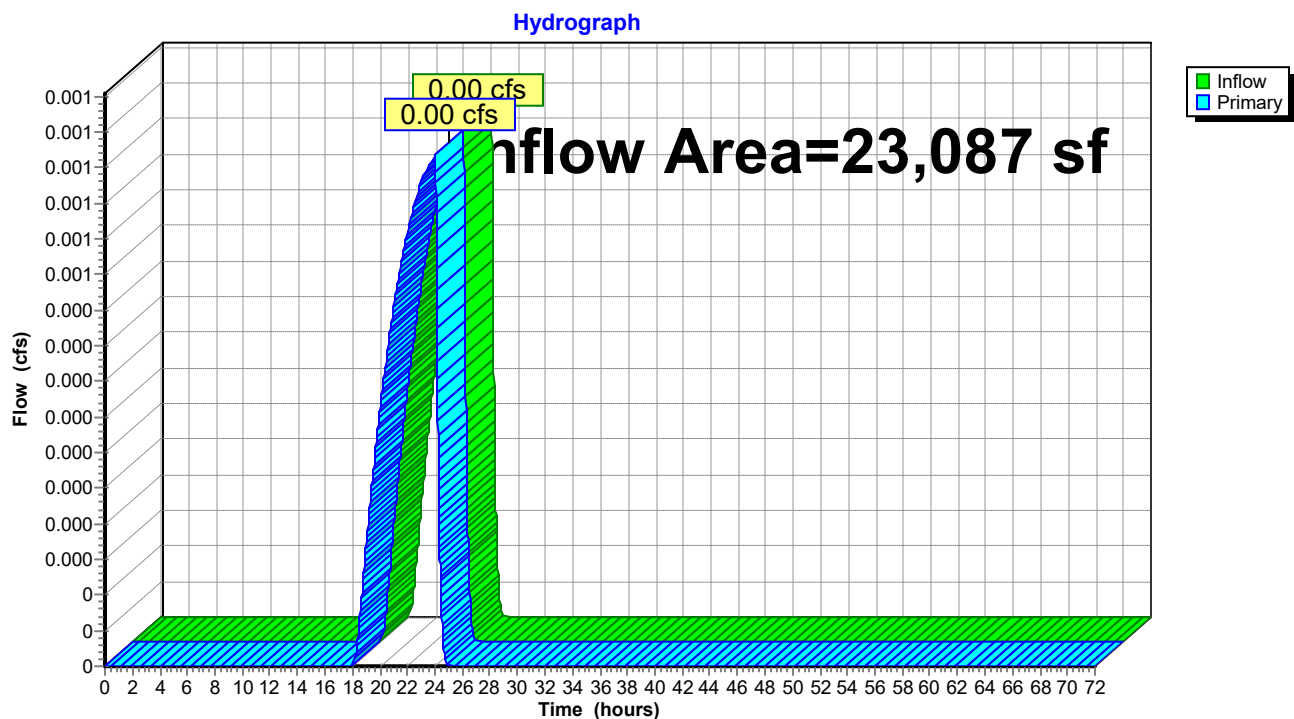
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Summary for Link 1AL: POA 1A (Wilbur W)

Inflow Area = 23,087 sf, 0.00% Impervious, Inflow Depth = 0.01" for 2 YR event
Inflow = 0.00 cfs @ 24.01 hrs, Volume= 10 cf
Primary = 0.00 cfs @ 24.01 hrs, Volume= 10 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 1L

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 1AL: POA 1A (Wilbur W)



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Hydrograph for Link 1AL: POA 1A (Wilbur W)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	63.00	0.00	0.00	0.00
13.00	0.00	0.00	0.00	64.00	0.00	0.00	0.00
14.00	0.00	0.00	0.00	65.00	0.00	0.00	0.00
15.00	0.00	0.00	0.00	66.00	0.00	0.00	0.00
16.00	0.00	0.00	0.00	67.00	0.00	0.00	0.00
17.00	0.00	0.00	0.00	68.00	0.00	0.00	0.00
18.00	0.00	0.00	0.00	69.00	0.00	0.00	0.00
19.00	0.00	0.00	0.00	70.00	0.00	0.00	0.00
20.00	0.00	0.00	0.00	71.00	0.00	0.00	0.00
21.00	0.00	0.00	0.00	72.00	0.00	0.00	0.00
22.00	0.00	0.00	0.00				
23.00	0.00	0.00	0.00				
24.00	0.00	0.00	0.00				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

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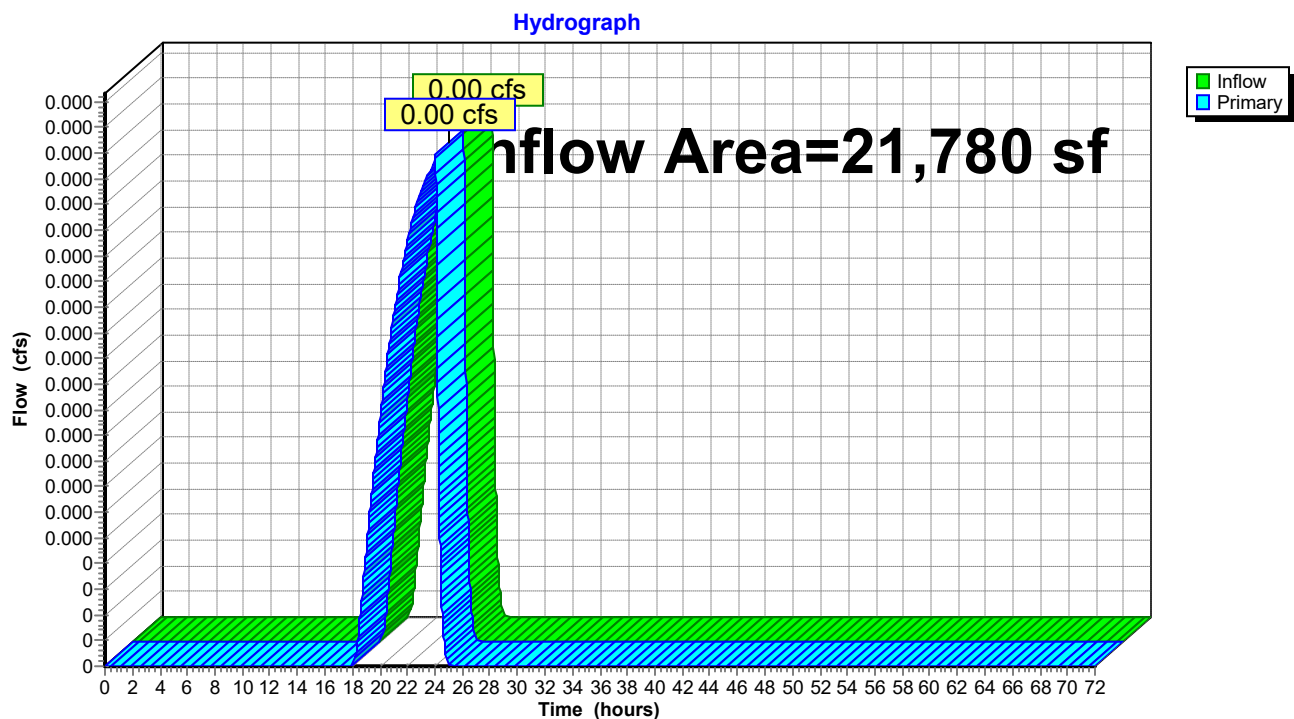
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Summary for Link 1BL: POA-1B (Wilbur E)

Inflow Area = 21,780 sf, 0.00% Impervious, Inflow Depth = 0.00" for 2 YR event
Inflow = 0.00 cfs @ 24.02 hrs, Volume= 6 cf
Primary = 0.00 cfs @ 24.02 hrs, Volume= 6 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 1L

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 1BL: POA-1B (Wilbur E)



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NOAA 24-hr D 2 YR Rainfall=3.42"

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Hydrograph for Link 1BL: POA-1B (Wilbur E)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	63.00	0.00	0.00	0.00
13.00	0.00	0.00	0.00	64.00	0.00	0.00	0.00
14.00	0.00	0.00	0.00	65.00	0.00	0.00	0.00
15.00	0.00	0.00	0.00	66.00	0.00	0.00	0.00
16.00	0.00	0.00	0.00	67.00	0.00	0.00	0.00
17.00	0.00	0.00	0.00	68.00	0.00	0.00	0.00
18.00	0.00	0.00	0.00	69.00	0.00	0.00	0.00
19.00	0.00	0.00	0.00	70.00	0.00	0.00	0.00
20.00	0.00	0.00	0.00	71.00	0.00	0.00	0.00
21.00	0.00	0.00	0.00	72.00	0.00	0.00	0.00
22.00	0.00	0.00	0.00				
23.00	0.00	0.00	0.00				
24.00	0.00	0.00	0.00				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

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NOAA 24-hr D 2 YR Rainfall=3.42"

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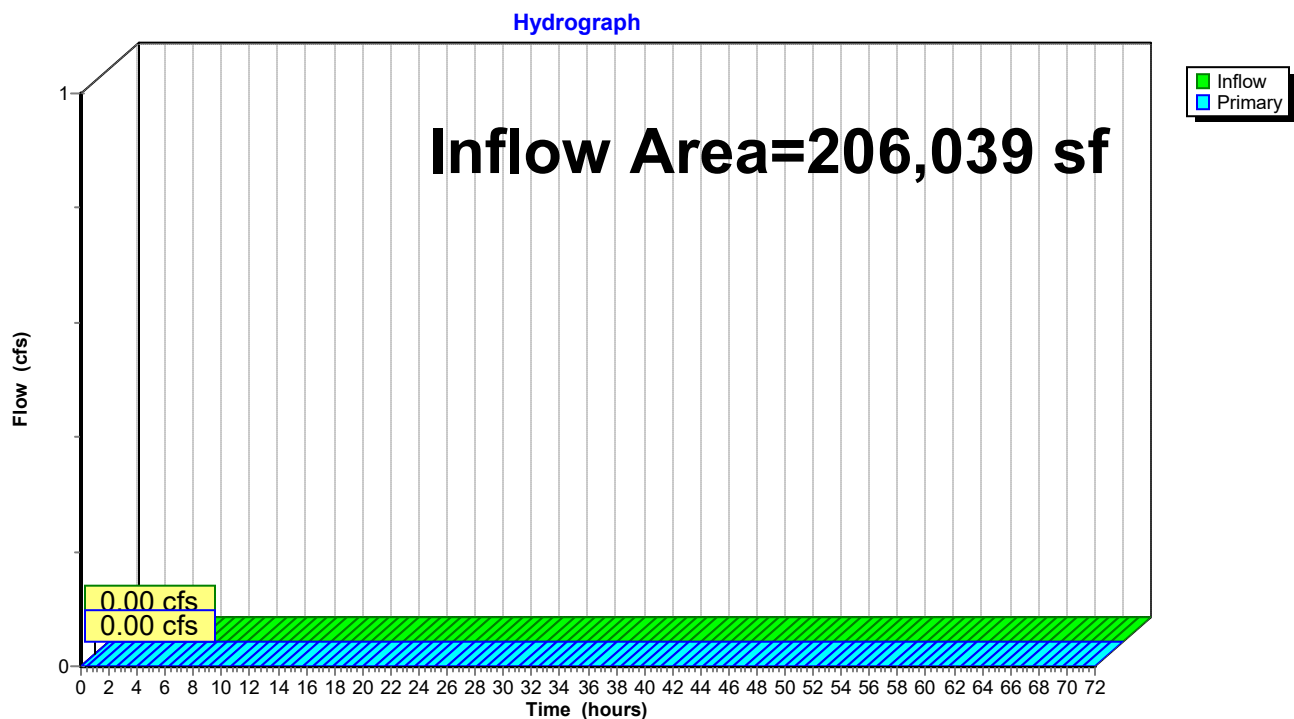
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Summary for Link 2L: POA 2 (Developed N)

Inflow Area = 206,039 sf, 18.18% Impervious, Inflow Depth = 0.00" for 2 YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 1L

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 2L: POA 2 (Developed N)



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Hydrograph for Link 2L: POA 2 (Developed N)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	63.00	0.00	0.00	0.00
13.00	0.00	0.00	0.00	64.00	0.00	0.00	0.00
14.00	0.00	0.00	0.00	65.00	0.00	0.00	0.00
15.00	0.00	0.00	0.00	66.00	0.00	0.00	0.00
16.00	0.00	0.00	0.00	67.00	0.00	0.00	0.00
17.00	0.00	0.00	0.00	68.00	0.00	0.00	0.00
18.00	0.00	0.00	0.00	69.00	0.00	0.00	0.00
19.00	0.00	0.00	0.00	70.00	0.00	0.00	0.00
20.00	0.00	0.00	0.00	71.00	0.00	0.00	0.00
21.00	0.00	0.00	0.00	72.00	0.00	0.00	0.00
22.00	0.00	0.00	0.00				
23.00	0.00	0.00	0.00				
24.00	0.00	0.00	0.00				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

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NOAA 24-hr D 2 YR Rainfall=3.42"

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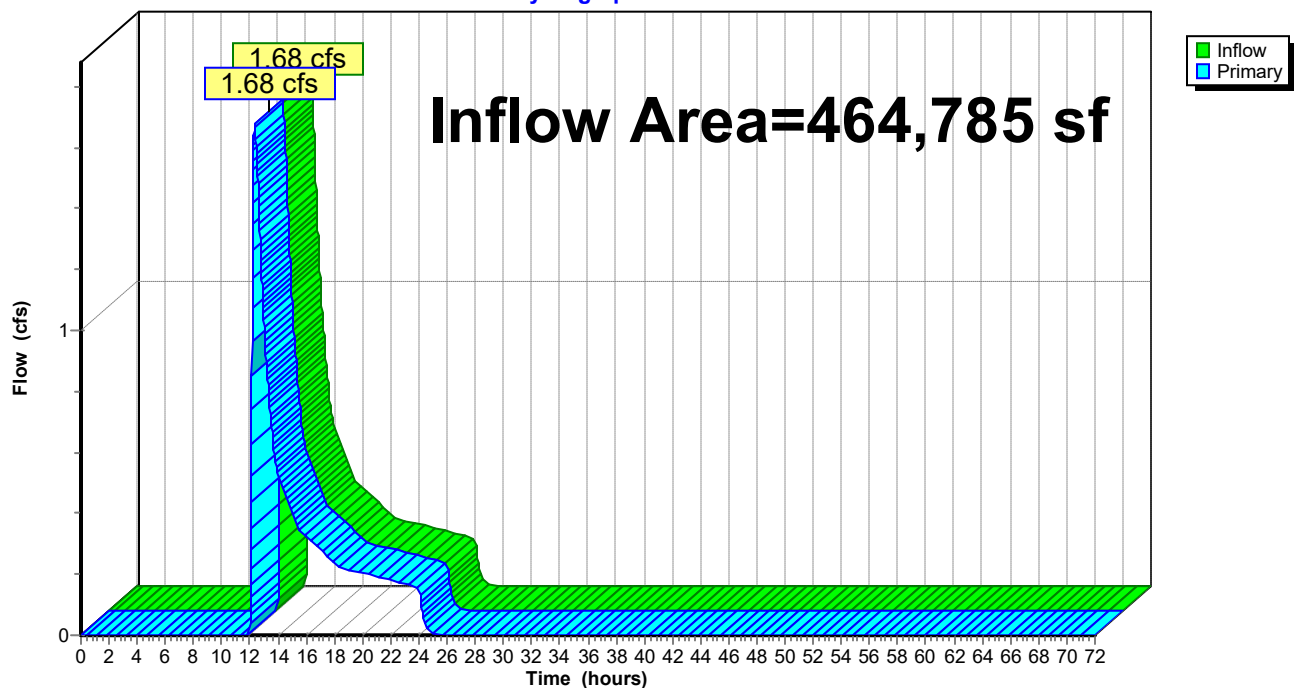
Summary for Link 3L: POA-3 (Undeveloped N)

Inflow Area = 464,785 sf, 0.00% Impervious, Inflow Depth = 0.42" for 2 YR event
Inflow = 1.68 cfs @ 12.34 hrs, Volume= 16,344 cf
Primary = 1.68 cfs @ 12.34 hrs, Volume= 16,344 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 1L

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 3L: POA-3 (Undeveloped N)

Hydrograph



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Hydrograph for Link 3L: POA-3 (Undeveloped N)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
12.00	0.02	0.00	0.02	63.00	0.00	0.00	0.00
13.00	1.02	0.00	1.02	64.00	0.00	0.00	0.00
14.00	0.53	0.00	0.53	65.00	0.00	0.00	0.00
15.00	0.40	0.00	0.40	66.00	0.00	0.00	0.00
16.00	0.32	0.00	0.32	67.00	0.00	0.00	0.00
17.00	0.28	0.00	0.28	68.00	0.00	0.00	0.00
18.00	0.24	0.00	0.24	69.00	0.00	0.00	0.00
19.00	0.21	0.00	0.21	70.00	0.00	0.00	0.00
20.00	0.20	0.00	0.20	71.00	0.00	0.00	0.00
21.00	0.19	0.00	0.19	72.00	0.00	0.00	0.00
22.00	0.18	0.00	0.18				
23.00	0.17	0.00	0.17				
24.00	0.16	0.00	0.16				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

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NOAA 24-hr D 10 YR Rainfall=5.38"

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Summary for Subcatchment 1A: DA-P1A

Runoff = 0.03 cfs @ 12.92 hrs, Volume= 545 cf, Depth= 0.28"
Routed to Link 1AL : POA 1A (Wilbur W)

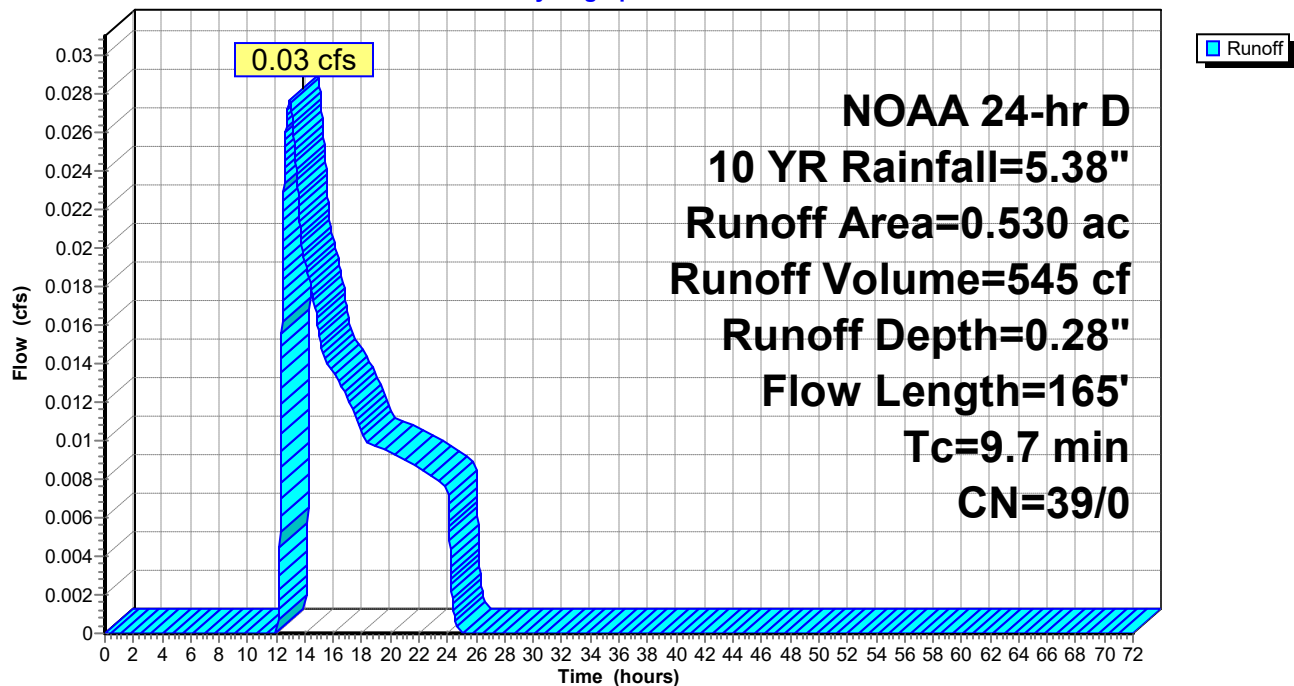
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10 YR Rainfall=5.38"

Area (ac)	CN	Description
0.530	39	>75% Grass cover, Good, HSG A
0.530	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	100	0.0270	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.42"
1.3	65	0.0150	0.86		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
9.7	165	Total			

Subcatchment 1A: DA-P1A

Hydrograph



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Hydrograph for Subcatchment 1A: DA-P1A

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.13	0.00	0.00	0.00
4.00	0.28	0.00	0.00	0.00
6.00	0.46	0.00	0.00	0.00
8.00	0.70	0.00	0.00	0.00
10.00	1.07	0.00	0.00	0.00
12.00	2.58	0.00	0.00	0.00
14.00	4.31	0.08	0.00	0.02
16.00	4.68	0.14	0.00	0.01
18.00	4.92	0.18	0.00	0.01
20.00	5.10	0.22	0.00	0.01
22.00	5.25	0.25	0.00	0.01
24.00	5.38	0.28	0.00	0.01
26.00	5.38	0.28	0.00	0.00
28.00	5.38	0.28	0.00	0.00
30.00	5.38	0.28	0.00	0.00
32.00	5.38	0.28	0.00	0.00
34.00	5.38	0.28	0.00	0.00
36.00	5.38	0.28	0.00	0.00
38.00	5.38	0.28	0.00	0.00
40.00	5.38	0.28	0.00	0.00
42.00	5.38	0.28	0.00	0.00
44.00	5.38	0.28	0.00	0.00
46.00	5.38	0.28	0.00	0.00
48.00	5.38	0.28	0.00	0.00
50.00	5.38	0.28	0.00	0.00
52.00	5.38	0.28	0.00	0.00
54.00	5.38	0.28	0.00	0.00
56.00	5.38	0.28	0.00	0.00
58.00	5.38	0.28	0.00	0.00
60.00	5.38	0.28	0.00	0.00
62.00	5.38	0.28	0.00	0.00
64.00	5.38	0.28	0.00	0.00
66.00	5.38	0.28	0.00	0.00
68.00	5.38	0.28	0.00	0.00
70.00	5.38	0.28	0.00	0.00
72.00	5.38	0.28	0.00	0.00

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Summary for Subcatchment 1B-E: P1B-E

Runoff = 0.01 cfs @ 13.25 hrs, Volume= 156 cf, Depth= 0.21"
Routed to Link 1BL : POA-1B (Wilbur E)

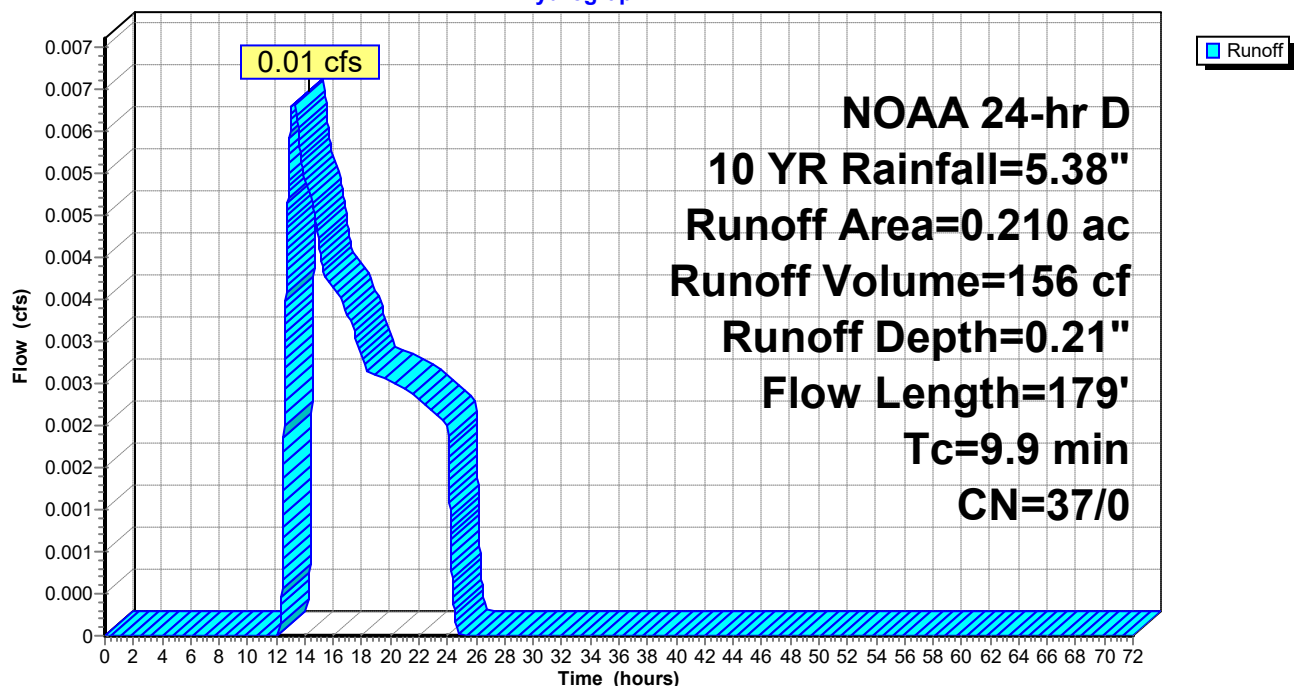
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10 YR Rainfall=5.38"

Area (ac)	CN	Description
0.160	39	>75% Grass cover, Good, HSG A
0.050	30	Meadow, non-grazed, HSG A
0.210	37	Weighted Average
0.210	37	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	99	0.0220	0.18		Sheet Flow, Grass: Short n= 0.150 P2= 3.42" Using McCuen-Spiess flow length
0.6	35	0.0220	1.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.3	45	0.1100	2.32		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
9.9	179	Total			

Subcatchment 1B-E: P1B-E

Hydrograph



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Hydrograph for Subcatchment 1B-E: P1B-E

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.13	0.00	0.00	0.00
4.00	0.28	0.00	0.00	0.00
6.00	0.46	0.00	0.00	0.00
8.00	0.70	0.00	0.00	0.00
10.00	1.07	0.00	0.00	0.00
12.00	2.58	0.00	0.00	0.00
14.00	4.31	0.05	0.00	0.01
16.00	4.68	0.09	0.00	0.00
18.00	4.92	0.12	0.00	0.00
20.00	5.10	0.15	0.00	0.00
22.00	5.25	0.18	0.00	0.00
24.00	5.38	0.21	0.00	0.00
26.00	5.38	0.21	0.00	0.00
28.00	5.38	0.21	0.00	0.00
30.00	5.38	0.21	0.00	0.00
32.00	5.38	0.21	0.00	0.00
34.00	5.38	0.21	0.00	0.00
36.00	5.38	0.21	0.00	0.00
38.00	5.38	0.21	0.00	0.00
40.00	5.38	0.21	0.00	0.00
42.00	5.38	0.21	0.00	0.00
44.00	5.38	0.21	0.00	0.00
46.00	5.38	0.21	0.00	0.00
48.00	5.38	0.21	0.00	0.00
50.00	5.38	0.21	0.00	0.00
52.00	5.38	0.21	0.00	0.00
54.00	5.38	0.21	0.00	0.00
56.00	5.38	0.21	0.00	0.00
58.00	5.38	0.21	0.00	0.00
60.00	5.38	0.21	0.00	0.00
62.00	5.38	0.21	0.00	0.00
64.00	5.38	0.21	0.00	0.00
66.00	5.38	0.21	0.00	0.00
68.00	5.38	0.21	0.00	0.00
70.00	5.38	0.21	0.00	0.00
72.00	5.38	0.21	0.00	0.00

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NOAA 24-hr D 10 YR Rainfall=5.38"

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Summary for Subcatchment 1B-W: P1B-W

Runoff = 0.02 cfs @ 12.96 hrs, Volume= 298 cf, Depth= 0.28"
Routed to Link 1BL : POA-1B (Wilbur E)

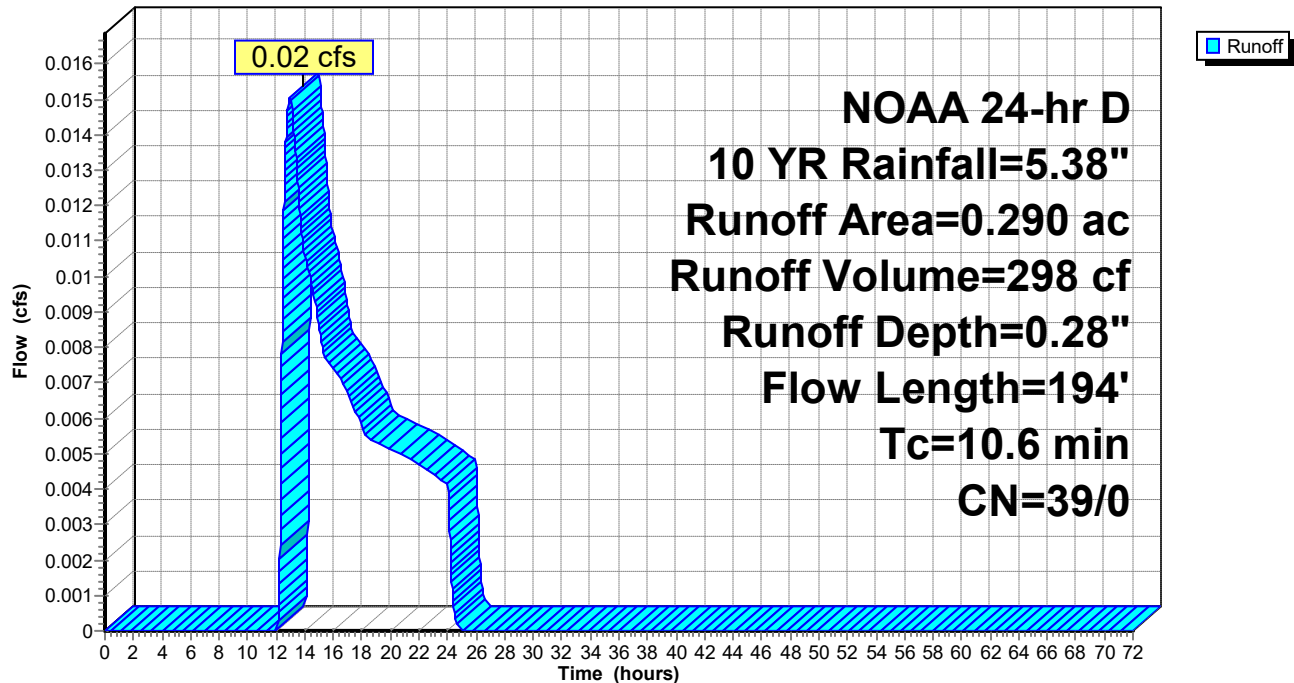
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 10 YR Rainfall=5.38"

Area (ac)	CN	Description
0.290	39	>75% Grass cover, Good, HSG A
0.290	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	84	0.0160	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 3.42" Using McCuen-Spiess flow length
1.6	110	0.0260	1.13		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
10.6	194	Total			

Subcatchment 1B-W: P1B-W

Hydrograph



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NOAA 24-hr D 10 YR Rainfall=5.38"

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Hydrograph for Subcatchment 1B-W: P1B-W

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.13	0.00	0.00	0.00
4.00	0.28	0.00	0.00	0.00
6.00	0.46	0.00	0.00	0.00
8.00	0.70	0.00	0.00	0.00
10.00	1.07	0.00	0.00	0.00
12.00	2.58	0.00	0.00	0.00
14.00	4.31	0.08	0.00	0.01
16.00	4.68	0.14	0.00	0.01
18.00	4.92	0.18	0.00	0.01
20.00	5.10	0.22	0.00	0.01
22.00	5.25	0.25	0.00	0.00
24.00	5.38	0.28	0.00	0.00
26.00	5.38	0.28	0.00	0.00
28.00	5.38	0.28	0.00	0.00
30.00	5.38	0.28	0.00	0.00
32.00	5.38	0.28	0.00	0.00
34.00	5.38	0.28	0.00	0.00
36.00	5.38	0.28	0.00	0.00
38.00	5.38	0.28	0.00	0.00
40.00	5.38	0.28	0.00	0.00
42.00	5.38	0.28	0.00	0.00
44.00	5.38	0.28	0.00	0.00
46.00	5.38	0.28	0.00	0.00
48.00	5.38	0.28	0.00	0.00
50.00	5.38	0.28	0.00	0.00
52.00	5.38	0.28	0.00	0.00
54.00	5.38	0.28	0.00	0.00
56.00	5.38	0.28	0.00	0.00
58.00	5.38	0.28	0.00	0.00
60.00	5.38	0.28	0.00	0.00
62.00	5.38	0.28	0.00	0.00
64.00	5.38	0.28	0.00	0.00
66.00	5.38	0.28	0.00	0.00
68.00	5.38	0.28	0.00	0.00
70.00	5.38	0.28	0.00	0.00
72.00	5.38	0.28	0.00	0.00

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NOAA 24-hr D 10 YR Rainfall=5.38"

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Summary for Subcatchment 2A: P2A

Runoff = 0.11 cfs @ 13.05 hrs, Volume= 2,181 cf, Depth= 0.28"
Routed to Pond P-A : Basin A

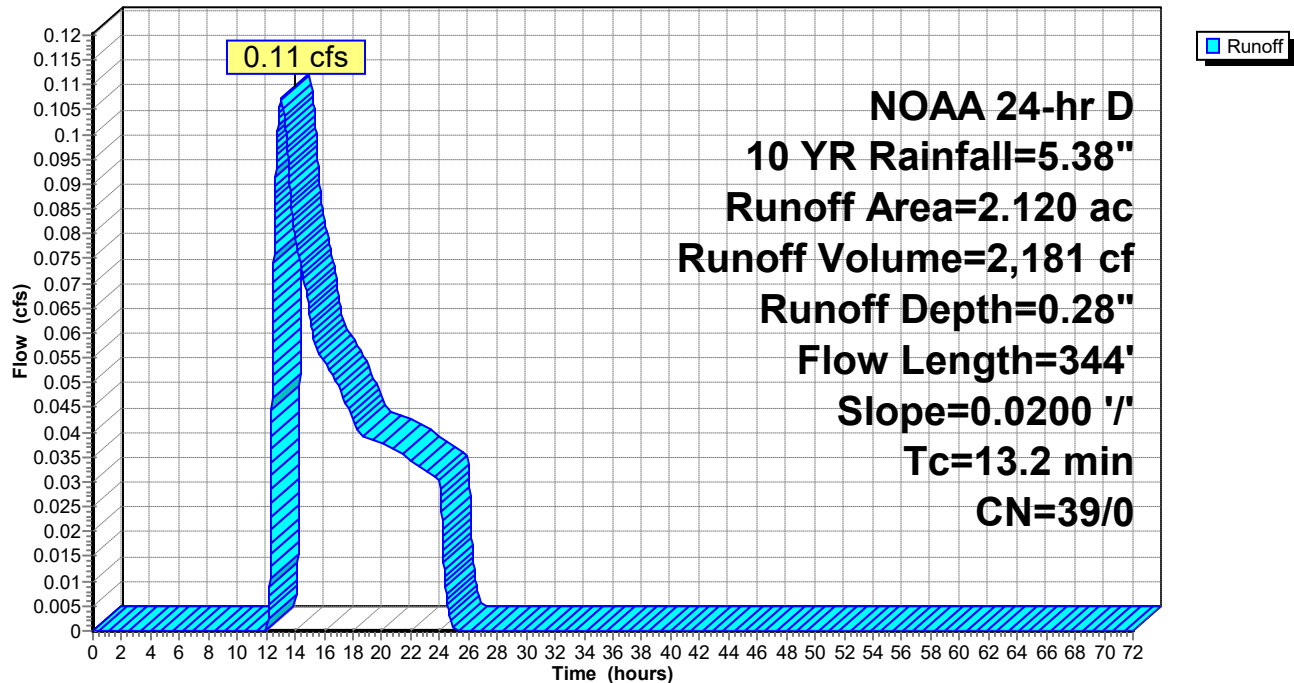
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10 YR Rainfall=5.38"

Area (ac)	CN	Description
2.120	39	>75% Grass cover, Good, HSG A
2.120	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	94	0.0200	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.42" Using McCuen-Spiess flow length
4.2	250	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
13.2	344	Total			

Subcatchment 2A: P2A

Hydrograph



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Hydrograph for Subcatchment 2A: P2A

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.13	0.00	0.00	0.00
4.00	0.28	0.00	0.00	0.00
6.00	0.46	0.00	0.00	0.00
8.00	0.70	0.00	0.00	0.00
10.00	1.07	0.00	0.00	0.00
12.00	2.58	0.00	0.00	0.00
14.00	4.31	0.08	0.00	0.08
16.00	4.68	0.14	0.00	0.05
18.00	4.92	0.18	0.00	0.04
20.00	5.10	0.22	0.00	0.04
22.00	5.25	0.25	0.00	0.03
24.00	5.38	0.28	0.00	0.03
26.00	5.38	0.28	0.00	0.00
28.00	5.38	0.28	0.00	0.00
30.00	5.38	0.28	0.00	0.00
32.00	5.38	0.28	0.00	0.00
34.00	5.38	0.28	0.00	0.00
36.00	5.38	0.28	0.00	0.00
38.00	5.38	0.28	0.00	0.00
40.00	5.38	0.28	0.00	0.00
42.00	5.38	0.28	0.00	0.00
44.00	5.38	0.28	0.00	0.00
46.00	5.38	0.28	0.00	0.00
48.00	5.38	0.28	0.00	0.00
50.00	5.38	0.28	0.00	0.00
52.00	5.38	0.28	0.00	0.00
54.00	5.38	0.28	0.00	0.00
56.00	5.38	0.28	0.00	0.00
58.00	5.38	0.28	0.00	0.00
60.00	5.38	0.28	0.00	0.00
62.00	5.38	0.28	0.00	0.00
64.00	5.38	0.28	0.00	0.00
66.00	5.38	0.28	0.00	0.00
68.00	5.38	0.28	0.00	0.00
70.00	5.38	0.28	0.00	0.00
72.00	5.38	0.28	0.00	0.00

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Summary for Subcatchment 2B: P2B

Runoff = 0.07 cfs @ 13.00 hrs, Volume= 1,430 cf, Depth= 0.28"
Routed to Pond P-B : Basin B

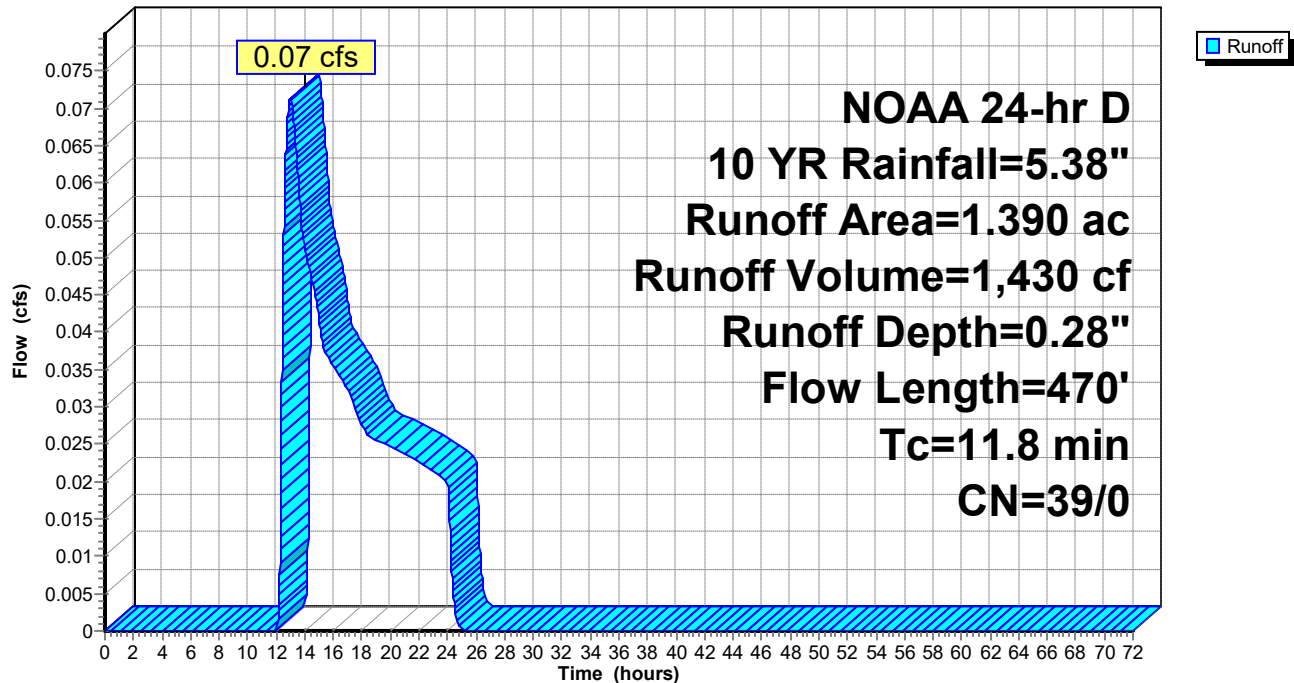
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10 YR Rainfall=5.38"

Area (ac)	CN	Description
1.390	39	>75% Grass cover, Good, HSG A
1.390	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.0310	0.21		Sheet Flow, Grass: Short n= 0.150 P2= 3.42"
3.4	205	0.0210	1.01		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.4	165	0.0100	6.22	7.63	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
11.8	470	Total			

Subcatchment 2B: P2B

Hydrograph



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Hydrograph for Subcatchment 2B: P2B

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.13	0.00	0.00	0.00
4.00	0.28	0.00	0.00	0.00
6.00	0.46	0.00	0.00	0.00
8.00	0.70	0.00	0.00	0.00
10.00	1.07	0.00	0.00	0.00
12.00	2.58	0.00	0.00	0.00
14.00	4.31	0.08	0.00	0.05
16.00	4.68	0.14	0.00	0.04
18.00	4.92	0.18	0.00	0.03
20.00	5.10	0.22	0.00	0.02
22.00	5.25	0.25	0.00	0.02
24.00	5.38	0.28	0.00	0.02
26.00	5.38	0.28	0.00	0.00
28.00	5.38	0.28	0.00	0.00
30.00	5.38	0.28	0.00	0.00
32.00	5.38	0.28	0.00	0.00
34.00	5.38	0.28	0.00	0.00
36.00	5.38	0.28	0.00	0.00
38.00	5.38	0.28	0.00	0.00
40.00	5.38	0.28	0.00	0.00
42.00	5.38	0.28	0.00	0.00
44.00	5.38	0.28	0.00	0.00
46.00	5.38	0.28	0.00	0.00
48.00	5.38	0.28	0.00	0.00
50.00	5.38	0.28	0.00	0.00
52.00	5.38	0.28	0.00	0.00
54.00	5.38	0.28	0.00	0.00
56.00	5.38	0.28	0.00	0.00
58.00	5.38	0.28	0.00	0.00
60.00	5.38	0.28	0.00	0.00
62.00	5.38	0.28	0.00	0.00
64.00	5.38	0.28	0.00	0.00
66.00	5.38	0.28	0.00	0.00
68.00	5.38	0.28	0.00	0.00
70.00	5.38	0.28	0.00	0.00
72.00	5.38	0.28	0.00	0.00

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Summary for Subcatchment 2C: P2C

Runoff = 0.05 cfs @ 13.47 hrs, Volume= 1,387 cf, Depth= 0.17"
Routed to Link 2L : POA 2 (Developed N)

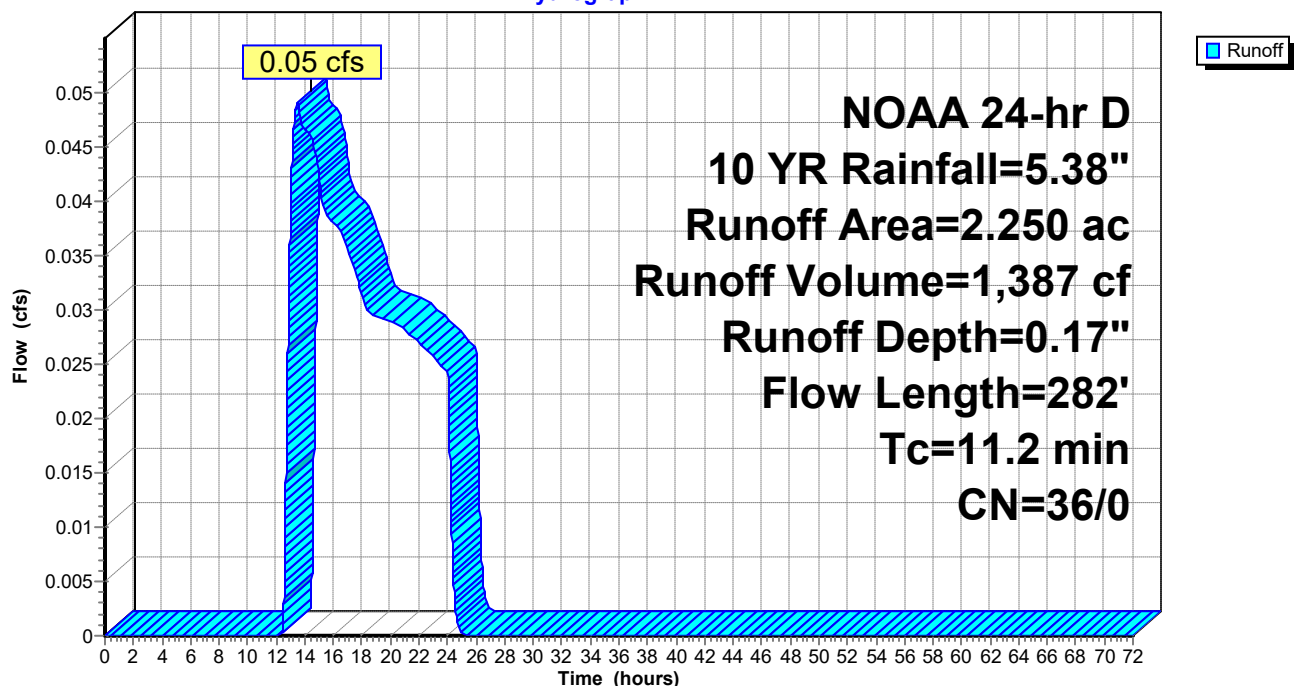
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10 YR Rainfall=5.38"

Area (ac)	CN	Description
1.390	39	>75% Grass cover, Good, HSG A
0.860	30	Meadow, non-grazed, HSG A
2.250	36	Weighted Average
2.250	36	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	87	0.0170	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 3.42" Using McCuen-Spiess flow length
1.8	135	0.0320	1.25		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.4	60	0.2200	2.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
11.2	282	Total			

Subcatchment 2C: P2C

Hydrograph



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Hydrograph for Subcatchment 2C: P2C

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.13	0.00	0.00	0.00
4.00	0.28	0.00	0.00	0.00
6.00	0.46	0.00	0.00	0.00
8.00	0.70	0.00	0.00	0.00
10.00	1.07	0.00	0.00	0.00
12.00	2.58	0.00	0.00	0.00
14.00	4.31	0.03	0.00	0.05
16.00	4.68	0.07	0.00	0.04
18.00	4.92	0.10	0.00	0.03
20.00	5.10	0.12	0.00	0.03
22.00	5.25	0.15	0.00	0.03
24.00	5.38	0.17	0.00	0.02
26.00	5.38	0.17	0.00	0.00
28.00	5.38	0.17	0.00	0.00
30.00	5.38	0.17	0.00	0.00
32.00	5.38	0.17	0.00	0.00
34.00	5.38	0.17	0.00	0.00
36.00	5.38	0.17	0.00	0.00
38.00	5.38	0.17	0.00	0.00
40.00	5.38	0.17	0.00	0.00
42.00	5.38	0.17	0.00	0.00
44.00	5.38	0.17	0.00	0.00
46.00	5.38	0.17	0.00	0.00
48.00	5.38	0.17	0.00	0.00
50.00	5.38	0.17	0.00	0.00
52.00	5.38	0.17	0.00	0.00
54.00	5.38	0.17	0.00	0.00
56.00	5.38	0.17	0.00	0.00
58.00	5.38	0.17	0.00	0.00
60.00	5.38	0.17	0.00	0.00
62.00	5.38	0.17	0.00	0.00
64.00	5.38	0.17	0.00	0.00
66.00	5.38	0.17	0.00	0.00
68.00	5.38	0.17	0.00	0.00
70.00	5.38	0.17	0.00	0.00
72.00	5.38	0.17	0.00	0.00

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Summary for Subcatchment 2RD-N: P2RD-N

Runoff = 3.22 cfs @ 12.14 hrs, Volume= 14,580 cf, Depth= 4.14"
Routed to Pond P-B : Basin B

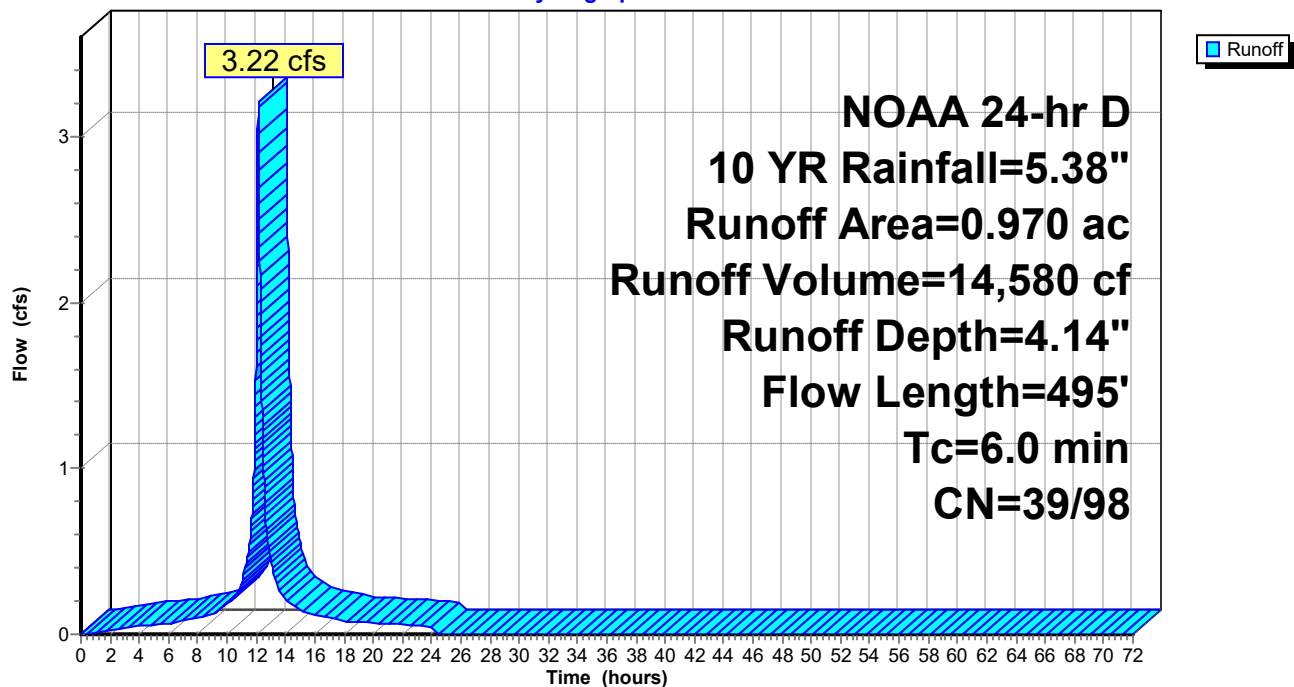
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10 YR Rainfall=5.38"

Area (ac)	CN	Description
0.770	98	Paved parking, HSG A
0.200	39	>75% Grass cover, Good, HSG A
0.970	86	Weighted Average
0.200	39	20.62% Pervious Area
0.770	98	79.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0210	1.05		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.42"
1.8	310	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.4	165	0.0100	6.22	7.63	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
2.5	495	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 2RD-N: P2RD-N

Hydrograph



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Hydrograph for Subcatchment 2RD-N: P2RD-N

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.13	0.00	0.03	0.03
4.00	0.28	0.00	0.13	0.05
6.00	0.46	0.00	0.28	0.06
8.00	0.70	0.00	0.50	0.10
10.00	1.07	0.00	0.86	0.18
12.00	2.58	0.00	2.35	1.78
14.00	4.31	0.08	4.08	0.22
16.00	4.68	0.14	4.45	0.12
18.00	4.92	0.18	4.68	0.08
20.00	5.10	0.22	4.86	0.07
22.00	5.25	0.25	5.01	0.06
24.00	5.38	0.28	5.14	0.05
26.00	5.38	0.28	5.14	0.00
28.00	5.38	0.28	5.14	0.00
30.00	5.38	0.28	5.14	0.00
32.00	5.38	0.28	5.14	0.00
34.00	5.38	0.28	5.14	0.00
36.00	5.38	0.28	5.14	0.00
38.00	5.38	0.28	5.14	0.00
40.00	5.38	0.28	5.14	0.00
42.00	5.38	0.28	5.14	0.00
44.00	5.38	0.28	5.14	0.00
46.00	5.38	0.28	5.14	0.00
48.00	5.38	0.28	5.14	0.00
50.00	5.38	0.28	5.14	0.00
52.00	5.38	0.28	5.14	0.00
54.00	5.38	0.28	5.14	0.00
56.00	5.38	0.28	5.14	0.00
58.00	5.38	0.28	5.14	0.00
60.00	5.38	0.28	5.14	0.00
62.00	5.38	0.28	5.14	0.00
64.00	5.38	0.28	5.14	0.00
66.00	5.38	0.28	5.14	0.00
68.00	5.38	0.28	5.14	0.00
70.00	5.38	0.28	5.14	0.00
72.00	5.38	0.28	5.14	0.00

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Summary for Subcatchment 2RD-S: P2RD-S

Runoff = 0.38 cfs @ 12.14 hrs, Volume= 1,711 cf, Depth= 3.93"
Routed to Pond P-B : Basin B

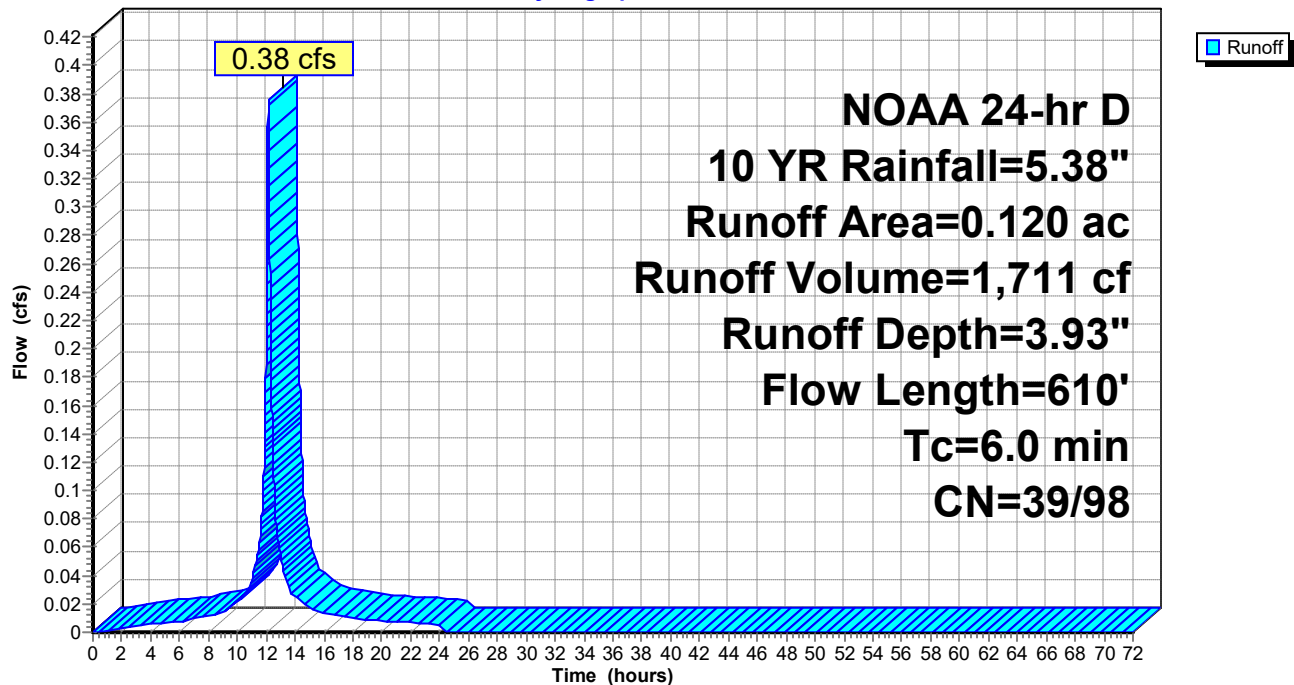
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10 YR Rainfall=5.38"

Area (ac)	CN	Description
0.090	98	Paved parking, HSG A
0.030	39	>75% Grass cover, Good, HSG A
0.120	83	Weighted Average
0.030	39	25.00% Pervious Area
0.090	98	75.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	1.03		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.42"
0.6	85	0.0160	2.57		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.6	505	0.0075	5.39	6.61	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
2.5	610	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 2RD-S: P2RD-S

Hydrograph



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Hydrograph for Subcatchment 2RD-S: P2RD-S

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.13	0.00	0.03	0.00
4.00	0.28	0.00	0.13	0.01
6.00	0.46	0.00	0.28	0.01
8.00	0.70	0.00	0.50	0.01
10.00	1.07	0.00	0.86	0.02
12.00	2.58	0.00	2.35	0.21
14.00	4.31	0.08	4.08	0.03
16.00	4.68	0.14	4.45	0.01
18.00	4.92	0.18	4.68	0.01
20.00	5.10	0.22	4.86	0.01
22.00	5.25	0.25	5.01	0.01
24.00	5.38	0.28	5.14	0.01
26.00	5.38	0.28	5.14	0.00
28.00	5.38	0.28	5.14	0.00
30.00	5.38	0.28	5.14	0.00
32.00	5.38	0.28	5.14	0.00
34.00	5.38	0.28	5.14	0.00
36.00	5.38	0.28	5.14	0.00
38.00	5.38	0.28	5.14	0.00
40.00	5.38	0.28	5.14	0.00
42.00	5.38	0.28	5.14	0.00
44.00	5.38	0.28	5.14	0.00
46.00	5.38	0.28	5.14	0.00
48.00	5.38	0.28	5.14	0.00
50.00	5.38	0.28	5.14	0.00
52.00	5.38	0.28	5.14	0.00
54.00	5.38	0.28	5.14	0.00
56.00	5.38	0.28	5.14	0.00
58.00	5.38	0.28	5.14	0.00
60.00	5.38	0.28	5.14	0.00
62.00	5.38	0.28	5.14	0.00
64.00	5.38	0.28	5.14	0.00
66.00	5.38	0.28	5.14	0.00
68.00	5.38	0.28	5.14	0.00
70.00	5.38	0.28	5.14	0.00
72.00	5.38	0.28	5.14	0.00

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NOAA 24-hr D 10 YR Rainfall=5.38"

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Summary for Subcatchment 3: DA-E4

Runoff = 8.98 cfs @ 12.22 hrs, Volume= 53,587 cf, Depth= 1.38"
Routed to Link 3L : POA-3 (Undeveloped N)

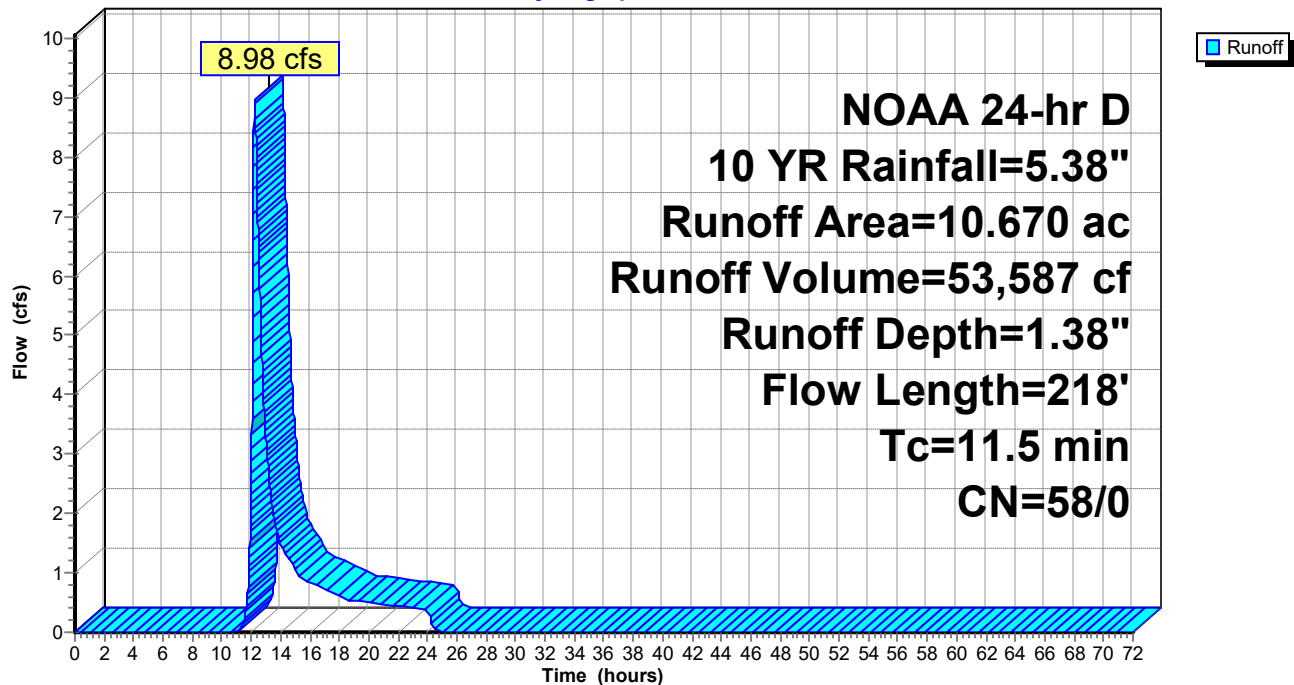
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10 YR Rainfall=5.38"

Area (ac)	CN	Description
6.010	77	Woods, Good, HSG D
2.590	30	Woods, Good, HSG A
2.070	39	>75% Grass cover, Good, HSG A
10.670	58	Weighted Average
10.670	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	35	0.0071	0.06		Sheet Flow, Grass: Dense n= 0.240 P2= 3.42" Using McCuen-Spiess flow length
1.9	148	0.0700	1.32		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.6	35	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
11.5	218	Total			

Subcatchment 3: DA-E4

Hydrograph



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Hydrograph for Subcatchment 3: DA-E4

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.13	0.00	0.00	0.00
4.00	0.28	0.00	0.00	0.00
6.00	0.46	0.00	0.00	0.00
8.00	0.70	0.00	0.00	0.00
10.00	1.07	0.00	0.00	0.00
12.00	2.58	0.15	0.00	2.52
14.00	4.31	0.81	0.00	1.48
16.00	4.68	1.00	0.00	0.84
18.00	4.92	1.13	0.00	0.60
20.00	5.10	1.22	0.00	0.50
22.00	5.25	1.31	0.00	0.44
24.00	5.38	1.38	0.00	0.38
26.00	5.38	1.38	0.00	0.00
28.00	5.38	1.38	0.00	0.00
30.00	5.38	1.38	0.00	0.00
32.00	5.38	1.38	0.00	0.00
34.00	5.38	1.38	0.00	0.00
36.00	5.38	1.38	0.00	0.00
38.00	5.38	1.38	0.00	0.00
40.00	5.38	1.38	0.00	0.00
42.00	5.38	1.38	0.00	0.00
44.00	5.38	1.38	0.00	0.00
46.00	5.38	1.38	0.00	0.00
48.00	5.38	1.38	0.00	0.00
50.00	5.38	1.38	0.00	0.00
52.00	5.38	1.38	0.00	0.00
54.00	5.38	1.38	0.00	0.00
56.00	5.38	1.38	0.00	0.00
58.00	5.38	1.38	0.00	0.00
60.00	5.38	1.38	0.00	0.00
62.00	5.38	1.38	0.00	0.00
64.00	5.38	1.38	0.00	0.00
66.00	5.38	1.38	0.00	0.00
68.00	5.38	1.38	0.00	0.00
70.00	5.38	1.38	0.00	0.00
72.00	5.38	1.38	0.00	0.00

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Summary for Subcatchment TS: Typical House/Driveway System

Runoff = 4.99 cfs @ 12.14 hrs, Volume= 22,285 cf, Depth= 5.14"
Routed to Pond P-PP : Porous Pavement (Typical)

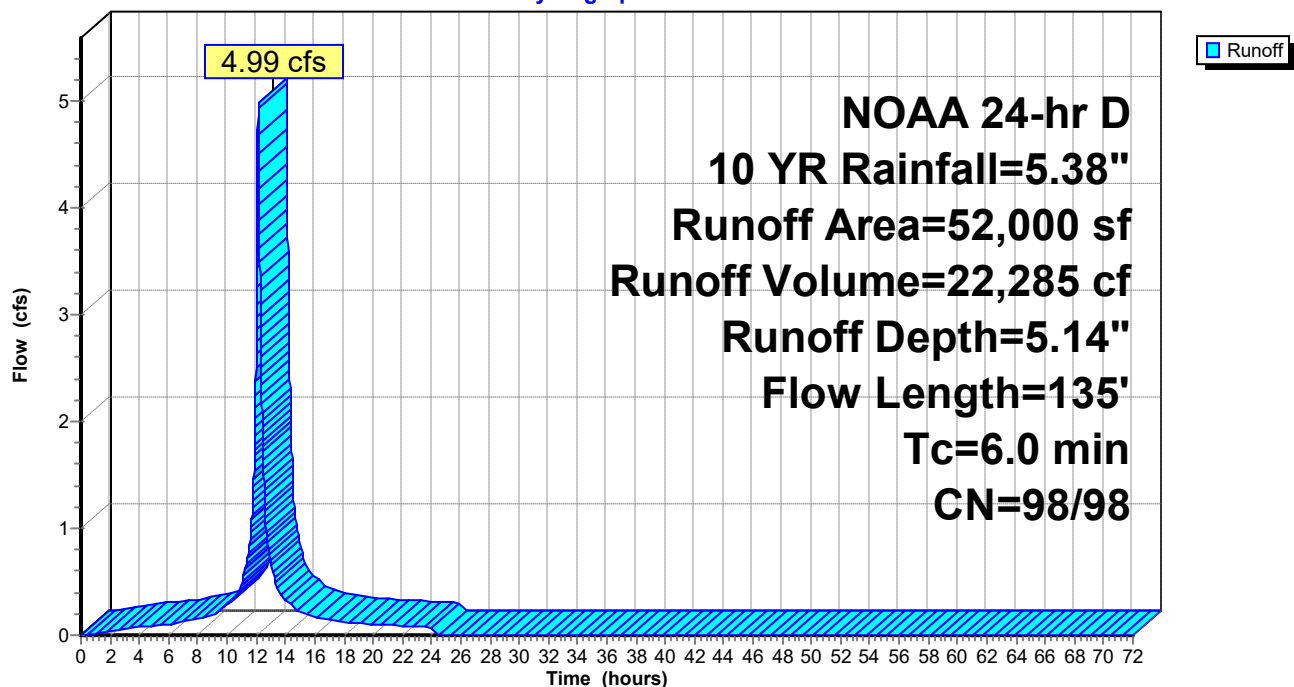
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 10 YR Rainfall=5.38"

Area (sf)	CN	Description
39,000	98	Unconnected roofs, HSG A
13,000	98	Paved parking, HSG A
52,000	98	Weighted Average
39,000	98	75.00% Pervious Area
13,000	98	25.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	25	0.2200	2.81		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.42"
0.6	110	0.0050	2.89	1.01	Pipe Channel, 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.011
0.7	135	Total, Increased to minimum Tc = 6.0 min			

Subcatchment TS: Typical House/Driveway System

Hydrograph



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Hydrograph for Subcatchment TS: Typical House/Driveway System

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.13	0.03	0.03	0.04
4.00	0.28	0.13	0.13	0.08
6.00	0.46	0.28	0.28	0.10
8.00	0.70	0.50	0.50	0.16
10.00	1.07	0.86	0.86	0.28
12.00	2.58	2.35	2.35	2.76
14.00	4.31	4.08	4.08	0.32
16.00	4.68	4.45	4.45	0.18
18.00	4.92	4.68	4.68	0.12
20.00	5.10	4.86	4.86	0.10
22.00	5.25	5.01	5.01	0.09
24.00	5.38	5.14	5.14	0.07
26.00	5.38	5.14	5.14	0.00
28.00	5.38	5.14	5.14	0.00
30.00	5.38	5.14	5.14	0.00
32.00	5.38	5.14	5.14	0.00
34.00	5.38	5.14	5.14	0.00
36.00	5.38	5.14	5.14	0.00
38.00	5.38	5.14	5.14	0.00
40.00	5.38	5.14	5.14	0.00
42.00	5.38	5.14	5.14	0.00
44.00	5.38	5.14	5.14	0.00
46.00	5.38	5.14	5.14	0.00
48.00	5.38	5.14	5.14	0.00
50.00	5.38	5.14	5.14	0.00
52.00	5.38	5.14	5.14	0.00
54.00	5.38	5.14	5.14	0.00
56.00	5.38	5.14	5.14	0.00
58.00	5.38	5.14	5.14	0.00
60.00	5.38	5.14	5.14	0.00
62.00	5.38	5.14	5.14	0.00
64.00	5.38	5.14	5.14	0.00
66.00	5.38	5.14	5.14	0.00
68.00	5.38	5.14	5.14	0.00
70.00	5.38	5.14	5.14	0.00
72.00	5.38	5.14	5.14	0.00

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Summary for Pond P-A: Basin A

Inflow Area = 92,347 sf, 0.00% Impervious, Inflow Depth = 0.28" for 10 YR event
 Inflow = 0.11 cfs @ 13.05 hrs, Volume= 2,181 cf
 Outflow = 0.11 cfs @ 13.07 hrs, Volume= 2,181 cf, Atten= 0%, Lag= 1.2 min
 Discarded = 0.11 cfs @ 13.07 hrs, Volume= 2,181 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 75.34' @ 13.07 hrs Surf.Area= 0.043 ac Storage= 0.000 af

Plug-Flow detention time= 1.6 min calculated for 2,181 cf (100% of inflow)
 Center-of-Mass det. time= 1.6 min (1,026.7 - 1,025.2)

Volume	Invert	Avail.Storage	Storage Description
#1	75.33'	0.142 af	15.00'W x 125.00'L x 2.17'H Prismatic Z=3.0

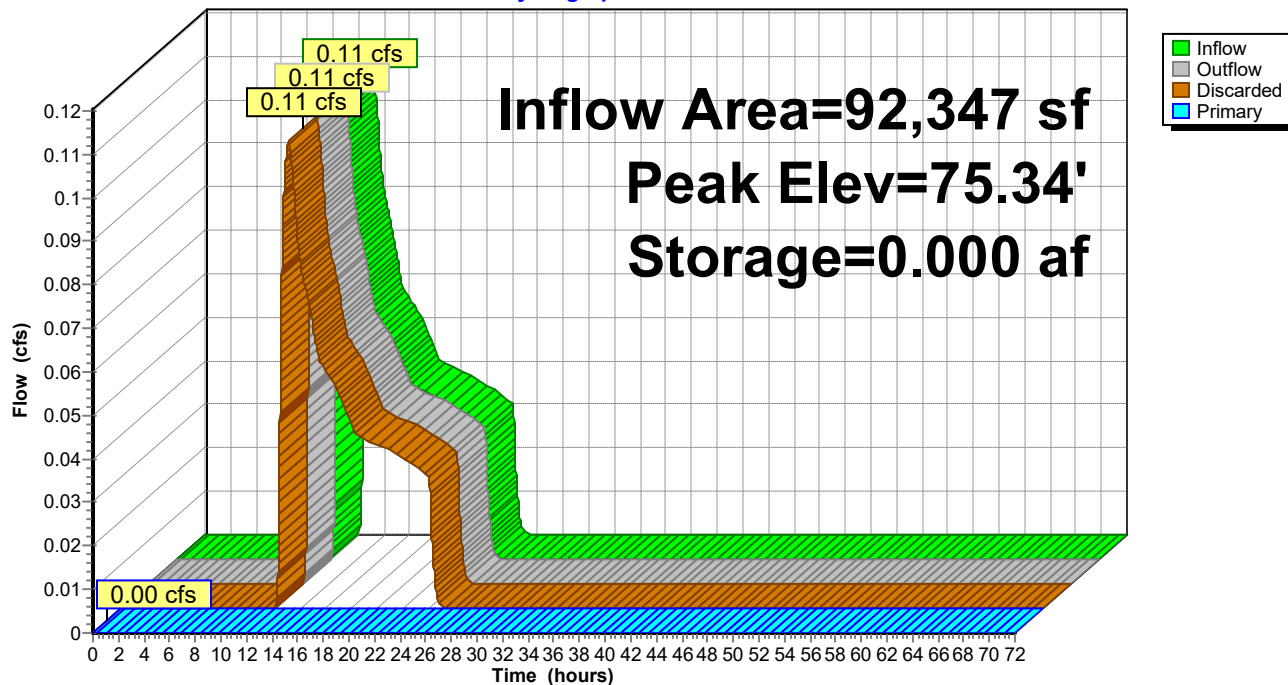
Device	Routing	Invert	Outlet Devices
#1	Discarded	75.33'	10.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 67.00'
#2	Primary	72.61'	12.0" Round Culvert L= 288.0' Ke= 0.600 Inlet / Outlet Invert= 72.61' / 69.74' S= 0.0100 ' / Cc= 0.900 n= 0.011, Flow Area= 0.79 sf
#3	Device 2	77.10'	2.5" Vert. Orifice C= 0.600 Limited to weir flow at low heads
#4	Device 2	77.40'	24.0" x 24.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.44 cfs @ 13.07 hrs HW=75.34' (Free Discharge)
 ↑ **1=Exfiltration** (Controls 0.44 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=75.33' (Free Discharge)
 ↑ **2=Culvert** (Passes 0.00 cfs of 4.75 cfs potential flow)
 ↑ **3=Orifice** (Controls 0.00 cfs)
 ↑ **4=Grate** (Controls 0.00 cfs)

Pond P-A: Basin A

Hydrograph



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Hydrograph for Pond P-A: Basin A

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.000	75.33	0.00	0.00	0.00
2.00	0.00	0.000	75.33	0.00	0.00	0.00
4.00	0.00	0.000	75.33	0.00	0.00	0.00
6.00	0.00	0.000	75.33	0.00	0.00	0.00
8.00	0.00	0.000	75.33	0.00	0.00	0.00
10.00	0.00	0.000	75.33	0.00	0.00	0.00
12.00	0.00	0.000	75.33	0.00	0.00	0.00
14.00	0.08	0.000	75.33	0.08	0.08	0.00
16.00	0.05	0.000	75.33	0.05	0.05	0.00
18.00	0.04	0.000	75.33	0.04	0.04	0.00
20.00	0.04	0.000	75.33	0.04	0.04	0.00
22.00	0.03	0.000	75.33	0.03	0.03	0.00
24.00	0.03	0.000	75.33	0.03	0.03	0.00
26.00	0.00	0.000	75.33	0.00	0.00	0.00
28.00	0.00	0.000	75.33	0.00	0.00	0.00
30.00	0.00	0.000	75.33	0.00	0.00	0.00
32.00	0.00	0.000	75.33	0.00	0.00	0.00
34.00	0.00	0.000	75.33	0.00	0.00	0.00
36.00	0.00	0.000	75.33	0.00	0.00	0.00
38.00	0.00	0.000	75.33	0.00	0.00	0.00
40.00	0.00	0.000	75.33	0.00	0.00	0.00
42.00	0.00	0.000	75.33	0.00	0.00	0.00
44.00	0.00	0.000	75.33	0.00	0.00	0.00
46.00	0.00	0.000	75.33	0.00	0.00	0.00
48.00	0.00	0.000	75.33	0.00	0.00	0.00
50.00	0.00	0.000	75.33	0.00	0.00	0.00
52.00	0.00	0.000	75.33	0.00	0.00	0.00
54.00	0.00	0.000	75.33	0.00	0.00	0.00
56.00	0.00	0.000	75.33	0.00	0.00	0.00
58.00	0.00	0.000	75.33	0.00	0.00	0.00
60.00	0.00	0.000	75.33	0.00	0.00	0.00
62.00	0.00	0.000	75.33	0.00	0.00	0.00
64.00	0.00	0.000	75.33	0.00	0.00	0.00
66.00	0.00	0.000	75.33	0.00	0.00	0.00
68.00	0.00	0.000	75.33	0.00	0.00	0.00
70.00	0.00	0.000	75.33	0.00	0.00	0.00
72.00	0.00	0.000	75.33	0.00	0.00	0.00

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Summary for Pond P-B: Basin B

Inflow Area = 108,029 sf, 34.68% Impervious, Inflow Depth = 1.97" for 10 YR event
 Inflow = 3.60 cfs @ 12.14 hrs, Volume= 17,721 cf
 Outflow = 0.48 cfs @ 13.18 hrs, Volume= 17,721 cf, Atten= 87%, Lag= 62.6 min
 Discarded = 0.38 cfs @ 13.18 hrs, Volume= 16,679 cf
 Primary = 0.11 cfs @ 13.18 hrs, Volume= 1,042 cf
 Routed to Link 2L : POA 2 (Developed N)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 68.09' @ 13.18 hrs Surf.Area= 5,261 sf Storage= 5,569 cf

Plug-Flow detention time= 97.5 min calculated for 17,718 cf (100% of inflow)
 Center-of-Mass det. time= 97.5 min (874.6 - 777.1)

Volume	Invert	Avail.Storage	Storage Description
#1	67.00'	24,905 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
67.00	5,000	0	0
68.00	5,240	5,120	5,120
69.00	5,490	5,365	10,485
70.00	5,700	5,595	16,080
71.00	5,900	5,800	21,880
71.50	6,200	3,025	24,905

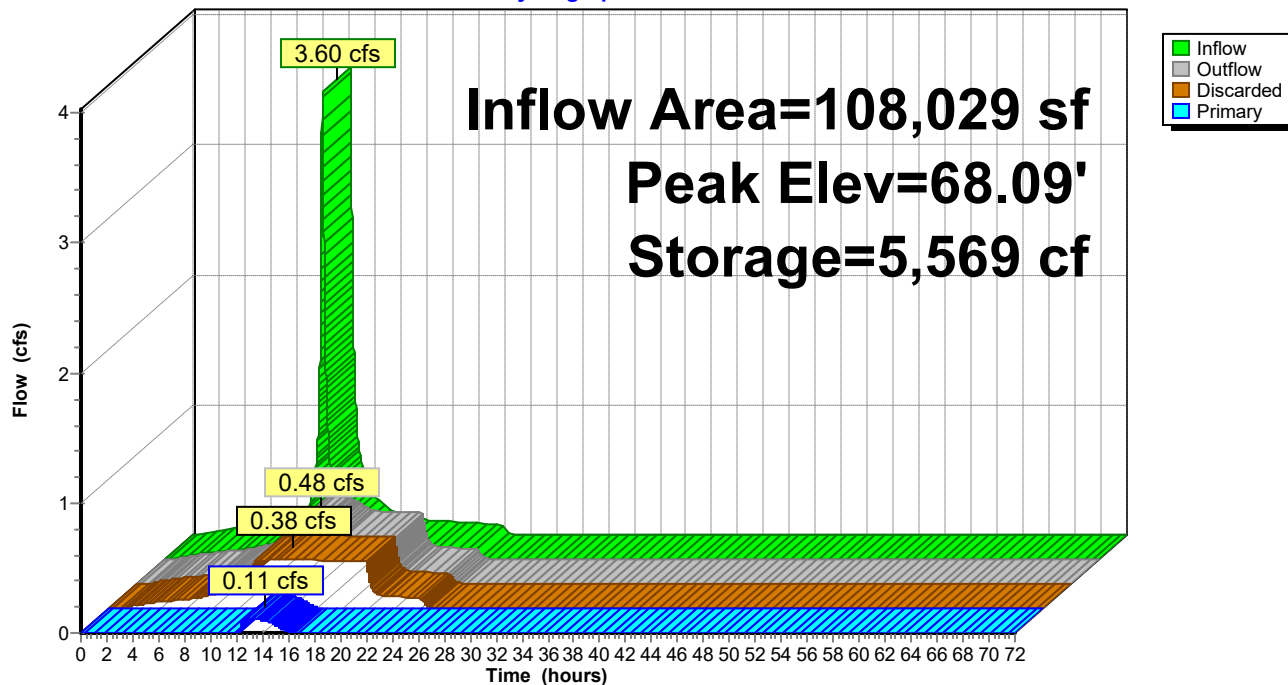
Device	Routing	Invert	Outlet Devices
#1	Primary	67.65'	Reg-U-Flo CH 3.0-in
#2	Primary	70.75'	24.0" x 24.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#3	Discarded	67.00'	3.100 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.38 cfs @ 13.18 hrs HW=68.09' (Free Discharge)
 ↑ **3=Exfiltration** (Exfiltration Controls 0.38 cfs)

Primary OutFlow Max=0.11 cfs @ 13.18 hrs HW=68.09' (Free Discharge)
 ↑ **1=Reg-U-Flo CH 3.0-in** (Custom Controls 0.11 cfs)
 ↑ **2=Grate** (Controls 0.00 cfs)

Pond P-B: Basin B

Hydrograph



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Hydrograph for Pond P-B: Basin B

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	67.00	0.00	0.00	0.00
2.00	0.03	22	67.00	0.02	0.02	0.00
4.00	0.06	48	67.01	0.05	0.05	0.00
6.00	0.07	65	67.01	0.07	0.07	0.00
8.00	0.11	100	67.02	0.11	0.11	0.00
10.00	0.20	172	67.03	0.19	0.19	0.00
12.00	1.99	1,592	67.32	0.36	0.36	0.00
14.00	0.29	5,229	68.02	0.48	0.38	0.10
16.00	0.17	3,681	67.72	0.38	0.37	0.01
18.00	0.12	2,056	67.41	0.37	0.37	0.00
20.00	0.10	242	67.05	0.26	0.26	0.00
22.00	0.09	83	67.02	0.09	0.09	0.00
24.00	0.07	71	67.01	0.08	0.08	0.00
26.00	0.00	0	67.00	0.00	0.00	0.00
28.00	0.00	0	67.00	0.00	0.00	0.00
30.00	0.00	0	67.00	0.00	0.00	0.00
32.00	0.00	0	67.00	0.00	0.00	0.00
34.00	0.00	0	67.00	0.00	0.00	0.00
36.00	0.00	0	67.00	0.00	0.00	0.00
38.00	0.00	0	67.00	0.00	0.00	0.00
40.00	0.00	0	67.00	0.00	0.00	0.00
42.00	0.00	0	67.00	0.00	0.00	0.00
44.00	0.00	0	67.00	0.00	0.00	0.00
46.00	0.00	0	67.00	0.00	0.00	0.00
48.00	0.00	0	67.00	0.00	0.00	0.00
50.00	0.00	0	67.00	0.00	0.00	0.00
52.00	0.00	0	67.00	0.00	0.00	0.00
54.00	0.00	0	67.00	0.00	0.00	0.00
56.00	0.00	0	67.00	0.00	0.00	0.00
58.00	0.00	0	67.00	0.00	0.00	0.00
60.00	0.00	0	67.00	0.00	0.00	0.00
62.00	0.00	0	67.00	0.00	0.00	0.00
64.00	0.00	0	67.00	0.00	0.00	0.00
66.00	0.00	0	67.00	0.00	0.00	0.00
68.00	0.00	0	67.00	0.00	0.00	0.00
70.00	0.00	0	67.00	0.00	0.00	0.00
72.00	0.00	0	67.00	0.00	0.00	0.00

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Summary for Pond P-PP: Porous Pavement (Typical)

Inflow Area = 52,000 sf, 25.00% Impervious, Inflow Depth = 5.14" for 10 YR event
 Inflow = 4.99 cfs @ 12.14 hrs, Volume= 22,285 cf
 Outflow = 1.24 cfs @ 12.58 hrs, Volume= 22,285 cf, Atten= 75%, Lag= 26.3 min
 Discarded = 1.24 cfs @ 12.58 hrs, Volume= 22,285 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 70.87' @ 12.58 hrs Surf.Area= 13,000 sf Storage= 4,538 cf

Plug-Flow detention time= 20.3 min calculated for 22,285 cf (100% of inflow)
 Center-of-Mass det. time= 20.3 min (772.0 - 751.7)

Volume	Invert	Avail.Storage	Storage Description
#1	70.00'	10,400 cf	20.00'W x 50.00'L x 2.00'H Stone Bed x 13 26,000 cf Overall x 40.0% Voids
#2	72.00'	975 cf	20.00'W x 50.00'L x 0.50'H Pavement x 13 -Impervious 6,500 cf Overall x 15.0% Voids
		11,375 cf	Total Available Storage

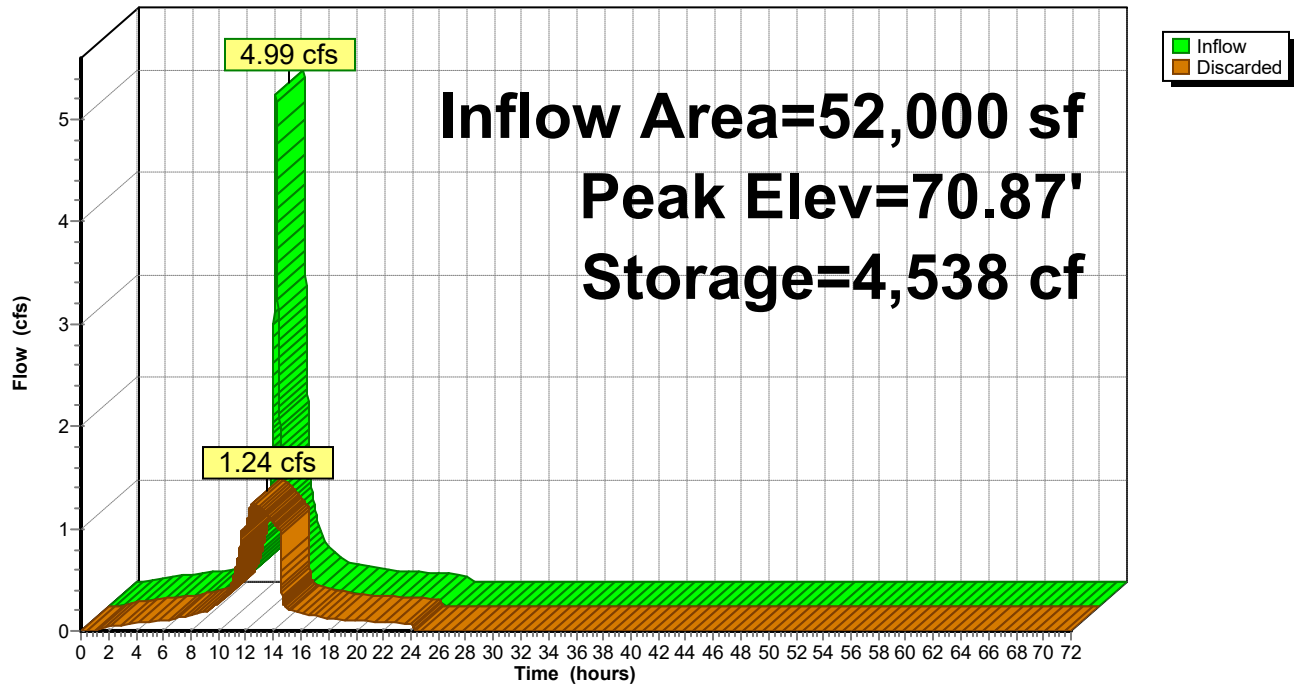
Device	Routing	Invert	Outlet Devices
#1	Discarded	70.00'	3.200 in/hr Exfiltration over Horizontal area Conductivity to Groundwater Elevation = 67.00'

Discarded OutFlow Max=1.24 cfs @ 12.58 hrs HW=70.87' (Free Discharge)

↑ **1=Exfiltration** (Controls 1.24 cfs)

Pond P-PP: Porous Pavement (Typical)

Hydrograph



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Wilbur Avenue Subdivision, Manchester, NJ

NOAA 24-hr D 10 YR Rainfall=5.38"

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Hydrograph for Pond P-PP: Porous Pavement (Typical)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Discarded (cfs)
0.00	0.00	0	70.00	0.00
2.00	0.04	5	70.00	0.04
4.00	0.08	10	70.00	0.08
6.00	0.10	13	70.00	0.10
8.00	0.16	21	70.00	0.16
10.00	0.28	37	70.01	0.28
12.00	2.76	857	70.16	1.02
14.00	0.32	1,529	70.29	1.06
16.00	0.18	24	70.00	0.18
18.00	0.12	16	70.00	0.12
20.00	0.10	13	70.00	0.10
22.00	0.09	12	70.00	0.09
24.00	0.07	10	70.00	0.07
26.00	0.00	0	70.00	0.00
28.00	0.00	0	70.00	0.00
30.00	0.00	0	70.00	0.00
32.00	0.00	0	70.00	0.00
34.00	0.00	0	70.00	0.00
36.00	0.00	0	70.00	0.00
38.00	0.00	0	70.00	0.00
40.00	0.00	0	70.00	0.00
42.00	0.00	0	70.00	0.00
44.00	0.00	0	70.00	0.00
46.00	0.00	0	70.00	0.00
48.00	0.00	0	70.00	0.00
50.00	0.00	0	70.00	0.00
52.00	0.00	0	70.00	0.00
54.00	0.00	0	70.00	0.00
56.00	0.00	0	70.00	0.00
58.00	0.00	0	70.00	0.00
60.00	0.00	0	70.00	0.00
62.00	0.00	0	70.00	0.00
64.00	0.00	0	70.00	0.00
66.00	0.00	0	70.00	0.00
68.00	0.00	0	70.00	0.00
70.00	0.00	0	70.00	0.00
72.00	0.00	0	70.00	0.00

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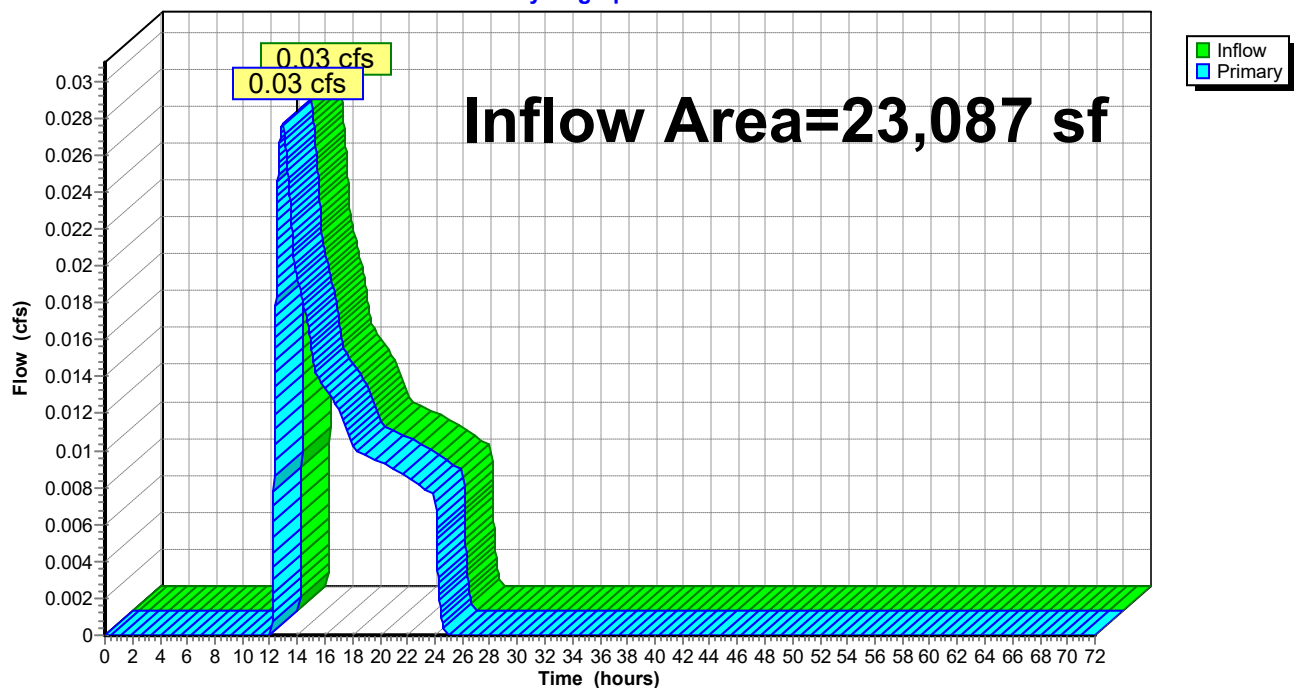
Summary for Link 1AL: POA 1A (Wilbur W)

Inflow Area = 23,087 sf, 0.00% Impervious, Inflow Depth = 0.28" for 10 YR event
Inflow = 0.03 cfs @ 12.92 hrs, Volume= 545 cf
Primary = 0.03 cfs @ 12.92 hrs, Volume= 545 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 1L

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 1AL: POA 1A (Wilbur W)

Hydrograph



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Hydrograph for Link 1AL: POA 1A (Wilbur W)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	63.00	0.00	0.00	0.00
13.00	0.03	0.00	0.03	64.00	0.00	0.00	0.00
14.00	0.02	0.00	0.02	65.00	0.00	0.00	0.00
15.00	0.02	0.00	0.02	66.00	0.00	0.00	0.00
16.00	0.01	0.00	0.01	67.00	0.00	0.00	0.00
17.00	0.01	0.00	0.01	68.00	0.00	0.00	0.00
18.00	0.01	0.00	0.01	69.00	0.00	0.00	0.00
19.00	0.01	0.00	0.01	70.00	0.00	0.00	0.00
20.00	0.01	0.00	0.01	71.00	0.00	0.00	0.00
21.00	0.01	0.00	0.01	72.00	0.00	0.00	0.00
22.00	0.01	0.00	0.01				
23.00	0.01	0.00	0.01				
24.00	0.01	0.00	0.01				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

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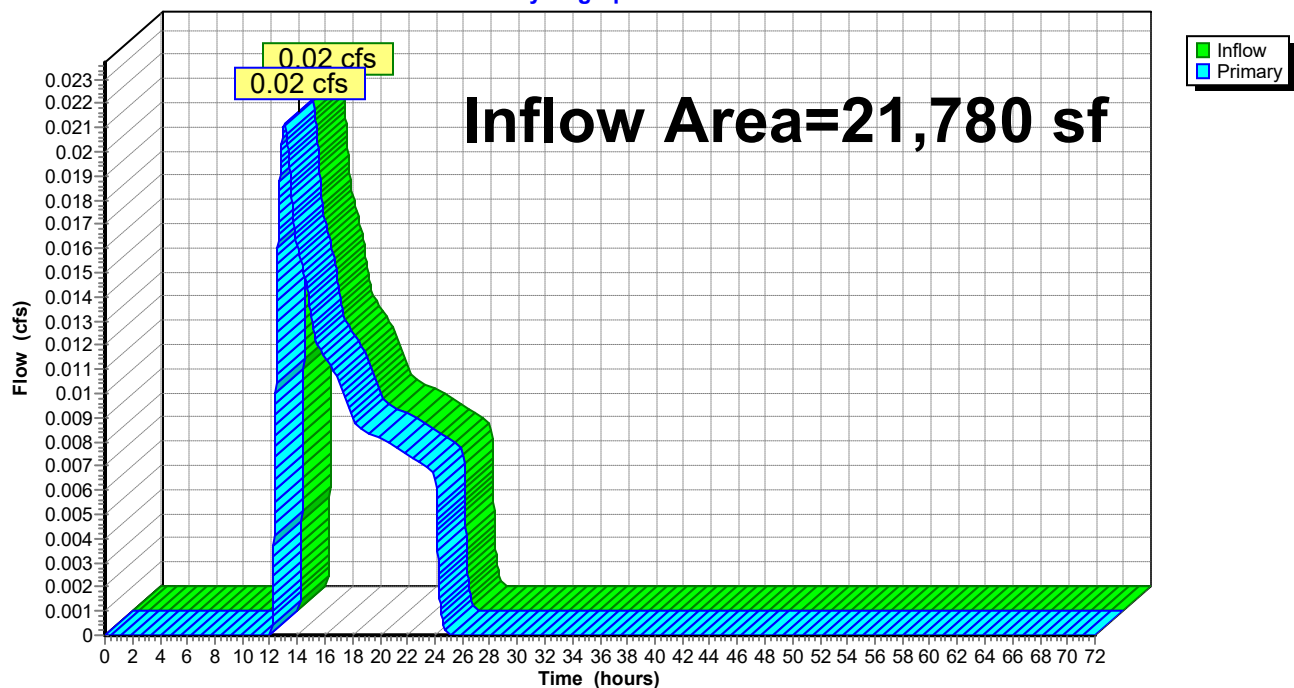
Summary for Link 1BL: POA-1B (Wilbur E)

Inflow Area = 21,780 sf, 0.00% Impervious, Inflow Depth = 0.25" for 10 YR event
Inflow = 0.02 cfs @ 13.04 hrs, Volume= 455 cf
Primary = 0.02 cfs @ 13.04 hrs, Volume= 455 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 1L

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 1BL: POA-1B (Wilbur E)

Hydrograph



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Hydrograph for Link 1BL: POA-1B (Wilbur E)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	63.00	0.00	0.00	0.00
13.00	0.02	0.00	0.02	64.00	0.00	0.00	0.00
14.00	0.02	0.00	0.02	65.00	0.00	0.00	0.00
15.00	0.01	0.00	0.01	66.00	0.00	0.00	0.00
16.00	0.01	0.00	0.01	67.00	0.00	0.00	0.00
17.00	0.01	0.00	0.01	68.00	0.00	0.00	0.00
18.00	0.01	0.00	0.01	69.00	0.00	0.00	0.00
19.00	0.01	0.00	0.01	70.00	0.00	0.00	0.00
20.00	0.01	0.00	0.01	71.00	0.00	0.00	0.00
21.00	0.01	0.00	0.01	72.00	0.00	0.00	0.00
22.00	0.01	0.00	0.01				
23.00	0.01	0.00	0.01				
24.00	0.01	0.00	0.01				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

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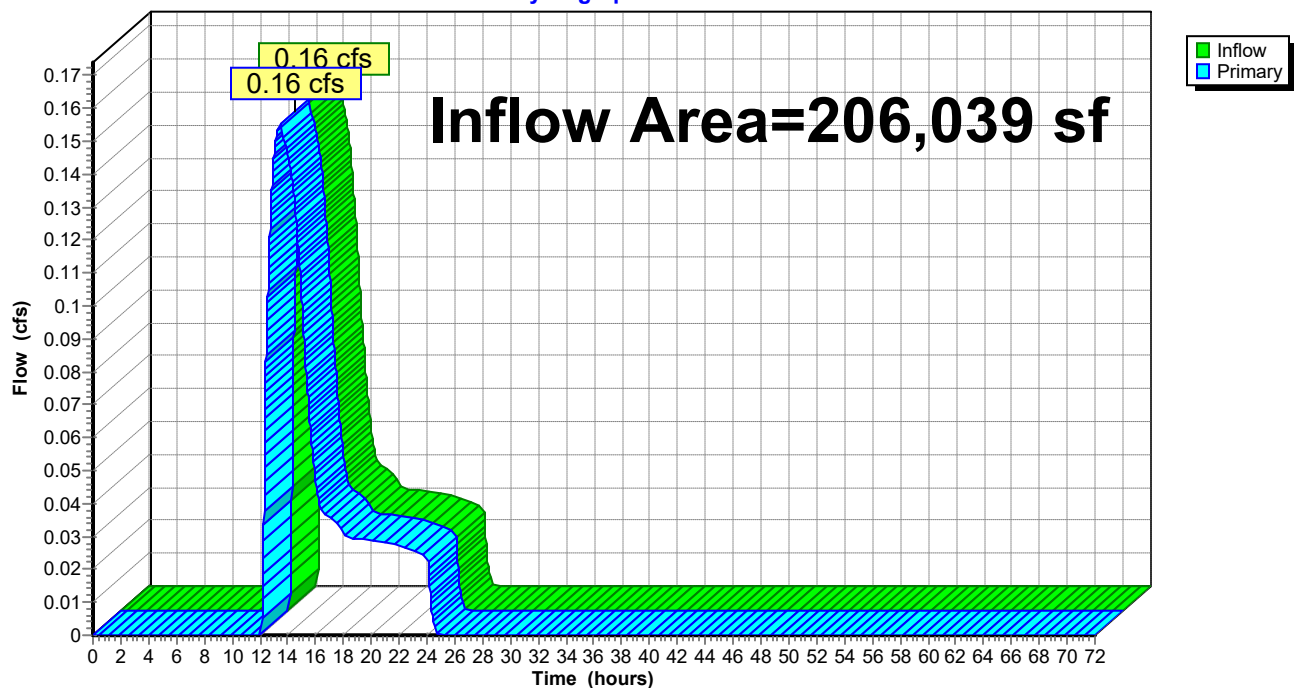
Summary for Link 2L: POA 2 (Developed N)

Inflow Area = 206,039 sf, 18.18% Impervious, Inflow Depth = 0.14" for 10 YR event
Inflow = 0.16 cfs @ 13.45 hrs, Volume= 2,429 cf
Primary = 0.16 cfs @ 13.45 hrs, Volume= 2,429 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 1L

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 2L: POA 2 (Developed N)

Hydrograph



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Hydrograph for Link 2L: POA 2 (Developed N)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	63.00	0.00	0.00	0.00
13.00	0.15	0.00	0.15	64.00	0.00	0.00	0.00
14.00	0.15	0.00	0.15	65.00	0.00	0.00	0.00
15.00	0.10	0.00	0.10	66.00	0.00	0.00	0.00
16.00	0.05	0.00	0.05	67.00	0.00	0.00	0.00
17.00	0.04	0.00	0.04	68.00	0.00	0.00	0.00
18.00	0.03	0.00	0.03	69.00	0.00	0.00	0.00
19.00	0.03	0.00	0.03	70.00	0.00	0.00	0.00
20.00	0.03	0.00	0.03	71.00	0.00	0.00	0.00
21.00	0.03	0.00	0.03	72.00	0.00	0.00	0.00
22.00	0.03	0.00	0.03				
23.00	0.03	0.00	0.03				
24.00	0.02	0.00	0.02				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

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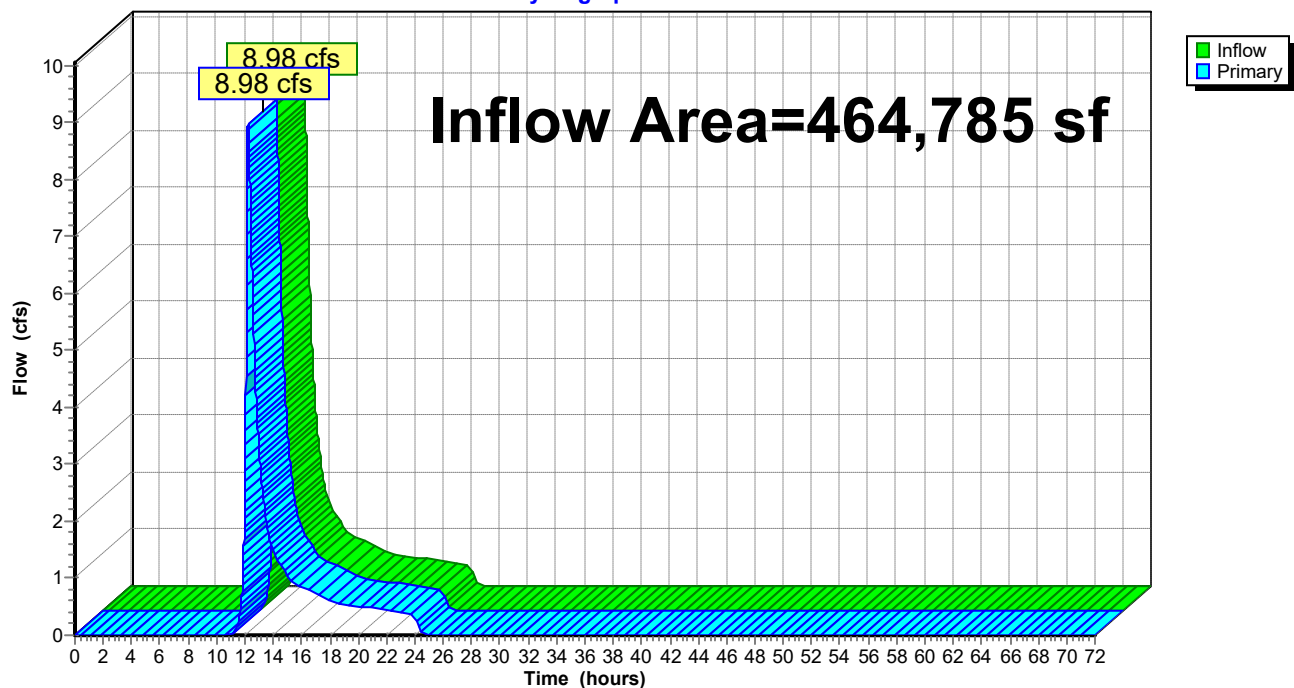
Summary for Link 3L: POA-3 (Undeveloped N)

Inflow Area = 464,785 sf, 0.00% Impervious, Inflow Depth = 1.38" for 10 YR event
Inflow = 8.98 cfs @ 12.22 hrs, Volume= 53,587 cf
Primary = 8.98 cfs @ 12.22 hrs, Volume= 53,587 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 1L

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 3L: POA-3 (Undeveloped N)

Hydrograph



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Hydrograph for Link 3L: POA-3 (Undeveloped N)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
12.00	2.52	0.00	2.52	63.00	0.00	0.00	0.00
13.00	3.22	0.00	3.22	64.00	0.00	0.00	0.00
14.00	1.48	0.00	1.48	65.00	0.00	0.00	0.00
15.00	1.06	0.00	1.06	66.00	0.00	0.00	0.00
16.00	0.84	0.00	0.84	67.00	0.00	0.00	0.00
17.00	0.72	0.00	0.72	68.00	0.00	0.00	0.00
18.00	0.60	0.00	0.60	69.00	0.00	0.00	0.00
19.00	0.53	0.00	0.53	70.00	0.00	0.00	0.00
20.00	0.50	0.00	0.50	71.00	0.00	0.00	0.00
21.00	0.47	0.00	0.47	72.00	0.00	0.00	0.00
22.00	0.44	0.00	0.44				
23.00	0.41	0.00	0.41				
24.00	0.38	0.00	0.38				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

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Wilbur Avenue Subdivision, Manchester, NJ

NOAA 24-hr D 100 YR Rainfall=9.20"

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Summary for Subcatchment 1A: DA-P1A

Runoff = 0.51 cfs @ 12.21 hrs, Volume= 3,267 cf, Depth= 1.70"
Routed to Link 1AL : POA 1A (Wilbur W)

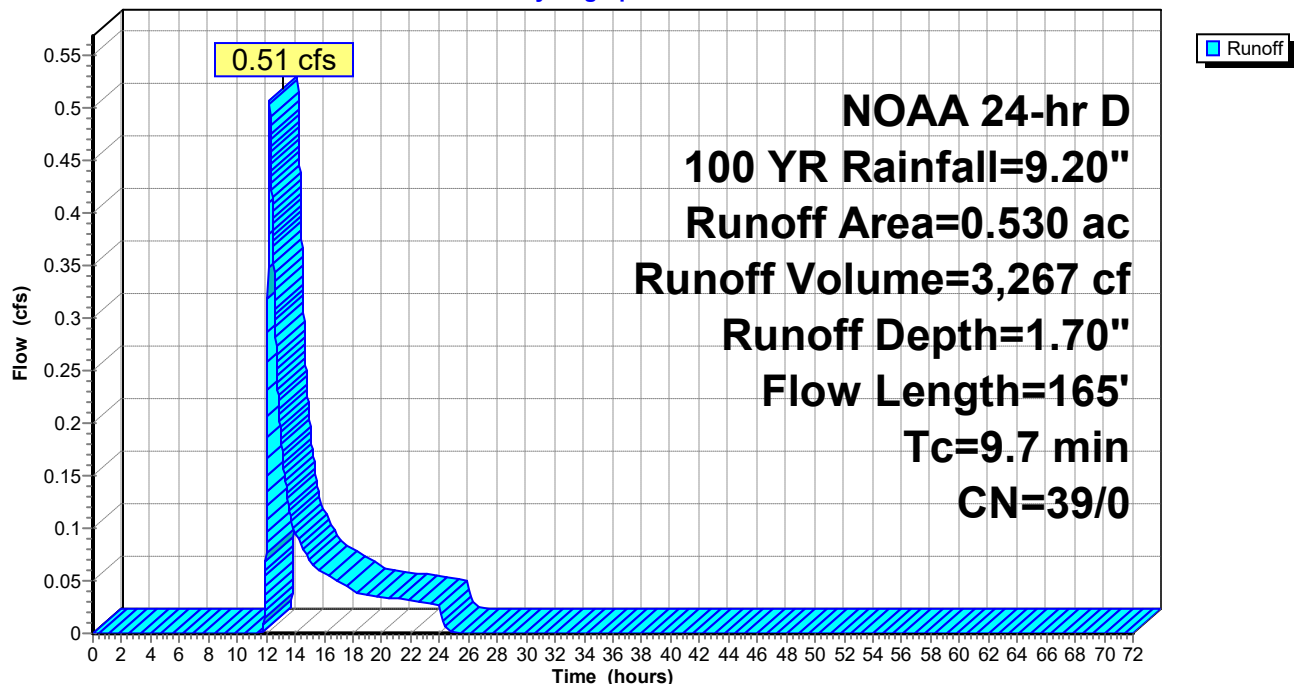
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100 YR Rainfall=9.20"

Area (ac)	CN	Description
0.530	39	>75% Grass cover, Good, HSG A
0.530	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	100	0.0270	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.42"
1.3	65	0.0150	0.86		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
9.7	165	Total			

Subcatchment 1A: DA-P1A

Hydrograph



260701_Proposed SWM 2024-06-17

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Wilbur Avenue Subdivision, Manchester, NJ

NOAA 24-hr D 100 YR Rainfall=9.20"

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Hydrograph for Subcatchment 1A: DA-P1A

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.22	0.00	0.00	0.00
4.00	0.48	0.00	0.00	0.00
6.00	0.79	0.00	0.00	0.00
8.00	1.19	0.00	0.00	0.00
10.00	1.82	0.00	0.00	0.00
12.00	4.41	0.10	0.00	0.10
14.00	7.38	0.91	0.00	0.10
16.00	8.01	1.16	0.00	0.06
18.00	8.41	1.34	0.00	0.04
20.00	8.72	1.47	0.00	0.03
22.00	8.98	1.59	0.00	0.03
24.00	9.20	1.70	0.00	0.03
26.00	9.20	1.70	0.00	0.00
28.00	9.20	1.70	0.00	0.00
30.00	9.20	1.70	0.00	0.00
32.00	9.20	1.70	0.00	0.00
34.00	9.20	1.70	0.00	0.00
36.00	9.20	1.70	0.00	0.00
38.00	9.20	1.70	0.00	0.00
40.00	9.20	1.70	0.00	0.00
42.00	9.20	1.70	0.00	0.00
44.00	9.20	1.70	0.00	0.00
46.00	9.20	1.70	0.00	0.00
48.00	9.20	1.70	0.00	0.00
50.00	9.20	1.70	0.00	0.00
52.00	9.20	1.70	0.00	0.00
54.00	9.20	1.70	0.00	0.00
56.00	9.20	1.70	0.00	0.00
58.00	9.20	1.70	0.00	0.00
60.00	9.20	1.70	0.00	0.00
62.00	9.20	1.70	0.00	0.00
64.00	9.20	1.70	0.00	0.00
66.00	9.20	1.70	0.00	0.00
68.00	9.20	1.70	0.00	0.00
70.00	9.20	1.70	0.00	0.00
72.00	9.20	1.70	0.00	0.00

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NOAA 24-hr D 100 YR Rainfall=9.20"

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Summary for Subcatchment 1B-E: P1B-E

Runoff = 0.16 cfs @ 12.22 hrs, Volume= 1,122 cf, Depth= 1.47"
Routed to Link 1BL : POA-1B (Wilbur E)

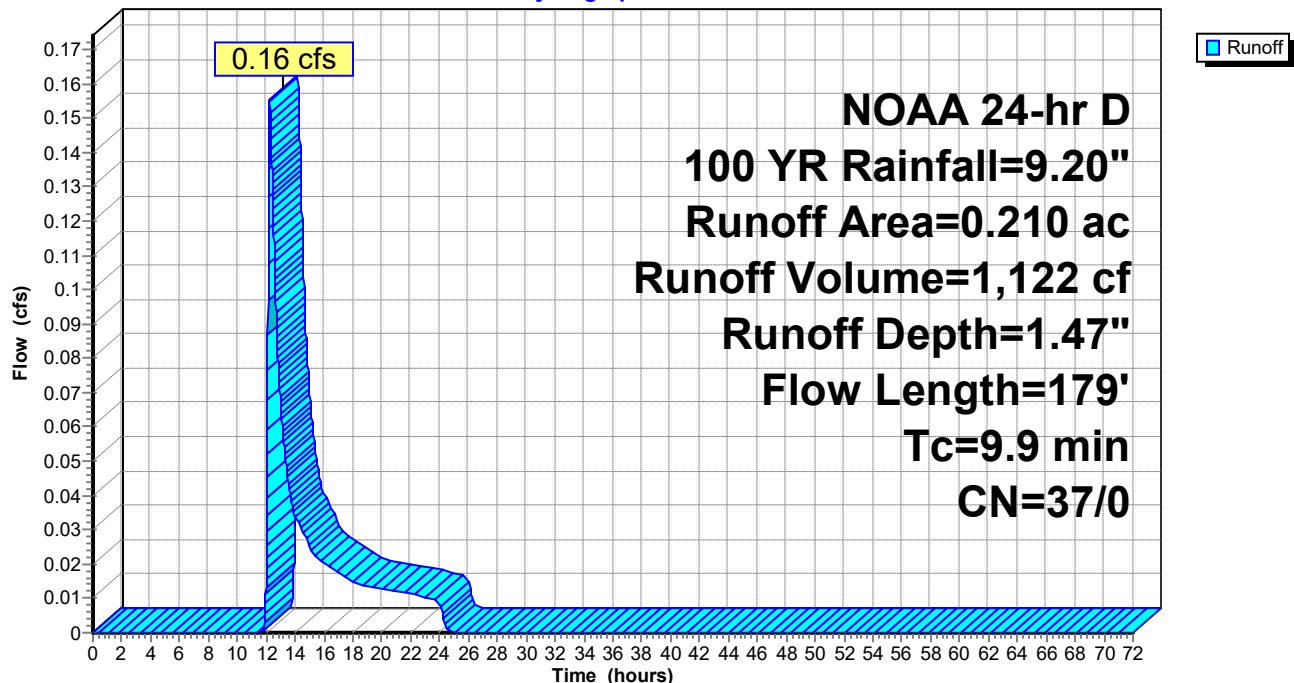
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100 YR Rainfall=9.20"

Area (ac)	CN	Description
0.160	39	>75% Grass cover, Good, HSG A
0.050	30	Meadow, non-grazed, HSG A
0.210	37	Weighted Average
0.210	37	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	99	0.0220	0.18		Sheet Flow, Grass: Short n= 0.150 P2= 3.42" Using McCuen-Spiess flow length
0.6	35	0.0220	1.04		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.3	45	0.1100	2.32		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
9.9	179	Total			

Subcatchment 1B-E: P1B-E

Hydrograph



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NOAA 24-hr D 100 YR Rainfall=9.20"

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Hydrograph for Subcatchment 1B-E: P1B-E

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.22	0.00	0.00	0.00
4.00	0.48	0.00	0.00	0.00
6.00	0.79	0.00	0.00	0.00
8.00	1.19	0.00	0.00	0.00
10.00	1.82	0.00	0.00	0.00
12.00	4.41	0.06	0.00	0.02
14.00	7.38	0.75	0.00	0.03
16.00	8.01	0.98	0.00	0.02
18.00	8.41	1.14	0.00	0.01
20.00	8.72	1.26	0.00	0.01
22.00	8.98	1.37	0.00	0.01
24.00	9.20	1.47	0.00	0.01
26.00	9.20	1.47	0.00	0.00
28.00	9.20	1.47	0.00	0.00
30.00	9.20	1.47	0.00	0.00
32.00	9.20	1.47	0.00	0.00
34.00	9.20	1.47	0.00	0.00
36.00	9.20	1.47	0.00	0.00
38.00	9.20	1.47	0.00	0.00
40.00	9.20	1.47	0.00	0.00
42.00	9.20	1.47	0.00	0.00
44.00	9.20	1.47	0.00	0.00
46.00	9.20	1.47	0.00	0.00
48.00	9.20	1.47	0.00	0.00
50.00	9.20	1.47	0.00	0.00
52.00	9.20	1.47	0.00	0.00
54.00	9.20	1.47	0.00	0.00
56.00	9.20	1.47	0.00	0.00
58.00	9.20	1.47	0.00	0.00
60.00	9.20	1.47	0.00	0.00
62.00	9.20	1.47	0.00	0.00
64.00	9.20	1.47	0.00	0.00
66.00	9.20	1.47	0.00	0.00
68.00	9.20	1.47	0.00	0.00
70.00	9.20	1.47	0.00	0.00
72.00	9.20	1.47	0.00	0.00

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NOAA 24-hr D 100 YR Rainfall=9.20"

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Summary for Subcatchment 1B-W: P1B-W

Runoff = 0.27 cfs @ 12.23 hrs, Volume= 1,787 cf, Depth= 1.70"
Routed to Link 1BL : POA-1B (Wilbur E)

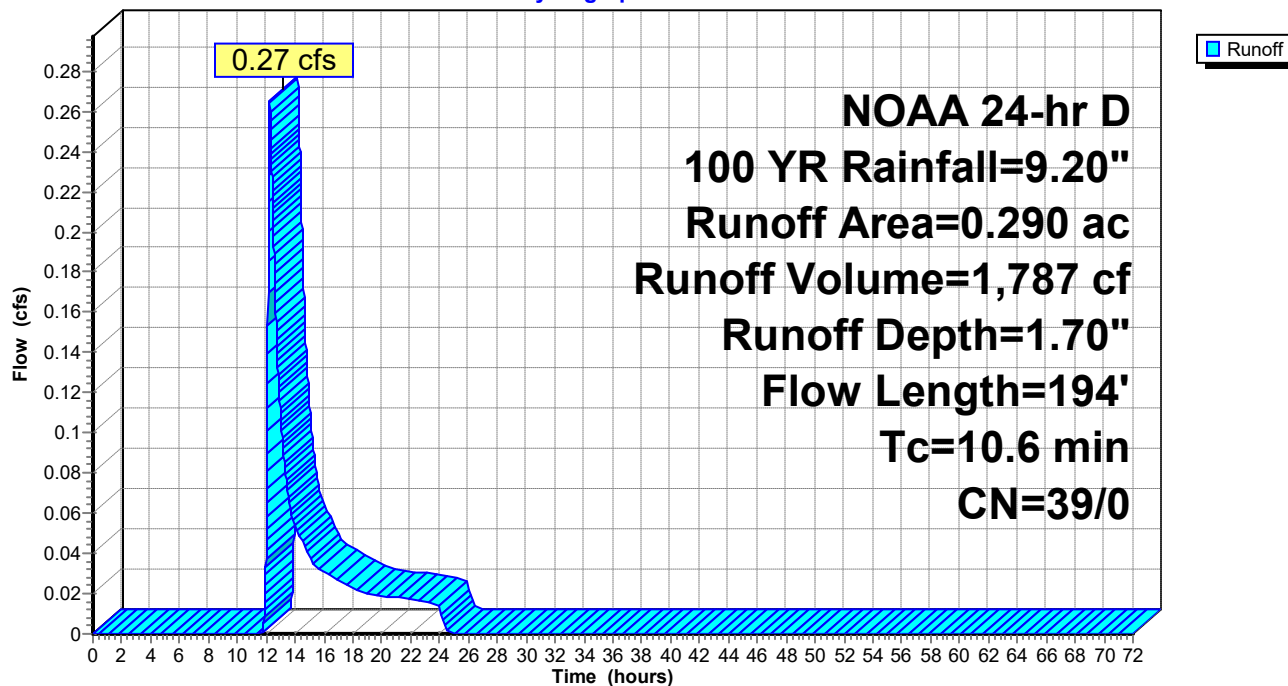
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.1
NOAA 24-hr D 100 YR Rainfall=9.20"

Area (ac)	CN	Description
0.290	39	>75% Grass cover, Good, HSG A
0.290	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	84	0.0160	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 3.42" Using McCuen-Spiess flow length
1.6	110	0.0260	1.13		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
10.6	194	Total			

Subcatchment 1B-W: P1B-W

Hydrograph



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Hydrograph for Subcatchment 1B-W: P1B-W

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.22	0.00	0.00	0.00
4.00	0.48	0.00	0.00	0.00
6.00	0.79	0.00	0.00	0.00
8.00	1.19	0.00	0.00	0.00
10.00	1.82	0.00	0.00	0.00
12.00	4.41	0.10	0.00	0.05
14.00	7.38	0.91	0.00	0.05
16.00	8.01	1.16	0.00	0.03
18.00	8.41	1.34	0.00	0.02
20.00	8.72	1.47	0.00	0.02
22.00	8.98	1.59	0.00	0.02
24.00	9.20	1.70	0.00	0.01
26.00	9.20	1.70	0.00	0.00
28.00	9.20	1.70	0.00	0.00
30.00	9.20	1.70	0.00	0.00
32.00	9.20	1.70	0.00	0.00
34.00	9.20	1.70	0.00	0.00
36.00	9.20	1.70	0.00	0.00
38.00	9.20	1.70	0.00	0.00
40.00	9.20	1.70	0.00	0.00
42.00	9.20	1.70	0.00	0.00
44.00	9.20	1.70	0.00	0.00
46.00	9.20	1.70	0.00	0.00
48.00	9.20	1.70	0.00	0.00
50.00	9.20	1.70	0.00	0.00
52.00	9.20	1.70	0.00	0.00
54.00	9.20	1.70	0.00	0.00
56.00	9.20	1.70	0.00	0.00
58.00	9.20	1.70	0.00	0.00
60.00	9.20	1.70	0.00	0.00
62.00	9.20	1.70	0.00	0.00
64.00	9.20	1.70	0.00	0.00
66.00	9.20	1.70	0.00	0.00
68.00	9.20	1.70	0.00	0.00
70.00	9.20	1.70	0.00	0.00
72.00	9.20	1.70	0.00	0.00

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NOAA 24-hr D 100 YR Rainfall=9.20"

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Summary for Subcatchment 2A: P2A

Runoff = 1.72 cfs @ 12.27 hrs, Volume= 13,067 cf, Depth= 1.70"
Routed to Pond P-A : Basin A

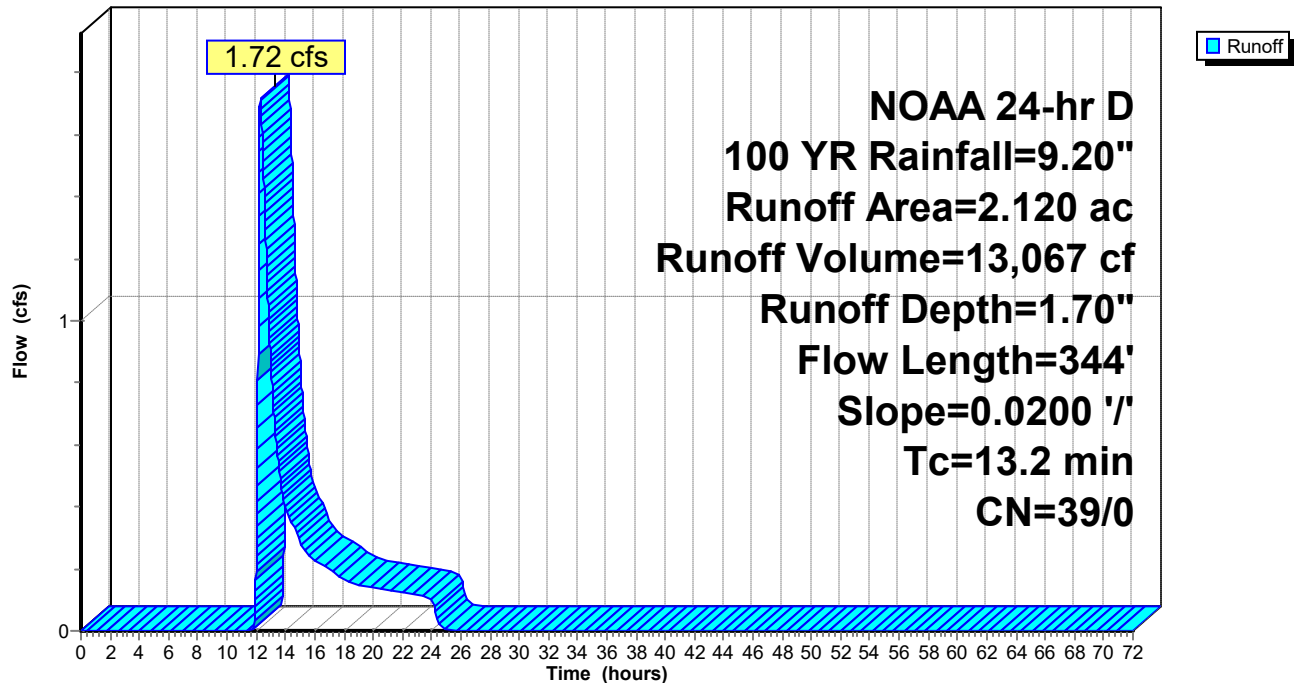
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100 YR Rainfall=9.20"

Area (ac)	CN	Description
2.120	39	>75% Grass cover, Good, HSG A
2.120	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	94	0.0200	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.42" Using McCuen-Spiess flow length
4.2	250	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
13.2	344	Total			

Subcatchment 2A: P2A

Hydrograph



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NOAA 24-hr D 100 YR Rainfall=9.20"

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Hydrograph for Subcatchment 2A: P2A

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.22	0.00	0.00	0.00
4.00	0.48	0.00	0.00	0.00
6.00	0.79	0.00	0.00	0.00
8.00	1.19	0.00	0.00	0.00
10.00	1.82	0.00	0.00	0.00
12.00	4.41	0.10	0.00	0.24
14.00	7.38	0.91	0.00	0.40
16.00	8.01	1.16	0.00	0.23
18.00	8.41	1.34	0.00	0.17
20.00	8.72	1.47	0.00	0.14
22.00	8.98	1.59	0.00	0.12
24.00	9.20	1.70	0.00	0.11
26.00	9.20	1.70	0.00	0.00
28.00	9.20	1.70	0.00	0.00
30.00	9.20	1.70	0.00	0.00
32.00	9.20	1.70	0.00	0.00
34.00	9.20	1.70	0.00	0.00
36.00	9.20	1.70	0.00	0.00
38.00	9.20	1.70	0.00	0.00
40.00	9.20	1.70	0.00	0.00
42.00	9.20	1.70	0.00	0.00
44.00	9.20	1.70	0.00	0.00
46.00	9.20	1.70	0.00	0.00
48.00	9.20	1.70	0.00	0.00
50.00	9.20	1.70	0.00	0.00
52.00	9.20	1.70	0.00	0.00
54.00	9.20	1.70	0.00	0.00
56.00	9.20	1.70	0.00	0.00
58.00	9.20	1.70	0.00	0.00
60.00	9.20	1.70	0.00	0.00
62.00	9.20	1.70	0.00	0.00
64.00	9.20	1.70	0.00	0.00
66.00	9.20	1.70	0.00	0.00
68.00	9.20	1.70	0.00	0.00
70.00	9.20	1.70	0.00	0.00
72.00	9.20	1.70	0.00	0.00

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NOAA 24-hr D 100 YR Rainfall=9.20"

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Summary for Subcatchment 2B: P2B

Runoff = 1.20 cfs @ 12.25 hrs, Volume= 8,567 cf, Depth= 1.70"
Routed to Pond P-B : Basin B

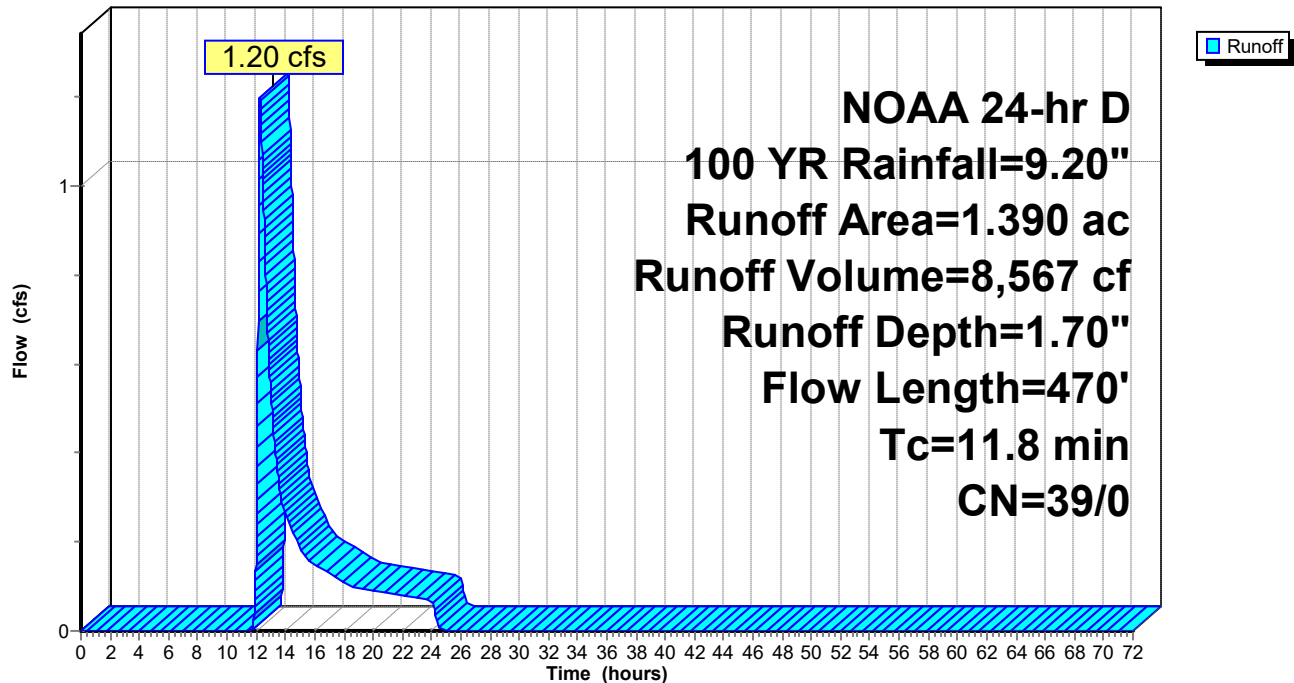
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.25 hrs
NOAA 24-hr D 100 YR Rainfall=9.20"

Area (ac)	CN	Description
1.390	39	>75% Grass cover, Good, HSG A
1.390	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.0310	0.21		Sheet Flow, Grass: Short n= 0.150 P2= 3.42"
3.4	205	0.0210	1.01		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.4	165	0.0100	6.22	7.63	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
11.8	470	Total			

Subcatchment 2B: P2B

Hydrograph



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Hydrograph for Subcatchment 2B: P2B

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.22	0.00	0.00	0.00
4.00	0.48	0.00	0.00	0.00
6.00	0.79	0.00	0.00	0.00
8.00	1.19	0.00	0.00	0.00
10.00	1.82	0.00	0.00	0.00
12.00	4.41	0.10	0.00	0.19
14.00	7.38	0.91	0.00	0.26
16.00	8.01	1.16	0.00	0.15
18.00	8.41	1.34	0.00	0.11
20.00	8.72	1.47	0.00	0.09
22.00	8.98	1.59	0.00	0.08
24.00	9.20	1.70	0.00	0.07
26.00	9.20	1.70	0.00	0.00
28.00	9.20	1.70	0.00	0.00
30.00	9.20	1.70	0.00	0.00
32.00	9.20	1.70	0.00	0.00
34.00	9.20	1.70	0.00	0.00
36.00	9.20	1.70	0.00	0.00
38.00	9.20	1.70	0.00	0.00
40.00	9.20	1.70	0.00	0.00
42.00	9.20	1.70	0.00	0.00
44.00	9.20	1.70	0.00	0.00
46.00	9.20	1.70	0.00	0.00
48.00	9.20	1.70	0.00	0.00
50.00	9.20	1.70	0.00	0.00
52.00	9.20	1.70	0.00	0.00
54.00	9.20	1.70	0.00	0.00
56.00	9.20	1.70	0.00	0.00
58.00	9.20	1.70	0.00	0.00
60.00	9.20	1.70	0.00	0.00
62.00	9.20	1.70	0.00	0.00
64.00	9.20	1.70	0.00	0.00
66.00	9.20	1.70	0.00	0.00
68.00	9.20	1.70	0.00	0.00
70.00	9.20	1.70	0.00	0.00
72.00	9.20	1.70	0.00	0.00

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NOAA 24-hr D 100 YR Rainfall=9.20"

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Summary for Subcatchment 2C: P2C

Runoff = 1.35 cfs @ 12.27 hrs, Volume= 11,110 cf, Depth= 1.36"
Routed to Link 2L : POA 2 (Developed N)

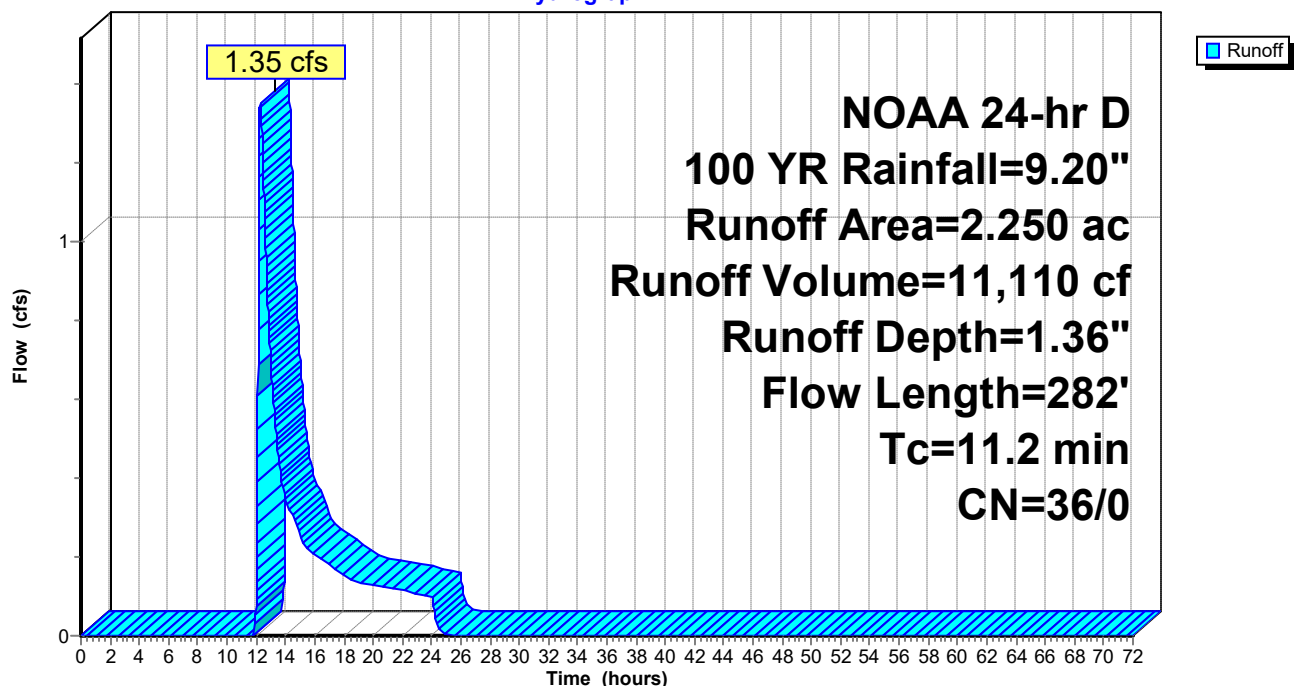
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100 YR Rainfall=9.20"

Area (ac)	CN	Description
1.390	39	>75% Grass cover, Good, HSG A
0.860	30	Meadow, non-grazed, HSG A
2.250	36	Weighted Average
2.250	36	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	87	0.0170	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 3.42" Using McCuen-Spiess flow length
1.8	135	0.0320	1.25		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.4	60	0.2200	2.35		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
11.2	282	Total			

Subcatchment 2C: P2C

Hydrograph



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NOAA 24-hr D 100 YR Rainfall=9.20"

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Hydrograph for Subcatchment 2C: P2C

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.22	0.00	0.00	0.00
4.00	0.48	0.00	0.00	0.00
6.00	0.79	0.00	0.00	0.00
8.00	1.19	0.00	0.00	0.00
10.00	1.82	0.00	0.00	0.00
12.00	4.41	0.04	0.00	0.09
14.00	7.38	0.68	0.00	0.35
16.00	8.01	0.89	0.00	0.21
18.00	8.41	1.04	0.00	0.15
20.00	8.72	1.16	0.00	0.13
22.00	8.98	1.27	0.00	0.12
24.00	9.20	1.36	0.00	0.10
26.00	9.20	1.36	0.00	0.00
28.00	9.20	1.36	0.00	0.00
30.00	9.20	1.36	0.00	0.00
32.00	9.20	1.36	0.00	0.00
34.00	9.20	1.36	0.00	0.00
36.00	9.20	1.36	0.00	0.00
38.00	9.20	1.36	0.00	0.00
40.00	9.20	1.36	0.00	0.00
42.00	9.20	1.36	0.00	0.00
44.00	9.20	1.36	0.00	0.00
46.00	9.20	1.36	0.00	0.00
48.00	9.20	1.36	0.00	0.00
50.00	9.20	1.36	0.00	0.00
52.00	9.20	1.36	0.00	0.00
54.00	9.20	1.36	0.00	0.00
56.00	9.20	1.36	0.00	0.00
58.00	9.20	1.36	0.00	0.00
60.00	9.20	1.36	0.00	0.00
62.00	9.20	1.36	0.00	0.00
64.00	9.20	1.36	0.00	0.00
66.00	9.20	1.36	0.00	0.00
68.00	9.20	1.36	0.00	0.00
70.00	9.20	1.36	0.00	0.00
72.00	9.20	1.36	0.00	0.00

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Wilbur Avenue Subdivision, Manchester, NJ

NOAA 24-hr D 100 YR Rainfall=9.20"

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Summary for Subcatchment 2RD-N: P2RD-N

Runoff = 5.77 cfs @ 12.14 hrs, Volume= 26,276 cf, Depth= 7.46"
Routed to Pond P-B : Basin B

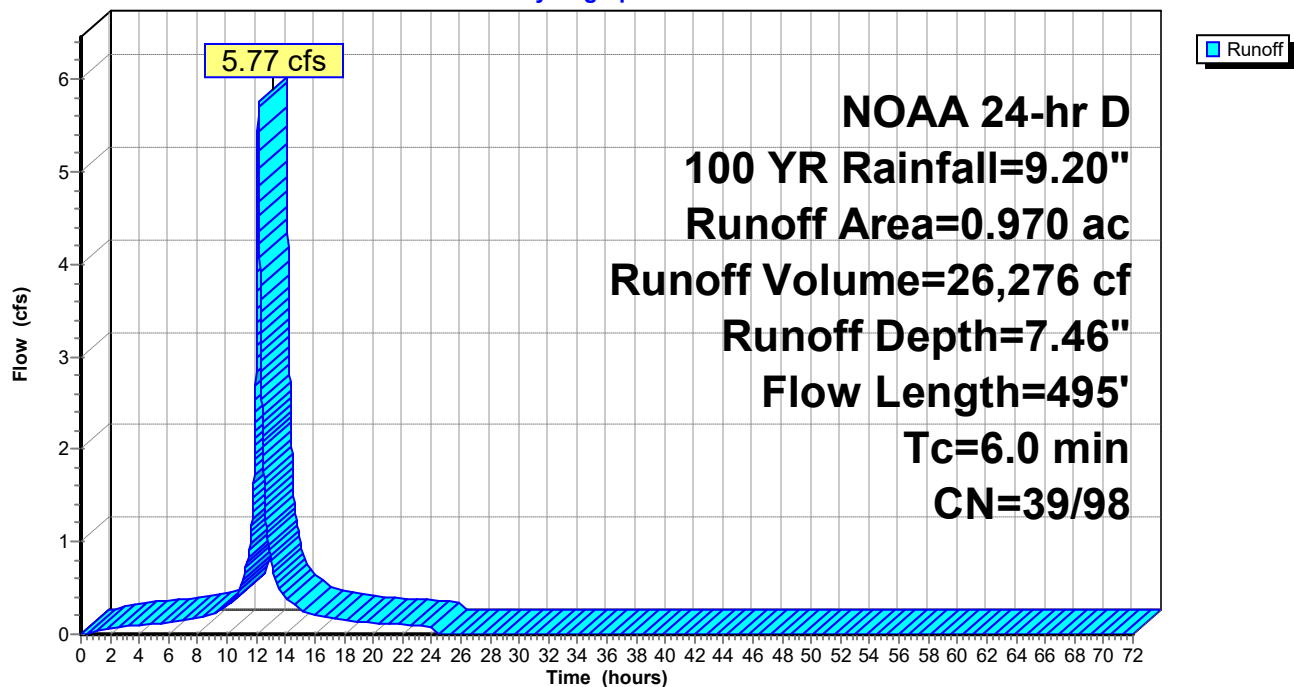
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.10 hrs
NOAA 24-hr D 100 YR Rainfall=9.20"

Area (ac)	CN	Description
0.770	98	Paved parking, HSG A
0.200	39	>75% Grass cover, Good, HSG A
0.970	86	Weighted Average
0.200	39	20.62% Pervious Area
0.770	98	79.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0210	1.05		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.42"
1.8	310	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.4	165	0.0100	6.22	7.63	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
2.5	495	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 2RD-N: P2RD-N

Hydrograph



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Hydrograph for Subcatchment 2RD-N: P2RD-N

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.22	0.00	0.08	0.06
4.00	0.48	0.00	0.30	0.10
6.00	0.79	0.00	0.58	0.12
8.00	1.19	0.00	0.98	0.18
10.00	1.82	0.00	1.60	0.32
12.00	4.41	0.10	4.17	3.12
14.00	7.38	0.91	7.14	0.39
16.00	8.01	1.16	7.77	0.22
18.00	8.41	1.34	8.17	0.15
20.00	8.72	1.47	8.48	0.12
22.00	8.98	1.59	8.74	0.11
24.00	9.20	1.70	8.96	0.09
26.00	9.20	1.70	8.96	0.00
28.00	9.20	1.70	8.96	0.00
30.00	9.20	1.70	8.96	0.00
32.00	9.20	1.70	8.96	0.00
34.00	9.20	1.70	8.96	0.00
36.00	9.20	1.70	8.96	0.00
38.00	9.20	1.70	8.96	0.00
40.00	9.20	1.70	8.96	0.00
42.00	9.20	1.70	8.96	0.00
44.00	9.20	1.70	8.96	0.00
46.00	9.20	1.70	8.96	0.00
48.00	9.20	1.70	8.96	0.00
50.00	9.20	1.70	8.96	0.00
52.00	9.20	1.70	8.96	0.00
54.00	9.20	1.70	8.96	0.00
56.00	9.20	1.70	8.96	0.00
58.00	9.20	1.70	8.96	0.00
60.00	9.20	1.70	8.96	0.00
62.00	9.20	1.70	8.96	0.00
64.00	9.20	1.70	8.96	0.00
66.00	9.20	1.70	8.96	0.00
68.00	9.20	1.70	8.96	0.00
70.00	9.20	1.70	8.96	0.00
72.00	9.20	1.70	8.96	0.00

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NOAA 24-hr D 100 YR Rainfall=9.20"

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Summary for Subcatchment 2RD-S: P2RD-S

Runoff = 0.68 cfs @ 12.14 hrs, Volume= 3,112 cf, Depth= 7.14"
Routed to Pond P-B : Basin B

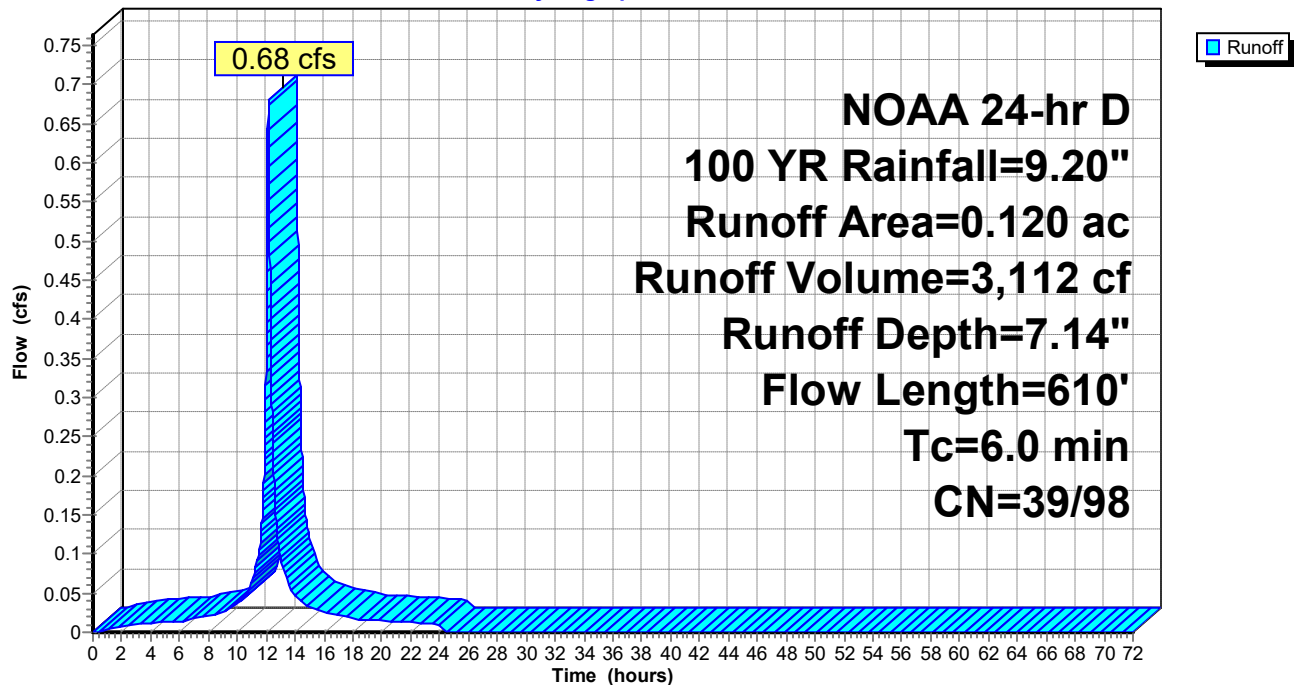
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100 YR Rainfall=9.20"

Area (ac)	CN	Description
0.090	98	Paved parking, HSG A
0.030	39	>75% Grass cover, Good, HSG A
0.120	83	Weighted Average
0.030	39	25.00% Pervious Area
0.090	98	75.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	1.03		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.42"
0.6	85	0.0160	2.57		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.6	505	0.0075	5.39	6.61	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
2.5	610	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 2RD-S: P2RD-S

Hydrograph



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Hydrograph for Subcatchment 2RD-S: P2RD-S

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.22	0.00	0.08	0.01
4.00	0.48	0.00	0.30	0.01
6.00	0.79	0.00	0.58	0.01
8.00	1.19	0.00	0.98	0.02
10.00	1.82	0.00	1.60	0.04
12.00	4.41	0.10	4.17	0.37
14.00	7.38	0.91	7.14	0.05
16.00	8.01	1.16	7.77	0.03
18.00	8.41	1.34	8.17	0.02
20.00	8.72	1.47	8.48	0.01
22.00	8.98	1.59	8.74	0.01
24.00	9.20	1.70	8.96	0.01
26.00	9.20	1.70	8.96	0.00
28.00	9.20	1.70	8.96	0.00
30.00	9.20	1.70	8.96	0.00
32.00	9.20	1.70	8.96	0.00
34.00	9.20	1.70	8.96	0.00
36.00	9.20	1.70	8.96	0.00
38.00	9.20	1.70	8.96	0.00
40.00	9.20	1.70	8.96	0.00
42.00	9.20	1.70	8.96	0.00
44.00	9.20	1.70	8.96	0.00
46.00	9.20	1.70	8.96	0.00
48.00	9.20	1.70	8.96	0.00
50.00	9.20	1.70	8.96	0.00
52.00	9.20	1.70	8.96	0.00
54.00	9.20	1.70	8.96	0.00
56.00	9.20	1.70	8.96	0.00
58.00	9.20	1.70	8.96	0.00
60.00	9.20	1.70	8.96	0.00
62.00	9.20	1.70	8.96	0.00
64.00	9.20	1.70	8.96	0.00
66.00	9.20	1.70	8.96	0.00
68.00	9.20	1.70	8.96	0.00
70.00	9.20	1.70	8.96	0.00
72.00	9.20	1.70	8.96	0.00

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Summary for Subcatchment 3: DA-E4

Runoff = 29.42 cfs @ 12.22 hrs, Volume= 155,230 cf, Depth= 4.01"
Routed to Link 3L : POA-3 (Undeveloped N)

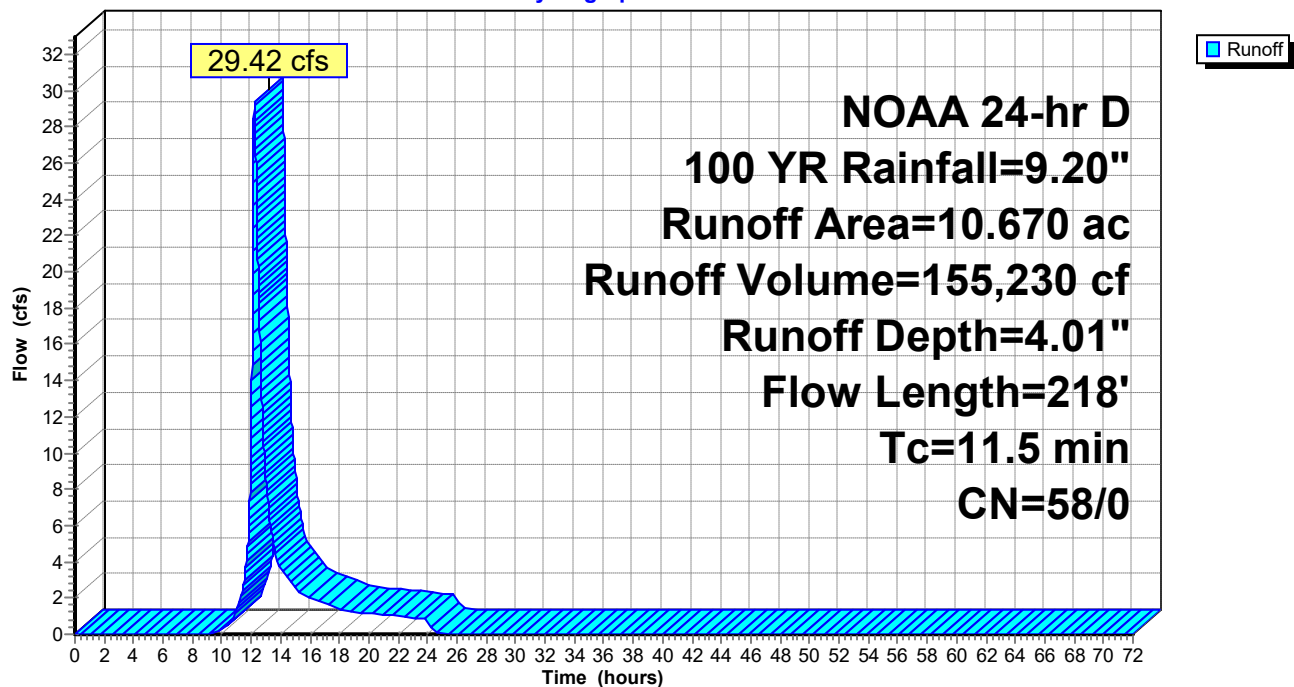
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100 YR Rainfall=9.20"

Area (ac)	CN	Description
6.010	77	Woods, Good, HSG D
2.590	30	Woods, Good, HSG A
2.070	39	>75% Grass cover, Good, HSG A
10.670	58	Weighted Average
10.670	58	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	35	0.0071	0.06		Sheet Flow, Grass: Dense n= 0.240 P2= 3.42" Using McCuen-Spiess flow length
1.9	148	0.0700	1.32		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.6	35	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
11.5	218	Total			

Subcatchment 3: DA-E4

Hydrograph



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Hydrograph for Subcatchment 3: DA-E4

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.22	0.00	0.00	0.00
4.00	0.48	0.00	0.00	0.00
6.00	0.79	0.00	0.00	0.00
8.00	1.19	0.00	0.00	0.00
10.00	1.82	0.02	0.00	0.29
12.00	4.41	0.86	0.00	11.34
14.00	7.38	2.67	0.00	3.66
16.00	8.01	3.12	0.00	2.00
18.00	8.41	3.42	0.00	1.39
20.00	8.72	3.64	0.00	1.16
22.00	8.98	3.84	0.00	1.01
24.00	9.20	4.01	0.00	0.85
26.00	9.20	4.01	0.00	0.00
28.00	9.20	4.01	0.00	0.00
30.00	9.20	4.01	0.00	0.00
32.00	9.20	4.01	0.00	0.00
34.00	9.20	4.01	0.00	0.00
36.00	9.20	4.01	0.00	0.00
38.00	9.20	4.01	0.00	0.00
40.00	9.20	4.01	0.00	0.00
42.00	9.20	4.01	0.00	0.00
44.00	9.20	4.01	0.00	0.00
46.00	9.20	4.01	0.00	0.00
48.00	9.20	4.01	0.00	0.00
50.00	9.20	4.01	0.00	0.00
52.00	9.20	4.01	0.00	0.00
54.00	9.20	4.01	0.00	0.00
56.00	9.20	4.01	0.00	0.00
58.00	9.20	4.01	0.00	0.00
60.00	9.20	4.01	0.00	0.00
62.00	9.20	4.01	0.00	0.00
64.00	9.20	4.01	0.00	0.00
66.00	9.20	4.01	0.00	0.00
68.00	9.20	4.01	0.00	0.00
70.00	9.20	4.01	0.00	0.00
72.00	9.20	4.01	0.00	0.00

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Summary for Subcatchment TS: Typical House/Driveway System

Runoff = 8.56 cfs @ 12.14 hrs, Volume= 38,825 cf, Depth= 8.96"
Routed to Pond P-PP : Porous Pavement (Typical)

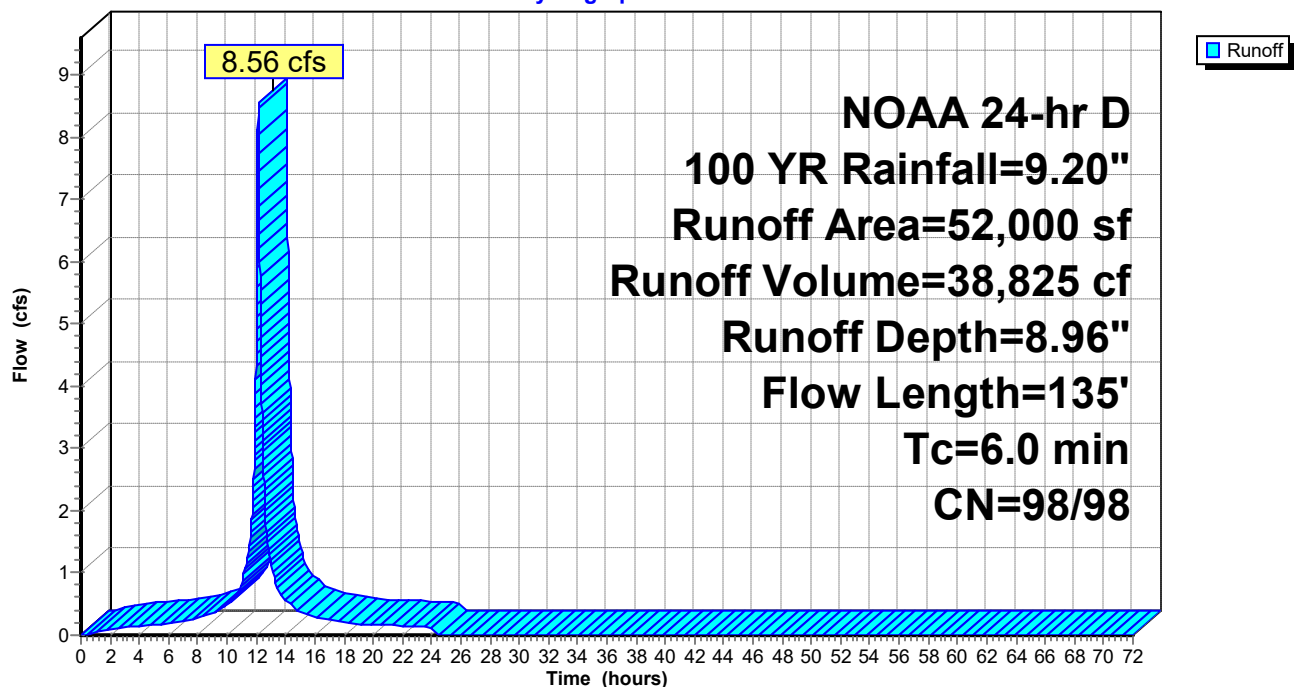
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.01
NOAA 24-hr D 100 YR Rainfall=9.20"

Area (sf)	CN	Description
39,000	98	Unconnected roofs, HSG A
13,000	98	Paved parking, HSG A
52,000	98	Weighted Average
39,000	98	75.00% Pervious Area
13,000	98	25.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	25	0.2200	2.81		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.42"
0.6	110	0.0050	2.89	1.01	Pipe Channel, 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.011
0.7	135	Total, Increased to minimum Tc = 6.0 min			

Subcatchment TS: Typical House/Driveway System

Hydrograph



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Hydrograph for Subcatchment TS: Typical House/Driveway System

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.22	0.08	0.08	0.10
4.00	0.48	0.30	0.30	0.15
6.00	0.79	0.58	0.58	0.18
8.00	1.19	0.98	0.98	0.28
10.00	1.82	1.60	1.60	0.49
12.00	4.41	4.17	4.17	4.74
14.00	7.38	7.14	7.14	0.55
16.00	8.01	7.77	7.77	0.30
18.00	8.41	8.17	8.17	0.20
20.00	8.72	8.48	8.48	0.17
22.00	8.98	8.74	8.74	0.15
24.00	9.20	8.96	8.96	0.12
26.00	9.20	8.96	8.96	0.00
28.00	9.20	8.96	8.96	0.00
30.00	9.20	8.96	8.96	0.00
32.00	9.20	8.96	8.96	0.00
34.00	9.20	8.96	8.96	0.00
36.00	9.20	8.96	8.96	0.00
38.00	9.20	8.96	8.96	0.00
40.00	9.20	8.96	8.96	0.00
42.00	9.20	8.96	8.96	0.00
44.00	9.20	8.96	8.96	0.00
46.00	9.20	8.96	8.96	0.00
48.00	9.20	8.96	8.96	0.00
50.00	9.20	8.96	8.96	0.00
52.00	9.20	8.96	8.96	0.00
54.00	9.20	8.96	8.96	0.00
56.00	9.20	8.96	8.96	0.00
58.00	9.20	8.96	8.96	0.00
60.00	9.20	8.96	8.96	0.00
62.00	9.20	8.96	8.96	0.00
64.00	9.20	8.96	8.96	0.00
66.00	9.20	8.96	8.96	0.00
68.00	9.20	8.96	8.96	0.00
70.00	9.20	8.96	8.96	0.00
72.00	9.20	8.96	8.96	0.00

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Summary for Pond P-A: Basin A

Inflow Area = 92,347 sf, 0.00% Impervious, Inflow Depth = 1.70" for 100 YR event
 Inflow = 1.72 cfs @ 12.27 hrs, Volume= 13,067 cf
 Outflow = 0.71 cfs @ 13.20 hrs, Volume= 13,067 cf, Atten= 59%, Lag= 55.6 min
 Discarded = 0.71 cfs @ 13.20 hrs, Volume= 13,067 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 76.35' @ 13.20 hrs Surf.Area= 0.064 ac Storage= 0.054 af

Plug-Flow detention time= 25.5 min calculated for 13,065 cf (100% of inflow)
 Center-of-Mass det. time= 25.5 min (952.9 - 927.4)

Volume	Invert	Avail.Storage	Storage Description
#1	75.33'	0.142 af	15.00'W x 125.00'L x 2.17'H Prismatic Z=3.0

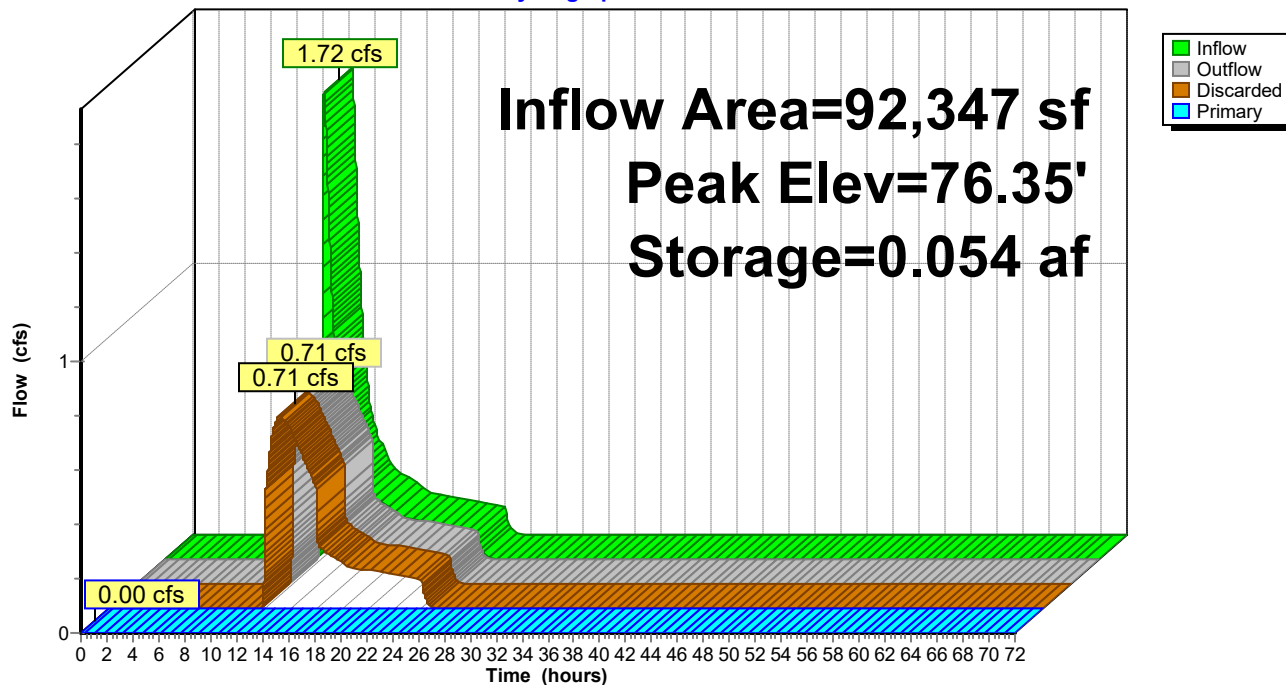
Device	Routing	Invert	Outlet Devices
#1	Discarded	75.33'	10.000 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 67.00'
#2	Primary	72.61'	12.0" Round Culvert L= 288.0' Ke= 0.600 Inlet / Outlet Invert= 72.61' / 69.74' S= 0.0100 ' / Cc= 0.900 n= 0.011, Flow Area= 0.79 sf
#3	Device 2	77.10'	2.5" Vert. Orifice C= 0.600 Limited to weir flow at low heads
#4	Device 2	77.40'	24.0" x 24.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.71 cfs @ 13.20 hrs HW=76.35' (Free Discharge)
 ↑ **1=Exfiltration** (Controls 0.71 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=75.33' (Free Discharge)
 ↑ **2=Culvert** (Passes 0.00 cfs of 4.75 cfs potential flow)
 ↑ **3=Orifice** (Controls 0.00 cfs)
 ↑ **4=Grate** (Controls 0.00 cfs)

Pond P-A: Basin A

Hydrograph



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Hydrograph for Pond P-A: Basin A

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0.000	75.33	0.00	0.00	0.00
2.00	0.00	0.000	75.33	0.00	0.00	0.00
4.00	0.00	0.000	75.33	0.00	0.00	0.00
6.00	0.00	0.000	75.33	0.00	0.00	0.00
8.00	0.00	0.000	75.33	0.00	0.00	0.00
10.00	0.00	0.000	75.33	0.00	0.00	0.00
12.00	0.24	0.000	75.34	0.19	0.19	0.00
14.00	0.40	0.044	76.18	0.66	0.66	0.00
16.00	0.23	0.002	75.37	0.44	0.44	0.00
18.00	0.17	0.000	75.34	0.17	0.17	0.00
20.00	0.14	0.000	75.34	0.14	0.14	0.00
22.00	0.12	0.000	75.34	0.12	0.12	0.00
24.00	0.11	0.000	75.34	0.11	0.11	0.00
26.00	0.00	0.000	75.33	0.00	0.00	0.00
28.00	0.00	0.000	75.33	0.00	0.00	0.00
30.00	0.00	0.000	75.33	0.00	0.00	0.00
32.00	0.00	0.000	75.33	0.00	0.00	0.00
34.00	0.00	0.000	75.33	0.00	0.00	0.00
36.00	0.00	0.000	75.33	0.00	0.00	0.00
38.00	0.00	0.000	75.33	0.00	0.00	0.00
40.00	0.00	0.000	75.33	0.00	0.00	0.00
42.00	0.00	0.000	75.33	0.00	0.00	0.00
44.00	0.00	0.000	75.33	0.00	0.00	0.00
46.00	0.00	0.000	75.33	0.00	0.00	0.00
48.00	0.00	0.000	75.33	0.00	0.00	0.00
50.00	0.00	0.000	75.33	0.00	0.00	0.00
52.00	0.00	0.000	75.33	0.00	0.00	0.00
54.00	0.00	0.000	75.33	0.00	0.00	0.00
56.00	0.00	0.000	75.33	0.00	0.00	0.00
58.00	0.00	0.000	75.33	0.00	0.00	0.00
60.00	0.00	0.000	75.33	0.00	0.00	0.00
62.00	0.00	0.000	75.33	0.00	0.00	0.00
64.00	0.00	0.000	75.33	0.00	0.00	0.00
66.00	0.00	0.000	75.33	0.00	0.00	0.00
68.00	0.00	0.000	75.33	0.00	0.00	0.00
70.00	0.00	0.000	75.33	0.00	0.00	0.00
72.00	0.00	0.000	75.33	0.00	0.00	0.00

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Summary for Pond P-B: Basin B

Inflow Area = 108,029 sf, 34.68% Impervious, Inflow Depth = 4.22" for 100 YR event
 Inflow = 7.30 cfs @ 12.15 hrs, Volume= 37,955 cf
 Outflow = 0.59 cfs @ 14.50 hrs, Volume= 37,955 cf, Atten= 92%, Lag= 141.4 min
 Discarded = 0.41 cfs @ 14.50 hrs, Volume= 30,788 cf
 Primary = 0.18 cfs @ 14.50 hrs, Volume= 7,167 cf
 Routed to Link 2L : POA 2 (Developed N)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 70.00' @ 14.50 hrs Surf.Area= 5,700 sf Storage= 16,090 cf

Plug-Flow detention time= 266.8 min calculated for 37,949 cf (100% of inflow)
 Center-of-Mass det. time= 266.8 min (1,058.1 - 791.3)

Volume	Invert	Avail.Storage	Storage Description
#1	67.00'	24,905 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
67.00	5,000	0	0
68.00	5,240	5,120	5,120
69.00	5,490	5,365	10,485
70.00	5,700	5,595	16,080
71.00	5,900	5,800	21,880
71.50	6,200	3,025	24,905

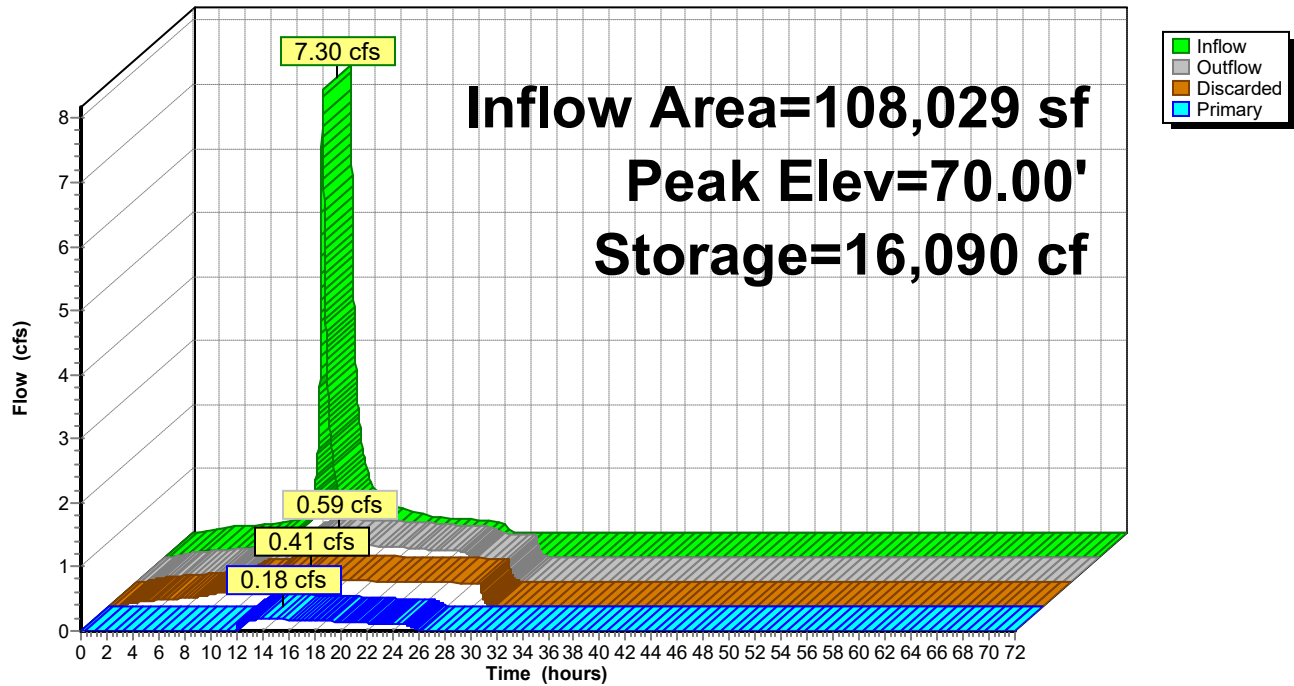
Device	Routing	Invert	Outlet Devices
#1	Primary	67.65'	Reg-U-Flo CH 3.0-in
#2	Primary	70.75'	24.0" x 24.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads
#3	Discarded	67.00'	3.100 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.41 cfs @ 14.50 hrs HW=70.00' (Free Discharge)
 ↑ **3=Exfiltration** (Exfiltration Controls 0.41 cfs)

Primary OutFlow Max=0.18 cfs @ 14.50 hrs HW=70.00' (Free Discharge)
 ↑ **1=Reg-U-Flo CH 3.0-in** (Custom Controls 0.18 cfs)
 ↓ **2=Grate** (Controls 0.00 cfs)

Pond P-B: Basin B

Hydrograph



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Hydrograph for Pond P-B: Basin B

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	67.00	0.00	0.00	0.00
2.00	0.07	58	67.01	0.06	0.06	0.00
4.00	0.11	97	67.02	0.10	0.10	0.00
6.00	0.13	120	67.02	0.13	0.13	0.00
8.00	0.20	178	67.04	0.19	0.19	0.00
10.00	0.36	300	67.06	0.32	0.32	0.00
12.00	3.68	3,851	67.76	0.39	0.37	0.02
14.00	0.70	15,995	69.99	0.59	0.41	0.18
16.00	0.39	15,426	69.88	0.58	0.41	0.18
18.00	0.27	13,678	69.58	0.57	0.40	0.16
20.00	0.23	11,460	69.18	0.54	0.40	0.15
22.00	0.20	9,206	68.77	0.51	0.39	0.12
24.00	0.17	6,946	68.35	0.48	0.38	0.11
26.00	0.00	3,772	67.74	0.38	0.37	0.01
28.00	0.00	1,123	67.22	0.36	0.36	0.00
30.00	0.00	1	67.00	0.00	0.00	0.00
32.00	0.00	0	67.00	0.00	0.00	0.00
34.00	0.00	0	67.00	0.00	0.00	0.00
36.00	0.00	0	67.00	0.00	0.00	0.00
38.00	0.00	0	67.00	0.00	0.00	0.00
40.00	0.00	0	67.00	0.00	0.00	0.00
42.00	0.00	0	67.00	0.00	0.00	0.00
44.00	0.00	0	67.00	0.00	0.00	0.00
46.00	0.00	0	67.00	0.00	0.00	0.00
48.00	0.00	0	67.00	0.00	0.00	0.00
50.00	0.00	0	67.00	0.00	0.00	0.00
52.00	0.00	0	67.00	0.00	0.00	0.00
54.00	0.00	0	67.00	0.00	0.00	0.00
56.00	0.00	0	67.00	0.00	0.00	0.00
58.00	0.00	0	67.00	0.00	0.00	0.00
60.00	0.00	0	67.00	0.00	0.00	0.00
62.00	0.00	0	67.00	0.00	0.00	0.00
64.00	0.00	0	67.00	0.00	0.00	0.00
66.00	0.00	0	67.00	0.00	0.00	0.00
68.00	0.00	0	67.00	0.00	0.00	0.00
70.00	0.00	0	67.00	0.00	0.00	0.00
72.00	0.00	0	67.00	0.00	0.00	0.00

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Summary for Pond P-PP: Porous Pavement (Typical)

Inflow Area = 52,000 sf, 25.00% Impervious, Inflow Depth = 8.96" for 100 YR event
 Inflow = 8.56 cfs @ 12.14 hrs, Volume= 38,825 cf
 Outflow = 1.60 cfs @ 12.71 hrs, Volume= 38,825 cf, Atten= 81%, Lag= 34.5 min
 Discarded = 1.60 cfs @ 12.71 hrs, Volume= 38,825 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 71.99' @ 12.71 hrs Surf.Area= 13,000 sf Storage= 10,352 cf

Plug-Flow detention time= 43.1 min calculated for 38,819 cf (100% of inflow)
 Center-of-Mass det. time= 43.1 min (787.0 - 743.9)

Volume	Invert	Avail.Storage	Storage Description
#1	70.00'	10,400 cf	20.00'W x 50.00'L x 2.00'H Stone Bed x 13 26,000 cf Overall x 40.0% Voids
#2	72.00'	975 cf	20.00'W x 50.00'L x 0.50'H Pavement x 13 -Impervious 6,500 cf Overall x 15.0% Voids
		11,375 cf	Total Available Storage

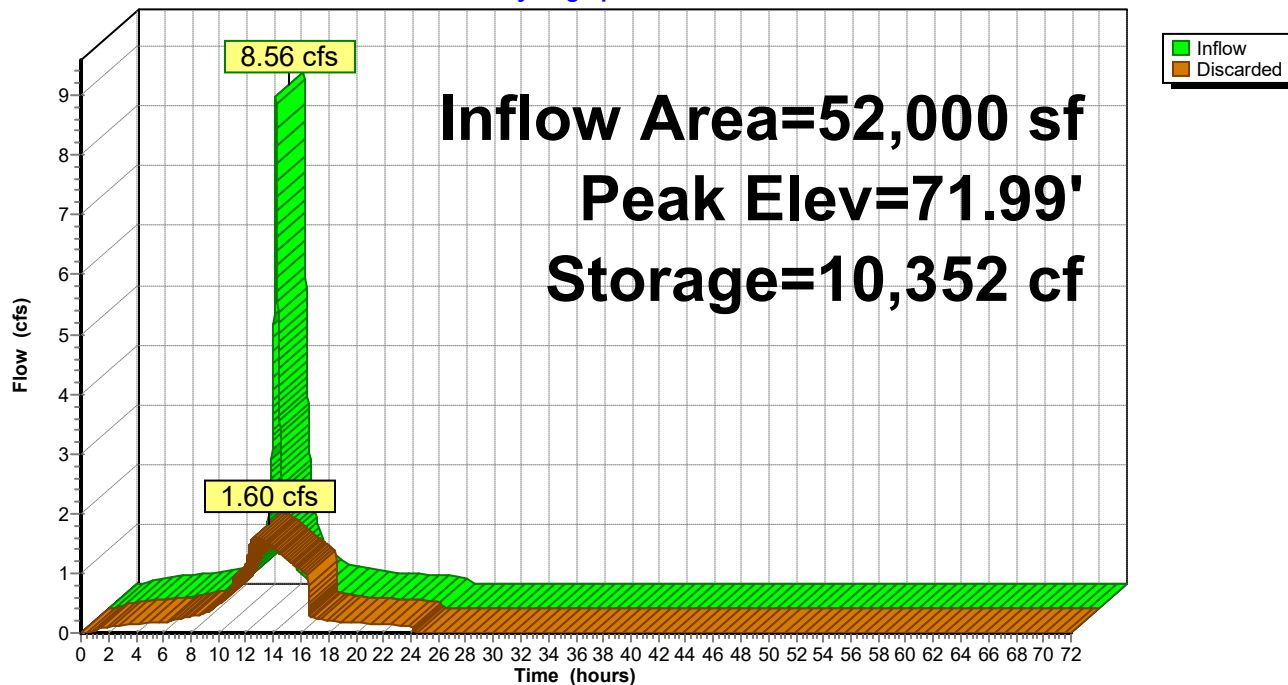
Device	Routing	Invert	Outlet Devices
#1	Discarded	70.00'	3.200 in/hr Exfiltration over Horizontal area Conductivity to Groundwater Elevation = 67.00'

Discarded OutFlow Max=1.60 cfs @ 12.71 hrs HW=71.99' (Free Discharge)

↑ **1=Exfiltration** (Controls 1.60 cfs)

Pond P-PP: Porous Pavement (Typical)

Hydrograph



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Hydrograph for Pond P-PP: Porous Pavement (Typical)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Discarded (cfs)
0.00	0.00	0	70.00	0.00
2.00	0.10	13	70.00	0.10
4.00	0.15	20	70.00	0.15
6.00	0.18	24	70.00	0.18
8.00	0.28	37	70.01	0.28
10.00	0.49	65	70.01	0.49
12.00	4.74	2,732	70.53	1.13
14.00	0.55	7,430	71.43	1.42
16.00	0.30	1,423	70.27	1.05
18.00	0.20	28	70.01	0.21
20.00	0.17	23	70.00	0.17
22.00	0.15	20	70.00	0.15
24.00	0.12	16	70.00	0.12
26.00	0.00	0	70.00	0.00
28.00	0.00	0	70.00	0.00
30.00	0.00	0	70.00	0.00
32.00	0.00	0	70.00	0.00
34.00	0.00	0	70.00	0.00
36.00	0.00	0	70.00	0.00
38.00	0.00	0	70.00	0.00
40.00	0.00	0	70.00	0.00
42.00	0.00	0	70.00	0.00
44.00	0.00	0	70.00	0.00
46.00	0.00	0	70.00	0.00
48.00	0.00	0	70.00	0.00
50.00	0.00	0	70.00	0.00
52.00	0.00	0	70.00	0.00
54.00	0.00	0	70.00	0.00
56.00	0.00	0	70.00	0.00
58.00	0.00	0	70.00	0.00
60.00	0.00	0	70.00	0.00
62.00	0.00	0	70.00	0.00
64.00	0.00	0	70.00	0.00
66.00	0.00	0	70.00	0.00
68.00	0.00	0	70.00	0.00
70.00	0.00	0	70.00	0.00
72.00	0.00	0	70.00	0.00

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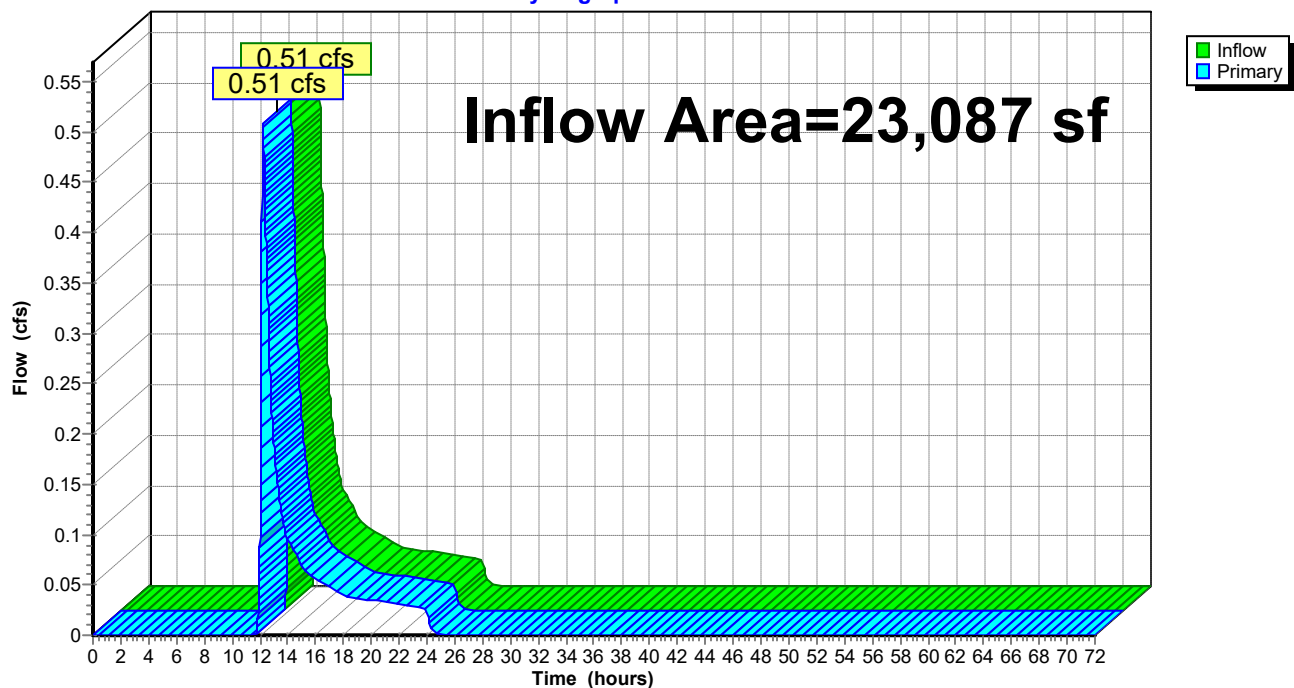
Summary for Link 1AL: POA 1A (Wilbur W)

Inflow Area = 23,087 sf, 0.00% Impervious, Inflow Depth = 1.70" for 100 YR event
Inflow = 0.51 cfs @ 12.21 hrs, Volume= 3,267 cf
Primary = 0.51 cfs @ 12.21 hrs, Volume= 3,267 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 1L

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 1AL: POA 1A (Wilbur W)

Hydrograph



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Hydrograph for Link 1AL: POA 1A (Wilbur W)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
12.00	0.10	0.00	0.10	63.00	0.00	0.00	0.00
13.00	0.19	0.00	0.19	64.00	0.00	0.00	0.00
14.00	0.10	0.00	0.10	65.00	0.00	0.00	0.00
15.00	0.07	0.00	0.07	66.00	0.00	0.00	0.00
16.00	0.06	0.00	0.06	67.00	0.00	0.00	0.00
17.00	0.05	0.00	0.05	68.00	0.00	0.00	0.00
18.00	0.04	0.00	0.04	69.00	0.00	0.00	0.00
19.00	0.04	0.00	0.04	70.00	0.00	0.00	0.00
20.00	0.03	0.00	0.03	71.00	0.00	0.00	0.00
21.00	0.03	0.00	0.03	72.00	0.00	0.00	0.00
22.00	0.03	0.00	0.03				
23.00	0.03	0.00	0.03				
24.00	0.03	0.00	0.03				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

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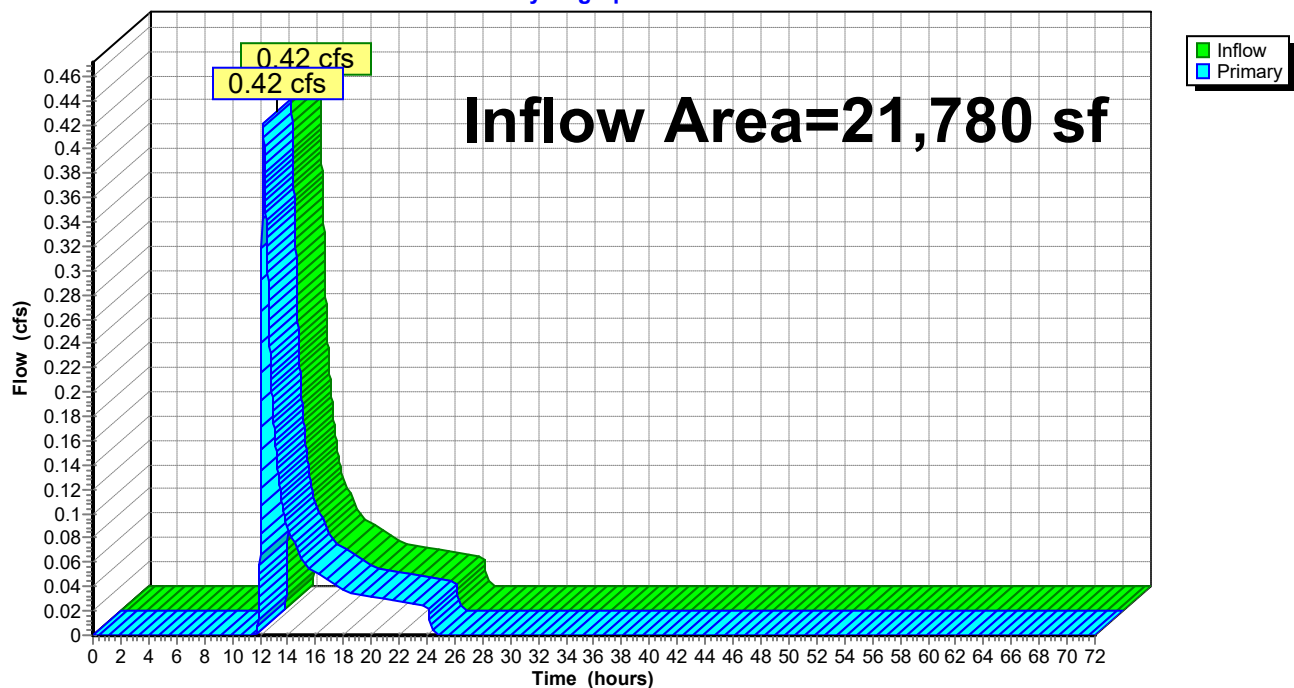
Summary for Link 1BL: POA-1B (Wilbur E)

Inflow Area = 21,780 sf, 0.00% Impervious, Inflow Depth = 1.60" for 100 YR event
Inflow = 0.42 cfs @ 12.23 hrs, Volume= 2,909 cf
Primary = 0.42 cfs @ 12.23 hrs, Volume= 2,909 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 1L

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 1BL: POA-1B (Wilbur E)

Hydrograph



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Hydrograph for Link 1BL: POA-1B (Wilbur E)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
12.00	0.07	0.00	0.07	63.00	0.00	0.00	0.00
13.00	0.17	0.00	0.17	64.00	0.00	0.00	0.00
14.00	0.09	0.00	0.09	65.00	0.00	0.00	0.00
15.00	0.06	0.00	0.06	66.00	0.00	0.00	0.00
16.00	0.05	0.00	0.05	67.00	0.00	0.00	0.00
17.00	0.04	0.00	0.04	68.00	0.00	0.00	0.00
18.00	0.04	0.00	0.04	69.00	0.00	0.00	0.00
19.00	0.03	0.00	0.03	70.00	0.00	0.00	0.00
20.00	0.03	0.00	0.03	71.00	0.00	0.00	0.00
21.00	0.03	0.00	0.03	72.00	0.00	0.00	0.00
22.00	0.03	0.00	0.03				
23.00	0.03	0.00	0.03				
24.00	0.02	0.00	0.02				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

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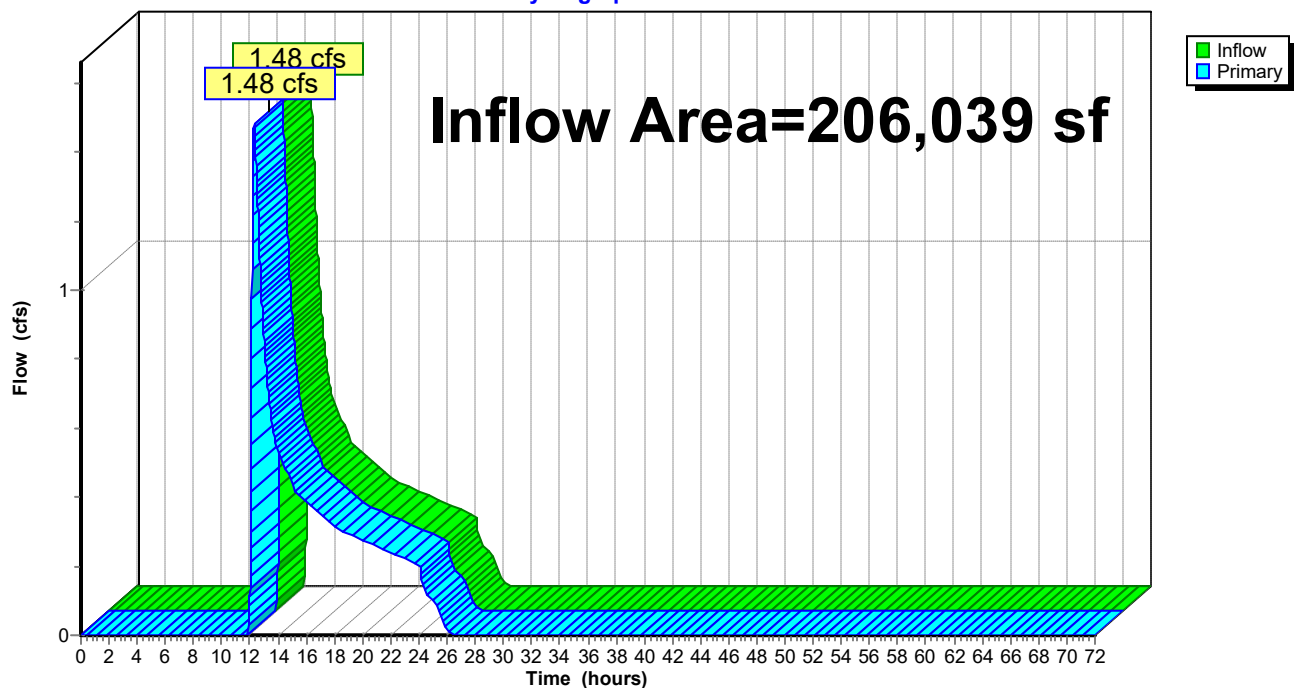
Summary for Link 2L: POA 2 (Developed N)

Inflow Area = 206,039 sf, 18.18% Impervious, Inflow Depth = 1.06" for 100 YR event
Inflow = 1.48 cfs @ 12.29 hrs, Volume= 18,277 cf
Primary = 1.48 cfs @ 12.29 hrs, Volume= 18,277 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 1L

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 2L: POA 2 (Developed N)

Hydrograph



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Hydrograph for Link 2L: POA 2 (Developed N)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
12.00	0.11	0.00	0.11	63.00	0.00	0.00	0.00
13.00	0.86	0.00	0.86	64.00	0.00	0.00	0.00
14.00	0.53	0.00	0.53	65.00	0.00	0.00	0.00
15.00	0.44	0.00	0.44	66.00	0.00	0.00	0.00
16.00	0.38	0.00	0.38	67.00	0.00	0.00	0.00
17.00	0.35	0.00	0.35	68.00	0.00	0.00	0.00
18.00	0.31	0.00	0.31	69.00	0.00	0.00	0.00
19.00	0.29	0.00	0.29	70.00	0.00	0.00	0.00
20.00	0.28	0.00	0.28	71.00	0.00	0.00	0.00
21.00	0.26	0.00	0.26	72.00	0.00	0.00	0.00
22.00	0.24	0.00	0.24				
23.00	0.22	0.00	0.22				
24.00	0.21	0.00	0.21				
25.00	0.10	0.00	0.10				
26.00	0.01	0.00	0.01				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

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Wilbur Avenue Subdivision, Manchester, NJ

NOAA 24-hr D 100 YR Rainfall=9.20"

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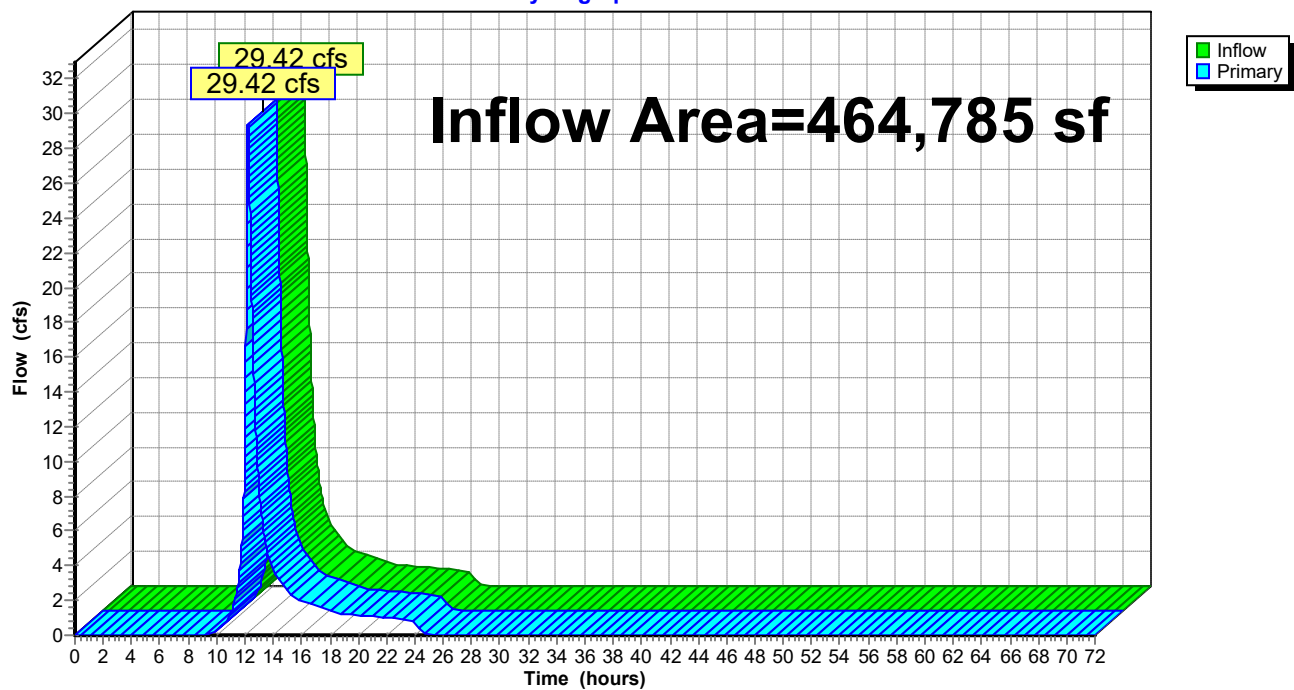
Summary for Link 3L: POA-3 (Undeveloped N)

Inflow Area = 464,785 sf, 0.00% Impervious, Inflow Depth = 4.01" for 100 YR event
Inflow = 29.42 cfs @ 12.22 hrs, Volume= 155,230 cf
Primary = 29.42 cfs @ 12.22 hrs, Volume= 155,230 cf, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 1L

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 3L: POA-3 (Undeveloped N)

Hydrograph



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NOAA 24-hr D 100 YR Rainfall=9.20"

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Hydrograph for Link 3L: POA-3 (Undeveloped N)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
10.00	0.29	0.00	0.29	61.00	0.00	0.00	0.00
11.00	1.25	0.00	1.25	62.00	0.00	0.00	0.00
12.00	11.34	0.00	11.34	63.00	0.00	0.00	0.00
13.00	8.49	0.00	8.49	64.00	0.00	0.00	0.00
14.00	3.66	0.00	3.66	65.00	0.00	0.00	0.00
15.00	2.55	0.00	2.55	66.00	0.00	0.00	0.00
16.00	2.00	0.00	2.00	67.00	0.00	0.00	0.00
17.00	1.70	0.00	1.70	68.00	0.00	0.00	0.00
18.00	1.39	0.00	1.39	69.00	0.00	0.00	0.00
19.00	1.24	0.00	1.24	70.00	0.00	0.00	0.00
20.00	1.16	0.00	1.16	71.00	0.00	0.00	0.00
21.00	1.09	0.00	1.09	72.00	0.00	0.00	0.00
22.00	1.01	0.00	1.01				
23.00	0.93	0.00	0.93				
24.00	0.85	0.00	0.85				
25.00	0.01	0.00	0.01				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

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Multi-Event Tables

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Events for Subcatchment 1A: DA-P1A

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2 YR	3.42	0.00	10	0.01
10 YR	5.38	0.03	545	0.28
100 YR	9.20	0.51	3,267	1.70

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Events for Subcatchment 1B-E: P1B-E

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2 YR	3.42	0.00	0	0.00
10 YR	5.38	0.01	156	0.21
100 YR	9.20	0.16	1,122	1.47

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Events for Subcatchment 1B-W: P1B-W

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2 YR	3.42	0.00	6	0.01
10 YR	5.38	0.02	298	0.28
100 YR	9.20	0.27	1,787	1.70

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Events for Subcatchment 2A: P2A

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2 YR	3.42	0.00	41	0.01
10 YR	5.38	0.11	2,181	0.28
100 YR	9.20	1.72	13,067	1.70

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Multi-Event Tables

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Events for Subcatchment 2B: P2B

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2 YR	3.42	0.00	27	0.01
10 YR	5.38	0.07	1,430	0.28
100 YR	9.20	1.20	8,567	1.70

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Events for Subcatchment 2C: P2C

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2 YR	3.42	0.00	0	0.00
10 YR	5.38	0.05	1,387	0.17
100 YR	9.20	1.35	11,110	1.36

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Multi-Event Tables

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Events for Subcatchment 2RD-N: P2RD-N

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2 YR	3.42	2.03	8,911	2.53
10 YR	5.38	3.22	14,580	4.14
100 YR	9.20	5.77	26,276	7.46

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Multi-Event Tables

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Events for Subcatchment 2RD-S: P2RD-S

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2 YR	3.42	0.24	1,042	2.39
10 YR	5.38	0.38	1,711	3.93
100 YR	9.20	0.68	3,112	7.14

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Events for Subcatchment 3: DA-E4

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2 YR	3.42	1.68	16,344	0.42
10 YR	5.38	8.98	53,587	1.38
100 YR	9.20	29.42	155,230	4.01

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Events for Subcatchment TS: Typical House/Driveway System

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2 YR	3.42	3.15	13,809	3.19
10 YR	5.38	4.99	22,285	5.14
100 YR	9.20	8.56	38,825	8.96

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Multi-Event Tables

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Events for Pond P-A: Basin A

Event	Inflow (cfs)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
2 YR	0.00	0.00	0.00	0.00	75.33	0.000
10 YR	0.11	0.11	0.11	0.00	75.34	0.000
100 YR	1.72	0.71	0.71	0.00	76.35	0.054

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Multi-Event Tables

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Events for Pond P-B: Basin B

Event	Inflow (cfs)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
2 YR	2.27	0.37	0.37	0.00	67.56	2,844
10 YR	3.60	0.48	0.38	0.11	68.09	5,569
100 YR	7.30	0.59	0.41	0.18	70.00	16,090

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Multi-Event Tables

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Events for Pond P-PP: Porous Pavement (Typical)

Event	Inflow (cfs)	Discarded (cfs)	Elevation (feet)	Storage (cubic-feet)
2 YR	3.15	1.09	70.39	2,019
10 YR	4.99	1.24	70.87	4,538
100 YR	8.56	1.60	71.99	10,352

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Events for Link 1AL: POA 1A (Wilbur W)

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2 YR	0.00	0.00	0.00
10 YR	0.03	0.03	0.00
100 YR	0.51	0.51	0.00

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Multi-Event Tables

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Events for Link 1BL: POA-1B (Wilbur E)

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2 YR	0.00	0.00	0.00
10 YR	0.02	0.02	0.00
100 YR	0.42	0.42	0.00

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Multi-Event Tables

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Events for Link 2L: POA 2 (Developed N)

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2 YR	0.00	0.00	0.00
10 YR	0.16	0.16	0.00
100 YR	1.48	1.48	0.00

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Multi-Event Tables

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Events for Link 3L: POA-3 (Undeveloped N)

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2 YR	1.68	1.68	0.00
10 YR	8.98	8.98	0.00
100 YR	29.42	29.42	0.00

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100 YR Event

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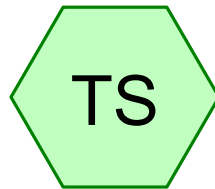
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88	Subcat 2C: P2C
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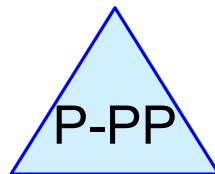
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115	Subcat 1A: DA-P1A
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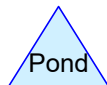
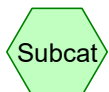
Proposed
Conditions



Typical
House/Driveway
System



Porous Pavement
(Typical)



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Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2 YR	NOAA 24-hr	D	Default	24.00	1	3.42	2
2	10 YR	NOAA 24-hr	D	Default	24.00	1	5.38	2
3	25 YR	NOAA 24-hr	D	Default	24.00	1	6.68	2
4	100 YR	NOAA 24-hr	D	Default	24.00	1	9.20	2
5	NJDEP WQ	NJ DEP 2-hr		Default	2.00	1	1.25	2

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Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
1,000	98	Paved parking, HSG A (TS)
3,000	98	Unconnected roofs, HSG A (TS)
4,000	98	TOTAL AREA

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NOAA 24-hr D 2 YR Rainfall=3.42"

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Summary for Subcatchment TS: Typical House/Driveway System

Runoff = 0.24 cfs @ 12.14 hrs, Volume= 1,062 cf, Depth= 3.19"
Routed to Pond P-PP : Porous Pavement (Typical)

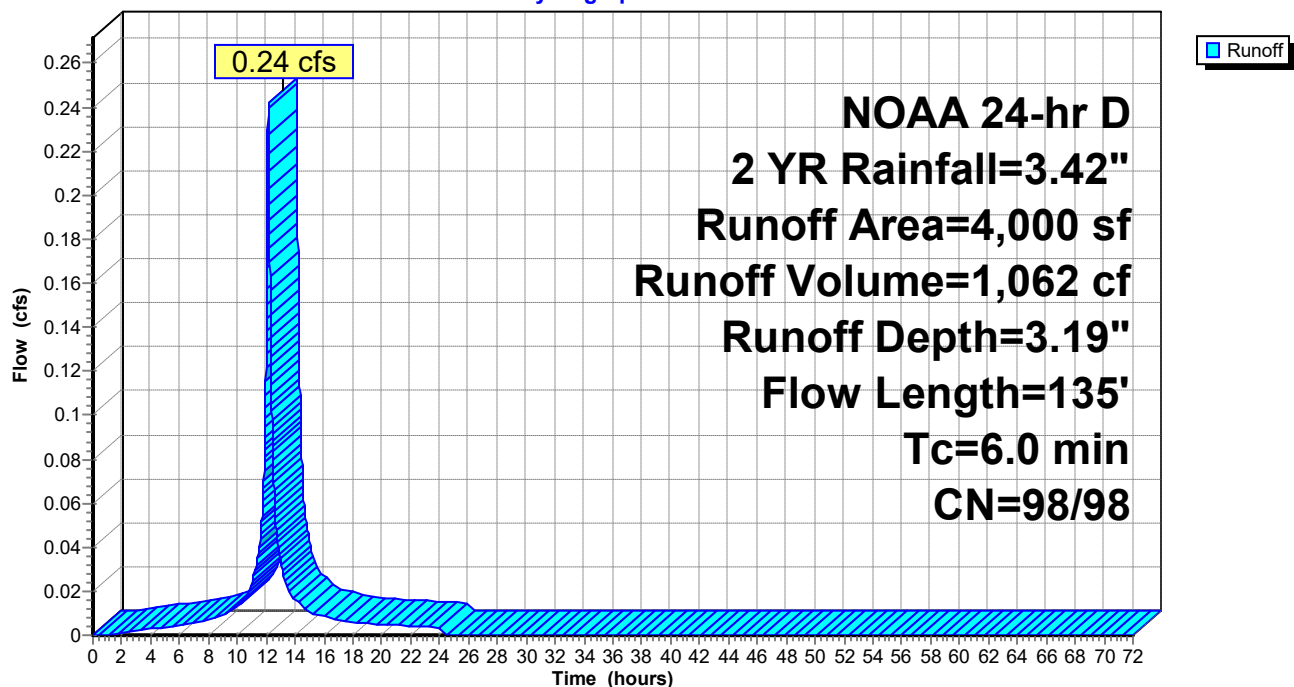
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2 YR Rainfall=3.42"

Area (sf)	CN	Description
3,000	98	Unconnected roofs, HSG A
1,000	98	Paved parking, HSG A
4,000	98	Weighted Average
3,000	98	75.00% Pervious Area
1,000	98	25.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	25	0.2200	2.81		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.42"
0.6	110	0.0050	2.89	1.01	Pipe Channel, 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.011
0.7	135	Total, Increased to minimum Tc = 6.0 min			

Subcatchment TS: Typical House/Driveway System

Hydrograph



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Wilbur Avenue Subdivision, Manchester, NJ

NOAA 24-hr D 2 YR Rainfall=3.42"

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Hydrograph for Subcatchment TS: Typical House/Driveway System

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.08	0.01	0.01	0.00
4.00	0.18	0.06	0.06	0.00
6.00	0.29	0.14	0.14	0.00
8.00	0.44	0.27	0.27	0.01
10.00	0.68	0.48	0.48	0.01
12.00	1.64	1.42	1.42	0.13
14.00	2.74	2.51	2.51	0.02
16.00	2.98	2.74	2.74	0.01
18.00	3.13	2.90	2.90	0.01
20.00	3.24	3.01	3.01	0.00
22.00	3.34	3.10	3.10	0.00
24.00	3.42	3.19	3.19	0.00
26.00	3.42	3.19	3.19	0.00
28.00	3.42	3.19	3.19	0.00
30.00	3.42	3.19	3.19	0.00
32.00	3.42	3.19	3.19	0.00
34.00	3.42	3.19	3.19	0.00
36.00	3.42	3.19	3.19	0.00
38.00	3.42	3.19	3.19	0.00
40.00	3.42	3.19	3.19	0.00
42.00	3.42	3.19	3.19	0.00
44.00	3.42	3.19	3.19	0.00
46.00	3.42	3.19	3.19	0.00
48.00	3.42	3.19	3.19	0.00
50.00	3.42	3.19	3.19	0.00
52.00	3.42	3.19	3.19	0.00
54.00	3.42	3.19	3.19	0.00
56.00	3.42	3.19	3.19	0.00
58.00	3.42	3.19	3.19	0.00
60.00	3.42	3.19	3.19	0.00
62.00	3.42	3.19	3.19	0.00
64.00	3.42	3.19	3.19	0.00
66.00	3.42	3.19	3.19	0.00
68.00	3.42	3.19	3.19	0.00
70.00	3.42	3.19	3.19	0.00
72.00	3.42	3.19	3.19	0.00

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NOAA 24-hr D 2 YR Rainfall=3.42"

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Summary for Pond P-PP: Porous Pavement (Typical)

Inflow Area = 4,000 sf, 25.00% Impervious, Inflow Depth = 3.19" for 2 YR event
 Inflow = 0.24 cfs @ 12.14 hrs, Volume= 1,062 cf
 Outflow = 0.08 cfs @ 12.45 hrs, Volume= 1,062 cf, Atten= 65%, Lag= 18.6 min
 Discarded = 0.08 cfs @ 12.45 hrs, Volume= 1,062 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 70.39' @ 12.45 hrs Surf.Area= 1,000 sf Storage= 155 cf

Plug-Flow detention time= 9.4 min calculated for 1,062 cf (100% of inflow)
 Center-of-Mass det. time= 9.4 min (769.9 - 760.5)

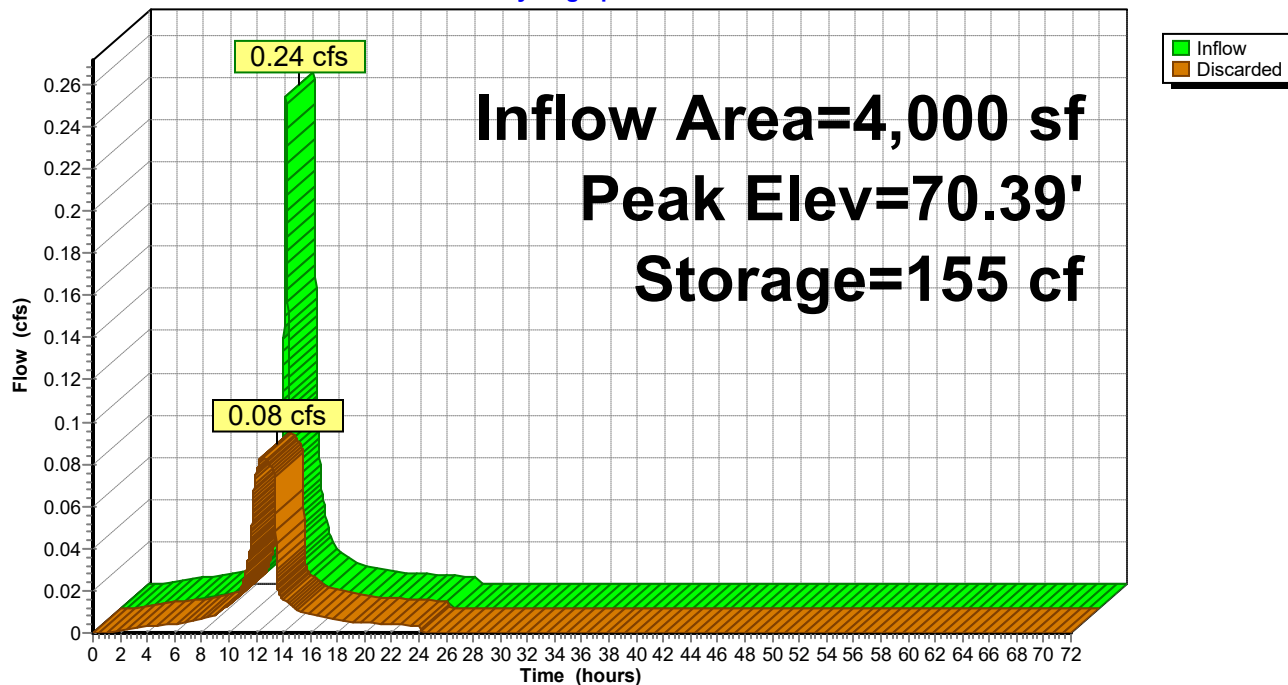
Volume	Invert	Avail.Storage	Storage Description
#1	70.00'	800 cf	20.00'W x 50.00'L x 2.00'H Stone Bed 2,000 cf Overall x 40.0% Voids
#2	72.00'	75 cf	20.00'W x 50.00'L x 0.50'H Pavement -Impervious 500 cf Overall x 15.0% Voids
		875 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	70.00'	3.200 in/hr Exfiltration over Horizontal area Conductivity to Groundwater Elevation = 67.00'

Discarded OutFlow Max=0.08 cfs @ 12.45 hrs HW=70.39' (Free Discharge)
 ↑**1=Exfiltration** (Controls 0.08 cfs)

Pond P-PP: Porous Pavement (Typical)

Hydrograph



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NOAA 24-hr D 2 YR Rainfall=3.42"

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Hydrograph for Pond P-PP: Porous Pavement (Typical)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Discarded (cfs)
0.00	0.00	0	70.00	0.00
2.00	0.00	0	70.00	0.00
4.00	0.00	0	70.00	0.00
6.00	0.00	1	70.00	0.00
8.00	0.01	1	70.00	0.01
10.00	0.01	2	70.00	0.01
12.00	0.13	22	70.05	0.08
14.00	0.02	2	70.01	0.02
16.00	0.01	1	70.00	0.01
18.00	0.01	1	70.00	0.01
20.00	0.00	1	70.00	0.00
22.00	0.00	1	70.00	0.00
24.00	0.00	0	70.00	0.00
26.00	0.00	0	70.00	0.00
28.00	0.00	0	70.00	0.00
30.00	0.00	0	70.00	0.00
32.00	0.00	0	70.00	0.00
34.00	0.00	0	70.00	0.00
36.00	0.00	0	70.00	0.00
38.00	0.00	0	70.00	0.00
40.00	0.00	0	70.00	0.00
42.00	0.00	0	70.00	0.00
44.00	0.00	0	70.00	0.00
46.00	0.00	0	70.00	0.00
48.00	0.00	0	70.00	0.00
50.00	0.00	0	70.00	0.00
52.00	0.00	0	70.00	0.00
54.00	0.00	0	70.00	0.00
56.00	0.00	0	70.00	0.00
58.00	0.00	0	70.00	0.00
60.00	0.00	0	70.00	0.00
62.00	0.00	0	70.00	0.00
64.00	0.00	0	70.00	0.00
66.00	0.00	0	70.00	0.00
68.00	0.00	0	70.00	0.00
70.00	0.00	0	70.00	0.00
72.00	0.00	0	70.00	0.00

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Wilbur Avenue Subdivision, Manchester, NJ

NOAA 24-hr D 10 YR Rainfall=5.38"

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Summary for Subcatchment TS: Typical House/Driveway System

Runoff = 0.38 cfs @ 12.14 hrs, Volume= 1,714 cf, Depth= 5.14"
Routed to Pond P-PP : Porous Pavement (Typical)

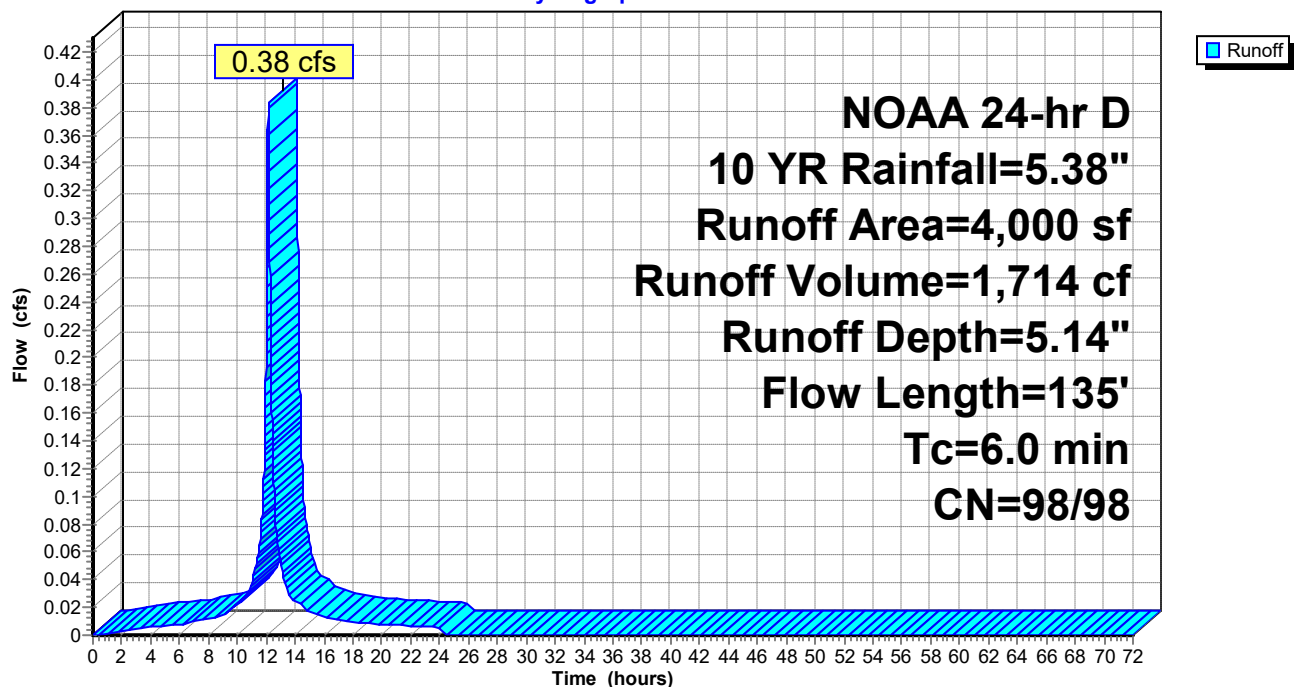
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.01
NOAA 24-hr D 10 YR Rainfall=5.38"

Area (sf)	CN	Description
3,000	98	Unconnected roofs, HSG A
1,000	98	Paved parking, HSG A
4,000	98	Weighted Average
3,000	98	75.00% Pervious Area
1,000	98	25.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	25	0.2200	2.81		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.42"
0.6	110	0.0050	2.89	1.01	Pipe Channel, 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.011
0.7	135	Total, Increased to minimum Tc = 6.0 min			

Subcatchment TS: Typical House/Driveway System

Hydrograph



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NOAA 24-hr D 10 YR Rainfall=5.38"

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Hydrograph for Subcatchment TS: Typical House/Driveway System

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.13	0.03	0.03	0.00
4.00	0.28	0.13	0.13	0.01
6.00	0.46	0.28	0.28	0.01
8.00	0.70	0.50	0.50	0.01
10.00	1.07	0.86	0.86	0.02
12.00	2.58	2.35	2.35	0.21
14.00	4.31	4.08	4.08	0.02
16.00	4.68	4.45	4.45	0.01
18.00	4.92	4.68	4.68	0.01
20.00	5.10	4.86	4.86	0.01
22.00	5.25	5.01	5.01	0.01
24.00	5.38	5.14	5.14	0.01
26.00	5.38	5.14	5.14	0.00
28.00	5.38	5.14	5.14	0.00
30.00	5.38	5.14	5.14	0.00
32.00	5.38	5.14	5.14	0.00
34.00	5.38	5.14	5.14	0.00
36.00	5.38	5.14	5.14	0.00
38.00	5.38	5.14	5.14	0.00
40.00	5.38	5.14	5.14	0.00
42.00	5.38	5.14	5.14	0.00
44.00	5.38	5.14	5.14	0.00
46.00	5.38	5.14	5.14	0.00
48.00	5.38	5.14	5.14	0.00
50.00	5.38	5.14	5.14	0.00
52.00	5.38	5.14	5.14	0.00
54.00	5.38	5.14	5.14	0.00
56.00	5.38	5.14	5.14	0.00
58.00	5.38	5.14	5.14	0.00
60.00	5.38	5.14	5.14	0.00
62.00	5.38	5.14	5.14	0.00
64.00	5.38	5.14	5.14	0.00
66.00	5.38	5.14	5.14	0.00
68.00	5.38	5.14	5.14	0.00
70.00	5.38	5.14	5.14	0.00
72.00	5.38	5.14	5.14	0.00

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NOAA 24-hr D 10 YR Rainfall=5.38"

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Summary for Pond P-PP: Porous Pavement (Typical)

Inflow Area = 4,000 sf, 25.00% Impervious, Inflow Depth = 5.14" for 10 YR event
 Inflow = 0.38 cfs @ 12.14 hrs, Volume= 1,714 cf
 Outflow = 0.10 cfs @ 12.58 hrs, Volume= 1,714 cf, Atten= 75%, Lag= 26.3 min
 Discarded = 0.10 cfs @ 12.58 hrs, Volume= 1,714 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 70.87' @ 12.58 hrs Surf.Area= 1,000 sf Storage= 349 cf

Plug-Flow detention time= 20.3 min calculated for 1,714 cf (100% of inflow)
 Center-of-Mass det. time= 20.3 min (772.0 - 751.7)

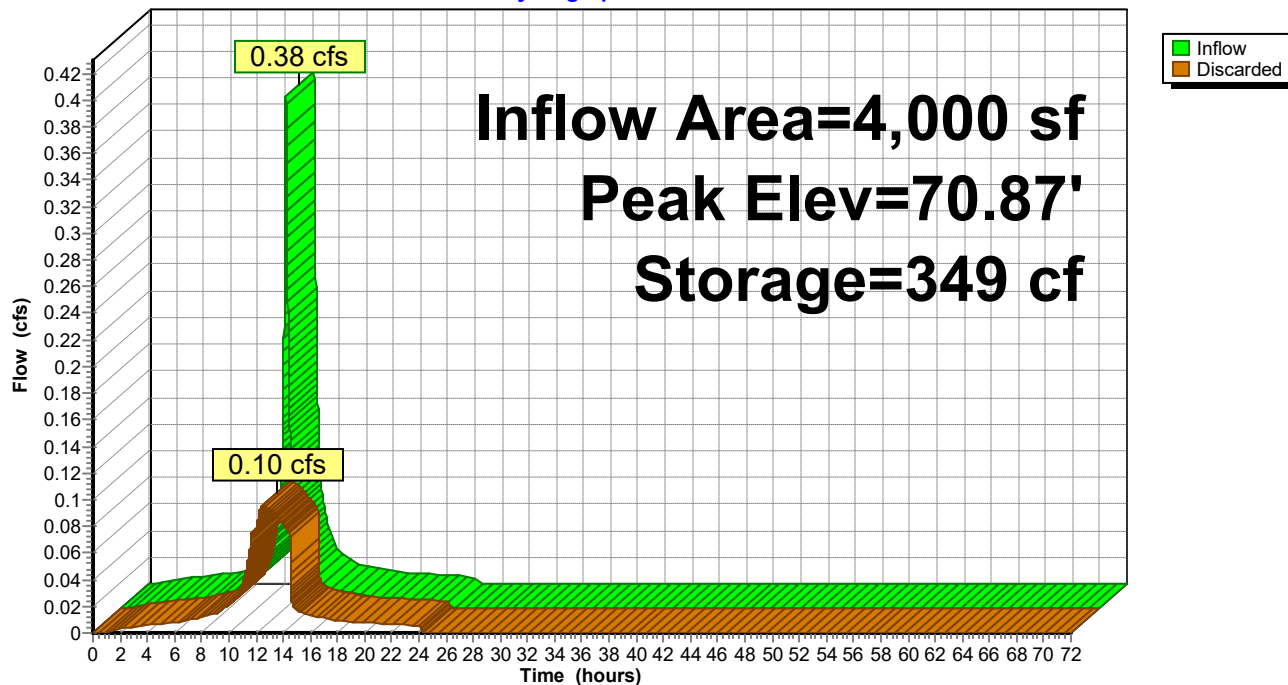
Volume	Invert	Avail.Storage	Storage Description
#1	70.00'	800 cf	20.00'W x 50.00'L x 2.00'H Stone Bed 2,000 cf Overall x 40.0% Voids
#2	72.00'	75 cf	20.00'W x 50.00'L x 0.50'H Pavement -Impervious 500 cf Overall x 15.0% Voids
875 cf			Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	70.00'	3.200 in/hr Exfiltration over Horizontal area Conductivity to Groundwater Elevation = 67.00'

Discarded OutFlow Max=0.10 cfs @ 12.58 hrs HW=70.87' (Free Discharge)
 ↑1=Exfiltration (Controls 0.10 cfs)

Pond P-PP: Porous Pavement (Typical)

Hydrograph



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NOAA 24-hr D 10 YR Rainfall=5.38"

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Hydrograph for Pond P-PP: Porous Pavement (Typical)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Discarded (cfs)
0.00	0.00	0	70.00	0.00
2.00	0.00	0	70.00	0.00
4.00	0.01	1	70.00	0.01
6.00	0.01	1	70.00	0.01
8.00	0.01	2	70.00	0.01
10.00	0.02	3	70.01	0.02
12.00	0.21	66	70.16	0.08
14.00	0.02	118	70.29	0.08
16.00	0.01	2	70.00	0.01
18.00	0.01	1	70.00	0.01
20.00	0.01	1	70.00	0.01
22.00	0.01	1	70.00	0.01
24.00	0.01	1	70.00	0.01
26.00	0.00	0	70.00	0.00
28.00	0.00	0	70.00	0.00
30.00	0.00	0	70.00	0.00
32.00	0.00	0	70.00	0.00
34.00	0.00	0	70.00	0.00
36.00	0.00	0	70.00	0.00
38.00	0.00	0	70.00	0.00
40.00	0.00	0	70.00	0.00
42.00	0.00	0	70.00	0.00
44.00	0.00	0	70.00	0.00
46.00	0.00	0	70.00	0.00
48.00	0.00	0	70.00	0.00
50.00	0.00	0	70.00	0.00
52.00	0.00	0	70.00	0.00
54.00	0.00	0	70.00	0.00
56.00	0.00	0	70.00	0.00
58.00	0.00	0	70.00	0.00
60.00	0.00	0	70.00	0.00
62.00	0.00	0	70.00	0.00
64.00	0.00	0	70.00	0.00
66.00	0.00	0	70.00	0.00
68.00	0.00	0	70.00	0.00
70.00	0.00	0	70.00	0.00
72.00	0.00	0	70.00	0.00

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NOAA 24-hr D 25 YR Rainfall=6.68"

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Summary for Subcatchment TS: Typical House/Driveway System

Runoff = 0.48 cfs @ 12.14 hrs, Volume= 2,147 cf, Depth= 6.44"
Routed to Pond P-PP : Porous Pavement (Typical)

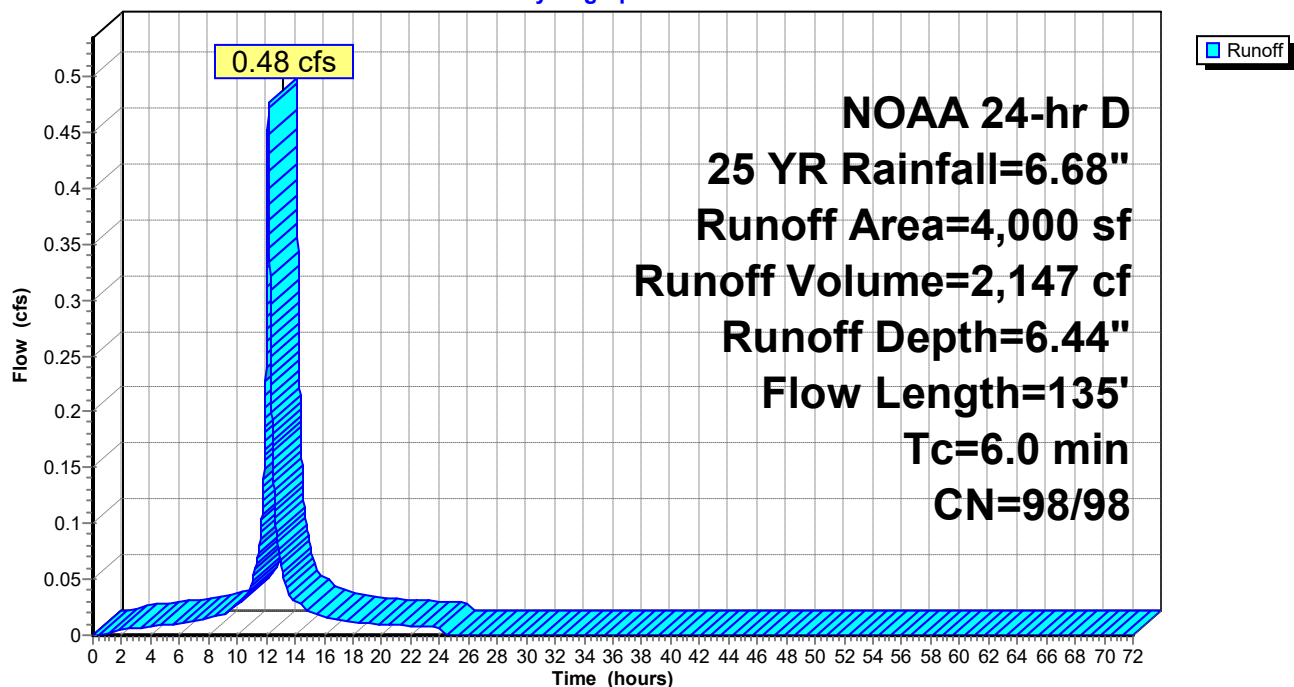
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 25 YR Rainfall=6.68"

Area (sf)	CN	Description
3,000	98	Unconnected roofs, HSG A
1,000	98	Paved parking, HSG A
4,000	98	Weighted Average
3,000	98	75.00% Pervious Area
1,000	98	25.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	25	0.2200	2.81		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.42"
0.6	110	0.0050	2.89	1.01	Pipe Channel, 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.011
0.7	135	Total, Increased to minimum Tc = 6.0 min			

Subcatchment TS: Typical House/Driveway System

Hydrograph



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NOAA 24-hr D 25 YR Rainfall=6.68"

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Hydrograph for Subcatchment TS: Typical House/Driveway System

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.16	0.04	0.04	0.00
4.00	0.35	0.19	0.19	0.01
6.00	0.57	0.38	0.38	0.01
8.00	0.87	0.66	0.66	0.02
10.00	1.32	1.11	1.11	0.03
12.00	3.20	2.97	2.97	0.26
14.00	5.36	5.12	5.12	0.03
16.00	5.81	5.58	5.58	0.02
18.00	6.11	5.87	5.87	0.01
20.00	6.33	6.09	6.09	0.01
22.00	6.52	6.28	6.28	0.01
24.00	6.68	6.44	6.44	0.01
26.00	6.68	6.44	6.44	0.00
28.00	6.68	6.44	6.44	0.00
30.00	6.68	6.44	6.44	0.00
32.00	6.68	6.44	6.44	0.00
34.00	6.68	6.44	6.44	0.00
36.00	6.68	6.44	6.44	0.00
38.00	6.68	6.44	6.44	0.00
40.00	6.68	6.44	6.44	0.00
42.00	6.68	6.44	6.44	0.00
44.00	6.68	6.44	6.44	0.00
46.00	6.68	6.44	6.44	0.00
48.00	6.68	6.44	6.44	0.00
50.00	6.68	6.44	6.44	0.00
52.00	6.68	6.44	6.44	0.00
54.00	6.68	6.44	6.44	0.00
56.00	6.68	6.44	6.44	0.00
58.00	6.68	6.44	6.44	0.00
60.00	6.68	6.44	6.44	0.00
62.00	6.68	6.44	6.44	0.00
64.00	6.68	6.44	6.44	0.00
66.00	6.68	6.44	6.44	0.00
68.00	6.68	6.44	6.44	0.00
70.00	6.68	6.44	6.44	0.00
72.00	6.68	6.44	6.44	0.00

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NOAA 24-hr D 25 YR Rainfall=6.68"

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Summary for Pond P-PP: Porous Pavement (Typical)

Inflow Area = 4,000 sf, 25.00% Impervious, Inflow Depth = 6.44" for 25 YR event
 Inflow = 0.48 cfs @ 12.14 hrs, Volume= 2,147 cf
 Outflow = 0.10 cfs @ 12.63 hrs, Volume= 2,147 cf, Atten= 78%, Lag= 29.5 min
 Discarded = 0.10 cfs @ 12.63 hrs, Volume= 2,147 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 71.23' @ 12.63 hrs Surf.Area= 1,000 sf Storage= 493 cf

Plug-Flow detention time= 28.1 min calculated for 2,147 cf (100% of inflow)
 Center-of-Mass det. time= 28.1 min (776.3 - 748.2)

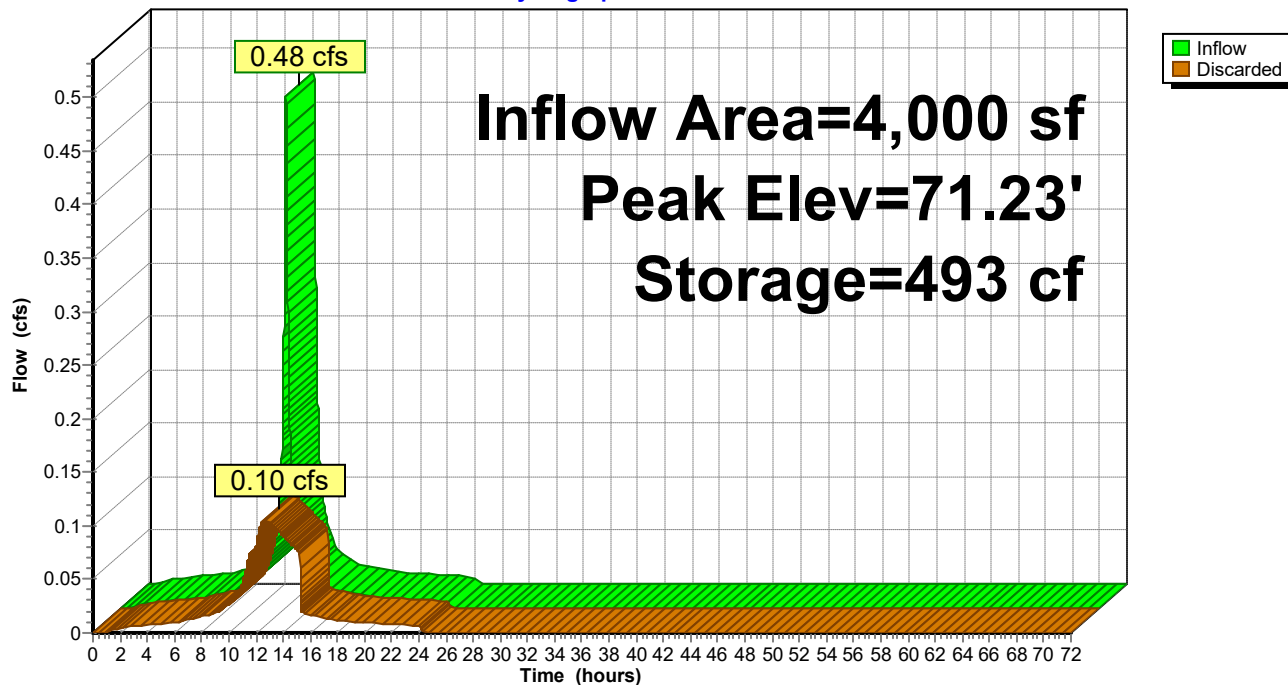
Volume	Invert	Avail.Storage	Storage Description
#1	70.00'	800 cf	20.00'W x 50.00'L x 2.00'H Stone Bed 2,000 cf Overall x 40.0% Voids
#2	72.00'	75 cf	20.00'W x 50.00'L x 0.50'H Pavement -Impervious 500 cf Overall x 15.0% Voids
		875 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	70.00'	3.200 in/hr Exfiltration over Horizontal area Conductivity to Groundwater Elevation = 67.00'

Discarded OutFlow Max=0.10 cfs @ 12.63 hrs HW=71.23' (Free Discharge)
 ↑1=Exfiltration (Controls 0.10 cfs)

Pond P-PP: Porous Pavement (Typical)

Hydrograph



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Wilbur Avenue Subdivision, Manchester, NJ

NOAA 24-hr D 25 YR Rainfall=6.68"

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Hydrograph for Pond P-PP: Porous Pavement (Typical)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Discarded (cfs)
0.00	0.00	0	70.00	0.00
2.00	0.00	1	70.00	0.00
4.00	0.01	1	70.00	0.01
6.00	0.01	1	70.00	0.01
8.00	0.02	2	70.01	0.02
10.00	0.03	4	70.01	0.03
12.00	0.26	108	70.27	0.08
14.00	0.03	267	70.67	0.09
16.00	0.02	2	70.01	0.02
18.00	0.01	2	70.00	0.01
20.00	0.01	1	70.00	0.01
22.00	0.01	1	70.00	0.01
24.00	0.01	1	70.00	0.01
26.00	0.00	0	70.00	0.00
28.00	0.00	0	70.00	0.00
30.00	0.00	0	70.00	0.00
32.00	0.00	0	70.00	0.00
34.00	0.00	0	70.00	0.00
36.00	0.00	0	70.00	0.00
38.00	0.00	0	70.00	0.00
40.00	0.00	0	70.00	0.00
42.00	0.00	0	70.00	0.00
44.00	0.00	0	70.00	0.00
46.00	0.00	0	70.00	0.00
48.00	0.00	0	70.00	0.00
50.00	0.00	0	70.00	0.00
52.00	0.00	0	70.00	0.00
54.00	0.00	0	70.00	0.00
56.00	0.00	0	70.00	0.00
58.00	0.00	0	70.00	0.00
60.00	0.00	0	70.00	0.00
62.00	0.00	0	70.00	0.00
64.00	0.00	0	70.00	0.00
66.00	0.00	0	70.00	0.00
68.00	0.00	0	70.00	0.00
70.00	0.00	0	70.00	0.00
72.00	0.00	0	70.00	0.00

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NOAA 24-hr D 100 YR Rainfall=9.20"

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Summary for Subcatchment TS: Typical House/Driveway System

Runoff = 0.66 cfs @ 12.14 hrs, Volume= 2,987 cf, Depth= 8.96"
Routed to Pond P-PP : Porous Pavement (Typical)

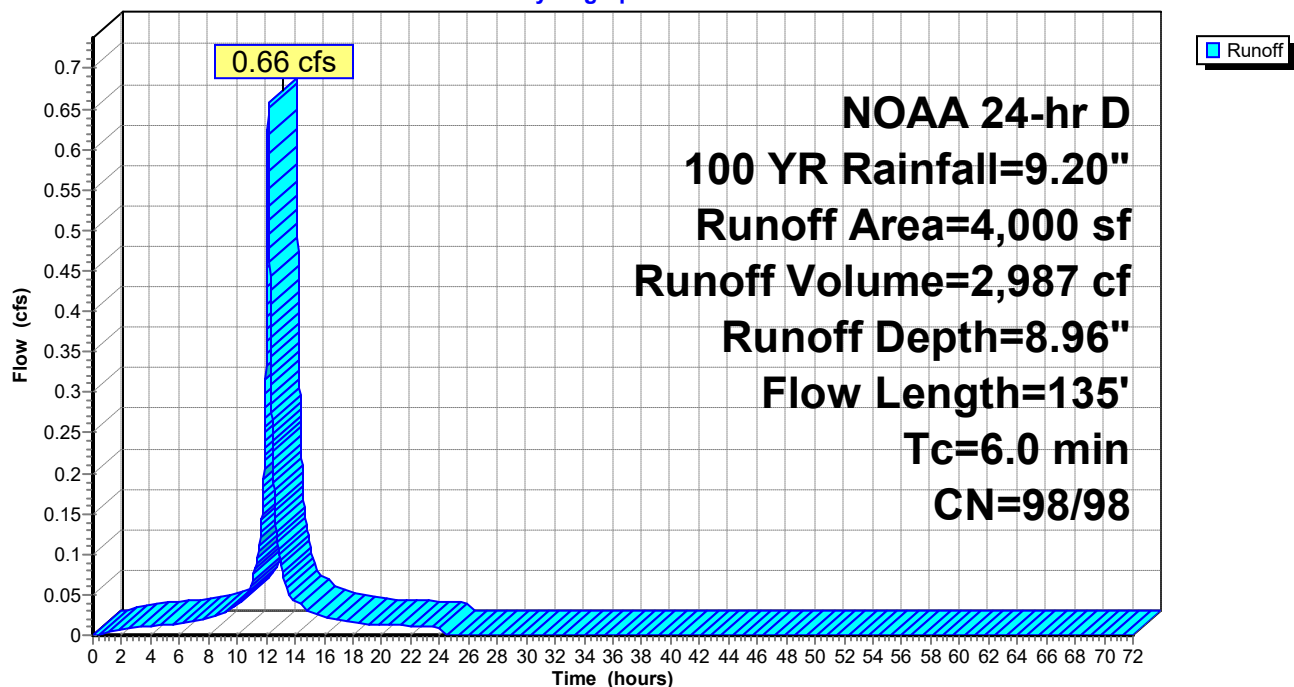
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 100 YR Rainfall=9.20"

Area (sf)	CN	Description
3,000	98	Unconnected roofs, HSG A
1,000	98	Paved parking, HSG A
4,000	98	Weighted Average
3,000	98	75.00% Pervious Area
1,000	98	25.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	25	0.2200	2.81		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.42"
0.6	110	0.0050	2.89	1.01	Pipe Channel, 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.011
0.7	135	Total, Increased to minimum Tc = 6.0 min			

Subcatchment TS: Typical House/Driveway System

Hydrograph



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NOAA 24-hr D 100 YR Rainfall=9.20"

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Hydrograph for Subcatchment TS: Typical House/Driveway System

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.22	0.08	0.08	0.01
4.00	0.48	0.30	0.30	0.01
6.00	0.79	0.58	0.58	0.01
8.00	1.19	0.98	0.98	0.02
10.00	1.82	1.60	1.60	0.04
12.00	4.41	4.17	4.17	0.36
14.00	7.38	7.14	7.14	0.04
16.00	8.01	7.77	7.77	0.02
18.00	8.41	8.17	8.17	0.02
20.00	8.72	8.48	8.48	0.01
22.00	8.98	8.74	8.74	0.01
24.00	9.20	8.96	8.96	0.01
26.00	9.20	8.96	8.96	0.00
28.00	9.20	8.96	8.96	0.00
30.00	9.20	8.96	8.96	0.00
32.00	9.20	8.96	8.96	0.00
34.00	9.20	8.96	8.96	0.00
36.00	9.20	8.96	8.96	0.00
38.00	9.20	8.96	8.96	0.00
40.00	9.20	8.96	8.96	0.00
42.00	9.20	8.96	8.96	0.00
44.00	9.20	8.96	8.96	0.00
46.00	9.20	8.96	8.96	0.00
48.00	9.20	8.96	8.96	0.00
50.00	9.20	8.96	8.96	0.00
52.00	9.20	8.96	8.96	0.00
54.00	9.20	8.96	8.96	0.00
56.00	9.20	8.96	8.96	0.00
58.00	9.20	8.96	8.96	0.00
60.00	9.20	8.96	8.96	0.00
62.00	9.20	8.96	8.96	0.00
64.00	9.20	8.96	8.96	0.00
66.00	9.20	8.96	8.96	0.00
68.00	9.20	8.96	8.96	0.00
70.00	9.20	8.96	8.96	0.00
72.00	9.20	8.96	8.96	0.00

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NOAA 24-hr D 100 YR Rainfall=9.20"

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Summary for Pond P-PP: Porous Pavement (Typical)

Inflow Area = 4,000 sf, 25.00% Impervious, Inflow Depth = 8.96" for 100 YR event
Inflow = 0.66 cfs @ 12.14 hrs, Volume= 2,987 cf
Outflow = 0.12 cfs @ 12.71 hrs, Volume= 2,987 cf, Atten= 81%, Lag= 34.5 min
Discarded = 0.12 cfs @ 12.71 hrs, Volume= 2,987 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 71.99' @ 12.71 hrs Surf.Area= 1,000 sf Storage= 796 cf

Plug-Flow detention time= 43.1 min calculated for 2,986 cf (100% of inflow)
Center-of-Mass det. time= 43.1 min (787.0 - 743.9)

Volume	Invert	Avail.Storage	Storage Description
#1	70.00'	800 cf	20.00'W x 50.00'L x 2.00'H Stone Bed 2,000 cf Overall x 40.0% Voids
#2	72.00'	75 cf	20.00'W x 50.00'L x 0.50'H Pavement -Impervious 500 cf Overall x 15.0% Voids
875 cf			Total Available Storage

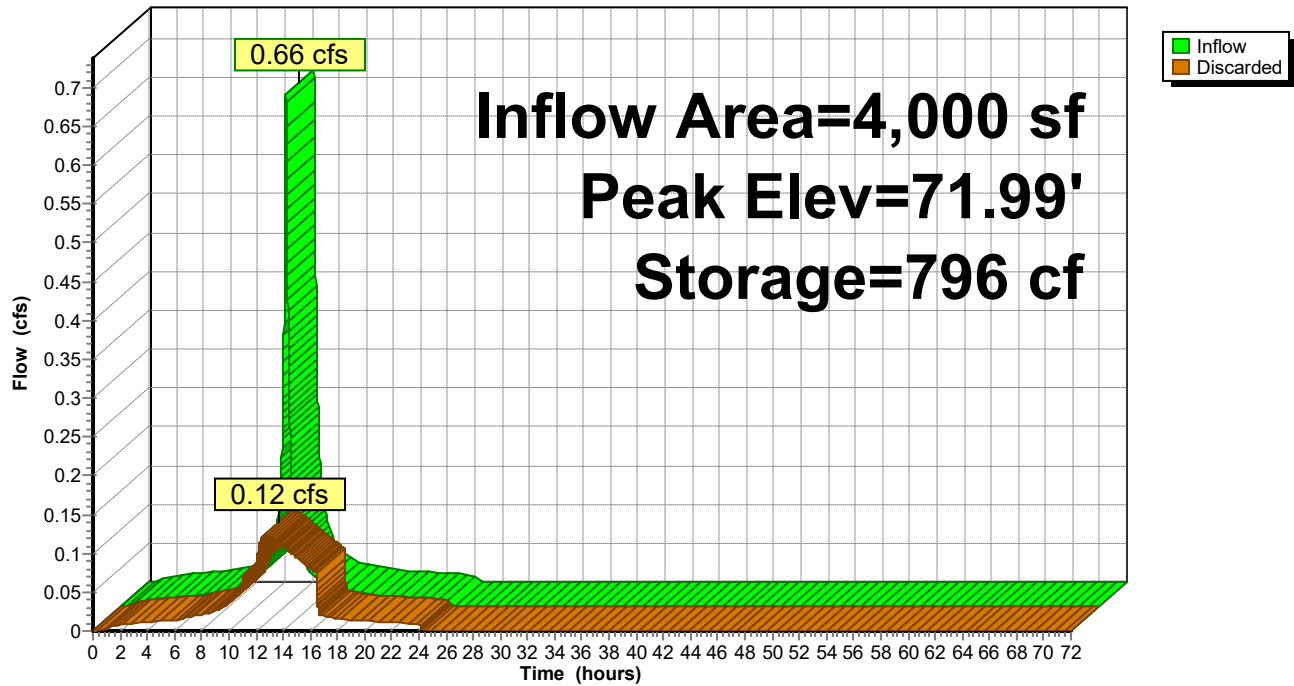
Device	Routing	Invert	Outlet Devices
#1	Discarded	70.00'	3.200 in/hr Exfiltration over Horizontal area Conductivity to Groundwater Elevation = 67.00'

Discarded OutFlow Max=0.12 cfs @ 12.71 hrs HW=71.99' (Free Discharge)

↑ **1=Exfiltration** (Controls 0.12 cfs)

Pond P-PP: Porous Pavement (Typical)

Hydrograph



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NOAA 24-hr D 100 YR Rainfall=9.20"

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Hydrograph for Pond P-PP: Porous Pavement (Typical)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Discarded (cfs)
0.00	0.00	0	70.00	0.00
2.00	0.01	1	70.00	0.01
4.00	0.01	2	70.00	0.01
6.00	0.01	2	70.00	0.01
8.00	0.02	3	70.01	0.02
10.00	0.04	5	70.01	0.04
12.00	0.36	210	70.53	0.09
14.00	0.04	572	71.43	0.11
16.00	0.02	109	70.27	0.08
18.00	0.02	2	70.01	0.02
20.00	0.01	2	70.00	0.01
22.00	0.01	2	70.00	0.01
24.00	0.01	1	70.00	0.01
26.00	0.00	0	70.00	0.00
28.00	0.00	0	70.00	0.00
30.00	0.00	0	70.00	0.00
32.00	0.00	0	70.00	0.00
34.00	0.00	0	70.00	0.00
36.00	0.00	0	70.00	0.00
38.00	0.00	0	70.00	0.00
40.00	0.00	0	70.00	0.00
42.00	0.00	0	70.00	0.00
44.00	0.00	0	70.00	0.00
46.00	0.00	0	70.00	0.00
48.00	0.00	0	70.00	0.00
50.00	0.00	0	70.00	0.00
52.00	0.00	0	70.00	0.00
54.00	0.00	0	70.00	0.00
56.00	0.00	0	70.00	0.00
58.00	0.00	0	70.00	0.00
60.00	0.00	0	70.00	0.00
62.00	0.00	0	70.00	0.00
64.00	0.00	0	70.00	0.00
66.00	0.00	0	70.00	0.00
68.00	0.00	0	70.00	0.00
70.00	0.00	0	70.00	0.00
72.00	0.00	0	70.00	0.00

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Wilbur Avenue Subdivision, Manchester, NJ

NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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Summary for Subcatchment TS: Typical House/Driveway System

Runoff = 0.22 cfs @ 1.12 hrs, Volume= 345 cf, Depth= 1.03"
Routed to Pond P-PP : Porous Pavement (Typical)

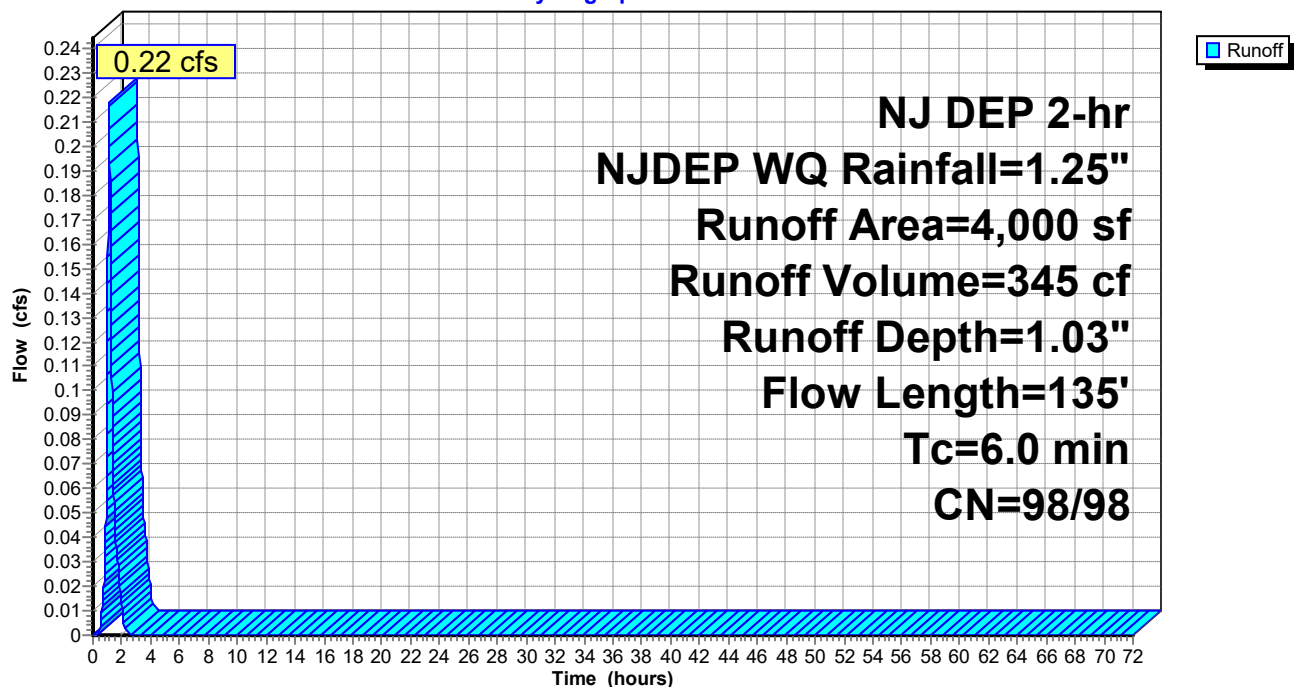
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.01
NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

Area (sf)	CN	Description
3,000	98	Unconnected roofs, HSG A
1,000	98	Paved parking, HSG A
4,000	98	Weighted Average
3,000	98	75.00% Pervious Area
1,000	98	25.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	25	0.2200	2.81		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.42"
0.6	110	0.0050	2.89	1.01	Pipe Channel, 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.011
0.7	135	Total, Increased to minimum Tc = 6.0 min			

Subcatchment TS: Typical House/Driveway System

Hydrograph



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NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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Hydrograph for Subcatchment TS: Typical House/Driveway System

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	1.25	1.03	1.03	0.01
4.00	1.25	1.03	1.03	0.00
6.00	1.25	1.03	1.03	0.00
8.00	1.25	1.03	1.03	0.00
10.00	1.25	1.03	1.03	0.00
12.00	1.25	1.03	1.03	0.00
14.00	1.25	1.03	1.03	0.00
16.00	1.25	1.03	1.03	0.00
18.00	1.25	1.03	1.03	0.00
20.00	1.25	1.03	1.03	0.00
22.00	1.25	1.03	1.03	0.00
24.00	1.25	1.03	1.03	0.00
26.00	1.25	1.03	1.03	0.00
28.00	1.25	1.03	1.03	0.00
30.00	1.25	1.03	1.03	0.00
32.00	1.25	1.03	1.03	0.00
34.00	1.25	1.03	1.03	0.00
36.00	1.25	1.03	1.03	0.00
38.00	1.25	1.03	1.03	0.00
40.00	1.25	1.03	1.03	0.00
42.00	1.25	1.03	1.03	0.00
44.00	1.25	1.03	1.03	0.00
46.00	1.25	1.03	1.03	0.00
48.00	1.25	1.03	1.03	0.00
50.00	1.25	1.03	1.03	0.00
52.00	1.25	1.03	1.03	0.00
54.00	1.25	1.03	1.03	0.00
56.00	1.25	1.03	1.03	0.00
58.00	1.25	1.03	1.03	0.00
60.00	1.25	1.03	1.03	0.00
62.00	1.25	1.03	1.03	0.00
64.00	1.25	1.03	1.03	0.00
66.00	1.25	1.03	1.03	0.00
68.00	1.25	1.03	1.03	0.00
70.00	1.25	1.03	1.03	0.00
72.00	1.25	1.03	1.03	0.00

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Wilbur Avenue Subdivision, Manchester, NJ

NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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Summary for Pond P-PP: Porous Pavement (Typical)

Inflow Area = 4,000 sf, 25.00% Impervious, Inflow Depth = 1.03" for NJDEP WQ event
 Inflow = 0.22 cfs @ 1.12 hrs, Volume= 345 cf
 Outflow = 0.08 cfs @ 1.36 hrs, Volume= 345 cf, Atten= 63%, Lag= 14.3 min
 Discarded = 0.08 cfs @ 1.36 hrs, Volume= 345 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 70.29' @ 1.36 hrs Surf.Area= 1,000 sf Storage= 115 cf

Plug-Flow detention time= 13.3 min calculated for 345 cf (100% of inflow)

Center-of-Mass det. time= 13.3 min (87.3 - 73.9)

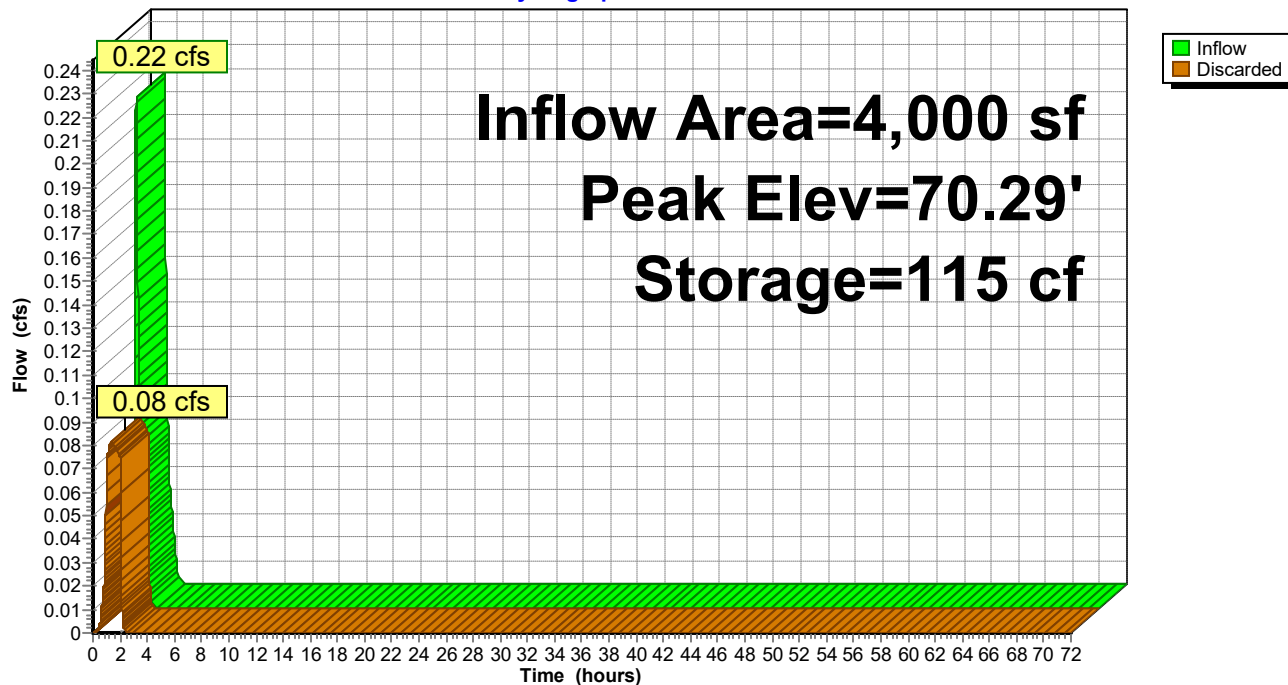
Volume	Invert	Avail.Storage	Storage Description
#1	70.00'	800 cf	20.00'W x 50.00'L x 2.00'H Stone Bed 2,000 cf Overall x 40.0% Voids
#2	72.00'	75 cf	20.00'W x 50.00'L x 0.50'H Pavement -Impervious 500 cf Overall x 15.0% Voids
875 cf			Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	70.00'	3.200 in/hr Exfiltration over Horizontal area Conductivity to Groundwater Elevation = 67.00'

Discarded OutFlow Max=0.08 cfs @ 1.36 hrs HW=70.29' (Free Discharge)↑**1=Exfiltration** (Controls 0.08 cfs)

Pond P-PP: Porous Pavement (Typical)

Hydrograph



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Wilbur Avenue Subdivision, Manchester, NJ

NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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Hydrograph for Pond P-PP: Porous Pavement (Typical)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Discarded (cfs)
0.00	0.00	0	70.00	0.00
2.00	0.01	14	70.04	0.07
4.00	0.00	0	70.00	0.00
6.00	0.00	0	70.00	0.00
8.00	0.00	0	70.00	0.00
10.00	0.00	0	70.00	0.00
12.00	0.00	0	70.00	0.00
14.00	0.00	0	70.00	0.00
16.00	0.00	0	70.00	0.00
18.00	0.00	0	70.00	0.00
20.00	0.00	0	70.00	0.00
22.00	0.00	0	70.00	0.00
24.00	0.00	0	70.00	0.00
26.00	0.00	0	70.00	0.00
28.00	0.00	0	70.00	0.00
30.00	0.00	0	70.00	0.00
32.00	0.00	0	70.00	0.00
34.00	0.00	0	70.00	0.00
36.00	0.00	0	70.00	0.00
38.00	0.00	0	70.00	0.00
40.00	0.00	0	70.00	0.00
42.00	0.00	0	70.00	0.00
44.00	0.00	0	70.00	0.00
46.00	0.00	0	70.00	0.00
48.00	0.00	0	70.00	0.00
50.00	0.00	0	70.00	0.00
52.00	0.00	0	70.00	0.00
54.00	0.00	0	70.00	0.00
56.00	0.00	0	70.00	0.00
58.00	0.00	0	70.00	0.00
60.00	0.00	0	70.00	0.00
62.00	0.00	0	70.00	0.00
64.00	0.00	0	70.00	0.00
66.00	0.00	0	70.00	0.00
68.00	0.00	0	70.00	0.00
70.00	0.00	0	70.00	0.00
72.00	0.00	0	70.00	0.00

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Multi-Event Tables

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Events for Subcatchment TS: Typical House/Driveway System

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
2 YR	3.42	0.24	1,062	3.19
10 YR	5.38	0.38	1,714	5.14
25 YR	6.68	0.48	2,147	6.44
100 YR	9.20	0.66	2,987	8.96
NJDEP WQ	1.25	0.22	345	1.03

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Multi-Event Tables

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Events for Pond P-PP: Porous Pavement (Typical)

Event	Inflow (cfs)	Discarded (cfs)	Elevation (feet)	Storage (cubic-feet)
2 YR	0.24	0.08	70.39	155
10 YR	0.38	0.10	70.87	349
25 YR	0.48	0.10	71.23	493
100 YR	0.66	0.12	71.99	796
NJDEP WQ	0.22	0.08	70.29	115

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- 9 Subcat TS: Typical House/Driveway System
- 11 Pond P-PP: Porous Pavement (Typical)

25 YR Event

- 14 Subcat TS: Typical House/Driveway System
- 16 Pond P-PP: Porous Pavement (Typical)

100 YR Event

- 19 Subcat TS: Typical House/Driveway System
- 21 Pond P-PP: Porous Pavement (Typical)

NJDEP WQ Event

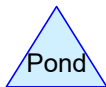
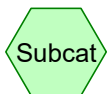
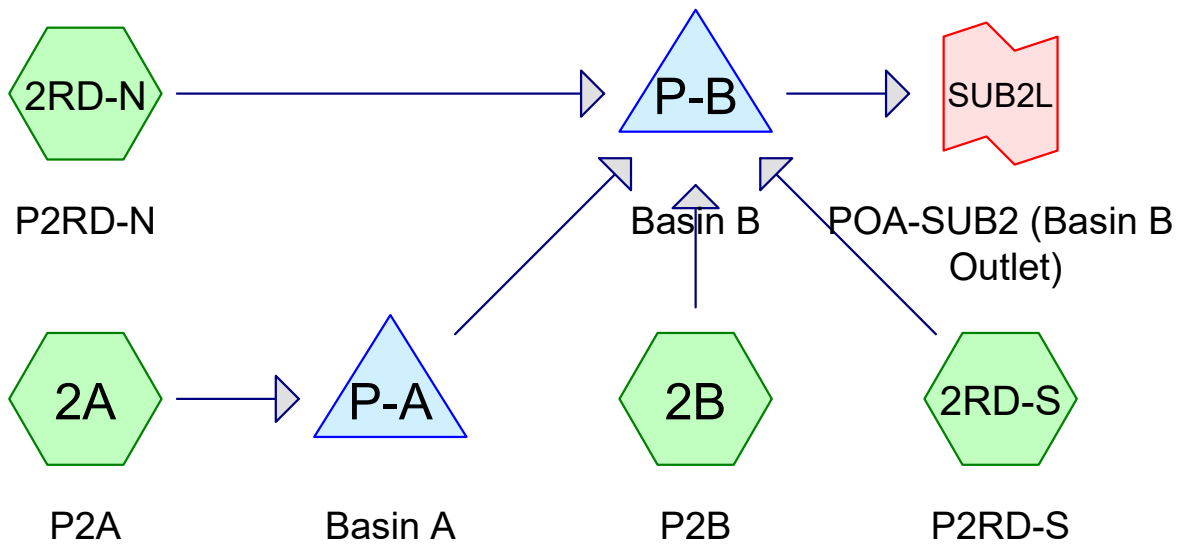
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Multi-Event Tables

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Appendix D – Failure Analysis

Proposed Conditions
(SCD Failure Analysis)



260713_Proposed SWM SCD

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Page 2

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2 YR	NOAA 24-hr	D	Default	24.00	1	3.42	2
2	10 YR	NOAA 24-hr	D	Default	24.00	1	5.33	2

260713_Proposed SWM SCD

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Page 3

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.740	39	>75% Grass cover, Good, HSG A (2A, 2B, 2RD-N, 2RD-S)
0.860	98	Paved parking, HSG A (2RD-N, 2RD-S)
0.210	49	Pervious Pavement Driveway (2B)
0.620	98	Unconnected roofs, HSG A (2B)
5.430	55	TOTAL AREA

260713_Proposed SWM SCD

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NOAA 24-hr D 2 YR Rainfall=3.42"

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Page 4

Summary for Subcatchment 2A: P2A

Runoff = 0.00 cfs @ 24.02 hrs, Volume= 0.001 af, Depth= 0.01"
Routed to Pond P-A : Basin A

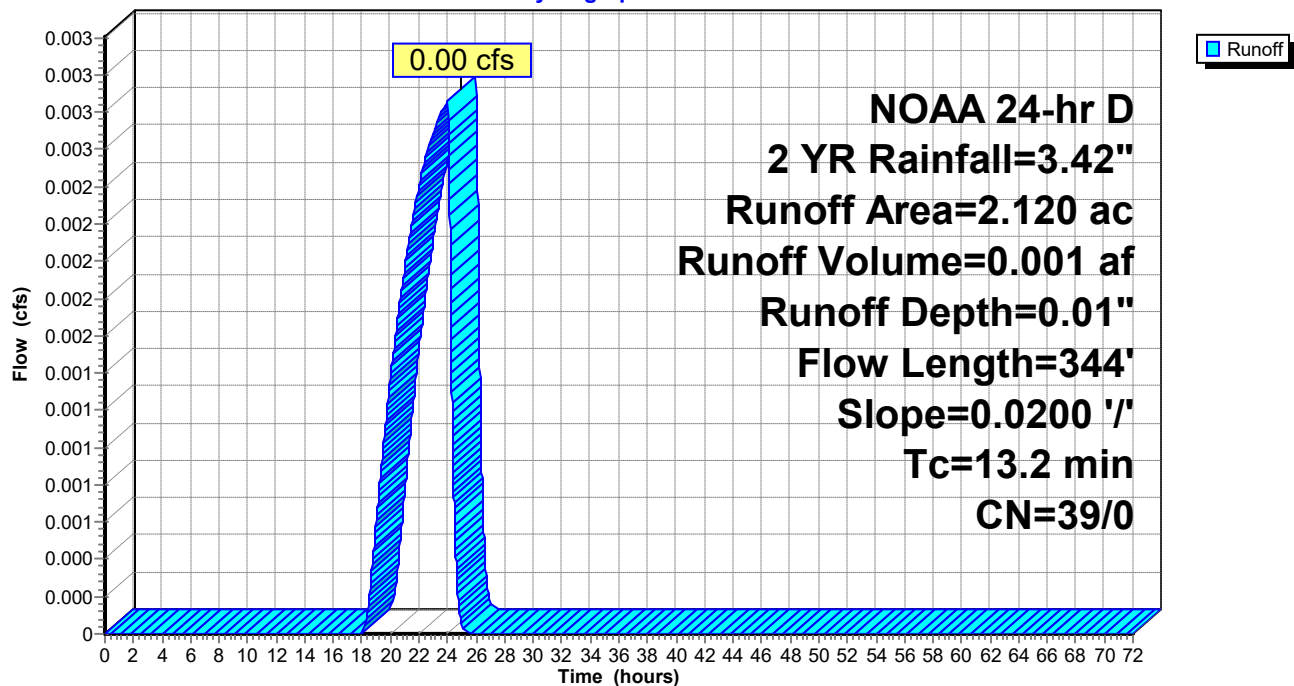
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 2 YR Rainfall=3.42"

Area (ac)	CN	Description
2.120	39	>75% Grass cover, Good, HSG A
2.120	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	94	0.0200	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.42" Using McCuen-Spiess flow length
4.2	250	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
13.2	344	Total			

Subcatchment 2A: P2A

Hydrograph



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Hydrograph for Subcatchment 2A: P2A

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.08	0.00	0.00	0.00
4.00	0.18	0.00	0.00	0.00
6.00	0.29	0.00	0.00	0.00
8.00	0.44	0.00	0.00	0.00
10.00	0.68	0.00	0.00	0.00
12.00	1.64	0.00	0.00	0.00
14.00	2.74	0.00	0.00	0.00
16.00	2.98	0.00	0.00	0.00
18.00	3.13	0.00	0.00	0.00
20.00	3.24	0.00	0.00	0.00
22.00	3.34	0.00	0.00	0.00
24.00	3.42	0.01	0.00	0.00
26.00	3.42	0.01	0.00	0.00
28.00	3.42	0.01	0.00	0.00
30.00	3.42	0.01	0.00	0.00
32.00	3.42	0.01	0.00	0.00
34.00	3.42	0.01	0.00	0.00
36.00	3.42	0.01	0.00	0.00
38.00	3.42	0.01	0.00	0.00
40.00	3.42	0.01	0.00	0.00
42.00	3.42	0.01	0.00	0.00
44.00	3.42	0.01	0.00	0.00
46.00	3.42	0.01	0.00	0.00
48.00	3.42	0.01	0.00	0.00
50.00	3.42	0.01	0.00	0.00
52.00	3.42	0.01	0.00	0.00
54.00	3.42	0.01	0.00	0.00
56.00	3.42	0.01	0.00	0.00
58.00	3.42	0.01	0.00	0.00
60.00	3.42	0.01	0.00	0.00
62.00	3.42	0.01	0.00	0.00
64.00	3.42	0.01	0.00	0.00
66.00	3.42	0.01	0.00	0.00
68.00	3.42	0.01	0.00	0.00
70.00	3.42	0.01	0.00	0.00
72.00	3.42	0.01	0.00	0.00

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NOAA 24-hr D 2 YR Rainfall=3.42"

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Summary for Subcatchment 2B: P2B

Runoff = 0.24 cfs @ 12.40 hrs, Volume= 0.065 af, Depth= 0.35"
Routed to Pond P-B : Basin B

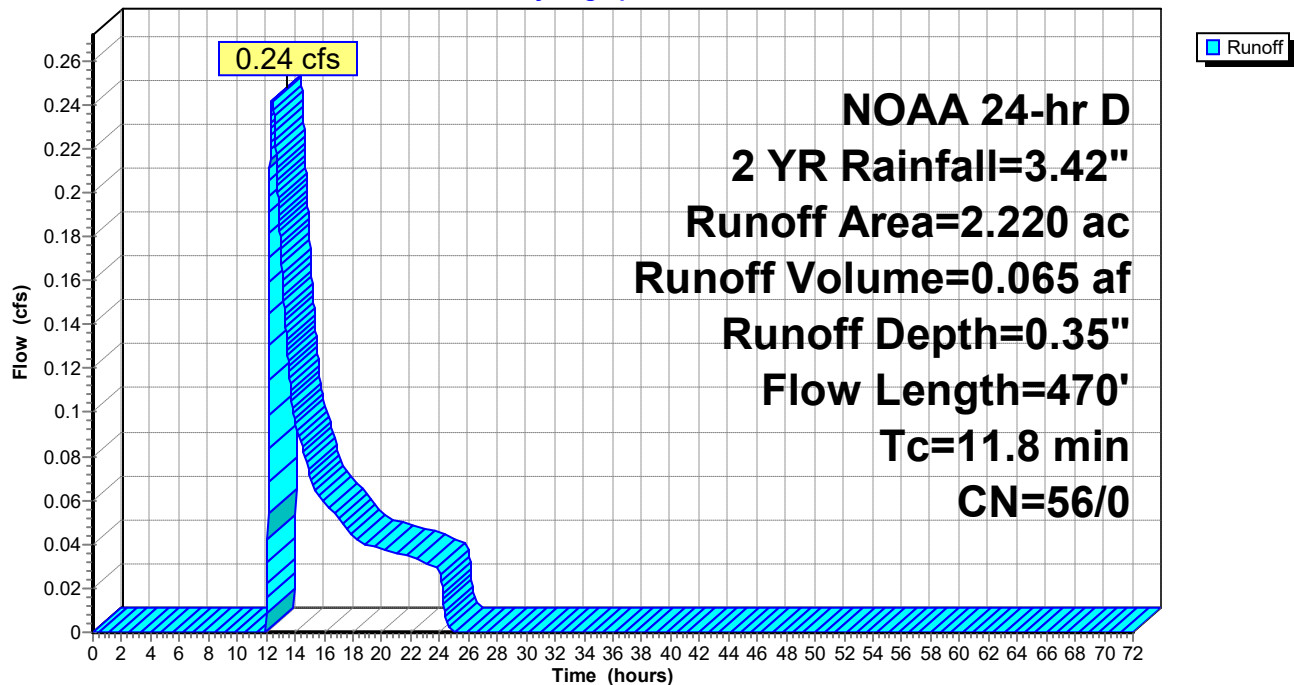
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.10 hrs
NOAA 24-hr D 2 YR Rainfall=3.42"

Area (ac)	CN	Description
1.390	39	>75% Grass cover, Good, HSG A
* 0.210	49	Pervious Pavement Driveway
0.620	98	Unconnected roofs, HSG A
2.220	56	Weighted Average
2.220	56	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.0310	0.21		Sheet Flow, Grass: Short n= 0.150 P2= 3.42"
3.4	205	0.0210	1.01		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.4	165	0.0100	6.22	7.63	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
11.8	470	Total			

Subcatchment 2B: P2B

Hydrograph



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Hydrograph for Subcatchment 2B: P2B

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.08	0.00	0.00	0.00
4.00	0.18	0.00	0.00	0.00
6.00	0.29	0.00	0.00	0.00
8.00	0.44	0.00	0.00	0.00
10.00	0.68	0.00	0.00	0.00
12.00	1.64	0.00	0.00	0.00
14.00	2.74	0.15	0.00	0.10
16.00	2.98	0.21	0.00	0.06
18.00	3.13	0.26	0.00	0.04
20.00	3.24	0.29	0.00	0.04
22.00	3.34	0.32	0.00	0.03
24.00	3.42	0.35	0.00	0.03
26.00	3.42	0.35	0.00	0.00
28.00	3.42	0.35	0.00	0.00
30.00	3.42	0.35	0.00	0.00
32.00	3.42	0.35	0.00	0.00
34.00	3.42	0.35	0.00	0.00
36.00	3.42	0.35	0.00	0.00
38.00	3.42	0.35	0.00	0.00
40.00	3.42	0.35	0.00	0.00
42.00	3.42	0.35	0.00	0.00
44.00	3.42	0.35	0.00	0.00
46.00	3.42	0.35	0.00	0.00
48.00	3.42	0.35	0.00	0.00
50.00	3.42	0.35	0.00	0.00
52.00	3.42	0.35	0.00	0.00
54.00	3.42	0.35	0.00	0.00
56.00	3.42	0.35	0.00	0.00
58.00	3.42	0.35	0.00	0.00
60.00	3.42	0.35	0.00	0.00
62.00	3.42	0.35	0.00	0.00
64.00	3.42	0.35	0.00	0.00
66.00	3.42	0.35	0.00	0.00
68.00	3.42	0.35	0.00	0.00
70.00	3.42	0.35	0.00	0.00
72.00	3.42	0.35	0.00	0.00

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NOAA 24-hr D 2 YR Rainfall=3.42"

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Summary for Subcatchment 2RD-N: P2RD-N

Runoff = 2.03 cfs @ 12.14 hrs, Volume= 0.205 af, Depth= 2.53"
Routed to Pond P-B : Basin B

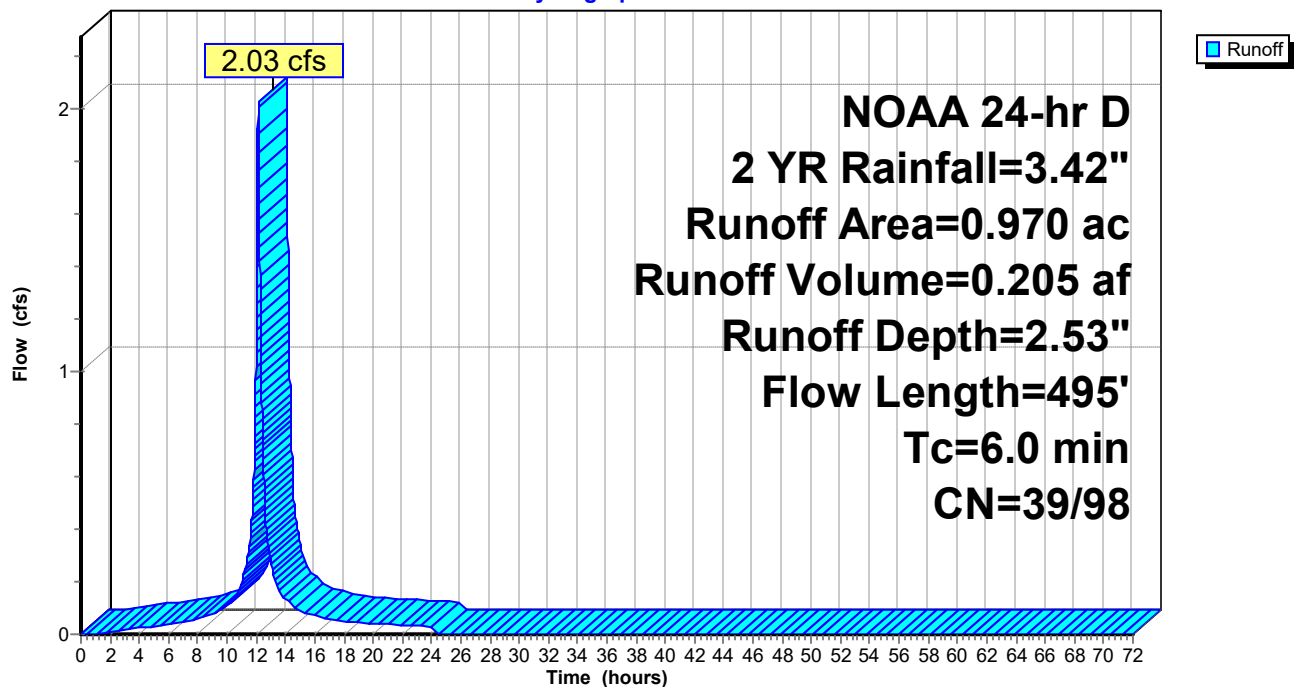
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2 YR Rainfall=3.42"

Area (ac)	CN	Description
0.770	98	Paved parking, HSG A
0.200	39	>75% Grass cover, Good, HSG A
0.970	86	Weighted Average
0.200	39	20.62% Pervious Area
0.770	98	79.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0210	1.05		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.42"
1.8	310	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.4	165	0.0100	6.22	7.63	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
2.5	495	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 2RD-N: P2RD-N

Hydrograph



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Hydrograph for Subcatchment 2RD-N: P2RD-N

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.08	0.00	0.01	0.01
4.00	0.18	0.00	0.06	0.03
6.00	0.29	0.00	0.14	0.04
8.00	0.44	0.00	0.27	0.06
10.00	0.68	0.00	0.48	0.11
12.00	1.64	0.00	1.42	1.12
14.00	2.74	0.00	2.51	0.13
16.00	2.98	0.00	2.74	0.07
18.00	3.13	0.00	2.90	0.05
20.00	3.24	0.00	3.01	0.04
22.00	3.34	0.00	3.10	0.04
24.00	3.42	0.01	3.19	0.03
26.00	3.42	0.01	3.19	0.00
28.00	3.42	0.01	3.19	0.00
30.00	3.42	0.01	3.19	0.00
32.00	3.42	0.01	3.19	0.00
34.00	3.42	0.01	3.19	0.00
36.00	3.42	0.01	3.19	0.00
38.00	3.42	0.01	3.19	0.00
40.00	3.42	0.01	3.19	0.00
42.00	3.42	0.01	3.19	0.00
44.00	3.42	0.01	3.19	0.00
46.00	3.42	0.01	3.19	0.00
48.00	3.42	0.01	3.19	0.00
50.00	3.42	0.01	3.19	0.00
52.00	3.42	0.01	3.19	0.00
54.00	3.42	0.01	3.19	0.00
56.00	3.42	0.01	3.19	0.00
58.00	3.42	0.01	3.19	0.00
60.00	3.42	0.01	3.19	0.00
62.00	3.42	0.01	3.19	0.00
64.00	3.42	0.01	3.19	0.00
66.00	3.42	0.01	3.19	0.00
68.00	3.42	0.01	3.19	0.00
70.00	3.42	0.01	3.19	0.00
72.00	3.42	0.01	3.19	0.00

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Summary for Subcatchment 2RD-S: P2RD-S

Runoff = 0.24 cfs @ 12.14 hrs, Volume= 0.024 af, Depth= 2.39"
Routed to Pond P-B : Basin B

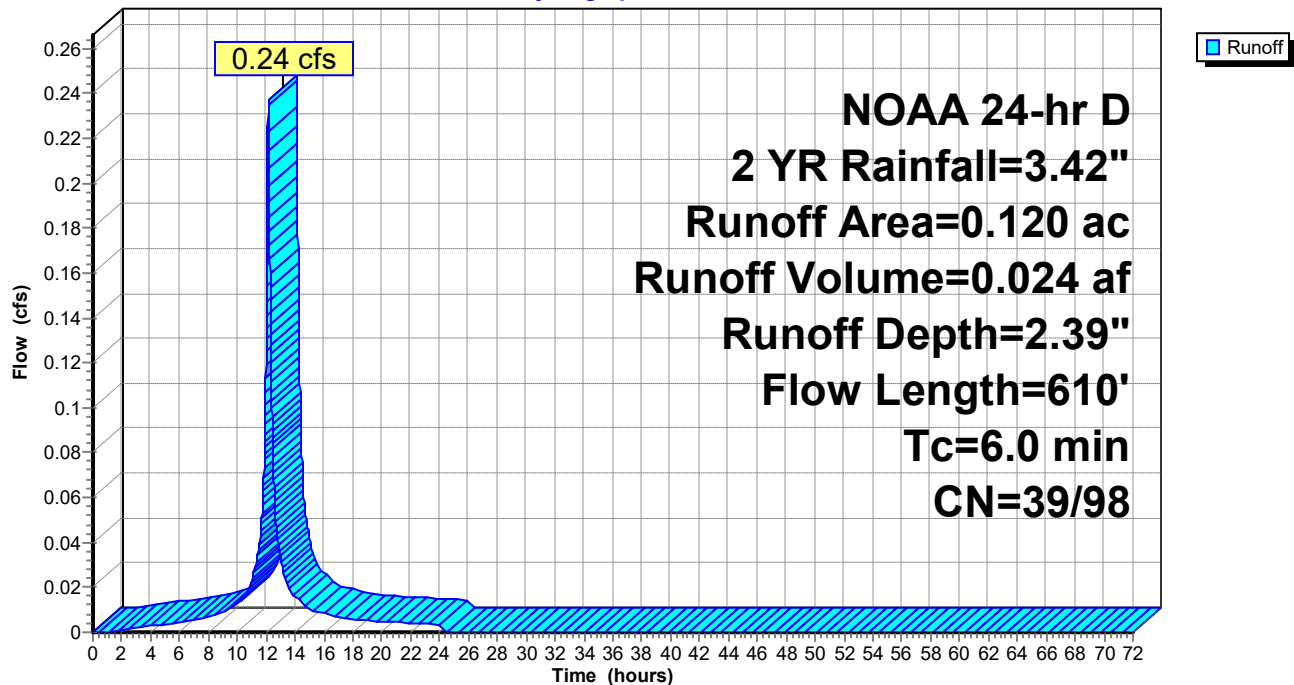
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 2 YR Rainfall=3.42"

Area (ac)	CN	Description
0.090	98	Paved parking, HSG A
0.030	39	>75% Grass cover, Good, HSG A
0.120	83	Weighted Average
0.030	39	25.00% Pervious Area
0.090	98	75.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	1.03		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.42"
0.6	85	0.0160	2.57		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.6	505	0.0075	5.39	6.61	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
2.5	610	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 2RD-S: P2RD-S

Hydrograph



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Hydrograph for Subcatchment 2RD-S: P2RD-S

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.08	0.00	0.01	0.00
4.00	0.18	0.00	0.06	0.00
6.00	0.29	0.00	0.14	0.00
8.00	0.44	0.00	0.27	0.01
10.00	0.68	0.00	0.48	0.01
12.00	1.64	0.00	1.42	0.13
14.00	2.74	0.00	2.51	0.02
16.00	2.98	0.00	2.74	0.01
18.00	3.13	0.00	2.90	0.01
20.00	3.24	0.00	3.01	0.00
22.00	3.34	0.00	3.10	0.00
24.00	3.42	0.01	3.19	0.00
26.00	3.42	0.01	3.19	0.00
28.00	3.42	0.01	3.19	0.00
30.00	3.42	0.01	3.19	0.00
32.00	3.42	0.01	3.19	0.00
34.00	3.42	0.01	3.19	0.00
36.00	3.42	0.01	3.19	0.00
38.00	3.42	0.01	3.19	0.00
40.00	3.42	0.01	3.19	0.00
42.00	3.42	0.01	3.19	0.00
44.00	3.42	0.01	3.19	0.00
46.00	3.42	0.01	3.19	0.00
48.00	3.42	0.01	3.19	0.00
50.00	3.42	0.01	3.19	0.00
52.00	3.42	0.01	3.19	0.00
54.00	3.42	0.01	3.19	0.00
56.00	3.42	0.01	3.19	0.00
58.00	3.42	0.01	3.19	0.00
60.00	3.42	0.01	3.19	0.00
62.00	3.42	0.01	3.19	0.00
64.00	3.42	0.01	3.19	0.00
66.00	3.42	0.01	3.19	0.00
68.00	3.42	0.01	3.19	0.00
70.00	3.42	0.01	3.19	0.00
72.00	3.42	0.01	3.19	0.00

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Summary for Pond P-A: Basin A

Inflow Area = 2.120 ac, 0.00% Impervious, Inflow Depth = 0.01" for 2 YR event
Inflow = 0.00 cfs @ 24.02 hrs, Volume= 0.001 af
Outflow = 0.00 cfs @ 24.57 hrs, Volume= 0.001 af, Atten= 85%, Lag= 33.4 min
Primary = 0.00 cfs @ 24.57 hrs, Volume= 0.001 af
Routed to Pond P-B : Basin B

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Starting Elev= 77.10' Surf.Area= 0.070 ac Storage= 0.092 af
Peak Elev= 77.11' @ 24.57 hrs Surf.Area= 0.071 ac Storage= 0.093 af (0.001 af above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 1,105.5 min (2,430.5 - 1,325.1)

Volume	Invert	Avail.Storage	Storage Description
#1	75.33'	0.122 af	12.00'W x 125.00'L x 2.17'H Prismatic Z=3.0

Device	Routing	Invert	Outlet Devices
#1	Primary	72.61'	12.0" Round Culvert L= 288.0' Ke= 0.600 Inlet / Outlet Invert= 72.61' / 69.73' S= 0.0100 ' / Cc= 0.900 n= 0.011, Flow Area= 0.79 sf
#2	Device 1	77.10'	2.5" Vert. Orifice C= 0.600 Limited to weir flow at low heads
#3	Device 1	77.40'	24.0" x 24.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 24.57 hrs HW=77.11' (Free Discharge)

1=Culvert (Passes 0.00 cfs of 5.60 cfs potential flow)
2=Orifice (Orifice Controls 0.00 cfs @ 0.38 fps)
3=Grate (Controls 0.00 cfs)

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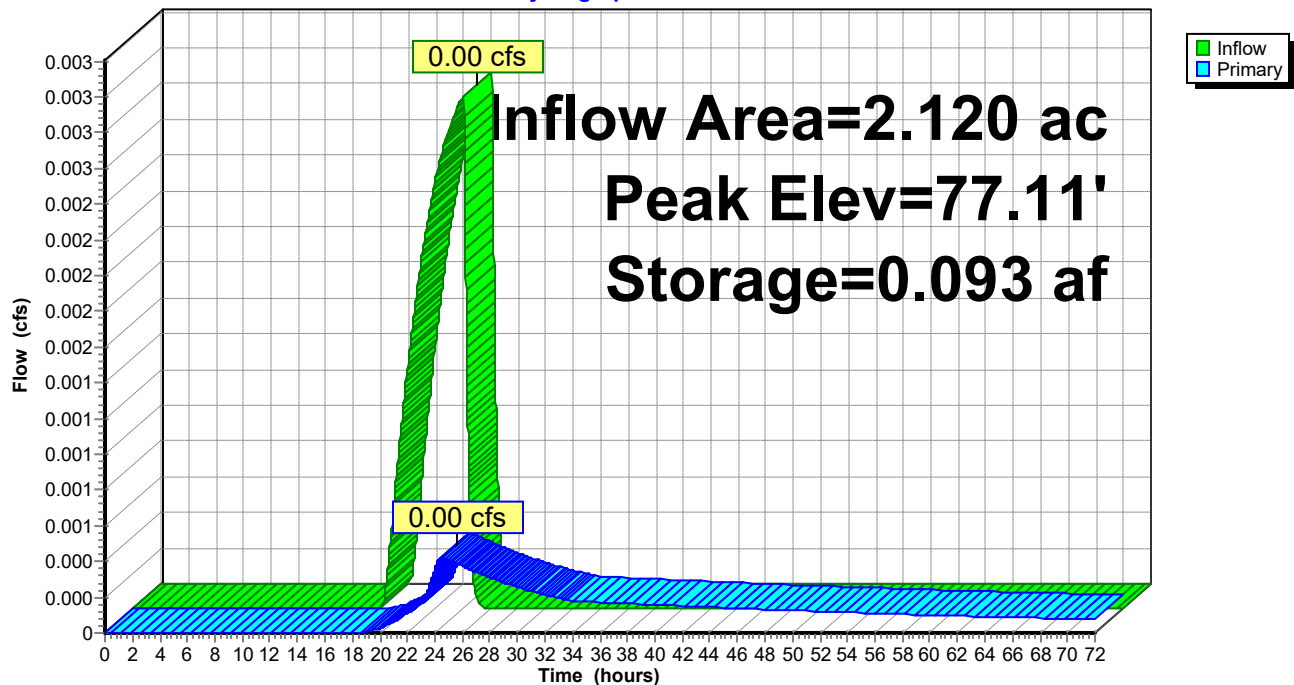
NOAA 24-hr D 2 YR Rainfall=3.42"

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Pond P-A: Basin A

Hydrograph



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Hydrograph for Pond P-A: Basin A

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.092	77.10	0.00
2.00	0.00	0.092	77.10	0.00
4.00	0.00	0.092	77.10	0.00
6.00	0.00	0.092	77.10	0.00
8.00	0.00	0.092	77.10	0.00
10.00	0.00	0.092	77.10	0.00
12.00	0.00	0.092	77.10	0.00
14.00	0.00	0.092	77.10	0.00
16.00	0.00	0.092	77.10	0.00
18.00	0.00	0.092	77.10	0.00
20.00	0.00	0.092	77.10	0.00
22.00	0.00	0.092	77.11	0.00
24.00	0.00	0.093	77.11	0.00
26.00	0.00	0.093	77.11	0.00
28.00	0.00	0.093	77.11	0.00
30.00	0.00	0.093	77.11	0.00
32.00	0.00	0.093	77.11	0.00
34.00	0.00	0.093	77.11	0.00
36.00	0.00	0.093	77.11	0.00
38.00	0.00	0.093	77.11	0.00
40.00	0.00	0.093	77.11	0.00
42.00	0.00	0.093	77.11	0.00
44.00	0.00	0.093	77.11	0.00
46.00	0.00	0.093	77.11	0.00
48.00	0.00	0.093	77.11	0.00
50.00	0.00	0.092	77.11	0.00
52.00	0.00	0.092	77.11	0.00
54.00	0.00	0.092	77.11	0.00
56.00	0.00	0.092	77.11	0.00
58.00	0.00	0.092	77.11	0.00
60.00	0.00	0.092	77.11	0.00
62.00	0.00	0.092	77.10	0.00
64.00	0.00	0.092	77.10	0.00
66.00	0.00	0.092	77.10	0.00
68.00	0.00	0.092	77.10	0.00
70.00	0.00	0.092	77.10	0.00
72.00	0.00	0.092	77.10	0.00

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Summary for Pond P-B: Basin B

Inflow Area = 5.430 ac, 15.84% Impervious, Inflow Depth = 0.65" for 2 YR event
Inflow = 2.36 cfs @ 12.14 hrs, Volume= 0.294 af
Outflow = 0.14 cfs @ 16.16 hrs, Volume= 0.292 af, Atten= 94%, Lag= 240.7 min
Primary = 0.14 cfs @ 16.16 hrs, Volume= 0.292 af
Routed to Link SUB2L : POA-SUB2 (Basin B Outlet)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Starting Elev= 67.65' Surf.Area= 5,309 sf Storage= 3,396 cf
Peak Elev= 69.00' @ 16.16 hrs Surf.Area= 5,630 sf Storage= 10,778 cf (7,382 cf above start)

Plug-Flow detention time= 1,028.7 min calculated for 0.214 af (73% of inflow)
Center-of-Mass det. time= 666.5 min (1,476.8 - 810.3)

Volume	Invert	Avail.Storage	Storage Description
#1	67.00'	25,595 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
67.00	5,140	0	0
68.00	5,400	5,270	5,270
69.00	5,630	5,515	10,785
70.00	5,870	5,750	16,535
71.00	6,100	5,985	22,520
71.50	6,200	3,075	25,595

Device	Routing	Invert	Outlet Devices
#1	Primary	67.65'	Reg-U-Flo CH 3.0-in
#2	Primary	70.75'	24.0" x 24.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.14 cfs @ 16.16 hrs HW=69.00' (Free Discharge)

↑ **1=Reg-U-Flo CH 3.0-in** (Custom Controls 0.14 cfs)

└ **2=Grate** (Controls 0.00 cfs)

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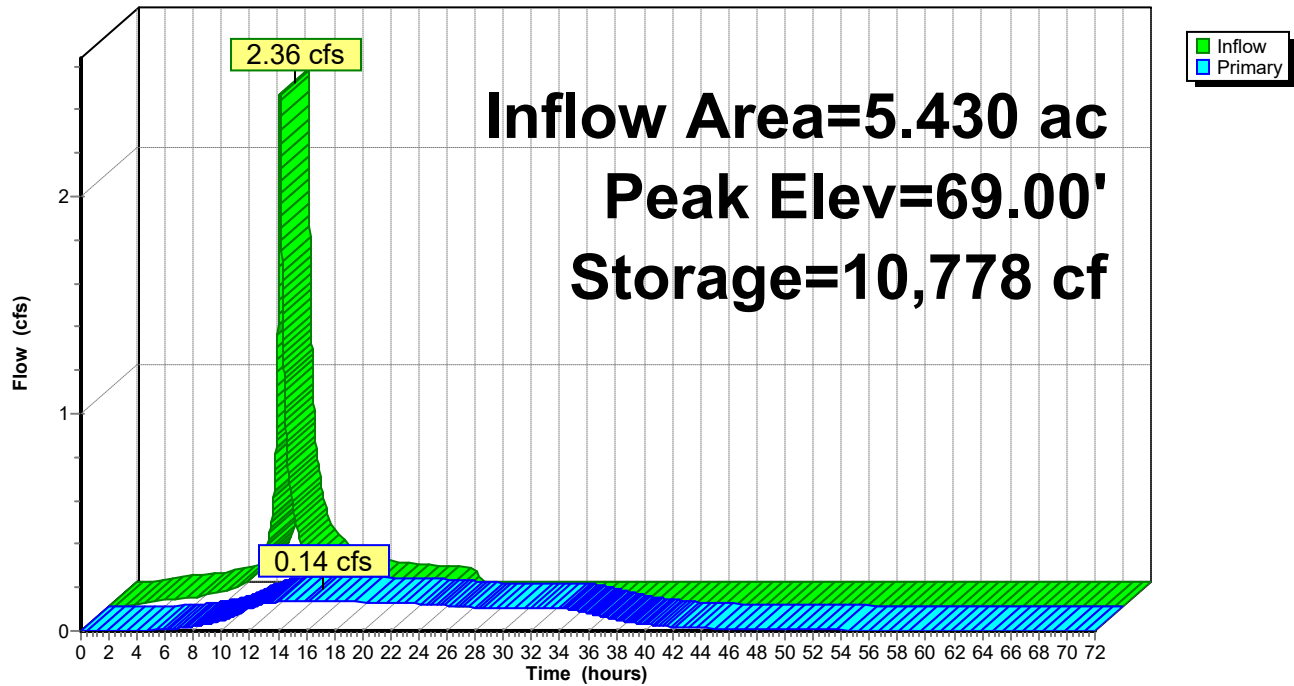
NOAA 24-hr D 2 YR Rainfall=3.42"

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Pond P-B: Basin B

Hydrograph



260713_Proposed SWM SCD

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Hydrograph for Pond P-B: Basin B

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	3,396	67.65	0.00
2.00	0.01	3,411	67.65	0.00
4.00	0.03	3,547	67.68	0.00
6.00	0.04	3,767	67.72	0.01
8.00	0.07	4,055	67.77	0.02
10.00	0.13	4,451	67.85	0.05
12.00	1.25	6,097	68.15	0.11
14.00	0.24	10,461	68.94	0.13
16.00	0.14	10,777	69.00	0.14
18.00	0.10	10,654	68.98	0.14
20.00	0.08	10,331	68.92	0.13
22.00	0.07	9,957	68.85	0.13
24.00	0.06	9,534	68.78	0.12
26.00	0.00	8,717	68.63	0.12
28.00	0.00	7,910	68.48	0.11
30.00	0.00	7,157	68.35	0.10
32.00	0.00	6,425	68.21	0.10
34.00	0.00	5,661	68.07	0.11
36.00	0.00	4,971	67.94	0.08
38.00	0.00	4,492	67.86	0.05
40.00	0.00	4,201	67.80	0.03
42.00	0.00	4,023	67.77	0.02
44.00	0.00	3,905	67.75	0.01
46.00	0.00	3,821	67.73	0.01
48.00	0.00	3,761	67.72	0.01
50.00	0.00	3,718	67.71	0.01
52.00	0.00	3,684	67.70	0.00
54.00	0.00	3,654	67.70	0.00
56.00	0.00	3,628	67.69	0.00
58.00	0.00	3,604	67.69	0.00
60.00	0.00	3,582	67.69	0.00
62.00	0.00	3,563	67.68	0.00
64.00	0.00	3,546	67.68	0.00
66.00	0.00	3,530	67.68	0.00
68.00	0.00	3,517	67.67	0.00
70.00	0.00	3,504	67.67	0.00
72.00	0.00	3,493	67.67	0.00

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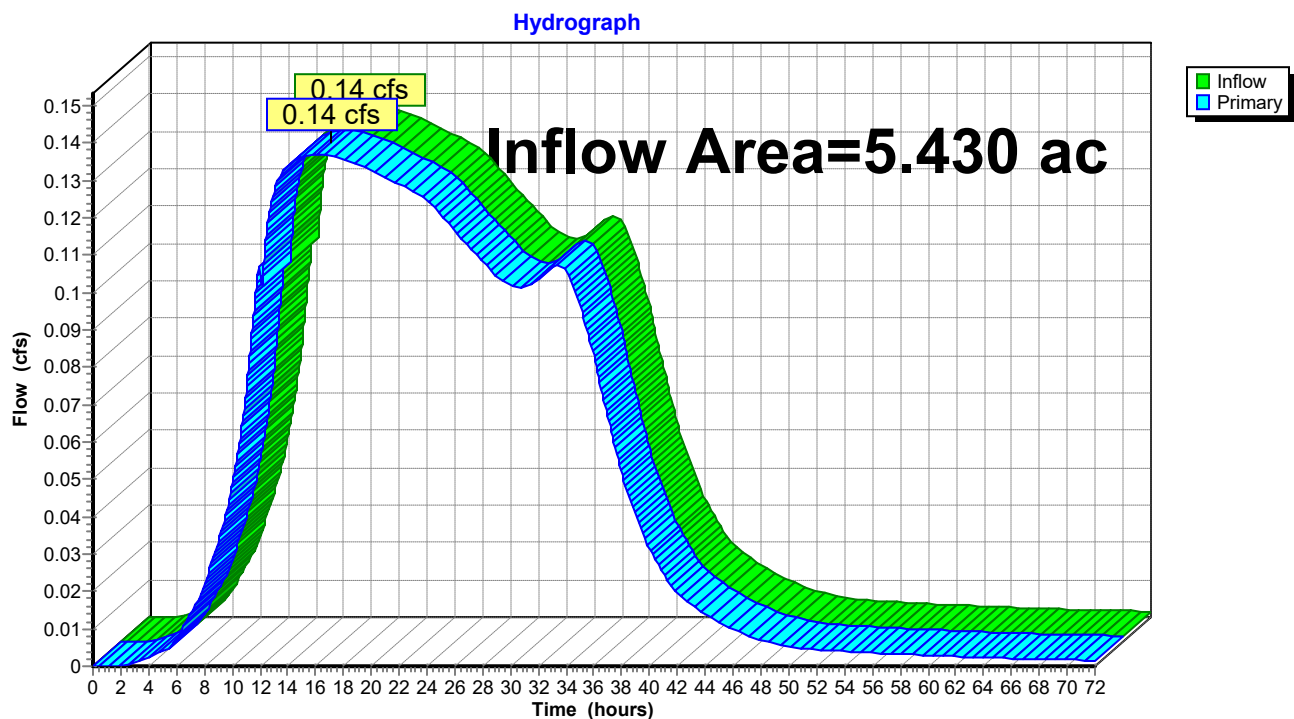
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Summary for Link SUB2L: POA-SUB2 (Basin B Outlet)

Inflow Area = 5.430 ac, 15.84% Impervious, Inflow Depth > 0.65" for 2 YR event
Inflow = 0.14 cfs @ 16.16 hrs, Volume= 0.292 af
Primary = 0.14 cfs @ 16.16 hrs, Volume= 0.292 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 2L

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link SUB2L: POA-SUB2 (Basin B Outlet)



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Hydrograph for Link SUB2L: POA-SUB2 (Basin B Outlet)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
6.00	0.01	0.00	0.01	57.00	0.00	0.00	0.00
7.00	0.01	0.00	0.01	58.00	0.00	0.00	0.00
8.00	0.02	0.00	0.02	59.00	0.00	0.00	0.00
9.00	0.03	0.00	0.03	60.00	0.00	0.00	0.00
10.00	0.05	0.00	0.05	61.00	0.00	0.00	0.00
11.00	0.07	0.00	0.07	62.00	0.00	0.00	0.00
12.00	0.11	0.00	0.11	63.00	0.00	0.00	0.00
13.00	0.13	0.00	0.13	64.00	0.00	0.00	0.00
14.00	0.13	0.00	0.13	65.00	0.00	0.00	0.00
15.00	0.14	0.00	0.14	66.00	0.00	0.00	0.00
16.00	0.14	0.00	0.14	67.00	0.00	0.00	0.00
17.00	0.14	0.00	0.14	68.00	0.00	0.00	0.00
18.00	0.14	0.00	0.14	69.00	0.00	0.00	0.00
19.00	0.13	0.00	0.13	70.00	0.00	0.00	0.00
20.00	0.13	0.00	0.13	71.00	0.00	0.00	0.00
21.00	0.13	0.00	0.13	72.00	0.00	0.00	0.00
22.00	0.13	0.00	0.13				
23.00	0.13	0.00	0.13				
24.00	0.12	0.00	0.12				
25.00	0.12	0.00	0.12				
26.00	0.12	0.00	0.12				
27.00	0.11	0.00	0.11				
28.00	0.11	0.00	0.11				
29.00	0.10	0.00	0.10				
30.00	0.10	0.00	0.10				
31.00	0.10	0.00	0.10				
32.00	0.10	0.00	0.10				
33.00	0.11	0.00	0.11				
34.00	0.11	0.00	0.11				
35.00	0.10	0.00	0.10				
36.00	0.08	0.00	0.08				
37.00	0.07	0.00	0.07				
38.00	0.05	0.00	0.05				
39.00	0.04	0.00	0.04				
40.00	0.03	0.00	0.03				
41.00	0.02	0.00	0.02				
42.00	0.02	0.00	0.02				
43.00	0.02	0.00	0.02				
44.00	0.01	0.00	0.01				
45.00	0.01	0.00	0.01				
46.00	0.01	0.00	0.01				
47.00	0.01	0.00	0.01				
48.00	0.01	0.00	0.01				
49.00	0.01	0.00	0.01				
50.00	0.01	0.00	0.01				

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NOAA 24-hr D 10 YR Rainfall=5.33"

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Summary for Subcatchment 2A: P2A

Runoff = 0.10 cfs @ 13.06 hrs, Volume= 0.048 af, Depth= 0.27"
Routed to Pond P-A : Basin A

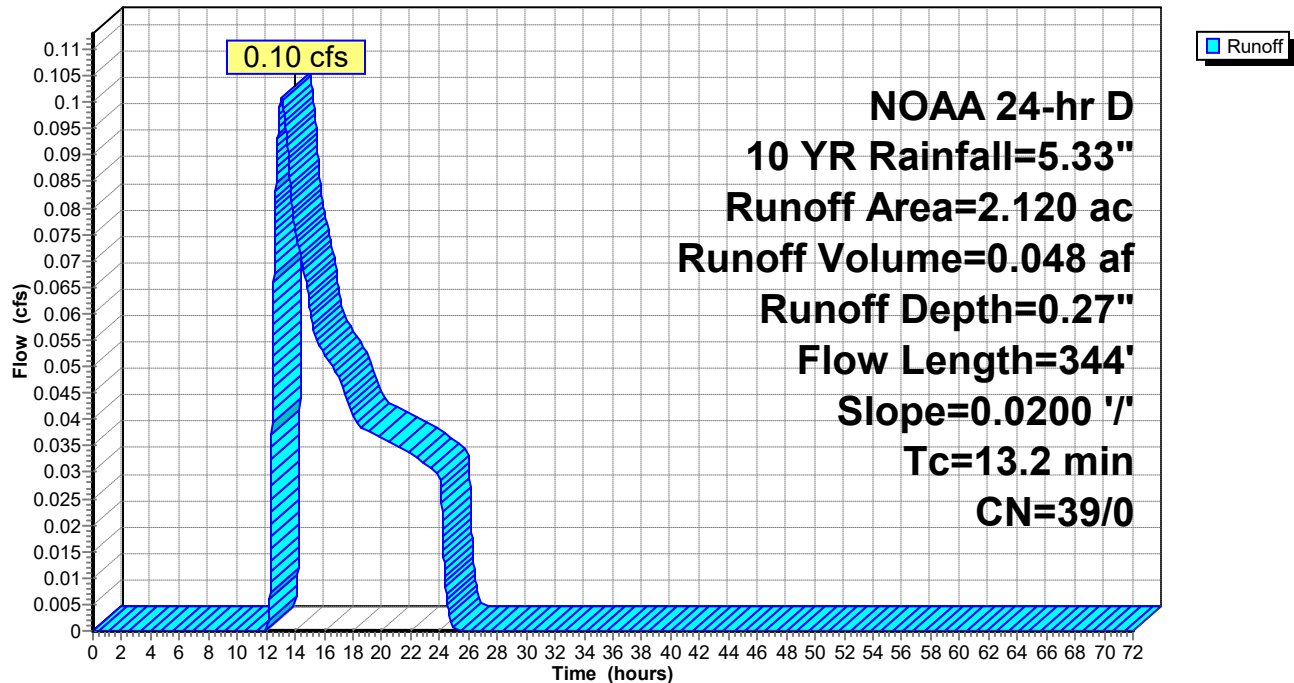
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10 YR Rainfall=5.33"

Area (ac)	CN	Description
2.120	39	>75% Grass cover, Good, HSG A
2.120	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	94	0.0200	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.42" Using McCuen-Spiess flow length
4.2	250	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
13.2	344	Total			

Subcatchment 2A: P2A

Hydrograph



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Hydrograph for Subcatchment 2A: P2A

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.13	0.00	0.00	0.00
4.00	0.28	0.00	0.00	0.00
6.00	0.46	0.00	0.00	0.00
8.00	0.69	0.00	0.00	0.00
10.00	1.06	0.00	0.00	0.00
12.00	2.55	0.00	0.00	0.00
14.00	4.27	0.08	0.00	0.08
16.00	4.64	0.13	0.00	0.05
18.00	4.87	0.18	0.00	0.04
20.00	5.05	0.21	0.00	0.04
22.00	5.20	0.24	0.00	0.03
24.00	5.33	0.27	0.00	0.03
26.00	5.33	0.27	0.00	0.00
28.00	5.33	0.27	0.00	0.00
30.00	5.33	0.27	0.00	0.00
32.00	5.33	0.27	0.00	0.00
34.00	5.33	0.27	0.00	0.00
36.00	5.33	0.27	0.00	0.00
38.00	5.33	0.27	0.00	0.00
40.00	5.33	0.27	0.00	0.00
42.00	5.33	0.27	0.00	0.00
44.00	5.33	0.27	0.00	0.00
46.00	5.33	0.27	0.00	0.00
48.00	5.33	0.27	0.00	0.00
50.00	5.33	0.27	0.00	0.00
52.00	5.33	0.27	0.00	0.00
54.00	5.33	0.27	0.00	0.00
56.00	5.33	0.27	0.00	0.00
58.00	5.33	0.27	0.00	0.00
60.00	5.33	0.27	0.00	0.00
62.00	5.33	0.27	0.00	0.00
64.00	5.33	0.27	0.00	0.00
66.00	5.33	0.27	0.00	0.00
68.00	5.33	0.27	0.00	0.00
70.00	5.33	0.27	0.00	0.00
72.00	5.33	0.27	0.00	0.00

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Summary for Subcatchment 2B: P2B

Runoff = 1.54 cfs @ 12.24 hrs, Volume= 0.225 af, Depth= 1.22"
Routed to Pond P-B : Basin B

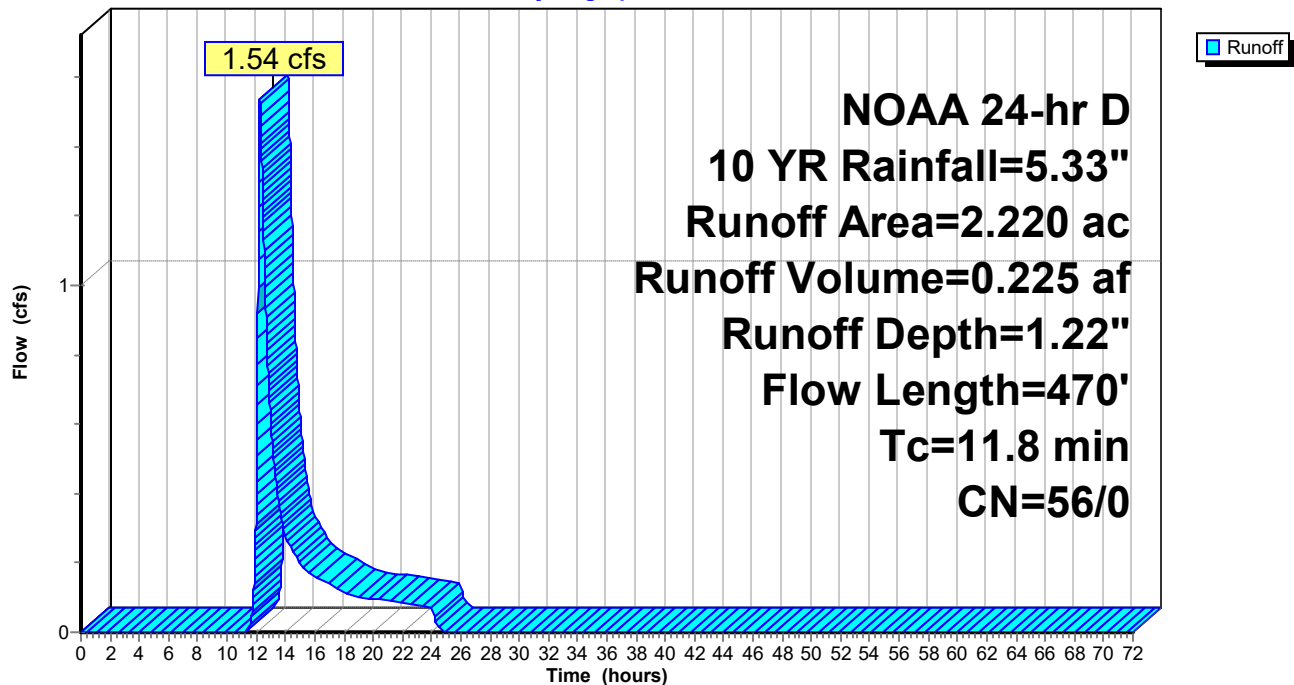
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 10 YR Rainfall=5.33"

Area (ac)	CN	Description
1.390	39	>75% Grass cover, Good, HSG A
* 0.210	49	Pervious Pavement Driveway
0.620	98	Unconnected roofs, HSG A
2.220	56	Weighted Average
2.220	56	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.0310	0.21		Sheet Flow, Grass: Short n= 0.150 P2= 3.42"
3.4	205	0.0210	1.01		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.4	165	0.0100	6.22	7.63	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
11.8	470	Total			

Subcatchment 2B: P2B

Hydrograph



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Hydrograph for Subcatchment 2B: P2B

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.13	0.00	0.00	0.00
4.00	0.28	0.00	0.00	0.00
6.00	0.46	0.00	0.00	0.00
8.00	0.69	0.00	0.00	0.00
10.00	1.06	0.00	0.00	0.00
12.00	2.55	0.11	0.00	0.37
14.00	4.27	0.69	0.00	0.28
16.00	4.64	0.86	0.00	0.16
18.00	4.87	0.98	0.00	0.11
20.00	5.05	1.07	0.00	0.10
22.00	5.20	1.15	0.00	0.09
24.00	5.33	1.22	0.00	0.07
26.00	5.33	1.22	0.00	0.00
28.00	5.33	1.22	0.00	0.00
30.00	5.33	1.22	0.00	0.00
32.00	5.33	1.22	0.00	0.00
34.00	5.33	1.22	0.00	0.00
36.00	5.33	1.22	0.00	0.00
38.00	5.33	1.22	0.00	0.00
40.00	5.33	1.22	0.00	0.00
42.00	5.33	1.22	0.00	0.00
44.00	5.33	1.22	0.00	0.00
46.00	5.33	1.22	0.00	0.00
48.00	5.33	1.22	0.00	0.00
50.00	5.33	1.22	0.00	0.00
52.00	5.33	1.22	0.00	0.00
54.00	5.33	1.22	0.00	0.00
56.00	5.33	1.22	0.00	0.00
58.00	5.33	1.22	0.00	0.00
60.00	5.33	1.22	0.00	0.00
62.00	5.33	1.22	0.00	0.00
64.00	5.33	1.22	0.00	0.00
66.00	5.33	1.22	0.00	0.00
68.00	5.33	1.22	0.00	0.00
70.00	5.33	1.22	0.00	0.00
72.00	5.33	1.22	0.00	0.00

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Summary for Subcatchment 2RD-N: P2RD-N

Runoff = 3.19 cfs @ 12.14 hrs, Volume= 0.331 af, Depth= 4.10"
Routed to Pond P-B : Basin B

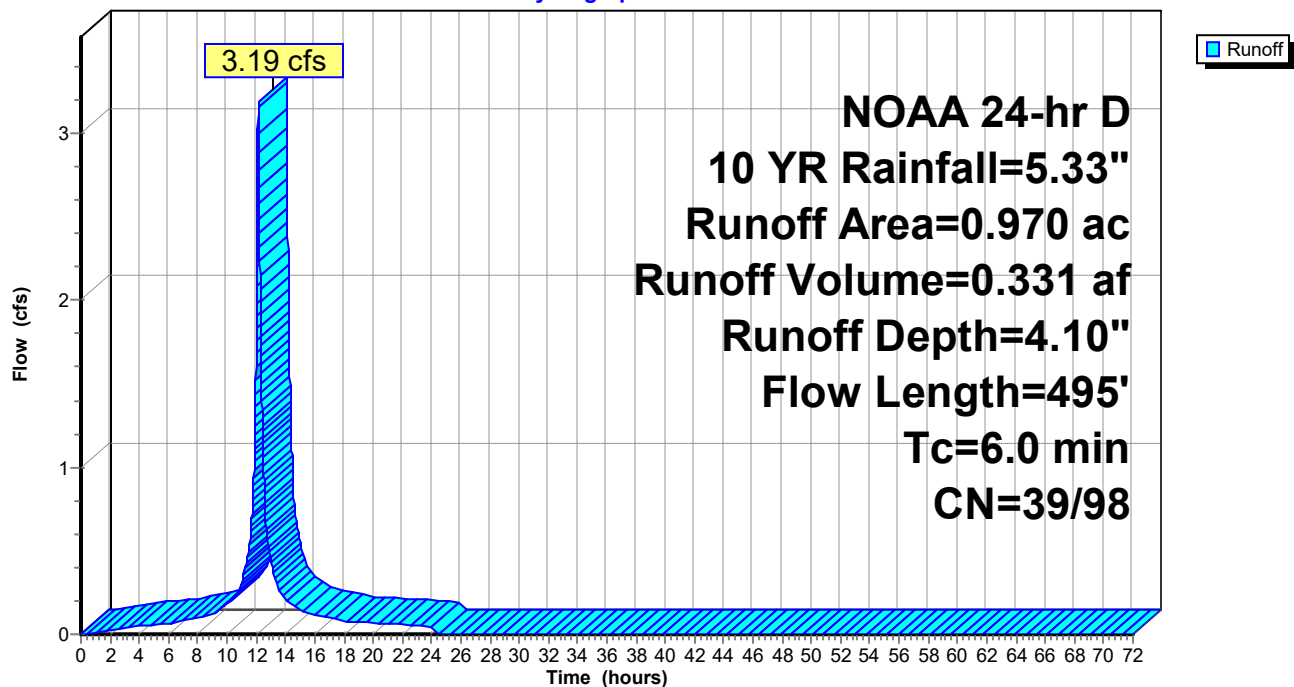
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr D 10 YR Rainfall=5.33"

Area (ac)	CN	Description
0.770	98	Paved parking, HSG A
0.200	39	>75% Grass cover, Good, HSG A
0.970	86	Weighted Average
0.200	39	20.62% Pervious Area
0.770	98	79.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0210	1.05		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.42"
1.8	310	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.4	165	0.0100	6.22	7.63	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
2.5	495	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 2RD-N: P2RD-N

Hydrograph



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Hydrograph for Subcatchment 2RD-N: P2RD-N

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.13	0.00	0.03	0.03
4.00	0.28	0.00	0.13	0.05
6.00	0.46	0.00	0.28	0.06
8.00	0.69	0.00	0.50	0.10
10.00	1.06	0.00	0.85	0.18
12.00	2.55	0.00	2.32	1.76
14.00	4.27	0.08	4.04	0.21
16.00	4.64	0.13	4.40	0.12
18.00	4.87	0.18	4.64	0.08
20.00	5.05	0.21	4.81	0.07
22.00	5.20	0.24	4.96	0.06
24.00	5.33	0.27	5.09	0.05
26.00	5.33	0.27	5.09	0.00
28.00	5.33	0.27	5.09	0.00
30.00	5.33	0.27	5.09	0.00
32.00	5.33	0.27	5.09	0.00
34.00	5.33	0.27	5.09	0.00
36.00	5.33	0.27	5.09	0.00
38.00	5.33	0.27	5.09	0.00
40.00	5.33	0.27	5.09	0.00
42.00	5.33	0.27	5.09	0.00
44.00	5.33	0.27	5.09	0.00
46.00	5.33	0.27	5.09	0.00
48.00	5.33	0.27	5.09	0.00
50.00	5.33	0.27	5.09	0.00
52.00	5.33	0.27	5.09	0.00
54.00	5.33	0.27	5.09	0.00
56.00	5.33	0.27	5.09	0.00
58.00	5.33	0.27	5.09	0.00
60.00	5.33	0.27	5.09	0.00
62.00	5.33	0.27	5.09	0.00
64.00	5.33	0.27	5.09	0.00
66.00	5.33	0.27	5.09	0.00
68.00	5.33	0.27	5.09	0.00
70.00	5.33	0.27	5.09	0.00
72.00	5.33	0.27	5.09	0.00

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Summary for Subcatchment 2RD-S: P2RD-S

Runoff = 0.37 cfs @ 12.14 hrs, Volume= 0.039 af, Depth= 3.89"
Routed to Pond P-B : Basin B

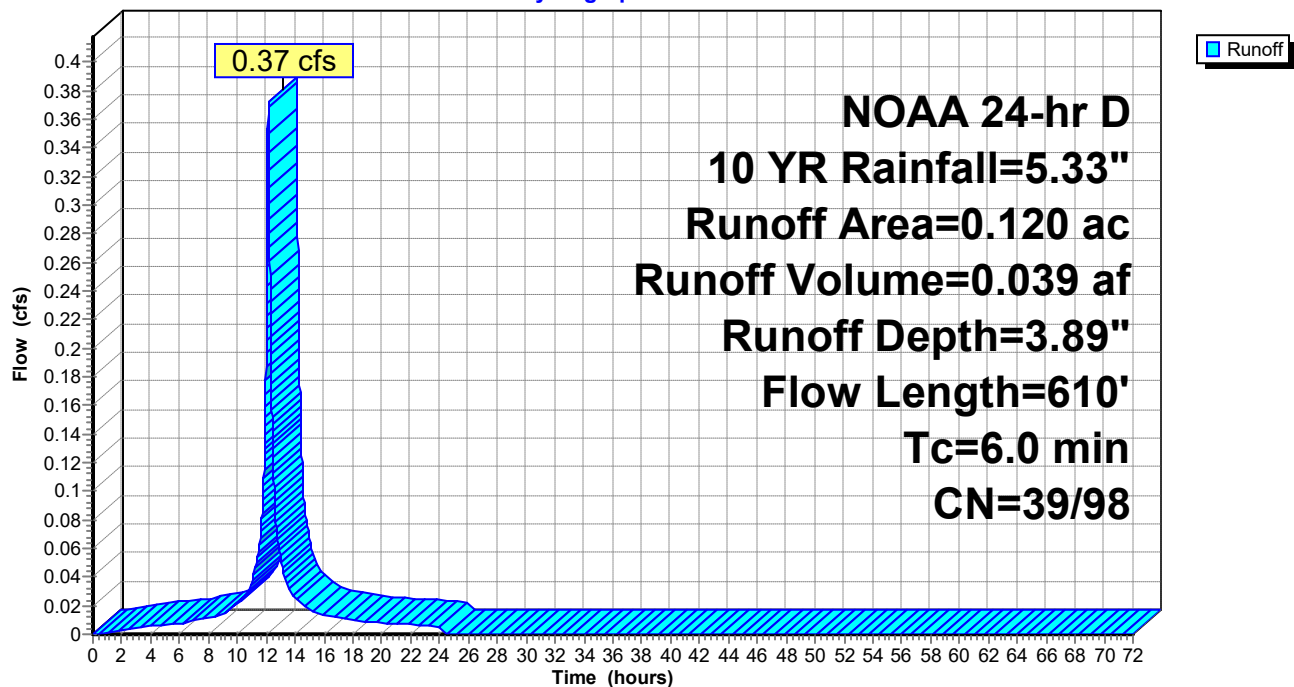
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NOAA 24-hr D 10 YR Rainfall=5.33"

Area (ac)	CN	Description
0.090	98	Paved parking, HSG A
0.030	39	>75% Grass cover, Good, HSG A
0.120	83	Weighted Average
0.030	39	25.00% Pervious Area
0.090	98	75.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	1.03		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.42"
0.6	85	0.0160	2.57		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.6	505	0.0075	5.39	6.61	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
2.5	610	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 2RD-S: P2RD-S

Hydrograph



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Hydrograph for Subcatchment 2RD-S: P2RD-S

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	0.13	0.00	0.03	0.00
4.00	0.28	0.00	0.13	0.01
6.00	0.46	0.00	0.28	0.01
8.00	0.69	0.00	0.50	0.01
10.00	1.06	0.00	0.85	0.02
12.00	2.55	0.00	2.32	0.21
14.00	4.27	0.08	4.04	0.03
16.00	4.64	0.13	4.40	0.01
18.00	4.87	0.18	4.64	0.01
20.00	5.05	0.21	4.81	0.01
22.00	5.20	0.24	4.96	0.01
24.00	5.33	0.27	5.09	0.01
26.00	5.33	0.27	5.09	0.00
28.00	5.33	0.27	5.09	0.00
30.00	5.33	0.27	5.09	0.00
32.00	5.33	0.27	5.09	0.00
34.00	5.33	0.27	5.09	0.00
36.00	5.33	0.27	5.09	0.00
38.00	5.33	0.27	5.09	0.00
40.00	5.33	0.27	5.09	0.00
42.00	5.33	0.27	5.09	0.00
44.00	5.33	0.27	5.09	0.00
46.00	5.33	0.27	5.09	0.00
48.00	5.33	0.27	5.09	0.00
50.00	5.33	0.27	5.09	0.00
52.00	5.33	0.27	5.09	0.00
54.00	5.33	0.27	5.09	0.00
56.00	5.33	0.27	5.09	0.00
58.00	5.33	0.27	5.09	0.00
60.00	5.33	0.27	5.09	0.00
62.00	5.33	0.27	5.09	0.00
64.00	5.33	0.27	5.09	0.00
66.00	5.33	0.27	5.09	0.00
68.00	5.33	0.27	5.09	0.00
70.00	5.33	0.27	5.09	0.00
72.00	5.33	0.27	5.09	0.00

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Summary for Pond P-A: Basin A

Inflow Area = 2.120 ac, 0.00% Impervious, Inflow Depth = 0.27" for 10 YR event
Inflow = 0.10 cfs @ 13.06 hrs, Volume= 0.048 af
Outflow = 0.05 cfs @ 17.00 hrs, Volume= 0.047 af, Atten= 53%, Lag= 236.4 min
Primary = 0.05 cfs @ 17.00 hrs, Volume= 0.047 af
Routed to Pond P-B : Basin B

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Starting Elev= 77.10' Surf.Area= 0.070 ac Storage= 0.092 af
Peak Elev= 77.29' @ 17.00 hrs Surf.Area= 0.075 ac Storage= 0.106 af (0.014 af above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 247.0 min (1,275.1 - 1,028.1)

Volume	Invert	Avail.Storage	Storage Description
#1	75.33'	0.122 af	12.00'W x 125.00'L x 2.17'H Prismatic Z=3.0

Device	Routing	Invert	Outlet Devices
#1	Primary	72.61'	12.0" Round Culvert L= 288.0' Ke= 0.600 Inlet / Outlet Invert= 72.61' / 69.73' S= 0.0100 ' / Cc= 0.900 n= 0.011, Flow Area= 0.79 sf
#2	Device 1	77.10'	2.5" Vert. Orifice C= 0.600 Limited to weir flow at low heads
#3	Device 1	77.40'	24.0" x 24.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.05 cfs @ 17.00 hrs HW=77.29' (Free Discharge)

1=Culvert (Passes 0.05 cfs of 5.68 cfs potential flow)
2=Orifice (Orifice Controls 0.05 cfs @ 1.48 fps)
3=Grate (Controls 0.00 cfs)

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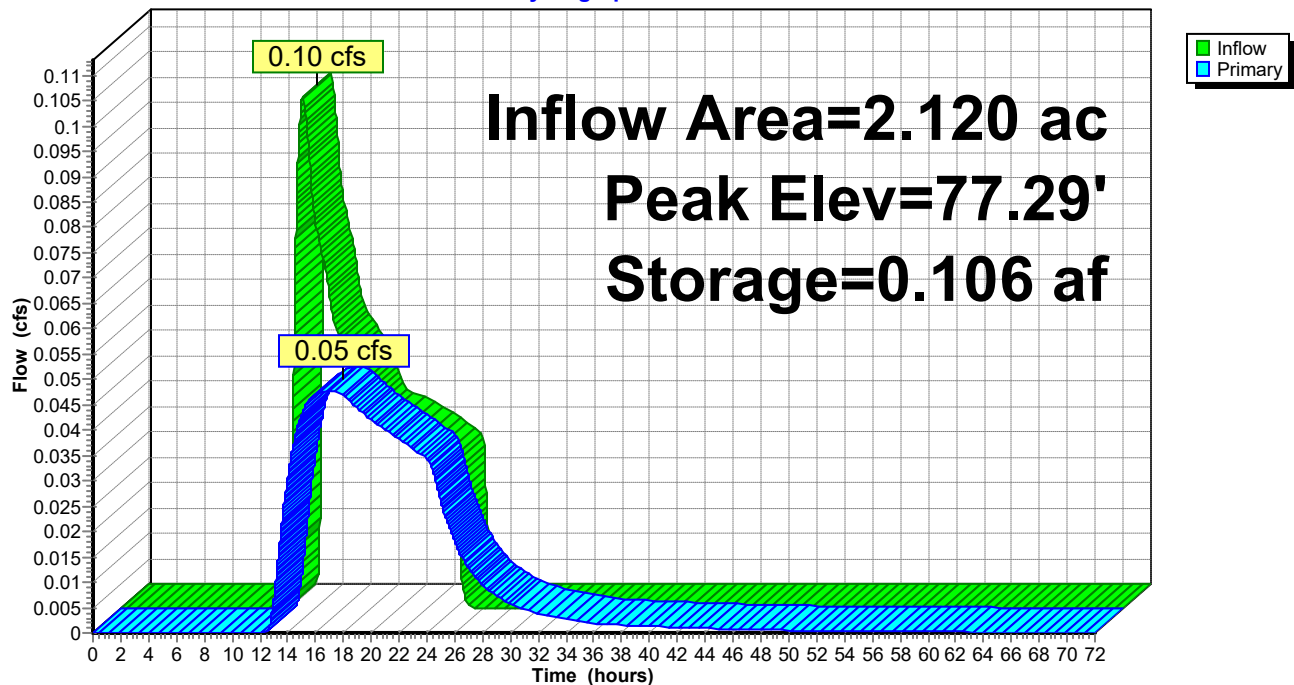
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Pond P-A: Basin A

Hydrograph



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Hydrograph for Pond P-A: Basin A

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.092	77.10	0.00
2.00	0.00	0.092	77.10	0.00
4.00	0.00	0.092	77.10	0.00
6.00	0.00	0.092	77.10	0.00
8.00	0.00	0.092	77.10	0.00
10.00	0.00	0.092	77.10	0.00
12.00	0.00	0.092	77.10	0.00
14.00	0.08	0.102	77.24	0.03
16.00	0.05	0.105	77.29	0.05
18.00	0.04	0.105	77.29	0.05
20.00	0.04	0.104	77.27	0.04
22.00	0.03	0.104	77.26	0.04
24.00	0.03	0.103	77.25	0.03
26.00	0.00	0.099	77.20	0.02
28.00	0.00	0.097	77.17	0.01
30.00	0.00	0.096	77.15	0.01
32.00	0.00	0.095	77.14	0.00
34.00	0.00	0.095	77.14	0.00
36.00	0.00	0.094	77.13	0.00
38.00	0.00	0.094	77.13	0.00
40.00	0.00	0.094	77.12	0.00
42.00	0.00	0.094	77.12	0.00
44.00	0.00	0.093	77.12	0.00
46.00	0.00	0.093	77.12	0.00
48.00	0.00	0.093	77.11	0.00
50.00	0.00	0.093	77.11	0.00
52.00	0.00	0.093	77.11	0.00
54.00	0.00	0.093	77.11	0.00
56.00	0.00	0.093	77.11	0.00
58.00	0.00	0.093	77.11	0.00
60.00	0.00	0.093	77.11	0.00
62.00	0.00	0.093	77.11	0.00
64.00	0.00	0.093	77.11	0.00
66.00	0.00	0.093	77.11	0.00
68.00	0.00	0.093	77.11	0.00
70.00	0.00	0.093	77.11	0.00
72.00	0.00	0.093	77.11	0.00

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Summary for Pond P-B: Basin B

Inflow Area = 5.430 ac, 15.84% Impervious, Inflow Depth = 1.42" for 10 YR event
Inflow = 4.77 cfs @ 12.15 hrs, Volume= 0.643 af
Outflow = 0.21 cfs @ 20.53 hrs, Volume= 0.636 af, Atten= 96%, Lag= 502.4 min
Primary = 0.21 cfs @ 20.53 hrs, Volume= 0.636 af
Routed to Link SUB2L : POA-SUB2 (Basin B Outlet)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Starting Elev= 67.65' Surf.Area= 5,309 sf Storage= 3,396 cf
Peak Elev= 70.73' @ 20.53 hrs Surf.Area= 6,037 sf Storage= 20,854 cf (17,458 cf above start)

Plug-Flow detention time= 1,244.7 min calculated for 0.558 af (87% of inflow)
Center-of-Mass det. time= 1,003.8 min (1,852.1 - 848.4)

Volume	Invert	Avail.Storage	Storage Description
#1	67.00'	25,595 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
67.00	5,140	0	0
68.00	5,400	5,270	5,270
69.00	5,630	5,515	10,785
70.00	5,870	5,750	16,535
71.00	6,100	5,985	22,520
71.50	6,200	3,075	25,595

Device	Routing	Invert	Outlet Devices
#1	Primary	67.65'	Reg-U-Flo CH 3.0-in
#2	Primary	70.75'	24.0" x 24.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.21 cfs @ 20.53 hrs HW=70.73' (Free Discharge)

↑ **1=Reg-U-Flo CH 3.0-in** (Custom Controls 0.21 cfs)

└ **2=Grate** (Controls 0.00 cfs)

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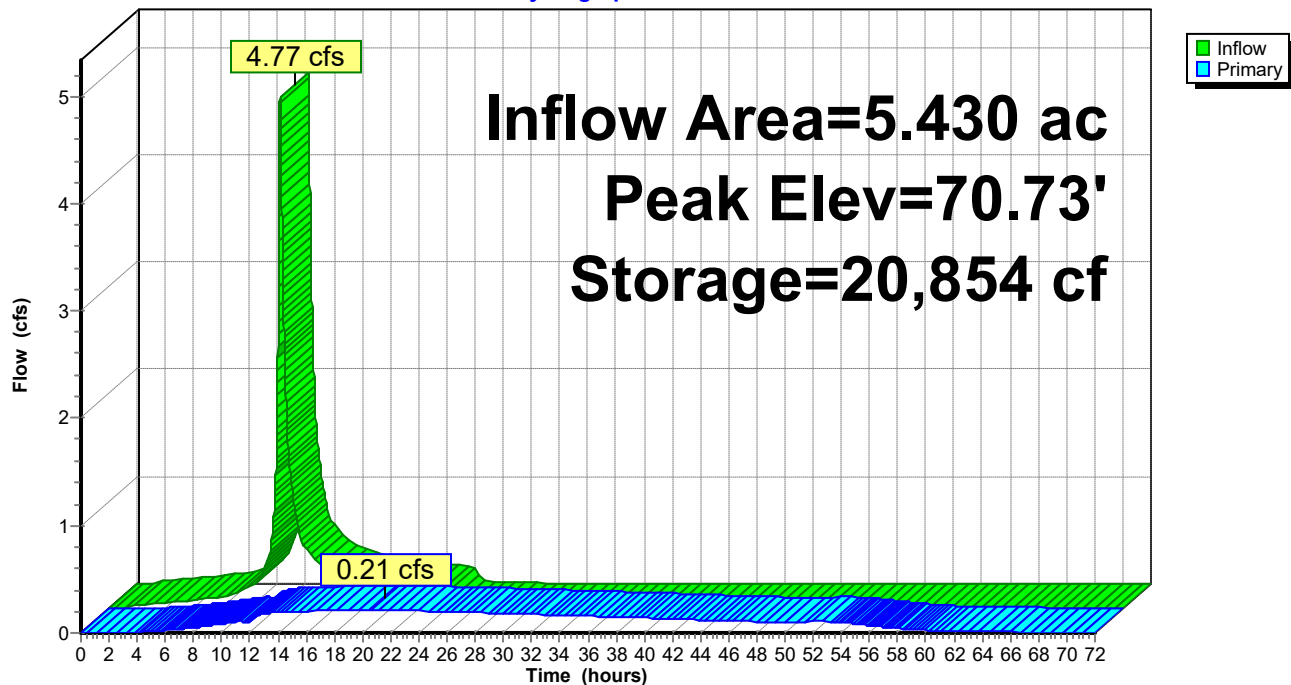
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Pond P-B: Basin B

Hydrograph



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Hydrograph for Pond P-B: Basin B

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	3,396	67.65	0.00
2.00	0.03	3,460	67.66	0.00
4.00	0.05	3,744	67.72	0.01
6.00	0.07	4,093	67.78	0.02
8.00	0.11	4,485	67.85	0.05
10.00	0.20	5,040	67.96	0.09
12.00	2.34	7,978	68.50	0.11
14.00	0.55	18,442	70.32	0.19
16.00	0.34	20,042	70.59	0.20
18.00	0.25	20,695	70.70	0.21
20.00	0.21	20,848	70.72	0.21
22.00	0.19	20,804	70.72	0.21
24.00	0.16	20,574	70.68	0.21
26.00	0.02	19,411	70.49	0.20
28.00	0.01	18,102	70.27	0.19
30.00	0.01	16,810	70.05	0.18
32.00	0.00	15,557	69.83	0.17
34.00	0.00	14,357	69.63	0.17
36.00	0.00	13,211	69.43	0.16
38.00	0.00	12,123	69.24	0.15
40.00	0.00	11,093	69.05	0.14
42.00	0.00	10,128	68.88	0.13
44.00	0.00	9,226	68.72	0.12
46.00	0.00	8,387	68.57	0.11
48.00	0.00	7,605	68.43	0.10
50.00	0.00	6,869	68.29	0.10
52.00	0.00	6,128	68.16	0.11
54.00	0.00	5,372	68.02	0.10
56.00	0.00	4,758	67.90	0.07
58.00	0.00	4,361	67.83	0.04
60.00	0.00	4,122	67.79	0.03
62.00	0.00	3,973	67.76	0.02
64.00	0.00	3,870	67.74	0.01
66.00	0.00	3,796	67.73	0.01
68.00	0.00	3,743	67.72	0.01
70.00	0.00	3,705	67.71	0.00
72.00	0.00	3,673	67.70	0.00

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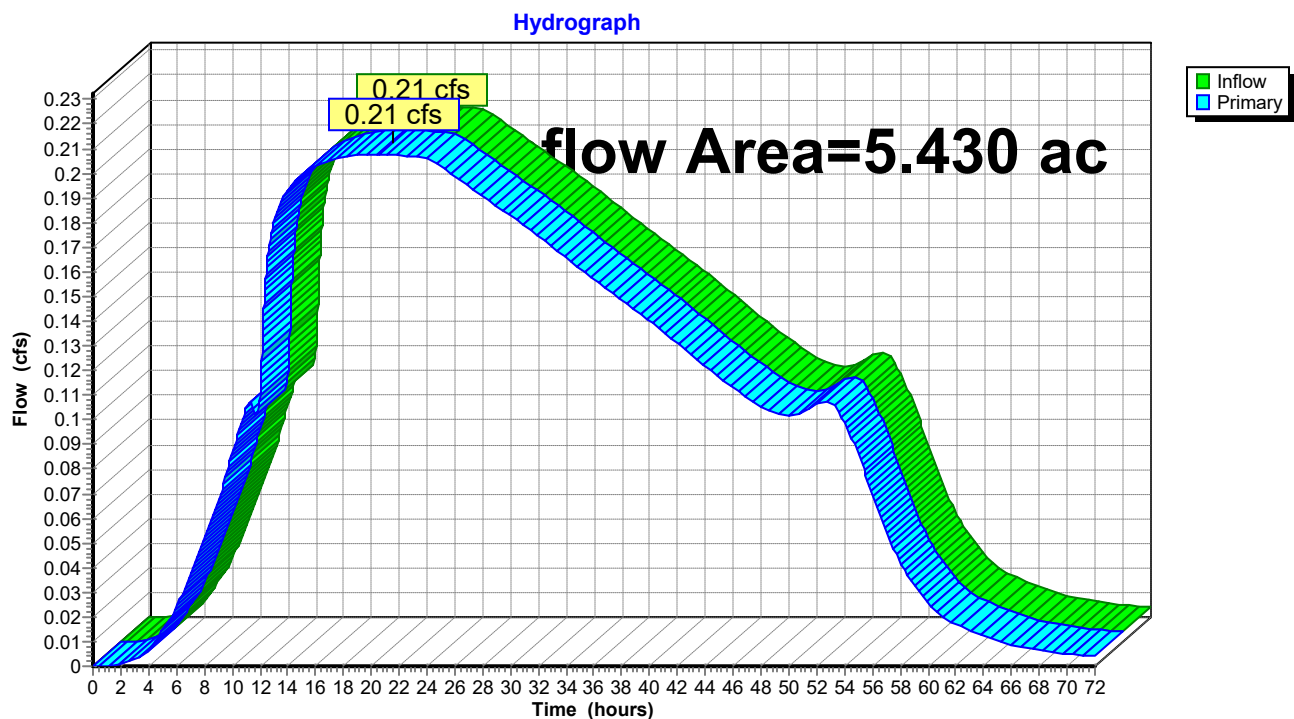
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Summary for Link SUB2L: POA-SUB2 (Basin B Outlet)

Inflow Area = 5.430 ac, 15.84% Impervious, Inflow Depth > 1.41" for 10 YR event
Inflow = 0.21 cfs @ 20.53 hrs, Volume= 0.636 af
Primary = 0.21 cfs @ 20.53 hrs, Volume= 0.636 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 2L

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link SUB2L: POA-SUB2 (Basin B Outlet)



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Hydrograph for Link SUB2L: POA-SUB2 (Basin B Outlet)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.10	0.00	0.10
1.00	0.00	0.00	0.00	52.00	0.11	0.00	0.11
2.00	0.00	0.00	0.00	53.00	0.11	0.00	0.11
3.00	0.00	0.00	0.00	54.00	0.10	0.00	0.10
4.00	0.01	0.00	0.01	55.00	0.09	0.00	0.09
5.00	0.01	0.00	0.01	56.00	0.07	0.00	0.07
6.00	0.02	0.00	0.02	57.00	0.05	0.00	0.05
7.00	0.04	0.00	0.04	58.00	0.04	0.00	0.04
8.00	0.05	0.00	0.05	59.00	0.03	0.00	0.03
9.00	0.07	0.00	0.07	60.00	0.03	0.00	0.03
10.00	0.09	0.00	0.09	61.00	0.02	0.00	0.02
11.00	0.11	0.00	0.11	62.00	0.02	0.00	0.02
12.00	0.11	0.00	0.11	63.00	0.01	0.00	0.01
13.00	0.18	0.00	0.18	64.00	0.01	0.00	0.01
14.00	0.19	0.00	0.19	65.00	0.01	0.00	0.01
15.00	0.20	0.00	0.20	66.00	0.01	0.00	0.01
16.00	0.20	0.00	0.20	67.00	0.01	0.00	0.01
17.00	0.21	0.00	0.21	68.00	0.01	0.00	0.01
18.00	0.21	0.00	0.21	69.00	0.01	0.00	0.01
19.00	0.21	0.00	0.21	70.00	0.00	0.00	0.00
20.00	0.21	0.00	0.21	71.00	0.00	0.00	0.00
21.00	0.21	0.00	0.21	72.00	0.00	0.00	0.00
22.00	0.21	0.00	0.21				
23.00	0.21	0.00	0.21				
24.00	0.21	0.00	0.21				
25.00	0.20	0.00	0.20				
26.00	0.20	0.00	0.20				
27.00	0.19	0.00	0.19				
28.00	0.19	0.00	0.19				
29.00	0.19	0.00	0.19				
30.00	0.18	0.00	0.18				
31.00	0.18	0.00	0.18				
32.00	0.17	0.00	0.17				
33.00	0.17	0.00	0.17				
34.00	0.17	0.00	0.17				
35.00	0.16	0.00	0.16				
36.00	0.16	0.00	0.16				
37.00	0.15	0.00	0.15				
38.00	0.15	0.00	0.15				
39.00	0.14	0.00	0.14				
40.00	0.14	0.00	0.14				
41.00	0.14	0.00	0.14				
42.00	0.13	0.00	0.13				
43.00	0.13	0.00	0.13				
44.00	0.12	0.00	0.12				
45.00	0.12	0.00	0.12				
46.00	0.11	0.00	0.11				
47.00	0.11	0.00	0.11				
48.00	0.10	0.00	0.10				
49.00	0.10	0.00	0.10				
50.00	0.10	0.00	0.10				

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Multi-Event Tables

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Events for Subcatchment 2A: P2A

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2 YR	3.42	0.00	0.001	0.01
10 YR	5.33	0.10	0.048	0.27

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Events for Subcatchment 2B: P2B

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2 YR	3.42	0.24	0.065	0.35
10 YR	5.33	1.54	0.225	1.22

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Events for Subcatchment 2RD-N: P2RD-N

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2 YR	3.42	2.03	0.205	2.53
10 YR	5.33	3.19	0.331	4.10

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Events for Subcatchment 2RD-S: P2RD-S

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2 YR	3.42	0.24	0.024	2.39
10 YR	5.33	0.37	0.039	3.89

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Events for Pond P-A: Basin A

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
2 YR	0.00	0.00	77.11	0.093
10 YR	0.10	0.05	77.29	0.106

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Multi-Event Tables

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Events for Pond P-B: Basin B

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
2 YR	2.36	0.14	69.00	10,778
10 YR	4.77	0.21	70.73	20,854

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Events for Link SUB2L: POA-SUB2 (Basin B Outlet)

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
2 YR	0.14	0.14	0.00
10 YR	0.21	0.21	0.00

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10 YR Event

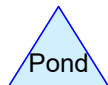
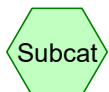
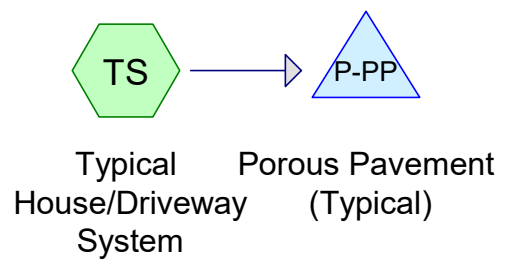
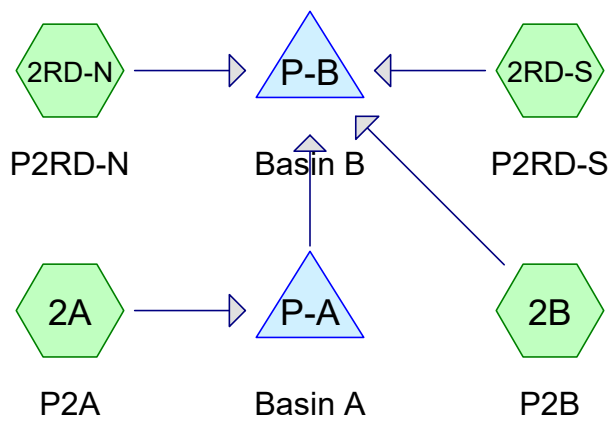
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Appendix E – Water Quality Analysis

Proposed Conditions WQDS



Proposed SWM WQ Storm 2024-06-17

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Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	NJDEP WQ	NJ DEP 2-hr		Default	2.00	1	1.25	2

Proposed SWM WQ Storm 2024-06-17

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Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
162,914	39	>75% Grass cover, Good, HSG A (2A, 2B, 2RD-N, 2RD-S)
38,542	98	Paved parking, HSG A (2RD-N, 2RD-S, TS)
2,200	98	Unconnected roofs, HSG A (TS)
203,656	51	TOTAL AREA

Proposed SWM WQ Storm 2024-06-17

Prepared by Civil Core Consulting

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Wilbur Avenue Subdivision, Manchester, NJ

NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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Summary for Subcatchment 2A: P2A

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
Routed to Pond P-A : Basin A

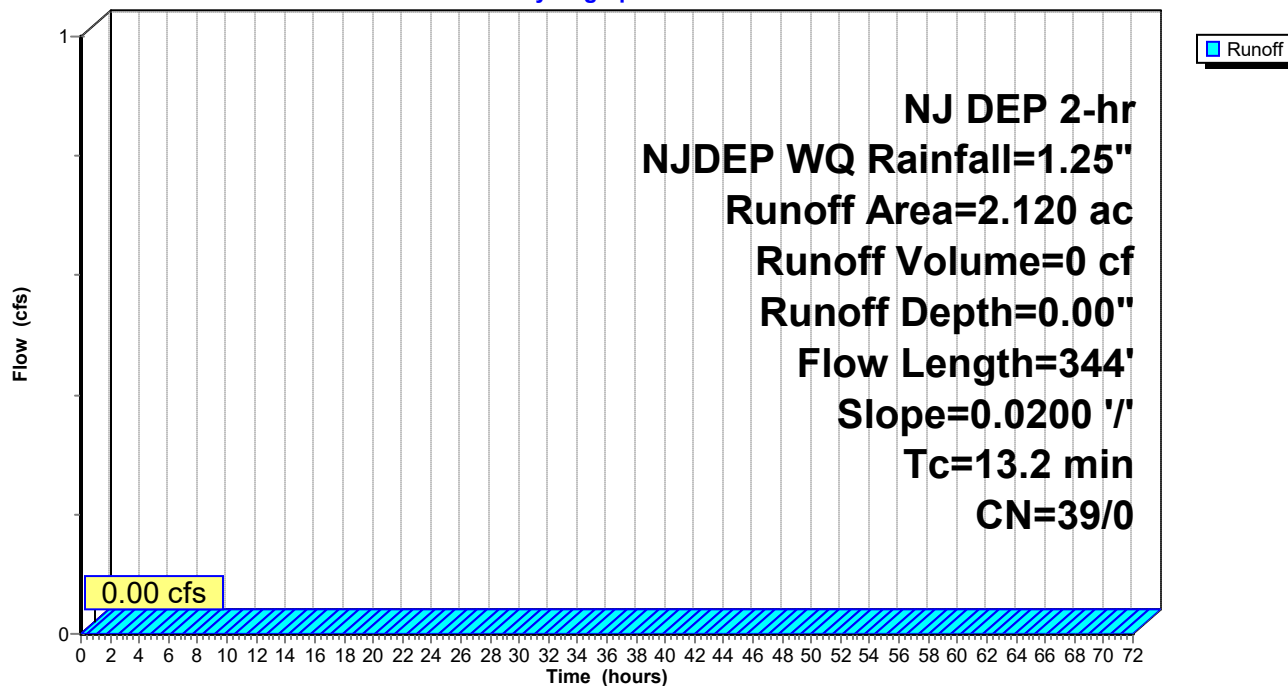
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.00 hrs
NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

Area (ac)	CN	Description
2.120	39	>75% Grass cover, Good, HSG A
2.120	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	94	0.0200	0.17		Sheet Flow, Grass: Short n= 0.150 P2= 3.42" Using McCuen-Spiess flow length
4.2	250	0.0200	0.99		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
13.2	344	Total			

Subcatchment 2A: P2A

Hydrograph



Proposed SWM WQ Storm 2024-06-17

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NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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Hydrograph for Subcatchment 2A: P2A

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	1.25	0.00	0.00	0.00
4.00	1.25	0.00	0.00	0.00
6.00	1.25	0.00	0.00	0.00
8.00	1.25	0.00	0.00	0.00
10.00	1.25	0.00	0.00	0.00
12.00	1.25	0.00	0.00	0.00
14.00	1.25	0.00	0.00	0.00
16.00	1.25	0.00	0.00	0.00
18.00	1.25	0.00	0.00	0.00
20.00	1.25	0.00	0.00	0.00
22.00	1.25	0.00	0.00	0.00
24.00	1.25	0.00	0.00	0.00
26.00	1.25	0.00	0.00	0.00
28.00	1.25	0.00	0.00	0.00
30.00	1.25	0.00	0.00	0.00
32.00	1.25	0.00	0.00	0.00
34.00	1.25	0.00	0.00	0.00
36.00	1.25	0.00	0.00	0.00
38.00	1.25	0.00	0.00	0.00
40.00	1.25	0.00	0.00	0.00
42.00	1.25	0.00	0.00	0.00
44.00	1.25	0.00	0.00	0.00
46.00	1.25	0.00	0.00	0.00
48.00	1.25	0.00	0.00	0.00
50.00	1.25	0.00	0.00	0.00
52.00	1.25	0.00	0.00	0.00
54.00	1.25	0.00	0.00	0.00
56.00	1.25	0.00	0.00	0.00
58.00	1.25	0.00	0.00	0.00
60.00	1.25	0.00	0.00	0.00
62.00	1.25	0.00	0.00	0.00
64.00	1.25	0.00	0.00	0.00
66.00	1.25	0.00	0.00	0.00
68.00	1.25	0.00	0.00	0.00
70.00	1.25	0.00	0.00	0.00
72.00	1.25	0.00	0.00	0.00

Proposed SWM WQ Storm 2024-06-17

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Wilbur Avenue Subdivision, Manchester, NJ

NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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Summary for Subcatchment 2B: P2B

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"
Routed to Pond P-B : Basin B

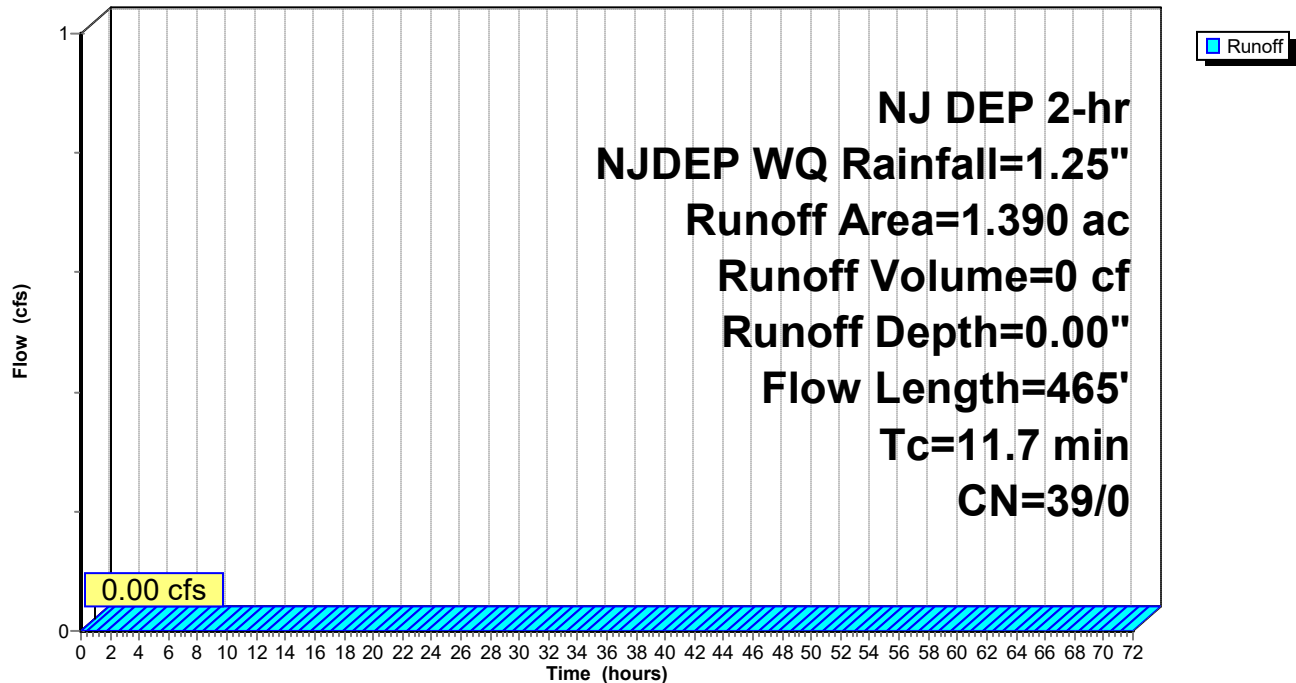
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

Area (ac)	CN	Description
1.390	39	>75% Grass cover, Good, HSG A
1.390	39	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.0310	0.21		Sheet Flow, Grass: Short n= 0.150 P2= 3.42"
3.3	200	0.0210	1.01		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.4	165	0.0100	6.22	7.63	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
11.7	465	Total			

Subcatchment 2B: P2B

Hydrograph



Proposed SWM WQ Storm 2024-06-17

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Wilbur Avenue Subdivision, Manchester, NJ

NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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Hydrograph for Subcatchment 2B: P2B

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	1.25	0.00	0.00	0.00
4.00	1.25	0.00	0.00	0.00
6.00	1.25	0.00	0.00	0.00
8.00	1.25	0.00	0.00	0.00
10.00	1.25	0.00	0.00	0.00
12.00	1.25	0.00	0.00	0.00
14.00	1.25	0.00	0.00	0.00
16.00	1.25	0.00	0.00	0.00
18.00	1.25	0.00	0.00	0.00
20.00	1.25	0.00	0.00	0.00
22.00	1.25	0.00	0.00	0.00
24.00	1.25	0.00	0.00	0.00
26.00	1.25	0.00	0.00	0.00
28.00	1.25	0.00	0.00	0.00
30.00	1.25	0.00	0.00	0.00
32.00	1.25	0.00	0.00	0.00
34.00	1.25	0.00	0.00	0.00
36.00	1.25	0.00	0.00	0.00
38.00	1.25	0.00	0.00	0.00
40.00	1.25	0.00	0.00	0.00
42.00	1.25	0.00	0.00	0.00
44.00	1.25	0.00	0.00	0.00
46.00	1.25	0.00	0.00	0.00
48.00	1.25	0.00	0.00	0.00
50.00	1.25	0.00	0.00	0.00
52.00	1.25	0.00	0.00	0.00
54.00	1.25	0.00	0.00	0.00
56.00	1.25	0.00	0.00	0.00
58.00	1.25	0.00	0.00	0.00
60.00	1.25	0.00	0.00	0.00
62.00	1.25	0.00	0.00	0.00
64.00	1.25	0.00	0.00	0.00
66.00	1.25	0.00	0.00	0.00
68.00	1.25	0.00	0.00	0.00
70.00	1.25	0.00	0.00	0.00
72.00	1.25	0.00	0.00	0.00

Proposed SWM WQ Storm 2024-06-17

Prepared by Civil Core Consulting

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Wilbur Avenue Subdivision, Manchester, NJ

NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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Summary for Subcatchment 2RD-N: P2RD-N

Runoff = 1.83 cfs @ 1.12 hrs, Volume= 2,892 cf, Depth= 0.82"
Routed to Pond P-B : Basin B

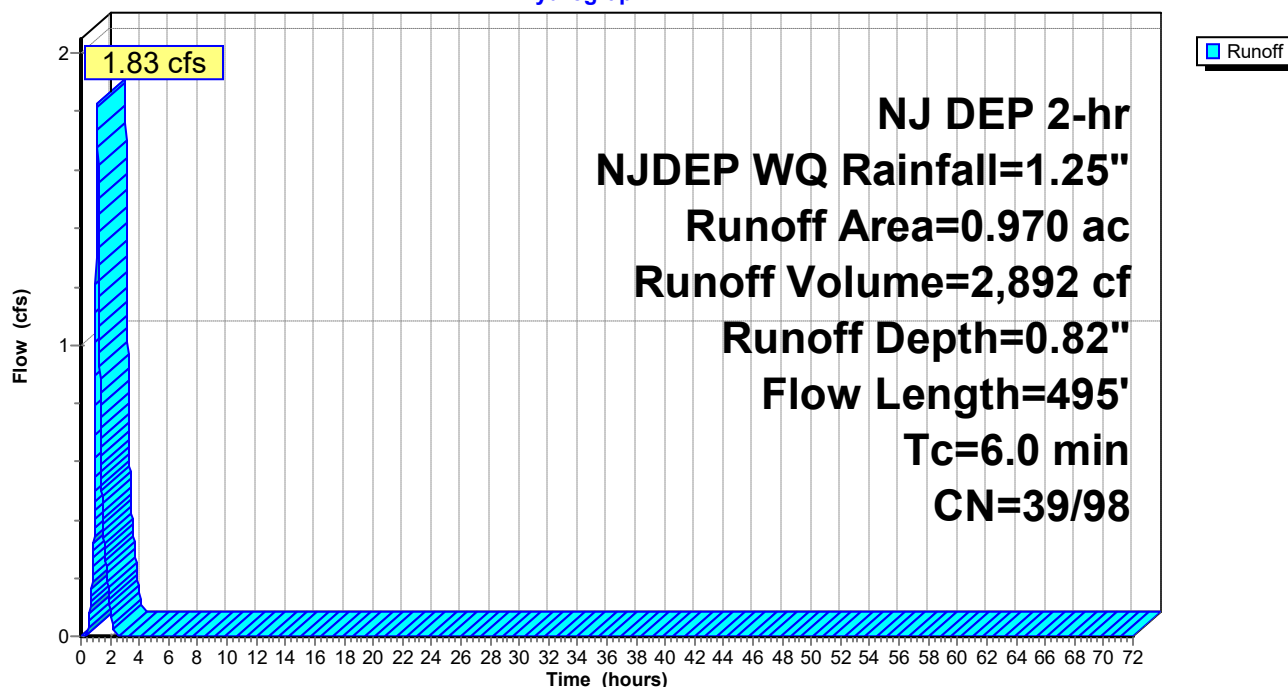
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

Area (ac)	CN	Description
0.770	98	Paved parking, HSG A
0.200	39	>75% Grass cover, Good, HSG A
0.970	86	Weighted Average
0.200	39	20.62% Pervious Area
0.770	98	79.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0210	1.05		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.42"
1.8	310	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.4	165	0.0100	6.22	7.63	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
2.5	495	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 2RD-N: P2RD-N

Hydrograph



Proposed SWM WQ Storm 2024-06-17

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NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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Hydrograph for Subcatchment 2RD-N: P2RD-N

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	1.25	0.00	1.03	0.10
4.00	1.25	0.00	1.03	0.00
6.00	1.25	0.00	1.03	0.00
8.00	1.25	0.00	1.03	0.00
10.00	1.25	0.00	1.03	0.00
12.00	1.25	0.00	1.03	0.00
14.00	1.25	0.00	1.03	0.00
16.00	1.25	0.00	1.03	0.00
18.00	1.25	0.00	1.03	0.00
20.00	1.25	0.00	1.03	0.00
22.00	1.25	0.00	1.03	0.00
24.00	1.25	0.00	1.03	0.00
26.00	1.25	0.00	1.03	0.00
28.00	1.25	0.00	1.03	0.00
30.00	1.25	0.00	1.03	0.00
32.00	1.25	0.00	1.03	0.00
34.00	1.25	0.00	1.03	0.00
36.00	1.25	0.00	1.03	0.00
38.00	1.25	0.00	1.03	0.00
40.00	1.25	0.00	1.03	0.00
42.00	1.25	0.00	1.03	0.00
44.00	1.25	0.00	1.03	0.00
46.00	1.25	0.00	1.03	0.00
48.00	1.25	0.00	1.03	0.00
50.00	1.25	0.00	1.03	0.00
52.00	1.25	0.00	1.03	0.00
54.00	1.25	0.00	1.03	0.00
56.00	1.25	0.00	1.03	0.00
58.00	1.25	0.00	1.03	0.00
60.00	1.25	0.00	1.03	0.00
62.00	1.25	0.00	1.03	0.00
64.00	1.25	0.00	1.03	0.00
66.00	1.25	0.00	1.03	0.00
68.00	1.25	0.00	1.03	0.00
70.00	1.25	0.00	1.03	0.00
72.00	1.25	0.00	1.03	0.00

Proposed SWM WQ Storm 2024-06-17

Prepared by Civil Core Consulting

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Wilbur Avenue Subdivision, Manchester, NJ

NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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Summary for Subcatchment 2RD-S: P2RD-S

Runoff = 0.21 cfs @ 1.12 hrs, Volume= 338 cf, Depth= 0.78"
Routed to Pond P-B : Basin B

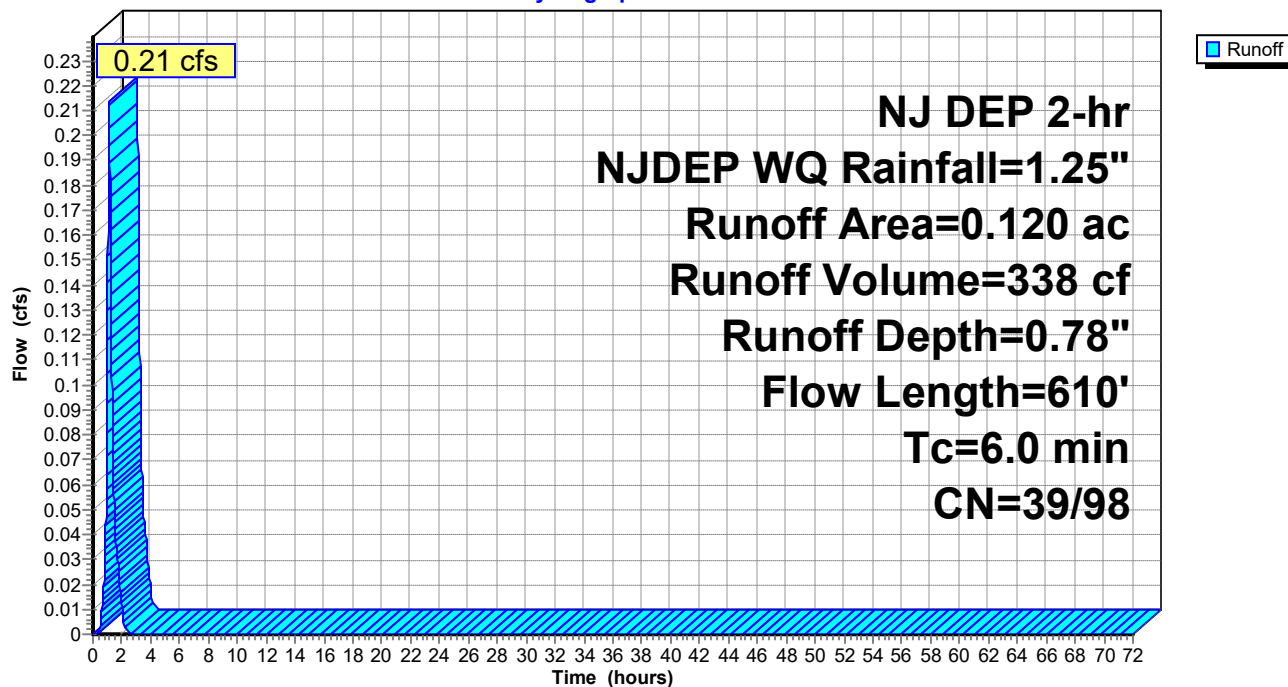
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

Area (ac)	CN	Description
0.090	98	Paved parking, HSG A
0.030	39	>75% Grass cover, Good, HSG A
0.120	83	Weighted Average
0.030	39	25.00% Pervious Area
0.090	98	75.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	1.03		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.42"
0.6	85	0.0160	2.57		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.6	505	0.0075	5.39	6.61	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
2.5	610	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 2RD-S: P2RD-S

Hydrograph



Proposed SWM WQ Storm 2024-06-17

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NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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Hydrograph for Subcatchment 2RD-S: P2RD-S

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	1.25	0.00	1.03	0.01
4.00	1.25	0.00	1.03	0.00
6.00	1.25	0.00	1.03	0.00
8.00	1.25	0.00	1.03	0.00
10.00	1.25	0.00	1.03	0.00
12.00	1.25	0.00	1.03	0.00
14.00	1.25	0.00	1.03	0.00
16.00	1.25	0.00	1.03	0.00
18.00	1.25	0.00	1.03	0.00
20.00	1.25	0.00	1.03	0.00
22.00	1.25	0.00	1.03	0.00
24.00	1.25	0.00	1.03	0.00
26.00	1.25	0.00	1.03	0.00
28.00	1.25	0.00	1.03	0.00
30.00	1.25	0.00	1.03	0.00
32.00	1.25	0.00	1.03	0.00
34.00	1.25	0.00	1.03	0.00
36.00	1.25	0.00	1.03	0.00
38.00	1.25	0.00	1.03	0.00
40.00	1.25	0.00	1.03	0.00
42.00	1.25	0.00	1.03	0.00
44.00	1.25	0.00	1.03	0.00
46.00	1.25	0.00	1.03	0.00
48.00	1.25	0.00	1.03	0.00
50.00	1.25	0.00	1.03	0.00
52.00	1.25	0.00	1.03	0.00
54.00	1.25	0.00	1.03	0.00
56.00	1.25	0.00	1.03	0.00
58.00	1.25	0.00	1.03	0.00
60.00	1.25	0.00	1.03	0.00
62.00	1.25	0.00	1.03	0.00
64.00	1.25	0.00	1.03	0.00
66.00	1.25	0.00	1.03	0.00
68.00	1.25	0.00	1.03	0.00
70.00	1.25	0.00	1.03	0.00
72.00	1.25	0.00	1.03	0.00

Proposed SWM WQ Storm 2024-06-17

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Wilbur Avenue Subdivision, Manchester, NJ

NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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Summary for Subcatchment TS: Typical House/Driveway System

Runoff = 0.14 cfs @ 1.17 hrs, Volume= 283 cf, Depth= 1.03"
Routed to Pond P-PP : Porous Pavement (Typical)

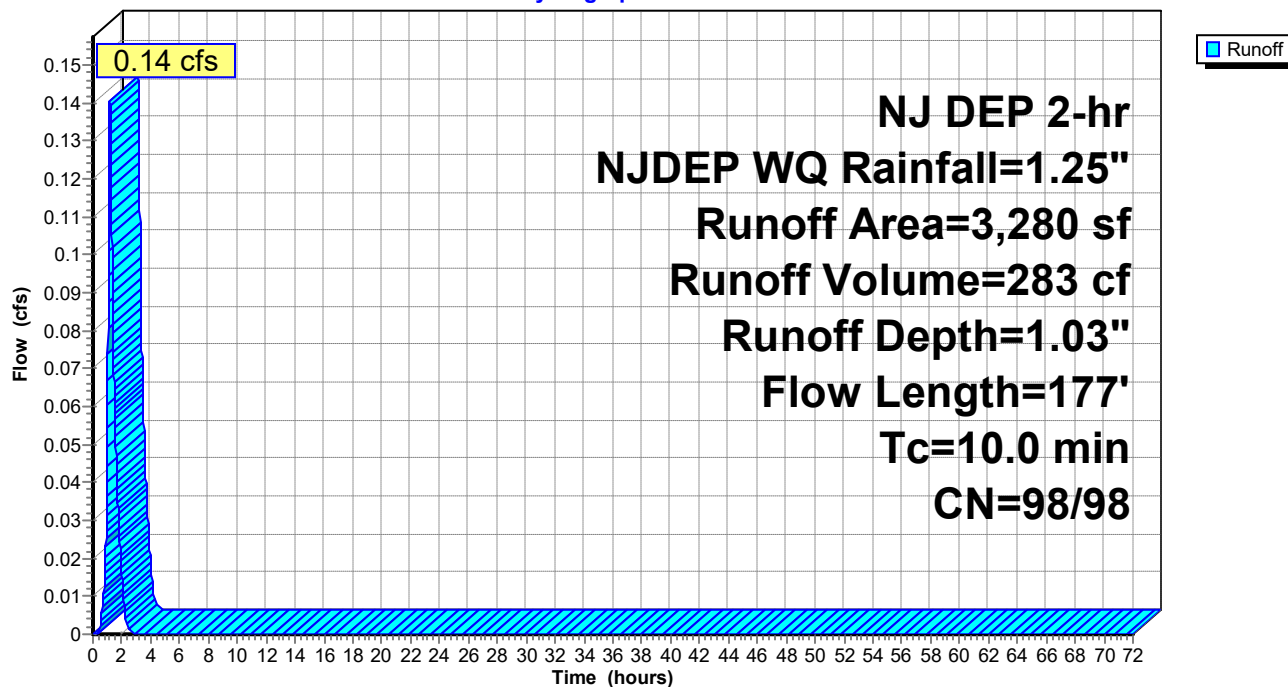
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

Area (sf)	CN	Description
2,200	98	Unconnected roofs, HSG A
1,080	98	Paved parking, HSG A
3,280	98	Weighted Average
2,200	98	67.07% Pervious Area
1,080	98	32.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	97	0.0210	0.18		Sheet Flow, Grass: Short n= 0.150 P2= 3.42" Using McCuen-Spiess flow length
0.7	40	0.0210	1.01		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.2	40	0.1900	3.05		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
10.0	177	Total			

Subcatchment TS: Typical House/Driveway System

Hydrograph



Proposed SWM WQ Storm 2024-06-17

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Wilbur Avenue Subdivision, Manchester, NJ

NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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Hydrograph for Subcatchment TS: Typical House/Driveway System

Time (hours)	Precip. (inches)	Perv.Excess (inches)	Imp.Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	0.00
2.00	1.25	1.03	1.03	0.02
4.00	1.25	1.03	1.03	0.00
6.00	1.25	1.03	1.03	0.00
8.00	1.25	1.03	1.03	0.00
10.00	1.25	1.03	1.03	0.00
12.00	1.25	1.03	1.03	0.00
14.00	1.25	1.03	1.03	0.00
16.00	1.25	1.03	1.03	0.00
18.00	1.25	1.03	1.03	0.00
20.00	1.25	1.03	1.03	0.00
22.00	1.25	1.03	1.03	0.00
24.00	1.25	1.03	1.03	0.00
26.00	1.25	1.03	1.03	0.00
28.00	1.25	1.03	1.03	0.00
30.00	1.25	1.03	1.03	0.00
32.00	1.25	1.03	1.03	0.00
34.00	1.25	1.03	1.03	0.00
36.00	1.25	1.03	1.03	0.00
38.00	1.25	1.03	1.03	0.00
40.00	1.25	1.03	1.03	0.00
42.00	1.25	1.03	1.03	0.00
44.00	1.25	1.03	1.03	0.00
46.00	1.25	1.03	1.03	0.00
48.00	1.25	1.03	1.03	0.00
50.00	1.25	1.03	1.03	0.00
52.00	1.25	1.03	1.03	0.00
54.00	1.25	1.03	1.03	0.00
56.00	1.25	1.03	1.03	0.00
58.00	1.25	1.03	1.03	0.00
60.00	1.25	1.03	1.03	0.00
62.00	1.25	1.03	1.03	0.00
64.00	1.25	1.03	1.03	0.00
66.00	1.25	1.03	1.03	0.00
68.00	1.25	1.03	1.03	0.00
70.00	1.25	1.03	1.03	0.00
72.00	1.25	1.03	1.03	0.00

Proposed SWM WQ Storm 2024-06-17

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Wilbur Avenue Subdivision, Manchester, NJ

NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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Summary for Pond P-A: Basin A

Inflow Area = 92,347 sf, 0.00% Impervious, Inflow Depth = 0.00" for NJDEP WQ event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond P-B : Basin B

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 75.33' @ 0.00 hrs Surf.Area= 0.043 ac Storage= 0.000 af

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	75.33'	0.142 af	15.00'W x 125.00'L x 2.17'H Prismatic Z=3.0
Device	Routing	Invert	Outlet Devices
#1	Primary	72.61'	12.0" Round Culvert L= 288.0' Ke= 0.600 Inlet / Outlet Invert= 72.61' / 69.74' S= 0.0100 ' / Cc= 0.900 n= 0.010, Flow Area= 0.79 sf
#2	Device 1	77.10'	2.5" Vert. Orifice C= 0.600 Limited to weir flow at low heads
#3	Device 1	77.40'	24.0" x 24.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=75.33' (Free Discharge)

1=Culvert (Passes 0.00 cfs of 5.12 cfs potential flow)

2=Orifice (Controls 0.00 cfs)

3=Grate (Controls 0.00 cfs)

Proposed SWM WQ Storm 2024-06-17

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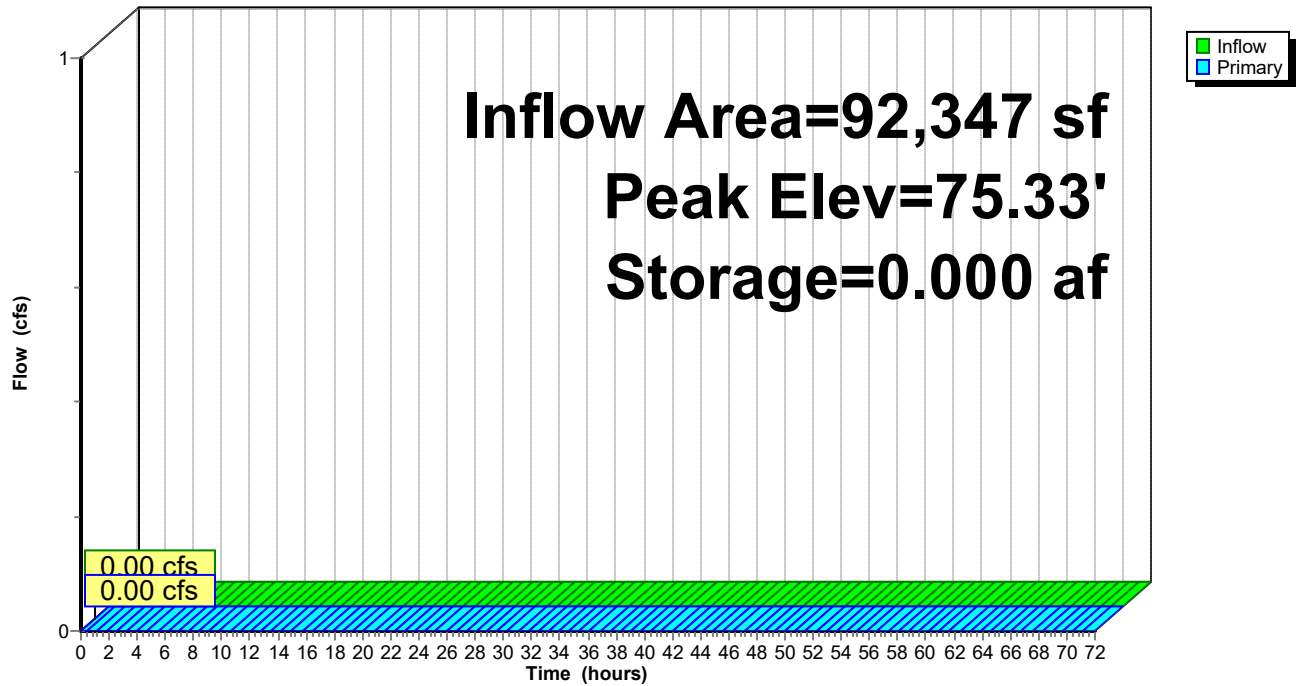
NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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Pond P-A: Basin A

Hydrograph



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NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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Hydrograph for Pond P-A: Basin A

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	75.33	0.00	51.00	0.00	75.33	0.00
1.00	0.00	75.33	0.00	52.00	0.00	75.33	0.00
2.00	0.00	75.33	0.00	53.00	0.00	75.33	0.00
3.00	0.00	75.33	0.00	54.00	0.00	75.33	0.00
4.00	0.00	75.33	0.00	55.00	0.00	75.33	0.00
5.00	0.00	75.33	0.00	56.00	0.00	75.33	0.00
6.00	0.00	75.33	0.00	57.00	0.00	75.33	0.00
7.00	0.00	75.33	0.00	58.00	0.00	75.33	0.00
8.00	0.00	75.33	0.00	59.00	0.00	75.33	0.00
9.00	0.00	75.33	0.00	60.00	0.00	75.33	0.00
10.00	0.00	75.33	0.00	61.00	0.00	75.33	0.00
11.00	0.00	75.33	0.00	62.00	0.00	75.33	0.00
12.00	0.00	75.33	0.00	63.00	0.00	75.33	0.00
13.00	0.00	75.33	0.00	64.00	0.00	75.33	0.00
14.00	0.00	75.33	0.00	65.00	0.00	75.33	0.00
15.00	0.00	75.33	0.00	66.00	0.00	75.33	0.00
16.00	0.00	75.33	0.00	67.00	0.00	75.33	0.00
17.00	0.00	75.33	0.00	68.00	0.00	75.33	0.00
18.00	0.00	75.33	0.00	69.00	0.00	75.33	0.00
19.00	0.00	75.33	0.00	70.00	0.00	75.33	0.00
20.00	0.00	75.33	0.00	71.00	0.00	75.33	0.00
21.00	0.00	75.33	0.00	72.00	0.00	75.33	0.00
22.00	0.00	75.33	0.00				
23.00	0.00	75.33	0.00				
24.00	0.00	75.33	0.00				
25.00	0.00	75.33	0.00				
26.00	0.00	75.33	0.00				
27.00	0.00	75.33	0.00				
28.00	0.00	75.33	0.00				
29.00	0.00	75.33	0.00				
30.00	0.00	75.33	0.00				
31.00	0.00	75.33	0.00				
32.00	0.00	75.33	0.00				
33.00	0.00	75.33	0.00				
34.00	0.00	75.33	0.00				
35.00	0.00	75.33	0.00				
36.00	0.00	75.33	0.00				
37.00	0.00	75.33	0.00				
38.00	0.00	75.33	0.00				
39.00	0.00	75.33	0.00				
40.00	0.00	75.33	0.00				
41.00	0.00	75.33	0.00				
42.00	0.00	75.33	0.00				
43.00	0.00	75.33	0.00				
44.00	0.00	75.33	0.00				
45.00	0.00	75.33	0.00				
46.00	0.00	75.33	0.00				
47.00	0.00	75.33	0.00				
48.00	0.00	75.33	0.00				
49.00	0.00	75.33	0.00				
50.00	0.00	75.33	0.00				

Proposed SWM WQ Storm 2024-06-17

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NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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Summary for Pond P-B: Basin B

Inflow Area = 200,376 sf, 18.70% Impervious, Inflow Depth = 0.19" for NJDEP WQ event
 Inflow = 2.04 cfs @ 1.12 hrs, Volume= 3,230 cf
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Routed to nonexistent node 2L

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Peak Elev= 67.62' @ 2.66 hrs Surf.Area= 5,301 sf Storage= 3,230 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	67.00'	25,595 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
67.00	5,140	0	0
68.00	5,400	5,270	5,270
69.00	5,630	5,515	10,785
70.00	5,870	5,750	16,535
71.00	6,100	5,985	22,520
71.50	6,200	3,075	25,595

Device	Routing	Invert	Outlet Devices
#1	Primary	68.00'	Reg-U-Flo CH 3.0-in
#2	Discarded	67.00'	5.800 in/hr Exfiltration X 0.00 over Surface area

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=67.00' (Free Discharge)
 ↑ **2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=67.00' (Free Discharge)
 ↑ **1=Reg-U-Flo CH 3.0-in** (Controls 0.00 cfs)

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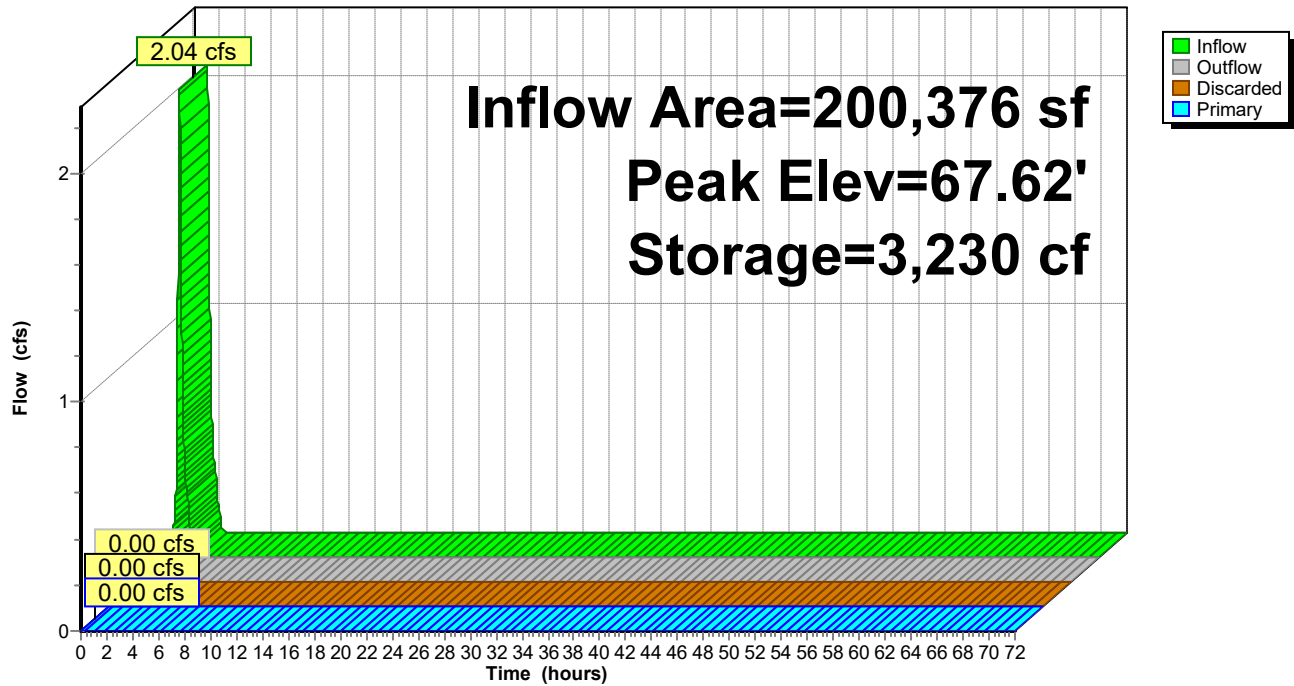
NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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Pond P-B: Basin B

Hydrograph



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NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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Hydrograph for Pond P-B: Basin B

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	67.00	0.00	0.00	0.00
2.00	0.11	3,174	67.61	0.00	0.00	0.00
4.00	0.00	3,230	67.62	0.00	0.00	0.00
6.00	0.00	3,230	67.62	0.00	0.00	0.00
8.00	0.00	3,230	67.62	0.00	0.00	0.00
10.00	0.00	3,230	67.62	0.00	0.00	0.00
12.00	0.00	3,230	67.62	0.00	0.00	0.00
14.00	0.00	3,230	67.62	0.00	0.00	0.00
16.00	0.00	3,230	67.62	0.00	0.00	0.00
18.00	0.00	3,230	67.62	0.00	0.00	0.00
20.00	0.00	3,230	67.62	0.00	0.00	0.00
22.00	0.00	3,230	67.62	0.00	0.00	0.00
24.00	0.00	3,230	67.62	0.00	0.00	0.00
26.00	0.00	3,230	67.62	0.00	0.00	0.00
28.00	0.00	3,230	67.62	0.00	0.00	0.00
30.00	0.00	3,230	67.62	0.00	0.00	0.00
32.00	0.00	3,230	67.62	0.00	0.00	0.00
34.00	0.00	3,230	67.62	0.00	0.00	0.00
36.00	0.00	3,230	67.62	0.00	0.00	0.00
38.00	0.00	3,230	67.62	0.00	0.00	0.00
40.00	0.00	3,230	67.62	0.00	0.00	0.00
42.00	0.00	3,230	67.62	0.00	0.00	0.00
44.00	0.00	3,230	67.62	0.00	0.00	0.00
46.00	0.00	3,230	67.62	0.00	0.00	0.00
48.00	0.00	3,230	67.62	0.00	0.00	0.00
50.00	0.00	3,230	67.62	0.00	0.00	0.00
52.00	0.00	3,230	67.62	0.00	0.00	0.00
54.00	0.00	3,230	67.62	0.00	0.00	0.00
56.00	0.00	3,230	67.62	0.00	0.00	0.00
58.00	0.00	3,230	67.62	0.00	0.00	0.00
60.00	0.00	3,230	67.62	0.00	0.00	0.00
62.00	0.00	3,230	67.62	0.00	0.00	0.00
64.00	0.00	3,230	67.62	0.00	0.00	0.00
66.00	0.00	3,230	67.62	0.00	0.00	0.00
68.00	0.00	3,230	67.62	0.00	0.00	0.00
70.00	0.00	3,230	67.62	0.00	0.00	0.00
72.00	0.00	3,230	67.62	0.00	0.00	0.00

Proposed SWM WQ Storm 2024-06-17

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NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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Summary for Pond P-PP: Porous Pavement (Typical)

Inflow Area = 3,280 sf, 32.93% Impervious, Inflow Depth = 1.03" for NJDEP WQ event
 Inflow = 0.14 cfs @ 1.17 hrs, Volume= 283 cf
 Outflow = 0.05 cfs @ 1.58 hrs, Volume= 283 cf, Atten= 65%, Lag= 24.7 min
 Discarded = 0.05 cfs @ 1.58 hrs, Volume= 283 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 70.28' @ 1.58 hrs Surf.Area= 1,000 sf Storage= 111 cf

Plug-Flow detention time= 23.8 min calculated for 283 cf (100% of inflow)

Center-of-Mass det. time= 23.8 min (103.9 - 80.1)

Volume	Invert	Avail.Storage	Storage Description
#1	70.00'	800 cf	20.00'W x 50.00'L x 2.00'H Stone Bed 2,000 cf Overall x 40.0% Voids
#2	72.00'	63 cf	12.00'W x 70.00'L x 0.50'H Pavement 420 cf Overall x 15.0% Voids
#3	72.50'	1,680 cf	12.00'W x 70.00'L x 2.00'H Surface
		2,543 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	70.00'	2.000 in/hr Exfiltration over Horizontal area Conductivity to Groundwater Elevation = 65.00'

Discarded OutFlow Max=0.05 cfs @ 1.58 hrs HW=70.28' (Free Discharge)↑**1=Exfiltration** (Controls 0.05 cfs)

Proposed SWM WQ Storm 2024-06-17

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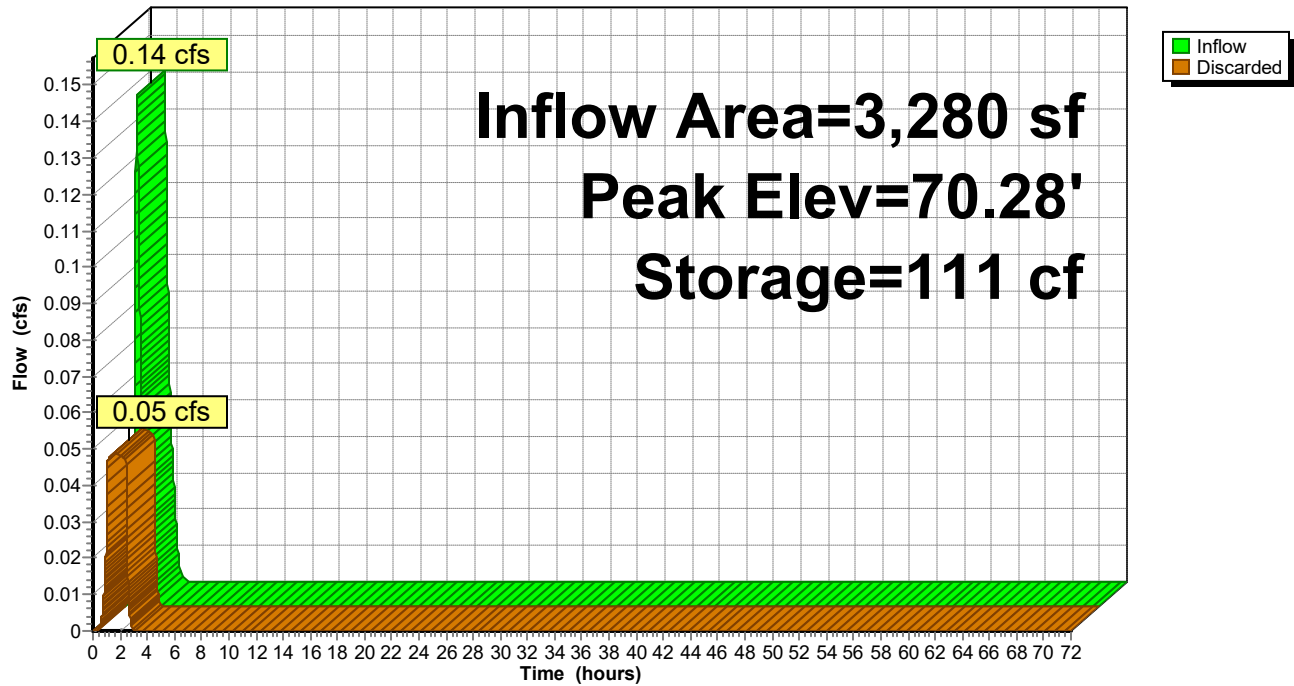
NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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Pond P-PP: Porous Pavement (Typical)

Hydrograph



Proposed SWM WQ Storm 2024-06-17

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NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

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Hydrograph for Pond P-PP: Porous Pavement (Typical)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Discarded (cfs)
0.00	0.00	0	70.00	0.00
2.00	0.02	83	70.21	0.05
4.00	0.00	0	70.00	0.00
6.00	0.00	0	70.00	0.00
8.00	0.00	0	70.00	0.00
10.00	0.00	0	70.00	0.00
12.00	0.00	0	70.00	0.00
14.00	0.00	0	70.00	0.00
16.00	0.00	0	70.00	0.00
18.00	0.00	0	70.00	0.00
20.00	0.00	0	70.00	0.00
22.00	0.00	0	70.00	0.00
24.00	0.00	0	70.00	0.00
26.00	0.00	0	70.00	0.00
28.00	0.00	0	70.00	0.00
30.00	0.00	0	70.00	0.00
32.00	0.00	0	70.00	0.00
34.00	0.00	0	70.00	0.00
36.00	0.00	0	70.00	0.00
38.00	0.00	0	70.00	0.00
40.00	0.00	0	70.00	0.00
42.00	0.00	0	70.00	0.00
44.00	0.00	0	70.00	0.00
46.00	0.00	0	70.00	0.00
48.00	0.00	0	70.00	0.00
50.00	0.00	0	70.00	0.00
52.00	0.00	0	70.00	0.00
54.00	0.00	0	70.00	0.00
56.00	0.00	0	70.00	0.00
58.00	0.00	0	70.00	0.00
60.00	0.00	0	70.00	0.00
62.00	0.00	0	70.00	0.00
64.00	0.00	0	70.00	0.00
66.00	0.00	0	70.00	0.00
68.00	0.00	0	70.00	0.00
70.00	0.00	0	70.00	0.00
72.00	0.00	0	70.00	0.00

Proposed SWM WQ Storm 2024-06-17

Multi-Event Tables

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Events for Subcatchment 2A: P2A

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
NJDEP WQ	1.25	0.00	0	0.00

Proposed SWM WQ Storm 2024-06-17

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Multi-Event Tables

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Events for Subcatchment 2B: P2B

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
NJDEP WQ	1.25	0.00	0	0.00

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Multi-Event Tables

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Events for Subcatchment 2RD-N: P2RD-N

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
NJDEP WQ	1.25	1.83	2,892	0.82

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Multi-Event Tables

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Events for Subcatchment 2RD-S: P2RD-S

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
NJDEP WQ	1.25	0.21	338	0.78

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Multi-Event Tables

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Events for Subcatchment TS: Typical House/Driveway System

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
NJDEP WQ	1.25	0.14	283	1.03

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Multi-Event Tables

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Events for Pond P-A: Basin A

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (acre-feet)
NJDEP WQ	0.00	0.00	75.33	0.000

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Multi-Event Tables

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Events for Pond P-B: Basin B

Event	Inflow (cfs)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
NJDEP WQ	2.04	0.00	0.00	0.00	67.62	3,230

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Wilbur Avenue Subdivision, Manchester, NJ

Multi-Event Tables

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Events for Pond P-PP: Porous Pavement (Typical)

Event	Inflow (cfs)	Discarded (cfs)	Elevation (feet)	Storage (cubic-feet)
NJDEP WQ	0.14	0.05	70.28	111

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Wilbur Avenue Subdivision, Manchester, NJ

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Appendix F – Pipe Calculations

DRAINAGE CALCULATIONS

MADE BY: AY DATE: 07/13/2026

CHKD BY: YP DATE: 07/13/2026

NJDEP RAINFALL CURVE

'n' VALUE = 0.012 RCP
'n' VALUE = 0.024 CMP
'n' VALUE = 0.010 DIP
'n' VALUE = 0.009 PVC
'n' VALUE = 0.010 HDPE

Sheet: 1 OF 1

Project Name: Wilbur Avenue, Manchester, NJ

Project #: 23172

SUBAREA DATA										DESIGN DATA						DESIGN FLOW				PIPE DATA							
PIPE LOCATION		AREA ACRES	"C"	CxA	SUM CxA	T _c	SUM T _c	DESIGN STORM	"I"	DISCH'G Q _a	PIPE TYPE	SIZE IN	THICKNESS IN	SLOPE %	CAP Q _f	VEL V _f	% FULL Q _a / Q _f	VEL V _a	Depth INCH	Flow TIME	Length I-I	TOP GRATE/RIM		INVERTS		COVER	
START	END																					UPPER	LOWER	UPPER	LOWER	UPPER	LOWER
B-inlet 1	B-inlet 2	0.320	0.750	0.240	0.240	10	10.0	25	6.37	1.53	HDPE	12	0.61	1.00	4.63	5.90	33	5.25	4.71	0.10	32	79.00	79.00	72.38	72.06	5.57	5.89
B-inlet 2	B-inlet 3 *	0.320	0.750	0.240	0.480	10	10.1	25	6.35	3.05	HDPE	12	0.61	1.00	4.63	5.90	66	6.26	7.07	0.55	206	79.00	74.65	72.06	70.00	5.89	3.60
B-inlet 6	B-inlet 7	0.090	0.900	0.081	0.081	10	10.0	25	6.37	0.52	HDPE	12	0.61	0.50	3.28	4.17	16	2.98	3.16	0.22	40	75.90	75.00	70.96	70.76	3.89	3.19
	B-inlet 8	0.060	0.900	0.054	0.135	10	10.2	25	9.79	1.32	HDPE	12	0.61	0.50	3.28	4.17	40	3.91	5.25	0.99	233	75.00	75.07	70.77	69.60	3.18	4.42
B-inlet 13	B-inlet 8	0.190	0.600	0.114	0.114	10	10.0	25	6.37	0.73	HDPE	12	0.61	0.50	3.28	4.17	22	3.29	3.77	0.16	32	74.90	75.07	69.80	69.64	4.05	4.38
B-inlet 8	B-inlet 5	0.110	0.900	0.099	0.348	10	11.2	25	6.12	2.13	HDPE	12	0.61	0.75	4.01	5.11	53	5.17	6.20	0.45	140	75.07	72.85	69.60	68.55	4.42	3.25
B-Inlet 4	B-inlet 5	0.630	0.450	0.284	0.284	10	10.0	25	6.37	1.81	HDPE	12	0.61	0.50	3.28	4.17	55	4.25	6.33	0.12	31	72.85	72.85	68.71	68.55	3.09	3.25
B-inlet 5	B-inlet 3 *	0.150	0.900	0.135	0.767	10	11.7	25	6.03	4.62	HDPE	15	0.61	0.75	7.27	5.93	64	6.25	8.67	0.31	117	72.85	74.65	68.30	67.42	3.25	5.93
OCS 10	E-Inlet 12	N/A	N/A	0.000	0.000	10	0.0	25	9.79	0.71	HDPE	12	0.61	1.00	4.63	5.90	15	4.14	3.05	0.93	231	77.40	74.69	72.61	70.30	3.74	3.34
E-Inlet 12	B-Inlet 3 *	0.340	0.700	0.238	0.238	10	10.0	25	6.37	1.52	HDPE	12	0.61	1.00	4.63	5.90	33	5.25	4.71	0.10	30	74.69	74.65	70.30	70.00	3.34	3.60
* B-Inlet 3	HDWL 9	0.340	0.750	0.255	1.740	10	12.2	25	5.92	10.30	HDPE	18	0.61	1.00	13.66	7.73	75	8.43	11.54	0.03	17	74.65	74.65	67.17	67.00	5.93	6.10
OCS 1	OUTFLOW 1	N/A	N/A	0.120	0.120	10	10.0	25	6.37	0.76	HDPE	12	0.61	0.50	3.28	4.17	23	3.33	3.86	0.25	50	70.75	66.77	65.40	65.15	4.30	0.57

Appendix G– Groundwater Mounding Analysis

Input Values

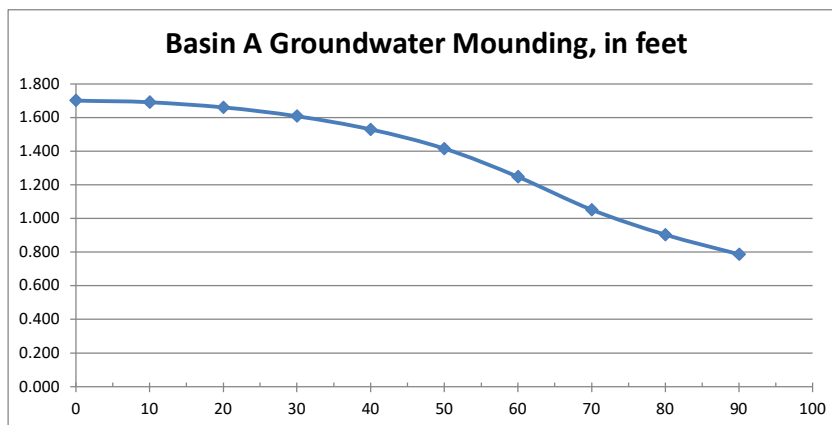
10.00	R	Recharge rate (permeability rate) (in/hr)
0.150	Sy	Specific yield, Sy (dimensionless) default value is 0.15; max value is 0.2 provided that a lab test data is submitted
50.00	Kh	Horizontal hydraulic conductivity (in/hr) Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan
62.500	x	1/2 length of basin (x direction, in feet)
7.500	y	1/2 width of basin (y direction, in feet)
8.36	t	Duration of infiltration period (hours)
71.00	hi(0)	Initial thickness of saturated zone (feet)

72.701	h(max)	Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
1.701	$\Delta h(\max)$	Maximum groundwater mounding (beneath center of basin at end of infiltration period)
Distance from		
Ground-water	center of basin in x	
Mounding, in feet	direction, in feet	

1.701	0
1.691	10
1.660	20
1.608	30
1.529	40
1.415	50
1.248	60
1.051	70
0.902	80
0.788	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.

Input Values

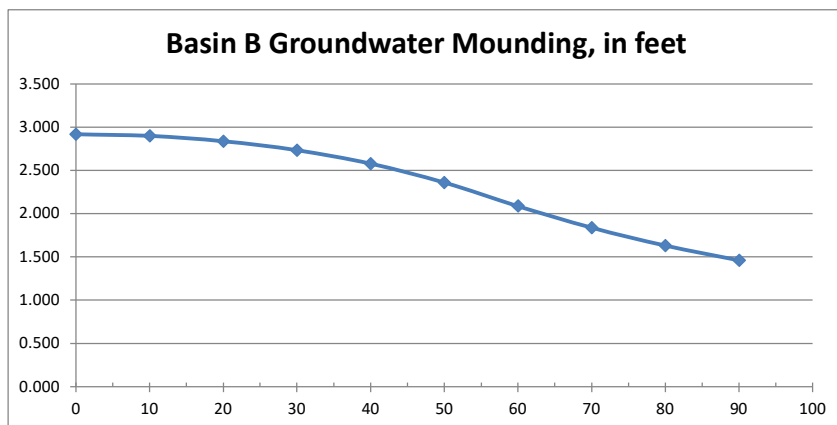
3.10	R	Recharge rate (permeability rate) (in/hr)
0.150	Sy	Specific yield, Sy (dimensionless) default value is 0.15; max value is 0.2 provided that a lab test data is submitted
28.75	Kh	Horizontal hydraulic conductivity (in/hr) Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan
56.000	x	1/2 length of basin (x direction, in feet)
22.950	y	1/2 width of basin (y direction, in feet)
23.19	t	Duration of infiltration period (hours)
63.00	hi(0)	Initial thickness of saturated zone (feet)

65.917	h(max)	Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
2.917	$\Delta h(\max)$	Maximum groundwater mounding (beneath center of basin at end of infiltration period)
Distance from		
Ground-water	center of basin in x	
Mounding, in feet	direction, in feet	

2.917	0
2.898	10
2.837	20
2.733	30
2.578	40
2.359	50
2.087	60
1.836	70
1.631	80
1.459	90



Re-Calculate Now



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Input Values

3.20	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
16.00	Kh	Horizontal hydraulic conductivity (in/hr) Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan
25.000	x	1/2 length of basin (x direction, in feet)
10.000	y	1/2 width of basin (y direction, in feet)
11.20	t	Duration of infiltration period (hours)
66.00	hi(0)	Initial thickness of saturated zone (feet)

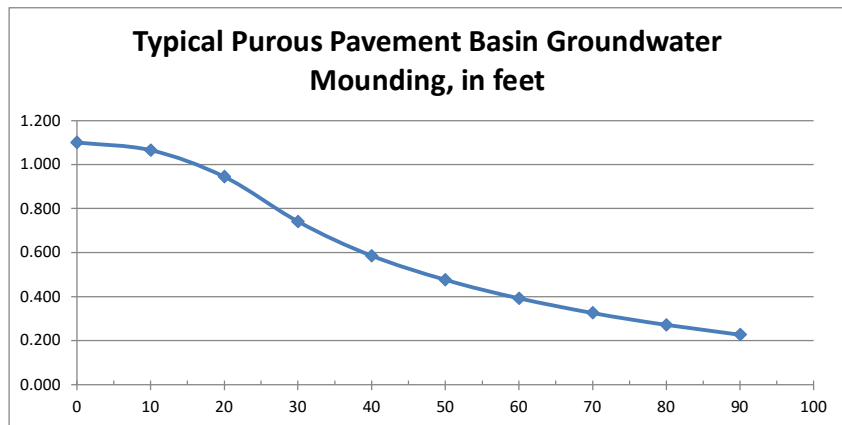
67.101	h(max)	Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
1.101	$\Delta h(\max)$	Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Distance from
center of basin in x
direction, in feet

1.101	0
1.065	10
0.945	20
0.741	30
0.585	40
0.476	50
0.392	60
0.326	70
0.272	80
0.227	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.

Appendix H – Conduit Outlet Protection

PROJECT # 23172
CALCULATED BY: AY
DATE: 07/13/26

Design Parameters

Design Storm Flow for 25 Year Q	4.6	cfs
Vertical Dimension of Outlet Pipe, D_0	15	in
Horizontal Dimension of Outlet Pipe, W_0	15	in
Tailwater Depth, TW^1	0.56	ft

Rip Rap Stone Size Calculations

Unit Discharge, $q = \frac{Q}{D_0}$ 3.68 cfs per foot

BASIN B - SCOUR 1

Option 1

if Scour Hole Depth , $y = \frac{1}{2}D_0$ 7.5 in

Apron Dimension Calculations

Minimum Bottom Width $W_1=2 W_0$	2.50	ft
Minimum Bottom Length $L_1=3 D_0$	3.75	ft
Minimum Top Width (max side slope of 3:1),	6.25	ft
Minimum Top Length (max side slope of 3:1)	7.50	ft

Median Stone $d_{50} = \frac{0.0125 q^{1.33}}{TW}$ 4 in

Apron Thickness , TH = 2x d_{50} 8 in

Option 2

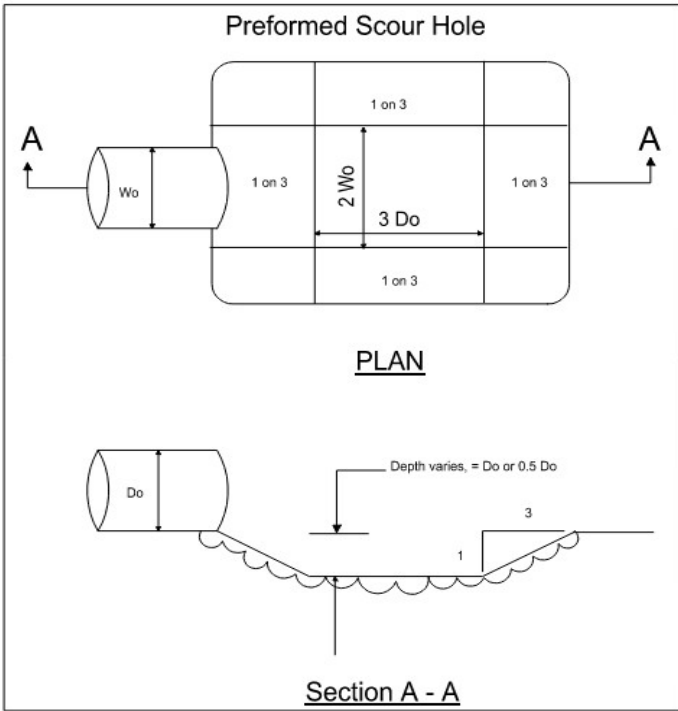
if Scour Hole Depth , $y = D_0$ 15 in

Apron Dimension Calculations

Minimum Bottom Width $W_1=2 W_0$	2.50	ft
Minimum Bottom Length $L_1=3 D_0$	3.75	ft
Minimum Top Width (max side slope of 3:1),	10.00	ft
Minimum Top Length (max side slope of 3:1)	11.25	ft

Median Stone $d_{50} = \frac{0.0082 q^{1.33}}{TW}$ 4 in

Apron Thickness , TH = 2x d_{50} 8 in



PROJECT # 23172
CALCULATED BY: AY
DATE: 07/13/26

Design Parameters

Design Storm Flow for 25 Year Q		0.12	cfs
Vertical Dimension of Outlet Pipe, D_0		12	in
Horizontal Dimension of Outlet Pipe, W_0		12	in
Tailwater Depth, TW^1		0.01	ft

Rip Rap Stone Size Calculations

Unit Discharge, $q = \frac{Q}{D_0}$ 0.12 cfs per foot

OUTFALL 1- SCOUR 2

Option 1

if Scour Hole Depth , $y = \frac{1}{2}D_0$ 6 in

Apron Dimension Calculations

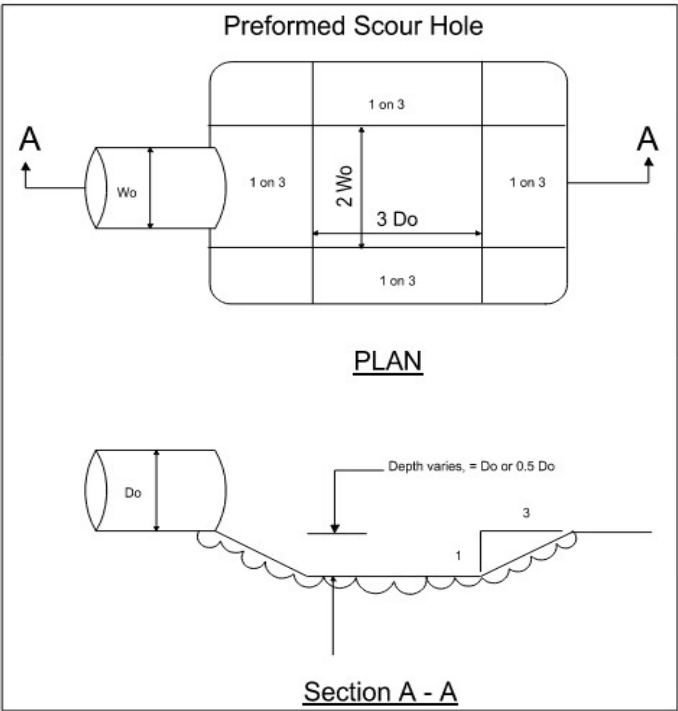
Minimum Bottom Width $W_1=2 W_0$	2.00	ft	3.00	
Minimum Bottom Length $L_1=3 D_0$	3.00	ft	3.00	1.5
Minimum Top Width (max side slope of 3:1),	5.00	ft		
Minimum Top Length (max side slope of 3:1)	6.00	ft		
Median Stone $d_{50} = \frac{0.0125 q^{1.33}}{TW}$	4	in		
Apron Thickness , TH = 2x d_{50}	8	in		

Option 2

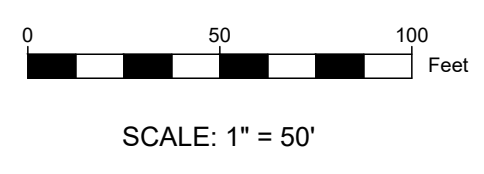
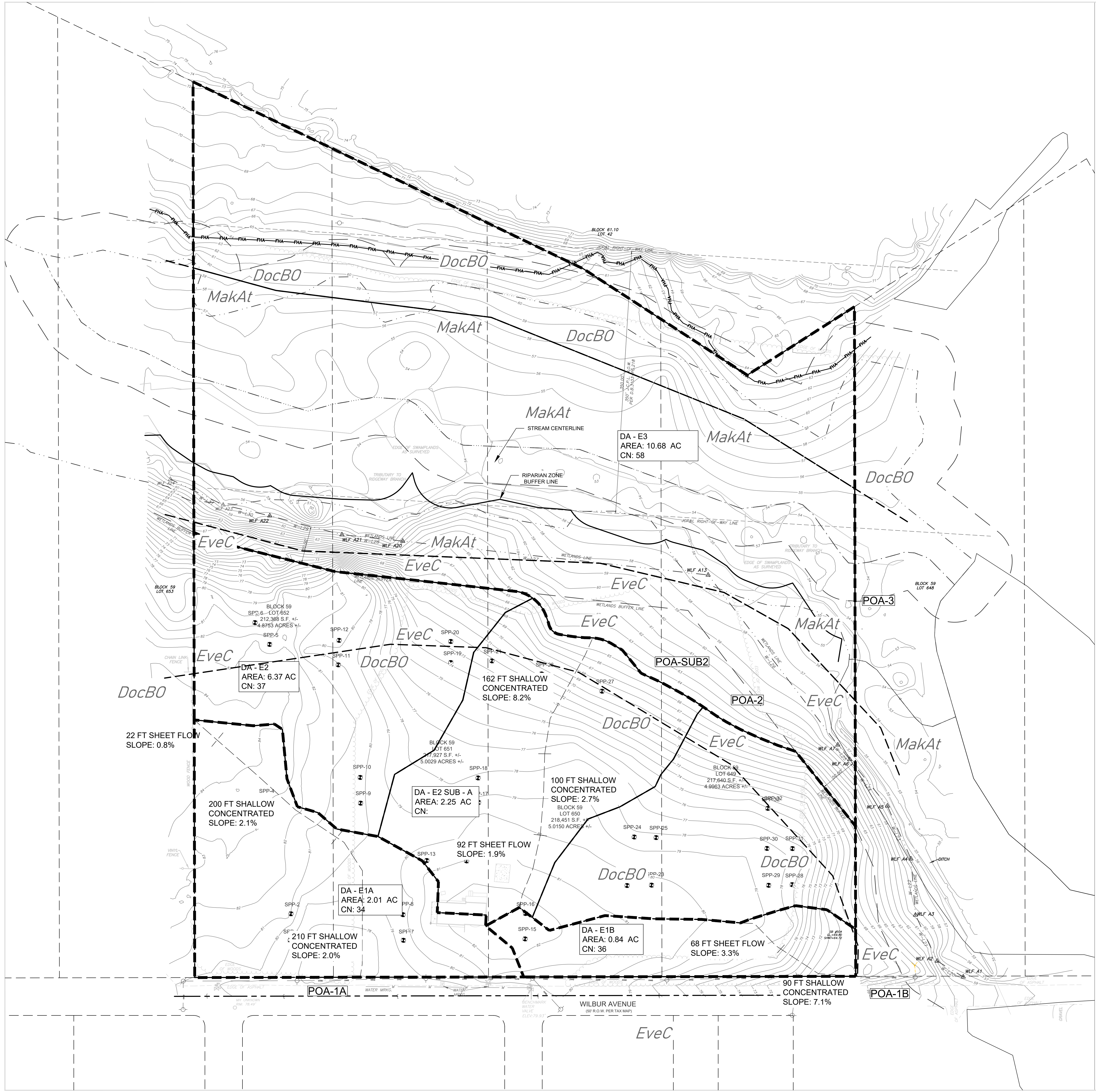
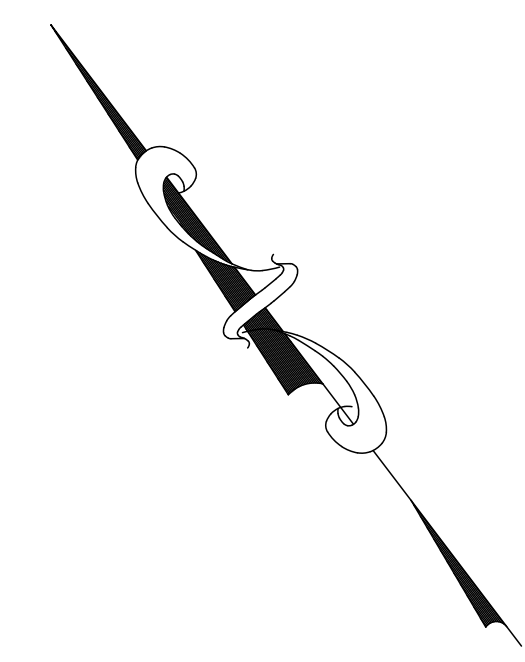
if Scour Hole Depth , $y = D_0$ 12 in

Apron Dimension Calculations

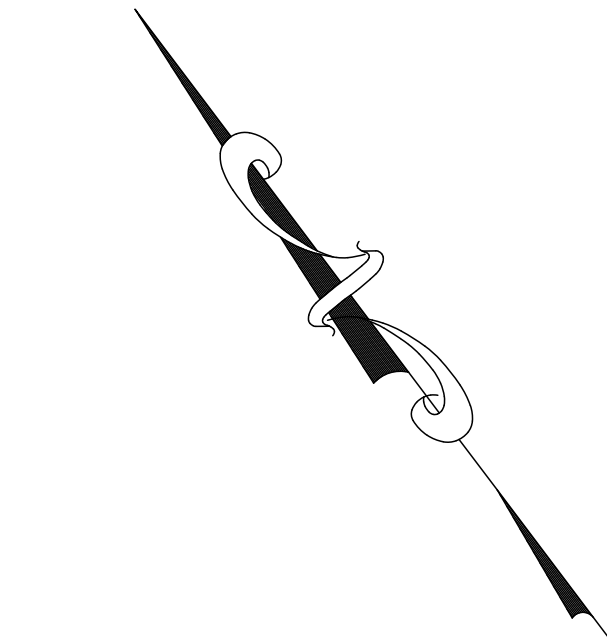
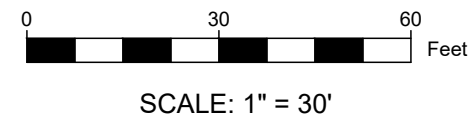
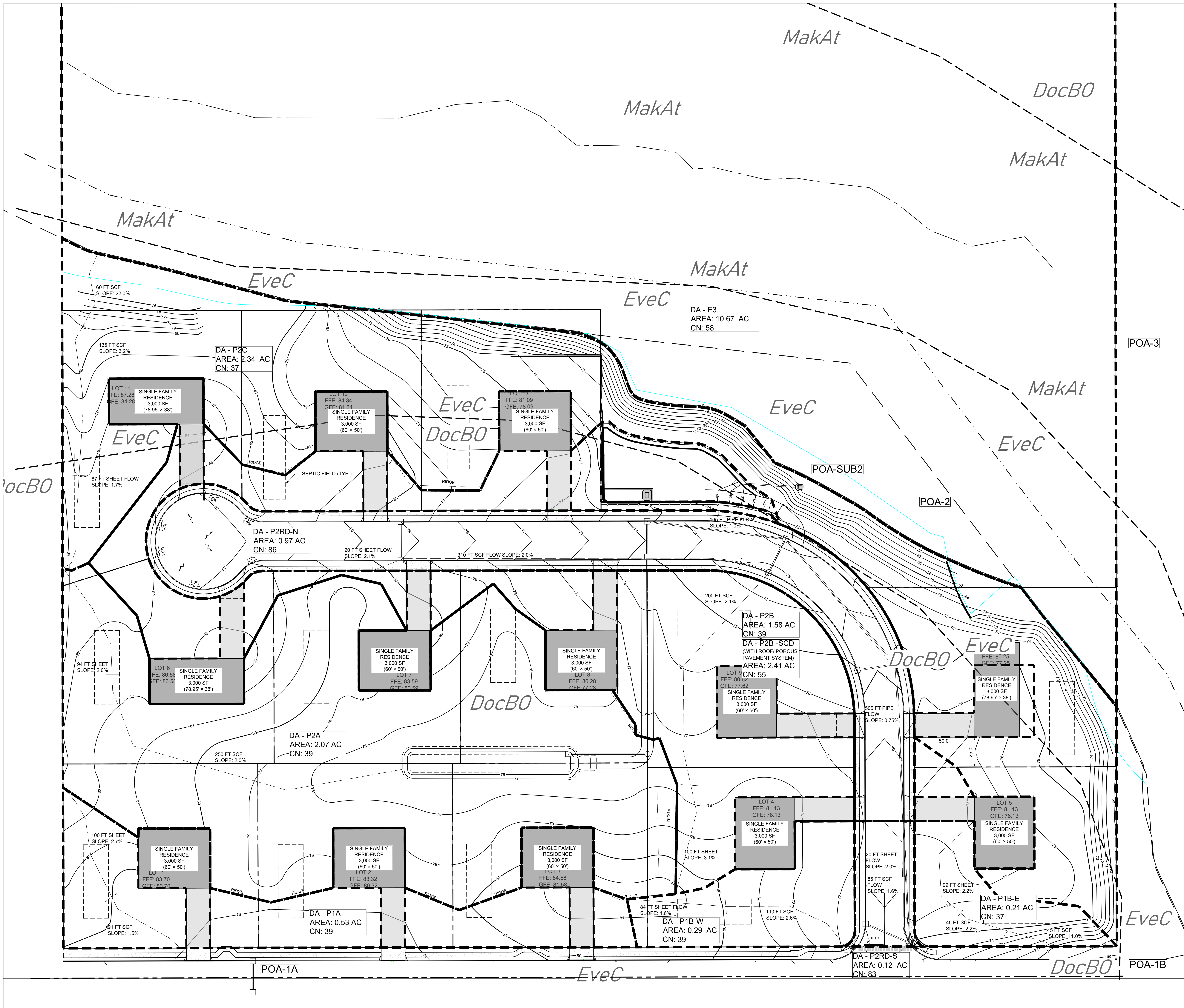
Minimum Bottom Width $W_1=2 W_0$	2.00	ft		
Minimum Bottom Length $L_1=3 D_0$	3.00	ft		
Minimum Top Width (max side slope of 3:1),	8.00	ft		
Minimum Top Length (max side slope of 3:1)	9.00	ft		
Median Stone $d_{50} = \frac{0.0082 q^{1.33}}{TW}$	4	in		
Apron Thickness , TH = 2x d_{50}	8	in		



Appendix I – Drainage Area Maps



1.	REVISED PER AGENCY COMMENTS	7/2/2026	HH
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 CIVIL CORE CONSULTING, LLC 1969 RUTGERS UNIVERSITY BLVD. LAKEWOOD, NJ 08701 NJ CERTIFICATE OF AUTHORIZATION NO. 24GA28399400			
PROJECT: PRELIMINARY/FINAL MAJOR SITE PLAN FOR WILBUR AVENUE			
LOCATION: BLOCK 59, LOT 649, 650, 651, 652 MANCHESTER TOWNSHIP OCEAN COUNTY NEW JERSEY			
DRAWING TITLE: EXISTING DRAINAGE AREAS			
PROJECT NO. 23172	DATE 07/01/24	DRAWN BY AY	CHECKED BY YP
			SCALE AS NOTED
			SHEET NO. 1 OF 1
YOSEF PORTNOY LICENSED PROFESSIONAL ENGINEER NJ LICENSE NO. GE533983			



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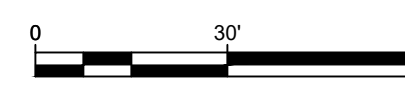
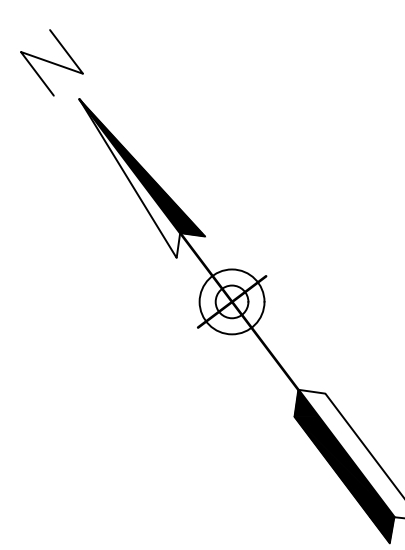
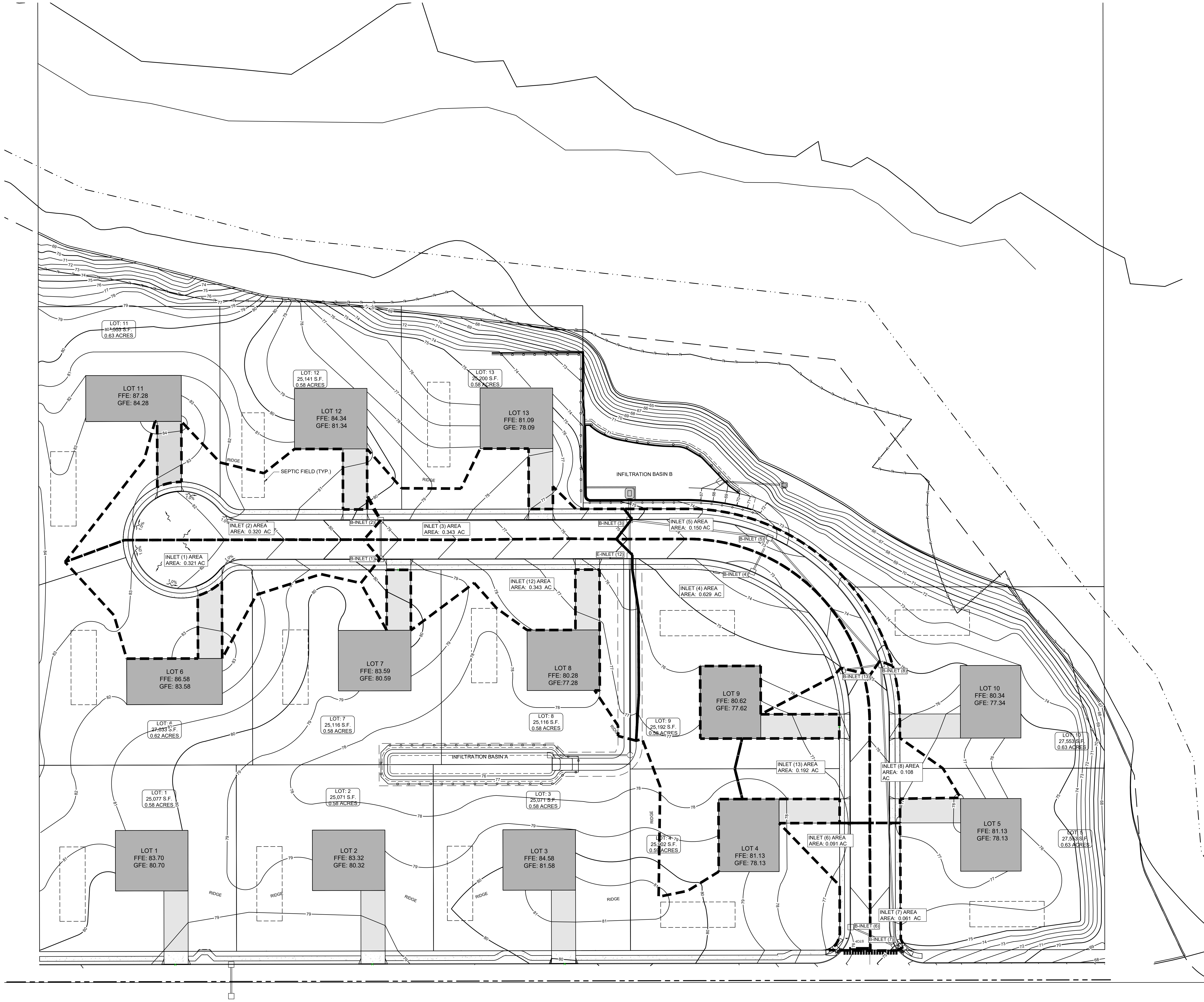
PROJECT: PRELIMINARY/FINAL
MAJOR SITE PLAN
FOR
WILBUR AVENUE

LOCATION:
BLOCK 59, LOT 649, 650, 651, 652
MANCHESTER TOWNSHIP
OCEAN COUNTY
NEW JERSEY

DRAWING TITLE:
PROPOSED DRAINAGE AREAS

PROJECT NO. 23172	DATE 07/01/24	DRAWN BY AY	CHECKED BY YP
			SCALE AS NOTED
			SHEET NO. 1 OF 1

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PROJECT: PRELIMINARY/FINAL MAJOR SITE PLAN FOR WILBUR AVENUE			
LOCATION: BLOCK 59, LOT 649, 650, 651, 652 MANCHESTER TOWNSHIP OCEAN COUNTY NEW JERSEY			
DRAWING TITLE: INLET AREA MAP			
PROJECT NO.	DATE	DRAWN BY	CHECKED BY
23172	07/01/24	AY	YP
			SCALE
			AS NOTED
			SHEET NO.
			1
			OF
			1
YOSEF PORTNOY LICENSED PROFESSIONAL ENGINEER NJ LICENSE NO. GE53393			