

STORMWATER MANAGEMENT, GROUNDWATER RECHARGE AND WATER QUALITY ANALYSIS

For

Malvern School Properties, LP

Proposed Day School & Medical Office

**Block 28010, Lot 57 & 58
Township of Montgomery, Somerset County, NJ**

Prepared by:



**1904 Main Street
Lake Como, NJ 07719
(732) 974-0198**

A handwritten signature in blue ink, appearing to read 'Jeffrey S. Haberman', is written over a horizontal line.

**Jeffrey S. Haberman, PE, PP
NJ Professional Engineer License #53560**

**April 2023
DEC# 4447-22-01334**

TABLE OF CONTENTS

Page No.

I.	SITE DESCRIPTION	- 1 -
II.	DESIGN OVERVIEW	- 1 -
III.	EXISTING DRAINAGE CONDITIONS.....	- 2 -
IV.	PROPOSED DRAINAGE CONDITIONS	- 3 -
V.	DESIGN METHODOLOGY	- 3 -
VI.	STORMWATER MANAGEMENT SYSTEM DESIGN & GREEN INFRASTRUCTURE COMPLIANCE.....	- 5 -
VII.	RUNOFF RATES	- 5 -
VIII.	WATER QUALITY	- 5 -
IX.	GROUNDWATER RECHARGE	- 6 -
X.	CONCLUSION	- 6 -

APPENDIX

- NRCS Web Soil Survey
- Hydrograph Summary Reports – Existing & Proposed Conditions 2, 10, & 100-year
- Hydrograph Summary Reports – Water Quality Storm
- Stormwater Collection System Calculations (Pipe Sizing)
- Conduit Outlet Protection Calculations
- Overflow Spillway Calculations
- Nonstructural Strategies Point System (NSPS)
- Stormwater Basin Area Investigation Report, prepared by Dynamic Earth, LLC (Attached Separately)
- Drainage Area Maps

I. SITE DESCRIPTION

The subject site is located at 982 Georgetown-Franklin Turnpike (CR 518) in the Township of Montgomery, Somerset County, New Jersey. The site is identified as Block 28010, Lots 57 & 58 on the Township of Montgomery Tax Map Sheet #55. The subject site consists of 2.046 Ac and is currently developed with a residential dwelling unit, and consists mainly of open space, impervious area, and some wooded area. The site is bounded by townhomes in construction and commercial uses to the north, residential uses to the west, residential and agricultural uses to the south, and commercial uses to the east, with Route 206 beyond. The existing conditions of the site have been verified by the ALTA/NSPS Land Title Survey as prepared by Dynamic Survey, dated 08/26/2022, last revised 09/07/2022.

The scope of the study includes the proposed development of the tract with one new approximately 8,640 SF GFA Malvern School and one new approximately 4,000 SF medical support building. Additional improvements include lighting, landscaping, grading, walkways, driveways, utilities, parking, and associated items.

II. DESIGN OVERVIEW

This report has been prepared to define and analyze the stormwater drainage conditions that would occur as a result of the development of the subject site into a Malvern School and medical support building on Block 28010, Lots 57 & 58 in the Township of Montgomery, Somerset County, New Jersey. The scope of the study includes the proposed development of the parcel with a Malvern School and medical support building with accompanying lighting, landscaping, grading, walkways, driveways, utilities, parking, and other related site improvements.

Based upon the fact that the proposed development will result in more than one (1) acre of land disturbance and increases motor vehicle surfaces by more than $\frac{1}{4}$ acre, this project is classified as a "major development". Therefore, the proposed development has been designed to meet the stormwater runoff quantity, quality, and groundwater recharge requirements set forth by the Township of Montgomery Land Use Ordinance and NJAC 7:8.

Accordingly, the following items are addressed within this report:

- Stormwater runoff quality standards (7:8-5.5)
- Stormwater runoff quantity standards (7:8-5.6)
- Calculation of stormwater runoff (7:8-5.7)
- Green Infrastructure Standards (7:8-5.3)

A hydrological evaluation is provided for the NJDEP Water Quality, 2, 10, and 100-year storm events utilizing the Urban Hydrology for Small Watershed TR55 method.

The Township of Montgomery and NJAC 7:8 flow reduction requirements are as follows:

2-year:	50% reduction
10-year:	25% reduction
100-year:	20% reduction

It is the intention of the design of this facility to comply with the Stormwater Management Best Management Practices Manual.

III. EXISTING DRAINAGE CONDITIONS

The area to be analyzed consists of approximately 2.046 acres and is currently developed with a residential dwelling use, comprised mostly of open space, impervious areas, and some wooded area. Currently, all of the stormwater runoff from the subject site drains east via overland flow to the adjacent property to the east, where runoff is collected by a flared end section and conveyed through stormwater conveyance infrastructure in the Brecknell Way R.O.W.

The subject site has been evaluated with the following drainage sub-watershed areas as depicted on the Existing Drainage Area Map included within the Appendix of this report. According to the Somerset County Soil Survey, the existing soils are of Hydrologic Soil Group B and C. However, after thorough analysis and geotechnical testing of the underlying soils, the existing soil is anticipated to be reclassified to Hydrologic Soil Group D. The reclassification of soils is consistent with the Montgomery Crossing project to the north due to the lack of permeability and type of existing soils as evidenced in the soil logs in the Appendix of this report.

Study Area - DA East: This area consists of the entire parcel, which primarily includes open space, impervious area, and wooded area.

Study Area - DA Offsite East: This area consists of a small offsite portion to the south of the site which primarily includes open space and wooded area. Under existing conditions, stormwater runoff generated by this area is ultimately tributary to the adjacent property to the east via overland flow.

Based upon the Somerset County Soil Survey, the soil types native to the site include:

SOIL TYPE	SOIL TYPE NAME	HYDROLOGIC SOIL GROUP
BhnB	Birdsboro silt loam, 2 to 6 percent slopes	B

*As previously noted, soils within the limit of disturbance are expected be reclassified as Hydrologic Soil Group D.

IV. PROPOSED DRAINAGE CONDITIONS

The proposed development includes the construction of a day school and medical office with associated site improvements including driveways, parking areas, stormwater management facilities, landscaping, lighting, utilities and other associated site improvements. The stormwater management system includes one (1) aboveground bioretention basin with underdrains which serves to detain and discharge stormwater runoff generated by the development in order to meet the stormwater management requirements set forth by the Township of Montgomery and NJAC 7:8.

The proposed site conditions have been evaluated using the following drainage sub-watershed areas as depicted on the Proposed Drainage Area Map included within the Appendix of this report.

Study Area - Proposed Basin A: The study area consists of the buildings via the roof leader conveyance system, open space via overland flow, and the proposed parking lot via the pipe conveyance system. Stormwater runoff is conveyed to the bioretention Basin 'A' where it is detained and is released at a controlled rate through an outlet control structure. Runoff discharged from Basin 'A' is conveyed to the existing stormwater management conveyance system to the east in the Brecknell Way R.O.W.

Study Area – DA East Undetained: The study area consists largely of open space, wooded area, and some impervious area, along the eastern and southern perimeter of the site. Runoff generated by this perimeter area flows undetained to the east.

Study Area – DA Offsite East Undetained: This area consists of impervious area and open space at the southern portion of the property. Runoff generated by this area flows undetained to the east.

V. DESIGN METHODOLOGY

The intention of the design of the proposed stormwater management facilities for this development is to provide measures as required to address the applicable aspects of the Township of Montgomery Land Use Ordinance and NJAC 7:8. In order to prepare the stormwater management design for the subject site, extensive initial investigation of the property and topography was performed. On-site review of the tract was initially performed by Dynamic Engineering Consultants, PC to verify existing site conditions and land cover characteristics. Dynamic Survey, LLC was contracted to prepare the Boundary and Topographic Survey to depict the existing site conditions. Furthermore, Dynamic Earth, LLC performed test pits within the site to establish the seasonal high-water table and soil permeability rates.

Based on our review of the existing site conditions and survey, the Drainage Area Maps for the existing and proposed site conditions as defined within this report were established. A grading plan was developed for the

proposed site improvements with consideration to the existing drainage patterns. The plan was designed to ensure runoff from the proposed development could be directed to the proposed stormwater management facilities in order to address the applicable sections of the Township of Montgomery Stormwater Ordinance and NJAC 7:8.

The rainfall data utilized for the analysis of the existing and proposed drainage conditions is based upon the New Jersey 24 Hour Rainfall Frequency Data for Somerset County as published by the USDA NRCS utilizing the NOAA Region C rainfall distribution.

Under proposed conditions, stormwater runoff from the proposed motor vehicle surface areas and other areas in DA-Proposed Basin 'A' is collected and conveyed by the on-site stormwater conveyance system to the proposed aboveground bioretention Basin 'A' at the eastern portion of the site. The proposed basin is designed to detain and infiltrate the entirety of the water quality storm event through a bio-media to an underlying perforated pipe conveyance network. Therefore, the development will provide a total TSS removal rate of 80% for the site, thereby satisfying the water quality aspect of NJAC 7:8.

Furthermore, an outlet control structure is proposed within Basin 'A' to detain and release runoff from the 2-, 10- and 100-year storm events at a controlled rate which is ultimately tributary to the existing stormwater management infrastructure northeast of the parcel in the Brecknell Way R.O.W. The peak runoff rates for the 2-, 10-, and 100-year storm events have been reduced by 50%, 25%, and 20%, respectively to satisfy the stormwater runoff quantity requirements set forth by NJAC 7:8.

Lastly, as previously noted, Dynamic Earth, LLC performed numerous test pits within the site to establish seasonal high groundwater table characteristics and percolation tests were conducted for on-site soils to confirm soil classification per the County Soil Survey. The soils encountered during this site investigation consisted of clayey silt, and groundwater and evidence of seasonal high water table were not encountered in any test pits. The field investigation recharge map, soil profile pit logs and tube permeameter testing in the Appendix of this Report reveal a restriction within the upper 40 inches of the soil profile consisting of low permeability rate of less than 0.2 in/hr which is consistent with hydrologic soil group (HSG) "D" as specified in the NJ BMP Manual. The New Jersey Groundwater Recharge Spreadsheet (NJGRS) in the Appendix of this Report indicates that no recharge occurs in the existing condition. Therefore, the proposed development satisfies the groundwater recharge requirements set forth by NJAC 7:8.

The overall stormwater management design for the subject site has been evaluated by Dynamic Engineering Consultants to ensure that the overall development satisfies the standards set forth in the Township of Montgomery Land Use Ordinance and NJAC 7:8.

VI. STORMWATER MANAGEMENT SYSTEM DESIGN & GREEN INFRASTRUCTURE COMPLIANCE

As detailed above, in order to meet the stormwater runoff quantity and quality requirements for the proposed development, the stormwater management system design include one (1) aboveground bioretention basin with underdrains. In accordance with the New Jersey Stormwater Best Management Practices Manual, the following design considerations have been satisfied as further identified in the table below:

Aboveground Bioretention Basin (small-scale):

- 2.5-acre maximum contributory drainage area
- 72-hour maximum design storm drain time (utilizing slowest design permeability rate)
- 1-foot minimum separation between basin bottom and seasonal high-water table

VII. RUNOFF RATES

The following is a comparison of the existing and proposed conditions runoff rates:

Existing and Proposed Conditions Peak Runoff Rates Results
Summary (Total)

	EXISTING DISTURBED RUNOFF RATE	NJAC 7:8 REQUIRED REDUCTION	NJAC 7:8 ALLOWABLE RUNOFF RATE	PROPOSED RUNOFF RATE
2 Year	2.61 CFS	50%	1.31 CFS	1.15 CFS
10 Year	4.99 CFS	25%	3.74 CFS	2.17 CFS
100 Year	9.82 CFS	20%	7.86 CFS	6.31 CFS

VIII. WATER QUALITY

As noted previously in this report, the proposed aboveground bioretention basin with undrains has been designed to retain and infiltrate the entire volume of the NJDEP Water Quality Storm event through a bio-media filter to an underlying perforated pipe underdrain system. In addition, the aboveground small-scale bioretention basin has been designed to comply with the standards set forth by the NJ Stormwater Best Management Practices Manual thereby, providing a TSS removal rate of 80%. As such, the proposed stormwater management facilities for the development will provide a total TSS removal rate of 80% for the site thereby satisfying the water quality aspect of NJAC 7:8.

IX. GROUNDWATER RECHARGE

As previously noted, Dynamic Earth, LLC performed numerous test pits within the site to establish seasonal high groundwater table characteristics and percolation tests were conducted for on-site soils to confirm soil classification per the County Soil Survey. The soils encountered during this site investigation consisted of clayey silt, and groundwater and evidence of seasonal high water table were not encountered in any test pits. The field investigation recharge map, soil profile pit logs and tube permeameter testing in the Appendix of this Report reveal a restriction within the upper 40 inches of the soil profile consisting of low permeability rate of less than 0.2 in/hr which is consistent with hydrologic soil group (HSG) "D" as specified in the NJ BMP Manual. The New Jersey Groundwater Recharge Spreadsheet (NJGRS) in the Appendix of this Report indicates that no recharge occurs in the existing condition. Therefore, the proposed development satisfies the groundwater recharge requirements set forth by NJAC 7:8.

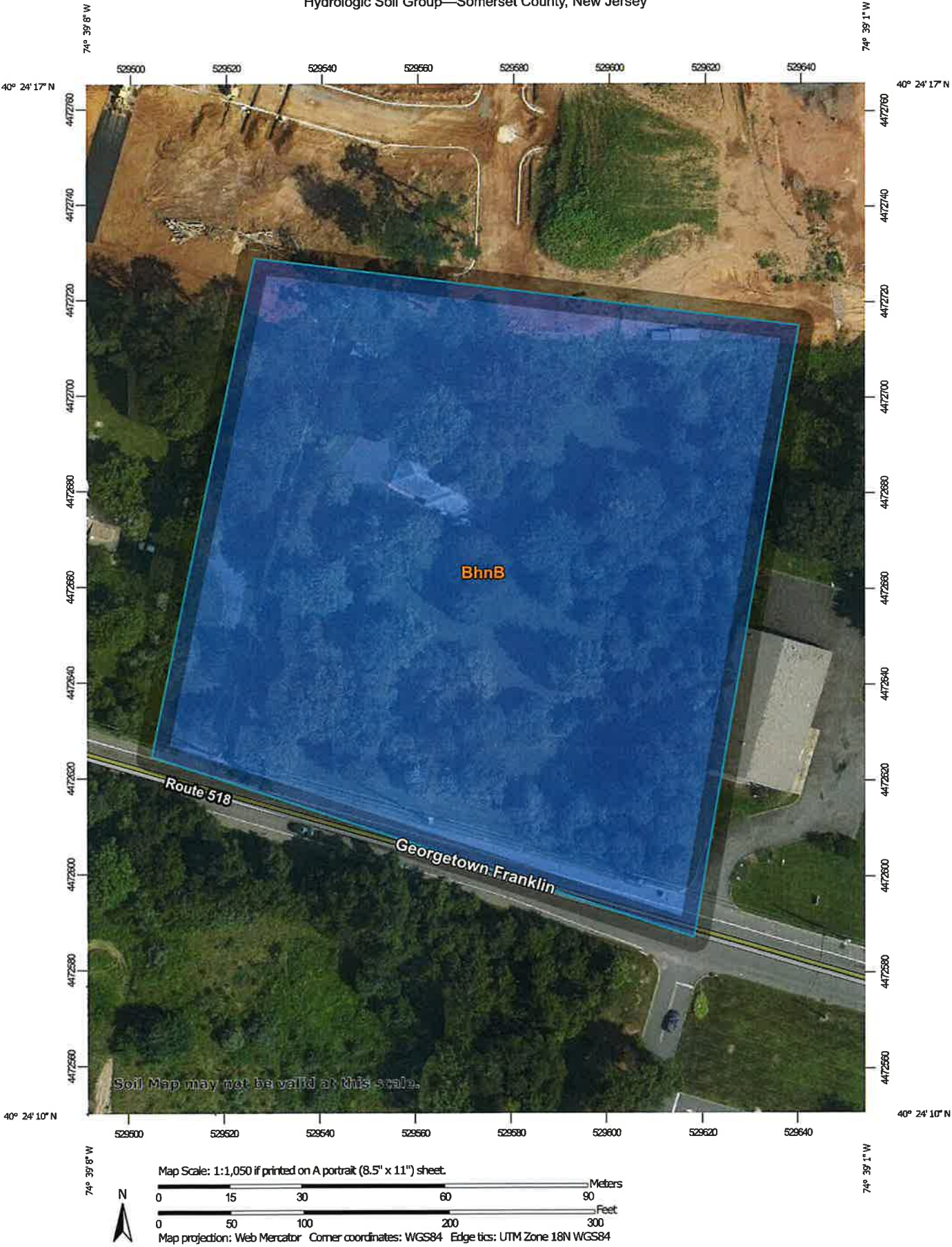
X. CONCLUSION

The proposed development has been designed with provisions for the safe and efficient control of stormwater runoff in a manner that will not adversely impact the existing drainage patterns, adjacent roadways, or adjacent parcels. In addition, the proposed development satisfies the runoff quantity and quality requirements set forth by the Township of Montgomery Land Use Ordinance and NJAC 7:8 through the use of a proposed aboveground bioretention basin with underdrains. With this stated, it is evident that the proposed development will not have a negative impact on the existing drainage conditions or water quality on-site or within the vicinity of the subject site.

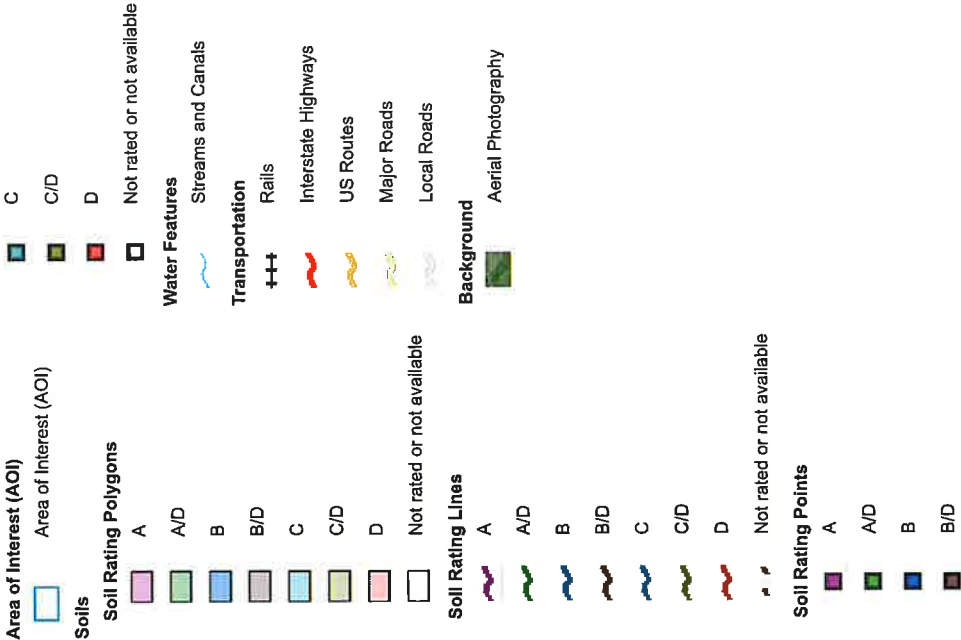
APPENDIX

NRCS WEB SOIL SURVEY

Hydrologic Soil Group—Somerset County, New Jersey



MAP LEGEND



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: Somerset County, New Jersey
Survey Area Data: Version 20, Aug 30, 2022

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

Date(s) aerial images were photographed: Mar 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
BhnB	Birdsboro silt loam, 2 to 6 percent slopes	B	3.4	100.0%
Totals for Area of Interest			3.4	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

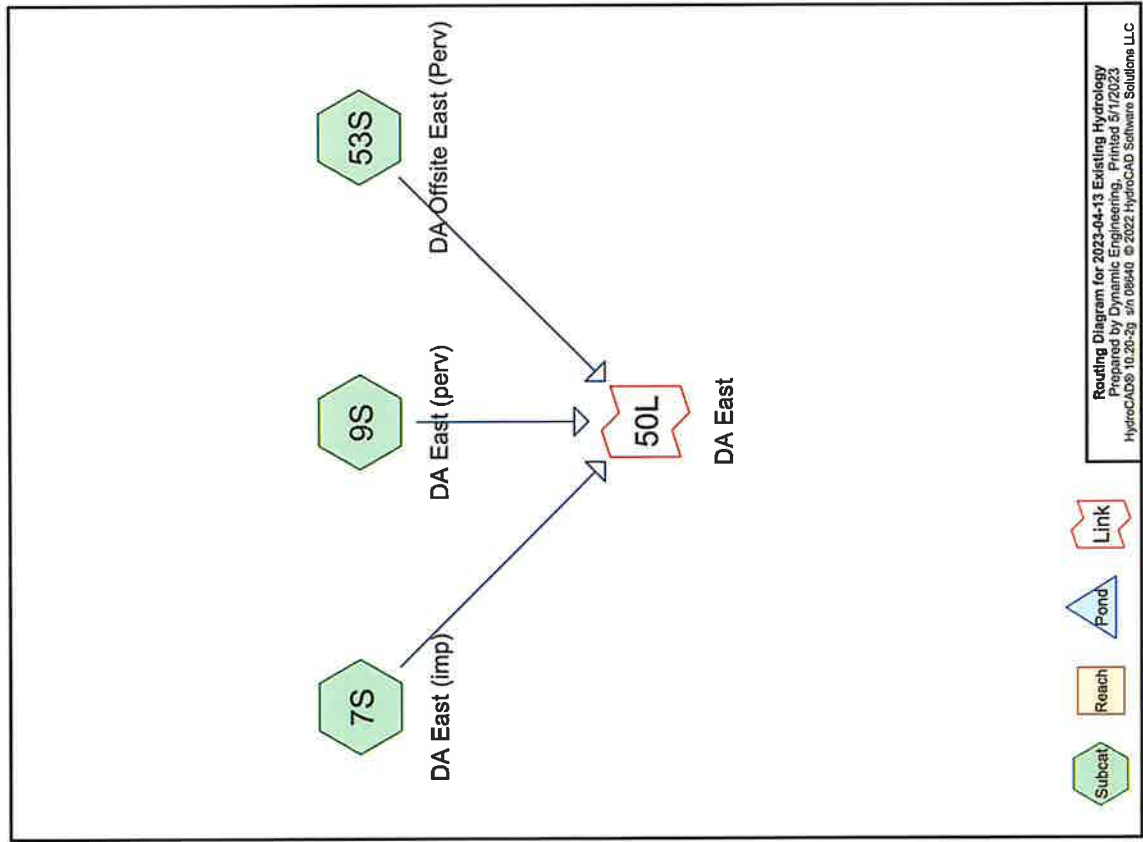
Component Percent Cutoff: None Specified

Tie-break Rule: Higher

**HYDROGRAPH SUMMARY REPORTS – EXISTING &
PROPOSED CONDITIONS 2, 10, & 100-YEAR**

Project Notes

Rainfall events imported from "NRCS-Rain.txt" for 6617 NJ Somerset-C



Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	NOAA 24-hr	C	Default	24.00	1	3.34	2
2	10-Year	NOAA 24-hr	C	Default	24.00	1	5.01	2
3	100-Year	NOAA 24-hr	C	Default	24.00	1	8.21	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.360	80	>75% Grass cover, Good, HSG D (9S, 53S)
0.160	98	Paved parking, HSG D (7S)
0.530	77	Woods, Good, HSG D (9S, 53S)
2.070	81	TOTAL AREA

2023-04-13 Existing Hydrology

Prepared by Dynamic Engineering

HydroCAD® 10.20-2q s/n 08640 © 2022 HydroCAD Software Solutions LLC

Printed 5/1/2023

Page 5

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
2.070	HSG D	7S, 9S, 53S
0.000	Other	
2.070		TOTAL AREA

2023-04-13 Existing Hydrology

Prepared by Dynamic Engineering

HydroCAD® 10.20-2q s/n 08640 © 2022 HydroCAD Software Solutions LLC

Printed 5/1/2023

Page 6

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	1.380	0.000	1.380	>75% Grass cover, Good	9S, 53S
0.000	0.000	0.000	0.160	0.000	0.160	Paved parking	7S
0.000	0.000	0.000	0.530	0.000	0.530	Woods, Good	9S, 53S
0.000	0.000	0.000	2.070	0.000	2.070	TOTAL AREA	

Notes Listing (all nodes)

Line#	Node Number	Notes
1	Project	Rainfall events imported from "NRCS-Rain.txt" for 6617 NJ Somerset-C

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 7S: DA East (imp) Runoff Area=0.160 ac 100.00% Impervious Runoff Depth=3.11"
Flow Length=307' Tc=10.1 min CN=88 Runoff=0.37 cfs 0.041 af

Subcatchment 9S: DA East (perv) Runoff Area=1.850 ac 0.00% Impervious Runoff Depth=1.44"
Flow Length=307' Tc=10.1 min CN=79 Runoff=2.17 cfs 0.222 af

Subcatchment 53S: DA Offsite East (Perv) Runoff Area=0.060 ac 0.00% Impervious Runoff Depth=1.51"
Flow Length=307' Tc=10.1 min CN=80 Runoff=0.07 cfs 0.008 af

Link 50L: DA East

Inflow=2.61 cfs 0.271 af
Primary=2.61 cfs 0.271 af

Total Runoff Area = 2.070 ac Runoff Volume = 0.271 af Average Runoff Depth = 1.57"
92.27% Pervious = 1.910 ac 7.73% Impervious = 0.160 ac

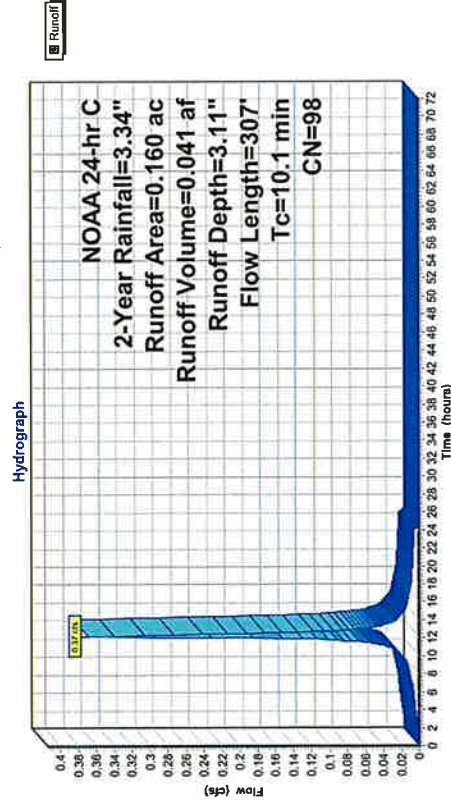
Summary for Subcatchment 7S: DA East (imp)

Runoff = 0.37 cfs @ 12.19 hrs, Volume= 0.041 af, Depth= 3.11"
Routed to Link 50L : DA East

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year Rainfall=3.34"

Area (ac)	CN	Description			
0.160	98	Paved parking, HSG D			
0.160		100.00% Impervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	78	0.0350	0.14		Sheet Flow, SF
					Grass: Dense n= 0.240 P2= 3.34"
					Using McCuen-Spless flow length
					Shallow Concentrated Flow, SCF
					Unpaved Kv= 16.1 fps
					Shallow Concentrated Flow, SCF
					Unpaved Kv= 16.1 fps
10.1	307	Total			

Subcatchment 7S: DA East (imp)



Hydrograph for Subcatchment 7S: DA East (imp)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.34	3.11	0.00
1.00	0.04	0.00	0.00	53.00	3.34	3.11	0.00
2.00	0.08	0.01	0.00	54.00	3.34	3.11	0.00
3.00	0.12	0.02	0.00	55.00	3.34	3.11	0.00
4.00	0.16	0.05	0.00	56.00	3.34	3.11	0.00
5.00	0.21	0.08	0.01	57.00	3.34	3.11	0.00
6.00	0.26	0.12	0.01	58.00	3.34	3.11	0.00
7.00	0.33	0.17	0.01	59.00	3.34	3.11	0.00
8.00	0.40	0.23	0.01	60.00	3.34	3.11	0.00
9.00	0.49	0.31	0.01	61.00	3.34	3.11	0.00
10.00	0.61	0.42	0.02	62.00	3.34	3.11	0.00
11.00	0.80	0.60	0.03	63.00	3.34	3.11	0.00
12.00	1.59	1.37	0.19	64.00	3.34	3.11	0.00
13.00	2.54	2.31	0.67	65.00	3.34	3.11	0.00
14.00	2.73	2.50	0.03	66.00	3.34	3.11	0.00
15.00	2.85	2.62	0.02	67.00	3.34	3.11	0.00
16.00	2.94	2.71	0.01	68.00	3.34	3.11	0.00
17.00	3.01	2.78	0.01	69.00	3.34	3.11	0.00
18.00	3.08	2.84	0.01	70.00	3.34	3.11	0.00
19.00	3.13	2.90	0.01	71.00	3.34	3.11	0.00
20.00	3.18	2.94	0.01	72.00	3.34	3.11	0.00
21.00	3.22	2.99	0.01				
22.00	3.26	3.03	0.01				
23.00	3.30	3.07	0.01				
24.00	3.34	3.11	0.01				
25.00	3.34	3.11	0.00				
26.00	3.34	3.11	0.00				
27.00	3.34	3.11	0.00				
28.00	3.34	3.11	0.00				
29.00	3.34	3.11	0.00				
30.00	3.34	3.11	0.00				
31.00	3.34	3.11	0.00				
32.00	3.34	3.11	0.00				
33.00	3.34	3.11	0.00				
34.00	3.34	3.11	0.00				
35.00	3.34	3.11	0.00				
36.00	3.34	3.11	0.00				
37.00	3.34	3.11	0.00				
38.00	3.34	3.11	0.00				
39.00	3.34	3.11	0.00				
40.00	3.34	3.11	0.00				
41.00	3.34	3.11	0.00				
42.00	3.34	3.11	0.00				
43.00	3.34	3.11	0.00				
44.00	3.34	3.11	0.00				
45.00	3.34	3.11	0.00				
46.00	3.34	3.11	0.00				
47.00	3.34	3.11	0.00				
48.00	3.34	3.11	0.00				
49.00	3.34	3.11	0.00				
50.00	3.34	3.11	0.00				
51.00	3.34	3.11	0.00				

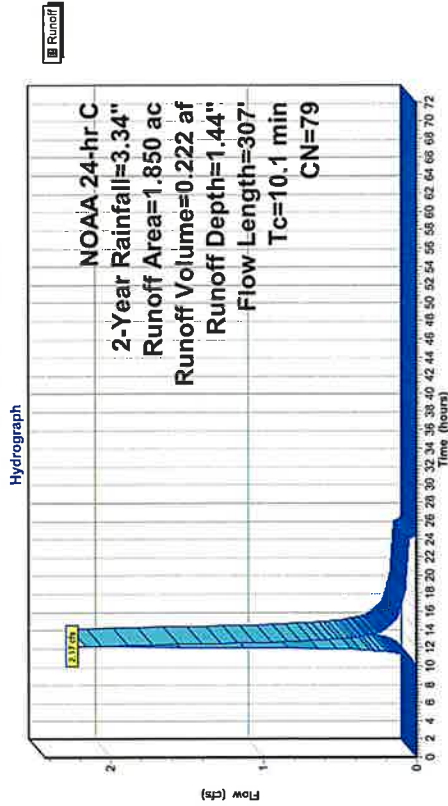
Summary for Subcatchment 9S: DA East (perv)

Runoff = 2.17 cfs @ 12.20 hrs, Volume= 0.222 af, Depth= 1.44"
Routed to Link 50L : DA East

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year Rainfall=3.34"

Area (ac)	CN	Description			
1.330	80	>75% Grass cover, Good, HSG D			
0.520	77	Woods, Good, HSG D			
1.850	79	Weighted Average			
1.850		100.00% Pervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	78	0.0350	0.14		Sheet Flow, sheet flow
					Grass: Dense n= 0.240 P2= 3.34"
0.4	88	0.0418	3.29		Shallow Concentrated Flow, SCF
					Unpaved Kv= 16.1 fps
0.5	141	0.0780	4.50		Shallow Concentrated Flow, SCF
					Unpaved Kv= 16.1 fps
10.1	307	Total			

Subcatchment 9S: DA East (perv)



Hydrograph for Subcatchment 9S: DA East (perv)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.34	1.44	0.00
1.00	0.04	0.00	0.00	53.00	3.34	1.44	0.00
2.00	0.08	0.00	0.00	54.00	3.34	1.44	0.00
3.00	0.12	0.00	0.00	55.00	3.34	1.44	0.00
4.00	0.16	0.00	0.00	56.00	3.34	1.44	0.00
5.00	0.21	0.00	0.00	57.00	3.34	1.44	0.00
6.00	0.26	0.00	0.00	58.00	3.34	1.44	0.00
7.00	0.33	0.00	0.00	59.00	3.34	1.44	0.00
8.00	0.40	0.00	0.00	60.00	3.34	1.44	0.00
9.00	0.49	0.00	0.00	61.00	3.34	1.44	0.00
10.00	0.61	0.00	0.01	62.00	3.34	1.44	0.00
11.00	0.80	0.02	0.06	63.00	3.34	1.44	0.00
12.00	1.59	0.30	0.84	64.00	3.34	1.44	0.00
13.00	2.54	0.86	0.51	65.00	3.34	1.44	0.00
14.00	2.73	1.00	0.21	66.00	3.34	1.44	0.00
15.00	2.85	1.08	0.14	67.00	3.34	1.44	0.00
16.00	2.94	1.14	0.11	68.00	3.34	1.44	0.00
17.00	3.01	1.20	0.10	69.00	3.34	1.44	0.00
18.00	3.08	1.24	0.08	70.00	3.34	1.44	0.00
19.00	3.13	1.28	0.07	71.00	3.34	1.44	0.00
20.00	3.18	1.32	0.07	72.00	3.34	1.44	0.00
21.00	3.22	1.35	0.06				
22.00	3.26	1.39	0.06				
23.00	3.30	1.41	0.05				
24.00	3.34	1.44	0.05				
25.00	3.34	1.44	0.00				
26.00	3.34	1.44	0.00				
27.00	3.34	1.44	0.00				
28.00	3.34	1.44	0.00				
29.00	3.34	1.44	0.00				
30.00	3.34	1.44	0.00				
31.00	3.34	1.44	0.00				
32.00	3.34	1.44	0.00				
33.00	3.34	1.44	0.00				
34.00	3.34	1.44	0.00				
35.00	3.34	1.44	0.00				
36.00	3.34	1.44	0.00				
37.00	3.34	1.44	0.00				
38.00	3.34	1.44	0.00				
39.00	3.34	1.44	0.00				
40.00	3.34	1.44	0.00				
41.00	3.34	1.44	0.00				
42.00	3.34	1.44	0.00				
43.00	3.34	1.44	0.00				
44.00	3.34	1.44	0.00				
45.00	3.34	1.44	0.00				
46.00	3.34	1.44	0.00				
47.00	3.34	1.44	0.00				
48.00	3.34	1.44	0.00				
49.00	3.34	1.44	0.00				
50.00	3.34	1.44	0.00				
51.00	3.34	1.44	0.00				

Summary for Subcatchment 53S: DA Offsite East (Perv)

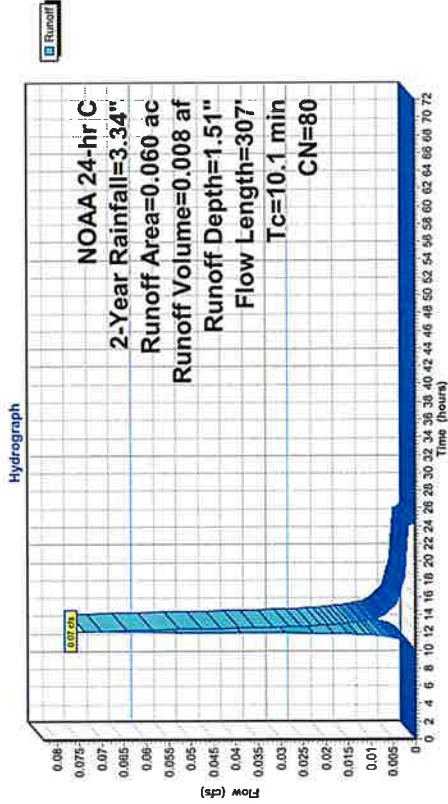
Runoff = 0.07 cfs @ 12.20 hrs, Volume= 0.008 af, Depth= 1.51"
Routed to Link 50L : DA East

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year Rainfall=3.34"

Area (ac)	CN	Description
0.050	80	>75% Grass cover, Good, HSG D
0.010	77	Woods, Good, HSG D
0.060	80	Weighted Average
0.060		100.00% Pervious Area

Tc	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
9.2	78	0.0350	0.14		Sheet Flow, sheet flow
					Grass: Dense n= 0.240 P2= 3.34"
0.4	88	0.0418	3.29		Shallow Concentrated Flow, SCF
					Unpaved Kv= 16.1 fps
0.5	141	0.0780	4.50		Shallow Concentrated Flow, SCF
					Unpaved Kv= 16.1 fps
10.1	307	Total			

Subcatchment 53S: DA Offsite East (Perv)



Hydrograph for Subcatchment 53S: DA Offsite East (Perv)

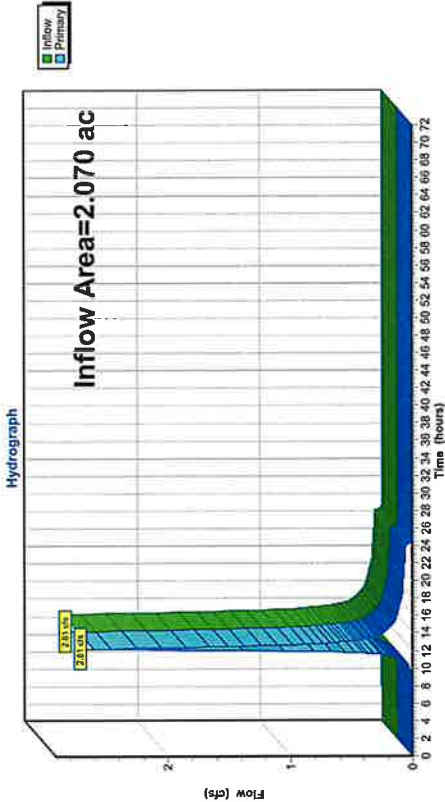
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.34	1.51	0.00
1.00	0.04	0.00	0.00	53.00	3.34	1.51	0.00
2.00	0.08	0.00	0.00	54.00	3.34	1.51	0.00
3.00	0.12	0.00	0.00	55.00	3.34	1.51	0.00
4.00	0.16	0.00	0.00	56.00	3.34	1.51	0.00
5.00	0.21	0.00	0.00	57.00	3.34	1.51	0.00
6.00	0.26	0.00	0.00	58.00	3.34	1.51	0.00
7.00	0.33	0.00	0.00	59.00	3.34	1.51	0.00
8.00	0.40	0.00	0.00	60.00	3.34	1.51	0.00
9.00	0.49	0.00	0.00	61.00	3.34	1.51	0.00
10.00	0.61	0.00	0.00	62.00	3.34	1.51	0.00
11.00	0.80	0.03	0.00	63.00	3.34	1.51	0.00
12.00	1.59	0.33	0.03	64.00	3.34	1.51	0.00
13.00	2.54	0.92	0.02	65.00	3.34	1.51	0.00
14.00	2.73	1.05	0.01	66.00	3.34	1.51	0.00
15.00	2.85	1.14	0.00	67.00	3.34	1.51	0.00
16.00	2.94	1.21	0.00	68.00	3.34	1.51	0.00
17.00	3.01	1.26	0.00	69.00	3.34	1.51	0.00
18.00	3.08	1.31	0.00	70.00	3.34	1.51	0.00
19.00	3.13	1.35	0.00	71.00	3.34	1.51	0.00
20.00	3.18	1.38	0.00	72.00	3.34	1.51	0.00
21.00	3.22	1.42	0.00				
22.00	3.26	1.45	0.00				
23.00	3.30	1.48	0.00				
24.00	3.34	1.51	0.00				
25.00	3.34	1.51	0.00				
26.00	3.34	1.51	0.00				
27.00	3.34	1.51	0.00				
28.00	3.34	1.51	0.00				
29.00	3.34	1.51	0.00				
30.00	3.34	1.51	0.00				
31.00	3.34	1.51	0.00				
32.00	3.34	1.51	0.00				
33.00	3.34	1.51	0.00				
34.00	3.34	1.51	0.00				
35.00	3.34	1.51	0.00				
36.00	3.34	1.51	0.00				
37.00	3.34	1.51	0.00				
38.00	3.34	1.51	0.00				
39.00	3.34	1.51	0.00				
40.00	3.34	1.51	0.00				
41.00	3.34	1.51	0.00				
42.00	3.34	1.51	0.00				
43.00	3.34	1.51	0.00				
44.00	3.34	1.51	0.00				
45.00	3.34	1.51	0.00				
46.00	3.34	1.51	0.00				
47.00	3.34	1.51	0.00				
48.00	3.34	1.51	0.00				
49.00	3.34	1.51	0.00				
50.00	3.34	1.51	0.00				
51.00	3.34	1.51	0.00				

Summary for Link 50L: DA East

Inflow Area = 2.070 ac, 7.73% Impervious, Inflow Depth = 1.57" for 2-Year event
Inflow = 2.61 cfs @ 12.20 hrs, Volume= 0.271 af
Primary = 2.61 cfs @ 12.20 hrs, Volume= 0.271 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 52P

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

Link 50L: DA East



Hydrograph for Link 50L: DA East

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.01	0.00	0.01	57.00	0.00	0.00	0.00
6.00	0.01	0.00	0.01	58.00	0.00	0.00	0.00
7.00	0.01	0.00	0.01	59.00	0.00	0.00	0.00
8.00	0.01	0.00	0.01	60.00	0.00	0.00	0.00
9.00	0.01	0.00	0.01	61.00	0.00	0.00	0.00
10.00	0.03	0.00	0.03	62.00	0.00	0.00	0.00
11.00	0.10	0.00	0.10	63.00	0.00	0.00	0.00
12.00	1.05	0.00	1.05	64.00	0.00	0.00	0.00
13.00	0.59	0.00	0.59	65.00	0.00	0.00	0.00
14.00	0.24	0.00	0.24	66.00	0.00	0.00	0.00
15.00	0.17	0.00	0.17	67.00	0.00	0.00	0.00
16.00	0.13	0.00	0.13	68.00	0.00	0.00	0.00
17.00	0.11	0.00	0.11	69.00	0.00	0.00	0.00
18.00	0.09	0.00	0.09	70.00	0.00	0.00	0.00
19.00	0.08	0.00	0.08	71.00	0.00	0.00	0.00
20.00	0.08	0.00	0.08	72.00	0.00	0.00	0.00
21.00	0.07	0.00	0.07				
22.00	0.07	0.00	0.07				
23.00	0.06	0.00	0.06				
24.00	0.06	0.00	0.06				
25.00	0.06	0.00	0.06				
26.00	0.06	0.00	0.06				
27.00	0.06	0.00	0.06				
28.00	0.06	0.00	0.06				
29.00	0.06	0.00	0.06				
30.00	0.06	0.00	0.06				
31.00	0.06	0.00	0.06				
32.00	0.06	0.00	0.06				
33.00	0.06	0.00	0.06				
34.00	0.06	0.00	0.06				
35.00	0.06	0.00	0.06				
36.00	0.06	0.00	0.06				
37.00	0.06	0.00	0.06				
38.00	0.06	0.00	0.06				
39.00	0.06	0.00	0.06				
40.00	0.06	0.00	0.06				
41.00	0.06	0.00	0.06				
42.00	0.06	0.00	0.06				
43.00	0.06	0.00	0.06				
44.00	0.06	0.00	0.06				
45.00	0.06	0.00	0.06				
46.00	0.06	0.00	0.06				
47.00	0.06	0.00	0.06				
48.00	0.06	0.00	0.06				
49.00	0.06	0.00	0.06				
50.00	0.06	0.00	0.06				
51.00	0.06	0.00	0.06				

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 7S: DA East (Imp)
Runoff Area=0.160 ac 100.00% Impervious Runoff Depth=4.77"
Flow Length=307' Tc=10.1 min CN=98 Runoff=0.56 cfs 0.064 af

Subcatchment 9S: DA East (perv)
Runoff Area=1.850 ac 0.00% Impervious Runoff Depth=2.81"
Flow Length=307' Tc=10.1 min CN=79 Runoff=4.29 cfs 0.433 af

Subcatchment 53S: DA Offsite East (Perv)
Runoff Area=0.060 ac 0.00% Impervious Runoff Depth=2.90"
Flow Length=307' Tc=10.1 min CN=80 Runoff=0.14 cfs 0.015 af

Link 50L: DA East

Inflow=4.99 cfs 0.511 af
Primary=4.99 cfs 0.511 af

Total Runoff Area = 2.070 ac Runoff Volume = 0.511 af Average Runoff Depth = 2.96"
92.27% Pervious = 1.910 ac 7.73% Impervious = 0.160 ac

Summary for Subcatchment 7S: DA East (imp)

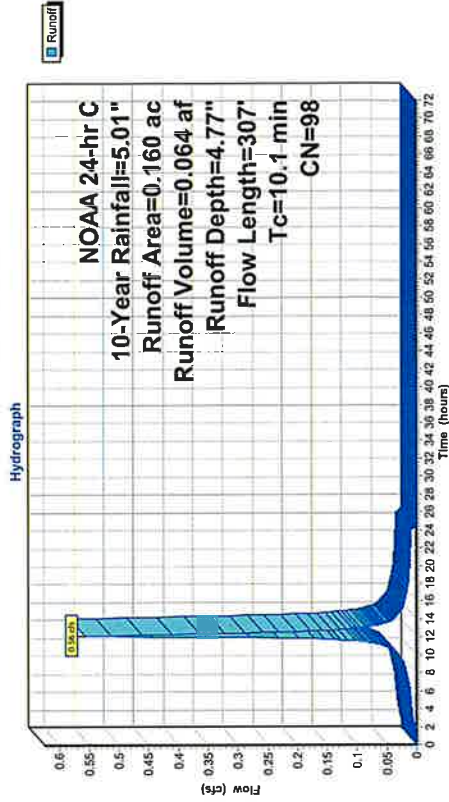
Runoff = 0.56 cfs @ 12.19 hrs, Volume= 0.064 af, Depth= 4.77"
Routed to Link 50L : DA East

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year Rainfall=5.01"

Area (ac)	CN	Description
0.160	98	Paved parking, HSG D
0.160		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	78	0.0350	0.14		Sheet Flow, SF
					Grass: Dense n= 0.240 P2= 3.34"
					Using McCuen-Spless flow length
0.4	88	0.0418	3.29		Shallow Concentrated Flow, SCF
					Unpaved Kv= 16.1 fps
0.5	141	0.0780	4.50		Shallow Concentrated Flow, SCF
					Unpaved Kv= 16.1 fps
10.1	307				Total

Subcatchment 7S: DA East (imp)



Hydrograph for Subcatchment 7S: DA East (imp)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	5.01	4.77	0.00
1.00	0.05	0.00	0.00	53.00	5.01	4.77	0.00
2.00	0.11	0.02	0.00	54.00	5.01	4.77	0.00
3.00	0.18	0.05	0.01	55.00	5.01	4.77	0.00
4.00	0.25	0.10	0.01	56.00	5.01	4.77	0.00
5.00	0.32	0.16	0.01	57.00	5.01	4.77	0.00
6.00	0.40	0.23	0.01	58.00	5.01	4.77	0.00
7.00	0.49	0.31	0.01	59.00	5.01	4.77	0.00
8.00	0.60	0.41	0.02	60.00	5.01	4.77	0.00
9.00	0.73	0.53	0.02	61.00	5.01	4.77	0.00
10.00	0.91	0.71	0.03	62.00	5.01	4.77	0.00
11.00	1.20	0.99	0.05	63.00	5.01	4.77	0.00
12.00	2.39	2.16	0.28	64.00	5.01	4.77	0.00
13.00	3.81	3.57	0.10	65.00	5.01	4.77	0.00
14.00	4.10	3.86	0.04	66.00	5.01	4.77	0.00
15.00	4.28	4.04	0.03	67.00	5.01	4.77	0.00
16.00	4.41	4.17	0.02	68.00	5.01	4.77	0.00
17.00	4.52	4.29	0.02	69.00	5.01	4.77	0.00
18.00	4.61	4.38	0.01	70.00	5.01	4.77	0.00
19.00	4.69	4.46	0.01	71.00	5.01	4.77	0.00
20.00	4.76	4.53	0.01	72.00	5.01	4.77	0.00
21.00	4.83	4.60	0.01				
22.00	4.90	4.66	0.01				
23.00	4.96	4.72	0.01				
24.00	5.01	4.77	0.01				
25.00	5.01	4.77	0.00				
26.00	5.01	4.77	0.00				
27.00	5.01	4.77	0.00				
28.00	5.01	4.77	0.00				
29.00	5.01	4.77	0.00				
30.00	5.01	4.77	0.00				
31.00	5.01	4.77	0.00				
32.00	5.01	4.77	0.00				
33.00	5.01	4.77	0.00				
34.00	5.01	4.77	0.00				
35.00	5.01	4.77	0.00				
36.00	5.01	4.77	0.00				
37.00	5.01	4.77	0.00				
38.00	5.01	4.77	0.00				
39.00	5.01	4.77	0.00				
40.00	5.01	4.77	0.00				
41.00	5.01	4.77	0.00				
42.00	5.01	4.77	0.00				
43.00	5.01	4.77	0.00				
44.00	5.01	4.77	0.00				
45.00	5.01	4.77	0.00				
46.00	5.01	4.77	0.00				
47.00	5.01	4.77	0.00				
48.00	5.01	4.77	0.00				
49.00	5.01	4.77	0.00				
50.00	5.01	4.77	0.00				
51.00	5.01	4.77	0.00				

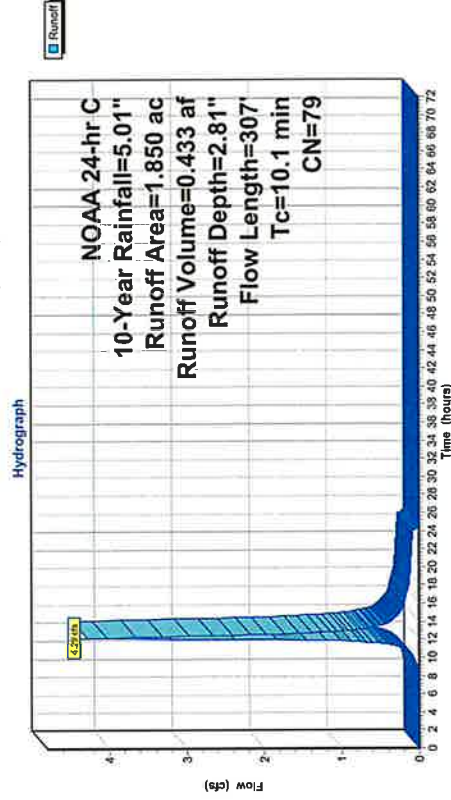
Summary for Subcatchment 9S: DA East (perv)

Runoff = 4.29 cfs @ 12.20 hrs, Volume= 0.433 af, Depth= 2.81"
Routed to Link 50L : DA East

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year Rainfall=5.01"

Area (ac)	CN	Description			
1.330	80	>75% Grass cover, Good, HSG D			
0.520	77	Woods, Good, HSG D			
1.850	79	Weighted Average			
1.850		100.00% Pervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	78	0.0350	0.14		Sheet flow, sheet flow
					Grass: Dense n= 0.240 P2= 3.34"
0.4	88	0.0418	3.29		Shallow Concentrated Flow, SCF
					Unpaved Kv= 16.1 fps
0.5	141	0.0780	4.50		Shallow Concentrated Flow, SCF
					Unpaved Kv= 16.1 fps

Subcatchment 9S: DA East (perv)



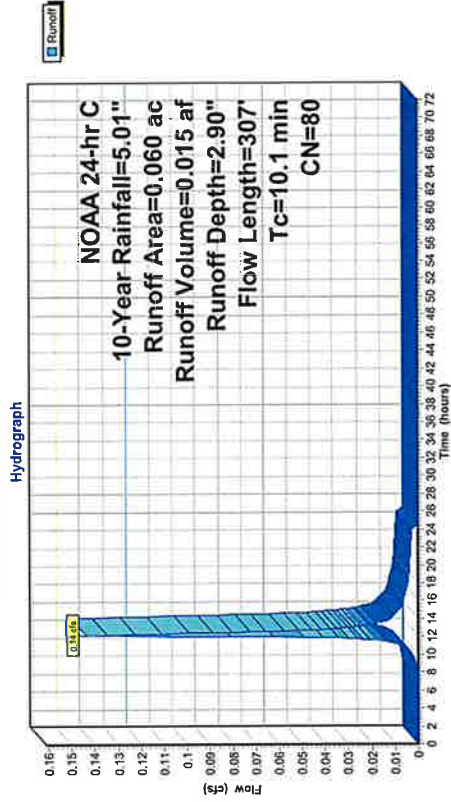
Hydrograph for Subcatchment 9S: DA East (perv)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	5.01	2.81	0.00
1.00	0.05	0.00	0.00	53.00	5.01	2.81	0.00
2.00	0.11	0.00	0.00	54.00	5.01	2.81	0.00
3.00	0.18	0.00	0.00	55.00	5.01	2.81	0.00
4.00	0.25	0.00	0.00	56.00	5.01	2.81	0.00
5.00	0.32	0.00	0.00	57.00	5.01	2.81	0.00
6.00	0.40	0.00	0.00	58.00	5.01	2.81	0.00
7.00	0.49	0.00	0.00	59.00	5.01	2.81	0.00
8.00	0.60	0.00	0.01	60.00	5.01	2.81	0.00
9.00	0.73	0.01	0.03	61.00	5.01	2.81	0.00
10.00	0.91	0.05	0.08	62.00	5.01	2.81	0.00
11.00	1.20	0.14	0.21	63.00	5.01	2.81	0.00
12.00	2.39	0.76	1.84	64.00	5.01	2.81	0.00
13.00	3.81	1.81	0.91	65.00	5.01	2.81	0.00
14.00	4.10	2.04	0.37	66.00	5.01	2.81	0.00
15.00	4.28	2.19	0.25	67.00	5.01	2.81	0.00
16.00	4.41	2.30	0.20	68.00	5.01	2.81	0.00
17.00	4.52	2.39	0.17	69.00	5.01	2.81	0.00
18.00	4.61	2.47	0.14	70.00	5.01	2.81	0.00
19.00	4.69	2.54	0.12	71.00	5.01	2.81	0.00
20.00	4.76	2.60	0.11	72.00	5.01	2.81	0.00
21.00	4.83	2.66	0.11				
22.00	4.90	2.71	0.10				
23.00	4.96	2.76	0.09				
24.00	5.01	2.81	0.09				
25.00	5.01	2.81	0.00				
26.00	5.01	2.81	0.00				
27.00	5.01	2.81	0.00				
28.00	5.01	2.81	0.00				
29.00	5.01	2.81	0.00				
30.00	5.01	2.81	0.00				
31.00	5.01	2.81	0.00				
32.00	5.01	2.81	0.00				
33.00	5.01	2.81	0.00				
34.00	5.01	2.81	0.00				
35.00	5.01	2.81	0.00				
36.00	5.01	2.81	0.00				
37.00	5.01	2.81	0.00				
38.00	5.01	2.81	0.00				
39.00	5.01	2.81	0.00				
40.00	5.01	2.81	0.00				
41.00	5.01	2.81	0.00				
42.00	5.01	2.81	0.00				
43.00	5.01	2.81	0.00				
44.00	5.01	2.81	0.00				
45.00	5.01	2.81	0.00				
46.00	5.01	2.81	0.00				
47.00	5.01	2.81	0.00				
48.00	5.01	2.81	0.00				
49.00	5.01	2.81	0.00				
50.00	5.01	2.81	0.00				
51.00	5.01	2.81	0.00				

Summary for Subcatchment 53S: DA Offsite East (Perv)

Runoff	=	0.14 cfs @ 12.20 hrs, Volume=	0.015 af, Depth= 2.90"
Routed to Link 50L : DA East			
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs			
NOAA 24-hr C 10-Year Rainfall=5.01"			
Area (ac)	CN	Description	
0.050	80	>75% Grass cover, Good, HSG D	
0.010	77	Woods, Good, HSG D	
0.060	80	Weighted Average	
0.060		100.00% Pervious Area	
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)
9.2	78	0.0350	0.14
Sheet Flow, sheet flow			
Grass, Dense n= 0.240 P2= 3.34"			
Shallow Concentrated Flow, SCF			
Unpaved Kv= 16.1 fps			
0.4	88	0.0418	3.29
Shallow Concentrated Flow, SCF			
0.5	141	0.0780	4.50
Unpaved Kv= 16.1 fps			
10.1	307	Total	

Subcatchment 53S: DA Offsite East (Perv)



Hydrograph for Subcatchment 53S: DA Offsite East (Perv)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	5.01	2.90	0.00
1.00	0.05	0.00	0.00	53.00	5.01	2.90	0.00
2.00	0.11	0.00	0.00	54.00	5.01	2.90	0.00
3.00	0.18	0.00	0.00	55.00	5.01	2.90	0.00
4.00	0.25	0.00	0.00	56.00	5.01	2.90	0.00
5.00	0.32	0.00	0.00	57.00	5.01	2.90	0.00
6.00	0.40	0.00	0.00	58.00	5.01	2.90	0.00
7.00	0.49	0.00	0.00	59.00	5.01	2.90	0.00
8.00	0.60	0.00	0.00	60.00	5.01	2.90	0.00
9.00	0.73	0.02	0.00	61.00	5.01	2.90	0.00
10.00	0.91	0.06	0.00	62.00	5.01	2.90	0.00
11.00	1.20	0.15	0.01	63.00	5.01	2.90	0.00
12.00	2.39	0.81	0.06	64.00	5.01	2.90	0.00
13.00	3.81	1.88	0.03	65.00	5.01	2.90	0.00
14.00	4.10	2.12	0.01	66.00	5.01	2.90	0.00
15.00	4.28	2.27	0.01	67.00	5.01	2.90	0.00
16.00	4.41	2.38	0.01	68.00	5.01	2.90	0.00
17.00	4.52	2.48	0.01	69.00	5.01	2.90	0.00
18.00	4.61	2.56	0.00	70.00	5.01	2.90	0.00
19.00	4.69	2.63	0.00	71.00	5.01	2.90	0.00
20.00	4.76	2.69	0.00	72.00	5.01	2.90	0.00
21.00	4.83	2.75	0.00				
22.00	4.90	2.80	0.00				
23.00	4.96	2.85	0.00				
24.00	5.01	2.90	0.00				
25.00	5.01	2.90	0.00				
26.00	5.01	2.90	0.00				
27.00	5.01	2.90	0.00				
28.00	5.01	2.90	0.00				
29.00	5.01	2.90	0.00				
30.00	5.01	2.90	0.00				
31.00	5.01	2.90	0.00				
32.00	5.01	2.90	0.00				
33.00	5.01	2.90	0.00				
34.00	5.01	2.90	0.00				
35.00	5.01	2.90	0.00				
36.00	5.01	2.90	0.00				
37.00	5.01	2.90	0.00				
38.00	5.01	2.90	0.00				
39.00	5.01	2.90	0.00				
40.00	5.01	2.90	0.00				
41.00	5.01	2.90	0.00				
42.00	5.01	2.90	0.00				
43.00	5.01	2.90	0.00				
44.00	5.01	2.90	0.00				
45.00	5.01	2.90	0.00				
46.00	5.01	2.90	0.00				
47.00	5.01	2.90	0.00				
48.00	5.01	2.90	0.00				
49.00	5.01	2.90	0.00				
50.00	5.01	2.90	0.00				
51.00	5.01	2.90	0.00				

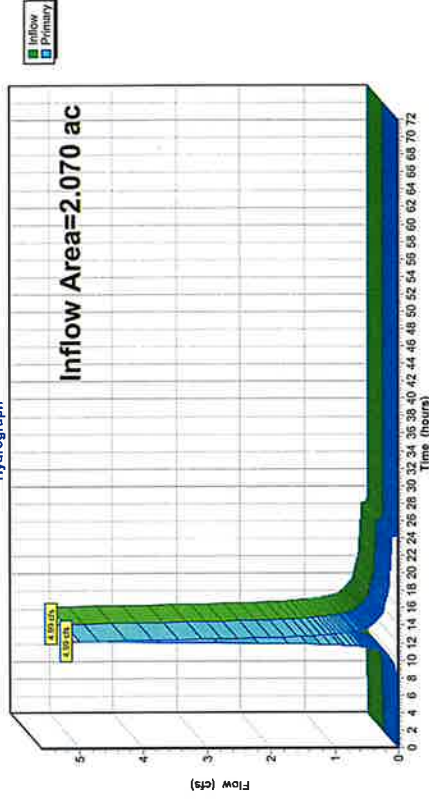
Summary for Link 50L: DA East

Inflow Area = 2.070 ac, 7.73% Impervious, Inflow Depth = 2.96" for 10-Year event
Inflow = 4.99 cfs @ 12.20 hrs, Volume= 0.511 af
Primary = 4.99 cfs @ 12.20 hrs, Volume= 0.511 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 52P

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

Link 50L: DA East

Hydrograph



Hydrograph for Link 50L: DA East

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.01	0.00	0.01	55.00	0.00	0.00	0.00
4.00	0.01	0.00	0.01	56.00	0.00	0.00	0.00
5.00	0.01	0.00	0.01	57.00	0.00	0.00	0.00
6.00	0.01	0.00	0.01	58.00	0.00	0.00	0.00
7.00	0.01	0.00	0.01	59.00	0.00	0.00	0.00
8.00	0.02	0.00	0.02	60.00	0.00	0.00	0.00
9.00	0.05	0.00	0.05	61.00	0.00	0.00	0.00
10.00	0.11	0.00	0.11	62.00	0.00	0.00	0.00
11.00	0.27	0.00	0.27	63.00	0.00	0.00	0.00
12.00	2.19	0.00	2.19	64.00	0.00	0.00	0.00
13.00	1.04	0.00	1.04	65.00	0.00	0.00	0.00
14.00	0.42	0.00	0.42	66.00	0.00	0.00	0.00
15.00	0.29	0.00	0.29	67.00	0.00	0.00	0.00
16.00	0.22	0.00	0.22	68.00	0.00	0.00	0.00
17.00	0.19	0.00	0.19	69.00	0.00	0.00	0.00
18.00	0.16	0.00	0.16	70.00	0.00	0.00	0.00
19.00	0.14	0.00	0.14	71.00	0.00	0.00	0.00
20.00	0.13	0.00	0.13	72.00	0.00	0.00	0.00
21.00	0.12	0.00	0.12				
22.00	0.11	0.00	0.11				
23.00	0.10	0.00	0.10				
24.00	0.10	0.00	0.10				
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				
51.00	0.00	0.00	0.00				

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 7S: DA East (imp) Runoff Area=0.160 ac 100.00% Impervious Runoff Depth=7.97"
Flow Length=307' Tc=10.1 min CN=98 Runoff=0.92 cfs 0.106 af

Subcatchment 9S: DA East (perv) Runoff Area=1.850 ac 0.00% Impervious Runoff Depth=5.70"
Flow Length=307' Tc=10.1 min CN=79 Runoff=8.62 cfs 0.879 af

Subcatchment 53S: DA Offsite East (Perv) Runoff Area=0.060 ac 0.00% Impervious Runoff Depth=5.82"
Flow Length=307' Tc=10.1 min CN=80 Runoff=0.28 cfs 0.029 af

Link 50L: DA East
Inflow=9.82 cfs 1.015 af
Primary=9.82 cfs 1.015 af

Total Runoff Area = 2.070 ac Runoff Volume = 1.015 af Average Runoff Depth = 5.88"
92.27% Pervious = 1.910 ac 7.73% Impervious = 0.160 ac

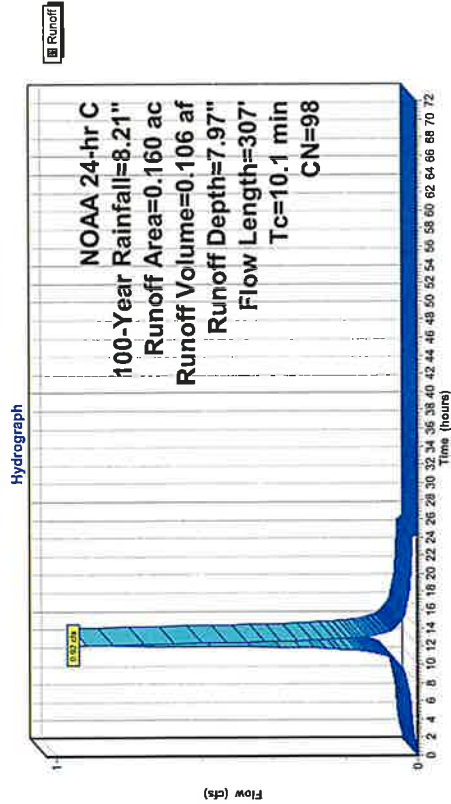
Summary for Subcatchment 7S: DA East (imp)

Runoff = 0.92 cfs @ 12.19 hrs, Volume= 0.106 af, Depth= 7.97"
Routed to Link 50L : DA East

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year Rainfall=8.21"

Area (ac)	CN	Description			
0.160	98	Paved parking, HSG D			
0.160		100.00% Impervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	78	0.0350	0.14		Sheet Flow, SF
					Grass: Dense n= 0.240 P2= 3.34"
					Using McCuen-Spless flow length
0.4	88	0.0418	3.29		Shallow Concentrated Flow, SCF
					Unpaved Kv= 16.1 fps
0.5	141	0.0780	4.50		Shallow Concentrated Flow, SCF
					Unpaved Kv= 16.1 fps
10.1	307	Total			

Subcatchment 7S: DA East (imp)



Hydrograph for Subcatchment 7S: DA East (imp)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	8.21	7.97	0.00
1.00	0.09	0.01	0.00	53.00	8.21	7.97	0.00
2.00	0.19	0.06	0.01	54.00	8.21	7.97	0.00
3.00	0.29	0.14	0.01	55.00	8.21	7.97	0.00
4.00	0.40	0.23	0.02	56.00	8.21	7.97	0.00
5.00	0.52	0.34	0.02	57.00	8.21	7.97	0.00
6.00	0.65	0.46	0.02	58.00	8.21	7.97	0.00
7.00	0.80	0.60	0.02	59.00	8.21	7.97	0.00
8.00	0.98	0.78	0.03	60.00	8.21	7.97	0.00
9.00	1.20	0.98	0.04	61.00	8.21	7.97	0.00
10.00	1.50	1.28	0.05	62.00	8.21	7.97	0.00
11.00	1.97	1.74	0.09	63.00	8.21	7.97	0.00
12.00	3.91	3.68	0.46	64.00	8.21	7.97	0.00
13.00	6.24	6.00	0.17	65.00	8.21	7.97	0.00
14.00	6.71	6.47	0.06	66.00	8.21	7.97	0.00
15.00	7.01	6.77	0.04	67.00	8.21	7.97	0.00
16.00	7.23	6.99	0.03	68.00	8.21	7.97	0.00
17.00	7.41	7.17	0.03	69.00	8.21	7.97	0.00
18.00	7.56	7.32	0.02	70.00	8.21	7.97	0.00
19.00	7.69	7.45	0.02	71.00	8.21	7.97	0.00
20.00	7.81	7.57	0.02	72.00	8.21	7.97	0.00
21.00	7.92	7.68	0.02				
22.00	8.02	7.78	0.02				
23.00	8.12	7.88	0.02				
24.00	8.21	7.97	0.01				
25.00	8.21	7.97	0.00				
26.00	8.21	7.97	0.00				
27.00	8.21	7.97	0.00				
28.00	8.21	7.97	0.00				
29.00	8.21	7.97	0.00				
30.00	8.21	7.97	0.00				
31.00	8.21	7.97	0.00				
32.00	8.21	7.97	0.00				
33.00	8.21	7.97	0.00				
34.00	8.21	7.97	0.00				
35.00	8.21	7.97	0.00				
36.00	8.21	7.97	0.00				
37.00	8.21	7.97	0.00				
38.00	8.21	7.97	0.00				
39.00	8.21	7.97	0.00				
40.00	8.21	7.97	0.00				
41.00	8.21	7.97	0.00				
42.00	8.21	7.97	0.00				
43.00	8.21	7.97	0.00				
44.00	8.21	7.97	0.00				
45.00	8.21	7.97	0.00				
46.00	8.21	7.97	0.00				
47.00	8.21	7.97	0.00				
48.00	8.21	7.97	0.00				
49.00	8.21	7.97	0.00				
50.00	8.21	7.97	0.00				
51.00	8.21	7.97	0.00				

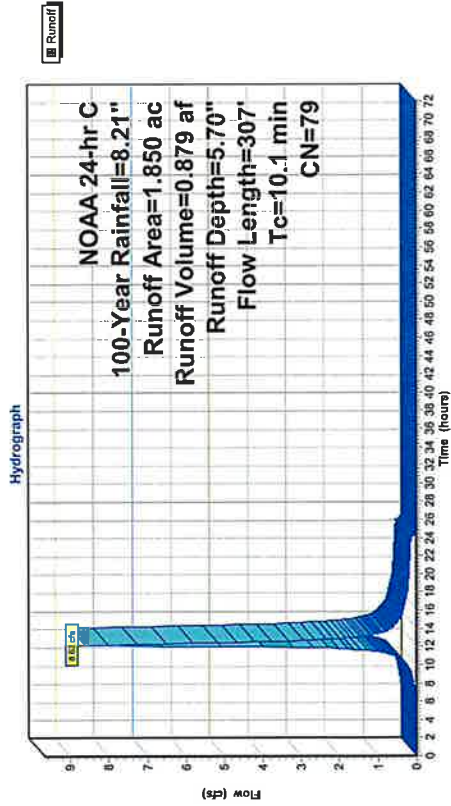
Summary for Subcatchment 9S: DA East (perv)

Runoff = 8.62 cfs @ 12.20 hrs, Volume= 0.879 af, Depth= 5.70"
Routed to Link 50L : DA East

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year Rainfall=8.21"

Area (ac)	CN	Description			
1.330	80	>75% Grass cover, Good, HSG D			
0.520	77	Woods, Good, HSG D			
1.850	79	Weighted Average			
1.850		100.00% Pervious Area			
Tc	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	78	0.0350	0.14		Sheet Flow, sheet flow Grass: Dense n= 0.240 P2= 3.34"
0.4	88	0.0418	3.29		Shallow Concentrated Flow, SCF Unpaved Kv= 16.1 fps
0.5	141	0.0780	4.50		Shallow Concentrated Flow, SCF Unpaved Kv= 16.1 fps

Subcatchment 9S: DA East (perv)



Hydrograph for Subcatchment 9S: DA East (perv)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	8.21	5.70	0.00
1.00	0.09	0.00	0.00	53.00	8.21	5.70	0.00
2.00	0.19	0.00	0.00	54.00	8.21	5.70	0.00
3.00	0.29	0.00	0.00	55.00	8.21	5.70	0.00
4.00	0.40	0.00	0.00	56.00	8.21	5.70	0.00
5.00	0.52	0.00	0.00	57.00	8.21	5.70	0.00
6.00	0.65	0.01	0.01	58.00	8.21	5.70	0.00
7.00	0.80	0.02	0.04	59.00	8.21	5.70	0.00
8.00	0.98	0.07	0.09	60.00	8.21	5.70	0.00
9.00	1.20	0.13	0.14	61.00	8.21	5.70	0.00
10.00	1.50	0.26	0.27	62.00	8.21	5.70	0.00
11.00	1.97	0.51	0.57	63.00	8.21	5.70	0.00
12.00	3.91	1.89	3.98	64.00	8.21	5.70	0.00
13.00	6.24	3.89	1.70	65.00	8.21	5.70	0.00
14.00	6.71	4.32	0.67	66.00	8.21	5.70	0.00
15.00	7.01	4.59	0.46	67.00	8.21	5.70	0.00
16.00	7.23	4.79	0.36	68.00	8.21	5.70	0.00
17.00	7.41	4.96	0.30	69.00	8.21	5.70	0.00
18.00	7.56	5.10	0.25	70.00	8.21	5.70	0.00
19.00	7.69	5.22	0.22	71.00	8.21	5.70	0.00
20.00	7.81	5.33	0.21	72.00	8.21	5.70	0.00
21.00	7.92	5.43	0.19				
22.00	8.02	5.53	0.18				
23.00	8.12	5.62	0.16				
24.00	8.21	5.70	0.15				
25.00	8.21	5.70	0.00				
26.00	8.21	5.70	0.00				
27.00	8.21	5.70	0.00				
28.00	8.21	5.70	0.00				
29.00	8.21	5.70	0.00				
30.00	8.21	5.70	0.00				
31.00	8.21	5.70	0.00				
32.00	8.21	5.70	0.00				
33.00	8.21	5.70	0.00				
34.00	8.21	5.70	0.00				
35.00	8.21	5.70	0.00				
36.00	8.21	5.70	0.00				
37.00	8.21	5.70	0.00				
38.00	8.21	5.70	0.00				
39.00	8.21	5.70	0.00				
40.00	8.21	5.70	0.00				
41.00	8.21	5.70	0.00				
42.00	8.21	5.70	0.00				
43.00	8.21	5.70	0.00				
44.00	8.21	5.70	0.00				
45.00	8.21	5.70	0.00				
46.00	8.21	5.70	0.00				
47.00	8.21	5.70	0.00				
48.00	8.21	5.70	0.00				
49.00	8.21	5.70	0.00				
50.00	8.21	5.70	0.00				
51.00	8.21	5.70	0.00				

Summary for Subcatchment 53S: DA Offsite East (Perv)

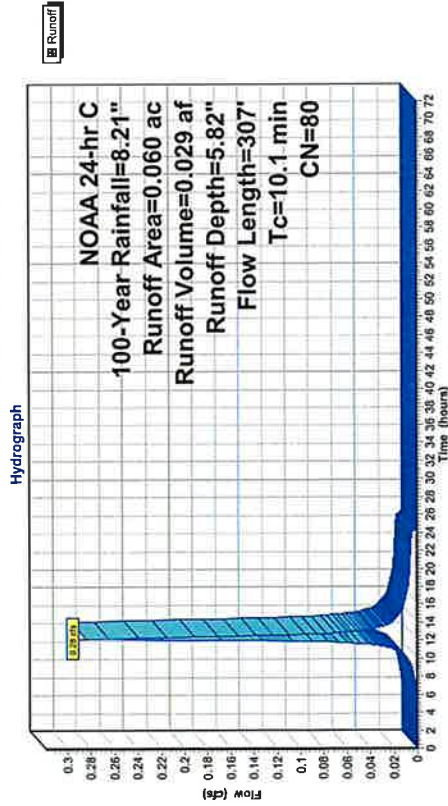
Runoff = 0.28 cfs @ 12.20 hrs, Volume= 0.029 af, Depth= 5.82"
Routed to Link 50L : DA East

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year Rainfall=8.21"

Area (ac)	CN	Description
0.050	80	>75% Grass cover, Good, HSG D
0.010	77	Woods, Good, HSG D
0.060	80	Weighted Average
0.060		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	78	0.0350	0.14		Sheet Flow, sheet flow
					Grass: Dense n= 0.240 P2= 3.34"
0.4	88	0.0418	3.29		Shallow Concentrated Flow, SCF
					Unpaved Kv= 16.1 fps
0.5	141	0.0780	4.50		Shallow Concentrated Flow, SCF
					Unpaved Kv= 16.1 fps
10.1	307	Total			

Subcatchment 53S: DA Offsite East (Perv)



Hydrograph for Subcatchment 53S: DA Offsite East (Perv)

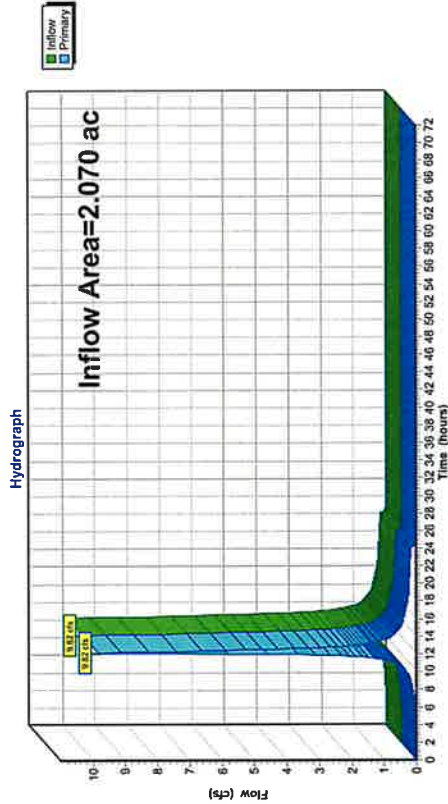
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	8.21	5.82	0.00
1.00	0.09	0.00	0.00	53.00	8.21	5.82	0.00
2.00	0.19	0.00	0.00	54.00	8.21	5.82	0.00
3.00	0.29	0.00	0.00	55.00	8.21	5.82	0.00
4.00	0.40	0.00	0.00	56.00	8.21	5.82	0.00
5.00	0.52	0.00	0.00	57.00	8.21	5.82	0.00
6.00	0.65	0.01	0.00	58.00	8.21	5.82	0.00
7.00	0.80	0.03	0.00	59.00	8.21	5.82	0.00
8.00	0.98	0.06	0.00	60.00	8.21	5.82	0.00
9.00	1.20	0.15	0.00	61.00	8.21	5.82	0.00
10.00	1.50	0.28	0.01	62.00	8.21	5.82	0.00
11.00	1.97	0.54	0.02	63.00	8.21	5.82	0.00
12.00	3.91	1.97	0.13	64.00	8.21	5.82	0.00
13.00	6.24	4.00	0.06	65.00	8.21	5.82	0.00
14.00	6.71	4.43	0.02	66.00	8.21	5.82	0.00
15.00	7.01	4.70	0.01	67.00	8.21	5.82	0.00
16.00	7.23	4.90	0.01	68.00	8.21	5.82	0.00
17.00	7.41	5.07	0.01	69.00	8.21	5.82	0.00
18.00	7.56	5.21	0.01	70.00	8.21	5.82	0.00
19.00	7.69	5.33	0.01	71.00	8.21	5.82	0.00
20.00	7.81	5.45	0.01	72.00	8.21	5.82	0.00
21.00	7.92	5.55	0.01				
22.00	8.02	5.65	0.01				
23.00	8.12	5.74	0.01				
24.00	8.21	5.82	0.01				
25.00	8.21	5.82	0.00				
26.00	8.21	5.82	0.00				
27.00	8.21	5.82	0.00				
28.00	8.21	5.82	0.00				
29.00	8.21	5.82	0.00				
30.00	8.21	5.82	0.00				
31.00	8.21	5.82	0.00				
32.00	8.21	5.82	0.00				
33.00	8.21	5.82	0.00				
34.00	8.21	5.82	0.00				
35.00	8.21	5.82	0.00				
36.00	8.21	5.82	0.00				
37.00	8.21	5.82	0.00				
38.00	8.21	5.82	0.00				
39.00	8.21	5.82	0.00				
40.00	8.21	5.82	0.00				
41.00	8.21	5.82	0.00				
42.00	8.21	5.82	0.00				
43.00	8.21	5.82	0.00				
44.00	8.21	5.82	0.00				
45.00	8.21	5.82	0.00				
46.00	8.21	5.82	0.00				
47.00	8.21	5.82	0.00				
48.00	8.21	5.82	0.00				
49.00	8.21	5.82	0.00				
50.00	8.21	5.82	0.00				
51.00	8.21	5.82	0.00				

Summary for Link 50L: DA East

Inflow Area = 2.070 ac, 7.73% Impervious, Inflow Depth = 5.88" for 100-Year event
Inflow = 9.82 cfs @ 12.20 hrs, Volume= 1.015 af
Primary = 9.82 cfs @ 12.20 hrs, Volume= 1.015 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 52P

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

Link 50L: DA East



Hydrograph for Link 50L: DA East

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.01	0.00	0.01	54.00	0.00	0.00	0.00
3.00	0.01	0.00	0.01	55.00	0.00	0.00	0.00
4.00	0.02	0.00	0.02	56.00	0.00	0.00	0.00
5.00	0.02	0.00	0.02	57.00	0.00	0.00	0.00
6.00	0.04	0.00	0.04	58.00	0.00	0.00	0.00
7.00	0.07	0.00	0.07	59.00	0.00	0.00	0.00
8.00	0.12	0.00	0.12	60.00	0.00	0.00	0.00
9.00	0.18	0.00	0.18	61.00	0.00	0.00	0.00
10.00	0.33	0.00	0.33	62.00	0.00	0.00	0.00
11.00	0.68	0.00	0.68	63.00	0.00	0.00	0.00
12.00	4.57	0.00	4.57	64.00	0.00	0.00	0.00
13.00	1.92	0.00	1.92	65.00	0.00	0.00	0.00
14.00	0.76	0.00	0.76	66.00	0.00	0.00	0.00
15.00	0.52	0.00	0.52	67.00	0.00	0.00	0.00
16.00	0.40	0.00	0.40	68.00	0.00	0.00	0.00
17.00	0.34	0.00	0.34	69.00	0.00	0.00	0.00
18.00	0.28	0.00	0.28	70.00	0.00	0.00	0.00
19.00	0.25	0.00	0.25	71.00	0.00	0.00	0.00
20.00	0.23	0.00	0.23	72.00	0.00	0.00	0.00
21.00	0.22	0.00	0.22				
22.00	0.20	0.00	0.20				
23.00	0.18	0.00	0.18				
24.00	0.17	0.00	0.17				
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				
51.00	0.00	0.00	0.00				

TABLE OF CONTENTS

Project Reports

- 1 Routing Diagram
- 2 Project Notes
- 3 Rainfall Events Listing (selected events)
- 4 Area Listing (all nodes)
- 5 Soil Listing (all nodes)
- 6 Ground Covers (all nodes)
- 7 Notes Listing (all nodes)

2-Year Event

- 8 Node Listing
- 9 Subcat 7S: DA East (imp)
- 11 Subcat 9S: DA East (perv)
- 13 Subcat 53S: DA Offsite East (Perv)
- 15 Link 50L: DA East

10-Year Event

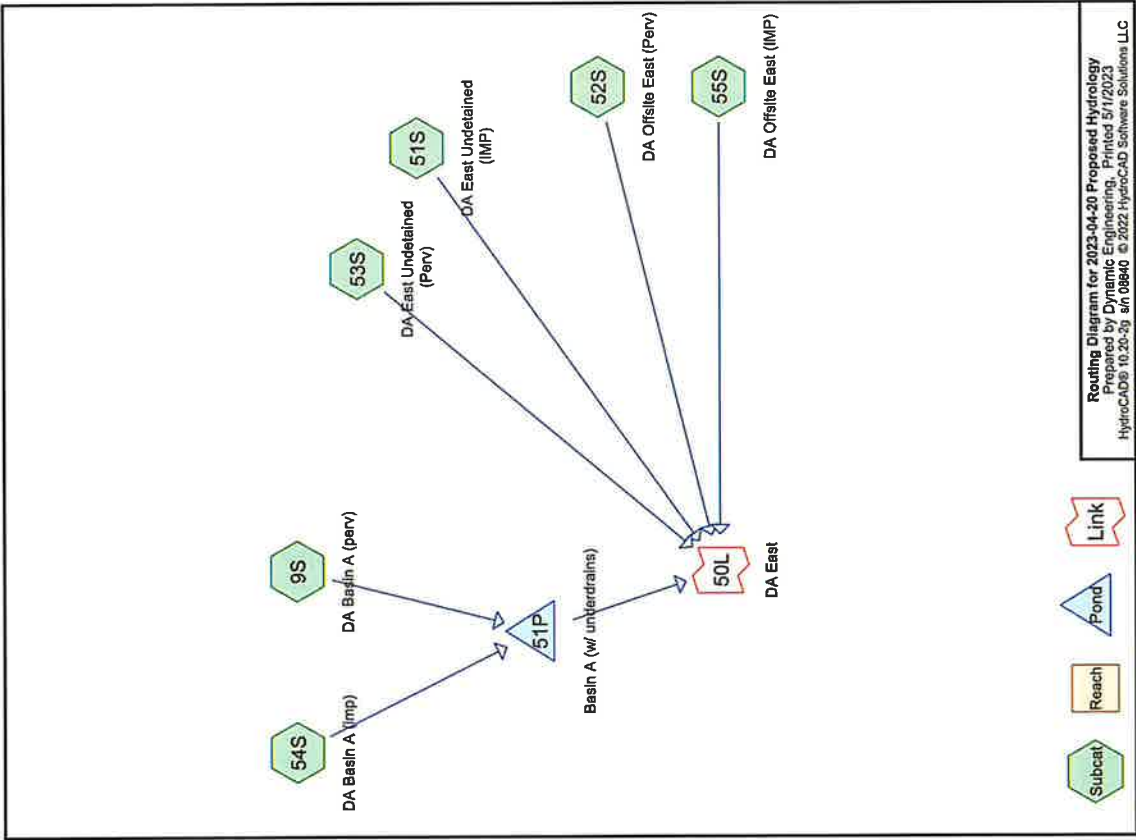
- 17 Node Listing
- 18 Subcat 7S: DA East (imp)
- 20 Subcat 9S: DA East (perv)
- 22 Subcat 53S: DA Offsite East (Perv)
- 24 Link 50L: DA East

100-Year Event

- 26 Node Listing
- 27 Subcat 7S: DA East (imp)
- 29 Subcat 9S: DA East (perv)
- 31 Subcat 53S: DA Offsite East (Perv)
- 33 Link 50L: DA East

Project Notes

Rainfall events imported from "NRCS-Rain.txt" for 6617 NJ Somerset-C



Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	NOAA 24-hr	C	Default	24.00	1	3.34	2
2	10-Year	NOAA 24-hr	C	Default	24.00	1	5.01	2
3	100-Year	NOAA 24-hr	C	Default	24.00	1	8.21	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.100	80	>75% Grass cover, Good, HSG D (9S, 52S, 53S)
0.780	98	Paved parking, HSG D (51S, 54S, 55S)
0.190	98	Roofs, HSG D (54S)
2.070	88	TOTAL AREA

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
2.070	HSG D	9S, 51S, 52S, 53S, 54S, 55S
0.000	Other	
2.070		TOTAL AREA

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	1.100	0.000	1.100	>75% Grass cover, Good	9S, 52S, 53S
0.000	0.000	0.000	0.780	0.000	0.780	Paved parking	51S, 54S, 55S
0.000	0.000	0.000	0.190	0.000	0.190	Roofs	54S
0.000	0.000	0.000	2.070	0.000	2.070	TOTAL AREA	

Notes Listing (all nodes)

Line#	Node Number	Notes
1	Project	Rainfall events imported from "NRCS-Rain.txt" for 6617 NJ Somerset-C

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 9S: DA Basin A (perv)	Runoff Area=0.700 ac 0.00% Impervious Runoff Depth=1.51" Flow Length=232' Tc=9.2 min CN=80 Runoff=0.90 cfs 0.008 af
Subcatchment 51S: DA East Undetained	Runoff Area=0.030 ac 100.00% Impervious Runoff Depth=3.11" Tc=10.7 min CN=98 Runoff=0.07 cfs 0.008 af
Subcatchment 52S: DA Offsite East (Perv)	Runoff Area=0.050 ac 0.00% Impervious Runoff Depth=1.51" Flow Length=334' Tc=10.7 min CN=80 Runoff=0.06 cfs 0.006 af
Subcatchment 53S: DA East Undetained	Runoff Area=0.350 ac 0.00% Impervious Runoff Depth=1.51" Tc=10.7 min CN=80 Runoff=0.42 cfs 0.044 af
Subcatchment 54S: DA Basin A (imp)	Runoff Area=0.930 ac 100.00% Impervious Runoff Depth=3.11" Flow Length=232' Tc=9.2 min CN=98 Runoff=2.22 cfs 0.241 af
Subcatchment 55S: DA Offsite East (IMP)	Runoff Area=0.010 ac 100.00% Impervious Runoff Depth=3.11" Tc=10.7 min CN=98 Runoff=0.02 cfs 0.003 af
Pond 51P: Basin A (w/ underdrains)	Peak Elev=126.59' Storage=7.599 cf Inflow=3.12 cfs 0.329 af Outflow=0.86 cfs 0.236 af
Link 50L: DA East	Inflow=1.15 cfs 0.297 af Primary=1.15 cfs 0.297 af

Total Runoff Area = 2.070 ac Runoff Volume = 0.390 af Average Runoff Depth = 2.26"
53.14% Pervious = 1.100 ac 46.86% Impervious = 0.970 ac

Summary for Subcatchment 9S: DA Basin A (perv)

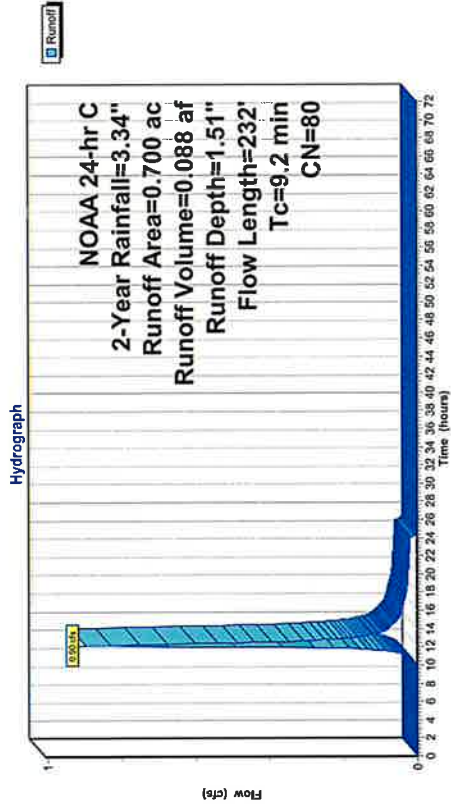
Runoff = 0.90 cfs @ 12.19 hrs, Volume= 0.088 af, Depth= 1.51"
Routed to Pond 51P : Basin A (w/ underdrains)

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year Rainfall=3.34"

Area (ac)	CN	Description
0.700	80	>75% Grass cover, Good, HSG D
0.700		100.00% Pervious Area

Tc	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	100	0.0672	0.19		Sheet Flow, SF - Grass
					Grass: Dense n= 0.240 P2= 3.34"
0.6	132	0.0606	3.96		Shallow Concentrated Flow, SCF - Grass
					Unpaved Kv= 16.1 fps
9.2	232	Total			

Subcatchment 9S: DA Basin A (perv)



Hydrograph for Subcatchment 9S: DA Basin A (perv)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.34	1.51	0.00
1.00	0.04	0.00	0.00	53.00	3.34	1.51	0.00
2.00	0.08	0.00	0.00	54.00	3.34	1.51	0.00
3.00	0.12	0.00	0.00	55.00	3.34	1.51	0.00
4.00	0.16	0.00	0.00	56.00	3.34	1.51	0.00
5.00	0.21	0.00	0.00	57.00	3.34	1.51	0.00
6.00	0.26	0.00	0.00	58.00	3.34	1.51	0.00
7.00	0.33	0.00	0.00	59.00	3.34	1.51	0.00
8.00	0.40	0.00	0.00	60.00	3.34	1.51	0.00
9.00	0.49	0.00	0.00	61.00	3.34	1.51	0.00
10.00	0.61	0.00	0.01	62.00	3.34	1.51	0.00
11.00	0.80	0.03	0.03	63.00	3.34	1.51	0.00
12.00	1.59	0.33	0.37	64.00	3.34	1.51	0.00
13.00	2.54	0.92	0.19	65.00	3.34	1.51	0.00
14.00	2.73	1.05	0.08	66.00	3.34	1.51	0.00
15.00	2.85	1.14	0.06	67.00	3.34	1.51	0.00
16.00	2.94	1.21	0.04	68.00	3.34	1.51	0.00
17.00	3.01	1.26	0.04	69.00	3.34	1.51	0.00
18.00	3.08	1.31	0.03	70.00	3.34	1.51	0.00
19.00	3.13	1.35	0.03	71.00	3.34	1.51	0.00
20.00	3.18	1.38	0.03	72.00	3.34	1.51	0.00
21.00	3.22	1.42	0.02				
22.00	3.26	1.45	0.02				
23.00	3.30	1.48	0.02				
24.00	3.34	1.51	0.02				
25.00	3.34	1.51	0.00				
26.00	3.34	1.51	0.00				
27.00	3.34	1.51	0.00				
28.00	3.34	1.51	0.00				
29.00	3.34	1.51	0.00				
30.00	3.34	1.51	0.00				
31.00	3.34	1.51	0.00				
32.00	3.34	1.51	0.00				
33.00	3.34	1.51	0.00				
34.00	3.34	1.51	0.00				
35.00	3.34	1.51	0.00				
36.00	3.34	1.51	0.00				
37.00	3.34	1.51	0.00				
38.00	3.34	1.51	0.00				
39.00	3.34	1.51	0.00				
40.00	3.34	1.51	0.00				
41.00	3.34	1.51	0.00				
42.00	3.34	1.51	0.00				
43.00	3.34	1.51	0.00				
44.00	3.34	1.51	0.00				
45.00	3.34	1.51	0.00				
46.00	3.34	1.51	0.00				
47.00	3.34	1.51	0.00				
48.00	3.34	1.51	0.00				
49.00	3.34	1.51	0.00				
50.00	3.34	1.51	0.00				
51.00	3.34	1.51	0.00				

Summary for Subcatchment 51S: DA East Undetained (IMP)

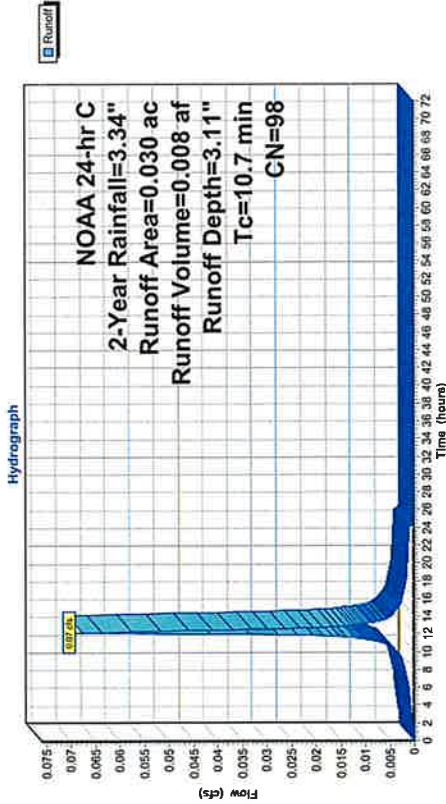
Runoff = 0.07 cfs @ 12.20 hrs, Volume= 0.008 af, Depth= 3.11"
Routed to Link 50L : DA East

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year Rainfall=3.34"

Area (ac)	CN	Description
0.030	98	Paved parking, HSG D
0.030		100.00% Impervious Area

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

Subcatchment 51S: DA East Undetained (IMP)



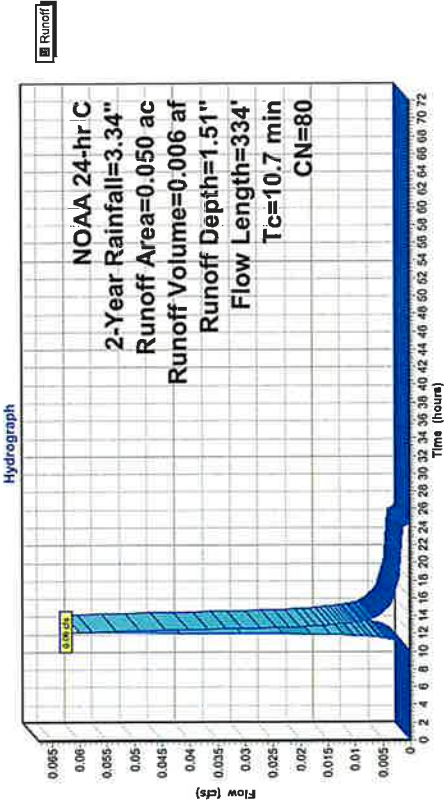
Hydrograph for Subcatchment 51S: DA East Undetained (IMP)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.34	3.11	0.00
1.00	0.04	0.00	0.00	53.00	3.34	3.11	0.00
2.00	0.08	0.01	0.00	54.00	3.34	3.11	0.00
3.00	0.12	0.02	0.00	55.00	3.34	3.11	0.00
4.00	0.16	0.05	0.00	56.00	3.34	3.11	0.00
5.00	0.21	0.08	0.00	57.00	3.34	3.11	0.00
6.00	0.26	0.12	0.00	58.00	3.34	3.11	0.00
7.00	0.33	0.17	0.00	59.00	3.34	3.11	0.00
8.00	0.40	0.23	0.00	60.00	3.34	3.11	0.00
9.00	0.49	0.31	0.00	61.00	3.34	3.11	0.00
10.00	0.61	0.42	0.00	62.00	3.34	3.11	0.00
11.00	0.80	0.60	0.01	63.00	3.34	3.11	0.00
12.00	1.59	1.37	0.03	64.00	3.34	3.11	0.00
13.00	2.64	2.31	0.01	65.00	3.34	3.11	0.00
14.00	2.73	2.50	0.00	66.00	3.34	3.11	0.00
15.00	2.85	2.62	0.00	67.00	3.34	3.11	0.00
16.00	2.94	2.71	0.00	68.00	3.34	3.11	0.00
17.00	3.01	2.78	0.00	69.00	3.34	3.11	0.00
18.00	3.08	2.84	0.00	70.00	3.34	3.11	0.00
19.00	3.13	2.90	0.00	71.00	3.34	3.11	0.00
20.00	3.16	2.94	0.00	72.00	3.34	3.11	0.00
21.00	3.22	2.99	0.00				
22.00	3.26	3.03	0.00				
23.00	3.30	3.07	0.00				
24.00	3.34	3.11	0.00				
25.00	3.34	3.11	0.00				
26.00	3.34	3.11	0.00				
27.00	3.34	3.11	0.00				
28.00	3.34	3.11	0.00				
29.00	3.34	3.11	0.00				
30.00	3.34	3.11	0.00				
31.00	3.34	3.11	0.00				
32.00	3.34	3.11	0.00				
33.00	3.34	3.11	0.00				
34.00	3.34	3.11	0.00				
35.00	3.34	3.11	0.00				
36.00	3.34	3.11	0.00				
37.00	3.34	3.11	0.00				
38.00	3.34	3.11	0.00				
39.00	3.34	3.11	0.00				
40.00	3.34	3.11	0.00				
41.00	3.34	3.11	0.00				
42.00	3.34	3.11	0.00				
43.00	3.34	3.11	0.00				
44.00	3.34	3.11	0.00				
45.00	3.34	3.11	0.00				
46.00	3.34	3.11	0.00				
47.00	3.34	3.11	0.00				
48.00	3.34	3.11	0.00				
49.00	3.34	3.11	0.00				
50.00	3.34	3.11	0.00				
51.00	3.34	3.11	0.00				

Summary for Subcatchment 52S: DA Offsite East (Perv)

Runoff	=	0.09 cfs @ 12.21 hrs,	Volume=	0.006 af,	Depth=	1.51"
Routed to Link 50L : DA East						
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs						
NOAA 24-hr C 2-Year Rainfall=3.34"						
Area (ac)	CN	Description				
0.050	80	>75% Grass cover, Good, HSG D				
0.050		100.00% Pervious Area				
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description	
9.1	49	0.0140	0.09		Sheet Flow, SF - Grass	
Grass: Dense n= 0.240 P2= 3.34"						
Using McCuen-Spless flow length						
1.6	285	0.0340	2.97		Shallow Concentrated Flow, SCF - Grass	
Unpaved Kv= 16.1 fps						
10.7	334	Total				

Subcatchment 52S: DA Offsite East (Perv)



Hydrograph for Subcatchment 52S: DA Offsite East (Perv)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.34	1.51	0.00
1.00	0.04	0.00	0.00	53.00	3.34	1.51	0.00
2.00	0.08	0.00	0.00	54.00	3.34	1.51	0.00
3.00	0.12	0.00	0.00	55.00	3.34	1.51	0.00
4.00	0.16	0.00	0.00	56.00	3.34	1.51	0.00
5.00	0.21	0.00	0.00	57.00	3.34	1.51	0.00
6.00	0.26	0.00	0.00	58.00	3.34	1.51	0.00
7.00	0.33	0.00	0.00	59.00	3.34	1.51	0.00
8.00	0.40	0.00	0.00	60.00	3.34	1.51	0.00
9.00	0.49	0.00	0.00	61.00	3.34	1.51	0.00
10.00	0.61	0.00	0.00	62.00	3.34	1.51	0.00
11.00	0.80	0.03	0.00	63.00	3.34	1.51	0.00
12.00	1.59	0.33	0.02	64.00	3.34	1.51	0.00
13.00	2.54	0.92	0.01	65.00	3.34	1.51	0.00
14.00	2.73	1.05	0.01	66.00	3.34	1.51	0.00
15.00	2.85	1.14	0.00	67.00	3.34	1.51	0.00
16.00	2.94	1.21	0.00	68.00	3.34	1.51	0.00
17.00	3.01	1.26	0.00	69.00	3.34	1.51	0.00
18.00	3.08	1.31	0.00	70.00	3.34	1.51	0.00
19.00	3.13	1.35	0.00	71.00	3.34	1.51	0.00
20.00	3.18	1.38	0.00	72.00	3.34	1.51	0.00
21.00	3.22	1.42	0.00				
22.00	3.26	1.45	0.00				
23.00	3.30	1.48	0.00				
24.00	3.34	1.51	0.00				
25.00	3.34	1.51	0.00				
26.00	3.34	1.51	0.00				
27.00	3.34	1.51	0.00				
28.00	3.34	1.51	0.00				
29.00	3.34	1.51	0.00				
30.00	3.34	1.51	0.00				
31.00	3.34	1.51	0.00				
32.00	3.34	1.51	0.00				
33.00	3.34	1.51	0.00				
34.00	3.34	1.51	0.00				
35.00	3.34	1.51	0.00				
36.00	3.34	1.51	0.00				
37.00	3.34	1.51	0.00				
38.00	3.34	1.51	0.00				
39.00	3.34	1.51	0.00				
40.00	3.34	1.51	0.00				
41.00	3.34	1.51	0.00				
42.00	3.34	1.51	0.00				
43.00	3.34	1.51	0.00				
44.00	3.34	1.51	0.00				
45.00	3.34	1.51	0.00				
46.00	3.34	1.51	0.00				
47.00	3.34	1.51	0.00				
48.00	3.34	1.51	0.00				
49.00	3.34	1.51	0.00				
50.00	3.34	1.51	0.00				
51.00	3.34	1.51	0.00				

Summary for Subcatchment 53S: DA East Undetained (Perv)

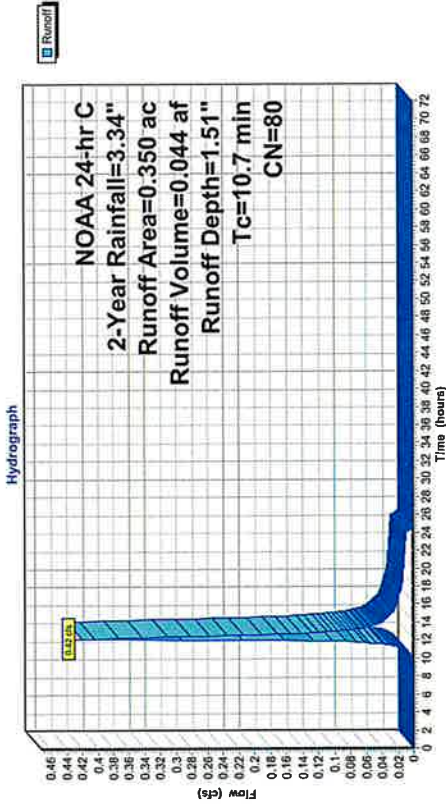
Runoff = 0.42 cfs @ 12.21 hrs, Volume= 0.044 af, Depth= 1.51"
Routed to Link 50L : DA East

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year Rainfall=3.34"

Area (ac)	CN	Description
0.350	80	>75% Grass cover, Good, HSG D
0.350		100.00% Pervious Area

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

Subcatchment 53S: DA East Undetained (Perv)



Hydrograph for Subcatchment 53S: DA East Undetained (Perv)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.34	1.51	0.00
1.00	0.04	0.00	0.00	53.00	3.34	1.51	0.00
2.00	0.08	0.00	0.00	54.00	3.34	1.51	0.00
3.00	0.12	0.00	0.00	55.00	3.34	1.51	0.00
4.00	0.16	0.00	0.00	56.00	3.34	1.51	0.00
5.00	0.21	0.00	0.00	57.00	3.34	1.51	0.00
6.00	0.26	0.00	0.00	58.00	3.34	1.51	0.00
7.00	0.33	0.00	0.00	59.00	3.34	1.51	0.00
8.00	0.40	0.00	0.00	60.00	3.34	1.51	0.00
9.00	0.49	0.00	0.00	61.00	3.34	1.51	0.00
10.00	0.61	0.00	0.00	62.00	3.34	1.51	0.00
11.00	0.80	0.03	0.01	63.00	3.34	1.51	0.00
12.00	1.59	0.33	0.16	64.00	3.34	1.51	0.00
13.00	2.54	0.92	0.16	65.00	3.34	1.51	0.00
14.00	2.73	1.05	0.04	66.00	3.34	1.51	0.00
15.00	2.85	1.14	0.03	67.00	3.34	1.51	0.00
16.00	2.94	1.21	0.02	68.00	3.34	1.51	0.00
17.00	3.01	1.26	0.02	69.00	3.34	1.51	0.00
18.00	3.08	1.31	0.02	70.00	3.34	1.51	0.00
19.00	3.13	1.35	0.01	71.00	3.34	1.51	0.00
20.00	3.18	1.38	0.01	72.00	3.34	1.51	0.00
21.00	3.22	1.42	0.01				
22.00	3.26	1.45	0.01				
23.00	3.30	1.48	0.01				
24.00	3.34	1.51	0.01				
25.00	3.34	1.51	0.00				
26.00	3.34	1.51	0.00				
27.00	3.34	1.51	0.00				
28.00	3.34	1.51	0.00				
29.00	3.34	1.51	0.00				
30.00	3.34	1.51	0.00				
31.00	3.34	1.51	0.00				
32.00	3.34	1.51	0.00				
33.00	3.34	1.51	0.00				
34.00	3.34	1.51	0.00				
35.00	3.34	1.51	0.00				
36.00	3.34	1.51	0.00				
37.00	3.34	1.51	0.00				
38.00	3.34	1.51	0.00				
39.00	3.34	1.51	0.00				
40.00	3.34	1.51	0.00				
41.00	3.34	1.51	0.00				
42.00	3.34	1.51	0.00				
43.00	3.34	1.51	0.00				
44.00	3.34	1.51	0.00				
45.00	3.34	1.51	0.00				
46.00	3.34	1.51	0.00				
47.00	3.34	1.51	0.00				
48.00	3.34	1.51	0.00				
49.00	3.34	1.51	0.00				
50.00	3.34	1.51	0.00				
51.00	3.34	1.51	0.00				

Summary for Subcatchment 54S: DA Basin A (imp)

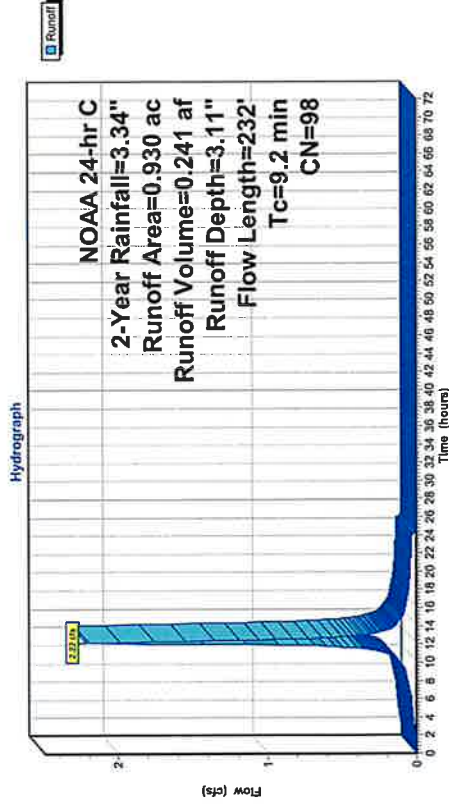
Runoff = 2.22 cfs @ 12.18 hrs, Volume= 0.241 af, Depth= 3.11"
Routed to Pond 51P : Basin A (w/ underdrains)

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year Rainfall=3.34"

Area (ac)	CN	Description
0.740	98	Paved parking, HSG D
0.190	98	Roofs, HSG D
0.930	98	Weighted Average
0.930	100.00%	Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	100	0.0672	0.19		Sheet Flow, SF - Grass
					Grass: Dense n= 0.240 P2= 3.34"
0.6	132	0.0606	3.96		Shallow Concentrated Flow, SCF - Grass
					Unpaved Kv= 16.1 fps
9.2	232	Total			

Subcatchment 54S: DA Basin A (imp)



Hydrograph for Subcatchment 54S: DA Basin A (imp)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.34	3.11	0.00
1.00	0.04	0.00	0.00	53.00	3.34	3.11	0.00
2.00	0.08	0.01	0.01	54.00	3.34	3.11	0.00
3.00	0.12	0.02	0.02	55.00	3.34	3.11	0.00
4.00	0.16	0.05	0.03	56.00	3.34	3.11	0.00
5.00	0.21	0.08	0.03	57.00	3.34	3.11	0.00
6.00	0.26	0.12	0.04	58.00	3.34	3.11	0.00
7.00	0.33	0.17	0.05	59.00	3.34	3.11	0.00
8.00	0.40	0.23	0.06	60.00	3.34	3.11	0.00
9.00	0.49	0.31	0.08	61.00	3.34	3.11	0.00
10.00	0.61	0.42	0.12	62.00	3.34	3.11	0.00
11.00	0.80	0.60	0.20	63.00	3.34	3.11	0.00
12.00	1.59	1.37	1.14	64.00	3.34	3.11	0.00
13.00	2.54	2.31	0.37	65.00	3.34	3.11	0.00
14.00	2.73	2.50	0.15	66.00	3.34	3.11	0.00
15.00	2.85	2.62	0.10	67.00	3.34	3.11	0.00
16.00	2.94	2.71	0.08	68.00	3.34	3.11	0.00
17.00	3.01	2.78	0.07	69.00	3.34	3.11	0.00
18.00	3.08	2.84	0.05	70.00	3.34	3.11	0.00
19.00	3.13	2.90	0.05	71.00	3.34	3.11	0.00
20.00	3.18	2.94	0.04	72.00	3.34	3.11	0.00
21.00	3.22	2.99	0.04				
22.00	3.26	3.03	0.04				
23.00	3.30	3.07	0.04				
24.00	3.34	3.11	0.03				
25.00	3.34	3.11	0.00				
26.00	3.34	3.11	0.00				
27.00	3.34	3.11	0.00				
28.00	3.34	3.11	0.00				
29.00	3.34	3.11	0.00				
30.00	3.34	3.11	0.00				
31.00	3.34	3.11	0.00				
32.00	3.34	3.11	0.00				
33.00	3.34	3.11	0.00				
34.00	3.34	3.11	0.00				
35.00	3.34	3.11	0.00				
36.00	3.34	3.11	0.00				
37.00	3.34	3.11	0.00				
38.00	3.34	3.11	0.00				
39.00	3.34	3.11	0.00				
40.00	3.34	3.11	0.00				
41.00	3.34	3.11	0.00				
42.00	3.34	3.11	0.00				
43.00	3.34	3.11	0.00				
44.00	3.34	3.11	0.00				
45.00	3.34	3.11	0.00				
46.00	3.34	3.11	0.00				
47.00	3.34	3.11	0.00				
48.00	3.34	3.11	0.00				
49.00	3.34	3.11	0.00				
50.00	3.34	3.11	0.00				
51.00	3.34	3.11	0.00				

Summary for Subcatchment 55S: DA Offsite East (IMP)

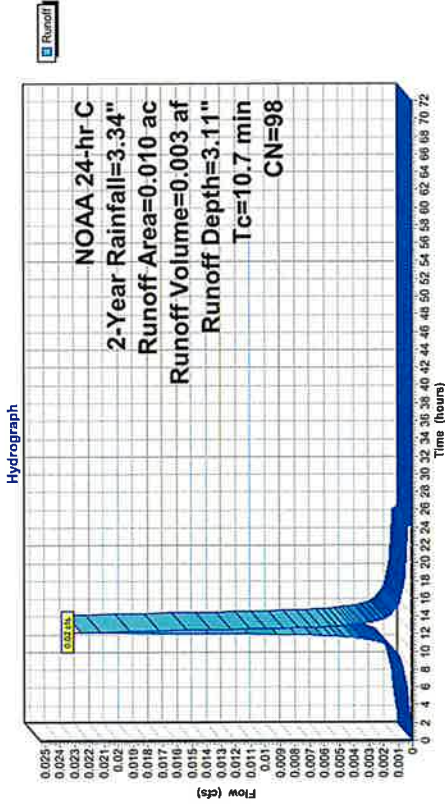
Runoff = 0.02 cfs @ 12.20 hrs, Volume= 0.003 af, Depth= 3.11"
Routed to Link 50L : DA East

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year Rainfall=3.34"

Area (ac)	CN	Description
0.010	98	Paved parking, HSG D
0.010		100.00% Impervious Area

Tc (min)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7				Direct Entry,

Subcatchment 55S: DA Offsite East (IMP)



Hydrograph for Subcatchment 55S: DA Offsite East (IMP)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	3.34	3.11	0.00
1.00	0.04	0.00	0.00	53.00	3.34	3.11	0.00
2.00	0.08	0.01	0.00	54.00	3.34	3.11	0.00
3.00	0.12	0.02	0.00	55.00	3.34	3.11	0.00
4.00	0.16	0.05	0.00	56.00	3.34	3.11	0.00
5.00	0.21	0.08	0.00	57.00	3.34	3.11	0.00
6.00	0.26	0.12	0.00	58.00	3.34	3.11	0.00
7.00	0.33	0.17	0.00	59.00	3.34	3.11	0.00
8.00	0.40	0.23	0.00	60.00	3.34	3.11	0.00
9.00	0.49	0.31	0.00	61.00	3.34	3.11	0.00
10.00	0.61	0.42	0.00	62.00	3.34	3.11	0.00
11.00	0.80	0.60	0.00	63.00	3.34	3.11	0.00
12.00	1.59	1.37	0.01	64.00	3.34	3.11	0.00
13.00	2.54	2.31	0.00	65.00	3.34	3.11	0.00
14.00	2.73	2.50	0.00	66.00	3.34	3.11	0.00
15.00	2.85	2.62	0.00	67.00	3.34	3.11	0.00
16.00	2.94	2.71	0.00	68.00	3.34	3.11	0.00
17.00	3.01	2.78	0.00	69.00	3.34	3.11	0.00
18.00	3.08	2.84	0.00	70.00	3.34	3.11	0.00
19.00	3.13	2.90	0.00	71.00	3.34	3.11	0.00
20.00	3.18	2.94	0.00	72.00	3.34	3.11	0.00
21.00	3.22	2.99	0.00				
22.00	3.26	3.03	0.00				
23.00	3.30	3.07	0.00				
24.00	3.34	3.11	0.00				
25.00	3.34	3.11	0.00				
26.00	3.34	3.11	0.00				
27.00	3.34	3.11	0.00				
28.00	3.34	3.11	0.00				
29.00	3.34	3.11	0.00				
30.00	3.34	3.11	0.00				
31.00	3.34	3.11	0.00				
32.00	3.34	3.11	0.00				
33.00	3.34	3.11	0.00				
34.00	3.34	3.11	0.00				
35.00	3.34	3.11	0.00				
36.00	3.34	3.11	0.00				
37.00	3.34	3.11	0.00				
38.00	3.34	3.11	0.00				
39.00	3.34	3.11	0.00				
40.00	3.34	3.11	0.00				
41.00	3.34	3.11	0.00				
42.00	3.34	3.11	0.00				
43.00	3.34	3.11	0.00				
44.00	3.34	3.11	0.00				
45.00	3.34	3.11	0.00				
46.00	3.34	3.11	0.00				
47.00	3.34	3.11	0.00				
48.00	3.34	3.11	0.00				
49.00	3.34	3.11	0.00				
50.00	3.34	3.11	0.00				
51.00	3.34	3.11	0.00				

Summary for Pond 51P: Basin A (w/ underdrains)

Inflow Area = 1,630 ac, 57.06% impervious, Inflow Depth = 2.42" for 2-Year event
Inflow = 3.12 cfs @ 12.18 hrs, Volume= 0.329 af
Outflow = 0.86 cfs @ 12.74 hrs, Volume= 0.236 af, Atten= 72%, Lag= 33.6 min
Primary = 0.86 cfs @ 12.74 hrs, Volume= 0.236 af
Routed to Link 50L : DA East

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 126.59' @ 12.74 hrs Surf.Area= 4,859 sf Storage= 7,599 cf
Plug-Flow detention time= 281.6 min calculated for 0.236 af (72% of inflow)
Center-of-Mass det. time= 184.5 min (973.1 - 788.6)

Volume		Invert	Avail.Storage	Storage Description
#1	125.00'		19,600 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
125.00	4,700	0	0	
126.00	4,800	4,750	4,750	
127.00	4,900	4,850	9,600	
128.00	5,000	4,950	14,550	
129.00	5,100	5,050	19,600	

Device	Routing	Invert	Outlet Devices
#1	Primary	125.85'	7.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	128.00'	4.0' long Sharp-Crested Rectangular Weir 2 End Contractions

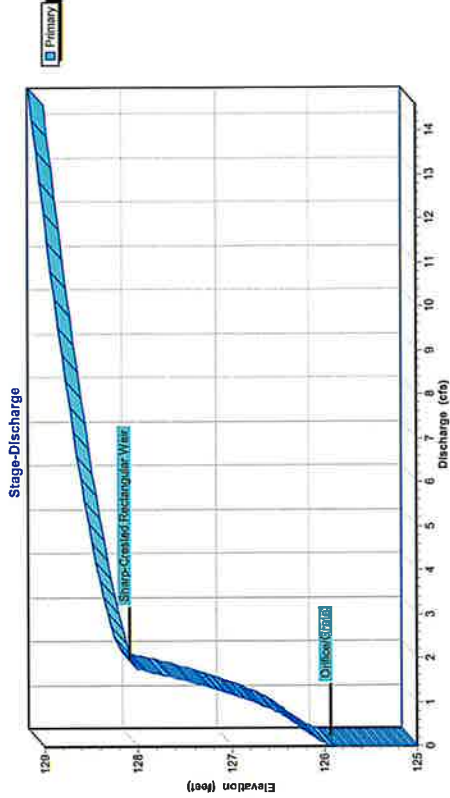
Primary Outflow Max=0.86 cfs @ 12.74 hrs HW=126.59' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 0.86 cfs @ 3.22 fps)
- 2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

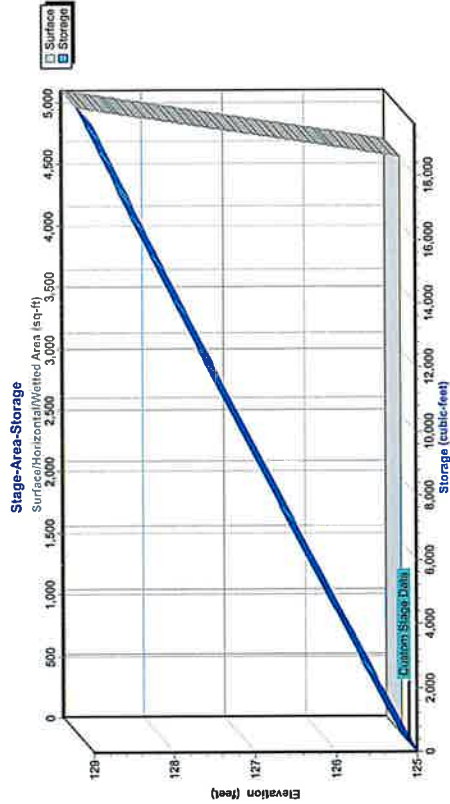
Pond 51P: Basin A (w/ underdrains)



Pond 51P: Basin A (w/ underdrains)



Pond 51P: Basin A (w/ underdrains)



Hydrograph for Pond 51P: Basin A (w/ underdrains)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	125.00	0.00
2.50	0.01	29	125.01	0.00
5.00	0.03	237	125.05	0.00
7.50	0.06	613	125.13	0.00
10.00	0.12	1,316	125.28	0.00
12.50	1.55	7,310	126.53	0.80
15.00	0.16	5,541	126.16	0.28
17.50	0.09	4,993	126.05	0.12
20.00	0.07	4,803	126.01	0.08
22.50	0.06	4,722	125.99	0.07
25.00	0.00	4,546	125.96	0.04
27.50	0.00	4,336	125.91	0.01
30.00	0.00	4,240	125.89	0.01
32.50	0.00	4,189	125.88	0.00
35.00	0.00	4,180	125.88	0.00
37.50	0.00	4,138	125.87	0.00
40.00	0.00	4,119	125.87	0.00
42.50	0.00	4,104	125.87	0.00
45.00	0.00	4,091	125.86	0.00
47.50	0.00	4,081	125.86	0.00
50.00	0.00	4,072	125.86	0.00
52.50	0.00	4,065	125.86	0.00
55.00	0.00	4,059	125.86	0.00
57.50	0.00	4,054	125.85	0.00
60.00	0.00	4,050	125.85	0.00
62.50	0.00	4,047	125.85	0.00
65.00	0.00	4,044	125.85	0.00
67.50	0.00	4,042	125.85	0.00
70.00	0.00	4,040	125.85	0.00

Stage-Discharge for Pond 51P: Basin A (w/ underdrains)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
125.00	0.00	127.08	1.25	128.12	2.35
125.02	0.00	127.10	1.26	128.14	2.50
125.04	0.00	127.12	1.27	128.16	2.66
125.06	0.00	127.14	1.29	128.18	2.83
125.08	0.00	127.16	1.30	128.20	3.00
125.10	0.00	127.18	1.31	128.22	3.19
125.12	0.00	127.20	1.32	128.24	3.38
125.14	0.00	127.22	1.34	128.26	3.58
125.16	0.00	127.24	1.35	128.28	3.79
125.18	0.00	127.26	1.36	128.30	4.01
125.20	0.00	127.28	1.37	128.32	4.23
125.22	0.00	127.30	1.38	128.34	4.46
125.24	0.00	127.32	1.40	128.36	4.69
125.26	0.00	127.34	1.41	128.38	4.93
125.28	0.00	127.36	1.42	128.40	5.18
125.30	0.00	127.38	1.43	128.42	5.43
125.32	0.00	127.40	1.44	128.44	5.68
125.34	0.00	127.42	1.45	128.46	5.95
125.36	0.00	127.44	1.47	128.48	6.21
125.38	0.00	127.46	1.48	128.50	6.49
125.40	0.00	127.48	1.49	128.52	6.76
125.42	0.00	127.50	1.50	128.54	7.04
125.44	0.00	127.52	1.51	128.56	7.33
125.46	0.00	127.54	1.52	128.58	7.62
125.48	0.00	127.56	1.53	128.60	7.91
125.50	0.00	127.58	1.54	128.62	8.21
125.52	0.00	127.60	1.55	128.64	8.52
125.54	0.00	127.62	1.58	128.66	8.82
125.56	0.00	127.64	1.58	128.68	9.14
125.58	0.00	127.66	1.59	128.70	9.45
125.60	0.00	127.68	1.60	128.72	9.77
125.62	0.00	127.70	1.61	128.74	10.09
125.64	0.00	127.72	1.62	128.76	10.42
125.66	0.00	127.74	1.63	128.78	10.75
125.68	0.00	127.76	1.64	128.80	11.08
125.70	0.00	127.78	1.65	128.82	11.42
125.72	0.00	127.80	1.66	128.84	11.76
125.74	0.00	127.82	1.67	128.86	12.10
125.76	0.00	127.84	1.68	128.88	12.45
125.78	0.00	127.86	1.69	128.90	12.80
125.80	0.00	127.88	1.70	128.92	13.16
125.82	0.00	127.90	1.71	128.94	13.51
125.84	0.00	127.92	1.72	128.96	13.87
125.86	0.00	127.94	1.73	128.98	14.24
125.88	0.00	127.96	1.74	129.00	14.60
125.90	0.01	127.98	1.74		
125.92	0.02	128.00	1.75		
125.94	0.03	128.02	1.80		
125.96	0.04	128.04	1.88		
125.98	0.05	128.06	1.97		
126.00	0.07	128.08	2.09		
126.02	0.09	128.10	2.21		

Stage-Area-Storage for Pond 51P: Basin A (w/ underdrains)

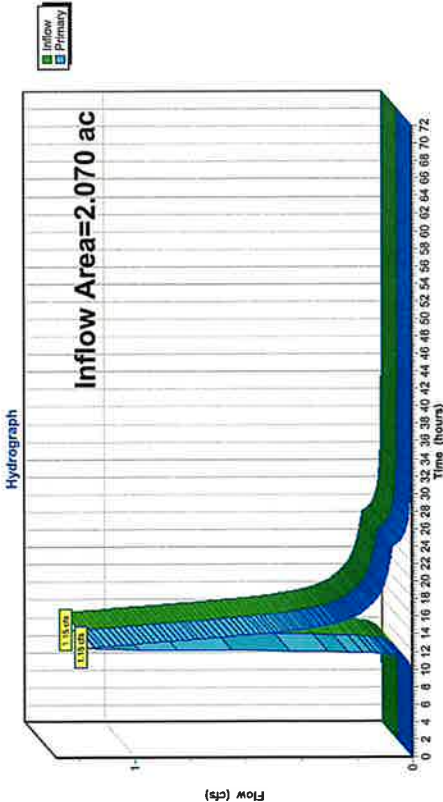
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
125.00	4,700	0	127.60	4,960	12,558
125.05	4,705	235	127.65	4,965	12,806
125.10	4,710	470	127.70	4,970	13,055
125.15	4,715	706	127.75	4,975	13,303
125.20	4,720	942	127.80	4,980	13,552
125.25	4,725	1,178	127.85	4,985	13,801
125.30	4,730	1,414	127.90	4,990	14,051
125.35	4,735	1,651	127.95	4,995	14,300
125.40	4,740	1,888	128.00	5,000	14,550
125.45	4,745	2,125	128.05	5,005	14,800
125.50	4,750	2,363	128.10	5,010	15,050
125.55	4,755	2,600	128.15	5,015	15,301
125.60	4,760	2,838	128.20	5,020	15,552
125.65	4,765	3,076	128.25	5,025	15,803
125.70	4,770	3,315	128.30	5,030	16,055
125.75	4,775	3,553	128.35	5,035	16,306
125.80	4,780	3,792	128.40	5,040	16,558
125.85	4,785	4,031	128.45	5,045	16,810
125.90	4,790	4,271	128.50	5,050	17,063
125.95	4,795	4,510	128.55	5,055	17,315
126.00	4,800	4,750	128.60	5,060	17,568
126.05	4,805	4,990	128.65	5,065	17,821
126.10	4,810	5,230	128.70	5,070	18,074
126.15	4,815	5,471	128.75	5,075	18,328
126.20	4,820	5,712	128.80	5,080	18,582
126.25	4,825	5,953	128.85	5,085	18,836
126.30	4,830	6,194	128.90	5,090	19,091
126.35	4,835	6,436	128.95	5,095	19,345
126.40	4,840	6,678	129.00	5,100	19,600
126.45	4,845	6,920			
126.50	4,850	7,163			
126.55	4,855	7,405			
126.60	4,860	7,648			
126.65	4,865	7,891			
126.70	4,870	8,135			
126.75	4,875	8,378			
126.80	4,880	8,622			
126.85	4,885	8,866			
126.90	4,890	9,111			
126.95	4,895	9,355			
127.00	4,900	9,600			
127.05	4,905	9,845			
127.10	4,910	10,090			
127.15	4,915	10,336			
127.20	4,920	10,582			
127.25	4,925	10,828			
127.30	4,930	11,074			
127.35	4,935	11,321			
127.40	4,940	11,568			
127.45	4,945	11,815			
127.50	4,950	12,063			
127.55	4,955	12,310			

Summary for Link 50L: DA East

Inflow Area = 2.070 ac, 46.86% Impervious, Inflow Depth > 1.72" for 2-Year event
Inflow = 1.15 cfs @ 12.47 hrs, Volume= 0.297 af
Primary = 1.15 cfs @ 12.47 hrs, Volume= 0.297 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 52p

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

Link 50L: DA East



Hydrograph for Link 50L: DA East

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
10.00	0.01	0.00	0.01	62.00	0.00	0.00	0.00
11.00	0.02	0.00	0.02	63.00	0.00	0.00	0.00
12.00	0.23	0.00	0.23	64.00	0.00	0.00	0.00
13.00	0.96	0.00	0.96	65.00	0.00	0.00	0.00
14.00	0.57	0.00	0.57	66.00	0.00	0.00	0.00
15.00	0.32	0.00	0.32	67.00	0.00	0.00	0.00
16.00	0.21	0.00	0.21	68.00	0.00	0.00	0.00
17.00	0.16	0.00	0.16	69.00	0.00	0.00	0.00
18.00	0.13	0.00	0.13	70.00	0.00	0.00	0.00
19.00	0.11	0.00	0.11	71.00	0.00	0.00	0.00
20.00	0.10	0.00	0.10	72.00	0.00	0.00	0.00
21.00	0.09	0.00	0.09				
22.00	0.08	0.00	0.08				
23.00	0.08	0.00	0.08				
24.00	0.07	0.00	0.07				
25.00	0.04	0.00	0.04				
26.00	0.02	0.00	0.02				
27.00	0.02	0.00	0.02				
28.00	0.01	0.00	0.01				
29.00	0.01	0.00	0.01				
30.00	0.01	0.00	0.01				
31.00	0.01	0.00	0.01				
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				
51.00	0.00	0.00	0.00				

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 9S: DA Basin A (perv)
Runoff Area=0.700 ac 0.00% Impervious Runoff Depth=2.90"
Flow Length=232' Tc=9.2 min CN=80 Runoff=1.74 cfs 0.169 af

Subcatchment 51S: DA East Undetained
Runoff Area=0.030 ac 100.00% Impervious Runoff Depth=4.77"
Tc=10.7 min CN=98 Runoff=0.10 cfs 0.012 af

Subcatchment 52S: DA Offsite East (Perv)
Runoff Area=0.050 ac 0.00% Impervious Runoff Depth=2.90"
Flow Length=334' Tc=10.7 min CN=80 Runoff=0.12 cfs 0.012 af

Subcatchment 53S: DA East Undetained
Runoff Area=0.350 ac 0.00% Impervious Runoff Depth=2.90"
Tc=10.7 min CN=80 Runoff=0.82 cfs 0.085 af

Subcatchment 54S: DA Basin A (Imp)
Runoff Area=0.930 ac 100.00% Impervious Runoff Depth=4.77"
Flow Length=232' Tc=9.2 min CN=98 Runoff=3.36 cfs 0.370 af

Subcatchment 55S: DA Offsite East (IMP)
Runoff Area=0.010 ac 100.00% Impervious Runoff Depth=4.77"
Tc=10.7 min CN=98 Runoff=0.03 cfs 0.004 af

Pond 51P: Basin A (w/ underdrains)
Peak Elev=127.41' Storage=11.621 cf Inflow=5.10 cfs 0.539 af
Outflow=1.45 cfs 0.446 af

Link 50L: DA East
Inflow=2.17 cfs 0.559 af
Primary=2.17 cfs 0.559 af

Total Runoff Area = 2.070 ac Runoff Volume = 0.652 af
53.14% Pervious = 1.100 ac 46.86% Impervious = 0.970 ac

Summary for Subcatchment 9S: DA Basin A (perv)

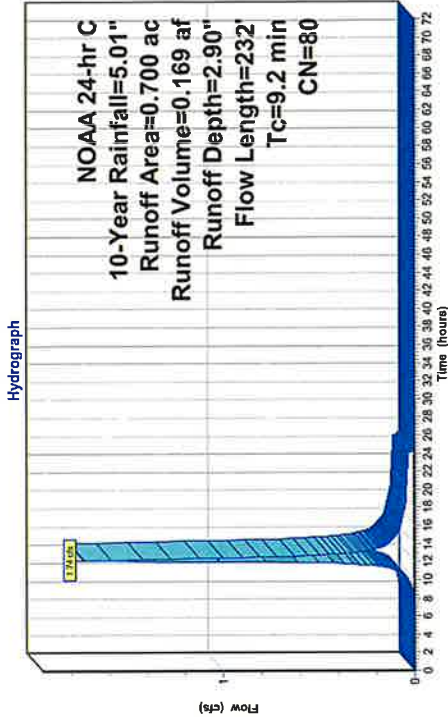
Runoff = 1.74 cfs @ 12.19 hrs, Volume= 0.169 af, Depth= 2.90"
Routed to Pond 51P: Basin A (w/ underdrains)

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year Rainfall=5.01"

Area (ac)	CN	Description
0.700	80	>75% Grass cover, Good, HSG D
0.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	100	0.0672	0.19		Sheet Flow, SF - Grass
					Grass: Dense n= 0.240 P2= 3.34"
0.6	132	0.0606	3.96		Shallow Concentrated Flow, SCF - Grass
					Unpaved Kv= 16.1 fps
9.2	232	Total			

Subcatchment 9S: DA Basin A (perv)



Hydrograph for Subcatchment 9S: DA Basin A (perv)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	5.01	2.90	0.00
1.00	0.05	0.00	0.00	53.00	5.01	2.90	0.00
2.00	0.11	0.00	0.00	54.00	5.01	2.90	0.00
3.00	0.18	0.00	0.00	55.00	5.01	2.90	0.00
4.00	0.25	0.00	0.00	56.00	5.01	2.90	0.00
5.00	0.32	0.00	0.00	57.00	5.01	2.90	0.00
6.00	0.40	0.00	0.00	58.00	5.01	2.90	0.00
7.00	0.49	0.00	0.00	59.00	5.01	2.90	0.00
8.00	0.60	0.00	0.00	60.00	5.01	2.90	0.00
9.00	0.73	0.02	0.01	61.00	5.01	2.90	0.00
10.00	0.91	0.06	0.03	62.00	5.01	2.90	0.00
11.00	1.20	0.15	0.09	63.00	5.01	2.90	0.00
12.00	2.39	0.81	0.78	64.00	5.01	2.90	0.00
13.00	3.81	1.88	0.33	65.00	5.01	2.90	0.00
14.00	4.10	2.12	0.14	66.00	5.01	2.90	0.00
15.00	4.28	2.27	0.10	67.00	5.01	2.90	0.00
16.00	4.41	2.38	0.08	68.00	5.01	2.90	0.00
17.00	4.52	2.48	0.06	69.00	5.01	2.90	0.00
18.00	4.61	2.56	0.05	70.00	5.01	2.90	0.00
19.00	4.69	2.63	0.05	71.00	5.01	2.90	0.00
20.00	4.76	2.69	0.04	72.00	5.01	2.90	0.00
21.00	4.83	2.75	0.04				
22.00	4.90	2.80	0.04				
23.00	4.96	2.85	0.04				
24.00	5.01	2.90	0.03				
25.00	5.01	2.90	0.00				
26.00	5.01	2.90	0.00				
27.00	5.01	2.90	0.00				
28.00	5.01	2.90	0.00				
29.00	5.01	2.90	0.00				
30.00	5.01	2.90	0.00				
31.00	5.01	2.90	0.00				
32.00	5.01	2.90	0.00				
33.00	5.01	2.90	0.00				
34.00	5.01	2.90	0.00				
35.00	5.01	2.90	0.00				
36.00	5.01	2.90	0.00				
37.00	5.01	2.90	0.00				
38.00	5.01	2.90	0.00				
39.00	5.01	2.90	0.00				
40.00	5.01	2.90	0.00				
41.00	5.01	2.90	0.00				
42.00	5.01	2.90	0.00				
43.00	5.01	2.90	0.00				
44.00	5.01	2.90	0.00				
45.00	5.01	2.90	0.00				
46.00	5.01	2.90	0.00				
47.00	5.01	2.90	0.00				
48.00	5.01	2.90	0.00				
49.00	5.01	2.90	0.00				
50.00	5.01	2.90	0.00				
51.00	5.01	2.90	0.00				

Summary for Subcatchment 51S: DA East Undetained (IMP)

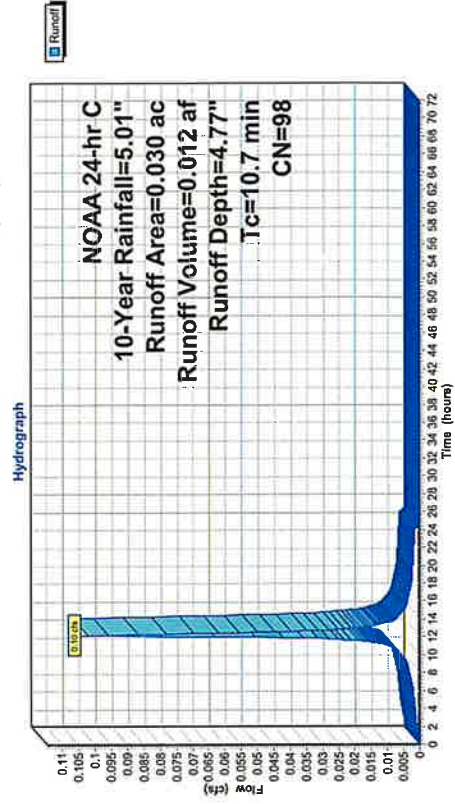
Runoff = 0.10 cfs @ 12.20 hrs, Volume= 0.012 af, Depth= 4.77"
Routed to Link 50L : DA East

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year Rainfall=5.01"

Area (ac)	CN	Description
0.030	98	Paved parking, HSG D
0.030		100.00% Impervious Area

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

Subcatchment 51S: DA East Undetained (IMP)



Hydrograph for Subcatchment 51S: DA East Undetained (IMP)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	5.01	4.77	0.00
1.00	0.05	0.00	0.00	53.00	5.01	4.77	0.00
2.00	0.11	0.02	0.00	54.00	5.01	4.77	0.00
3.00	0.18	0.05	0.00	55.00	5.01	4.77	0.00
4.00	0.25	0.10	0.00	56.00	5.01	4.77	0.00
5.00	0.32	0.16	0.00	57.00	5.01	4.77	0.00
6.00	0.40	0.23	0.00	58.00	5.01	4.77	0.00
7.00	0.49	0.31	0.00	59.00	5.01	4.77	0.00
8.00	0.60	0.41	0.00	60.00	5.01	4.77	0.00
9.00	0.73	0.53	0.00	61.00	5.01	4.77	0.00
10.00	0.91	0.71	0.01	62.00	5.01	4.77	0.00
11.00	1.20	0.99	0.01	63.00	5.01	4.77	0.00
12.00	2.39	2.18	0.05	64.00	5.01	4.77	0.00
13.00	3.81	3.57	0.02	65.00	5.01	4.77	0.00
14.00	4.10	3.86	0.01	66.00	5.01	4.77	0.00
15.00	4.28	4.04	0.00	67.00	5.01	4.77	0.00
16.00	4.41	4.17	0.00	68.00	5.01	4.77	0.00
17.00	4.52	4.29	0.00	69.00	5.01	4.77	0.00
18.00	4.61	4.38	0.00	70.00	5.01	4.77	0.00
19.00	4.69	4.46	0.00	71.00	5.01	4.77	0.00
20.00	4.76	4.53	0.00	72.00	5.01	4.77	0.00
21.00	4.83	4.60	0.00				
22.00	4.90	4.66	0.00				
23.00	4.96	4.72	0.00				
24.00	5.01	4.77	0.00				
25.00	5.01	4.77	0.00				
26.00	5.01	4.77	0.00				
27.00	5.01	4.77	0.00				
28.00	5.01	4.77	0.00				
29.00	5.01	4.77	0.00				
30.00	5.01	4.77	0.00				
31.00	5.01	4.77	0.00				
32.00	5.01	4.77	0.00				
33.00	5.01	4.77	0.00				
34.00	5.01	4.77	0.00				
35.00	5.01	4.77	0.00				
36.00	5.01	4.77	0.00				
37.00	5.01	4.77	0.00				
38.00	5.01	4.77	0.00				
39.00	5.01	4.77	0.00				
40.00	5.01	4.77	0.00				
41.00	5.01	4.77	0.00				
42.00	5.01	4.77	0.00				
43.00	5.01	4.77	0.00				
44.00	5.01	4.77	0.00				
45.00	5.01	4.77	0.00				
46.00	5.01	4.77	0.00				
47.00	5.01	4.77	0.00				
48.00	5.01	4.77	0.00				
49.00	5.01	4.77	0.00				
50.00	5.01	4.77	0.00				
51.00	5.01	4.77	0.00				

Summary for Subcatchment 52S: DA Offsite East (Perv)

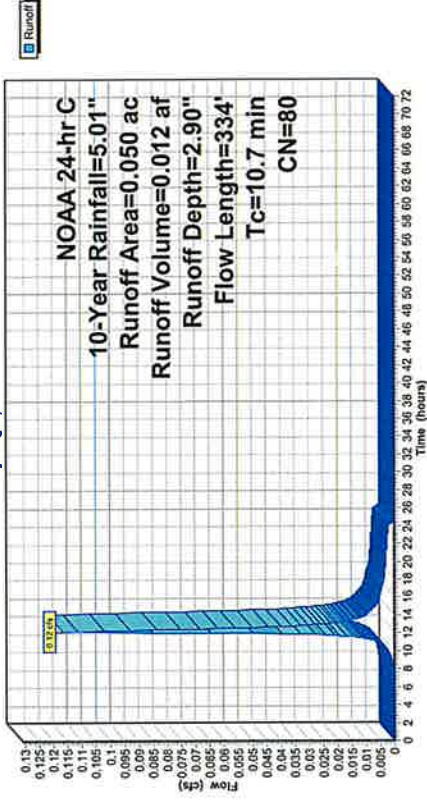
Runoff = 0.12 cfs @ 12.21 hrs, Volume= 0.012 af, Depth= 2.90"
Routed to Link 50L : DA East

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year Rainfall=5.01"

Area (ac)	CN	Description			
0.050	80	>75% Grass cover, Good, HSG D			
0.050		100.00% Pervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	49	0.0140	0.09		Sheet Flow, SF - Grass Grass: Dense n= 0.240 P2= 3.34" Using McCuen-Spless flow length
1.6	285	0.0340	2.97		Shallow Concentrated Flow, SCF - Grass Unpaved Kv= 16.1 fps
10.7	334	Total			

Subcatchment 52S: DA Offsite East (Perv)

Hydrograph



Hydrograph for Subcatchment 52S: DA Offsite East (Perv)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	5.01	2.90	0.00
1.00	0.05	0.00	0.00	53.00	5.01	2.90	0.00
2.00	0.11	0.00	0.00	54.00	5.01	2.90	0.00
3.00	0.18	0.00	0.00	55.00	5.01	2.90	0.00
4.00	0.25	0.00	0.00	56.00	5.01	2.90	0.00
5.00	0.32	0.00	0.00	57.00	5.01	2.90	0.00
6.00	0.40	0.00	0.00	58.00	5.01	2.90	0.00
7.00	0.49	0.00	0.00	59.00	5.01	2.90	0.00
8.00	0.60	0.00	0.00	60.00	5.01	2.90	0.00
9.00	0.73	0.02	0.00	61.00	5.01	2.90	0.00
10.00	0.91	0.06	0.00	62.00	5.01	2.90	0.00
11.00	1.20	0.15	0.01	63.00	5.01	2.90	0.00
12.00	2.39	0.81	0.05	64.00	5.01	2.90	0.00
13.00	3.81	1.88	0.03	65.00	5.01	2.90	0.00
14.00	4.10	2.12	0.01	66.00	5.01	2.90	0.00
15.00	4.28	2.27	0.01	67.00	5.01	2.90	0.00
16.00	4.41	2.38	0.01	68.00	5.01	2.90	0.00
17.00	4.52	2.48	0.00	69.00	5.01	2.90	0.00
18.00	4.61	2.56	0.00	70.00	5.01	2.90	0.00
19.00	4.69	2.63	0.00	71.00	5.01	2.90	0.00
20.00	4.76	2.69	0.00	72.00	5.01	2.90	0.00
21.00	4.83	2.75	0.00				
22.00	4.90	2.80	0.00				
23.00	4.96	2.85	0.00				
24.00	5.01	2.90	0.00				
25.00	5.01	2.90	0.00				
26.00	5.01	2.90	0.00				
27.00	5.01	2.90	0.00				
28.00	5.01	2.90	0.00				
29.00	5.01	2.90	0.00				
30.00	5.01	2.90	0.00				
31.00	5.01	2.90	0.00				
32.00	5.01	2.90	0.00				
33.00	5.01	2.90	0.00				
34.00	5.01	2.90	0.00				
35.00	5.01	2.90	0.00				
36.00	5.01	2.90	0.00				
37.00	5.01	2.90	0.00				
38.00	5.01	2.90	0.00				
39.00	5.01	2.90	0.00				
40.00	5.01	2.90	0.00				
41.00	5.01	2.90	0.00				
42.00	5.01	2.90	0.00				
43.00	5.01	2.90	0.00				
44.00	5.01	2.90	0.00				
45.00	5.01	2.90	0.00				
46.00	5.01	2.90	0.00				
47.00	5.01	2.90	0.00				
48.00	5.01	2.90	0.00				
49.00	5.01	2.90	0.00				
50.00	5.01	2.90	0.00				
51.00	5.01	2.90	0.00				

Summary for Subcatchment 53S: DA East Undetained (Perv)

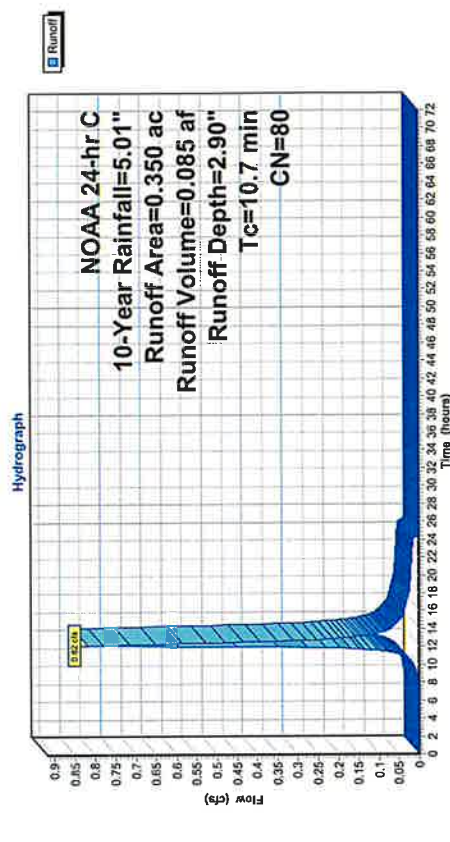
Runoff = 0.82 cfs @ 12.21 hrs, Volume= 0.085 af, Depth= 2.90"
Routed to Link 50L : DA East

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year Rainfall=5.01"

Area (ac)	CN	Description
0.350	80	>75% Grass cover, Good, HSG D
0.350		100.00% Pervious Area

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

Subcatchment 53S: DA East Undetained (Perv)



Hydrograph for Subcatchment 53S: DA East Undetained (Perv)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	5.01	2.90	0.00
1.00	0.05	0.00	0.00	53.00	5.01	2.90	0.00
2.00	0.11	0.00	0.00	54.00	5.01	2.90	0.00
3.00	0.18	0.00	0.00	55.00	5.01	2.90	0.00
4.00	0.25	0.00	0.00	56.00	5.01	2.90	0.00
5.00	0.32	0.00	0.00	57.00	5.01	2.90	0.00
6.00	0.40	0.00	0.00	58.00	5.01	2.90	0.00
7.00	0.49	0.00	0.00	59.00	5.01	2.90	0.00
8.00	0.60	0.00	0.00	60.00	5.01	2.90	0.00
9.00	0.73	0.02	0.01	61.00	5.01	2.90	0.00
10.00	0.91	0.06	0.02	62.00	5.01	2.90	0.00
11.00	1.20	0.15	0.04	63.00	5.01	2.90	0.00
12.00	2.39	0.81	0.35	64.00	5.01	2.90	0.00
13.00	3.81	1.88	0.18	65.00	5.01	2.90	0.00
14.00	4.10	2.12	0.07	66.00	5.01	2.90	0.00
15.00	4.28	2.27	0.05	67.00	5.01	2.90	0.00
16.00	4.41	2.38	0.04	68.00	5.01	2.90	0.00
17.00	4.52	2.48	0.03	69.00	5.01	2.90	0.00
18.00	4.61	2.56	0.03	70.00	5.01	2.90	0.00
19.00	4.69	2.63	0.02	71.00	5.01	2.90	0.00
20.00	4.76	2.69	0.02	72.00	5.01	2.90	0.00
21.00	4.83	2.75	0.02				
22.00	4.90	2.80	0.02				
23.00	4.96	2.85	0.02				
24.00	5.01	2.90	0.02				
25.00	5.01	2.90	0.00				
26.00	5.01	2.90	0.00				
27.00	5.01	2.90	0.00				
28.00	5.01	2.90	0.00				
29.00	5.01	2.90	0.00				
30.00	5.01	2.90	0.00				
31.00	5.01	2.90	0.00				
32.00	5.01	2.90	0.00				
33.00	5.01	2.90	0.00				
34.00	5.01	2.90	0.00				
35.00	5.01	2.90	0.00				
36.00	5.01	2.90	0.00				
37.00	5.01	2.90	0.00				
38.00	5.01	2.90	0.00				
39.00	5.01	2.90	0.00				
40.00	5.01	2.90	0.00				
41.00	5.01	2.90	0.00				
42.00	5.01	2.90	0.00				
43.00	5.01	2.90	0.00				
44.00	5.01	2.90	0.00				
45.00	5.01	2.90	0.00				
46.00	5.01	2.90	0.00				
47.00	5.01	2.90	0.00				
48.00	5.01	2.90	0.00				
49.00	5.01	2.90	0.00				
50.00	5.01	2.90	0.00				
51.00	5.01	2.90	0.00				

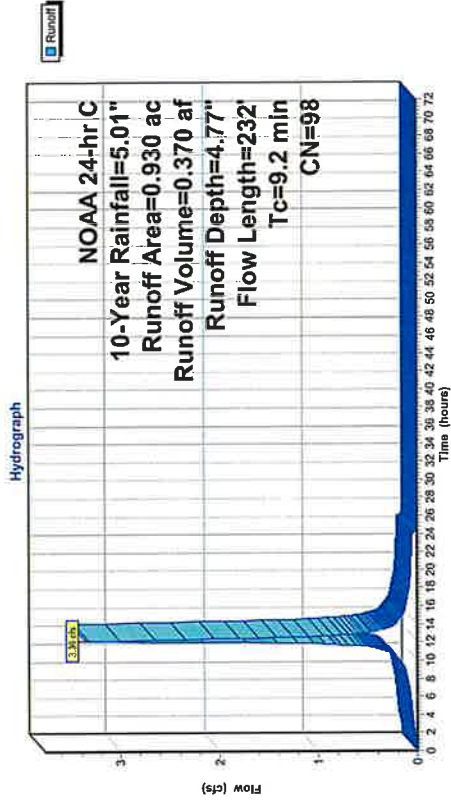
Summary for Subcatchment 54S: DA Basin A (imp)

Runoff = 3.36 cfs @ 12.18 hrs, Volume= 0.370 af, Depth= 4.77"
Routed to Pond 51P : Basin A (w/ underdrains)

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year Rainfall=5.01"

Area (ac)	CN	Description			
0.740	98	Paved parking, HSG D			
0.190	98	Roofs, HSG D			
0.930	98	Weighted Average			
0.930		100.00% Impervious Area			
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	100	0.0672	0.19		Sheet Flow, SF - Grass
					Grass: Dense n= 0.240 P2= 3.34"
0.6	132	0.0606	3.96		Shallow Concentrated Flow, SCF - Grass
					Unpaved Kv= 16.1 fps
9.2	232	Total			

Subcatchment 54S: DA Basin A (Imp)



Hydrograph for Subcatchment 54S: DA Basin A (imp)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	5.01	4.77	0.00
1.00	0.05	0.00	0.00	53.00	5.01	4.77	0.00
2.00	0.11	0.02	0.02	54.00	5.01	4.77	0.00
3.00	0.18	0.05	0.04	55.00	5.01	4.77	0.00
4.00	0.25	0.10	0.05	56.00	5.01	4.77	0.00
5.00	0.32	0.16	0.06	57.00	5.01	4.77	0.00
6.00	0.40	0.23	0.06	58.00	5.01	4.77	0.00
7.00	0.49	0.31	0.08	59.00	5.01	4.77	0.00
8.00	0.60	0.41	0.10	60.00	5.01	4.77	0.00
9.00	0.73	0.53	0.12	61.00	5.01	4.77	0.00
10.00	0.91	0.71	0.18	62.00	5.01	4.77	0.00
11.00	1.20	0.99	0.32	63.00	5.01	4.77	0.00
12.00	2.39	2.16	1.73	64.00	5.01	4.77	0.00
13.00	3.81	3.57	0.55	65.00	5.01	4.77	0.00
14.00	4.10	3.86	0.22	66.00	5.01	4.77	0.00
15.00	4.28	4.04	0.15	67.00	5.01	4.77	0.00
16.00	4.41	4.17	0.12	68.00	5.01	4.77	0.00
17.00	4.52	4.29	0.10	69.00	5.01	4.77	0.00
18.00	4.61	4.38	0.08	70.00	5.01	4.77	0.00
19.00	4.69	4.46	0.07	71.00	5.01	4.77	0.00
20.00	4.76	4.53	0.07	72.00	5.01	4.77	0.00
21.00	4.83	4.60	0.06				
22.00	4.90	4.66	0.06				
23.00	4.96	4.72	0.05				
24.00	5.01	4.77	0.05				
25.00	5.01	4.77	0.00				
26.00	5.01	4.77	0.00				
27.00	5.01	4.77	0.00				
28.00	5.01	4.77	0.00				
29.00	5.01	4.77	0.00				
30.00	5.01	4.77	0.00				
31.00	5.01	4.77	0.00				
32.00	5.01	4.77	0.00				
33.00	5.01	4.77	0.00				
34.00	5.01	4.77	0.00				
35.00	5.01	4.77	0.00				
36.00	5.01	4.77	0.00				
37.00	5.01	4.77	0.00				
38.00	5.01	4.77	0.00				
39.00	5.01	4.77	0.00				
40.00	5.01	4.77	0.00				
41.00	5.01	4.77	0.00				
42.00	5.01	4.77	0.00				
43.00	5.01	4.77	0.00				
44.00	5.01	4.77	0.00				
45.00	5.01	4.77	0.00				
46.00	5.01	4.77	0.00				
47.00	5.01	4.77	0.00				
48.00	5.01	4.77	0.00				
49.00	5.01	4.77	0.00				
50.00	5.01	4.77	0.00				
51.00	5.01	4.77	0.00				

Summary for Subcatchment 55S: DA Offsite East (IMP)

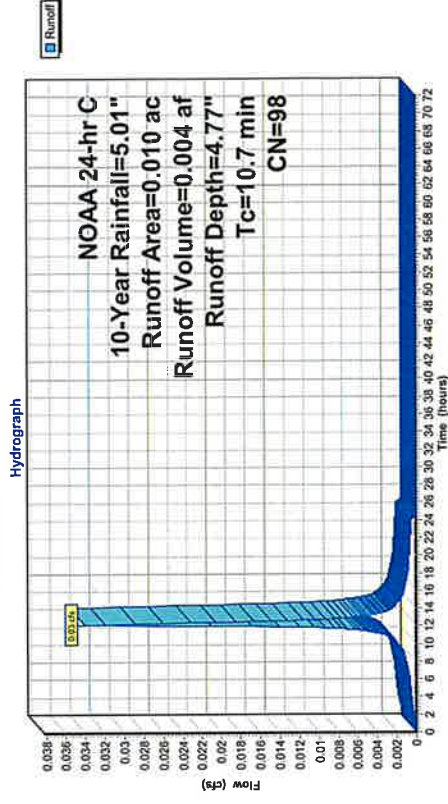
Runoff = 0.03 cfs @ 12.20 hrs, Volume= 0.004 af, Depth= 4.77"
Routed to Link 50L : DA East

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year Rainfall=5.01"

Area (ac)	CN	Description
0.010	98	Paved parking, HSG D
0.010		100.00% Impervious Area

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

Subcatchment 55S: DA Offsite East (IMP)



Hydrograph for Subcatchment 55S: DA Offsite East (IMP)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	5.01	4.77	0.00
1.00	0.05	0.00	0.00	53.00	5.01	4.77	0.00
2.00	0.11	0.02	0.00	54.00	5.01	4.77	0.00
3.00	0.18	0.05	0.00	55.00	5.01	4.77	0.00
4.00	0.25	0.10	0.00	56.00	5.01	4.77	0.00
5.00	0.32	0.16	0.00	57.00	5.01	4.77	0.00
6.00	0.40	0.23	0.00	58.00	5.01	4.77	0.00
7.00	0.49	0.31	0.00	59.00	5.01	4.77	0.00
8.00	0.60	0.41	0.00	60.00	5.01	4.77	0.00
9.00	0.73	0.53	0.00	61.00	5.01	4.77	0.00
10.00	0.91	0.71	0.00	62.00	5.01	4.77	0.00
11.00	1.20	0.98	0.00	63.00	5.01	4.77	0.00
12.00	2.39	2.16	0.02	64.00	5.01	4.77	0.00
13.00	3.81	3.57	0.01	65.00	5.01	4.77	0.00
14.00	4.10	3.86	0.00	66.00	5.01	4.77	0.00
15.00	4.28	4.04	0.00	67.00	5.01	4.77	0.00
16.00	4.41	4.17	0.00	68.00	5.01	4.77	0.00
17.00	4.52	4.29	0.00	69.00	5.01	4.77	0.00
18.00	4.61	4.38	0.00	70.00	5.01	4.77	0.00
19.00	4.69	4.46	0.00	71.00	5.01	4.77	0.00
20.00	4.76	4.53	0.00	72.00	5.01	4.77	0.00
21.00	4.83	4.60	0.00				
22.00	4.90	4.66	0.00				
23.00	4.96	4.72	0.00				
24.00	5.01	4.77	0.00				
25.00	5.01	4.77	0.00				
26.00	5.01	4.77	0.00				
27.00	5.01	4.77	0.00				
28.00	5.01	4.77	0.00				
29.00	5.01	4.77	0.00				
30.00	5.01	4.77	0.00				
31.00	5.01	4.77	0.00				
32.00	5.01	4.77	0.00				
33.00	5.01	4.77	0.00				
34.00	5.01	4.77	0.00				
35.00	5.01	4.77	0.00				
36.00	5.01	4.77	0.00				
37.00	5.01	4.77	0.00				
38.00	5.01	4.77	0.00				
39.00	5.01	4.77	0.00				
40.00	5.01	4.77	0.00				
41.00	5.01	4.77	0.00				
42.00	5.01	4.77	0.00				
43.00	5.01	4.77	0.00				
44.00	5.01	4.77	0.00				
45.00	5.01	4.77	0.00				
46.00	5.01	4.77	0.00				
47.00	5.01	4.77	0.00				
48.00	5.01	4.77	0.00				
49.00	5.01	4.77	0.00				
50.00	5.01	4.77	0.00				
51.00	5.01	4.77	0.00				

Summary for Pond 51P: Basin A (w/ underdrains)

Inflow Area = 1,630 ac, 57.06% Impervious, Inflow Depth = 3.97" for 10-Year event
Inflow = 5.10 cfs @ 12.18 hrs, Volume= 0.539 af
Outflow = 1.45 cfs @ 12.72 hrs, Volume= 0.446 af, Atten= 72%, Lag= 32.4 min
Primary = 1.45 cfs @ 12.72 hrs, Volume= 0.446 af
Routed to Link 50L : DA East

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 127.41' @ 12.72 hrs Surf.Area= 4,941 sf Storage= 11,621 cf

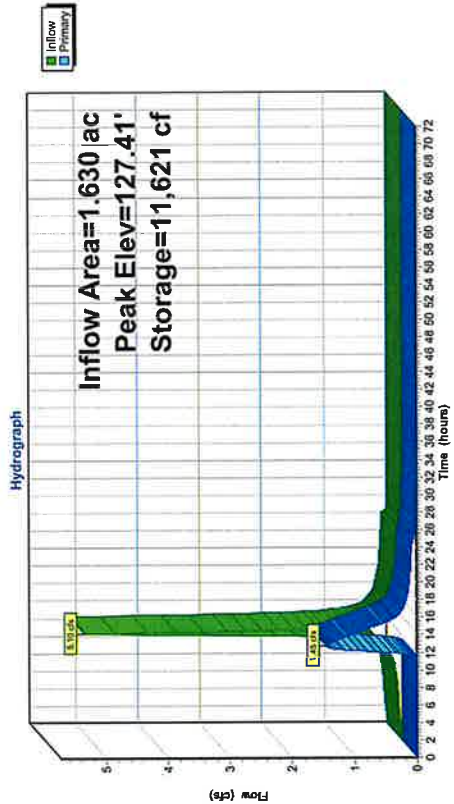
Plug-Flow detention time= 226.7 min calculated for 0.446 af (83% of inflow)
Center-of-Mass det. time= 151.9 min (933.2 - 781.3)

Volume	Invert	Avail. Storage	Storage Description
#1	125.00'	19,600 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf. Area (sq-ft)	Inc. Store (cubic-feet)	Cum. Store (cubic-feet)
125.00	4,700	0	0
126.00	4,800	4,750	4,750
127.00	4,900	4,850	9,600
128.00	5,000	4,950	14,550
129.00	5,100	5,050	19,600

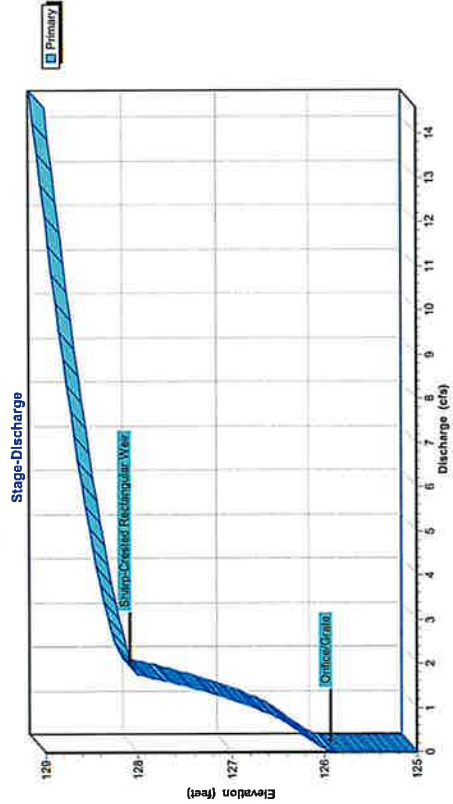
Device	Routing	Invert	Outlet Devices
#1	Primary	125.85'	7.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	128.00'	4.0' long Sharp-Crested Rectangular Weir 2 End Contractions

Primary Outflow Max=1.45 cfs @ 12.72 hrs HW=127.41' (Free Discharge)
1=Orifice/Grate (Orifice Controls 1.45 cfs @ 5.42 fps)
2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

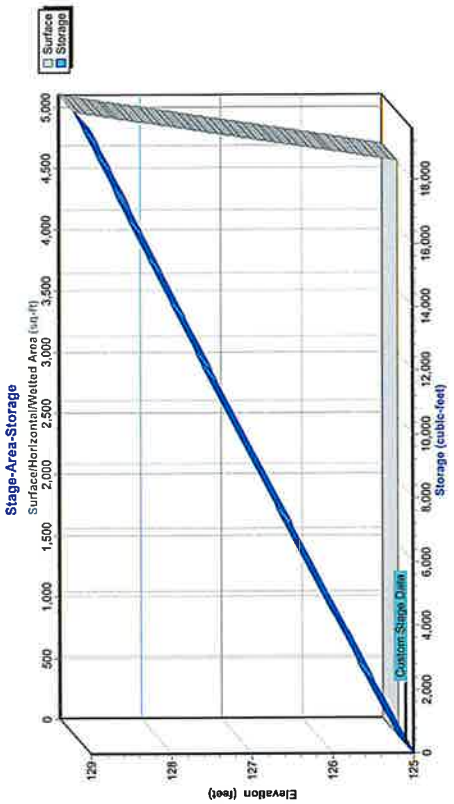
Pond 51P: Basin A (w/ underdrains)



Pond 51P: Basin A (w/ underdrains)



Pond 51P: Basin A (w/ underdrains)



Hydrograph for Pond 51P: Basin A (w/ underdrains)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	125.00	0.00
2.50	0.03	92	125.02	0.00
5.00	0.06	492	125.10	0.00
7.50	0.09	1,124	125.24	0.00
10.00	0.22	2,349	125.50	0.00
12.50	2.50	11,231	127.33	1.40
15.00	0.25	6,733	126.41	0.67
17.50	0.15	5,274	126.11	0.20
20.00	0.11	5,000	126.05	0.13
22.50	0.09	4,897	126.03	0.10
25.00	0.00	4,650	125.98	0.05
27.50	0.00	4,371	125.92	0.02
30.00	0.00	4,259	125.90	0.01
32.50	0.00	4,189	125.89	0.00
35.00	0.00	4,167	125.88	0.00
37.50	0.00	4,143	125.87	0.00
40.00	0.00	4,123	125.87	0.00
42.50	0.00	4,107	125.87	0.00
45.00	0.00	4,094	125.86	0.00
47.50	0.00	4,083	125.86	0.00
50.00	0.00	4,074	125.86	0.00
52.50	0.00	4,066	125.86	0.00
55.00	0.00	4,055	125.86	0.00
57.50	0.00	4,051	125.85	0.00
60.00	0.00	4,047	125.85	0.00
62.50	0.00	4,045	125.85	0.00
65.00	0.00	4,042	125.85	0.00
67.50	0.00	4,040	125.85	0.00
70.00	0.00			

Stage-Discharge for Pond 51P: Basin A (w/ underdrains)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
125.00	0.00	126.04	0.11	127.08	1.25
125.02	0.00	126.06	0.14	127.10	1.26
125.04	0.00	126.08	0.16	127.12	1.27
125.06	0.00	126.10	0.19	127.14	1.29
125.08	0.00	126.12	0.21	127.16	1.30
125.10	0.00	126.14	0.24	127.18	1.31
125.12	0.00	126.16	0.27	127.20	1.32
125.14	0.00	126.18	0.30	127.22	1.34
125.16	0.00	126.20	0.34	127.24	1.35
125.18	0.00	126.22	0.37	127.26	1.36
125.20	0.00	126.24	0.40	127.28	1.37
125.22	0.00	126.26	0.44	127.30	1.38
125.24	0.00	126.28	0.47	127.32	1.40
125.26	0.00	126.30	0.51	127.34	1.41
125.28	0.00	126.32	0.54	127.36	1.42
125.30	0.00	126.34	0.57	127.38	1.43
125.32	0.00	126.36	0.60	127.40	1.44
125.34	0.00	126.38	0.63	127.42	1.45
125.36	0.00	126.40	0.66	127.44	1.47
125.38	0.00	126.42	0.68	127.46	1.48
125.40	0.00	126.44	0.70	127.48	1.49
125.42	0.00	126.46	0.73	127.50	1.50
125.44	0.00	126.48	0.75	127.52	1.51
125.46	0.00	126.50	0.77	127.54	1.52
125.48	0.00	126.52	0.79	127.56	1.53
125.50	0.00	126.54	0.81	127.58	1.54
125.52	0.00	126.56	0.83	127.60	1.55
125.54	0.00	126.58	0.85	127.62	1.56
125.56	0.00	126.60	0.87	127.64	1.58
125.58	0.00	126.62	0.89	127.66	1.59
125.60	0.00	126.64	0.91	127.68	1.60
125.62	0.00	126.66	0.93	127.70	1.61
125.64	0.00	126.68	0.94	127.72	1.62
125.66	0.00	126.70	0.96	127.74	1.63
125.68	0.00	126.72	0.98	127.76	1.64
125.70	0.00	126.74	1.00	127.78	1.65
125.72	0.00	126.76	1.01	127.80	1.66
125.74	0.00	126.78	1.03	127.82	1.67
125.76	0.00	126.80	1.04	127.84	1.68
125.78	0.00	126.82	1.06	127.86	1.69
125.80	0.00	126.84	1.08	127.88	1.70
125.82	0.00	126.86	1.09	127.90	1.71
125.84	0.00	126.88	1.11	127.92	1.72
125.86	0.00	126.90	1.12	127.94	1.73
125.88	0.00	126.92	1.14	127.96	1.74
125.90	0.01	126.94	1.15	127.98	1.74
125.92	0.02	126.96	1.16	128.00	1.75
125.94	0.03	126.98	1.18	128.02	1.80
125.96	0.04	127.00	1.19	128.04	1.88
125.98	0.05	127.02	1.21	128.06	1.97
126.00	0.07	127.04	1.22	128.08	2.09
126.02	0.09	127.06	1.23	128.10	2.21

Stage-Area-Storage for Pond 51P: Basin A (w/ underdrains)

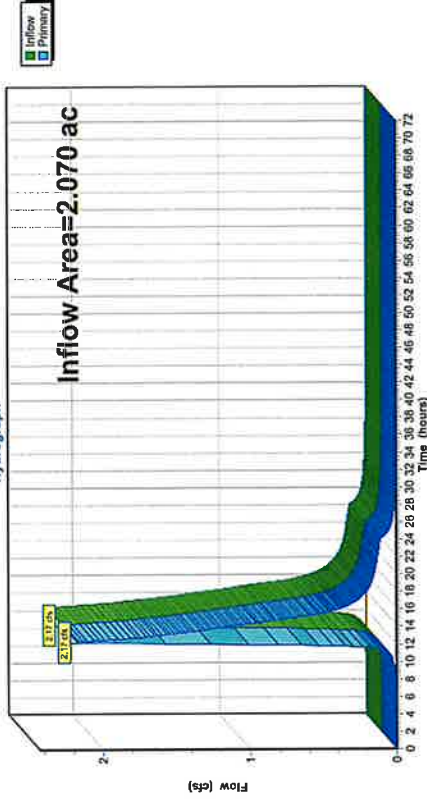
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
123.00	4,700	0	127.60	4,960	12,558
125.05	4,705	235	127.65	4,965	12,806
125.10	4,710	470	127.70	4,970	13,055
125.15	4,715	705	127.75	4,975	13,303
125.20	4,720	942	127.80	4,980	13,552
125.25	4,725	1,178	127.85	4,985	13,801
125.30	4,730	1,414	127.90	4,990	14,051
125.35	4,735	1,651	127.95	4,995	14,300
125.40	4,740	1,888	128.00	5,000	14,550
125.45	4,745	2,125	128.05	5,005	14,800
125.50	4,750	2,363	128.10	5,010	15,050
125.55	4,755	2,600	128.15	5,015	15,301
125.60	4,760	2,838	128.20	5,020	15,552
125.65	4,765	3,076	128.25	5,025	15,803
125.70	4,770	3,315	128.30	5,030	16,055
125.75	4,775	3,553	128.35	5,035	16,306
125.80	4,780	3,792	128.40	5,040	16,558
125.85	4,785	4,031	128.45	5,045	16,810
125.90	4,790	4,271	128.50	5,050	17,063
125.95	4,795	4,510	128.55	5,055	17,315
126.00	4,800	4,750	128.60	5,060	17,568
126.05	4,805	4,990	128.65	5,065	17,821
126.10	4,810	5,230	128.70	5,070	18,074
126.15	4,815	5,471	128.75	5,075	18,328
126.20	4,820	5,712	128.80	5,080	18,582
126.25	4,825	5,953	128.85	5,085	18,836
126.30	4,830	6,194	128.90	5,090	19,091
126.35	4,835	6,436	128.95	5,095	19,345
126.40	4,840	6,678	129.00	5,100	19,600
126.45	4,845	6,920			
126.50	4,850	7,163			
126.55	4,855	7,405			
126.60	4,860	7,648			
126.65	4,865	7,891			
126.70	4,870	8,135			
126.75	4,875	8,378			
126.80	4,880	8,622			
126.85	4,885	8,866			
126.90	4,890	9,111			
126.95	4,895	9,355			
127.00	4,900	9,600			
127.05	4,905	9,845			
127.10	4,910	10,090			
127.15	4,915	10,336			
127.20	4,920	10,582			
127.25	4,925	10,828			
127.30	4,930	11,074			
127.35	4,935	11,321			
127.40	4,940	11,568			
127.45	4,945	11,815			
127.50	4,950	12,063			
127.55	4,955	12,310			

Summary for Link 50L: DA East

Inflow Area = 2.070 ac, 46.86% Impervious, Inflow Depth = 3.24" for 10-Year event
Inflow = 2.17 cfs @ 12.27 hrs, Volume= 0.559 af
Primary = 2.17 cfs @ 12.27 hrs, Volume= 0.559 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 52P
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 50L: DA East

Hydrograph



Hydrograph for Link 50L: DA East

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
8.00	0.01	0.00	0.01	60.00	0.00	0.00	0.00
9.00	0.01	0.00	0.01	61.00	0.00	0.00	0.00
10.00	0.03	0.00	0.03	62.00	0.00	0.00	0.00
11.00	0.06	0.00	0.06	63.00	0.00	0.00	0.00
12.00	1.01	0.00	1.01	64.00	0.00	0.00	0.00
13.00	1.65	0.00	1.65	65.00	0.00	0.00	0.00
14.00	1.16	0.00	1.16	66.00	0.00	0.00	0.00
15.00	0.73	0.00	0.73	67.00	0.00	0.00	0.00
16.00	0.40	0.00	0.40	68.00	0.00	0.00	0.00
17.00	0.27	0.00	0.27	69.00	0.00	0.00	0.00
18.00	0.21	0.00	0.21	70.00	0.00	0.00	0.00
19.00	0.17	0.00	0.17	71.00	0.00	0.00	0.00
20.00	0.15	0.00	0.15	72.00	0.00	0.00	0.00
21.00	0.14	0.00	0.14				
22.00	0.13	0.00	0.13				
23.00	0.12	0.00	0.12				
24.00	0.11	0.00	0.11				
25.00	0.05	0.00	0.05				
26.00	0.03	0.00	0.03				
27.00	0.02	0.00	0.02				
28.00	0.01	0.00	0.01				
29.00	0.01	0.00	0.01				
30.00	0.01	0.00	0.01				
31.00	0.01	0.00	0.01				
32.00	0.01	0.00	0.01				
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				
51.00	0.00	0.00	0.00				

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

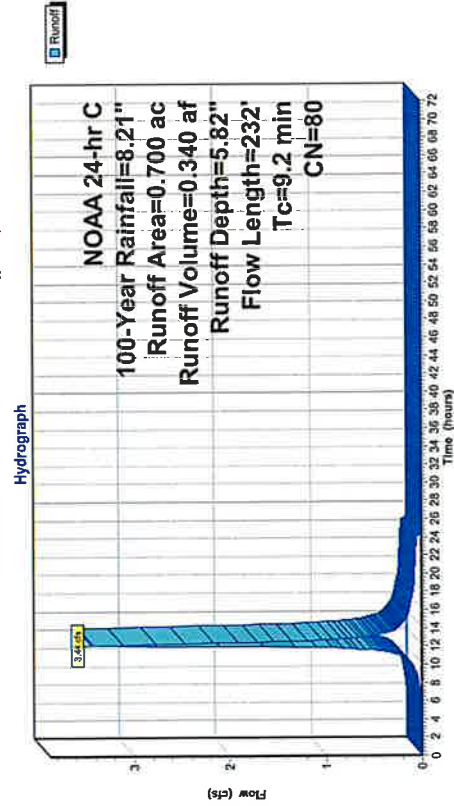
Subcatchment 9S: DA Basin A (perv)	Runoff Area=0.700 ac	0.00% Impervious	Runoff Depth=5.82"	Flow Length=232'	Tc=9.2 min	CN=80	Runoff=3.44 cfs	0.340 af
Subcatchment 51S: DA East Undetained	Runoff Area=0.030 ac	100.00% Impervious	Runoff Depth=7.97"	Tc=10.7 min	CN=98	Runoff=0.17 cfs	0.020 af	
Subcatchment 52S: DA Offsite East (Perv)	Runoff Area=0.050 ac	0.00% Impervious	Runoff Depth=5.82"	Flow Length=334'	Tc=10.7 min	CN=80	Runoff=0.23 cfs	0.024 af
Subcatchment 53S: DA East Undetained	Runoff Area=0.350 ac	0.00% Impervious	Runoff Depth=5.82"	Tc=10.7 min	CN=80	Runoff=1.62 cfs	0.170 af	
Subcatchment 54S: DA Basin A (Imp)	Runoff Area=0.930 ac	100.00% Impervious	Runoff Depth=7.97"	Flow Length=232'	Tc=9.2 min	CN=98	Runoff=5.53 cfs	0.618 af
Subcatchment 55S: DA Offsite East (IMP)	Runoff Area=0.010 ac	100.00% Impervious	Runoff Depth=7.97"	Tc=10.7 min	CN=98	Runoff=0.06 cfs	0.007 af	
Pond 51P: Basin A (w/ underdrains)	Peak Elev=128.38'	Storage=16.465 cf	Inflow=8.97 cfs	0.957 af	Outflow=4.95 cfs	0.865 af		
Link 50L: DA East			Inflow=6.31 cfs	1.085 af	Primary=6.31 cfs	1.085 af		

Total Runoff Area = 2.070 ac Runoff Volume = 1.178 af Average Runoff Depth = 6.83"
53.14% Pervious = 1.100 ac 46.86% Impervious = 0.970 ac

Summary for Subcatchment 9S: DA Basin A (perv)

Runoff = 3.44 cfs @ 12.18 hrs, Volume= 0.340 af, Depth= 5.82"	
Routed to Pond 51P : Basin A (w/ underdrains)	
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs	
NOAA 24-hr C 100-Year Rainfall=8.21"	
Area (ac)	CN Description
0.700	80 >75% Grass cover, Good, HSG D
0.700	100.00% Pervious Area
Tc	Slope Velocity Capacity Description
(min)	(ft/ft) (ft/sec) (cfs)
8.6	100 0.0672 0.19
0.6	132 0.0606 3.96
Sheet Flow, SF - Grass Grass: Dense n= 0.240 P2= 3.34"	
Shallow Concentrated Flow, SCF - Grass Unpaved Kv= 16.1 fps	
9.2	232 Total

Subcatchment 9S: DA Basin A (perv)



Hydrograph for Subcatchment 9S: DA Basin A (perv)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	8.21	5.82	0.00
1.00	0.09	0.00	0.00	53.00	8.21	5.82	0.00
2.00	0.19	0.00	0.00	54.00	8.21	5.82	0.00
3.00	0.29	0.00	0.00	55.00	8.21	5.82	0.00
4.00	0.40	0.00	0.00	56.00	8.21	5.82	0.00
5.00	0.52	0.00	0.00	57.00	8.21	5.82	0.00
6.00	0.65	0.01	0.01	58.00	8.21	5.82	0.00
7.00	0.80	0.03	0.02	59.00	8.21	5.82	0.00
8.00	0.98	0.08	0.04	60.00	8.21	5.82	0.00
9.00	1.20	0.15	0.06	61.00	8.21	5.82	0.00
10.00	1.50	0.28	0.11	62.00	8.21	5.82	0.00
11.00	1.97	0.54	0.23	63.00	8.21	5.82	0.00
12.00	3.91	1.97	1.65	64.00	8.21	5.82	0.00
13.00	6.24	4.00	0.62	65.00	8.21	5.82	0.00
14.00	6.71	4.43	0.25	66.00	8.21	5.82	0.00
15.00	7.01	4.70	0.17	67.00	8.21	5.82	0.00
16.00	7.23	4.90	0.14	68.00	8.21	5.82	0.00
17.00	7.41	5.07	0.11	69.00	8.21	5.82	0.00
18.00	7.56	5.21	0.09	70.00	8.21	5.82	0.00
19.00	7.69	5.33	0.08	71.00	8.21	5.82	0.00
20.00	7.81	5.45	0.08	72.00	8.21	5.82	0.00
21.00	7.92	5.55	0.07				
22.00	8.02	5.65	0.07				
23.00	8.12	5.74	0.06				
24.00	8.21	5.82	0.06				
25.00	8.21	5.82	0.00				
26.00	8.21	5.82	0.00				
27.00	8.21	5.82	0.00				
28.00	8.21	5.82	0.00				
29.00	8.21	5.82	0.00				
30.00	8.21	5.82	0.00				
31.00	8.21	5.82	0.00				
32.00	8.21	5.82	0.00				
33.00	8.21	5.82	0.00				
34.00	8.21	5.82	0.00				
35.00	8.21	5.82	0.00				
36.00	8.21	5.82	0.00				
37.00	8.21	5.82	0.00				
38.00	8.21	5.82	0.00				
39.00	8.21	5.82	0.00				
40.00	8.21	5.82	0.00				
41.00	8.21	5.82	0.00				
42.00	8.21	5.82	0.00				
43.00	8.21	5.82	0.00				
44.00	8.21	5.82	0.00				
45.00	8.21	5.82	0.00				
46.00	8.21	5.82	0.00				
47.00	8.21	5.82	0.00				
48.00	8.21	5.82	0.00				
49.00	8.21	5.82	0.00				
50.00	8.21	5.82	0.00				
51.00	8.21	5.82	0.00				

Summary for Subcatchment 51S: DA East Undetained (IMP)

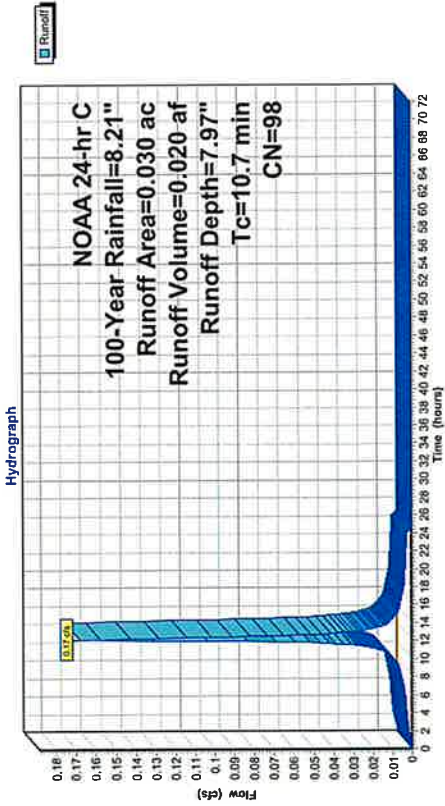
Runoff = 0.17 cfs @ 12.20 hrs, Volume= 0.020 af, Depth= 7.97"
Routed to Link 50L : DA East

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year Rainfall=8.21"

Area (ac)	CN	Description
0.030	98	Paved parking, HSG D
0.030		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description

Subcatchment 51S: DA East Undetained (IMP)



Hydrograph for Subcatchment 51S: DA East Undetained (IMP)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	8.21	7.97	0.00
1.00	0.09	0.01	0.00	53.00	8.21	7.97	0.00
2.00	0.19	0.06	0.00	54.00	8.21	7.97	0.00
3.00	0.29	0.14	0.00	55.00	8.21	7.97	0.00
4.00	0.40	0.23	0.00	56.00	8.21	7.97	0.00
5.00	0.52	0.34	0.00	57.00	8.21	7.97	0.00
6.00	0.65	0.46	0.00	58.00	8.21	7.97	0.00
7.00	0.80	0.60	0.00	59.00	8.21	7.97	0.00
8.00	0.98	0.78	0.01	60.00	8.21	7.97	0.00
9.00	1.20	0.98	0.01	61.00	8.21	7.97	0.00
10.00	1.50	1.28	0.01	62.00	8.21	7.97	0.00
11.00	1.97	1.74	0.02	63.00	8.21	7.97	0.00
12.00	3.91	3.68	0.03	64.00	8.21	7.97	0.00
13.00	6.24	6.00	0.03	65.00	8.21	7.97	0.00
14.00	6.71	6.47	0.01	66.00	8.21	7.97	0.00
15.00	7.01	6.77	0.01	67.00	8.21	7.97	0.00
16.00	7.23	6.99	0.01	68.00	8.21	7.97	0.00
17.00	7.41	7.17	0.01	69.00	8.21	7.97	0.00
18.00	7.56	7.32	0.00	70.00	8.21	7.97	0.00
19.00	7.69	7.45	0.00	71.00	8.21	7.97	0.00
20.00	7.81	7.57	0.00	72.00	8.21	7.97	0.00
21.00	7.92	7.68	0.00				
22.00	8.02	7.78	0.00				
23.00	8.12	7.88	0.00				
24.00	8.21	7.97	0.00				
25.00	8.21	7.97	0.00				
26.00	8.21	7.97	0.00				
27.00	8.21	7.97	0.00				
28.00	8.21	7.97	0.00				
29.00	8.21	7.97	0.00				
30.00	8.21	7.97	0.00				
31.00	8.21	7.97	0.00				
32.00	8.21	7.97	0.00				
33.00	8.21	7.97	0.00				
34.00	8.21	7.97	0.00				
35.00	8.21	7.97	0.00				
36.00	8.21	7.97	0.00				
37.00	8.21	7.97	0.00				
38.00	8.21	7.97	0.00				
39.00	8.21	7.97	0.00				
40.00	8.21	7.97	0.00				
41.00	8.21	7.97	0.00				
42.00	8.21	7.97	0.00				
43.00	8.21	7.97	0.00				
44.00	8.21	7.97	0.00				
45.00	8.21	7.97	0.00				
46.00	8.21	7.97	0.00				
47.00	8.21	7.97	0.00				
48.00	8.21	7.97	0.00				
49.00	8.21	7.97	0.00				
50.00	8.21	7.97	0.00				
51.00	8.21	7.97	0.00				

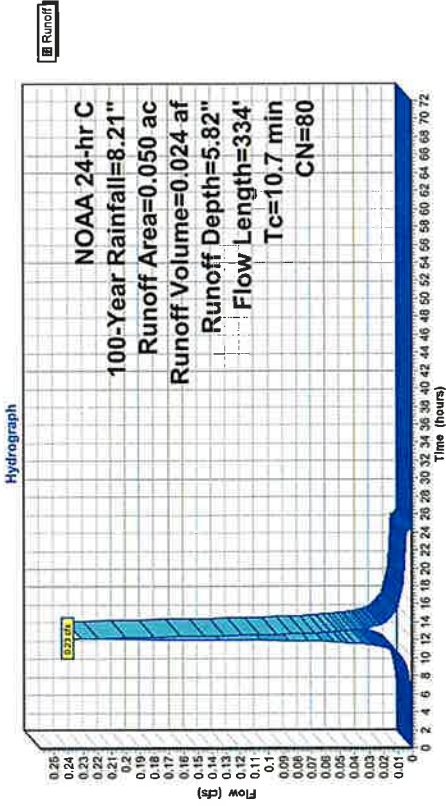
Summary for Subcatchment 52S: DA Offsite East (Perv)

Runoff = 0.23 cfs @ 12.20 hrs, Volume= 0.024 af, Depth= 5.82"
Routed to Link 50L : DA East

Runoff by SCS TR-20 method, UH=Delmanva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year Rainfall=8.21"

Area (ac)	CN	Description		
0.050	80	>75% Grass cover, Good, HSG D		
0.050		100.00% Pervious Area		
Tc (min)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	49	0.0140	0.09	Sheet Flow, SF - Grass Grass: Dense n= 0.240 P2= 3.34" Using McCuen-Spess flow length
1.6	285	0.0340	2.97	Shallow Concentrated Flow, SCF - Grass Unpaved Kv= 16.1 fps

Subcatchment 52S: DA Offsite East (Perv)



Hydrograph for Subcatchment 52S: DA Offsite East (Perv)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	8.21	5.82	0.00
1.00	0.09	0.00	0.00	53.00	8.21	5.82	0.00
2.00	0.19	0.00	0.00	54.00	8.21	5.82	0.00
3.00	0.29	0.00	0.00	55.00	8.21	5.82	0.00
4.00	0.40	0.00	0.00	56.00	8.21	5.82	0.00
5.00	0.52	0.00	0.00	57.00	8.21	5.82	0.00
6.00	0.65	0.01	0.00	58.00	8.21	5.82	0.00
7.00	0.80	0.03	0.00	59.00	8.21	5.82	0.00
8.00	0.96	0.08	0.00	60.00	8.21	5.82	0.00
9.00	1.20	0.15	0.00	61.00	8.21	5.82	0.00
10.00	1.50	0.28	0.01	62.00	8.21	5.82	0.00
11.00	1.97	0.54	0.02	63.00	8.21	5.82	0.00
12.00	3.91	1.97	0.11	64.00	8.21	5.82	0.00
13.00	6.24	4.00	0.05	65.00	8.21	5.82	0.00
14.00	6.71	4.43	0.02	66.00	8.21	5.82	0.00
15.00	7.01	4.70	0.01	67.00	8.21	5.82	0.00
16.00	7.23	4.90	0.01	68.00	8.21	5.82	0.00
17.00	7.41	5.07	0.01	69.00	8.21	5.82	0.00
18.00	7.56	5.21	0.01	70.00	8.21	5.82	0.00
19.00	7.69	5.33	0.01	71.00	8.21	5.82	0.00
20.00	7.81	5.45	0.01	72.00	8.21	5.82	0.00
21.00	7.92	5.55	0.01				
22.00	8.02	5.65	0.00				
23.00	8.12	5.74	0.00				
24.00	8.21	5.82	0.00				
25.00	8.21	5.82	0.00				
26.00	8.21	5.82	0.00				
27.00	8.21	5.82	0.00				
28.00	8.21	5.82	0.00				
29.00	8.21	5.82	0.00				
30.00	8.21	5.82	0.00				
31.00	8.21	5.82	0.00				
32.00	8.21	5.82	0.00				
33.00	8.21	5.82	0.00				
34.00	8.21	5.82	0.00				
35.00	8.21	5.82	0.00				
36.00	8.21	5.82	0.00				
37.00	8.21	5.82	0.00				
38.00	8.21	5.82	0.00				
39.00	8.21	5.82	0.00				
40.00	8.21	5.82	0.00				
41.00	8.21	5.82	0.00				
42.00	8.21	5.82	0.00				
43.00	8.21	5.82	0.00				
44.00	8.21	5.82	0.00				
45.00	8.21	5.82	0.00				
46.00	8.21	5.82	0.00				
47.00	8.21	5.82	0.00				
48.00	8.21	5.82	0.00				
49.00	8.21	5.82	0.00				
50.00	8.21	5.82	0.00				
51.00	8.21	5.82	0.00				

Summary for Subcatchment 53S: DA East Undetained (Perv)

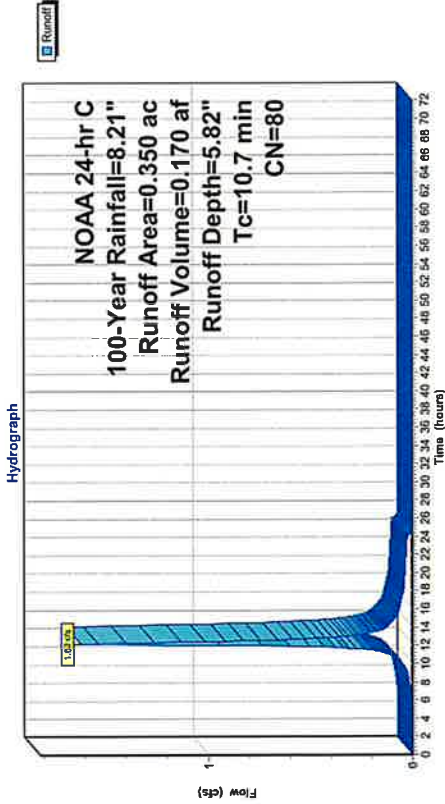
Runoff = 1.62 cfs @ 12.20 hrs, Volume= 0.170 af, Depth= 5.82"
 Routed to Link 50L : DA East

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 100-Year Rainfall=8.21"

Area (ac)	CN	Description
0.350	80	>75% Grass cover, Good, HSG D
0.350		100.00% Pervious Area

Tc (min)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7				Direct Entry,

Subcatchment 53S: DA East Undetained (Perv)



Hydrograph for Subcatchment 53S: DA East Undetained (Perv)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	8.21	5.82	0.00
1.00	0.09	0.00	0.00	53.00	8.21	5.82	0.00
2.00	0.19	0.00	0.00	54.00	8.21	5.82	0.00
3.00	0.29	0.00	0.00	55.00	8.21	5.82	0.00
4.00	0.40	0.00	0.00	56.00	8.21	5.82	0.00
5.00	0.52	0.00	0.00	57.00	8.21	5.82	0.00
6.00	0.65	0.01	0.00	58.00	8.21	5.82	0.00
7.00	0.80	0.03	0.01	59.00	8.21	5.82	0.00
8.00	0.98	0.08	0.02	60.00	8.21	5.82	0.00
9.00	1.20	0.15	0.03	61.00	8.21	5.82	0.00
10.00	1.50	0.28	0.05	62.00	8.21	5.82	0.00
11.00	1.97	0.54	0.11	63.00	8.21	5.82	0.00
12.00	3.91	1.97	0.74	64.00	8.21	5.82	0.00
13.00	6.24	4.00	0.34	65.00	8.21	5.82	0.00
14.00	6.71	4.43	0.13	66.00	8.21	5.82	0.00
15.00	7.01	4.70	0.09	67.00	8.21	5.82	0.00
16.00	7.23	4.90	0.07	68.00	8.21	5.82	0.00
17.00	7.41	5.07	0.06	69.00	8.21	5.82	0.00
18.00	7.56	5.21	0.05	70.00	8.21	5.82	0.00
19.00	7.69	5.33	0.04	71.00	8.21	5.82	0.00
20.00	7.81	5.45	0.04	72.00	8.21	5.82	0.00
21.00	7.92	5.55	0.04				
22.00	8.02	5.65	0.03				
23.00	8.12	5.74	0.03				
24.00	8.21	5.82	0.03				
25.00	8.21	5.82	0.00				
26.00	8.21	5.82	0.00				
27.00	8.21	5.82	0.00				
28.00	8.21	5.82	0.00				
29.00	8.21	5.82	0.00				
30.00	8.21	5.82	0.00				
31.00	8.21	5.82	0.00				
32.00	8.21	5.82	0.00				
33.00	8.21	5.82	0.00				
34.00	8.21	5.82	0.00				
35.00	8.21	5.82	0.00				
36.00	8.21	5.82	0.00				
37.00	8.21	5.82	0.00				
38.00	8.21	5.82	0.00				
39.00	8.21	5.82	0.00				
40.00	8.21	5.82	0.00				
41.00	8.21	5.82	0.00				
42.00	8.21	5.82	0.00				
43.00	8.21	5.82	0.00				
44.00	8.21	5.82	0.00				
45.00	8.21	5.82	0.00				
46.00	8.21	5.82	0.00				
47.00	8.21	5.82	0.00				
48.00	8.21	5.82	0.00				
49.00	8.21	5.82	0.00				
50.00	8.21	5.82	0.00				
51.00	8.21	5.82	0.00				

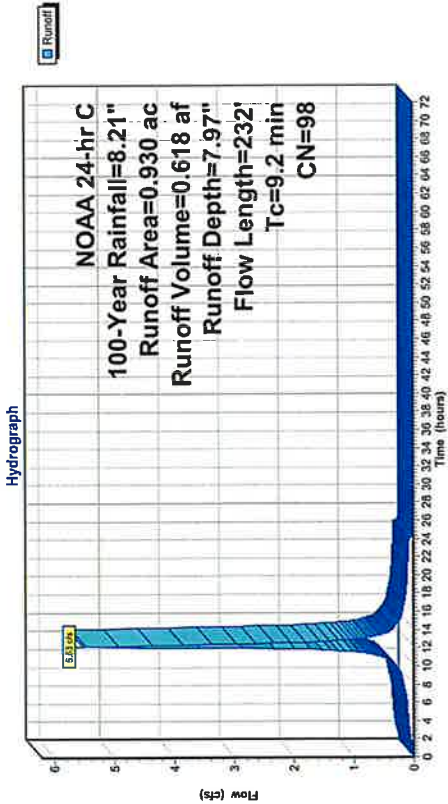
Summary for Subcatchment 54S: DA Basin A (imp)

Runoff = 5.53 cfs @ 12.18 hrs, Volume= 0.618 af, Depth= 7.97"
Routed to Pond 51P : Basin A (w/ underdrains)

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year Rainfall=8.21"

Area (ac)	CN	Description		
0.740	98	Paved parking, HSG D		
0.190	98	Roofs, HSG D		
0.930	98	Weighted Average		
0.930		100.00% Impervious Area		
Tc (min)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6	100	0.0672	0.19	Sheet Flow, SF - Grass
				Grass: Dense n= 0.240 P2= 3.34"
0.6	132	0.0806	3.96	Shallow Concentrated Flow, SCF - Grass
				Unpaved Kv= 16.1 fps

Subcatchment 54S: DA Basin A (imp)



Hydrograph for Subcatchment 54S: DA Basin A (imp)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	8.21	7.97	0.00
1.00	0.09	0.01	0.02	53.00	8.21	7.97	0.00
2.00	0.19	0.06	0.06	54.00	8.21	7.97	0.00
3.00	0.29	0.14	0.08	55.00	8.21	7.97	0.00
4.00	0.40	0.23	0.09	56.00	8.21	7.97	0.00
5.00	0.52	0.34	0.10	57.00	8.21	7.97	0.00
6.00	0.65	0.46	0.11	58.00	8.21	7.97	0.00
7.00	0.80	0.60	0.14	59.00	8.21	7.97	0.00
8.00	0.98	0.78	0.17	60.00	8.21	7.97	0.00
9.00	1.20	0.98	0.21	61.00	8.21	7.97	0.00
10.00	1.50	1.28	0.30	62.00	8.21	7.97	0.00
11.00	1.97	1.74	0.52	63.00	8.21	7.97	0.00
12.00	3.91	3.68	2.86	64.00	8.21	7.97	0.00
13.00	6.24	6.00	0.91	65.00	8.21	7.97	0.00
14.00	6.71	6.47	0.37	66.00	8.21	7.97	0.00
15.00	7.01	6.77	0.25	67.00	8.21	7.97	0.00
16.00	7.23	6.99	0.19	68.00	8.21	7.97	0.00
17.00	7.41	7.17	0.16	69.00	8.21	7.97	0.00
18.00	7.56	7.32	0.13	70.00	8.21	7.97	0.00
19.00	7.69	7.45	0.12	71.00	8.21	7.97	0.00
20.00	7.81	7.57	0.11	72.00	8.21	7.97	0.00
21.00	7.92	7.68	0.10				
22.00	8.02	7.78	0.10				
23.00	8.12	7.88	0.09				
24.00	8.21	7.97	0.08				
25.00	8.21	7.97	0.00				
26.00	8.21	7.97	0.00				
27.00	8.21	7.97	0.00				
28.00	8.21	7.97	0.00				
29.00	8.21	7.97	0.00				
30.00	8.21	7.97	0.00				
31.00	8.21	7.97	0.00				
32.00	8.21	7.97	0.00				
33.00	8.21	7.97	0.00				
34.00	8.21	7.97	0.00				
35.00	8.21	7.97	0.00				
36.00	8.21	7.97	0.00				
37.00	8.21	7.97	0.00				
38.00	8.21	7.97	0.00				
39.00	8.21	7.97	0.00				
40.00	8.21	7.97	0.00				
41.00	8.21	7.97	0.00				
42.00	8.21	7.97	0.00				
43.00	8.21	7.97	0.00				
44.00	8.21	7.97	0.00				
45.00	8.21	7.97	0.00				
46.00	8.21	7.97	0.00				
47.00	8.21	7.97	0.00				
48.00	8.21	7.97	0.00				
49.00	8.21	7.97	0.00				
50.00	8.21	7.97	0.00				
51.00	8.21	7.97	0.00				

Summary for Subcatchment 55S: DA Offsite East (IMP)

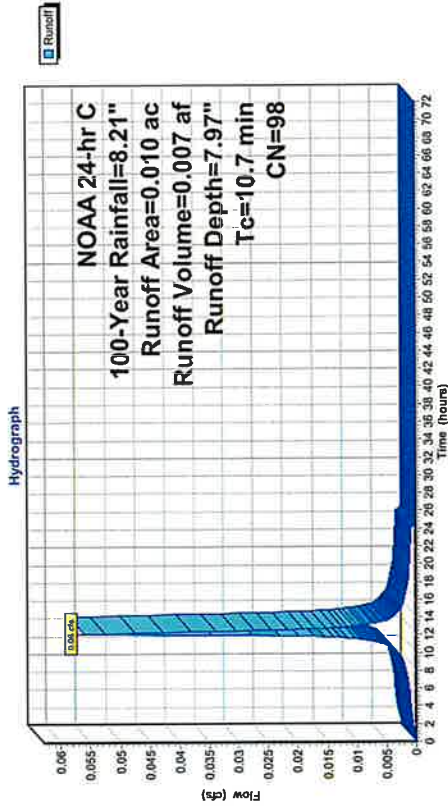
Runoff = 0.06 cfs @ 12.20 hrs, Volume= 0.007 af, Depth= 7.97"
Routed to Link 50L : DA East

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year Rainfall=8.21"

Area (ac)	CN	Description
0.010	98	Paved parking HSG D
0.010		100.00% Impervious Area

Tc (min)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description

Subcatchment 55S: DA Offsite East (IMP)



Hydrograph for Subcatchment 55S: DA Offsite East (IMP)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	8.21	7.97	0.00
1.00	0.09	0.01	0.00	53.00	8.21	7.97	0.00
2.00	0.19	0.06	0.00	54.00	8.21	7.97	0.00
3.00	0.29	0.14	0.00	55.00	8.21	7.97	0.00
4.00	0.40	0.23	0.00	56.00	8.21	7.97	0.00
5.00	0.52	0.34	0.00	57.00	8.21	7.97	0.00
6.00	0.65	0.46	0.00	58.00	8.21	7.97	0.00
7.00	0.80	0.60	0.00	59.00	8.21	7.97	0.00
8.00	0.98	0.78	0.00	60.00	8.21	7.97	0.00
9.00	1.20	0.98	0.00	61.00	8.21	7.97	0.00
10.00	1.50	1.28	0.00	62.00	8.21	7.97	0.00
11.00	1.97	1.74	0.01	63.00	8.21	7.97	0.00
12.00	3.91	3.68	0.03	64.00	8.21	7.97	0.00
13.00	6.24	6.00	0.01	65.00	8.21	7.97	0.00
14.00	6.71	6.47	0.00	66.00	8.21	7.97	0.00
15.00	7.01	6.77	0.00	67.00	8.21	7.97	0.00
16.00	7.23	6.99	0.00	68.00	8.21	7.97	0.00
17.00	7.41	7.17	0.00	69.00	8.21	7.97	0.00
18.00	7.56	7.32	0.00	70.00	8.21	7.97	0.00
19.00	7.69	7.45	0.00	71.00	8.21	7.97	0.00
20.00	7.81	7.57	0.00	72.00	8.21	7.97	0.00
21.00	7.92	7.68	0.00				
22.00	8.02	7.78	0.00				
23.00	8.12	7.88	0.00				
24.00	8.21	7.97	0.00				
25.00	8.21	7.97	0.00				
26.00	8.21	7.97	0.00				
27.00	8.21	7.97	0.00				
28.00	8.21	7.97	0.00				
29.00	8.21	7.97	0.00				
30.00	8.21	7.97	0.00				
31.00	8.21	7.97	0.00				
32.00	8.21	7.97	0.00				
33.00	8.21	7.97	0.00				
34.00	8.21	7.97	0.00				
35.00	8.21	7.97	0.00				
36.00	8.21	7.97	0.00				
37.00	8.21	7.97	0.00				
38.00	8.21	7.97	0.00				
39.00	8.21	7.97	0.00				
40.00	8.21	7.97	0.00				
41.00	8.21	7.97	0.00				
42.00	8.21	7.97	0.00				
43.00	8.21	7.97	0.00				
44.00	8.21	7.97	0.00				
45.00	8.21	7.97	0.00				
46.00	8.21	7.97	0.00				
47.00	8.21	7.97	0.00				
48.00	8.21	7.97	0.00				
49.00	8.21	7.97	0.00				
50.00	8.21	7.97	0.00				
51.00	8.21	7.97	0.00				

Summary for Pond 51P: Basin A (w/ underdrains)

Inflow Area = 1,630 ac, 57.06% Impervious, Inflow Depth = 7.05" for 100-Year event
Inflow = 8.97 cfs @ 12.18 hrs, Volume= 0.957 af
Outflow = 4.95 cfs @ 12.45 hrs, Volume= 0.865 af, Atten= 45%, Lag= 16.4 min
Primary = 4.95 cfs @ 12.45 hrs, Volume= 0.865 af
Routed to Link 50L : DA East

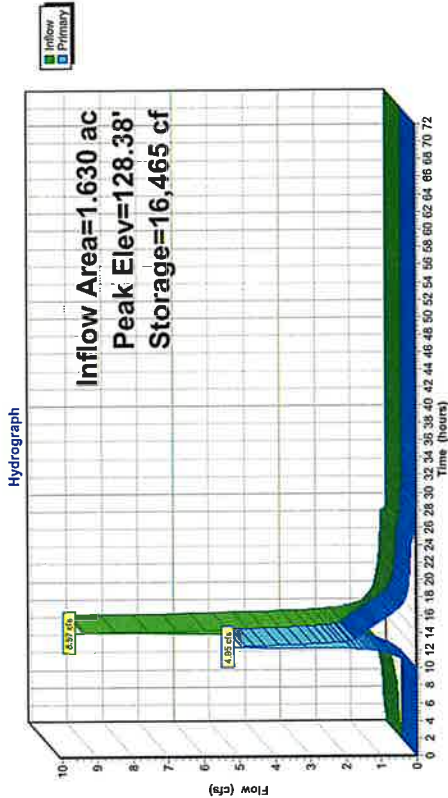
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 128.38' @ 12.45 hrs Surf.Area= 5,038 sf Storage= 16,465 cf
Plug-Flow detention time= 173.5 min calculated for 0.864 af (90% of inflow)
Center-of-Mass det. time= 124.2 min (896.7 - 772.5)

Volume		Invert	Avail.Storage	Storage Description
#1	125.00'		19,600 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
125.00	4,700	0	0	
126.00	4,800	4,750	4,750	
127.00	4,900	4,850	9,600	
128.00	5,000	4,950	14,550	
129.00	5,100	5,050	19,600	

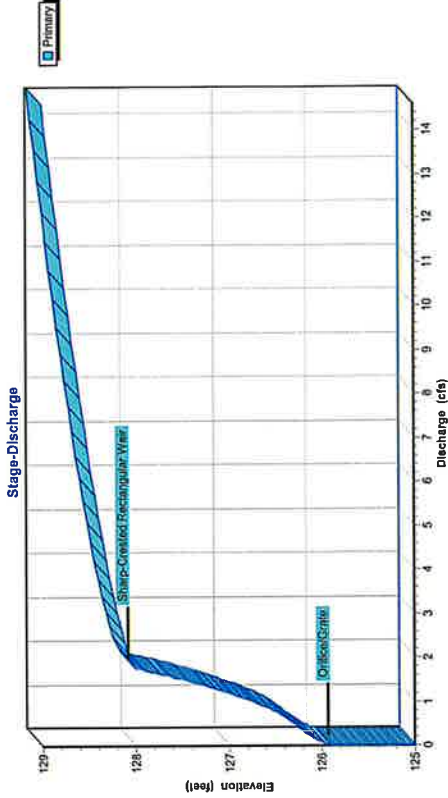
Device	Routing	Invert	Outlet Devices
#1	Primary	125.85'	7.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	128.00'	4.0' long Sharp-Crested Rectangular Weir 2 End Contractions

Primary Outflow Max=4.95 cfs @ 12.45 hrs HW=128.38' (Free Discharge)
1=Orifice/Grate (Orifice Controls 1.93 cfs @ 7.21 fps)
2=Sharp-Crested Rectangular Weir (Weir Controls 3.02 cfs @ 2.02 fps)

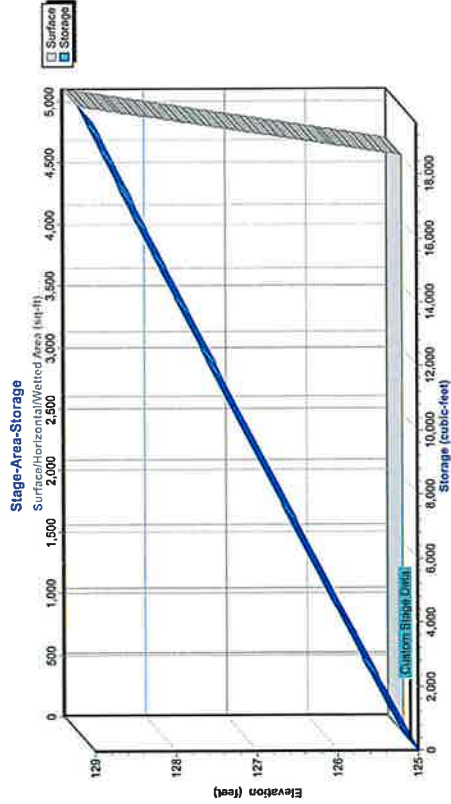
Pond 51P: Basin A (w/ underdrains)



Pond 51P: Basin A (w/ underdrains)



Pond 51P: Basin A (w/ underdrains)



Hydrograph for Pond 51P: Basin A (w/ underdrains)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	125.00	0.00
2.50	0.07	265	125.06	0.00
5.00	0.10	1,053	125.22	0.00
7.50	0.19	2,278	125.48	0.00
10.00	0.41	4,642	125.98	0.05
12.50	4.34	16,414	128.37	4.83
15.00	0.42	9,284	126.94	1.15
17.50	0.25	5,801	126.22	0.37
20.00	0.19	5,311	126.12	0.21
22.50	0.16	5,170	126.09	0.17
25.00	0.00	4,796	126.01	0.08
27.50	0.00	4,413	125.93	0.02
30.00	0.00	4,280	125.90	0.01
32.50	0.00	4,211	125.89	0.01
35.00	0.00	4,173	125.88	0.00
37.50	0.00	4,149	125.87	0.00
40.00	0.00	4,128	125.87	0.00
42.50	0.00	4,111	125.87	0.00
45.00	0.00	4,097	125.86	0.00
47.50	0.00	4,085	125.86	0.00
50.00	0.00	4,076	125.86	0.00
52.50	0.00	4,068	125.86	0.00
55.00	0.00	4,062	125.86	0.00
57.50	0.00	4,056	125.86	0.00
60.00	0.00	4,052	125.85	0.00
62.50	0.00	4,048	125.85	0.00
65.00	0.00	4,045	125.85	0.00
67.50	0.00	4,043	125.85	0.00
70.00	0.00	4,041	125.85	0.00

Stage-Discharge for Pond 51P: Basin A (w/ underdrains)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
125.00	0.00	127.08	1.25	128.12	2.35
125.02	0.00	127.10	1.26	128.14	2.50
125.04	0.00	127.12	1.27	128.16	2.66
125.06	0.00	127.14	1.29	128.18	2.83
125.08	0.00	127.16	1.30	128.20	3.00
125.10	0.00	127.18	1.31	128.22	3.19
125.12	0.00	127.20	1.32	128.24	3.38
125.14	0.00	127.22	1.34	128.26	3.58
125.16	0.00	127.24	1.35	128.28	3.79
125.18	0.00	127.26	1.36	128.30	4.01
125.20	0.00	127.28	1.37	128.32	4.23
125.22	0.00	127.30	1.38	128.34	4.46
125.24	0.00	127.32	1.40	128.36	4.69
125.26	0.00	127.34	1.41	128.38	4.93
125.28	0.00	127.36	1.42	128.40	5.18
125.30	0.00	127.38	1.43	128.42	5.43
125.32	0.00	127.40	1.44	128.44	5.68
125.34	0.00	127.42	1.45	128.46	5.95
125.36	0.00	127.44	1.47	128.48	6.21
125.38	0.00	127.46	1.48	128.50	6.49
125.40	0.00	127.48	1.49	128.52	6.76
125.42	0.00	127.50	1.50	128.54	7.04
125.44	0.00	127.52	1.51	128.56	7.33
125.46	0.00	127.54	1.52	128.58	7.62
125.48	0.00	127.56	1.53	128.60	7.91
125.50	0.00	127.58	1.54	128.62	8.21
125.52	0.00	127.60	1.55	128.64	8.52
125.54	0.00	127.62	1.56	128.66	8.82
125.56	0.00	127.64	1.58	128.68	9.14
125.58	0.00	127.66	1.59	128.70	9.45
125.60	0.00	127.68	1.60	128.72	9.77
125.62	0.00	127.70	1.61	128.74	10.09
125.64	0.00	127.72	1.62	128.76	10.42
125.66	0.00	127.74	1.63	128.78	10.75
125.68	0.00	127.76	1.64	128.80	11.08
125.70	0.00	127.78	1.65	128.82	11.42
125.72	0.00	127.80	1.66	128.84	11.76
125.74	0.00	127.82	1.67	128.86	12.10
125.76	0.00	127.84	1.68	128.88	12.45
125.78	0.00	127.86	1.69	128.90	12.80
125.80	0.00	127.88	1.70	128.92	13.16
125.82	0.00	127.90	1.71	128.94	13.51
125.84	0.00	127.92	1.72	128.96	13.87
125.86	0.00	127.94	1.73	128.98	14.24
125.88	0.00	127.96	1.74	129.00	14.60
125.90	0.01	127.98	1.74		
125.92	0.02	128.00	1.75		
125.94	0.03	128.02	1.80		
125.96	0.04	128.04	1.86		
125.98	0.05	128.06	1.97		
126.00	0.07	128.08	2.09		
126.02	0.09	128.10	2.21		

Stage-Area-Storage for Pond 51P: Basin A (w/ underdrains)

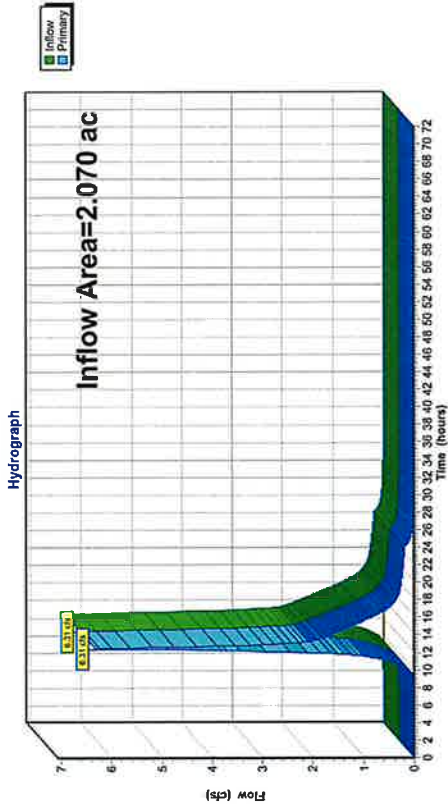
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
125.00	4,700	0	127.80	4,960	12,558
125.05	4,705	235	127.85	4,965	12,806
125.10	4,710	470	127.90	4,970	13,055
125.15	4,715	706	127.95	4,975	13,303
125.20	4,720	942	128.00	4,980	13,552
125.25	4,725	1,178	128.05	4,985	13,801
125.30	4,730	1,414	128.10	4,990	14,051
125.35	4,735	1,651	128.15	4,995	14,300
125.40	4,740	1,888	128.20	5,000	14,550
125.45	4,745	2,125	128.25	5,005	14,800
125.50	4,750	2,363	128.30	5,010	15,050
125.55	4,755	2,600	128.35	5,015	15,301
125.60	4,760	2,838	128.40	5,020	15,552
125.65	4,765	3,076	128.45	5,025	15,803
125.70	4,770	3,315	128.50	5,030	16,055
125.75	4,775	3,553	128.55	5,035	16,306
125.80	4,780	3,792	128.60	5,040	16,558
125.85	4,785	4,031	128.65	5,045	16,810
125.90	4,790	4,271	128.70	5,050	17,063
125.95	4,795	4,510	128.75	5,055	17,315
126.00	4,800	4,750	128.80	5,060	17,568
126.05	4,805	4,990	128.85	5,065	17,821
126.10	4,810	5,230	128.90	5,070	18,074
126.15	4,815	5,471	128.95	5,075	18,328
126.20	4,820	5,712	129.00	5,080	18,582
126.25	4,825	5,953		5,085	18,836
126.30	4,830	6,194		5,090	19,091
126.35	4,835	6,436		5,095	19,345
126.40	4,840	6,678		5,100	19,600
126.45	4,845	6,920			
126.50	4,850	7,163			
126.55	4,855	7,405			
126.60	4,860	7,648			
126.65	4,865	7,891			
126.70	4,870	8,135			
126.75	4,875	8,378			
126.80	4,880	8,622			
126.85	4,885	8,866			
126.90	4,890	9,111			
126.95	4,895	9,355			
127.00	4,900	9,600			
127.05	4,905	9,845			
127.10	4,910	10,090			
127.15	4,915	10,336			
127.20	4,920	10,582			
127.25	4,925	10,828			
127.30	4,930	11,074			
127.35	4,935	11,321			
127.40	4,940	11,568			
127.45	4,945	11,815			
127.50	4,950	12,063			
127.55	4,955	12,310			

Summary for Link 50L: DA East

Inflow Area = 2.070 ac, 46.86% Impervious, Inflow Depth = 6.29" for 100-Year event
Inflow = 6.31 cfs @ 12.42 hrs, Volume= 1.085 af
Primary = 6.31 cfs @ 12.42 hrs, Volume= 1.085 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 52p

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

Link 50L: DA East



Hydrograph for Link 50L: DA East

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.01	0.00	0.01	58.00	0.00	0.00	0.00
7.00	0.02	0.00	0.02	59.00	0.00	0.00	0.00
8.00	0.03	0.00	0.03	60.00	0.00	0.00	0.00
9.00	0.04	0.00	0.04	61.00	0.00	0.00	0.00
10.00	0.13	0.00	0.13	62.00	0.00	0.00	0.00
11.00	0.53	0.00	0.53	63.00	0.00	0.00	0.00
12.00	2.11	0.00	2.11	64.00	0.00	0.00	0.00
13.00	2.57	0.00	2.57	65.00	0.00	0.00	0.00
14.00	1.68	0.00	1.68	66.00	0.00	0.00	0.00
15.00	1.26	0.00	1.26	67.00	0.00	0.00	0.00
16.00	0.85	0.00	0.85	68.00	0.00	0.00	0.00
17.00	0.53	0.00	0.53	69.00	0.00	0.00	0.00
18.00	0.37	0.00	0.37	70.00	0.00	0.00	0.00
19.00	0.29	0.00	0.29	71.00	0.00	0.00	0.00
20.00	0.26	0.00	0.26	72.00	0.00	0.00	0.00
21.00	0.24	0.00	0.24				
22.00	0.22	0.00	0.22				
23.00	0.20	0.00	0.20				
24.00	0.19	0.00	0.19				
25.00	0.08	0.00	0.08				
26.00	0.04	0.00	0.04				
27.00	0.03	0.00	0.03				
28.00	0.02	0.00	0.02				
29.00	0.01	0.00	0.01				
30.00	0.01	0.00	0.01				
31.00	0.01	0.00	0.01				
32.00	0.01	0.00	0.01				
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				
51.00	0.00	0.00	0.00				

TABLE OF CONTENTS

Project Reports

- 1 Routing Diagram
- 2 Project Notes
- 3 Rainfall Events Listing (selected events)
- 4 Area Listing (all nodes)
- 5 Soil Listing (all nodes)
- 6 Ground Covers (all nodes)
- 7 Notes Listing (all nodes)

2-Year Event

- 8 Node Listing
- 9 Subcat 9S: DA Basin A (perv)
- 11 Subcat 51S: DA East Undetained (IMP)
- 13 Subcat 52S: DA Offsite East (Perv)
- 15 Subcat 53S: DA East Undetained (Perv)
- 17 Subcat 54S: DA Basin A (Imp)
- 19 Subcat 55S: DA Offsite East (IMP)
- 21 Pond 51P: Basin A (w/ underdrains)
- 27 Link 50L: DA East

10-Year Event

- 29 Node Listing
- 30 Subcat 9S: DA Basin A (perv)
- 32 Subcat 51S: DA East Undetained (IMP)
- 34 Subcat 52S: DA Offsite East (Perv)
- 36 Subcat 53S: DA East Undetained (Perv)
- 38 Subcat 54S: DA Basin A (Imp)
- 40 Subcat 55S: DA Offsite East (IMP)
- 42 Pond 51P: Basin A (w/ underdrains)
- 48 Link 50L: DA East

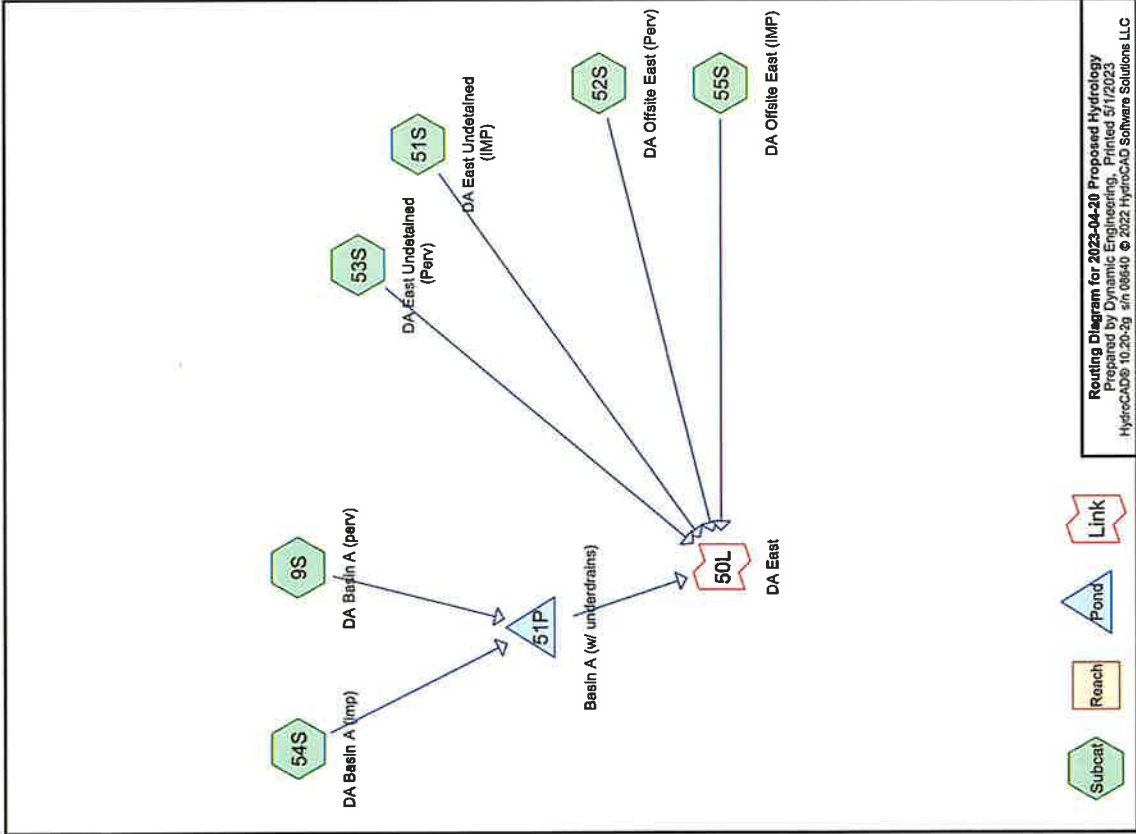
100-Year Event

- 50 Node Listing
- 51 Subcat 9S: DA Basin A (perv)
- 53 Subcat 51S: DA East Undetained (IMP)
- 55 Subcat 52S: DA Offsite East (Perv)
- 57 Subcat 53S: DA East Undetained (Perv)
- 59 Subcat 54S: DA Basin A (Imp)
- 61 Subcat 55S: DA Offsite East (IMP)
- 63 Pond 51P: Basin A (w/ underdrains)
- 69 Link 50L: DA East

**HYDROGRAPH SUMMARY REPORTS –
WATER QUALITY STORM**

Project Notes

Rainfall events imported from "NRCS-Rain.txt" for 6617 NJ Somerset-C



Rainfall Events Listing (selected events)

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

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.100	80	>75% Grass cover, Good, HSG D (9S, 52S, 53S)
0.780	98	Paved parking, HSG D (51S, 54S, 55S)
0.190	98	Roofs, HSG D (54S)
2.070	88	TOTAL AREA

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
2.070	HSG D	9S, 51S, 52S, 53S, 54S, 55S
0.000	Other	
2.070	TOTAL AREA	

Ground Covers (all nodes)

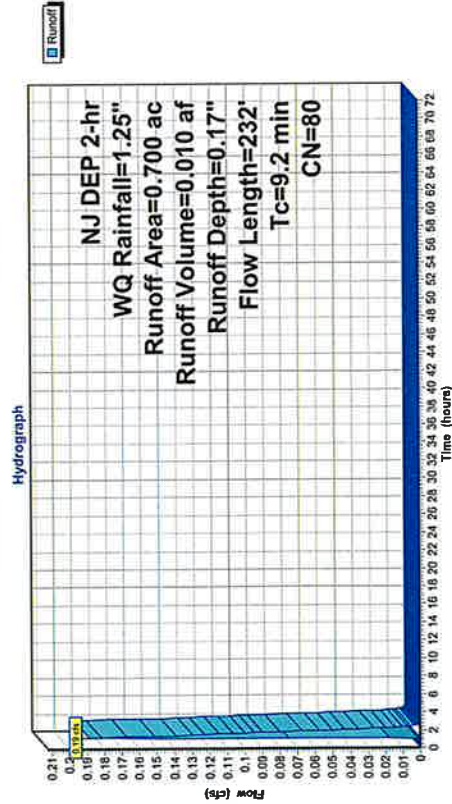
HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	1.100	0.000	1.100	>75% Grass cover, Good	9S,
							52S,
							53S
0.000	0.000	0.000	0.780	0.000	0.780	Paved parking	51S,
							54S,
0.000	0.000	0.000	0.190	0.000	0.190	Roofs	55S
0.000	0.000	0.000	2.070	0.000	2.070	TOTAL AREA	54S

Notes Listing (all nodes)			
Line#	Node Number	Notes	
1	Project	Rainfall events imported from "NRCS-Rain.txt" for 6617 NJ Somerset-C	
Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points			
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN			
Reach routing by Stor-Ind+ Trans method - Pond routing by Stor-Ind method			
Subcatchment 9S: DA Basin A (perv)			
Runoff Area=0.700 ac 0.00% Impervious Runoff Depth=0.17"			
Flow Length=232' Tc=9.2 min CN=80 Runoff=0.19 cfs 0.010 af			
Subcatchment 51S: DA East Undetained			
Runoff Area=0.030 ac 100.00% Impervious Runoff Depth=1.03"			
Tc=10.7 min CN=98 Runoff=0.05 cfs 0.003 af			
Subcatchment 52S: DA Offsite East (Perv)			
Runoff Area=0.050 ac 0.00% Impervious Runoff Depth=0.17"			
Flow Length=334' Tc=10.7 min CN=80 Runoff=0.01 cfs 0.001 af			
Subcatchment 53S: DA East Undetained			
Runoff Area=0.350 ac 0.00% Impervious Runoff Depth=0.17"			
Tc=10.7 min CN=80 Runoff=0.09 cfs 0.005 af			
Subcatchment 54S: DA Basin A (Imp)			
Runoff Area=0.930 ac 100.00% Impervious Runoff Depth=1.03"			
Flow Length=232' Tc=9.2 min CN=98 Runoff=1.81 cfs 0.080 af			
Subcatchment 55S: DA Offsite East (IMP)			
Runoff Area=0.010 ac 100.00% Impervious Runoff Depth=1.03"			
Tc=10.7 min CN=98 Runoff=0.02 cfs 0.001 af			
Pond 51P: Basin A (w/ underdrains)			
Peak Elev=125.83' Storage=3,932 cf Inflow=1.97 cfs 0.090 af			
Outflow=0.00 cfs 0.000 af			
Link 50L: DA East			
Inflow=0.16 cfs 0.009 af			
Primary=0.16 cfs 0.009 af			
Total Runoff Area = 2.070 ac Runoff Volume = 0.099 af Average Runoff Depth = 0.58"			
53.14% Pervious = 1.100 ac 46.86% Impervious = 0.970 ac			

Summary for Subcatchment 9S: DA Basin A (perv)

Runoff	=	0.19 cfs @ 1.25 hrs, Volume=	0.010 af, Depth= 0.17"
Routed to Pond 51P : Basin A (w/ underdrains)			
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs			
NJ DEP 2-hr WQ Rainfall=1.25"			
Area (ac)	CN	Description	
0.700	80	>75% Grass cover, Good, HSG D	
0.700		100.00% Pervious Area	
Tc	Length	Slope	Velocity Capacity
(min)	(feet)	(ft/ft)	(ft/sec) (cfs)
8.6	100	0.0672	0.19
Sheet Flow, SF - Grass			
Grass: Dense n= 0.240 P2= 3.34"			
Shallow Concentrated Flow, SCF - Grass			
Unpaved Kv= 16.1 fps			
0.6	132	0.0606	3.96
9.2	232	Total	

Subcatchment 9S: DA Basin A (perv)



Hydrograph for Subcatchment 9S: DA Basin A (perv)

Time (hours)	Precip. (Inches)	Excess (Inches)	Runoff (cfs)	Time (hours)	Precip. (Inches)	Excess (Inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	1.25	0.17	0.00
1.00	0.63	0.01	0.00	53.00	1.25	0.17	0.00
2.00	1.25	0.17	0.05	54.00	1.25	0.17	0.00
3.00	1.25	0.17	0.00	55.00	1.25	0.17	0.00
4.00	1.25	0.17	0.00	56.00	1.25	0.17	0.00
5.00	1.25	0.17	0.00	57.00	1.25	0.17	0.00
6.00	1.25	0.17	0.00	58.00	1.25	0.17	0.00
7.00	1.25	0.17	0.00	59.00	1.25	0.17	0.00
8.00	1.25	0.17	0.00	60.00	1.25	0.17	0.00
9.00	1.25	0.17	0.00	61.00	1.25	0.17	0.00
10.00	1.25	0.17	0.00	62.00	1.25	0.17	0.00
11.00	1.25	0.17	0.00	63.00	1.25	0.17	0.00
12.00	1.25	0.17	0.00	64.00	1.25	0.17	0.00
13.00	1.25	0.17	0.00	65.00	1.25	0.17	0.00
14.00	1.25	0.17	0.00	66.00	1.25	0.17	0.00
15.00	1.25	0.17	0.00	67.00	1.25	0.17	0.00
16.00	1.25	0.17	0.00	68.00	1.25	0.17	0.00
17.00	1.25	0.17	0.00	69.00	1.25	0.17	0.00
18.00	1.25	0.17	0.00	70.00	1.25	0.17	0.00
19.00	1.25	0.17	0.00	71.00	1.25	0.17	0.00
20.00	1.25	0.17	0.00	72.00	1.25	0.17	0.00
21.00	1.25	0.17	0.00				
22.00	1.25	0.17	0.00				
23.00	1.25	0.17	0.00				
24.00	1.25	0.17	0.00				
25.00	1.25	0.17	0.00				
26.00	1.25	0.17	0.00				
27.00	1.25	0.17	0.00				
28.00	1.25	0.17	0.00				
29.00	1.25	0.17	0.00				
30.00	1.25	0.17	0.00				
31.00	1.25	0.17	0.00				
32.00	1.25	0.17	0.00				
33.00	1.25	0.17	0.00				
34.00	1.25	0.17	0.00				
35.00	1.25	0.17	0.00				
36.00	1.25	0.17	0.00				
37.00	1.25	0.17	0.00				
38.00	1.25	0.17	0.00				
39.00	1.25	0.17	0.00				
40.00	1.25	0.17	0.00				
41.00	1.25	0.17	0.00				
42.00	1.25	0.17	0.00				
43.00	1.25	0.17	0.00				
44.00	1.25	0.17	0.00				
45.00	1.25	0.17	0.00				
46.00	1.25	0.17	0.00				
47.00	1.25	0.17	0.00				
48.00	1.25	0.17	0.00				
49.00	1.25	0.17	0.00				
50.00	1.25	0.17	0.00				
51.00	1.25	0.17	0.00				

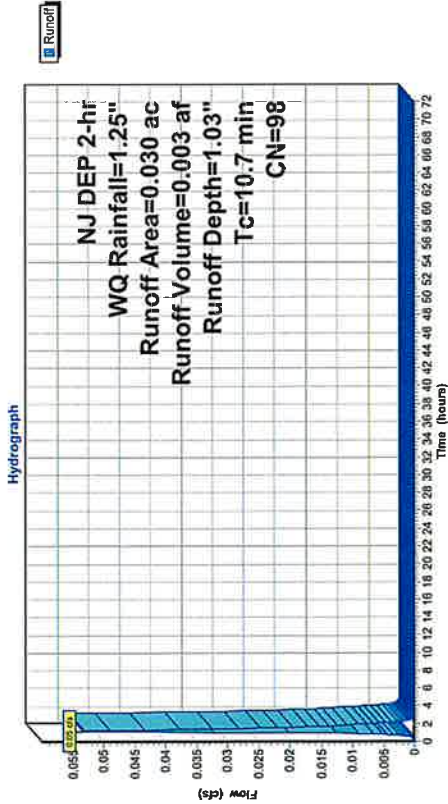
Summary for Subcatchment 51S: DA East Undetained (IMP)

Runoff = 0.05 cfs @ 1.18 hrs, Volume= 0.003 af, Depth= 1.03"
Routed to Link 50L : DA East

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description		
0.030	98	Paved parking, HSG D		
0.030		100.00% Impervious Area		
Tc (min)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7				Direct Entry,

Subcatchment 51S: DA East Undetained (IMP)



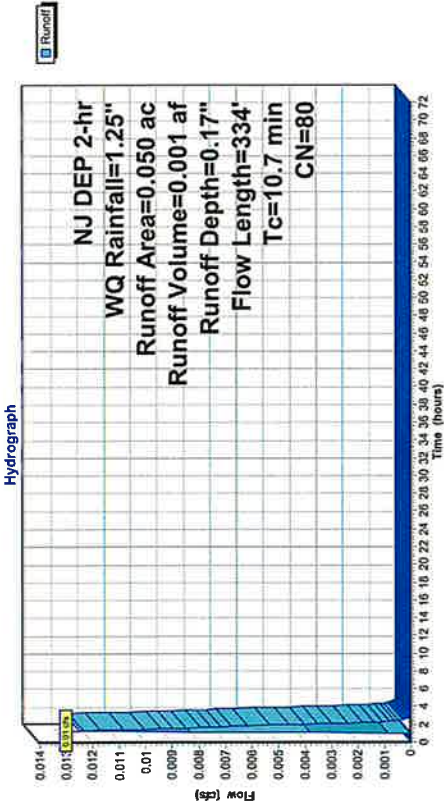
Hydrograph for Subcatchment 51S: DA East Undetained (IMP)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	1.25	1.03	0.00
1.00	0.63	0.43	0.02	53.00	1.25	1.03	0.00
2.00	1.25	1.03	0.01	54.00	1.25	1.03	0.00
3.00	1.25	1.03	0.00	55.00	1.25	1.03	0.00
4.00	1.25	1.03	0.00	56.00	1.25	1.03	0.00
5.00	1.25	1.03	0.00	57.00	1.25	1.03	0.00
6.00	1.25	1.03	0.00	58.00	1.25	1.03	0.00
7.00	1.25	1.03	0.00	59.00	1.25	1.03	0.00
8.00	1.25	1.03	0.00	60.00	1.25	1.03	0.00
9.00	1.25	1.03	0.00	61.00	1.25	1.03	0.00
10.00	1.25	1.03	0.00	62.00	1.25	1.03	0.00
11.00	1.25	1.03	0.00	63.00	1.25	1.03	0.00
12.00	1.25	1.03	0.00	64.00	1.25	1.03	0.00
13.00	1.25	1.03	0.00	65.00	1.25	1.03	0.00
14.00	1.25	1.03	0.00	66.00	1.25	1.03	0.00
15.00	1.25	1.03	0.00	67.00	1.25	1.03	0.00
16.00	1.25	1.03	0.00	68.00	1.25	1.03	0.00
17.00	1.25	1.03	0.00	69.00	1.25	1.03	0.00
18.00	1.25	1.03	0.00	70.00	1.25	1.03	0.00
19.00	1.25	1.03	0.00	71.00	1.25	1.03	0.00
20.00	1.25	1.03	0.00	72.00	1.25	1.03	0.00
21.00	1.25	1.03	0.00				
22.00	1.25	1.03	0.00				
23.00	1.25	1.03	0.00				
24.00	1.25	1.03	0.00				
25.00	1.25	1.03	0.00				
26.00	1.25	1.03	0.00				
27.00	1.25	1.03	0.00				
28.00	1.25	1.03	0.00				
29.00	1.25	1.03	0.00				
30.00	1.25	1.03	0.00				
31.00	1.25	1.03	0.00				
32.00	1.25	1.03	0.00				
33.00	1.25	1.03	0.00				
34.00	1.25	1.03	0.00				
35.00	1.25	1.03	0.00				
36.00	1.25	1.03	0.00				
37.00	1.25	1.03	0.00				
38.00	1.25	1.03	0.00				
39.00	1.25	1.03	0.00				
40.00	1.25	1.03	0.00				
41.00	1.25	1.03	0.00				
42.00	1.25	1.03	0.00				
43.00	1.25	1.03	0.00				
44.00	1.25	1.03	0.00				
45.00	1.25	1.03	0.00				
46.00	1.25	1.03	0.00				
47.00	1.25	1.03	0.00				
48.00	1.25	1.03	0.00				
49.00	1.25	1.03	0.00				
50.00	1.25	1.03	0.00				
51.00	1.25	1.03	0.00				

Summary for Subcatchment 52S: DA Offsite East (Perv)

Runoff	=	0.01 cfs @	1.27 hrs, Volume=	0.001 af, Depth=	0.17"
Routed to Link 50L : DA East					
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs					
NJ DEP 2-hr WQ Rainfall=1.25"					
Area (ac)	CN	Description			
0.050	80	>75% Grass cover, Good, HSG D			
0.050		100.00% Pervious Area			
Tc	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
9.1	49	0.0140	0.09		Sheet Flow, SF - Grass
					Grass: Dense n= 0.240 P2= 3.34"
					Using McCuen-Spless flow length
1.6	285	0.0340	2.97		Shallow Concentrated Flow, SCF - Grass
					Unpaved Kv= 16.1 fps
10.7	334	Total			

Subcatchment 52S: DA Offsite East (Perv)



Hydrograph for Subcatchment 52S: DA Offsite East (Perv)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	1.25	0.17	0.00
1.00	0.63	0.01	0.00	53.00	1.25	0.17	0.00
2.00	1.25	0.17	0.00	54.00	1.25	0.17	0.00
3.00	1.25	0.17	0.00	55.00	1.25	0.17	0.00
4.00	1.25	0.17	0.00	56.00	1.25	0.17	0.00
5.00	1.25	0.17	0.00	57.00	1.25	0.17	0.00
6.00	1.25	0.17	0.00	58.00	1.25	0.17	0.00
7.00	1.25	0.17	0.00	59.00	1.25	0.17	0.00
8.00	1.25	0.17	0.00	60.00	1.25	0.17	0.00
9.00	1.25	0.17	0.00	61.00	1.25	0.17	0.00
10.00	1.25	0.17	0.00	62.00	1.25	0.17	0.00
11.00	1.25	0.17	0.00	63.00	1.25	0.17	0.00
12.00	1.25	0.17	0.00	64.00	1.25	0.17	0.00
13.00	1.25	0.17	0.00	65.00	1.25	0.17	0.00
14.00	1.25	0.17	0.00	66.00	1.25	0.17	0.00
15.00	1.25	0.17	0.00	67.00	1.25	0.17	0.00
16.00	1.25	0.17	0.00	68.00	1.25	0.17	0.00
17.00	1.25	0.17	0.00	69.00	1.25	0.17	0.00
18.00	1.25	0.17	0.00	70.00	1.25	0.17	0.00
19.00	1.25	0.17	0.00	71.00	1.25	0.17	0.00
20.00	1.25	0.17	0.00	72.00	1.25	0.17	0.00
21.00	1.25	0.17	0.00				
22.00	1.25	0.17	0.00				
23.00	1.25	0.17	0.00				
24.00	1.25	0.17	0.00				
25.00	1.25	0.17	0.00				
26.00	1.25	0.17	0.00				
27.00	1.25	0.17	0.00				
28.00	1.25	0.17	0.00				
29.00	1.25	0.17	0.00				
30.00	1.25	0.17	0.00				
31.00	1.25	0.17	0.00				
32.00	1.25	0.17	0.00				
33.00	1.25	0.17	0.00				
34.00	1.25	0.17	0.00				
35.00	1.25	0.17	0.00				
36.00	1.25	0.17	0.00				
37.00	1.25	0.17	0.00				
38.00	1.25	0.17	0.00				
39.00	1.25	0.17	0.00				
40.00	1.25	0.17	0.00				
41.00	1.25	0.17	0.00				
42.00	1.25	0.17	0.00				
43.00	1.25	0.17	0.00				
44.00	1.25	0.17	0.00				
45.00	1.25	0.17	0.00				
46.00	1.25	0.17	0.00				
47.00	1.25	0.17	0.00				
48.00	1.25	0.17	0.00				
49.00	1.25	0.17	0.00				
50.00	1.25	0.17	0.00				
51.00	1.25	0.17	0.00				

Summary for Subcatchment 53S: DA East Undetained (Perv)

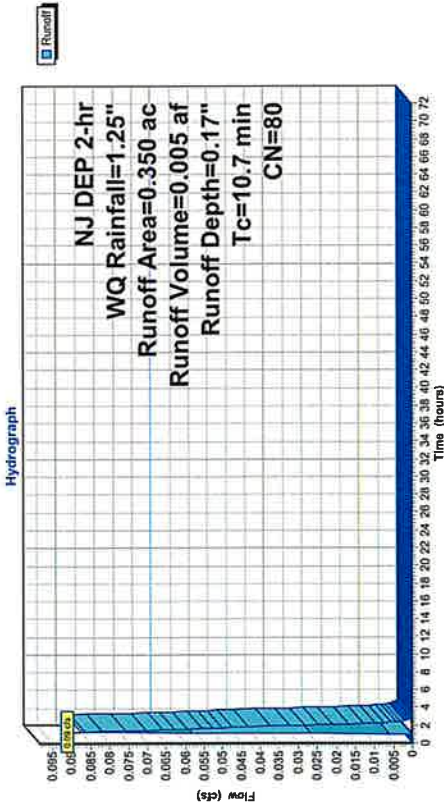
Runoff = 0.09 cfs @ 1.27 hrs, Volume= 0.005 af, Depth= 0.17"
Routed to Link 50L : DA East

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
0.350	80	>75% Grass cover, Good, HSG D
0.350		100.00% Pervious Area

Tc (min)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7				Direct Entry,

Subcatchment 53S: DA East Undetained (Perv)



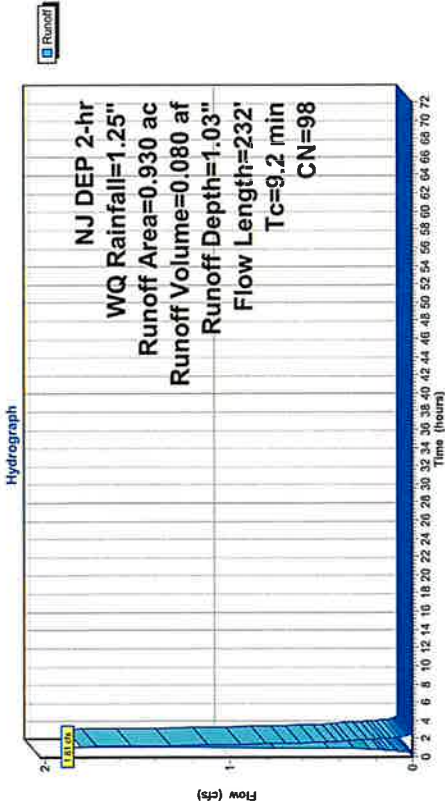
Hydrograph for Subcatchment 53S: DA East Undetained (Perv)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	1.25	0.17	0.00
1.00	0.63	0.01	0.00	53.00	1.25	0.17	0.00
2.00	1.25	0.17	0.03	54.00	1.25	0.17	0.00
3.00	1.25	0.17	0.00	55.00	1.25	0.17	0.00
4.00	1.25	0.17	0.00	56.00	1.25	0.17	0.00
5.00	1.25	0.17	0.00	57.00	1.25	0.17	0.00
6.00	1.25	0.17	0.00	58.00	1.25	0.17	0.00
7.00	1.25	0.17	0.00	59.00	1.25	0.17	0.00
8.00	1.25	0.17	0.00	60.00	1.25	0.17	0.00
9.00	1.25	0.17	0.00	61.00	1.25	0.17	0.00
10.00	1.25	0.17	0.00	62.00	1.25	0.17	0.00
11.00	1.25	0.17	0.00	63.00	1.25	0.17	0.00
12.00	1.25	0.17	0.00	64.00	1.25	0.17	0.00
13.00	1.25	0.17	0.00	65.00	1.25	0.17	0.00
14.00	1.25	0.17	0.00	66.00	1.25	0.17	0.00
15.00	1.25	0.17	0.00	67.00	1.25	0.17	0.00
16.00	1.25	0.17	0.00	68.00	1.25	0.17	0.00
17.00	1.25	0.17	0.00	69.00	1.25	0.17	0.00
18.00	1.25	0.17	0.00	70.00	1.25	0.17	0.00
19.00	1.25	0.17	0.00	71.00	1.25	0.17	0.00
20.00	1.25	0.17	0.00	72.00	1.25	0.17	0.00
21.00	1.25	0.17	0.00				
22.00	1.25	0.17	0.00				
23.00	1.25	0.17	0.00				
24.00	1.25	0.17	0.00				
25.00	1.25	0.17	0.00				
26.00	1.25	0.17	0.00				
27.00	1.25	0.17	0.00				
28.00	1.25	0.17	0.00				
29.00	1.25	0.17	0.00				
30.00	1.25	0.17	0.00				
31.00	1.25	0.17	0.00				
32.00	1.25	0.17	0.00				
33.00	1.25	0.17	0.00				
34.00	1.25	0.17	0.00				
35.00	1.25	0.17	0.00				
36.00	1.25	0.17	0.00				
37.00	1.25	0.17	0.00				
38.00	1.25	0.17	0.00				
39.00	1.25	0.17	0.00				
40.00	1.25	0.17	0.00				
41.00	1.25	0.17	0.00				
42.00	1.25	0.17	0.00				
43.00	1.25	0.17	0.00				
44.00	1.25	0.17	0.00				
45.00	1.25	0.17	0.00				
46.00	1.25	0.17	0.00				
47.00	1.25	0.17	0.00				
48.00	1.25	0.17	0.00				
49.00	1.25	0.17	0.00				
50.00	1.25	0.17	0.00				
51.00	1.25	0.17	0.00				

Summary for Subcatchment 54S: DA Basin A (imp)

Runoff	=	1.81 cfs @	1.16 hrs, Volume=	0.080 af, Depth=	1.03"
Routed to Pond 51P : Basin A (w/ underdrains)					
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs					
NJ DEP 2-hr WQ Rainfall=1.25"					
Area (ac)	CN	Description			
0.740	98	Paved parking, HSG D			
0.190	98	Roofs, HSG D			
0.930	98	Weighted Average			
0.930		100.00% Impervious Area			
Tc	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
8.6	100	0.0672	0.19		Sheet Flow, SF - Grass
					Grass: Dense n= 0.240 P2= 3.34"
0.6	132	0.0606	3.96		Shallow Concentrated Flow, SCF - Grass
					Unpaved Kv= 16.1 fps
9.2	232	Total			

Subcatchment 54S: DA Basin A (imp)



Hydrograph for Subcatchment 54S: DA Basin A (imp)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	1.25	1.03	0.00
1.00	0.63	0.43	0.75	53.00	1.25	1.03	0.00
2.00	1.25	1.03	0.17	54.00	1.25	1.03	0.00
3.00	1.25	1.03	0.00	55.00	1.25	1.03	0.00
4.00	1.25	1.03	0.00	56.00	1.25	1.03	0.00
5.00	1.25	1.03	0.00	57.00	1.25	1.03	0.00
6.00	1.25	1.03	0.00	58.00	1.25	1.03	0.00
7.00	1.25	1.03	0.00	59.00	1.25	1.03	0.00
8.00	1.25	1.03	0.00	60.00	1.25	1.03	0.00
9.00	1.25	1.03	0.00	61.00	1.25	1.03	0.00
10.00	1.25	1.03	0.00	62.00	1.25	1.03	0.00
11.00	1.25	1.03	0.00	63.00	1.25	1.03	0.00
12.00	1.25	1.03	0.00	64.00	1.25	1.03	0.00
13.00	1.25	1.03	0.00	65.00	1.25	1.03	0.00
14.00	1.25	1.03	0.00	66.00	1.25	1.03	0.00
15.00	1.25	1.03	0.00	67.00	1.25	1.03	0.00
16.00	1.25	1.03	0.00	68.00	1.25	1.03	0.00
17.00	1.25	1.03	0.00	69.00	1.25	1.03	0.00
18.00	1.25	1.03	0.00	70.00	1.25	1.03	0.00
19.00	1.25	1.03	0.00	71.00	1.25	1.03	0.00
20.00	1.25	1.03	0.00	72.00	1.25	1.03	0.00
21.00	1.25	1.03	0.00				
22.00	1.25	1.03	0.00				
23.00	1.25	1.03	0.00				
24.00	1.25	1.03	0.00				
25.00	1.25	1.03	0.00				
26.00	1.25	1.03	0.00				
27.00	1.25	1.03	0.00				
28.00	1.25	1.03	0.00				
29.00	1.25	1.03	0.00				
30.00	1.25	1.03	0.00				
31.00	1.25	1.03	0.00				
32.00	1.25	1.03	0.00				
33.00	1.25	1.03	0.00				
34.00	1.25	1.03	0.00				
35.00	1.25	1.03	0.00				
36.00	1.25	1.03	0.00				
37.00	1.25	1.03	0.00				
38.00	1.25	1.03	0.00				
39.00	1.25	1.03	0.00				
40.00	1.25	1.03	0.00				
41.00	1.25	1.03	0.00				
42.00	1.25	1.03	0.00				
43.00	1.25	1.03	0.00				
44.00	1.25	1.03	0.00				
45.00	1.25	1.03	0.00				
46.00	1.25	1.03	0.00				
47.00	1.25	1.03	0.00				
48.00	1.25	1.03	0.00				
49.00	1.25	1.03	0.00				
50.00	1.25	1.03	0.00				
51.00	1.25	1.03	0.00				

Summary for Subcatchment 55S: DA Offsite East (IMP)

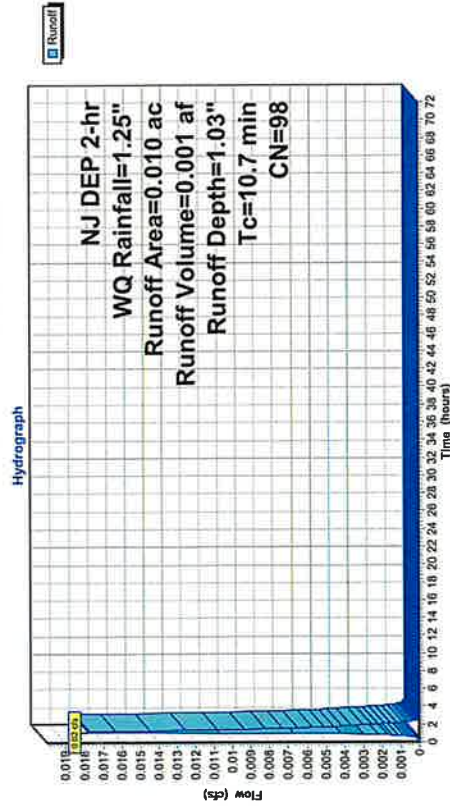
Runoff = 0.02 cfs @ 1.18 hrs, Volume= 0.001 af, Depth= 1.03"
Routed to Link 50L : DA East

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NJ DEP 2-hr WQ Rainfall=1.25"

Area (ac)	CN	Description
0.010	98	Paved parking, HSG D
0.010		100.00% Impervious Area

Tc (min)	Slope (ft/ft)	Capacity (cfs)	Description
10.7			Direct Entry,

Subcatchment 55S: DA Offsite East (IMP)



Hydrograph for Subcatchment 55S: DA Offsite East (IMP)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	1.25	1.03	0.00
1.00	0.63	0.43	0.01	53.00	1.25	1.03	0.00
2.00	1.25	1.03	0.00	54.00	1.25	1.03	0.00
3.00	1.25	1.03	0.00	55.00	1.25	1.03	0.00
4.00	1.25	1.03	0.00	56.00	1.25	1.03	0.00
5.00	1.25	1.03	0.00	57.00	1.25	1.03	0.00
6.00	1.25	1.03	0.00	58.00	1.25	1.03	0.00
7.00	1.25	1.03	0.00	59.00	1.25	1.03	0.00
8.00	1.25	1.03	0.00	60.00	1.25	1.03	0.00
9.00	1.25	1.03	0.00	61.00	1.25	1.03	0.00
10.00	1.25	1.03	0.00	62.00	1.25	1.03	0.00
11.00	1.25	1.03	0.00	63.00	1.25	1.03	0.00
12.00	1.25	1.03	0.00	64.00	1.25	1.03	0.00
13.00	1.25	1.03	0.00	65.00	1.25	1.03	0.00
14.00	1.25	1.03	0.00	66.00	1.25	1.03	0.00
15.00	1.25	1.03	0.00	67.00	1.25	1.03	0.00
16.00	1.25	1.03	0.00	68.00	1.25	1.03	0.00
17.00	1.25	1.03	0.00	69.00	1.25	1.03	0.00
18.00	1.25	1.03	0.00	70.00	1.25	1.03	0.00
19.00	1.25	1.03	0.00	71.00	1.25	1.03	0.00
20.00	1.25	1.03	0.00	72.00	1.25	1.03	0.00
21.00	1.25	1.03	0.00				
22.00	1.25	1.03	0.00				
23.00	1.25	1.03	0.00				
24.00	1.25	1.03	0.00				
25.00	1.25	1.03	0.00				
26.00	1.25	1.03	0.00				
27.00	1.25	1.03	0.00				
28.00	1.25	1.03	0.00				
29.00	1.25	1.03	0.00				
30.00	1.25	1.03	0.00				
31.00	1.25	1.03	0.00				
32.00	1.25	1.03	0.00				
33.00	1.25	1.03	0.00				
34.00	1.25	1.03	0.00				
35.00	1.25	1.03	0.00				
36.00	1.25	1.03	0.00				
37.00	1.25	1.03	0.00				
38.00	1.25	1.03	0.00				
39.00	1.25	1.03	0.00				
40.00	1.25	1.03	0.00				
41.00	1.25	1.03	0.00				
42.00	1.25	1.03	0.00				
43.00	1.25	1.03	0.00				
44.00	1.25	1.03	0.00				
45.00	1.25	1.03	0.00				
46.00	1.25	1.03	0.00				
47.00	1.25	1.03	0.00				
48.00	1.25	1.03	0.00				
49.00	1.25	1.03	0.00				
50.00	1.25	1.03	0.00				
51.00	1.25	1.03	0.00				

Summary for Pond 51P: Basin A (w/ underdrains)

Inflow Area = 1.630 ac, 57.06% Impervious, Inflow Depth = 0.66" for WQ event
Inflow = 1.97 cfs @ 1.17 hrs, Volume= 0.090 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 50L : DA East

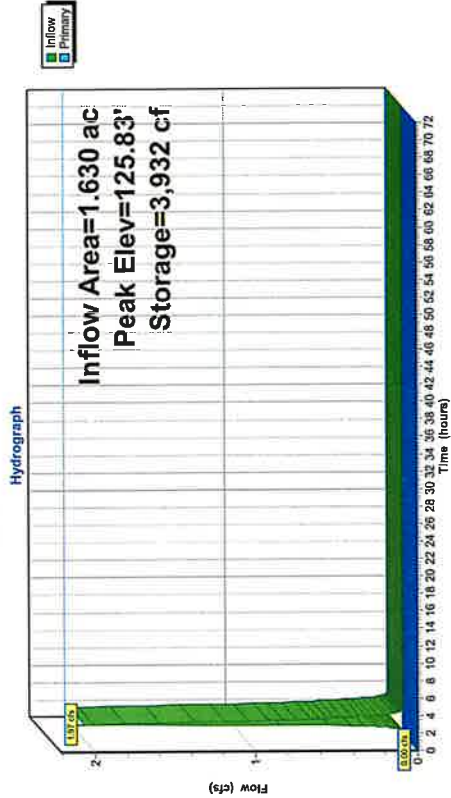
Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 125.83' @ 3.05 hrs Surf.Area= 4,783 sf Storage= 3,932 cf
Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume #1	Invert 125.00'	Avail.Storage 19,600 cf	Storage Description Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.00	4,700	0	0
126.00	4,800	4,750	4,750
127.00	4,900	4,850	9,600
128.00	5,000	4,950	14,550
129.00	5,100	5,050	19,600

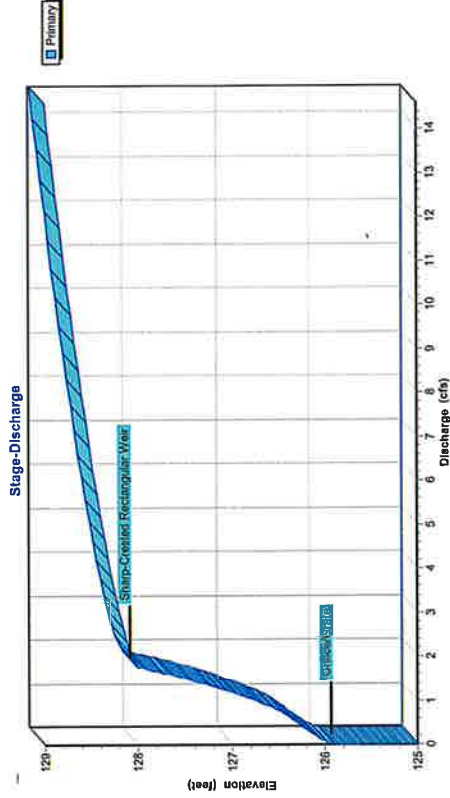
Device	Routing	Invert	Outlet Devices
#1	Primary	125.85'	7.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	128.00'	4.0' long Sharp-Crested Rectangular Weir 2 End Contractions

Primary Outflow Max=0.00 cfs @ 0.00 hrs HW=125.00' (Free Discharge)
1=Orifice/Grate (Controls 0.00 cfs)
2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

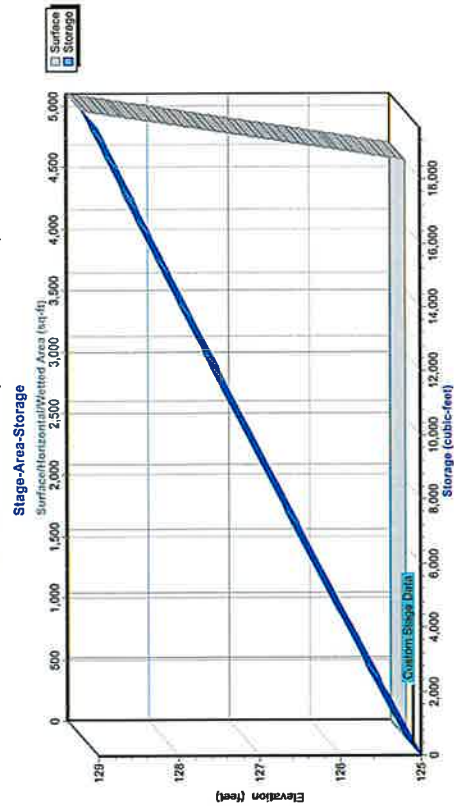
Pond 51P: Basin A (w/ underdrains)



Pond 51P: Basin A (w/ underdrains)



Pond 51P: Basin A (w/ underdrains)



Hydrograph for Pond 51P: Basin A (w/ underdrains)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	125.00	0.00
2.50	0.01	3,927	125.83	0.00
5.00	0.00	3,932	125.83	0.00
7.50	0.00	3,932	125.83	0.00
10.00	0.00	3,932	125.83	0.00
12.50	0.00	3,932	125.83	0.00
15.00	0.00	3,932	125.83	0.00
17.50	0.00	3,932	125.83	0.00
20.00	0.00	3,932	125.83	0.00
22.50	0.00	3,932	125.83	0.00
25.00	0.00	3,932	125.83	0.00
27.50	0.00	3,932	125.83	0.00
30.00	0.00	3,932	125.83	0.00
32.50	0.00	3,932	125.83	0.00
35.00	0.00	3,932	125.83	0.00
37.50	0.00	3,932	125.83	0.00
40.00	0.00	3,932	125.83	0.00
42.50	0.00	3,932	125.83	0.00
45.00	0.00	3,932	125.83	0.00
47.50	0.00	3,932	125.83	0.00
50.00	0.00	3,932	125.83	0.00
52.50	0.00	3,932	125.83	0.00
55.00	0.00	3,932	125.83	0.00
57.50	0.00	3,932	125.83	0.00
60.00	0.00	3,932	125.83	0.00
62.50	0.00	3,932	125.83	0.00
65.00	0.00	3,932	125.83	0.00
67.50	0.00	3,932	125.83	0.00
70.00	0.00	3,932	125.83	0.00

Stage-Discharge for Pond 51P: Basin A (w/ underdrains)

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
125.00	0.00	127.08	1.25	128.12	2.35
125.02	0.00	127.10	1.26	128.14	2.50
125.04	0.00	127.12	1.27	128.16	2.66
125.06	0.00	127.14	1.29	128.18	2.83
125.08	0.00	127.16	1.30	128.20	3.00
125.10	0.00	127.18	1.31	128.22	3.19
125.12	0.00	127.20	1.32	128.24	3.38
125.14	0.00	127.22	1.34	128.26	3.58
125.16	0.00	127.24	1.35	128.28	3.79
125.18	0.00	127.26	1.36	128.30	4.01
125.20	0.00	127.28	1.37	128.32	4.23
125.22	0.00	127.30	1.38	128.34	4.46
125.24	0.00	127.32	1.40	128.36	4.69
125.26	0.00	127.34	1.41	128.38	4.93
125.28	0.00	127.36	1.42	128.40	5.18
125.30	0.00	127.38	1.43	128.42	5.43
125.32	0.00	127.40	1.44	128.44	5.68
125.34	0.00	127.42	1.45	128.46	5.95
125.36	0.00	127.44	1.47	128.48	6.21
125.38	0.00	127.46	1.48	128.50	6.49
125.40	0.00	127.48	1.49	128.52	6.76
125.42	0.00	127.50	1.50	128.54	7.04
125.44	0.00	127.52	1.51	128.56	7.33
125.46	0.00	127.54	1.52	128.58	7.62
125.48	0.00	127.56	1.53	128.60	7.91
125.50	0.00	127.58	1.54	128.62	8.21
125.52	0.00	127.60	1.55	128.64	8.52
125.54	0.00	127.62	1.56	128.66	8.82
125.56	0.00	127.64	1.58	128.68	9.14
125.58	0.00	127.66	1.59	128.70	9.45
125.60	0.00	127.68	1.60	128.72	9.77
125.62	0.00	127.70	1.61	128.74	10.09
125.64	0.00	127.72	1.62	128.76	10.42
125.66	0.00	127.74	1.63	128.78	10.75
125.68	0.00	127.76	1.64	128.80	11.08
125.70	0.00	127.78	1.65	128.82	11.42
125.72	0.00	127.80	1.66	128.84	11.76
125.74	0.00	127.82	1.67	128.86	12.10
125.76	0.00	127.84	1.68	128.88	12.45
125.78	0.00	127.86	1.69	128.90	12.80
125.80	0.00	127.88	1.70	128.92	13.16
125.82	0.00	127.90	1.71	128.94	13.51
125.84	0.00	127.92	1.72	128.96	13.87
125.86	0.00	127.94	1.73	128.98	14.24
125.88	0.00	127.96	1.74	129.00	14.60
125.90	0.01	127.98	1.74		
125.92	0.02	128.00	1.75		
125.94	0.03	128.02	1.80		
125.96	0.04	128.04	1.88		
125.98	0.05	128.06	1.97		
126.00	0.07	128.08	2.09		
126.02	0.09	128.10	2.21		

Stage-Area-Storage for Pond 51P: Basin A (w/ underdrains)

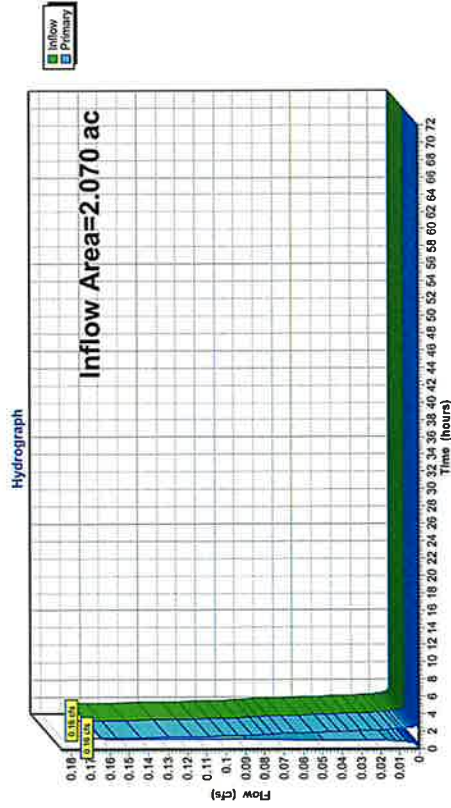
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
125.00	4,700	0	127.60	4,960	12,558
125.05	4,705	235	127.65	4,965	12,806
125.10	4,710	470	127.70	4,970	13,055
125.15	4,715	706	127.75	4,975	13,303
125.20	4,720	942	127.80	4,980	13,552
125.25	4,725	1,178	127.85	4,985	13,801
125.30	4,730	1,414	127.90	4,990	14,051
125.35	4,735	1,651	127.95	4,995	14,300
125.40	4,740	1,888	128.00	5,000	14,550
125.45	4,745	2,125	128.05	5,005	14,800
125.50	4,750	2,363	128.10	5,010	15,050
125.55	4,755	2,600	128.15	5,015	15,301
125.60	4,760	2,838	128.20	5,020	15,552
125.65	4,765	3,076	128.25	5,025	15,803
125.70	4,770	3,315	128.30	5,030	16,055
125.75	4,775	3,553	128.35	5,035	16,306
125.80	4,780	3,792	128.40	5,040	16,558
125.85	4,785	4,031	128.45	5,045	16,810
125.90	4,790	4,271	128.50	5,050	17,063
125.95	4,795	4,510	128.55	5,055	17,315
126.00	4,800	4,750	128.60	5,060	17,568
126.05	4,805	4,990	128.65	5,065	17,821
126.10	4,810	5,230	128.70	5,070	18,074
126.15	4,815	5,471	128.75	5,075	18,328
126.20	4,820	5,712	128.80	5,080	18,582
126.25	4,825	5,953	128.85	5,085	18,836
126.30	4,830	6,194	128.90	5,090	19,091
126.35	4,835	6,436	128.95	5,095	19,345
126.40	4,840	6,678	129.00	5,100	19,600
126.45	4,845	6,920			
126.50	4,850	7,163			
126.55	4,855	7,405			
126.60	4,860	7,648			
126.65	4,865	7,891			
126.70	4,870	8,135			
126.75	4,875	8,378			
126.80	4,880	8,622			
126.85	4,885	8,866			
126.90	4,890	9,111			
126.95	4,895	9,355			
127.00	4,900	9,600			
127.05	4,905	9,845			
127.10	4,910	10,090			
127.15	4,915	10,336			
127.20	4,920	10,582			
127.25	4,925	10,828			
127.30	4,930	11,074			
127.35	4,935	11,321			
127.40	4,940	11,568			
127.45	4,945	11,815			
127.50	4,950	12,063			
127.55	4,955	12,310			

Summary for Link 50L: DA East

Inflow Area = 2.070 ac, 46.86% Impervious, Inflow Depth = 0.05" for WQ event
Inflow = 0.16 cfs @ 1.24 hrs, Volume= 0.009 af
Primary = 0.16 cfs @ 1.24 hrs, Volume= 0.009 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 52P

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

Link 50L: DA East



Hydrograph for Link 50L: DA East

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
1.00	0.03	0.00	0.03	53.00	0.00	0.00	0.00
2.00	0.04	0.00	0.04	54.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	59.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	60.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	62.00	0.00	0.00	0.00
11.00	0.00	0.00	0.00	63.00	0.00	0.00	0.00
12.00	0.00	0.00	0.00	64.00	0.00	0.00	0.00
13.00	0.00	0.00	0.00	65.00	0.00	0.00	0.00
14.00	0.00	0.00	0.00	66.00	0.00	0.00	0.00
15.00	0.00	0.00	0.00	67.00	0.00	0.00	0.00
16.00	0.00	0.00	0.00	68.00	0.00	0.00	0.00
17.00	0.00	0.00	0.00	69.00	0.00	0.00	0.00
18.00	0.00	0.00	0.00	70.00	0.00	0.00	0.00
19.00	0.00	0.00	0.00	71.00	0.00	0.00	0.00
20.00	0.00	0.00	0.00	72.00	0.00	0.00	0.00
21.00	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				
51.00	0.00	0.00	0.00				

TABLE OF CONTENTS

Project Reports

- 1 Routing Diagram
- 2 Project Notes
- 3 Rainfall Events Listing (selected events)
- 4 Area Listing (all nodes)
- 5 Soil Listing (all nodes)
- 6 Ground Covers (all nodes)
- 7 Notes Listing (all nodes)

WQ Event

- 8 Node Listing
- 9 Subcat 9S: DA Basin A (perv)
- 11 Subcat 51S: DA East Undetained (IMP)
- 13 Subcat 52S: DA Offsite East (Perv)
- 15 Subcat 53S: DA East Undetained (Perv)
- 17 Subcat 54S: DA Basin A (Imp)
- 19 Subcat 55S: DA Offsite East (IMP)
- 21 Pond 51P: Basin A (w/ underdrains)
- 27 Link 50L: DA East

STORMWATER COLLECTION SYSTEM CALCULATIONS (PIPE SIZING)



Stormwater Collection System Calculations

Project: Prop. Day School & Medical Office
 Job #: 4447-22-01334
 Location: Montgomery
 Design Storm: 25 YR

Computed By: SS
 Checked By: JSH
 Date: 5/1/2023
 Revised:

NOTES:

- Design method used is Rational Method
- Refer to Weighted Runoff Coefficient table for calculation of incremental areas and C values
- OCS was designed to manage 100-YR storm

PIPE SECTION		SUBCATCHMENT AREA	INCREMENTAL		CUMULATIVE	TIME OF CONCENTRATION			I	PEAK RUNOFF		PIPING INPUT			PIPING DATA			
FROM	TO	Area (Acres)	"C"	A x C Ac	A x C (acres)	Tc to Inlet (min)	Tc in Pipe (min.)	Final Tc (min)	(In/Hr)	Q to Inlet (CFS)	Q cum. for Pipe (CFS)	Dia. (In)	Length (Ft)	Man. "n"	Slope (ft/ft)	Pipe Capacity (cfs)	Full Pipe Velocity (fps)	Actual Pipe Velocity (fps)
Inlet #121	Inlet #120	0.12	0.95	0.11	0.11	10.00	0.03	10.00	6.80	0.75	0.75	15	7.0	0.012	0.0050	4.95	4.04	2.09
Inlet #120	Inlet #110	0.13	0.90	0.12	0.29	10.00	0.17	10.08	6.80	0.82	1.97	15	41.0	0.012	0.0050	4.95	4.04	3.65
Inlet #113	Inlet #112	0.08	0.95	0.08	0.08	10.00	0.10	10.00	6.80	0.54	0.54	15	31.0	0.012	0.0050	4.95	4.04	1.72
Inlet #114	Inlet #112	0.20	0.90	0.18	0.18	10.00	0.02	10.00	6.80	1.22	1.22	15	5.0	0.012	0.0050	4.95	4.04	2.83
Inlet #112	Inlet #111	0.12	0.95	0.11	0.37	10.00	0.39	10.10	6.80	0.75	2.52	15	95.0	0.012	0.0050	4.95	4.04	4.08
Inlet #111	Inlet #110	0.08	0.95	0.08	0.45	10.00	0.09	10.49	6.80	0.54	3.06	15	23.0	0.012	0.0050	4.95	4.04	4.38
Inlet #110	Inlet #100	0.09	0.95	0.09	0.83	10.00	0.21	10.58	6.68	0.60	5.54	15	125.0	0.012	0.0300	12.12	9.88	9.55
Malvern Roof	Inlet #100	0.10	0.95	0.10	0.10	10.00	0.89	10.00	6.80	0.68	0.68	8	200.0	0.012	0.0100	1.31	3.75	3.82
Play Area	Inlet #100	0.22	0.85	0.19	0.19	10.00	0.09	10.00	6.80	1.29	1.29	12	26.0	0.012	0.0100	3.86	4.92	4.03
Inlet #100	FES A	0.07	0.85	0.06	1.18	10.00	0.02	10.89	6.68	0.40	7.88	18	15.0	0.012	0.0662	29.27	16.57	12.16
Office Roof	Basin A	0.09	0.95	0.09	0.09	10.00	0.07	10.00	6.80	0.61	0.61	8	20.0	0.012	0.0100	1.57	4.50	3.35
OCS #200	MH #210					10.00	0.02	10.00	6.80	6.32	6.32	18	13.0	0.012	0.0500	25.44	14.40	10.12
MH #210	MH #220	0.00	0.95	0.00	0.93	10.00	0.10	10.02	6.80	0.00	6.32	18	88.0	0.012	0.0500	25.44	14.40	10.12
MH #220	EX. MH #230	0.00	0.95	0.00	0.93	10.00	0.06	10.12	6.80	0.00	6.32	18	65.0	0.012	0.0682	29.71	16.82	10.67

CONDUIT OUTLET PROTECTION CALCULATIONS

Conduit Outlet Protection Calculations

Rip Rap Pad # A

Design Parameters:

Design Storm Flow for 25 Year, Q
Vertical Dimension of Outlet Pipe, D_o
Horizontal Dimension of Outlet Pipe, W_o
Tailwater Depth, TW^1

7.88 cfs
15 in
15 in
1.63 ft

Apron Dimension Calculations:

Unit Discharge, $q = Q/D_o =$ 6.30 cfs per foot

• **Case I: $TW < 1/2 D_o$**

$$\text{Apron Length, } L_a = \frac{1.8q}{D_o^{1/2}} + 7D_o =$$

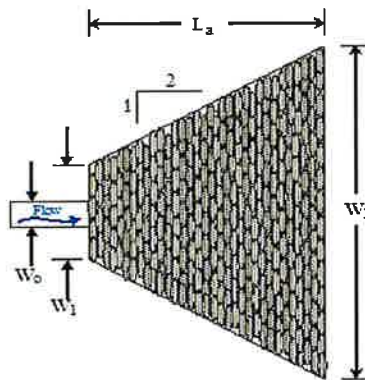
$$\text{Width, } W_1 = 3W_o =$$

$$\text{Width, } W_2 = 3W_o + L_a =$$

$$L_a =$$

$$W_1 =$$

$$W_2 =$$



• **Case II: $TW \geq 1/2 D_o$**

$$\text{Apron Length, } L_a = \frac{3q}{D_o^{1/2}} = 16.92 \text{ ft}$$

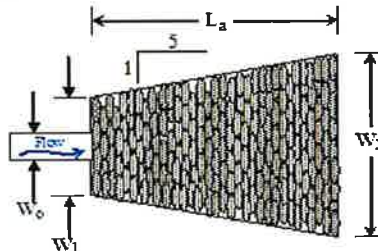
$$\text{Width, } W_1 = 3W_o = 3.75 \text{ ft}$$

$$\text{Width, } W_2 = 3W_o + 0.4L_a = 10.52 \text{ ft}$$

or $L_a = 17 \text{ ft}$

or $W_1 = 4 \text{ ft}$

or $W_2 = 11 \text{ ft}$



Rip Rap Stone Size Calculations:

$$\text{Median Stone, } d_{50} = \frac{0.02q^{1.33}}{TW} = 1.70 \text{ in}$$

$$d_{50} = 6 \text{ in}$$

Notes:

1. Where there is a well-defined channel downstream of the apron, the bottom width of the apron shall be at least equal to the bottom width of the channel and the structural lining shall extend at least one foot above the tailwater elevation, but no lower than two-thirds of the vertical conduit dimension above the conduit invert.
2. The side slopes shall be 2:1 or flatter.
3. The bottom grade shall be 0.0% (level).
4. There shall be no overfall at the end of the apron or at the end of the culvert.
5. Fifty (50) percent by weight of the rip-rap mixture shall be smaller than the median size stone designated as d_{50} . The largest stone size in the mixture shall be 1.5 times the d_{50} size. The rip-rap shall be reasonably well graded.
6. The thickness of the rip-rap apron may be two (2) times the median stone diameter provided that the apron is constructed on a bedding of four (4) inches of 3/4 inch clean stone on approved filter fabric material.
7. Rip-rap and filter fabric shall meet the standards of the governing Soil Conservation District as well as the requirements of the local municipality.
8. No bends or curves at the intersection of the conduit and apron will be permitted.

Footnote:

1. Tailwater depth shall be the 2-year storm if discharging into a detention basin. For areas where tailwater cannot be computed, use $TW = 0.2D_o$.
2. For multiple pipes, increase rip-rap sizes by 25% when pipe spacing is greater than or equal to $1/4W_o$.

OVERFLOW SPILLWAY CALCULATIONS



Overflow Spillway Calculations

Project: Proposed Day School and Medical Office
Job #: 4447-22-01334
Location: Montgomery NJ
Computed By: AF
Checked By: JH
Date: 4/28/2023

BASIN NAME

To Size Spillway:

- Assume complete blockage of the outlet control structure and no infiltration
- Route 2 & 10 year storm through basin assuming that the basin is filled with water up to the Emergency Spillway Elevation

	2 Year	10 Year
Spillway Width (ft.)	10.00	10.00
Spillway Elevation (ft.)	128.50	128.50
Flow through Spillway (Q) (cfs)	2.850	4.750
Water Surface Elevation (ft)	128.70	128.78
Depth of Flow (ft)	0.20	0.28
Area of Flow (A) (sf)*	2.04	2.88

Velocity (V) = Q / A (ft/sec) **1.40** **1.65**

**** V = < 2.0 FPS ** Stability Achieved**

NONSTRUCTURAL STRATEGIES POINTS SYSTEM (NSPS)

NJDEP Nonstructural Strategies Points System (NSPS)

Version: January 31, 2006

Note: Input Values in Yellow Cells Only

Project: 4447-22-01334

Date: April 28, 2023

User: Dynamic Engineering Consultants PC

Notes: The Malvern School Properties, LP
Block 28010, Lots 57 & 58
982 Georgetown-Franklin Turnpike
Montgomery Township, Somerset County, NJ

Step 1 - Provide Basic Major Development Site Information

A. Specify Total Area in Acres of Development Site Described in Steps 2 and 3 = 2.1 Acres

B. Specify by Percent the Various Planning Areas Located within the Development Site:

State Plan Planning Area:	PA-1	PA-2	PA-3	PA-4	PA-4B	PA-5	Total % Area
Percent of Each Planning Area within Site:	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	100.0%

Note: See User's Guide for Equivalent Zones within Designated Centers and the NJ Meadowlands, Pinelands, and Highlands Districts

Step 2 - Describe Existing or Pre-Developed Site Conditions

A. Specify Existing Land Use/Land Cover Descriptions and Areas:

Site Segment	Land Use/Land Cover Description	Specify Land Use/Land Cover in Acres for Each HSG				Use/Cover Subtotals	Points
		HSG A	HSG B	HSG C	HSG D		
1	Wetlands and Undisturbed Stream Buffers					0.0	0
2	Lawn and Open Space				1.4	1.4	121
3	Brush and Shrub					0.0	0
4	Meadow, Pasture, Grassland, or Range					0.0	0
5	Row Crop					0.0	0
6	Small Grain and Legumes					0.0	0
7	Woods - Indigenous					0.0	0
8	Woods - Planted					0.0	0
9	Woods and Grass Combination				0.5	0.5	56
10	Ponds, Lakes, and Other Open Water					0.0	0
11	Gravel and Dirt					0.0	0
12	Porous and Permeable Paving					0.0	0
13	Directly Connected Impervious				0.2	0.2	0
14	Unconnected Impervious with Small D/S Pervious					0.0	0
15	Unconnected Impervious with Large D/S Pervious					0.0	0
HSG Subtotals (Acres):		0.0	0.0	0.0	2.1		
HSG Subtotals (%):		0.0%	0.0%	0.0%	100.0%		
						Total Area:	2.1
						Total % Area:	100.0%

Points Subtotal: 176

Total Existing Site Points: 176

Step 3 - Describe Proposed or Post-Developed Site Conditions

A. Specify Proposed Land Use/Land Cover Descriptions and Areas:

Site Segment	Land Use/Land Cover Description	Specify Land Use/Land Cover in Acres for Each HSG				Use/Cover Subtotals	Points
		HSG A	HSG B	HSG C	HSG D		
1	Wetlands and Undisturbed Stream Buffers					0.0	0
2	Lawn and Open Space				1.0	1.0	91
3	Brush and Shrub					0.0	0
4	Meadow, Pasture, Grassland, or Range					0.0	0
5	Row Crop					0.0	0
6	Small Grain and Legumes					0.0	0

7	Woods - Indigenous				0.0	0
8	Woods - Planted				0.0	0
9	Woods and Grass Combination			0.1	0.1	6
10	Ponds, Lakes, and Other Open Water				0.0	0
11	Gravel and Dirt				0.0	0
12	Porous and Permeable Paving				0.0	0
13	Directly Connected Impervious			1.0	1.0	0
14	Unconnected Impervious with Small D/S Pervious				0.0	0
15	Unconnected Impervious with Large D/S Pervious				0.0	0

HSG Subtotals (Acres):	0.0	0.0	0.0	2.1
HSG Subtotals (%):	0.0%	0.0%	0.0%	100.0%

Total Area:	2.1
Total % Area:	100.0%

Points Subtotal: 97

B. Compare Proposed Impervious Coverage with Maximum Allowable Impervious Coverage:

Total Directly Connected Impervious Coverage =	47%	% of Site
Total Unconnected Impervious Coverage with Small D/S Pervious =	0%	% of Site
Total Unconnected Impervious Coverage with Large D/S Pervious =	0%	% of Site
Total Site Impervious Coverage =	47%	% of Site
Effective Site Impervious Coverage =	47%	% of Site
Specify Source of Maximum Allowable Impervious Coverage:	None	(None or Table)

Points Subtotal: 0

C. Compare Proposed Site Disturbance with Maximum Allowable Site Disturbance:

Total Proposed Site Disturbance =	97%	% of Site
Maximum Allowable Site Disturbance by Municipal Ordinance =	100%	% of Site

Points Subtotal: 1

D. Describe Proposed Runoff Conveyance System:

Total Length of Runoff Conveyance System =	361	Feet
Length of Vegetated Runoff Conveyance System =	210	Feet
% of Total Runoff Conveyance System That is Vegetated =	58%	

Points Subtotal: 42

E. Residential Lot Clustering:

Percent of Total Site Area that will be Clustered =	0%	% of Site
Minimum Standard Lot Size as Per Zoning (Note: 1/2 Acre or Greater) =	0.000	Acres
Maximum Proposed Cluster Lot Size (Note: 1/4 Acre or Less) =	0.000	Acres
Percent of Clustered Portion of Site to be Preserved as Vegetated Open Space =	0%	% of Clustered Site Portion

Points Subtotal: 0

F. Will the Following be Utilized to Minimize Soil Compaction?

Proposed Lawn Areas will be Graded with Lightweight Construction Equipment:	Yes	(Yes or No)
Percent of Proposed Lawn Areas to be Graded with Such Equipment:	100%	% of Lawn Areas

Points Subtotal: 18

G. Are Any of the Following Stormwater Management Standards Met Using Only Nonstructural Strategies and Measures?

Groundwater Recharge Standards (NJAC 7:8-5.4-a-2):	No	(Yes or No)
Stormwater Runoff Quality Standards (NJAC 7:8-5.5):	No	(Yes or No)
Stormwater Runoff Quantity Standards (NJAC 7:8-5.4-a-3):	No	(Yes or No)

Points Subtotal: 0

Note: If the Answers to All Three Questions at G Above are "Yes", Adequate Nonstructural Measures have been Utilized.

Total Proposed Site Points: 158

Ratio of Proposed to Existing Site Points: 90%

Required Site Points Ratio: 89%

Nonstructural Point System Results: Proposed Nonstructural Measures are Adequate

**STORMWATER BASIN AREA INVESTIGATION
REPORT, PREPARED BY DYNAMIC EARTH, LLC
(ATTACHED SEPARATELY)**

DRAINAGE AREA MAPS

