

STORMWATER MANAGEMENT REPORT

for the:

Americana Place

Township of East Windsor – Block 57, Lots 9, 10 & 11

Borough of Hightstown – Block 7, Lots 40.02 & 41

Mercer County, New Jersey

Prepared By:

Menlo Engineering Associates, Inc
261 Cleveland Avenue
Highland Park, New Jersey 08904
T.: 732.846.8585
F.: 732.846.9439

Under the Immediate Supervision of:



Gregory S. Oman, P.E.
NJ PE # 43441

GSO/SK
MEA # 2005.109.02
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INTRODUCTION

This report analyzes the stormwater drainage conditions that will occur as a result of the new development at proposed Americana Center property, divided between the Township of East Windsor (H-3 district) and the Borough of Hightstown (R-3 district), Mercer County, New Jersey. The subject site is more specifically defined as Block 57, Lots 9, 10, 11 (East Windsor) and Block 7, Lots 40.02 & 41 (Hightstown). Said existing lots are shown on the USGS and Site Location maps provided within this report and shall hereby be referenced as "the Site". The site consists of approximately 6.46 acres and is bounded by NJ State Highway US Route 130 to the north, Rocky Brook to the east, a single-family residential development to the south and a single-story furniture store to the west. Access to/from the site is handled by seven separate curb cuts along Route 130. Currently on site resides a single-story furniture store, motel, diner and two small retail buildings. The applicant proposes demolishing all the buildings onsite except for the diner and one of the retail buildings.

The applicant, Americana Hospitality Group, proposes redeveloping a 6.46-acre tract within the central portion of East Windsor Township as a commercial development. The project anticipates constructing two (2) new buildings, while expanding the existing medical office building along Route 130. Three (3) structures are single users: 10,933 SF existing diner, proposed 43,384 SF Hotel, proposed 2,225 SF Starbucks Restaurant, and the existing 5,791 SF medical office building with 2,448 SF building addition. Additional improvements include driveways, sidewalks, parking and landscaped areas, stormwater management facilities, associated utilities, and related site improvements. The scope of this report includes analysis of runoff generated by the proposed buildings, paved areas, landscaped areas, as well as an analysis of the proposed bioretention and infiltration systems, and resulting stormwater collection system, as shown on the accompanying Site Plan documents.

The following items shall be addressed within this report:

- Narrative of pre- and post-development conditions with calculations to substantiate derived runoff coefficients and time of concentration;
- Calculations for the water quality storm utilizing the NJDEP 1.25"/2 hours water quality design storm;
- Storm pollutant (TSS) removal;
- Calculations for the 2-, 10-, and 100- year storm peak runoff rates for entire site under pre- and post-development conditions, respectively;
- Calculations for the proposed small scale bioretention systems include inflow hydrographs, outflow hydrographs and a storage volume versus depth table.
- Calculations to verify the capacity of the proposed stormwater conveyance system.

The primary design constraints for this project are based on the standards of the Township of East Windsor, the Borough of Hightstown, Mercer County, the New Jersey Soil Conservation Service, and the New Jersey Department of Environmental Protection (NJDEP) Rules and Regulations.

The purpose of this report is to demonstrate that the proposed stormwater management system will mitigate stormwater runoff while providing water quality, and to assist Engineer at the Municipal level in evaluating the drainage calculations and considerations incorporated in the design as shown on the plans submitted. The report supplements, and should be reviewed in conjunction with, the project development plans prepared by Menlo Engineering Associates, Inc.

This office will readily respond to questions and requests for additional calculations or verification of the proposed design by Municipal Engineers and will be responsive to his suggestions and modifications to the



ROAD MAP

Township of East Windsor &
Borough of Hightstown
Mercer County

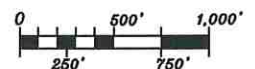


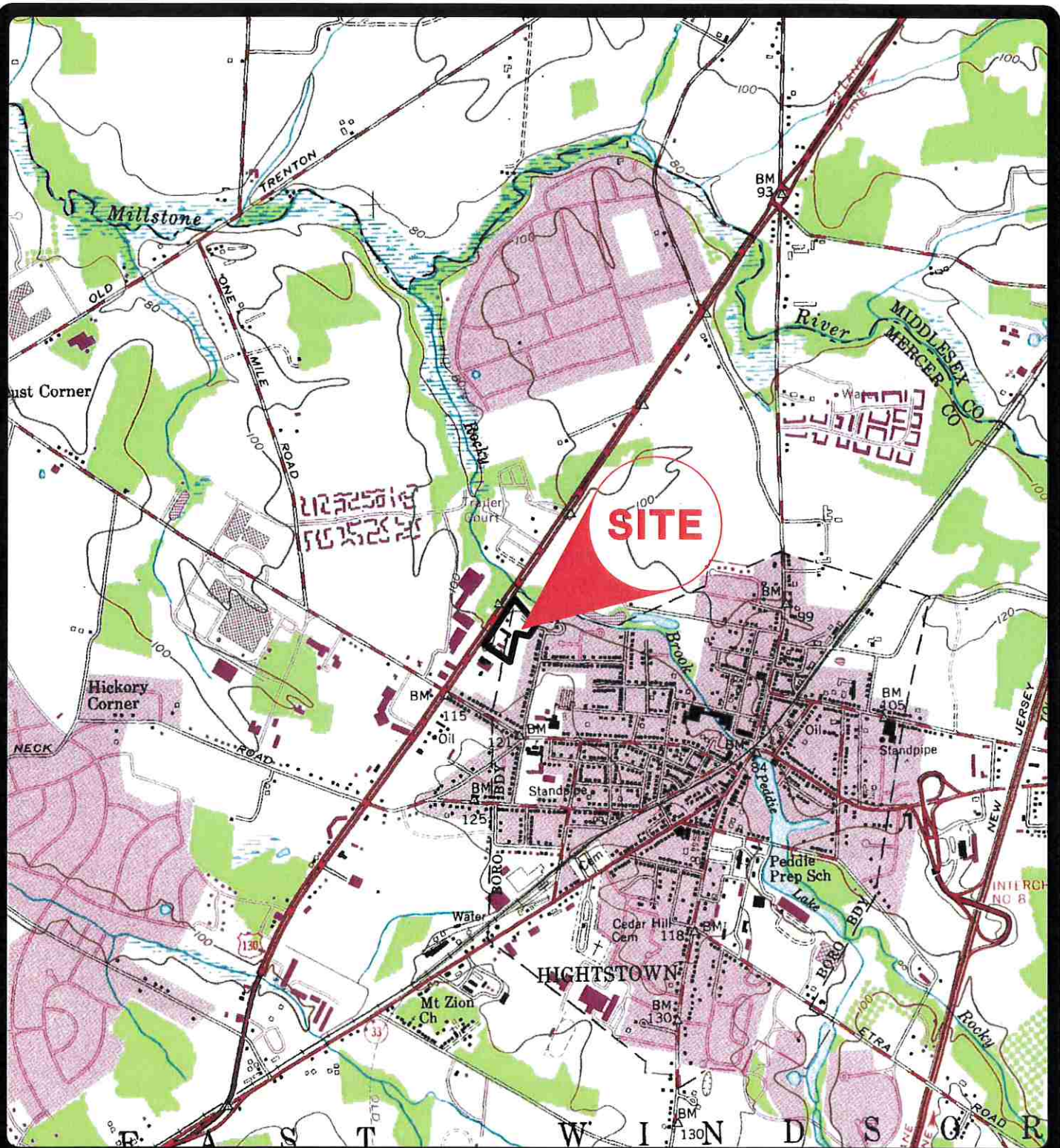
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261 CLEVELAND AVENUE
HIGHLAND PARK, NJ 08904
(732) 846-8585

East Windsor
BLOCK
57
LOTS
9, 10
& 11

Hightstown
BLOCK
7
LOTS
40.02
& 41

Scale: 1"=1,000±ft Job # 2005.109.02

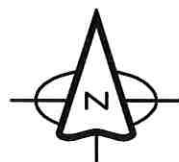




U.S.G.S. MAP

Quad Name: Highstown
 Township of East Windsor &
 Borough of Highstown
 Mercer County

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 HIGHLAND PARK, NJ 08904
 (732) 846-8585



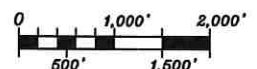
State Plane Coordinates:

N: 525,022.20 ft.
 E: 482,250.12 ft.

East Windsor
 BLOCK
 57
 LOTS
 9, 10
 & 11

Highstown
 BLOCK
 7
 LOTS
 40.02
 & 41

Job # 2005.109.02
 Scale: 1"=2,000±ft



design in conformance to the applicable codes in the interest of land use control consistent with environmental protection.

CRITERIA

In the hydraulic designs involved in this project, the drainage areas have been determined by electronic digitizer from the U.S.G.S. Quadrangle map, Legal and Topographic survey prepared by Control Layouts, Inc. and field observations to determine off-site and on-site areas. The Soil Conservation Service Soil Survey maps are used for hydrological soil group classification. Existing and proposed conditions are calculated for the 2, 10 and 100-year design storms. On-site storm sewer collection systems were sized for the 25-year storm and employed the Rational Method for design calculations.

STORMWATER MANAGEMENT PLAN & DESIGN

The guidelines for hydraulic design, as prepared by the Soil Conservation District, the Township of East Windsor and the Borough of Hightstown, Mercer County, and the New Jersey Department of Environmental Protection have been utilized for the drainage design of this project.

Additional stormwater detention systems are required on-site to attenuate flows from proposed impervious and pervious surfaces on the property. Calculations of runoff values, peak rates of discharge, and hydrographs were generated using the runoff control measures listed in the Soil Conservation Services TR-55 Method. This methodology was used to calculate both existing and proposed stormwater runoff generated from the site.

Existing Conditions:

The existing drainage pattern of the site drains from a South to North direction to existing drainage systems located within Route 130. These drainage systems eventually convey runoff down to Rocky Brook. Today, the drainage is broken into two separate systems, each of approximately equal area with the remaining drainage at the southern end of the site drains to an isolated wetland and ditch. This report demonstrates that the use of two separate underground detention basins provides the required rate of reduction to each of the points of analysis.

Under existing conditions, the entire site consists of two (2) drainage areas: EX-1 (3.07 ac), draining to the P.O.I. "A" at US Route 130 and EX-2 (0.49 ac), draining to the P.O.I. "B" at the main entrance drive of the property, and discharging all runoffs to Rocky Brook at upper corner of this site, as depicted on the accompanying Existing Drainage Area Map (see Fig. 1).

This site is depicted by the Mercer County Soils Manual as a combination of SacB (Sassafras sandy loam), MBYB (Mattapex and Bertie loams), and UdstB (Udorthents, stratified substratum) soils. Per the Soil Conservation System Urban Hydrology for Small Watersheds, these soils belong to Hydrologic Soil Groups (HSG) "B", "C" and "D" respectively. Additional information on these soil types is contained in Appendix E of this report.

Proposed Conditions:

The stormwater management facilities for the proposed development have been designed to maintain the natural, existing drainage patterns to the fullest extent possible, and to meet the governing agencies' requirements with respect to groundwater recharge, water quality and peak flow reductions.

Under post-development conditions, nine (9) main drainage areas are delineated, as depicted on the accompanying Proposed Drainage Area Map (see Fig. 2). Six (5) of them will be directed for water quality treatment and detention to achieve required reductions in rate of runoff, to proposed small-scale Bioretention systems.

- PR-1 (0.16 AC) – Drainage area to Small-scale Bioretention system #1
- PR-2 (0.29 AC) – Drainage area to Small-scale Bioretention system #2
- PR-3 (0.23 AC) – Drainage area to Small-scale Bioretention system #3
- PR-4 (0.71 AC) – Drainage area to Small-scale Bioretention system #4
- PR-5 (0.30 AC) – Drainage area to Small-scale Bioretention system #5
- PR-6 (1.45 AC) – Drainage area to Small-scale Bioretention system #6
- PR-7 (0.17 AC) – Drainage area of untreated runoffs via proposed conveyance system to P.O.I. "A"
- PR-8 (0.15 AC) – Drainage area of untreated runoffs overland to P.O.I. "A"
- PR-9 (0.10 AC) – Drainage area of untreated runoffs overland to P.O.I. "B"

Proposed Small-scale Bioretention systems routing calculations can be found in Appendix D of this report.

Proposed peak rate of runoff from site during and after development to Point of Interest (P.O.I.) "A" will be increased, and the use of six (6) Small-scale Bioretention systems will allow runoff rates for the 100, 10 and 2-year design storms to be reduced in accordance with current NJDEP standards. Based on the comparison of the peak discharge rates between the existing and proposed conditions, the outlet control structures have been designed to reduce peak flows leaving the Site to P.O.I. "A" after development. See Appendix D for detention system routing calculations.

Proposed peak rates of runoff from site during and after development to Point of Interest (P.O.I.) "B" will be reduced, and for stormwater leaving the site to P.O.I. "B", post-construction runoff hydrographs for the 2, 10 and 100-year storm events will not exceed, at any point in time, the pre-construction runoff hydrographs for the same storm event, which complies with requirements for stormwater runoff quantity control. Comparison tables and hydrographs for Existing and Proposed rates of runoff to P.O.I. "B" can be found at Appendix C of this report.

The time of concentration and travel time (T_c) calculations have been completed in accordance with Chapter 3 of the SCS Technical Release 55 Manual.

Pipe sizing calculations have been made using a 25-year design storm for capacity verification. Conveyance calculations and an Inlet Drainage Area Map (see Fig. 5) supporting pipe sizing results are included in Appendix F of this report.

Some runoffs will be leaving the proposed paved parking area at the eastern border of the site through seven (7) wall cuts (see Fig. 6). Since proposed stormwater velocities at these openings (see channel reports for curb cuts C5 – C11 in the Appendix F of this report) are lower than maximum allowable for sandy loams found in this area (2.5 ft./sec. maximum allowable velocity for sandy loam), outlet protections behind these wall cuts are not required.

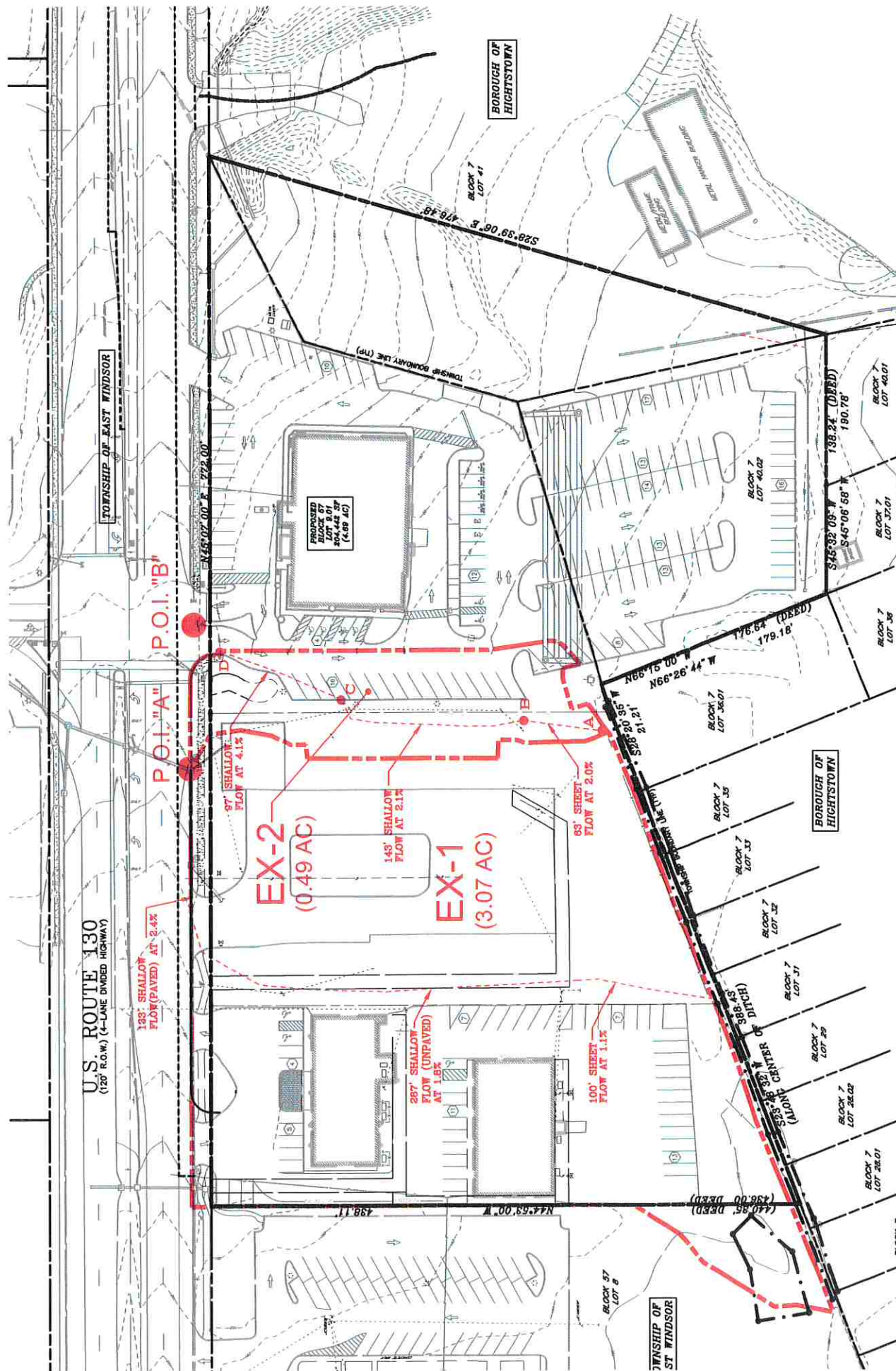


Figure 1. EXISTING DRAINAGE AREA MAP.

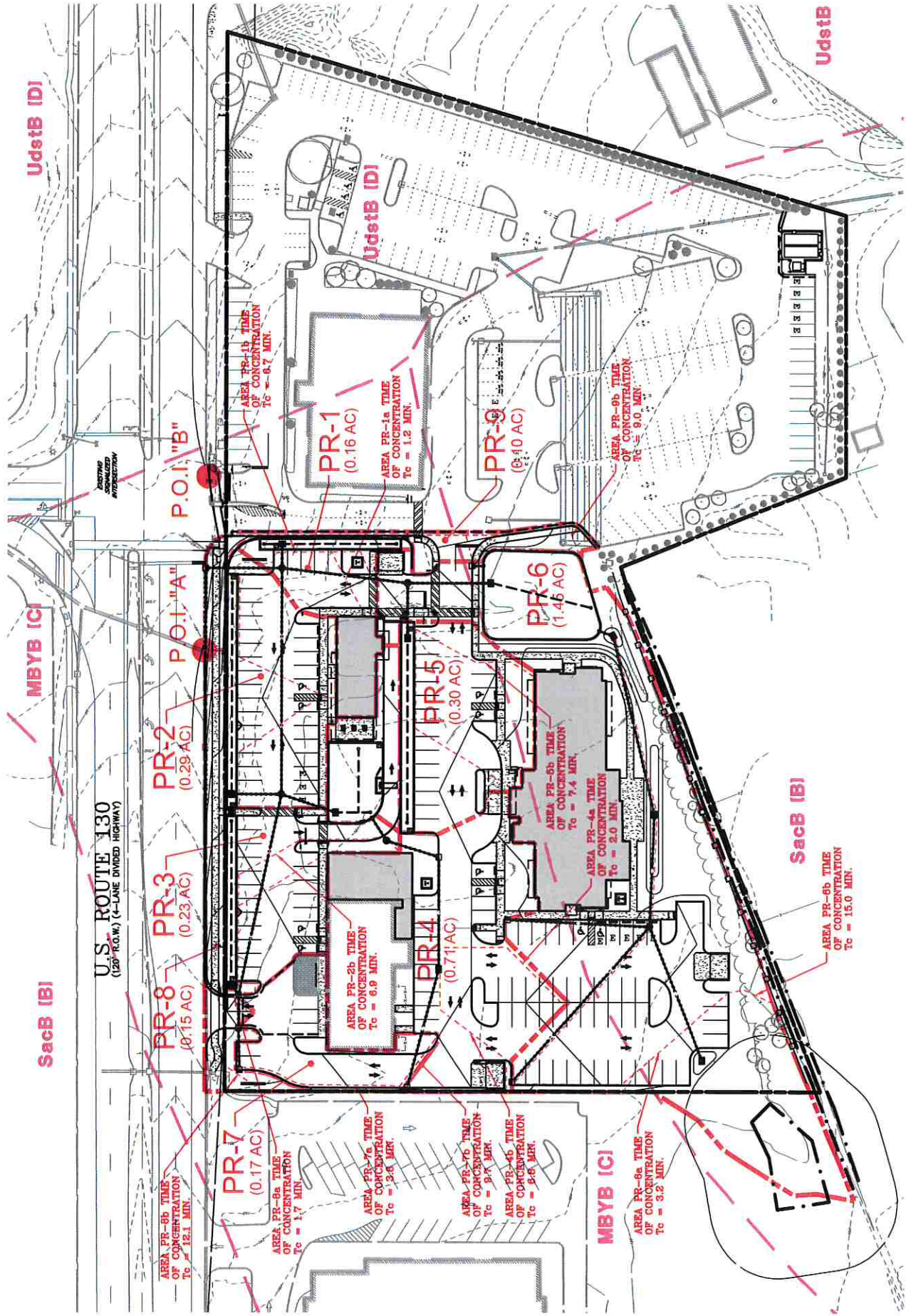


Figure 2. PROPOSED DRAINAGE AREA MAP.

Summary of the Rate of Runoff:

As demonstrated in the tables below, the proposed development will comply with the required rate or reductions for the 100, 10 and 2-year storm events, in accordance with NJDEP Stormwater Management Rules.

SUMMARY OF SITE RUNOFF TO P.O.I. "A"

STORM	EXISTING RUNOFF FROM SITE TO P.O.I. "A" (CFS)	REQUIRED NJDEP REDUCTIONS	ALLOWABLE RUNOFF FROM SITE TO P.O.I. "A" (CFS)	PROPOSED RUNOFF FROM SITE TO P.O.I. "A" (CFS)
2	3.78	50%	1.89	1.36
10	6.50	25%	4.88	3.70
100	12.28	20%	9.82	9.68

SUMMARY OF SITE RUNOFF TO P.O.I. "B"

STORM	EXISTING RUNOFF FROM SITE TO P.O.I. "B" (CFS)	PROPOSED RUNOFF FROM SITE TO P.O.I. "B" (CFS)
2	0.70	0.21
10	1.28	0.34
100	2.52	0.62

Result: The rate of runoff leaving the site complies with all Municipal and State requirements and reductions up to and including the 100-year storm event.

Pipe calculations for Run C were not completed because the outfall from the existing underground basin was not modeled. The proposed outfall pipes have the same size pipe and steeper slopes than the existing pipes. Based on our site inspections, the existing stormwater collection line has sufficient capacity for outfall flows and runoff from the site has been reduced per the summary table above. The pipe calculations sheet showing capacity of existing outfall pipes based on their sizes and slopes can be found in Appendix F.

Summary of the Groundwater Recharge Analysis:

The onsite testing concludes that the permeability rates throughout the site are less than 0.20 inches per hour. Per the NJDEP standards, groundwater recharge is not possible and/or required for sites with little to no permeability.

Summary of the Water Quality Analysis:

Proposed six (6) small-scale Bioretention Systems will allow us to meet TSS removal requirement for the entire site. As can be seen on Required and Achieved TSS removal exhibits (see Fig. 3 and Fig. 4), this site provides a weighted TSS removal rate of 78.83%, where 77.83% is required. See Appendix G of this report for related documents.

Nonstructural Stormwater Management Strategies

The NJDEP Nonstructural Strategies Point System (NSPS) has been utilized (see Appendix H for supporting tables) in order to provide proof that the proposed nonstructural measures are adequate and have been used to the maximum extent practicable at this development, as required by NJDEP, the Township of East Windsor and the Borough of Hightstown Standards. Some of them are:

- Impervious coverage was minimized to the maximum extent practicable.
- Existing vegetation was preserved to the maximum extent possible.
- Disturbed areas were stabilized with non-lawn grass mixes.
- Low maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawns, fertilizers and pesticides were provided.
- Clearing and grading was minimized in order to minimize land disturbance.

Conclusions:

The proposed stormwater management system for a proposed development at Americana Center has been designed with provisions for safe and efficient control of stormwater runoff in a manner which will not adversely affect the existing drainage patterns found in the surrounding areas and consists of an underground detention basin and two stormwater treatment devices, designed to reduce the rate of runoff and enhance the runoff water quality.

It is the opinion of this office that the proposed development will not have any negative impacts on the drainage characteristics of the site, or the immediately surrounding areas. Further, it is the opinion of this office, that the proposed development will be in compliance with all applicable stormwater management regulations as established by the NJDEP, the Township of East Windsor and the Borough of Hightstown Standards.

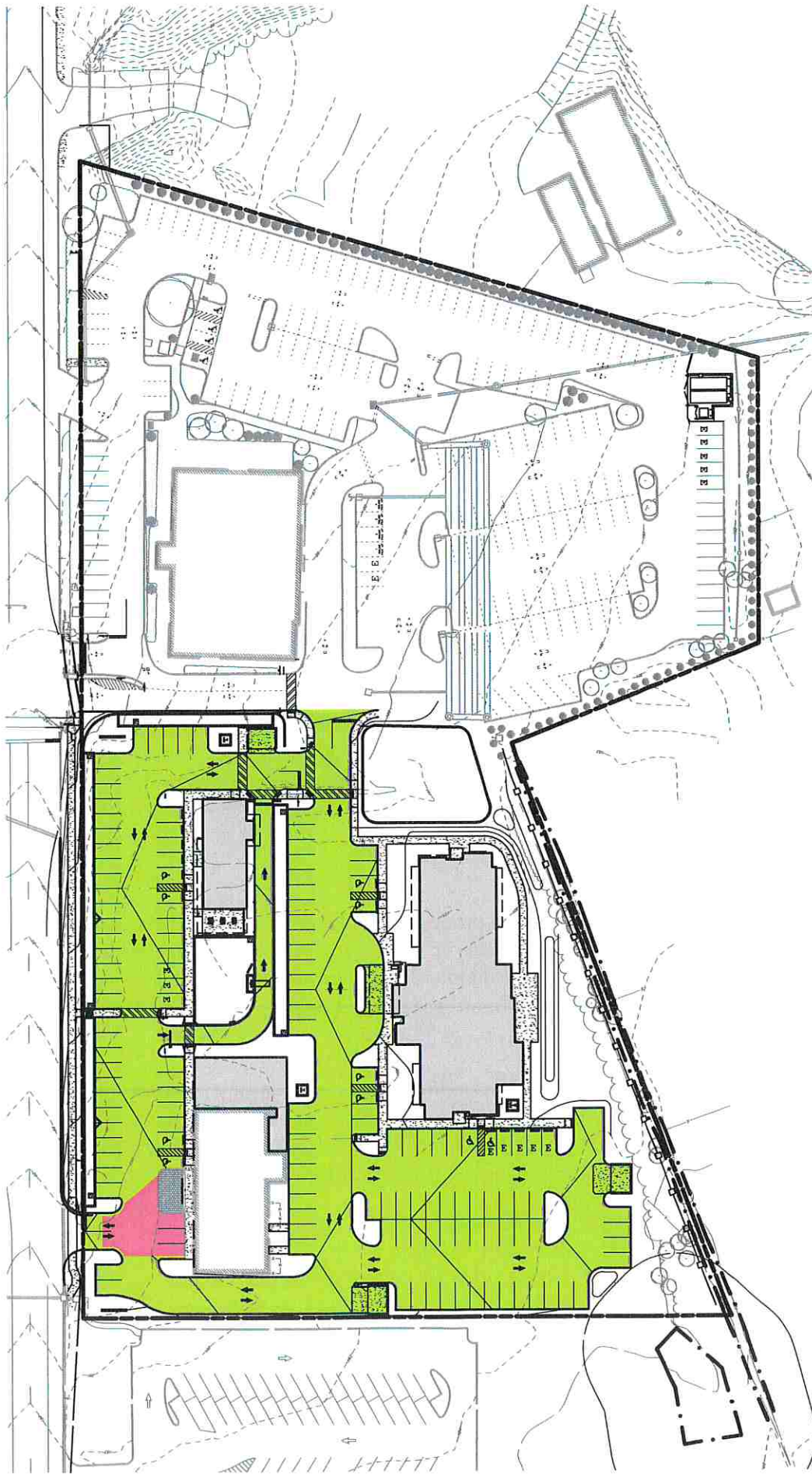
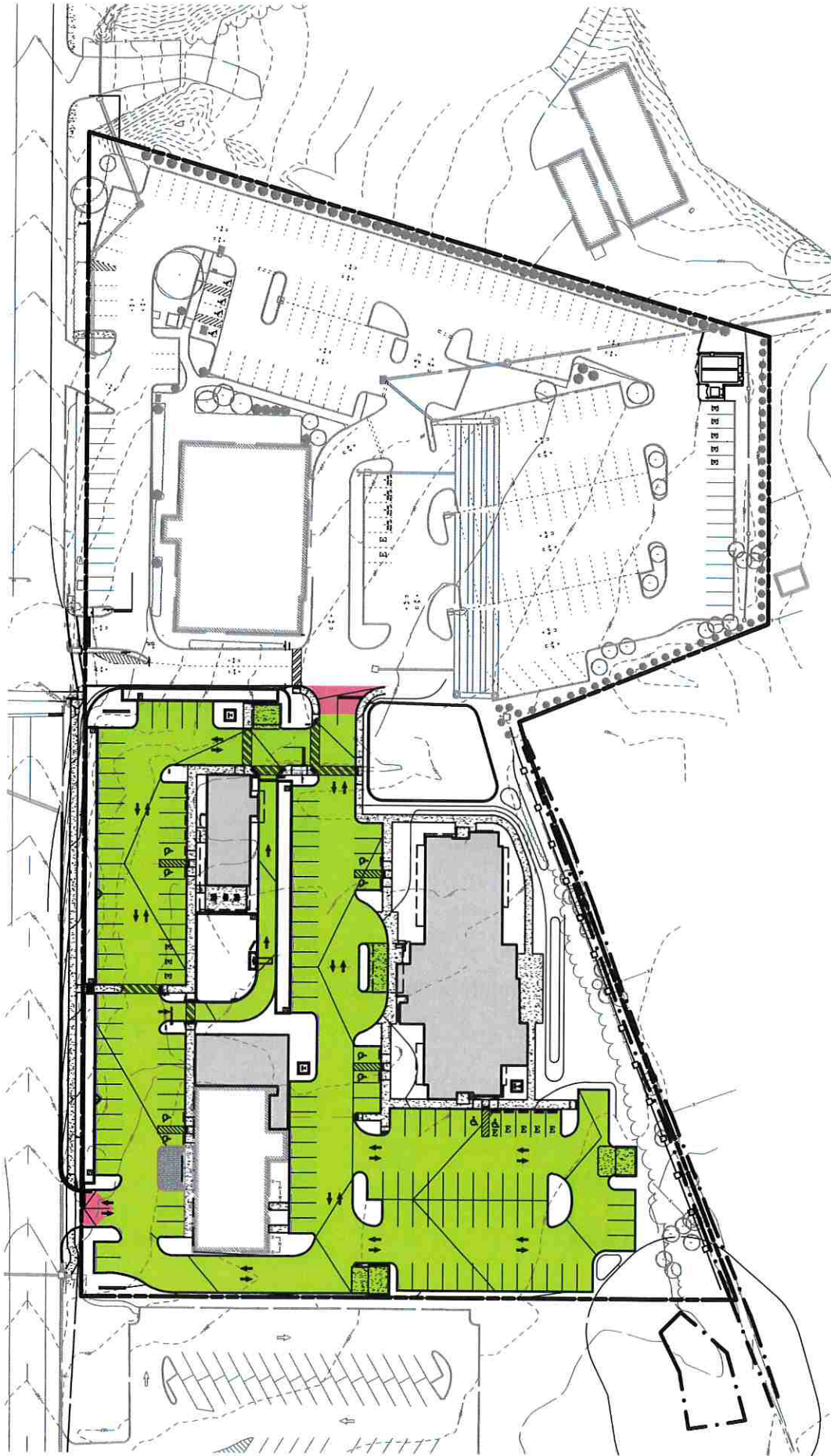


Figure 3. TSS REMOVAL REQUIRED.



- AREA OF 0% TSS REMOVAL ACHIEVED. WATER NOT TREATED (963 SF)
- AREA OF 80% TSS REMOVAL ACHIEVED. WATER TREATED BY STORMFILTER (64,931 SF)

$$W_a = \frac{64,931 \times 0.80 + 963 \times 0}{65,894} = 78.83 \%$$

W_a - WEIGHTED TSS REMOVAL RATE ACHIEVED

Figure 4. TSS REMOVAL ACHIEVED.

Drain Time Calculation

Bioretention Basin #1

Minimum Percolation Rate of soil bed mix (estimated): in/hr

Basin Information:

Weir Elevation: ft

Bottom of Basin: ft

Depth = ft

Depth (in inches) = in

Factor of Safety:

Percolation Time (Tp) Calculation:

Depth / Perc. Rate= hours

Water Quality design storm storage volume: cf

Underdrain pipe flow capacity: cfs

Conveyence Time (Tc) via underdrain pipe hours

Maximum Design storm Drain Time (Td):

Td = Tp + Tc hours

Bioretention Basin #2

Minimum Percolation Rate of soil bed mix (estimated): in/hr

Basin Information:

Weir Elevation: ft

Bottom of Basin: ft

Depth = ft

Depth (in inches) = in

Factor of Safety:

Percolation Time (Tp) Calculation:

Depth / Perc. Rate= hours

Water Quality design storm storage volume: cf

Underdrain pipe flow capacity: cfs

Conveyence Time (Tc) via underdrain pipe hours

Maximum Design storm Drain Time (Td) :

Td = Tp + Tc hours

Note: As-built testing must be conducted to validate the estimated permeability rate of the soil bed

Drain Time Calculation

Bioretention Basin #3

Minimum Percolation Rate of soil bed mix (estimated): in/hr

Basin Information:

Weir Elevation: ft

Bottom of Basin: ft

Depth = ft

Depth (in inches) = in

Factor of Safety:

Percolation Time (Tp) Calculation:

Depth / Perc. Rate = hours

Water Quality design storm storage volume: cf

Underdrain pipe flow capacity: cfs

Conveyence Time (Tc) via underdrain pipe hours

Maximum Design storm Drain Time (Td):

Td = Tp + Tc hours

Bioretention Basin #4

Minimum Percolation Rate of soil bed mix (estimated): in/hr

Basin Information:

Weir Elevation: ft

Bottom of Basin: ft

Depth = ft

Depth (in inches) = in

Factor of Safety:

Percolation Time (Tp) Calculation:

Depth / Perc. Rate = hours

Water Quality design storm storage volume: cf

Underdrain pipe flow capacity: cfs

Conveyence Time (Tc) via underdrain pipe hours

Maximum Design storm Drain Time (Td) :

Td = Tp + Tc hours

Note: As-built testing must be conducted to validate the estimated permeability rate of the soil bed

Drain Time Calculation

Bioretention Basin #5

Minimum Percolation Rate of soil bed mix (estimated):

2 in/hr

Basin Information:

Weir Elevation:

98.70 ft

Bottom of Basin:

98.00 ft

Depth = 0.70 ft

Depth (in inches) = 8.4 in

Factor of Safety:

2

Percolation Time (Tp) Calculation:

Depth / Perc. Rate=

8.4 hours

Water Quality design storm storage volume:

827.0 cf

Underdrain pipe flow capacity:

0.1 cfs

Conveyence Time (Tc) via underdrain pipe

2.3 hours

Maximum Design storm Drain Time (Td):

$T_d = T_p + T_c$

10.7 hours

Bioretention Basin #6

Minimum Percolation Rate of soil bed mix (estimated):

2 in/hr

Basin Information:

Weir Elevation:

97.60 ft

Bottom of Basin:

97.00 ft

Depth = 0.60 ft

Depth (in inches) = 7.2 in

Factor of Safety:

2

Percolation Time (Tp) Calculation:

Depth / Perc. Rate=

7.2 hours

Water Quality design storm storage volume:

2095.0 cf

Underdrain pipe flow capacity:

0.1 cfs

Conveyence Time (Tc) via underdrain pipe

7.8 hours

Maximum Design storm Drain Time (Td) :

$T_d = T_p + T_c$

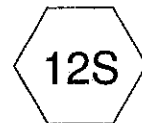
15.0 hours

Note: As-built testing must be conducted to validate the estimated permeability rate of the soil bed

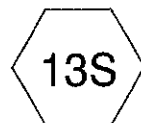
APPENDIX A: EXISTING CONDITIONS



Drainage Area EX-1a
(Impervious part of
Drainage Area EX-1)



Drainage Area EX-1b
(Pervious part of
Drainage Area EX-1)



Drainage Area EX-2a
(Impervious part of
Drainage Area EX-2)



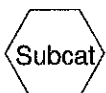
Drainage Area EX-2b
(Pervious part of
Drainage Area EX-2)



Total to P.O.I. "A"



Total to P.O.I. "B"



2 YEAR STORM

2005.109.02_EXISTING (Rev 7)

Prepared by Menlo Engineering Associates

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2 Year Storm

NOAA 24-hr C 2-Year Rainfall=3.31"

Printed 2/9/2023

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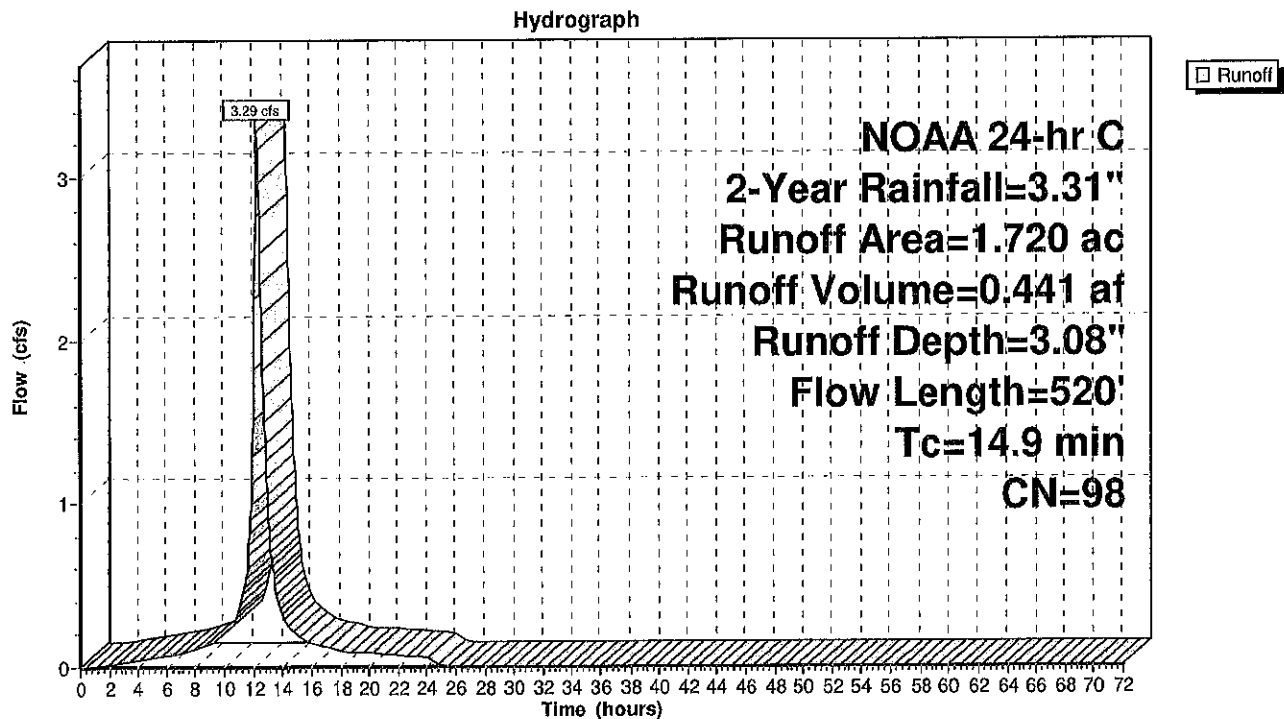
Summary for Subcatchment 11S: Drainage Area EX-1a (Impervious part of Drainage Area EX-1)

Runoff = 3.29 cfs @ 12.25 hrs, Volume= 0.441 af, Depth= 3.08"
Routed to Link 15L : Total to P.O.I. "A"

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=3.31"

Area (ac)	CN	Description
* 1.720	98	Paved parking
1.720	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	100	0.0115	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.30"
2.2	287	0.0188	2.21		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.7	133	0.0240	3.14		Shallow Concentrated Flow, Paved Kv= 20.3 fps
14.9	520	Total			

Subcatchment 11S: Drainage Area EX-1a (Impervious part of Drainage Area EX-1)

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2 Year Storm

NOAA 24-hr C 2-Year Rainfall=3.31"

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Page 2

Hydrograph for Subcatchment 11S: Drainage Area EX-1a (Impervious part of Drainage Area EX-1)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	3.31	3.08	0.00
1.00	0.04	0.00	0.00	52.00	3.31	3.08	0.00
2.00	0.07	0.00	0.01	53.00	3.31	3.08	0.00
3.00	0.12	0.02	0.03	54.00	3.31	3.08	0.00
4.00	0.16	0.05	0.04	55.00	3.31	3.08	0.00
5.00	0.21	0.08	0.06	56.00	3.31	3.08	0.00
6.00	0.26	0.12	0.07	57.00	3.31	3.08	0.00
7.00	0.32	0.16	0.09	58.00	3.31	3.08	0.00
8.00	0.40	0.23	0.11	59.00	3.31	3.08	0.00
9.00	0.48	0.30	0.14	60.00	3.31	3.08	0.00
10.00	0.60	0.41	0.20	61.00	3.31	3.08	0.00
11.00	0.79	0.59	0.34	62.00	3.31	3.08	0.00
12.00	1.58	1.36	1.51	63.00	3.31	3.08	0.00
13.00	2.52	2.29	0.98	64.00	3.31	3.08	0.00
14.00	2.71	2.48	0.30	65.00	3.31	3.08	0.00
15.00	2.83	2.60	0.20	66.00	3.31	3.08	0.00
16.00	2.91	2.68	0.15	67.00	3.31	3.08	0.00
17.00	2.99	2.76	0.12	68.00	3.31	3.08	0.00
18.00	3.05	2.82	0.10	69.00	3.31	3.08	0.00
19.00	3.10	2.87	0.09	70.00	3.31	3.08	0.00
20.00	3.15	2.92	0.08	71.00	3.31	3.08	0.00
21.00	3.19	2.96	0.08	72.00	3.31	3.08	0.00
22.00	3.24	3.00	0.07				
23.00	3.27	3.04	0.07				
24.00	3.31	3.08	0.06				
25.00	3.31	3.08	0.00				
26.00	3.31	3.08	0.00				
27.00	3.31	3.08	0.00				
28.00	3.31	3.08	0.00				
29.00	3.31	3.08	0.00				
30.00	3.31	3.08	0.00				
31.00	3.31	3.08	0.00				
32.00	3.31	3.08	0.00				
33.00	3.31	3.08	0.00				
34.00	3.31	3.08	0.00				
35.00	3.31	3.08	0.00				
36.00	3.31	3.08	0.00				
37.00	3.31	3.08	0.00				
38.00	3.31	3.08	0.00				
39.00	3.31	3.08	0.00				
40.00	3.31	3.08	0.00				
41.00	3.31	3.08	0.00				
42.00	3.31	3.08	0.00				
43.00	3.31	3.08	0.00				
44.00	3.31	3.08	0.00				
45.00	3.31	3.08	0.00				
46.00	3.31	3.08	0.00				
47.00	3.31	3.08	0.00				
48.00	3.31	3.08	0.00				
49.00	3.31	3.08	0.00				
50.00	3.31	3.08	0.00				

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2 Year Storm

NOAA 24-hr C 2-Year Rainfall=3.31"

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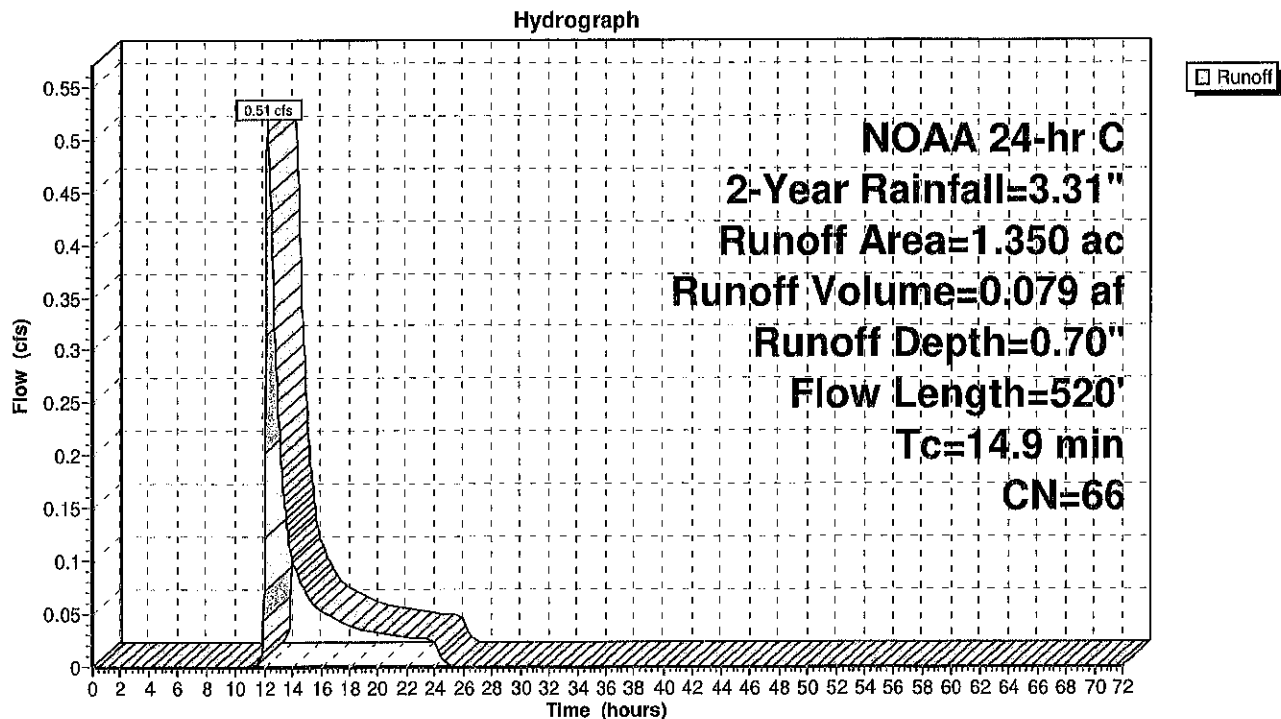
Summary for Subcatchment 12S: Drainage Area EX-1b (Pervious part of Drainage Area EX-1)

Runoff = 0.51 cfs @ 12.31 hrs, Volume= 0.079 af, Depth= 0.70"
 Routed to Link 15L : Total to P.O.I. "A"

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=3.31"

Area (ac)	CN	Description
0.220	55	Woods, Good, HSG B
0.490	61	>75% Grass cover, Good, HSG B
0.640	74	>75% Grass cover, Good, HSG C
1.350	66	Weighted Average
1.350	66	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	100	0.0115	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.30"
2.2	287	0.0188	2.21		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.7	133	0.0240	3.14		Shallow Concentrated Flow, Paved Kv= 20.3 fps
14.9	520	Total			

Subcatchment 12S: Drainage Area EX-1b (Pervious part of Drainage Area EX-1)

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2 Year Storm
NOAA 24-hr C 2-Year Rainfall=3.31"

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Hydrograph for Subcatchment 12S: Drainage Area EX-1b (Pervious part of Drainage Area EX-1)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	3.31	0.70	0.00
1.00	0.04	0.00	0.00	52.00	3.31	0.70	0.00
2.00	0.07	0.00	0.00	53.00	3.31	0.70	0.00
3.00	0.12	0.00	0.00	54.00	3.31	0.70	0.00
4.00	0.16	0.00	0.00	55.00	3.31	0.70	0.00
5.00	0.21	0.00	0.00	56.00	3.31	0.70	0.00
6.00	0.26	0.00	0.00	57.00	3.31	0.70	0.00
7.00	0.32	0.00	0.00	58.00	3.31	0.70	0.00
8.00	0.40	0.00	0.00	59.00	3.31	0.70	0.00
9.00	0.48	0.00	0.00	60.00	3.31	0.70	0.00
10.00	0.60	0.00	0.00	61.00	3.31	0.70	0.00
11.00	0.79	0.00	0.00	62.00	3.31	0.70	0.00
12.00	1.58	0.05	0.07	63.00	3.31	0.70	0.00
13.00	2.52	0.33	0.25	64.00	3.31	0.70	0.00
14.00	2.71	0.41	0.10	65.00	3.31	0.70	0.00
15.00	2.83	0.46	0.07	66.00	3.31	0.70	0.00
16.00	2.91	0.50	0.05	67.00	3.31	0.70	0.00
17.00	2.99	0.54	0.05	68.00	3.31	0.70	0.00
18.00	3.05	0.57	0.04	69.00	3.31	0.70	0.00
19.00	3.10	0.59	0.03	70.00	3.31	0.70	0.00
20.00	3.15	0.62	0.03	71.00	3.31	0.70	0.00
21.00	3.19	0.64	0.03	72.00	3.31	0.70	0.00
22.00	3.24	0.66	0.03				
23.00	3.27	0.68	0.03				
24.00	3.31	0.70	0.02				
25.00	3.31	0.70	0.00				
26.00	3.31	0.70	0.00				
27.00	3.31	0.70	0.00				
28.00	3.31	0.70	0.00				
29.00	3.31	0.70	0.00				
30.00	3.31	0.70	0.00				
31.00	3.31	0.70	0.00				
32.00	3.31	0.70	0.00				
33.00	3.31	0.70	0.00				
34.00	3.31	0.70	0.00				
35.00	3.31	0.70	0.00				
36.00	3.31	0.70	0.00				
37.00	3.31	0.70	0.00				
38.00	3.31	0.70	0.00				
39.00	3.31	0.70	0.00				
40.00	3.31	0.70	0.00				
41.00	3.31	0.70	0.00				
42.00	3.31	0.70	0.00				
43.00	3.31	0.70	0.00				
44.00	3.31	0.70	0.00				
45.00	3.31	0.70	0.00				
46.00	3.31	0.70	0.00				
47.00	3.31	0.70	0.00				
48.00	3.31	0.70	0.00				
49.00	3.31	0.70	0.00				
50.00	3.31	0.70	0.00				

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2 Year Storm

NOAA 24-hr C 2-Year Rainfall=3.31"

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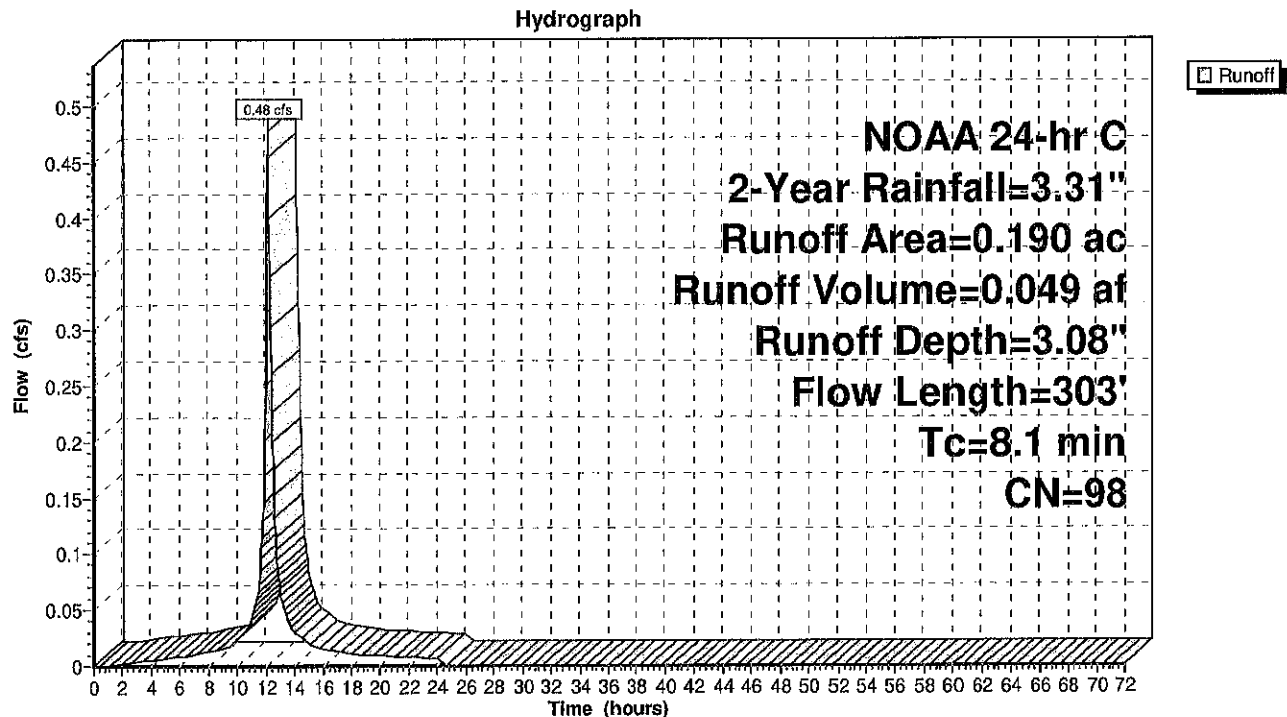
Summary for Subcatchment 13S: Drainage Area EX-2a (Impervious part of Drainage Area EX-2)

Runoff = 0.48 cfs @ 12.16 hrs, Volume= 0.049 af, Depth= 3.08"
Routed to Link 16L : Total to P.O.I. "B"

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=3.31"

Area (ac)	CN	Description
0.190	98	Paved parking, HSG C
0.190	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	63	0.0200	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 3.30"
1.0	143	0.0210	2.33		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.4	97	0.0410	4.11		Shallow Concentrated Flow, Paved Kv= 20.3 fps
8.1	303	Total			

Subcatchment 13S: Drainage Area EX-2a (Impervious part of Drainage Area EX-2)

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2 Year Storm

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Hydrograph for Subcatchment 13S: Drainage Area EX-2a (Imervious part of Drainage Area EX-2)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	3.31	3.08	0.00
1.00	0.04	0.00	0.00	52.00	3.31	3.08	0.00
2.00	0.07	0.00	0.00	53.00	3.31	3.08	0.00
3.00	0.12	0.02	0.00	54.00	3.31	3.08	0.00
4.00	0.16	0.05	0.01	55.00	3.31	3.08	0.00
5.00	0.21	0.08	0.01	56.00	3.31	3.08	0.00
6.00	0.26	0.12	0.01	57.00	3.31	3.08	0.00
7.00	0.32	0.16	0.01	58.00	3.31	3.08	0.00
8.00	0.40	0.23	0.01	59.00	3.31	3.08	0.00
9.00	0.48	0.30	0.02	60.00	3.31	3.08	0.00
10.00	0.60	0.41	0.02	61.00	3.31	3.08	0.00
11.00	0.79	0.59	0.04	62.00	3.31	3.08	0.00
12.00	1.58	1.36	0.25	63.00	3.31	3.08	0.00
13.00	2.52	2.29	0.07	64.00	3.31	3.08	0.00
14.00	2.71	2.48	0.03	65.00	3.31	3.08	0.00
15.00	2.83	2.60	0.02	66.00	3.31	3.08	0.00
16.00	2.91	2.68	0.02	67.00	3.31	3.08	0.00
17.00	2.99	2.76	0.01	68.00	3.31	3.08	0.00
18.00	3.05	2.82	0.01	69.00	3.31	3.08	0.00
19.00	3.10	2.87	0.01	70.00	3.31	3.08	0.00
20.00	3.15	2.92	0.01	71.00	3.31	3.08	0.00
21.00	3.19	2.96	0.01	72.00	3.31	3.08	0.00
22.00	3.24	3.00	0.01				
23.00	3.27	3.04	0.01				
24.00	3.31	3.08	0.01				
25.00	3.31	3.08	0.00				
26.00	3.31	3.08	0.00				
27.00	3.31	3.08	0.00				
28.00	3.31	3.08	0.00				
29.00	3.31	3.08	0.00				
30.00	3.31	3.08	0.00				
31.00	3.31	3.08	0.00				
32.00	3.31	3.08	0.00				
33.00	3.31	3.08	0.00				
34.00	3.31	3.08	0.00				
35.00	3.31	3.08	0.00				
36.00	3.31	3.08	0.00				
37.00	3.31	3.08	0.00				
38.00	3.31	3.08	0.00				
39.00	3.31	3.08	0.00				
40.00	3.31	3.08	0.00				
41.00	3.31	3.08	0.00				
42.00	3.31	3.08	0.00				
43.00	3.31	3.08	0.00				
44.00	3.31	3.08	0.00				
45.00	3.31	3.08	0.00				
46.00	3.31	3.08	0.00				
47.00	3.31	3.08	0.00				
48.00	3.31	3.08	0.00				
49.00	3.31	3.08	0.00				
50.00	3.31	3.08	0.00				

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2 Year Storm

NOAA 24-hr C 2-Year Rainfall=3.31"

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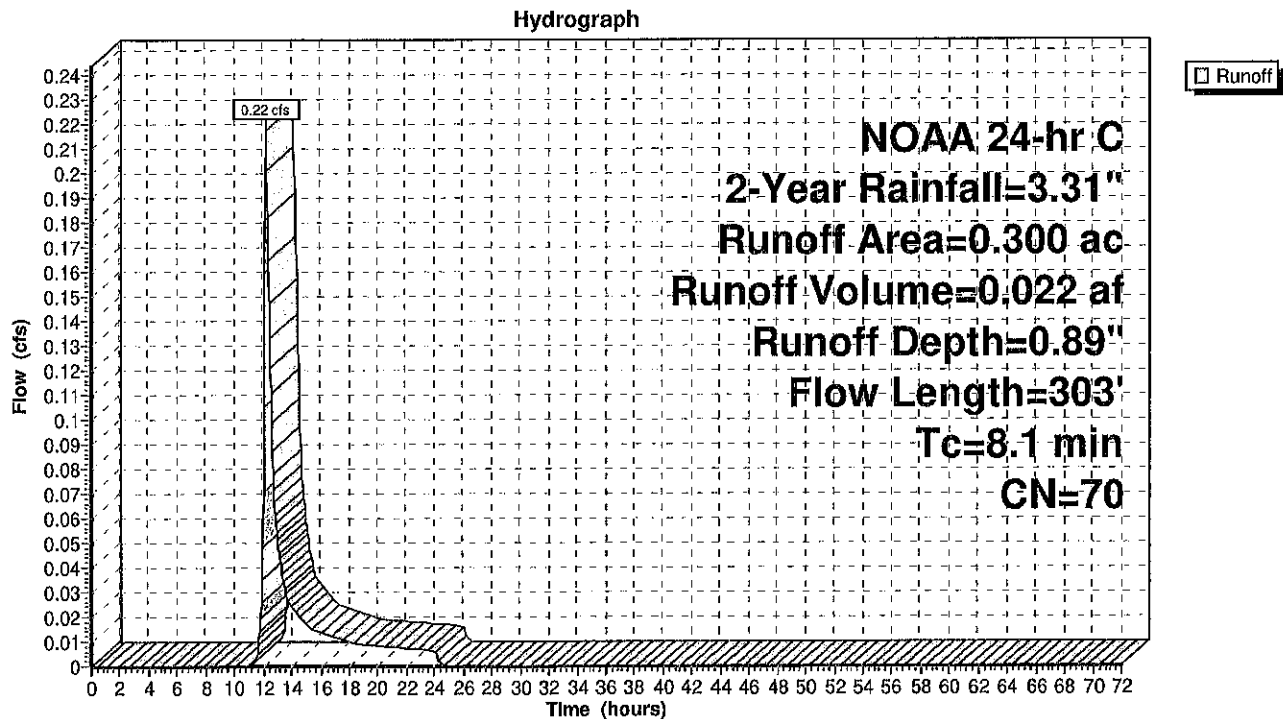
Summary for Subcatchment 14S: Drainage Area EX-2b (Pervious part of Drainage Area EX-2)

Runoff = 0.22 cfs @ 12.19 hrs, Volume= 0.022 af, Depth= 0.89"
 Routed to Link 16L : Total to P.O.I. "B"

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=3.31"

Area (ac)	CN	Description
0.100	61	>75% Grass cover, Good, HSG B
0.200	74	>75% Grass cover, Good, HSG C
0.300	70	Weighted Average
0.300	70	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	63	0.0200	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 3.30"
1.0	143	0.0210	2.33		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.4	97	0.0410	4.11		Shallow Concentrated Flow, Paved Kv= 20.3 fps
8.1	303	Total			

Subcatchment 14S: Drainage Area EX-2b (Pervious part of Drainage Area EX-2)

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2 Year Storm
NOAA 24-hr C 2-Year Rainfall=3.31"

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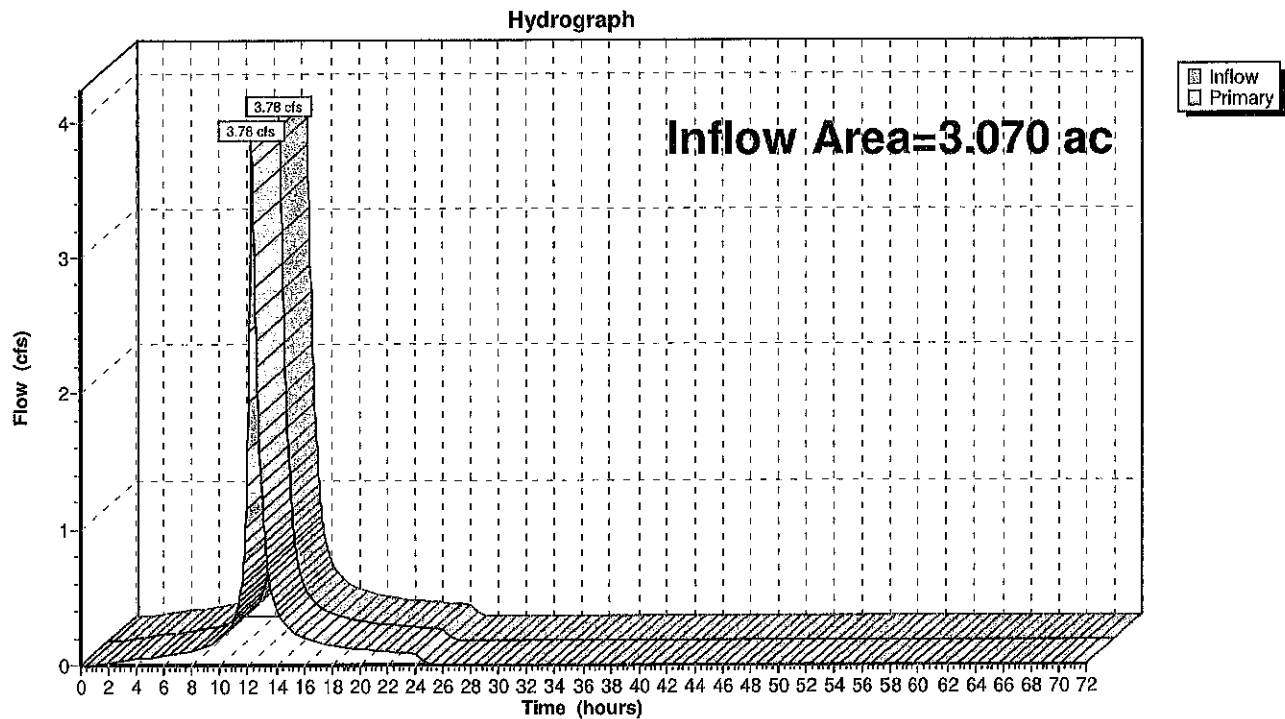
Hydrograph for Subcatchment 14S: Drainage Area EX-2b (Pervious part of Drainage Area EX-2)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	3.31	0.89	0.00
1.00	0.04	0.00	0.00	52.00	3.31	0.89	0.00
2.00	0.07	0.00	0.00	53.00	3.31	0.89	0.00
3.00	0.12	0.00	0.00	54.00	3.31	0.89	0.00
4.00	0.16	0.00	0.00	55.00	3.31	0.89	0.00
5.00	0.21	0.00	0.00	56.00	3.31	0.89	0.00
6.00	0.26	0.00	0.00	57.00	3.31	0.89	0.00
7.00	0.32	0.00	0.00	58.00	3.31	0.89	0.00
8.00	0.40	0.00	0.00	59.00	3.31	0.89	0.00
9.00	0.48	0.00	0.00	60.00	3.31	0.89	0.00
10.00	0.60	0.00	0.00	61.00	3.31	0.89	0.00
11.00	0.79	0.00	0.00	62.00	3.31	0.89	0.00
12.00	1.58	0.10	0.07	63.00	3.31	0.89	0.00
13.00	2.52	0.46	0.05	64.00	3.31	0.89	0.00
14.00	2.71	0.56	0.02	65.00	3.31	0.89	0.00
15.00	2.83	0.62	0.02	66.00	3.31	0.89	0.00
16.00	2.91	0.67	0.01	67.00	3.31	0.89	0.00
17.00	2.99	0.71	0.01	68.00	3.31	0.89	0.00
18.00	3.05	0.74	0.01	69.00	3.31	0.89	0.00
19.00	3.10	0.77	0.01	70.00	3.31	0.89	0.00
20.00	3.15	0.80	0.01	71.00	3.31	0.89	0.00
21.00	3.19	0.82	0.01	72.00	3.31	0.89	0.00
22.00	3.24	0.85	0.01				
23.00	3.27	0.87	0.01				
24.00	3.31	0.89	0.01				
25.00	3.31	0.89	0.00				
26.00	3.31	0.89	0.00				
27.00	3.31	0.89	0.00				
28.00	3.31	0.89	0.00				
29.00	3.31	0.89	0.00				
30.00	3.31	0.89	0.00				
31.00	3.31	0.89	0.00				
32.00	3.31	0.89	0.00				
33.00	3.31	0.89	0.00				
34.00	3.31	0.89	0.00				
35.00	3.31	0.89	0.00				
36.00	3.31	0.89	0.00				
37.00	3.31	0.89	0.00				
38.00	3.31	0.89	0.00				
39.00	3.31	0.89	0.00				
40.00	3.31	0.89	0.00				
41.00	3.31	0.89	0.00				
42.00	3.31	0.89	0.00				
43.00	3.31	0.89	0.00				
44.00	3.31	0.89	0.00				
45.00	3.31	0.89	0.00				
46.00	3.31	0.89	0.00				
47.00	3.31	0.89	0.00				
48.00	3.31	0.89	0.00				
49.00	3.31	0.89	0.00				
50.00	3.31	0.89	0.00				

Summary for Link 15L: Total to P.O.I. "A"

Inflow Area = 3.070 ac, 56.03% Impervious, Inflow Depth = 2.03" for 2-Year event
Inflow = 3.78 cfs @ 12.26 hrs, Volume= 0.520 af
Primary = 3.78 cfs @ 12.26 hrs, Volume= 0.520 af, Atten= 0%, Lag= 0.0 min

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

Link 15L: Total to P.O.I. "A"

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2 Year Storm
NOAA 24-hr C 2-Year Rainfall=3.31"

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Hydrograph for Link 15L: Total to P.O.I. "A"

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.01	0.00	0.01	53.00	0.00	0.00	0.00
3.00	0.03	0.00	0.03	54.00	0.00	0.00	0.00
4.00	0.04	0.00	0.04	55.00	0.00	0.00	0.00
5.00	0.06	0.00	0.06	56.00	0.00	0.00	0.00
6.00	0.07	0.00	0.07	57.00	0.00	0.00	0.00
7.00	0.09	0.00	0.09	58.00	0.00	0.00	0.00
8.00	0.11	0.00	0.11	59.00	0.00	0.00	0.00
9.00	0.14	0.00	0.14	60.00	0.00	0.00	0.00
10.00	0.20	0.00	0.20	61.00	0.00	0.00	0.00
11.00	0.34	0.00	0.34	62.00	0.00	0.00	0.00
12.00	1.58	0.00	1.58	63.00	0.00	0.00	0.00
13.00	1.23	0.00	1.23	64.00	0.00	0.00	0.00
14.00	0.40	0.00	0.40	65.00	0.00	0.00	0.00
15.00	0.27	0.00	0.27	66.00	0.00	0.00	0.00
16.00	0.20	0.00	0.20	67.00	0.00	0.00	0.00
17.00	0.17	0.00	0.17	68.00	0.00	0.00	0.00
18.00	0.14	0.00	0.14	69.00	0.00	0.00	0.00
19.00	0.12	0.00	0.12	70.00	0.00	0.00	0.00
20.00	0.12	0.00	0.12	71.00	0.00	0.00	0.00
21.00	0.11	0.00	0.11	72.00	0.00	0.00	0.00
22.00	0.10	0.00	0.10				
23.00	0.09	0.00	0.09				
24.00	0.09	0.00	0.09				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

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2 Year Storm

NOAA 24-hr C 2-Year Rainfall=3.31"

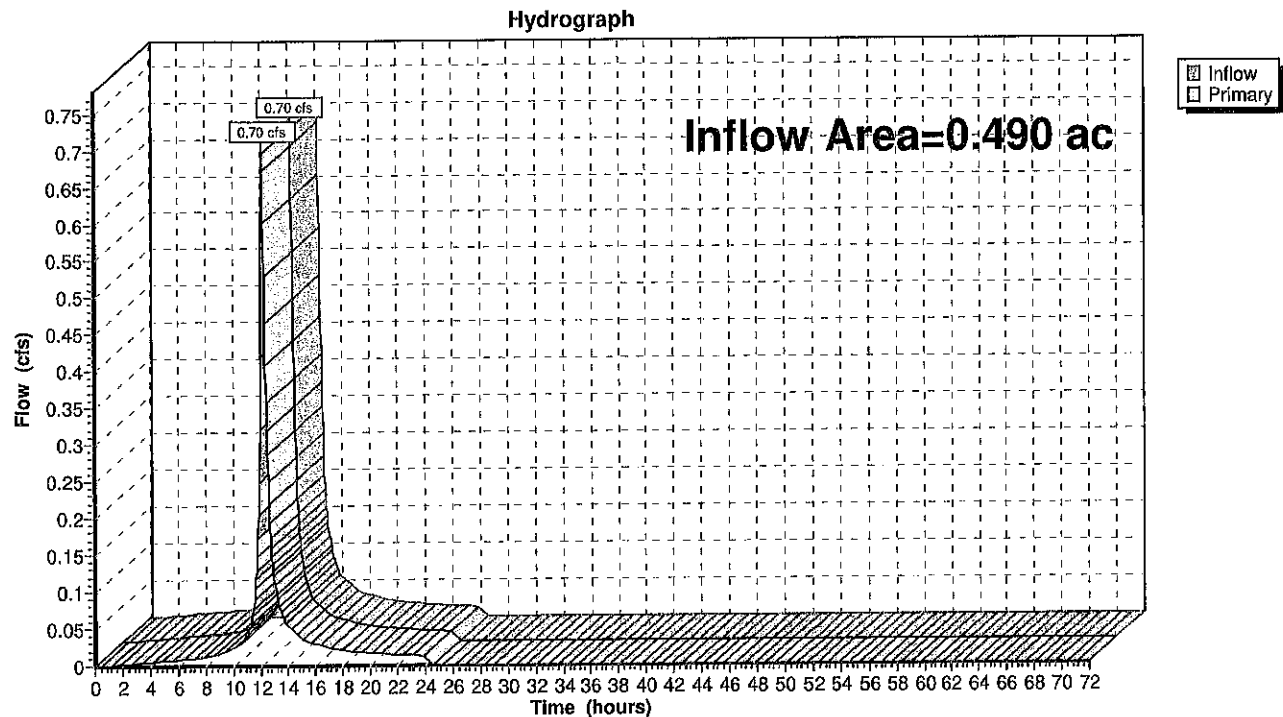
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Summary for Link 16L: Total to P.O.I. "B"

Inflow Area = 0.490 ac, 38.78% Impervious, Inflow Depth = 1.74" for 2-Year event
Inflow = 0.70 cfs @ 12.17 hrs, Volume= 0.071 af
Primary = 0.70 cfs @ 12.17 hrs, Volume= 0.071 af, Atten= 0%, Lag= 0.0 min

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

Link 16L: Total to P.O.I. "B"

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2 Year Storm

NOAA 24-hr C 2-Year Rainfall=3.31"

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Hydrograph for Link 16L: Total to P.O.I. "B"

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
4.00	0.01	0.00	0.01	55.00	0.00	0.00	0.00
5.00	0.01	0.00	0.01	56.00	0.00	0.00	0.00
6.00	0.01	0.00	0.01	57.00	0.00	0.00	0.00
7.00	0.01	0.00	0.01	58.00	0.00	0.00	0.00
8.00	0.01	0.00	0.01	59.00	0.00	0.00	0.00
9.00	0.02	0.00	0.02	60.00	0.00	0.00	0.00
10.00	0.02	0.00	0.02	61.00	0.00	0.00	0.00
11.00	0.04	0.00	0.04	62.00	0.00	0.00	0.00
12.00	0.32	0.00	0.32	63.00	0.00	0.00	0.00
13.00	0.12	0.00	0.12	64.00	0.00	0.00	0.00
14.00	0.05	0.00	0.05	65.00	0.00	0.00	0.00
15.00	0.04	0.00	0.04	66.00	0.00	0.00	0.00
16.00	0.03	0.00	0.03	67.00	0.00	0.00	0.00
17.00	0.02	0.00	0.02	68.00	0.00	0.00	0.00
18.00	0.02	0.00	0.02	69.00	0.00	0.00	0.00
19.00	0.02	0.00	0.02	70.00	0.00	0.00	0.00
20.00	0.02	0.00	0.02	71.00	0.00	0.00	0.00
21.00	0.02	0.00	0.02	72.00	0.00	0.00	0.00
22.00	0.02	0.00	0.02				
23.00	0.01	0.00	0.01				
24.00	0.01	0.00	0.01				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

10 YEAR STORM

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10 Year Storm
NOAA 24-hr C 10-Year Rainfall=5.01"

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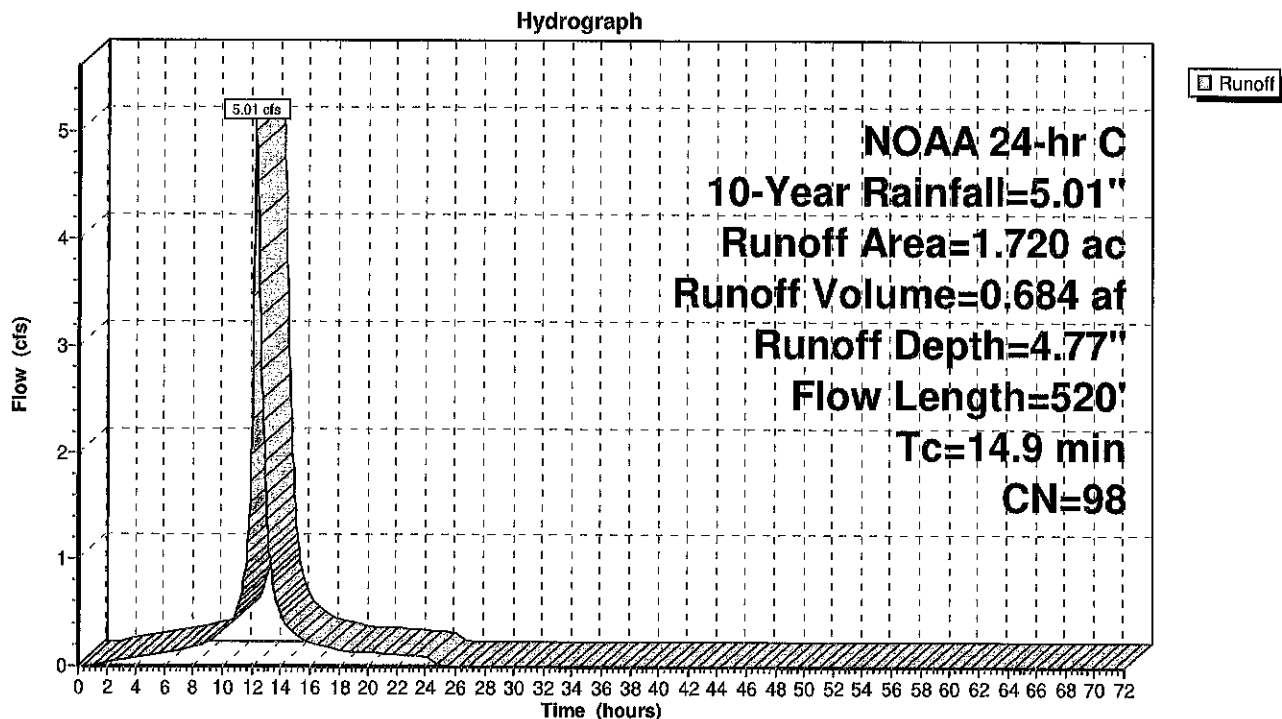
Summary for Subcatchment 11S: Drainage Area EX-1a (Impervious part of Drainage Area EX-1)

Runoff = 5.01 cfs @ 12.25 hrs, Volume= 0.684 af, Depth= 4.77"
 Routed to Link 15L : Total to P.O.I. "A"

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
* 1.720	98	Paved parking
1.720	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	100	0.0115	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.30"
2.2	287	0.0188	2.21		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.7	133	0.0240	3.14		Shallow Concentrated Flow, Paved Kv= 20.3 fps
14.9	520	Total			

Subcatchment 11S: Drainage Area EX-1a (Impervious part of Drainage Area EX-1)

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10 Year Storm
NOAA 24-hr C 10-Year Rainfall=5.01"

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Hydrograph for Subcatchment 11S: Drainage Area EX-1a (Impervious part of Drainage Area EX-1)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	5.01	4.77	0.00
1.00	0.05	0.00	0.00	52.00	5.01	4.77	0.00
2.00	0.11	0.02	0.04	53.00	5.01	4.77	0.00
3.00	0.18	0.05	0.06	54.00	5.01	4.77	0.00
4.00	0.25	0.10	0.09	55.00	5.01	4.77	0.00
5.00	0.32	0.16	0.10	56.00	5.01	4.77	0.00
6.00	0.40	0.23	0.12	57.00	5.01	4.77	0.00
7.00	0.49	0.31	0.15	58.00	5.01	4.77	0.00
8.00	0.60	0.41	0.18	59.00	5.01	4.77	0.00
9.00	0.73	0.53	0.22	60.00	5.01	4.77	0.00
10.00	0.91	0.71	0.32	61.00	5.01	4.77	0.00
11.00	1.20	0.99	0.53	62.00	5.01	4.77	0.00
12.00	2.39	2.16	2.31	63.00	5.01	4.77	0.00
13.00	3.81	3.57	1.49	64.00	5.01	4.77	0.00
14.00	4.10	3.86	0.46	65.00	5.01	4.77	0.00
15.00	4.28	4.04	0.30	66.00	5.01	4.77	0.00
16.00	4.41	4.17	0.22	67.00	5.01	4.77	0.00
17.00	4.52	4.29	0.19	68.00	5.01	4.77	0.00
18.00	4.61	4.38	0.15	69.00	5.01	4.77	0.00
19.00	4.69	4.46	0.13	70.00	5.01	4.77	0.00
20.00	4.76	4.53	0.13	71.00	5.01	4.77	0.00
21.00	4.83	4.60	0.12	72.00	5.01	4.77	0.00
22.00	4.90	4.66	0.11				
23.00	4.96	4.72	0.10				
24.00	5.01	4.77	0.09				
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				

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10 Year Storm
NOAA 24-hr C 10-Year Rainfall=5.01"

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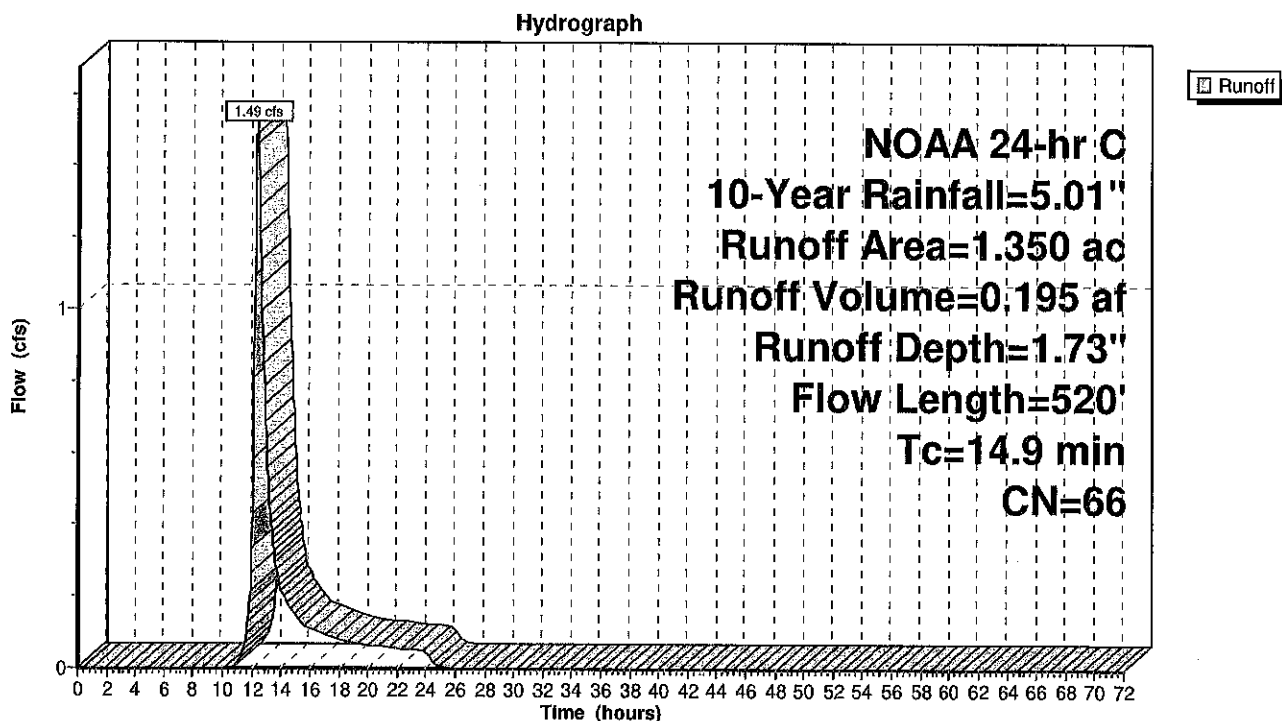
Summary for Subcatchment 12S: Drainage Area EX-1b (Pervious part of Drainage Area EX-1)

Runoff = 1.49 cfs @ 12.28 hrs, Volume= 0.195 af, Depth= 1.73"
 Routed to Link 15L : Total to P.O.I. "A"

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
0.220	55	Woods, Good, HSG B
0.490	61	>75% Grass cover, Good, HSG B
0.640	74	>75% Grass cover, Good, HSG C
1.350	66	Weighted Average
1.350	66	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	100	0.0115	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.30"
2.2	287	0.0188	2.21		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.7	133	0.0240	3.14		Shallow Concentrated Flow, Paved Kv= 20.3 fps
14.9	520	Total			

Subcatchment 12S: Drainage Area EX-1b (Pervious part of Drainage Area EX-1)

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NOAA 24-hr C 10-Year Rainfall=5.01"

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Hydrograph for Subcatchment 12S: Drainage Area EX-1b (Pervious part of Drainage Area EX-1)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	5.01	1.73	0.00
1.00	0.05	0.00	0.00	52.00	5.01	1.73	0.00
2.00	0.11	0.00	0.00	53.00	5.01	1.73	0.00
3.00	0.18	0.00	0.00	54.00	5.01	1.73	0.00
4.00	0.25	0.00	0.00	55.00	5.01	1.73	0.00
5.00	0.32	0.00	0.00	56.00	5.01	1.73	0.00
6.00	0.40	0.00	0.00	57.00	5.01	1.73	0.00
7.00	0.49	0.00	0.00	58.00	5.01	1.73	0.00
8.00	0.60	0.00	0.00	59.00	5.01	1.73	0.00
9.00	0.73	0.00	0.00	60.00	5.01	1.73	0.00
10.00	0.91	0.00	0.00	61.00	5.01	1.73	0.00
11.00	1.20	0.01	0.01	62.00	5.01	1.73	0.00
12.00	2.39	0.28	0.43	63.00	5.01	1.73	0.00
13.00	3.81	0.97	0.60	64.00	5.01	1.73	0.00
14.00	4.10	1.14	0.22	65.00	5.01	1.73	0.00
15.00	4.28	1.26	0.15	66.00	5.01	1.73	0.00
16.00	4.41	1.34	0.11	67.00	5.01	1.73	0.00
17.00	4.52	1.41	0.10	68.00	5.01	1.73	0.00
18.00	4.61	1.47	0.08	69.00	5.01	1.73	0.00
19.00	4.69	1.52	0.07	70.00	5.01	1.73	0.00
20.00	4.76	1.57	0.07	71.00	5.01	1.73	0.00
21.00	4.83	1.62	0.06	72.00	5.01	1.73	0.00
22.00	4.90	1.66	0.06				
23.00	4.96	1.70	0.05				
24.00	5.01	1.73	0.05				
25.00	5.01	1.73	0.00				
26.00	5.01	1.73	0.00				
27.00	5.01	1.73	0.00				
28.00	5.01	1.73	0.00				
29.00	5.01	1.73	0.00				
30.00	5.01	1.73	0.00				
31.00	5.01	1.73	0.00				
32.00	5.01	1.73	0.00				
33.00	5.01	1.73	0.00				
34.00	5.01	1.73	0.00				
35.00	5.01	1.73	0.00				
36.00	5.01	1.73	0.00				
37.00	5.01	1.73	0.00				
38.00	5.01	1.73	0.00				
39.00	5.01	1.73	0.00				
40.00	5.01	1.73	0.00				
41.00	5.01	1.73	0.00				
42.00	5.01	1.73	0.00				
43.00	5.01	1.73	0.00				
44.00	5.01	1.73	0.00				
45.00	5.01	1.73	0.00				
46.00	5.01	1.73	0.00				
47.00	5.01	1.73	0.00				
48.00	5.01	1.73	0.00				
49.00	5.01	1.73	0.00				
50.00	5.01	1.73	0.00				

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10 Year Storm
NOAA 24-hr C 10-Year Rainfall=5.01"

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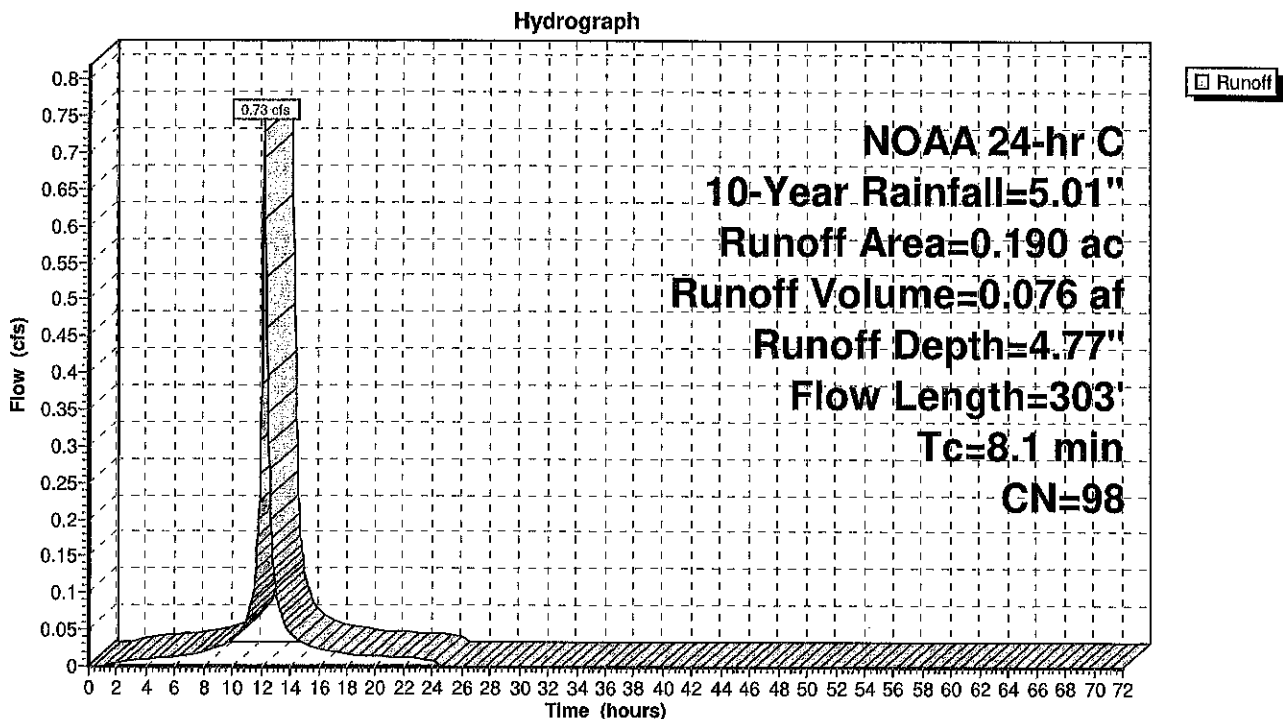
Summary for Subcatchment 13S: Drainage Area EX-2a (Impervious part of Drainage Area EX-2)

Runoff = 0.73 cfs @ 12.16 hrs, Volume= 0.076 af, Depth= 4.77"
 Routed to Link 16L : Total to P.O.I. "B"

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
0.190	98	Paved parking, HSG C
0.190	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	63	0.0200	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 3.30"
1.0	143	0.0210	2.33		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.4	97	0.0410	4.11		Shallow Concentrated Flow, Paved Kv= 20.3 fps
8.1	303	Total			

Subcatchment 13S: Drainage Area EX-2a (Impervious part of Drainage Area EX-2)

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Hydrograph for Subcatchment 13S: Drainage Area EX-2a (Imervious part of Drainage Area EX-2)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	5.01	4.77	0.00
1.00	0.05	0.00	0.00	52.00	5.01	4.77	0.00
2.00	0.11	0.02	0.00	53.00	5.01	4.77	0.00
3.00	0.18	0.05	0.01	54.00	5.01	4.77	0.00
4.00	0.25	0.10	0.01	55.00	5.01	4.77	0.00
5.00	0.32	0.16	0.01	56.00	5.01	4.77	0.00
6.00	0.40	0.23	0.01	57.00	5.01	4.77	0.00
7.00	0.49	0.31	0.02	58.00	5.01	4.77	0.00
8.00	0.60	0.41	0.02	59.00	5.01	4.77	0.00
9.00	0.73	0.53	0.02	60.00	5.01	4.77	0.00
10.00	0.91	0.71	0.04	61.00	5.01	4.77	0.00
11.00	1.20	0.99	0.07	62.00	5.01	4.77	0.00
12.00	2.39	2.16	0.38	63.00	5.01	4.77	0.00
13.00	3.81	3.57	0.11	64.00	5.01	4.77	0.00
14.00	4.10	3.86	0.05	65.00	5.01	4.77	0.00
15.00	4.28	4.04	0.03	66.00	5.01	4.77	0.00
16.00	4.41	4.17	0.02	67.00	5.01	4.77	0.00
17.00	4.52	4.29	0.02	68.00	5.01	4.77	0.00
18.00	4.61	4.38	0.02	69.00	5.01	4.77	0.00
19.00	4.69	4.46	0.01	70.00	5.01	4.77	0.00
20.00	4.76	4.53	0.01	71.00	5.01	4.77	0.00
21.00	4.83	4.60	0.01	72.00	5.01	4.77	0.00
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				

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10 Year Storm
NOAA 24-hr C 10-Year Rainfall=5.01"

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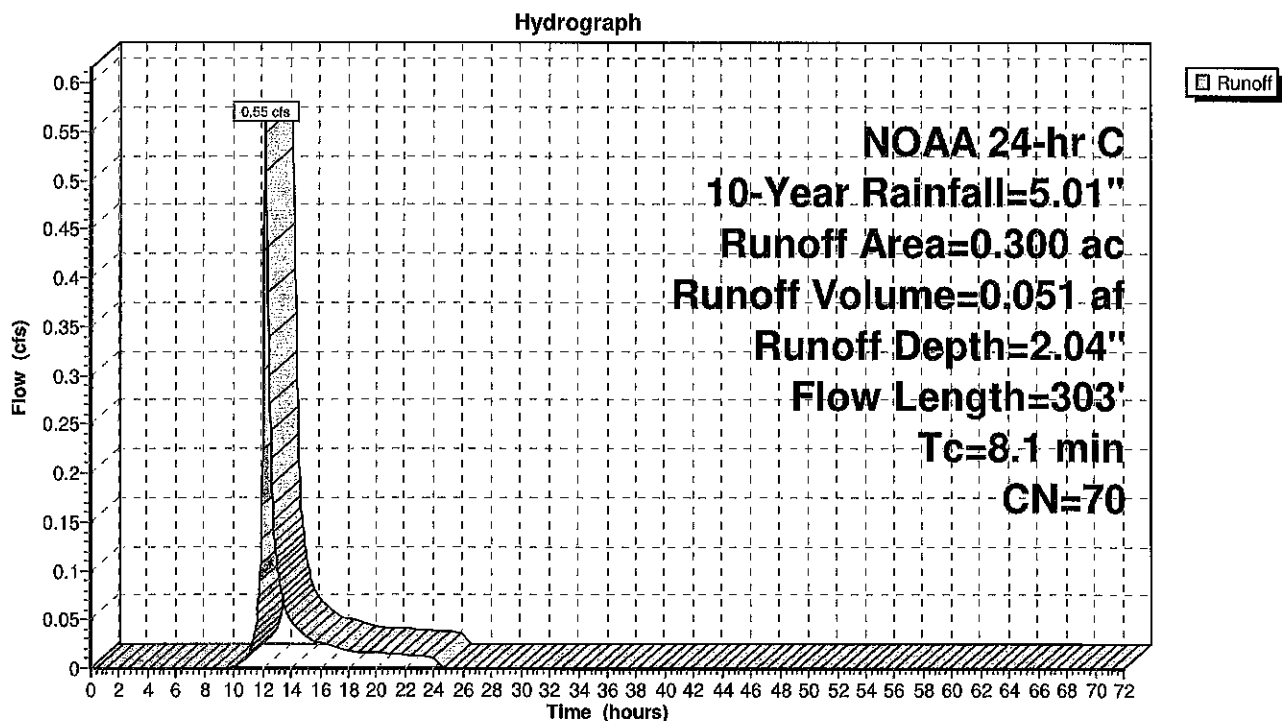
Summary for Subcatchment 14S: Drainage Area EX-2b (Pervious part of Drainage Area EX-2)

Runoff = 0.55 cfs @ 12.17 hrs, Volume= 0.051 af, Depth= 2.04"
Routed to Link 16L : Total to P.O.I. "B"

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
0.100	61	>75% Grass cover, Good, HSG B
0.200	74	>75% Grass cover, Good, HSG C
0.300	70	Weighted Average
0.300	70	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	63	0.0200	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 3.30"
1.0	143	0.0210	2.33		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.4	97	0.0410	4.11		Shallow Concentrated Flow, Paved Kv= 20.3 fps
8.1	303	Total			

Subcatchment 14S: Drainage Area EX-2b (Pervious part of Drainage Area EX-2)

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10 Year Storm
NOAA 24-hr C 10-Year Rainfall=5.01"

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Hydrograph for Subcatchment 14S: Drainage Area EX-2b (Pervious part of Drainage Area EX-2)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	5.01	2.04	0.00
1.00	0.05	0.00	0.00	52.00	5.01	2.04	0.00
2.00	0.11	0.00	0.00	53.00	5.01	2.04	0.00
3.00	0.18	0.00	0.00	54.00	5.01	2.04	0.00
4.00	0.25	0.00	0.00	55.00	5.01	2.04	0.00
5.00	0.32	0.00	0.00	56.00	5.01	2.04	0.00
6.00	0.40	0.00	0.00	57.00	5.01	2.04	0.00
7.00	0.49	0.00	0.00	58.00	5.01	2.04	0.00
8.00	0.60	0.00	0.00	59.00	5.01	2.04	0.00
9.00	0.73	0.00	0.00	60.00	5.01	2.04	0.00
10.00	0.91	0.00	0.00	61.00	5.01	2.04	0.00
11.00	1.20	0.03	0.01	62.00	5.01	2.04	0.00
12.00	2.39	0.40	0.22	63.00	5.01	2.04	0.00
13.00	3.81	1.20	0.11	64.00	5.01	2.04	0.00
14.00	4.10	1.39	0.05	65.00	5.01	2.04	0.00
15.00	4.28	1.52	0.03	66.00	5.01	2.04	0.00
16.00	4.41	1.61	0.03	67.00	5.01	2.04	0.00
17.00	4.52	1.69	0.02	68.00	5.01	2.04	0.00
18.00	4.61	1.75	0.02	69.00	5.01	2.04	0.00
19.00	4.69	1.81	0.02	70.00	5.01	2.04	0.00
20.00	4.76	1.86	0.02	71.00	5.01	2.04	0.00
21.00	4.83	1.91	0.01	72.00	5.01	2.04	0.00
22.00	4.90	1.96	0.01				
23.00	4.96	2.00	0.01				
24.00	5.01	2.04	0.01				
25.00	5.01	2.04	0.00				
26.00	5.01	2.04	0.00				
27.00	5.01	2.04	0.00				
28.00	5.01	2.04	0.00				
29.00	5.01	2.04	0.00				
30.00	5.01	2.04	0.00				
31.00	5.01	2.04	0.00				
32.00	5.01	2.04	0.00				
33.00	5.01	2.04	0.00				
34.00	5.01	2.04	0.00				
35.00	5.01	2.04	0.00				
36.00	5.01	2.04	0.00				
37.00	5.01	2.04	0.00				
38.00	5.01	2.04	0.00				
39.00	5.01	2.04	0.00				
40.00	5.01	2.04	0.00				
41.00	5.01	2.04	0.00				
42.00	5.01	2.04	0.00				
43.00	5.01	2.04	0.00				
44.00	5.01	2.04	0.00				
45.00	5.01	2.04	0.00				
46.00	5.01	2.04	0.00				
47.00	5.01	2.04	0.00				
48.00	5.01	2.04	0.00				
49.00	5.01	2.04	0.00				
50.00	5.01	2.04	0.00				

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10 Year Storm
NOAA 24-hr C 10-Year Rainfall=5.01"

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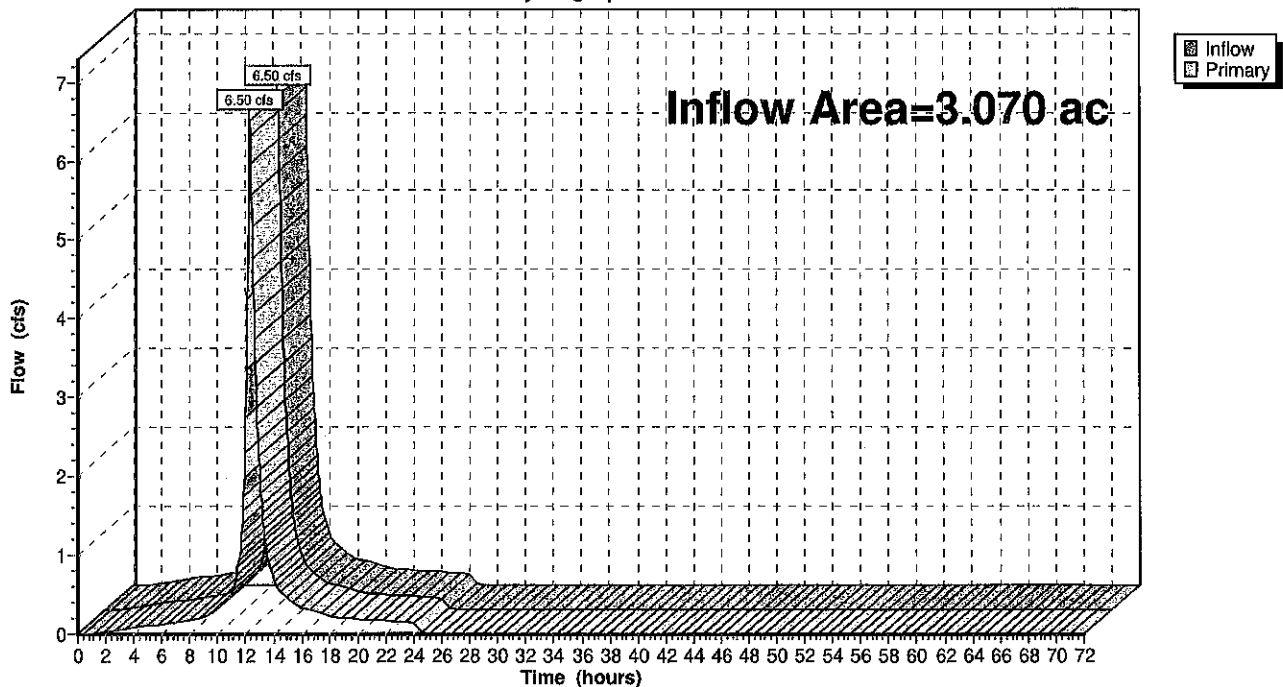
Summary for Link 15L: Total to P.O.I. "A"

Inflow Area = 3.070 ac, 56.03% Impervious, Inflow Depth = 3.44" for 10-Year event
Inflow = 6.50 cfs @ 12.26 hrs, Volume= 0.879 af
Primary = 6.50 cfs @ 12.26 hrs, Volume= 0.879 af, Atten= 0%, Lag= 0.0 min

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

Link 15L: Total to P.O.I. "A"

Hydrograph



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10 Year Storm

NOAA 24-hr C 10-Year Rainfall=5.01"

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Hydrograph for Link 15L: Total to P.O.I. "A"

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.04	0.00	0.04	53.00	0.00	0.00	0.00
3.00	0.06	0.00	0.06	54.00	0.00	0.00	0.00
4.00	0.09	0.00	0.09	55.00	0.00	0.00	0.00
5.00	0.10	0.00	0.10	56.00	0.00	0.00	0.00
6.00	0.12	0.00	0.12	57.00	0.00	0.00	0.00
7.00	0.15	0.00	0.15	58.00	0.00	0.00	0.00
8.00	0.18	0.00	0.18	59.00	0.00	0.00	0.00
9.00	0.22	0.00	0.22	60.00	0.00	0.00	0.00
10.00	0.32	0.00	0.32	61.00	0.00	0.00	0.00
11.00	0.54	0.00	0.54	62.00	0.00	0.00	0.00
12.00	2.74	0.00	2.74	63.00	0.00	0.00	0.00
13.00	2.08	0.00	2.08	64.00	0.00	0.00	0.00
14.00	0.68	0.00	0.68	65.00	0.00	0.00	0.00
15.00	0.44	0.00	0.44	66.00	0.00	0.00	0.00
16.00	0.34	0.00	0.34	67.00	0.00	0.00	0.00
17.00	0.28	0.00	0.28	68.00	0.00	0.00	0.00
18.00	0.23	0.00	0.23	69.00	0.00	0.00	0.00
19.00	0.20	0.00	0.20	70.00	0.00	0.00	0.00
20.00	0.19	0.00	0.19	71.00	0.00	0.00	0.00
21.00	0.18	0.00	0.18	72.00	0.00	0.00	0.00
22.00	0.17	0.00	0.17				
23.00	0.15	0.00	0.15				
24.00	0.14	0.00	0.14				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

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Prepared by Menlo Engineering Associates

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10 Year Storm
NOAA 24-hr C 10-Year Rainfall=5.01"

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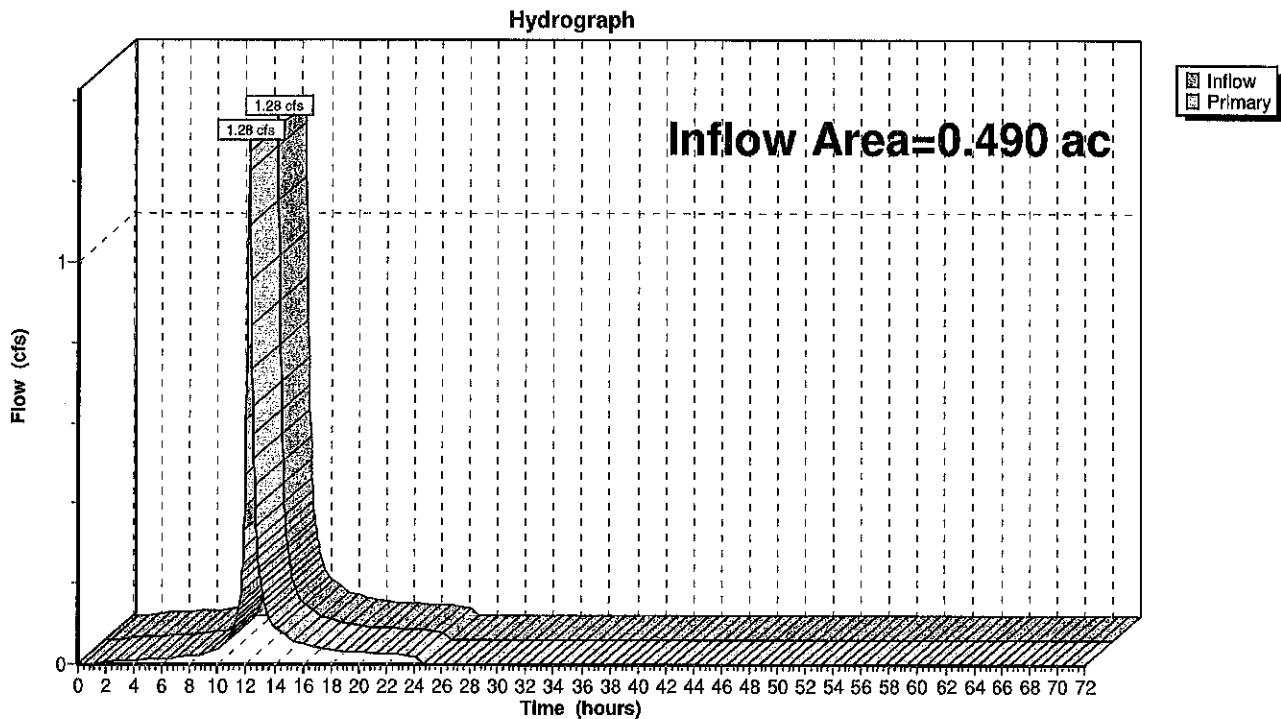
Page 11

Summary for Link 16L: Total to P.O.I. "B"

Inflow Area = 0.490 ac, 38.78% Impervious, Inflow Depth = 3.10" for 10-Year event
Inflow = 1.28 cfs @ 12.17 hrs, Volume= 0.127 af
Primary = 1.28 cfs @ 12.17 hrs, Volume= 0.127 af, Atten= 0%, Lag= 0.0 min

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

Link 16L: Total to P.O.I. "B"



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10 Year Storm

NOAA 24-hr C 10-Year Rainfall=5.01"

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Hydrograph for Link 16L: Total to P.O.I. "B"

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
3.00	0.01	0.00	0.01	54.00	0.00	0.00	0.00
4.00	0.01	0.00	0.01	55.00	0.00	0.00	0.00
5.00	0.01	0.00	0.01	56.00	0.00	0.00	0.00
6.00	0.01	0.00	0.01	57.00	0.00	0.00	0.00
7.00	0.02	0.00	0.02	58.00	0.00	0.00	0.00
8.00	0.02	0.00	0.02	59.00	0.00	0.00	0.00
9.00	0.02	0.00	0.02	60.00	0.00	0.00	0.00
10.00	0.04	0.00	0.04	61.00	0.00	0.00	0.00
11.00	0.08	0.00	0.08	62.00	0.00	0.00	0.00
12.00	0.61	0.00	0.61	63.00	0.00	0.00	0.00
13.00	0.21	0.00	0.21	64.00	0.00	0.00	0.00
14.00	0.09	0.00	0.09	65.00	0.00	0.00	0.00
15.00	0.06	0.00	0.06	66.00	0.00	0.00	0.00
16.00	0.05	0.00	0.05	67.00	0.00	0.00	0.00
17.00	0.04	0.00	0.04	68.00	0.00	0.00	0.00
18.00	0.03	0.00	0.03	69.00	0.00	0.00	0.00
19.00	0.03	0.00	0.03	70.00	0.00	0.00	0.00
20.00	0.03	0.00	0.03	71.00	0.00	0.00	0.00
21.00	0.03	0.00	0.03	72.00	0.00	0.00	0.00
22.00	0.03	0.00	0.03				
23.00	0.02	0.00	0.02				
24.00	0.02	0.00	0.02				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

100 YEAR STORM

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100 Year Storm

NOAA 24-hr C 100-Year Rainfall=8.33"

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Page 1

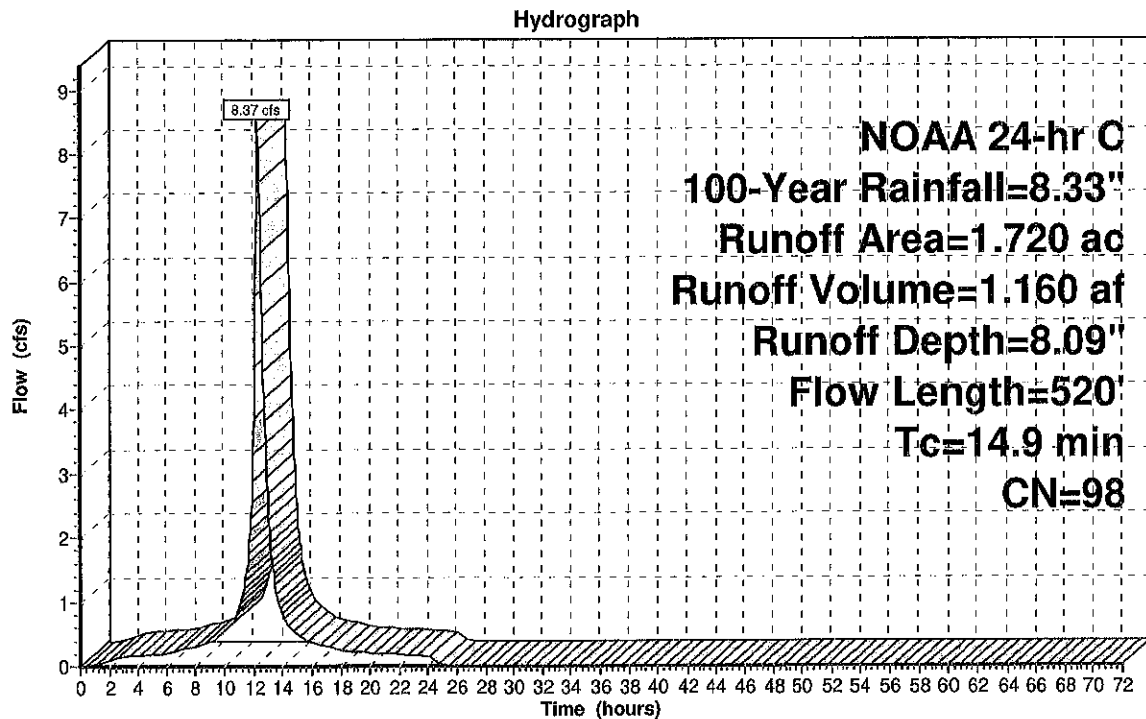
Summary for Subcatchment 11S: Drainage Area EX-1a (Impervious part of Drainage Area EX-1)

Runoff = 8.37 cfs @ 12.25 hrs, Volume= 1.160 af, Depth= 8.09"
 Routed to Link 15L : Total to P.O.I. "A"

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=8.33"

Area (ac)	CN	Description
* 1.720	98	Paved parking
1.720	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	100	0.0115	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.30"
2.2	287	0.0188	2.21		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.7	133	0.0240	3.14		Shallow Concentrated Flow, Paved Kv= 20.3 fps
14.9	520	Total			

Subcatchment 11S: Drainage Area EX-1a (Impervious part of Drainage Area EX-1)

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100 Year Storm
NOAA 24-hr C 100-Year Rainfall=8.33"

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Hydrograph for Subcatchment 11S: Drainage Area EX-1a (Impervious part of Drainage Area EX-1)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	8.33	8.09	0.00
1.00	0.09	0.01	0.03	52.00	8.33	8.09	0.00
2.00	0.19	0.06	0.10	53.00	8.33	8.09	0.00
3.00	0.29	0.14	0.14	54.00	8.33	8.09	0.00
4.00	0.41	0.24	0.17	55.00	8.33	8.09	0.00
5.00	0.53	0.34	0.19	56.00	8.33	8.09	0.00
6.00	0.66	0.47	0.21	57.00	8.33	8.09	0.00
7.00	0.81	0.61	0.26	58.00	8.33	8.09	0.00
8.00	1.00	0.79	0.32	59.00	8.33	8.09	0.00
9.00	1.22	1.00	0.38	60.00	8.33	8.09	0.00
10.00	1.52	1.30	0.54	61.00	8.33	8.09	0.00
11.00	2.00	1.77	0.89	62.00	8.33	8.09	0.00
12.00	3.97	3.74	3.87	63.00	8.33	8.09	0.00
13.00	6.33	6.09	2.48	64.00	8.33	8.09	0.00
14.00	6.81	6.57	0.77	65.00	8.33	8.09	0.00
15.00	7.11	6.87	0.50	66.00	8.33	8.09	0.00
16.00	7.33	7.09	0.37	67.00	8.33	8.09	0.00
17.00	7.52	7.28	0.31	68.00	8.33	8.09	0.00
18.00	7.67	7.43	0.26	69.00	8.33	8.09	0.00
19.00	7.80	7.56	0.22	70.00	8.33	8.09	0.00
20.00	7.92	7.68	0.21	71.00	8.33	8.09	0.00
21.00	8.04	7.80	0.20	72.00	8.33	8.09	0.00
22.00	8.14	7.90	0.18				
23.00	8.24	8.00	0.17				
24.00	8.33	8.09	0.15				
25.00	8.33	8.09	0.01				
26.00	8.33	8.09	0.00				
27.00	8.33	8.09	0.00				
28.00	8.33	8.09	0.00				
29.00	8.33	8.09	0.00				
30.00	8.33	8.09	0.00				
31.00	8.33	8.09	0.00				
32.00	8.33	8.09	0.00				
33.00	8.33	8.09	0.00				
34.00	8.33	8.09	0.00				
35.00	8.33	8.09	0.00				
36.00	8.33	8.09	0.00				
37.00	8.33	8.09	0.00				
38.00	8.33	8.09	0.00				
39.00	8.33	8.09	0.00				
40.00	8.33	8.09	0.00				
41.00	8.33	8.09	0.00				
42.00	8.33	8.09	0.00				
43.00	8.33	8.09	0.00				
44.00	8.33	8.09	0.00				
45.00	8.33	8.09	0.00				
46.00	8.33	8.09	0.00				
47.00	8.33	8.09	0.00				
48.00	8.33	8.09	0.00				
49.00	8.33	8.09	0.00				
50.00	8.33	8.09	0.00				

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100 Year Storm

NOAA 24-hr C 100-Year Rainfall=8.33"

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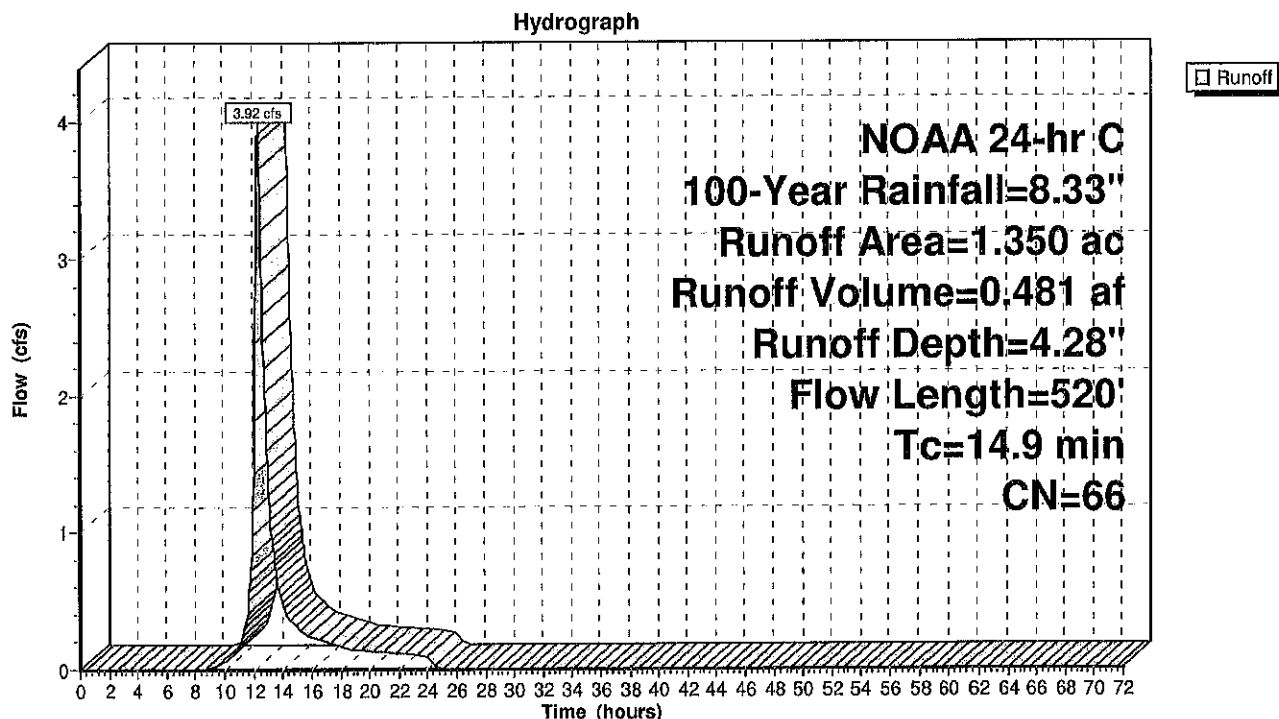
Summary for Subcatchment 12S: Drainage Area EX-1b (Pervious part of Drainage Area EX-1)

Runoff = 3.92 cfs @ 12.26 hrs, Volume= 0.481 af, Depth= 4.28"
 Routed to Link 15L : Total to P.O.I. "A"

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=8.33"

Area (ac)	CN	Description
0.220	55	Woods, Good, HSG B
0.490	61	>75% Grass cover, Good, HSG B
0.640	74	>75% Grass cover, Good, HSG C
1.350	66	Weighted Average
1.350	66	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	100	0.0115	0.14		Sheet Flow, Grass: Short n= 0.150 P2= 3.30"
2.2	287	0.0188	2.21		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.7	133	0.0240	3.14		Shallow Concentrated Flow, Paved Kv= 20.3 fps
14.9	520	Total			

Subcatchment 12S: Drainage Area EX-1b (Pervious part of Drainage Area EX-1)

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100 Year Storm
NOAA 24-hr C 100-Year Rainfall=8.33"

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Hydrograph for Subcatchment 12S: Drainage Area EX-1b (Pervious part of Drainage Area EX-1)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	8.33	4.28	0.00
1.00	0.09	0.00	0.00	52.00	8.33	4.28	0.00
2.00	0.19	0.00	0.00	53.00	8.33	4.28	0.00
3.00	0.29	0.00	0.00	54.00	8.33	4.28	0.00
4.00	0.41	0.00	0.00	55.00	8.33	4.28	0.00
5.00	0.53	0.00	0.00	56.00	8.33	4.28	0.00
6.00	0.66	0.00	0.00	57.00	8.33	4.28	0.00
7.00	0.81	0.00	0.00	58.00	8.33	4.28	0.00
8.00	1.00	0.00	0.00	59.00	8.33	4.28	0.00
9.00	1.22	0.01	0.01	60.00	8.33	4.28	0.00
10.00	1.52	0.04	0.06	61.00	8.33	4.28	0.00
11.00	2.00	0.15	0.17	62.00	8.33	4.28	0.00
12.00	3.97	1.07	1.43	63.00	8.33	4.28	0.00
13.00	6.33	2.69	1.37	64.00	8.33	4.28	0.00
14.00	6.81	3.06	0.46	65.00	8.33	4.28	0.00
15.00	7.11	3.29	0.31	66.00	8.33	4.28	0.00
16.00	7.33	3.47	0.23	67.00	8.33	4.28	0.00
17.00	7.52	3.62	0.20	68.00	8.33	4.28	0.00
18.00	7.67	3.74	0.16	69.00	8.33	4.28	0.00
19.00	7.80	3.84	0.14	70.00	8.33	4.28	0.00
20.00	7.92	3.94	0.13	71.00	8.33	4.28	0.00
21.00	8.04	4.04	0.13	72.00	8.33	4.28	0.00
22.00	8.14	4.12	0.12				
23.00	8.24	4.20	0.11				
24.00	8.33	4.28	0.10				
25.00	8.33	4.28	0.00				
26.00	8.33	4.28	0.00				
27.00	8.33	4.28	0.00				
28.00	8.33	4.28	0.00				
29.00	8.33	4.28	0.00				
30.00	8.33	4.28	0.00				
31.00	8.33	4.28	0.00				
32.00	8.33	4.28	0.00				
33.00	8.33	4.28	0.00				
34.00	8.33	4.28	0.00				
35.00	8.33	4.28	0.00				
36.00	8.33	4.28	0.00				
37.00	8.33	4.28	0.00				
38.00	8.33	4.28	0.00				
39.00	8.33	4.28	0.00				
40.00	8.33	4.28	0.00				
41.00	8.33	4.28	0.00				
42.00	8.33	4.28	0.00				
43.00	8.33	4.28	0.00				
44.00	8.33	4.28	0.00				
45.00	8.33	4.28	0.00				
46.00	8.33	4.28	0.00				
47.00	8.33	4.28	0.00				
48.00	8.33	4.28	0.00				
49.00	8.33	4.28	0.00				
50.00	8.33	4.28	0.00				

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100 Year Storm

NOAA 24-hr C 100-Year Rainfall=8.33"

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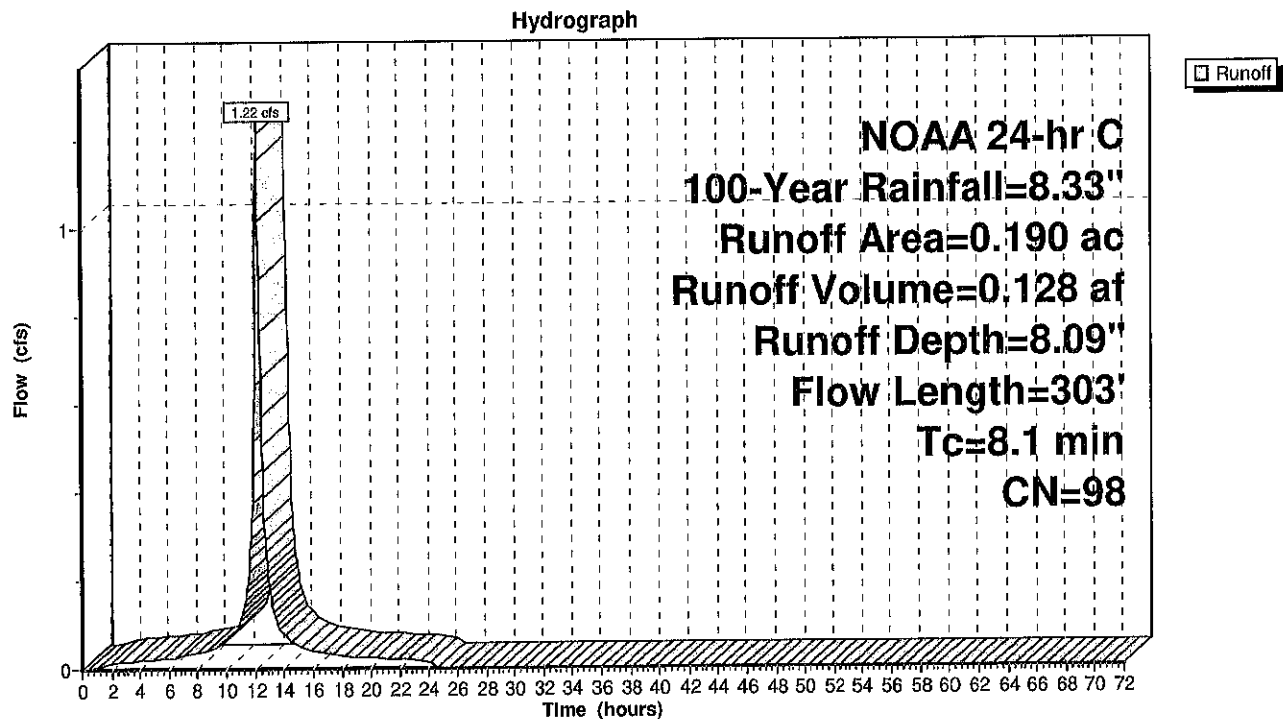
Summary for Subcatchment 13S: Drainage Area EX-2a (Impervious part of Drainage Area EX-2)

Runoff = 1.22 cfs @ 12.16 hrs, Volume= 0.128 af, Depth= 8.09"
Routed to Link 16L : Total to P.O.I. "B"

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=8.33"

Area (ac)	CN	Description
0.190	98	Paved parking, HSG C
0.190	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	63	0.0200	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 3.30"
1.0	143	0.0210	2.33		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.4	97	0.0410	4.11		Shallow Concentrated Flow, Paved Kv= 20.3 fps
8.1	303	Total			

Subcatchment 13S: Drainage Area EX-2a (Impervious part of Drainage Area EX-2)

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Hydrograph for Subcatchment 13S: Drainage Area EX-2a (Imervious part of Drainage Area EX-2)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	8.33	8.09	0.00
1.00	0.09	0.01	0.00	52.00	8.33	8.09	0.00
2.00	0.19	0.06	0.01	53.00	8.33	8.09	0.00
3.00	0.29	0.14	0.02	54.00	8.33	8.09	0.00
4.00	0.41	0.24	0.02	55.00	8.33	8.09	0.00
5.00	0.53	0.34	0.02	56.00	8.33	8.09	0.00
6.00	0.66	0.47	0.02	57.00	8.33	8.09	0.00
7.00	0.81	0.61	0.03	58.00	8.33	8.09	0.00
8.00	1.00	0.79	0.04	59.00	8.33	8.09	0.00
9.00	1.22	1.00	0.04	60.00	8.33	8.09	0.00
10.00	1.52	1.30	0.06	61.00	8.33	8.09	0.00
11.00	2.00	1.77	0.11	62.00	8.33	8.09	0.00
12.00	3.97	3.74	0.64	63.00	8.33	8.09	0.00
13.00	6.33	6.09	0.18	64.00	8.33	8.09	0.00
14.00	6.81	6.57	0.08	65.00	8.33	8.09	0.00
15.00	7.11	6.87	0.05	66.00	8.33	8.09	0.00
16.00	7.33	7.09	0.04	67.00	8.33	8.09	0.00
17.00	7.52	7.28	0.03	68.00	8.33	8.09	0.00
18.00	7.67	7.43	0.03	69.00	8.33	8.09	0.00
19.00	7.80	7.56	0.02	70.00	8.33	8.09	0.00
20.00	7.92	7.68	0.02	71.00	8.33	8.09	0.00
21.00	8.04	7.80	0.02	72.00	8.33	8.09	0.00
22.00	8.14	7.90	0.02				
23.00	8.24	8.00	0.02				
24.00	8.33	8.09	0.02				
25.00	8.33	8.09	0.00				
26.00	8.33	8.09	0.00				
27.00	8.33	8.09	0.00				
28.00	8.33	8.09	0.00				
29.00	8.33	8.09	0.00				
30.00	8.33	8.09	0.00				
31.00	8.33	8.09	0.00				
32.00	8.33	8.09	0.00				
33.00	8.33	8.09	0.00				
34.00	8.33	8.09	0.00				
35.00	8.33	8.09	0.00				
36.00	8.33	8.09	0.00				
37.00	8.33	8.09	0.00				
38.00	8.33	8.09	0.00				
39.00	8.33	8.09	0.00				
40.00	8.33	8.09	0.00				
41.00	8.33	8.09	0.00				
42.00	8.33	8.09	0.00				
43.00	8.33	8.09	0.00				
44.00	8.33	8.09	0.00				
45.00	8.33	8.09	0.00				
46.00	8.33	8.09	0.00				
47.00	8.33	8.09	0.00				
48.00	8.33	8.09	0.00				
49.00	8.33	8.09	0.00				
50.00	8.33	8.09	0.00				

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100 Year Storm

NOAA 24-hr C 100-Year Rainfall=8.33"

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Page 7

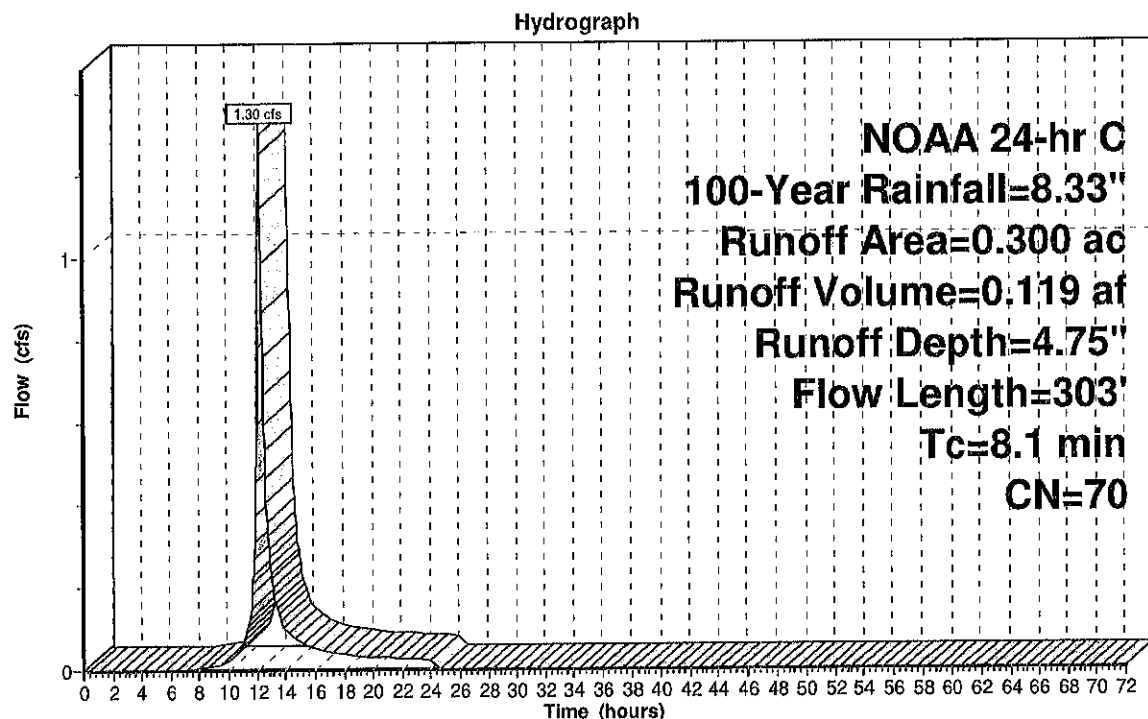
Summary for Subcatchment 14S: Drainage Area EX-2b (Pervious part of Drainage Area EX-2)

Runoff = 1.30 cfs @ 12.17 hrs, Volume= 0.119 af, Depth= 4.75"
 Routed to Link 16L : Total to P.O.I. "B"

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=8.33"

Area (ac)	CN	Description
0.100	61	>75% Grass cover, Good, HSG B
0.200	74	>75% Grass cover, Good, HSG C
0.300	70	Weighted Average
0.300	70	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	63	0.0200	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 3.30"
1.0	143	0.0210	2.33		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.4	97	0.0410	4.11		Shallow Concentrated Flow, Paved Kv= 20.3 fps
8.1	303	Total			

Subcatchment 14S: Drainage Area EX-2b (Pervious part of Drainage Area EX-2)

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100 Year Storm
NOAA 24-hr C 100-Year Rainfall=8.33"

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Hydrograph for Subcatchment 14S: Drainage Area EX-2b (Pervious part of Drainage Area EX-2)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	8.33	4.75	0.00
1.00	0.09	0.00	0.00	52.00	8.33	4.75	0.00
2.00	0.19	0.00	0.00	53.00	8.33	4.75	0.00
3.00	0.29	0.00	0.00	54.00	8.33	4.75	0.00
4.00	0.41	0.00	0.00	55.00	8.33	4.75	0.00
5.00	0.53	0.00	0.00	56.00	8.33	4.75	0.00
6.00	0.66	0.00	0.00	57.00	8.33	4.75	0.00
7.00	0.81	0.00	0.00	58.00	8.33	4.75	0.00
8.00	1.00	0.00	0.00	59.00	8.33	4.75	0.00
9.00	1.22	0.03	0.01	60.00	8.33	4.75	0.00
10.00	1.52	0.09	0.02	61.00	8.33	4.75	0.00
11.00	2.00	0.24	0.06	62.00	8.33	4.75	0.00
12.00	3.97	1.31	0.60	63.00	8.33	4.75	0.00
13.00	6.33	3.07	0.22	64.00	8.33	4.75	0.00
14.00	6.81	3.46	0.10	65.00	8.33	4.75	0.00
15.00	7.11	3.71	0.07	66.00	8.33	4.75	0.00
16.00	7.33	3.90	0.05	67.00	8.33	4.75	0.00
17.00	7.52	4.05	0.04	68.00	8.33	4.75	0.00
18.00	7.67	4.18	0.04	69.00	8.33	4.75	0.00
19.00	7.80	4.29	0.03	70.00	8.33	4.75	0.00
20.00	7.92	4.40	0.03	71.00	8.33	4.75	0.00
21.00	8.04	4.50	0.03	72.00	8.33	4.75	0.00
22.00	8.14	4.59	0.03				
23.00	8.24	4.67	0.02				
24.00	8.33	4.75	0.02				
25.00	8.33	4.75	0.00				
26.00	8.33	4.75	0.00				
27.00	8.33	4.75	0.00				
28.00	8.33	4.75	0.00				
29.00	8.33	4.75	0.00				
30.00	8.33	4.75	0.00				
31.00	8.33	4.75	0.00				
32.00	8.33	4.75	0.00				
33.00	8.33	4.75	0.00				
34.00	8.33	4.75	0.00				
35.00	8.33	4.75	0.00				
36.00	8.33	4.75	0.00				
37.00	8.33	4.75	0.00				
38.00	8.33	4.75	0.00				
39.00	8.33	4.75	0.00				
40.00	8.33	4.75	0.00				
41.00	8.33	4.75	0.00				
42.00	8.33	4.75	0.00				
43.00	8.33	4.75	0.00				
44.00	8.33	4.75	0.00				
45.00	8.33	4.75	0.00				
46.00	8.33	4.75	0.00				
47.00	8.33	4.75	0.00				
48.00	8.33	4.75	0.00				
49.00	8.33	4.75	0.00				
50.00	8.33	4.75	0.00				

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100 Year Storm

NOAA 24-hr C 100-Year Rainfall=8.33"

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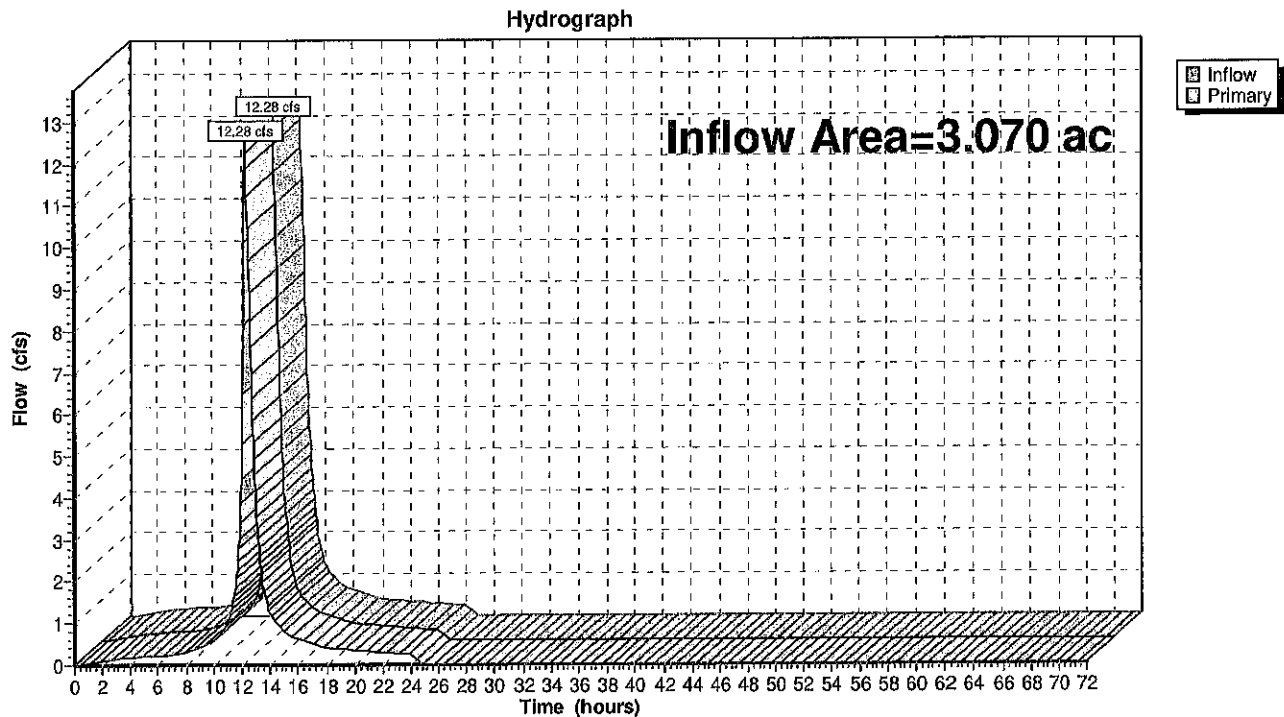
Page 9

Summary for Link 15L: Total to P.O.I. "A"

Inflow Area = 3.070 ac, 56.03% Impervious, Inflow Depth = 6.41" for 100-Year event
Inflow = 12.28 cfs @ 12.26 hrs, Volume= 1.641 af
Primary = 12.28 cfs @ 12.26 hrs, Volume= 1.641 af, Atten= 0%, Lag= 0.0 min

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

Link 15L: Total to P.O.I. "A"



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100 Year Storm
NOAA 24-hr C 100-Year Rainfall=8.33"

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Hydrograph for Link 15L: Total to P.O.I. "A"

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.03	0.00	0.03	52.00	0.00	0.00	0.00
2.00	0.10	0.00	0.10	53.00	0.00	0.00	0.00
3.00	0.14	0.00	0.14	54.00	0.00	0.00	0.00
4.00	0.17	0.00	0.17	55.00	0.00	0.00	0.00
5.00	0.19	0.00	0.19	56.00	0.00	0.00	0.00
6.00	0.21	0.00	0.21	57.00	0.00	0.00	0.00
7.00	0.26	0.00	0.26	58.00	0.00	0.00	0.00
8.00	0.32	0.00	0.32	59.00	0.00	0.00	0.00
9.00	0.39	0.00	0.39	60.00	0.00	0.00	0.00
10.00	0.60	0.00	0.60	61.00	0.00	0.00	0.00
11.00	1.06	0.00	1.06	62.00	0.00	0.00	0.00
12.00	5.29	0.00	5.29	63.00	0.00	0.00	0.00
13.00	3.85	0.00	3.85	64.00	0.00	0.00	0.00
14.00	1.23	0.00	1.23	65.00	0.00	0.00	0.00
15.00	0.81	0.00	0.81	66.00	0.00	0.00	0.00
16.00	0.61	0.00	0.61	67.00	0.00	0.00	0.00
17.00	0.51	0.00	0.51	68.00	0.00	0.00	0.00
18.00	0.42	0.00	0.42	69.00	0.00	0.00	0.00
19.00	0.37	0.00	0.37	70.00	0.00	0.00	0.00
20.00	0.34	0.00	0.34	71.00	0.00	0.00	0.00
21.00	0.32	0.00	0.32	72.00	0.00	0.00	0.00
22.00	0.30	0.00	0.30				
23.00	0.27	0.00	0.27				
24.00	0.25	0.00	0.25				
25.00	0.01	0.00	0.01				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

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Prepared by Menlo Engineering Associates

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100 Year Storm
NOAA 24-hr C 100-Year Rainfall=8.33"

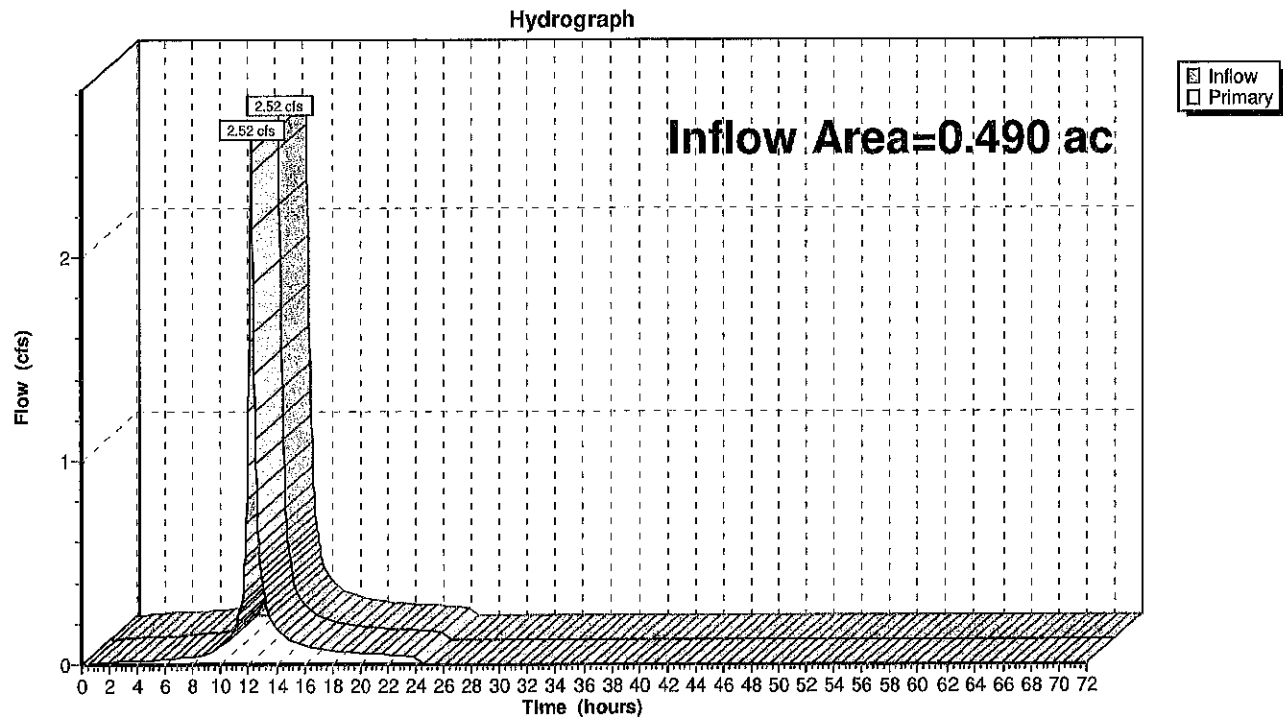
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Summary for Link 16L: Total to P.O.I. "B"

Inflow Area = 0.490 ac, 38.78% Impervious, Inflow Depth = 6.04" for 100-Year event
Inflow = 2.52 cfs @ 12.17 hrs, Volume= 0.247 af
Primary = 2.52 cfs @ 12.17 hrs, Volume= 0.247 af, Atten= 0%, Lag= 0.0 min

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

Link 16L: Total to P.O.I. "B"

2005.109.02_EXISTING (Rev 7)

Prepared by Menlo Engineering Associates

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100 Year Storm
NOAA 24-hr C 100-Year Rainfall=8.33"

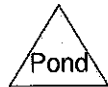
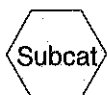
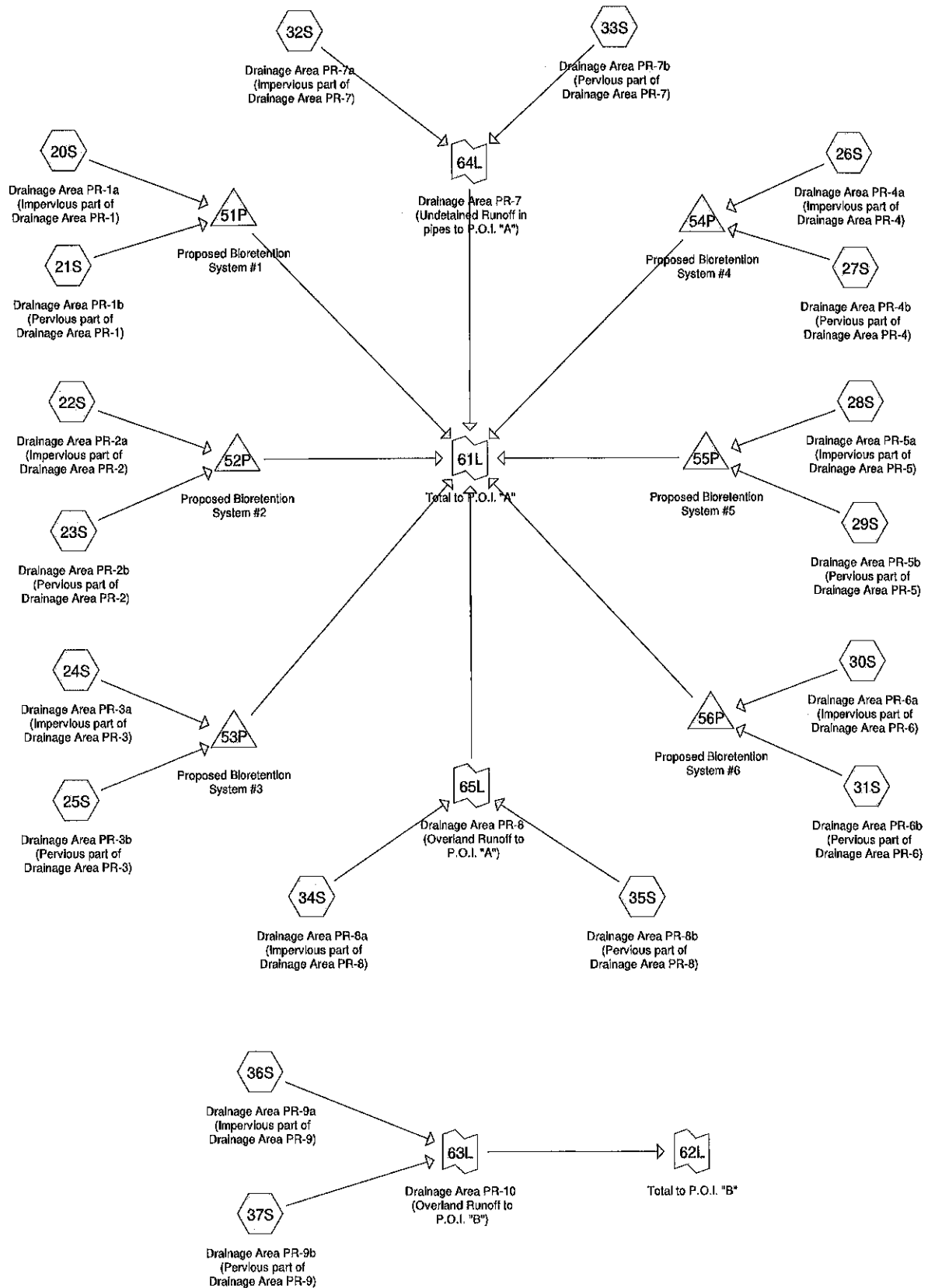
Printed 2/9/2023

Page 12

Hydrograph for Link 16L: Total to P.O.I. "B"

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.01	0.00	0.01	53.00	0.00	0.00	0.00
3.00	0.02	0.00	0.02	54.00	0.00	0.00	0.00
4.00	0.02	0.00	0.02	55.00	0.00	0.00	0.00
5.00	0.02	0.00	0.02	56.00	0.00	0.00	0.00
6.00	0.02	0.00	0.02	57.00	0.00	0.00	0.00
7.00	0.03	0.00	0.03	58.00	0.00	0.00	0.00
8.00	0.04	0.00	0.04	59.00	0.00	0.00	0.00
9.00	0.05	0.00	0.05	60.00	0.00	0.00	0.00
10.00	0.09	0.00	0.09	61.00	0.00	0.00	0.00
11.00	0.17	0.00	0.17	62.00	0.00	0.00	0.00
12.00	1.24	0.00	1.24	63.00	0.00	0.00	0.00
13.00	0.40	0.00	0.40	64.00	0.00	0.00	0.00
14.00	0.17	0.00	0.17	65.00	0.00	0.00	0.00
15.00	0.12	0.00	0.12	66.00	0.00	0.00	0.00
16.00	0.09	0.00	0.09	67.00	0.00	0.00	0.00
17.00	0.08	0.00	0.08	68.00	0.00	0.00	0.00
18.00	0.06	0.00	0.06	69.00	0.00	0.00	0.00
19.00	0.06	0.00	0.06	70.00	0.00	0.00	0.00
20.00	0.05	0.00	0.05	71.00	0.00	0.00	0.00
21.00	0.05	0.00	0.05	72.00	0.00	0.00	0.00
22.00	0.05	0.00	0.05				
23.00	0.04	0.00	0.04				
24.00	0.04	0.00	0.04				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

APPENDIX B: PROPOSED CONDITIONS



Routing Diagram for 2005.109.02_PROPOSED (Rev. 8)
 Prepared by Menlo Engineering Associates, Printed 8/29/2023
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2 YEAR STORM

2005.109.02 PROPOSED (Rev. 8)

Prepared by Menlo Engineering Associates

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2 Year Storm
NOAA 24-hr C 2-Year Rainfall=3.31"

Printed 8/29/2023

Page 1

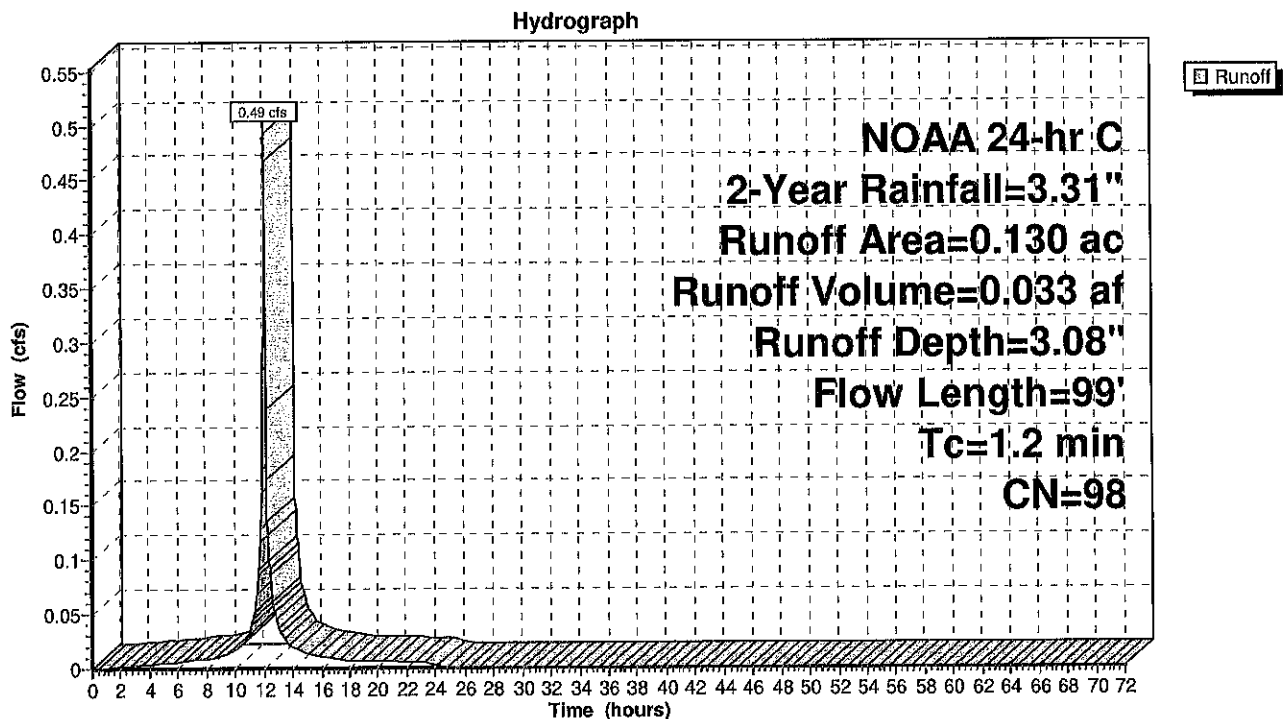
Summary for Subcatchment 20S: Drainage Area PR-1a (Impervious part of Drainage Area PR-1)

Runoff = 0.49 cfs @ 12.08 hrs, Volume= 0.033 af, Depth= 3.08"
 Routed to Pond 51P : Proposed Bioretention System #1

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=3.31"

Area (ac)	CN	Description
0.080	98	Paved parking, HSG C
0.050	98	Roofs, HSG C
0.130	98	Weighted Average
0.130	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	54	0.0150	1.11		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
0.4	45	0.0100	2.03		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.2	99	Total			

Subcatchment 20S: Drainage Area PR-1a (Impervious part of Drainage Area PR-1)

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2 Year Storm

NOAA 24-hr C 2-Year Rainfall=3.31"

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Hydrograph for Subcatchment 20S: Drainage Area PR-1a (Impervious part of Drainage Area PR-1)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	3.31	3.08	0.00
1.00	0.04	0.00	0.00	52.00	3.31	3.08	0.00
2.00	0.07	0.00	0.00	53.00	3.31	3.08	0.00
3.00	0.12	0.02	0.00	54.00	3.31	3.08	0.00
4.00	0.16	0.05	0.00	55.00	3.31	3.08	0.00
5.00	0.21	0.08	0.00	56.00	3.31	3.08	0.00
6.00	0.26	0.12	0.01	57.00	3.31	3.08	0.00
7.00	0.32	0.16	0.01	58.00	3.31	3.08	0.00
8.00	0.40	0.23	0.01	59.00	3.31	3.08	0.00
9.00	0.48	0.30	0.01	60.00	3.31	3.08	0.00
10.00	0.60	0.41	0.02	61.00	3.31	3.08	0.00
11.00	0.79	0.59	0.03	62.00	3.31	3.08	0.00
12.00	1.58	1.36	0.32	63.00	3.31	3.08	0.00
13.00	2.52	2.29	0.04	64.00	3.31	3.08	0.00
14.00	2.71	2.48	0.02	65.00	3.31	3.08	0.00
15.00	2.83	2.60	0.01	66.00	3.31	3.08	0.00
16.00	2.91	2.68	0.01	67.00	3.31	3.08	0.00
17.00	2.99	2.76	0.01	68.00	3.31	3.08	0.00
18.00	3.05	2.82	0.01	69.00	3.31	3.08	0.00
19.00	3.10	2.87	0.01	70.00	3.31	3.08	0.00
20.00	3.15	2.92	0.01	71.00	3.31	3.08	0.00
21.00	3.19	2.96	0.01	72.00	3.31	3.08	0.00
22.00	3.24	3.00	0.01				
23.00	3.27	3.04	0.00				
24.00	3.31	3.08	0.00				
25.00	3.31	3.08	0.00				
26.00	3.31	3.08	0.00				
27.00	3.31	3.08	0.00				
28.00	3.31	3.08	0.00				
29.00	3.31	3.08	0.00				
30.00	3.31	3.08	0.00				
31.00	3.31	3.08	0.00				
32.00	3.31	3.08	0.00				
33.00	3.31	3.08	0.00				
34.00	3.31	3.08	0.00				
35.00	3.31	3.08	0.00				
36.00	3.31	3.08	0.00				
37.00	3.31	3.08	0.00				
38.00	3.31	3.08	0.00				
39.00	3.31	3.08	0.00				
40.00	3.31	3.08	0.00				
41.00	3.31	3.08	0.00				
42.00	3.31	3.08	0.00				
43.00	3.31	3.08	0.00				
44.00	3.31	3.08	0.00				
45.00	3.31	3.08	0.00				
46.00	3.31	3.08	0.00				
47.00	3.31	3.08	0.00				
48.00	3.31	3.08	0.00				
49.00	3.31	3.08	0.00				
50.00	3.31	3.08	0.00				

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2 Year Storm
NOAA 24-hr C 2-Year Rainfall=3.31"

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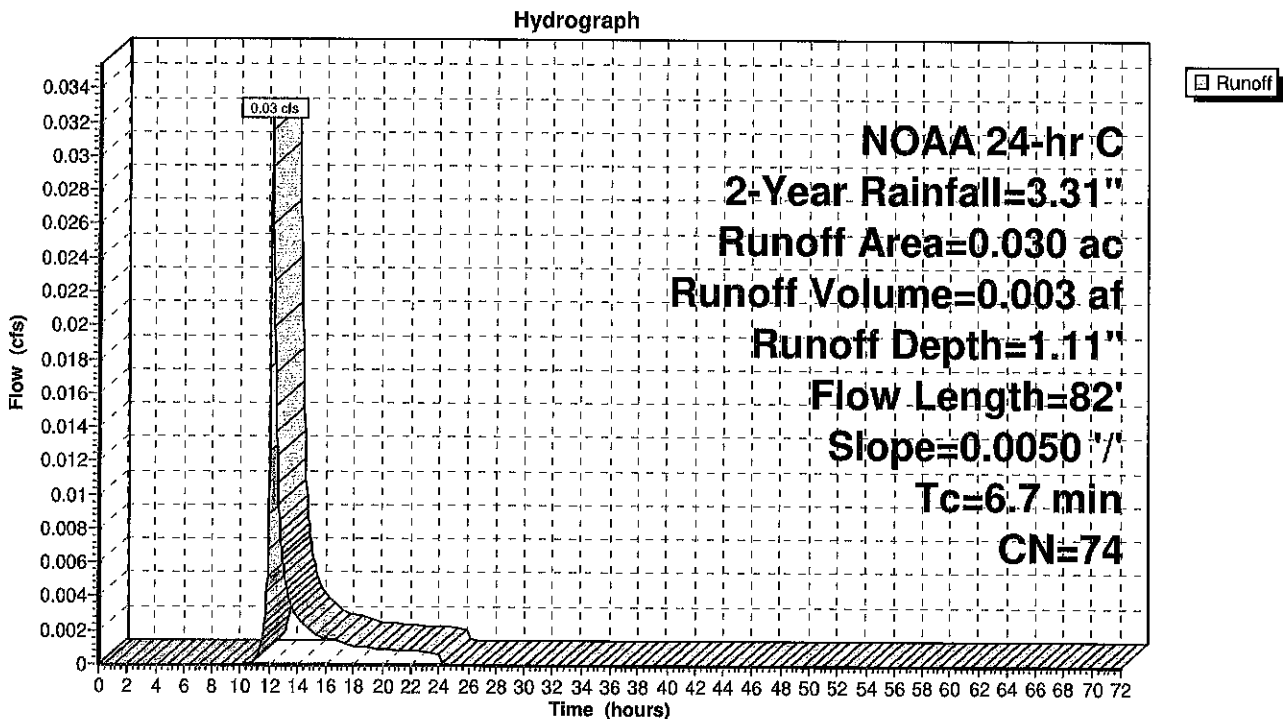
Summary for Subcatchment 21S: Drainage Area PR-1b (Pervious part of Drainage Area PR-1)

Runoff = 0.03 cfs @ 12.16 hrs, Volume= 0.003 af, Depth= 1.11"
 Routed to Pond 51P : Proposed Bioretention System #1

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=3.31"

Area (ac)	CN	Description
0.030	74	>75% Grass cover, Good, HSG C
0.030	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	17	0.0050	0.05		Sheet Flow, Grass: Dense n= 0.240 P2= 3.35"
0.2	13	0.0050	1.14		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.6	52	0.0050	1.44		Shallow Concentrated Flow, Paved Kv= 20.3 fps
6.7	82	Total			

Subcatchment 21S: Drainage Area PR-1b (Pervious part of Drainage Area PR-1)

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NOAA 24-hr C 2-Year Rainfall=3.31"

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Hydrograph for Subcatchment 21S: Drainage Area PR-1b (Pervious part of Drainage Area PR-1)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	3.31	1.11	0.00
1.00	0.04	0.00	0.00	52.00	3.31	1.11	0.00
2.00	0.07	0.00	0.00	53.00	3.31	1.11	0.00
3.00	0.12	0.00	0.00	54.00	3.31	1.11	0.00
4.00	0.16	0.00	0.00	55.00	3.31	1.11	0.00
5.00	0.21	0.00	0.00	56.00	3.31	1.11	0.00
6.00	0.26	0.00	0.00	57.00	3.31	1.11	0.00
7.00	0.32	0.00	0.00	58.00	3.31	1.11	0.00
8.00	0.40	0.00	0.00	59.00	3.31	1.11	0.00
9.00	0.48	0.00	0.00	60.00	3.31	1.11	0.00
10.00	0.60	0.00	0.00	61.00	3.31	1.11	0.00
11.00	0.79	0.00	0.00	62.00	3.31	1.11	0.00
12.00	1.58	0.17	0.01	63.00	3.31	1.11	0.00
13.00	2.52	0.62	0.01	64.00	3.31	1.11	0.00
14.00	2.71	0.73	0.00	65.00	3.31	1.11	0.00
15.00	2.83	0.80	0.00	66.00	3.31	1.11	0.00
16.00	2.91	0.85	0.00	67.00	3.31	1.11	0.00
17.00	2.99	0.90	0.00	68.00	3.31	1.11	0.00
18.00	3.05	0.94	0.00	69.00	3.31	1.11	0.00
19.00	3.10	0.97	0.00	70.00	3.31	1.11	0.00
20.00	3.15	1.00	0.00	71.00	3.31	1.11	0.00
21.00	3.19	1.03	0.00	72.00	3.31	1.11	0.00
22.00	3.24	1.06	0.00				
23.00	3.27	1.09	0.00				
24.00	3.31	1.11	0.00				
25.00	3.31	1.11	0.00				
26.00	3.31	1.11	0.00				
27.00	3.31	1.11	0.00				
28.00	3.31	1.11	0.00				
29.00	3.31	1.11	0.00				
30.00	3.31	1.11	0.00				
31.00	3.31	1.11	0.00				
32.00	3.31	1.11	0.00				
33.00	3.31	1.11	0.00				
34.00	3.31	1.11	0.00				
35.00	3.31	1.11	0.00				
36.00	3.31	1.11	0.00				
37.00	3.31	1.11	0.00				
38.00	3.31	1.11	0.00				
39.00	3.31	1.11	0.00				
40.00	3.31	1.11	0.00				
41.00	3.31	1.11	0.00				
42.00	3.31	1.11	0.00				
43.00	3.31	1.11	0.00				
44.00	3.31	1.11	0.00				
45.00	3.31	1.11	0.00				
46.00	3.31	1.11	0.00				
47.00	3.31	1.11	0.00				
48.00	3.31	1.11	0.00				
49.00	3.31	1.11	0.00				
50.00	3.31	1.11	0.00				

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2 Year Storm

NOAA 24-hr C 2-Year Rainfall=3.31"

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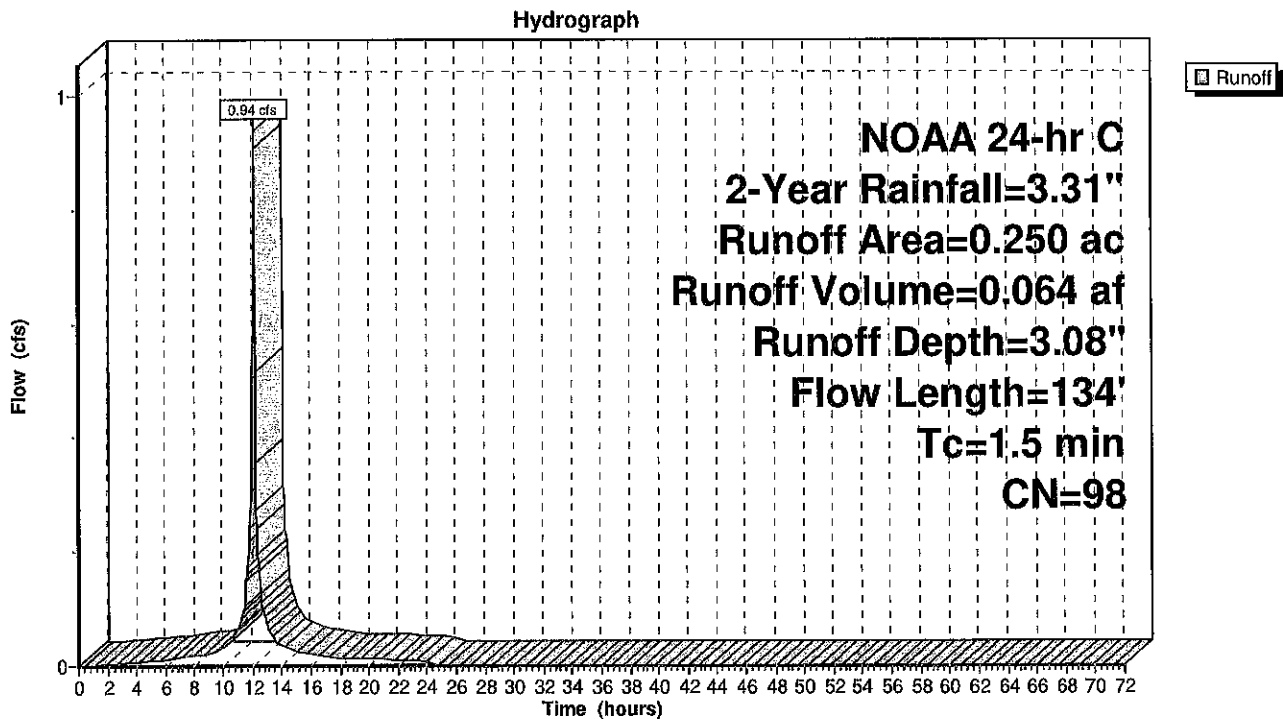
Summary for Subcatchment 22S: Drainage Area PR-2a (Impervious part of Drainage Area PR-2)

Runoff = 0.94 cfs @ 12.08 hrs, Volume= 0.064 af, Depth= 3.08"
 Routed to Pond 52P : Proposed Bioretention System #2

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=3.31"

Area (ac)	CN	Description
0.250	98	Paved parking, HSG C
0.250	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	72	0.0150	1.17		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
0.5	62	0.0100	2.03		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.5	134	Total			

Subcatchment 22S: Drainage Area PR-2a (Impervious part of Drainage Area PR-2)

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Hydrograph for Subcatchment 22S: Drainage Area PR-2a (Impervious part of Drainage Area PR-2)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	3.31	3.08	0.00
1.00	0.04	0.00	0.00	52.00	3.31	3.08	0.00
2.00	0.07	0.00	0.00	53.00	3.31	3.08	0.00
3.00	0.12	0.02	0.01	54.00	3.31	3.08	0.00
4.00	0.16	0.05	0.01	55.00	3.31	3.08	0.00
5.00	0.21	0.08	0.01	56.00	3.31	3.08	0.00
6.00	0.26	0.12	0.01	57.00	3.31	3.08	0.00
7.00	0.32	0.16	0.01	58.00	3.31	3.08	0.00
8.00	0.40	0.23	0.02	59.00	3.31	3.08	0.00
9.00	0.48	0.30	0.02	60.00	3.31	3.08	0.00
10.00	0.60	0.41	0.03	61.00	3.31	3.08	0.00
11.00	0.79	0.59	0.06	62.00	3.31	3.08	0.00
12.00	1.58	1.36	0.59	63.00	3.31	3.08	0.00
13.00	2.52	2.29	0.07	64.00	3.31	3.08	0.00
14.00	2.71	2.48	0.04	65.00	3.31	3.08	0.00
15.00	2.83	2.60	0.02	66.00	3.31	3.08	0.00
16.00	2.91	2.68	0.02	67.00	3.31	3.08	0.00
17.00	2.99	2.76	0.02	68.00	3.31	3.08	0.00
18.00	3.05	2.82	0.01	69.00	3.31	3.08	0.00
19.00	3.10	2.87	0.01	70.00	3.31	3.08	0.00
20.00	3.15	2.92	0.01	71.00	3.31	3.08	0.00
21.00	3.19	2.96	0.01	72.00	3.31	3.08	0.00
22.00	3.24	3.00	0.01				
23.00	3.27	3.04	0.01				
24.00	3.31	3.08	0.01				
25.00	3.31	3.08	0.00				
26.00	3.31	3.08	0.00				
27.00	3.31	3.08	0.00				
28.00	3.31	3.08	0.00				
29.00	3.31	3.08	0.00				
30.00	3.31	3.08	0.00				
31.00	3.31	3.08	0.00				
32.00	3.31	3.08	0.00				
33.00	3.31	3.08	0.00				
34.00	3.31	3.08	0.00				
35.00	3.31	3.08	0.00				
36.00	3.31	3.08	0.00				
37.00	3.31	3.08	0.00				
38.00	3.31	3.08	0.00				
39.00	3.31	3.08	0.00				
40.00	3.31	3.08	0.00				
41.00	3.31	3.08	0.00				
42.00	3.31	3.08	0.00				
43.00	3.31	3.08	0.00				
44.00	3.31	3.08	0.00				
45.00	3.31	3.08	0.00				
46.00	3.31	3.08	0.00				
47.00	3.31	3.08	0.00				
48.00	3.31	3.08	0.00				
49.00	3.31	3.08	0.00				
50.00	3.31	3.08	0.00				

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2 Year Storm
NOAA 24-hr C 2-Year Rainfall=3.31"

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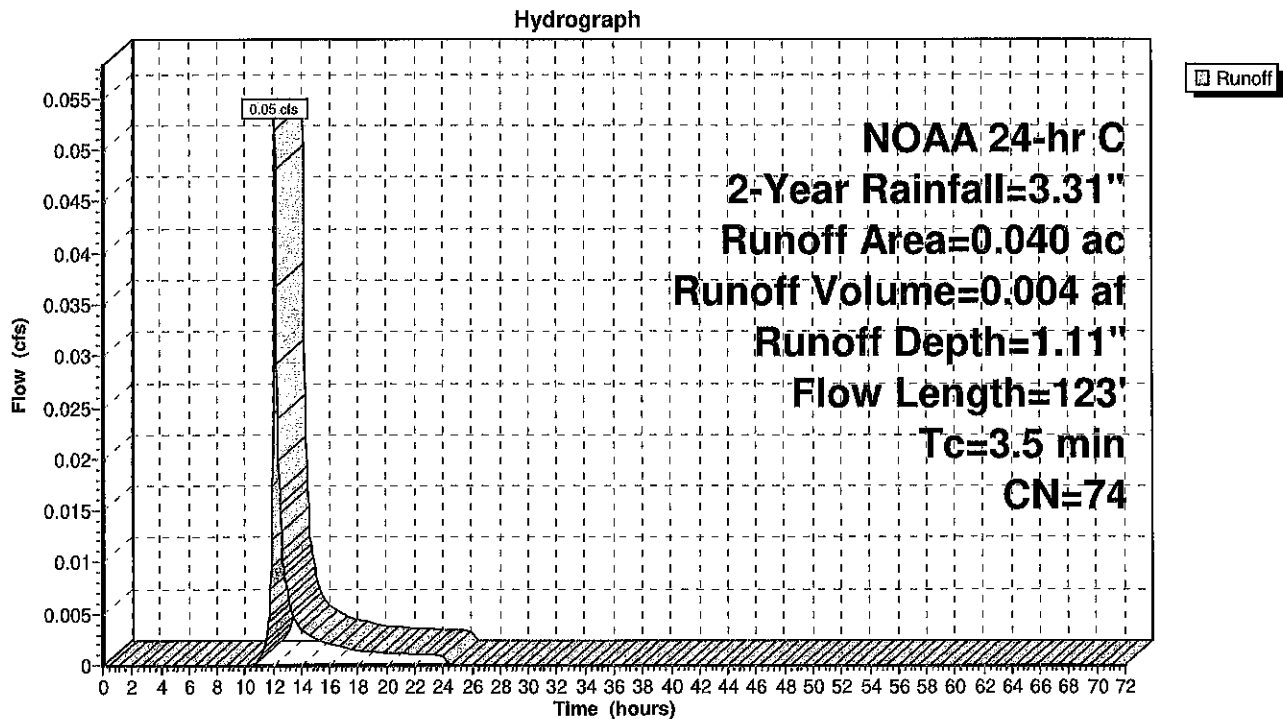
Summary for Subcatchment 23S: Drainage Area PR-2b (Pervious part of Drainage Area PR-2)

Runoff = 0.05 cfs @ 12.12 hrs, Volume= 0.004 af, Depth= 1.11"
Routed to Pond 52P : Proposed Bioretention System #2

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=3.31"

Area (ac)	CN	Description
0.040	74	>75% Grass cover, Good, HSG C
0.040	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	6	0.0050	0.04		Sheet Flow, Grass: Dense n= 0.240 P2= 3.35"
0.2	6	0.0050	0.46		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
0.7	111	0.0150	2.49		Shallow Concentrated Flow, Paved Kv= 20.3 fps
3.5	123	Total			

Subcatchment 23S: Drainage Area PR-2b (Pervious part of Drainage Area PR-2)

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2 Year Storm

NOAA 24-hr C 2-Year Rainfall=3.31"

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Hydrograph for Subcatchment 23S: Drainage Area PR-2b (Pervious part of Drainage Area PR-2)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	3.31	1.11	0.00
1.00	0.04	0.00	0.00	52.00	3.31	1.11	0.00
2.00	0.07	0.00	0.00	53.00	3.31	1.11	0.00
3.00	0.12	0.00	0.00	54.00	3.31	1.11	0.00
4.00	0.16	0.00	0.00	55.00	3.31	1.11	0.00
5.00	0.21	0.00	0.00	56.00	3.31	1.11	0.00
6.00	0.26	0.00	0.00	57.00	3.31	1.11	0.00
7.00	0.32	0.00	0.00	58.00	3.31	1.11	0.00
8.00	0.40	0.00	0.00	59.00	3.31	1.11	0.00
9.00	0.48	0.00	0.00	60.00	3.31	1.11	0.00
10.00	0.60	0.00	0.00	61.00	3.31	1.11	0.00
11.00	0.79	0.00	0.00	62.00	3.31	1.11	0.00
12.00	1.58	0.17	0.02	63.00	3.31	1.11	0.00
13.00	2.52	0.62	0.01	64.00	3.31	1.11	0.00
14.00	2.71	0.73	0.00	65.00	3.31	1.11	0.00
15.00	2.83	0.80	0.00	66.00	3.31	1.11	0.00
16.00	2.91	0.85	0.00	67.00	3.31	1.11	0.00
17.00	2.99	0.90	0.00	68.00	3.31	1.11	0.00
18.00	3.05	0.94	0.00	69.00	3.31	1.11	0.00
19.00	3.10	0.97	0.00	70.00	3.31	1.11	0.00
20.00	3.15	1.00	0.00	71.00	3.31	1.11	0.00
21.00	3.19	1.03	0.00	72.00	3.31	1.11	0.00
22.00	3.24	1.06	0.00				
23.00	3.27	1.09	0.00				
24.00	3.31	1.11	0.00				
25.00	3.31	1.11	0.00				
26.00	3.31	1.11	0.00				
27.00	3.31	1.11	0.00				
28.00	3.31	1.11	0.00				
29.00	3.31	1.11	0.00				
30.00	3.31	1.11	0.00				
31.00	3.31	1.11	0.00				
32.00	3.31	1.11	0.00				
33.00	3.31	1.11	0.00				
34.00	3.31	1.11	0.00				
35.00	3.31	1.11	0.00				
36.00	3.31	1.11	0.00				
37.00	3.31	1.11	0.00				
38.00	3.31	1.11	0.00				
39.00	3.31	1.11	0.00				
40.00	3.31	1.11	0.00				
41.00	3.31	1.11	0.00				
42.00	3.31	1.11	0.00				
43.00	3.31	1.11	0.00				
44.00	3.31	1.11	0.00				
45.00	3.31	1.11	0.00				
46.00	3.31	1.11	0.00				
47.00	3.31	1.11	0.00				
48.00	3.31	1.11	0.00				
49.00	3.31	1.11	0.00				
50.00	3.31	1.11	0.00				

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2 Year Storm
NOAA 24-hr C 2-Year Rainfall=3.31"

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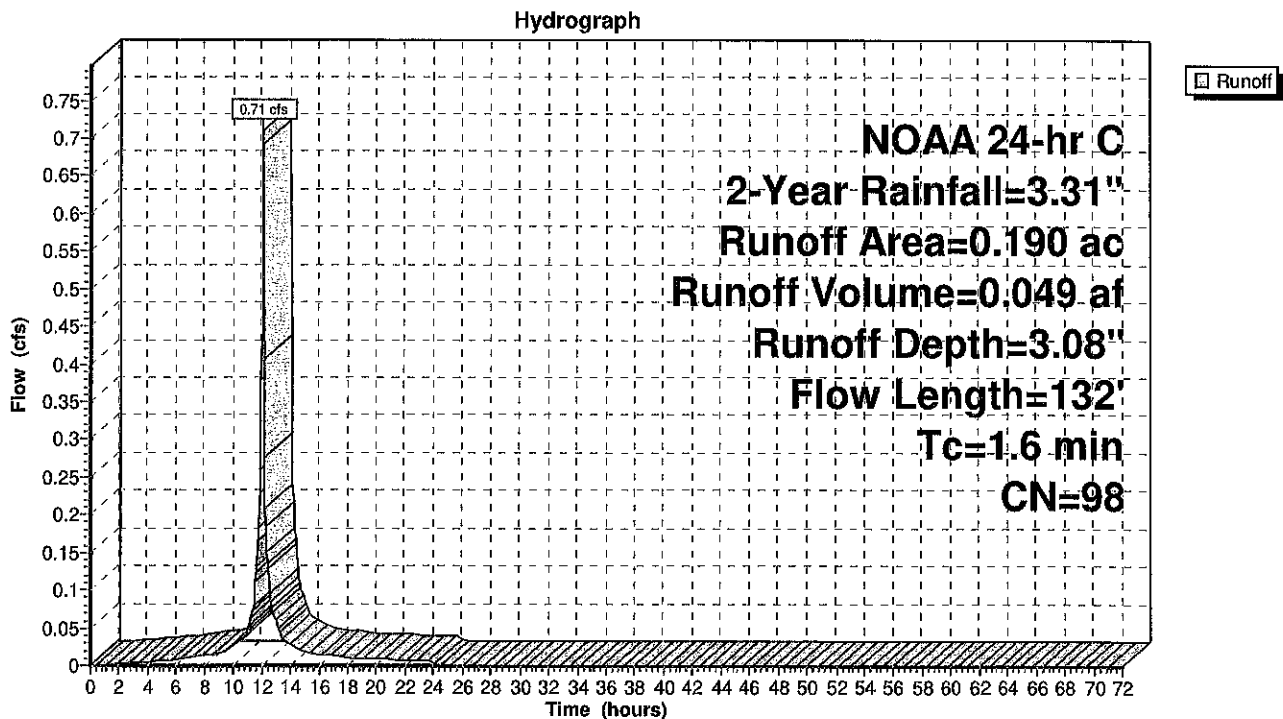
Summary for Subcatchment 24S: Drainage Area PR-3a (Impervious part of Drainage Area PR-3)

Runoff = 0.71 cfs @ 12.08 hrs, Volume= 0.049 af, Depth= 3.08"
 Routed to Pond 53P : Proposed Bioretention System #3

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=3.31"

Area (ac)	CN	Description
0.190	98	Paved parking, HSG C
0.190	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	76	0.0150	1.19		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
0.5	56	0.0100	2.03		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.6	132	Total			

Subcatchment 24S: Drainage Area PR-3a (Impervious part of Drainage Area PR-3)

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2 Year Storm

NOAA 24-hr C 2-Year Rainfall=3.31"

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Hydrograph for Subcatchment 24S: Drainage Area PR-3a (Impervious part of Drainage Area PR-3)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	3.31	3.08	0.00
1.00	0.04	0.00	0.00	52.00	3.31	3.08	0.00
2.00	0.07	0.00	0.00	53.00	3.31	3.08	0.00
3.00	0.12	0.02	0.00	54.00	3.31	3.08	0.00
4.00	0.16	0.05	0.01	55.00	3.31	3.08	0.00
5.00	0.21	0.08	0.01	56.00	3.31	3.08	0.00
6.00	0.26	0.12	0.01	57.00	3.31	3.08	0.00
7.00	0.32	0.16	0.01	58.00	3.31	3.08	0.00
8.00	0.40	0.23	0.01	59.00	3.31	3.08	0.00
9.00	0.48	0.30	0.02	60.00	3.31	3.08	0.00
10.00	0.60	0.41	0.03	61.00	3.31	3.08	0.00
11.00	0.79	0.59	0.05	62.00	3.31	3.08	0.00
12.00	1.58	1.36	0.44	63.00	3.31	3.08	0.00
13.00	2.52	2.29	0.06	64.00	3.31	3.08	0.00
14.00	2.71	2.48	0.03	65.00	3.31	3.08	0.00
15.00	2.83	2.60	0.02	66.00	3.31	3.08	0.00
16.00	2.91	2.68	0.02	67.00	3.31	3.08	0.00
17.00	2.99	2.76	0.01	68.00	3.31	3.08	0.00
18.00	3.05	2.82	0.01	69.00	3.31	3.08	0.00
19.00	3.10	2.87	0.01	70.00	3.31	3.08	0.00
20.00	3.15	2.92	0.01	71.00	3.31	3.08	0.00
21.00	3.19	2.96	0.01	72.00	3.31	3.08	0.00
22.00	3.24	3.00	0.01				
23.00	3.27	3.04	0.01				
24.00	3.31	3.08	0.01				
25.00	3.31	3.08	0.00				
26.00	3.31	3.08	0.00				
27.00	3.31	3.08	0.00				
28.00	3.31	3.08	0.00				
29.00	3.31	3.08	0.00				
30.00	3.31	3.08	0.00				
31.00	3.31	3.08	0.00				
32.00	3.31	3.08	0.00				
33.00	3.31	3.08	0.00				
34.00	3.31	3.08	0.00				
35.00	3.31	3.08	0.00				
36.00	3.31	3.08	0.00				
37.00	3.31	3.08	0.00				
38.00	3.31	3.08	0.00				
39.00	3.31	3.08	0.00				
40.00	3.31	3.08	0.00				
41.00	3.31	3.08	0.00				
42.00	3.31	3.08	0.00				
43.00	3.31	3.08	0.00				
44.00	3.31	3.08	0.00				
45.00	3.31	3.08	0.00				
46.00	3.31	3.08	0.00				
47.00	3.31	3.08	0.00				
48.00	3.31	3.08	0.00				
49.00	3.31	3.08	0.00				
50.00	3.31	3.08	0.00				

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2 Year Storm

NOAA 24-hr C 2-Year Rainfall=3.31"

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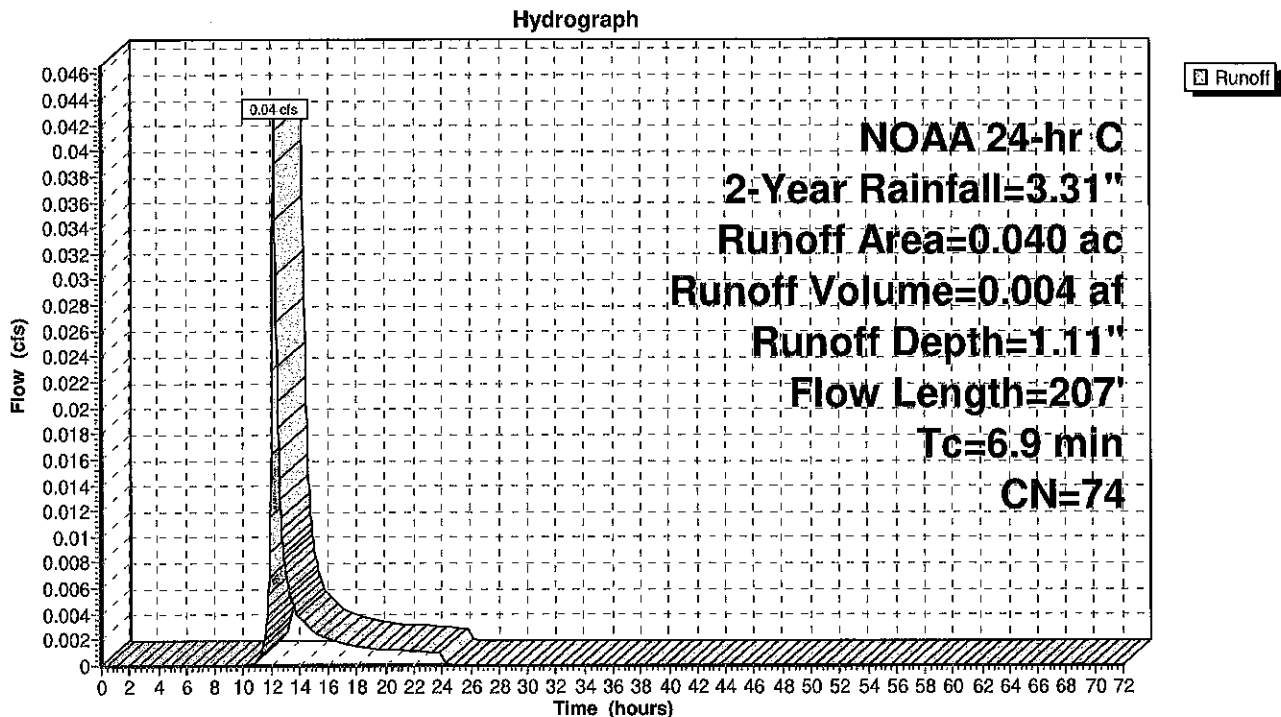
Summary for Subcatchment 25S: Drainage Area PR-3b (Pervious part of Drainage Area PR-3)

Runoff = 0.04 cfs @ 12.16 hrs, Volume= 0.004 af, Depth= 1.11"
Routed to Pond 53P : Proposed Bioretention System #3

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=3.31"

Area (ac)	CN	Description
0.040	74	>75% Grass cover, Good, HSG C
0.040	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	16	0.0050	0.05		Sheet Flow, Grass: Dense n= 0.240 P2= 3.35"
1.3	191	0.0140	2.40		Shallow Concentrated Flow, Paved Kv= 20.3 fps
6.9	207	Total			

Subcatchment 25S: Drainage Area PR-3b (Pervious part of Drainage Area PR-3)

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Hydrograph for Subcatchment 25S: Drainage Area PR-3b (Pervious part of Drainage Area PR-3)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	3.31	1.11	0.00
1.00	0.04	0.00	0.00	52.00	3.31	1.11	0.00
2.00	0.07	0.00	0.00	53.00	3.31	1.11	0.00
3.00	0.12	0.00	0.00	54.00	3.31	1.11	0.00
4.00	0.16	0.00	0.00	55.00	3.31	1.11	0.00
5.00	0.21	0.00	0.00	56.00	3.31	1.11	0.00
6.00	0.26	0.00	0.00	57.00	3.31	1.11	0.00
7.00	0.32	0.00	0.00	58.00	3.31	1.11	0.00
8.00	0.40	0.00	0.00	59.00	3.31	1.11	0.00
9.00	0.48	0.00	0.00	60.00	3.31	1.11	0.00
10.00	0.60	0.00	0.00	61.00	3.31	1.11	0.00
11.00	0.79	0.00	0.00	62.00	3.31	1.11	0.00
12.00	1.58	0.17	0.02	63.00	3.31	1.11	0.00
13.00	2.52	0.62	0.01	64.00	3.31	1.11	0.00
14.00	2.71	0.73	0.00	65.00	3.31	1.11	0.00
15.00	2.83	0.80	0.00	66.00	3.31	1.11	0.00
16.00	2.91	0.85	0.00	67.00	3.31	1.11	0.00
17.00	2.99	0.90	0.00	68.00	3.31	1.11	0.00
18.00	3.05	0.94	0.00	69.00	3.31	1.11	0.00
19.00	3.10	0.97	0.00	70.00	3.31	1.11	0.00
20.00	3.15	1.00	0.00	71.00	3.31	1.11	0.00
21.00	3.19	1.03	0.00	72.00	3.31	1.11	0.00
22.00	3.24	1.06	0.00				
23.00	3.27	1.09	0.00				
24.00	3.31	1.11	0.00				
25.00	3.31	1.11	0.00				
26.00	3.31	1.11	0.00				
27.00	3.31	1.11	0.00				
28.00	3.31	1.11	0.00				
29.00	3.31	1.11	0.00				
30.00	3.31	1.11	0.00				
31.00	3.31	1.11	0.00				
32.00	3.31	1.11	0.00				
33.00	3.31	1.11	0.00				
34.00	3.31	1.11	0.00				
35.00	3.31	1.11	0.00				
36.00	3.31	1.11	0.00				
37.00	3.31	1.11	0.00				
38.00	3.31	1.11	0.00				
39.00	3.31	1.11	0.00				
40.00	3.31	1.11	0.00				
41.00	3.31	1.11	0.00				
42.00	3.31	1.11	0.00				
43.00	3.31	1.11	0.00				
44.00	3.31	1.11	0.00				
45.00	3.31	1.11	0.00				
46.00	3.31	1.11	0.00				
47.00	3.31	1.11	0.00				
48.00	3.31	1.11	0.00				
49.00	3.31	1.11	0.00				
50.00	3.31	1.11	0.00				

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2 Year Storm
NOAA 24-hr C 2-Year Rainfall=3.31"

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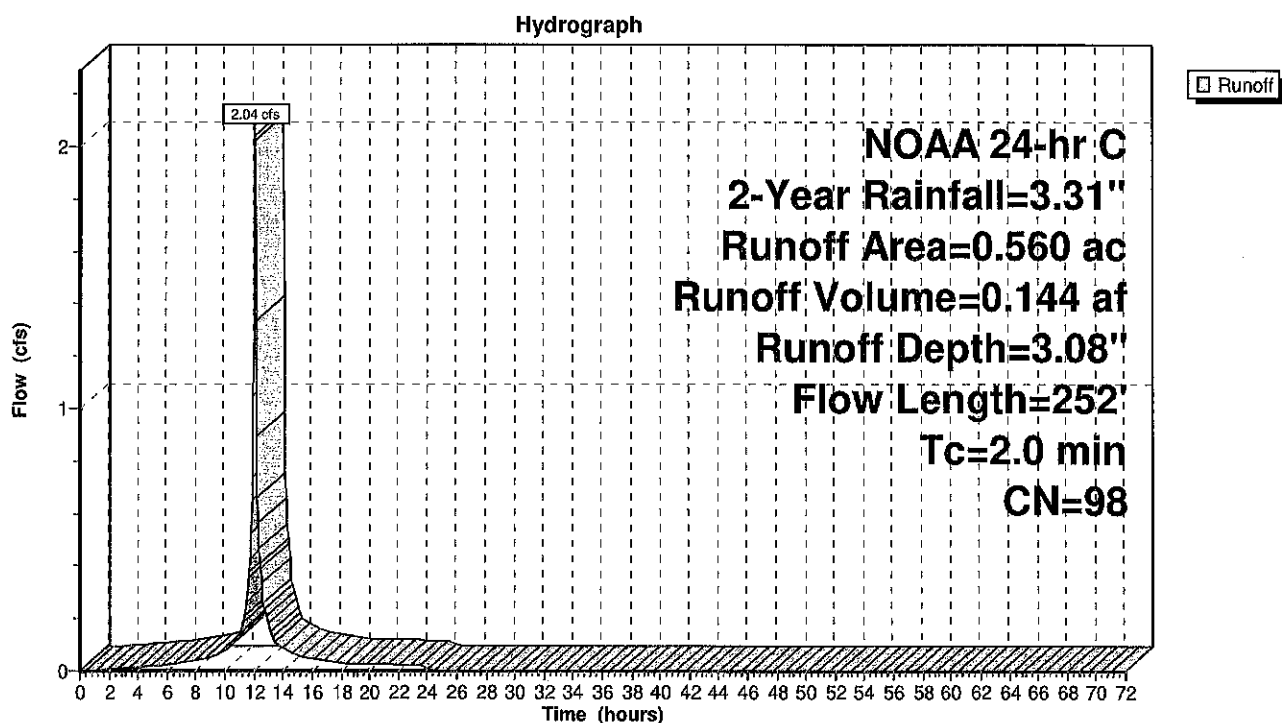
Summary for Subcatchment 26S: Drainage Area PR-4a (Impervious part of Drainage Area PR-4)

Runoff = 2.04 cfs @ 12.09 hrs, Volume= 0.144 af, Depth= 3.08"
 Routed to Pond 54P : Proposed Bioretention System #4

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=3.31"

Area (ac)	CN	Description
0.370	98	Paved parking, HSG C
0.190	98	Roofs, HSG C
0.560	98	Weighted Average
0.560	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	61	0.0150	1.14		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
0.4	59	0.0150	2.49		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.7	132	0.0030	3.12	3.83	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
2.0	252	Total			

Subcatchment 26S: Drainage Area PR-4a (Impervious part of Drainage Area PR-4)

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Hydrograph for Subcatchment 26S: Drainage Area PR-4a (Impervious part of Drainage Area PR-4)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	3.31	3.08	0.00
1.00	0.04	0.00	0.00	52.00	3.31	3.08	0.00
2.00	0.07	0.00	0.01	53.00	3.31	3.08	0.00
3.00	0.12	0.02	0.01	54.00	3.31	3.08	0.00
4.00	0.16	0.05	0.02	55.00	3.31	3.08	0.00
5.00	0.21	0.08	0.02	56.00	3.31	3.08	0.00
6.00	0.26	0.12	0.02	57.00	3.31	3.08	0.00
7.00	0.32	0.16	0.03	58.00	3.31	3.08	0.00
8.00	0.40	0.23	0.04	59.00	3.31	3.08	0.00
9.00	0.48	0.30	0.05	60.00	3.31	3.08	0.00
10.00	0.60	0.41	0.07	61.00	3.31	3.08	0.00
11.00	0.79	0.59	0.14	62.00	3.31	3.08	0.00
12.00	1.58	1.36	1.26	63.00	3.31	3.08	0.00
13.00	2.52	2.29	0.17	64.00	3.31	3.08	0.00
14.00	2.71	2.48	0.08	65.00	3.31	3.08	0.00
15.00	2.83	2.60	0.06	66.00	3.31	3.08	0.00
16.00	2.91	2.68	0.05	67.00	3.31	3.08	0.00
17.00	2.99	2.76	0.04	68.00	3.31	3.08	0.00
18.00	3.05	2.82	0.03	69.00	3.31	3.08	0.00
19.00	3.10	2.87	0.03	70.00	3.31	3.08	0.00
20.00	3.15	2.92	0.03	71.00	3.31	3.08	0.00
21.00	3.19	2.96	0.02	72.00	3.31	3.08	0.00
22.00	3.24	3.00	0.02				
23.00	3.27	3.04	0.02				
24.00	3.31	3.08	0.02				
25.00	3.31	3.08	0.00				
26.00	3.31	3.08	0.00				
27.00	3.31	3.08	0.00				
28.00	3.31	3.08	0.00				
29.00	3.31	3.08	0.00				
30.00	3.31	3.08	0.00				
31.00	3.31	3.08	0.00				
32.00	3.31	3.08	0.00				
33.00	3.31	3.08	0.00				
34.00	3.31	3.08	0.00				
35.00	3.31	3.08	0.00				
36.00	3.31	3.08	0.00				
37.00	3.31	3.08	0.00				
38.00	3.31	3.08	0.00				
39.00	3.31	3.08	0.00				
40.00	3.31	3.08	0.00				
41.00	3.31	3.08	0.00				
42.00	3.31	3.08	0.00				
43.00	3.31	3.08	0.00				
44.00	3.31	3.08	0.00				
45.00	3.31	3.08	0.00				
46.00	3.31	3.08	0.00				
47.00	3.31	3.08	0.00				
48.00	3.31	3.08	0.00				
49.00	3.31	3.08	0.00				
50.00	3.31	3.08	0.00				

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Summary for Subcatchment 27S: Drainage Area PR-4b (Pervious part of Drainage Area PR-4)

Runoff = 0.16 cfs @ 12.16 hrs, Volume= 0.014 af, Depth= 1.11"
 Routed to Pond 54P : Proposed Bioretention System #4

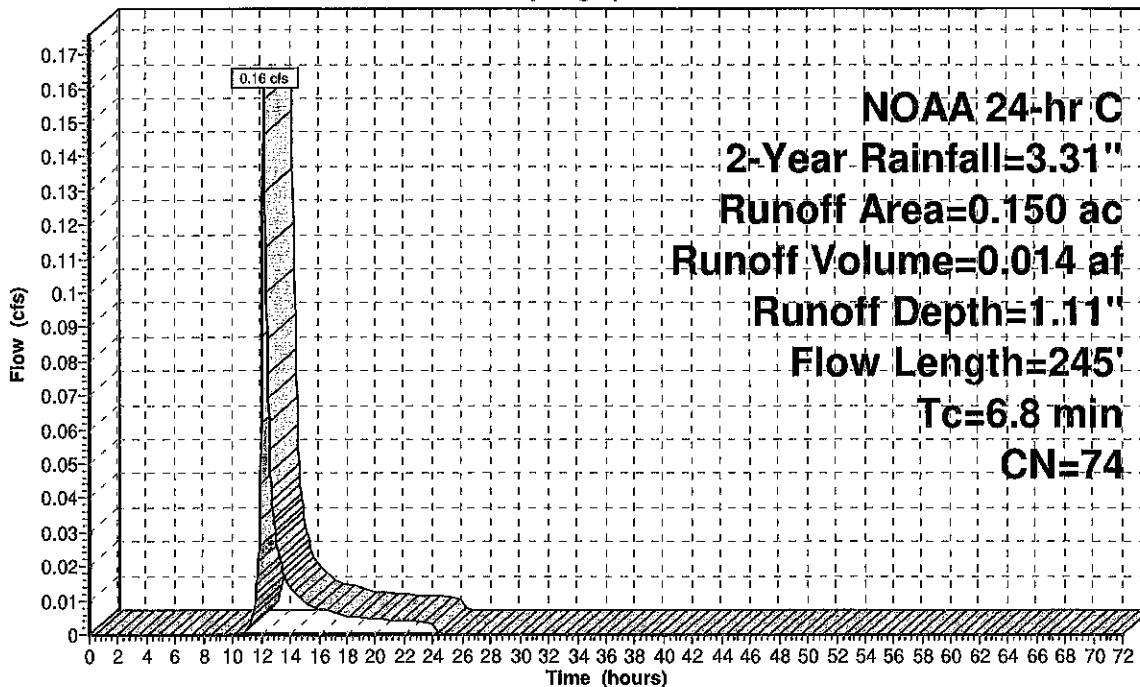
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 2-Year Rainfall=3.31"

Area (ac)	CN	Description
0.150	74	>75% Grass cover, Good, HSG C
0.150	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	21	0.0100	0.07		Sheet Flow, Grass: Dense n= 0.240 P2= 3.35"
0.8	92	0.0100	2.03		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.7	132	0.0030	3.12	3.83	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
6.8	245	Total			

Subcatchment 27S: Drainage Area PR-4b (Pervious part of Drainage Area PR-4)

Hydrograph



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Hydrograph for Subcatchment 27S: Drainage Area PR-4b (Pervious part of Drainage Area PR-4)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	3.31	1.11	0.00
1.00	0.04	0.00	0.00	52.00	3.31	1.11	0.00
2.00	0.07	0.00	0.00	53.00	3.31	1.11	0.00
3.00	0.12	0.00	0.00	54.00	3.31	1.11	0.00
4.00	0.16	0.00	0.00	55.00	3.31	1.11	0.00
5.00	0.21	0.00	0.00	56.00	3.31	1.11	0.00
6.00	0.26	0.00	0.00	57.00	3.31	1.11	0.00
7.00	0.32	0.00	0.00	58.00	3.31	1.11	0.00
8.00	0.40	0.00	0.00	59.00	3.31	1.11	0.00
9.00	0.48	0.00	0.00	60.00	3.31	1.11	0.00
10.00	0.60	0.00	0.00	61.00	3.31	1.11	0.00
11.00	0.79	0.00	0.00	62.00	3.31	1.11	0.00
12.00	1.58	0.17	0.06	63.00	3.31	1.11	0.00
13.00	2.52	0.62	0.03	64.00	3.31	1.11	0.00
14.00	2.71	0.73	0.01	65.00	3.31	1.11	0.00
15.00	2.83	0.80	0.01	66.00	3.31	1.11	0.00
16.00	2.91	0.85	0.01	67.00	3.31	1.11	0.00
17.00	2.99	0.90	0.01	68.00	3.31	1.11	0.00
18.00	3.05	0.94	0.01	69.00	3.31	1.11	0.00
19.00	3.10	0.97	0.00	70.00	3.31	1.11	0.00
20.00	3.15	1.00	0.00	71.00	3.31	1.11	0.00
21.00	3.19	1.03	0.00	72.00	3.31	1.11	0.00
22.00	3.24	1.06	0.00				
23.00	3.27	1.09	0.00				
24.00	3.31	1.11	0.00				
25.00	3.31	1.11	0.00				
26.00	3.31	1.11	0.00				
27.00	3.31	1.11	0.00				
28.00	3.31	1.11	0.00				
29.00	3.31	1.11	0.00				
30.00	3.31	1.11	0.00				
31.00	3.31	1.11	0.00				
32.00	3.31	1.11	0.00				
33.00	3.31	1.11	0.00				
34.00	3.31	1.11	0.00				
35.00	3.31	1.11	0.00				
36.00	3.31	1.11	0.00				
37.00	3.31	1.11	0.00				
38.00	3.31	1.11	0.00				
39.00	3.31	1.11	0.00				
40.00	3.31	1.11	0.00				
41.00	3.31	1.11	0.00				
42.00	3.31	1.11	0.00				
43.00	3.31	1.11	0.00				
44.00	3.31	1.11	0.00				
45.00	3.31	1.11	0.00				
46.00	3.31	1.11	0.00				
47.00	3.31	1.11	0.00				
48.00	3.31	1.11	0.00				
49.00	3.31	1.11	0.00				
50.00	3.31	1.11	0.00				

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Summary for Subcatchment 28S: Drainage Area PR-5a (Impervious part of Drainage Area PR-5)

Runoff = 0.78 cfs @ 12.09 hrs, Volume= 0.056 af, Depth= 3.08"
 Routed to Pond 55P : Proposed Bioretention System #5

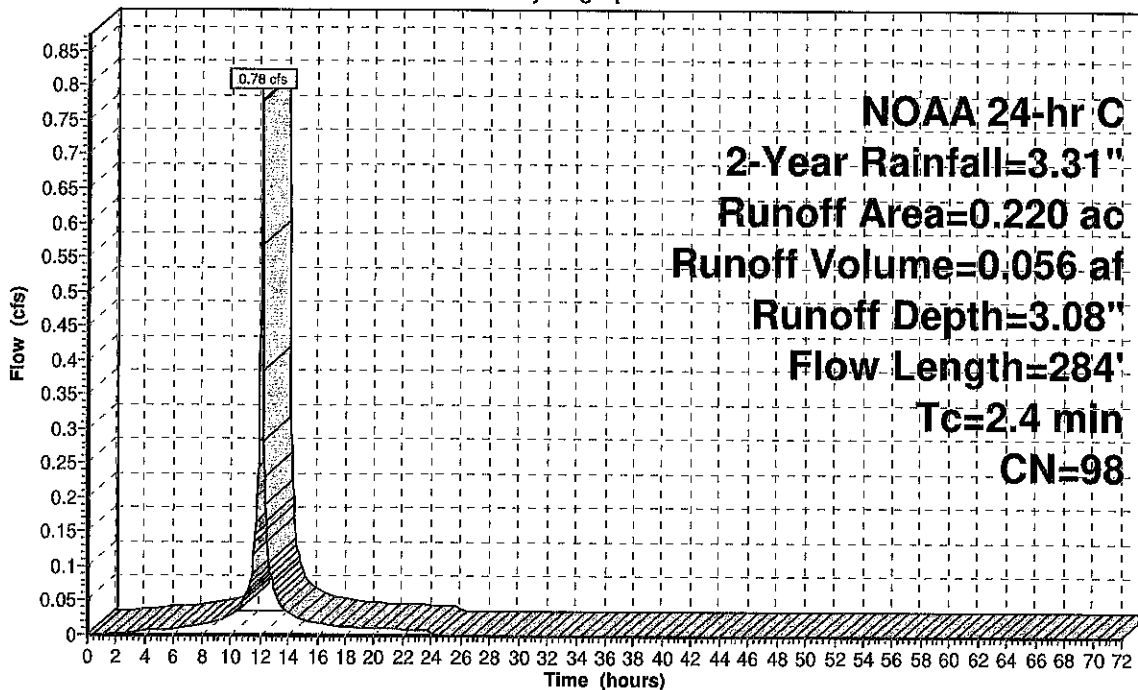
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 2-Year Rainfall=3.31"

Area (ac)	CN	Description
0.220	98	Paved parking, HSG C
0.220	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	79	0.0150	1.20		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
0.6	73	0.0100	2.03		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.7	132	0.0030	3.12	3.83	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
2.4	284	Total			

Subcatchment 28S: Drainage Area PR-5a (Impervious part of Drainage Area PR-5)

Hydrograph



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Hydrograph for Subcatchment 28S: Drainage Area PR-5a (Impervious part of Drainage Area PR-5)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	3.31	3.08	0.00
1.00	0.04	0.00	0.00	52.00	3.31	3.08	0.00
2.00	0.07	0.00	0.00	53.00	3.31	3.08	0.00
3.00	0.12	0.02	0.00	54.00	3.31	3.08	0.00
4.00	0.16	0.05	0.01	55.00	3.31	3.08	0.00
5.00	0.21	0.08	0.01	56.00	3.31	3.08	0.00
6.00	0.26	0.12	0.01	57.00	3.31	3.08	0.00
7.00	0.32	0.16	0.01	58.00	3.31	3.08	0.00
8.00	0.40	0.23	0.02	59.00	3.31	3.08	0.00
9.00	0.48	0.30	0.02	60.00	3.31	3.08	0.00
10.00	0.60	0.41	0.03	61.00	3.31	3.08	0.00
11.00	0.79	0.59	0.05	62.00	3.31	3.08	0.00
12.00	1.58	1.36	0.47	63.00	3.31	3.08	0.00
13.00	2.52	2.29	0.07	64.00	3.31	3.08	0.00
14.00	2.71	2.48	0.03	65.00	3.31	3.08	0.00
15.00	2.83	2.60	0.02	66.00	3.31	3.08	0.00
16.00	2.91	2.68	0.02	67.00	3.31	3.08	0.00
17.00	2.99	2.76	0.02	68.00	3.31	3.08	0.00
18.00	3.05	2.82	0.01	69.00	3.31	3.08	0.00
19.00	3.10	2.87	0.01	70.00	3.31	3.08	0.00
20.00	3.15	2.92	0.01	71.00	3.31	3.08	0.00
21.00	3.19	2.96	0.01	72.00	3.31	3.08	0.00
22.00	3.24	3.00	0.01				
23.00	3.27	3.04	0.01				
24.00	3.31	3.08	0.01				
25.00	3.31	3.08	0.00				
26.00	3.31	3.08	0.00				
27.00	3.31	3.08	0.00				
28.00	3.31	3.08	0.00				
29.00	3.31	3.08	0.00				
30.00	3.31	3.08	0.00				
31.00	3.31	3.08	0.00				
32.00	3.31	3.08	0.00				
33.00	3.31	3.08	0.00				
34.00	3.31	3.08	0.00				
35.00	3.31	3.08	0.00				
36.00	3.31	3.08	0.00				
37.00	3.31	3.08	0.00				
38.00	3.31	3.08	0.00				
39.00	3.31	3.08	0.00				
40.00	3.31	3.08	0.00				
41.00	3.31	3.08	0.00				
42.00	3.31	3.08	0.00				
43.00	3.31	3.08	0.00				
44.00	3.31	3.08	0.00				
45.00	3.31	3.08	0.00				
46.00	3.31	3.08	0.00				
47.00	3.31	3.08	0.00				
48.00	3.31	3.08	0.00				
49.00	3.31	3.08	0.00				
50.00	3.31	3.08	0.00				

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2 Year Storm
NOAA 24-hr C 2-Year Rainfall=3.31"

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Summary for Subcatchment 29S: Drainage Area PR-5b (Pervious part of Drainage Area PR-5)

Runoff = 0.06 cfs @ 12.17 hrs, Volume= 0.006 af, Depth= 0.84"
 Routed to Pond 55P : Proposed Bioretention System #5

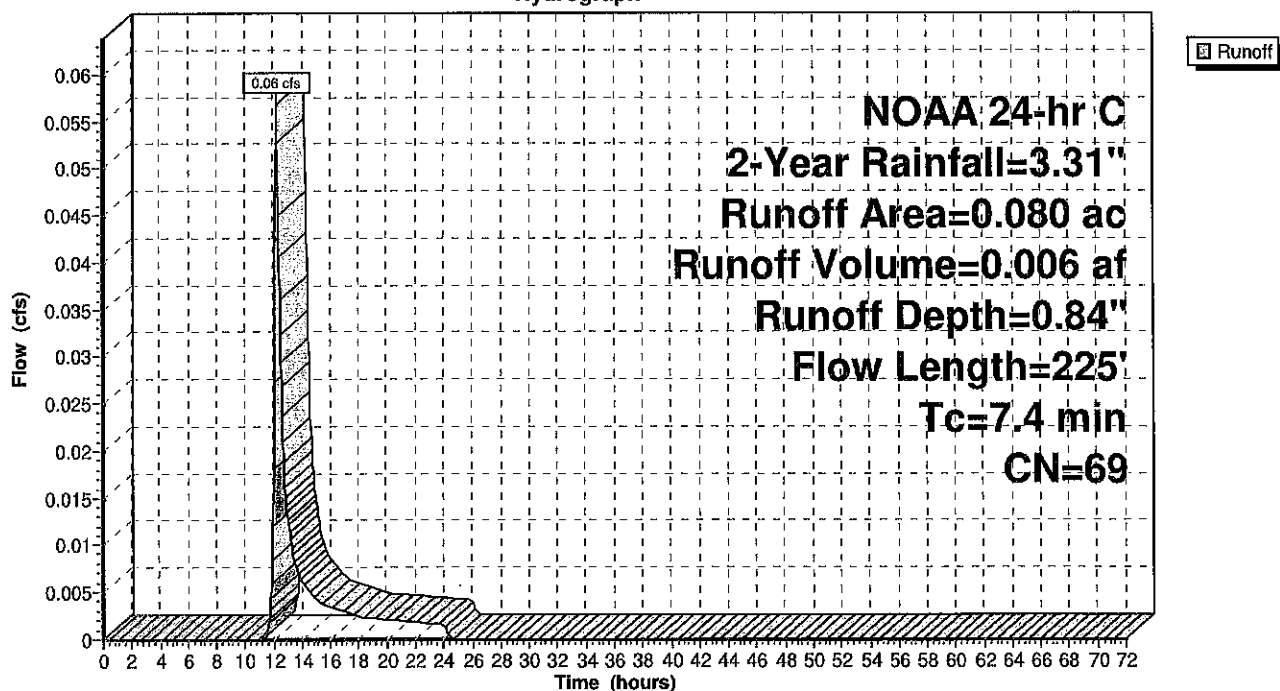
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 2-Year Rainfall=3.31"

Area (ac)	CN	Description
0.030	61	>75% Grass cover, Good, HSG B
0.050	74	>75% Grass cover, Good, HSG C
0.080	69	Weighted Average
0.080	69	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	26	0.0100	0.07		Sheet Flow, Grass: Dense n= 0.240 P2= 3.35"
0.4	67	0.0150	2.49		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.7	132	0.0030	3.12	3.83	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
7.4	225	Total			

Subcatchment 29S: Drainage Area PR-5b (Pervious part of Drainage Area PR-5)

Hydrograph



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Hydrograph for Subcatchment 29S: Drainage Area PR-5b (Pervious part of Drainage Area PR-5)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	3.31	0.84	0.00
1.00	0.04	0.00	0.00	52.00	3.31	0.84	0.00
2.00	0.07	0.00	0.00	53.00	3.31	0.84	0.00
3.00	0.12	0.00	0.00	54.00	3.31	0.84	0.00
4.00	0.16	0.00	0.00	55.00	3.31	0.84	0.00
5.00	0.21	0.00	0.00	56.00	3.31	0.84	0.00
6.00	0.26	0.00	0.00	57.00	3.31	0.84	0.00
7.00	0.32	0.00	0.00	58.00	3.31	0.84	0.00
8.00	0.40	0.00	0.00	59.00	3.31	0.84	0.00
9.00	0.48	0.00	0.00	60.00	3.31	0.84	0.00
10.00	0.60	0.00	0.00	61.00	3.31	0.84	0.00
11.00	0.79	0.00	0.00	62.00	3.31	0.84	0.00
12.00	1.58	0.09	0.02	63.00	3.31	0.84	0.00
13.00	2.52	0.43	0.01	64.00	3.31	0.84	0.00
14.00	2.71	0.52	0.01	65.00	3.31	0.84	0.00
15.00	2.83	0.58	0.00	66.00	3.31	0.84	0.00
16.00	2.91	0.62	0.00	67.00	3.31	0.84	0.00
17.00	2.99	0.66	0.00	68.00	3.31	0.84	0.00
18.00	3.05	0.70	0.00	69.00	3.31	0.84	0.00
19.00	3.10	0.72	0.00	70.00	3.31	0.84	0.00
20.00	3.15	0.75	0.00	71.00	3.31	0.84	0.00
21.00	3.19	0.78	0.00	72.00	3.31	0.84	0.00
22.00	3.24	0.80	0.00				
23.00	3.27	0.82	0.00				
24.00	3.31	0.84	0.00				
25.00	3.31	0.84	0.00				
26.00	3.31	0.84	0.00				
27.00	3.31	0.84	0.00				
28.00	3.31	0.84	0.00				
29.00	3.31	0.84	0.00				
30.00	3.31	0.84	0.00				
31.00	3.31	0.84	0.00				
32.00	3.31	0.84	0.00				
33.00	3.31	0.84	0.00				
34.00	3.31	0.84	0.00				
35.00	3.31	0.84	0.00				
36.00	3.31	0.84	0.00				
37.00	3.31	0.84	0.00				
38.00	3.31	0.84	0.00				
39.00	3.31	0.84	0.00				
40.00	3.31	0.84	0.00				
41.00	3.31	0.84	0.00				
42.00	3.31	0.84	0.00				
43.00	3.31	0.84	0.00				
44.00	3.31	0.84	0.00				
45.00	3.31	0.84	0.00				
46.00	3.31	0.84	0.00				
47.00	3.31	0.84	0.00				
48.00	3.31	0.84	0.00				
49.00	3.31	0.84	0.00				
50.00	3.31	0.84	0.00				

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2 Year Storm
NOAA 24-hr C 2-Year Rainfall=3.31"

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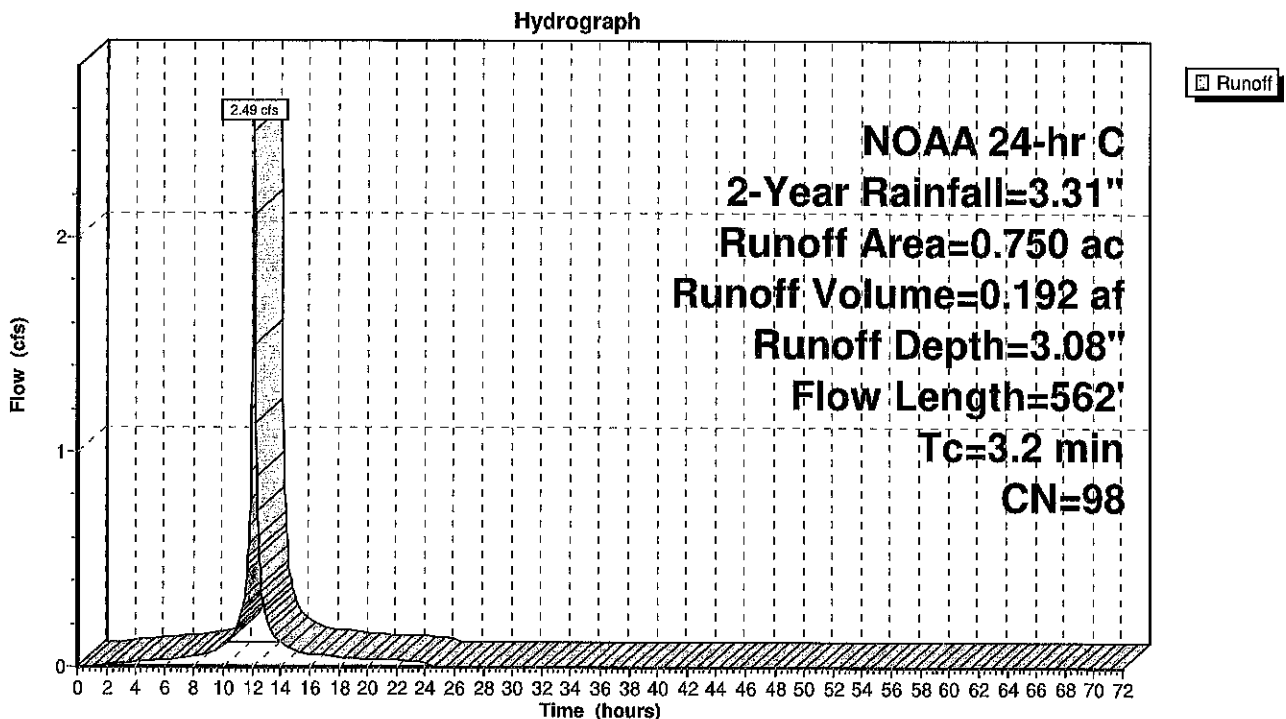
Summary for Subcatchment 30S: Drainage Area PR-6a (Impervious part of Drainage Area PR-6)

Runoff = 2.49 cfs @ 12.10 hrs, Volume= 0.192 af, Depth= 3.08"
 Routed to Pond 56P : Proposed Bioretention System #6

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=3.31"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG B
0.250	98	Roofs, HSG B
0.750	98	Weighted Average
0.750	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0150	1.25		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
0.5	79	0.0150	2.49		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.4	383	0.0050	4.55	8.05	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
3.2	562	Total			

Subcatchment 30S: Drainage Area PR-6a (Impervious part of Drainage Area PR-6)

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2 Year Storm

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Hydrograph for Subcatchment 30S: Drainage Area PR-6a (Impervious part of Drainage Area PR-6)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	3.31	3.08	0.00
1.00	0.04	0.00	0.00	52.00	3.31	3.08	0.00
2.00	0.07	0.00	0.01	53.00	3.31	3.08	0.00
3.00	0.12	0.02	0.01	54.00	3.31	3.08	0.00
4.00	0.16	0.05	0.02	55.00	3.31	3.08	0.00
5.00	0.21	0.08	0.03	56.00	3.31	3.08	0.00
6.00	0.26	0.12	0.03	57.00	3.31	3.08	0.00
7.00	0.32	0.16	0.04	58.00	3.31	3.08	0.00
8.00	0.40	0.23	0.05	59.00	3.31	3.08	0.00
9.00	0.48	0.30	0.06	60.00	3.31	3.08	0.00
10.00	0.60	0.41	0.10	61.00	3.31	3.08	0.00
11.00	0.79	0.59	0.18	62.00	3.31	3.08	0.00
12.00	1.58	1.36	1.51	63.00	3.31	3.08	0.00
13.00	2.52	2.29	0.23	64.00	3.31	3.08	0.00
14.00	2.71	2.48	0.11	65.00	3.31	3.08	0.00
15.00	2.83	2.60	0.07	66.00	3.31	3.08	0.00
16.00	2.91	2.68	0.06	67.00	3.31	3.08	0.00
17.00	2.99	2.76	0.05	68.00	3.31	3.08	0.00
18.00	3.05	2.82	0.04	69.00	3.31	3.08	0.00
19.00	3.10	2.87	0.04	70.00	3.31	3.08	0.00
20.00	3.15	2.92	0.04	71.00	3.31	3.08	0.00
21.00	3.19	2.96	0.03	72.00	3.31	3.08	0.00
22.00	3.24	3.00	0.03				
23.00	3.27	3.04	0.03				
24.00	3.31	3.08	0.03				
25.00	3.31	3.08	0.00				
26.00	3.31	3.08	0.00				
27.00	3.31	3.08	0.00				
28.00	3.31	3.08	0.00				
29.00	3.31	3.08	0.00				
30.00	3.31	3.08	0.00				
31.00	3.31	3.08	0.00				
32.00	3.31	3.08	0.00				
33.00	3.31	3.08	0.00				
34.00	3.31	3.08	0.00				
35.00	3.31	3.08	0.00				
36.00	3.31	3.08	0.00				
37.00	3.31	3.08	0.00				
38.00	3.31	3.08	0.00				
39.00	3.31	3.08	0.00				
40.00	3.31	3.08	0.00				
41.00	3.31	3.08	0.00				
42.00	3.31	3.08	0.00				
43.00	3.31	3.08	0.00				
44.00	3.31	3.08	0.00				
45.00	3.31	3.08	0.00				
46.00	3.31	3.08	0.00				
47.00	3.31	3.08	0.00				
48.00	3.31	3.08	0.00				
49.00	3.31	3.08	0.00				
50.00	3.31	3.08	0.00				

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NOAA 24-hr C 2-Year Rainfall=3.31"

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Summary for Subcatchment 31S: Drainage Area PR-6b (Pervious part of Drainage Area PR-6)

Runoff = 0.11 cfs @ 12.43 hrs, Volume= 0.024 af, Depth= 0.42"
 Routed to Pond 56P : Proposed Bioretention System #6

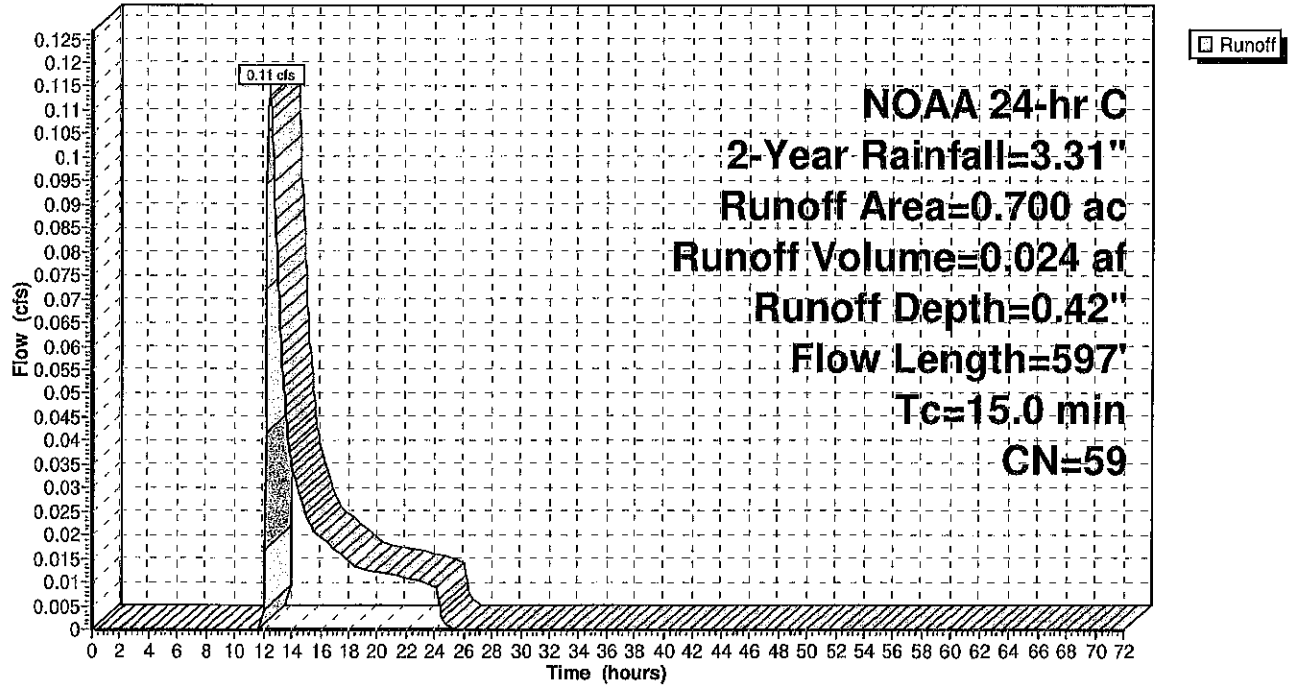
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 2-Year Rainfall=3.31"

Area (ac)	CN	Description
0.020	74	>75% Grass cover, Good, HSG C
0.460	61	>75% Grass cover, Good, HSG B
0.220	55	Woods, Good, HSG B
0.700	59	Weighted Average
0.700	59	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	23	0.0050	0.03		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.35"
0.2	12	0.0300	1.21		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
2.1	179	0.0050	1.44		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.4	383	0.0050	4.55	8.05	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
15.0	597	Total			

Subcatchment 31S: Drainage Area PR-6b (Pervious part of Drainage Area PR-6)

Hydrograph



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Hydrograph for Subcatchment 31S: Drainage Area PR-6b (Pervious part of Drainage Area PR-6)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	3.31	0.42	0.00
1.00	0.04	0.00	0.00	52.00	3.31	0.42	0.00
2.00	0.07	0.00	0.00	53.00	3.31	0.42	0.00
3.00	0.12	0.00	0.00	54.00	3.31	0.42	0.00
4.00	0.16	0.00	0.00	55.00	3.31	0.42	0.00
5.00	0.21	0.00	0.00	56.00	3.31	0.42	0.00
6.00	0.26	0.00	0.00	57.00	3.31	0.42	0.00
7.00	0.32	0.00	0.00	58.00	3.31	0.42	0.00
8.00	0.40	0.00	0.00	59.00	3.31	0.42	0.00
9.00	0.48	0.00	0.00	60.00	3.31	0.42	0.00
10.00	0.60	0.00	0.00	61.00	3.31	0.42	0.00
11.00	0.79	0.00	0.00	62.00	3.31	0.42	0.00
12.00	1.58	0.00	0.00	63.00	3.31	0.42	0.00
13.00	2.52	0.16	0.08	64.00	3.31	0.42	0.00
14.00	2.71	0.21	0.03	65.00	3.31	0.42	0.00
15.00	2.83	0.25	0.02	66.00	3.31	0.42	0.00
16.00	2.91	0.27	0.02	67.00	3.31	0.42	0.00
17.00	2.99	0.30	0.02	68.00	3.31	0.42	0.00
18.00	3.05	0.32	0.01	69.00	3.31	0.42	0.00
19.00	3.10	0.34	0.01	70.00	3.31	0.42	0.00
20.00	3.15	0.36	0.01	71.00	3.31	0.42	0.00
21.00	3.19	0.37	0.01	72.00	3.31	0.42	0.00
22.00	3.24	0.39	0.01				
23.00	3.27	0.40	0.01				
24.00	3.31	0.42	0.01				
25.00	3.31	0.42	0.00				
26.00	3.31	0.42	0.00				
27.00	3.31	0.42	0.00				
28.00	3.31	0.42	0.00				
29.00	3.31	0.42	0.00				
30.00	3.31	0.42	0.00				
31.00	3.31	0.42	0.00				
32.00	3.31	0.42	0.00				
33.00	3.31	0.42	0.00				
34.00	3.31	0.42	0.00				
35.00	3.31	0.42	0.00				
36.00	3.31	0.42	0.00				
37.00	3.31	0.42	0.00				
38.00	3.31	0.42	0.00				
39.00	3.31	0.42	0.00				
40.00	3.31	0.42	0.00				
41.00	3.31	0.42	0.00				
42.00	3.31	0.42	0.00				
43.00	3.31	0.42	0.00				
44.00	3.31	0.42	0.00				
45.00	3.31	0.42	0.00				
46.00	3.31	0.42	0.00				
47.00	3.31	0.42	0.00				
48.00	3.31	0.42	0.00				
49.00	3.31	0.42	0.00				
50.00	3.31	0.42	0.00				

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2 Year Storm

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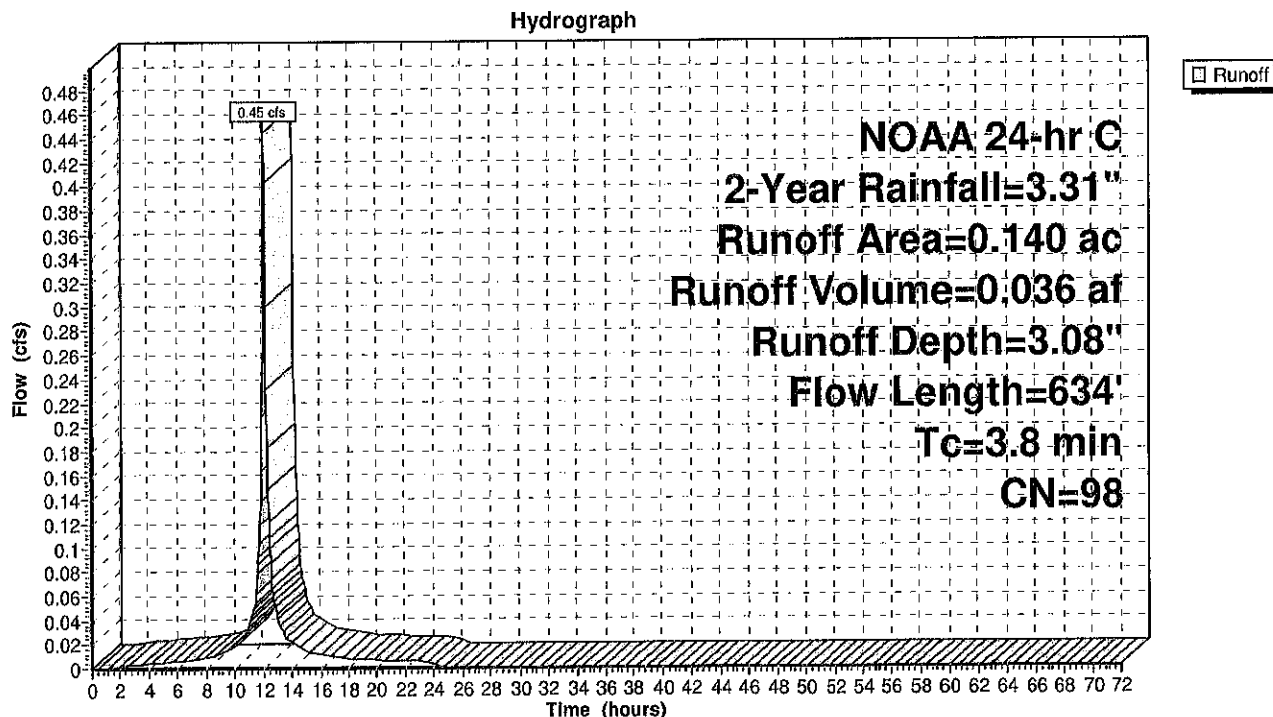
Summary for Subcatchment 32S: Drainage Area PR-7a (Impervious part of Drainage Area PR-7)

Runoff = 0.45 cfs @ 12.11 hrs, Volume= 0.036 af, Depth= 3.08"
 Routed to Link 64L : Drainage Area PR-7 (Undetained Runoff in pipes to P.O.I. "A")

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=3.31"

Area (ac)	CN	Description
0.140	98	Paved parking, HSG C
0.140	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	30	0.0050	0.64		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
1.0	122	0.0100	2.03		Shallow Concentrated Flow, Paved Kv= 20.3 fps
2.0	482	0.0050	4.03	4.95	Pipe Channel, CMP_Round 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
3.8	634	Total			

Subcatchment 32S: Drainage Area PR-7a (Impervious part of Drainage Area PR-7)

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Hydrograph for Subcatchment 32S: Drainage Area PR-7a (Impervious part of Drainage Area PR-7)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	3.31	3.08	0.00
1.00	0.04	0.00	0.00	52.00	3.31	3.08	0.00
2.00	0.07	0.00	0.00	53.00	3.31	3.08	0.00
3.00	0.12	0.02	0.00	54.00	3.31	3.08	0.00
4.00	0.16	0.05	0.00	55.00	3.31	3.08	0.00
5.00	0.21	0.08	0.00	56.00	3.31	3.08	0.00
6.00	0.26	0.12	0.01	57.00	3.31	3.08	0.00
7.00	0.32	0.16	0.01	58.00	3.31	3.08	0.00
8.00	0.40	0.23	0.01	59.00	3.31	3.08	0.00
9.00	0.48	0.30	0.01	60.00	3.31	3.08	0.00
10.00	0.60	0.41	0.02	61.00	3.31	3.08	0.00
11.00	0.79	0.59	0.03	62.00	3.31	3.08	0.00
12.00	1.58	1.36	0.27	63.00	3.31	3.08	0.00
13.00	2.52	2.29	0.04	64.00	3.31	3.08	0.00
14.00	2.71	2.48	0.02	65.00	3.31	3.08	0.00
15.00	2.83	2.60	0.01	66.00	3.31	3.08	0.00
16.00	2.91	2.68	0.01	67.00	3.31	3.08	0.00
17.00	2.99	2.76	0.01	68.00	3.31	3.08	0.00
18.00	3.05	2.82	0.01	69.00	3.31	3.08	0.00
19.00	3.10	2.87	0.01	70.00	3.31	3.08	0.00
20.00	3.15	2.92	0.01	71.00	3.31	3.08	0.00
21.00	3.19	2.96	0.01	72.00	3.31	3.08	0.00
22.00	3.24	3.00	0.01				
23.00	3.27	3.04	0.01				
24.00	3.31	3.08	0.01				
25.00	3.31	3.08	0.00				
26.00	3.31	3.08	0.00				
27.00	3.31	3.08	0.00				
28.00	3.31	3.08	0.00				
29.00	3.31	3.08	0.00				
30.00	3.31	3.08	0.00				
31.00	3.31	3.08	0.00				
32.00	3.31	3.08	0.00				
33.00	3.31	3.08	0.00				
34.00	3.31	3.08	0.00				
35.00	3.31	3.08	0.00				
36.00	3.31	3.08	0.00				
37.00	3.31	3.08	0.00				
38.00	3.31	3.08	0.00				
39.00	3.31	3.08	0.00				
40.00	3.31	3.08	0.00				
41.00	3.31	3.08	0.00				
42.00	3.31	3.08	0.00				
43.00	3.31	3.08	0.00				
44.00	3.31	3.08	0.00				
45.00	3.31	3.08	0.00				
46.00	3.31	3.08	0.00				
47.00	3.31	3.08	0.00				
48.00	3.31	3.08	0.00				
49.00	3.31	3.08	0.00				
50.00	3.31	3.08	0.00				

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2 Year Storm
NOAA 24-hr C 2-Year Rainfall=3.31"

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Summary for Subcatchment 33S: Drainage Area PR-7b (Pervious part of Drainage Area PR-7)

Runoff = 0.03 cfs @ 12.21 hrs, Volume= 0.003 af, Depth= 1.11"
 Routed to Link 64L : Drainage Area PR-7 (Undetained Runoff in pipes to P.O.I. "A")

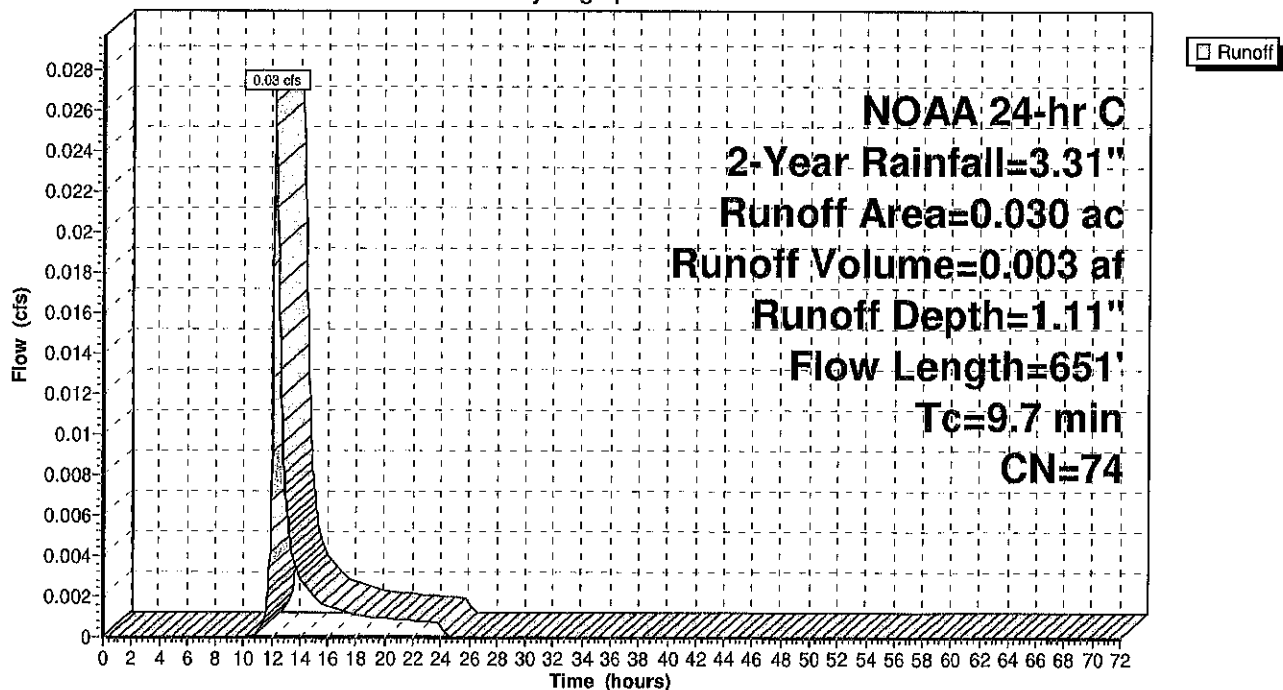
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 2-Year Rainfall=3.31"

Area (ac)	CN	Description
0.030	74	>75% Grass cover, Good, HSG C
0.030	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	17	0.0050	0.05		Sheet Flow, Grass: Dense n= 0.240 P2= 3.35"
0.8	30	0.0050	0.64		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
1.0	122	0.0100	2.03		Shallow Concentrated Flow, Paved Kv= 20.3 fps
2.0	482	0.0050	4.03	4.95	Pipe Channel, CMP_Round 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
9.7	651	Total			

Subcatchment 33S: Drainage Area PR-7b (Pervious part of Drainage Area PR-7)

Hydrograph



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Hydrograph for Subcatchment 33S: Drainage Area PR-7b (Pervious part of Drainage Area PR-7)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	3.31	1.11	0.00
1.00	0.04	0.00	0.00	52.00	3.31	1.11	0.00
2.00	0.07	0.00	0.00	53.00	3.31	1.11	0.00
3.00	0.12	0.00	0.00	54.00	3.31	1.11	0.00
4.00	0.16	0.00	0.00	55.00	3.31	1.11	0.00
5.00	0.21	0.00	0.00	56.00	3.31	1.11	0.00
6.00	0.26	0.00	0.00	57.00	3.31	1.11	0.00
7.00	0.32	0.00	0.00	58.00	3.31	1.11	0.00
8.00	0.40	0.00	0.00	59.00	3.31	1.11	0.00
9.00	0.48	0.00	0.00	60.00	3.31	1.11	0.00
10.00	0.60	0.00	0.00	61.00	3.31	1.11	0.00
11.00	0.79	0.00	0.00	62.00	3.31	1.11	0.00
12.00	1.58	0.17	0.01	63.00	3.31	1.11	0.00
13.00	2.52	0.62	0.01	64.00	3.31	1.11	0.00
14.00	2.71	0.73	0.00	65.00	3.31	1.11	0.00
15.00	2.83	0.80	0.00	66.00	3.31	1.11	0.00
16.00	2.91	0.85	0.00	67.00	3.31	1.11	0.00
17.00	2.99	0.90	0.00	68.00	3.31	1.11	0.00
18.00	3.05	0.94	0.00	69.00	3.31	1.11	0.00
19.00	3.10	0.97	0.00	70.00	3.31	1.11	0.00
20.00	3.15	1.00	0.00	71.00	3.31	1.11	0.00
21.00	3.19	1.03	0.00	72.00	3.31	1.11	0.00
22.00	3.24	1.06	0.00				
23.00	3.27	1.09	0.00				
24.00	3.31	1.11	0.00				
25.00	3.31	1.11	0.00				
26.00	3.31	1.11	0.00				
27.00	3.31	1.11	0.00				
28.00	3.31	1.11	0.00				
29.00	3.31	1.11	0.00				
30.00	3.31	1.11	0.00				
31.00	3.31	1.11	0.00				
32.00	3.31	1.11	0.00				
33.00	3.31	1.11	0.00				
34.00	3.31	1.11	0.00				
35.00	3.31	1.11	0.00				
36.00	3.31	1.11	0.00				
37.00	3.31	1.11	0.00				
38.00	3.31	1.11	0.00				
39.00	3.31	1.11	0.00				
40.00	3.31	1.11	0.00				
41.00	3.31	1.11	0.00				
42.00	3.31	1.11	0.00				
43.00	3.31	1.11	0.00				
44.00	3.31	1.11	0.00				
45.00	3.31	1.11	0.00				
46.00	3.31	1.11	0.00				
47.00	3.31	1.11	0.00				
48.00	3.31	1.11	0.00				
49.00	3.31	1.11	0.00				
50.00	3.31	1.11	0.00				

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2 Year Storm

NOAA 24-hr C 2-Year Rainfall=3.31"

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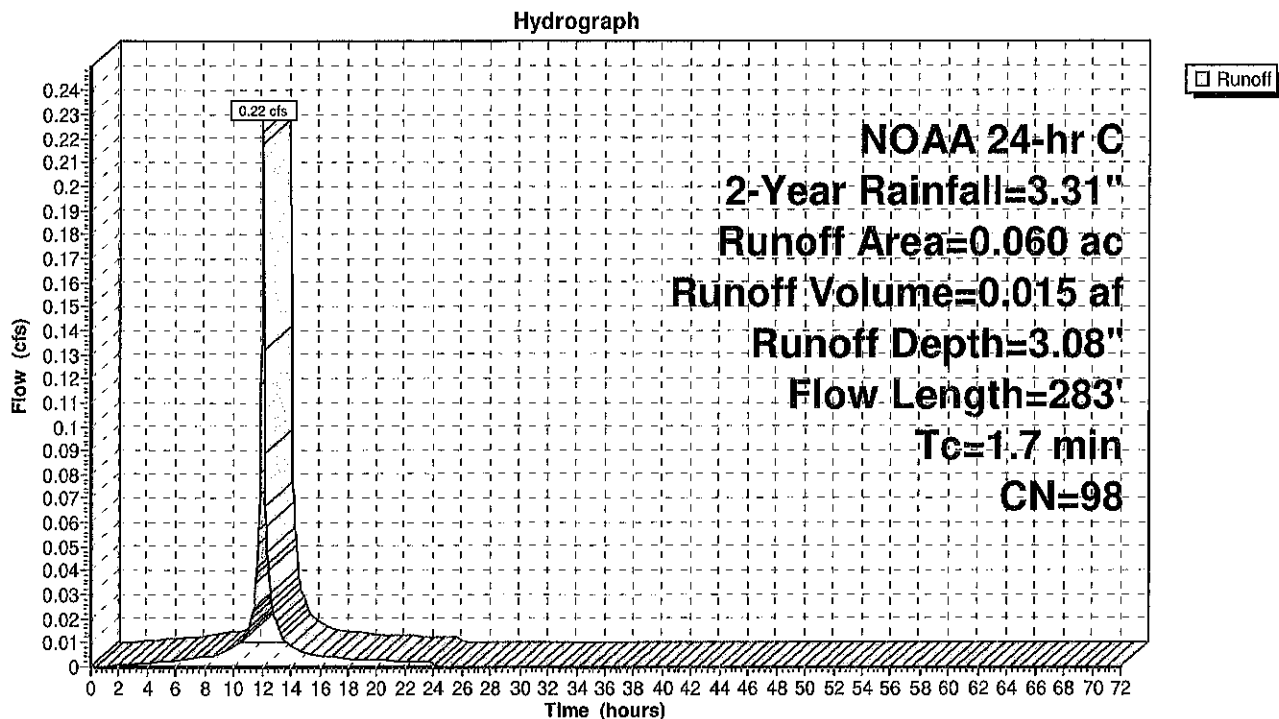
Summary for Subcatchment 34S: Drainage Area PR-8a (Impervious part of Drainage Area PR-8)

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 0.015 af, Depth= 3.08"
Routed to Link 65L : Drainage Area PR-8 (Overland Runoff to P.O.I. "A")

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=3.31"

Area (ac)	CN	Description
0.060	98	Paved parking, HSG C
0.060	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	17	0.0400	1.30		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
1.5	266	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.7	283	Total			

Subcatchment 34S: Drainage Area PR-8a (Impervious part of Drainage Area PR-8)

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Hydrograph for Subcatchment 34S: Drainage Area PR-8a (Impervious part of Drainage Area PR-8)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	3.31	3.08	0.00
1.00	0.04	0.00	0.00	52.00	3.31	3.08	0.00
2.00	0.07	0.00	0.00	53.00	3.31	3.08	0.00
3.00	0.12	0.02	0.00	54.00	3.31	3.08	0.00
4.00	0.16	0.05	0.00	55.00	3.31	3.08	0.00
5.00	0.21	0.08	0.00	56.00	3.31	3.08	0.00
6.00	0.26	0.12	0.00	57.00	3.31	3.08	0.00
7.00	0.32	0.16	0.00	58.00	3.31	3.08	0.00
8.00	0.40	0.23	0.00	59.00	3.31	3.08	0.00
9.00	0.48	0.30	0.01	60.00	3.31	3.08	0.00
10.00	0.60	0.41	0.01	61.00	3.31	3.08	0.00
11.00	0.79	0.59	0.02	62.00	3.31	3.08	0.00
12.00	1.58	1.36	0.14	63.00	3.31	3.08	0.00
13.00	2.52	2.29	0.02	64.00	3.31	3.08	0.00
14.00	2.71	2.48	0.01	65.00	3.31	3.08	0.00
15.00	2.83	2.60	0.01	66.00	3.31	3.08	0.00
16.00	2.91	2.68	0.00	67.00	3.31	3.08	0.00
17.00	2.99	2.76	0.00	68.00	3.31	3.08	0.00
18.00	3.05	2.82	0.00	69.00	3.31	3.08	0.00
19.00	3.10	2.87	0.00	70.00	3.31	3.08	0.00
20.00	3.15	2.92	0.00	71.00	3.31	3.08	0.00
21.00	3.19	2.96	0.00	72.00	3.31	3.08	0.00
22.00	3.24	3.00	0.00				
23.00	3.27	3.04	0.00				
24.00	3.31	3.08	0.00				
25.00	3.31	3.08	0.00				
26.00	3.31	3.08	0.00				
27.00	3.31	3.08	0.00				
28.00	3.31	3.08	0.00				
29.00	3.31	3.08	0.00				
30.00	3.31	3.08	0.00				
31.00	3.31	3.08	0.00				
32.00	3.31	3.08	0.00				
33.00	3.31	3.08	0.00				
34.00	3.31	3.08	0.00				
35.00	3.31	3.08	0.00				
36.00	3.31	3.08	0.00				
37.00	3.31	3.08	0.00				
38.00	3.31	3.08	0.00				
39.00	3.31	3.08	0.00				
40.00	3.31	3.08	0.00				
41.00	3.31	3.08	0.00				
42.00	3.31	3.08	0.00				
43.00	3.31	3.08	0.00				
44.00	3.31	3.08	0.00				
45.00	3.31	3.08	0.00				
46.00	3.31	3.08	0.00				
47.00	3.31	3.08	0.00				
48.00	3.31	3.08	0.00				
49.00	3.31	3.08	0.00				
50.00	3.31	3.08	0.00				

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2 Year Storm

NOAA 24-hr C 2-Year Rainfall=3.31"

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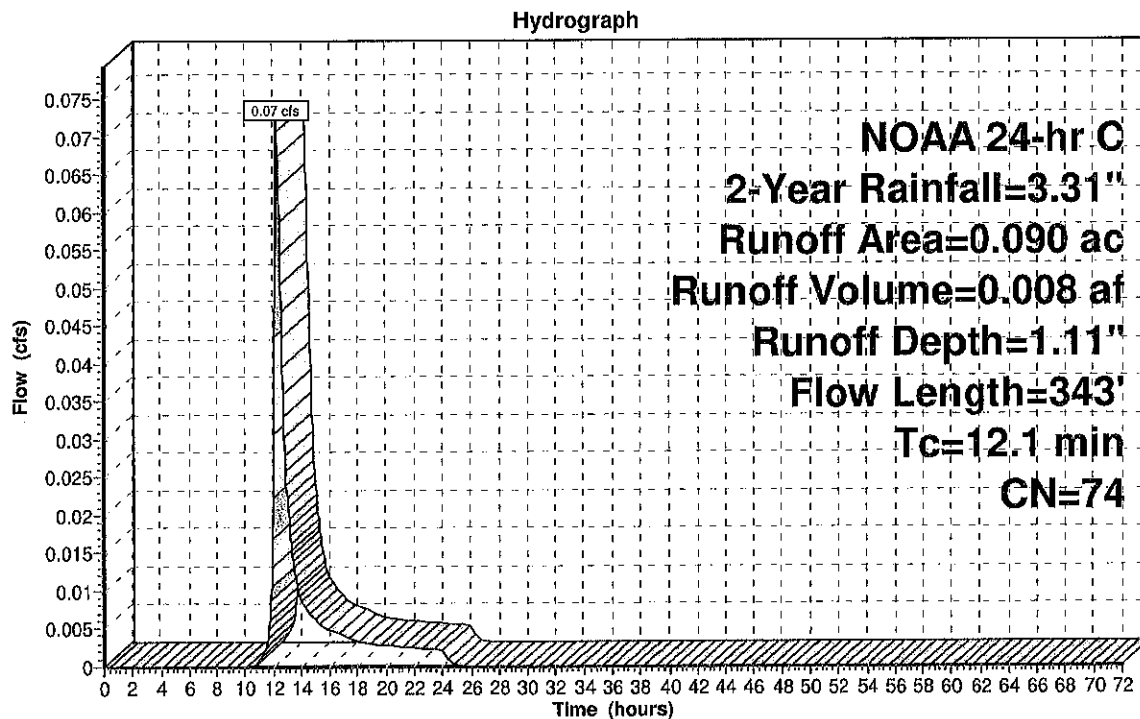
Summary for Subcatchment 35S: Drainage Area PR-8b (Pervious part of Drainage Area PR-8)

Runoff = 0.07 cfs @ 12.24 hrs, Volume= 0.008 af, Depth= 1.11"
 Routed to Link 65L : Drainage Area PR-8 (Overland Runoff to P.O.I. "A")

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=3.31"

Area (ac)	CN	Description
0.090	74	>75% Grass cover, Good, HSG C
0.090	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	49	0.0100	0.08		Sheet Flow, Grass: Dense n= 0.240 P2= 3.35"
1.7	294	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
12.1	343	Total			

Subcatchment 35S: Drainage Area PR-8b (Pervious part of Drainage Area PR-8)

Runoff

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Hydrograph for Subcatchment 35S: Drainage Area PR-8b (Pervious part of Drainage Area PR-8)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	3.31	1.11	0.00
1.00	0.04	0.00	0.00	52.00	3.31	1.11	0.00
2.00	0.07	0.00	0.00	53.00	3.31	1.11	0.00
3.00	0.12	0.00	0.00	54.00	3.31	1.11	0.00
4.00	0.16	0.00	0.00	55.00	3.31	1.11	0.00
5.00	0.21	0.00	0.00	56.00	3.31	1.11	0.00
6.00	0.26	0.00	0.00	57.00	3.31	1.11	0.00
7.00	0.32	0.00	0.00	58.00	3.31	1.11	0.00
8.00	0.40	0.00	0.00	59.00	3.31	1.11	0.00
9.00	0.48	0.00	0.00	60.00	3.31	1.11	0.00
10.00	0.60	0.00	0.00	61.00	3.31	1.11	0.00
11.00	0.79	0.00	0.00	62.00	3.31	1.11	0.00
12.00	1.58	0.17	0.02	63.00	3.31	1.11	0.00
13.00	2.52	0.62	0.02	64.00	3.31	1.11	0.00
14.00	2.71	0.73	0.01	65.00	3.31	1.11	0.00
15.00	2.83	0.80	0.01	66.00	3.31	1.11	0.00
16.00	2.91	0.85	0.00	67.00	3.31	1.11	0.00
17.00	2.99	0.90	0.00	68.00	3.31	1.11	0.00
18.00	3.05	0.94	0.00	69.00	3.31	1.11	0.00
19.00	3.10	0.97	0.00	70.00	3.31	1.11	0.00
20.00	3.15	1.00	0.00	71.00	3.31	1.11	0.00
21.00	3.19	1.03	0.00	72.00	3.31	1.11	0.00
22.00	3.24	1.06	0.00				
23.00	3.27	1.09	0.00				
24.00	3.31	1.11	0.00				
25.00	3.31	1.11	0.00				
26.00	3.31	1.11	0.00				
27.00	3.31	1.11	0.00				
28.00	3.31	1.11	0.00				
29.00	3.31	1.11	0.00				
30.00	3.31	1.11	0.00				
31.00	3.31	1.11	0.00				
32.00	3.31	1.11	0.00				
33.00	3.31	1.11	0.00				
34.00	3.31	1.11	0.00				
35.00	3.31	1.11	0.00				
36.00	3.31	1.11	0.00				
37.00	3.31	1.11	0.00				
38.00	3.31	1.11	0.00				
39.00	3.31	1.11	0.00				
40.00	3.31	1.11	0.00				
41.00	3.31	1.11	0.00				
42.00	3.31	1.11	0.00				
43.00	3.31	1.11	0.00				
44.00	3.31	1.11	0.00				
45.00	3.31	1.11	0.00				
46.00	3.31	1.11	0.00				
47.00	3.31	1.11	0.00				
48.00	3.31	1.11	0.00				
49.00	3.31	1.11	0.00				
50.00	3.31	1.11	0.00				

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2 Year Storm

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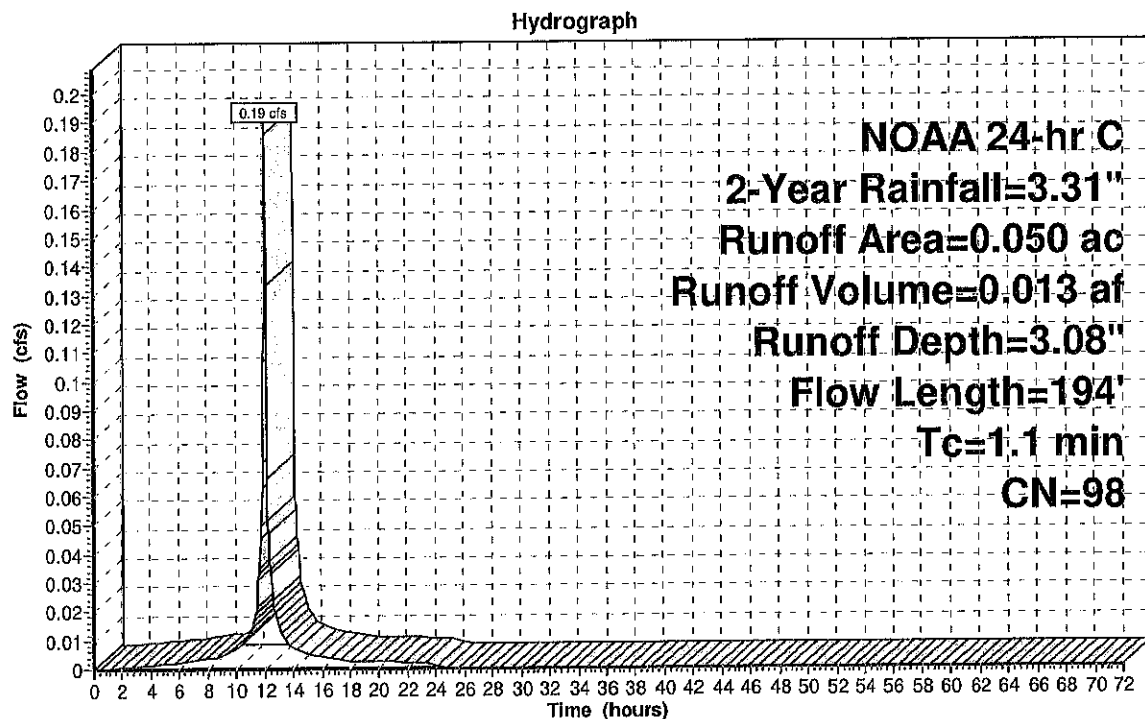
Summary for Subcatchment 36S: Drainage Area PR-9a (Impervious part of Drainage Area PR-9)

Runoff = 0.19 cfs @ 12.07 hrs, Volume= 0.013 af, Depth= 3.08"
 Routed to Link 63L : Drainage Area PR-10 (Overland Runoff to P.O.I. "B")

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=3.31"

Area (ac)	CN	Description
0.050	98	Paved parking, HSG C
0.050	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	18	0.0250	1.09		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
0.8	176	0.0340	3.74		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.1	194	Total			

Subcatchment 36S: Drainage Area PR-9a (Impervious part of Drainage Area PR-9)

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Hydrograph for Subcatchment 36S: Drainage Area PR-9a (Impervious part of Drainage Area PR-9)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	3.31	3.08	0.00
1.00	0.04	0.00	0.00	52.00	3.31	3.08	0.00
2.00	0.07	0.00	0.00	53.00	3.31	3.08	0.00
3.00	0.12	0.02	0.00	54.00	3.31	3.08	0.00
4.00	0.16	0.05	0.00	55.00	3.31	3.08	0.00
5.00	0.21	0.08	0.00	56.00	3.31	3.08	0.00
6.00	0.26	0.12	0.00	57.00	3.31	3.08	0.00
7.00	0.32	0.16	0.00	58.00	3.31	3.08	0.00
8.00	0.40	0.23	0.00	59.00	3.31	3.08	0.00
9.00	0.48	0.30	0.00	60.00	3.31	3.08	0.00
10.00	0.60	0.41	0.01	61.00	3.31	3.08	0.00
11.00	0.79	0.59	0.01	62.00	3.31	3.08	0.00
12.00	1.58	1.36	0.12	63.00	3.31	3.08	0.00
13.00	2.52	2.29	0.01	64.00	3.31	3.08	0.00
14.00	2.71	2.48	0.01	65.00	3.31	3.08	0.00
15.00	2.83	2.60	0.00	66.00	3.31	3.08	0.00
16.00	2.91	2.68	0.00	67.00	3.31	3.08	0.00
17.00	2.99	2.76	0.00	68.00	3.31	3.08	0.00
18.00	3.05	2.82	0.00	69.00	3.31	3.08	0.00
19.00	3.10	2.87	0.00	70.00	3.31	3.08	0.00
20.00	3.15	2.92	0.00	71.00	3.31	3.08	0.00
21.00	3.19	2.96	0.00	72.00	3.31	3.08	0.00
22.00	3.24	3.00	0.00				
23.00	3.27	3.04	0.00				
24.00	3.31	3.08	0.00				
25.00	3.31	3.08	0.00				
26.00	3.31	3.08	0.00				
27.00	3.31	3.08	0.00				
28.00	3.31	3.08	0.00				
29.00	3.31	3.08	0.00				
30.00	3.31	3.08	0.00				
31.00	3.31	3.08	0.00				
32.00	3.31	3.08	0.00				
33.00	3.31	3.08	0.00				
34.00	3.31	3.08	0.00				
35.00	3.31	3.08	0.00				
36.00	3.31	3.08	0.00				
37.00	3.31	3.08	0.00				
38.00	3.31	3.08	0.00				
39.00	3.31	3.08	0.00				
40.00	3.31	3.08	0.00				
41.00	3.31	3.08	0.00				
42.00	3.31	3.08	0.00				
43.00	3.31	3.08	0.00				
44.00	3.31	3.08	0.00				
45.00	3.31	3.08	0.00				
46.00	3.31	3.08	0.00				
47.00	3.31	3.08	0.00				
48.00	3.31	3.08	0.00				
49.00	3.31	3.08	0.00				
50.00	3.31	3.08	0.00				

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2 Year Storm

NOAA 24-hr C 2-Year Rainfall=3.31"

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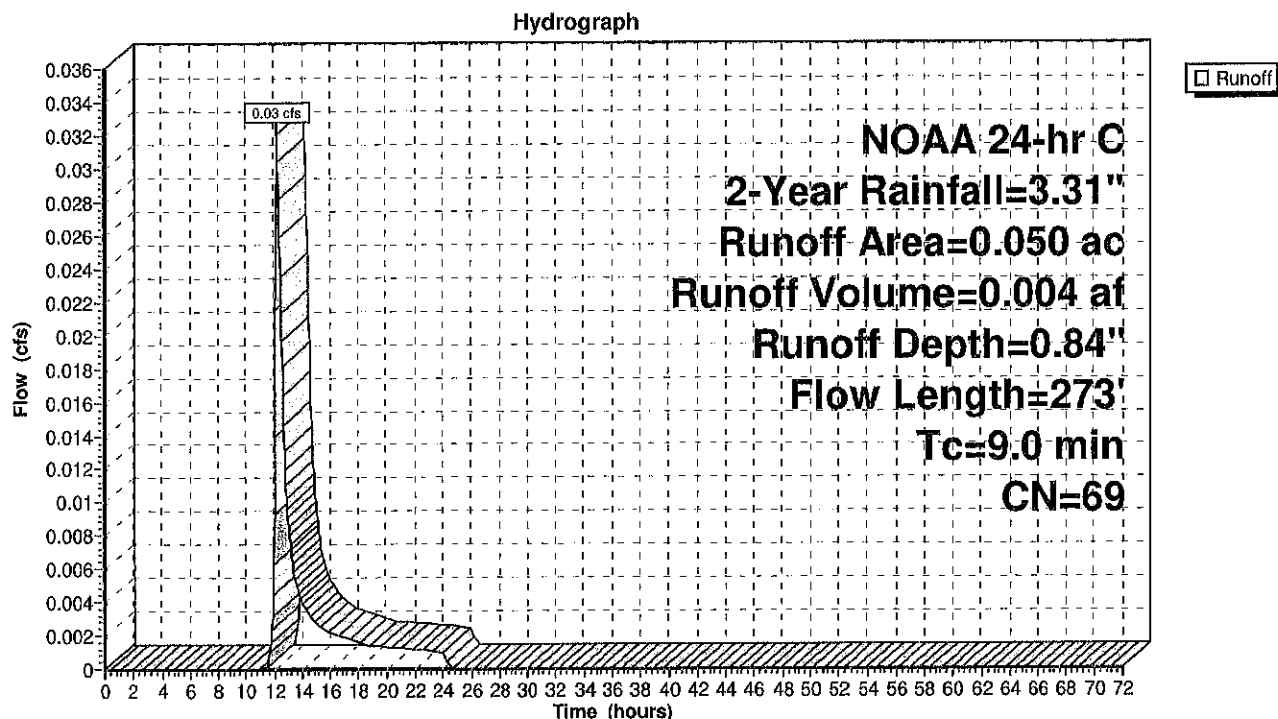
Summary for Subcatchment 37S: Drainage Area PR-9b (Pervious part of Drainage Area PR-9)

Runoff = 0.03 cfs @ 12.20 hrs, Volume= 0.004 af, Depth= 0.84"
Routed to Link 63L : Drainage Area PR-10 (Overland Runoff to P.O.I. "B")

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=3.31"

Area (ac)	CN	Description
0.020	61	>75% Grass cover, Good, HSG B
0.030	74	>75% Grass cover, Good, HSG C
0.050	69	Weighted Average
0.050	69	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	18	0.0030	0.04		Sheet Flow, Grass: Dense n= 0.240 P2= 3.35"
0.2	6	0.0050	0.46		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
1.2	249	0.0280	3.40		Shallow Concentrated Flow, Paved Kv= 20.3 fps
9.0	273	Total			

Subcatchment 37S: Drainage Area PR-9b (Pervious part of Drainage Area PR-9)

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2 Year Storm

NOAA 24-hr C 2-Year Rainfall=3.31"

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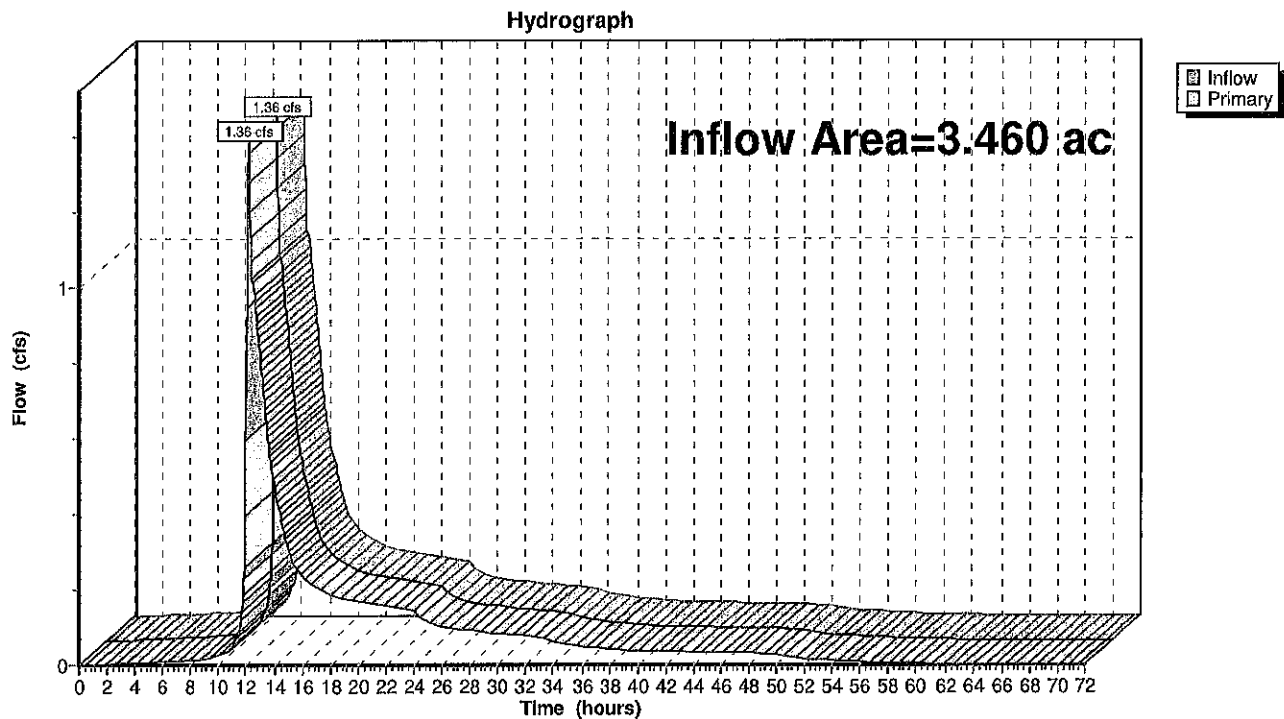
Hydrograph for Subcatchment 37S: Drainage Area PR-9b (Pervious part of Drainage Area PR-9)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	3.31	0.84	0.00
1.00	0.04	0.00	0.00	52.00	3.31	0.84	0.00
2.00	0.07	0.00	0.00	53.00	3.31	0.84	0.00
3.00	0.12	0.00	0.00	54.00	3.31	0.84	0.00
4.00	0.16	0.00	0.00	55.00	3.31	0.84	0.00
5.00	0.21	0.00	0.00	56.00	3.31	0.84	0.00
6.00	0.26	0.00	0.00	57.00	3.31	0.84	0.00
7.00	0.32	0.00	0.00	58.00	3.31	0.84	0.00
8.00	0.40	0.00	0.00	59.00	3.31	0.84	0.00
9.00	0.48	0.00	0.00	60.00	3.31	0.84	0.00
10.00	0.60	0.00	0.00	61.00	3.31	0.84	0.00
11.00	0.79	0.00	0.00	62.00	3.31	0.84	0.00
12.00	1.58	0.09	0.01	63.00	3.31	0.84	0.00
13.00	2.52	0.43	0.01	64.00	3.31	0.84	0.00
14.00	2.71	0.52	0.00	65.00	3.31	0.84	0.00
15.00	2.83	0.58	0.00	66.00	3.31	0.84	0.00
16.00	2.91	0.62	0.00	67.00	3.31	0.84	0.00
17.00	2.99	0.66	0.00	68.00	3.31	0.84	0.00
18.00	3.05	0.70	0.00	69.00	3.31	0.84	0.00
19.00	3.10	0.72	0.00	70.00	3.31	0.84	0.00
20.00	3.15	0.75	0.00	71.00	3.31	0.84	0.00
21.00	3.19	0.78	0.00	72.00	3.31	0.84	0.00
22.00	3.24	0.80	0.00				
23.00	3.27	0.82	0.00				
24.00	3.31	0.84	0.00				
25.00	3.31	0.84	0.00				
26.00	3.31	0.84	0.00				
27.00	3.31	0.84	0.00				
28.00	3.31	0.84	0.00				
29.00	3.31	0.84	0.00				
30.00	3.31	0.84	0.00				
31.00	3.31	0.84	0.00				
32.00	3.31	0.84	0.00				
33.00	3.31	0.84	0.00				
34.00	3.31	0.84	0.00				
35.00	3.31	0.84	0.00				
36.00	3.31	0.84	0.00				
37.00	3.31	0.84	0.00				
38.00	3.31	0.84	0.00				
39.00	3.31	0.84	0.00				
40.00	3.31	0.84	0.00				
41.00	3.31	0.84	0.00				
42.00	3.31	0.84	0.00				
43.00	3.31	0.84	0.00				
44.00	3.31	0.84	0.00				
45.00	3.31	0.84	0.00				
46.00	3.31	0.84	0.00				
47.00	3.31	0.84	0.00				
48.00	3.31	0.84	0.00				
49.00	3.31	0.84	0.00				
50.00	3.31	0.84	0.00				

Summary for Link 61L: Total to P.O.I. "A"

Inflow Area = 3.460 ac, 66.47% Impervious, Inflow Depth > 1.60" for 2-Year event
Inflow = 1.36 cfs @ 12.15 hrs, Volume= 0.461 af
Primary = 1.36 cfs @ 12.15 hrs, Volume= 0.461 af, Atten= 0%, Lag= 0.0 min

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

Link 61L: Total to P.O.I. "A"

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2 Year Storm
NOAA 24-hr C 2-Year Rainfall=3.31"

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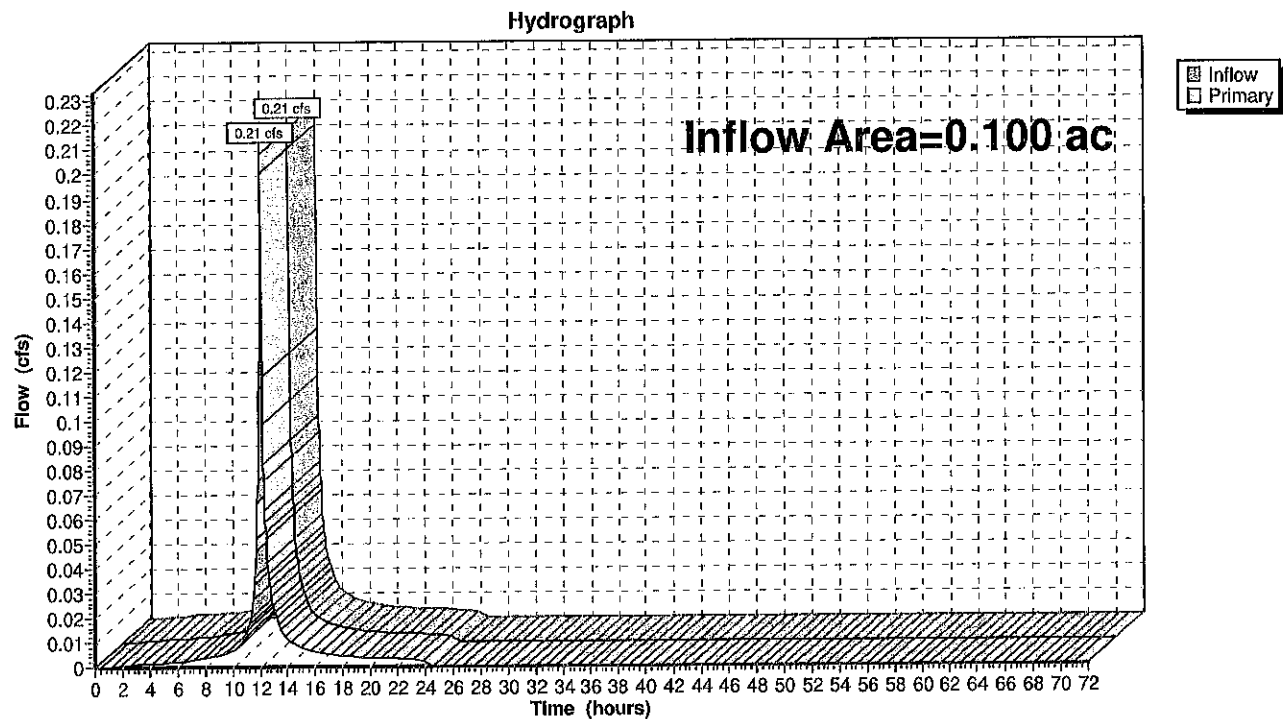
Hydrograph for Link 61L: Total to P.O.I. "A"

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.02	0.00	0.02
1.00	0.00	0.00	0.00	52.00	0.02	0.00	0.02
2.00	0.00	0.00	0.00	53.00	0.01	0.00	0.01
3.00	0.00	0.00	0.00	54.00	0.01	0.00	0.01
4.00	0.01	0.00	0.01	55.00	0.01	0.00	0.01
5.00	0.01	0.00	0.01	56.00	0.01	0.00	0.01
6.00	0.01	0.00	0.01	57.00	0.01	0.00	0.01
7.00	0.01	0.00	0.01	58.00	0.00	0.00	0.00
8.00	0.01	0.00	0.01	59.00	0.00	0.00	0.00
9.00	0.02	0.00	0.02	60.00	0.00	0.00	0.00
10.00	0.03	0.00	0.03	61.00	0.00	0.00	0.00
11.00	0.05	0.00	0.05	62.00	0.00	0.00	0.00
12.00	0.59	0.00	0.59	63.00	0.00	0.00	0.00
13.00	0.83	0.00	0.83	64.00	0.00	0.00	0.00
14.00	0.48	0.00	0.48	65.00	0.00	0.00	0.00
15.00	0.31	0.00	0.31	66.00	0.00	0.00	0.00
16.00	0.23	0.00	0.23	67.00	0.00	0.00	0.00
17.00	0.20	0.00	0.20	68.00	0.00	0.00	0.00
18.00	0.19	0.00	0.19	69.00	0.00	0.00	0.00
19.00	0.17	0.00	0.17	70.00	0.00	0.00	0.00
20.00	0.17	0.00	0.17	71.00	0.00	0.00	0.00
21.00	0.16	0.00	0.16	72.00	0.00	0.00	0.00
22.00	0.16	0.00	0.16				
23.00	0.15	0.00	0.15				
24.00	0.15	0.00	0.15				
25.00	0.11	0.00	0.11				
26.00	0.10	0.00	0.10				
27.00	0.10	0.00	0.10				
28.00	0.09	0.00	0.09				
29.00	0.09	0.00	0.09				
30.00	0.08	0.00	0.08				
31.00	0.08	0.00	0.08				
32.00	0.08	0.00	0.08				
33.00	0.07	0.00	0.07				
34.00	0.06	0.00	0.06				
35.00	0.05	0.00	0.05				
36.00	0.05	0.00	0.05				
37.00	0.04	0.00	0.04				
38.00	0.04	0.00	0.04				
39.00	0.04	0.00	0.04				
40.00	0.04	0.00	0.04				
41.00	0.04	0.00	0.04				
42.00	0.04	0.00	0.04				
43.00	0.04	0.00	0.04				
44.00	0.03	0.00	0.03				
45.00	0.03	0.00	0.03				
46.00	0.03	0.00	0.03				
47.00	0.03	0.00	0.03				
48.00	0.03	0.00	0.03				
49.00	0.03	0.00	0.03				
50.00	0.03	0.00	0.03				

Summary for Link 62L: Total to P.O.I. "B"

Inflow Area = 0.100 ac, 50.00% Impervious, Inflow Depth = 1.96" for 2-Year event
Inflow = 0.21 cfs @ 12.08 hrs, Volume= 0.016 af
Primary = 0.21 cfs @ 12.08 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.0 min

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

Link 62L: Total to P.O.I. "B"

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2 Year Storm

NOAA 24-hr C 2-Year Rainfall=3.31"

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Hydrograph for Link 62L: Total to P.O.I. "B"

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

10 YEAR STORM

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10 Year Storm
NOAA 24-hr C 10-Year Rainfall=5.01"

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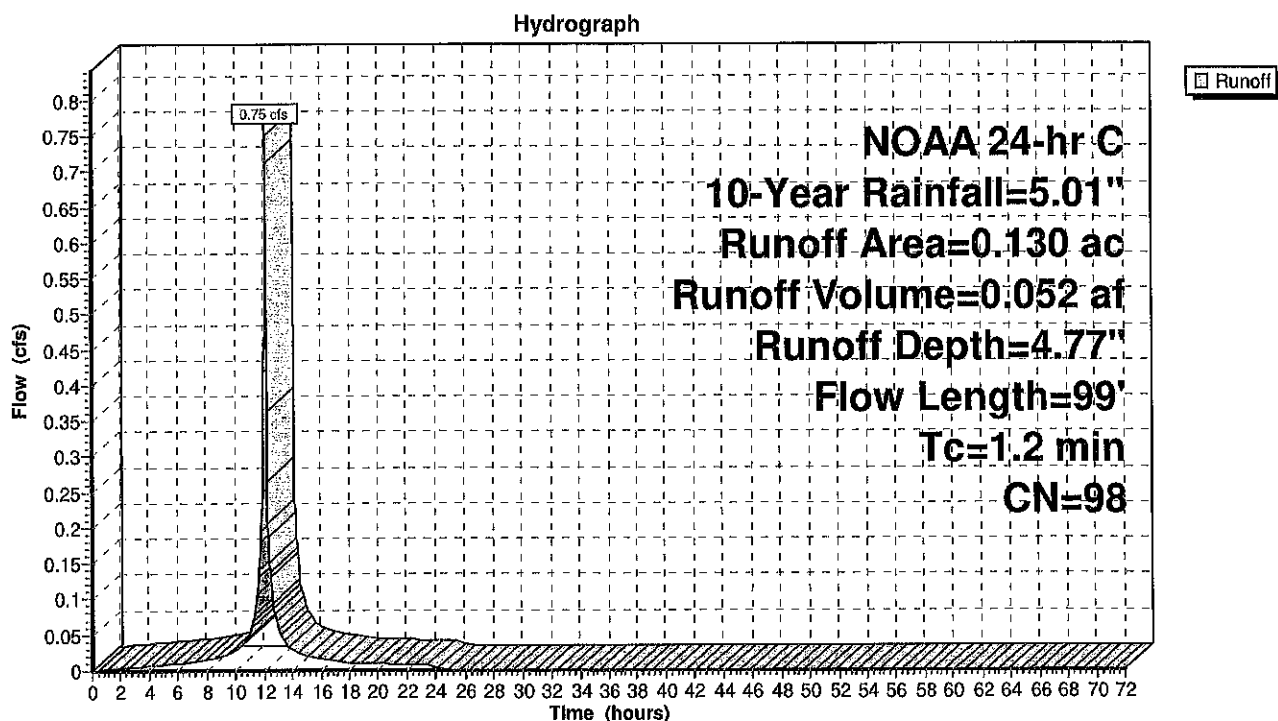
Summary for Subcatchment 20S: Drainage Area PR-1a (Impervious part of Drainage Area PR-1)

Runoff = 0.75 cfs @ 12.08 hrs, Volume= 0.052 af, Depth= 4.77"
 Routed to Pond 51P : Proposed Bioretention System #1

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
0.080	98	Paved parking, HSG C
0.050	98	Roofs, HSG C
0.130	98	Weighted Average
0.130	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	54	0.0150	1.11		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
0.4	45	0.0100	2.03		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.2	99	Total			

Subcatchment 20S: Drainage Area PR-1a (Impervious part of Drainage Area PR-1)

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10 Year Storm

NOAA 24-hr C 10-Year Rainfall=5.01"

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Hydrograph for Subcatchment 20S: Drainage Area PR-1a (Impervious part of Drainage Area PR-1)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	5.01	4.77	0.00
1.00	0.05	0.00	0.00	52.00	5.01	4.77	0.00
2.00	0.11	0.02	0.00	53.00	5.01	4.77	0.00
3.00	0.18	0.05	0.01	54.00	5.01	4.77	0.00
4.00	0.25	0.10	0.01	55.00	5.01	4.77	0.00
5.00	0.32	0.16	0.01	56.00	5.01	4.77	0.00
6.00	0.40	0.23	0.01	57.00	5.01	4.77	0.00
7.00	0.49	0.31	0.01	58.00	5.01	4.77	0.00
8.00	0.60	0.41	0.01	59.00	5.01	4.77	0.00
9.00	0.73	0.53	0.02	60.00	5.01	4.77	0.00
10.00	0.91	0.71	0.03	61.00	5.01	4.77	0.00
11.00	1.20	0.99	0.05	62.00	5.01	4.77	0.00
12.00	2.39	2.16	0.48	63.00	5.01	4.77	0.00
13.00	3.81	3.57	0.06	64.00	5.01	4.77	0.00
14.00	4.10	3.86	0.03	65.00	5.01	4.77	0.00
15.00	4.28	4.04	0.02	66.00	5.01	4.77	0.00
16.00	4.41	4.17	0.02	67.00	5.01	4.77	0.00
17.00	4.52	4.29	0.01	68.00	5.01	4.77	0.00
18.00	4.61	4.38	0.01	69.00	5.01	4.77	0.00
19.00	4.69	4.46	0.01	70.00	5.01	4.77	0.00
20.00	4.76	4.53	0.01	71.00	5.01	4.77	0.00
21.00	4.83	4.60	0.01	72.00	5.01	4.77	0.00
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				

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10 Year Storm
NOAA 24-hr C 10-Year Rainfall=5.01"

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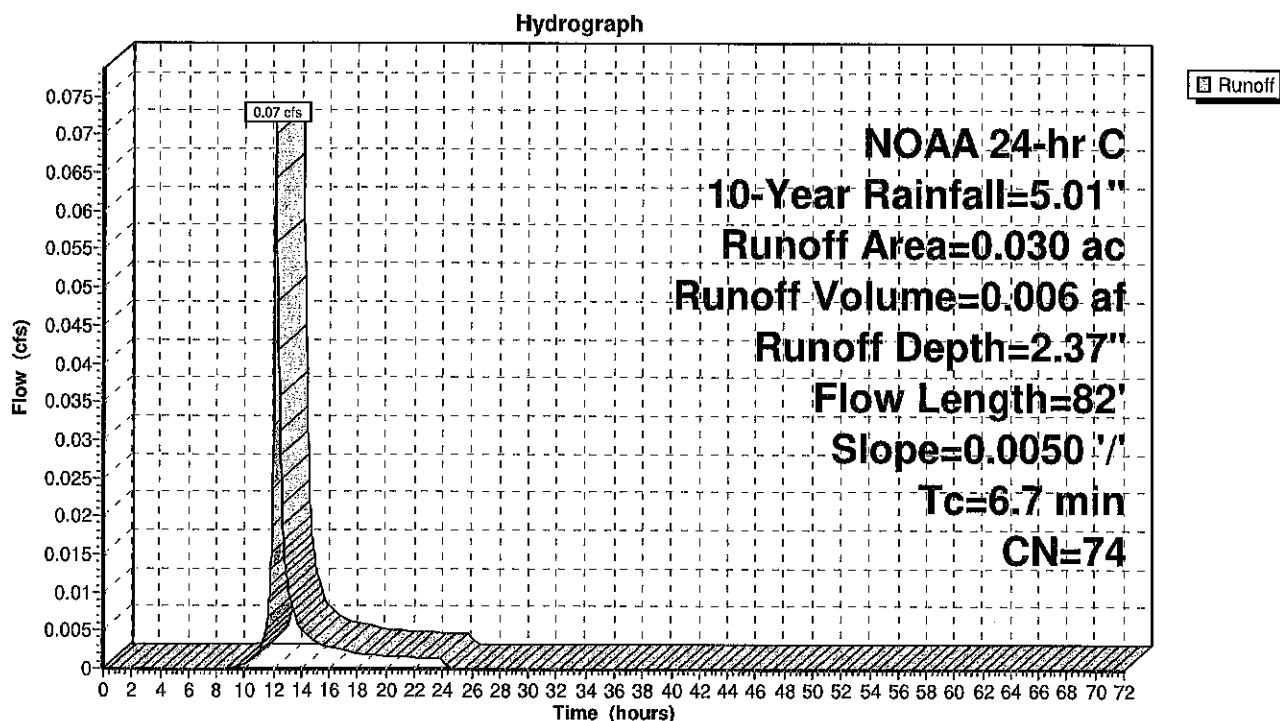
Summary for Subcatchment 21S: Drainage Area PR-1b (Pervious part of Drainage Area PR-1)

Runoff = 0.07 cfs @ 12.16 hrs, Volume= 0.006 af, Depth= 2.37"
 Routed to Pond 51P : Proposed Bioretention System #1

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	74	>75% Grass cover, Good, HSG C
0.030	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	17	0.0050	0.05		Sheet Flow, Grass: Dense n= 0.240 P2= 3.35"
0.2	13	0.0050	1.14		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.6	52	0.0050	1.44		Shallow Concentrated Flow, Paved Kv= 20.3 fps
6.7	82	Total			

Subcatchment 21S: Drainage Area PR-1b (Pervious part of Drainage Area PR-1)

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10 Year Storm

NOAA 24-hr C 10-Year Rainfall=5.01"

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Hydrograph for Subcatchment 21S: Drainage Area PR-1b (Pervious part of Drainage Area PR-1)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	5.01	2.37	0.00
1.00	0.05	0.00	0.00	52.00	5.01	2.37	0.00
2.00	0.11	0.00	0.00	53.00	5.01	2.37	0.00
3.00	0.18	0.00	0.00	54.00	5.01	2.37	0.00
4.00	0.25	0.00	0.00	55.00	5.01	2.37	0.00
5.00	0.32	0.00	0.00	56.00	5.01	2.37	0.00
6.00	0.40	0.00	0.00	57.00	5.01	2.37	0.00
7.00	0.49	0.00	0.00	58.00	5.01	2.37	0.00
8.00	0.60	0.00	0.00	59.00	5.01	2.37	0.00
9.00	0.73	0.00	0.00	60.00	5.01	2.37	0.00
10.00	0.91	0.01	0.00	61.00	5.01	2.37	0.00
11.00	1.20	0.06	0.00	62.00	5.01	2.37	0.00
12.00	2.39	0.55	0.03	63.00	5.01	2.37	0.00
13.00	3.81	1.46	0.01	64.00	5.01	2.37	0.00
14.00	4.10	1.67	0.01	65.00	5.01	2.37	0.00
15.00	4.28	1.80	0.00	66.00	5.01	2.37	0.00
16.00	4.41	1.90	0.00	67.00	5.01	2.37	0.00
17.00	4.52	1.99	0.00	68.00	5.01	2.37	0.00
18.00	4.61	2.06	0.00	69.00	5.01	2.37	0.00
19.00	4.69	2.12	0.00	70.00	5.01	2.37	0.00
20.00	4.76	2.18	0.00	71.00	5.01	2.37	0.00
21.00	4.83	2.23	0.00	72.00	5.01	2.37	0.00
22.00	4.90	2.28	0.00				
23.00	4.96	2.33	0.00				
24.00	5.01	2.37	0.00				
25.00	5.01	2.37	0.00				
26.00	5.01	2.37	0.00				
27.00	5.01	2.37	0.00				
28.00	5.01	2.37	0.00				
29.00	5.01	2.37	0.00				
30.00	5.01	2.37	0.00				
31.00	5.01	2.37	0.00				
32.00	5.01	2.37	0.00				
33.00	5.01	2.37	0.00				
34.00	5.01	2.37	0.00				
35.00	5.01	2.37	0.00				
36.00	5.01	2.37	0.00				
37.00	5.01	2.37	0.00				
38.00	5.01	2.37	0.00				
39.00	5.01	2.37	0.00				
40.00	5.01	2.37	0.00				
41.00	5.01	2.37	0.00				
42.00	5.01	2.37	0.00				
43.00	5.01	2.37	0.00				
44.00	5.01	2.37	0.00				
45.00	5.01	2.37	0.00				
46.00	5.01	2.37	0.00				
47.00	5.01	2.37	0.00				
48.00	5.01	2.37	0.00				
49.00	5.01	2.37	0.00				
50.00	5.01	2.37	0.00				

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10 Year Storm
NOAA 24-hr C 10-Year Rainfall=5.01"

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Summary for Subcatchment 22S: Drainage Area PR-2a (Impervious part of Drainage Area PR-2)

Runoff = 1.43 cfs @ 12.08 hrs, Volume= 0.099 af, Depth= 4.77"
 Routed to Pond 52P : Proposed Bioretention System #2

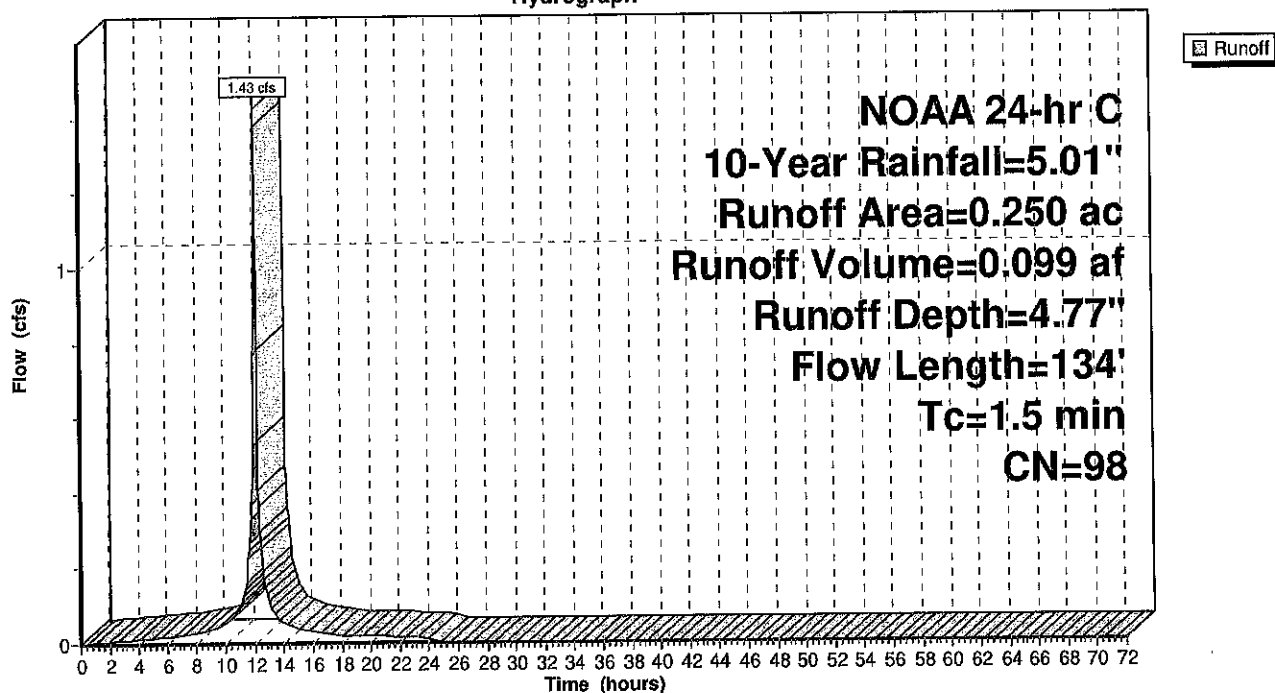
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 10-Year Rainfall=5.01"

Area (ac)	CN	Description
0.250	98	Paved parking, HSG C
0.250	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	72	0.0150	1.17		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
0.5	62	0.0100	2.03		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.5	134	Total			

Subcatchment 22S: Drainage Area PR-2a (Impervious part of Drainage Area PR-2)

Hydrograph



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Hydrograph for Subcatchment 22S: Drainage Area PR-2a (Impervious part of Drainage Area PR-2)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	5.01	4.77	0.00
1.00	0.05	0.00	0.00	52.00	5.01	4.77	0.00
2.00	0.11	0.02	0.01	53.00	5.01	4.77	0.00
3.00	0.18	0.05	0.01	54.00	5.01	4.77	0.00
4.00	0.25	0.10	0.01	55.00	5.01	4.77	0.00
5.00	0.32	0.16	0.02	56.00	5.01	4.77	0.00
6.00	0.40	0.23	0.02	57.00	5.01	4.77	0.00
7.00	0.49	0.31	0.02	58.00	5.01	4.77	0.00
8.00	0.60	0.41	0.03	59.00	5.01	4.77	0.00
9.00	0.73	0.53	0.03	60.00	5.01	4.77	0.00
10.00	0.91	0.71	0.05	61.00	5.01	4.77	0.00
11.00	1.20	0.99	0.10	62.00	5.01	4.77	0.00
12.00	2.39	2.16	0.90	63.00	5.01	4.77	0.00
13.00	3.81	3.57	0.11	64.00	5.01	4.77	0.00
14.00	4.10	3.86	0.06	65.00	5.01	4.77	0.00
15.00	4.28	4.04	0.04	66.00	5.01	4.77	0.00
16.00	4.41	4.17	0.03	67.00	5.01	4.77	0.00
17.00	4.52	4.29	0.03	68.00	5.01	4.77	0.00
18.00	4.61	4.38	0.02	69.00	5.01	4.77	0.00
19.00	4.69	4.46	0.02	70.00	5.01	4.77	0.00
20.00	4.76	4.53	0.02	71.00	5.01	4.77	0.00
21.00	4.83	4.60	0.02	72.00	5.01	4.77	0.00
22.00	4.90	4.66	0.02				
23.00	4.96	4.72	0.01				
24.00	5.01	4.77	0.02				
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				

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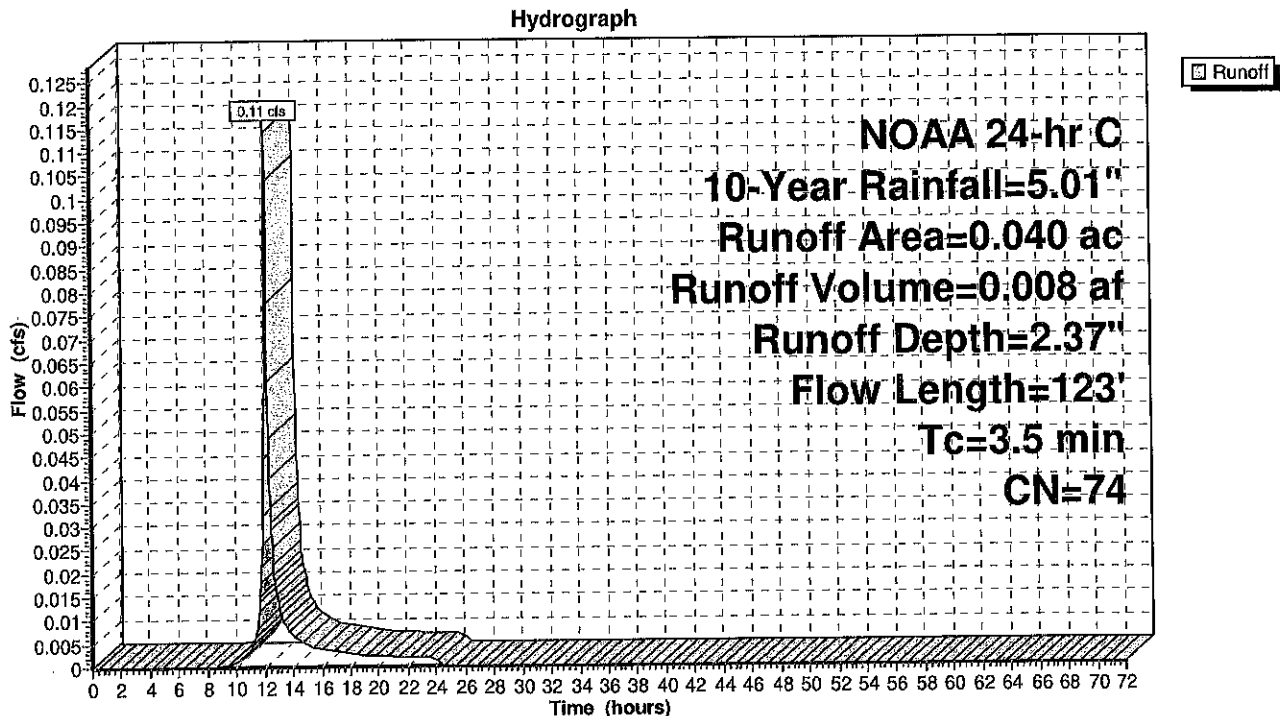
Summary for Subcatchment 23S: Drainage Area PR-2b (Pervious part of Drainage Area PR-2)

Runoff = 0.11 cfs @ 12.11 hrs, Volume= 0.008 af, Depth= 2.37"
 Routed to Pond 52P : Proposed Bioretention System #2

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
0.040	74	>75% Grass cover, Good, HSG C
0.040	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	6	0.0050	0.04		Sheet Flow, Grass: Dense n= 0.240 P2= 3.35"
0.2	6	0.0050	0.46		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
0.7	111	0.0150	2.49		Shallow Concentrated Flow, Paved Kv= 20.3 fps
3.5	123	Total			

Subcatchment 23S: Drainage Area PR-2b (Pervious part of Drainage Area PR-2)

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Hydrograph for Subcatchment 23S: Drainage Area PR-2b (Pervious part of Drainage Area PR-2)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	5.01	2.37	0.00
1.00	0.05	0.00	0.00	52.00	5.01	2.37	0.00
2.00	0.11	0.00	0.00	53.00	5.01	2.37	0.00
3.00	0.18	0.00	0.00	54.00	5.01	2.37	0.00
4.00	0.25	0.00	0.00	55.00	5.01	2.37	0.00
5.00	0.32	0.00	0.00	56.00	5.01	2.37	0.00
6.00	0.40	0.00	0.00	57.00	5.01	2.37	0.00
7.00	0.49	0.00	0.00	58.00	5.01	2.37	0.00
8.00	0.60	0.00	0.00	59.00	5.01	2.37	0.00
9.00	0.73	0.00	0.00	60.00	5.01	2.37	0.00
10.00	0.91	0.01	0.00	61.00	5.01	2.37	0.00
11.00	1.20	0.06	0.00	62.00	5.01	2.37	0.00
12.00	2.39	0.55	0.06	63.00	5.01	2.37	0.00
13.00	3.81	1.46	0.01	64.00	5.01	2.37	0.00
14.00	4.10	1.67	0.01	65.00	5.01	2.37	0.00
15.00	4.28	1.80	0.00	66.00	5.01	2.37	0.00
16.00	4.41	1.90	0.00	67.00	5.01	2.37	0.00
17.00	4.52	1.99	0.00	68.00	5.01	2.37	0.00
18.00	4.61	2.06	0.00	69.00	5.01	2.37	0.00
19.00	4.69	2.12	0.00	70.00	5.01	2.37	0.00
20.00	4.76	2.18	0.00	71.00	5.01	2.37	0.00
21.00	4.83	2.23	0.00	72.00	5.01	2.37	0.00
22.00	4.90	2.28	0.00				
23.00	4.96	2.33	0.00				
24.00	5.01	2.37	0.00				
25.00	5.01	2.37	0.00				
26.00	5.01	2.37	0.00				
27.00	5.01	2.37	0.00				
28.00	5.01	2.37	0.00				
29.00	5.01	2.37	0.00				
30.00	5.01	2.37	0.00				
31.00	5.01	2.37	0.00				
32.00	5.01	2.37	0.00				
33.00	5.01	2.37	0.00				
34.00	5.01	2.37	0.00				
35.00	5.01	2.37	0.00				
36.00	5.01	2.37	0.00				
37.00	5.01	2.37	0.00				
38.00	5.01	2.37	0.00				
39.00	5.01	2.37	0.00				
40.00	5.01	2.37	0.00				
41.00	5.01	2.37	0.00				
42.00	5.01	2.37	0.00				
43.00	5.01	2.37	0.00				
44.00	5.01	2.37	0.00				
45.00	5.01	2.37	0.00				
46.00	5.01	2.37	0.00				
47.00	5.01	2.37	0.00				
48.00	5.01	2.37	0.00				
49.00	5.01	2.37	0.00				
50.00	5.01	2.37	0.00				

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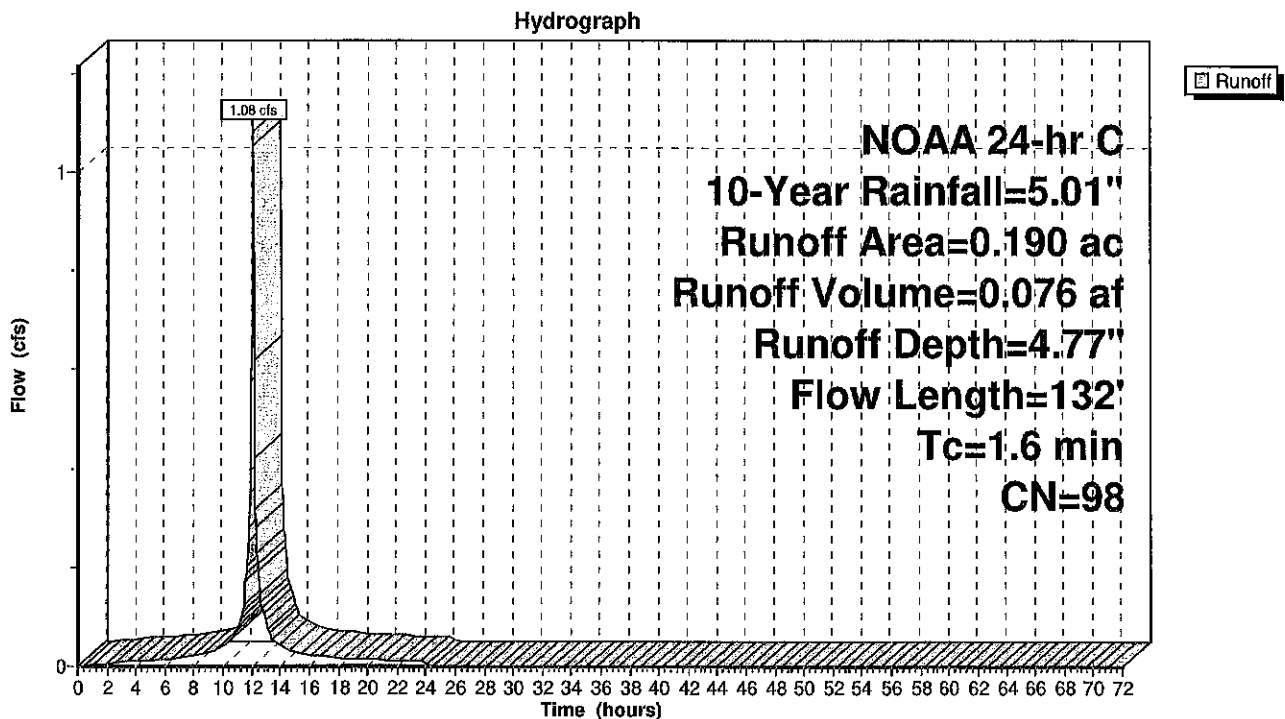
Summary for Subcatchment 24S: Drainage Area PR-3a (Impervious part of Drainage Area PR-3)

Runoff = 1.08 cfs @ 12.08 hrs, Volume= 0.076 af, Depth= 4.77"
 Routed to Pond 53P : Proposed Bioretention System #3

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
0.190	98	Paved parking, HSG C
0.190	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	76	0.0150	1.19		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
0.5	56	0.0100	2.03		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.6	132	Total			

Subcatchment 24S: Drainage Area PR-3a (Impervious part of Drainage Area PR-3)

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Hydrograph for Subcatchment 24S: Drainage Area PR-3a (Impervious part of Drainage Area PR-3)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	5.01	4.77	0.00
1.00	0.05	0.00	0.00	52.00	5.01	4.77	0.00
2.00	0.11	0.02	0.01	53.00	5.01	4.77	0.00
3.00	0.18	0.05	0.01	54.00	5.01	4.77	0.00
4.00	0.25	0.10	0.01	55.00	5.01	4.77	0.00
5.00	0.32	0.16	0.01	56.00	5.01	4.77	0.00
6.00	0.40	0.23	0.01	57.00	5.01	4.77	0.00
7.00	0.49	0.31	0.02	58.00	5.01	4.77	0.00
8.00	0.60	0.41	0.02	59.00	5.01	4.77	0.00
9.00	0.73	0.53	0.03	60.00	5.01	4.77	0.00
10.00	0.91	0.71	0.04	61.00	5.01	4.77	0.00
11.00	1.20	0.99	0.07	62.00	5.01	4.77	0.00
12.00	2.39	2.16	0.68	63.00	5.01	4.77	0.00
13.00	3.81	3.57	0.09	64.00	5.01	4.77	0.00
14.00	4.10	3.86	0.04	65.00	5.01	4.77	0.00
15.00	4.28	4.04	0.03	66.00	5.01	4.77	0.00
16.00	4.41	4.17	0.02	67.00	5.01	4.77	0.00
17.00	4.52	4.29	0.02	68.00	5.01	4.77	0.00
18.00	4.61	4.38	0.02	69.00	5.01	4.77	0.00
19.00	4.69	4.46	0.01	70.00	5.01	4.77	0.00
20.00	4.76	4.53	0.01	71.00	5.01	4.77	0.00
21.00	4.83	4.60	0.01	72.00	5.01	4.77	0.00
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				

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10 Year Storm
NOAA 24-hr C 10-Year Rainfall=5.01"

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Summary for Subcatchment 25S: Drainage Area PR-3b (Pervious part of Drainage Area PR-3)

Runoff = 0.09 cfs @ 12.16 hrs, Volume= 0.008 af, Depth= 2.37"
 Routed to Pond 53P : Proposed Bioretention System #3

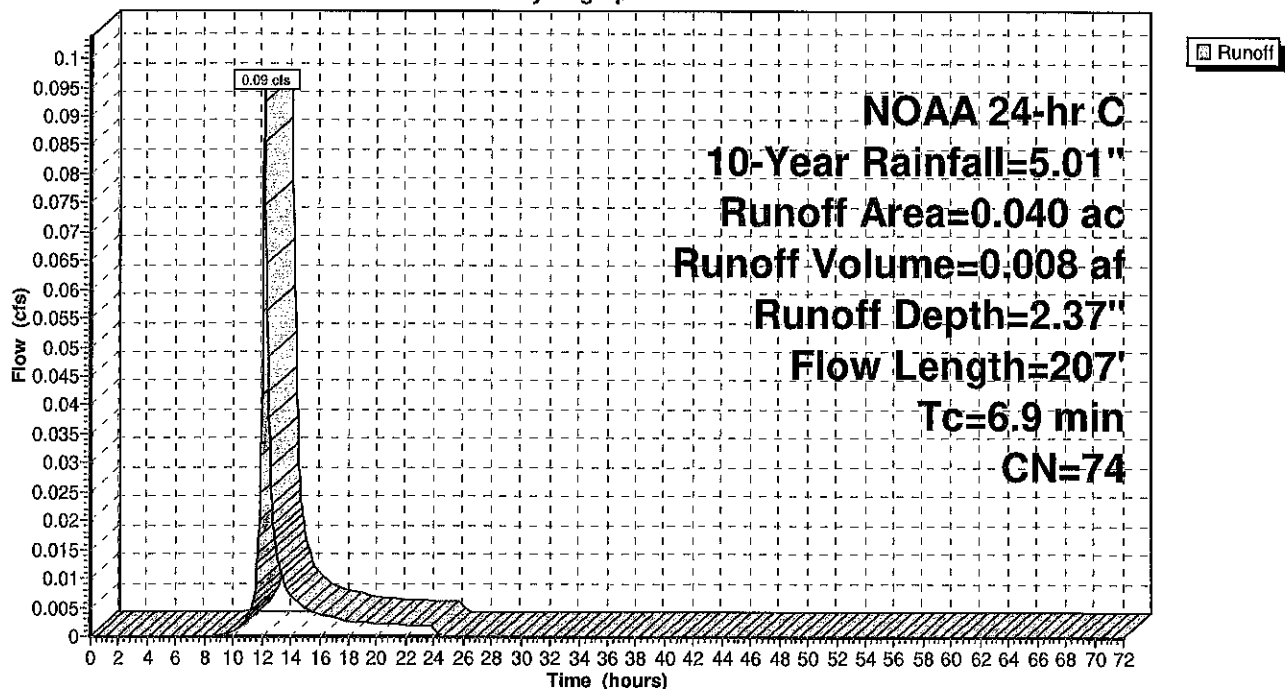
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 10-Year Rainfall=5.01"

Area (ac)	CN	Description
0.040	74	>75% Grass cover, Good, HSG C
0.040	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	16	0.0050	0.05		Sheet Flow, Grass: Dense n= 0.240 P2= 3.35"
1.3	191	0.0140	2.40		Shallow Concentrated Flow, Paved Kv= 20.3 fps
6.9	207	Total			

Subcatchment 25S: Drainage Area PR-3b (Pervious part of Drainage Area PR-3)

Hydrograph



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10 Year Storm
NOAA 24-hr C 10-Year Rainfall=5.01"

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Hydrograph for Subcatchment 25S: Drainage Area PR-3b (Pervious part of Drainage Area PR-3)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	5.01	2.37	0.00
1.00	0.05	0.00	0.00	52.00	5.01	2.37	0.00
2.00	0.11	0.00	0.00	53.00	5.01	2.37	0.00
3.00	0.18	0.00	0.00	54.00	5.01	2.37	0.00
4.00	0.25	0.00	0.00	55.00	5.01	2.37	0.00
5.00	0.32	0.00	0.00	56.00	5.01	2.37	0.00
6.00	0.40	0.00	0.00	57.00	5.01	2.37	0.00
7.00	0.49	0.00	0.00	58.00	5.01	2.37	0.00
8.00	0.60	0.00	0.00	59.00	5.01	2.37	0.00
9.00	0.73	0.00	0.00	60.00	5.01	2.37	0.00
10.00	0.91	0.01	0.00	61.00	5.01	2.37	0.00
11.00	1.20	0.06	0.00	62.00	5.01	2.37	0.00
12.00	2.39	0.55	0.04	63.00	5.01	2.37	0.00
13.00	3.81	1.46	0.02	64.00	5.01	2.37	0.00
14.00	4.10	1.67	0.01	65.00	5.01	2.37	0.00
15.00	4.28	1.80	0.00	66.00	5.01	2.37	0.00
16.00	4.41	1.90	0.00	67.00	5.01	2.37	0.00
17.00	4.52	1.99	0.00	68.00	5.01	2.37	0.00
18.00	4.61	2.06	0.00	69.00	5.01	2.37	0.00
19.00	4.69	2.12	0.00	70.00	5.01	2.37	0.00
20.00	4.76	2.18	0.00	71.00	5.01	2.37	0.00
21.00	4.83	2.23	0.00	72.00	5.01	2.37	0.00
22.00	4.90	2.28	0.00				
23.00	4.96	2.33	0.00				
24.00	5.01	2.37	0.00				
25.00	5.01	2.37	0.00				
26.00	5.01	2.37	0.00				
27.00	5.01	2.37	0.00				
28.00	5.01	2.37	0.00				
29.00	5.01	2.37	0.00				
30.00	5.01	2.37	0.00				
31.00	5.01	2.37	0.00				
32.00	5.01	2.37	0.00				
33.00	5.01	2.37	0.00				
34.00	5.01	2.37	0.00				
35.00	5.01	2.37	0.00				
36.00	5.01	2.37	0.00				
37.00	5.01	2.37	0.00				
38.00	5.01	2.37	0.00				
39.00	5.01	2.37	0.00				
40.00	5.01	2.37	0.00				
41.00	5.01	2.37	0.00				
42.00	5.01	2.37	0.00				
43.00	5.01	2.37	0.00				
44.00	5.01	2.37	0.00				
45.00	5.01	2.37	0.00				
46.00	5.01	2.37	0.00				
47.00	5.01	2.37	0.00				
48.00	5.01	2.37	0.00				
49.00	5.01	2.37	0.00				
50.00	5.01	2.37	0.00				

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10 Year Storm
NOAA 24-hr C 10-Year Rainfall=5.01"

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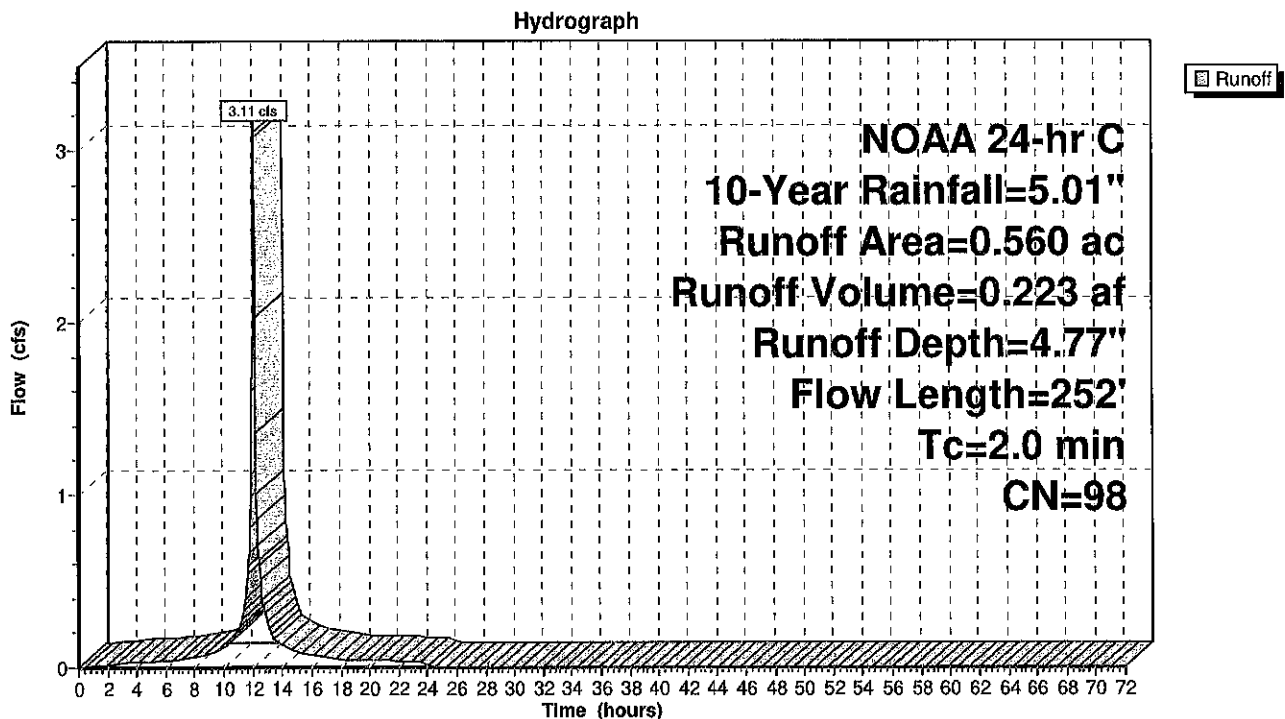
Summary for Subcatchment 26S: Drainage Area PR-4a (Impervious part of Drainage Area PR-4)

Runoff = 3.11 cfs @ 12.09 hrs, Volume= 0.223 af, Depth= 4.77"
 Routed to Pond 54P : Proposed Bioretention System #4

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
0.370	98	Paved parking, HSG C
0.190	98	Roofs, HSG C
0.560	98	Weighted Average
0.560	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	61	0.0150	1.14		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
0.4	59	0.0150	2.49		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.7	132	0.0030	3.12	3.83	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
2.0	252	Total			

Subcatchment 26S: Drainage Area PR-4a (Impervious part of Drainage Area PR-4)

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Hydrograph for Subcatchment 26S: Drainage Area PR-4a (Impervious part of Drainage Area PR-4)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	5.01	4.77	0.00
1.00	0.05	0.00	0.00	52.00	5.01	4.77	0.00
2.00	0.11	0.02	0.02	53.00	5.01	4.77	0.00
3.00	0.18	0.05	0.02	54.00	5.01	4.77	0.00
4.00	0.25	0.10	0.03	55.00	5.01	4.77	0.00
5.00	0.32	0.16	0.03	56.00	5.01	4.77	0.00
6.00	0.40	0.23	0.04	57.00	5.01	4.77	0.00
7.00	0.49	0.31	0.05	58.00	5.01	4.77	0.00
8.00	0.60	0.41	0.06	59.00	5.01	4.77	0.00
9.00	0.73	0.53	0.08	60.00	5.01	4.77	0.00
10.00	0.91	0.71	0.12	61.00	5.01	4.77	0.00
11.00	1.20	0.99	0.22	62.00	5.01	4.77	0.00
12.00	2.39	2.16	1.92	63.00	5.01	4.77	0.00
13.00	3.81	3.57	0.26	64.00	5.01	4.77	0.00
14.00	4.10	3.86	0.13	65.00	5.01	4.77	0.00
15.00	4.28	4.04	0.08	66.00	5.01	4.77	0.00
16.00	4.41	4.17	0.07	67.00	5.01	4.77	0.00
17.00	4.52	4.29	0.06	68.00	5.01	4.77	0.00
18.00	4.61	4.38	0.05	69.00	5.01	4.77	0.00
19.00	4.69	4.46	0.04	70.00	5.01	4.77	0.00
20.00	4.76	4.53	0.04	71.00	5.01	4.77	0.00
21.00	4.83	4.60	0.04	72.00	5.01	4.77	0.00
22.00	4.90	4.66	0.03				
23.00	4.96	4.72	0.03				
24.00	5.01	4.77	0.03				
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				

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Summary for Subcatchment 27S: Drainage Area PR-4b (Pervious part of Drainage Area PR-4)

Runoff = 0.35 cfs @ 12.16 hrs, Volume= 0.030 af, Depth= 2.37"
 Routed to Pond 54P : Proposed Bioretention System #4

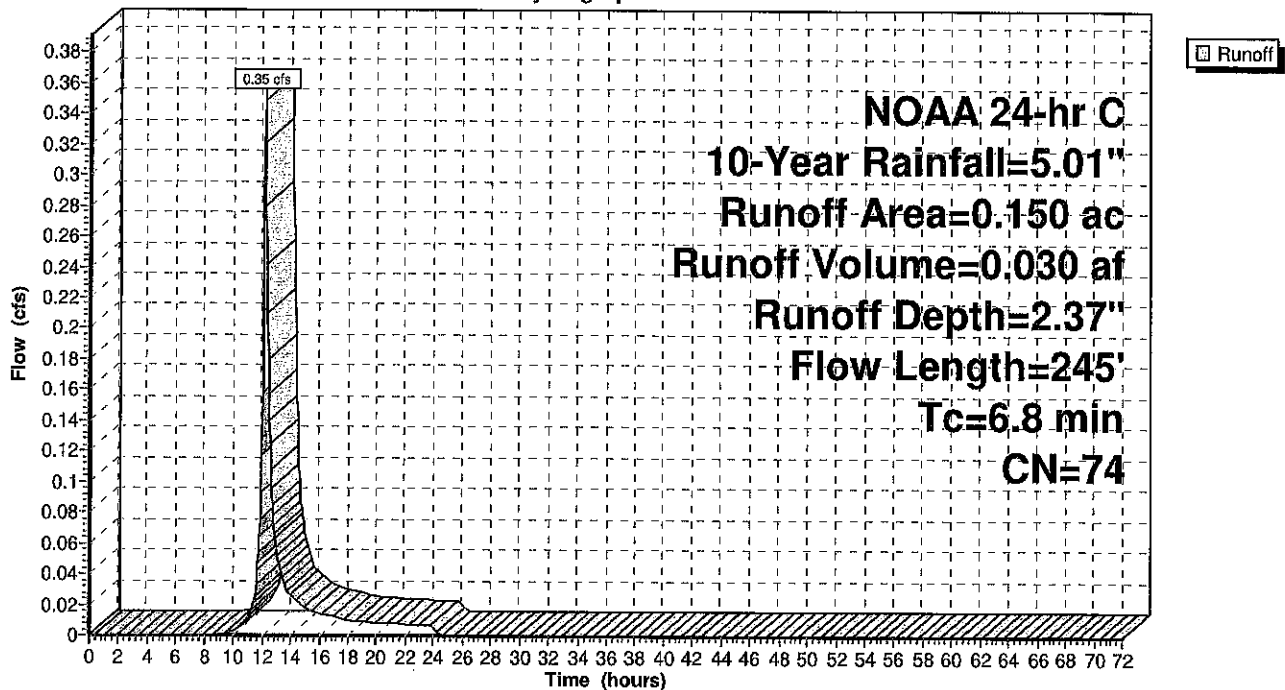
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 10-Year Rainfall=5.01"

Area (ac)	CN	Description
0.150	74	>75% Grass cover, Good, HSG C
0.150	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	21	0.0100	0.07		Sheet Flow, Grass: Dense n= 0.240 P2= 3.35"
0.8	92	0.0100	2.03		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.7	132	0.0030	3.12	3.83	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
6.8	245	Total			

Subcatchment 27S: Drainage Area PR-4b (Pervious part of Drainage Area PR-4)

Hydrograph



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Hydrograph for Subcatchment 27S: Drainage Area PR-4b (Pervious part of Drainage Area PR-4)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	5.01	2.37	0.00
1.00	0.05	0.00	0.00	52.00	5.01	2.37	0.00
2.00	0.11	0.00	0.00	53.00	5.01	2.37	0.00
3.00	0.18	0.00	0.00	54.00	5.01	2.37	0.00
4.00	0.25	0.00	0.00	55.00	5.01	2.37	0.00
5.00	0.32	0.00	0.00	56.00	5.01	2.37	0.00
6.00	0.40	0.00	0.00	57.00	5.01	2.37	0.00
7.00	0.49	0.00	0.00	58.00	5.01	2.37	0.00
8.00	0.60	0.00	0.00	59.00	5.01	2.37	0.00
9.00	0.73	0.00	0.00	60.00	5.01	2.37	0.00
10.00	0.91	0.01	0.00	61.00	5.01	2.37	0.00
11.00	1.20	0.06	0.01	62.00	5.01	2.37	0.00
12.00	2.39	0.55	0.16	63.00	5.01	2.37	0.00
13.00	3.81	1.46	0.06	64.00	5.01	2.37	0.00
14.00	4.10	1.67	0.03	65.00	5.01	2.37	0.00
15.00	4.28	1.80	0.02	66.00	5.01	2.37	0.00
16.00	4.41	1.90	0.01	67.00	5.01	2.37	0.00
17.00	4.52	1.99	0.01	68.00	5.01	2.37	0.00
18.00	4.61	2.06	0.01	69.00	5.01	2.37	0.00
19.00	4.69	2.12	0.01	70.00	5.01	2.37	0.00
20.00	4.76	2.18	0.01	71.00	5.01	2.37	0.00
21.00	4.83	2.23	0.01	72.00	5.01	2.37	0.00
22.00	4.90	2.28	0.01				
23.00	4.96	2.33	0.01				
24.00	5.01	2.37	0.01				
25.00	5.01	2.37	0.00				
26.00	5.01	2.37	0.00				
27.00	5.01	2.37	0.00				
28.00	5.01	2.37	0.00				
29.00	5.01	2.37	0.00				
30.00	5.01	2.37	0.00				
31.00	5.01	2.37	0.00				
32.00	5.01	2.37	0.00				
33.00	5.01	2.37	0.00				
34.00	5.01	2.37	0.00				
35.00	5.01	2.37	0.00				
36.00	5.01	2.37	0.00				
37.00	5.01	2.37	0.00				
38.00	5.01	2.37	0.00				
39.00	5.01	2.37	0.00				
40.00	5.01	2.37	0.00				
41.00	5.01	2.37	0.00				
42.00	5.01	2.37	0.00				
43.00	5.01	2.37	0.00				
44.00	5.01	2.37	0.00				
45.00	5.01	2.37	0.00				
46.00	5.01	2.37	0.00				
47.00	5.01	2.37	0.00				
48.00	5.01	2.37	0.00				
49.00	5.01	2.37	0.00				
50.00	5.01	2.37	0.00				

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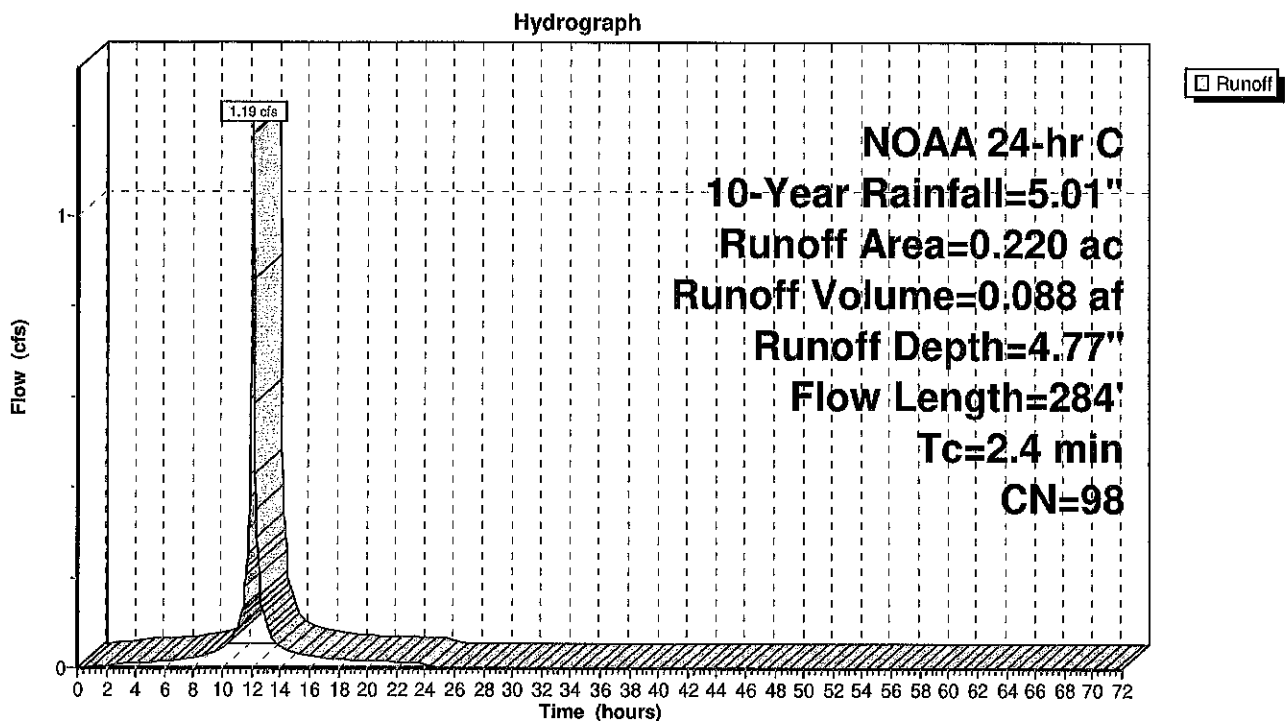
Summary for Subcatchment 28S: Drainage Area PR-5a (Impervious part of Drainage Area PR-5)

Runoff = 1.19 cfs @ 12.09 hrs, Volume= 0.088 af, Depth= 4.77"
 Routed to Pond 55P : Proposed Bioretention System #5

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
0.220	98	Paved parking, HSG C
0.220	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	79	0.0150	1.20		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
0.6	73	0.0100	2.03		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.7	132	0.0030	3.12	3.83	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
2.4	284	Total			

Subcatchment 28S: Drainage Area PR-5a (Impervious part of Drainage Area PR-5)

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Hydrograph for Subcatchment 28S: Drainage Area PR-5a (Impervious part of Drainage Area PR-5)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	5.01	4.77	0.00
1.00	0.05	0.00	0.00	52.00	5.01	4.77	0.00
2.00	0.11	0.02	0.01	53.00	5.01	4.77	0.00
3.00	0.18	0.05	0.01	54.00	5.01	4.77	0.00
4.00	0.25	0.10	0.01	55.00	5.01	4.77	0.00
5.00	0.32	0.16	0.01	56.00	5.01	4.77	0.00
6.00	0.40	0.23	0.02	57.00	5.01	4.77	0.00
7.00	0.49	0.31	0.02	58.00	5.01	4.77	0.00
8.00	0.60	0.41	0.02	59.00	5.01	4.77	0.00
9.00	0.73	0.53	0.03	60.00	5.01	4.77	0.00
10.00	0.91	0.71	0.05	61.00	5.01	4.77	0.00
11.00	1.20	0.99	0.09	62.00	5.01	4.77	0.00
12.00	2.39	2.16	0.72	63.00	5.01	4.77	0.00
13.00	3.81	3.57	0.10	64.00	5.01	4.77	0.00
14.00	4.10	3.86	0.05	65.00	5.01	4.77	0.00
15.00	4.28	4.04	0.03	66.00	5.01	4.77	0.00
16.00	4.41	4.17	0.03	67.00	5.01	4.77	0.00
17.00	4.52	4.29	0.02	68.00	5.01	4.77	0.00
18.00	4.61	4.38	0.02	69.00	5.01	4.77	0.00
19.00	4.69	4.46	0.02	70.00	5.01	4.77	0.00
20.00	4.76	4.53	0.02	71.00	5.01	4.77	0.00
21.00	4.83	4.60	0.01	72.00	5.01	4.77	0.00
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				

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10 Year Storm
NOAA 24-hr C 10-Year Rainfall=5.01"

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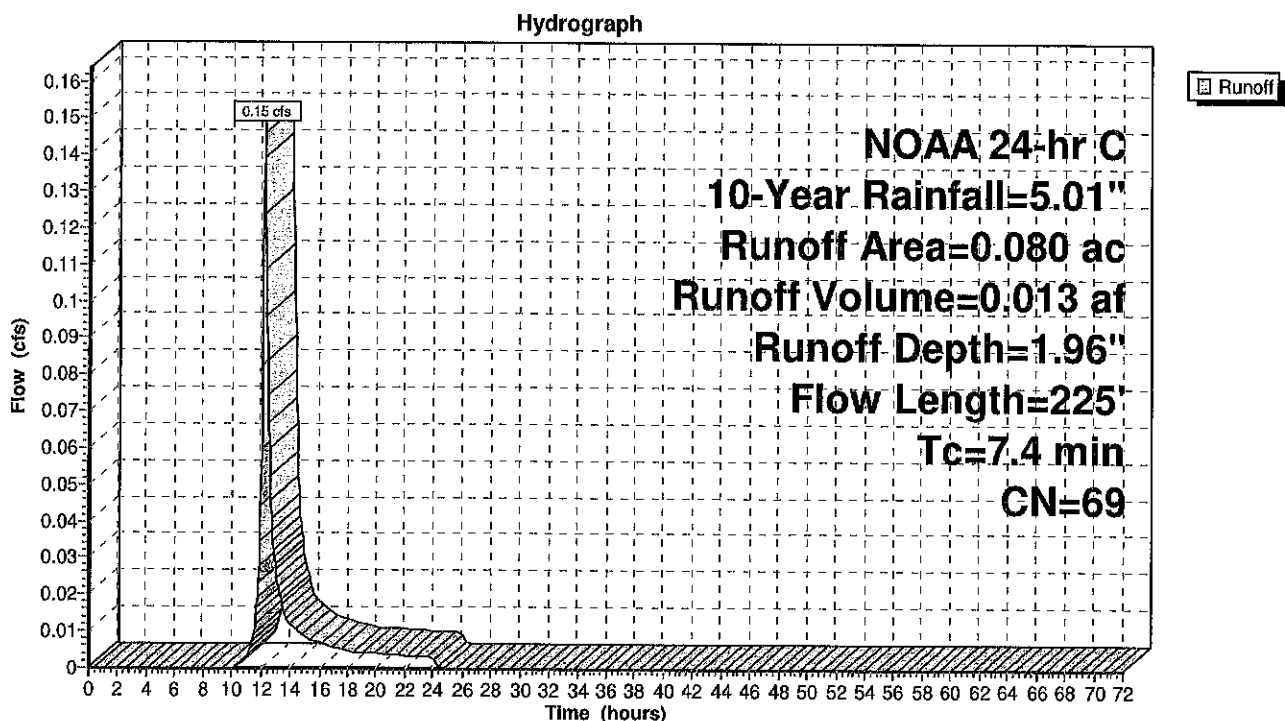
Summary for Subcatchment 29S: Drainage Area PR-5b (Pervious part of Drainage Area PR-5)

Runoff = 0.15 cfs @ 12.17 hrs, Volume= 0.013 af, Depth= 1.96"
 Routed to Pond 55P : Proposed Bioretention System #5

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	61	>75% Grass cover, Good, HSG B
0.050	74	>75% Grass cover, Good, HSG C
0.080	69	Weighted Average
0.080	69	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	26	0.0100	0.07		Sheet Flow, Grass: Dense n= 0.240 P2= 3.35"
0.4	67	0.0150	2.49		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.7	132	0.0030	3.12	3.83	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
7.4	225	Total			

Subcatchment 29S: Drainage Area PR-5b (Pervious part of Drainage Area PR-5)

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NOAA 24-hr C 10-Year Rainfall=5.01"

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Hydrograph for Subcatchment 29S: Drainage Area PR-5b (Pervious part of Drainage Area PR-5)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	5.01	1.96	0.00
1.00	0.05	0.00	0.00	52.00	5.01	1.96	0.00
2.00	0.11	0.00	0.00	53.00	5.01	1.96	0.00
3.00	0.18	0.00	0.00	54.00	5.01	1.96	0.00
4.00	0.25	0.00	0.00	55.00	5.01	1.96	0.00
5.00	0.32	0.00	0.00	56.00	5.01	1.96	0.00
6.00	0.40	0.00	0.00	57.00	5.01	1.96	0.00
7.00	0.49	0.00	0.00	58.00	5.01	1.96	0.00
8.00	0.60	0.00	0.00	59.00	5.01	1.96	0.00
9.00	0.73	0.00	0.00	60.00	5.01	1.96	0.00
10.00	0.91	0.00	0.00	61.00	5.01	1.96	0.00
11.00	1.20	0.02	0.00	62.00	5.01	1.96	0.00
12.00	2.39	0.37	0.06	63.00	5.01	1.96	0.00
13.00	3.81	1.14	0.03	64.00	5.01	1.96	0.00
14.00	4.10	1.33	0.01	65.00	5.01	1.96	0.00
15.00	4.28	1.45	0.01	66.00	5.01	1.96	0.00
16.00	4.41	1.54	0.01	67.00	5.01	1.96	0.00
17.00	4.52	1.62	0.01	68.00	5.01	1.96	0.00
18.00	4.61	1.68	0.00	69.00	5.01	1.96	0.00
19.00	4.69	1.74	0.00	70.00	5.01	1.96	0.00
20.00	4.76	1.79	0.00	71.00	5.01	1.96	0.00
21.00	4.83	1.84	0.00	72.00	5.01	1.96	0.00
22.00	4.90	1.88	0.00				
23.00	4.96	1.92	0.00				
24.00	5.01	1.96	0.00				
25.00	5.01	1.96	0.00				
26.00	5.01	1.96	0.00				
27.00	5.01	1.96	0.00				
28.00	5.01	1.96	0.00				
29.00	5.01	1.96	0.00				
30.00	5.01	1.96	0.00				
31.00	5.01	1.96	0.00				
32.00	5.01	1.96	0.00				
33.00	5.01	1.96	0.00				
34.00	5.01	1.96	0.00				
35.00	5.01	1.96	0.00				
36.00	5.01	1.96	0.00				
37.00	5.01	1.96	0.00				
38.00	5.01	1.96	0.00				
39.00	5.01	1.96	0.00				
40.00	5.01	1.96	0.00				
41.00	5.01	1.96	0.00				
42.00	5.01	1.96	0.00				
43.00	5.01	1.96	0.00				
44.00	5.01	1.96	0.00				
45.00	5.01	1.96	0.00				
46.00	5.01	1.96	0.00				
47.00	5.01	1.96	0.00				
48.00	5.01	1.96	0.00				
49.00	5.01	1.96	0.00				
50.00	5.01	1.96	0.00				

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10 Year Storm

NOAA 24-hr C 10-Year Rainfall=5.01"

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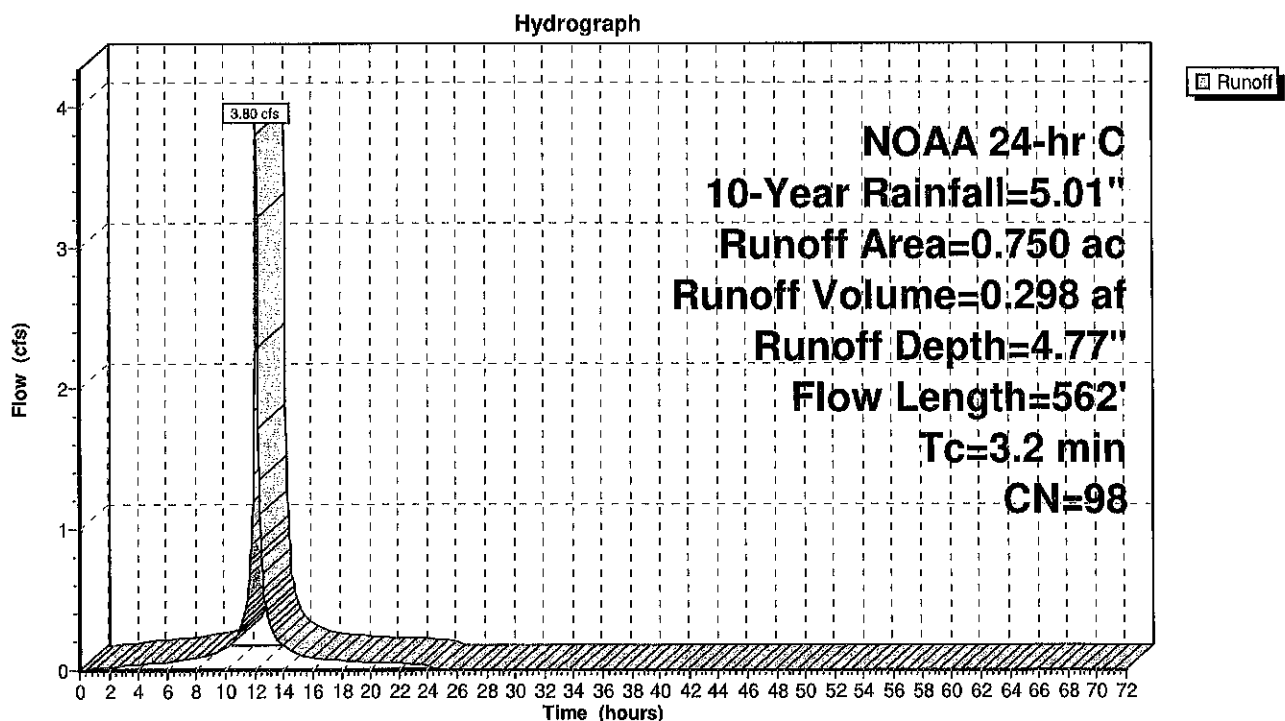
Summary for Subcatchment 30S: Drainage Area PR-6a (Impervious part of Drainage Area PR-6)

Runoff = 3.80 cfs @ 12.10 hrs, Volume= 0.298 af, Depth= 4.77"
 Routed to Pond 56P : Proposed Bioretention System #6

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
0.500	98	Paved parking, HSG B
0.250	98	Roofs, HSG B
0.750	98	Weighted Average
0.750	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0150	1.25		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
0.5	79	0.0150	2.49		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.4	383	0.0050	4.55	8.05	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
3.2	562	Total			

Subcatchment 30S: Drainage Area PR-6a (Impervious part of Drainage Area PR-6)

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Hydrograph for Subcatchment 30S: Drainage Area PR-6a (Impervious part of Drainage Area PR-6)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	5.01	4.77	0.00
1.00	0.05	0.00	0.00	52.00	5.01	4.77	0.00
2.00	0.11	0.02	0.02	53.00	5.01	4.77	0.00
3.00	0.18	0.05	0.03	54.00	5.01	4.77	0.00
4.00	0.25	0.10	0.04	55.00	5.01	4.77	0.00
5.00	0.32	0.16	0.05	56.00	5.01	4.77	0.00
6.00	0.40	0.23	0.05	57.00	5.01	4.77	0.00
7.00	0.49	0.31	0.07	58.00	5.01	4.77	0.00
8.00	0.60	0.41	0.08	59.00	5.01	4.77	0.00
9.00	0.73	0.53	0.10	60.00	5.01	4.77	0.00
10.00	0.91	0.71	0.16	61.00	5.01	4.77	0.00
11.00	1.20	0.99	0.29	62.00	5.01	4.77	0.00
12.00	2.39	2.16	2.30	63.00	5.01	4.77	0.00
13.00	3.81	3.57	0.35	64.00	5.01	4.77	0.00
14.00	4.10	3.86	0.17	65.00	5.01	4.77	0.00
15.00	4.28	4.04	0.11	66.00	5.01	4.77	0.00
16.00	4.41	4.17	0.09	67.00	5.01	4.77	0.00
17.00	4.52	4.29	0.08	68.00	5.01	4.77	0.00
18.00	4.61	4.38	0.06	69.00	5.01	4.77	0.00
19.00	4.69	4.46	0.06	70.00	5.01	4.77	0.00
20.00	4.76	4.53	0.05	71.00	5.01	4.77	0.00
21.00	4.83	4.60	0.05	72.00	5.01	4.77	0.00
22.00	4.90	4.66	0.05				
23.00	4.96	4.72	0.04				
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				

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10 Year Storm
NOAA 24-hr C 10-Year Rainfall=5.01"

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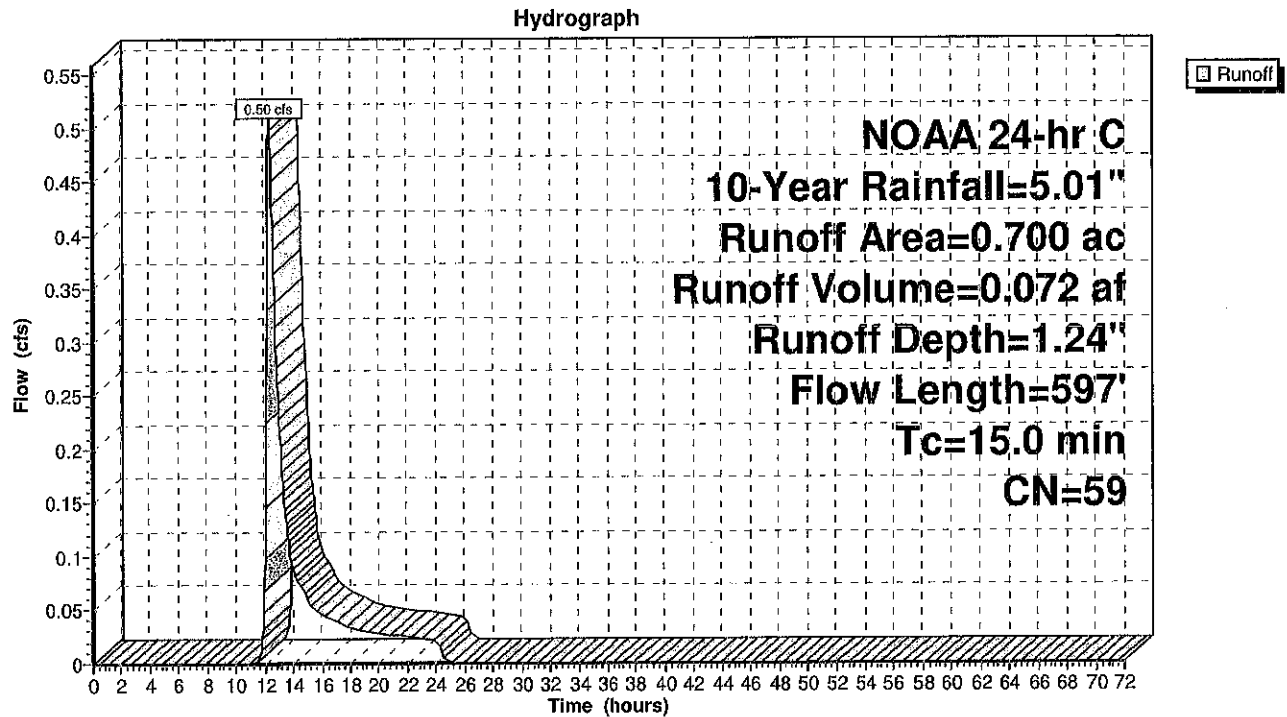
Summary for Subcatchment 31S: Drainage Area PR-6b (Pervious part of Drainage Area PR-6)

Runoff = 0.50 cfs @ 12.30 hrs, Volume= 0.072 af, Depth= 1.24"
 Routed to Pond 56P : Proposed Bioretention System #6

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
0.020	74	>75% Grass cover, Good, HSG C
0.460	61	>75% Grass cover, Good, HSG B
0.220	55	Woods, Good, HSG B
0.700	59	Weighted Average
0.700	59	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	23	0.0050	0.03		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.35"
0.2	12	0.0300	1.21		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
2.1	179	0.0050	1.44		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.4	383	0.0050	4.55	8.05	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
15.0	597	Total			

Subcatchment 31S: Drainage Area PR-6b (Pervious part of Drainage Area PR-6)

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Hydrograph for Subcatchment 31S: Drainage Area PR-6b (Pervious part of Drainage Area PR-6)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	5.01	1.24	0.00
1.00	0.05	0.00	0.00	52.00	5.01	1.24	0.00
2.00	0.11	0.00	0.00	53.00	5.01	1.24	0.00
3.00	0.18	0.00	0.00	54.00	5.01	1.24	0.00
4.00	0.25	0.00	0.00	55.00	5.01	1.24	0.00
5.00	0.32	0.00	0.00	56.00	5.01	1.24	0.00
6.00	0.40	0.00	0.00	57.00	5.01	1.24	0.00
7.00	0.49	0.00	0.00	58.00	5.01	1.24	0.00
8.00	0.60	0.00	0.00	59.00	5.01	1.24	0.00
9.00	0.73	0.00	0.00	60.00	5.01	1.24	0.00
10.00	0.91	0.00	0.00	61.00	5.01	1.24	0.00
11.00	1.20	0.00	0.00	62.00	5.01	1.24	0.00
12.00	2.39	0.13	0.10	63.00	5.01	1.24	0.00
13.00	3.81	0.62	0.23	64.00	5.01	1.24	0.00
14.00	4.10	0.76	0.09	65.00	5.01	1.24	0.00
15.00	4.28	0.85	0.06	66.00	5.01	1.24	0.00
16.00	4.41	0.91	0.05	67.00	5.01	1.24	0.00
17.00	4.52	0.97	0.04	68.00	5.01	1.24	0.00
18.00	4.61	1.02	0.03	69.00	5.01	1.24	0.00
19.00	4.69	1.06	0.03	70.00	5.01	1.24	0.00
20.00	4.76	1.10	0.03	71.00	5.01	1.24	0.00
21.00	4.83	1.14	0.03	72.00	5.01	1.24	0.00
22.00	4.90	1.18	0.02				
23.00	4.96	1.21	0.02				
24.00	5.01	1.24	0.02				
25.00	5.01	1.24	0.00				
26.00	5.01	1.24	0.00				
27.00	5.01	1.24	0.00				
28.00	5.01	1.24	0.00				
29.00	5.01	1.24	0.00				
30.00	5.01	1.24	0.00				
31.00	5.01	1.24	0.00				
32.00	5.01	1.24	0.00				
33.00	5.01	1.24	0.00				
34.00	5.01	1.24	0.00				
35.00	5.01	1.24	0.00				
36.00	5.01	1.24	0.00				
37.00	5.01	1.24	0.00				
38.00	5.01	1.24	0.00				
39.00	5.01	1.24	0.00				
40.00	5.01	1.24	0.00				
41.00	5.01	1.24	0.00				
42.00	5.01	1.24	0.00				
43.00	5.01	1.24	0.00				
44.00	5.01	1.24	0.00				
45.00	5.01	1.24	0.00				
46.00	5.01	1.24	0.00				
47.00	5.01	1.24	0.00				
48.00	5.01	1.24	0.00				
49.00	5.01	1.24	0.00				
50.00	5.01	1.24	0.00				

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Summary for Subcatchment 32S: Drainage Area PR-7a (Impervious part of Drainage Area PR-7)

Runoff = 0.68 cfs @ 12.11 hrs, Volume= 0.056 af, Depth= 4.77"
 Routed to Link 64L : Drainage Area PR-7 (Undetained Runoff in pipes to P.O.I. "A")

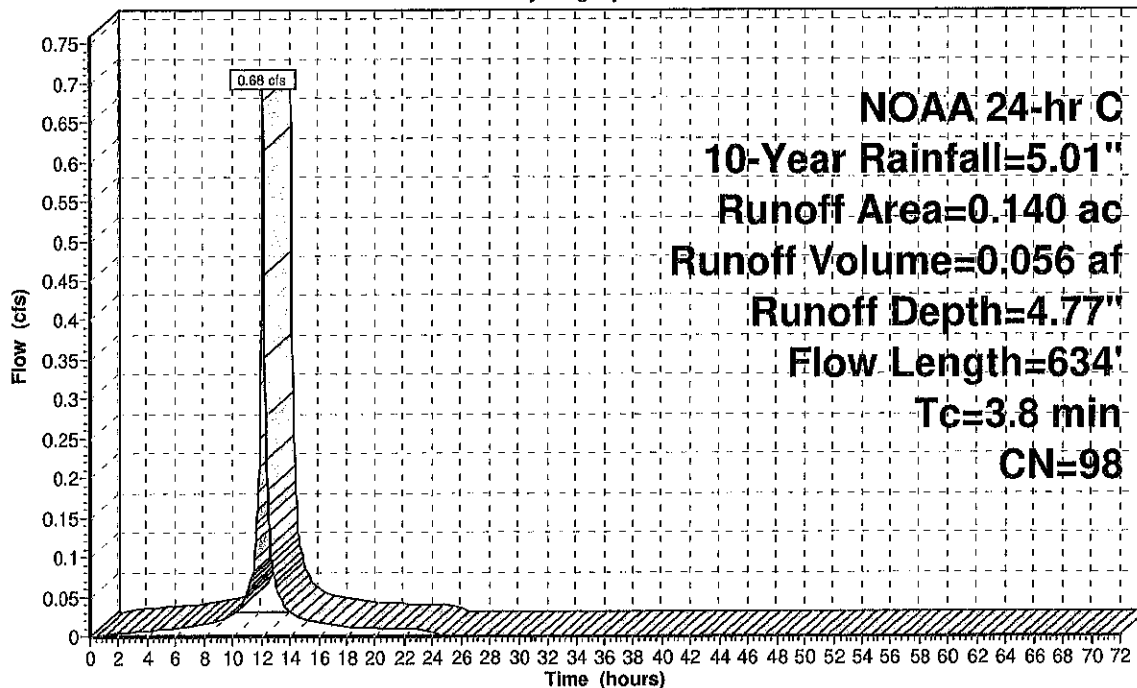
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 10-Year Rainfall=5.01"

Area (ac)	CN	Description
0.140	98	Paved parking, HSG C
0.140	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	30	0.0050	0.64		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
1.0	122	0.0100	2.03		Shallow Concentrated Flow, Paved Kv= 20.3 fps
2.0	482	0.0050	4.03	4.95	Pipe Channel, CMP_Round 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
3.8	634	Total			

Subcatchment 32S: Drainage Area PR-7a (Impervious part of Drainage Area PR-7)

Hydrograph



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Hydrograph for Subcatchment 32S: Drainage Area PR-7a (Impervious part of Drainage Area PR-7)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	5.01	4.77	0.00
1.00	0.05	0.00	0.00	52.00	5.01	4.77	0.00
2.00	0.11	0.02	0.00	53.00	5.01	4.77	0.00
3.00	0.18	0.05	0.01	54.00	5.01	4.77	0.00
4.00	0.25	0.10	0.01	55.00	5.01	4.77	0.00
5.00	0.32	0.16	0.01	56.00	5.01	4.77	0.00
6.00	0.40	0.23	0.01	57.00	5.01	4.77	0.00
7.00	0.49	0.31	0.01	58.00	5.01	4.77	0.00
8.00	0.60	0.41	0.02	59.00	5.01	4.77	0.00
9.00	0.73	0.53	0.02	60.00	5.01	4.77	0.00
10.00	0.91	0.71	0.03	61.00	5.01	4.77	0.00
11.00	1.20	0.99	0.05	62.00	5.01	4.77	0.00
12.00	2.39	2.16	0.41	63.00	5.01	4.77	0.00
13.00	3.81	3.57	0.07	64.00	5.01	4.77	0.00
14.00	4.10	3.86	0.03	65.00	5.01	4.77	0.00
15.00	4.28	4.04	0.02	66.00	5.01	4.77	0.00
16.00	4.41	4.17	0.02	67.00	5.01	4.77	0.00
17.00	4.52	4.29	0.01	68.00	5.01	4.77	0.00
18.00	4.61	4.38	0.01	69.00	5.01	4.77	0.00
19.00	4.69	4.46	0.01	70.00	5.01	4.77	0.00
20.00	4.76	4.53	0.01	71.00	5.01	4.77	0.00
21.00	4.83	4.60	0.01	72.00	5.01	4.77	0.00
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				

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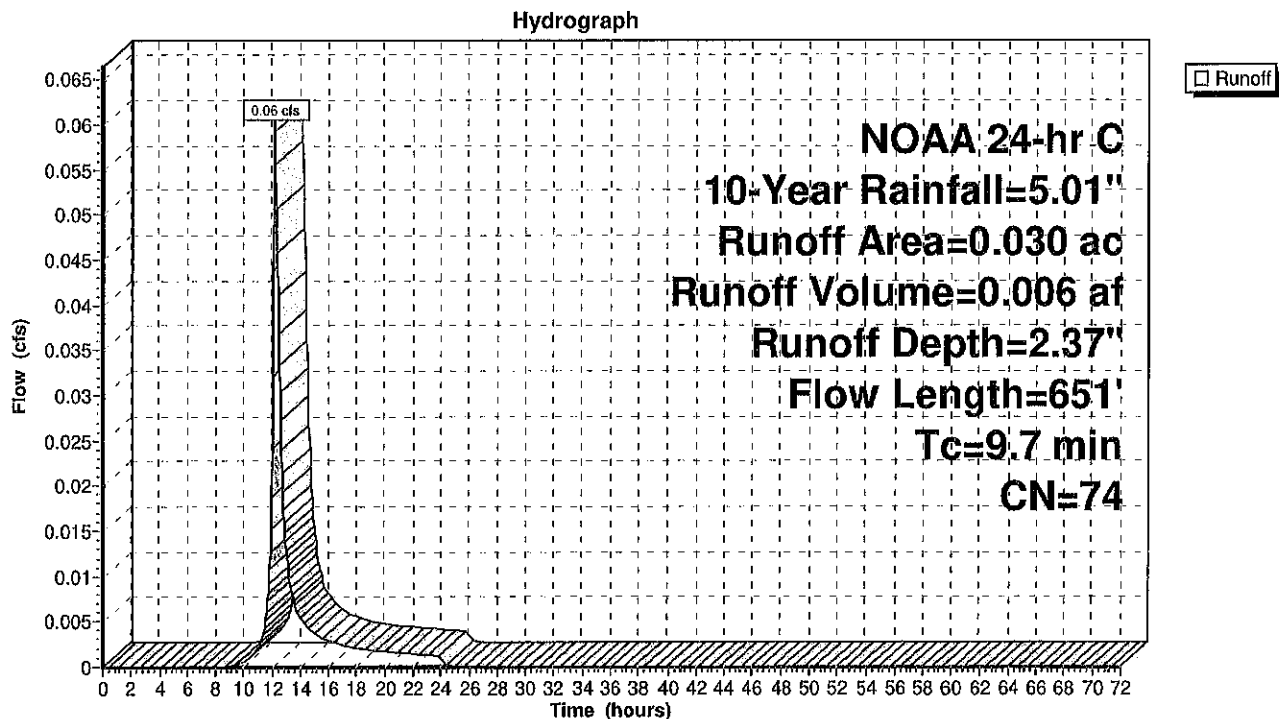
Summary for Subcatchment 33S: Drainage Area PR-7b (Pervious part of Drainage Area PR-7)

Runoff = 0.06 cfs @ 12.20 hrs, Volume= 0.006 af, Depth= 2.37"
 Routed to Link 64L : Drainage Area PR-7 (Undetained Runoff in pipes to P.O.I. "A")

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	74	>75% Grass cover, Good, HSG C
0.030	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	17	0.0050	0.05		Sheet Flow, Grass: Dense n= 0.240 P2= 3.35"
0.8	30	0.0050	0.64		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
1.0	122	0.0100	2.03		Shallow Concentrated Flow, Paved Kv= 20.3 fps
2.0	482	0.0050	4.03	4.95	Pipe Channel, CMP_Round 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
9.7	651	Total			

Subcatchment 33S: Drainage Area PR-7b (Pervious part of Drainage Area PR-7)

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NOAA 24-hr C 10-Year Rainfall=5.01"

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Hydrograph for Subcatchment 33S: Drainage Area PR-7b (Pervious part of Drainage Area PR-7)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	5.01	2.37	0.00
1.00	0.05	0.00	0.00	52.00	5.01	2.37	0.00
2.00	0.11	0.00	0.00	53.00	5.01	2.37	0.00
3.00	0.18	0.00	0.00	54.00	5.01	2.37	0.00
4.00	0.25	0.00	0.00	55.00	5.01	2.37	0.00
5.00	0.32	0.00	0.00	56.00	5.01	2.37	0.00
6.00	0.40	0.00	0.00	57.00	5.01	2.37	0.00
7.00	0.49	0.00	0.00	58.00	5.01	2.37	0.00
8.00	0.60	0.00	0.00	59.00	5.01	2.37	0.00
9.00	0.73	0.00	0.00	60.00	5.01	2.37	0.00
10.00	0.91	0.01	0.00	61.00	5.01	2.37	0.00
11.00	1.20	0.06	0.00	62.00	5.01	2.37	0.00
12.00	2.39	0.55	0.02	63.00	5.01	2.37	0.00
13.00	3.81	1.46	0.01	64.00	5.01	2.37	0.00
14.00	4.10	1.67	0.01	65.00	5.01	2.37	0.00
15.00	4.28	1.80	0.00	66.00	5.01	2.37	0.00
16.00	4.41	1.90	0.00	67.00	5.01	2.37	0.00
17.00	4.52	1.99	0.00	68.00	5.01	2.37	0.00
18.00	4.61	2.06	0.00	69.00	5.01	2.37	0.00
19.00	4.69	2.12	0.00	70.00	5.01	2.37	0.00
20.00	4.76	2.18	0.00	71.00	5.01	2.37	0.00
21.00	4.83	2.23	0.00	72.00	5.01	2.37	0.00
22.00	4.90	2.28	0.00				
23.00	4.96	2.33	0.00				
24.00	5.01	2.37	0.00				
25.00	5.01	2.37	0.00				
26.00	5.01	2.37	0.00				
27.00	5.01	2.37	0.00				
28.00	5.01	2.37	0.00				
29.00	5.01	2.37	0.00				
30.00	5.01	2.37	0.00				
31.00	5.01	2.37	0.00				
32.00	5.01	2.37	0.00				
33.00	5.01	2.37	0.00				
34.00	5.01	2.37	0.00				
35.00	5.01	2.37	0.00				
36.00	5.01	2.37	0.00				
37.00	5.01	2.37	0.00				
38.00	5.01	2.37	0.00				
39.00	5.01	2.37	0.00				
40.00	5.01	2.37	0.00				
41.00	5.01	2.37	0.00				
42.00	5.01	2.37	0.00				
43.00	5.01	2.37	0.00				
44.00	5.01	2.37	0.00				
45.00	5.01	2.37	0.00				
46.00	5.01	2.37	0.00				
47.00	5.01	2.37	0.00				
48.00	5.01	2.37	0.00				
49.00	5.01	2.37	0.00				
50.00	5.01	2.37	0.00				

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10 Year Storm

NOAA 24-hr C 10-Year Rainfall=5.01"

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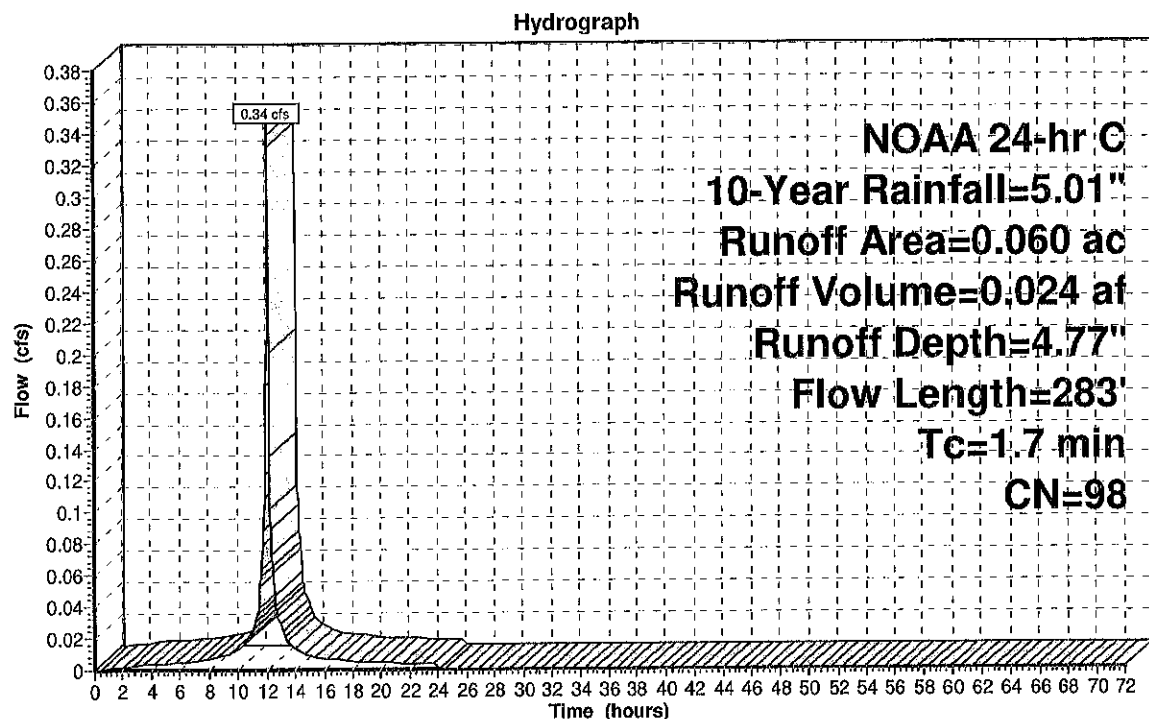
Summary for Subcatchment 34S: Drainage Area PR-8a (Impervious part of Drainage Area PR-8)

Runoff = 0.34 cfs @ 12.08 hrs, Volume= 0.024 af, Depth= 4.77"
Routed to Link 65L : Drainage Area PR-8 (Overland Runoff to P.O.I. "A")

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
0.060	98	Paved parking, HSG C
0.060	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	17	0.0400	1.30		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
1.5	266	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.7	283	Total			

Subcatchment 34S: Drainage Area PR-8a (Impervious part of Drainage Area PR-8)

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Hydrograph for Subcatchment 34S: Drainage Area PR-8a (Impervious part of Drainage Area PR-8)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	5.01	4.77	0.00
1.00	0.05	0.00	0.00	52.00	5.01	4.77	0.00
2.00	0.11	0.02	0.00	53.00	5.01	4.77	0.00
3.00	0.18	0.05	0.00	54.00	5.01	4.77	0.00
4.00	0.25	0.10	0.00	55.00	5.01	4.77	0.00
5.00	0.32	0.16	0.00	56.00	5.01	4.77	0.00
6.00	0.40	0.23	0.00	57.00	5.01	4.77	0.00
7.00	0.49	0.31	0.01	58.00	5.01	4.77	0.00
8.00	0.60	0.41	0.01	59.00	5.01	4.77	0.00
9.00	0.73	0.53	0.01	60.00	5.01	4.77	0.00
10.00	0.91	0.71	0.01	61.00	5.01	4.77	0.00
11.00	1.20	0.99	0.02	62.00	5.01	4.77	0.00
12.00	2.39	2.16	0.21	63.00	5.01	4.77	0.00
13.00	3.81	3.57	0.03	64.00	5.01	4.77	0.00
14.00	4.10	3.86	0.01	65.00	5.01	4.77	0.00
15.00	4.28	4.04	0.01	66.00	5.01	4.77	0.00
16.00	4.41	4.17	0.01	67.00	5.01	4.77	0.00
17.00	4.52	4.29	0.01	68.00	5.01	4.77	0.00
18.00	4.61	4.38	0.00	69.00	5.01	4.77	0.00
19.00	4.69	4.46	0.00	70.00	5.01	4.77	0.00
20.00	4.76	4.53	0.00	71.00	5.01	4.77	0.00
21.00	4.83	4.60	0.00	72.00	5.01	4.77	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				

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10 Year Storm

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Summary for Subcatchment 35S: Drainage Area PR-8b (Pervious part of Drainage Area PR-8)

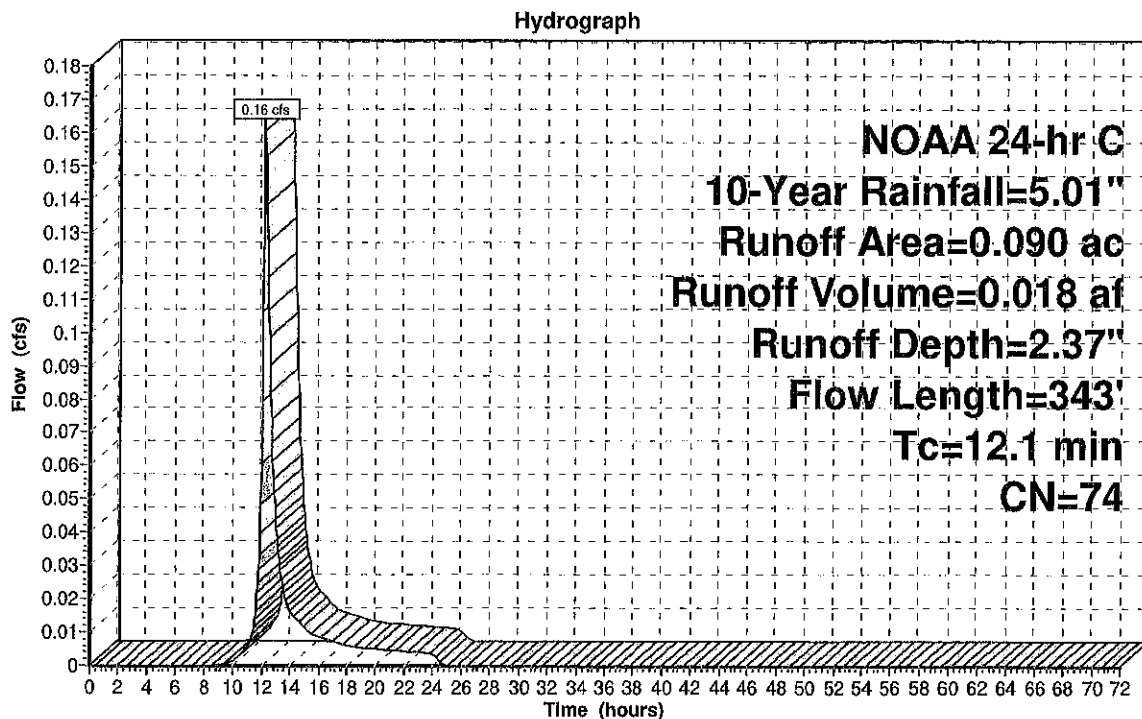
Runoff = 0.16 cfs @ 12.22 hrs, Volume= 0.018 af, Depth= 2.37"

Routed to Link 65L : Drainage Area PR-8 (Overland Runoff to P.O.I. "A")

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
0.090	74	>75% Grass cover, Good, HSG C
0.090	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	49	0.0100	0.08		Sheet Flow, Grass: Dense n= 0.240 P2= 3.35"
1.7	294	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
12.1	343	Total			

Subcatchment 35S: Drainage Area PR-8b (Pervious part of Drainage Area PR-8)

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Hydrograph for Subcatchment 35S: Drainage Area PR-8b (Pervious part of Drainage Area PR-8)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	5.01	2.37	0.00
1.00	0.05	0.00	0.00	52.00	5.01	2.37	0.00
2.00	0.11	0.00	0.00	53.00	5.01	2.37	0.00
3.00	0.18	0.00	0.00	54.00	5.01	2.37	0.00
4.00	0.25	0.00	0.00	55.00	5.01	2.37	0.00
5.00	0.32	0.00	0.00	56.00	5.01	2.37	0.00
6.00	0.40	0.00	0.00	57.00	5.01	2.37	0.00
7.00	0.49	0.00	0.00	58.00	5.01	2.37	0.00
8.00	0.60	0.00	0.00	59.00	5.01	2.37	0.00
9.00	0.73	0.00	0.00	60.00	5.01	2.37	0.00
10.00	0.91	0.01	0.00	61.00	5.01	2.37	0.00
11.00	1.20	0.06	0.01	62.00	5.01	2.37	0.00
12.00	2.39	0.55	0.06	63.00	5.01	2.37	0.00
13.00	3.81	1.46	0.04	64.00	5.01	2.37	0.00
14.00	4.10	1.67	0.02	65.00	5.01	2.37	0.00
15.00	4.28	1.80	0.01	66.00	5.01	2.37	0.00
16.00	4.41	1.90	0.01	67.00	5.01	2.37	0.00
17.00	4.52	1.99	0.01	68.00	5.01	2.37	0.00
18.00	4.61	2.06	0.01	69.00	5.01	2.37	0.00
19.00	4.69	2.12	0.01	70.00	5.01	2.37	0.00
20.00	4.76	2.18	0.01	71.00	5.01	2.37	0.00
21.00	4.83	2.23	0.00	72.00	5.01	2.37	0.00
22.00	4.90	2.28	0.00				
23.00	4.96	2.33	0.00				
24.00	5.01	2.37	0.00				
25.00	5.01	2.37	0.00				
26.00	5.01	2.37	0.00				
27.00	5.01	2.37	0.00				
28.00	5.01	2.37	0.00				
29.00	5.01	2.37	0.00				
30.00	5.01	2.37	0.00				
31.00	5.01	2.37	0.00				
32.00	5.01	2.37	0.00				
33.00	5.01	2.37	0.00				
34.00	5.01	2.37	0.00				
35.00	5.01	2.37	0.00				
36.00	5.01	2.37	0.00				
37.00	5.01	2.37	0.00				
38.00	5.01	2.37	0.00				
39.00	5.01	2.37	0.00				
40.00	5.01	2.37	0.00				
41.00	5.01	2.37	0.00				
42.00	5.01	2.37	0.00				
43.00	5.01	2.37	0.00				
44.00	5.01	2.37	0.00				
45.00	5.01	2.37	0.00				
46.00	5.01	2.37	0.00				
47.00	5.01	2.37	0.00				
48.00	5.01	2.37	0.00				
49.00	5.01	2.37	0.00				
50.00	5.01	2.37	0.00				

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10 Year Storm

NOAA 24-hr C 10-Year Rainfall=5.01"

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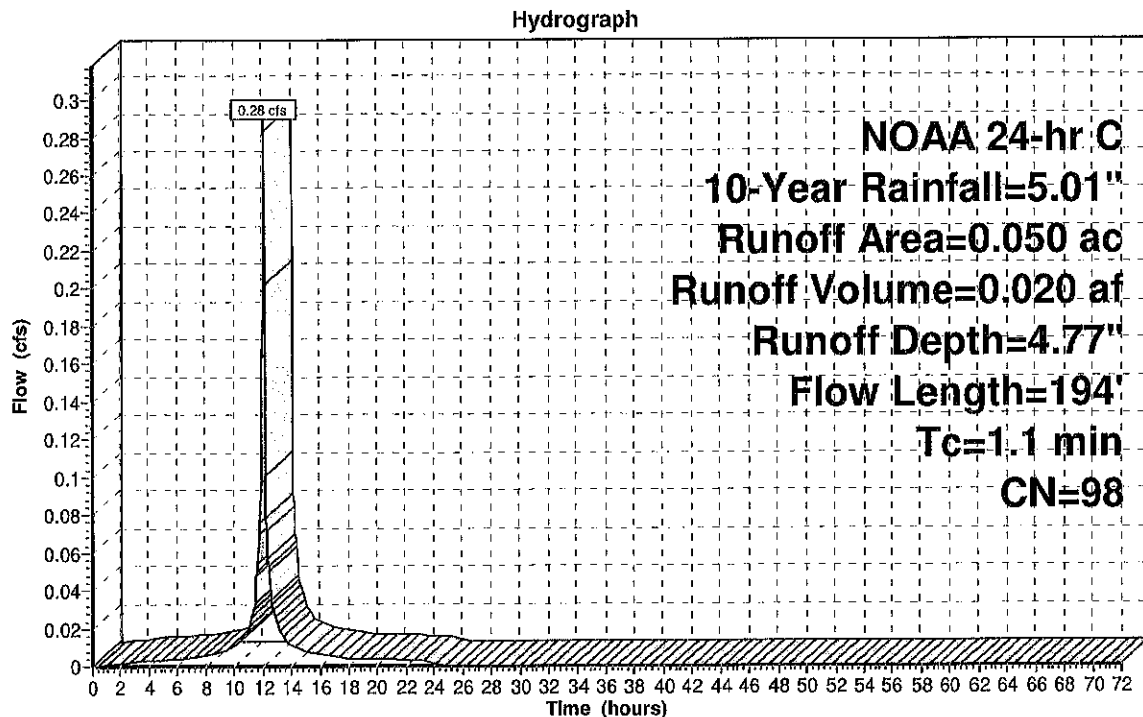
Summary for Subcatchment 36S: Drainage Area PR-9a (Impervious part of Drainage Area PR-9)

Runoff = 0.28 cfs @ 12.07 hrs, Volume= 0.020 af, Depth= 4.77"
 Routed to Link 63L : Drainage Area PR-10 (Overland Runoff to P.O.I. "B")

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	98	Paved parking, HSG C
0.050	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	18	0.0250	1.09		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
0.8	176	0.0340	3.74		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.1	194	Total			

Subcatchment 36S: Drainage Area PR-9a (Impervious part of Drainage Area PR-9)

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Hydrograph for Subcatchment 36S: Drainage Area PR-9a (Impervious part of Drainage Area PR-9)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	5.01	4.77	0.00
1.00	0.05	0.00	0.00	52.00	5.01	4.77	0.00
2.00	0.11	0.02	0.00	53.00	5.01	4.77	0.00
3.00	0.18	0.05	0.00	54.00	5.01	4.77	0.00
4.00	0.25	0.10	0.00	55.00	5.01	4.77	0.00
5.00	0.32	0.16	0.00	56.00	5.01	4.77	0.00
6.00	0.40	0.23	0.00	57.00	5.01	4.77	0.00
7.00	0.49	0.31	0.00	58.00	5.01	4.77	0.00
8.00	0.60	0.41	0.01	59.00	5.01	4.77	0.00
9.00	0.73	0.53	0.01	60.00	5.01	4.77	0.00
10.00	0.91	0.71	0.01	61.00	5.01	4.77	0.00
11.00	1.20	0.99	0.02	62.00	5.01	4.77	0.00
12.00	2.39	2.16	0.19	63.00	5.01	4.77	0.00
13.00	3.81	3.57	0.02	64.00	5.01	4.77	0.00
14.00	4.10	3.86	0.01	65.00	5.01	4.77	0.00
15.00	4.28	4.04	0.01	66.00	5.01	4.77	0.00
16.00	4.41	4.17	0.01	67.00	5.01	4.77	0.00
17.00	4.52	4.29	0.01	68.00	5.01	4.77	0.00
18.00	4.61	4.38	0.00	69.00	5.01	4.77	0.00
19.00	4.69	4.46	0.00	70.00	5.01	4.77	0.00
20.00	4.76	4.53	0.00	71.00	5.01	4.77	0.00
21.00	4.83	4.60	0.00	72.00	5.01	4.77	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				

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10 Year Storm
NOAA 24-hr C 10-Year Rainfall=5.01"

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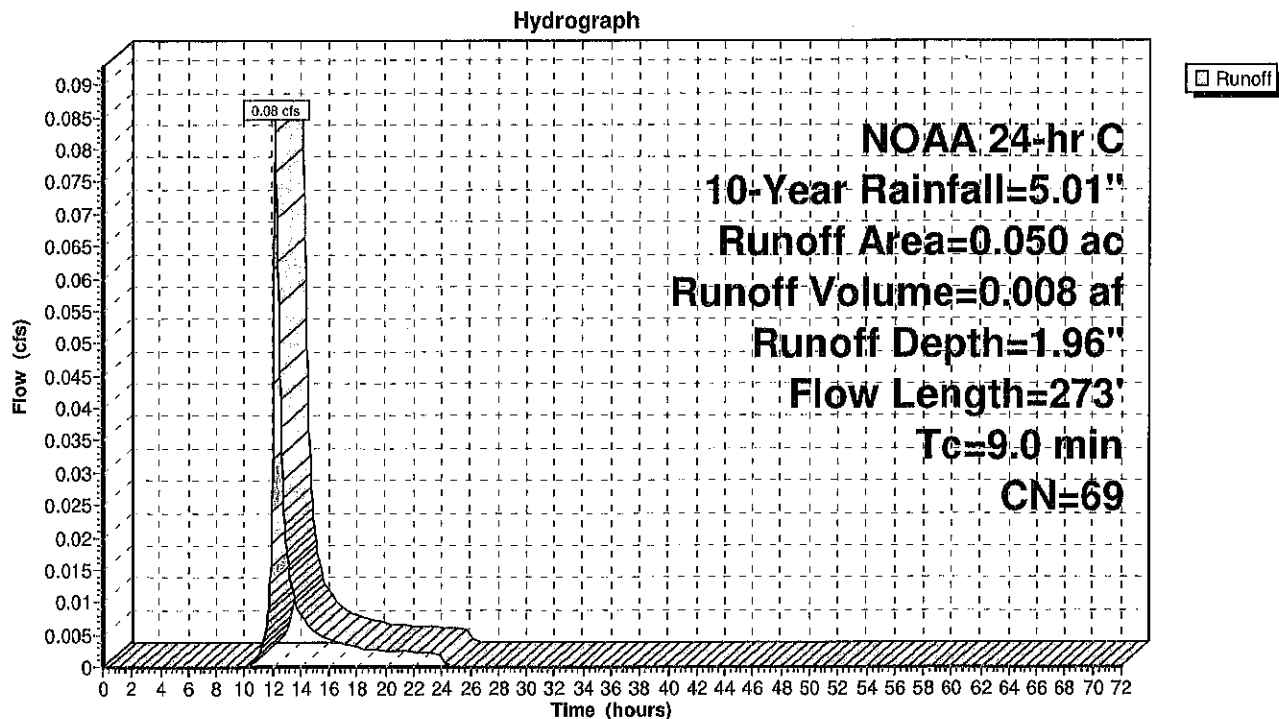
Summary for Subcatchment 37S: Drainage Area PR-9b (Pervious part of Drainage Area PR-9)

Runoff = 0.08 cfs @ 12.19 hrs, Volume= 0.008 af, Depth= 1.96"
 Routed to Link 63L : Drainage Area PR-10 (Overland Runoff to P.O.I. "B")

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
0.020	61	>75% Grass cover, Good, HSG B
0.030	74	>75% Grass cover, Good, HSG C
0.050	69	Weighted Average
0.050	69	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	18	0.0030	0.04		Sheet Flow, Grass: Dense n= 0.240 P2= 3.35"
0.2	6	0.0050	0.46		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
1.2	249	0.0280	3.40		Shallow Concentrated Flow, Paved Kv= 20.3 fps
9.0	273	Total			

Subcatchment 37S: Drainage Area PR-9b (Pervious part of Drainage Area PR-9)

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10 Year Storm

NOAA 24-hr C 10-Year Rainfall=5.01"

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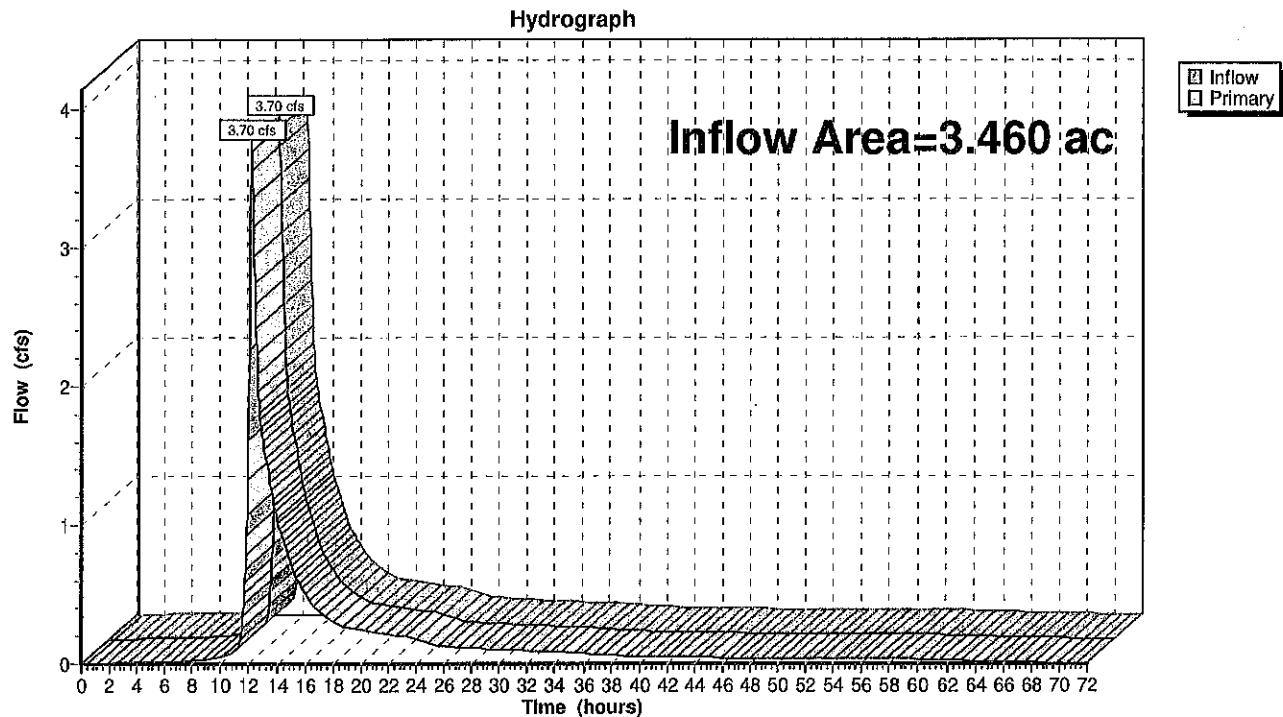
Hydrograph for Subcatchment 37S: Drainage Area PR-9b (Pervious part of Drainage Area PR-9)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	5.01	1.96	0.00
1.00	0.05	0.00	0.00	52.00	5.01	1.96	0.00
2.00	0.11	0.00	0.00	53.00	5.01	1.96	0.00
3.00	0.18	0.00	0.00	54.00	5.01	1.96	0.00
4.00	0.25	0.00	0.00	55.00	5.01	1.96	0.00
5.00	0.32	0.00	0.00	56.00	5.01	1.96	0.00
6.00	0.40	0.00	0.00	57.00	5.01	1.96	0.00
7.00	0.49	0.00	0.00	58.00	5.01	1.96	0.00
8.00	0.60	0.00	0.00	59.00	5.01	1.96	0.00
9.00	0.73	0.00	0.00	60.00	5.01	1.96	0.00
10.00	0.91	0.00	0.00	61.00	5.01	1.96	0.00
11.00	1.20	0.02	0.00	62.00	5.01	1.96	0.00
12.00	2.39	0.37	0.03	63.00	5.01	1.96	0.00
13.00	3.81	1.14	0.02	64.00	5.01	1.96	0.00
14.00	4.10	1.33	0.01	65.00	5.01	1.96	0.00
15.00	4.28	1.45	0.01	66.00	5.01	1.96	0.00
16.00	4.41	1.54	0.00	67.00	5.01	1.96	0.00
17.00	4.52	1.62	0.00	68.00	5.01	1.96	0.00
18.00	4.61	1.68	0.00	69.00	5.01	1.96	0.00
19.00	4.69	1.74	0.00	70.00	5.01	1.96	0.00
20.00	4.76	1.79	0.00	71.00	5.01	1.96	0.00
21.00	4.83	1.84	0.00	72.00	5.01	1.96	0.00
22.00	4.90	1.88	0.00				
23.00	4.96	1.92	0.00				
24.00	5.01	1.96	0.00				
25.00	5.01	1.96	0.00				
26.00	5.01	1.96	0.00				
27.00	5.01	1.96	0.00				
28.00	5.01	1.96	0.00				
29.00	5.01	1.96	0.00				
30.00	5.01	1.96	0.00				
31.00	5.01	1.96	0.00				
32.00	5.01	1.96	0.00				
33.00	5.01	1.96	0.00				
34.00	5.01	1.96	0.00				
35.00	5.01	1.96	0.00				
36.00	5.01	1.96	0.00				
37.00	5.01	1.96	0.00				
38.00	5.01	1.96	0.00				
39.00	5.01	1.96	0.00				
40.00	5.01	1.96	0.00				
41.00	5.01	1.96	0.00				
42.00	5.01	1.96	0.00				
43.00	5.01	1.96	0.00				
44.00	5.01	1.96	0.00				
45.00	5.01	1.96	0.00				
46.00	5.01	1.96	0.00				
47.00	5.01	1.96	0.00				
48.00	5.01	1.96	0.00				
49.00	5.01	1.96	0.00				
50.00	5.01	1.96	0.00				

Summary for Link 61L: Total to P.O.I. "A"

Inflow Area = 3.460 ac, 66.47% Impervious, Inflow Depth > 3.05" for 10-Year event
Inflow = 3.70 cfs @ 12.19 hrs, Volume= 0.880 af
Primary = 3.70 cfs @ 12.19 hrs, Volume= 0.880 af, Atten= 0%, Lag= 0.0 min

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

Link 61L: Total to P.O.I. "A"

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10 Year Storm
NOAA 24-hr C 10-Year Rainfall=5.01"

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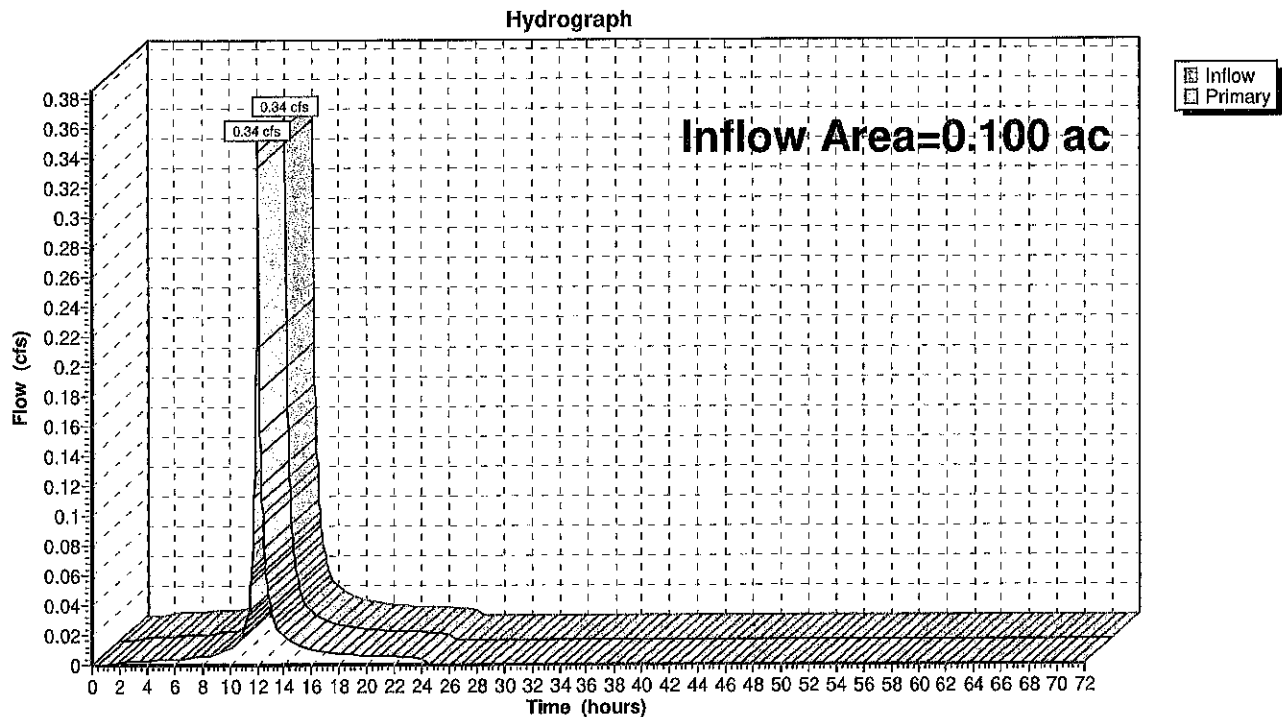
Hydrograph for Link 61L: Total to P.O.I. "A"

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.04	0.00	0.04
1.00	0.00	0.00	0.00	52.00	0.04	0.00	0.04
2.00	0.01	0.00	0.01	53.00	0.04	0.00	0.04
3.00	0.01	0.00	0.01	54.00	0.04	0.00	0.04
4.00	0.01	0.00	0.01	55.00	0.04	0.00	0.04
5.00	0.01	0.00	0.01	56.00	0.03	0.00	0.03
6.00	0.01	0.00	0.01	57.00	0.03	0.00	0.03
7.00	0.02	0.00	0.02	58.00	0.03	0.00	0.03
8.00	0.02	0.00	0.02	59.00	0.03	0.00	0.03
9.00	0.03	0.00	0.03	60.00	0.03	0.00	0.03
10.00	0.04	0.00	0.04	61.00	0.03	0.00	0.03
11.00	0.08	0.00	0.08	62.00	0.03	0.00	0.03
12.00	1.61	0.00	1.61	63.00	0.02	0.00	0.02
13.00	1.63	0.00	1.63	64.00	0.02	0.00	0.02
14.00	1.07	0.00	1.07	65.00	0.01	0.00	0.01
15.00	0.72	0.00	0.72	66.00	0.01	0.00	0.01
16.00	0.50	0.00	0.50	67.00	0.01	0.00	0.01
17.00	0.38	0.00	0.38	68.00	0.01	0.00	0.01
18.00	0.31	0.00	0.31	69.00	0.01	0.00	0.01
19.00	0.26	0.00	0.26	70.00	0.00	0.00	0.00
20.00	0.24	0.00	0.24	71.00	0.00	0.00	0.00
21.00	0.23	0.00	0.23	72.00	0.00	0.00	0.00
22.00	0.22	0.00	0.22				
23.00	0.20	0.00	0.20				
24.00	0.20	0.00	0.20				
25.00	0.14	0.00	0.14				
26.00	0.13	0.00	0.13				
27.00	0.12	0.00	0.12				
28.00	0.11	0.00	0.11				
29.00	0.11	0.00	0.11				
30.00	0.10	0.00	0.10				
31.00	0.10	0.00	0.10				
32.00	0.10	0.00	0.10				
33.00	0.09	0.00	0.09				
34.00	0.09	0.00	0.09				
35.00	0.09	0.00	0.09				
36.00	0.07	0.00	0.07				
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	0.05	0.00	0.05				
41.00	0.05	0.00	0.05				
42.00	0.05	0.00	0.05				
43.00	0.05	0.00	0.05				
44.00	0.05	0.00	0.05				
45.00	0.04	0.00	0.04				
46.00	0.04	0.00	0.04				
47.00	0.04	0.00	0.04				
48.00	0.04	0.00	0.04				
49.00	0.04	0.00	0.04				
50.00	0.04	0.00	0.04				

Summary for Link 62L: Total to P.O.I. "B"

Inflow Area = 0.100 ac, 50.00% Impervious, Inflow Depth = 3.37" for 10-Year event
Inflow = 0.34 cfs @ 12.08 hrs, Volume= 0.028 af
Primary = 0.34 cfs @ 12.08 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min

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

Link 62L: Total to P.O.I. "B"

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10 Year Storm

NOAA 24-hr C 10-Year Rainfall=5.01"

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Hydrograph for Link 62L: Total to P.O.I. "B"

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	56.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	57.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	58.00	0.00	0.00	0.00
8.00	0.01	0.00	0.01	59.00	0.00	0.00	0.00
9.00	0.01	0.00	0.01	60.00	0.00	0.00	0.00
10.00	0.01	0.00	0.01	61.00	0.00	0.00	0.00
11.00	0.02	0.00	0.02	62.00	0.00	0.00	0.00
12.00	0.22	0.00	0.22	63.00	0.00	0.00	0.00
13.00	0.04	0.00	0.04	64.00	0.00	0.00	0.00
14.00	0.02	0.00	0.02	65.00	0.00	0.00	0.00
15.00	0.01	0.00	0.01	66.00	0.00	0.00	0.00
16.00	0.01	0.00	0.01	67.00	0.00	0.00	0.00
17.00	0.01	0.00	0.01	68.00	0.00	0.00	0.00
18.00	0.01	0.00	0.01	69.00	0.00	0.00	0.00
19.00	0.01	0.00	0.01	70.00	0.00	0.00	0.00
20.00	0.01	0.00	0.01	71.00	0.00	0.00	0.00
21.00	0.01	0.00	0.01	72.00	0.00	0.00	0.00
22.00	0.01	0.00	0.01				
23.00	0.00	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				

100 YEAR STORM

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100 Year Storm
NOAA 24-hr C 100-Year Rainfall=8.33"

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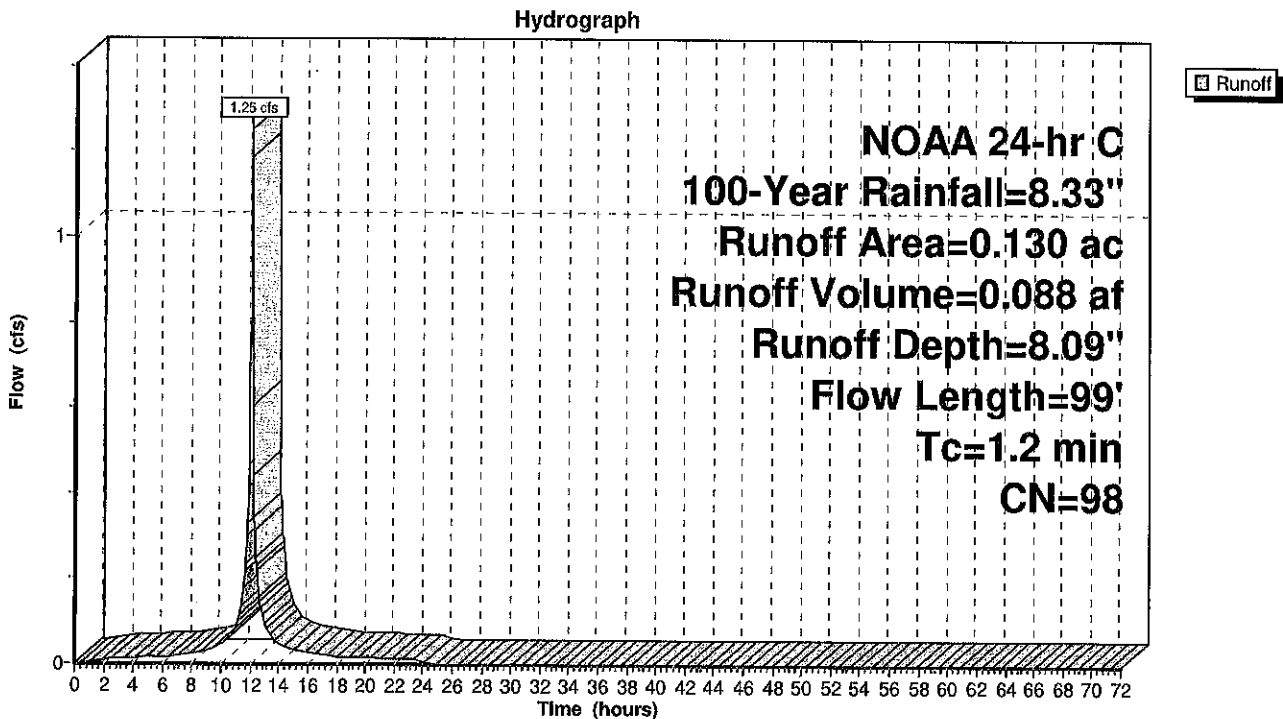
Summary for Subcatchment 20S: Drainage Area PR-1a (Impervious part of Drainage Area PR-1)

Runoff = 1.25 cfs @ 12.08 hrs, Volume= 0.088 af, Depth= 8.09"
Routed to Pond 51P : Proposed Bioretention System #1

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=8.33"

Area (ac)	CN	Description
0.080	98	Paved parking, HSG C
0.050	98	Roofs, HSG C
0.130	98	Weighted Average
0.130	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	54	0.0150	1.11		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
0.4	45	0.0100	2.03		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.2	99	Total			

Subcatchment 20S: Drainage Area PR-1a (Impervious part of Drainage Area PR-1)

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100 Year Storm

NOAA 24-hr C 100-Year Rainfall=8.33"

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Hydrograph for Subcatchment 20S: Drainage Area PR-1a (Impervious part of Drainage Area PR-1)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	8.33	8.09	0.00
1.00	0.09	0.01	0.00	52.00	8.33	8.09	0.00
2.00	0.19	0.06	0.01	53.00	8.33	8.09	0.00
3.00	0.29	0.14	0.01	54.00	8.33	8.09	0.00
4.00	0.41	0.24	0.01	55.00	8.33	8.09	0.00
5.00	0.53	0.34	0.02	56.00	8.33	8.09	0.00
6.00	0.66	0.47	0.02	57.00	8.33	8.09	0.00
7.00	0.81	0.61	0.02	58.00	8.33	8.09	0.00
8.00	1.00	0.79	0.03	59.00	8.33	8.09	0.00
9.00	1.22	1.00	0.03	60.00	8.33	8.09	0.00
10.00	1.52	1.30	0.05	61.00	8.33	8.09	0.00
11.00	2.00	1.77	0.09	62.00	8.33	8.09	0.00
12.00	3.97	3.74	0.81	63.00	8.33	8.09	0.00
13.00	6.33	6.09	0.10	64.00	8.33	8.09	0.00
14.00	6.81	6.57	0.05	65.00	8.33	8.09	0.00
15.00	7.11	6.87	0.03	66.00	8.33	8.09	0.00
16.00	7.33	7.09	0.03	67.00	8.33	8.09	0.00
17.00	7.52	7.28	0.02	68.00	8.33	8.09	0.00
18.00	7.67	7.43	0.02	69.00	8.33	8.09	0.00
19.00	7.80	7.56	0.02	70.00	8.33	8.09	0.00
20.00	7.92	7.68	0.02	71.00	8.33	8.09	0.00
21.00	8.04	7.80	0.01	72.00	8.33	8.09	0.00
22.00	8.14	7.90	0.01				
23.00	8.24	8.00	0.01				
24.00	8.33	8.09	0.01				
25.00	8.33	8.09	0.00				
26.00	8.33	8.09	0.00				
27.00	8.33	8.09	0.00				
28.00	8.33	8.09	0.00				
29.00	8.33	8.09	0.00				
30.00	8.33	8.09	0.00				
31.00	8.33	8.09	0.00				
32.00	8.33	8.09	0.00				
33.00	8.33	8.09	0.00				
34.00	8.33	8.09	0.00				
35.00	8.33	8.09	0.00				
36.00	8.33	8.09	0.00				
37.00	8.33	8.09	0.00				
38.00	8.33	8.09	0.00				
39.00	8.33	8.09	0.00				
40.00	8.33	8.09	0.00				
41.00	8.33	8.09	0.00				
42.00	8.33	8.09	0.00				
43.00	8.33	8.09	0.00				
44.00	8.33	8.09	0.00				
45.00	8.33	8.09	0.00				
46.00	8.33	8.09	0.00				
47.00	8.33	8.09	0.00				
48.00	8.33	8.09	0.00				
49.00	8.33	8.09	0.00				
50.00	8.33	8.09	0.00				

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100 Year Storm
NOAA 24-hr C 100-Year Rainfall=8.33"

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Summary for Subcatchment 21S: Drainage Area PR-1b (Pervious part of Drainage Area PR-1)

Runoff = 0.15 cfs @ 12.15 hrs, Volume= 0.013 af, Depth= 5.22"
 Routed to Pond 51P : Proposed Bioretention System #1

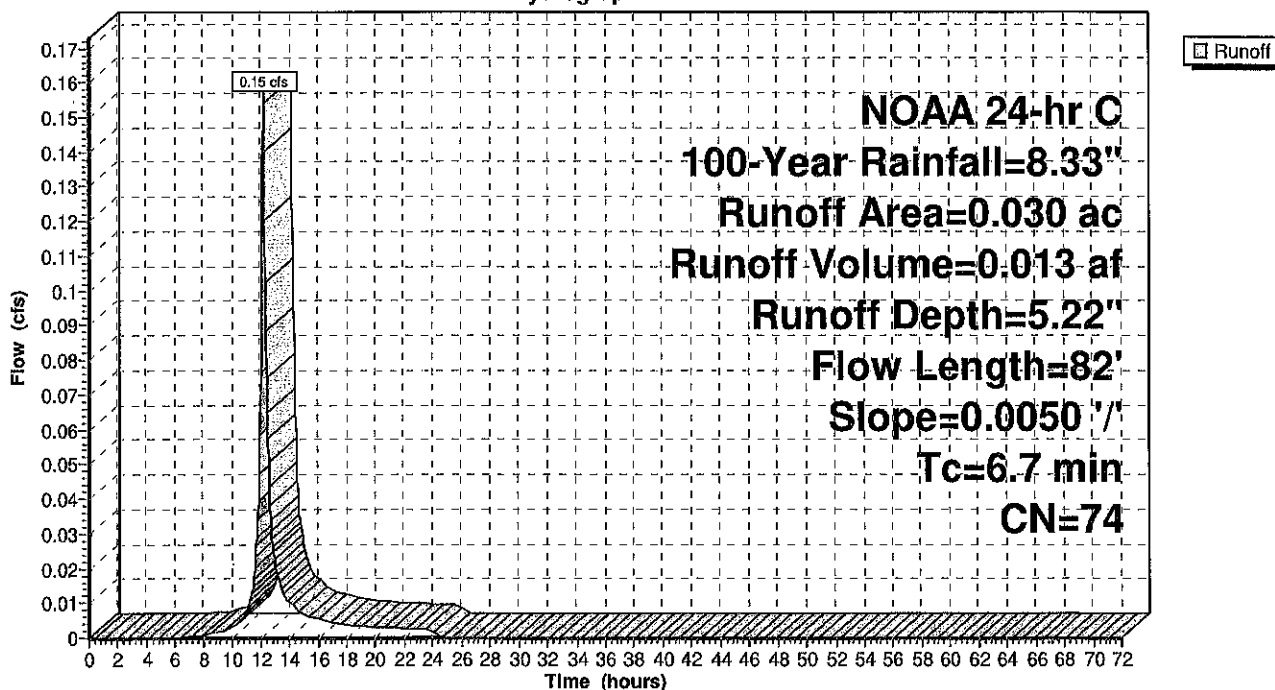
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 100-Year Rainfall=8.33"

Area (ac)	CN	Description
0.030	74	>75% Grass cover, Good, HSG C
0.030	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	17	0.0050	0.05		Sheet Flow, Grass: Dense n= 0.240 P2= 3.35"
0.2	13	0.0050	1.14		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
0.6	52	0.0050	1.44		Shallow Concentrated Flow, Paved Kv= 20.3 fps
6.7	82	Total			

Subcatchment 21S: Drainage Area PR-1b (Pervious part of Drainage Area PR-1)

Hydrograph



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100 Year Storm

NOAA 24-hr C 100-Year Rainfall=8.33"

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Hydrograph for Subcatchment 21S: Drainage Area PR-1b (Pervious part of Drainage Area PR-1)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	8.33	5.22	0.00
1.00	0.09	0.00	0.00	52.00	8.33	5.22	0.00
2.00	0.19	0.00	0.00	53.00	8.33	5.22	0.00
3.00	0.29	0.00	0.00	54.00	8.33	5.22	0.00
4.00	0.41	0.00	0.00	55.00	8.33	5.22	0.00
5.00	0.53	0.00	0.00	56.00	8.33	5.22	0.00
6.00	0.66	0.00	0.00	57.00	8.33	5.22	0.00
7.00	0.81	0.00	0.00	58.00	8.33	5.22	0.00
8.00	1.00	0.02	0.00	59.00	8.33	5.22	0.00
9.00	1.22	0.07	0.00	60.00	8.33	5.22	0.00
10.00	1.52	0.15	0.00	61.00	8.33	5.22	0.00
11.00	2.00	0.35	0.01	62.00	8.33	5.22	0.00
12.00	3.97	1.57	0.08	63.00	8.33	5.22	0.00
13.00	6.33	3.47	0.02	64.00	8.33	5.22	0.00
14.00	6.81	3.88	0.01	65.00	8.33	5.22	0.00
15.00	7.11	4.14	0.01	66.00	8.33	5.22	0.00
16.00	7.33	4.33	0.01	67.00	8.33	5.22	0.00
17.00	7.52	4.50	0.00	68.00	8.33	5.22	0.00
18.00	7.67	4.63	0.00	69.00	8.33	5.22	0.00
19.00	7.80	4.75	0.00	70.00	8.33	5.22	0.00
20.00	7.92	4.86	0.00	71.00	8.33	5.22	0.00
21.00	8.04	4.96	0.00	72.00	8.33	5.22	0.00
22.00	8.14	5.05	0.00				
23.00	8.24	5.14	0.00				
24.00	8.33	5.22	0.00				
25.00	8.33	5.22	0.00				
26.00	8.33	5.22	0.00				
27.00	8.33	5.22	0.00				
28.00	8.33	5.22	0.00				
29.00	8.33	5.22	0.00				
30.00	8.33	5.22	0.00				
31.00	8.33	5.22	0.00				
32.00	8.33	5.22	0.00				
33.00	8.33	5.22	0.00				
34.00	8.33	5.22	0.00				
35.00	8.33	5.22	0.00				
36.00	8.33	5.22	0.00				
37.00	8.33	5.22	0.00				
38.00	8.33	5.22	0.00				
39.00	8.33	5.22	0.00				
40.00	8.33	5.22	0.00				
41.00	8.33	5.22	0.00				
42.00	8.33	5.22	0.00				
43.00	8.33	5.22	0.00				
44.00	8.33	5.22	0.00				
45.00	8.33	5.22	0.00				
46.00	8.33	5.22	0.00				
47.00	8.33	5.22	0.00				
48.00	8.33	5.22	0.00				
49.00	8.33	5.22	0.00				
50.00	8.33	5.22	0.00				

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100 Year Storm
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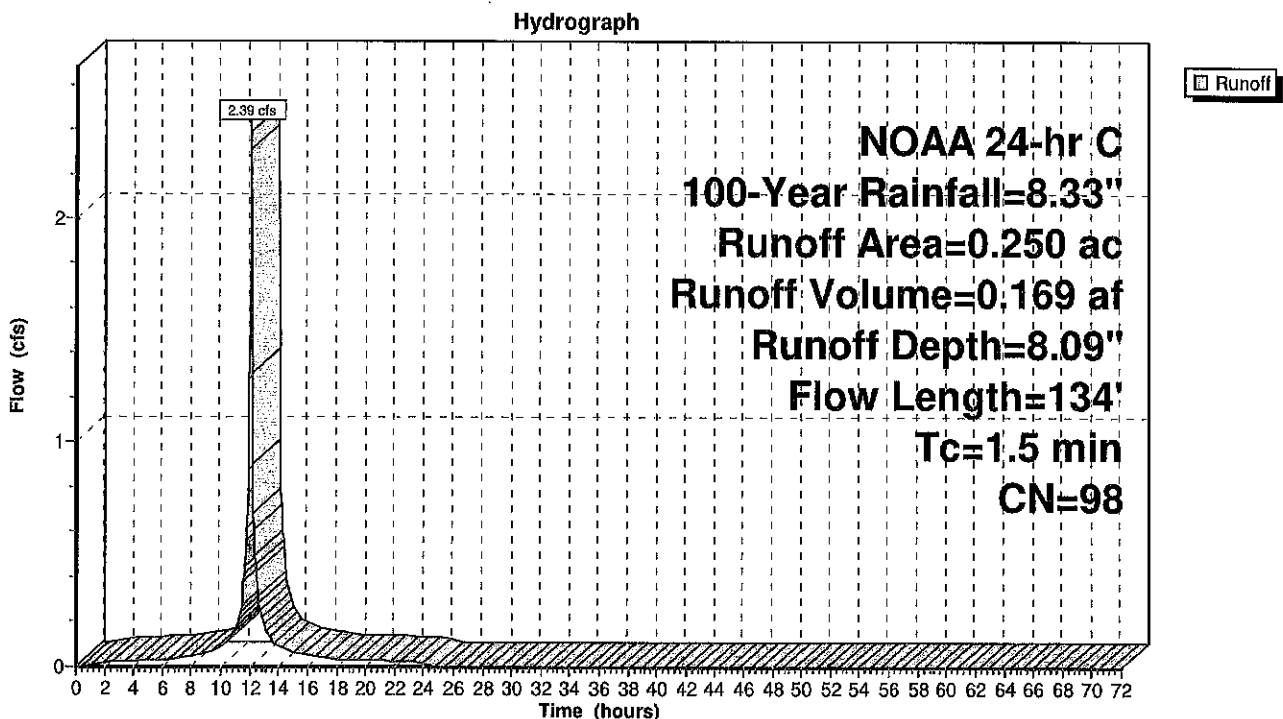
Summary for Subcatchment 22S: Drainage Area PR-2a (Impervious part of Drainage Area PR-2)

Runoff = 2.39 cfs @ 12.08 hrs, Volume= 0.169 af, Depth= 8.09"
 Routed to Pond 52P : Proposed Bioretention System #2

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=8.33"

Area (ac)	CN	Description
0.250	98	Paved parking, HSG C
0.250	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	72	0.0150	1.17		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
0.5	62	0.0100	2.03		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.5	134	Total			

Subcatchment 22S: Drainage Area PR-2a (Impervious part of Drainage Area PR-2)

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Hydrograph for Subcatchment 22S: Drainage Area PR-2a (Impervious part of Drainage Area PR-2)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	8.33	8.09	0.00
1.00	0.09	0.01	0.01	52.00	8.33	8.09	0.00
2.00	0.19	0.06	0.02	53.00	8.33	8.09	0.00
3.00	0.29	0.14	0.02	54.00	8.33	8.09	0.00
4.00	0.41	0.24	0.03	55.00	8.33	8.09	0.00
5.00	0.53	0.34	0.03	56.00	8.33	8.09	0.00
6.00	0.66	0.47	0.03	57.00	8.33	8.09	0.00
7.00	0.81	0.61	0.04	58.00	8.33	8.09	0.00
8.00	1.00	0.79	0.05	59.00	8.33	8.09	0.00
9.00	1.22	1.00	0.06	60.00	8.33	8.09	0.00
10.00	1.52	1.30	0.09	61.00	8.33	8.09	0.00
11.00	2.00	1.77	0.17	62.00	8.33	8.09	0.00
12.00	3.97	3.74	1.50	63.00	8.33	8.09	0.00
13.00	6.33	6.09	0.19	64.00	8.33	8.09	0.00
14.00	6.81	6.57	0.09	65.00	8.33	8.09	0.00
15.00	7.11	6.87	0.06	66.00	8.33	8.09	0.00
16.00	7.33	7.09	0.05	67.00	8.33	8.09	0.00
17.00	7.52	7.28	0.04	68.00	8.33	8.09	0.00
18.00	7.67	7.43	0.03	69.00	8.33	8.09	0.00
19.00	7.80	7.56	0.03	70.00	8.33	8.09	0.00
20.00	7.92	7.68	0.03	71.00	8.33	8.09	0.00
21.00	8.04	7.80	0.03	72.00	8.33	8.09	0.00
22.00	8.14	7.90	0.03				
23.00	8.24	8.00	0.02				
24.00	8.33	8.09	0.02				
25.00	8.33	8.09	0.00				
26.00	8.33	8.09	0.00				
27.00	8.33	8.09	0.00				
28.00	8.33	8.09	0.00				
29.00	8.33	8.09	0.00				
30.00	8.33	8.09	0.00				
31.00	8.33	8.09	0.00				
32.00	8.33	8.09	0.00				
33.00	8.33	8.09	0.00				
34.00	8.33	8.09	0.00				
35.00	8.33	8.09	0.00				
36.00	8.33	8.09	0.00				
37.00	8.33	8.09	0.00				
38.00	8.33	8.09	0.00				
39.00	8.33	8.09	0.00				
40.00	8.33	8.09	0.00				
41.00	8.33	8.09	0.00				
42.00	8.33	8.09	0.00				
43.00	8.33	8.09	0.00				
44.00	8.33	8.09	0.00				
45.00	8.33	8.09	0.00				
46.00	8.33	8.09	0.00				
47.00	8.33	8.09	0.00				
48.00	8.33	8.09	0.00				
49.00	8.33	8.09	0.00				
50.00	8.33	8.09	0.00				

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100 Year Storm
NOAA 24-hr C 100-Year Rainfall=8.33"

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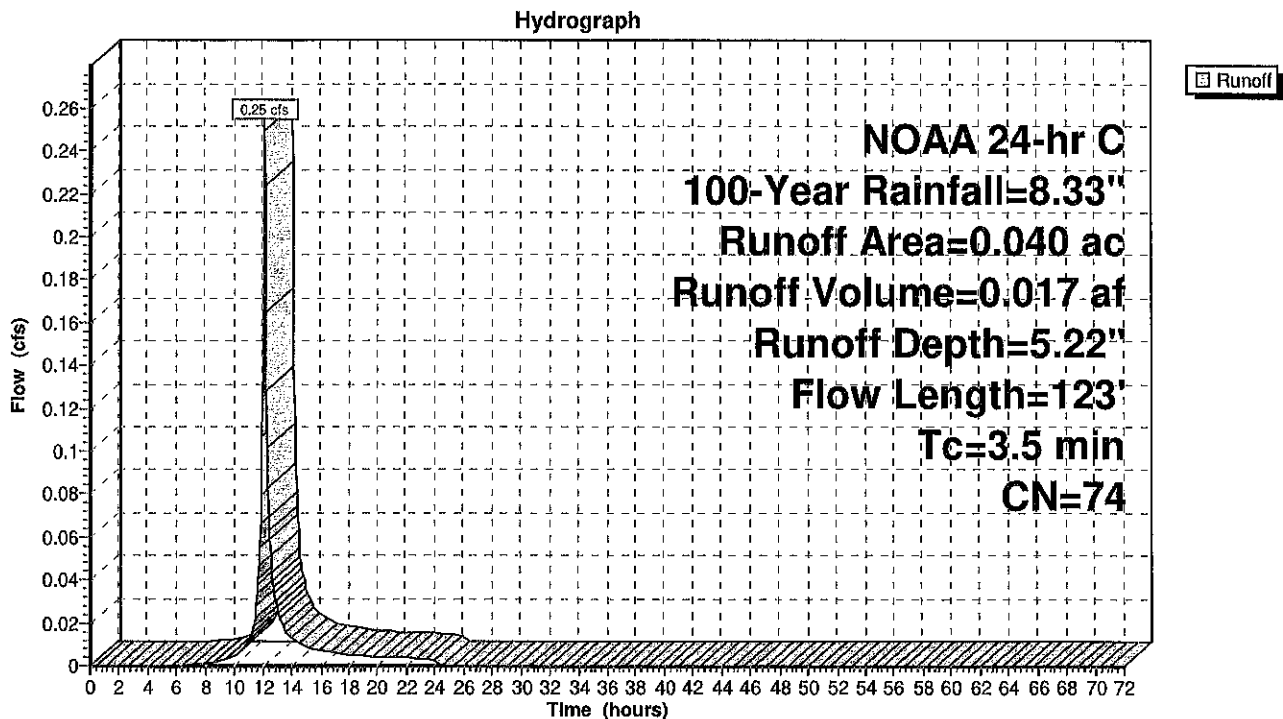
Summary for Subcatchment 23S: Drainage Area PR-2b (Pervious part of Drainage Area PR-2)

Runoff = 0.25 cfs @ 12.11 hrs, Volume= 0.017 af, Depth= 5.22"
 Routed to Pond 52P : Proposed Bioretention System #2

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=8.33"

Area (ac)	CN	Description
0.040	74	>75% Grass cover, Good, HSG C
0.040	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	6	0.0050	0.04		Sheet Flow, Grass: Dense n= 0.240 P2= 3.35"
0.2	6	0.0050	0.46		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
0.7	111	0.0150	2.49		Shallow Concentrated Flow, Paved Kv= 20.3 fps
3.5	123	Total			

Subcatchment 23S: Drainage Area PR-2b (Pervious part of Drainage Area PR-2)

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Hydrograph for Subcatchment 23S: Drainage Area PR-2b (Pervious part of Drainage Area PR-2)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	8.33	5.22	0.00
1.00	0.09	0.00	0.00	52.00	8.33	5.22	0.00
2.00	0.19	0.00	0.00	53.00	8.33	5.22	0.00
3.00	0.29	0.00	0.00	54.00	8.33	5.22	0.00
4.00	0.41	0.00	0.00	55.00	8.33	5.22	0.00
5.00	0.53	0.00	0.00	56.00	8.33	5.22	0.00
6.00	0.66	0.00	0.00	57.00	8.33	5.22	0.00
7.00	0.81	0.00	0.00	58.00	8.33	5.22	0.00
8.00	1.00	0.02	0.00	59.00	8.33	5.22	0.00
9.00	1.22	0.07	0.00	60.00	8.33	5.22	0.00
10.00	1.52	0.15	0.00	61.00	8.33	5.22	0.00
11.00	2.00	0.35	0.01	62.00	8.33	5.22	0.00
12.00	3.97	1.57	0.14	63.00	8.33	5.22	0.00
13.00	6.33	3.47	0.03	64.00	8.33	5.22	0.00
14.00	6.81	3.88	0.01	65.00	8.33	5.22	0.00
15.00	7.11	4.14	0.01	66.00	8.33	5.22	0.00
16.00	7.33	4.33	0.01	67.00	8.33	5.22	0.00
17.00	7.52	4.50	0.01	68.00	8.33	5.22	0.00
18.00	7.67	4.63	0.00	69.00	8.33	5.22	0.00
19.00	7.80	4.75	0.00	70.00	8.33	5.22	0.00
20.00	7.92	4.86	0.00	71.00	8.33	5.22	0.00
21.00	8.04	4.96	0.00	72.00	8.33	5.22	0.00
22.00	8.14	5.05	0.00				
23.00	8.24	5.14	0.00				
24.00	8.33	5.22	0.00				
25.00	8.33	5.22	0.00				
26.00	8.33	5.22	0.00				
27.00	8.33	5.22	0.00				
28.00	8.33	5.22	0.00				
29.00	8.33	5.22	0.00				
30.00	8.33	5.22	0.00				
31.00	8.33	5.22	0.00				
32.00	8.33	5.22	0.00				
33.00	8.33	5.22	0.00				
34.00	8.33	5.22	0.00				
35.00	8.33	5.22	0.00				
36.00	8.33	5.22	0.00				
37.00	8.33	5.22	0.00				
38.00	8.33	5.22	0.00				
39.00	8.33	5.22	0.00				
40.00	8.33	5.22	0.00				
41.00	8.33	5.22	0.00				
42.00	8.33	5.22	0.00				
43.00	8.33	5.22	0.00				
44.00	8.33	5.22	0.00				
45.00	8.33	5.22	0.00				
46.00	8.33	5.22	0.00				
47.00	8.33	5.22	0.00				
48.00	8.33	5.22	0.00				
49.00	8.33	5.22	0.00				
50.00	8.33	5.22	0.00				

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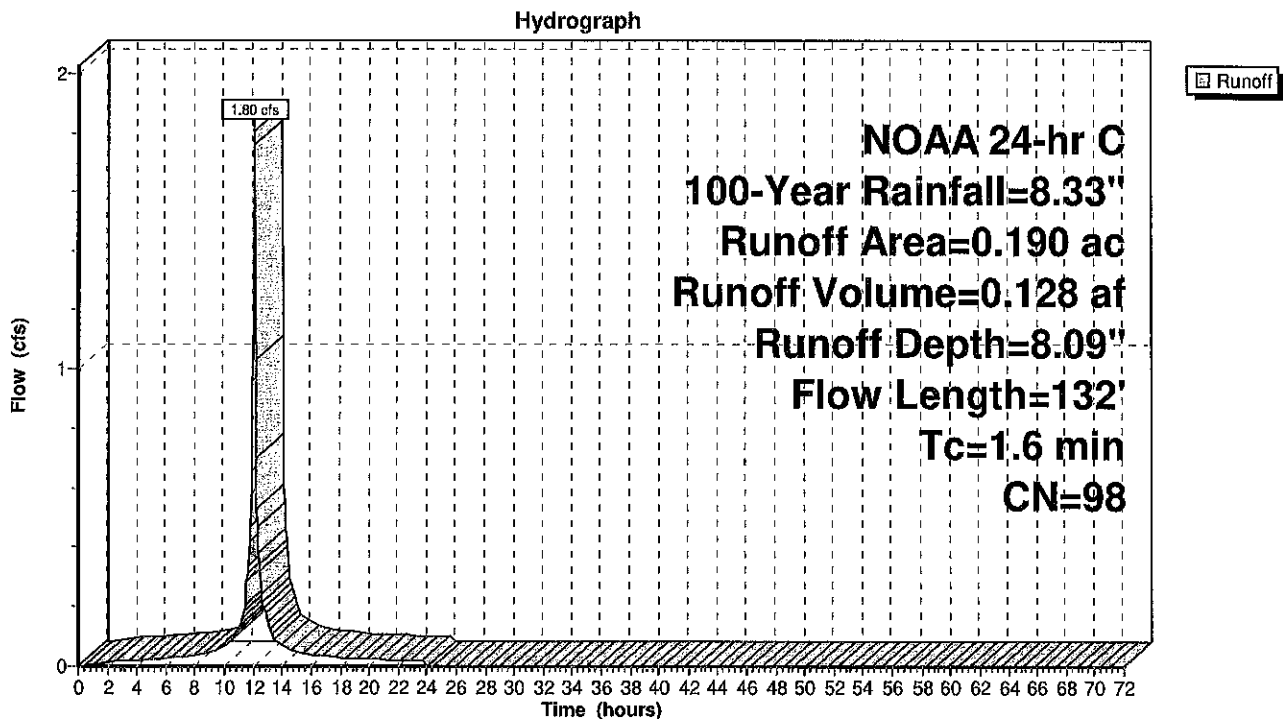
Summary for Subcatchment 24S: Drainage Area PR-3a (Impervious part of Drainage Area PR-3)

Runoff = 1.80 cfs @ 12.08 hrs, Volume= 0.128 af, Depth= 8.09"
 Routed to Pond 53P : Proposed Bioretention System #3

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=8.33"

Area (ac)	CN	Description
0.190	98	Paved parking, HSG C
0.190	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	76	0.0150	1.19		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
0.5	56	0.0100	2.03		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.6	132	Total			

Subcatchment 24S: Drainage Area PR-3a (Impervious part of Drainage Area PR-3)

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Hydrograph for Subcatchment 24S: Drainage Area PR-3a (Impervious part of Drainage Area PR-3)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	8.33	8.09	0.00
1.00	0.09	0.01	0.01	52.00	8.33	8.09	0.00
2.00	0.19	0.06	0.01	53.00	8.33	8.09	0.00
3.00	0.29	0.14	0.02	54.00	8.33	8.09	0.00
4.00	0.41	0.24	0.02	55.00	8.33	8.09	0.00
5.00	0.53	0.34	0.02	56.00	8.33	8.09	0.00
6.00	0.66	0.47	0.02	57.00	8.33	8.09	0.00
7.00	0.81	0.61	0.03	58.00	8.33	8.09	0.00
8.00	1.00	0.79	0.04	59.00	8.33	8.09	0.00
9.00	1.22	1.00	0.04	60.00	8.33	8.09	0.00
10.00	1.52	1.30	0.07	61.00	8.33	8.09	0.00
11.00	2.00	1.77	0.13	62.00	8.33	8.09	0.00
12.00	3.97	3.74	1.13	63.00	8.33	8.09	0.00
13.00	6.33	6.09	0.14	64.00	8.33	8.09	0.00
14.00	6.81	6.57	0.07	65.00	8.33	8.09	0.00
15.00	7.11	6.87	0.05	66.00	8.33	8.09	0.00
16.00	7.33	7.09	0.04	67.00	8.33	8.09	0.00
17.00	7.52	7.28	0.03	68.00	8.33	8.09	0.00
18.00	7.67	7.43	0.03	69.00	8.33	8.09	0.00
19.00	7.80	7.56	0.02	70.00	8.33	8.09	0.00
20.00	7.92	7.68	0.02	71.00	8.33	8.09	0.00
21.00	8.04	7.80	0.02	72.00	8.33	8.09	0.00
22.00	8.14	7.90	0.02				
23.00	8.24	8.00	0.02				
24.00	8.33	8.09	0.02				
25.00	8.33	8.09	0.00				
26.00	8.33	8.09	0.00				
27.00	8.33	8.09	0.00				
28.00	8.33	8.09	0.00				
29.00	8.33	8.09	0.00				
30.00	8.33	8.09	0.00				
31.00	8.33	8.09	0.00				
32.00	8.33	8.09	0.00				
33.00	8.33	8.09	0.00				
34.00	8.33	8.09	0.00				
35.00	8.33	8.09	0.00				
36.00	8.33	8.09	0.00				
37.00	8.33	8.09	0.00				
38.00	8.33	8.09	0.00				
39.00	8.33	8.09	0.00				
40.00	8.33	8.09	0.00				
41.00	8.33	8.09	0.00				
42.00	8.33	8.09	0.00				
43.00	8.33	8.09	0.00				
44.00	8.33	8.09	0.00				
45.00	8.33	8.09	0.00				
46.00	8.33	8.09	0.00				
47.00	8.33	8.09	0.00				
48.00	8.33	8.09	0.00				
49.00	8.33	8.09	0.00				
50.00	8.33	8.09	0.00				

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Summary for Subcatchment 25S: Drainage Area PR-3b (Pervious part of Drainage Area PR-3)

Runoff = 0.20 cfs @ 12.16 hrs, Volume= 0.017 af, Depth= 5.22"
 Routed to Pond 53P : Proposed Bioretention System #3

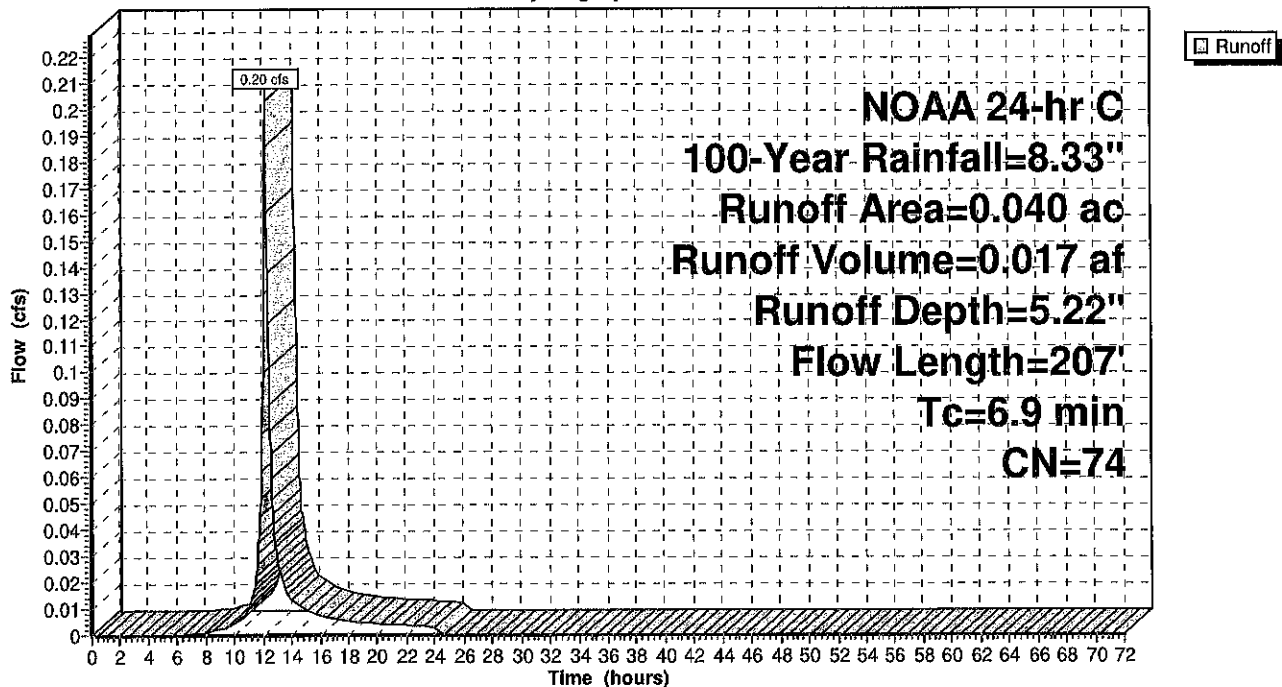
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 100-Year Rainfall=8.33"

Area (ac)	CN	Description
0.040	74	>75% Grass cover, Good, HSG C
0.040	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	16	0.0050	0.05		Sheet Flow, Grass: Dense n= 0.240 P2= 3.35"
1.3	191	0.0140	2.40		Shallow Concentrated Flow, Paved Kv= 20.3 fps
6.9	207	Total			

Subcatchment 25S: Drainage Area PR-3b (Pervious part of Drainage Area PR-3)

Hydrograph



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NOAA 24-hr C 100-Year Rainfall=8.33"

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Hydrograph for Subcatchment 25S: Drainage Area PR-3b (Pervious part of Drainage Area PR-3)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	8.33	5.22	0.00
1.00	0.09	0.00	0.00	52.00	8.33	5.22	0.00
2.00	0.19	0.00	0.00	53.00	8.33	5.22	0.00
3.00	0.29	0.00	0.00	54.00	8.33	5.22	0.00
4.00	0.41	0.00	0.00	55.00	8.33	5.22	0.00
5.00	0.53	0.00	0.00	56.00	8.33	5.22	0.00
6.00	0.66	0.00	0.00	57.00	8.33	5.22	0.00
7.00	0.81	0.00	0.00	58.00	8.33	5.22	0.00
8.00	1.00	0.02	0.00	59.00	8.33	5.22	0.00
9.00	1.22	0.07	0.00	60.00	8.33	5.22	0.00
10.00	1.52	0.15	0.00	61.00	8.33	5.22	0.00
11.00	2.00	0.35	0.01	62.00	8.33	5.22	0.00
12.00	3.97	1.57	0.10	63.00	8.33	5.22	0.00
13.00	6.33	3.47	0.03	64.00	8.33	5.22	0.00
14.00	6.81	3.88	0.01	65.00	8.33	5.22	0.00
15.00	7.11	4.14	0.01	66.00	8.33	5.22	0.00
16.00	7.33	4.33	0.01	67.00	8.33	5.22	0.00
17.00	7.52	4.50	0.01	68.00	8.33	5.22	0.00
18.00	7.67	4.63	0.01	69.00	8.33	5.22	0.00
19.00	7.80	4.75	0.00	70.00	8.33	5.22	0.00
20.00	7.92	4.86	0.00	71.00	8.33	5.22	0.00
21.00	8.04	4.96	0.00	72.00	8.33	5.22	0.00
22.00	8.14	5.05	0.00				
23.00	8.24	5.14	0.00				
24.00	8.33	5.22	0.00				
25.00	8.33	5.22	0.00				
26.00	8.33	5.22	0.00				
27.00	8.33	5.22	0.00				
28.00	8.33	5.22	0.00				
29.00	8.33	5.22	0.00				
30.00	8.33	5.22	0.00				
31.00	8.33	5.22	0.00				
32.00	8.33	5.22	0.00				
33.00	8.33	5.22	0.00				
34.00	8.33	5.22	0.00				
35.00	8.33	5.22	0.00				
36.00	8.33	5.22	0.00				
37.00	8.33	5.22	0.00				
38.00	8.33	5.22	0.00				
39.00	8.33	5.22	0.00				
40.00	8.33	5.22	0.00				
41.00	8.33	5.22	0.00				
42.00	8.33	5.22	0.00				
43.00	8.33	5.22	0.00				
44.00	8.33	5.22	0.00				
45.00	8.33	5.22	0.00				
46.00	8.33	5.22	0.00				
47.00	8.33	5.22	0.00				
48.00	8.33	5.22	0.00				
49.00	8.33	5.22	0.00				
50.00	8.33	5.22	0.00				

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100 Year Storm

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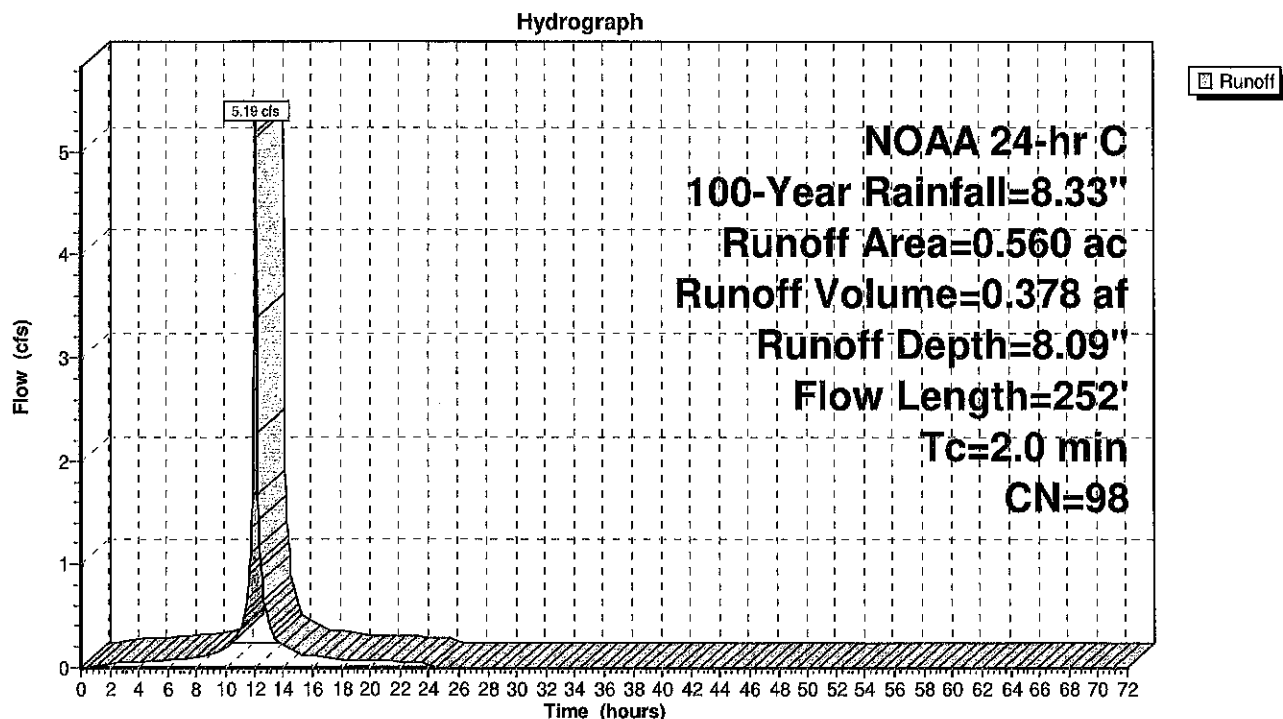
Summary for Subcatchment 26S: Drainage Area PR-4a (Impervious part of Drainage Area PR-4)

Runoff = 5.19 cfs @ 12.09 hrs, Volume= 0.378 af, Depth= 8.09"
 Routed to Pond 54P : Proposed Bioretention System #4

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=8.33"

Area (ac)	CN	Description
0.370	98	Paved parking, HSG C
0.190	98	Roofs, HSG C
0.560	98	Weighted Average
0.560	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	61	0.0150	1.14		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
0.4	59	0.0150	2.49		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.7	132	0.0030	3.12	3.83	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
2.0	252	Total			

Subcatchment 26S: Drainage Area PR-4a (Impervious part of Drainage Area PR-4)

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Hydrograph for Subcatchment 26S: Drainage Area PR-4a (Impervious part of Drainage Area PR-4)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	8.33	8.09	0.00
1.00	0.09	0.01	0.02	52.00	8.33	8.09	0.00
2.00	0.19	0.06	0.04	53.00	8.33	8.09	0.00
3.00	0.29	0.14	0.05	54.00	8.33	8.09	0.00
4.00	0.41	0.24	0.06	55.00	8.33	8.09	0.00
5.00	0.53	0.34	0.06	56.00	8.33	8.09	0.00
6.00	0.66	0.47	0.07	57.00	8.33	8.09	0.00
7.00	0.81	0.61	0.09	58.00	8.33	8.09	0.00
8.00	1.00	0.79	0.11	59.00	8.33	8.09	0.00
9.00	1.22	1.00	0.13	60.00	8.33	8.09	0.00
10.00	1.52	1.30	0.20	61.00	8.33	8.09	0.00
11.00	2.00	1.77	0.37	62.00	8.33	8.09	0.00
12.00	3.97	3.74	3.20	63.00	8.33	8.09	0.00
13.00	6.33	6.09	0.43	64.00	8.33	8.09	0.00
14.00	6.81	6.57	0.21	65.00	8.33	8.09	0.00
15.00	7.11	6.87	0.14	66.00	8.33	8.09	0.00
16.00	7.33	7.09	0.11	67.00	8.33	8.09	0.00
17.00	7.52	7.28	0.10	68.00	8.33	8.09	0.00
18.00	7.67	7.43	0.08	69.00	8.33	8.09	0.00
19.00	7.80	7.56	0.07	70.00	8.33	8.09	0.00
20.00	7.92	7.68	0.07	71.00	8.33	8.09	0.00
21.00	8.04	7.80	0.06	72.00	8.33	8.09	0.00
22.00	8.14	7.90	0.06				
23.00	8.24	8.00	0.05				
24.00	8.33	8.09	0.06				
25.00	8.33	8.09	0.00				
26.00	8.33	8.09	0.00				
27.00	8.33	8.09	0.00				
28.00	8.33	8.09	0.00				
29.00	8.33	8.09	0.00				
30.00	8.33	8.09	0.00				
31.00	8.33	8.09	0.00				
32.00	8.33	8.09	0.00				
33.00	8.33	8.09	0.00				
34.00	8.33	8.09	0.00				
35.00	8.33	8.09	0.00				
36.00	8.33	8.09	0.00				
37.00	8.33	8.09	0.00				
38.00	8.33	8.09	0.00				
39.00	8.33	8.09	0.00				
40.00	8.33	8.09	0.00				
41.00	8.33	8.09	0.00				
42.00	8.33	8.09	0.00				
43.00	8.33	8.09	0.00				
44.00	8.33	8.09	0.00				
45.00	8.33	8.09	0.00				
46.00	8.33	8.09	0.00				
47.00	8.33	8.09	0.00				
48.00	8.33	8.09	0.00				
49.00	8.33	8.09	0.00				
50.00	8.33	8.09	0.00				

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Summary for Subcatchment 27S: Drainage Area PR-4b (Pervious part of Drainage Area PR-4)

Runoff = 0.77 cfs @ 12.16 hrs, Volume= 0.065 af, Depth= 5.22"
 Routed to Pond 54P : Proposed Bioretention System #4

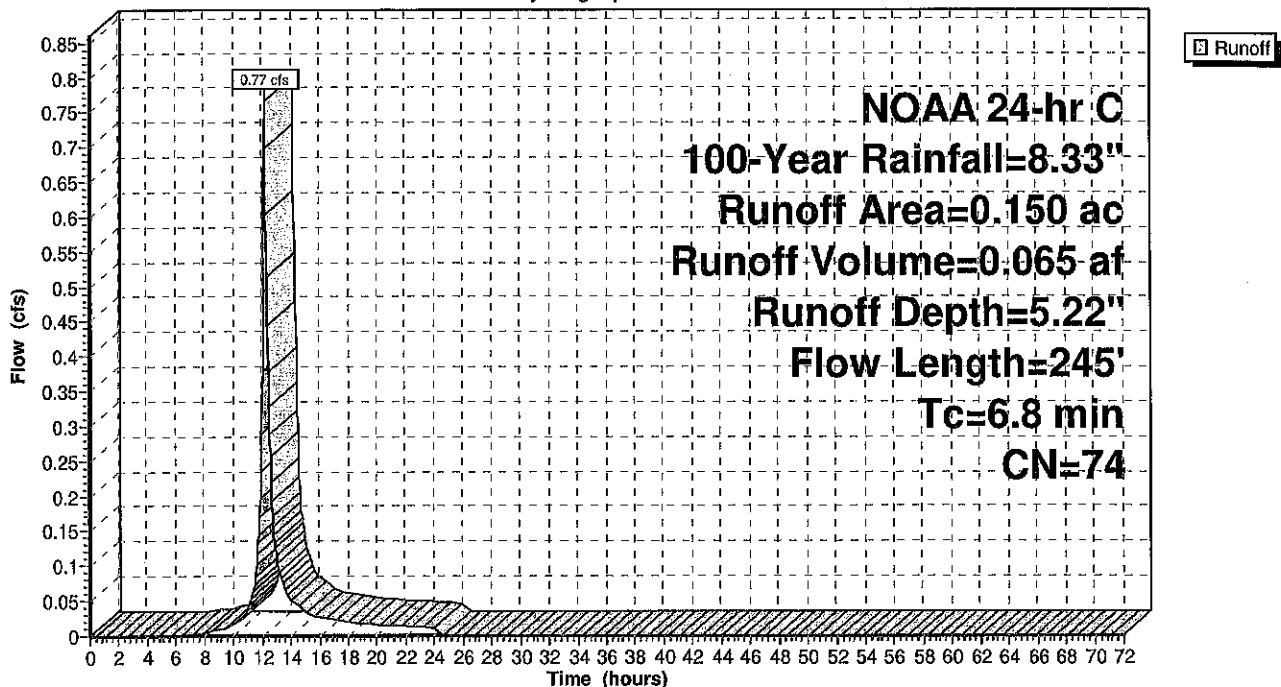
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 100-Year Rainfall=8.33"

Area (ac)	CN	Description
0.150	74	>75% Grass cover, Good, HSG C
0.150	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	21	0.0100	0.07		Sheet Flow, Grass: Dense n= 0.240 P2= 3.35"
0.8	92	0.0100	2.03		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.7	132	0.0030	3.12	3.83	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
6.8	245	Total			

Subcatchment 27S: Drainage Area PR-4b (Pervious part of Drainage Area PR-4)

Hydrograph



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Hydrograph for Subcatchment 27S: Drainage Area PR-4b (Pervious part of Drainage Area PR-4)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	8.33	5.22	0.00
1.00	0.09	0.00	0.00	52.00	8.33	5.22	0.00
2.00	0.19	0.00	0.00	53.00	8.33	5.22	0.00
3.00	0.29	0.00	0.00	54.00	8.33	5.22	0.00
4.00	0.41	0.00	0.00	55.00	8.33	5.22	0.00
5.00	0.53	0.00	0.00	56.00	8.33	5.22	0.00
6.00	0.66	0.00	0.00	57.00	8.33	5.22	0.00
7.00	0.81	0.00	0.00	58.00	8.33	5.22	0.00
8.00	1.00	0.02	0.00	59.00	8.33	5.22	0.00
9.00	1.22	0.07	0.01	60.00	8.33	5.22	0.00
10.00	1.52	0.15	0.02	61.00	8.33	5.22	0.00
11.00	2.00	0.35	0.04	62.00	8.33	5.22	0.00
12.00	3.97	1.57	0.38	63.00	8.33	5.22	0.00
13.00	6.33	3.47	0.11	64.00	8.33	5.22	0.00
14.00	6.81	3.88	0.05	65.00	8.33	5.22	0.00
15.00	7.11	4.14	0.03	66.00	8.33	5.22	0.00
16.00	7.33	4.33	0.03	67.00	8.33	5.22	0.00
17.00	7.52	4.50	0.02	68.00	8.33	5.22	0.00
18.00	7.67	4.63	0.02	69.00	8.33	5.22	0.00
19.00	7.80	4.75	0.02	70.00	8.33	5.22	0.00
20.00	7.92	4.86	0.02	71.00	8.33	5.22	0.00
21.00	8.04	4.96	0.02	72.00	8.33	5.22	0.00
22.00	8.14	5.05	0.01				
23.00	8.24	5.14	0.01				
24.00	8.33	5.22	0.01				
25.00	8.33	5.22	0.00				
26.00	8.33	5.22	0.00				
27.00	8.33	5.22	0.00				
28.00	8.33	5.22	0.00				
29.00	8.33	5.22	0.00				
30.00	8.33	5.22	0.00				
31.00	8.33	5.22	0.00				
32.00	8.33	5.22	0.00				
33.00	8.33	5.22	0.00				
34.00	8.33	5.22	0.00				
35.00	8.33	5.22	0.00				
36.00	8.33	5.22	0.00				
37.00	8.33	5.22	0.00				
38.00	8.33	5.22	0.00				
39.00	8.33	5.22	0.00				
40.00	8.33	5.22	0.00				
41.00	8.33	5.22	0.00				
42.00	8.33	5.22	0.00				
43.00	8.33	5.22	0.00				
44.00	8.33	5.22	0.00				
45.00	8.33	5.22	0.00				
46.00	8.33	5.22	0.00				
47.00	8.33	5.22	0.00				
48.00	8.33	5.22	0.00				
49.00	8.33	5.22	0.00				
50.00	8.33	5.22	0.00				

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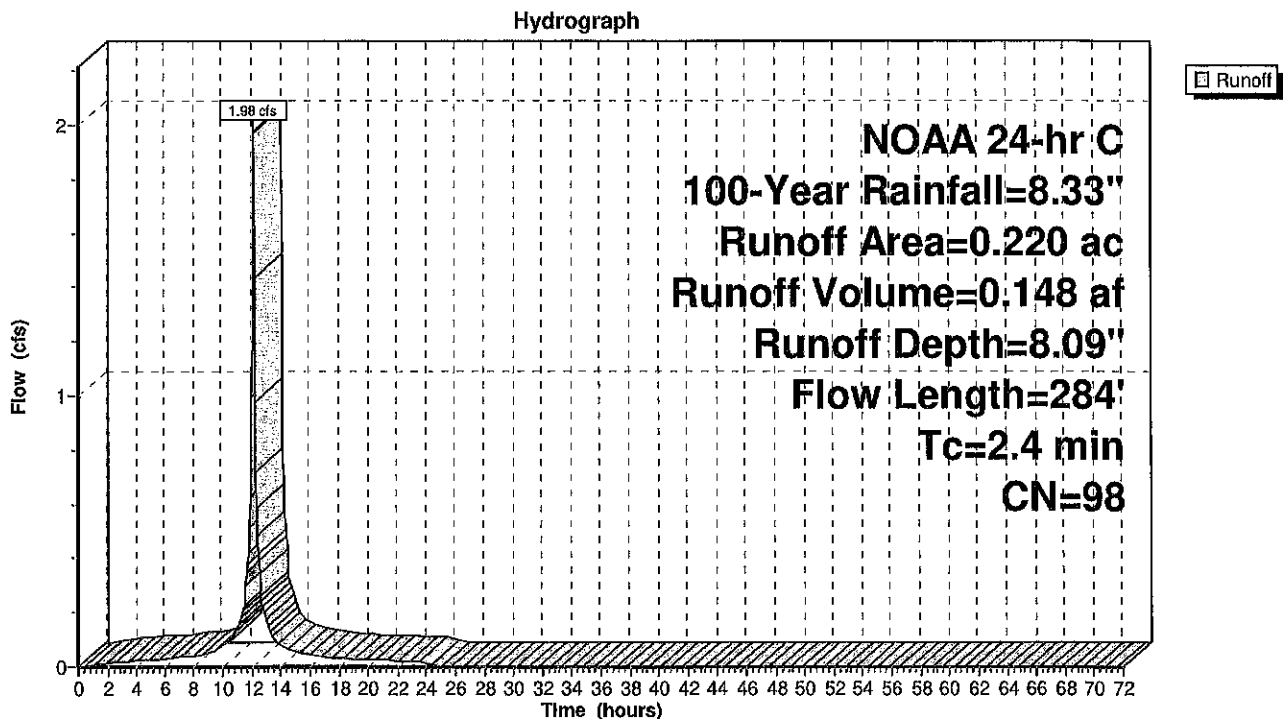
Summary for Subcatchment 28S: Drainage Area PR-5a (Impervious part of Drainage Area PR-5)

Runoff = 1.98 cfs @ 12.09 hrs, Volume= 0.148 af, Depth= 8.09"
 Routed to Pond 55P : Proposed Bioretention System #5

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=8.33"

Area (ac)	CN	Description
0.220	98	Paved parking, HSG C
0.220	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	79	0.0150	1.20		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
0.6	73	0.0100	2.03		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.7	132	0.0030	3.12	3.83	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
2.4	284	Total			

Subcatchment 28S: Drainage Area PR-5a (Impervious part of Drainage Area PR-5)

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Hydrograph for Subcatchment 28S: Drainage Area PR-5a (Impervious part of Drainage Area PR-5)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	8.33	8.09	0.00
1.00	0.09	0.01	0.01	52.00	8.33	8.09	0.00
2.00	0.19	0.06	0.01	53.00	8.33	8.09	0.00
3.00	0.29	0.14	0.02	54.00	8.33	8.09	0.00
4.00	0.41	0.24	0.02	55.00	8.33	8.09	0.00
5.00	0.53	0.34	0.03	56.00	8.33	8.09	0.00
6.00	0.66	0.47	0.03	57.00	8.33	8.09	0.00
7.00	0.81	0.61	0.04	58.00	8.33	8.09	0.00
8.00	1.00	0.79	0.04	59.00	8.33	8.09	0.00
9.00	1.22	1.00	0.05	60.00	8.33	8.09	0.00
10.00	1.52	1.30	0.08	61.00	8.33	8.09	0.00
11.00	2.00	1.77	0.14	62.00	8.33	8.09	0.00
12.00	3.97	3.74	1.21	63.00	8.33	8.09	0.00
13.00	6.33	6.09	0.17	64.00	8.33	8.09	0.00
14.00	6.81	6.57	0.08	65.00	8.33	8.09	0.00
15.00	7.11	6.87	0.05	66.00	8.33	8.09	0.00
16.00	7.33	7.09	0.05	67.00	8.33	8.09	0.00
17.00	7.52	7.28	0.04	68.00	8.33	8.09	0.00
18.00	7.67	7.43	0.03	69.00	8.33	8.09	0.00
19.00	7.80	7.56	0.03	70.00	8.33	8.09	0.00
20.00	7.92	7.68	0.03	71.00	8.33	8.09	0.00
21.00	8.04	7.80	0.02	72.00	8.33	8.09	0.00
22.00	8.14	7.90	0.02				
23.00	8.24	8.00	0.02				
24.00	8.33	8.09	0.02				
25.00	8.33	8.09	0.00				
26.00	8.33	8.09	0.00				
27.00	8.33	8.09	0.00				
28.00	8.33	8.09	0.00				
29.00	8.33	8.09	0.00				
30.00	8.33	8.09	0.00				
31.00	8.33	8.09	0.00				
32.00	8.33	8.09	0.00				
33.00	8.33	8.09	0.00				
34.00	8.33	8.09	0.00				
35.00	8.33	8.09	0.00				
36.00	8.33	8.09	0.00				
37.00	8.33	8.09	0.00				
38.00	8.33	8.09	0.00				
39.00	8.33	8.09	0.00				
40.00	8.33	8.09	0.00				
41.00	8.33	8.09	0.00				
42.00	8.33	8.09	0.00				
43.00	8.33	8.09	0.00				
44.00	8.33	8.09	0.00				
45.00	8.33	8.09	0.00				
46.00	8.33	8.09	0.00				
47.00	8.33	8.09	0.00				
48.00	8.33	8.09	0.00				
49.00	8.33	8.09	0.00				
50.00	8.33	8.09	0.00				

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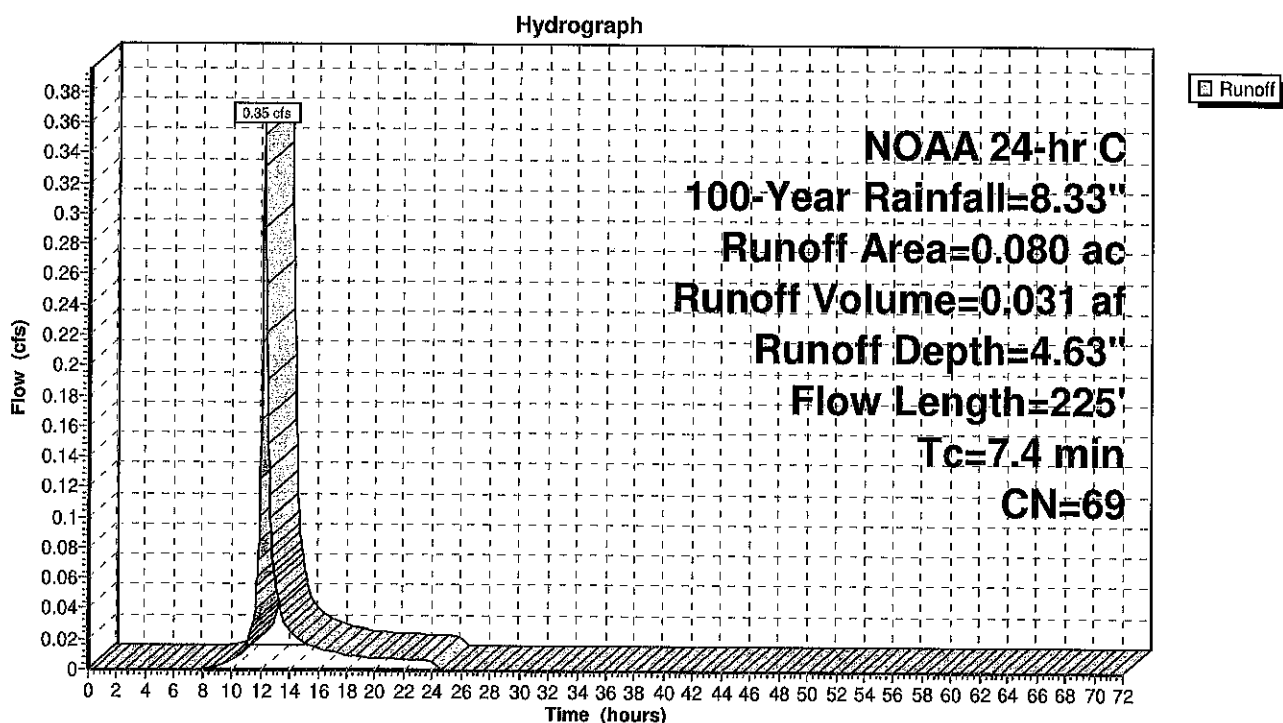
Summary for Subcatchment 29S: Drainage Area PR-5b (Pervious part of Drainage Area PR-5)

Runoff = 0.35 cfs @ 12.16 hrs, Volume= 0.031 af, Depth= 4.63"
 Routed to Pond 55P : Proposed Bioretention System #5

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=8.33"

Area (ac)	CN	Description
0.030	61	>75% Grass cover, Good, HSG B
0.050	74	>75% Grass cover, Good, HSG C
0.080	69	Weighted Average
0.080	69	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	26	0.0100	0.07		Sheet Flow, Grass: Dense n= 0.240 P2= 3.35"
0.4	67	0.0150	2.49		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.7	132	0.0030	3.12	3.83	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
7.4	225	Total			

Subcatchment 29S: Drainage Area PR-5b (Pervious part of Drainage Area PR-5)

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Hydrograph for Subcatchment 29S: Drainage Area PR-5b (Pervious part of Drainage Area PR-5)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	8.33	4.63	0.00
1.00	0.09	0.00	0.00	52.00	8.33	4.63	0.00
2.00	0.19	0.00	0.00	53.00	8.33	4.63	0.00
3.00	0.29	0.00	0.00	54.00	8.33	4.63	0.00
4.00	0.41	0.00	0.00	55.00	8.33	4.63	0.00
5.00	0.53	0.00	0.00	56.00	8.33	4.63	0.00
6.00	0.66	0.00	0.00	57.00	8.33	4.63	0.00
7.00	0.81	0.00	0.00	58.00	8.33	4.63	0.00
8.00	1.00	0.00	0.00	59.00	8.33	4.63	0.00
9.00	1.22	0.02	0.00	60.00	8.33	4.63	0.00
10.00	1.52	0.08	0.01	61.00	8.33	4.63	0.00
11.00	2.00	0.22	0.02	62.00	8.33	4.63	0.00
12.00	3.97	1.25	0.16	63.00	8.33	4.63	0.00
13.00	6.33	2.97	0.06	64.00	8.33	4.63	0.00
14.00	6.81	3.36	0.03	65.00	8.33	4.63	0.00
15.00	7.11	3.61	0.02	66.00	8.33	4.63	0.00
16.00	7.33	3.79	0.01	67.00	8.33	4.63	0.00
17.00	7.52	3.94	0.01	68.00	8.33	4.63	0.00
18.00	7.67	4.07	0.01	69.00	8.33	4.63	0.00
19.00	7.80	4.18	0.01	70.00	8.33	4.63	0.00
20.00	7.92	4.28	0.01	71.00	8.33	4.63	0.00
21.00	8.04	4.38	0.01	72.00	8.33	4.63	0.00
22.00	8.14	4.47	0.01				
23.00	8.24	4.55	0.01				
24.00	8.33	4.63	0.01				
25.00	8.33	4.63	0.00				
26.00	8.33	4.63	0.00				
27.00	8.33	4.63	0.00				
28.00	8.33	4.63	0.00				
29.00	8.33	4.63	0.00				
30.00	8.33	4.63	0.00				
31.00	8.33	4.63	0.00				
32.00	8.33	4.63	0.00				
33.00	8.33	4.63	0.00				
34.00	8.33	4.63	0.00				
35.00	8.33	4.63	0.00				
36.00	8.33	4.63	0.00				
37.00	8.33	4.63	0.00				
38.00	8.33	4.63	0.00				
39.00	8.33	4.63	0.00				
40.00	8.33	4.63	0.00				
41.00	8.33	4.63	0.00				
42.00	8.33	4.63	0.00				
43.00	8.33	4.63	0.00				
44.00	8.33	4.63	0.00				
45.00	8.33	4.63	0.00				
46.00	8.33	4.63	0.00				
47.00	8.33	4.63	0.00				
48.00	8.33	4.63	0.00				
49.00	8.33	4.63	0.00				
50.00	8.33	4.63	0.00				

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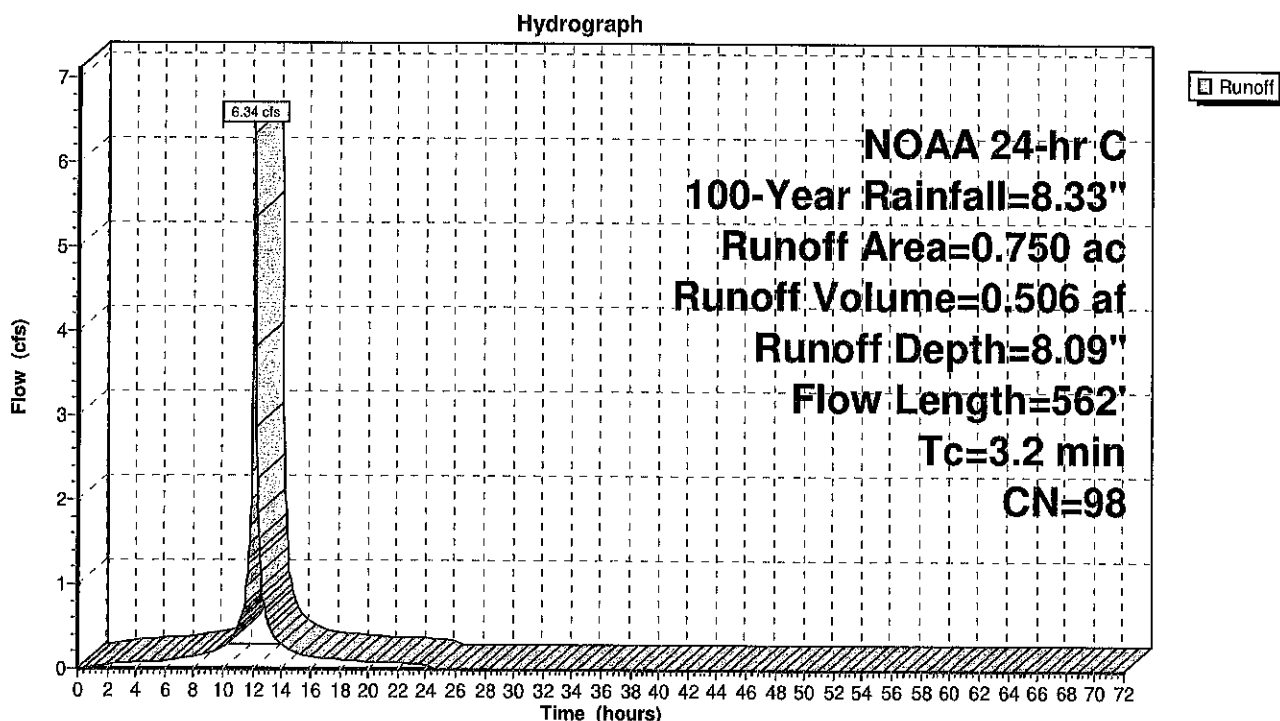
Summary for Subcatchment 30S: Drainage Area PR-6a (Impervious part of Drainage Area PR-6)

Runoff = 6.34 cfs @ 12.10 hrs, Volume= 0.506 af, Depth= 8.09"
 Routed to Pond 56P : Proposed Bioretention System #6

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=8.33"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG B
0.250	98	Roofs, HSG B
0.750	98	Weighted Average
0.750	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0150	1.25		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
0.5	79	0.0150	2.49		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.4	383	0.0050	4.55	8.05	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
3.2	562	Total			

Subcatchment 30S: Drainage Area PR-6a (Impervious part of Drainage Area PR-6)

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Hydrograph for Subcatchment 30S: Drainage Area PR-6a (Impervious part of Drainage Area PR-6)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	8.33	8.09	0.00
1.00	0.09	0.01	0.02	52.00	8.33	8.09	0.00
2.00	0.19	0.06	0.05	53.00	8.33	8.09	0.00
3.00	0.29	0.14	0.07	54.00	8.33	8.09	0.00
4.00	0.41	0.24	0.08	55.00	8.33	8.09	0.00
5.00	0.53	0.34	0.09	56.00	8.33	8.09	0.00
6.00	0.66	0.47	0.09	57.00	8.33	8.09	0.00
7.00	0.81	0.61	0.12	58.00	8.33	8.09	0.00
8.00	1.00	0.79	0.15	59.00	8.33	8.09	0.00
9.00	1.22	1.00	0.17	60.00	8.33	8.09	0.00
10.00	1.52	1.30	0.26	61.00	8.33	8.09	0.00
11.00	2.00	1.77	0.48	62.00	8.33	8.09	0.00
12.00	3.97	3.74	3.84	63.00	8.33	8.09	0.00
13.00	6.33	6.09	0.59	64.00	8.33	8.09	0.00
14.00	6.81	6.57	0.28	65.00	8.33	8.09	0.00
15.00	7.11	6.87	0.19	66.00	8.33	8.09	0.00
16.00	7.33	7.09	0.15	67.00	8.33	8.09	0.00
17.00	7.52	7.28	0.13	68.00	8.33	8.09	0.00
18.00	7.67	7.43	0.10	69.00	8.33	8.09	0.00
19.00	7.80	7.56	0.10	70.00	8.33	8.09	0.00
20.00	7.92	7.68	0.09	71.00	8.33	8.09	0.00
21.00	8.04	7.80	0.08	72.00	8.33	8.09	0.00
22.00	8.14	7.90	0.08				
23.00	8.24	8.00	0.07				
24.00	8.33	8.09	0.08				
25.00	8.33	8.09	0.00				
26.00	8.33	8.09	0.00				
27.00	8.33	8.09	0.00				
28.00	8.33	8.09	0.00				
29.00	8.33	8.09	0.00				
30.00	8.33	8.09	0.00				
31.00	8.33	8.09	0.00				
32.00	8.33	8.09	0.00				
33.00	8.33	8.09	0.00				
34.00	8.33	8.09	0.00				
35.00	8.33	8.09	0.00				
36.00	8.33	8.09	0.00				
37.00	8.33	8.09	0.00				
38.00	8.33	8.09	0.00				
39.00	8.33	8.09	0.00				
40.00	8.33	8.09	0.00				
41.00	8.33	8.09	0.00				
42.00	8.33	8.09	0.00				
43.00	8.33	8.09	0.00				
44.00	8.33	8.09	0.00				
45.00	8.33	8.09	0.00				
46.00	8.33	8.09	0.00				
47.00	8.33	8.09	0.00				
48.00	8.33	8.09	0.00				
49.00	8.33	8.09	0.00				
50.00	8.33	8.09	0.00				

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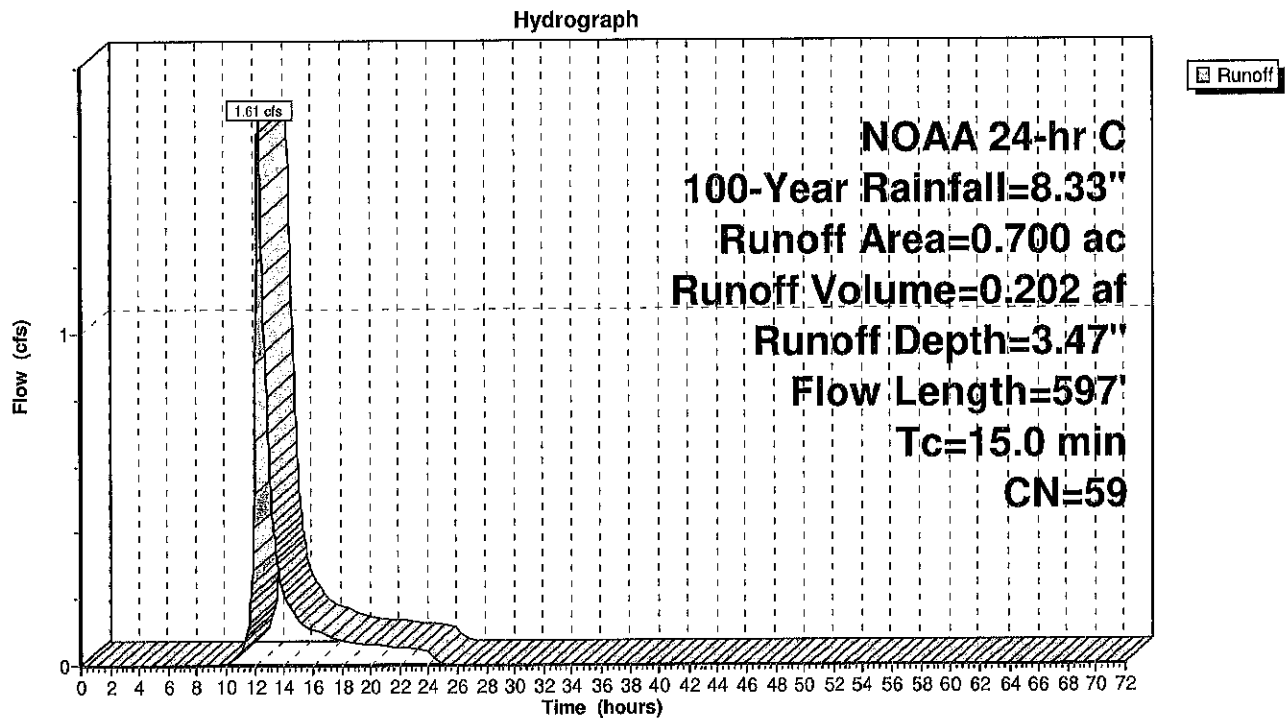
Summary for Subcatchment 31S: Drainage Area PR-6b (Pervious part of Drainage Area PR-6)

Runoff = 1.61 cfs @ 12.27 hrs, Volume= 0.202 af, Depth= 3.47"
 Routed to Pond 56P : Proposed Bioretention System #6

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=8.33"

Area (ac)	CN	Description
0.020	74	>75% Grass cover, Good, HSG C
0.460	61	>75% Grass cover, Good, HSG B
0.220	55	Woods, Good, HSG B
0.700	59	Weighted Average
0.700	59	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.3	23	0.0050	0.03		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.35"
0.2	12	0.0300	1.21		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
2.1	179	0.0050	1.44		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.4	383	0.0050	4.55	8.05	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
15.0	597	Total			

Subcatchment 31S: Drainage Area PR-6b (Pervious part of Drainage Area PR-6)

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Hydrograph for Subcatchment 31S: Drainage Area PR-6b (Pervious part of Drainage Area PR-6)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	8.33	3.47	0.00
1.00	0.09	0.00	0.00	52.00	8.33	3.47	0.00
2.00	0.19	0.00	0.00	53.00	8.33	3.47	0.00
3.00	0.29	0.00	0.00	54.00	8.33	3.47	0.00
4.00	0.41	0.00	0.00	55.00	8.33	3.47	0.00
5.00	0.53	0.00	0.00	56.00	8.33	3.47	0.00
6.00	0.66	0.00	0.00	57.00	8.33	3.47	0.00
7.00	0.81	0.00	0.00	58.00	8.33	3.47	0.00
8.00	1.00	0.00	0.00	59.00	8.33	3.47	0.00
9.00	1.22	0.00	0.00	60.00	8.33	3.47	0.00
10.00	1.52	0.00	0.00	61.00	8.33	3.47	0.00
11.00	2.00	0.05	0.04	62.00	8.33	3.47	0.00
12.00	3.97	0.70	0.52	63.00	8.33	3.47	0.00
13.00	6.33	2.05	0.60	64.00	8.33	3.47	0.00
14.00	6.81	2.38	0.21	65.00	8.33	3.47	0.00
15.00	7.11	2.59	0.14	66.00	8.33	3.47	0.00
16.00	7.33	2.74	0.11	67.00	8.33	3.47	0.00
17.00	7.52	2.87	0.09	68.00	8.33	3.47	0.00
18.00	7.67	2.98	0.08	69.00	8.33	3.47	0.00
19.00	7.80	3.08	0.07	70.00	8.33	3.47	0.00
20.00	7.92	3.17	0.06	71.00	8.33	3.47	0.00
21.00	8.04	3.25	0.06	72.00	8.33	3.47	0.00
22.00	8.14	3.33	0.05				
23.00	8.24	3.40	0.05				
24.00	8.33	3.47	0.05				
25.00	8.33	3.47	0.00				
26.00	8.33	3.47	0.00				
27.00	8.33	3.47	0.00				
28.00	8.33	3.47	0.00				
29.00	8.33	3.47	0.00				
30.00	8.33	3.47	0.00				
31.00	8.33	3.47	0.00				
32.00	8.33	3.47	0.00				
33.00	8.33	3.47	0.00				
34.00	8.33	3.47	0.00				
35.00	8.33	3.47	0.00				
36.00	8.33	3.47	0.00				
37.00	8.33	3.47	0.00				
38.00	8.33	3.47	0.00				
39.00	8.33	3.47	0.00				
40.00	8.33	3.47	0.00				
41.00	8.33	3.47	0.00				
42.00	8.33	3.47	0.00				
43.00	8.33	3.47	0.00				
44.00	8.33	3.47	0.00				
45.00	8.33	3.47	0.00				
46.00	8.33	3.47	0.00				
47.00	8.33	3.47	0.00				
48.00	8.33	3.47	0.00				
49.00	8.33	3.47	0.00				
50.00	8.33	3.47	0.00				

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100 Year Storm

NOAA 24-hr C 100-Year Rainfall=8.33"

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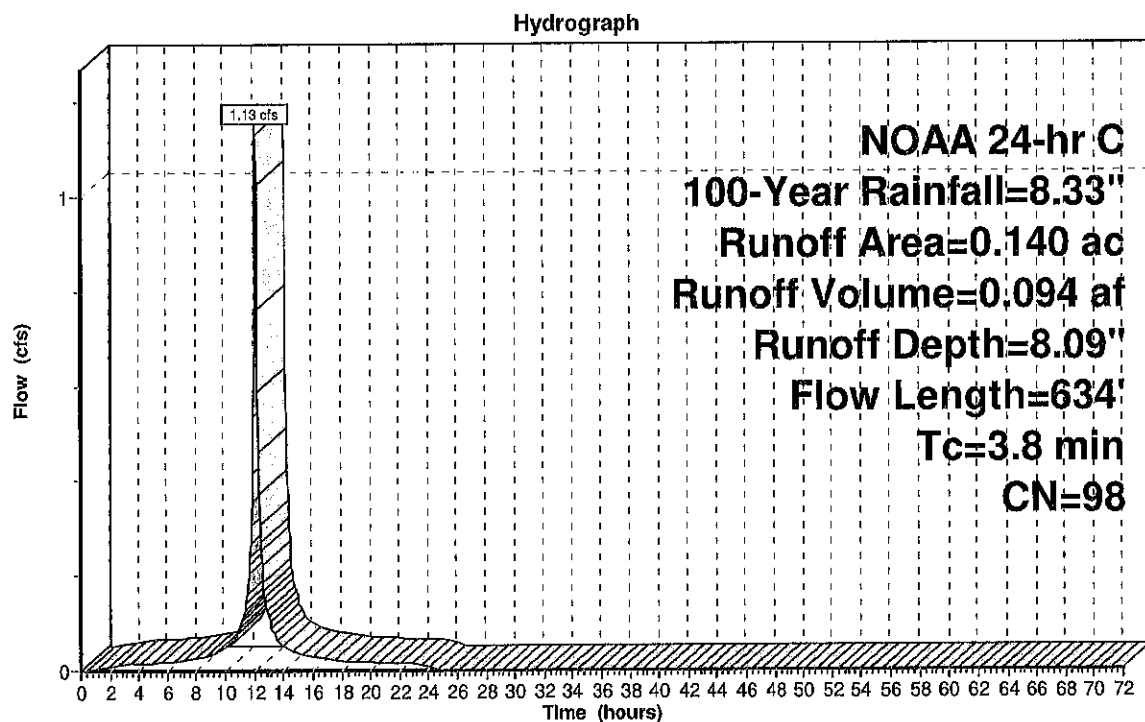
Summary for Subcatchment 32S: Drainage Area PR-7a (Impervious part of Drainage Area PR-7)

Runoff = 1.13 cfs @ 12.11 hrs, Volume= 0.094 af, Depth= 8.09"
 Routed to Link 64L : Drainage Area PR-7 (Undetained Runoff in pipes to P.O.I. "A")

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=8.33"

Area (ac)	CN	Description
0.140	98	Paved parking, HSG C
0.140	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	30	0.0050	0.64		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
1.0	122	0.0100	2.03		Shallow Concentrated Flow, Paved Kv= 20.3 fps
2.0	482	0.0050	4.03	4.95	Pipe Channel, CMP_Round 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
3.8	634	Total			

Subcatchment 32S: Drainage Area PR-7a (Impervious part of Drainage Area PR-7)

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Hydrograph for Subcatchment 32S: Drainage Area PR-7a (Impervious part of Drainage Area PR-7)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	8.33	8.09	0.00
1.00	0.09	0.01	0.00	52.00	8.33	8.09	0.00
2.00	0.19	0.06	0.01	53.00	8.33	8.09	0.00
3.00	0.29	0.14	0.01	54.00	8.33	8.09	0.00
4.00	0.41	0.24	0.01	55.00	8.33	8.09	0.00
5.00	0.53	0.34	0.02	56.00	8.33	8.09	0.00
6.00	0.66	0.47	0.02	57.00	8.33	8.09	0.00
7.00	0.81	0.61	0.02	58.00	8.33	8.09	0.00
8.00	1.00	0.79	0.03	59.00	8.33	8.09	0.00
9.00	1.22	1.00	0.03	60.00	8.33	8.09	0.00
10.00	1.52	1.30	0.05	61.00	8.33	8.09	0.00
11.00	2.00	1.77	0.09	62.00	8.33	8.09	0.00
12.00	3.97	3.74	0.68	63.00	8.33	8.09	0.00
13.00	6.33	6.09	0.11	64.00	8.33	8.09	0.00
14.00	6.81	6.57	0.05	65.00	8.33	8.09	0.00
15.00	7.11	6.87	0.04	66.00	8.33	8.09	0.00
16.00	7.33	7.09	0.03	67.00	8.33	8.09	0.00
17.00	7.52	7.28	0.02	68.00	8.33	8.09	0.00
18.00	7.67	7.43	0.02	69.00	8.33	8.09	0.00
19.00	7.80	7.56	0.02	70.00	8.33	8.09	0.00
20.00	7.92	7.68	0.02	71.00	8.33	8.09	0.00
21.00	8.04	7.80	0.02	72.00	8.33	8.09	0.00
22.00	8.14	7.90	0.01				
23.00	8.24	8.00	0.01				
24.00	8.33	8.09	0.01				
25.00	8.33	8.09	0.00				
26.00	8.33	8.09	0.00				
27.00	8.33	8.09	0.00				
28.00	8.33	8.09	0.00				
29.00	8.33	8.09	0.00				
30.00	8.33	8.09	0.00				
31.00	8.33	8.09	0.00				
32.00	8.33	8.09	0.00				
33.00	8.33	8.09	0.00				
34.00	8.33	8.09	0.00				
35.00	8.33	8.09	0.00				
36.00	8.33	8.09	0.00				
37.00	8.33	8.09	0.00				
38.00	8.33	8.09	0.00				
39.00	8.33	8.09	0.00				
40.00	8.33	8.09	0.00				
41.00	8.33	8.09	0.00				
42.00	8.33	8.09	0.00				
43.00	8.33	8.09	0.00				
44.00	8.33	8.09	0.00				
45.00	8.33	8.09	0.00				
46.00	8.33	8.09	0.00				
47.00	8.33	8.09	0.00				
48.00	8.33	8.09	0.00				
49.00	8.33	8.09	0.00				
50.00	8.33	8.09	0.00				

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Summary for Subcatchment 33S: Drainage Area PR-7b (Pervious part of Drainage Area PR-7)

Runoff = 0.13 cfs @ 12.19 hrs, Volume= 0.013 af, Depth= 5.22"
 Routed to Link 64L : Drainage Area PR-7 (Undetained Runoff in pipes to P.O.I. "A")

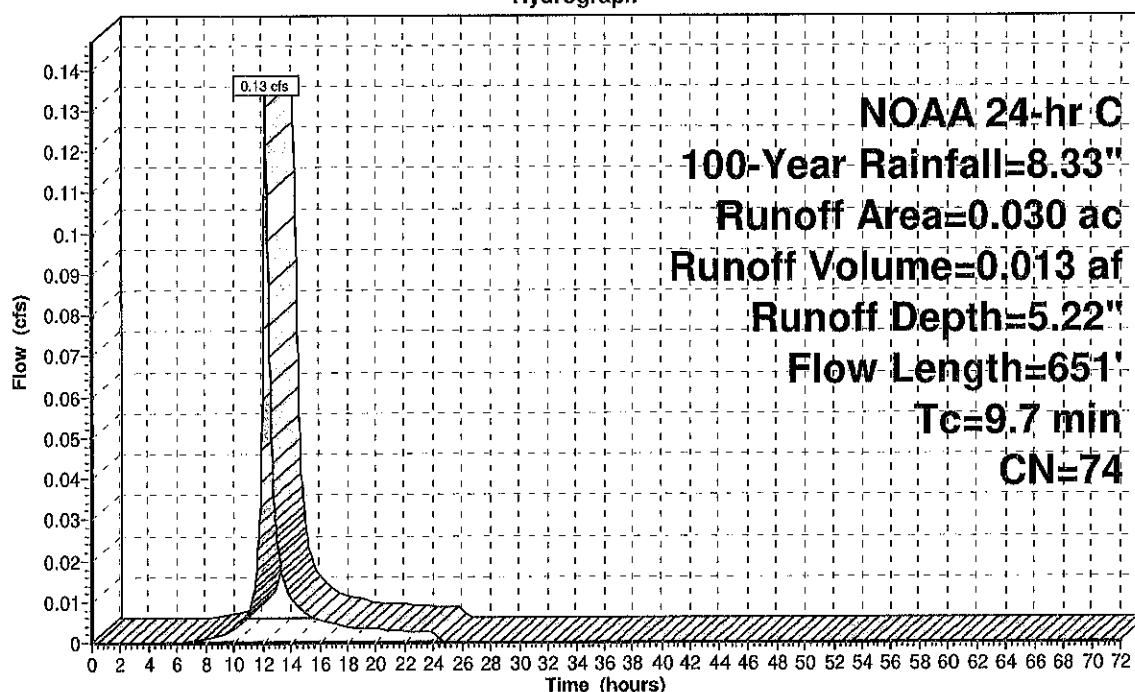
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 100-Year Rainfall=8.33"

Area (ac)	CN	Description
0.030	74	>75% Grass cover, Good, HSG C
0.030	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	17	0.0050	0.05		Sheet Flow, Grass: Dense n= 0.240 P2= 3.35"
0.8	30	0.0050	0.64		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
1.0	122	0.0100	2.03		Shallow Concentrated Flow, Paved Kv= 20.3 fps
2.0	482	0.0050	4.03	4.95	Pipe Channel, CMP_Round 15" 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
9.7	651	Total			

Subcatchment 33S: Drainage Area PR-7b (Pervious part of Drainage Area PR-7)

Hydrograph



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Hydrograph for Subcatchment 33S: Drainage Area PR-7b (Pervious part of Drainage Area PR-7)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	8.33	5.22	0.00
1.00	0.09	0.00	0.00	52.00	8.33	5.22	0.00
2.00	0.19	0.00	0.00	53.00	8.33	5.22	0.00
3.00	0.29	0.00	0.00	54.00	8.33	5.22	0.00
4.00	0.41	0.00	0.00	55.00	8.33	5.22	0.00
5.00	0.53	0.00	0.00	56.00	8.33	5.22	0.00
6.00	0.66	0.00	0.00	57.00	8.33	5.22	0.00
7.00	0.81	0.00	0.00	58.00	8.33	5.22	0.00
8.00	1.00	0.02	0.00	59.00	8.33	5.22	0.00
9.00	1.22	0.07	0.00	60.00	8.33	5.22	0.00
10.00	1.52	0.15	0.00	61.00	8.33	5.22	0.00
11.00	2.00	0.35	0.01	62.00	8.33	5.22	0.00
12.00	3.97	1.57	0.06	63.00	8.33	5.22	0.00
13.00	6.33	3.47	0.03	64.00	8.33	5.22	0.00
14.00	6.81	3.88	0.01	65.00	8.33	5.22	0.00
15.00	7.11	4.14	0.01	66.00	8.33	5.22	0.00
16.00	7.33	4.33	0.01	67.00	8.33	5.22	0.00
17.00	7.52	4.50	0.00	68.00	8.33	5.22	0.00
18.00	7.67	4.63	0.00	69.00	8.33	5.22	0.00
19.00	7.80	4.75	0.00	70.00	8.33	5.22	0.00
20.00	7.92	4.86	0.00	71.00	8.33	5.22	0.00
21.00	8.04	4.96	0.00	72.00	8.33	5.22	0.00
22.00	8.14	5.05	0.00				
23.00	8.24	5.14	0.00				
24.00	8.33	5.22	0.00				
25.00	8.33	5.22	0.00				
26.00	8.33	5.22	0.00				
27.00	8.33	5.22	0.00				
28.00	8.33	5.22	0.00				
29.00	8.33	5.22	0.00				
30.00	8.33	5.22	0.00				
31.00	8.33	5.22	0.00				
32.00	8.33	5.22	0.00				
33.00	8.33	5.22	0.00				
34.00	8.33	5.22	0.00				
35.00	8.33	5.22	0.00				
36.00	8.33	5.22	0.00				
37.00	8.33	5.22	0.00				
38.00	8.33	5.22	0.00				
39.00	8.33	5.22	0.00				
40.00	8.33	5.22	0.00				
41.00	8.33	5.22	0.00				
42.00	8.33	5.22	0.00				
43.00	8.33	5.22	0.00				
44.00	8.33	5.22	0.00				
45.00	8.33	5.22	0.00				
46.00	8.33	5.22	0.00				
47.00	8.33	5.22	0.00				
48.00	8.33	5.22	0.00				
49.00	8.33	5.22	0.00				
50.00	8.33	5.22	0.00				

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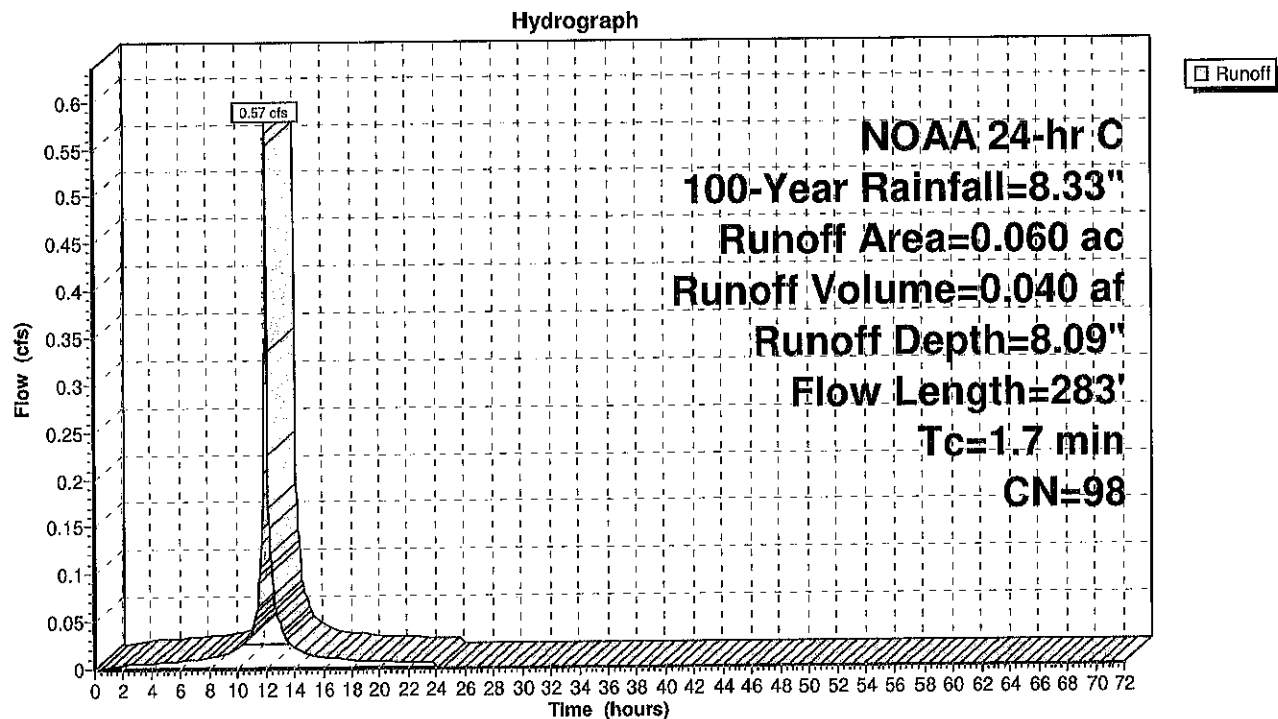
Summary for Subcatchment 34S: Drainage Area PR-8a (Impervious part of Drainage Area PR-8)

Runoff = 0.57 cfs @ 12.08 hrs, Volume= 0.040 af, Depth= 8.09"
Routed to Link 65L : Drainage Area PR-8 (Overland Runoff to P.O.I. "A")

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=8.33"

Area (ac)	CN	Description
0.060	98	Paved parking, HSG C
0.060	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	17	0.0400	1.30		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
1.5	266	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.7	283	Total			

Subcatchment 34S: Drainage Area PR-8a (Impervious part of Drainage Area PR-8)

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Hydrograph for Subcatchment 34S: Drainage Area PR-8a (Impervious part of Drainage Area PR-8)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	8.33	8.09	0.00
1.00	0.09	0.01	0.00	52.00	8.33	8.09	0.00
2.00	0.19	0.06	0.00	53.00	8.33	8.09	0.00
3.00	0.29	0.14	0.01	54.00	8.33	8.09	0.00
4.00	0.41	0.24	0.01	55.00	8.33	8.09	0.00
5.00	0.53	0.34	0.01	56.00	8.33	8.09	0.00
6.00	0.66	0.47	0.01	57.00	8.33	8.09	0.00
7.00	0.81	0.61	0.01	58.00	8.33	8.09	0.00
8.00	1.00	0.79	0.01	59.00	8.33	8.09	0.00
9.00	1.22	1.00	0.01	60.00	8.33	8.09	0.00
10.00	1.52	1.30	0.02	61.00	8.33	8.09	0.00
11.00	2.00	1.77	0.04	62.00	8.33	8.09	0.00
12.00	3.97	3.74	0.35	63.00	8.33	8.09	0.00
13.00	6.33	6.09	0.05	64.00	8.33	8.09	0.00
14.00	6.81	6.57	0.02	65.00	8.33	8.09	0.00
15.00	7.11	6.87	0.01	66.00	8.33	8.09	0.00
16.00	7.33	7.09	0.01	67.00	8.33	8.09	0.00
17.00	7.52	7.28	0.01	68.00	8.33	8.09	0.00
18.00	7.67	7.43	0.01	69.00	8.33	8.09	0.00
19.00	7.80	7.56	0.01	70.00	8.33	8.09	0.00
20.00	7.92	7.68	0.01	71.00	8.33	8.09	0.00
21.00	8.04	7.80	0.01	72.00	8.33	8.09	0.00
22.00	8.14	7.90	0.01				
23.00	8.24	8.00	0.01				
24.00	8.33	8.09	0.01				
25.00	8.33	8.09	0.00				
26.00	8.33	8.09	0.00				
27.00	8.33	8.09	0.00				
28.00	8.33	8.09	0.00				
29.00	8.33	8.09	0.00				
30.00	8.33	8.09	0.00				
31.00	8.33	8.09	0.00				
32.00	8.33	8.09	0.00				
33.00	8.33	8.09	0.00				
34.00	8.33	8.09	0.00				
35.00	8.33	8.09	0.00				
36.00	8.33	8.09	0.00				
37.00	8.33	8.09	0.00				
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39.00	8.33	8.09	0.00				
40.00	8.33	8.09	0.00				
41.00	8.33	8.09	0.00				
42.00	8.33	8.09	0.00				
43.00	8.33	8.09	0.00				
44.00	8.33	8.09	0.00				
45.00	8.33	8.09	0.00				
46.00	8.33	8.09	0.00				
47.00	8.33	8.09	0.00				
48.00	8.33	8.09	0.00				
49.00	8.33	8.09	0.00				
50.00	8.33	8.09	0.00				

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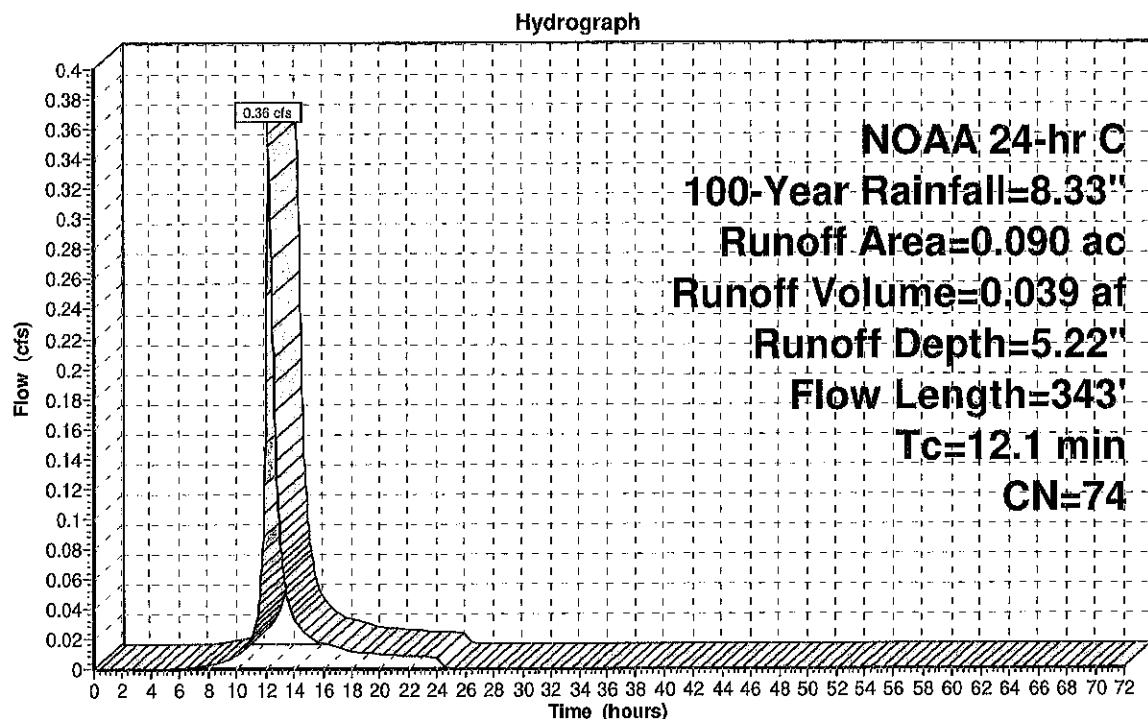
Summary for Subcatchment 35S: Drainage Area PR-8b (Pervious part of Drainage Area PR-8)

Runoff = 0.36 cfs @ 12.22 hrs, Volume= 0.039 af, Depth= 5.22"
 Routed to Link 65L : Drainage Area PR-8 (Overland Runoff to P.O.I. "A")

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=8.33"

Area (ac)	CN	Description
0.090	74	>75% Grass cover, Good, HSG C
0.090	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	49	0.0100	0.08		Sheet Flow, Grass: Dense n= 0.240 P2= 3.35"
1.7	294	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
12.1	343	Total			

Subcatchment 35S: Drainage Area PR-8b (Pervious part of Drainage Area PR-8)

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Hydrograph for Subcatchment 35S: Drainage Area PR-8b (Pervious part of Drainage Area PR-8)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	8.33	5.22	0.00
1.00	0.09	0.00	0.00	52.00	8.33	5.22	0.00
2.00	0.19	0.00	0.00	53.00	8.33	5.22	0.00
3.00	0.29	0.00	0.00	54.00	8.33	5.22	0.00
4.00	0.41	0.00	0.00	55.00	8.33	5.22	0.00
5.00	0.53	0.00	0.00	56.00	8.33	5.22	0.00
6.00	0.66	0.00	0.00	57.00	8.33	5.22	0.00
7.00	0.81	0.00	0.00	58.00	8.33	5.22	0.00
8.00	1.00	0.02	0.00	59.00	8.33	5.22	0.00
9.00	1.22	0.07	0.00	60.00	8.33	5.22	0.00
10.00	1.52	0.15	0.01	61.00	8.33	5.22	0.00
11.00	2.00	0.35	0.02	62.00	8.33	5.22	0.00
12.00	3.97	1.57	0.15	63.00	8.33	5.22	0.00
13.00	6.33	3.47	0.09	64.00	8.33	5.22	0.00
14.00	6.81	3.88	0.03	65.00	8.33	5.22	0.00
15.00	7.11	4.14	0.02	66.00	8.33	5.22	0.00
16.00	7.33	4.33	0.02	67.00	8.33	5.22	0.00
17.00	7.52	4.50	0.01	68.00	8.33	5.22	0.00
18.00	7.67	4.63	0.01	69.00	8.33	5.22	0.00
19.00	7.80	4.75	0.01	70.00	8.33	5.22	0.00
20.00	7.92	4.86	0.01	71.00	8.33	5.22	0.00
21.00	8.04	4.96	0.01	72.00	8.33	5.22	0.00
22.00	8.14	5.05	0.01				
23.00	8.24	5.14	0.01				
24.00	8.33	5.22	0.01				
25.00	8.33	5.22	0.00				
26.00	8.33	5.22	0.00				
27.00	8.33	5.22	0.00				
28.00	8.33	5.22	0.00				
29.00	8.33	5.22	0.00				
30.00	8.33	5.22	0.00				
31.00	8.33	5.22	0.00				
32.00	8.33	5.22	0.00				
33.00	8.33	5.22	0.00				
34.00	8.33	5.22	0.00				
35.00	8.33	5.22	0.00				
36.00	8.33	5.22	0.00				
37.00	8.33	5.22	0.00				
38.00	8.33	5.22	0.00				
39.00	8.33	5.22	0.00				
40.00	8.33	5.22	0.00				
41.00	8.33	5.22	0.00				
42.00	8.33	5.22	0.00				
43.00	8.33	5.22	0.00				
44.00	8.33	5.22	0.00				
45.00	8.33	5.22	0.00				
46.00	8.33	5.22	0.00				
47.00	8.33	5.22	0.00				
48.00	8.33	5.22	0.00				
49.00	8.33	5.22	0.00				
50.00	8.33	5.22	0.00				

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100 Year Storm

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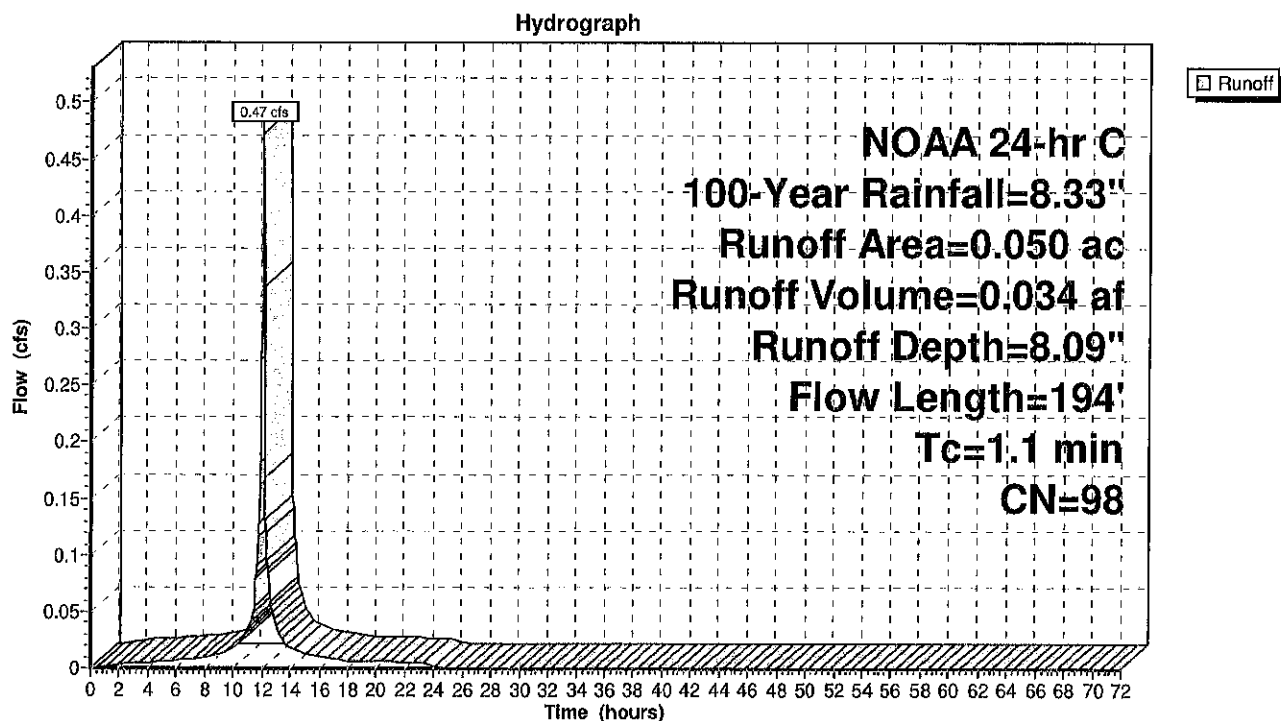
Summary for Subcatchment 36S: Drainage Area PR-9a (Impervious part of Drainage Area PR-9)

Runoff = 0.47 cfs @ 12.07 hrs, Volume= 0.034 af, Depth= 8.09"
 Routed to Link 63L : Drainage Area PR-10 (Overland Runoff to P.O.I. "B")

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=8.33"

Area (ac)	CN	Description
0.050	98	Paved parking, HSG C
0.050	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	18	0.0250	1.09		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
0.8	176	0.0340	3.74		Shallow Concentrated Flow, Paved Kv= 20.3 fps
1.1	194	Total			

Subcatchment 36S: Drainage Area PR-9a (Impervious part of Drainage Area PR-9)

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Hydrograph for Subcatchment 36S: Drainage Area PR-9a (Impervious part of Drainage Area PR-9)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	8.33	8.09	0.00
1.00	0.09	0.01	0.00	52.00	8.33	8.09	0.00
2.00	0.19	0.06	0.00	53.00	8.33	8.09	0.00
3.00	0.29	0.14	0.00	54.00	8.33	8.09	0.00
4.00	0.41	0.24	0.01	55.00	8.33	8.09	0.00
5.00	0.53	0.34	0.01	56.00	8.33	8.09	0.00
6.00	0.66	0.47	0.01	57.00	8.33	8.09	0.00
7.00	0.81	0.61	0.01	58.00	8.33	8.09	0.00
8.00	1.00	0.79	0.01	59.00	8.33	8.09	0.00
9.00	1.22	1.00	0.01	60.00	8.33	8.09	0.00
10.00	1.52	1.30	0.02	61.00	8.33	8.09	0.00
11.00	2.00	1.77	0.03	62.00	8.33	8.09	0.00
12.00	3.97	3.74	0.31	63.00	8.33	8.09	0.00
13.00	6.33	6.09	0.04	64.00	8.33	8.09	0.00
14.00	6.81	6.57	0.02	65.00	8.33	8.09	0.00
15.00	7.11	6.87	0.01	66.00	8.33	8.09	0.00
16.00	7.33	7.09	0.01	67.00	8.33	8.09	0.00
17.00	7.52	7.28	0.01	68.00	8.33	8.09	0.00
18.00	7.67	7.43	0.01	69.00	8.33	8.09	0.00
19.00	7.80	7.56	0.01	70.00	8.33	8.09	0.00
20.00	7.92	7.68	0.01	71.00	8.33	8.09	0.00
21.00	8.04	7.80	0.01	72.00	8.33	8.09	0.00
22.00	8.14	7.90	0.01				
23.00	8.24	8.00	0.00				
24.00	8.33	8.09	0.00				
25.00	8.33	8.09	0.00				
26.00	8.33	8.09	0.00				
27.00	8.33	8.09	0.00				
28.00	8.33	8.09	0.00				
29.00	8.33	8.09	0.00				
30.00	8.33	8.09	0.00				
31.00	8.33	8.09	0.00				
32.00	8.33	8.09	0.00				
33.00	8.33	8.09	0.00				
34.00	8.33	8.09	0.00				
35.00	8.33	8.09	0.00				
36.00	8.33	8.09	0.00				
37.00	8.33	8.09	0.00				
38.00	8.33	8.09	0.00				
39.00	8.33	8.09	0.00				
40.00	8.33	8.09	0.00				
41.00	8.33	8.09	0.00				
42.00	8.33	8.09	0.00				
43.00	8.33	8.09	0.00				
44.00	8.33	8.09	0.00				
45.00	8.33	8.09	0.00				
46.00	8.33	8.09	0.00				
47.00	8.33	8.09	0.00				
48.00	8.33	8.09	0.00				
49.00	8.33	8.09	0.00				
50.00	8.33	8.09	0.00				

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100 Year Storm

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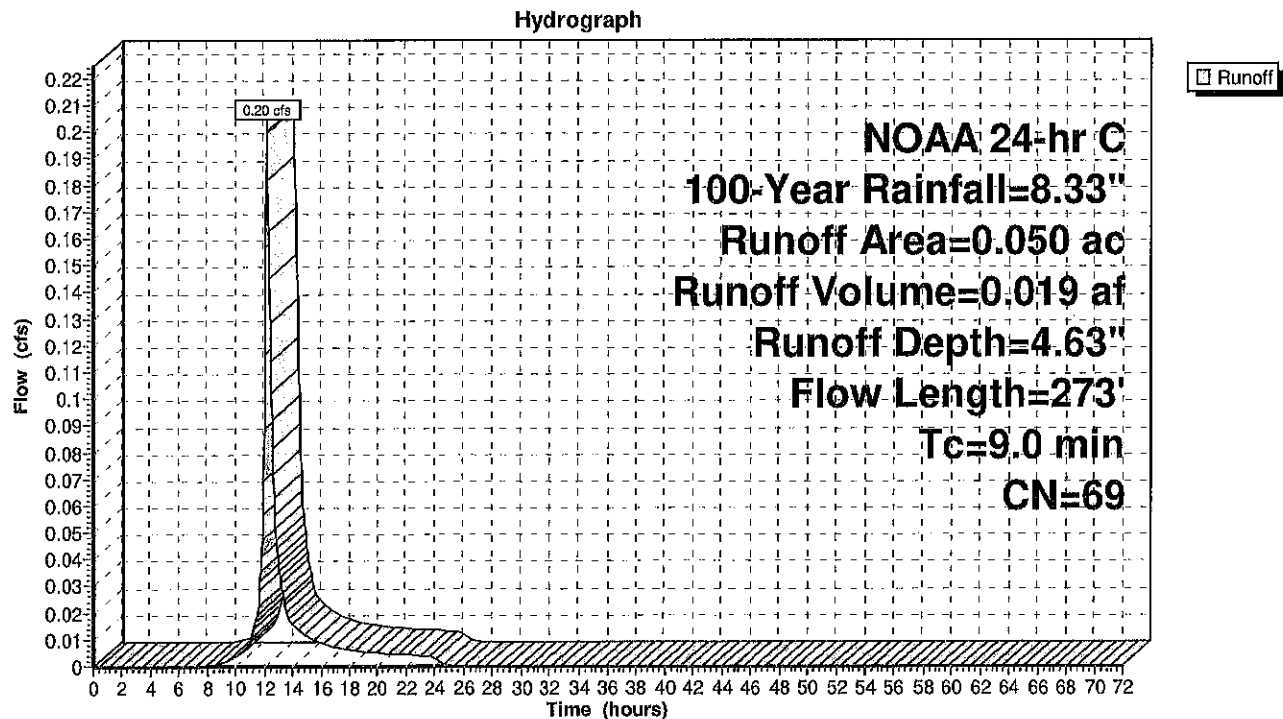
Summary for Subcatchment 37S: Drainage Area PR-9b (Pervious part of Drainage Area PR-9)

Runoff = 0.20 cfs @ 12.18 hrs, Volume= 0.019 af, Depth= 4.63"
 Routed to Link 63L : Drainage Area PR-10 (Overland Runoff to P.O.I. "B")

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=8.33"

Area (ac)	CN	Description
0.020	61	>75% Grass cover, Good, HSG B
0.030	74	>75% Grass cover, Good, HSG C
0.050	69	Weighted Average
0.050	69	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	18	0.0030	0.04		Sheet Flow, Grass: Dense n= 0.240 P2= 3.35"
0.2	6	0.0050	0.46		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.35"
1.2	249	0.0280	3.40		Shallow Concentrated Flow, Paved Kv= 20.3 fps
9.0	273	Total			

Subcatchment 37S: Drainage Area PR-9b (Pervious part of Drainage Area PR-9)

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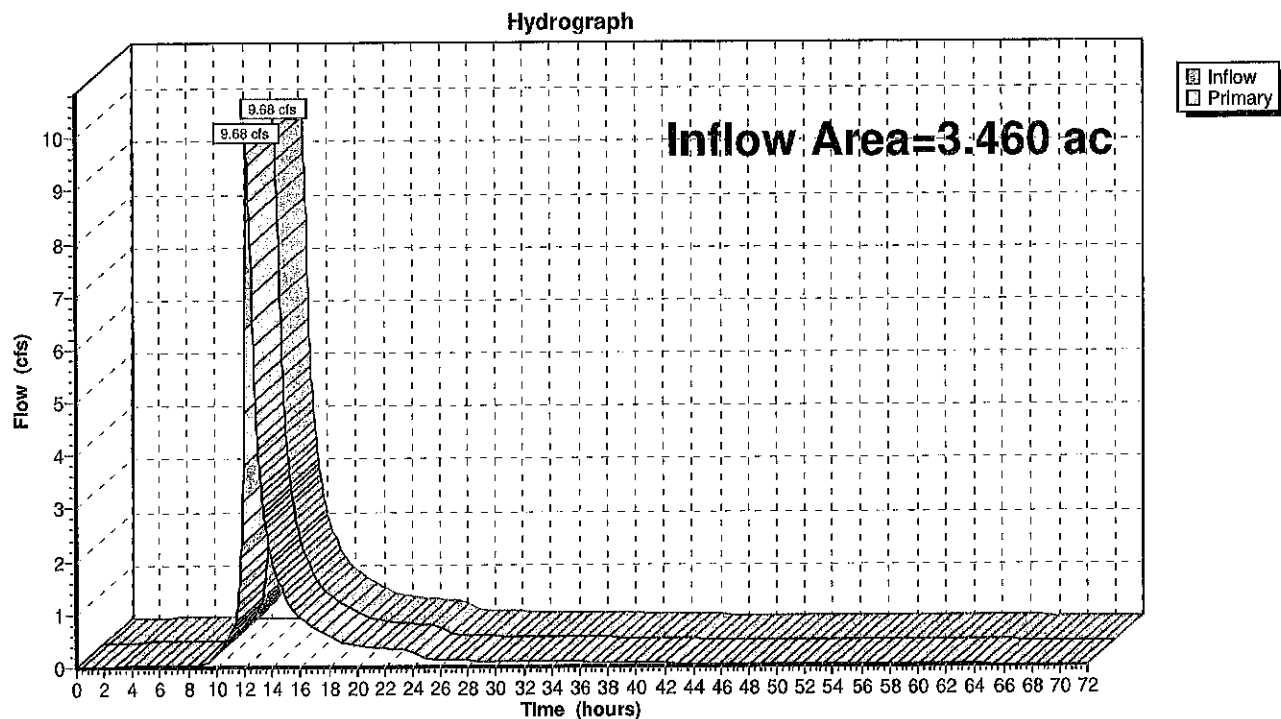
Hydrograph for Subcatchment 37S: Drainage Area PR-9b (Pervious part of Drainage Area PR-9)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	51.00	8.33	4.63	0.00
1.00	0.09	0.00	0.00	52.00	8.33	4.63	0.00
2.00	0.19	0.00	0.00	53.00	8.33	4.63	0.00
3.00	0.29	0.00	0.00	54.00	8.33	4.63	0.00
4.00	0.41	0.00	0.00	55.00	8.33	4.63	0.00
5.00	0.53	0.00	0.00	56.00	8.33	4.63	0.00
6.00	0.66	0.00	0.00	57.00	8.33	4.63	0.00
7.00	0.81	0.00	0.00	58.00	8.33	4.63	0.00
8.00	1.00	0.00	0.00	59.00	8.33	4.63	0.00
9.00	1.22	0.02	0.00	60.00	8.33	4.63	0.00
10.00	1.52	0.08	0.00	61.00	8.33	4.63	0.00
11.00	2.00	0.22	0.01	62.00	8.33	4.63	0.00
12.00	3.97	1.25	0.09	63.00	8.33	4.63	0.00
13.00	6.33	2.97	0.04	64.00	8.33	4.63	0.00
14.00	6.81	3.36	0.02	65.00	8.33	4.63	0.00
15.00	7.11	3.61	0.01	66.00	8.33	4.63	0.00
16.00	7.33	3.79	0.01	67.00	8.33	4.63	0.00
17.00	7.52	3.94	0.01	68.00	8.33	4.63	0.00
18.00	7.67	4.07	0.01	69.00	8.33	4.63	0.00
19.00	7.80	4.18	0.01	70.00	8.33	4.63	0.00
20.00	7.92	4.28	0.01	71.00	8.33	4.63	0.00
21.00	8.04	4.38	0.00	72.00	8.33	4.63	0.00
22.00	8.14	4.47	0.00				
23.00	8.24	4.55	0.00				
24.00	8.33	4.63	0.00				
25.00	8.33	4.63	0.00				
26.00	8.33	4.63	0.00				
27.00	8.33	4.63	0.00				
28.00	8.33	4.63	0.00				
29.00	8.33	4.63	0.00				
30.00	8.33	4.63	0.00				
31.00	8.33	4.63	0.00				
32.00	8.33	4.63	0.00				
33.00	8.33	4.63	0.00				
34.00	8.33	4.63	0.00				
35.00	8.33	4.63	0.00				
36.00	8.33	4.63	0.00				
37.00	8.33	4.63	0.00				
38.00	8.33	4.63	0.00				
39.00	8.33	4.63	0.00				
40.00	8.33	4.63	0.00				
41.00	8.33	4.63	0.00				
42.00	8.33	4.63	0.00				
43.00	8.33	4.63	0.00				
44.00	8.33	4.63	0.00				
45.00	8.33	4.63	0.00				
46.00	8.33	4.63	0.00				
47.00	8.33	4.63	0.00				
48.00	8.33	4.63	0.00				
49.00	8.33	4.63	0.00				
50.00	8.33	4.63	0.00				

Summary for Link 61L: Total to P.O.I. "A"

Inflow Area = 3.460 ac, 66.47% Impervious, Inflow Depth > 6.08" for 100-Year event
Inflow = 9.68 cfs @ 12.20 hrs, Volume= 1.754 af
Primary = 9.68 cfs @ 12.20 hrs, Volume= 1.754 af, Atten= 0%, Lag= 0.0 min

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

Link 61L: Total to P.O.I. "A"

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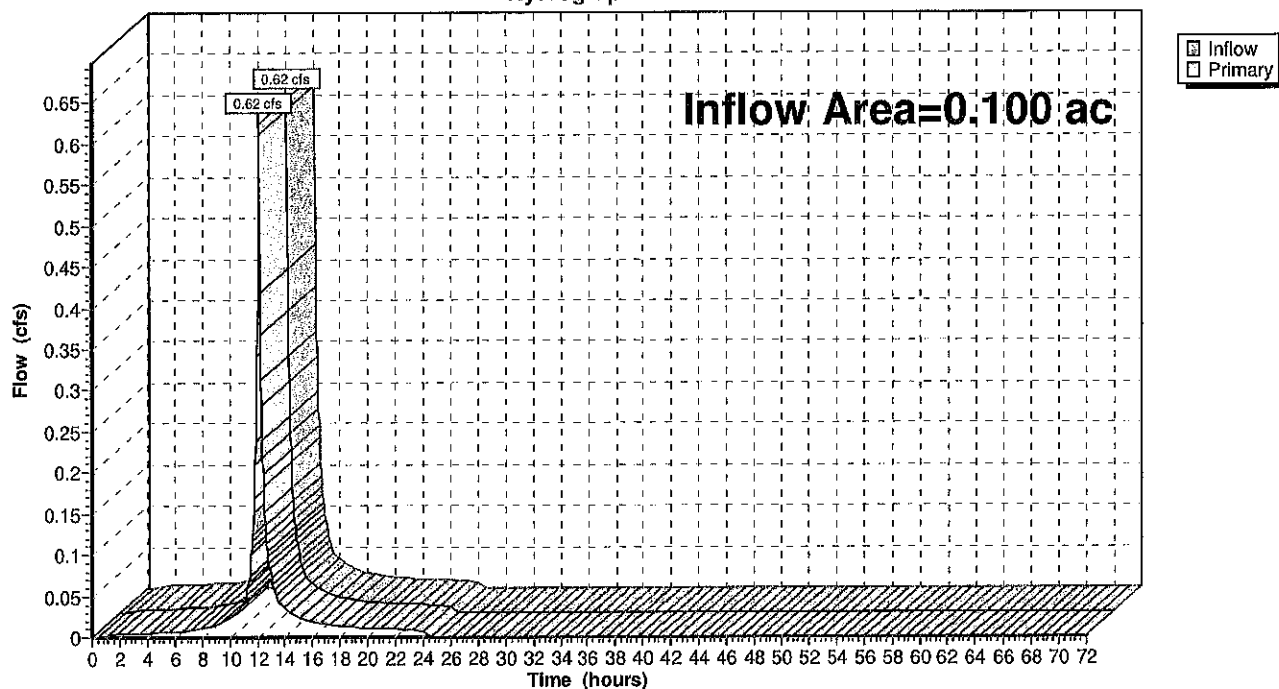
Hydrograph for Link 61L: Total to P.O.I. "A"

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.04	0.00	0.04
1.00	0.01	0.00	0.01	52.00	0.04	0.00	0.04
2.00	0.01	0.00	0.01	53.00	0.04	0.00	0.04
3.00	0.02	0.00	0.02	54.00	0.04	0.00	0.04
4.00	0.02	0.00	0.02	55.00	0.04	0.00	0.04
5.00	0.02	0.00	0.02	56.00	0.03	0.00	0.03
6.00	0.03	0.00	0.03	57.00	0.03	0.00	0.03
7.00	0.03	0.00	0.03	58.00	0.03	0.00	0.03
8.00	0.04	0.00	0.04	59.00	0.03	0.00	0.03
9.00	0.05	0.00	0.05	60.00	0.03	0.00	0.03
10.00	0.25	0.00	0.25	61.00	0.03	0.00	0.03
11.00	0.60	0.00	0.60	62.00	0.03	0.00	0.03
12.00	4.81	0.00	4.81	63.00	0.03	0.00	0.03
13.00	4.12	0.00	4.12	64.00	0.02	0.00	0.02
14.00	1.98	0.00	1.98	65.00	0.02	0.00	0.02
15.00	1.29	0.00	1.29	66.00	0.01	0.00	0.01
16.00	0.92	0.00	0.92	67.00	0.01	0.00	0.01
17.00	0.72	0.00	0.72	68.00	0.01	0.00	0.01
18.00	0.57	0.00	0.57	69.00	0.01	0.00	0.01
19.00	0.46	0.00	0.46	70.00	0.01	0.00	0.01
20.00	0.41	0.00	0.41	71.00	0.00	0.00	0.00
21.00	0.38	0.00	0.38	72.00	0.00	0.00	0.00
22.00	0.35	0.00	0.35				
23.00	0.33	0.00	0.33				
24.00	0.31	0.00	0.31				
25.00	0.16	0.00	0.16				
26.00	0.13	0.00	0.13				
27.00	0.12	0.00	0.12				
28.00	0.12	0.00	0.12				
29.00	0.11	0.00	0.11				
30.00	0.11	0.00	0.11				
31.00	0.10	0.00	0.10				
32.00	0.10	0.00	0.10				
33.00	0.10	0.00	0.10				
34.00	0.09	0.00	0.09				
35.00	0.09	0.00	0.09				
36.00	0.09	0.00	0.09				
37.00	0.07	0.00	0.07				
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	0.05	0.00	0.05				
42.00	0.05	0.00	0.05				
43.00	0.05	0.00	0.05				
44.00	0.05	0.00	0.05				
45.00	0.05	0.00	0.05				
46.00	0.04	0.00	0.04				
47.00	0.04	0.00	0.04				
48.00	0.04	0.00	0.04				
49.00	0.04	0.00	0.04				
50.00	0.04	0.00	0.04				

Summary for Link 62L: Total to P.O.I. "B"

Inflow Area = 0.100 ac, 50.00% Impervious, Inflow Depth = 6.36" for 100-Year event
Inflow = 0.62 cfs @ 12.08 hrs, Volume= 0.053 af
Primary = 0.62 cfs @ 12.08 hrs, Volume= 0.053 af, Atten= 0%, Lag= 0.0 min

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

Link 62L: Total to P.O.I. "B"**Hydrograph**

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100 Year Storm
NOAA 24-hr C 100-Year Rainfall=8.33"

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Hydrograph for Link 62L: Total to P.O.I. "B"

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	51.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	52.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
3.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
4.00	0.01	0.00	0.01	55.00	0.00	0.00	0.00
5.00	0.01	0.00	0.01	56.00	0.00	0.00	0.00
6.00	0.01	0.00	0.01	57.00	0.00	0.00	0.00
7.00	0.01	0.00	0.01	58.00	0.00	0.00	0.00
8.00	0.01	0.00	0.01	59.00	0.00	0.00	0.00
9.00	0.01	0.00	0.01	60.00	0.00	0.00	0.00
10.00	0.02	0.00	0.02	61.00	0.00	0.00	0.00
11.00	0.04	0.00	0.04	62.00	0.00	0.00	0.00
12.00	0.40	0.00	0.40	63.00	0.00	0.00	0.00
13.00	0.08	0.00	0.08	64.00	0.00	0.00	0.00
14.00	0.03	0.00	0.03	65.00	0.00	0.00	0.00
15.00	0.02	0.00	0.02	66.00	0.00	0.00	0.00
16.00	0.02	0.00	0.02	67.00	0.00	0.00	0.00
17.00	0.02	0.00	0.02	68.00	0.00	0.00	0.00
18.00	0.01	0.00	0.01	69.00	0.00	0.00	0.00
19.00	0.01	0.00	0.01	70.00	0.00	0.00	0.00
20.00	0.01	0.00	0.01	71.00	0.00	0.00	0.00
21.00	0.01	0.00	0.01	72.00	0.00	0.00	0.00
22.00	0.01	0.00	0.01				
23.00	0.01	0.00	0.01				
24.00	0.01	0.00	0.01				
25.00	0.00	0.00	0.00				
26.00	0.00	0.00	0.00				
27.00	0.00	0.00	0.00				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				

**APPENDIX C: COMPARISON FOR EXISTING AND PROPOSED RATES OF
RUNOFF TO P.O.I. 'B'**

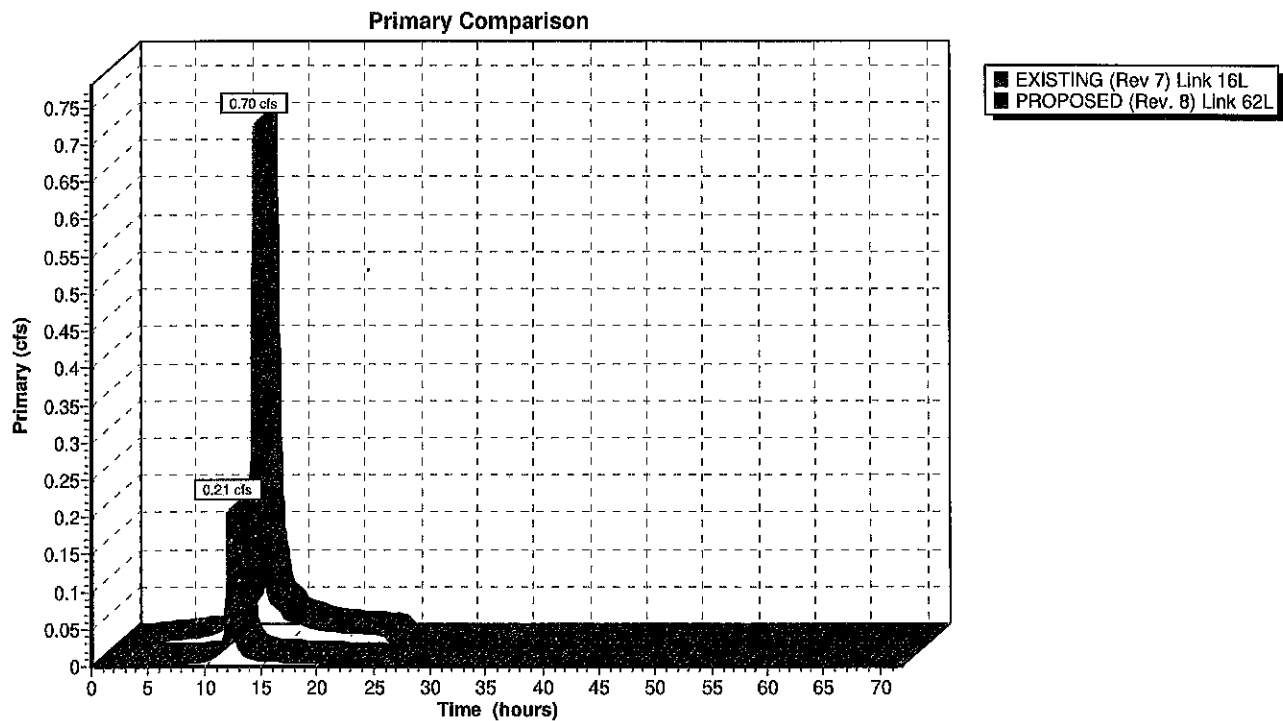
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NOAA 24-hr C 2-Year Rainfall=3.31"

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NOAA 24-hr C 2-Year Rainfall=3.31"

Prepared by Menlo Engineering Associates

Printed 8/29/2023

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Primary Comparison

Time (hours)	EXISTING (Rev 7) Link 16L (cfs)	PROPOSED (Rev. 8) Link 62L (cfs)
0.00	0.00	0.00
2.50	0.00	0.00
5.00	0.01	0.00
7.50	0.01	0.00
10.00	0.02	0.01
12.50	0.32	0.05
15.00	0.04	0.01
17.50	0.02	0.00
20.00	0.02	0.00
22.50	0.01	0.00
25.00	0.00	0.00
27.50	0.00	0.00
30.00	0.00	0.00
32.50	0.00	0.00
35.00	0.00	0.00
37.50	0.00	0.00
40.00	0.00	0.00
42.50	0.00	0.00
45.00	0.00	0.00
47.50	0.00	0.00
50.00	0.00	0.00
52.50	0.00	0.00
55.00	0.00	0.00
57.50	0.00	0.00
60.00	0.00	0.00
62.50	0.00	0.00
65.00	0.00	0.00
67.50	0.00	0.00
70.00	0.00	0.00

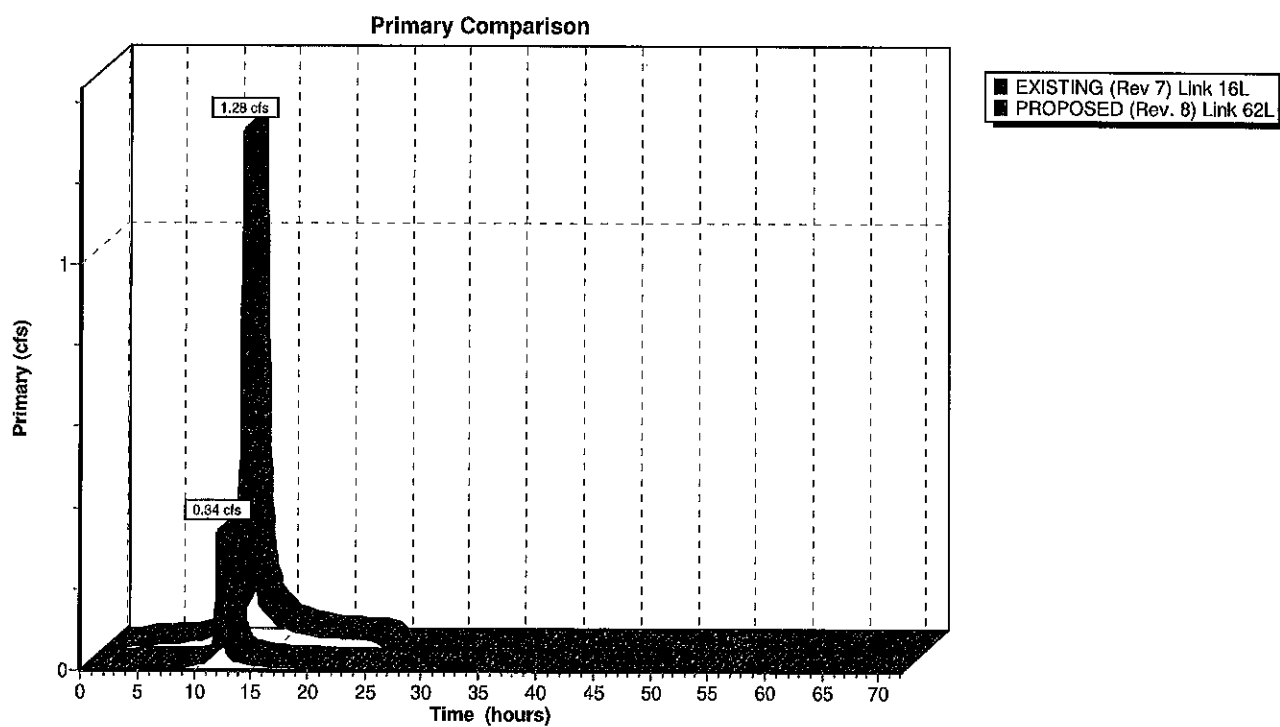
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NOAA 24-hr C 10-Year Rainfall=5.01"

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2005.109.02_PROPOSED (Rev. 8)

NOAA 24-hr C 10-Year Rainfall=5.01"

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Primary Comparison

Time (hours)	EXISTING (Rev 7) Link 16L (cfs)	PROPOSED (Rev. 8) Link 62L (cfs)
0.00	0.00	0.00
2.50	0.01	0.00
5.00	0.01	0.00
7.50	0.02	0.01
10.00	0.04	0.01
12.50	0.57	0.09
15.00	0.06	0.01
17.50	0.04	0.01
20.00	0.03	0.01
22.50	0.02	0.01
25.00	0.00	0.00
27.50	0.00	0.00
30.00	0.00	0.00
32.50	0.00	0.00
35.00	0.00	0.00
37.50	0.00	0.00
40.00	0.00	0.00
42.50	0.00	0.00
45.00	0.00	0.00
47.50	0.00	0.00
50.00	0.00	0.00
52.50	0.00	0.00
55.00	0.00	0.00
57.50	0.00	0.00
60.00	0.00	0.00
62.50	0.00	0.00
65.00	0.00	0.00
67.50	0.00	0.00
70.00	0.00	0.00

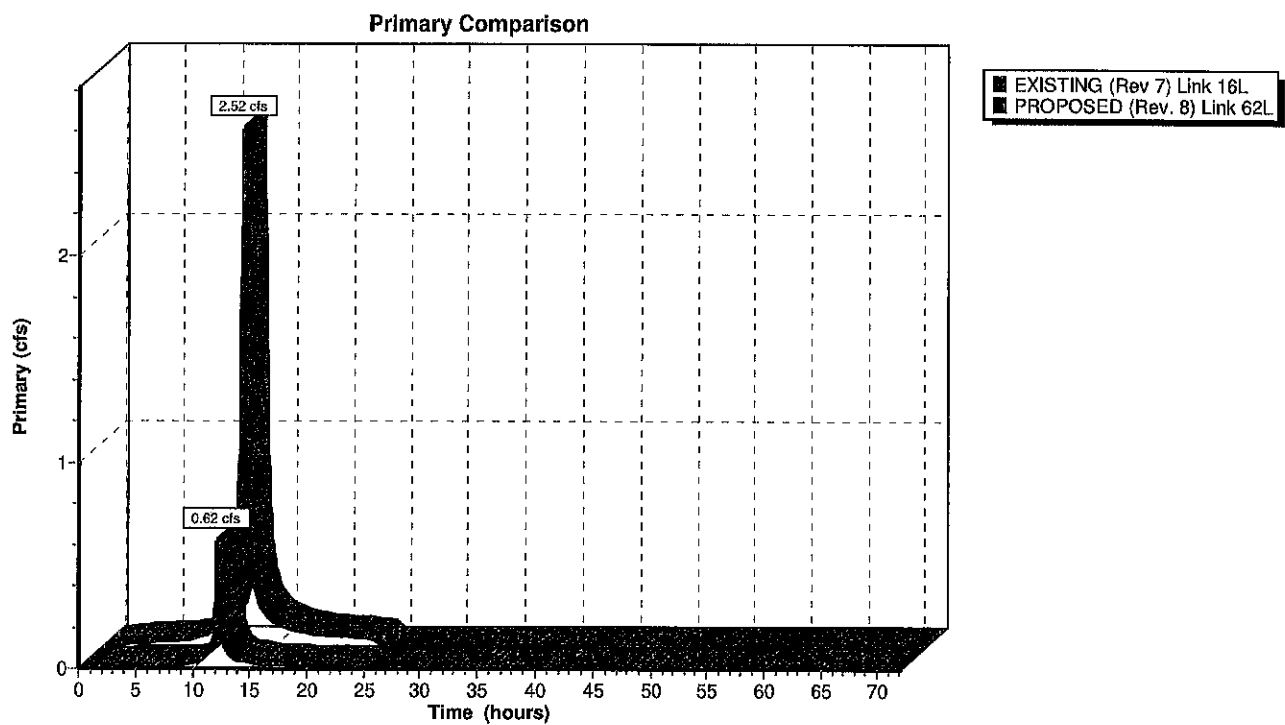
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NOAA 24-hr C 100-Year Rainfall=8.33"

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2005.109.02_PROPOSED (Rev. 8)

NOAA 24-hr C 100-Year Rainfall=8.33"

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Primary Comparison

Time (hours)	EXISTING (Rev 7) Link 16L (cfs)	PROPOSED (Rev. 8) Link 62L (cfs)
0.00	0.00	0.00
2.50	0.01	0.00
5.00	0.02	0.01
7.50	0.03	0.01
10.00	0.09	0.02
12.50	1.10	0.18
15.00	0.12	0.02
17.50	0.07	0.01
20.00	0.05	0.01
22.50	0.04	0.01
25.00	0.00	0.00
27.50	0.00	0.00
30.00	0.00	0.00
32.50	0.00	0.00
35.00	0.00	0.00
37.50	0.00	0.00
40.00	0.00	0.00
42.50	0.00	0.00
45.00	0.00	0.00
47.50	0.00	0.00
50.00	0.00	0.00
52.50	0.00	0.00
55.00	0.00	0.00
57.50	0.00	0.00
60.00	0.00	0.00
62.50	0.00	0.00
65.00	0.00	0.00
67.50	0.00	0.00
70.00	0.00	0.00

APPENDIX D: PROPOSED BIORETENTION SYSTEMS ROUTING

2 YEAR STORM

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2 Year Storm
NOAA 24-hr C 2-Year Rainfall=3.31"

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Page 1

Summary for Pond 51P: Proposed Bioretention System #1

Inflow Area = 0.160 ac, 81.25% Impervious, Inflow Depth = 2.71" for 2-Year event
 Inflow = 0.52 cfs @ 12.08 hrs, Volume= 0.036 af
 Outflow = 0.13 cfs @ 12.33 hrs, Volume= 0.024 af, Atten= 75%, Lag= 15.2 min
 Primary = 0.13 cfs @ 12.33 hrs, Volume= 0.024 af
 Routed to Link 61L : Total to P.O.I. "A"

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 99.13' @ 12.33 hrs Surf.Area= 0.017 ac Storage= 0.019 af

Plug-Flow detention time= 248.5 min calculated for 0.024 af (67% of inflow)
 Center-of-Mass det. time= 147.8 min (909.8 - 762.0)

Volume	Invert	Avail.Storage	Storage Description
#1	98.00'	0.051 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
98.00	0.017	0.000	0.000
99.00	0.017	0.017	0.017
100.00	0.017	0.017	0.034
101.00	0.017	0.017	0.051

Device	Routing	Invert	Outlet Devices
#1	Primary	94.50'	15.0" Round HDPE_Round 15" L= 28.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 94.50' / 94.36' S= 0.0050 '/ Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	98.70'	3.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	100.50'	42.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

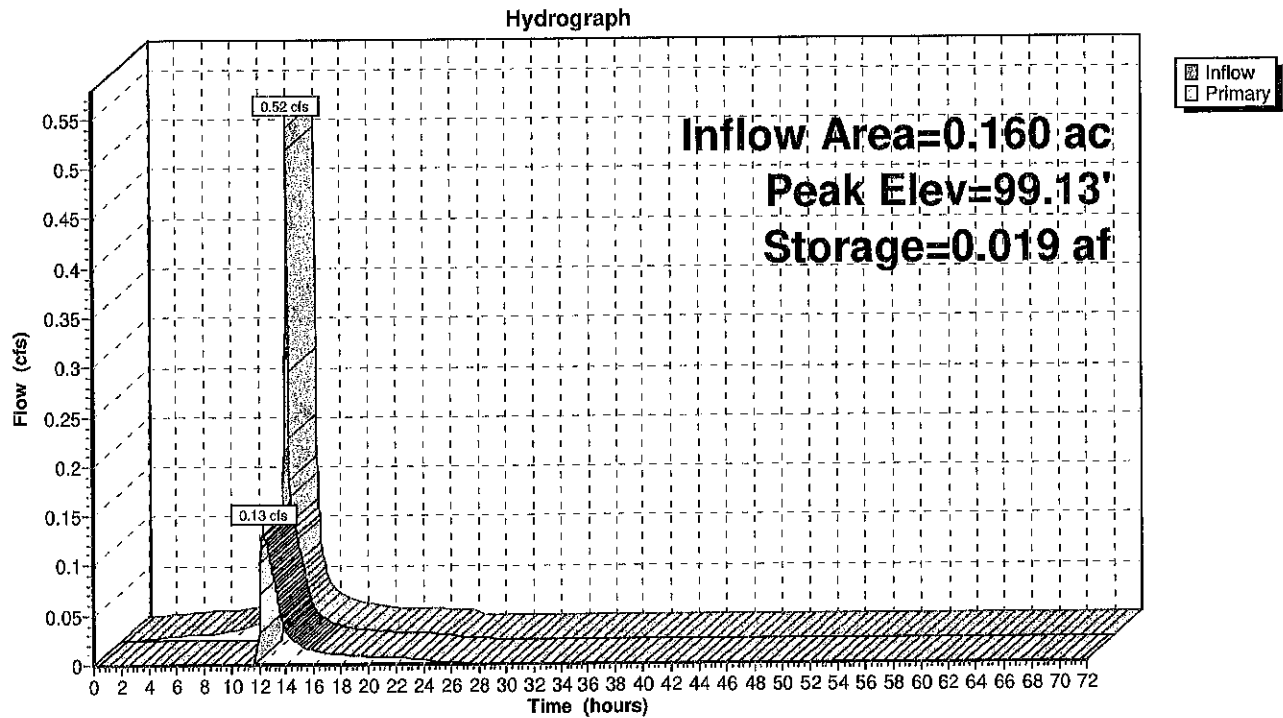
Primary OutFlow Max=0.13 cfs @ 12.33 hrs HW=99.13' TW=0.00' (Dynamic Tailwater)

1=HDPE_Round 15" (Passes 0.13 cfs of 11.82 cfs potential flow)

2=Orifice/Grate (Orifice Controls 0.13 cfs @ 2.64 fps)

3=Grate (Controls 0.00 cfs)

Pond 51P: Proposed Bioretention System #1



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2 Year Storm

NOAA 24-hr C 2-Year Rainfall=3.31"

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Hydrograph for Pond 51P: Proposed Bioretention System #1

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	98.00	0.00
2.50	0.00	0.000	98.01	0.00
5.00	0.00	0.001	98.05	0.00
7.50	0.01	0.002	98.12	0.00
10.00	0.02	0.004	98.26	0.00
12.50	0.10	0.019	99.11	0.13
15.00	0.01	0.014	98.80	0.02
17.50	0.01	0.013	98.77	0.01
20.00	0.01	0.013	98.76	0.01
22.50	0.01	0.013	98.75	0.01
25.00	0.00	0.012	98.73	0.00
27.50	0.00	0.012	98.72	0.00
30.00	0.00	0.012	98.71	0.00
32.50	0.00	0.012	98.71	0.00
35.00	0.00	0.012	98.71	0.00
37.50	0.00	0.012	98.71	0.00
40.00	0.00	0.012	98.71	0.00
42.50	0.00	0.012	98.70	0.00
45.00	0.00	0.012	98.70	0.00
47.50	0.00	0.012	98.70	0.00
50.00	0.00	0.012	98.70	0.00
52.50	0.00	0.012	98.70	0.00
55.00	0.00	0.012	98.70	0.00
57.50	0.00	0.012	98.70	0.00
60.00	0.00	0.012	98.70	0.00
62.50	0.00	0.012	98.70	0.00
65.00	0.00	0.012	98.70	0.00
67.50	0.00	0.012	98.70	0.00
70.00	0.00	0.012	98.70	0.00

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2 Year Storm
NOAA 24-hr C 2-Year Rainfall=3.31"

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Page 4

Summary for Pond 52P: Proposed Bioretention System #2

Inflow Area = 0.290 ac, 86.21% Impervious, Inflow Depth = 2.81" for 2-Year event
 Inflow = 0.99 cfs @ 12.08 hrs, Volume= 0.068 af
 Outflow = 0.17 cfs @ 12.50 hrs, Volume= 0.045 af, Atten= 83%, Lag= 25.0 min
 Primary = 0.17 cfs @ 12.50 hrs, Volume= 0.045 af
 Routed to Link 61L : Total to P.O.I. "A"

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 99.55' @ 12.50 hrs Surf.Area= 0.025 ac Storage= 0.039 af

Plug-Flow detention time= 267.5 min calculated for 0.045 af (67% of inflow)
 Center-of-Mass det. time= 165.3 min (924.8 - 759.6)

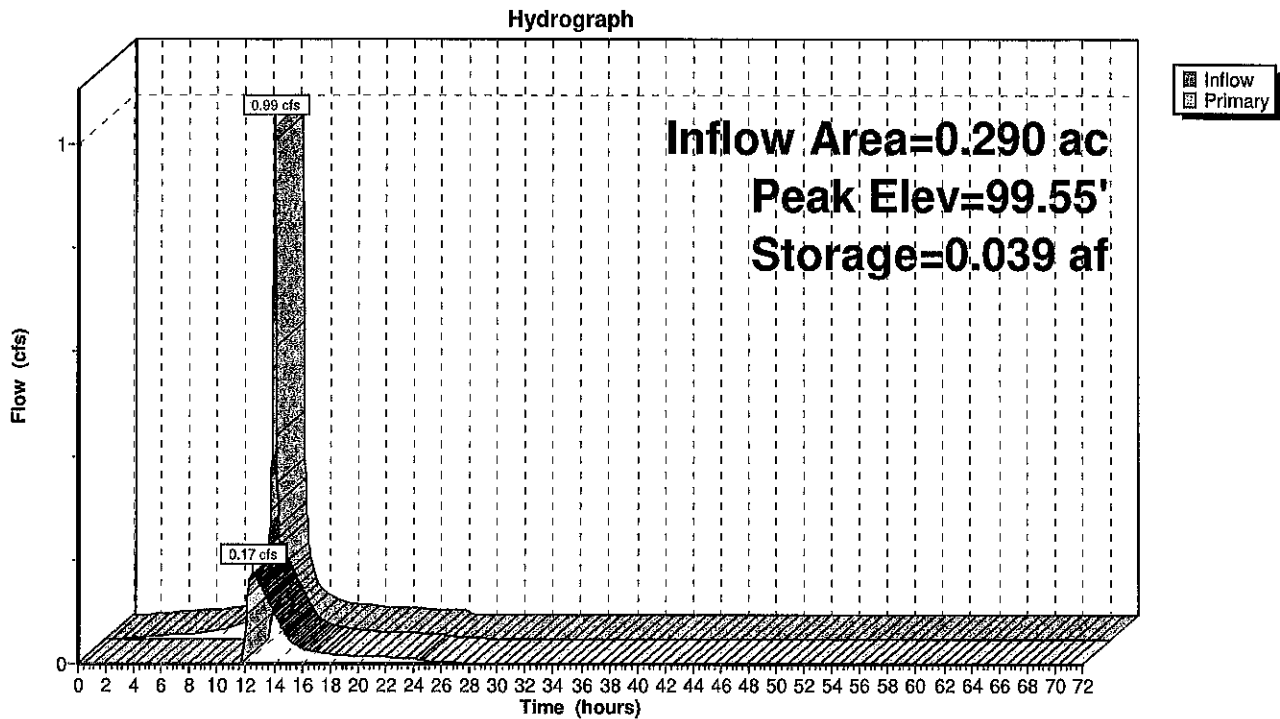
Volume	Invert	Avail.Storage	Storage Description
#1	98.00'	0.075 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
98.00	0.025	0.000	0.000
99.00	0.025	0.025	0.025
100.00	0.025	0.025	0.050
101.00	0.025	0.025	0.075

Device	Routing	Invert	Outlet Devices
#1	Primary	94.50'	15.0" Round HDPE_Round 15" L= 37.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 94.50' / 94.31' S= 0.0051 ' / ' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Primary	98.90'	3.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	100.00'	0.5' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#4	Device 1	100.95'	42.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.17 cfs @ 12.50 hrs HW=99.55' TW=0.00' (Dynamic Tailwater)

1=HDPE_Round 15" (Passes 0.00 cfs of 12.42 cfs potential flow)
 3=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)
 4=Grate (Controls 0.00 cfs)
 2=Orifice/Grate (Orifice Controls 0.17 cfs @ 3.47 fps)

Pond 52P: Proposed Bioretention System #2



2005.109.02_PROPOSED (Rev. 8)

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2 Year Storm

NOAA 24-hr C 2-Year Rainfall=3.31"

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Hydrograph for Pond 52P: Proposed Bioretention System #2

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	98.00	0.00
2.50	0.00	0.000	98.01	0.00
5.00	0.01	0.002	98.06	0.00
7.50	0.02	0.004	98.16	0.00
10.00	0.03	0.008	98.34	0.00
12.50	0.18	0.039	99.55	0.17
15.00	0.03	0.027	99.07	0.05
17.50	0.02	0.025	99.00	0.02
20.00	0.01	0.025	98.98	0.01
22.50	0.01	0.024	98.98	0.01
25.00	0.00	0.024	98.95	0.01
27.50	0.00	0.023	98.93	0.00
30.00	0.00	0.023	98.92	0.00
32.50	0.00	0.023	98.91	0.00
35.00	0.00	0.023	98.91	0.00
37.50	0.00	0.023	98.91	0.00
40.00	0.00	0.023	98.91	0.00
42.50	0.00	0.023	98.91	0.00
45.00	0.00	0.023	98.91	0.00
47.50	0.00	0.023	98.91	0.00
50.00	0.00	0.023	98.90	0.00
52.50	0.00	0.023	98.90	0.00
55.00	0.00	0.023	98.90	0.00
57.50	0.00	0.023	98.90	0.00
60.00	0.00	0.023	98.90	0.00
62.50	0.00	0.023	98.90	0.00
65.00	0.00	0.023	98.90	0.00
67.50	0.00	0.023	98.90	0.00
70.00	0.00	0.023	98.90	0.00

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2 Year Storm
NOAA 24-hr C 2-Year Rainfall=3.31"

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Summary for Pond 53P: Proposed Bioretention System #3

Inflow Area = 0.230 ac, 82.61% Impervious, Inflow Depth = 2.74" for 2-Year event
 Inflow = 0.74 cfs @ 12.08 hrs, Volume= 0.052 af
 Outflow = 0.32 cfs @ 12.21 hrs, Volume= 0.033 af, Atten= 57%, Lag= 7.4 min
 Primary = 0.32 cfs @ 12.21 hrs, Volume= 0.033 af
 Routed to Link 61L : Total to P.O.I. "A"

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 98.37' @ 12.21 hrs Surf.Area= 0.019 ac Storage= 0.026 af

Plug-Flow detention time= 228.9 min calculated for 0.033 af (64% of inflow)
 Center-of-Mass det. time= 121.3 min (883.1 - 761.8)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	0.057 af	Custom Stage Data (Prismatic) Listed below (Recalc)

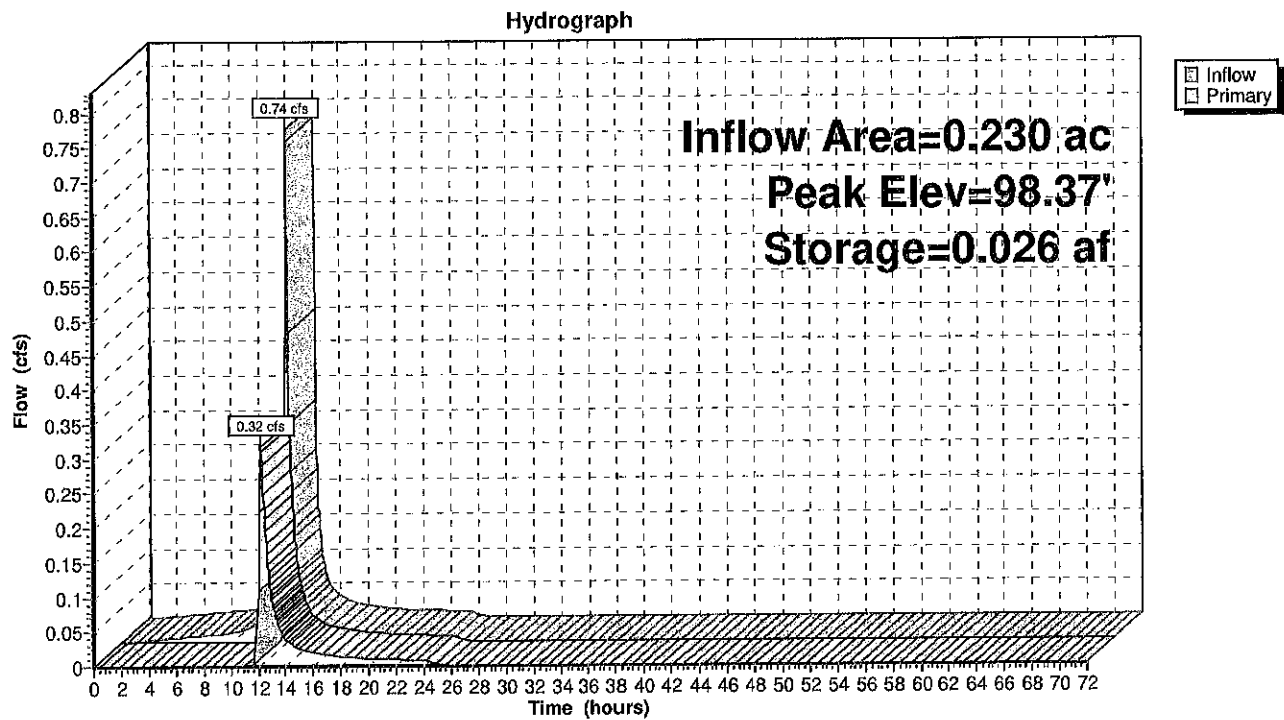
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
97.00	0.019	0.000	0.000
98.00	0.019	0.019	0.019
99.00	0.019	0.019	0.038
100.00	0.019	0.019	0.057

Device	Routing	Invert	Outlet Devices
#1	Primary	93.50'	15.0" Round HDPE_Round 15" L= 11.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 93.50' / 93.44' S= 0.0055 ' / Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	98.00'	0.5' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#3	Device 1	99.50'	42.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.32 cfs @ 12.21 hrs HW=98.37' TW=0.00' (Dynamic Tailwater)

1=HDPE_Round 15" (Passes 0.32 cfs of 12.18 cfs potential flow)
 2=Sharp-Crested Rectangular Weir (Weir Controls 0.32 cfs @ 2.00 fps)
 3=Grate (Controls 0.00 cfs)

Pond 53P: Proposed Bioretention System #3



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2 Year Storm
NOAA 24-hr C 2-Year Rainfall=3.31"

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Hydrograph for Pond 53P: Proposed Bioretention System #3

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	97.00	0.00
2.50	0.00	0.000	97.01	0.00
5.00	0.01	0.001	97.06	0.00
7.50	0.01	0.003	97.16	0.00
10.00	0.03	0.006	97.34	0.00
12.50	0.14	0.024	98.28	0.21
15.00	0.02	0.020	98.06	0.03
17.50	0.01	0.020	98.04	0.01
20.00	0.01	0.020	98.04	0.01
22.50	0.01	0.020	98.03	0.01
25.00	0.00	0.019	98.01	0.00
27.50	0.00	0.019	98.00	0.00
30.00	0.00	0.019	98.00	0.00
32.50	0.00	0.019	98.00	0.00
35.00	0.00	0.019	98.00	0.00
37.50	0.00	0.019	98.00	0.00
40.00	0.00	0.019	98.00	0.00
42.50	0.00	0.019	98.00	0.00
45.00	0.00	0.019	98.00	0.00
47.50	0.00	0.019	98.00	0.00
50.00	0.00	0.019	98.00	0.00
52.50	0.00	0.019	98.00	0.00
55.00	0.00	0.019	98.00	0.00
57.50	0.00	0.019	98.00	0.00
60.00	0.00	0.019	98.00	0.00
62.50	0.00	0.019	98.00	0.00
65.00	0.00	0.019	98.00	0.00
67.50	0.00	0.019	98.00	0.00
70.00	0.00	0.019	98.00	0.00

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Summary for Pond 54P: Proposed Bioretention System #4

Inflow Area = 0.710 ac, 78.87% Impervious, Inflow Depth = 2.66" for 2-Year event
 Inflow = 2.16 cfs @ 12.09 hrs, Volume= 0.157 af
 Outflow = 0.22 cfs @ 12.89 hrs, Volume= 0.107 af, Atten= 90%, Lag= 48.1 min
 Primary = 0.22 cfs @ 12.89 hrs, Volume= 0.107 af
 Routed to Link 61L : Total to P.O.I. "A"

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 100.04' @ 12.89 hrs Surf.Area= 0.050 ac Storage= 0.103 af

Plug-Flow detention time= 569.3 min calculated for 0.107 af (68% of inflow)
 Center-of-Mass det. time= 467.4 min (1,231.8 - 764.4)

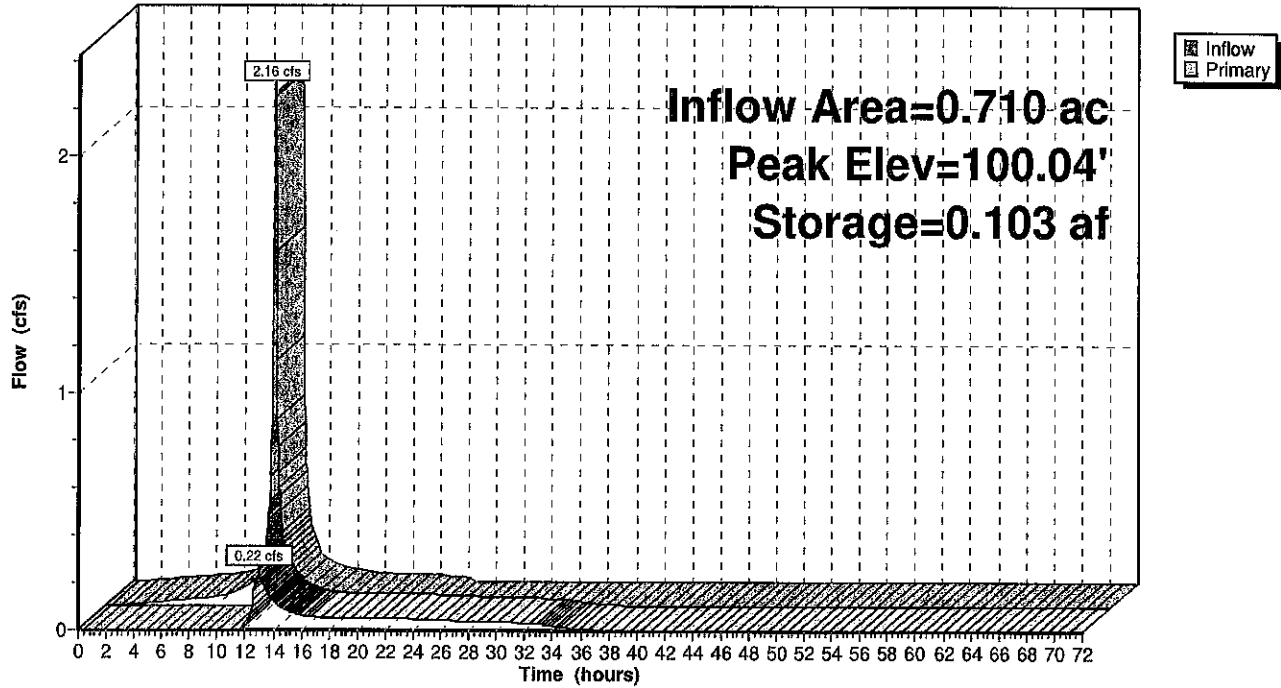
Volume	Invert	Avail.Storage	Storage Description
#1	98.00'	0.201 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
98.00	0.050	0.000	0.000
99.00	0.050	0.050	0.050
100.00	0.050	0.050	0.101
101.00	0.050	0.050	0.151
102.00	0.050	0.050	0.201

Device	Routing	Invert	Outlet Devices
#1	Primary	94.50'	15.0" Round HDPE Round 15" L= 40.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 94.50' / 94.30' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	99.00'	Chicago 3-in VFR
#3	Device 1	99.90'	1.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#4	Device 1	101.40'	42.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.22 cfs @ 12.89 hrs HW=100.04' TW=0.00' (Dynamic Tailwater)
 1=HDPE_Round 15" (Passes 0.22 cfs of 13.10 cfs potential flow)
 2=Chicago 3-in VFR (Custom Controls 0.06 cfs)
 3=Sharp-Crested Rectangular Weir (Weir Controls 0.16 cfs @ 1.21 fps)
 4=Grate (Controls 0.00 cfs)

Pond 54P: Proposed Bioretention System #4

Hydrograph



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Hydrograph for Pond 54P: Proposed Bioretention System #4

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	98.00	0.00
2.50	0.01	0.001	98.01	0.00
5.00	0.02	0.004	98.07	0.00
7.50	0.03	0.009	98.18	0.00
10.00	0.07	0.019	98.38	0.00
12.50	0.44	0.100	99.98	0.13
15.00	0.06	0.098	99.94	0.08
17.50	0.04	0.095	99.89	0.05
20.00	0.03	0.091	99.81	0.05
22.50	0.03	0.086	99.72	0.05
25.00	0.00	0.080	99.59	0.05
27.50	0.00	0.071	99.41	0.04
30.00	0.00	0.063	99.26	0.03
32.50	0.00	0.057	99.12	0.03
35.00	0.00	0.052	99.04	0.01
37.50	0.00	0.051	99.01	0.00
40.00	0.00	0.050	99.00	0.00
42.50	0.00	0.050	99.00	0.00
45.00	0.00	0.050	99.00	0.00
47.50	0.00	0.050	99.00	0.00
50.00	0.00	0.050	99.00	0.00
52.50	0.00	0.050	99.00	0.00
55.00	0.00	0.050	99.00	0.00
57.50	0.00	0.050	99.00	0.00
60.00	0.00	0.050	99.00	0.00
62.50	0.00	0.050	99.00	0.00
65.00	0.00	0.050	99.00	0.00
67.50	0.00	0.050	99.00	0.00
70.00	0.00	0.050	99.00	0.00

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2 Year Storm
NOAA 24-hr C 2-Year Rainfall=3.31"

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Summary for Pond 55P: Proposed Bioretention System #5

Inflow Area = 0.300 ac, 73.33% Impervious, Inflow Depth = 2.48" for 2-Year event
 Inflow = 0.82 cfs @ 12.10 hrs, Volume= 0.062 af
 Outflow = 0.13 cfs @ 12.60 hrs, Volume= 0.040 af, Atten= 84%, Lag= 30.4 min
 Primary = 0.13 cfs @ 12.60 hrs, Volume= 0.040 af
 Routed to Link 61L : Total to P.O.I. "A"

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 99.13' @ 12.60 hrs Surf.Area= 0.032 ac Storage= 0.036 af

Plug-Flow detention time= 301.4 min calculated for 0.039 af (64% of inflow)
 Center-of-Mass det. time= 194.6 min (961.5 - 766.9)

Volume	Invert	Avail.Storage	Storage Description
#1	98.00'	0.096 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
98.00	0.032	0.000	0.000
99.00	0.032	0.032	0.032
100.00	0.032	0.032	0.064
101.00	0.032	0.032	0.096

Device	Routing	Invert	Outlet Devices
#1	Primary	94.50'	15.0" Round HDPE_Round 15" L= 35.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 94.50' / 94.33' S= 0.0049 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	98.70'	3.0" Vert. Orifice C= 0.600 Limited to weir flow at low heads
#3	Device 1	100.70'	42.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.13 cfs @ 12.60 hrs HW=99.13' TW=0.00' (Dynamic Tailwater)

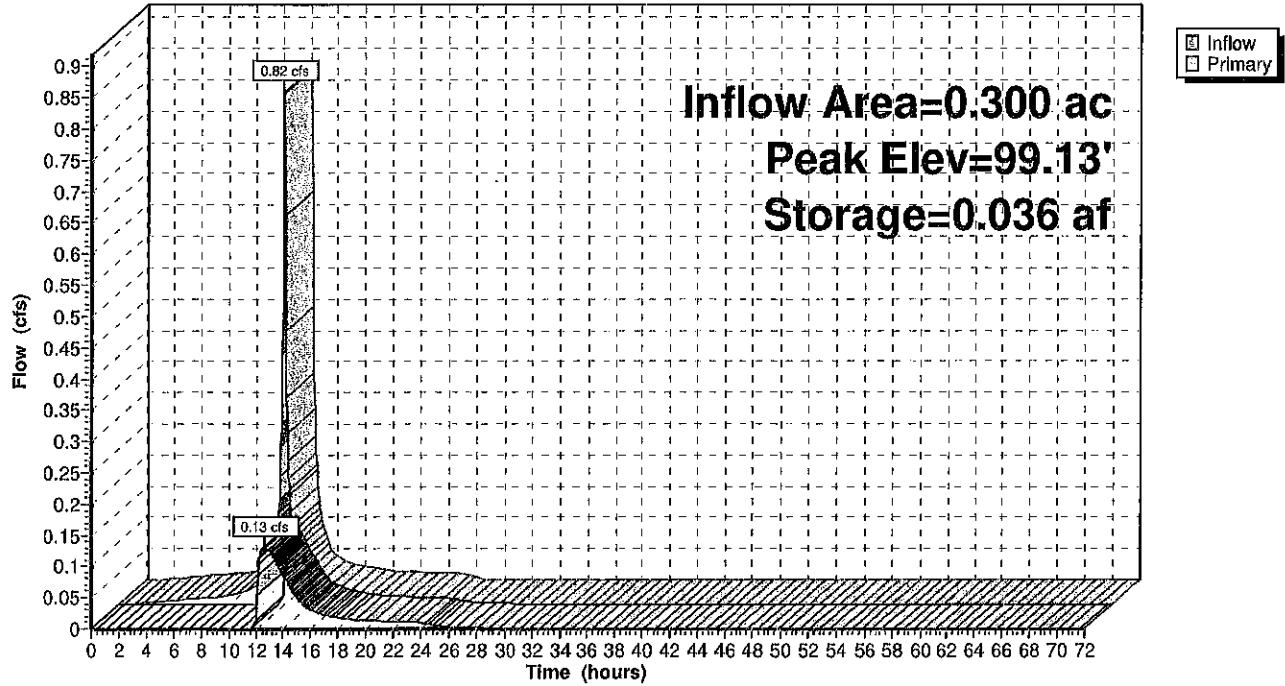
1=HDPE_Round 15" (Passes 0.13 cfs of 11.82 cfs potential flow)

2=Orifice (Orifice Controls 0.13 cfs @ 2.64 fps)

3=Grate (Controls 0.00 cfs)

Pond 55P: Proposed Bioretention System #5

Hydrograph



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Hydrograph for Pond 55P: Proposed Bioretention System #5

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	98.00	0.00
2.50	0.00	0.000	98.01	0.00
5.00	0.01	0.001	98.04	0.00
7.50	0.01	0.003	98.11	0.00
10.00	0.03	0.007	98.23	0.00
12.50	0.18	0.036	99.12	0.13
15.00	0.03	0.028	98.87	0.05
17.50	0.02	0.026	98.80	0.02
20.00	0.01	0.025	98.78	0.01
22.50	0.01	0.025	98.78	0.01
25.00	0.00	0.024	98.75	0.01
27.50	0.00	0.023	98.73	0.00
30.00	0.00	0.023	98.72	0.00
32.50	0.00	0.023	98.72	0.00
35.00	0.00	0.023	98.71	0.00
37.50	0.00	0.023	98.71	0.00
40.00	0.00	0.023	98.71	0.00
42.50	0.00	0.023	98.71	0.00
45.00	0.00	0.023	98.71	0.00
47.50	0.00	0.023	98.71	0.00
50.00	0.00	0.023	98.71	0.00
52.50	0.00	0.023	98.71	0.00
55.00	0.00	0.023	98.71	0.00
57.50	0.00	0.023	98.70	0.00
60.00	0.00	0.023	98.70	0.00
62.50	0.00	0.023	98.70	0.00
65.00	0.00	0.023	98.70	0.00
67.50	0.00	0.023	98.70	0.00
70.00	0.00	0.023	98.70	0.00

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Summary for Pond 56P: Proposed Bioretention System #6

Inflow Area = 1.450 ac, 51.72% Impervious, Inflow Depth = 1.79" for 2-Year event
 Inflow = 2.51 cfs @ 12.10 hrs, Volume= 0.217 af
 Outflow = 0.06 cfs @ 18.06 hrs, Volume= 0.149 af, Atten= 98%, Lag= 357.5 min
 Primary = 0.06 cfs @ 18.06 hrs, Volume= 0.149 af
 Routed to Link 61L : Total to P.O.I. "A"

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 98.49' @ 18.06 hrs Surf.Area= 4,912 sf Storage= 7,331 cf

Plug-Flow detention time= 1,168.3 min calculated for 0.149 af (69% of inflow)
 Center-of-Mass det. time= 1,062.7 min (1,839.9 - 777.2)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	19,648 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

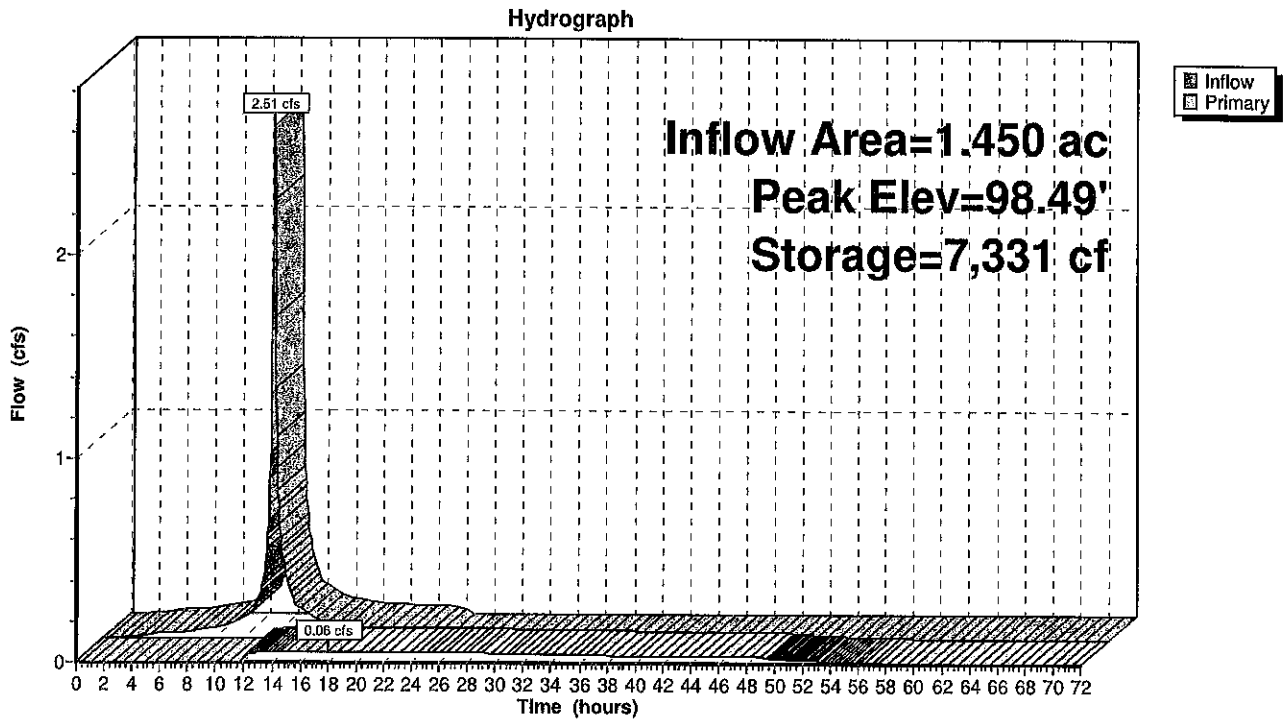
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
97.00	4,912	0	0
98.00	4,912	4,912	4,912
99.00	4,912	4,912	9,824
100.00	4,912	4,912	14,736
101.00	4,912	4,912	19,648

Device	Routing	Invert	Outlet Devices
#1	Primary	93.50'	15.0" Round HDPE_Round 15" L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 93.50' / 93.25' S= 0.0050 ' /' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	97.60'	Chicago 3-in VFR
#3	Device 1	99.00'	1.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#4	Device 1	100.00'	42.0" x 48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.06 cfs @ 18.06 hrs HW=98.49' TW=0.00' (Dynamic Tailwater)

1=HDPE_Round 15" (Passes 0.06 cfs of 12.35 cfs potential flow)
 2=Chicago 3-in VFR (Custom Controls 0.06 cfs)
 3=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)
 4=Orifice/Grate (Controls 0.00 cfs)

Pond 56P: Proposed Bioretention System #6



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2 Year Storm

NOAA 24-hr C 2-Year Rainfall=3.31"

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Hydrograph for Pond 56P: Proposed Bioretention System #6

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	97.00	0.00
2.50	0.01	28	97.01	0.00
5.00	0.03	202	97.04	0.00
7.50	0.05	512	97.10	0.00
10.00	0.10	1,095	97.22	0.00
12.50	0.63	5,637	98.15	0.04
15.00	0.10	7,111	98.45	0.05
17.50	0.06	7,323	98.49	0.05
20.00	0.05	7,302	98.49	0.05
22.50	0.04	7,206	98.47	0.05
25.00	0.00	6,949	98.41	0.05
27.50	0.00	6,489	98.32	0.05
30.00	0.00	6,056	98.23	0.05
32.50	0.00	5,646	98.15	0.04
35.00	0.00	5,260	98.07	0.04
37.50	0.00	4,895	98.00	0.04
40.00	0.00	4,551	97.93	0.04
42.50	0.00	4,226	97.86	0.04
45.00	0.00	3,919	97.80	0.03
47.50	0.00	3,630	97.74	0.03
50.00	0.00	3,363	97.68	0.03
52.50	0.00	3,187	97.65	0.01
55.00	0.00	3,086	97.63	0.01
57.50	0.00	3,027	97.62	0.00
60.00	0.00	2,993	97.61	0.00
62.50	0.00	2,974	97.61	0.00
65.00	0.00	2,963	97.60	0.00
67.50	0.00	2,956	97.60	0.00
70.00	0.00	2,952	97.60	0.00

10 YEAR STORM

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10 Year Storm
NOAA 24-hr C 10-Year Rainfall=5.01"

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Page 1

Summary for Pond 51P: Proposed Bioretention System #1

Inflow Area = 0.160 ac, 81.25% Impervious, Inflow Depth = 4.32" for 10-Year event
 Inflow = 0.80 cfs @ 12.08 hrs, Volume= 0.058 af
 Outflow = 0.21 cfs @ 12.33 hrs, Volume= 0.046 af, Atten= 74%, Lag= 15.2 min
 Primary = 0.21 cfs @ 12.33 hrs, Volume= 0.046 af
 Routed to Link 61L : Total to P.O.I. "A"

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 99.61' @ 12.33 hrs Surf.Area= 0.017 ac Storage= 0.027 af

Plug-Flow detention time= 205.2 min calculated for 0.046 af (79% of inflow)
 Center-of-Mass det. time= 122.5 min (877.9 - 755.4)

Volume	Invert	Avail.Storage	Storage Description
#1	98.00'	0.051 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
98.00	0.017	0.000	0.000
99.00	0.017	0.017	0.017
100.00	0.017	0.017	0.034
101.00	0.017	0.017	0.051

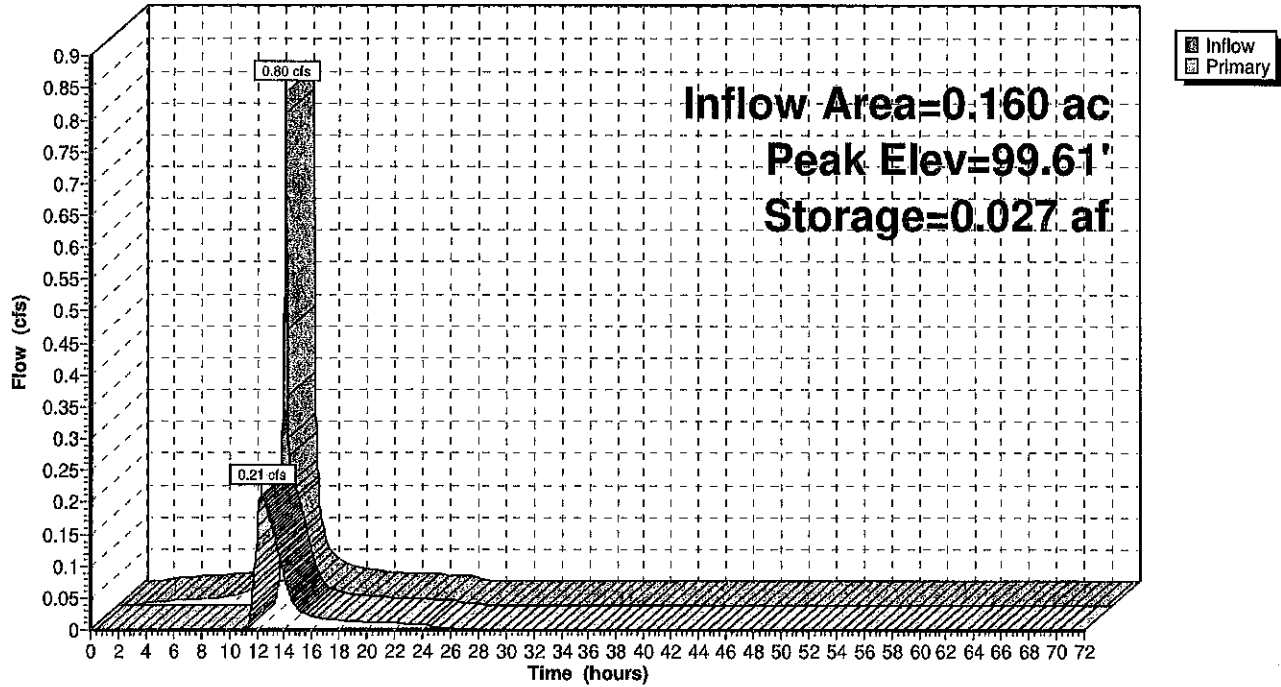
Device	Routing	Invert	Outlet Devices
#1	Primary	94.50'	15.0" Round HDPE_Round 15" L= 28.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 94.50' / 94.36' S= 0.0050 ' / ' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	98.70'	3.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	100.50'	42.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.21 cfs @ 12.33 hrs HW=99.61' TW=0.00' (Dynamic Tailwater)

1=HDPE_Round 15" (Passes 0.21 cfs of 12.51 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.21 cfs @ 4.26 fps)
 3=Grate (Controls 0.00 cfs)

Pond 51P: Proposed Bioretention System #1

Hydrograph



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Hydrograph for Pond 51P: Proposed Bioretention System #1

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	98.00	0.00
2.50	0.00	0.000	98.02	0.00
5.00	0.01	0.002	98.10	0.00
7.50	0.01	0.004	98.22	0.00
10.00	0.03	0.008	98.45	0.00
12.50	0.16	0.027	99.58	0.21
15.00	0.02	0.014	98.83	0.03
17.50	0.01	0.013	98.79	0.02
20.00	0.01	0.013	98.78	0.01
22.50	0.01	0.013	98.77	0.01
25.00	0.00	0.013	98.74	0.00
27.50	0.00	0.012	98.72	0.00
30.00	0.00	0.012	98.71	0.00
32.50	0.00	0.012	98.71	0.00
35.00	0.00	0.012	98.71	0.00
37.50	0.00	0.012	98.71	0.00
40.00	0.00	0.012	98.71	0.00
42.50	0.00	0.012	98.70	0.00
45.00	0.00	0.012	98.70	0.00
47.50	0.00	0.012	98.70	0.00
50.00	0.00	0.012	98.70	0.00
52.50	0.00	0.012	98.70	0.00
55.00	0.00	0.012	98.70	0.00
57.50	0.00	0.012	98.70	0.00
60.00	0.00	0.012	98.70	0.00
62.50	0.00	0.012	98.70	0.00
65.00	0.00	0.012	98.70	0.00
67.50	0.00	0.012	98.70	0.00
70.00	0.00	0.012	98.70	0.00

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10 Year Storm
NOAA 24-hr C 10-Year Rainfall=5.01"

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Summary for Pond 52P: Proposed Bioretention System #2

Inflow Area = 0.290 ac, 86.21% Impervious, Inflow Depth = 4.44" for 10-Year event
 Inflow = 1.54 cfs @ 12.08 hrs, Volume= 0.107 af
 Outflow = 0.39 cfs @ 12.32 hrs, Volume= 0.085 af, Atten= 75%, Lag= 14.0 min
 Primary = 0.39 cfs @ 12.32 hrs, Volume= 0.085 af
 Routed to Link 61L : Total to P.O.I. "A"

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 100.20' @ 12.32 hrs Surf.Area= 0.025 ac Storage= 0.055 af

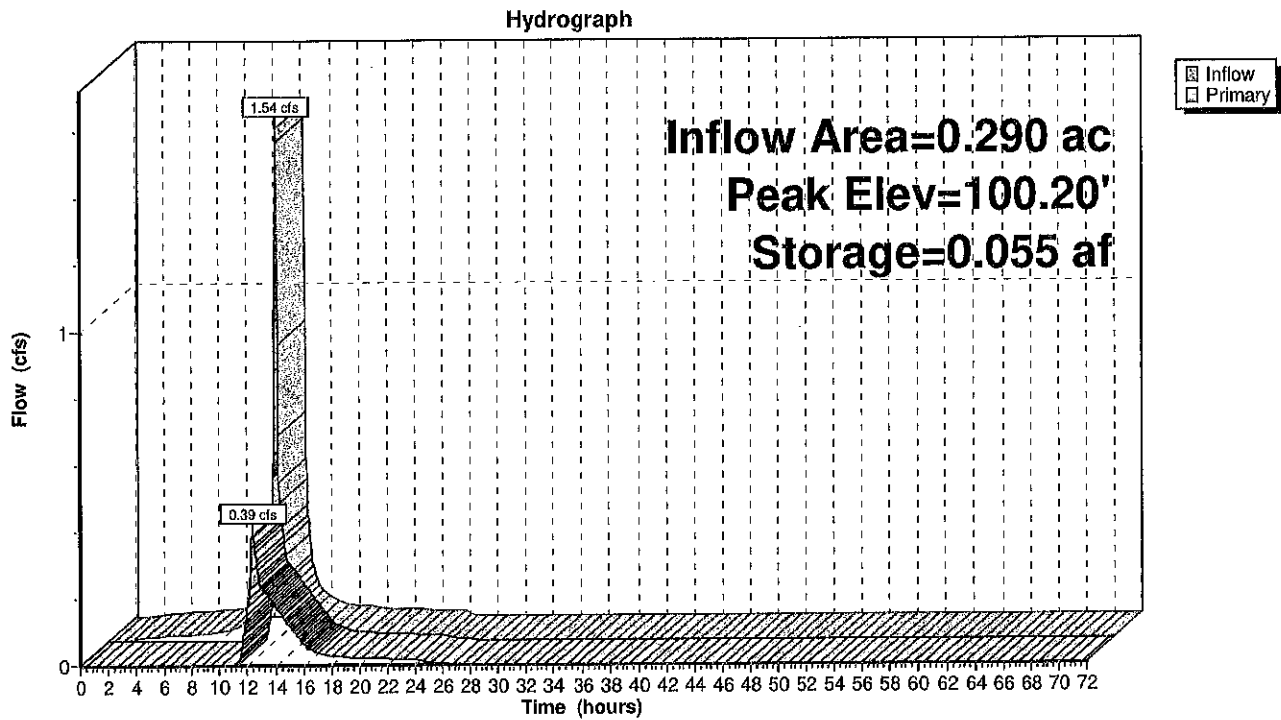
Plug-Flow detention time= 224.5 min calculated for 0.085 af (79% of inflow)
 Center-of-Mass det. time= 143.3 min (895.9 - 752.5)

Volume	Invert	Avail.Storage	Storage Description
#1	98.00'	0.075 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
98.00	0.025	0.000	0.000
99.00	0.025	0.025	0.025
100.00	0.025	0.025	0.050
101.00	0.025	0.025	0.075

Device	Routing	Invert	Outlet Devices
#1	Primary	94.50'	15.0" Round HDPE_Round 15" L= 37.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 94.50' / 94.31' S= 0.0051 ' / ' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Primary	98.90'	3.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	100.00'	0.5' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#4	Device 1	100.95'	42.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.39 cfs @ 12.32 hrs HW=100.20' TW=0.00' (Dynamic Tailwater)

1=HDPE_Round 15" (Passes 0.13 cfs of 13.31 cfs potential flow)
 3=Sharp-Crested Rectangular Weir (Weir Controls 0.13 cfs @ 1.46 fps)
 4=Grate (Controls 0.00 cfs)
 2=Orifice/Grate (Orifice Controls 0.26 cfs @ 5.22 fps)

Pond 52P: Proposed Bioretention System #2

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10 Year Storm
NOAA 24-hr C 10-Year Rainfall=5.01"

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Hydrograph for Pond 52P: Proposed Bioretention System #2

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	98.00	0.00
2.50	0.01	0.001	98.03	0.00
5.00	0.02	0.003	98.13	0.00
7.50	0.03	0.007	98.29	0.00
10.00	0.05	0.015	98.58	0.00
12.50	0.28	0.054	100.16	0.35
15.00	0.04	0.032	99.27	0.12
17.50	0.03	0.026	99.03	0.03
20.00	0.02	0.025	99.01	0.02
22.50	0.02	0.025	98.99	0.02
25.00	0.00	0.024	98.96	0.01
27.50	0.00	0.023	98.93	0.00
30.00	0.00	0.023	98.92	0.00
32.50	0.00	0.023	98.91	0.00
35.00	0.00	0.023	98.91	0.00
37.50	0.00	0.023	98.91	0.00
40.00	0.00	0.023	98.91	0.00
42.50	0.00	0.023	98.91	0.00
45.00	0.00	0.023	98.91	0.00
47.50	0.00	0.023	98.91	0.00
50.00	0.00	0.023	98.90	0.00
52.50	0.00	0.023	98.90	0.00
55.00	0.00	0.023	98.90	0.00
57.50	0.00	0.023	98.90	0.00
60.00	0.00	0.023	98.90	0.00
62.50	0.00	0.023	98.90	0.00
65.00	0.00	0.023	98.90	0.00
67.50	0.00	0.023	98.90	0.00
70.00	0.00	0.023	98.90	0.00

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Summary for Pond 53P: Proposed Bioretention System #3

Inflow Area = 0.230 ac, 82.61% Impervious, Inflow Depth = 4.36" for 10-Year event
 Inflow = 1.15 cfs @ 12.08 hrs, Volume= 0.083 af
 Outflow = 0.69 cfs @ 12.17 hrs, Volume= 0.064 af, Atten= 41%, Lag= 4.8 min
 Primary = 0.69 cfs @ 12.17 hrs, Volume= 0.064 af
 Routed to Link 61L : Total to P.O.I. "A"

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 98.70' @ 12.17 hrs Surf.Area= 0.019 ac Storage= 0.032 af

Plug-Flow detention time= 179.7 min calculated for 0.064 af (77% of inflow)
 Center-of-Mass det. time= 93.8 min (849.0 - 755.2)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	0.057 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
97.00	0.019	0.000	0.000
98.00	0.019	0.019	0.019
99.00	0.019	0.019	0.038
100.00	0.019	0.019	0.057

Device	Routing	Invert	Outlet Devices
#1	Primary	93.50'	15.0" Round HDPE_Round 15" L= 11.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 93.50' / 93.44' S= 0.0055 ' /' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	98.00'	0.5' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#3	Device 1	99.50'	42.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

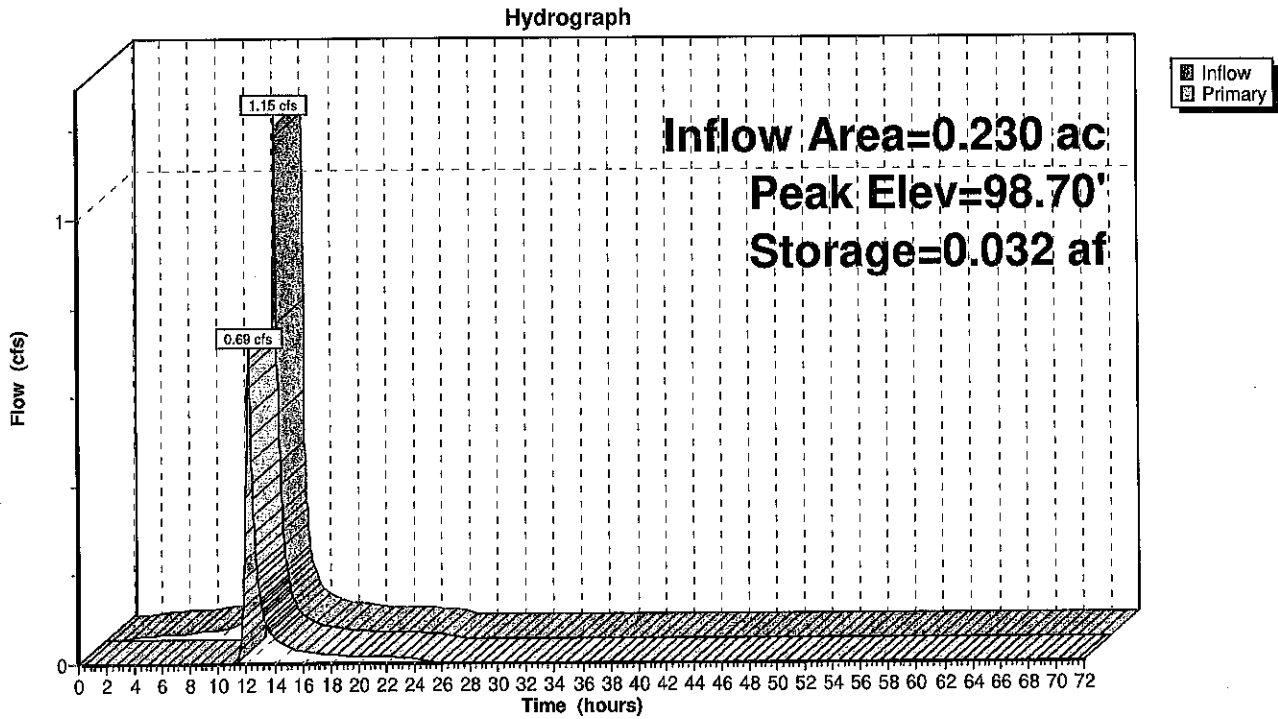
Primary OutFlow Max=0.68 cfs @ 12.17 hrs HW=98.69' TW=0.00' (Dynamic Tailwater)

1=HDPE_Round 15" (Passes 0.68 cfs of 12.62 cfs potential flow)

2=Sharp-Crested Rectangular Weir (Weir Controls 0.68 cfs @ 2.71 fps)

3=Grate (Controls 0.00 cfs)

Pond 53P: Proposed Bioretention System #3



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Hydrograph for Pond 53P: Proposed Bioretention System #3

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	97.00	0.00
2.50	0.01	0.001	97.03	0.00
5.00	0.01	0.002	97.13	0.00
7.50	0.02	0.006	97.29	0.00
10.00	0.04	0.011	97.58	0.00
12.50	0.23	0.027	98.42	0.37
15.00	0.03	0.021	98.08	0.04
17.50	0.02	0.020	98.06	0.02
20.00	0.02	0.020	98.05	0.02
22.50	0.01	0.020	98.04	0.01
25.00	0.00	0.019	98.01	0.00
27.50	0.00	0.019	98.00	0.00
30.00	0.00	0.019	98.00	0.00
32.50	0.00	0.019	98.00	0.00
35.00	0.00	0.019	98.00	0.00
37.50	0.00	0.019	98.00	0.00
40.00	0.00	0.019	98.00	0.00
42.50	0.00	0.019	98.00	0.00
45.00	0.00	0.019	98.00	0.00
47.50	0.00	0.019	98.00	0.00
50.00	0.00	0.019	98.00	0.00
52.50	0.00	0.019	98.00	0.00
55.00	0.00	0.019	98.00	0.00
57.50	0.00	0.019	98.00	0.00
60.00	0.00	0.019	98.00	0.00
62.50	0.00	0.019	98.00	0.00
65.00	0.00	0.019	98.00	0.00
67.50	0.00	0.019	98.00	0.00
70.00	0.00	0.019	98.00	0.00

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Summary for Pond 54P: Proposed Bioretention System #4

Inflow Area = 0.710 ac, 78.87% Impervious, Inflow Depth = 4.27" for 10-Year event
 Inflow = 3.39 cfs @ 12.09 hrs, Volume= 0.252 af
 Outflow = 1.42 cfs @ 12.24 hrs, Volume= 0.202 af, Atten= 58%, Lag= 8.8 min
 Primary = 1.42 cfs @ 12.24 hrs, Volume= 0.202 af
 Routed to Link 61L : Total to P.O.I. "A"

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 100.50' @ 12.24 hrs Surf.Area= 0.050 ac Storage= 0.126 af

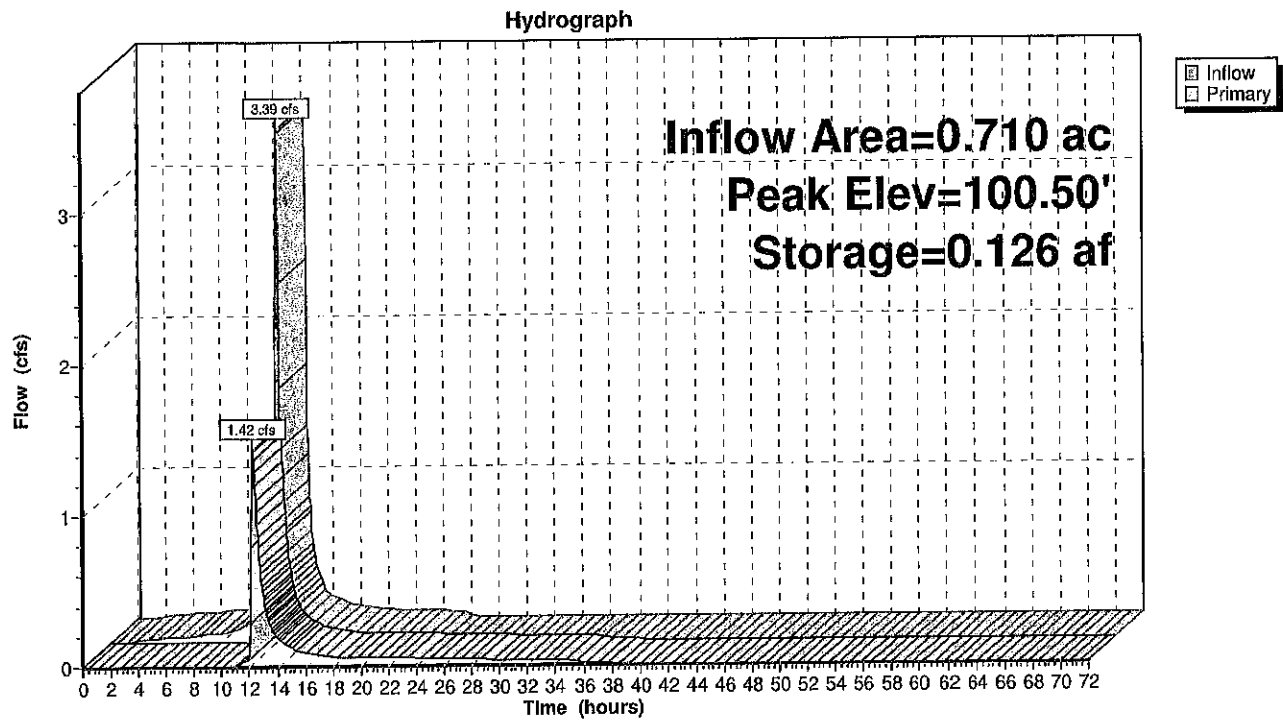
Plug-Flow detention time= 393.0 min calculated for 0.202 af (80% of inflow)
 Center-of-Mass det. time= 313.0 min (1,071.0 - 758.0)

Volume	Invert	Avail.Storage	Storage Description
#1	98.00'	0.201 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
98.00	0.050	0.000	0.000
99.00	0.050	0.050	0.050
100.00	0.050	0.050	0.101
101.00	0.050	0.050	0.151
102.00	0.050	0.050	0.201

Device	Routing	Invert	Outlet Devices
#1	Primary	94.50'	15.0" Round HDPE_Round 15" L= 40.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 94.50' / 94.30' S= 0.0050 '/ Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	99.00'	Chicago 3-in VFR
#3	Device 1	99.90'	1.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#4	Device 1	101.40'	42.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.42 cfs @ 12.24 hrs HW=100.50' TW=0.00' (Dynamic Tailwater)

- 1=HDPE_Round 15" (Passes 1.42 cfs of 13.70 cfs potential flow)
- 2=Chicago 3-in VFR (Custom Controls 0.07 cfs)
- 3=Sharp-Crested Rectangular Weir (Weir Controls 1.34 cfs @ 2.54 fps)
- 4=Grate (Controls 0.00 cfs)

Pond 54P: Proposed Bioretention System #4

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Hydrograph for Pond 54P: Proposed Bioretention System #4

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	98.00	0.00
2.50	0.02	0.002	98.03	0.00
5.00	0.03	0.007	98.15	0.00
7.50	0.06	0.016	98.33	0.00
10.00	0.12	0.033	98.65	0.00
12.50	0.71	0.119	100.37	1.02
15.00	0.10	0.099	99.98	0.12
17.50	0.06	0.097	99.93	0.07
20.00	0.05	0.096	99.90	0.06
22.50	0.04	0.093	99.86	0.05
25.00	0.00	0.088	99.74	0.05
27.50	0.00	0.078	99.55	0.04
30.00	0.00	0.069	99.38	0.04
32.50	0.00	0.062	99.23	0.03
35.00	0.00	0.055	99.10	0.03
37.50	0.00	0.052	99.03	0.01
40.00	0.00	0.051	99.01	0.00
42.50	0.00	0.050	99.00	0.00
45.00	0.00	0.050	99.00	0.00
47.50	0.00	0.050	99.00	0.00
50.00	0.00	0.050	99.00	0.00
52.50	0.00	0.050	99.00	0.00
55.00	0.00	0.050	99.00	0.00
57.50	0.00	0.050	99.00	0.00
60.00	0.00	0.050	99.00	0.00
62.50	0.00	0.050	99.00	0.00
65.00	0.00	0.050	99.00	0.00
67.50	0.00	0.050	99.00	0.00
70.00	0.00	0.050	99.00	0.00

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10 Year Storm
NOAA 24-hr C 10-Year Rainfall=5.01"

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Summary for Pond 55P: Proposed Bioretention System #5

Inflow Area = 0.300 ac, 73.33% Impervious, Inflow Depth = 4.02" for 10-Year event
 Inflow = 1.30 cfs @ 12.10 hrs, Volume= 0.101 af
 Outflow = 0.22 cfs @ 12.58 hrs, Volume= 0.078 af, Atten= 83%, Lag= 29.3 min
 Primary = 0.22 cfs @ 12.58 hrs, Volume= 0.078 af
 Routed to Link 61L : Total to P.O.I. "A"

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 99.72' @ 12.58 hrs Surf.Area= 0.032 ac Storage= 0.055 af

Plug-Flow detention time= 254.9 min calculated for 0.078 af (78% of inflow)
 Center-of-Mass det. time= 167.9 min (929.5 - 761.6)

Volume	Invert	Avail.Storage	Storage Description
#1	98.00'	0.096 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
98.00	0.032	0.000	0.000
99.00	0.032	0.032	0.032
100.00	0.032	0.032	0.064
101.00	0.032	0.032	0.096

Device	Routing	Invert	Outlet Devices
#1	Primary	94.50'	15.0" Round HDPE_Round 15" L= 35.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 94.50' / 94.33' S= 0.0049 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	98.70'	3.0" Vert. Orifice C= 0.600 Limited to weir flow at low heads
#3	Device 1	100.70'	42.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.22 cfs @ 12.58 hrs HW=99.72' TW=0.00' (Dynamic Tailwater)

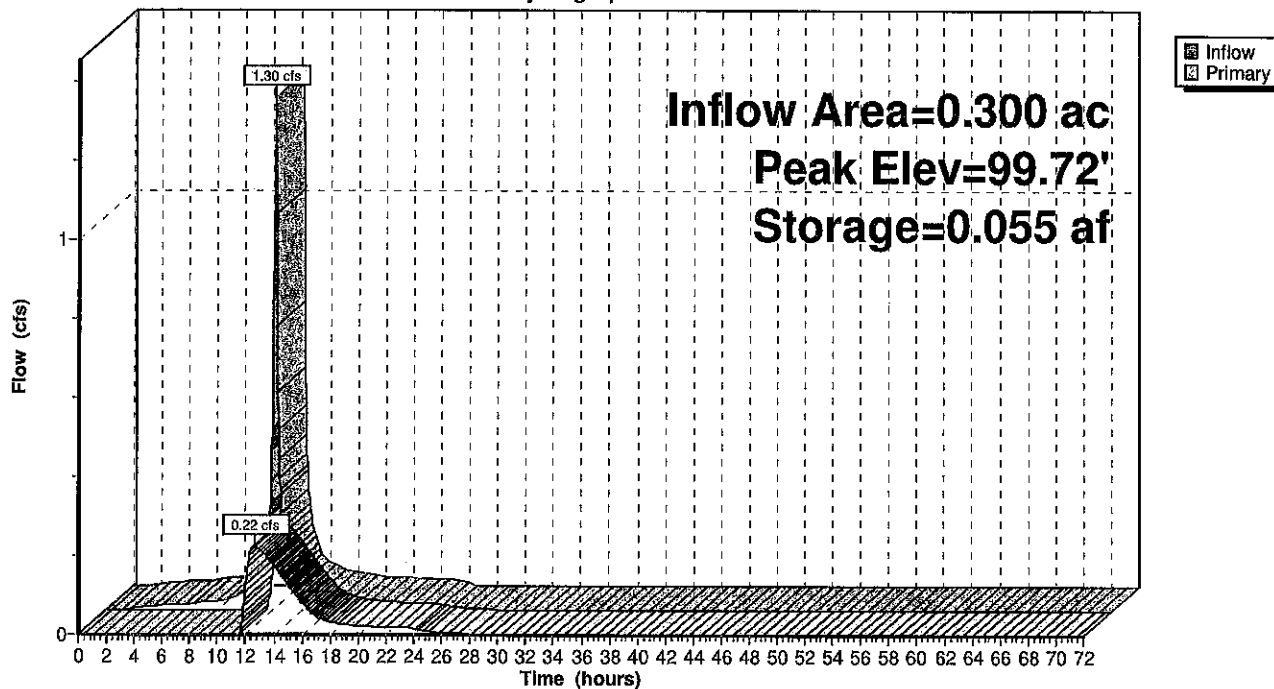
1=HDPE_Round 15" (Passes 0.22 cfs of 12.66 cfs potential flow)

2=Orifice (Orifice Controls 0.22 cfs @ 4.55 fps)

3=Grate (Controls 0.00 cfs)

Pond 55P: Proposed Bioretention System #5

Hydrograph



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10 Year Storm

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Hydrograph for Pond 55P: Proposed Bioretention System #5

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	98.00	0.00
2.50	0.01	0.001	98.02	0.00
5.00	0.01	0.003	98.09	0.00
7.50	0.02	0.006	98.20	0.00
10.00	0.05	0.013	98.40	0.00
12.50	0.29	0.055	99.71	0.22
15.00	0.04	0.036	99.11	0.13
17.50	0.03	0.027	98.84	0.04
20.00	0.02	0.026	98.81	0.02
22.50	0.02	0.025	98.80	0.02
25.00	0.00	0.024	98.76	0.01
27.50	0.00	0.023	98.73	0.00
30.00	0.00	0.023	98.72	0.00
32.50	0.00	0.023	98.72	0.00
35.00	0.00	0.023	98.71	0.00
37.50	0.00	0.023	98.71	0.00
40.00	0.00	0.023	98.71	0.00
42.50	0.00	0.023	98.71	0.00
45.00	0.00	0.023	98.71	0.00
47.50	0.00	0.023	98.71	0.00
50.00	0.00	0.023	98.71	0.00
52.50	0.00	0.023	98.71	0.00
55.00	0.00	0.023	98.71	0.00
57.50	0.00	0.023	98.70	0.00
60.00	0.00	0.023	98.70	0.00
62.50	0.00	0.023	98.70	0.00
65.00	0.00	0.023	98.70	0.00
67.50	0.00	0.023	98.70	0.00
70.00	0.00	0.023	98.70	0.00

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10 Year Storm
NOAA 24-hr C 10-Year Rainfall=5.01"

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Summary for Pond 56P: Proposed Bioretention System #6

Inflow Area = 1.450 ac, 51.72% Impervious, Inflow Depth = 3.07" for 10-Year event
 Inflow = 4.03 cfs @ 12.11 hrs, Volume= 0.371 af
 Outflow = 0.35 cfs @ 13.52 hrs, Volume= 0.302 af, Atten= 91%, Lag= 84.7 min
 Primary = 0.35 cfs @ 13.52 hrs, Volume= 0.302 af
 Routed to Link 61L : Total to P.O.I. "A"

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 99.19' @ 13.52 hrs Surf.Area= 4,912 sf Storage= 10,776 cf

Plug-Flow detention time= 1,088.1 min calculated for 0.302 af (81% of inflow)
 Center-of-Mass det. time= 1,007.8 min (1,785.6 - 777.8)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	19,648 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
97.00	4,912	0	0
98.00	4,912	4,912	4,912
99.00	4,912	4,912	9,824
100.00	4,912	4,912	14,736
101.00	4,912	4,912	19,648

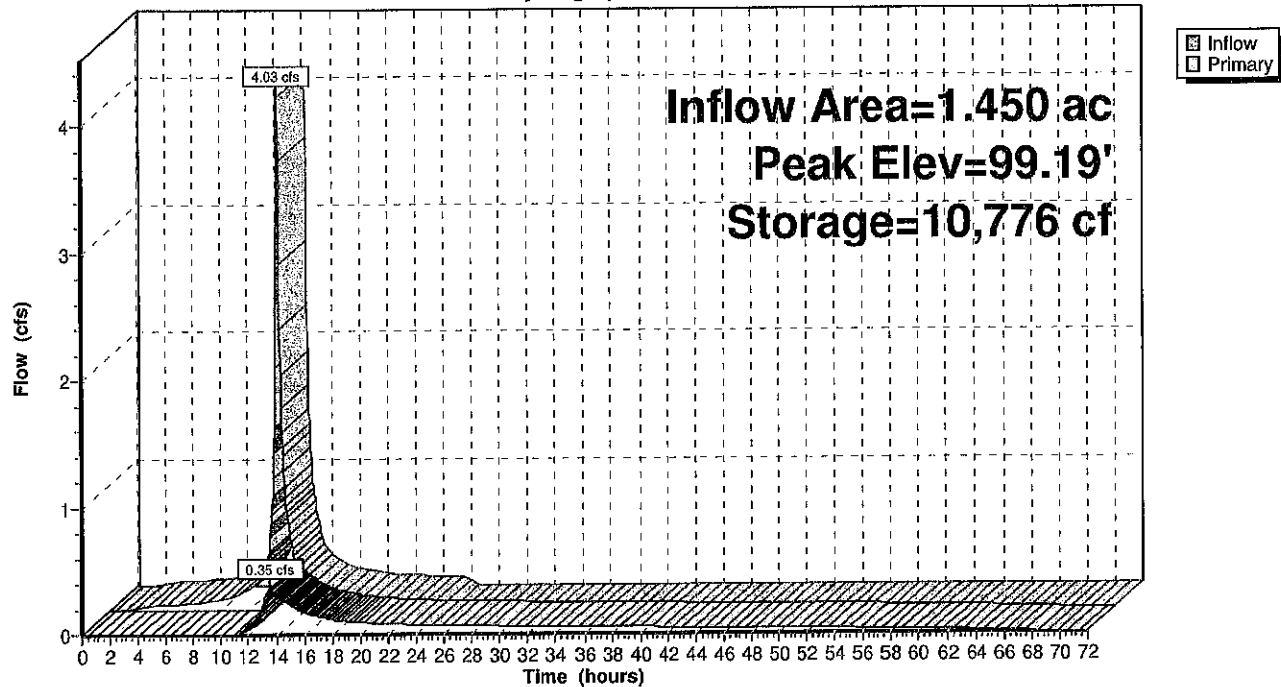
Device	Routing	Invert	Outlet Devices
#1	Primary	93.50'	15.0" Round HDPE_Round 15" L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 93.50' / 93.25' S= 0.0050 ' / Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	97.60'	Chicago 3-in VFR
#3	Device 1	99.00'	1.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#4	Device 1	100.00'	42.0" x 48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.35 cfs @ 13.52 hrs HW=99.19' TW=0.00' (Dynamic Tailwater)

- 1=HDPE_Round 15" (Passes 0.35 cfs of 13.30 cfs potential flow)
- 2=Chicago 3-in VFR (Custom Controls 0.08 cfs)
- 3=Sharp-Crested Rectangular Weir (Weir Controls 0.27 cfs @ 1.44 fps)
- 4=Orifice/Grate (Controls 0.00 cfs)

Pond 56P: Proposed Bioretention System #6

Hydrograph



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10 Year Storm
NOAA 24-hr C 10-Year Rainfall=5.01"

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Hydrograph for Pond 56P: Proposed Bioretention System #6

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	97.00	0.00
2.50	0.03	87	97.02	0.00
5.00	0.05	422	97.09	0.00
7.50	0.08	947	97.19	0.00
10.00	0.16	1,880	97.38	0.00
12.50	1.22	9,303	98.89	0.07
15.00	0.17	10,490	99.14	0.23
17.50	0.11	10,163	99.07	0.13
20.00	0.08	9,996	99.04	0.09
22.50	0.07	9,904	99.02	0.08
25.00	0.00	9,636	98.96	0.07
27.50	0.00	9,026	98.84	0.07
30.00	0.00	8,449	98.72	0.06
32.50	0.00	7,905	98.61	0.06
35.00	0.00	7,392	98.50	0.06
37.50	0.00	6,907	98.41	0.05
40.00	0.00	6,450	98.31	0.05
42.50	0.00	6,018	98.23	0.05
45.00	0.00	5,611	98.14	0.04
47.50	0.00	5,226	98.06	0.04
50.00	0.00	4,864	97.99	0.04
52.50	0.00	4,521	97.92	0.04
55.00	0.00	4,198	97.85	0.03
57.50	0.00	3,893	97.79	0.03
60.00	0.00	3,605	97.73	0.03
62.50	0.00	3,343	97.68	0.02
65.00	0.00	3,176	97.65	0.01
67.50	0.00	3,079	97.63	0.01
70.00	0.00	3,023	97.62	0.00

25 YEAR STORM

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25 Year Storm
NOAA 24-hr C 25-Year Rainfall=6.19"

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Page 1

Summary for Pond 51P: Proposed Bioretention System #1

Inflow Area = 0.160 ac, 81.25% Impervious, Inflow Depth = 5.46" for 25-Year event
 Inflow = 1.01 cfs @ 12.08 hrs, Volume= 0.073 af
 Outflow = 0.25 cfs @ 12.36 hrs, Volume= 0.061 af, Atten= 75%, Lag= 16.7 min
 Primary = 0.25 cfs @ 12.36 hrs, Volume= 0.061 af
 Routed to Link 61L : Total to P.O.I. "A"

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 99.91' @ 12.36 hrs Surf.Area= 0.017 ac Storage= 0.033 af

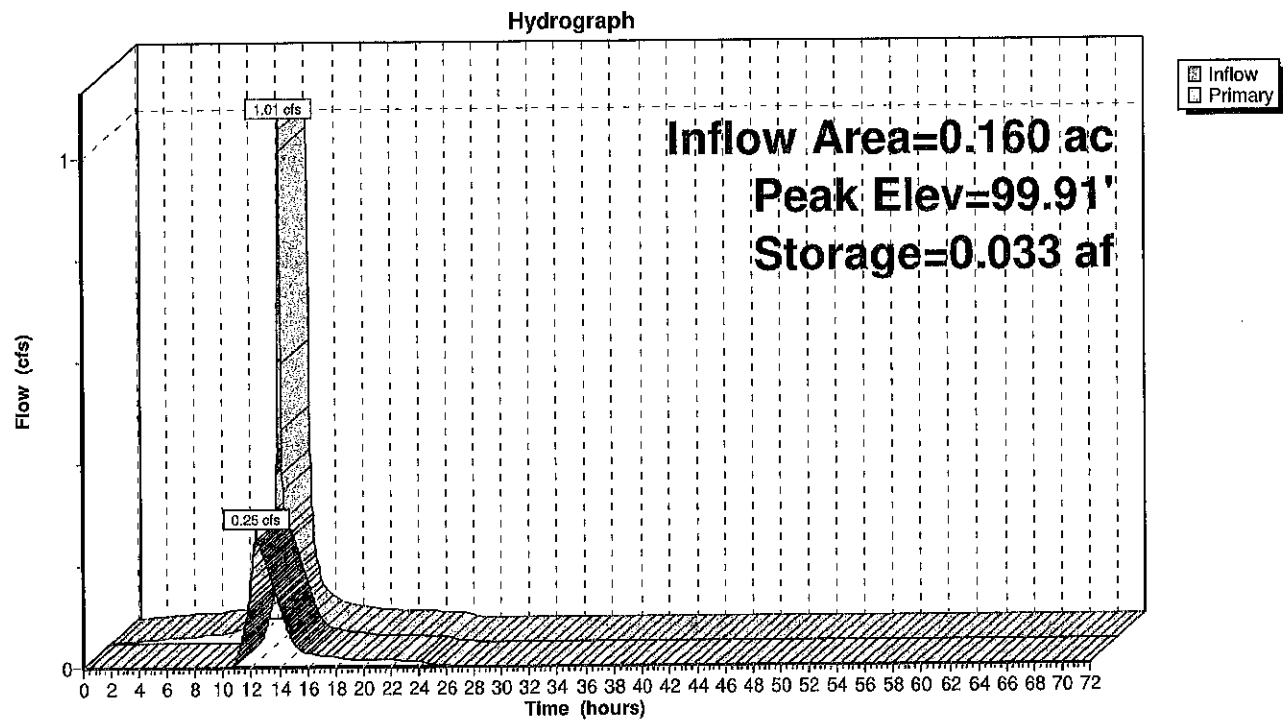
Plug-Flow detention time= 186.7 min calculated for 0.061 af (84% of inflow)
 Center-of-Mass det. time= 115.5 min (868.0 - 752.4)

Volume	Invert	Avail.Storage	Storage Description
#1	98.00'	0.051 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
98.00	0.017	0.000	0.000
99.00	0.017	0.017	0.017
100.00	0.017	0.017	0.034
101.00	0.017	0.017	0.051

Device	Routing	Invert	Outlet Devices
#1	Primary	94.50'	15.0" Round HDPE_Round 15" L= 28.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 94.50' / 94.36' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	98.70'	3.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	100.50'	42.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.25 cfs @ 12.36 hrs HW=99.91' TW=0.00' (Dynamic Tailwater)

- 1=HDPE_Round 15" (Passes 0.25 cfs of 12.93 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.25 cfs @ 5.02 fps)
- 3=Grate (Controls 0.00 cfs)

Pond 51P: Proposed Bioretention System #1

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Hydrograph for Pond 51P: Proposed Bioretention System #1

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	98.00	0.00
2.50	0.01	0.001	98.03	0.00
5.00	0.01	0.002	98.14	0.00
7.50	0.02	0.005	98.30	0.00
10.00	0.04	0.010	98.58	0.00
12.50	0.20	0.032	99.89	0.24
15.00	0.03	0.015	98.87	0.05
17.50	0.02	0.014	98.80	0.02
20.00	0.01	0.013	98.78	0.01
22.50	0.01	0.013	98.78	0.01
25.00	0.00	0.013	98.74	0.00
27.50	0.00	0.012	98.72	0.00
30.00	0.00	0.012	98.71	0.00
32.50	0.00	0.012	98.71	0.00
35.00	0.00	0.012	98.71	0.00
37.50	0.00	0.012	98.71	0.00
40.00	0.00	0.012	98.71	0.00
42.50	0.00	0.012	98.70	0.00
45.00	0.00	0.012	98.70	0.00
47.50	0.00	0.012	98.70	0.00
50.00	0.00	0.012	98.70	0.00
52.50	0.00	0.012	98.70	0.00
55.00	0.00	0.012	98.70	0.00
57.50	0.00	0.012	98.70	0.00
60.00	0.00	0.012	98.70	0.00
62.50	0.00	0.012	98.70	0.00
65.00	0.00	0.012	98.70	0.00
67.50	0.00	0.012	98.70	0.00
70.00	0.00	0.012	98.70	0.00

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Summary for Pond 52P: Proposed Bioretention System #2

Inflow Area = 0.290 ac, 86.21% Impervious, Inflow Depth = 5.59" for 25-Year event
 Inflow = 1.92 cfs @ 12.08 hrs, Volume= 0.135 af
 Outflow = 0.72 cfs @ 12.22 hrs, Volume= 0.113 af, Atten= 62%, Lag= 8.2 min
 Primary = 0.72 cfs @ 12.22 hrs, Volume= 0.113 af
 Routed to Link 61L : Total to P.O.I. "A"

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 100.48' @ 12.22 hrs Surf.Area= 0.025 ac Storage= 0.062 af

Plug-Flow detention time= 202.0 min calculated for 0.113 af (83% of inflow)
 Center-of-Mass det. time= 128.6 min (878.0 - 749.4)

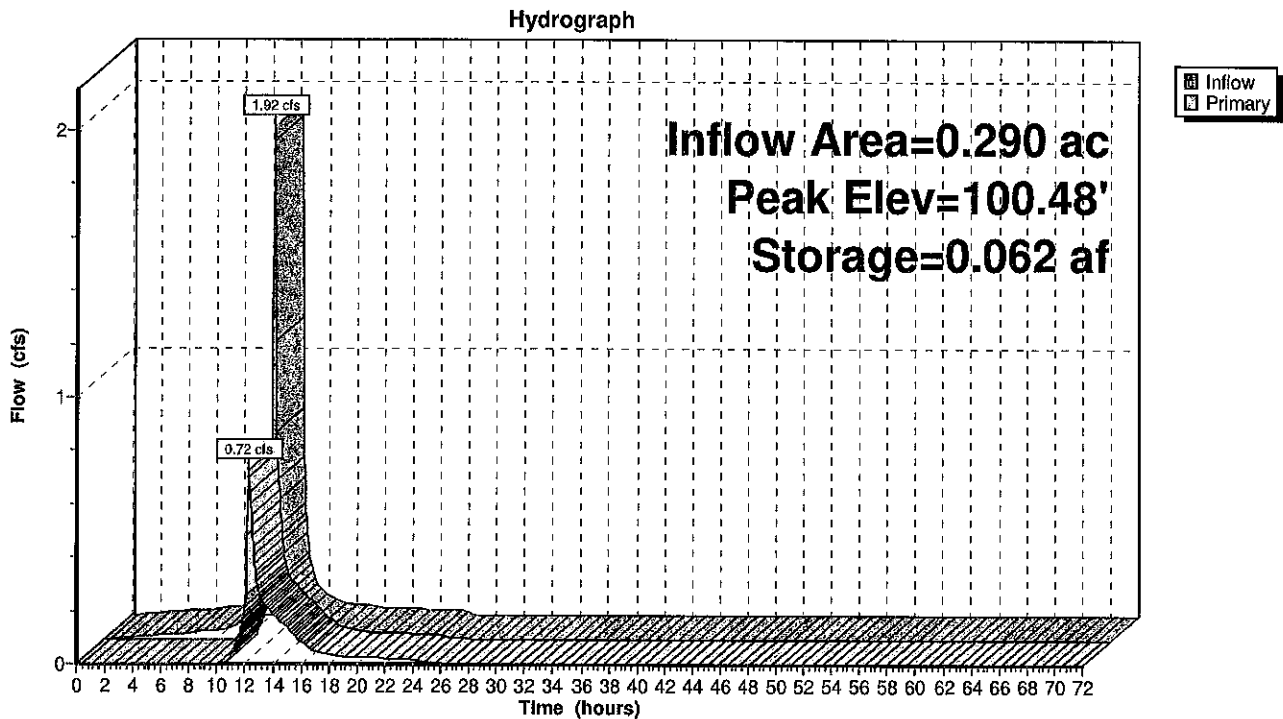
Volume	Invert	Avail.Storage	Storage Description
#1	98.00'	0.075 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
98.00	0.025	0.000	0.000
99.00	0.025	0.025	0.025
100.00	0.025	0.025	0.050
101.00	0.025	0.025	0.075

Device	Routing	Invert	Outlet Devices
#1	Primary	94.50'	15.0" Round HDPE_Round 15" L= 37.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 94.50' / 94.31' S= 0.0051 ' /' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Primary	98.90'	3.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	100.00'	0.5' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#4	Device 1	100.95'	42.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.72 cfs @ 12.22 hrs HW=100.47' TW=0.00' (Dynamic Tailwater)

- 1=HDPE_Round 15" (Passes 0.43 cfs of 13.67 cfs potential flow)
- 3=Sharp-Crested Rectangular Weir (Weir Controls 0.43 cfs @ 2.25 fps)
- 4=Grate (Controls 0.00 cfs)
- 2=Orifice/Grate (Orifice Controls 0.28 cfs @ 5.80 fps)

Pond 52P: Proposed Bioretention System #2



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Hydrograph for Pond 52P: Proposed Bioretention System #2

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	98.00	0.00
2.50	0.01	0.001	98.04	0.00
5.00	0.02	0.005	98.18	0.00
7.50	0.03	0.010	98.39	0.00
10.00	0.07	0.019	98.76	0.00
12.50	0.35	0.058	100.32	0.52
15.00	0.05	0.034	99.35	0.14
17.50	0.03	0.026	99.05	0.04
20.00	0.03	0.025	99.02	0.03
22.50	0.02	0.025	99.01	0.02
25.00	0.00	0.024	98.96	0.01
27.50	0.00	0.023	98.93	0.00
30.00	0.00	0.023	98.92	0.00
32.50	0.00	0.023	98.91	0.00
35.00	0.00	0.023	98.91	0.00
37.50	0.00	0.023	98.91	0.00
40.00	0.00	0.023	98.91	0.00
42.50	0.00	0.023	98.91	0.00
45.00	0.00	0.023	98.91	0.00
47.50	0.00	0.023	98.91	0.00
50.00	0.00	0.023	98.90	0.00
52.50	0.00	0.023	98.90	0.00
55.00	0.00	0.023	98.90	0.00
57.50	0.00	0.023	98.90	0.00
60.00	0.00	0.023	98.90	0.00
62.50	0.00	0.023	98.90	0.00
65.00	0.00	0.023	98.90	0.00
67.50	0.00	0.023	98.90	0.00
70.00	0.00	0.023	98.90	0.00

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Summary for Pond 53P: Proposed Bioretention System #3

Inflow Area = 0.230 ac, 82.61% Impervious, Inflow Depth = 5.50" for 25-Year event
 Inflow = 1.44 cfs @ 12.09 hrs, Volume= 0.105 af
 Outflow = 0.86 cfs @ 12.17 hrs, Volume= 0.086 af, Atten= 41%, Lag= 4.8 min
 Primary = 0.86 cfs @ 12.17 hrs, Volume= 0.086 af
 Routed to Link 61L : Total to P.O.I. "A"

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 98.86' @ 12.17 hrs Surf.Area= 0.019 ac Storage= 0.035 af

Plug-Flow detention time= 161.0 min calculated for 0.086 af (82% of inflow)
 Center-of-Mass det. time= 85.0 min (837.1 - 752.2)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	0.057 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
97.00	0.019	0.000	0.000
98.00	0.019	0.019	0.019
99.00	0.019	0.019	0.038
100.00	0.019	0.019	0.057

Device	Routing	Invert	Outlet Devices
#1	Primary	93.50'	15.0" Round HDPE_Round 15" L= 11.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 93.50' / 93.44' S= 0.0055 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	98.00'	0.5' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#3	Device 1	99.50'	42.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.85 cfs @ 12.17 hrs HW=98.85' TW=0.00' (Dynamic Tailwater)

- 1=HDPE_Round 15" (Passes 0.85 cfs of 12.85 cfs potential flow)
- 2=Sharp-Crested Rectangular Weir (Weir Controls 0.85 cfs @ 3.02 fps)
- 3=Grate (Controls 0.00 cfs)

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25 Year Storm

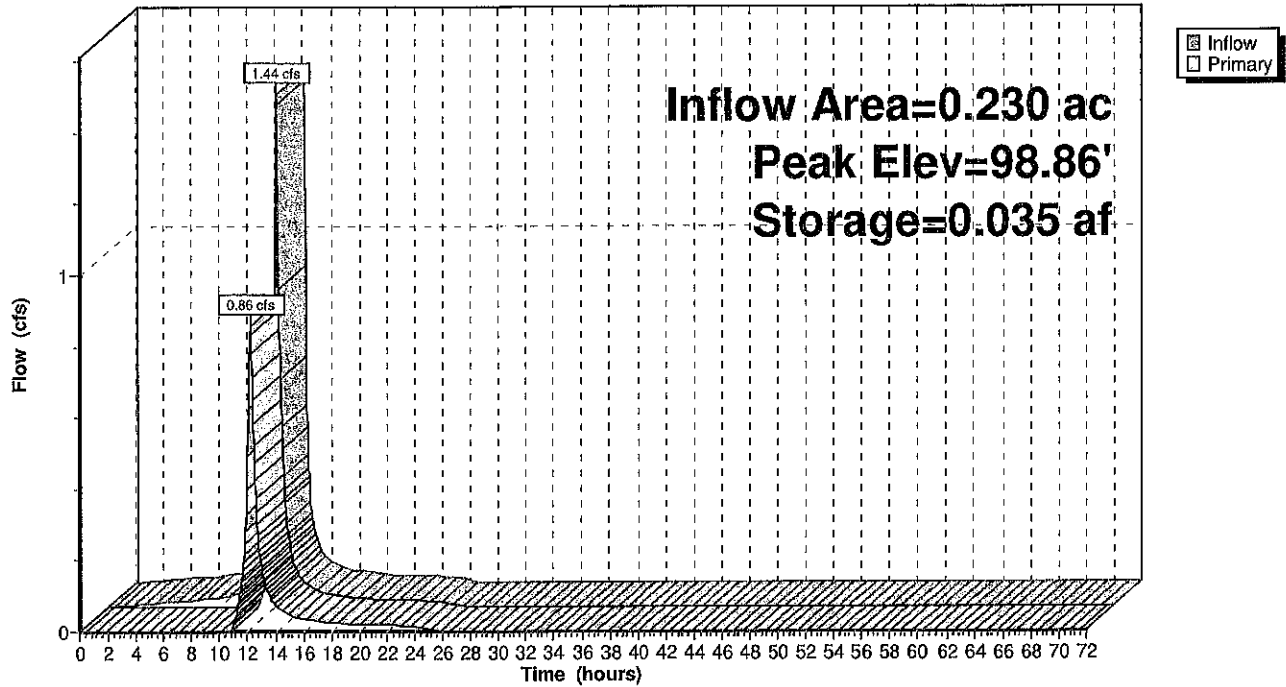
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Pond 53P: Proposed Bioretention System #3

Hydrograph



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Hydrograph for Pond 53P: Proposed Bioretention System #3

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	97.00	0.00
2.50	0.01	0.001	97.04	0.00
5.00	0.02	0.003	97.18	0.00
7.50	0.02	0.007	97.39	0.00
10.00	0.05	0.014	97.76	0.00
12.50	0.29	0.029	98.51	0.47
15.00	0.04	0.021	98.10	0.05
17.50	0.03	0.020	98.07	0.03
20.00	0.02	0.020	98.05	0.02
22.50	0.02	0.020	98.05	0.02
25.00	0.00	0.019	98.02	0.00
27.50	0.00	0.019	98.00	0.00
30.00	0.00	0.019	98.00	0.00
32.50	0.00	0.019	98.00	0.00
35.00	0.00	0.019	98.00	0.00
37.50	0.00	0.019	98.00	0.00
40.00	0.00	0.019	98.00	0.00
42.50	0.00	0.019	98.00	0.00
45.00	0.00	0.019	98.00	0.00
47.50	0.00	0.019	98.00	0.00
50.00	0.00	0.019	98.00	0.00
52.50	0.00	0.019	98.00	0.00
55.00	0.00	0.019	98.00	0.00
57.50	0.00	0.019	98.00	0.00
60.00	0.00	0.019	98.00	0.00
62.50	0.00	0.019	98.00	0.00
65.00	0.00	0.019	98.00	0.00
67.50	0.00	0.019	98.00	0.00
70.00	0.00	0.019	98.00	0.00

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Summary for Pond 54P: Proposed Bioretention System #4

Inflow Area = 0.710 ac, 78.87% Impervious, Inflow Depth = 5.40" for 25-Year event
 Inflow = 4.25 cfs @ 12.09 hrs, Volume= 0.320 af
 Outflow = 2.38 cfs @ 12.19 hrs, Volume= 0.269 af, Atten= 44%, Lag= 6.1 min
 Primary = 2.38 cfs @ 12.19 hrs, Volume= 0.269 af
 Routed to Link 61L : Total to P.O.I. "A"

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 100.80' @ 12.19 hrs Surf.Area= 0.050 ac Storage= 0.141 af

Plug-Flow detention time= 330.6 min calculated for 0.269 af (84% of inflow)
 Center-of-Mass det. time= 260.6 min (1,015.6 - 755.0)

Volume	Invert	Avail.Storage	Storage Description
#1	98.00'	0.201 af	Custom Stage Data (Prismatic) Listed below (Recalc)

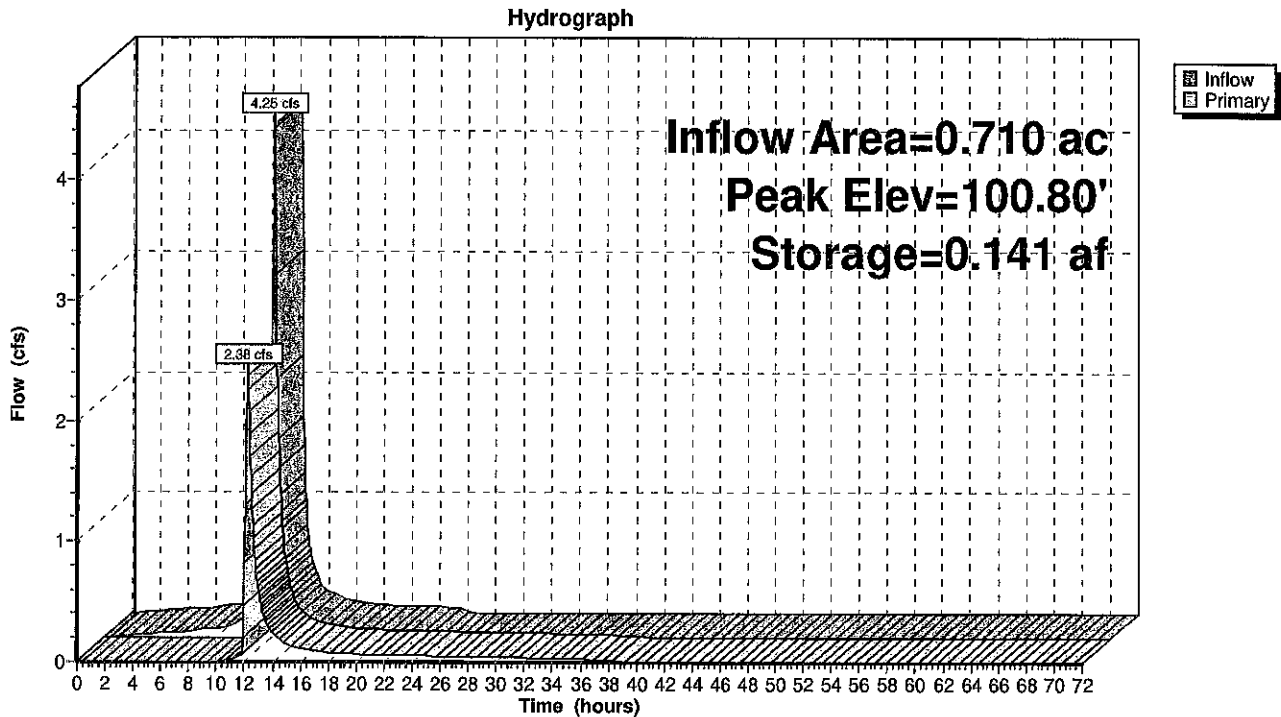
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
98.00	0.050	0.000	0.000
99.00	0.050	0.050	0.050
100.00	0.050	0.050	0.101
101.00	0.050	0.050	0.151
102.00	0.050	0.050	0.201

Device	Routing	Invert	Outlet Devices
#1	Primary	94.50'	15.0" Round HDPE_Round 15" L= 40.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 94.50' / 94.30' S= 0.0050 '/ Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	99.00'	Chicago 3-in VFR
#3	Device 1	99.90'	1.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#4	Device 1	101.40'	42.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.36 cfs @ 12.19 hrs HW=100.80' TW=0.00' (Dynamic Tailwater)

1=HDPE_Round 15" (Passes 2.36 cfs of 14.07 cfs potential flow)
 2=Chicago 3-in VFR (Custom Controls 0.08 cfs)
 3=Sharp-Crested Rectangular Weir (Weir Controls 2.28 cfs @ 3.10 fps)
 4=Grate (Controls 0.00 cfs)

Pond 54P: Proposed Bioretention System #4



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Hydrograph for Pond 54P: Proposed Bioretention System #4

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	98.00	0.00
2.50	0.03	0.002	98.05	0.00
5.00	0.05	0.010	98.20	0.00
7.50	0.07	0.022	98.43	0.00
10.00	0.15	0.043	98.85	0.00
12.50	0.89	0.126	100.50	1.40
15.00	0.13	0.100	100.00	0.15
17.50	0.08	0.098	99.95	0.09
20.00	0.06	0.097	99.92	0.06
22.50	0.05	0.096	99.90	0.06
25.00	0.00	0.091	99.80	0.05
27.50	0.00	0.081	99.60	0.05
30.00	0.00	0.072	99.42	0.04
32.50	0.00	0.064	99.27	0.04
35.00	0.00	0.057	99.13	0.03
37.50	0.00	0.052	99.04	0.01
40.00	0.00	0.051	99.01	0.00
42.50	0.00	0.050	99.00	0.00
45.00	0.00	0.050	99.00	0.00
47.50	0.00	0.050	99.00	0.00
50.00	0.00	0.050	99.00	0.00
52.50	0.00	0.050	99.00	0.00
55.00	0.00	0.050	99.00	0.00
57.50	0.00	0.050	99.00	0.00
60.00	0.00	0.050	99.00	0.00
62.50	0.00	0.050	99.00	0.00
65.00	0.00	0.050	99.00	0.00
67.50	0.00	0.050	99.00	0.00
70.00	0.00	0.050	99.00	0.00

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Summary for Pond 55P: Proposed Bioretention System #5

Inflow Area = 0.300 ac, 73.33% Impervious, Inflow Depth = 5.13" for 25-Year event
 Inflow = 1.64 cfs @ 12.10 hrs, Volume= 0.128 af
 Outflow = 0.27 cfs @ 12.61 hrs, Volume= 0.106 af, Atten= 84%, Lag= 30.6 min
 Primary = 0.27 cfs @ 12.61 hrs, Volume= 0.106 af
 Routed to Link 61L : Total to P.O.I. "A"

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 100.13' @ 12.61 hrs Surf.Area= 0.032 ac Storage= 0.068 af

Plug-Flow detention time= 239.4 min calculated for 0.106 af (82% of inflow)
 Center-of-Mass det. time= 164.9 min (924.0 - 759.1)

Volume	Invert	Avail.Storage	Storage Description
#1	98.00'	0.096 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
98.00	0.032	0.000	0.000
99.00	0.032	0.032	0.032
100.00	0.032	0.032	0.064
101.00	0.032	0.032	0.096

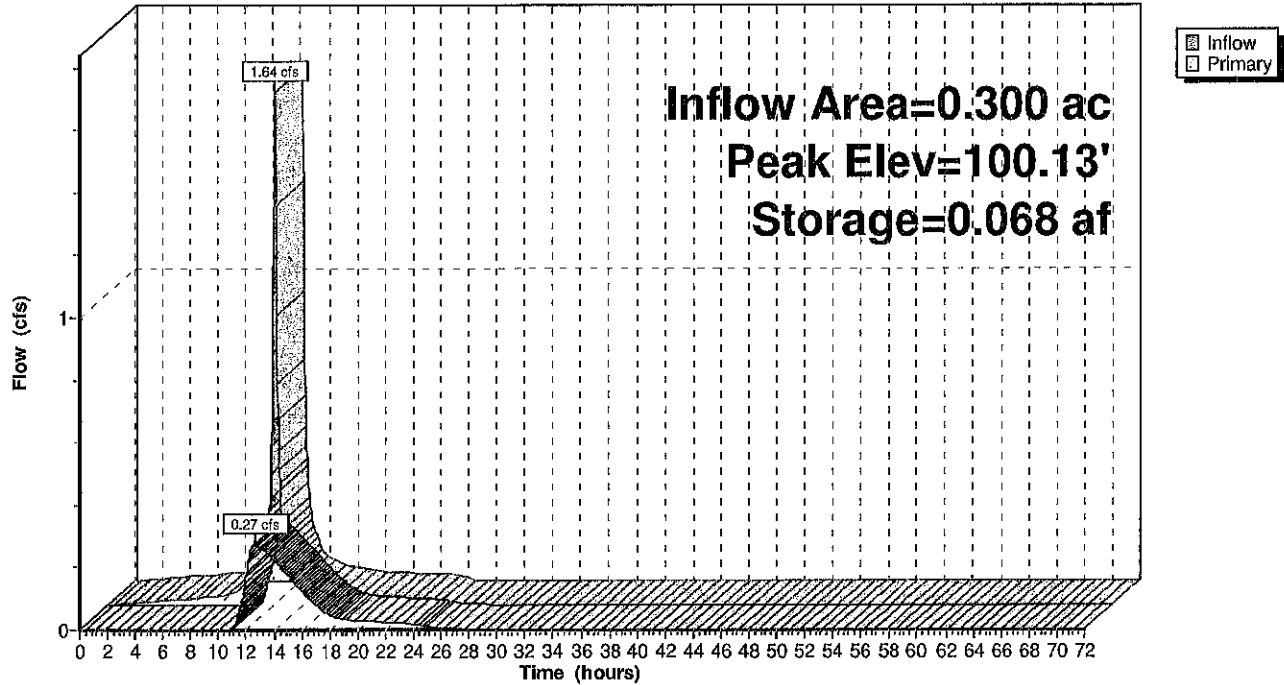
Device	Routing	Invert	Outlet Devices
#1	Primary	94.50'	15.0" Round HDPE_Round 15" L= 35.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 94.50' / 94.33' S= 0.0049 ' S= 0.0049 ' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	98.70'	3.0" Vert. Orifice C= 0.600 Limited to weir flow at low heads
#3	Device 1	100.70'	42.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.27 cfs @ 12.61 hrs HW=100.13' TW=0.00' (Dynamic Tailwater)

1=HDPE_Round 15" (Passes 0.27 cfs of 13.22 cfs potential flow)
 2=Orifice (Orifice Controls 0.27 cfs @ 5.49 fps)
 3=Grate (Controls 0.00 cfs)

Pond 55P: Proposed Bioretention System #5

Hydrograph



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Hydrograph for Pond 55P: Proposed Bioretention System #5

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	98.00	0.00
2.50	0.01	0.001	98.03	0.00
5.00	0.02	0.004	98.13	0.00
7.50	0.03	0.009	98.27	0.00
10.00	0.06	0.017	98.52	0.00
12.50	0.37	0.068	100.11	0.27
15.00	0.05	0.044	99.37	0.17
17.50	0.03	0.029	98.89	0.06
20.00	0.03	0.026	98.82	0.03
22.50	0.02	0.026	98.81	0.02
25.00	0.00	0.025	98.77	0.01
27.50	0.00	0.024	98.74	0.00
30.00	0.00	0.023	98.72	0.00
32.50	0.00	0.023	98.72	0.00
35.00	0.00	0.023	98.71	0.00
37.50	0.00	0.023	98.71	0.00
40.00	0.00	0.023	98.71	0.00
42.50	0.00	0.023	98.71	0.00
45.00	0.00	0.023	98.71	0.00
47.50	0.00	0.023	98.71	0.00
50.00	0.00	0.023	98.71	0.00
52.50	0.00	0.023	98.71	0.00
55.00	0.00	0.023	98.71	0.00
57.50	0.00	0.023	98.70	0.00
60.00	0.00	0.023	98.70	0.00
62.50	0.00	0.023	98.70	0.00
65.00	0.00	0.023	98.70	0.00
67.50	0.00	0.023	98.70	0.00
70.00	0.00	0.023	98.70	0.00

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Summary for Pond 56P: Proposed Bioretention System #6

Inflow Area = 1.450 ac, 51.72% Impervious, Inflow Depth = 4.03" for 25-Year event
 Inflow = 5.16 cfs @ 12.11 hrs, Volume= 0.486 af
 Outflow = 0.99 cfs @ 12.81 hrs, Volume= 0.417 af, Atten= 81%, Lag= 42.4 min
 Primary = 0.99 cfs @ 12.81 hrs, Volume= 0.417 af
 Routed to Link 61L : Total to P.O.I. "A"

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 99.45' @ 12.81 hrs Surf.Area= 4,912 sf Storage= 12,044 cf

Plug-Flow detention time= 831.1 min calculated for 0.417 af (86% of inflow)
 Center-of-Mass det. time= 764.1 min (1,541.8 - 777.6)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	19,648 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
97.00	4,912	0	0
98.00	4,912	4,912	4,912
99.00	4,912	4,912	9,824
100.00	4,912	4,912	14,736
101.00	4,912	4,912	19,648

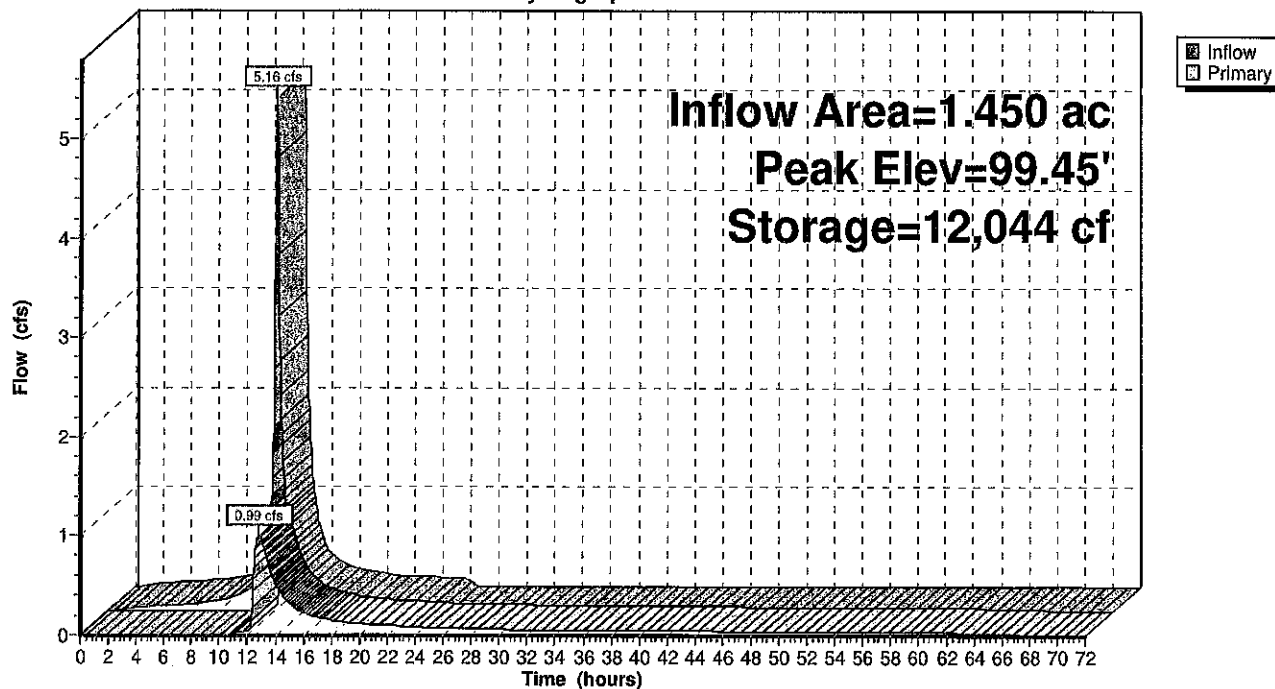
Device	Routing	Invert	Outlet Devices
#1	Primary	93.50'	15.0" Round HDPE_Round 15" L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 93.50' / 93.25' S= 0.0050 '/ Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	97.60'	Chicago 3-in VFR
#3	Device 1	99.00'	1.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#4	Device 1	100.00'	42.0" x 48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.99 cfs @ 12.81 hrs HW=99.45' TW=0.00' (Dynamic Tailwater)

- 1=HDPE_Round 15" (Passes 0.99 cfs of 13.64 cfs potential flow)
- 2=Chicago 3-in VFR (Custom Controls 0.09 cfs)
- 3=Sharp-Crested Rectangular Weir (Weir Controls 0.90 cfs @ 2.20 fps)
- 4=Orifice/Grate (Controls 0.00 cfs)

Pond 56P: Proposed Bioretention System #6

Hydrograph



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25 Year Storm

NOAA 24-hr C 25-Year Rainfall=6.19"

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Hydrograph for Pond 56P: Proposed Bioretention System #6

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	97.00	0.00
2.50	0.04	140	97.03	0.00
5.00	0.06	591	97.12	0.00
7.50	0.10	1,264	97.26	0.00
10.00	0.19	2,436	97.50	0.00
12.50	1.68	11,674	99.38	0.78
15.00	0.23	10,716	99.18	0.32
17.50	0.14	10,291	99.10	0.17
20.00	0.11	10,109	99.06	0.12
22.50	0.09	10,020	99.04	0.10
25.00	0.00	9,752	98.99	0.07
27.50	0.00	9,135	98.86	0.07
30.00	0.00	8,553	98.74	0.06
32.50	0.00	8,003	98.63	0.06
35.00	0.00	7,484	98.52	0.06
37.50	0.00	6,994	98.42	0.05
40.00	0.00	6,532	98.33	0.05
42.50	0.00	6,096	98.24	0.05
45.00	0.00	5,684	98.16	0.04
47.50	0.00	5,295	98.08	0.04
50.00	0.00	4,929	98.00	0.04
52.50	0.00	4,583	97.93	0.04
55.00	0.00	4,256	97.87	0.04
57.50	0.00	3,948	97.80	0.03
60.00	0.00	3,657	97.74	0.03
62.50	0.00	3,385	97.69	0.03
65.00	0.00	3,200	97.65	0.02
67.50	0.00	3,093	97.63	0.01
70.00	0.00	3,031	97.62	0.01

100 YEAR STORM

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100 Year Storm
NOAA 24-hr C 100-Year Rainfall=8.33"

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Summary for Pond 51P: Proposed Bioretention System #1

Inflow Area = 0.160 ac, 81.25% Impervious, Inflow Depth = 7.55" for 100-Year event
 Inflow = 1.37 cfs @ 12.08 hrs, Volume= 0.101 af
 Outflow = 0.30 cfs @ 12.41 hrs, Volume= 0.089 af, Atten= 78%, Lag= 20.1 min
 Primary = 0.30 cfs @ 12.41 hrs, Volume= 0.089 af
 Routed to Link 61L : Total to P.O.I. "A"

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 100.47' @ 12.41 hrs Surf.Area= 0.017 ac Storage= 0.042 af

Plug-Flow detention time= 167.9 min calculated for 0.089 af (88% of inflow)
 Center-of-Mass det. time= 108.5 min (857.1 - 748.6)

Volume	Invert	Avail.Storage	Storage Description
#1	98.00'	0.051 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
98.00	0.017	0.000	0.000
99.00	0.017	0.017	0.017
100.00	0.017	0.017	0.034
101.00	0.017	0.017	0.051

Device	Routing	Invert	Outlet Devices
#1	Primary	94.50'	15.0" Round HDPE_Round 15" L= 28.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 94.50' / 94.36' S= 0.0050 ' S= 0.0050 ' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	98.70'	3.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	100.50'	42.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

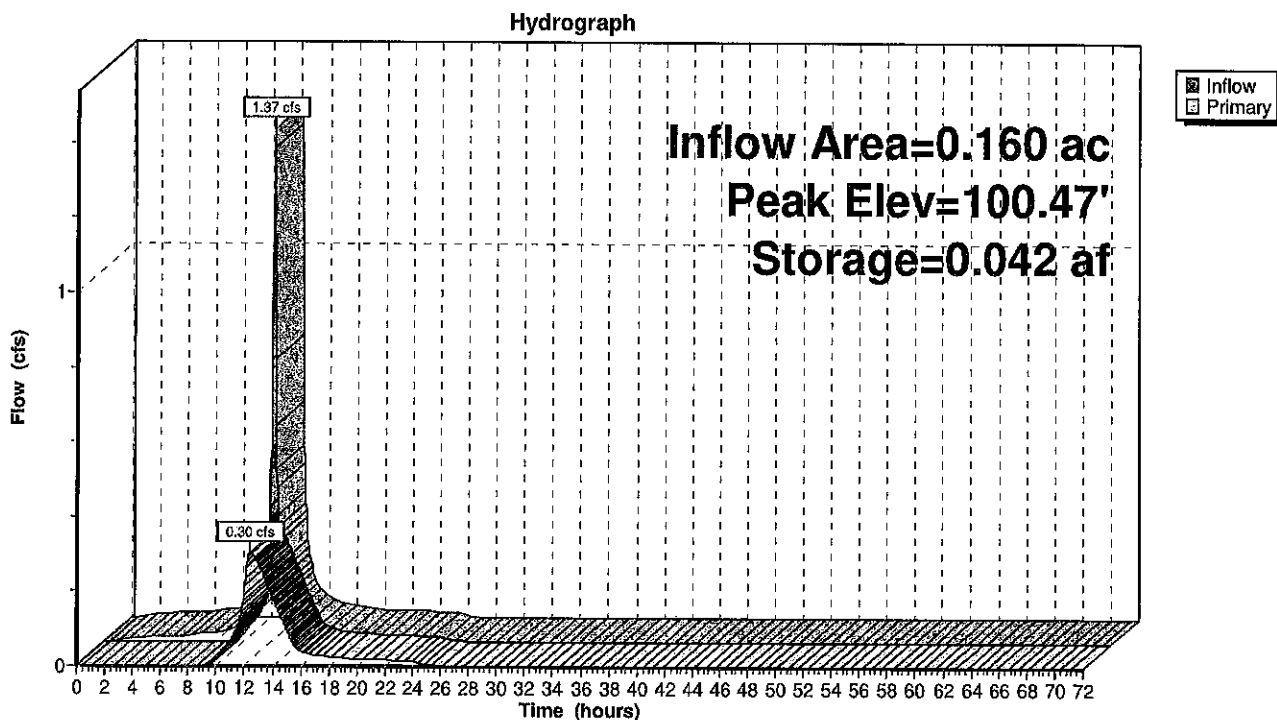
Primary OutFlow Max=0.30 cfs @ 12.41 hrs HW=100.47' TW=0.00' (Dynamic Tailwater)

1=HDPE_Round 15" (Passes 0.30 cfs of 13.66 cfs potential flow)

2=Orifice/Grate (Orifice Controls 0.30 cfs @ 6.18 fps)

3=Grate (Controls 0.00 cfs)

Pond 51P: Proposed Bioretention System #1



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100 Year Storm
NOAA 24-hr C 100-Year Rainfall=8.33"

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Hydrograph for Pond 51P: Proposed Bioretention System #1

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	98.00	0.00
2.50	0.01	0.001	98.06	0.00
5.00	0.02	0.004	98.22	0.00
7.50	0.02	0.007	98.44	0.00
10.00	0.05	0.014	98.81	0.02
12.50	0.27	0.042	100.46	0.30
15.00	0.04	0.017	98.99	0.10
17.50	0.02	0.014	98.82	0.03
20.00	0.02	0.014	98.80	0.02
22.50	0.02	0.013	98.79	0.02
25.00	0.00	0.013	98.75	0.00
27.50	0.00	0.012	98.72	0.00
30.00	0.00	0.012	98.71	0.00
32.50	0.00	0.012	98.71	0.00
35.00	0.00	0.012	98.71	0.00
37.50	0.00	0.012	98.71	0.00
40.00	0.00	0.012	98.71	0.00
42.50	0.00	0.012	98.70	0.00
45.00	0.00	0.012	98.70	0.00
47.50	0.00	0.012	98.70	0.00
50.00	0.00	0.012	98.70	0.00
52.50	0.00	0.012	98.70	0.00
55.00	0.00	0.012	98.70	0.00
57.50	0.00	0.012	98.70	0.00
60.00	0.00	0.012	98.70	0.00
62.50	0.00	0.012	98.70	0.00
65.00	0.00	0.012	98.70	0.00
67.50	0.00	0.012	98.70	0.00
70.00	0.00	0.012	98.70	0.00

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100 Year Storm
NOAA 24-hr C 100-Year Rainfall=8.33"

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Summary for Pond 52P: Proposed Bioretention System #2

Inflow Area = 0.290 ac, 86.21% Impervious, Inflow Depth = 7.69" for 100-Year event
 Inflow = 2.62 cfs @ 12.08 hrs, Volume= 0.186 af
 Outflow = 1.24 cfs @ 12.18 hrs, Volume= 0.163 af, Atten= 53%, Lag= 6.1 min
 Primary = 1.24 cfs @ 12.18 hrs, Volume= 0.163 af
 Routed to Link 61L : Total to P.O.I. "A"

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 100.92' @ 12.19 hrs Surf.Area= 0.025 ac Storage= 0.073 af

Plug-Flow detention time= 169.9 min calculated for 0.163 af (88% of inflow)
 Center-of-Mass det. time= 111.1 min (856.6 - 745.5)

Volume	Invert	Avail.Storage	Storage Description
#1	98.00'	0.075 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
98.00	0.025	0.000	0.000
99.00	0.025	0.025	0.025
100.00	0.025	0.025	0.050
101.00	0.025	0.025	0.075

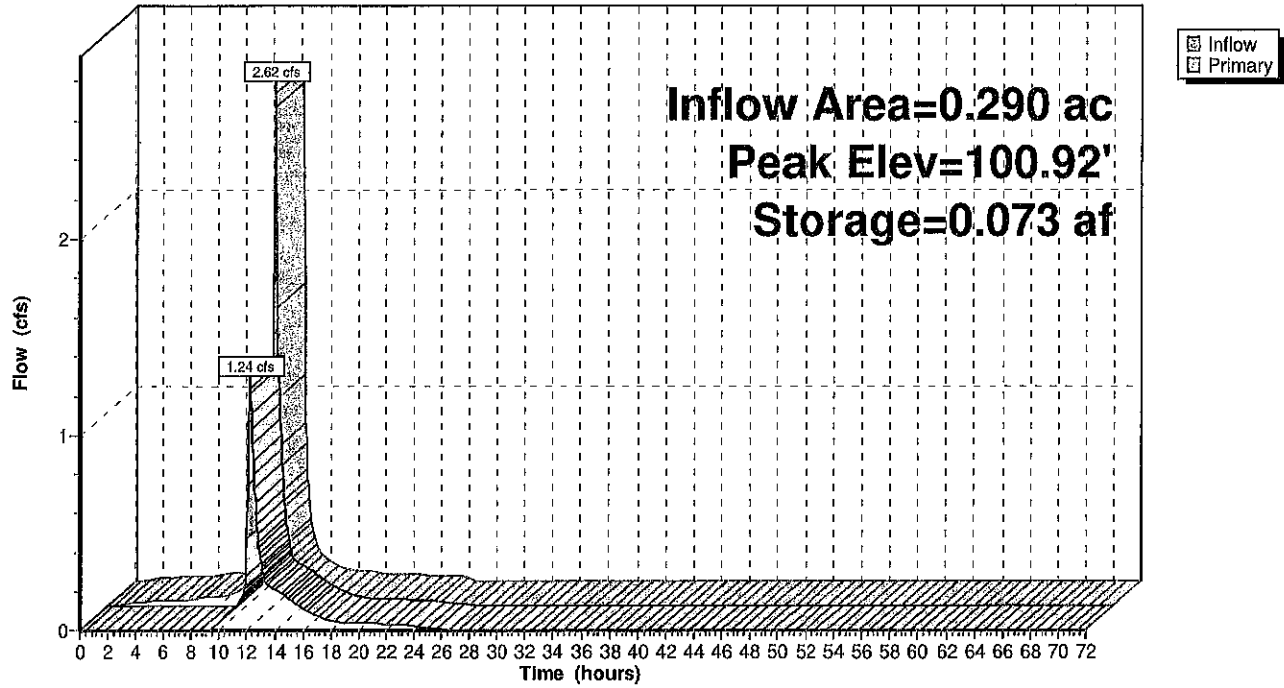
Device	Routing	Invert	Outlet Devices
#1	Primary	94.50'	15.0" Round HDPE_Round 15" L= 37.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 94.50' / 94.31' S= 0.0051 ' / Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Primary	98.90'	3.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	100.00'	0.5' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#4	Device 1	100.95'	42.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.23 cfs @ 12.18 hrs HW=100.91' TW=0.00' (Dynamic Tailwater)

1=HDPE_Round 15" (Passes 0.91 cfs of 14.22 cfs potential flow)
 3=Sharp-Crested Rectangular Weir (Weir Controls 0.91 cfs @ 3.12 fps)
 4=Grate (Controls 0.00 cfs)
 2=Orifice/Grate (Orifice Controls 0.32 cfs @ 6.62 fps)

Pond 52P: Proposed Bioretention System #2

Hydrograph



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100 Year Storm
NOAA 24-hr C 100-Year Rainfall=8.33"

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Hydrograph for Pond 52P: Proposed Bioretention System #2

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	98.00	0.00
2.50	0.02	0.002	98.08	0.00
5.00	0.03	0.007	98.28	0.00
7.50	0.05	0.014	98.58	0.00
10.00	0.09	0.026	99.05	0.04
12.50	0.47	0.063	100.54	0.80
15.00	0.07	0.037	99.49	0.16
17.50	0.04	0.027	99.09	0.06
20.00	0.03	0.026	99.04	0.04
22.50	0.03	0.026	99.03	0.03
25.00	0.00	0.024	98.97	0.01
27.50	0.00	0.023	98.93	0.00
30.00	0.00	0.023	98.92	0.00
32.50	0.00	0.023	98.91	0.00
35.00	0.00	0.023	98.91	0.00
37.50	0.00	0.023	98.91	0.00
40.00	0.00	0.023	98.91	0.00
42.50	0.00	0.023	98.91	0.00
45.00	0.00	0.023	98.91	0.00
47.50	0.00	0.023	98.91	0.00
50.00	0.00	0.023	98.90	0.00
52.50	0.00	0.023	98.90	0.00
55.00	0.00	0.023	98.90	0.00
57.50	0.00	0.023	98.90	0.00
60.00	0.00	0.023	98.90	0.00
62.50	0.00	0.023	98.90	0.00
65.00	0.00	0.023	98.90	0.00
67.50	0.00	0.023	98.90	0.00
70.00	0.00	0.023	98.90	0.00

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100 Year Storm
NOAA 24-hr C 100-Year Rainfall=8.33"

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Summary for Pond 53P: Proposed Bioretention System #3

Inflow Area = 0.230 ac, 82.61% Impervious, Inflow Depth = 7.59" for 100-Year event
 Inflow = 1.97 cfs @ 12.09 hrs, Volume= 0.145 af
 Outflow = 1.10 cfs @ 12.17 hrs, Volume= 0.126 af, Atten= 44%, Lag= 5.2 min
 Primary = 1.10 cfs @ 12.17 hrs, Volume= 0.126 af
 Routed to Link 61L : Total to P.O.I. "A"

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 99.17' @ 12.17 hrs Surf.Area= 0.019 ac Storage= 0.041 af

Plug-Flow detention time= 136.9 min calculated for 0.126 af (87% of inflow)
 Center-of-Mass det. time= 74.3 min (822.6 - 748.3)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	0.057 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
97.00	0.019	0.000	0.000
98.00	0.019	0.019	0.019
99.00	0.019	0.019	0.038
100.00	0.019	0.019	0.057

Device	Routing	Invert	Outlet Devices
#1	Primary	93.50'	15.0" Round HDPE_Round 15" L= 11.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 93.50' / 93.44' S= 0.0055 ' / Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	98.00'	0.5' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#3	Device 1	99.50'	42.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

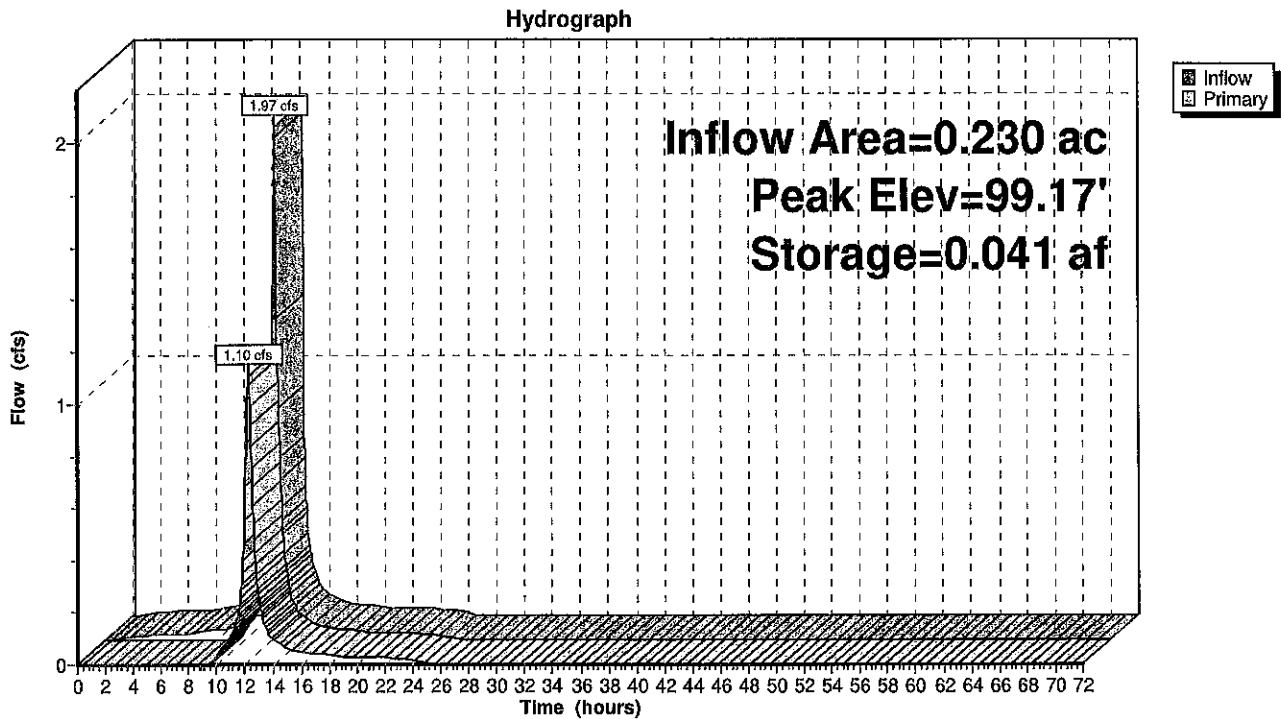
Primary OutFlow Max=1.09 cfs @ 12.17 hrs HW=99.16' TW=0.00' (Dynamic Tailwater)

1=HDPE_Round 15" (Passes 1.09 cfs of 13.26 cfs potential flow)

2=Sharp-Crested Rectangular Weir (Weir Controls 1.09 cfs @ 3.52 fps)

3=Grate (Controls 0.00 cfs)

Pond 53P: Proposed Bioretention System #3



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100 Year Storm

NOAA 24-hr C 100-Year Rainfall=8.33"

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Hydrograph for Pond 53P: Proposed Bioretention System #3

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	97.00	0.00
2.50	0.01	0.002	97.08	0.00
5.00	0.02	0.005	97.28	0.00
7.50	0.03	0.011	97.57	0.00
10.00	0.07	0.020	98.07	0.03
12.50	0.39	0.032	98.69	0.68
15.00	0.06	0.021	98.12	0.06
17.50	0.04	0.021	98.08	0.04
20.00	0.03	0.020	98.07	0.03
22.50	0.02	0.020	98.06	0.02
25.00	0.00	0.019	98.02	0.00
27.50	0.00	0.019	98.00	0.00
30.00	0.00	0.019	98.00	0.00
32.50	0.00	0.019	98.00	0.00
35.00	0.00	0.019	98.00	0.00
37.50	0.00	0.019	98.00	0.00
40.00	0.00	0.019	98.00	0.00
42.50	0.00	0.019	98.00	0.00
45.00	0.00	0.019	98.00	0.00
47.50	0.00	0.019	98.00	0.00
50.00	0.00	0.019	98.00	0.00
52.50	0.00	0.019	98.00	0.00
55.00	0.00	0.019	98.00	0.00
57.50	0.00	0.019	98.00	0.00
60.00	0.00	0.019	98.00	0.00
62.50	0.00	0.019	98.00	0.00
65.00	0.00	0.019	98.00	0.00
67.50	0.00	0.019	98.00	0.00
70.00	0.00	0.019	98.00	0.00

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100 Year Storm
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Summary for Pond 54P: Proposed Bioretention System #4

Inflow Area = 0.710 ac, 78.87% Impervious, Inflow Depth = 7.48" for 100-Year event
 Inflow = 5.82 cfs @ 12.09 hrs, Volume= 0.443 af
 Outflow = 3.65 cfs @ 12.17 hrs, Volume= 0.392 af, Atten= 37%, Lag= 5.0 min
 Primary = 3.65 cfs @ 12.17 hrs, Volume= 0.392 af
 Routed to Link 61L : Total to P.O.I. "A"

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 101.19' @ 12.17 hrs Surf.Area= 0.050 ac Storage= 0.160 af

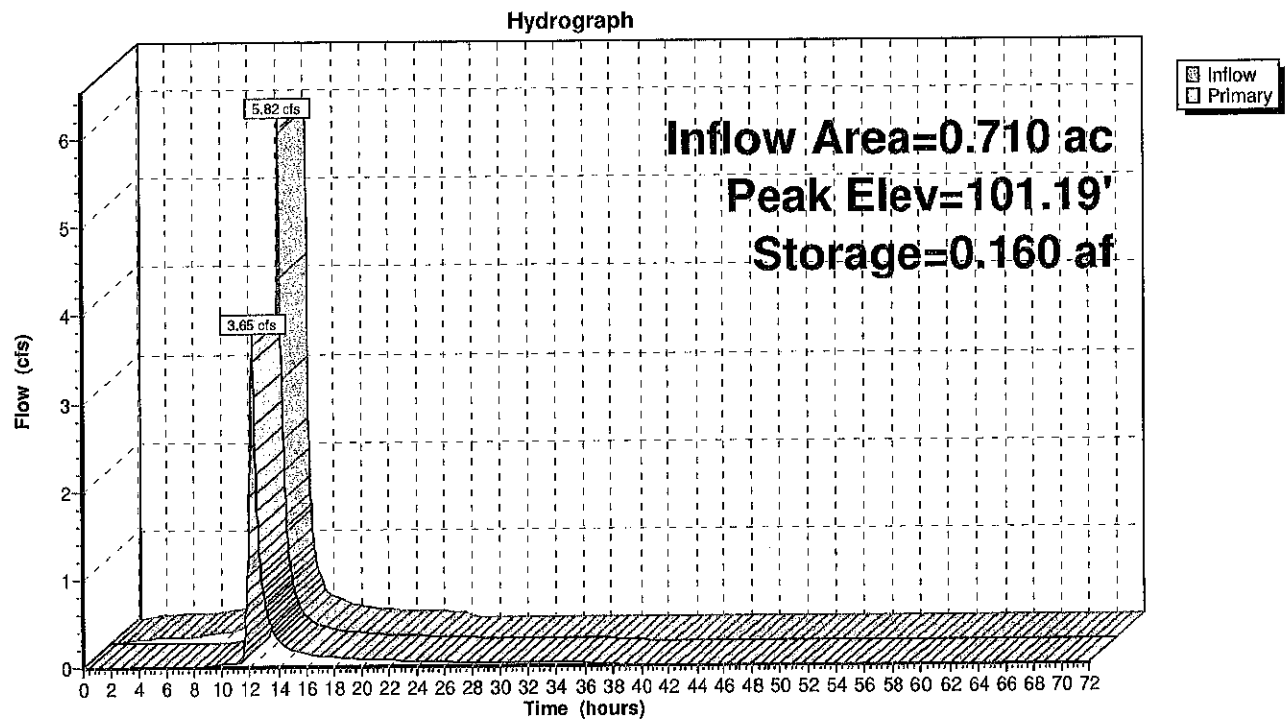
Plug-Flow detention time= 258.4 min calculated for 0.392 af (89% of inflow)
 Center-of-Mass det. time= 201.8 min (953.0 - 751.2)

Volume	Invert	Avail.Storage	Storage Description
#1	98.00'	0.201 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
98.00	0.050	0.000	0.000
99.00	0.050	0.050	0.050
100.00	0.050	0.050	0.101
101.00	0.050	0.050	0.151
102.00	0.050	0.050	0.201

Device	Routing	Invert	Outlet Devices
#1	Primary	94.50'	15.0" Round HDPE_Round 15" L= 40.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 94.50' / 94.30' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	99.00'	Chicago 3-in VFR
#3	Device 1	99.90'	1.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#4	Device 1	101.40'	42.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.60 cfs @ 12.17 hrs HW=101.17' TW=0.00' (Dynamic Tailwater)

- 1=HDPE_Round 15" (Passes 3.60 cfs of 14.53 cfs potential flow)
- 2=Chicago 3-in VFR (Custom Controls 0.10 cfs)
- 3=Sharp-Crested Rectangular Weir (Weir Controls 3.50 cfs @ 3.69 fps)
- 4=Grate (Controls 0.00 cfs)

Pond 54P: Proposed Bioretention System #4

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100 Year Storm
NOAA 24-hr C 100-Year Rainfall=8.33"

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Hydrograph for Pond 54P: Proposed Bioretention System #4

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	98.00	0.00
2.50	0.04	0.004	98.09	0.00
5.00	0.06	0.016	98.31	0.00
7.50	0.10	0.032	98.64	0.00
10.00	0.22	0.060	99.19	0.03
12.50	1.23	0.135	100.68	1.98
15.00	0.17	0.102	100.03	0.20
17.50	0.11	0.099	99.97	0.12
20.00	0.08	0.098	99.94	0.09
22.50	0.07	0.097	99.93	0.07
25.00	0.00	0.092	99.84	0.05
27.50	0.00	0.082	99.63	0.05
30.00	0.00	0.073	99.45	0.04
32.50	0.00	0.065	99.29	0.04
35.00	0.00	0.058	99.15	0.03
37.50	0.00	0.053	99.05	0.01
40.00	0.00	0.051	99.01	0.00
42.50	0.00	0.051	99.00	0.00
45.00	0.00	0.050	99.00	0.00
47.50	0.00	0.050	99.00	0.00
50.00	0.00	0.050	99.00	0.00
52.50	0.00	0.050	99.00	0.00
55.00	0.00	0.050	99.00	0.00
57.50	0.00	0.050	99.00	0.00
60.00	0.00	0.050	99.00	0.00
62.50	0.00	0.050	99.00	0.00
65.00	0.00	0.050	99.00	0.00
67.50	0.00	0.050	99.00	0.00
70.00	0.00	0.050	99.00	0.00

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100 Year Storm

NOAA 24-hr C 100-Year Rainfall=8.33"

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Summary for Pond 55P: Proposed Bioretention System #5

Inflow Area = 0.300 ac, 73.33% Impervious, Inflow Depth = 7.17" for 100-Year event
 Inflow = 2.27 cfs @ 12.10 hrs, Volume= 0.179 af
 Outflow = 0.64 cfs @ 12.42 hrs, Volume= 0.157 af, Atten= 72%, Lag= 19.1 min
 Primary = 0.64 cfs @ 12.42 hrs, Volume= 0.157 af
 Routed to Link 61L : Total to P.O.I. "A"

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 100.73' @ 12.42 hrs Surf.Area= 0.032 ac Storage= 0.088 af

Plug-Flow detention time= 220.2 min calculated for 0.157 af (87% of inflow)
 Center-of-Mass det. time= 159.9 min (915.7 - 755.7)

Volume	Invert	Avail.Storage	Storage Description
#1	98.00'	0.096 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
98.00	0.032	0.000	0.000
99.00	0.032	0.032	0.032
100.00	0.032	0.032	0.064
101.00	0.032	0.032	0.096

Device	Routing	Invert	Outlet Devices
#1	Primary	94.50'	15.0" Round HDPE_Round 15" L= 35.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 94.50' / 94.33' S= 0.0049 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	98.70'	3.0" Vert. Orifice C= 0.600 Limited to weir flow at low heads
#3	Device 1	100.70'	42.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

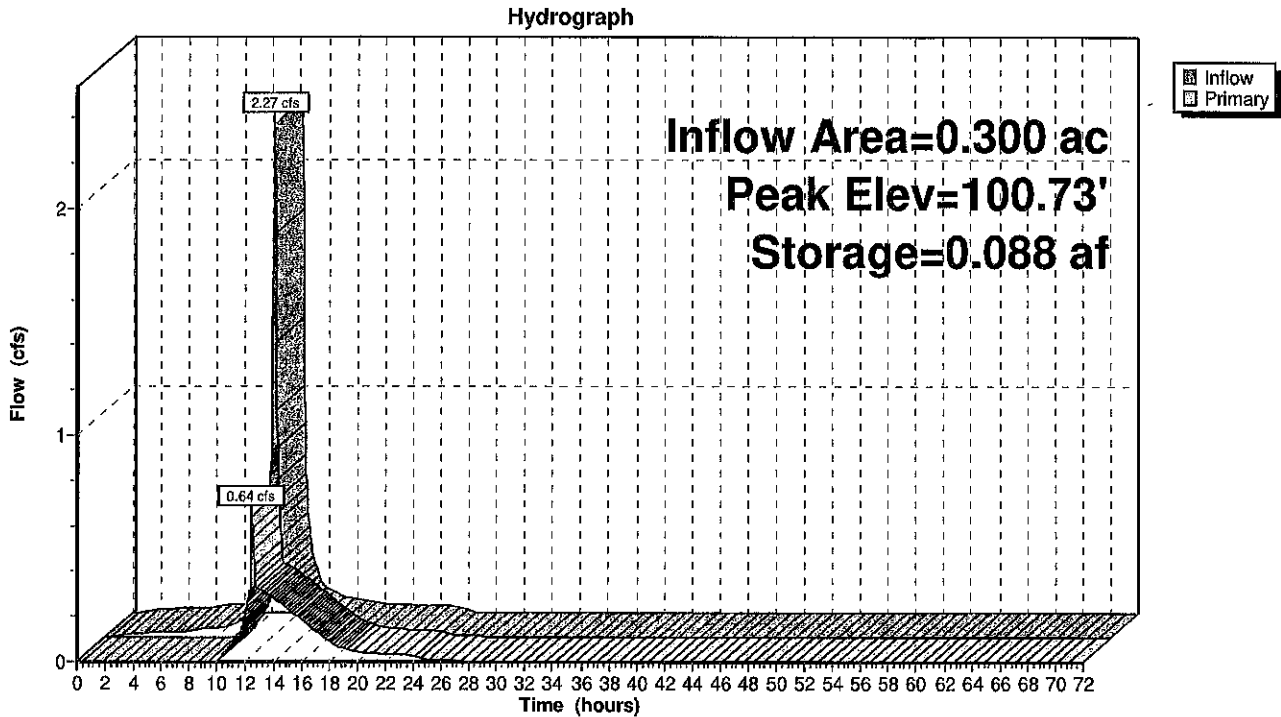
Primary OutFlow Max=0.62 cfs @ 12.42 hrs HW=100.73' TW=0.00' (Dynamic Tailwater)

1=HDPE_Round 15" (Passes 0.62 cfs of 13.99 cfs potential flow)

2=Orifice (Orifice Controls 0.33 cfs @ 6.65 fps)

3=Grate (Weir Controls 0.29 cfs @ 0.59 fps)

Pond 55P: Proposed Bioretention System #5



2005.109.02_PROPOSED (Rev. 8)

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100 Year Storm

NOAA 24-hr C 100-Year Rainfall=8.33"

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Hydrograph for Pond 55P: Proposed Bioretention System #5

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	98.00	0.00
2.50	0.02	0.002	98.05	0.00
5.00	0.03	0.006	98.19	0.00
7.50	0.04	0.013	98.39	0.00
10.00	0.08	0.024	98.74	0.00
12.50	0.52	0.087	100.73	0.55
15.00	0.07	0.058	99.82	0.24
17.50	0.04	0.034	99.06	0.12
20.00	0.03	0.027	98.85	0.04
22.50	0.03	0.027	98.83	0.03
25.00	0.00	0.025	98.78	0.01
27.50	0.00	0.024	98.74	0.00
30.00	0.00	0.023	98.72	0.00
32.50	0.00	0.023	98.72	0.00
35.00	0.00	0.023	98.71	0.00
37.50	0.00	0.023	98.71	0.00
40.00	0.00	0.023	98.71	0.00
42.50	0.00	0.023	98.71	0.00
45.00	0.00	0.023	98.71	0.00
47.50	0.00	0.023	98.71	0.00
50.00	0.00	0.023	98.71	0.00
52.50	0.00	0.023	98.71	0.00
55.00	0.00	0.023	98.71	0.00
57.50	0.00	0.023	98.70	0.00
60.00	0.00	0.023	98.70	0.00
62.50	0.00	0.023	98.70	0.00
65.00	0.00	0.023	98.70	0.00
67.50	0.00	0.023	98.70	0.00
70.00	0.00	0.023	98.70	0.00

2005.109.02_PROPOSED (Rev. 8)

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100 Year Storm
NOAA 24-hr C 100-Year Rainfall=8.33"

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Summary for Pond 56P: Proposed Bioretention System #6

Inflow Area = 1.450 ac, 51.72% Impervious, Inflow Depth = 5.86" for 100-Year event
 Inflow = 7.28 cfs @ 12.11 hrs, Volume= 0.708 af
 Outflow = 2.56 cfs @ 12.50 hrs, Volume= 0.639 af, Atten= 65%, Lag= 23.4 min
 Primary = 2.56 cfs @ 12.50 hrs, Volume= 0.639 af
 Routed to Link 61L : Total to P.O.I. "A"

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 99.95' @ 12.50 hrs Surf.Area= 4,912 sf Storage= 14,506 cf

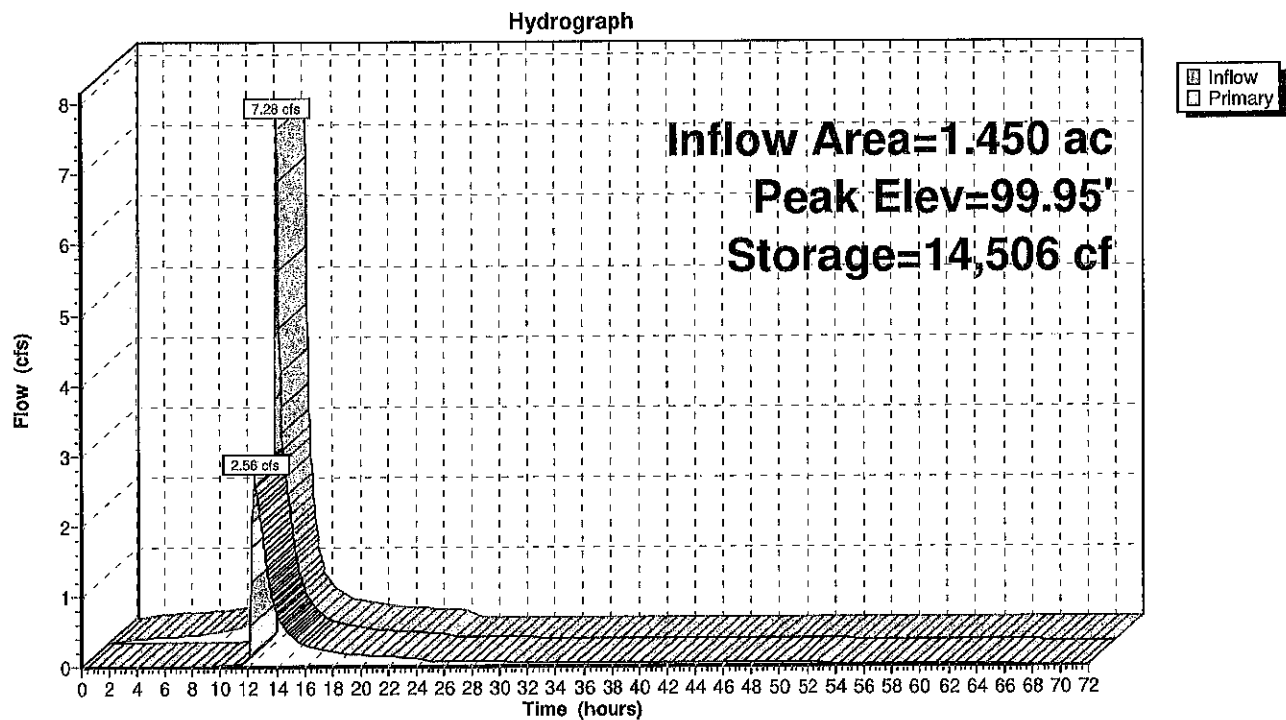
Plug-Flow detention time= 583.9 min calculated for 0.639 af (90% of inflow)
 Center-of-Mass det. time= 531.7 min (1,308.5 - 776.8)

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	19,648 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
97.00	4,912	0	0
98.00	4,912	4,912	4,912
99.00	4,912	4,912	9,824
100.00	4,912	4,912	14,736
101.00	4,912	4,912	19,648

Device	Routing	Invert	Outlet Devices
#1	Primary	93.50'	15.0" Round HDPE_Round 15" L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 93.50' / 93.25' S= 0.0050 '/ Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	97.60'	Chicago 3-in VFR
#3	Device 1	99.00'	1.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#4	Device 1	100.00'	42.0" x 48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.56 cfs @ 12.50 hrs HW=99.95' TW=0.00' (Dynamic Tailwater)

- 1=HDPE_Round 15" (Passes 2.56 cfs of 14.26 cfs potential flow)
- 2=Chicago 3-in VFR (Custom Controls 0.10 cfs)
- 3=Sharp-Crested Rectangular Weir (Weir Controls 2.46 cfs @ 3.19 fps)
- 4=Orifice/Grate (Controls 0.00 cfs)

Pond 56P: Proposed Bioretention System #6

2005.109.02 PROPOSED (Rev. 8)

Prepared by Menlo Engineering Associates

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100 Year Storm
NOAA 24-hr C 100-Year Rainfall=8.33"

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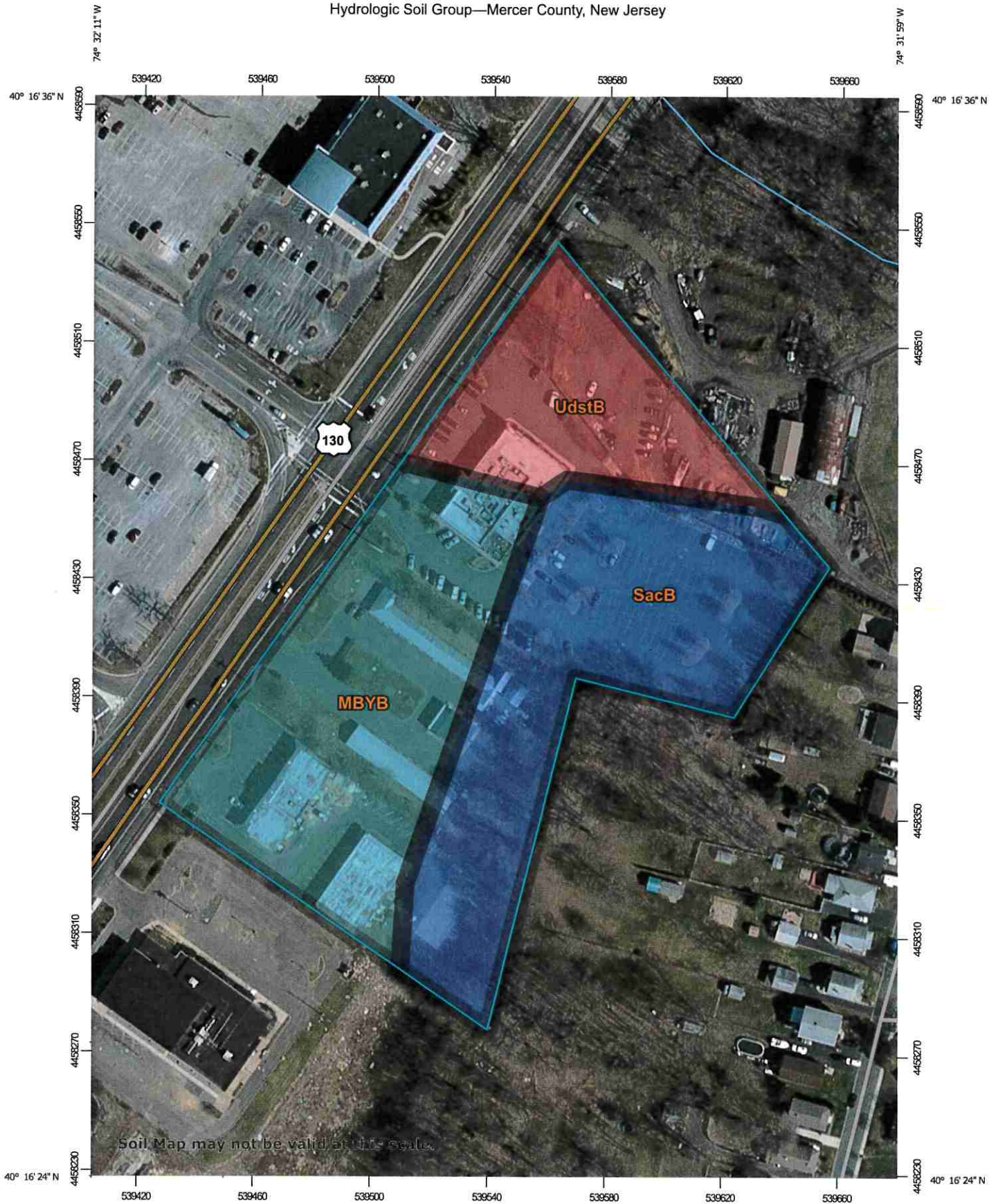
Page 18

Hydrograph for Pond 56P: Proposed Bioretention System #6

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	97.00	0.00
2.50	0.06	251	97.05	0.00
5.00	0.09	914	97.19	0.00
7.50	0.13	1,854	97.38	0.00
10.00	0.27	3,427	97.70	0.03
12.50	2.57	14,506	99.95	2.56
15.00	0.33	11,022	99.24	0.45
17.50	0.20	10,491	99.14	0.23
20.00	0.15	10,280	99.09	0.16
22.50	0.13	10,183	99.07	0.14
25.00	0.00	9,867	99.01	0.07
27.50	0.00	9,244	98.88	0.07
30.00	0.00	8,655	98.76	0.06
32.50	0.00	8,099	98.65	0.06
35.00	0.00	7,575	98.54	0.06
37.50	0.00	7,080	98.44	0.05
40.00	0.00	6,613	98.35	0.05
42.50	0.00	6,172	98.26	0.05
45.00	0.00	5,756	98.17	0.04
47.50	0.00	5,364	98.09	0.04
50.00	0.00	4,993	98.02	0.04
52.50	0.00	4,643	97.95	0.04
55.00	0.00	4,313	97.88	0.04
57.50	0.00	4,002	97.81	0.03
60.00	0.00	3,708	97.75	0.03
62.50	0.00	3,430	97.70	0.03
65.00	0.00	3,226	97.66	0.02
67.50	0.00	3,108	97.63	0.01
70.00	0.00	3,040	97.62	0.01

APPENDIX E: SOILS INFORMATION

Hydrologic Soil Group—Mercer County, New Jersey



Soil Map may not be valid at this scale.

Map Scale: 1:1,780 if printed on A portrait (8.5" x 11") sheet.

0 25 50 100 150 Meters

0 50 100 200 300 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

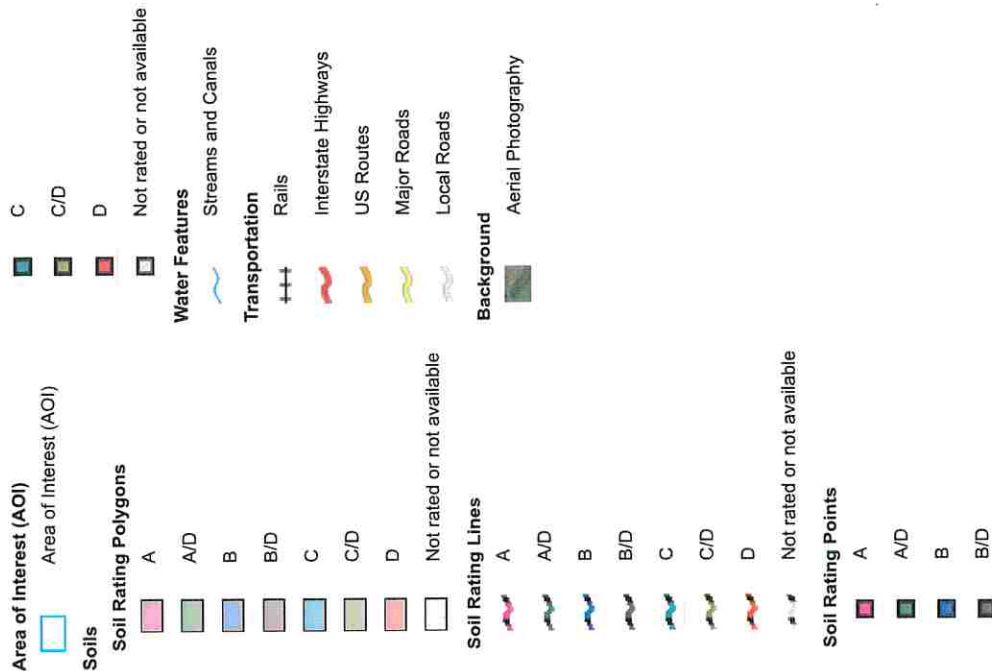


Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

3/6/2017
Page 1 of 4

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: Mercer County, New Jersey
Survey Area Data: Version 12, Sep 28, 2016

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

Date(s) aerial images were photographed: Mar 26, 2011—May 1, 2011

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

Hydrologic Soil Group— Summary by Map Unit — Mercer County, New Jersey (NJ021)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
MBYB	Mattapex and Bertie loams, 0 to 5 percent slopes	C	2.6	39.9%
SacB	Sassafras sandy loam, 2 to 5 percent slopes, Northern Coastal Plain	B	2.6	39.7%
UdstB	Udorthents, stratified substratum, 0 to 8 percent slopes	D	1.3	20.4%
Totals for Area of Interest			6.6	100.0%

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

APPENDIX F: PIPE CALCULATIONS

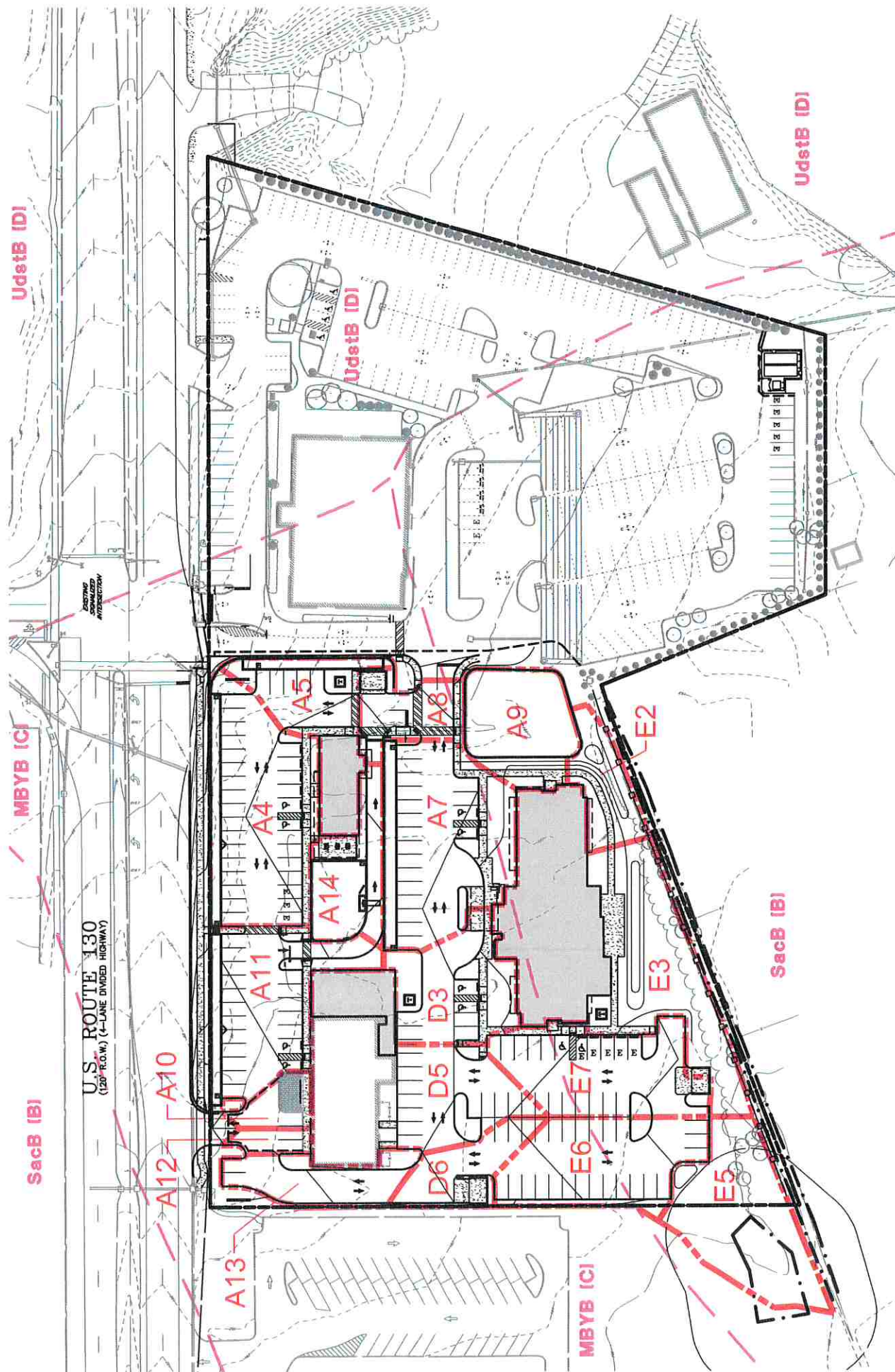


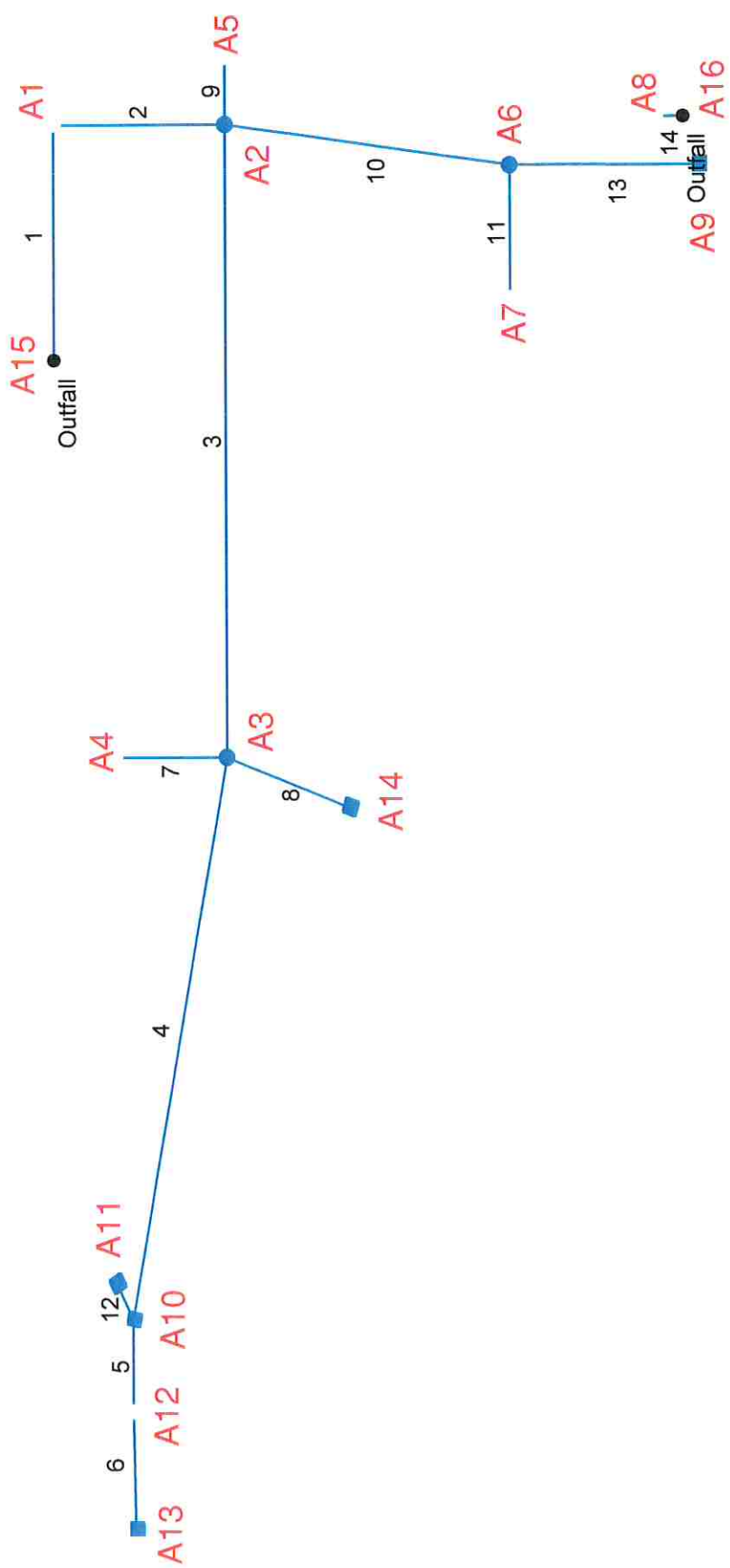
Figure 5. INLET DRAINAGE AREA MAP.

2005.109.02 AMERICANA CENTER - WEIGHTED 'C' VALUES

SOIL TYPE(S) : SacB (TYPE 'B'), MBYB (TYPE 'C'), UdstB (TYPE 'D')

ID	TOTAL AREA (acres)	IMPERVIOUS		GRASS 'B'		GRASS 'C'		GRASS 'D'		WOODS 'B'		WOODS 'C'		WOOD 'D'		TOTAL WEIGHTED 'C'
		'C' =	0.99	'C' =	0.25	'C' =	0.51	'C' =	0.65	'C' =	0.01	'C' =	0.45	'C' =	0.59	
		AREA (acres)	%	AREA (acres)	%	AREA (acres)	%	AREA (acres)	%	AREA (acres)	%	AREA (acres)	%	AREA (acres)	%	
A8	0.09	0.08	89%	0.00	0%	0.01	11%	0.00	0%	0.00	0%	0.00	0%	0.00	0%	0.94
A10	0.04	0.04	100%	0.00	0%	0.00	0%	0.00	0%	0.00	0%	0.00	0%	0.00	0%	0.99
A12	0.02	0.02	100%	0.00	0%	0.00	0%	0.00	0%	0.00	0%	0.00	0%	0.00	0%	0.99
A13	0.10	0.08	80%	0.00	0%	0.02	20%	0.00	0%	0.00	0%	0.00	0%	0.00	0%	0.89
D3	0.16	0.11	69%	0.00	0%	0.05	31%	0.00	0%	0.00	0%	0.00	0%	0.00	0%	0.84
D5	0.35	0.33	94%	0.00	0%	0.02	6%	0.00	0%	0.00	0%	0.00	0%	0.00	0%	0.96
D6	0.09	0.08	89%	0.00	0%	0.01	11%	0.00	0%	0.00	0%	0.00	0%	0.00	0%	0.94
E2	0.08	0.01	13%	0.05	63%	0.00	0%	0.00	0%	0.02	25%	0.00	0%	0.00	0%	0.28
E3	0.50	0.28	56%	0.16	32%	0.00	0%	0.00	0%	0.06	12%	0.00	0%	0.00	0%	0.64
E5	0.22	0.00	0%	0.08	36%	0.00	0%	0.00	0%	0.14	64%	0.00	0%	0.00	0%	0.10
E6	0.20	0.18	90%	0.01	5%	0.01	5%	0.00	0%	0.00	0%	0.00	0%	0.00	0%	0.93
E7	0.21	0.20	95%	0.01	5%	0.00	0%	0.00	0%	0.00	0%	0.00	0%	0.00	0%	0.85
TOTALS	2.06	1.41	68%	0.31	15%	0.12	6%	0.00	0%	0.22	11%	0.00	0%	0.00	0%	

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: 2005.109.02_STORM A (Rev. 6).stm	Number of lines: 14	Date: 10/24/2022
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Pipe Calc

Line No.	Inlet ID	Line ID	Gnd/Rim El Up	Line Length	Drng Area	Runoff Coeff	Inlet Time	i Inlet	Incr Q	Total Area	Tc	i Sys	Total Runoff	Known Q	Flow Rate	Capac Full	Line Size	Line Slope	Vel Ave	Invert Up	Invert Dn	n-val Pipe
1	A1	A1	96.56	61.239	0.00	0.00	10.0	0.00	0.00	0.16	13.6	6.99	1.04	0.00	10.53	17.43	24	0.51	5.68	87.81	87.50	0.012
2	A2	A2	101.25	56.116	0.00	0.00	10.0	0.00	0.00	0.16	13.5	7.03	1.04	0.00	10.53	25.46	18	5.01	6.94	90.62	87.81	0.012
3	A3	A3	101.70	164.983	0.00	0.00	10.0	0.00	0.00	0.16	12.8	7.20	1.07	0.00	7.06	8.02	18	0.50	5.12	92.45	91.63	0.012
4	A10	A10	100.00	149.629	0.04	0.99	10.0	8.02	0.32	0.16	11.4	7.57	1.12	0.00	2.22	4.95	15	0.50	2.84	93.45	92.70	0.012
5	A12	A12	100.00	24.000	0.02	0.99	10.0	8.02	0.16	0.12	10.9	7.74	0.84	0.00	0.84	4.95	15	0.50	2.95	95.85	95.73	0.012
6	A13	A13	100.00	30.347	0.10	0.89	10.0	8.02	0.71	0.10	10.0	8.02	0.71	0.00	0.71	4.92	15	0.49	2.60	96.00	95.85	0.012
7	A4	A4	100.50	36.675	0.00	0.00	10.0	0.00	1.24	0.00	10.0	0.00	0.00	1.24	1.24	4.90	15	0.49	3.28	94.50	94.32	0.012
8	A14	A14	101.00	42.164	0.00	0.00	10.0	0.00	3.65	0.00	10.0	0.00	0.00	3.65	3.65	4.82	15	0.47	4.32	94.50	94.30	0.012
9	A5	A5	100.50	17.517	0.00	0.00	10.0	0.00	0.30	0.00	10.0	0.00	0.00	0.30	0.30	6.25	15	0.80	2.40	94.50	94.36	0.012
10	A6	A6	101.65	93.580	0.00	0.00	10.0	0.00	0.00	0.00	11.1	0.00	0.00	0.00	3.20	8.06	18	0.50	4.20	93.19	92.72	0.012
11	A7	A7	100.90	35.000	0.00	0.00	10.0	0.00	0.64	0.00	10.0	0.00	0.00	0.64	0.64	4.88	15	0.49	2.71	94.50	94.33	0.012
12	A11	A11	99.50	10.824	0.00	0.00	10.0	0.00	1.10	0.00	10.0	0.00	0.00	1.10	1.10	4.75	15	0.46	2.51	93.50	93.45	0.012
13	A9	A9	100.00	61.267	0.00	0.00	10.0	0.00	2.56	0.00	10.0	0.00	0.00	2.56	2.56	4.98	15	0.51	3.90	93.50	93.19	0.012
14	A8	A8	100.50	8.760	0.09	0.94	10.0	8.02	0.68	0.09	10.0	8.02	0.68	0.00	0.68	4.73	15	0.46	0.55	97.04	97.00	0.012

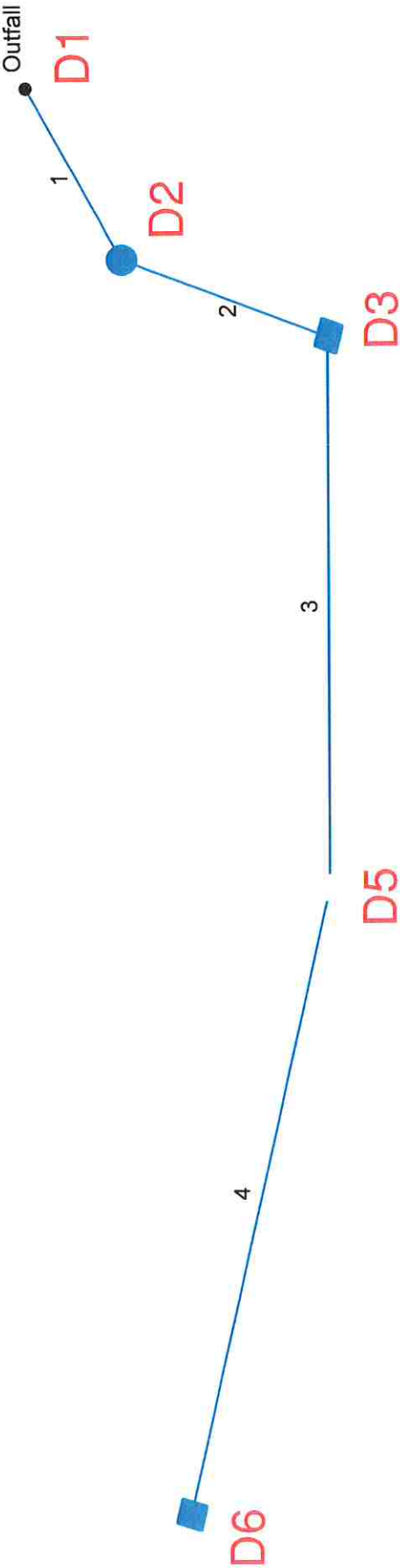
Project File: 2005.109.02_STORM A (Rev. 8).stm

Number of lines: 14

Date: 8/29/2023

NOTES: Intensity = 63.72 / (Inlet time + 7.40) ^ 0.73 - Return period = 100 Yrs. ; ** Critical depth

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: 2005.109.02_STORM D (Rev. 7).stn	Number of lines: 4	Date: 2/10/2023
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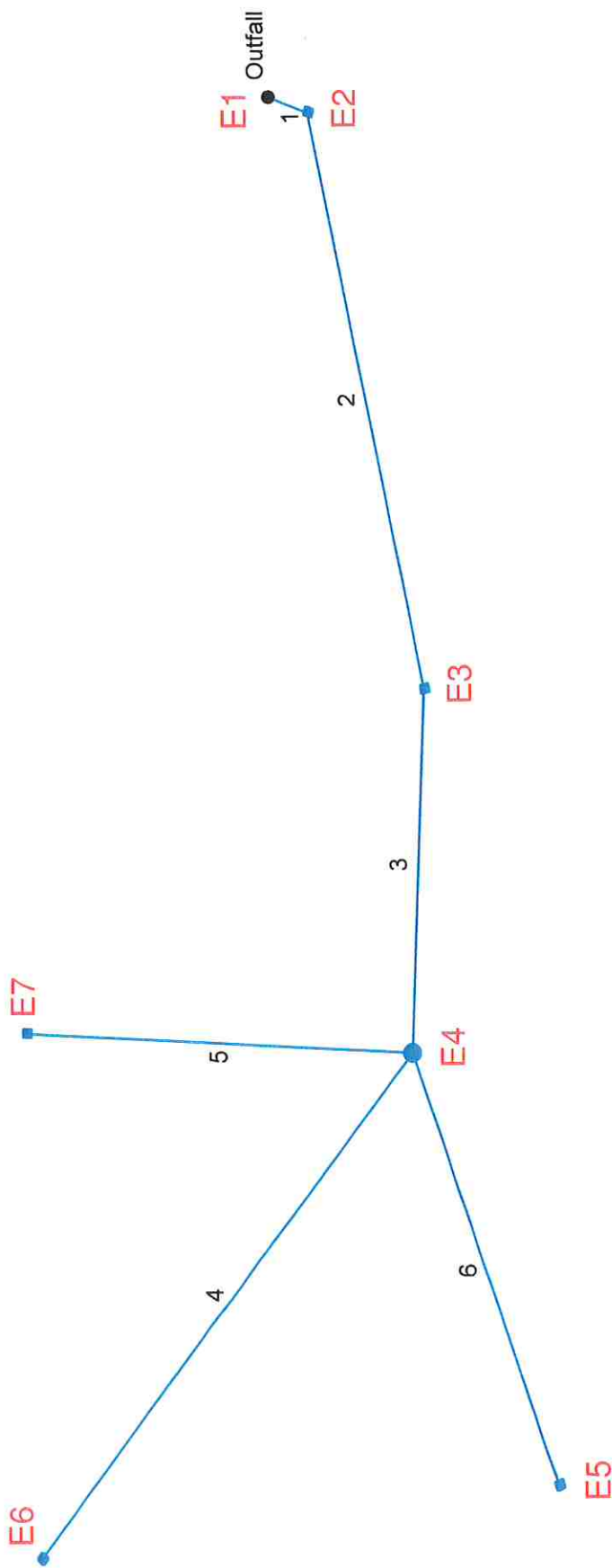
Pipe Calc

Line No.	Inlet ID	Line ID	Gnd/Rim El Up	Line Length	Dmg Area	Runoff Coeff	Inlet Time	i Inlet	Incr Q	Total Area	Tc	i Sys	Total Runoff	Known Q	Flow Rate	Capac Full	Line Size	Line Slope	Vel Ave	Invert Up	Invert Dn	n-val Pipe
1	D2	D2	102.63	20.254	0.00	0.00	10.0	0.00	0.00	0.60	15.8	5.40	3.00	0.00	3.00	6.19	18	0.30	1.70	98.06	98.00	0.012
2	D3	D3	101.20	40.383	0.16	0.84	10.0	6.73	0.90	0.60	15.5	5.46	3.03	0.00	3.03	6.20	18	0.30	1.71	98.18	98.06	0.012
3	D5	D5	101.30	81.915	0.35	0.96	10.0	6.73	2.26	0.44	14.6	5.62	2.36	0.00	2.36	6.28	18	0.31	1.34	98.43	98.18	0.012
4	D6	D6	101.50	89.046	0.09	0.94	10.0	6.73	0.57	0.09	10.0	6.73	0.57	0.00	0.57	6.26	18	0.30	0.32	98.70	98.43	0.012

Project File: 2005.109.02_STORM D (Rev. 8).stm Number of lines: 4 Date: 8/29/2023

NOTES: Intensity = 42.39 / (Inlet time + 5.10) ^ 0.68 – Return period = 25 Yrs. ; ** Critical depth

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Pipe Calc

Line No.	Inlet ID	Line ID	Gnd/Rim El Up	Line Length	Drng Area	Runoff Coeff	Inlet Time	i Inlet	Incr Q	Total Area	Tc	i Sys	Total Runoff	Known Q	Flow Rate	Capac Full	Line Size	Line Slope	Vel Ave	Invert Up	Invert Dn	n-val Pipe
1	E2	E2	100.50	10.984	0.08	0.28	10.0	6.73	0.15	1.21	26.9	4.04	3.05	0.00	3.05	5.95	18	0.27	1.73	97.03	97.00	0.012
2	E3	E3	101.00	133.686	0.50	0.64	10.0	6.73	2.15	1.13	26.1	4.12	3.01	0.00	3.01	6.22	18	0.30	1.84	97.43	97.03	0.012
3	E4	E4	103.50	81.957	0.00	0.00	10.0	0.00	0.00	0.63	25.2	4.20	1.73	0.00	1.73	6.28	18	0.31	1.24	97.68	97.43	0.012
4	E6	E6	102.15	151.226	0.22	0.93	10.0	6.73	1.38	0.22	10.0	6.73	1.38	0.00	1.38	4.96	15	0.50	2.30	98.44	97.68	0.012
5	E7	E7	102.15	104.065	0.20	0.93	10.0	6.73	1.25	0.20	10.0	6.73	1.25	0.00	1.25	4.95	15	0.50	2.20	98.20	97.68	0.012
6	E5	E5	103.00	104.856	0.21	0.10	10.0	6.73	0.14	0.21	10.0	6.73	0.14	0.00	0.14	4.93	15	0.50	0.21	98.20	97.68	0.012

Project File: 2005.109.02_STORM E.stm

Number of lines: 6

Date: 10/24/2022

NOTES: Intensity = 42.39 / (Inlet time + 5.10) ^ 0.68 -- Return period = 25 Yrs. ; ** Critical depth

TYPICAL RIP-RAP CALCULATIONS

The following calculations are done in accordance with The Soil Conservation District's Standards for Conduit Outlet Protection.

Length of Pad:

$$La = \left(\frac{1.8q}{\sqrt{Do}} \right) + 7Do \quad TW < \frac{1}{2} Do \quad \text{Where } q = \frac{Q}{Wo} \text{ in cfs per foot}$$

$$La = \frac{3q}{\sqrt{Do}} \quad TW > \frac{1}{2} Do$$

Width of Pad:

$$W = 3Wo + La \quad TW < \frac{1}{2} Do$$

$$W = 3Wo + 0.4La \quad TW > \frac{1}{2} Do$$

* Rip-Rap to extend to top of banks of channel

d50 Stone Size:

$$d_{50} = \left(\frac{0.016}{Tw} \right) q^{1.33} \quad \text{Where } q = \frac{Q}{Do}$$

Minimum = 6.00 inches

For areas where Tw cannot be computed, use Tw=0.2Do

<u>Headwall #</u>	<u>Q(cfs)</u>	<u>Do(in)</u>	<u>Wo(in)</u>	<u>TW(ft)</u>	<u>La(ft)</u>	<u>W(ft)</u>	<u>d50(in)</u>
A16	0.68	15	15	0.25	9.6	13.4	6.00
E1	3.05	18	18	0.30	13.5	18.0	6.00

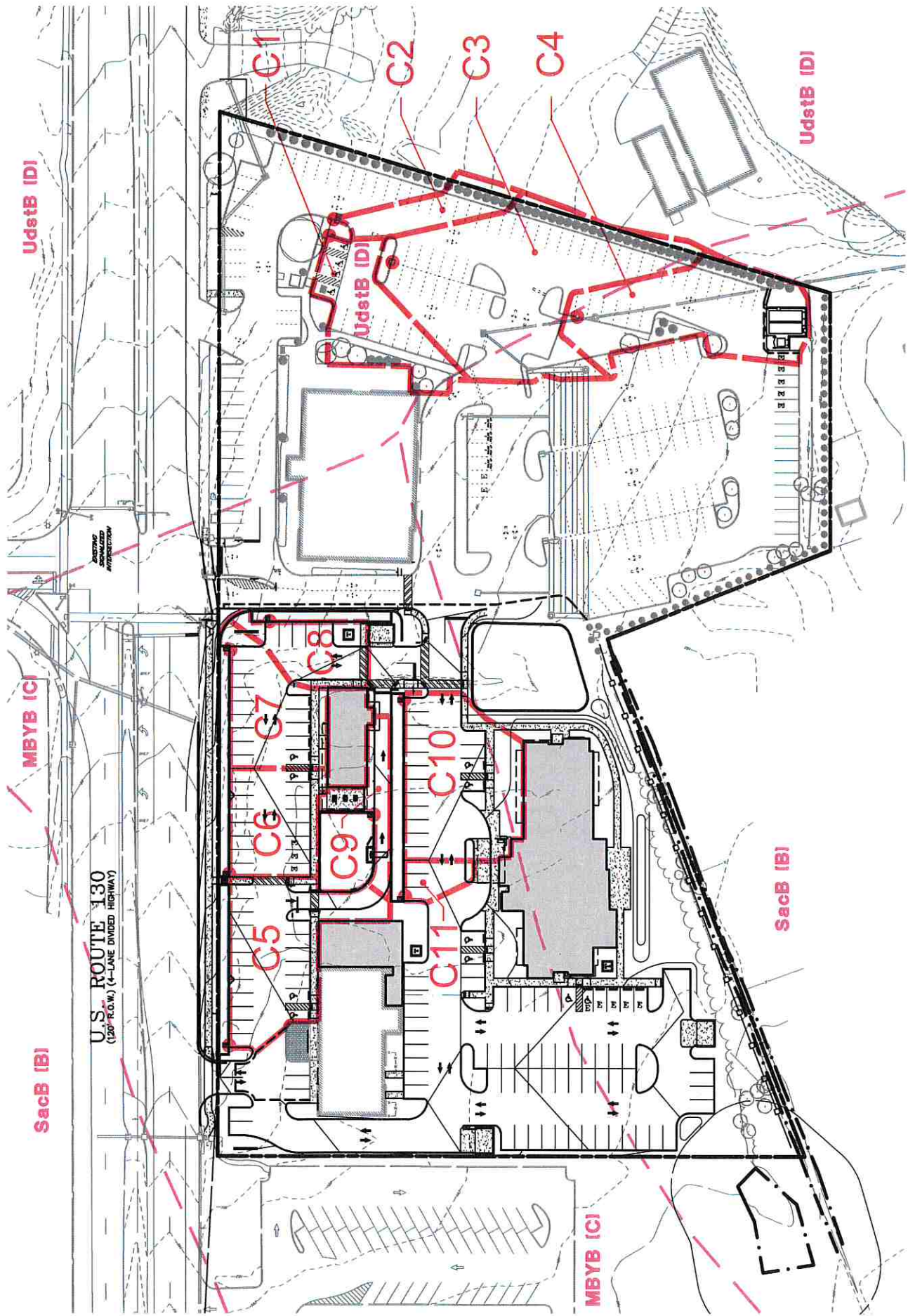
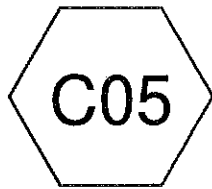
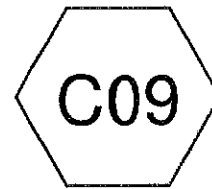


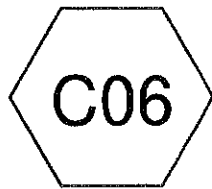
Figure 6. PROPOSED CURB AND WALL CUTS DRAINAGE AREA MAP.



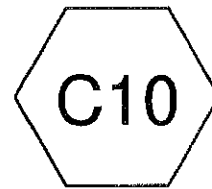
Proposed Wall Cut C5



Proposed Wall Cut C09



Proposed Wall Cut C6



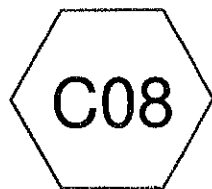
Proposed Wall Cut C10



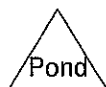
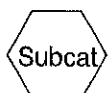
Proposed Wall Cut C7



Proposed Wall Cut C11



Proposed Wall Cut C8



2005.109.02_CURB CUTS (Rev 8)

Prepared by Menlo Engineering Associates

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25 Year Storm
NOAA 24-hr C 25-Year Rainfall=6.19"

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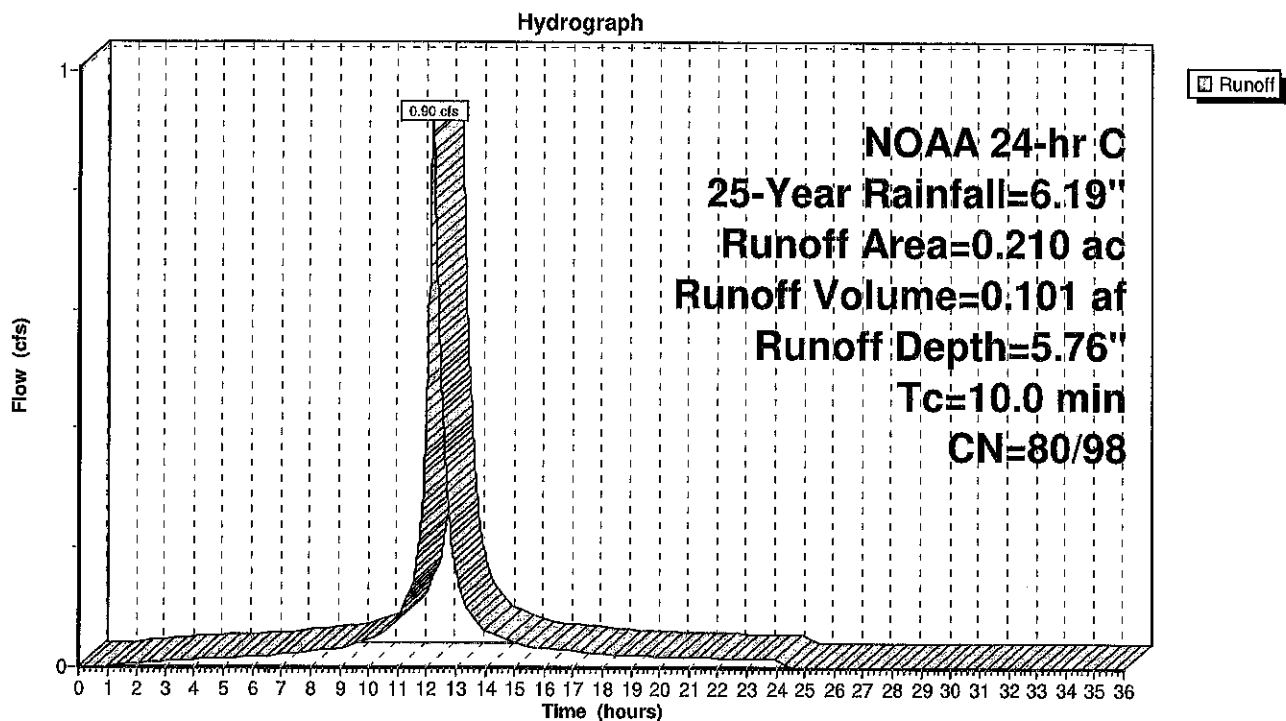
Summary for Subcatchment C05: Proposed Wall Cut C5

Runoff = 0.90 cfs @ 12.18 hrs, Volume= 0.101 af, Depth= 5.76"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 25-Year Rainfall=6.19"

Area (ac)	CN	Description
* 0.190	98	Paved parking
0.020	80	>75% Grass cover, Good, HSG D
0.210	96	Weighted Average
0.020	80	9.52% Pervious Area
0.190	98	90.48% Impervious Area

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

Subcatchment C05: Proposed Wall Cut C5

Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc.

Tuesday, Aug 29 2023

Proposed wall cut C5

Rectangular

Bottom Width (ft) = 3.00
Total Depth (ft) = 0.50

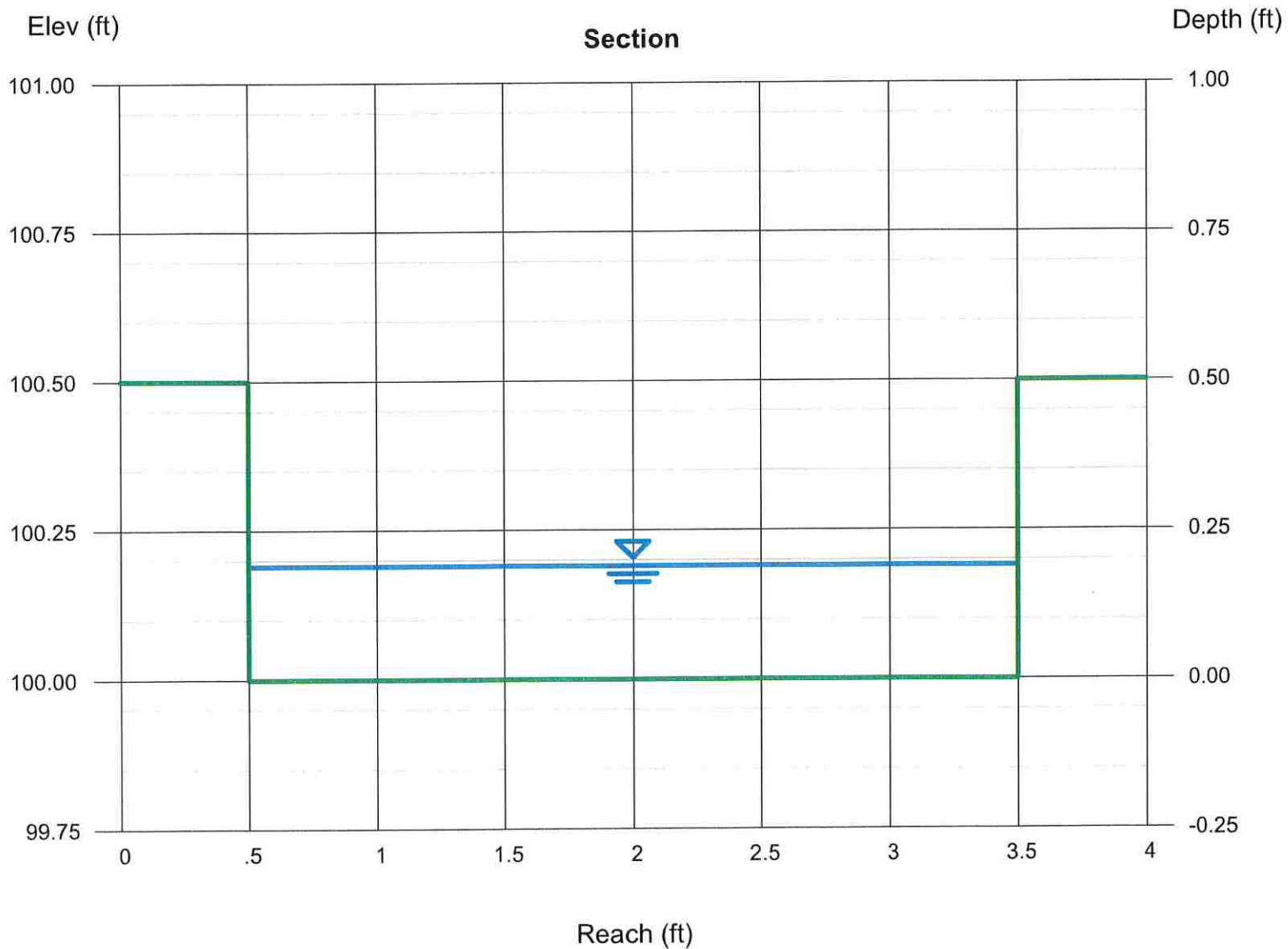
Invert Elev (ft) = 100.00
Slope (%) = 1.50
N-Value = 0.035

Calculations

Compute by: Known Q
Known Q (cfs) = 0.90

Highlighted

Depth (ft) = 0.19
Q (cfs) = 0.900
Area (sqft) = 0.57
Velocity (ft/s) = 1.58
Wetted Perim (ft) = 3.38
Crit Depth, Y_c (ft) = 0.15
Top Width (ft) = 3.00
EGL (ft) = 0.23



2005.109.02 CURB CUTS (Rev 7)

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25 Year Storm
NOAA 24-hr C 25-Year Rainfall=6.19"

Printed 2/9/2023

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Summary for Subcatchment C06: Proposed Wall Cut C6

Runoff = 0.55 cfs @ 12.18 hrs, Volume= 0.062 af, Depth= 5.75"

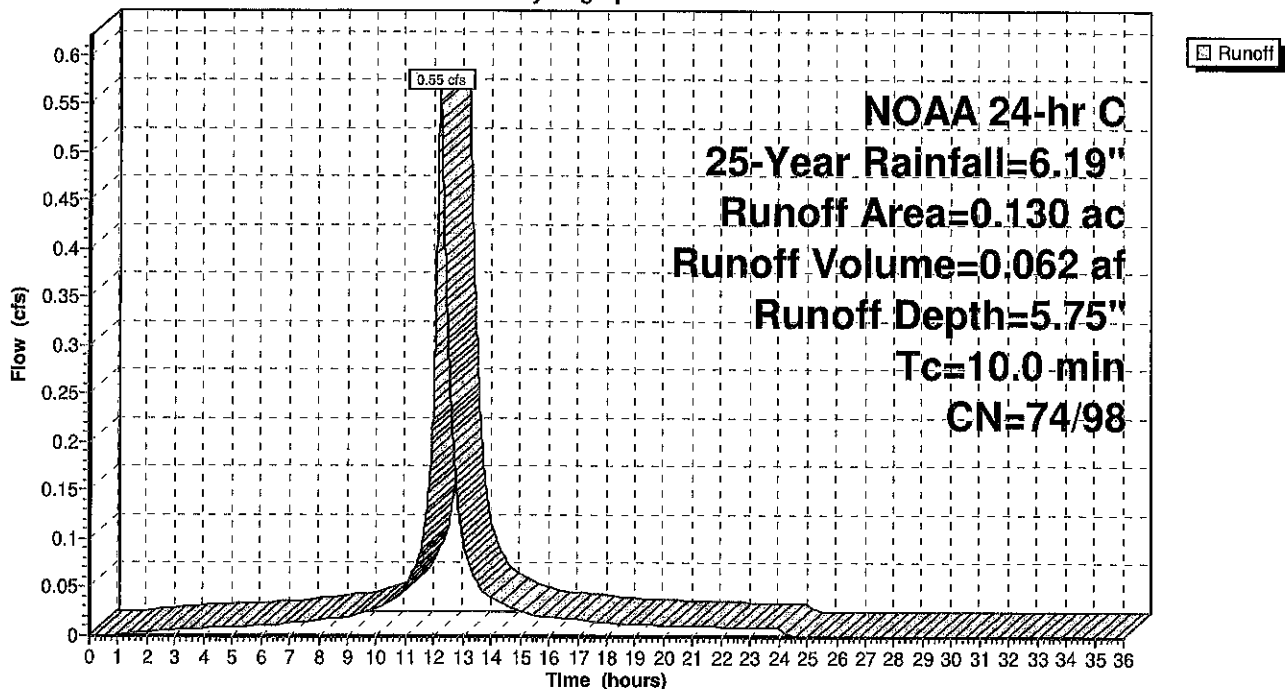
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 25-Year Rainfall=6.19"

Area (ac)	CN	Description
* 0.120	98	Paved parking
0.010	74	>75% Grass cover, Good, HSG C
0.130	96	Weighted Average
0.010	74	7.69% Pervious Area
0.120	98	92.31% Impervious Area

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

Subcatchment C06: Proposed Wall Cut C6

Hydrograph



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc.

Monday, Oct 24 2022

Proposed wall cut C6

Rectangular

Bottom Width (ft) = 3.00
Total Depth (ft) = 0.50

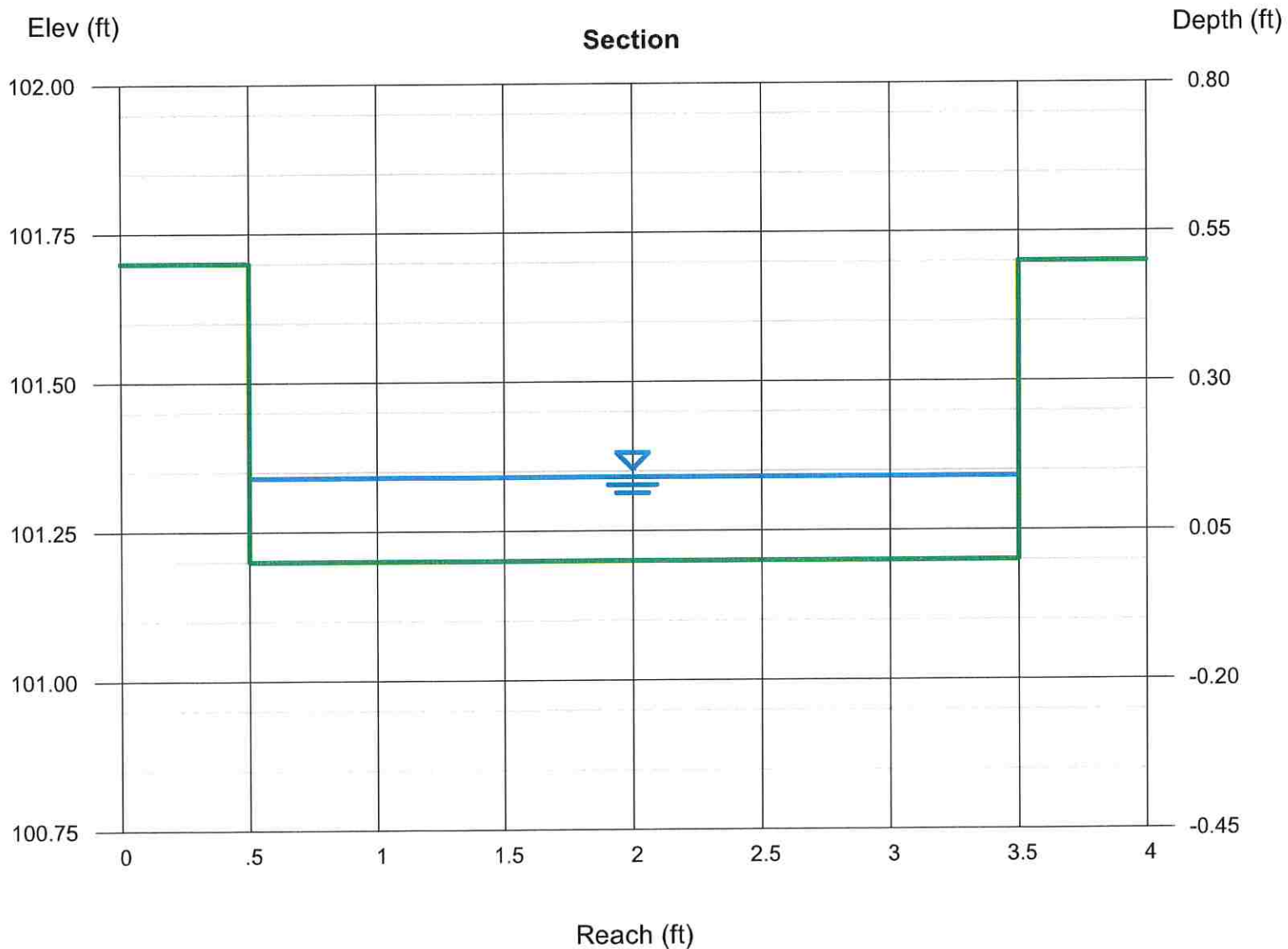
Invert Elev (ft) = 101.20
Slope (%) = 1.50
N-Value = 0.035

Calculations

Compute by: Known Q
Known Q (cfs) = 0.55

Highlighted

Depth (ft) = 0.14
Q (cfs) = 0.550
Area (sqft) = 0.42
Velocity (ft/s) = 1.31
Wetted Perim (ft) = 3.28
Crit Depth, Yc (ft) = 0.11
Top Width (ft) = 3.00
EGL (ft) = 0.17



2005.109.02_CURB CUTS (Rev 7)

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25 Year Storm
NOAA 24-hr C 25-Year Rainfall=6.19"

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Summary for Subcatchment C07: Proposed Wall Cut C7

Runoff = 0.54 cfs @ 12.18 hrs, Volume= 0.060 af, Depth= 5.55"

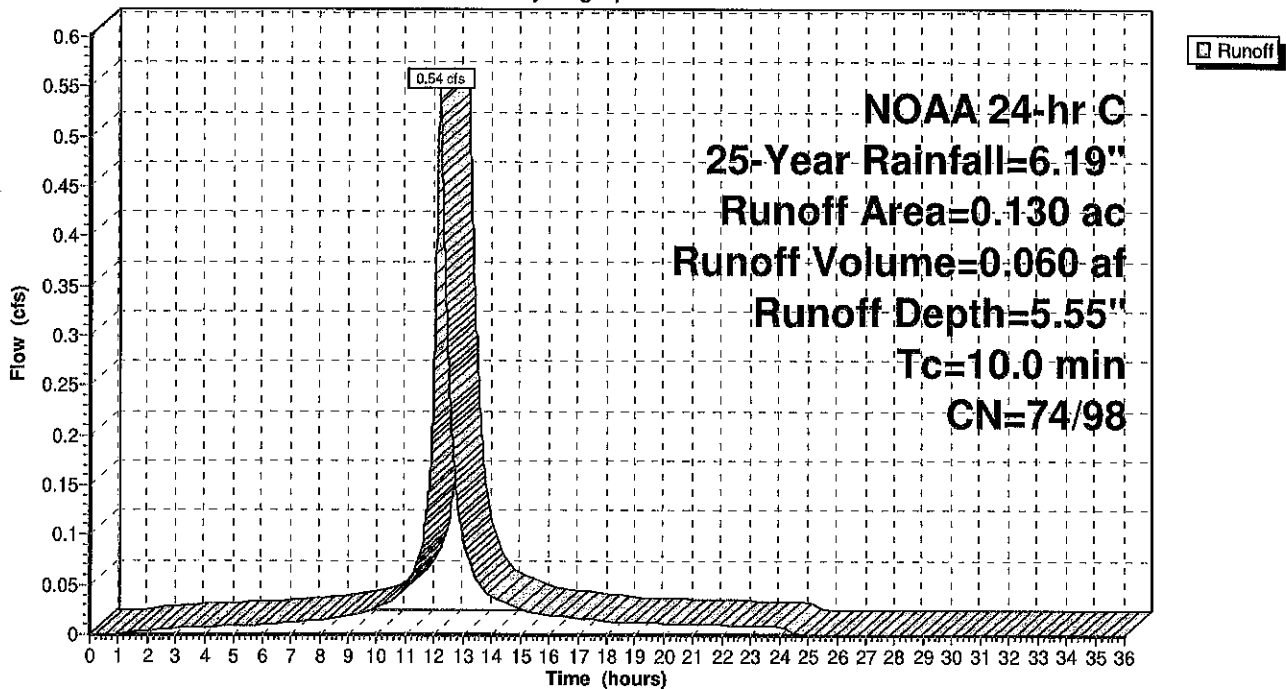
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 25-Year Rainfall=6.19"

Area (ac)	CN	Description
* 0.110	98	Paved parking
0.020	74	>75% Grass cover, Good, HSG C
0.130	94	Weighted Average
0.020	74	15.38% Pervious Area
0.110	98	84.62% Impervious Area

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

Subcatchment C07: Proposed Wall Cut C7

Hydrograph



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc.

Monday, Oct 24 2022

Proposed wall cut C7

Rectangular

Bottom Width (ft) = 3.00

Total Depth (ft) = 0.50

Invert Elev (ft) = 101.00

Slope (%) = 1.50

N-Value = 0.035

Calculations

Compute by: Known Q

Known Q (cfs) = 0.54

Highlighted

Depth (ft) = 0.14

Q (cfs) = 0.540

Area (sqft) = 0.42

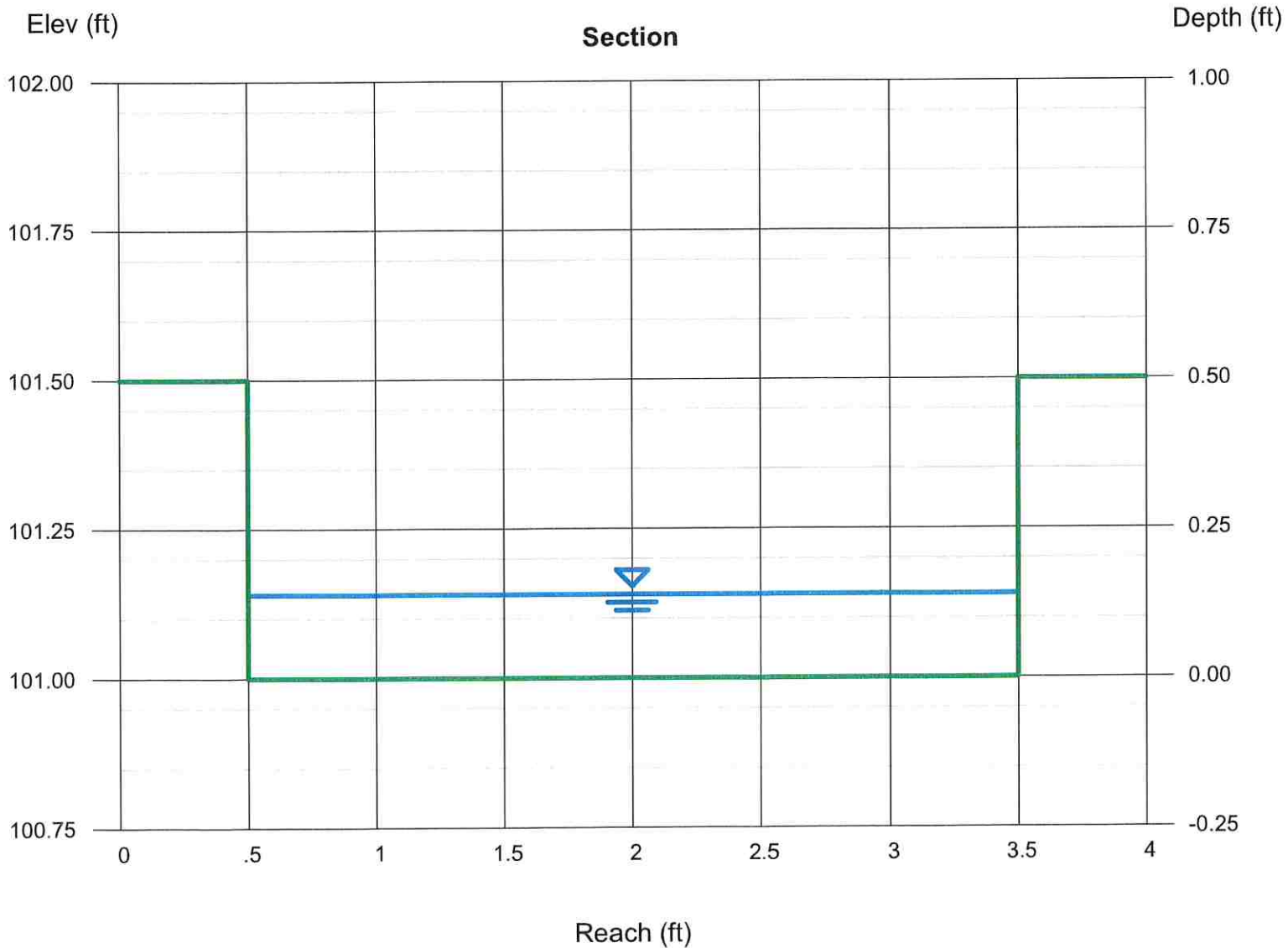
Velocity (ft/s) = 1.29

Wetted Perim (ft) = 3.28

Crit Depth, Y_c (ft) = 0.11

Top Width (ft) = 3.00

EGL (ft) = 0.17



2005.109.02 CURB CUTS (Rev 7)

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25 Year Storm
NOAA 24-hr C 25-Year Rainfall=6.19"

Printed 2/9/2023

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Summary for Subcatchment C08: Proposed Wall Cut C8

Runoff = 0.36 cfs @ 12.18 hrs, Volume= 0.040 af, Depth= 5.37"

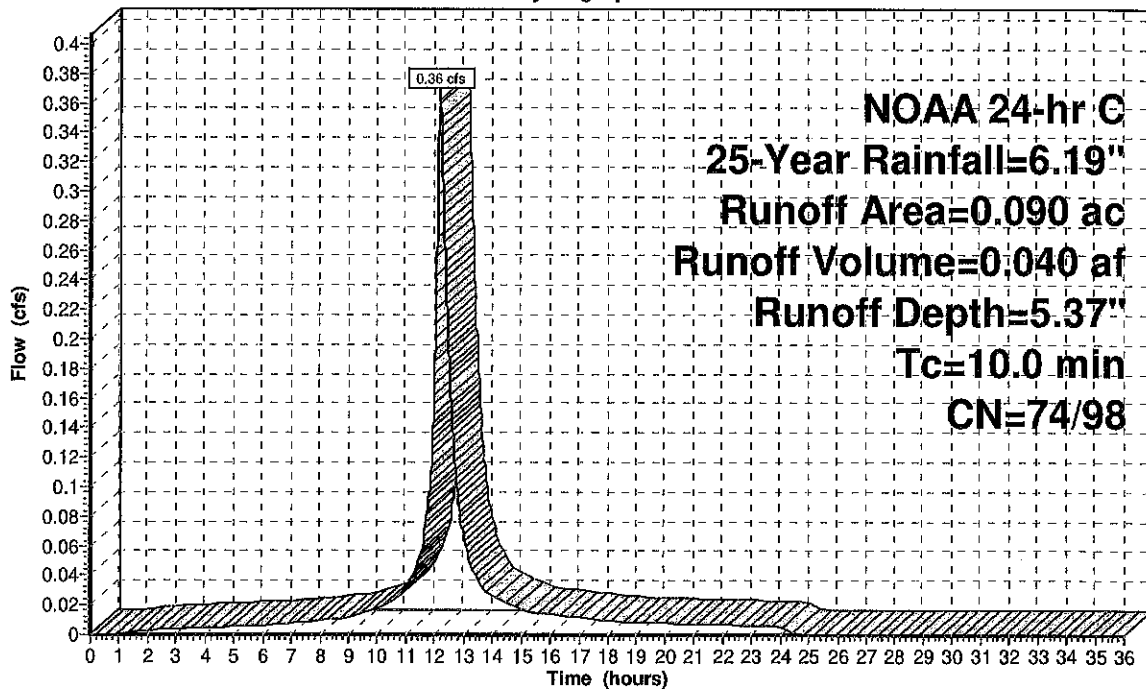
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 25-Year Rainfall=6.19"

Area (ac)	CN	Description
* 0.070	98	Paved parking
0.020	74	>75% Grass cover, Good, HSG C
0.090	93	Weighted Average
0.020	74	22.22% Pervious Area
0.070	98	77.78% Impervious Area

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

Subcatchment C08: Proposed Wall Cut C8

Hydrograph



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc.

Thursday, Feb 9 2023

Proposed wall cut C8

Rectangular

Bottom Width (ft) = 3.00
Total Depth (ft) = 0.50

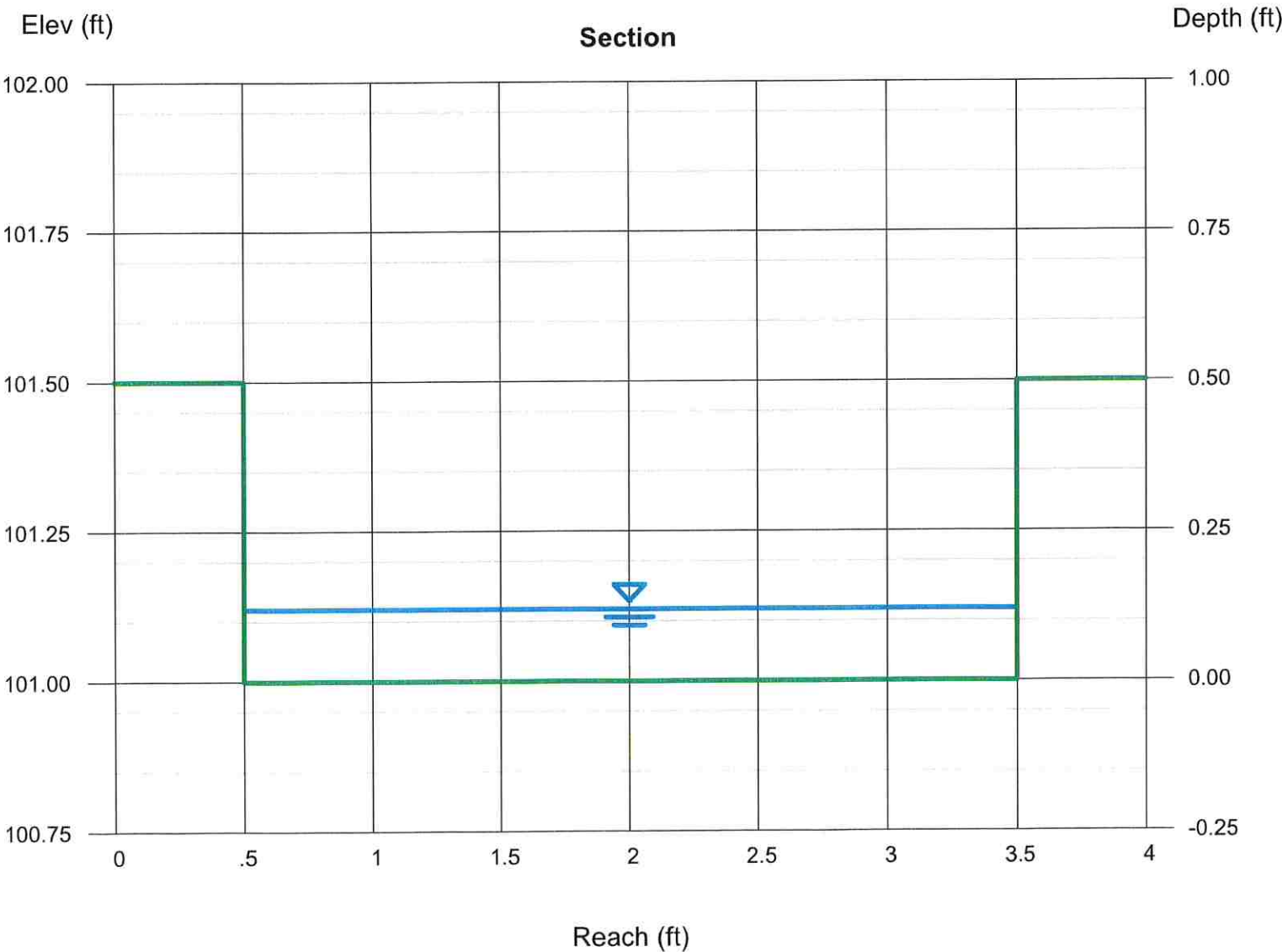
Invert Elev (ft) = 101.00
Slope (%) = 1.50
N-Value = 0.035

Calculations

Compute by: Known Q
Known Q (cfs) = 0.38

Highlighted

Depth (ft) = 0.12
Q (cfs) = 0.380
Area (sqft) = 0.36
Velocity (ft/s) = 1.06
Wetted Perim (ft) = 3.24
Crit Depth, Yc (ft) = 0.08
Top Width (ft) = 3.00
EGL (ft) = 0.14



2005.109.02_CURB CUTS (Rev 7)

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25 Year Storm
NOAA 24-hr C 25-Year Rainfall=6.19"

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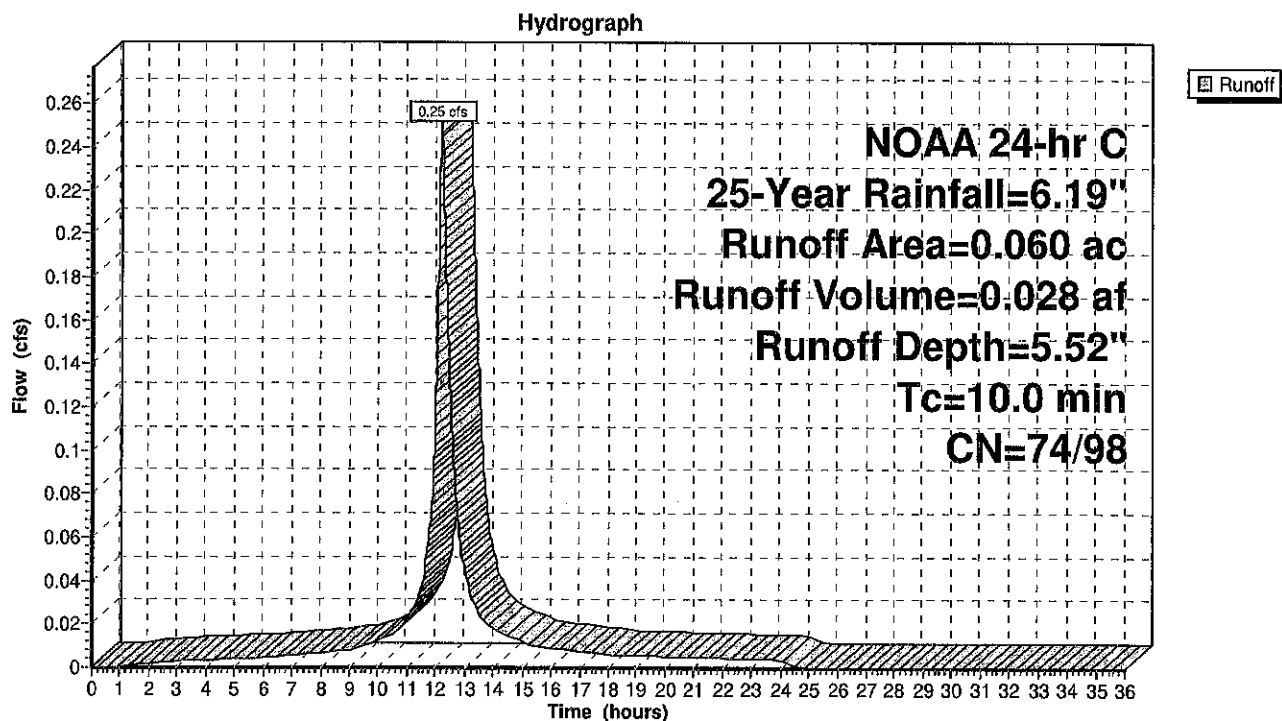
Summary for Subcatchment C09: Proposed Wall Cut C09

Runoff = 0.25 cfs @ 12.18 hrs, Volume= 0.028 af, Depth= 5.52"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 25-Year Rainfall=6.19"

Area (ac)	CN	Description
* 0.050	98	Paved parking
0.010	74	>75% Grass cover, Good, HSG C
0.060	94	Weighted Average
0.010	74	16.67% Pervious Area
0.050	98	83.33% Impervious Area

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

Subcatchment C09: Proposed Wall Cut C09

Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc.

Monday, Oct 24 2022

Proposed wall cut C9

Rectangular

Bottom Width (ft) = 3.00
Total Depth (ft) = 0.50

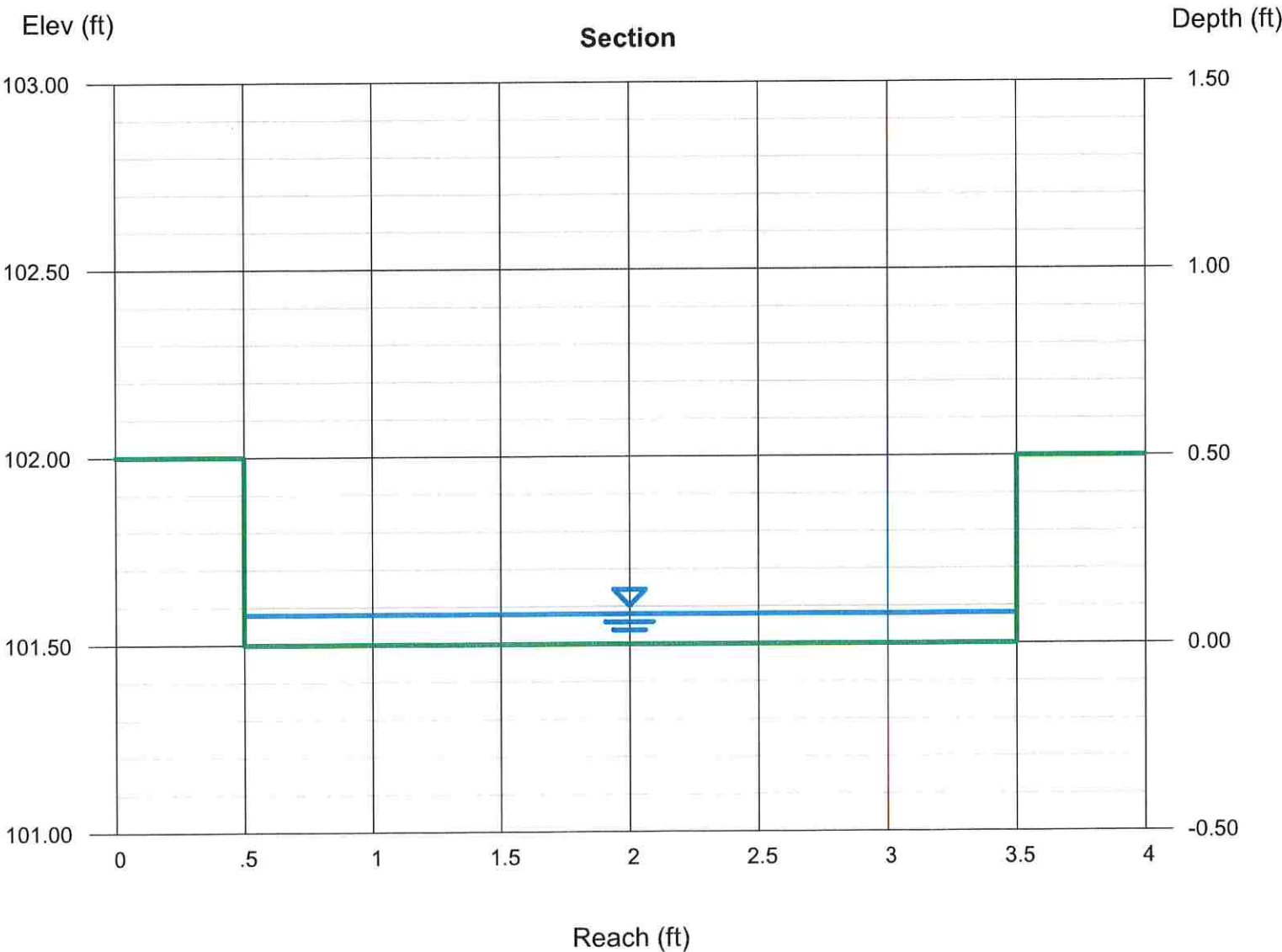
Invert Elev (ft) = 101.50
Slope (%) = 2.00
N-Value = 0.035

Calculations

Compute by: Known Q
Known Q (cfs) = 0.25

Highlighted

Depth (ft) = 0.08
Q (cfs) = 0.250
Area (sqft) = 0.24
Velocity (ft/s) = 1.04
Wetted Perim (ft) = 3.16
Crit Depth, Yc (ft) = 0.06
Top Width (ft) = 3.00
EGL (ft) = 0.10



2005.109.02 CURB CUTS (Rev 7)

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25 Year Storm
NOAA 24-hr C 25-Year Rainfall=6.19"

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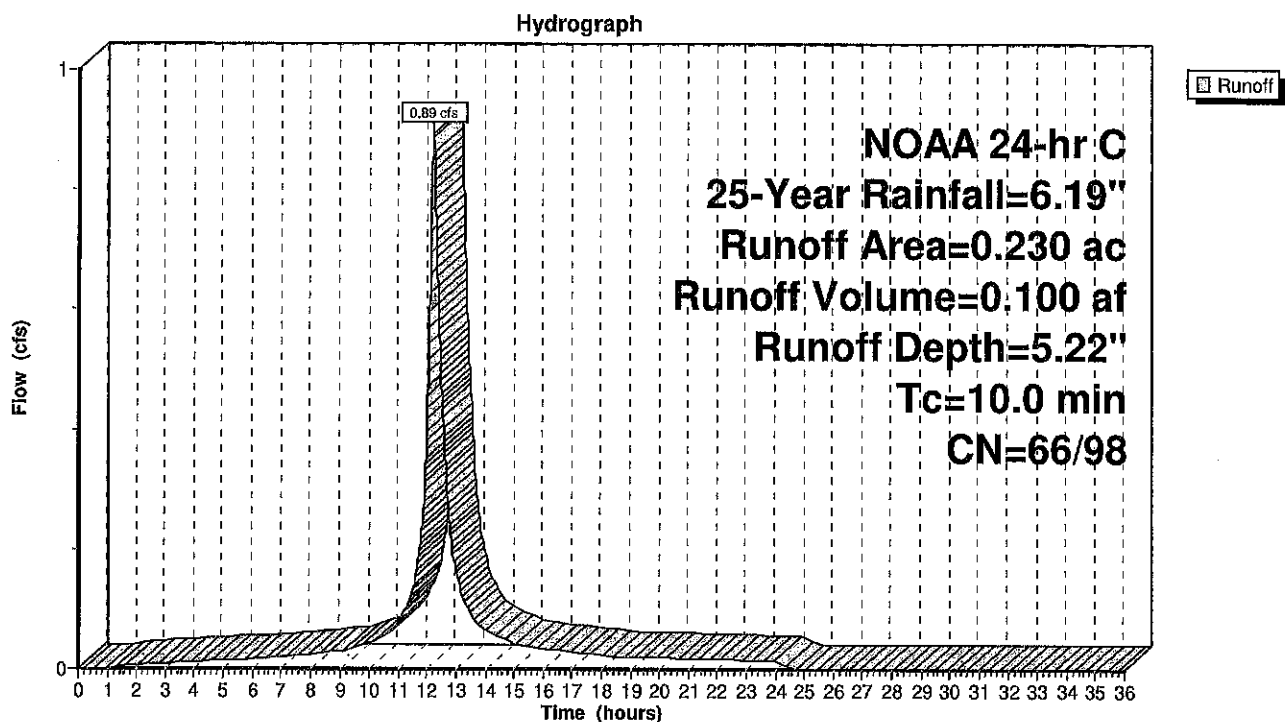
Summary for Subcatchment C10: Proposed Wall Cut C10

Runoff = 0.89 cfs @ 12.18 hrs, Volume= 0.100 af, Depth= 5.22"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 25-Year Rainfall=6.19"

Area (ac)	CN	Description
* 0.180	98	Paved parking
0.020	74	>75% Grass cover, Good, HSG C
0.030	61	>75% Grass cover, Good, HSG B
0.230	91	Weighted Average
0.050	66	21.74% Pervious Area
0.180	98	78.26% Impervious Area

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

Subcatchment C10: Proposed Wall Cut C10

Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc.

Monday, Oct 24 2022

Proposed wall cut C10

Rectangular

Bottom Width (ft) = 3.00
Total Depth (ft) = 0.50

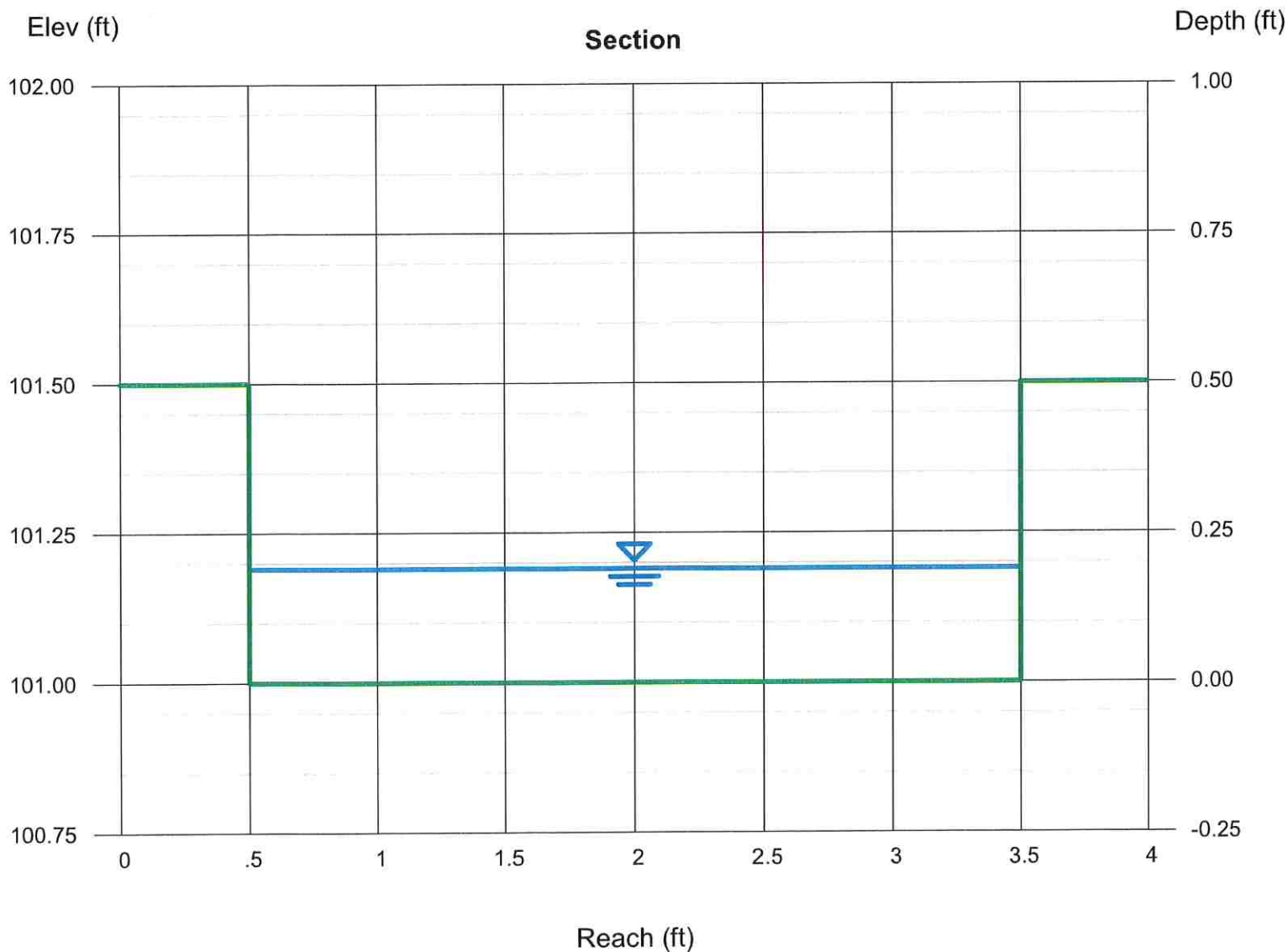
Invert Elev (ft) = 101.00
Slope (%) = 1.50
N-Value = 0.035

Calculations

Compute by: Known Q
Known Q (cfs) = 0.89

Highlighted

Depth (ft) = 0.19
Q (cfs) = 0.890
Area (sqft) = 0.57
Velocity (ft/s) = 1.56
Wetted Perim (ft) = 3.38
Crit Depth, Y_c (ft) = 0.14
Top Width (ft) = 3.00
EGL (ft) = 0.23



2005.109.02_CURB CUTS (Rev 8)

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25 Year Storm
NOAA 24-hr C 25-Year Rainfall=6.19"

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Summary for Subcatchment C11: Proposed Wall Cut C11

Runoff = 0.12 cfs @ 12.18 hrs, Volume= 0.013 af, Depth= 5.08"

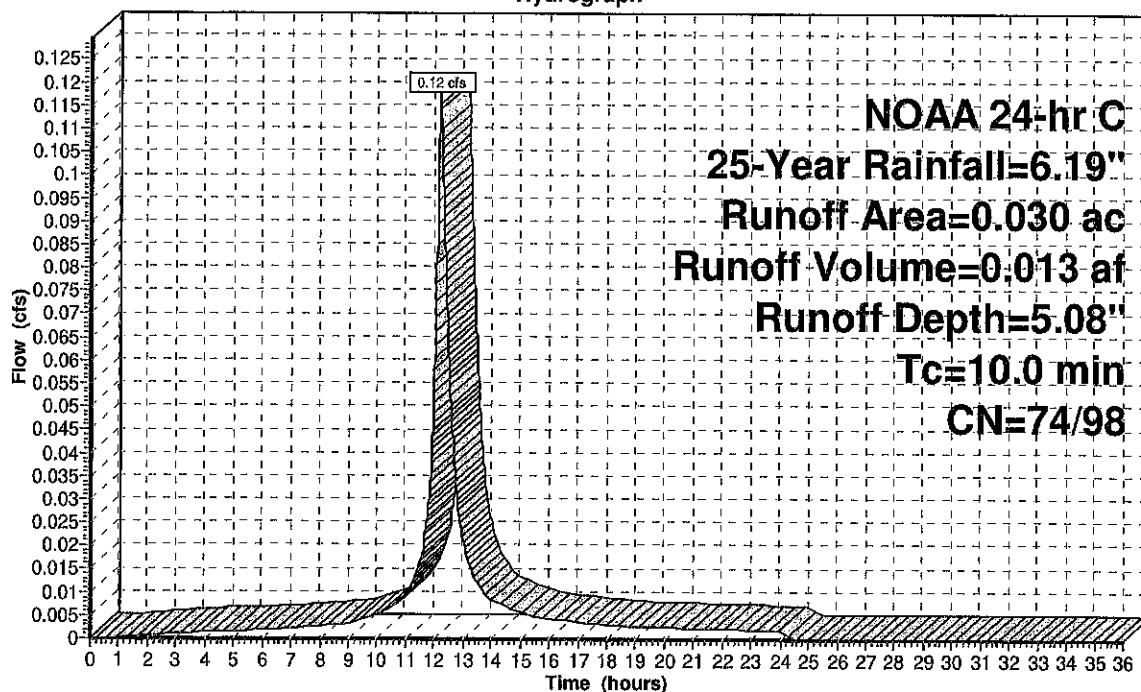
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
NOAA 24-hr C 25-Year Rainfall=6.19"

Area (ac)	CN	Description
* 0.020	98	Paved parking
0.010	74	>75% Grass cover, Good, HSG C
0.030	90	Weighted Average
0.010	74	33.33% Pervious Area
0.020	98	66.67% Impervious Area

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

Subcatchment C11: Proposed Wall Cut C11

Hydrograph



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc.

Tuesday, Aug 29 2023

Proposed wall cut C11

Rectangular

Bottom Width (ft) = 3.00
Total Depth (ft) = 0.50

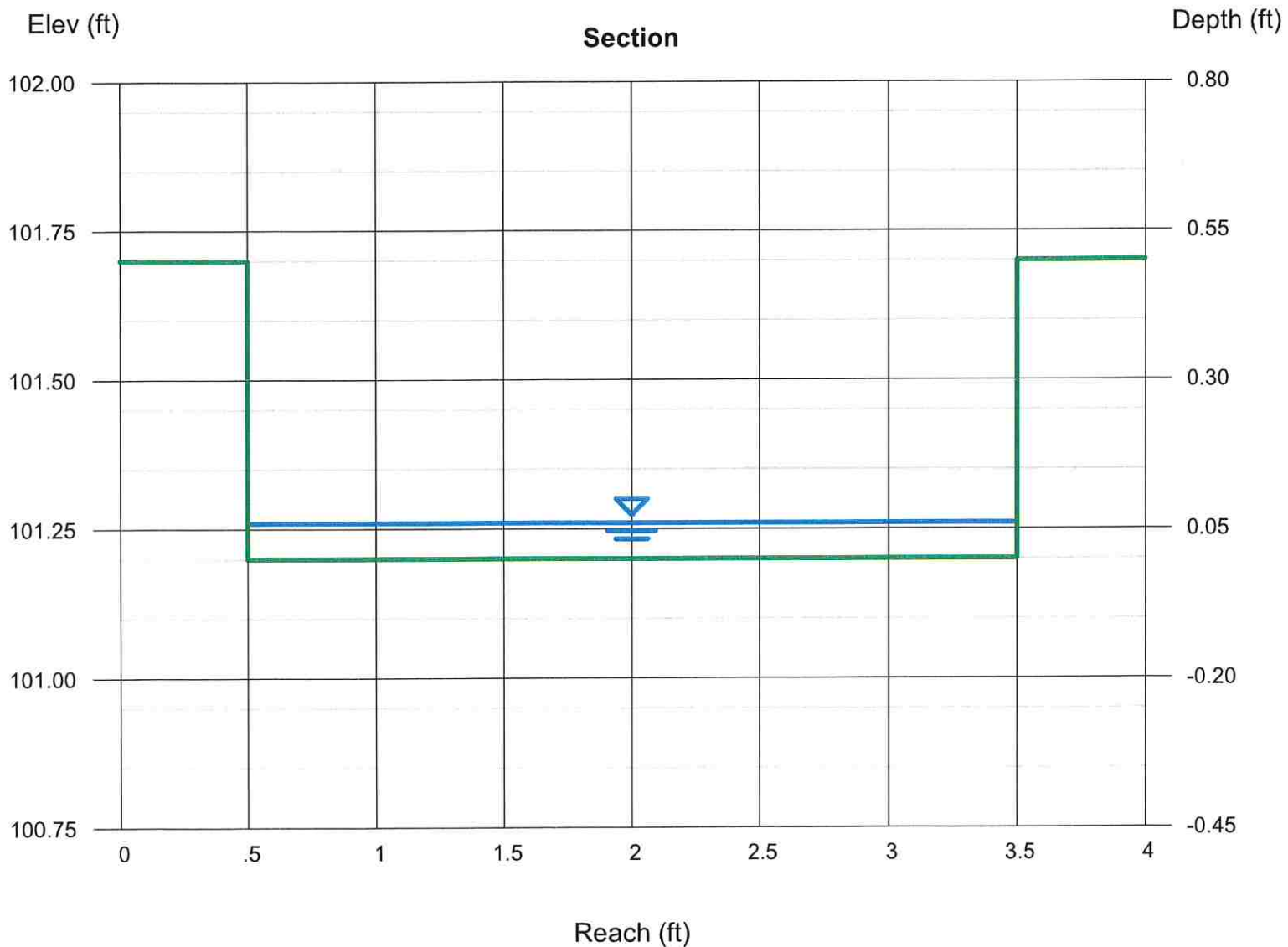
Invert Elev (ft) = 101.20
Slope (%) = 1.50
N-Value = 0.035

Calculations

Compute by: Known Q
Known Q (cfs) = 0.12

Highlighted

Depth (ft) = 0.06
Q (cfs) = 0.120
Area (sqft) = 0.18
Velocity (ft/s) = 0.67
Wetted Perim (ft) = 3.12
Crit Depth, Yc (ft) = 0.04
Top Width (ft) = 3.00
EGL (ft) = 0.07



APPENDIX G: WATER QUALITY CALCULATIONS

2005.109.02_PROPOSED (Rev. 8)

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Water Quality Storm
NJ DEP 2-hr WQ Rainfall=1.25"

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Summary for Pond 51P: Proposed Bioretention System #1

Inflow Area = 0.160 ac, 81.25% Impervious, Inflow Depth = 0.85" for WQ event
 Inflow = 0.40 cfs @ 1.04 hrs, Volume= 0.011 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 61L : Total to P.O.I. "A"

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Peak Elev= 98.67' @ 2.80 hrs Surf.Area= 0.017 ac Storage= 0.011 af

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	98.00'	0.051 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
98.00	0.017	0.000	0.000
99.00	0.017	0.017	0.017
100.00	0.017	0.017	0.034
101.00	0.017	0.017	0.051

Device	Routing	Invert	Outlet Devices
#1	Primary	94.50'	15.0" Round HDPE_Round 15" L= 28.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 94.50' / 94.36' S= 0.0050 ' /' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	98.70'	3.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	100.50'	42.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=98.00' TW=0.00' (Dynamic Tailwater)

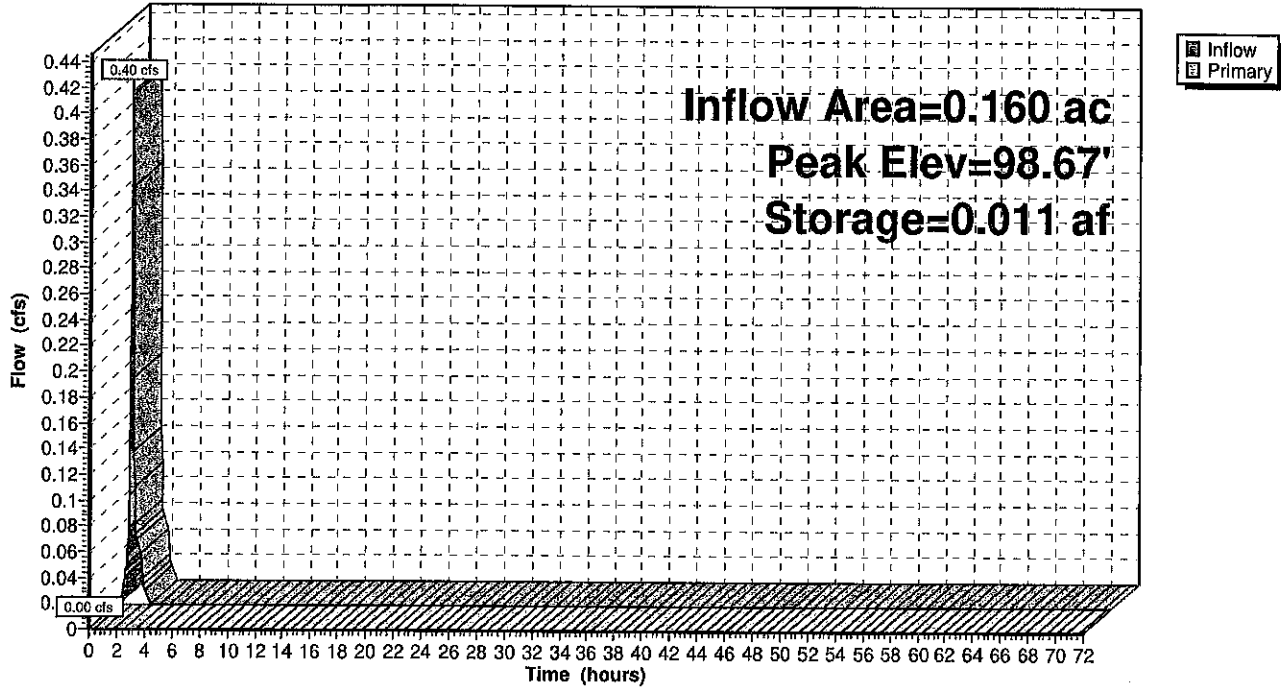
1=HDPE_Round 15" (Passes 0.00 cfs of 10.02 cfs potential flow)

2=Orifice/Grate (Controls 0.00 cfs)

3=Grate (Controls 0.00 cfs)

Pond 51P: Proposed Bioretention System #1

Hydrograph



2005.109.02 PROPOSED (Rev. 8)

Prepared by Menlo Engineering Associates

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Water Quality Storm
NJ DEP 2-hr WQ Rainfall=1.25"

Printed 8/29/2023

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Hydrograph for Pond 51P: Proposed Bioretention System #1

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	98.00	0.00
2.50	0.00	0.011	98.67	0.00
5.00	0.00	0.011	98.67	0.00
7.50	0.00	0.011	98.67	0.00
10.00	0.00	0.011	98.67	0.00
12.50	0.00	0.011	98.67	0.00
15.00	0.00	0.011	98.67	0.00
17.50	0.00	0.011	98.67	0.00
20.00	0.00	0.011	98.67	0.00
22.50	0.00	0.011	98.67	0.00
25.00	0.00	0.011	98.67	0.00
27.50	0.00	0.011	98.67	0.00
30.00	0.00	0.011	98.67	0.00
32.50	0.00	0.011	98.67	0.00
35.00	0.00	0.011	98.67	0.00
37.50	0.00	0.011	98.67	0.00
40.00	0.00	0.011	98.67	0.00
42.50	0.00	0.011	98.67	0.00
45.00	0.00	0.011	98.67	0.00
47.50	0.00	0.011	98.67	0.00
50.00	0.00	0.011	98.67	0.00
52.50	0.00	0.011	98.67	0.00
55.00	0.00	0.011	98.67	0.00
57.50	0.00	0.011	98.67	0.00
60.00	0.00	0.011	98.67	0.00
62.50	0.00	0.011	98.67	0.00
65.00	0.00	0.011	98.67	0.00
67.50	0.00	0.011	98.67	0.00
70.00	0.00	0.011	98.67	0.00

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Water Quality Storm
NJ DEP 2-hr WQ Rainfall=1.25"

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Summary for Pond 52P: Proposed Bioretention System #2

Inflow Area = 0.290 ac, 86.21% Impervious, Inflow Depth = 0.90" for WQ event
 Inflow = 0.75 cfs @ 1.04 hrs, Volume= 0.022 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 61L : Total to P.O.I. "A"

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 98.87' @ 2.45 hrs Surf.Area= 0.025 ac Storage= 0.022 af

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

Volume	Invert	Avail.Storage	Storage Description
#1	98.00'	0.075 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
98.00	0.025	0.000	0.000
99.00	0.025	0.025	0.025
100.00	0.025	0.025	0.050
101.00	0.025	0.025	0.075

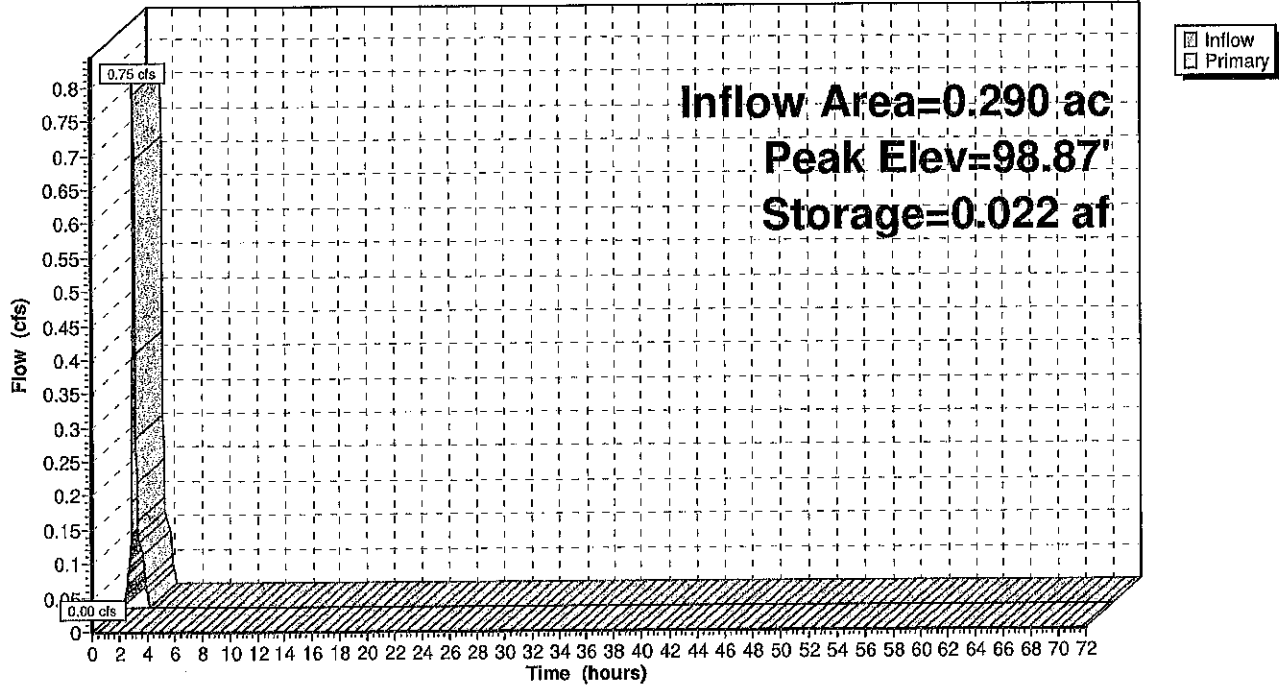
Device	Routing	Invert	Outlet Devices
#1	Primary	94.50'	15.0" Round HDPE_Round 15" L= 37.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 94.50' / 94.31' S= 0.0051 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Primary	98.90'	3.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	100.00'	0.5' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#4	Device 1	100.95'	42.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=98.00' TW=0.00' (Dynamic Tailwater)

1=HDPE_Round 15" (Passes 0.00 cfs of 10.02 cfs potential flow)
 3=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)
 4=Grate (Controls 0.00 cfs)
 2=Orifice/Grate (Controls 0.00 cfs)

Pond 52P: Proposed Bioretention System #2

Hydrograph



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NJ DEP 2-hr WQ Rainfall=1.25"

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Hydrograph for Pond 52P: Proposed Bioretention System #2

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	98.00	0.00
2.50	0.00	0.022	98.87	0.00
5.00	0.00	0.022	98.87	0.00
7.50	0.00	0.022	98.87	0.00
10.00	0.00	0.022	98.87	0.00
12.50	0.00	0.022	98.87	0.00
15.00	0.00	0.022	98.87	0.00
17.50	0.00	0.022	98.87	0.00
20.00	0.00	0.022	98.87	0.00
22.50	0.00	0.022	98.87	0.00
25.00	0.00	0.022	98.87	0.00
27.50	0.00	0.022	98.87	0.00
30.00	0.00	0.022	98.87	0.00
32.50	0.00	0.022	98.87	0.00
35.00	0.00	0.022	98.87	0.00
37.50	0.00	0.022	98.87	0.00
40.00	0.00	0.022	98.87	0.00
42.50	0.00	0.022	98.87	0.00
45.00	0.00	0.022	98.87	0.00
47.50	0.00	0.022	98.87	0.00
50.00	0.00	0.022	98.87	0.00
52.50	0.00	0.022	98.87	0.00
55.00	0.00	0.022	98.87	0.00
57.50	0.00	0.022	98.87	0.00
60.00	0.00	0.022	98.87	0.00
62.50	0.00	0.022	98.87	0.00
65.00	0.00	0.022	98.87	0.00
67.50	0.00	0.022	98.87	0.00
70.00	0.00	0.022	98.87	0.00

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Summary for Pond 53P: Proposed Bioretention System #3

Inflow Area = 0.230 ac, 82.61% Impervious, Inflow Depth = 0.87" for WQ event
 Inflow = 0.57 cfs @ 1.05 hrs, Volume= 0.017 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 61L : Total to P.O.I. "A"

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 97.88' @ 2.80 hrs Surf.Area= 0.019 ac Storage= 0.017 af

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

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	0.057 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
97.00	0.019	0.000	0.000
98.00	0.019	0.019	0.019
99.00	0.019	0.019	0.038
100.00	0.019	0.019	0.057

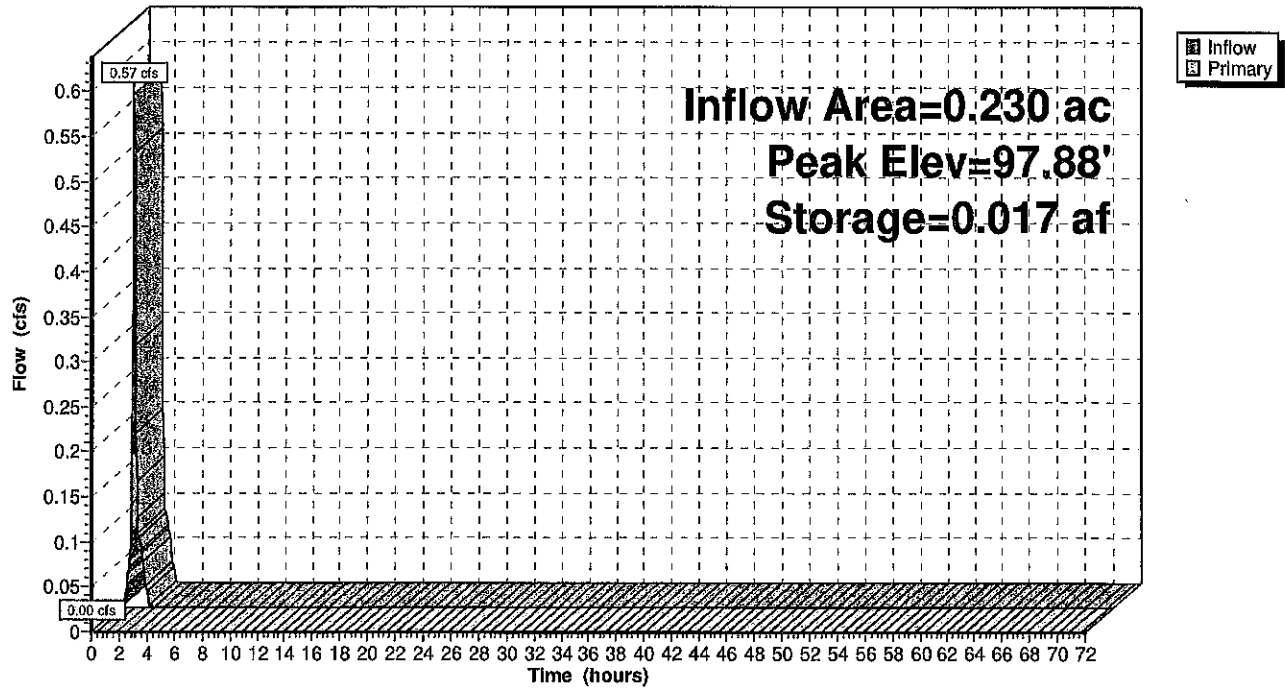
Device	Routing	Invert	Outlet Devices
#1	Primary	93.50'	15.0" Round HDPE_Round 15" L= 11.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 93.50' / 93.44' S= 0.0055 ' S= 0.0055 ' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	98.00'	0.5' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#3	Device 1	99.50'	42.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=97.00' TW=0.00' (Dynamic Tailwater)

1=HDPE_Round 15" (Passes 0.00 cfs of 10.02 cfs potential flow)
 2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)
 3=Grate (Controls 0.00 cfs)

Pond 53P: Proposed Bioretention System #3

Hydrograph



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Hydrograph for Pond 53P: Proposed Bioretention System #3

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	97.00	0.00
2.50	0.00	0.017	97.88	0.00
5.00	0.00	0.017	97.88	0.00
7.50	0.00	0.017	97.88	0.00
10.00	0.00	0.017	97.88	0.00
12.50	0.00	0.017	97.88	0.00
15.00	0.00	0.017	97.88	0.00
17.50	0.00	0.017	97.88	0.00
20.00	0.00	0.017	97.88	0.00
22.50	0.00	0.017	97.88	0.00
25.00	0.00	0.017	97.88	0.00
27.50	0.00	0.017	97.88	0.00
30.00	0.00	0.017	97.88	0.00
32.50	0.00	0.017	97.88	0.00
35.00	0.00	0.017	97.88	0.00
37.50	0.00	0.017	97.88	0.00
40.00	0.00	0.017	97.88	0.00
42.50	0.00	0.017	97.88	0.00
45.00	0.00	0.017	97.88	0.00
47.50	0.00	0.017	97.88	0.00
50.00	0.00	0.017	97.88	0.00
52.50	0.00	0.017	97.88	0.00
55.00	0.00	0.017	97.88	0.00
57.50	0.00	0.017	97.88	0.00
60.00	0.00	0.017	97.88	0.00
62.50	0.00	0.017	97.88	0.00
65.00	0.00	0.017	97.88	0.00
67.50	0.00	0.017	97.88	0.00
70.00	0.00	0.017	97.88	0.00

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Summary for Pond 54P: Proposed Bioretention System #4

Inflow Area = 0.710 ac, 78.87% Impervious, Inflow Depth = 0.83" for WQ event
 Inflow = 1.65 cfs @ 1.06 hrs, Volume= 0.049 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 61L : Total to P.O.I. "A"

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 98.98' @ 2.80 hrs Surf.Area= 0.050 ac Storage= 0.049 af

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

Volume	Invert	Avail.Storage	Storage Description
#1	98.00'	0.201 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
98.00	0.050	0.000	0.000
99.00	0.050	0.050	0.050
100.00	0.050	0.050	0.101
101.00	0.050	0.050	0.151
102.00	0.050	0.050	0.201

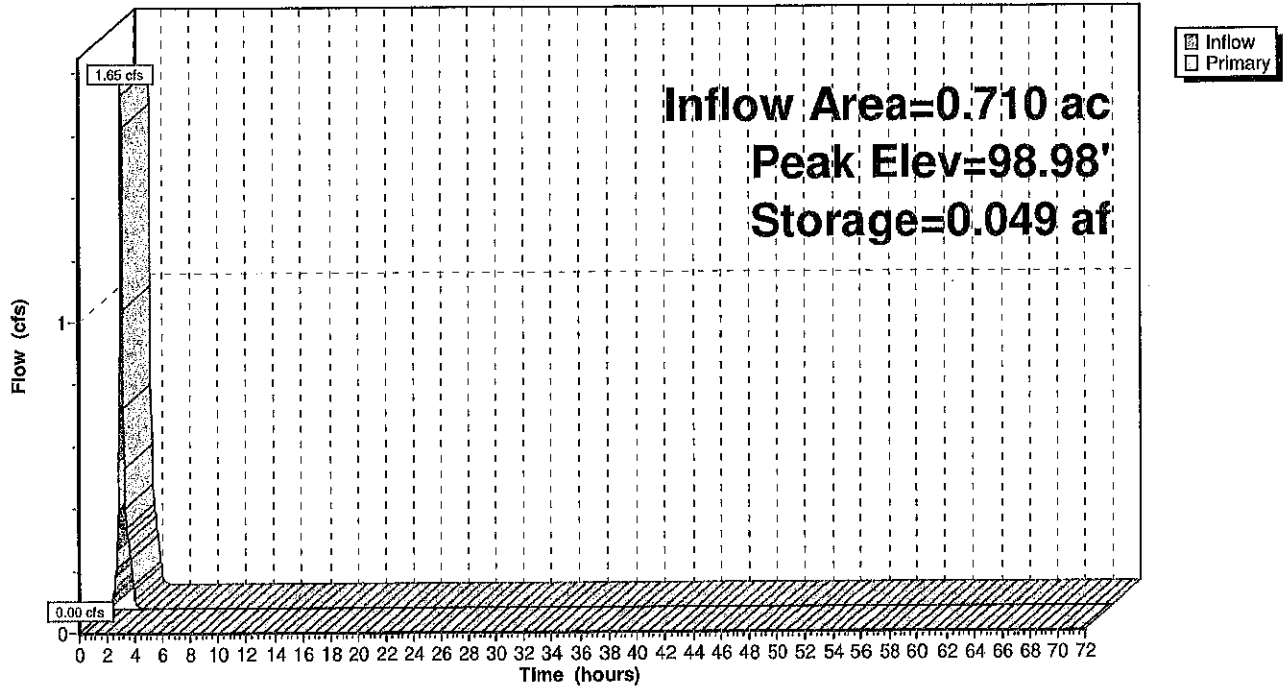
Device	Routing	Invert	Outlet Devices
#1	Primary	94.50'	15.0" Round HDPE_Round 15" L= 40.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 94.50' / 94.30' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	99.00'	Chicago 3-in VFR
#3	Device 1	99.90'	1.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#4	Device 1	101.40'	42.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=98.00' TW=0.00' (Dynamic Tailwater)

- ↑ 1=HDPE_Round 15" (Passes 0.00 cfs of 10.02 cfs potential flow)
- ↑ 2=Chicago 3-in VFR (Controls 0.00 cfs)
- ↑ 3=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)
- ↑ 4=Grate (Controls 0.00 cfs)

Pond 54P: Proposed Bioretention System #4

Hydrograph



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NJ DEP 2-hr WQ Rainfall=1.25"

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Hydrograph for Pond 54P: Proposed Bioretention System #4

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	98.00	0.00
2.50	0.00	0.049	98.98	0.00
5.00	0.00	0.049	98.98	0.00
7.50	0.00	0.049	98.98	0.00
10.00	0.00	0.049	98.98	0.00
12.50	0.00	0.049	98.98	0.00
15.00	0.00	0.049	98.98	0.00
17.50	0.00	0.049	98.98	0.00
20.00	0.00	0.049	98.98	0.00
22.50	0.00	0.049	98.98	0.00
25.00	0.00	0.049	98.98	0.00
27.50	0.00	0.049	98.98	0.00
30.00	0.00	0.049	98.98	0.00
32.50	0.00	0.049	98.98	0.00
35.00	0.00	0.049	98.98	0.00
37.50	0.00	0.049	98.98	0.00
40.00	0.00	0.049	98.98	0.00
42.50	0.00	0.049	98.98	0.00
45.00	0.00	0.049	98.98	0.00
47.50	0.00	0.049	98.98	0.00
50.00	0.00	0.049	98.98	0.00
52.50	0.00	0.049	98.98	0.00
55.00	0.00	0.049	98.98	0.00
57.50	0.00	0.049	98.98	0.00
60.00	0.00	0.049	98.98	0.00
62.50	0.00	0.049	98.98	0.00
65.00	0.00	0.049	98.98	0.00
67.50	0.00	0.049	98.98	0.00
70.00	0.00	0.049	98.98	0.00

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NJ DEP 2-hr WQ Rainfall=1.25"

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Summary for Pond 55P: Proposed Bioretention System #5

Inflow Area = 0.300 ac, 73.33% Impervious, Inflow Depth = 0.77" for WQ event
 Inflow = 0.63 cfs @ 1.07 hrs, Volume= 0.019 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 61L : Total to P.O.I. "A"

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Peak Elev= 98.60' @ 2.85 hrs Surf.Area= 0.032 ac Storage= 0.019 af

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	98.00'	0.096 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
98.00	0.032	0.000	0.000
99.00	0.032	0.032	0.032
100.00	0.032	0.032	0.064
101.00	0.032	0.032	0.096

Device	Routing	Invert	Outlet Devices
#1	Primary	94.50'	15.0" Round HDPE_Round 15" L= 35.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 94.50' / 94.33' S= 0.0049 ' / ' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	98.70'	3.0" Vert. Orifice C= 0.600 Limited to weir flow at low heads
#3	Device 1	100.70'	42.0" x 48.0" Horiz. Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=98.00' TW=0.00' (Dynamic Tailwater)

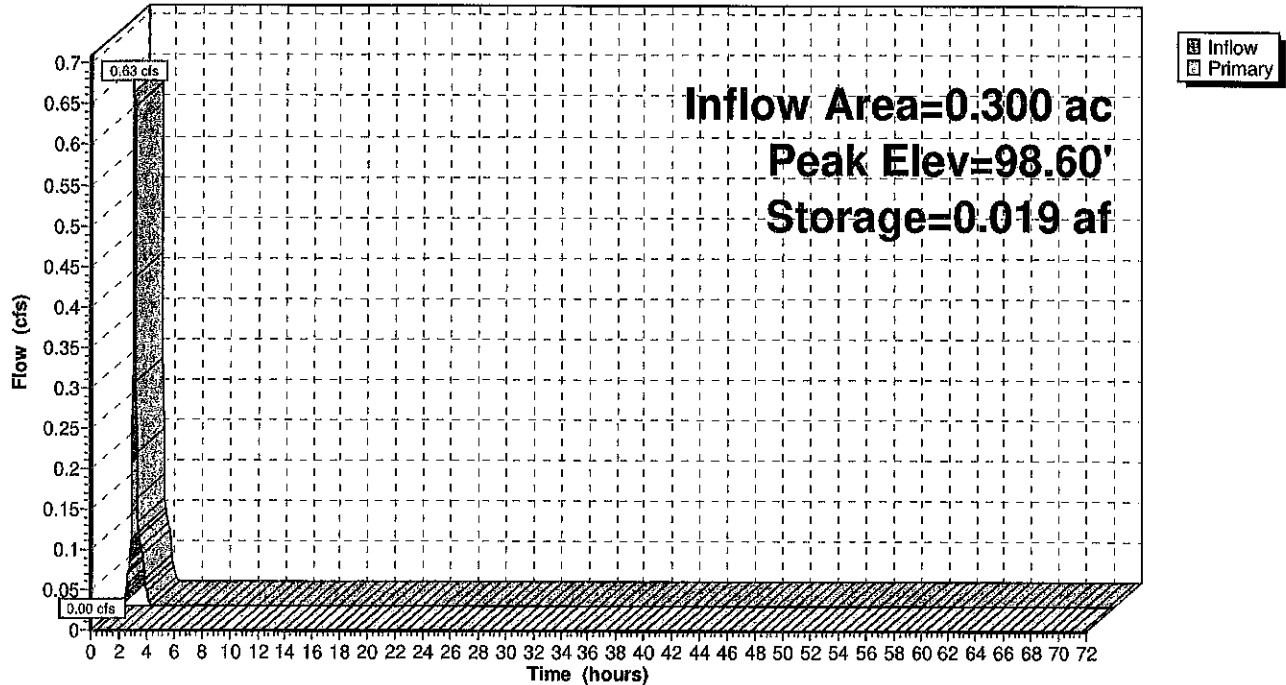
1=HDPE_Round 15" (Passes 0.00 cfs of 10.02 cfs potential flow)

2=Orifice (Controls 0.00 cfs)

3=Grate (Controls 0.00 cfs)

Pond 55P: Proposed Bioretention System #5

Hydrograph



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Hydrograph for Pond 55P: Proposed Bioretention System #5

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	98.00	0.00
2.50	0.00	0.019	98.60	0.00
5.00	0.00	0.019	98.60	0.00
7.50	0.00	0.019	98.60	0.00
10.00	0.00	0.019	98.60	0.00
12.50	0.00	0.019	98.60	0.00
15.00	0.00	0.019	98.60	0.00
17.50	0.00	0.019	98.60	0.00
20.00	0.00	0.019	98.60	0.00
22.50	0.00	0.019	98.60	0.00
25.00	0.00	0.019	98.60	0.00
27.50	0.00	0.019	98.60	0.00
30.00	0.00	0.019	98.60	0.00
32.50	0.00	0.019	98.60	0.00
35.00	0.00	0.019	98.60	0.00
37.50	0.00	0.019	98.60	0.00
40.00	0.00	0.019	98.60	0.00
42.50	0.00	0.019	98.60	0.00
45.00	0.00	0.019	98.60	0.00
47.50	0.00	0.019	98.60	0.00
50.00	0.00	0.019	98.60	0.00
52.50	0.00	0.019	98.60	0.00
55.00	0.00	0.019	98.60	0.00
57.50	0.00	0.019	98.60	0.00
60.00	0.00	0.019	98.60	0.00
62.50	0.00	0.019	98.60	0.00
65.00	0.00	0.019	98.60	0.00
67.50	0.00	0.019	98.60	0.00
70.00	0.00	0.019	98.60	0.00

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Summary for Pond 56P: Proposed Bioretention System #6

Inflow Area = 1.450 ac, 51.72% Impervious, Inflow Depth = 0.54" for WQ event
 Inflow = 2.12 cfs @ 1.08 hrs, Volume= 0.065 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 61L : Total to P.O.I. "A"

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 97.57' @ 2.40 hrs Surf.Area= 4,912 sf Storage= 2,817 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	97.00'	19,648 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

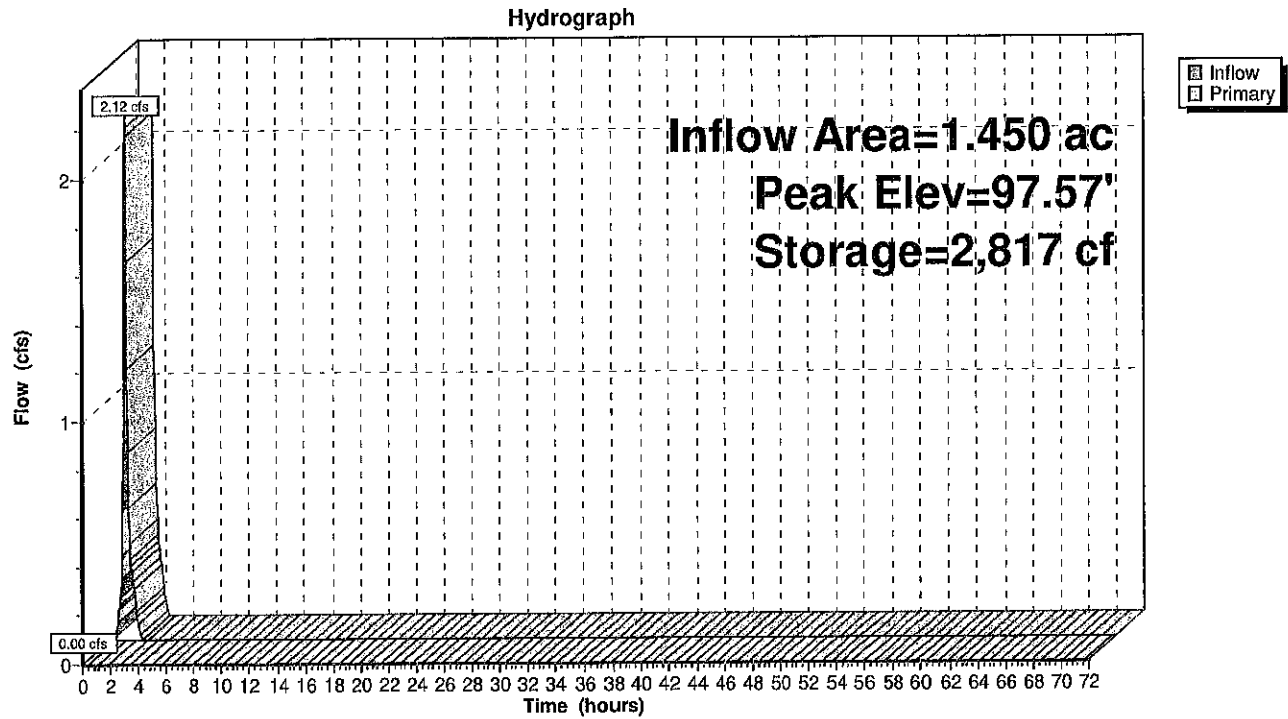
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
97.00	4,912	0	0
98.00	4,912	4,912	4,912
99.00	4,912	4,912	9,824
100.00	4,912	4,912	14,736
101.00	4,912	4,912	19,648

Device	Routing	Invert	Outlet Devices
#1	Primary	93.50'	15.0" Round HDPE_Round 15" L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 93.50' / 93.25' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	97.60'	Chicago 3-in VFR
#3	Device 1	99.00'	1.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#4	Device 1	100.00'	42.0" x 48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=97.00' TW=0.00' (Dynamic Tailwater)

1=HDPE_Round 15" (Passes 0.00 cfs of 9.86 cfs potential flow)
 2=Chicago 3-in VFR (Controls 0.00 cfs)
 3=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)
 4=Orifice/Grate (Controls 0.00 cfs)

Pond 56P: Proposed Bioretention System #6



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NJ DEP 2-hr WQ Rainfall=1.25"

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Hydrograph for Pond 56P: Proposed Bioretention System #6

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	97.00	0.00
2.50	0.00	2,817	97.57	0.00
5.00	0.00	2,817	97.57	0.00
7.50	0.00	2,817	97.57	0.00
10.00	0.00	2,817	97.57	0.00
12.50	0.00	2,817	97.57	0.00
15.00	0.00	2,817	97.57	0.00
17.50	0.00	2,817	97.57	0.00
20.00	0.00	2,817	97.57	0.00
22.50	0.00	2,817	97.57	0.00
25.00	0.00	2,817	97.57	0.00
27.50	0.00	2,817	97.57	0.00
30.00	0.00	2,817	97.57	0.00
32.50	0.00	2,817	97.57	0.00
35.00	0.00	2,817	97.57	0.00
37.50	0.00	2,817	97.57	0.00
40.00	0.00	2,817	97.57	0.00
42.50	0.00	2,817	97.57	0.00
45.00	0.00	2,817	97.57	0.00
47.50	0.00	2,817	97.57	0.00
50.00	0.00	2,817	97.57	0.00
52.50	0.00	2,817	97.57	0.00
55.00	0.00	2,817	97.57	0.00
57.50	0.00	2,817	97.57	0.00
60.00	0.00	2,817	97.57	0.00
62.50	0.00	2,817	97.57	0.00
65.00	0.00	2,817	97.57	0.00
67.50	0.00	2,817	97.57	0.00
70.00	0.00	2,817	97.57	0.00

APPENDIX H: NONSTRUCTURAL STORMWATER MANAGEMENT STRATEGIES

NJDEP Nonstructural Strategies Points System (NSPS)

Version: January 31, 2006

Note: Input Values in Yellow Cells Only

Project: Americana Center

Date: February 10, 2023

User: SK

Notes:

Step 1 - Provide Basic Major Development Site Information

A. Specify Total Area in Acres of Development Site Described in Steps 2 and 3 = 3.2 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:		100.0%					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		0.5	0.8		1.3	109
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					0.0	0
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		0.4	1.5		1.9	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	0.9	2.2	0.0		
HSG Subtotals (%):		0.0%	29.6%	70.4%	0.0%		
Total Area:						3.2	
Total % Area:						100.0%	

Points Subtotal: 109

Total Existing Site Points: 109

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		0.4	0.4		0.8	74
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					0.0	0
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		0.5	1.1		1.7	0
14	Unconnected Impervious with Small D/S Pervious					0.0	0
15	Unconnected Impervious with Large D/S Pervious			0.7		0.7	39
HSG Subtotals (Acres):		0.0	0.9	2.2	0.0		3.2
HSG Subtotals (%):		0.0%	29.6%	70.4%	0.0%		100.0%
Points Subtotal:							114

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

Total Directly Connected Impervious Coverage =
Total Unconnected Impervious Coverage with Small D/S Pervious =
Total Unconnected Impervious Coverage with Large D/S Pervious =
Total Site Impervious Coverage =
Effective Site Impervious Coverage =

52%	% of Site
0%	% of Site
21%	% of Site
74%	% of Site
63%	% of Site

Specify Source of Maximum Allowable Impervious Coverage:

(None or Table)

Table

Allowable Site Impervious Cover from Maximum Impervious Cover Table:
Note: See Maximum Impervious Cover Table Worksheet for Details

0%

Points Subtotal:

0

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

Total Proposed Site Disturbance =
Maximum Allowable Site Disturbance by Municipal Ordinance =

49%	% of Site
100%	% of Site

Points Subtotal:

26

D. Describe Proposed Runoff Conveyance System:

Total Length of Runoff Conveyance System =
Length of Vegetated Runoff Conveyance System =
% of Total Runoff Conveyance System That is Vegetated =

Feet
Feet
0%

Points Subtotal:

0

E. Residential Lot Clustering:

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

% of Site
Acres
Acres
% 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:
Percent of Proposed Lawn Areas to be Graded with Such Equipment:

No	(Yes or No)
26%	% of Lawn Areas

Points Subtotal:

0

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):
Stormwater Runoff Quality Standards (NJAC 7:8-5.5):
Stormwater Runoff Quantity Standards (NJAC 7:8-5.4-a-3):

No	(Yes or No)
No	(Yes or No)
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:

140

Ratio of Proposed to Existing Site Points:

128%

Required Site Points Ratio:

86%

Nonstructural Point System Results:

Proposed Nonstructural Measures are Adequate

