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STORMWATER MANAGEMENT REPORT

INN AT STRATHMERE

513 S. COMMONWEALTH AVENUE

BLOCK 834 LOT 1

STRATHMERE/UPPER TOWNSHIP

CAPE MAY COUNTY, NJ

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SECTION 4 SOIL LOGS

GENERAL

It is the purpose of this report to present a stormwater management plan for the demolition of an existing outdated 16 unit motel on the property and replace it with a modern, flood-compliant 15-unit motel. Associated site improvements include parking with an access drive, site lighting, landscaping and a trash enclosure.

EXISTING CONDITIONS – ONSITE

The site is located at 513 S. Commonwealth Avenue and known as Block 834, Lot 1 in the City of Strathmere, New Jersey. At present the site contains a 16 unit motel with a gravel parking area and septic system. The land generally slopes from the site to the surrounding streets -- Sherman Avenue, Sumner Avenue and Commonwealth Avenue with the existing runoff flowing to and along curblines to stormwater inlets located in the street intersections.

POSTDEVELOPED CONDITIONS – ONSITE

Following demolition of the existing 16 unit motel the project proposes to construct a modern, flood compliant 15 unit motel. Related support features include an access drive, parking area, site lighting, landscaping and a trash enclosure. Site runoff will continue along the existing curblines to the inlets in the intersections

REQUIREMENTS

Normally a project will propose that stormwater runoff rates and volumes shall be limited by the preconstruction levels in that the postdevelopment condition will result in a decrease in the 2, 10 and 100 year storms by 50 %, 75 % and 80 % respectively. As seen in the attached soil logs the most frequent seasonal and full moon high tide depth from existing grade varies from 21 to 24 inches. The minimum NJDEP required separation from existing grade to seasonal high and/or full moon high water is 24 inches which essentially leaves no room for runoff storage. However, the project proposes to install pervious pavement supplemented with pavers in all parking and driving areas over a stone storage bed. That design will permit storage of the NJDEP Water Quality storm and the 2 year storm while maintaining a 15 inch distance to seasonal water.

STORMWATER ANALYSIS

Calculations were performed utilizing the Soil Conservation Service Technical Release No. 55 "Urban Hydrology for Small Watersheds".Weighted curve numbers and times of concentration for existing and developed conditions were established using the TR-55 methodology. Soils on the site are mapped as Coastal Beach Urban Area Complex, sand (CU) and considered Group A.

From the Soil Survey permeability for Coastal Beach Urban Area Complex (CU) is listed as greater than 6.0 inches per hour for the soil type. The included soil testing results performed by Michael Lucey, Environmental Scientist, indicate depths to seasonal high water of 24, 34 and 42 inches. Monitoring wells indicated depths to full moon high tide of 21 and 22 inches.

PATH OF POSITIVE OUTFLOW

The post development flow path will continue the predeveloped natural drainage pattern for the area that directs runoff to the surrounding streets of Sherman Avenue, Sumner Avenue and Commonwealth Avenue and flowing along their curbline to existing stormwater inlets located at the intersections. As seen in the analysis below not all NJDEP runoff reductions are met, however, the calculations indicate there will be no increase in the volume or rate of runoff and therefore there should be no adverse effect on downstream areas receiving runoff from the inlets and their piping system.

STORMWATER ANALYSIS

	DA 1 PREDEVELOPED	**DA 2 PREDEVELOPED**
Storm 2 YEAR 3.3 in.	Predeveloped Peak = 0.07 cfs @ 12.24 hrs Volume = 0.008 AF	Predeveloped Peak = 0.25 cfs @ 12.26 hrs $Volume_{out}$ = 0.030 AF
Storm 10 YEAR 5.2 in.	Predeveloped Peak = 0.11 cfs @ 12.24 hrs Volume = 0.015 AF	Predeveloped Peak = 0.49 cfs @ 12.25 hrs $Volume_{out}$ = 0.059 AF
Storm 100 YEAR 8.9 in.	Predeveloped Peak = 0.20 cfs @ 12.24 hrs Volume = 0.027 AF	Predeveloped Peak = 0.97 cfs @ 12.24 hrs $Volume_{out}$ = 0.120 AF

	SUM OF DA 1 AND 2 PREDEVELOPED	**DA 4 POSTDEVELOPED**
Storm 2 YEAR 3.3 in.	Predeveloped Peak = 0.32 cfs 50% = 0.16 cfs @ 12.24 hrs Volume = 0.038 AF	Postdeveloped Q_{out} = 0.22 cfs 69 % @ 12.25 hrs $Volume_{out}$ = 0.026 AF
Storm 10 YEAR 5.2 in.	Predeveloped Peak = 0.60 cfs 75% = 0.45 cfs @ 12.24 hrs Volume = 0.074 AF	Postdeveloped Q_{out} = 39 cfs **OK** @ 12.25 hrs $Volume_{out}$ = 0.049 AF

Storm	Predeveloped	Postdeveloped
100 YEAR	Peak = 1.17 cfs 80% = 0.94 cfs	Q_{out} = 0.77 cfs **OK**
8.9 in.	@ 12.24 hrs	@ 12.25 hrs
	Volume = 0.147 AF	$Volume_{out}$ = 0.101 AF

DRAINAGE AREA 3

Storm	Predeveloped	Postdeveloped
2 YEAR	Peak = 0.13 cfs 50% = 0.07 cfs	Q_{out} = 0.14 cfs
3.3 in.	@ 12.27 hrs	@ 12.25 hrs
	Volume = 0..016 AF	$Volume_{out}$ = 0.017 AF
Storm	Predeveloped	Postdeveloped
10 YEAR	Peak = 0.27 cfs 75% = 0.20 cfs	Q_{out} = 0.26 cfs
5.2 in.	@ 12.25 hrs	@ 12.25 hrs
	Volume = 0.032 AF	$Volume_{out}$ = 0.033 AF
Storm	Predeveloped	Postdeveloped
100 YEAR	Peak = 0.54 cfs 80% = 0.43 cfs	Q_{out} = 0.51 cfs **OK**
8.9 in.	@ 12.25 hrs	@ 12.25 hrs
	Volume = 0.066 AF	$Volume_{out}$ = 0.068 AF

DRAINAGE AREA 5

WATER QUALITY STORAGE CALCULATION

DA 4 Water Quality Storm Q_{out} = 0.10 cfs @ 1.29 hrs $Volume_{out}$ = 0.005 af/218 cf
% Voids = 0.40 Storage Area = 6489 sf

$$\text{Storage Bed Depth} = \frac{\text{Water Quality Volume}}{\text{Permeability x Storage Area}} = \frac{218 \text{ cf x } 12 \text{ in/ft}}{0.40 \text{ x } 6489 \text{ sf}} = 1.0 \text{ inches}$$

Storage available in 6' thick bed = 0.5 ft x 6489 sf x 0.40 = 1298 cf = 0.03 af

2 yr storm volume = 0.026 cf that will be stored in the proposed 6 inch thick storage bed

DA 5 Water Quality Storm Q_{out} = 0.07 cfs @ 1.29 hrs $Volume_{out}$ = 0.004 af/174 cf
% Voids = 0.40 Storage Area = 6489 sf

$$\text{Storage Bed Depth} = \frac{\text{Water Quality Volume}}{\text{Permeability x Storage Area}} = \frac{174 \text{ cf x } 12 \text{ in/ft}}{0.40 \text{ x } 3300 \text{ sf}} = 1.58 \text{ inches}$$

Storage available in 6' thick bed = 0.5 ft x 3300 sf x 0.40 = 660 cf = 0.02 af

2 yr storm volume = 0.017 af that will be stored in the proposed 6 inch thick storage bed

STORMWATER POLLUTANT REMOVAL CRITERIA

A major development that creates at least 0.25 acres of new or additional impervious surface must include stormwater management measures that reduce the average annual total suspended solids (TSS) load in the development's post-construction runoff by 80 percent. This reduction is to be achieved by conveying the site's runoff through one or more onsite BMPs that have the ability to remove a portion of the TSS load.

Per Chapter 9.7 of the NJ Stormwater Best Management Practices Manual Pervious Paving Systems provide provide 80 % TSS removal in accordance with N.J.A.C. 7:8 Stormwater management Rules – Design and Performance Standards.

PERMEABILITY – TIME TO DRAIN

Per the Cape May County Soil Survey Coastal Beach Urban Area Complex, sand (CU) has a permeability rate greater than 6.0 inches per hour. A conservative rate of 3.0 in/hr will be used using factor of safety of two.

From the Calculations the Water Quality Design Volumes are contained in the 6 inch storage bed beneath the pervious pavement. Using the conservative permeability rate of 3.0 in/hr the time to drain may be calculated as 6.inches / 3.0 inches per hour = 2.0 hours to drain.

The storage bed will fully drain the Water Quality and 2yr storms within 72 hours

LOW IMPACT DEVELOPMENT TECHNIQUES

An applicant seeking approval for a major development must specifically identify which and how these nine nonstructural strategies have been incorporated into the development's design:

Non-structural BMPs

1. *Protect areas that provide water quality benefits or areas particularly susceptible to erosion and sediment loss.*
   The majority of the lot will be cleared for the contractors use. It contained the building, a gravel parking area and fair open space. While the proposed impervious area increases, the gravel and poor open space is eliminated and replaced with good open space thereby providing water quality benefits. It is noted the entire parking and drive aisle areas will receive pervious paving and pavers.

2. *Minimize impervious surfaces and break up or disconnect the flow of runoff over impervious surfaces.*
   Driveways and travel aisles will be constructed of pervious paving. Surface runoff from the lot is directed to the surrounding streets and along the curbline to existing inlets in the intersections.

3. *Maximize the protection of natural drainage features and vegetation.*
   The existing drainage pattern will be continued with pervious pavement.

4. *Minimize the decrease in the pre-construction "time of concentration"*
   Site grading and disturbance has been carefully considered in order to minimize the impact of development on the time of concentration.

5. *Minimize land disturbance including clearing and grading.*
   A soil erosion and sediment control plan will be prepared which establishes and regulates construction areas, access roads, and material and equipment storage areas, and if possible, construction should be phased to minimize the site area that will be disturbed at any given time.

6. *Minimize soil compaction.*
   A soil erosion and sediment control plan will be prepared which establishes and regulates construction areas, access roads, and material and equipment storage areas. If compaction should be a problem, the Standards for Soil Erosion and Sediment Control indicate methods for remediation of soil compaction.

7. *Provide low maintenance landscaping that encourages retention and planting of native vegetation and minimized the use of lawns, fertilizers, and pesticides.*
   Only the area required for grading around the proposed buiding and access roads will be disturbed. As this area is poor open space and gravel it will be replaced by revegetation with a grass mixture.

8. *Provide vegetated open-channel conveyance systems, discharge into and through stable vegetated areas.*
   The lot has been graded to the existing curblines along the surrounding streets and to existing inlets in their intersections.

9. *Provide preventative source controls.*
   Minimal pollutants would be expected, mainly floatables (trash and debris) from the site. A maintenance and inspection program will incllude manual collection of litter on the site.

PERVIOUS PAVEMENT MAINTENANCE PER BMP 9.7

Maintenance

Regular and effective maintenance is crucial to ensure effective pervious paving system performance; in addition, maintenance plans are required for all stormwater management facilities on a major development. In addition to the manufacturer's maintenance requirements, there are a number of required elements in all maintenance plans, pursuant to N.J.A.C. 7:8-5.8; these are discussed in more detail in *Chapter 8: Maintenance of Stormwater Management Measures*. Furthermore, maintenance activities are required through various regulations, including the New Jersey Pollutant Discharge Elimination System (NJPDES) rules, N.J.A.C. 7:14A. Specific maintenance requirements for pervious paving systems are presented below; these requirements must be included in the maintenance plan for pervious paving systems.

General Maintenance

§ Failure to correctly maintain a pervious paving system will shorten its lifespan or result in system failure; therefore, the maintenance plan must ensure proper training of personnel and include the special equipment necessary in accordance with the industry's or manufacturer's requirements.

§ The surface course must be inspected, at least once annually, for cracking, subsidence, spalling, erosion, deterioration and unwanted vegetation. Remedial measures must be taken as soon as possible. Herbicides must not be applied.

§ The surface course of a pervious paving system must be vacuum swept, not power swept, at least four times per year. Vacuum sweeping must be followed by either air blowing or high-pressure power washing performed in accordance with the specifications recommended for the particular type of system. All dislodged material must be promptly removed.

□ The first annual maintenance must be performed in the spring.

□ Maintenance must additionally be performed in the autumn, after the fallen leaves are collected and removed.

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Chapter 9.7 Pervious Paving Systems Page 32

§ Each spring, after the last snow or ice event, the infiltration rate of the surface course must be tested in accordance with the methods of either ASTM C1701 or C1781, as corresponds to the post-construction test performed for the system. At least 3 locations must be tested. One of the locations must be in an area where sediment is most likely to be deposited, such as, but not limited to, a parking lot entrance. The other test locations must be evenly spaced across the system surface. The locations and results obtained must be recorded in the maintenance plan for future reference and compared to the as-built testing results as a metric for determining if a system requires corrective action. The chart provided below shows the approximate infiltration rate based upon the time it takes to infiltrate either 8 or 40 pounds of water specified in the above-cited tests.

This chart should be included in the maintenance plan for future reference. The infiltration rate, I, is based upon the following calculation:

$I=(K*M)/(D2*t)$, where
K = 126,870 in-lbs
M = water mass, lbs
D = ring diameter = 12 inches
t = time, in seconds **Test Methods Per ASTM C1701 or C1781**

Time to Infiltrate the Specified Amount of Water (seconds)		**Approximate Surface Infiltration Rate (inches per hour)**
***M* = 8 lbs**		***M* = 40 lbs**
30	235	1175
60	118	587
100	70.5	352
200	35.2	176
350	20.1	100.7
360	19.6	97.9
380	18.5	92.7
900	7.8	39.2
1760	4.0	20.0
1910	3.7	18.5
3600	2.0	9.8
5400	1.3	6.5
5470	1.3	6.4
6000	1.2	5.9

Take note that should the test be performed with a different quantity of water, the values in the chart above cannot be used.
§ Corrective action must be immediately taken to restore the infiltration capacity of the pervious paving system under the following scenarios:
□ Standing water is observed on the surface course; or
□ The testing methods above show an infiltration rate of 20 inches per hour or less for a system designed for quantity control or 6.4 or less for a system designed for water quality control only.
§ If mud or sediment is tracked onto the surface course, it must be removed as soon as possible. Removal should take place when all runoff has drained from the surface course.
§ Disposal of debris, trash, sediment and other waste material must be done at suitable disposal/recycling sites and in compliance with all applicable local, state and federal waste regulations.
§ Under no circumstances may any sealants or coatings be applied to pervious paving systems, except for those approved by the manufacturer to improve surface course resistance to de-icing chemicals or refresh traffic striping.

§ Over the lifetime of the surface course, no more than 10% of its surface area may be patched with impervious material such as bituminous asphalt or concrete. All patching must be recorded in the maintenance manual for future reference to prevent exceedance of this maximum.

Storage Bed Drain Time

§ The approximate drain time for the maximum design storm runoff volume below the top of the surface course must be indicated in the maintenance manual.
§ If the actual drain time is significantly different from the design drain time, the components and groundwater levels must be evaluated and appropriate measures taken to return the pervious paving system to minimum and maximum drain time requirements.
§ If the system fails to drain the maximum design storm volume within 72 hours, corrective action must be taken.

Cold Weather Maintenance
§ Care must be taken when removing snow from the surface course; pervious paving surface courses may be damaged by snowplows or loader buckets set too low to the ground or not equipped with a rubber blade guard. Sand, grit or cinders may not be used on surface courses for snow/ice control.
§ De-icers containing magnesium chloride, calcium magnesium acetate or potassium acetate may never be used on pervious concrete.

CONCLUSION

The predeveloped design includes three drainage areas. Two (DA 1 and 2) provide runoff to inlets at the intersection of Sumner and Commonwealth Avenues and the third (DA 3) provides runoff to inlets at the intersection of Sherman and Commonwealth Avenues.

The postdeveloped design includes two areas. One (DA 4) provides runoff to the intersection of Sumner and Commonwealth Avenues that receives the predeveloped runoff from DA 1 and SA 2 and second (DA 5) providing runoff to the intersection of Sherman and Commonwealth Avenues that receives predeveloped runoff from DA 3.

The project reduces the 10 and 100 year storm flow rates by 75 % and 80 % respectively for DA 4. The DA 4 2 year storm runoff is reduced by 69% rather than the 50% required from the predeveloped condition but is completely stored in the water quality storage bed.

The postdeveloped storm runoff rates for DA 5 essentially equal their respective 2, 10 and 100 year predeveloped storm runoff rates. It is noted the project proposes to install pervious pavement supplemented with pavers in all parking and driving areas. That design will permit storage of the NJDEP Water Quality storm plus the 2 year storm and maintain a 15 inch rather than the required 24 inch distance to seasonal water and decrease runoff CN values when compared to ordinary paving.

The Water Quality storm and the 2yr storm are contained in the 6 inch thick storage bed under the pervious pavenent.

The project proposes to reduce the post-construction by removing 80 percent of the TSS runoff in accordance with the Best Management Practices Manual for Pervious Pavement.

The storage bed will drain in 2.0 hours, less than the 72 hours required.

The project is therefore recommended for acceptance.

DRAINAGE AREA PLANS

REAR POCKET

SOIL LOGS

Test Pit Results
Block 834
Lot 1
Upper Twp., Cape May Co., NJ
WEE 1725

Test Pit # 1 WEE #1725 - Strathmore, Upper Township, Cape May County, Block: 834 Lot: 1 Witnessed By: Heather Johnson, CMC

Depth	Munsel Code	Color	Texture	Structure	Consistency	Mottles	Mottle Color	Mottle Abundance	Size	Contrast	Water	Percent CF
0" - 4"	10YR3/3	dark brown										
4" - 9"	10YR2/1	black	roots									
9" - 12"	10YR5/6	yellowish brown	fill	subangular blocky								
12" - 15"	10YR7/8	yellow	fill	subangular blocky								
15" - 19"	10YR6/6	brownish yellow	fill	subangular blocky								
19" - 23"	10YR6/6	brownish yellow	sand	subangular blocky								
23" - 32"	10YR7/8	yellow	stone at 28"			24"	10YR7/8 yellow	10%				
32" - 37"	10YR2/1	black	timber								33" Effluent from system	
37"	10YR4/1	dark gray		subangular blocky								
Required depth of 10 feet could not be safely achieved because of caving and instability of excavation due to effluent from existing system												

Depth to SHGW: 24"

Depth to BRC:

Performed By: Water's Edge Environmental, LLC

Date: 3/4/2020

Test Pit Results
Block 834
Lot 1
Upper Twp., Cape May Co., NJ
WEE #1725

Test Pit # 2 WEE #1725 - Strathmere, Upper Township, Cape May County, Block: 834 Lot: 1 Witnessed By: Heather Johnson, CMC

Depth	Munsel Code	Color	Texture	Structure	Consistency	Mottles	Mottle Color	Mottle Abundance	Size	Contrast	Water	Percent CF
0" - 4"	10YR3/3	dark brown										
4" - 8"	10YR2/1	black	roots									
8" - 12"	10YR5/4	yellowish brown	fill	subangular blocky								
12" - 15"	10YR7/8	yellow	fill	subangular blocky								
15" - 19"	10YR6/6	brownish yellow	fill	subangular blocky								
19" - 23"	10YR6/6	brownish yellow	sand	subangular blocky								
23" - 32	10YR7/8	yellow	mottle at 28"			24"	10YR7/8 yellow	10%				
32" - 37"	10YR2/1	black	timber								33" Effluent from system	
37"	10YR4/1	dark gray		subangular blocky								
Required depth of 10 feet could not be safely achieved because of caving and instability of excavation due to effluent from existing system												

Depth to SHGWT: 24"

Depth to RW:

Performed By: Water's Edge Environmental, LLC

Date: 3/4/2020

Test Pit Results
Block 834
Lot 1
Upper Twp., Cape May Co., NJ
WEE 1725

Test Pit # 3 WEE #1725 - Strathmere, Upper Township, Cape May County, Block: 834 Lot: 1 Witnessed By: Heather Johnson, CMC

Depth	Munsel Code	Color	Texture	Structure	Consistency	Mottles	Mottle Color	Mottle Abundance	Size	Contrast	Water	Percent CF
0" - 23"			fill	subangular blocky								
23" - 24"	10YR2/1	black	sand	subangular blocky								
24" - 42"	10YR5/1	gray	sand	subangular blocky								
42" - 69"	10YR4/1 & 10YR2/1	dark gray & black	sand	subangular blocky	moist						69"	
80" - 130"	10YR3/1	very dark gray	meadowmat	subangular blocky								

Depth to SHGW: 42"

Depth to GW: 69"

Performed By: Water's Edge Environmental, LLC

Date: 3/4/2020

Test Pit Results
Block 834
Lot 1
Upper Twp., Cape May Co., NJ
WEE 1725

Test Pit # 4 (Sherman Ave) WEE #1725 - Strathmere, Upper Township, Cape May County, Block: 834 Lot: 1 Witnessed By: Heather Johnson, CMC

Depth	Munsel Code	Color	Texture	Structure	Consistency	Mottles	Mottle Color	Mottle Abundance	Size	Contrast	Water	Percent CF
0" - 7"			topsoil									
7" - 13"	10YR5/4	yellowish brown		subangular blocky								
13" - 20"	10YR5/3 & 10YR6/6	brown & brownish yellow	sand	subangular blocky								
20" - 29"	10YR5/1	gray	sand	subangular blocky								
30" - 34"			shells & brick									
34" - 36"	10YR5/1	gray		subangular blocky								
36" - 60"	10YR5/1	gray	sand, damp	subangular blocky							61"	
Required depth of 10 feet could not be safely achieved due to caving and instability of excavation												

Depth to SHGW: 34"

Depth to GW: 61"

Performed By: Water's Edge Environmental, LLC

Date: 3/4/2020

DRAINAGE CALCULATIONS

Drainage Diagram for 220003 Maloney DA 1 2yr Predeveloped
Prepared by Forest Bruce Associates
HydroCAD® 7.10 s/n 00192 © 2005 HydroCAD Software Solutions LLC

Time span=0.00-36.00 hrs, dt=0.25 hrs, 145 points
Runoff by SCS TR-20 method, UH=Delmarva
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA 1: Runoff Area=1,735 sf Runoff Depth=2.54"
Flow Length=53' Tc=10.0 min CN=93 Runoff=0.07 cfs 0.008 af

Total Runoff Area = 0.040 ac Runoff Volume = 0.008 af Average Runoff Depth = 2.54"

Subcatchment DA 1:

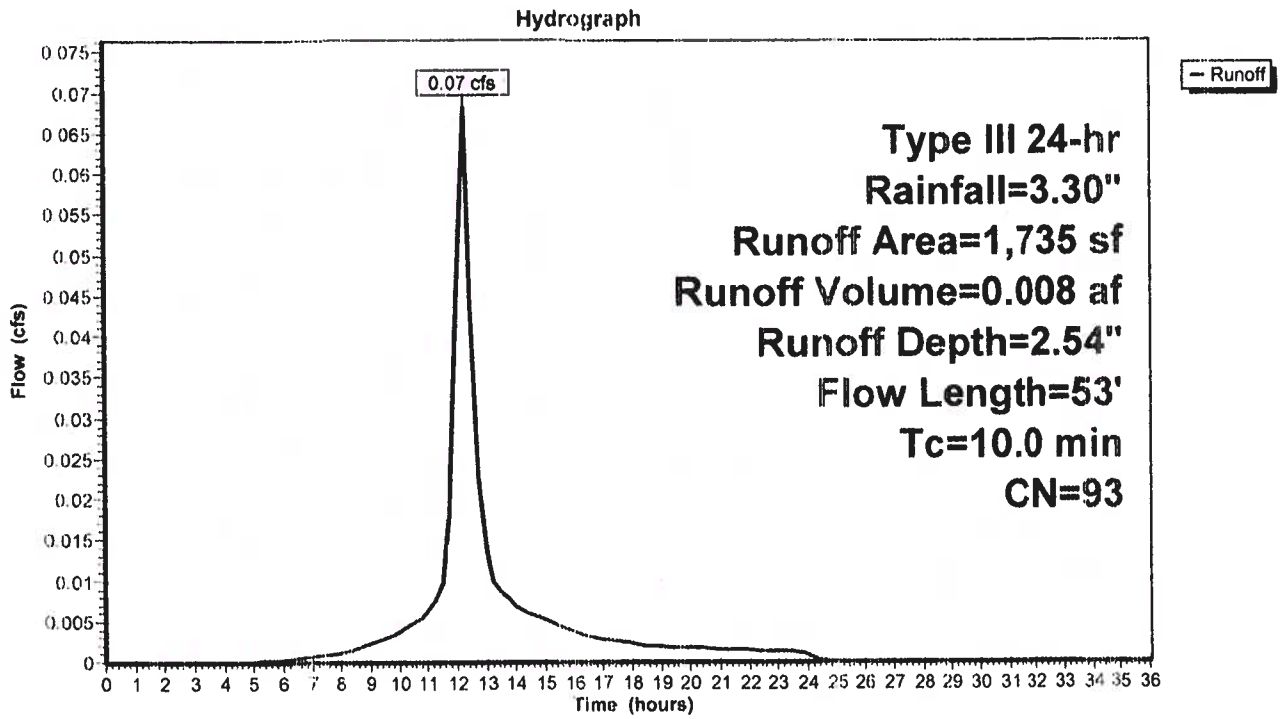
Runoff = 0.07 cfs @ 12.24 hrs, Volume= 0.008 af, Depth= 2.54"

Runoff by SCS TR-20 method, UH=Delmarva, Time Span= 0.00-36.00 hrs, dt= 0.25 hrs
Type III 24-hr Rainfall=3.30"

Area (sf)	CN	Description
1,554	98	Roofs HSG A
181	49	50-75% Grass cover, Fair, HSG A
1,735	93	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	53	0.0100	0.9		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
0.9	53	Total, Increased to minimum Tc = 10.0 min			

Subcatchment DA 1:



Hydrograph for Subcatchment DA 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	13.00	2.47	1.76	0.01
0.25	0.01	0.00	0.00	13.25	2.53	1.81	0.01
0.50	0.02	0.00	0.00	13.50	2.59	1.86	0.01
0.75	0.02	0.00	0.00	13.75	2.63	1.91	0.01
1.00	0.03	0.00	0.00	14.00	2.68	1.95	0.01
1.25	0.04	0.00	0.00	14.25	2.72	1.98	0.01
1.50	0.05	0.00	0.00	14.50	2.75	2.02	0.01
1.75	0.06	0.00	0.00	14.75	2.79	2.05	0.01
2.00	0.07	0.00	0.00	15.00	2.82	2.08	0.01
2.25	0.07	0.00	0.00	15.25	2.85	2.11	0.00
2.50	0.08	0.00	0.00	15.50	2.88	2.14	0.00
2.75	0.09	0.00	0.00	15.75	2.90	2.16	0.00
3.00	0.10	0.00	0.00	16.00	2.92	2.18	0.00
3.25	0.11	0.00	0.00	16.25	2.94	2.20	0.00
3.50	0.12	0.00	0.00	16.50	2.96	2.22	0.00
3.75	0.13	0.00	0.00	16.75	2.98	2.24	0.00
4.00	0.14	0.00	0.00	17.00	3.00	2.26	0.00
4.25	0.15	0.00	0.00	17.25	3.02	2.27	0.00
4.50	0.16	0.00	0.00	17.50	3.03	2.29	0.00
4.75	0.18	0.00	0.00	17.75	3.05	2.30	0.00
5.00	0.19	0.00	0.00	18.00	3.06	2.31	0.00
5.25	0.20	0.00	0.00	18.25	3.08	2.33	0.00
5.50	0.21	0.00	0.00	18.50	3.09	2.34	0.00
5.75	0.22	0.01	0.00	18.75	3.10	2.35	0.00
6.00	0.24	0.01	0.00	19.00	3.11	2.36	0.00
6.25	0.25	0.01	0.00	19.25	3.12	2.37	0.00
6.50	0.27	0.02	0.00	19.50	3.14	2.38	0.00
6.75	0.28	0.02	0.00	19.75	3.15	2.40	0.00
7.00	0.30	0.02	0.00	20.00	3.16	2.41	0.00
7.25	0.32	0.03	0.00	20.25	3.17	2.42	0.00
7.50	0.34	0.04	0.00	20.50	3.18	2.43	0.00
7.75	0.36	0.04	0.00	20.75	3.19	2.44	0.00
8.00	0.38	0.05	0.00	21.00	3.20	2.44	0.00
8.25	0.40	0.06	0.00	21.25	3.21	2.45	0.00
8.50	0.42	0.07	0.00	21.50	3.22	2.46	0.00
8.75	0.45	0.09	0.00	21.75	3.23	2.47	0.00
9.00	0.48	0.10	0.00	22.00	3.24	2.48	0.00
9.25	0.51	0.12	0.00	22.25	3.25	2.49	0.00
9.50	0.55	0.14	0.00	22.50	3.25	2.50	0.00
9.75	0.58	0.16	0.00	22.75	3.26	2.51	0.00
10.00	0.62	0.18	0.00	23.00	3.27	2.51	0.00
10.25	0.67	0.21	0.00	23.25	3.28	2.52	0.00
10.50	0.71	0.24	0.00	23.50	3.29	2.53	0.00
10.75	0.77	0.28	0.01	23.75	3.29	2.54	0.00
11.00	0.83	0.32	0.01	24.00	**3.30**	**2.54**	0.00
11.25	0.89	0.37	0.01	24.25	3.30	2.54	0.00
11.50	0.98	0.44	0.01	24.50	3.30	2.54	0.00
11.75	1.17	0.59	0.02	24.75	3.30	2.54	0.00
12.00	1.65	1.00	0.05	25.00	3.30	2.54	0.00
12.25	2.13	1.43	**0.07**	25.25	3.30	2.54	0.00
12.50	2.32	1.61	0.04	25.50	3.30	2.54	0.00
12.75	2.41	1.69	0.02	25.75	3.30	2.54	0.00

Hydrograph for Subcatchment DA 1: (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
26.00	3.30	2.54	0.00
26.25	3.30	2.54	0.00
26.50	3.30	2.54	0.00
26.75	3.30	2.54	0.00
27.00	3.30	2.54	0.00
27.25	3.30	2.54	0.00
27.50	3.30	2.54	0.00
27.75	3.30	2.54	0.00
28.00	3.30	2.54	0.00
28.25	3.30	2.54	0.00
28.50	3.30	2.54	0.00
28.75	3.30	2.54	0.00
29.00	3.30	2.54	0.00
29.25	3.30	2.54	0.00
29.50	3.30	2.54	0.00
29.75	3.30	2.54	0.00
30.00	3.30	2.54	0.00
30.25	3.30	2.54	0.00
30.50	3.30	2.54	0.00
30.75	3.30	2.54	0.00
31.00	3.30	2.54	0.00
31.25	3.30	2.54	0.00
31.50	3.30	2.54	0.00
31.75	3.30	2.54	0.00
32.00	3.30	2.54	0.00
32.25	3.30	2.54	0.00
32.50	3.30	2.54	0.00
32.75	3.30	2.54	0.00
33.00	3.30	2.54	0.00
33.25	3.30	2.54	0.00
33.50	3.30	2.54	0.00
33.75	3.30	2.54	0.00
34.00	3.30	2.54	0.00
34.25	3.30	2.54	0.00
34.50	3.30	2.54	0.00
34.75	3.30	2.54	0.00
35.00	3.30	2.54	0.00
35.25	3.30	2.54	0.00
35.50	3.30	2.54	0.00
35.75	3.30	2.54	0.00
36.00	3.30	2.54	0.00

Drainage Diagram for 220003 Maloney DA 1 10 yr Predeveloped
Prepared by Robert Bruce Associates 6/3/2020
HydroCAD® 7.10 s/n 001102 © 2005 HydroCAD Software Solutions LLC

Time span=0.00-36.00 hrs, dt=0.25 hrs, 145 points
Runoff by SCS TR-20 method, UH=Delmarva
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA 1: Runoff Area=1,735 sf Runoff Depth=4.39"
Flow Length=53' Tc=10.0 min CN=93 Runoff=0.11 cfs 0.015 af

Total Runoff Area = 0.040 ac Runoff Volume = 0.015 af Average Runoff Depth = 4.39"

Subcatchment DA 1:

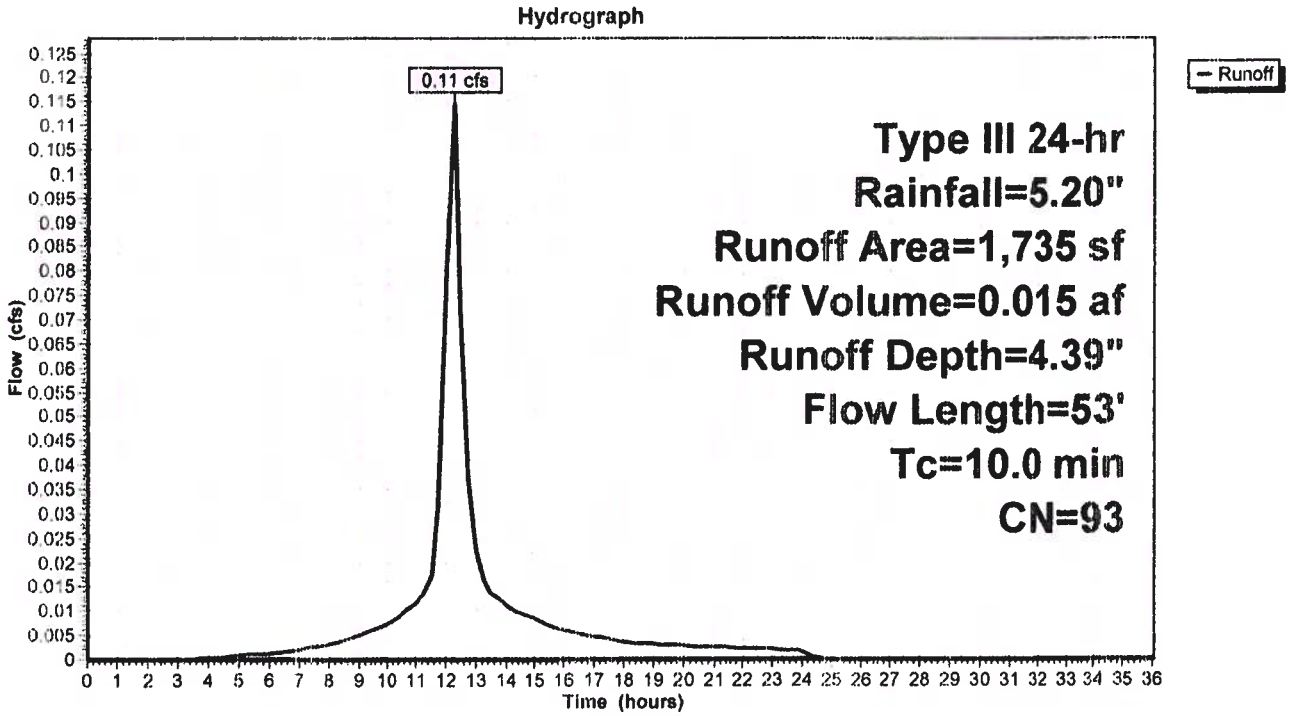
Runoff = 0.11 cfs @ 12.24 hrs, Volume= 0.015 af, Depth= 4.39"

Runoff by SCS TR-20 method, UH=Delmarva, Time Span= 0.00-36.00 hrs, dt= 0.25 hrs
Type III 24-hr Rainfall=5.20"

Area (sf)	CN	Description
1,554	98	Roofs HSG A
181	49	50-75% Grass cover, Fair, HSG A
1,735	93	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	53	0.0100	0.9		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
0.9	53	Total, Increased to minimum Tc = 10.0 min			

Subcatchment DA 1:



Hydrograph for Subcatchment DA 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	13.00	3.90	3.12	0.02
0.25	0.01	0.00	0.00	13.25	3.99	3.21	0.02
0.50	0.03	0.00	0.00	13.50	4.07	3.29	0.01
0.75	0.04	0.00	0.00	13.75	4.15	3.37	0.01
1.00	0.05	0.00	0.00	14.00	4.22	3.43	0.01
1.25	0.06	0.00	0.00	14.25	4.28	3.49	0.01
1.50	0.08	0.00	0.00	14.50	4.34	3.55	0.01
1.75	0.09	0.00	0.00	14.75	4.39	3.60	0.01
2.00	0.10	0.00	0.00	15.00	4.44	3.65	0.01
2.25	0.12	0.00	0.00	15.25	4.49	3.70	0.01
2.50	0.13	0.00	0.00	15.50	4.53	3.74	0.01
2.75	0.15	0.00	0.00	15.75	4.57	3.78	0.01
3.00	0.16	0.00	0.00	16.00	4.61	3.81	0.01
3.25	0.18	0.00	0.00	16.25	4.64	3.85	0.01
3.50	0.19	0.00	0.00	16.50	4.67	3.88	0.01
3.75	0.21	0.00	0.00	16.75	4.70	3.90	0.00
4.00	0.22	0.01	0.00	17.00	4.73	3.93	0.00
4.25	0.24	0.01	0.00	17.25	4.76	3.96	0.00
4.50	0.26	0.01	0.00	17.50	4.78	3.98	0.00
4.75	0.28	0.02	0.00	17.75	4.80	4.01	0.00
5.00	0.30	0.02	0.00	18.00	4.83	4.03	0.00
5.25	0.31	0.03	0.00	18.25	4.85	4.05	0.00
5.50	0.33	0.04	0.00	18.50	4.87	4.07	0.00
5.75	0.35	0.04	0.00	18.75	4.89	4.09	0.00
6.00	0.37	0.05	0.00	19.00	4.90	4.10	0.00
6.25	0.40	0.06	0.00	19.25	4.92	4.12	0.00
6.50	0.42	0.07	0.00	19.50	4.94	4.14	0.00
6.75	0.44	0.08	0.00	19.75	4.96	4.16	0.00
7.00	0.47	0.10	0.00	20.00	4.98	4.17	0.00
7.25	0.50	0.11	0.00	20.25	4.99	4.19	0.00
7.50	0.53	0.13	0.00	20.50	5.01	4.21	0.00
7.75	0.56	0.14	0.00	20.75	5.03	4.22	0.00
8.00	0.59	0.16	0.00	21.00	5.04	4.24	0.00
8.25	0.63	0.19	0.00	21.25	5.06	4.25	0.00
8.50	0.67	0.21	0.00	21.50	5.07	4.27	0.00
8.75	0.71	0.24	0.00	21.75	5.09	4.28	0.00
9.00	0.76	0.27	0.00	22.00	5.10	4.30	0.00
9.25	0.81	0.31	0.01	22.25	5.11	4.31	0.00
9.50	0.86	0.35	0.01	22.50	5.13	4.32	0.00
9.75	0.92	0.39	0.01	22.75	5.14	4.34	0.00
10.00	0.98	0.44	0.01	23.00	5.15	4.35	0.00
10.25	1.05	0.49	0.01	23.25	5.17	4.36	0.00
10.50	1.13	0.55	0.01	23.50	5.18	4.37	0.00
10.75	1.21	0.62	0.01	23.75	5.19	4.38	0.00
11.00	1.30	0.69	0.01	24.00	**5.20**	**4.39**	0.00
11.25	1.41	0.79	0.01	24.25	5.20	4.39	0.00
11.50	1.55	0.91	0.02	24.50	5.20	4.39	0.00
11.75	1.85	1.18	0.03	24.75	5.20	4.39	0.00
12.00	2.60	1.87	0.08	25.00	5.20	4.39	0.00
12.25	3.35	2.59	**0.11**	25.25	5.20	4.39	0.00
12.50	3.65	2.88	0.07	25.50	5.20	4.39	0.00
12.75	3.79	3.02	0.04	25.75	5.20	4.39	0.00

Hydrograph for Subcatchment DA 1: (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
26.00	5.20	4.39	0.00
26.25	5.20	4.39	0.00
26.50	5.20	4.39	0.00
26.75	5.20	4.39	0.00
27.00	5.20	4.39	0.00
27.25	5.20	4.39	0.00
27.50	5.20	4.39	0.00
27.75	5.20	4.39	0.00
28.00	5.20	4.39	0.00
28.25	5.20	4.39	0.00
28.50	5.20	4.39	0.00
28.75	5.20	4.39	0.00
29.00	5.20	4.39	0.00
29.25	5.20	4.39	0.00
29.50	5.20	4.39	0.00
29.75	5.20	4.39	0.00
30.00	5.20	4.39	0.00
30.25	5.20	4.39	0.00
30.50	5.20	4.39	0.00
30.75	5.20	4.39	0.00
31.00	5.20	4.39	0.00
31.25	5.20	4.39	0.00
31.50	5.20	4.39	0.00
31.75	5.20	4.39	0.00
32.00	5.20	4.39	0.00
32.25	5.20	4.39	0.00
32.50	5.20	4.39	0.00
32.75	5.20	4.39	0.00
33.00	5.20	4.39	0.00
33.25	5.20	4.39	0.00
33.50	5.20	4.39	0.00
33.75	5.20	4.39	0.00
34.00	5.20	4.39	0.00
34.25	5.20	4.39	0.00
34.50	5.20	4.39	0.00
34.75	5.20	4.39	0.00
35.00	5.20	4.39	0.00
35.25	5.20	4.39	0.00
35.50	5.20	4.39	0.00
35.75	5.20	4.39	0.00
36.00	5.20	4.39	0.00

Drainage Diagram for 220003 Maloney DA 1 100 yr Predeveloped
Prepared by Robert Bruce Associates 6/3/2020
HydroCAD® 7.10 s/n 001102 © 2005 HydroCAD Software Solutions LLC

Time span=0.00-36.00 hrs, dt=0.25 hrs, 145 points
Runoff by SCS TR-20 method, UH=Delmarva
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA 1: Runoff Area=1,735 sf Runoff Depth=8.06"
Flow Length=53' Tc=10.0 min CN=93 Runoff=0.20 cfs 0.027 af

Total Runoff Area = 0.040 ac Runoff Volume = 0.027 af Average Runoff Depth = 8.06"

Subcatchment DA 1:

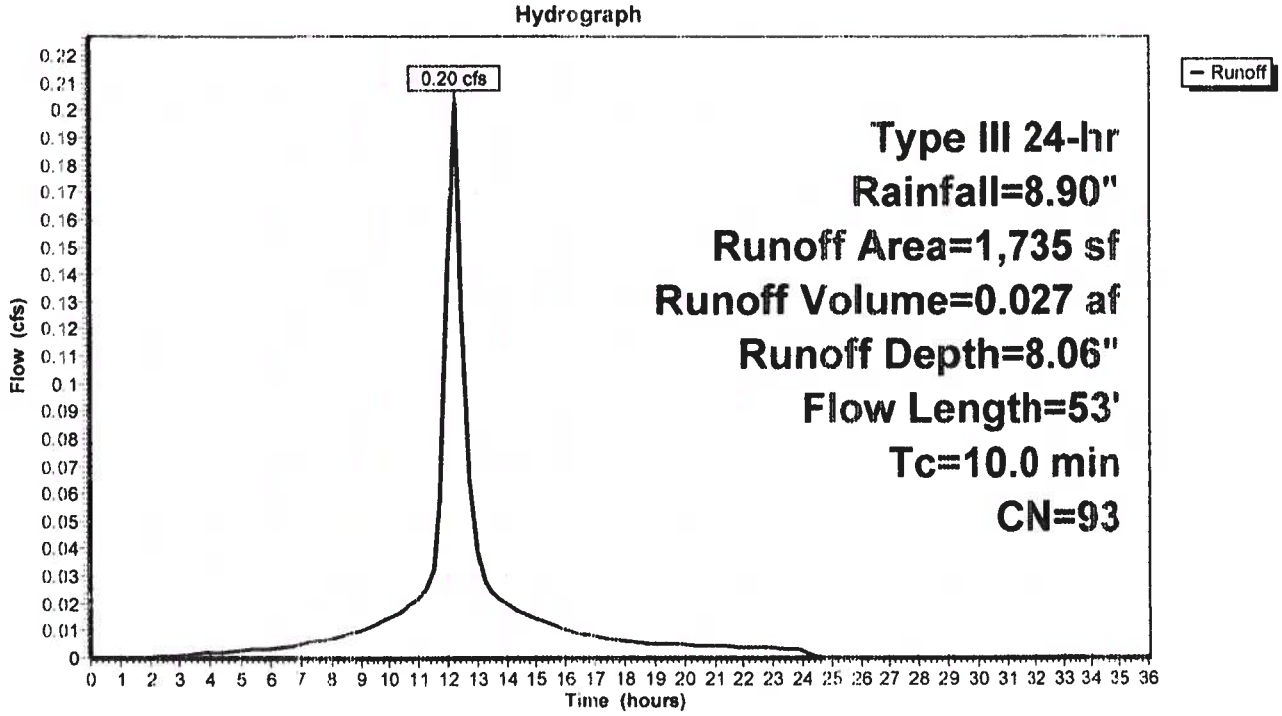
Runoff = 0.20 cfs @ 12.24 hrs, Volume= 0.027 af, Depth= 8.06"

Runoff by SCS TR-20 method, UH=Delmarva, Time Span= 0.00-36.00 hrs, dt= 0.25 hrs
Type III 24-hr Rainfall=8.90"

Area (sf)	CN	Description
1,554	98	Roofs HSG A
181	49	50-75% Grass cover, Fair, HSG A
1,735	93	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	53	0.0100	0.9		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
0.9	53	Total, Increased to minimum Tc = 10.0 min			

Subcatchment DA 1:



Hydrograph for Subcatchment DA 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	13.00	6.67	5.85	0.04
0.25	0.02	0.00	0.00	13.25	6.83	6.00	0.03
0.50	0.04	0.00	0.00	13.50	6.97	6.14	0.02
0.75	0.07	0.00	0.00	13.75	7.10	6.27	0.02
1.00	0.09	0.00	0.00	14.00	7.22	6.39	0.02
1.25	0.11	0.00	0.00	14.25	7.32	6.49	0.02
1.50	0.13	0.00	0.00	14.50	7.42	6.59	0.02
1.75	0.16	0.00	0.00	14.75	7.52	6.68	0.02
2.00	0.18	0.00	0.00	15.00	7.60	6.77	0.01
2.25	0.20	0.00	0.00	15.25	7.68	6.85	0.01
2.50	0.22	0.01	0.00	15.50	7.76	6.92	0.01
2.75	0.25	0.01	0.00	15.75	7.82	6.99	0.01
3.00	0.27	0.02	0.00	16.00	7.89	7.05	0.01
3.25	0.30	0.02	0.00	16.25	7.94	7.10	0.01
3.50	0.33	0.03	0.00	16.50	8.00	7.16	0.01
3.75	0.35	0.04	0.00	16.75	8.05	7.21	0.01
4.00	0.38	0.05	0.00	17.00	8.09	7.26	0.01
4.25	0.41	0.07	0.00	17.25	8.14	7.30	0.01
4.50	0.44	0.08	0.00	17.50	8.18	7.34	0.01
4.75	0.47	0.10	0.00	17.75	8.22	7.38	0.01
5.00	0.51	0.11	0.00	18.00	8.26	7.42	0.01
5.25	0.54	0.13	0.00	18.25	8.29	7.45	0.01
5.50	0.57	0.15	0.00	18.50	8.33	7.49	0.01
5.75	0.61	0.17	0.00	18.75	8.36	7.52	0.01
6.00	0.64	0.19	0.00	19.00	8.39	7.55	0.01
6.25	0.68	0.22	0.00	19.25	8.43	7.59	0.01
6.50	0.72	0.24	0.00	19.50	8.46	7.62	0.01
6.75	0.76	0.27	0.00	19.75	8.49	7.65	0.00
7.00	0.81	0.30	0.00	20.00	8.52	7.68	0.00
7.25	0.85	0.34	0.01	20.25	8.55	7.70	0.00
7.50	0.90	0.38	0.01	20.50	8.57	7.73	0.00
7.75	0.96	0.42	0.01	20.75	8.60	7.76	0.00
8.00	1.01	0.46	0.01	21.00	8.63	7.79	0.00
8.25	1.08	0.51	0.01	21.25	8.65	7.81	0.00
8.50	1.14	0.56	0.01	21.50	8.68	7.84	0.00
8.75	1.22	0.63	0.01	21.75	8.70	7.86	0.00
9.00	1.30	0.69	0.01	22.00	8.73	7.89	0.00
9.25	1.38	0.77	0.01	22.25	8.75	7.91	0.00
9.50	1.48	0.85	0.01	22.50	8.78	7.93	0.00
9.75	1.58	0.93	0.01	22.75	8.80	7.95	0.00
10.00	1.68	1.03	0.01	23.00	8.82	7.98	0.00
10.25	1.80	1.13	0.02	23.25	8.84	8.00	0.00
10.50	1.93	1.25	0.02	23.50	8.86	8.02	0.00
10.75	2.07	1.38	0.02	23.75	8.88	8.04	0.00
11.00	2.23	1.52	0.02	24.00	**8.90**	**8.06**	0.00
11.25	2.41	1.70	0.03	24.25	8.90	8.06	0.00
11.50	2.65	1.92	0.03	24.50	8.90	8.06	0.00
11.75	3.16	2.41	0.06	24.75	8.90	8.06	0.00
12.00	4.45	3.66	0.14	25.00	8.90	8.06	0.00
12.25	5.74	4.92	**0.20**	25.25	8.90	8.06	0.00
12.50	6.25	5.43	0.13	25.50	8.90	8.06	0.00
12.75	6.49	5.66	0.06	25.75	8.90	8.06	0.00

Routing Diagram for 220003 Maloney DA 2 2 yr Predeveloped
Prepared by rba, Printed 6/3/2020
HydroCAD® 10.00-15 s/n 01102 © 2015 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.060	49	50-75% Grass cover, Fair, HSG A (DA 2)
0.128	96	Gravel surface, HSG A (DA 2)
0.023	98	Roofs HSG A (DA 2)
0.211	**83**	**TOTAL AREA**

Summary for Subcatchment DA 2:

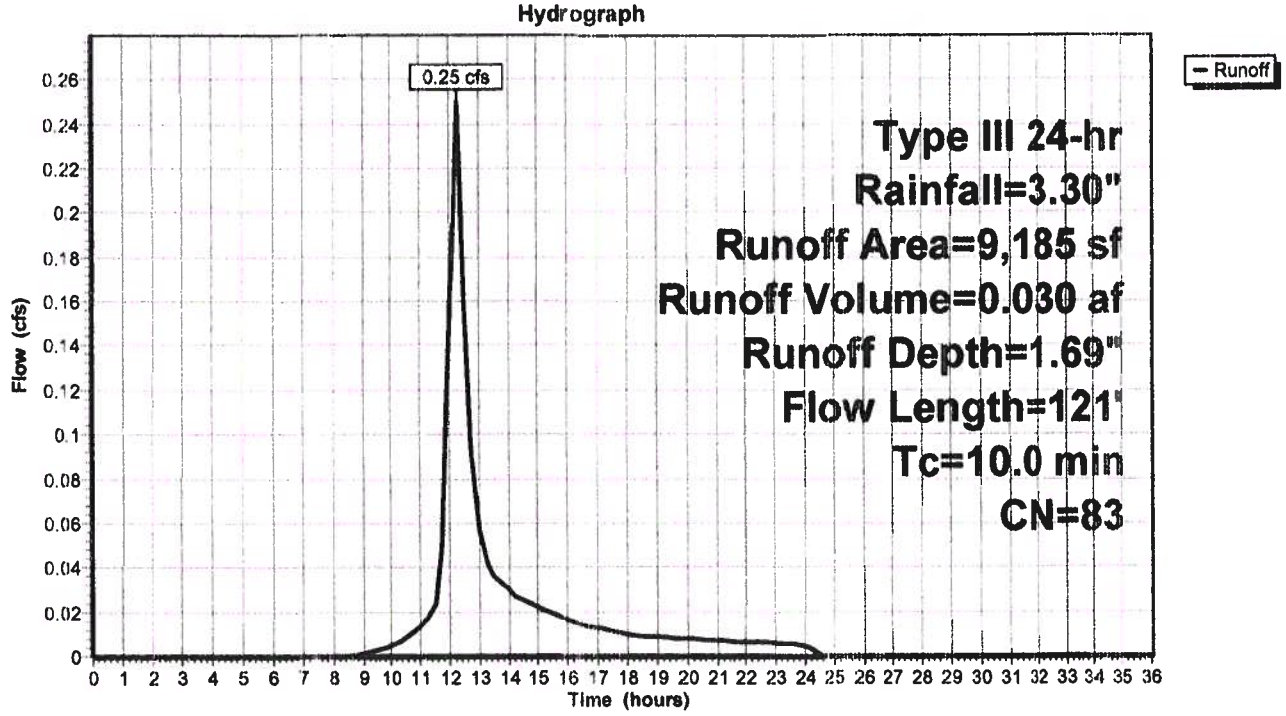
Runoff = 0.25 cfs @ 12.26 hrs, Volume= 0.030 af, Depth= 1.69"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.25 hrs
Type III 24-hr Rainfall=3.30"

	Area (sf)	CN	Description
*	982	98	Roofs HSG A
	5,568	96	Gravel surface, HSG A
	2,635	49	50-75% Grass cover, Fair, HSG A
	9,185	83	Weighted Average
	8,203		89.31% Pervious Area
	982		10.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	36	0.0140	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
0.7	85	0.0190	2.18		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 8.90"
5.6	121	Total, Increased to minimum Tc = 10.0 min			

Subcatchment DA 2:

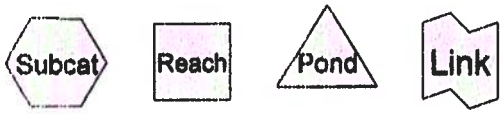


Hydrograph for Subcatchment DA 2:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.00	2.47	1.04	0.06
0.25	0.01	0.00	0.00	13.25	2.53	1.08	0.04
0.50	0.02	0.00	0.00	13.50	2.59	1.12	0.04
0.75	0.02	0.00	0.00	13.75	2.63	1.16	0.03
1.00	0.03	0.00	0.00	14.00	2.68	1.19	0.03
1.25	0.04	0.00	0.00	14.25	2.72	1.22	0.03
1.50	0.05	0.00	0.00	14.50	2.75	1.25	0.03
1.75	0.06	0.00	0.00	14.75	2.79	1.28	0.02
2.00	0.07	0.00	0.00	15.00	2.82	1.30	0.02
2.25	0.07	0.00	0.00	15.25	2.85	1.33	0.02
2.50	0.08	0.00	0.00	15.50	2.88	1.35	0.02
2.75	0.09	0.00	0.00	15.75	2.90	1.37	0.02
3.00	0.10	0.00	0.00	16.00	2.92	1.39	0.02
3.25	0.11	0.00	0.00	16.25	2.94	1.40	0.01
3.50	0.12	0.00	0.00	16.50	2.96	1.42	0.01
3.75	0.13	0.00	0.00	16.75	2.98	1.43	0.01
4.00	0.14	0.00	0.00	17.00	3.00	1.45	0.01
4.25	0.15	0.00	0.00	17.25	3.02	1.46	0.01
4.50	0.16	0.00	0.00	17.50	3.03	1.47	0.01
4.75	0.18	0.00	0.00	17.75	3.05	1.49	0.01
5.00	0.19	0.00	0.00	18.00	3.06	1.50	0.01
5.25	0.20	0.00	0.00	18.25	3.08	1.51	0.01
5.50	0.21	0.00	0.00	18.50	3.09	1.52	0.01
5.75	0.22	0.00	0.00	18.75	3.10	1.53	0.01
6.00	0.24	0.00	0.00	19.00	3.11	1.54	0.01
6.25	0.25	0.00	0.00	19.25	3.12	1.55	0.01
6.50	0.27	0.00	0.00	19.50	3.14	1.56	0.01
6.75	0.28	0.00	0.00	19.75	3.15	1.57	0.01
7.00	0.30	0.00	0.00	20.00	3.16	1.57	0.01
7.25	0.32	0.00	0.00	20.25	3.17	1.58	0.01
7.50	0.34	0.00	0.00	20.50	3.18	1.59	0.01
7.75	0.36	0.00	0.00	20.75	3.19	1.60	0.01
8.00	0.38	0.00	0.00	21.00	3.20	1.61	0.01
8.25	0.40	0.00	0.00	21.25	3.21	1.62	0.01
8.50	0.42	0.00	0.00	21.50	3.22	1.62	0.01
8.75	0.45	0.00	0.00	21.75	3.23	1.63	0.01
9.00	0.48	0.00	0.00	22.00	3.24	1.64	0.01
9.25	0.51	0.00	0.00	22.25	3.25	1.65	0.01
9.50	0.55	0.01	0.00	22.50	3.25	1.65	0.01
9.75	0.58	0.01	0.00	22.75	3.26	1.66	0.01
10.00	0.62	0.02	0.00	23.00	3.27	1.67	0.01
10.25	0.67	0.03	0.01	23.25	3.28	1.67	0.01
10.50	0.71	0.04	0.01	23.50	3.29	1.68	0.01
10.75	0.77	0.05	0.01	23.75	3.29	1.69	0.01
11.00	0.83	0.07	0.01	24.00	**3.30**	**1.69**	0.00
11.25	0.89	0.09	0.02	24.25	3.30	1.69	0.00
11.50	0.98	0.13	0.02	24.50	3.30	1.69	0.00
11.75	1.17	0.21	0.05	24.75	3.30	1.69	0.00
12.00	1.65	0.47	0.15	25.00	3.30	1.69	0.00
12.25	2.13	0.78	**0.25**	25.25	3.30	1.69	0.00
12.50	2.32	0.92	0.17	25.50	3.30	1.69	0.00
12.75	2.41	0.98	0.09	25.75	3.30	1.69	0.00

Hydrograph for Subcatchment DA 2: (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
26.00	3.30	1.69	0.00
26.25	3.30	1.69	0.00
26.50	3.30	1.69	0.00
26.75	3.30	1.69	0.00
27.00	3.30	1.69	0.00
27.25	3.30	1.69	0.00
27.50	3.30	1.69	0.00
27.75	3.30	1.69	0.00
28.00	3.30	1.69	0.00
28.25	3.30	1.69	0.00
28.50	3.30	1.69	0.00
28.75	3.30	1.69	0.00
29.00	3.30	1.69	0.00
29.25	3.30	1.69	0.00
29.50	3.30	1.69	0.00
29.75	3.30	1.69	0.00
30.00	3.30	1.69	0.00
30.25	3.30	1.69	0.00
30.50	3.30	1.69	0.00
30.75	3.30	1.69	0.00
31.00	3.30	1.69	0.00
31.25	3.30	1.69	0.00
31.50	3.30	1.69	0.00
31.75	3.30	1.69	0.00
32.00	3.30	1.69	0.00
32.25	3.30	1.69	0.00
32.50	3.30	1.69	0.00
32.75	3.30	1.69	0.00
33.00	3.30	1.69	0.00
33.25	3.30	1.69	0.00
33.50	3.30	1.69	0.00
33.75	3.30	1.69	0.00
34.00	3.30	1.69	0.00
34.25	3.30	1.69	0.00
34.50	3.30	1.69	0.00
34.75	3.30	1.69	0.00
35.00	3.30	1.69	0.00
35.25	3.30	1.69	0.00
35.50	3.30	1.69	0.00
35.75	3.30	1.69	0.00
36.00	3.30	1.69	0.00



Routing Diagram for 220003 Maloney DA 2 10 yr Predeveloped
Prepared by rba, Printed 6/3/2020
HydroCAD® 10.00-15 s/n 01102 © 2015 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.060	49	50-75% Grass cover, Fair, HSG A (DA 2)
0.128	96	Gravel surface, HSG A (DA 2)
0.023	98	Roofs HSG A (DA 2)
0.211	**83**	**TOTAL AREA**

Summary for Subcatchment DA 2:

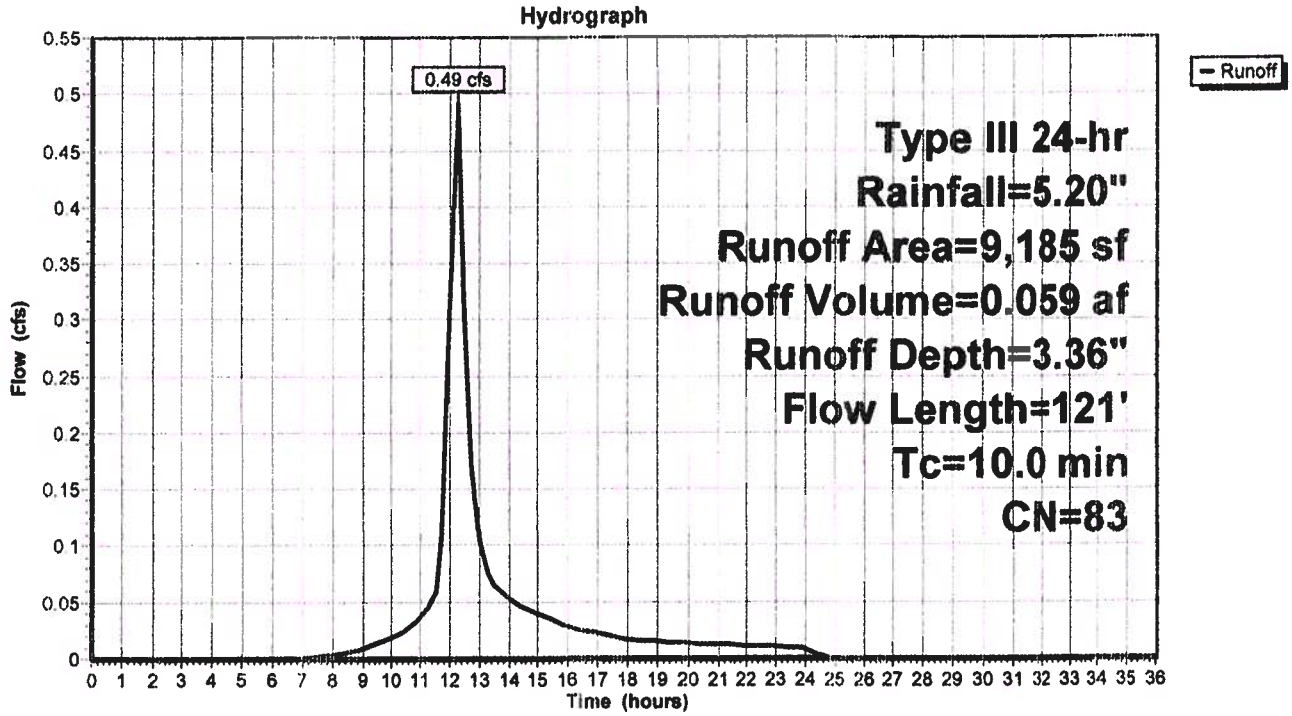
Runoff = 0.49 cfs @ 12.25 hrs, Volume= 0.059 af, Depth= 3.36"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.25 hrs
Type III 24-hr Rainfall=5.20"

	Area (sf)	CN	Description
*	982	98	Roofs HSG A
	5,568	96	Gravel surface, HSG A
	2,635	49	50-75% Grass cover, Fair, HSG A
	9,185	83	Weighted Average
	8,203		89.31% Pervious Area
	982		10.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	36	0.0140	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
0.7	85	0.0190	2.18		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 8.90"
5.6	121	Total, Increased to minimum Tc = 10.0 min			

Subcatchment DA 2:



Hydrograph for Subcatchment DA 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	13.00	3.90	2.20	0.10
0.25	0.01	0.00	0.00	13.25	3.99	2.28	0.08
0.50	0.03	0.00	0.00	13.50	4.07	2.35	0.07
0.75	0.04	0.00	0.00	13.75	4.15	2.42	0.06
1.00	0.05	0.00	0.00	14.00	4.22	2.48	0.05
1.25	0.06	0.00	0.00	14.25	4.28	2.53	0.05
1.50	0.08	0.00	0.00	14.50	4.34	2.58	0.05
1.75	0.09	0.00	0.00	14.75	4.39	2.63	0.04
2.00	0.10	0.00	0.00	15.00	4.44	2.67	0.04
2.25	0.12	0.00	0.00	15.25	4.49	2.72	0.04
2.50	0.13	0.00	0.00	15.50	4.53	2.75	0.03
2.75	0.15	0.00	0.00	15.75	4.57	2.79	0.03
3.00	0.16	0.00	0.00	16.00	4.61	2.82	0.03
3.25	0.18	0.00	0.00	16.25	4.64	2.85	0.03
3.50	0.19	0.00	0.00	16.50	4.67	2.88	0.02
3.75	0.21	0.00	0.00	16.75	4.70	2.91	0.02
4.00	0.22	0.00	0.00	17.00	4.73	2.93	0.02
4.25	0.24	0.00	0.00	17.25	4.76	2.95	0.02
4.50	0.26	0.00	0.00	17.50	4.78	2.98	0.02
4.75	0.28	0.00	0.00	17.75	4.80	3.00	0.02
5.00	0.30	0.00	0.00	18.00	4.83	3.02	0.02
5.25	0.31	0.00	0.00	18.25	4.85	3.04	0.02
5.50	0.33	0.00	0.00	18.50	4.87	3.05	0.02
5.75	0.35	0.00	0.00	18.75	4.89	3.07	0.02
6.00	0.37	0.00	0.00	19.00	4.90	3.09	0.01
6.25	0.40	0.00	0.00	19.25	4.92	3.10	0.01
6.50	0.42	0.00	0.00	19.50	4.94	3.12	0.01
6.75	0.44	0.00	0.00	19.75	4.96	3.14	0.01
7.00	0.47	0.00	0.00	20.00	4.98	3.15	0.01
7.25	0.50	0.00	0.00	20.25	4.99	3.17	0.01
7.50	0.53	0.01	0.00	20.50	5.01	3.18	0.01
7.75	0.56	0.01	0.00	20.75	5.03	3.20	0.01
8.00	0.59	0.02	0.00	21.00	5.04	3.21	0.01
8.25	0.63	0.02	0.00	21.25	5.06	3.23	0.01
8.50	0.67	0.03	0.01	21.50	5.07	3.24	0.01
8.75	0.71	0.04	0.01	21.75	5.09	3.25	0.01
9.00	0.76	0.05	0.01	22.00	5.10	3.26	0.01
9.25	0.81	0.07	0.01	22.25	5.11	3.28	0.01
9.50	0.86	0.08	0.01	22.50	5.13	3.29	0.01
9.75	0.92	0.10	0.02	22.75	5.14	3.30	0.01
10.00	0.98	0.13	0.02	23.00	5.15	3.31	0.01
10.25	1.05	0.15	0.02	23.25	5.17	3.32	0.01
10.50	1.13	0.19	0.03	23.50	5.18	3.33	0.01
10.75	1.21	0.22	0.03	23.75	5.19	3.35	0.01
11.00	1.30	0.27	0.04	24.00	**5.20**	**3.36**	0.01
11.25	1.41	0.33	0.04	24.25	5.20	3.36	0.00
11.50	1.55	0.41	0.06	24.50	5.20	3.36	0.00
11.75	1.85	0.59	0.12	24.75	5.20	3.36	0.00
12.00	2.60	1.13	0.31	25.00	5.20	3.36	0.00
12.25	3.35	1.74	**0.49**	25.25	5.20	3.36	0.00
12.50	3.65	1.99	0.32	25.50	5.20	3.36	0.00
12.75	3.79	2.11	0.17	25.75	5.20	3.36	0.00

Hydrograph for Subcatchment DA 2: (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
26.00	5.20	3.36	0.00
26.25	5.20	3.36	0.00
26.50	5.20	3.36	0.00
26.75	5.20	3.36	0.00
27.00	5.20	3.36	0.00
27.25	5.20	3.36	0.00
27.50	5.20	3.36	0.00
27.75	5.20	3.36	0.00
28.00	5.20	3.36	0.00
28.25	5.20	3.36	0.00
28.50	5.20	3.36	0.00
28.75	5.20	3.36	0.00
29.00	5.20	3.36	0.00
29.25	5.20	3.36	0.00
29.50	5.20	3.36	0.00
29.75	5.20	3.36	0.00
30.00	5.20	3.36	0.00
30.25	5.20	3.36	0.00
30.50	5.20	3.36	0.00
30.75	5.20	3.36	0.00
31.00	5.20	3.36	0.00
31.25	5.20	3.36	0.00
31.50	5.20	3.36	0.00
31.75	5.20	3.36	0.00
32.00	5.20	3.36	0.00
32.25	5.20	3.36	0.00
32.50	5.20	3.36	0.00
32.75	5.20	3.36	0.00
33.00	5.20	3.36	0.00
33.25	5.20	3.36	0.00
33.50	5.20	3.36	0.00
33.75	5.20	3.36	0.00
34.00	5.20	3.36	0.00
34.25	5.20	3.36	0.00
34.50	5.20	3.36	0.00
34.75	5.20	3.36	0.00
35.00	5.20	3.36	0.00
35.25	5.20	3.36	0.00
35.50	5.20	3.36	0.00
35.75	5.20	3.36	0.00
36.00	5.20	3.36	0.00

Routing Diagram for 220003 Maloney DA 2 100 yr Predeveloped
Prepared by rba, Printed 6/3/2020
HydroCAD® 10.00-15 s/n 01102 © 2015 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.060	49	50-75% Grass cover, Fair, HSG A (DA 2)
0.128	96	Gravel surface, HSG A (DA 2)
0.023	98	Roofs HSG A (DA 2)
0.211	**83**	**TOTAL AREA**

Summary for Subcatchment DA 2:

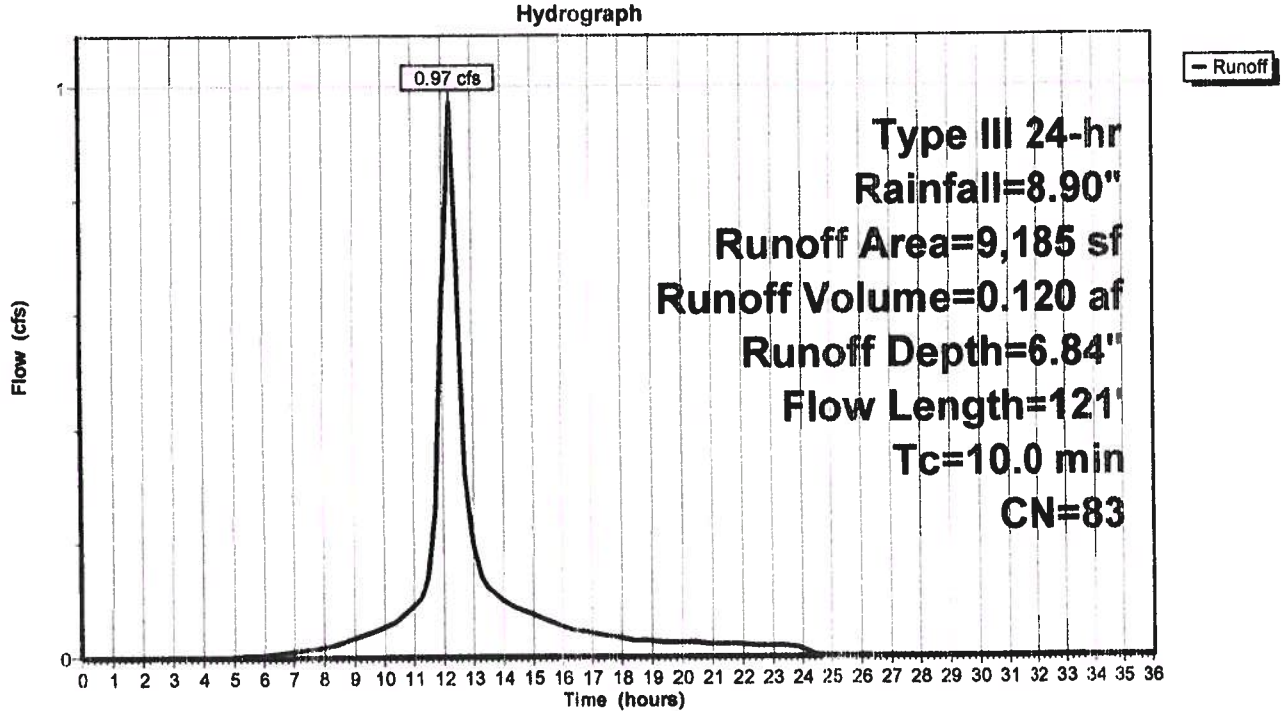
Runoff = 0.97 cfs @ 12.24 hrs, Volume= 0.120 af, Depth= 6.84"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.25 hrs
Type III 24-hr Rainfall=8.90"

	Area (sf)	CN	Description
*	982	98	Roofs HSG A
	5,568	96	Gravel surface, HSG A
	2,635	49	50-75% Grass cover, Fair, HSG A
	9,185	83	Weighted Average
	8,203		89.31% Pervious Area
	982		10.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	36	0.0140	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
0.7	85	0.0190	2.18		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 8.90"
5.6	121	Total, Increased to minimum Tc = 10.0 min			

Subcatchment DA 2:

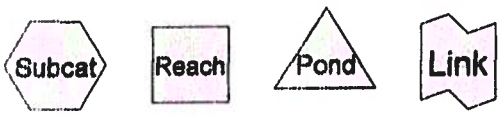


Hydrograph for Subcatchment DA 2:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.00	6.67	4.72	0.20
0.25	0.02	0.00	0.00	13.25	6.83	4.87	0.14
0.50	0.04	0.00	0.00	13.50	6.97	5.00	0.12
0.75	0.07	0.00	0.00	13.75	7.10	5.12	0.11
1.00	0.09	0.00	0.00	14.00	7.22	5.23	0.10
1.25	0.11	0.00	0.00	14.25	7.32	5.33	0.09
1.50	0.13	0.00	0.00	14.50	7.42	5.43	0.08
1.75	0.16	0.00	0.00	14.75	7.52	5.52	0.08
2.00	0.18	0.00	0.00	15.00	7.60	5.60	0.07
2.25	0.20	0.00	0.00	15.25	7.68	5.68	0.07
2.50	0.22	0.00	0.00	15.50	7.76	5.75	0.06
2.75	0.25	0.00	0.00	15.75	7.82	5.81	0.06
3.00	0.27	0.00	0.00	16.00	7.89	5.87	0.05
3.25	0.30	0.00	0.00	16.25	7.94	5.92	0.05
3.50	0.33	0.00	0.00	16.50	8.00	5.97	0.04
3.75	0.35	0.00	0.00	16.75	8.05	6.02	0.04
4.00	0.38	0.00	0.00	17.00	8.09	6.07	0.04
4.25	0.41	0.00	0.00	17.25	8.14	6.11	0.04
4.50	0.44	0.00	0.00	17.50	8.18	6.15	0.04
4.75	0.47	0.00	0.00	17.75	8.22	6.19	0.03
5.00	0.51	0.00	0.00	18.00	8.26	6.23	0.03
5.25	0.54	0.01	0.00	18.25	8.29	6.26	0.03
5.50	0.57	0.01	0.00	18.50	8.33	6.29	0.03
5.75	0.61	0.02	0.00	18.75	8.36	6.32	0.03
6.00	0.64	0.02	0.00	19.00	8.39	6.36	0.03
6.25	0.68	0.03	0.01	19.25	8.43	6.39	0.03
6.50	0.72	0.04	0.01	19.50	8.46	6.42	0.03
6.75	0.76	0.05	0.01	19.75	8.49	6.44	0.02
7.00	0.81	0.06	0.01	20.00	8.52	6.47	0.02
7.25	0.85	0.08	0.01	20.25	8.55	6.50	0.02
7.50	0.90	0.10	0.01	20.50	8.57	6.53	0.02
7.75	0.96	0.12	0.02	20.75	8.60	6.55	0.02
8.00	1.01	0.14	0.02	21.00	8.63	6.58	0.02
8.25	1.08	0.16	0.02	21.25	8.65	6.60	0.02
8.50	1.14	0.19	0.02	21.50	8.68	6.63	0.02
8.75	1.22	0.23	0.03	21.75	8.70	6.65	0.02
9.00	1.30	0.27	0.03	22.00	8.73	6.68	0.02
9.25	1.38	0.31	0.04	22.25	8.75	6.70	0.02
9.50	1.48	0.37	0.04	22.50	8.78	6.72	0.02
9.75	1.58	0.42	0.05	22.75	8.80	6.74	0.02
10.00	1.68	0.49	0.05	23.00	8.82	6.76	0.02
10.25	1.80	0.56	0.06	23.25	8.84	6.78	0.02
10.50	1.93	0.65	0.07	23.50	8.86	6.80	0.02
10.75	2.07	0.74	0.08	23.75	8.88	6.82	0.02
11.00	2.23	0.85	0.09	24.00	**8.90**	**6.84**	0.02
11.25	2.41	0.99	0.11	24.25	8.90	6.84	0.01
11.50	2.65	1.17	0.14	24.50	8.90	6.84	0.00
11.75	3.16	1.58	0.26	24.75	8.90	6.84	0.00
12.00	4.45	2.68	0.65	25.00	8.90	6.84	0.00
12.25	5.74	3.85	**0.97**	25.25	8.90	6.84	0.00
12.50	6.25	4.32	0.62	25.50	8.90	6.84	0.00
12.75	6.49	4.55	0.32	25.75	8.90	6.84	0.00

Hydrograph for Subcatchment DA 2: (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
26.00	8.90	6.84	0.00
26.25	8.90	6.84	0.00
26.50	8.90	6.84	0.00
26.75	8.90	6.84	0.00
27.00	8.90	6.84	0.00
27.25	8.90	6.84	0.00
27.50	8.90	6.84	0.00
27.75	8.90	6.84	0.00
28.00	8.90	6.84	0.00
28.25	8.90	6.84	0.00
28.50	8.90	6.84	0.00
28.75	8.90	6.84	0.00
29.00	8.90	6.84	0.00
29.25	8.90	6.84	0.00
29.50	8.90	6.84	0.00
29.75	8.90	6.84	0.00
30.00	8.90	6.84	0.00
30.25	8.90	6.84	0.00
30.50	8.90	6.84	0.00
30.75	8.90	6.84	0.00
31.00	8.90	6.84	0.00
31.25	8.90	6.84	0.00
31.50	8.90	6.84	0.00
31.75	8.90	6.84	0.00
32.00	8.90	6.84	0.00
32.25	8.90	6.84	0.00
32.50	8.90	6.84	0.00
32.75	8.90	6.84	0.00
33.00	8.90	6.84	0.00
33.25	8.90	6.84	0.00
33.50	8.90	6.84	0.00
33.75	8.90	6.84	0.00
34.00	8.90	6.84	0.00
34.25	8.90	6.84	0.00
34.50	8.90	6.84	0.00
34.75	8.90	6.84	0.00
35.00	8.90	6.84	0.00
35.25	8.90	6.84	0.00
35.50	8.90	6.84	0.00
35.75	8.90	6.84	0.00
36.00	8.90	6.84	0.00



Routing Diagram for 220003 Maloney DA 3 2 yr Predeveloped
Prepared by rba, Printed 6/3/2020
HydroCAD® 10.00-15 s/n 01102 © 2015 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.064	68	<50% Grass cover, Poor, HSG A (DA 3)
0.054	98	Roofs HSG A (DA 3)
0.118	**82**	**TOTAL AREA**

Summary for Subcatchment DA 3:

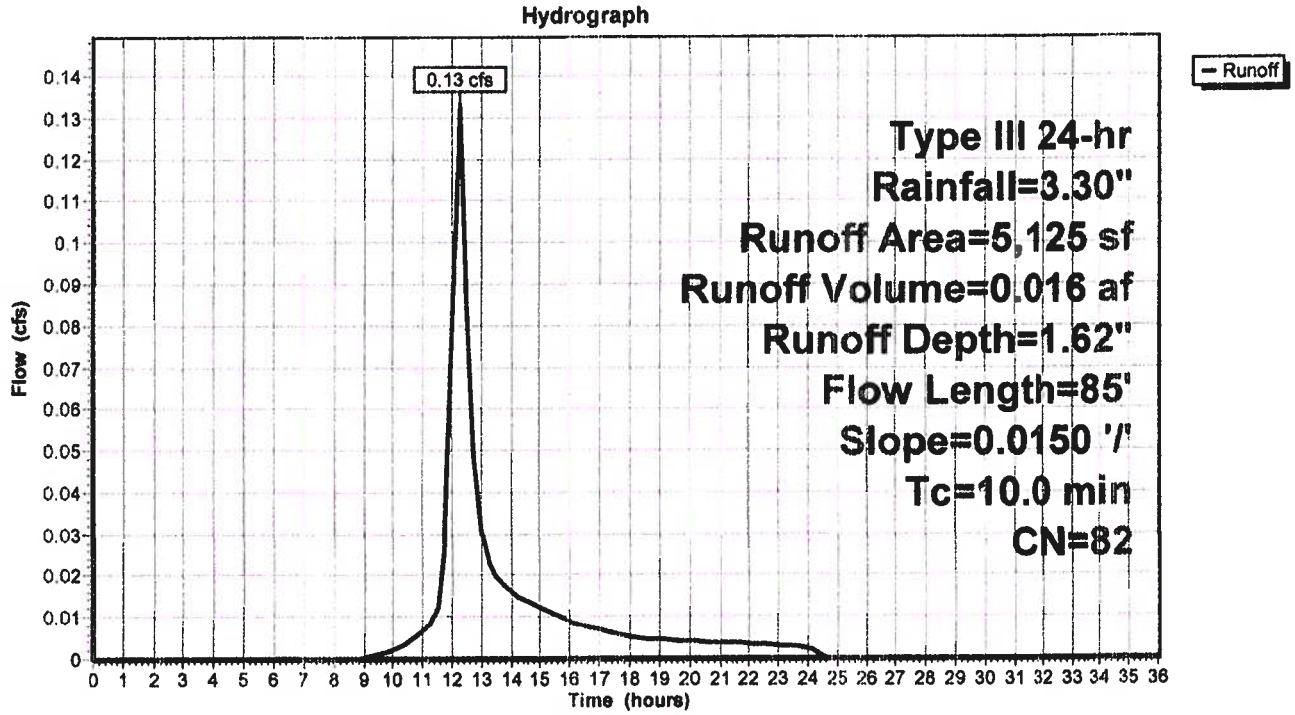
Runoff = 0.13 cfs @ 12.27 hrs, Volume= 0.016 af, Depth= 1.62"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.25 hrs
Type III 24-hr Rainfall=3.30"

	Area (sf)	CN	Description
*	2,350	98	Roofs HSG A
	2,775	68	<50% Grass cover, Poor, HSG A
	5,125	82	Weighted Average
	2,775		54.15% Pervious Area
	2,350		45.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	85	0.0150	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
9.5	85	Total, Increased to minimum Tc = 10.0 min			

Subcatchment DA 3:



Hydrograph for Subcatchment DA 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	13.00	2.47	0.98	0.03
0.25	0.01	0.00	0.00	13.25	2.53	1.02	0.02
0.50	0.02	0.00	0.00	13.50	2.59	1.06	0.02
0.75	0.02	0.00	0.00	13.75	2.63	1.10	0.02
1.00	0.03	0.00	0.00	14.00	2.68	1.13	0.02
1.25	0.04	0.00	0.00	14.25	2.72	1.16	0.01
1.50	0.05	0.00	0.00	14.50	2.75	1.19	0.01
1.75	0.06	0.00	0.00	14.75	2.79	1.21	0.01
2.00	0.07	0.00	0.00	15.00	2.82	1.24	0.01
2.25	0.07	0.00	0.00	15.25	2.85	1.26	0.01
2.50	0.08	0.00	0.00	15.50	2.88	1.28	0.01
2.75	0.09	0.00	0.00	15.75	2.90	1.30	0.01
3.00	0.10	0.00	0.00	16.00	2.92	1.32	0.01
3.25	0.11	0.00	0.00	16.25	2.94	1.34	0.01
3.50	0.12	0.00	0.00	16.50	2.96	1.35	0.01
3.75	0.13	0.00	0.00	16.75	2.98	1.37	0.01
4.00	0.14	0.00	0.00	17.00	3.00	1.38	0.01
4.25	0.15	0.00	0.00	17.25	3.02	1.39	0.01
4.50	0.16	0.00	0.00	17.50	3.03	1.41	0.01
4.75	0.18	0.00	0.00	17.75	3.05	1.42	0.01
5.00	0.19	0.00	0.00	18.00	3.06	1.43	0.01
5.25	0.20	0.00	0.00	18.25	3.08	1.44	0.01
5.50	0.21	0.00	0.00	18.50	3.09	1.45	0.00
5.75	0.22	0.00	0.00	18.75	3.10	1.46	0.00
6.00	0.24	0.00	0.00	19.00	3.11	1.47	0.00
6.25	0.25	0.00	0.00	19.25	3.12	1.48	0.00
6.50	0.27	0.00	0.00	19.50	3.14	1.49	0.00
6.75	0.28	0.00	0.00	19.75	3.15	1.50	0.00
7.00	0.30	0.00	0.00	20.00	3.16	1.50	0.00
7.25	0.32	0.00	0.00	20.25	3.17	1.51	0.00
7.50	0.34	0.00	0.00	20.50	3.18	1.52	0.00
7.75	0.36	0.00	0.00	20.75	3.19	1.53	0.00
8.00	0.38	0.00	0.00	21.00	3.20	1.54	0.00
8.25	0.40	0.00	0.00	21.25	3.21	1.55	0.00
8.50	0.42	0.00	0.00	21.50	3.22	1.55	0.00
8.75	0.45	0.00	0.00	21.75	3.23	1.56	0.00
9.00	0.48	0.00	0.00	22.00	3.24	1.57	0.00
9.25	0.51	0.00	0.00	22.25	3.25	1.57	0.00
9.50	0.55	0.01	0.00	22.50	3.25	1.58	0.00
9.75	0.58	0.01	0.00	22.75	3.26	1.59	0.00
10.00	0.62	0.01	0.00	23.00	3.27	1.59	0.00
10.25	0.67	0.02	0.00	23.25	3.28	1.60	0.00
10.50	0.71	0.03	0.00	23.50	3.29	1.61	0.00
10.75	0.77	0.04	0.01	23.75	3.29	1.61	0.00
11.00	0.83	0.06	0.01	24.00	**3.30**	**1.62**	0.00
11.25	0.89	0.08	0.01	24.25	3.30	1.62	0.00
11.50	0.98	0.11	0.01	24.50	3.30	1.62	0.00
11.75	1.17	0.18	0.03	24.75	3.30	1.62	0.00
12.00	1.65	0.43	0.08	25.00	3.30	1.62	0.00
12.25	2.13	0.73	**0.13**	25.25	3.30	1.62	0.00
12.50	2.32	0.87	0.09	25.50	3.30	1.62	0.00
12.75	2.41	0.93	0.05	25.75	3.30	1.62	0.00

Hydrograph for Subcatchment DA 3: (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
26.00	3.30	1.62	0.00
26.25	3.30	1.62	0.00
26.50	3.30	1.62	0.00
26.75	3.30	1.62	0.00
27.00	3.30	1.62	0.00
27.25	3.30	1.62	0.00
27.50	3.30	1.62	0.00
27.75	3.30	1.62	0.00
28.00	3.30	1.62	0.00
28.25	3.30	1.62	0.00
28.50	3.30	1.62	0.00
28.75	3.30	1.62	0.00
29.00	3.30	1.62	0.00
29.25	3.30	1.62	0.00
29.50	3.30	1.62	0.00
29.75	3.30	1.62	0.00
30.00	3.30	1.62	0.00
30.25	3.30	1.62	0.00
30.50	3.30	1.62	0.00
30.75	3.30	1.62	0.00
31.00	3.30	1.62	0.00
31.25	3.30	1.62	0.00
31.50	3.30	1.62	0.00
31.75	3.30	1.62	0.00
32.00	3.30	1.62	0.00
32.25	3.30	1.62	0.00
32.50	3.30	1.62	0.00
32.75	3.30	1.62	0.00
33.00	3.30	1.62	0.00
33.25	3.30	1.62	0.00
33.50	3.30	1.62	0.00
33.75	3.30	1.62	0.00
34.00	3.30	1.62	0.00
34.25	3.30	1.62	0.00
34.50	3.30	1.62	0.00
34.75	3.30	1.62	0.00
35.00	3.30	1.62	0.00
35.25	3.30	1.62	0.00
35.50	3.30	1.62	0.00
35.75	3.30	1.62	0.00
36.00	3.30	1.62	0.00

Routing Diagram for 220003 Maloney DA 3 10 yr Predeveloped
Prepared by rba, Printed 6/3/2020
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.064	68	<50% Grass cover, Poor, HSG A (DA 3)
0.054	98	Roofs HSG A (DA 3)
0.118	**82**	**TOTAL AREA**

Summary for Subcatchment DA 3:

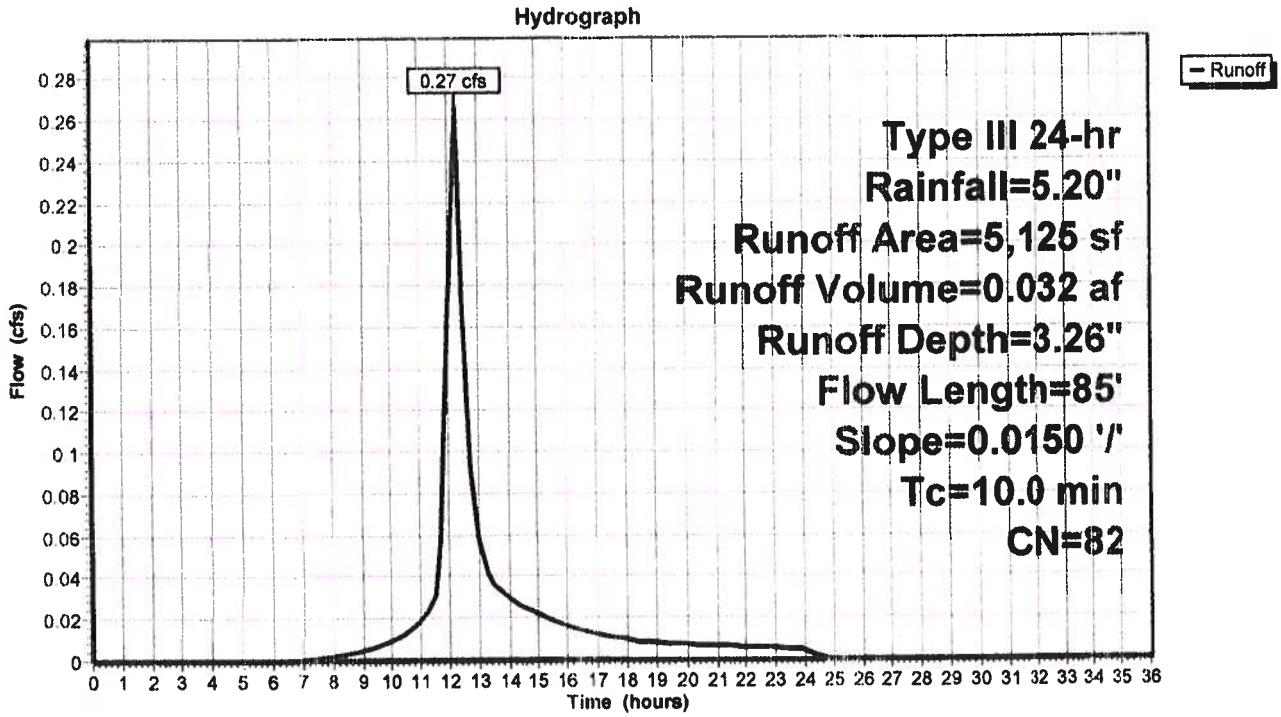
Runoff = 0.27 cfs @ 12.25 hrs, Volume= 0.032 af, Depth= 3.26"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.25 hrs
Type III 24-hr Rainfall=5.20"

	Area (sf)	CN	Description
*	2,350	98	Roofs HSG A
	2,775	68	<50% Grass cover, Poor, HSG A
	5,125	82	Weighted Average
	2,775		54.15% Pervious Area
	2,350		45.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	85	0.0150	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
9.5	85	Total, Increased to minimum Tc = 10.0 min			

Subcatchment DA 3:

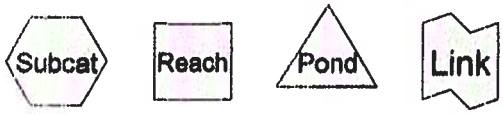


Hydrograph for Subcatchment DA 3:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.00	3.90	2.12	0.06
0.25	0.01	0.00	0.00	13.25	3.99	2.20	0.04
0.50	0.03	0.00	0.00	13.50	4.07	2.27	0.04
0.75	0.04	0.00	0.00	13.75	4.15	2.33	0.03
1.00	0.05	0.00	0.00	14.00	4.22	2.39	0.03
1.25	0.06	0.00	0.00	14.25	4.28	2.44	0.03
1.50	0.08	0.00	0.00	14.50	4.34	2.49	0.02
1.75	0.09	0.00	0.00	14.75	4.39	2.54	0.02
2.00	0.10	0.00	0.00	15.00	4.44	2.59	0.02
2.25	0.12	0.00	0.00	15.25	4.49	2.63	0.02
2.50	0.13	0.00	0.00	15.50	4.53	2.66	0.02
2.75	0.15	0.00	0.00	15.75	4.57	2.70	0.02
3.00	0.16	0.00	0.00	16.00	4.61	2.73	0.02
3.25	0.18	0.00	0.00	16.25	4.64	2.76	0.01
3.50	0.19	0.00	0.00	16.50	4.67	2.79	0.01
3.75	0.21	0.00	0.00	16.75	4.70	2.81	0.01
4.00	0.22	0.00	0.00	17.00	4.73	2.84	0.01
4.25	0.24	0.00	0.00	17.25	4.76	2.86	0.01
4.50	0.26	0.00	0.00	17.50	4.78	2.88	0.01
4.75	0.28	0.00	0.00	17.75	4.80	2.90	0.01
5.00	0.30	0.00	0.00	18.00	4.83	2.92	0.01
5.25	0.31	0.00	0.00	18.25	4.85	2.94	0.01
5.50	0.33	0.00	0.00	18.50	4.87	2.96	0.01
5.75	0.35	0.00	0.00	18.75	4.89	2.98	0.01
6.00	0.37	0.00	0.00	19.00	4.90	2.99	0.01
6.25	0.40	0.00	0.00	19.25	4.92	3.01	0.01
6.50	0.42	0.00	0.00	19.50	4.94	3.03	0.01
6.75	0.44	0.00	0.00	19.75	4.96	3.04	0.01
7.00	0.47	0.00	0.00	20.00	4.98	3.06	0.01
7.25	0.50	0.00	0.00	20.25	4.99	3.07	0.01
7.50	0.53	0.00	0.00	20.50	5.01	3.09	0.01
7.75	0.56	0.01	0.00	20.75	5.03	3.10	0.01
8.00	0.59	0.01	0.00	21.00	5.04	3.12	0.01
8.25	0.63	0.02	0.00	21.25	5.06	3.13	0.01
8.50	0.67	0.02	0.00	21.50	5.07	3.14	0.01
8.75	0.71	0.03	0.00	21.75	5.09	3.16	0.01
9.00	0.76	0.04	0.00	22.00	5.10	3.17	0.01
9.25	0.81	0.05	0.01	22.25	5.11	3.18	0.01
9.50	0.86	0.07	0.01	22.50	5.13	3.19	0.01
9.75	0.92	0.09	0.01	22.75	5.14	3.20	0.01
10.00	0.98	0.11	0.01	23.00	5.15	3.22	0.01
10.25	1.05	0.13	0.01	23.25	5.17	3.23	0.01
10.50	1.13	0.16	0.01	23.50	5.18	3.24	0.01
10.75	1.21	0.20	0.02	23.75	5.19	3.25	0.01
11.00	1.30	0.24	0.02	24.00	**5.20**	**3.26**	0.00
11.25	1.41	0.30	0.02	24.25	5.20	3.26	0.00
11.50	1.55	0.37	0.03	24.50	5.20	3.26	0.00
11.75	1.85	0.55	0.06	24.75	5.20	3.26	0.00
12.00	2.60	1.07	0.17	25.00	5.20	3.26	0.00
12.25	3.35	1.66	**0.27**	25.25	5.20	3.26	0.00
12.50	3.65	1.91	0.17	25.50	5.20	3.26	0.00
12.75	3.79	2.02	0.09	25.75	5.20	3.26	0.00

Hydrograph for Subcatchment DA 3: (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
26.00	5.20	3.26	0.00
26.25	5.20	3.26	0.00
26.50	5.20	3.26	0.00
26.75	5.20	3.26	0.00
27.00	5.20	3.26	0.00
27.25	5.20	3.26	0.00
27.50	5.20	3.26	0.00
27.75	5.20	3.26	0.00
28.00	5.20	3.26	0.00
28.25	5.20	3.26	0.00
28.50	5.20	3.26	0.00
28.75	5.20	3.26	0.00
29.00	5.20	3.26	0.00
29.25	5.20	3.26	0.00
29.50	5.20	3.26	0.00
29.75	5.20	3.26	0.00
30.00	5.20	3.26	0.00
30.25	5.20	3.26	0.00
30.50	5.20	3.26	0.00
30.75	5.20	3.26	0.00
31.00	5.20	3.26	0.00
31.25	5.20	3.26	0.00
31.50	5.20	3.26	0.00
31.75	5.20	3.26	0.00
32.00	5.20	3.26	0.00
32.25	5.20	3.26	0.00
32.50	5.20	3.26	0.00
32.75	5.20	3.26	0.00
33.00	5.20	3.26	0.00
33.25	5.20	3.26	0.00
33.50	5.20	3.26	0.00
33.75	5.20	3.26	0.00
34.00	5.20	3.26	0.00
34.25	5.20	3.26	0.00
34.50	5.20	3.26	0.00
34.75	5.20	3.26	0.00
35.00	5.20	3.26	0.00
35.25	5.20	3.26	0.00
35.50	5.20	3.26	0.00
35.75	5.20	3.26	0.00
36.00	5.20	3.26	0.00



Routing Diagram for 220003 Maloney DA 3 100 yr Predeveloped
Prepared by rba, Printed 6/3/2020
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.064	68	<50% Grass cover, Poor, HSG A (DA 3)
0.054	98	Roofs HSG A (DA 3)
0.118	**82**	**TOTAL AREA**

Summary for Subcatchment DA 3:

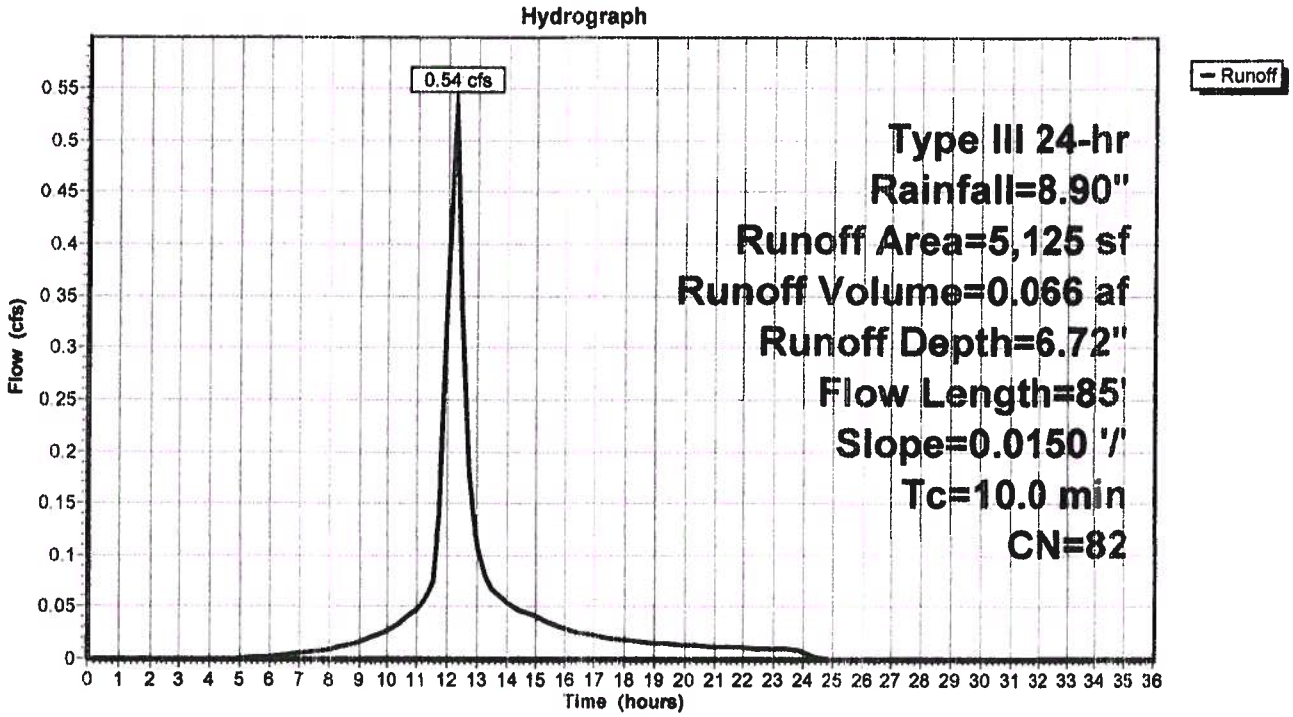
Runoff = 0.54 cfs @ 12.25 hrs, Volume= 0.066 af, Depth= 6.72"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.25 hrs
Type III 24-hr Rainfall=8.90"

	Area (sf)	CN	Description
*	2,350	98	Roofs HSG A
	2,775	68	<50% Grass cover, Poor, HSG A
	5,125	82	Weighted Average
	2,775		54.15% Pervious Area
	2,350		45.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	85	0.0150	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.30"
9.5	85	Total, Increased to minimum Tc = 10.0 min			

Subcatchment DA 3:

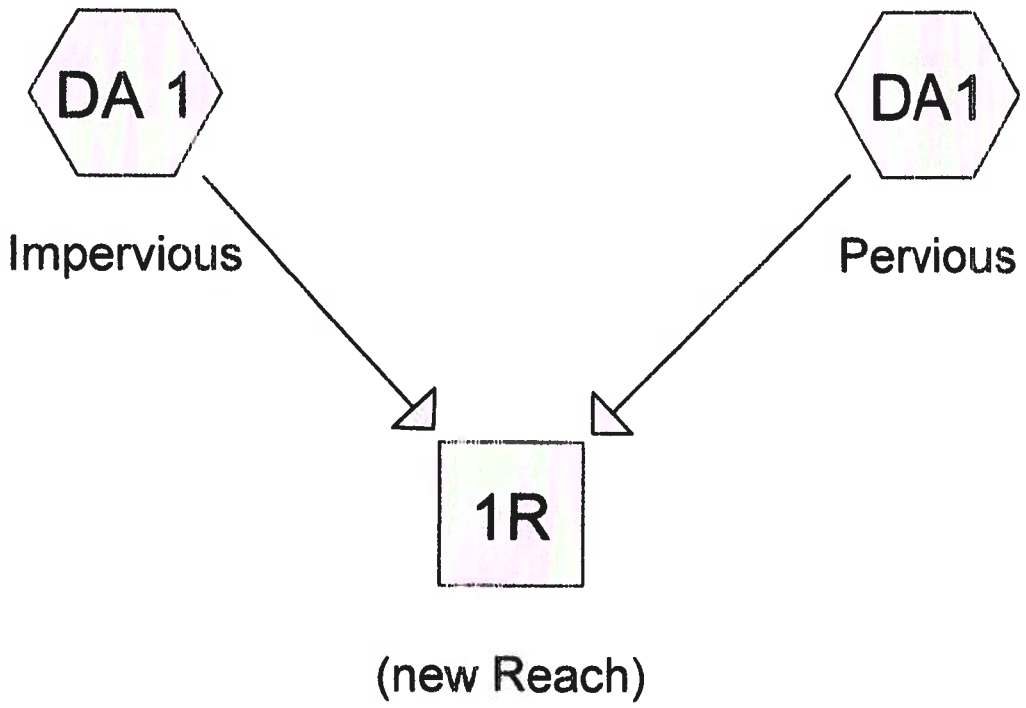


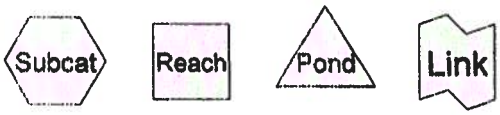
Hydrograph for Subcatchment DA 3:

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.00	6.67	4.61	0.11
0.25	0.02	0.00	0.00	13.25	6.83	4.76	0.08
0.50	0.04	0.00	0.00	13.50	6.97	4.89	0.07
0.75	0.07	0.00	0.00	13.75	7.10	5.01	0.06
1.00	0.09	0.00	0.00	14.00	7.22	5.12	0.05
1.25	0.11	0.00	0.00	14.25	7.32	5.22	0.05
1.50	0.13	0.00	0.00	14.50	7.42	5.31	0.05
1.75	0.16	0.00	0.00	14.75	7.52	5.40	0.04
2.00	0.18	0.00	0.00	15.00	7.60	5.48	0.04
2.25	0.20	0.00	0.00	15.25	7.68	5.56	0.04
2.50	0.22	0.00	0.00	15.50	7.76	5.63	0.03
2.75	0.25	0.00	0.00	15.75	7.82	5.69	0.03
3.00	0.27	0.00	0.00	16.00	7.89	5.75	0.03
3.25	0.30	0.00	0.00	16.25	7.94	5.80	0.03
3.50	0.33	0.00	0.00	16.50	8.00	5.86	0.02
3.75	0.35	0.00	0.00	16.75	8.05	5.90	0.02
4.00	0.38	0.00	0.00	17.00	8.09	5.95	0.02
4.25	0.41	0.00	0.00	17.25	8.14	5.99	0.02
4.50	0.44	0.00	0.00	17.50	8.18	6.03	0.02
4.75	0.47	0.00	0.00	17.75	8.22	6.07	0.02
5.00	0.51	0.00	0.00	18.00	8.26	6.11	0.02
5.25	0.54	0.00	0.00	18.25	8.29	6.14	0.02
5.50	0.57	0.01	0.00	18.50	8.33	6.17	0.02
5.75	0.61	0.01	0.00	18.75	8.36	6.20	0.02
6.00	0.64	0.02	0.00	19.00	8.39	6.24	0.01
6.25	0.68	0.02	0.00	19.25	8.43	6.27	0.01
6.50	0.72	0.03	0.00	19.50	8.46	6.30	0.01
6.75	0.76	0.04	0.00	19.75	8.49	6.32	0.01
7.00	0.81	0.05	0.00	20.00	8.52	6.35	0.01
7.25	0.85	0.07	0.01	20.25	8.55	6.38	0.01
7.50	0.90	0.08	0.01	20.50	8.57	6.41	0.01
7.75	0.96	0.10	0.01	20.75	8.60	6.43	0.01
8.00	1.01	0.12	0.01	21.00	8.63	6.46	0.01
8.25	1.08	0.14	0.01	21.25	8.65	6.48	0.01
8.50	1.14	0.17	0.01	21.50	8.68	6.51	0.01
8.75	1.22	0.20	0.01	21.75	8.70	6.53	0.01
9.00	1.30	0.24	0.02	22.00	8.73	6.55	0.01
9.25	1.38	0.28	0.02	22.25	8.75	6.58	0.01
9.50	1.48	0.33	0.02	22.50	8.78	6.60	0.01
9.75	1.58	0.39	0.02	22.75	8.80	6.62	0.01
10.00	1.68	0.45	0.03	23.00	8.82	6.64	0.01
10.25	1.80	0.52	0.03	23.25	8.84	6.66	0.01
10.50	1.93	0.60	0.04	23.50	8.86	6.68	0.01
10.75	2.07	0.69	0.04	23.75	8.88	6.70	0.01
11.00	2.23	0.80	0.05	24.00	**8.90**	**6.72**	0.01
11.25	2.41	0.93	0.06	24.25	8.90	6.72	0.00
11.50	2.65	1.11	0.07	24.50	8.90	6.72	0.00
11.75	3.16	1.51	0.14	24.75	8.90	6.72	0.00
12.00	4.45	2.59	0.35	25.00	8.90	6.72	0.00
12.25	5.74	3.75	**0.53**	25.25	8.90	6.72	0.00
12.50	6.25	4.22	0.34	25.50	8.90	6.72	0.00
12.75	6.49	4.44	0.18	25.75	8.90	6.72	0.00

Hydrograph for Subcatchment DA 3: (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
26.00	8.90	6.72	0.00
26.25	8.90	6.72	0.00
26.50	8.90	6.72	0.00
26.75	8.90	6.72	0.00
27.00	8.90	6.72	0.00
27.25	8.90	6.72	0.00
27.50	8.90	6.72	0.00
27.75	8.90	6.72	0.00
28.00	8.90	6.72	0.00
28.25	8.90	6.72	0.00
28.50	8.90	6.72	0.00
28.75	8.90	6.72	0.00
29.00	8.90	6.72	0.00
29.25	8.90	6.72	0.00
29.50	8.90	6.72	0.00
29.75	8.90	6.72	0.00
30.00	8.90	6.72	0.00
30.25	8.90	6.72	0.00
30.50	8.90	6.72	0.00
30.75	8.90	6.72	0.00
31.00	8.90	6.72	0.00
31.25	8.90	6.72	0.00
31.50	8.90	6.72	0.00
31.75	8.90	6.72	0.00
32.00	8.90	6.72	0.00
32.25	8.90	6.72	0.00
32.50	8.90	6.72	0.00
32.75	8.90	6.72	0.00
33.00	8.90	6.72	0.00
33.25	8.90	6.72	0.00
33.50	8.90	6.72	0.00
33.75	8.90	6.72	0.00
34.00	8.90	6.72	0.00
34.25	8.90	6.72	0.00
34.50	8.90	6.72	0.00
34.75	8.90	6.72	0.00
35.00	8.90	6.72	0.00
35.25	8.90	6.72	0.00
35.50	8.90	6.72	0.00
35.75	8.90	6.72	0.00
36.00	8.90	6.72	0.00





Routing Diagram for 220003 Maloney DA 4 2 yr Postdeveloped
Prepared by rba, Printed 6/3/2020
HydroCAD® 10.00-15 s/n 01102 © 2015 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.068	39	>75% Grass cover, Good, HSG A (DA1)
0.068	76	Porous pavement (DA 1)
0.081	98	roofs (DA 1)
0.217	**73**	**TOTAL AREA**

Summary for Subcatchment DA 1: Impervious

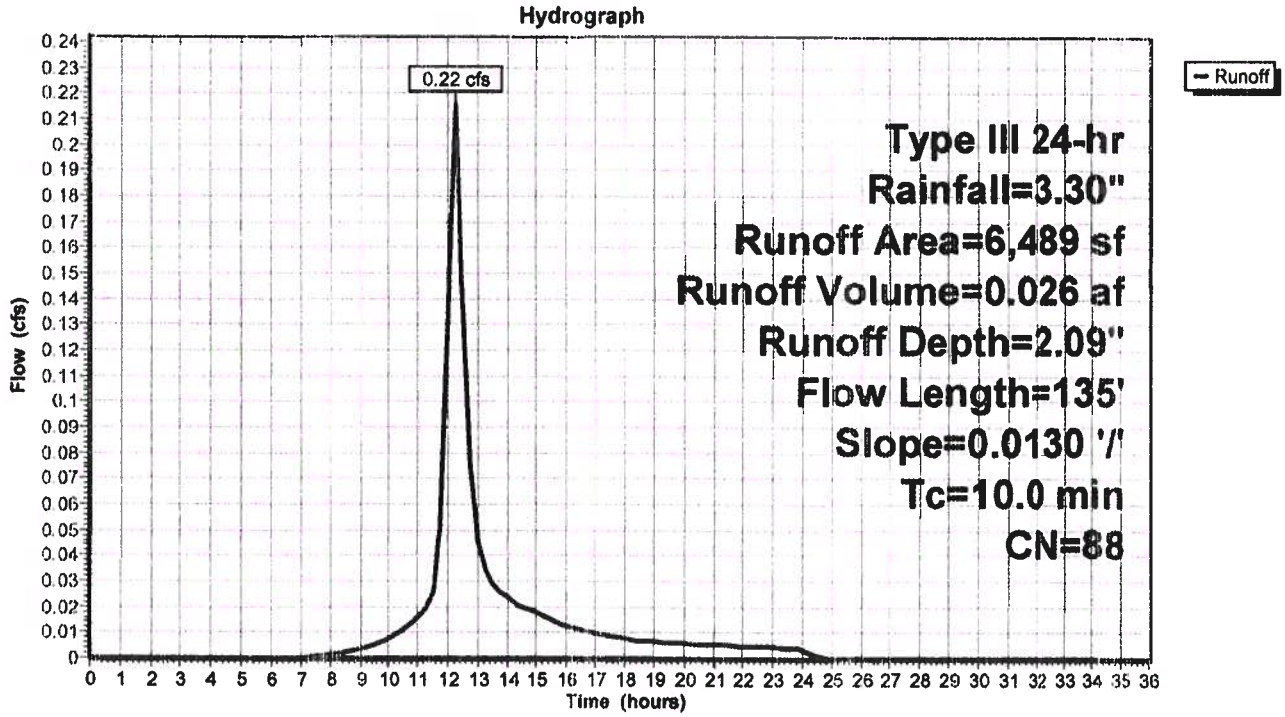
Runoff = 0.22 cfs @ 12.25 hrs, Volume= 0.026 af, Depth= 2.09"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.25 hrs
Type III 24-hr Rainfall=3.30"

	Area (sf)	CN	Description
*	3,508	98	roofs
*	2,981	76	Porous pavement
	6,489	88	Weighted Average
	2,981		45.94% Pervious Area
	3,508		54.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	135	0.0130	1.25		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
1.8	135	Total, Increased to minimum Tc = 10.0 min			

Subcatchment DA 1: Impervious



Hydrograph for Subcatchment DA 1: Impervious

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.00	2.47	1.36	0.05
0.25	0.01	0.00	0.00	13.25	2.53	1.41	0.03
0.50	0.02	0.00	0.00	13.50	2.59	1.45	0.03
0.75	0.02	0.00	0.00	13.75	2.63	1.50	0.03
1.00	0.03	0.00	0.00	14.00	2.68	1.53	0.02
1.25	0.04	0.00	0.00	14.25	2.72	1.57	0.02
1.50	0.05	0.00	0.00	14.50	2.75	1.60	0.02
1.75	0.06	0.00	0.00	14.75	2.79	1.63	0.02
2.00	0.07	0.00	0.00	15.00	2.82	1.66	0.02
2.25	0.07	0.00	0.00	15.25	2.85	1.68	0.02
2.50	0.08	0.00	0.00	15.50	2.88	1.71	0.02
2.75	0.09	0.00	0.00	15.75	2.90	1.73	0.01
3.00	0.10	0.00	0.00	16.00	2.92	1.75	0.01
3.25	0.11	0.00	0.00	16.25	2.94	1.77	0.01
3.50	0.12	0.00	0.00	16.50	2.96	1.79	0.01
3.75	0.13	0.00	0.00	16.75	2.98	1.80	0.01
4.00	0.14	0.00	0.00	17.00	3.00	1.82	0.01
4.25	0.15	0.00	0.00	17.25	3.02	1.83	0.01
4.50	0.16	0.00	0.00	17.50	3.03	1.85	0.01
4.75	0.18	0.00	0.00	17.75	3.05	1.86	0.01
5.00	0.19	0.00	0.00	18.00	3.06	1.87	0.01
5.25	0.20	0.00	0.00	18.25	3.08	1.89	0.01
5.50	0.21	0.00	0.00	18.50	3.09	1.90	0.01
5.75	0.22	0.00	0.00	18.75	3.10	1.91	0.01
6.00	0.24	0.00	0.00	19.00	3.11	1.92	0.01
6.25	0.25	0.00	0.00	19.25	3.12	1.93	0.01
6.50	0.27	0.00	0.00	19.50	3.14	1.94	0.01
6.75	0.28	0.00	0.00	19.75	3.15	1.95	0.01
7.00	0.30	0.00	0.00	20.00	3.16	1.96	0.01
7.25	0.32	0.00	0.00	20.25	3.17	1.97	0.01
7.50	0.34	0.00	0.00	20.50	3.18	1.98	0.01
7.75	0.36	0.00	0.00	20.75	3.19	1.99	0.01
8.00	0.38	0.01	0.00	21.00	3.20	2.00	0.01
8.25	0.40	0.01	0.00	21.25	3.21	2.00	0.01
8.50	0.42	0.02	0.00	21.50	3.22	2.01	0.01
8.75	0.45	0.02	0.00	21.75	3.23	2.02	0.01
9.00	0.48	0.03	0.00	22.00	3.24	2.03	0.00
9.25	0.51	0.04	0.00	22.25	3.25	2.04	0.00
9.50	0.55	0.05	0.01	22.50	3.25	2.05	0.00
9.75	0.58	0.06	0.01	22.75	3.26	2.05	0.00
10.00	0.62	0.07	0.01	23.00	3.27	2.06	0.00
10.25	0.67	0.09	0.01	23.25	3.28	2.07	0.00
10.50	0.71	0.11	0.01	23.50	3.29	2.07	0.00
10.75	0.77	0.13	0.01	23.75	3.29	2.08	0.00
11.00	0.83	0.16	0.02	24.00	**3.30**	**2.09**	0.00
11.25	0.89	0.19	0.02	24.25	3.30	2.09	0.00
11.50	0.98	0.24	0.03	24.50	3.30	2.09	0.00
11.75	1.17	0.36	0.05	24.75	3.30	2.09	0.00
12.00	1.65	0.69	0.14	25.00	3.30	2.09	0.00
12.25	2.13	1.07	**0.22**	25.25	3.30	2.09	0.00
12.50	2.32	1.23	0.14	25.50	3.30	2.09	0.00
12.75	2.41	1.30	0.07	25.75	3.30	2.09	0.00

Hydrograph for Subcatchment DA 1: Impervious (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
26.00	3.30	2.09	0.00
26.25	3.30	2.09	0.00
26.50	3.30	2.09	0.00
26.75	3.30	2.09	0.00
27.00	3.30	2.09	0.00
27.25	3.30	2.09	0.00
27.50	3.30	2.09	0.00
27.75	3.30	2.09	0.00
28.00	3.30	2.09	0.00
28.25	3.30	2.09	0.00
28.50	3.30	2.09	0.00
28.75	3.30	2.09	0.00
29.00	3.30	2.09	0.00
29.25	3.30	2.09	0.00
29.50	3.30	2.09	0.00
29.75	3.30	2.09	0.00
30.00	3.30	2.09	0.00
30.25	3.30	2.09	0.00
30.50	3.30	2.09	0.00
30.75	3.30	2.09	0.00
31.00	3.30	2.09	0.00
31.25	3.30	2.09	0.00
31.50	3.30	2.09	0.00
31.75	3.30	2.09	0.00
32.00	3.30	2.09	0.00
32.25	3.30	2.09	0.00
32.50	3.30	2.09	0.00
32.75	3.30	2.09	0.00
33.00	3.30	2.09	0.00
33.25	3.30	2.09	0.00
33.50	3.30	2.09	0.00
33.75	3.30	2.09	0.00
34.00	3.30	2.09	0.00
34.25	3.30	2.09	0.00
34.50	3.30	2.09	0.00
34.75	3.30	2.09	0.00
35.00	3.30	2.09	0.00
35.25	3.30	2.09	0.00
35.50	3.30	2.09	0.00
35.75	3.30	2.09	0.00
36.00	3.30	2.09	0.00

Summary for Subcatchment DA1: Pervious

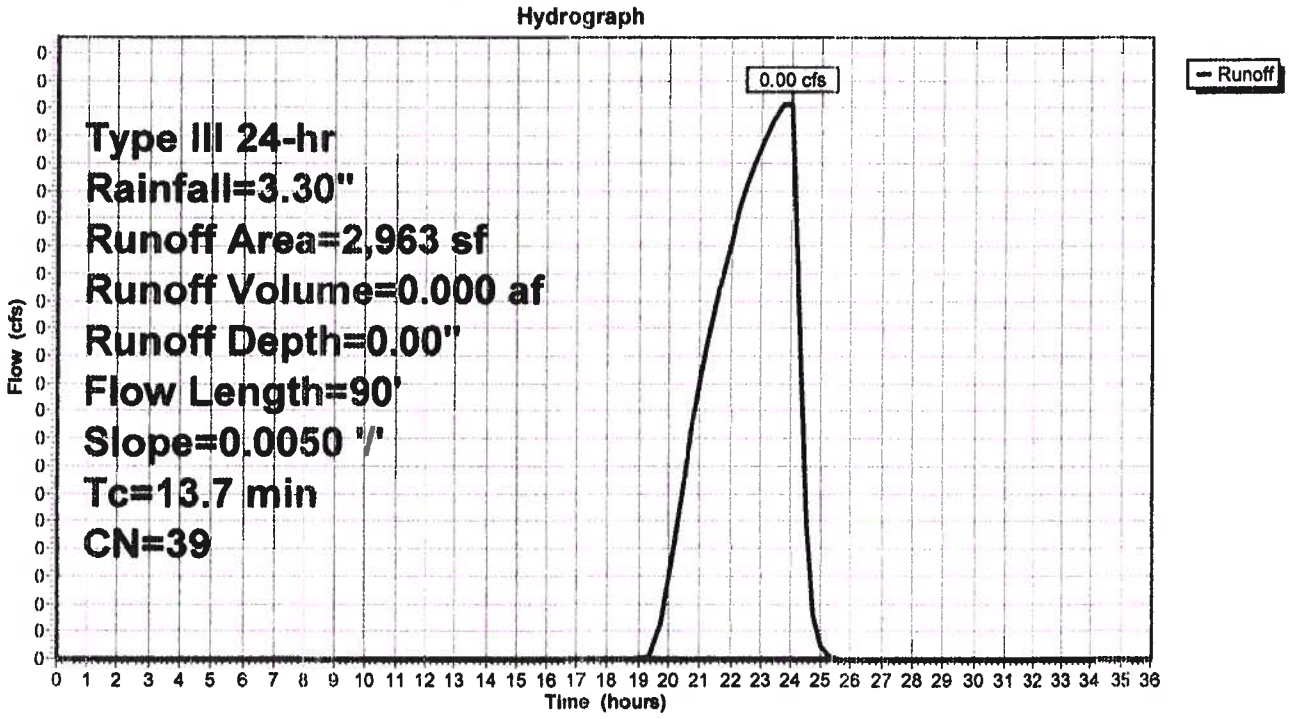
Runoff = 0.00 cfs @ 24.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.25 hrs
Type III 24-hr Rainfall=3.30"

Area (sf)	CN	Description
2,963	39	>75% Grass cover, Good, HSG A
2,963		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	90	0.0050	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 8.90"

Subcatchment DA1: Pervious



Hydrograph for Subcatchment DA1: Pervious

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.00	2.47	0.00	0.00
0.25	0.01	0.00	0.00	13.25	2.53	0.00	0.00
0.50	0.02	0.00	0.00	13.50	2.59	0.00	0.00
0.75	0.02	0.00	0.00	13.75	2.63	0.00	0.00
1.00	0.03	0.00	0.00	14.00	2.68	0.00	0.00
1.25	0.04	0.00	0.00	14.25	2.72	0.00	0.00
1.50	0.05	0.00	0.00	14.50	2.75	0.00	0.00
1.75	0.06	0.00	0.00	14.75	2.79	0.00	0.00
2.00	0.07	0.00	0.00	15.00	2.82	0.00	0.00
2.25	0.07	0.00	0.00	15.25	2.85	0.00	0.00
2.50	0.08	0.00	0.00	15.50	2.88	0.00	0.00
2.75	0.09	0.00	0.00	15.75	2.90	0.00	0.00
3.00	0.10	0.00	0.00	16.00	2.92	0.00	0.00
3.25	0.11	0.00	0.00	16.25	2.94	0.00	0.00
3.50	0.12	0.00	0.00	16.50	2.96	0.00	0.00
3.75	0.13	0.00	0.00	16.75	2.98	0.00	0.00
4.00	0.14	0.00	0.00	17.00	3.00	0.00	0.00
4.25	0.15	0.00	0.00	17.25	3.02	0.00	0.00
4.50	0.16	0.00	0.00	17.50	3.03	0.00	0.00
4.75	0.18	0.00	0.00	17.75	3.05	0.00	0.00
5.00	0.19	0.00	0.00	18.00	3.06	0.00	0.00
5.25	0.20	0.00	0.00	18.25	3.08	0.00	0.00
5.50	0.21	0.00	0.00	18.50	3.09	0.00	0.00
5.75	0.22	0.00	0.00	18.75	3.10	0.00	0.00
6.00	0.24	0.00	0.00	19.00	3.11	0.00	0.00
6.25	0.25	0.00	0.00	19.25	3.12	0.00	0.00
6.50	0.27	0.00	0.00	19.50	3.14	0.00	0.00
6.75	0.28	0.00	0.00	19.75	3.15	0.00	0.00
7.00	0.30	0.00	0.00	20.00	3.16	0.00	0.00
7.25	0.32	0.00	0.00	20.25	3.17	0.00	0.00
7.50	0.34	0.00	0.00	20.50	3.18	0.00	0.00
7.75	0.36	0.00	0.00	20.75	3.19	0.00	0.00
8.00	0.38	0.00	0.00	21.00	3.20	0.00	0.00
8.25	0.40	0.00	0.00	21.25	3.21	0.00	0.00
8.50	0.42	0.00	0.00	21.50	3.22	0.00	0.00
8.75	0.45	0.00	0.00	21.75	3.23	0.00	0.00
9.00	0.48	0.00	0.00	22.00	3.24	0.00	0.00
9.25	0.51	0.00	0.00	22.25	3.25	0.00	0.00
9.50	0.55	0.00	0.00	22.50	3.25	0.00	0.00
9.75	0.58	0.00	0.00	22.75	3.26	0.00	0.00
10.00	0.62	0.00	0.00	23.00	3.27	0.00	0.00
10.25	0.67	0.00	0.00	23.25	3.28	0.00	0.00
10.50	0.71	0.00	0.00	23.50	3.29	0.00	0.00
10.75	0.77	0.00	0.00	23.75	3.29	0.00	0.00
11.00	0.83	0.00	0.00	24.00	**3.30**	**0.00**	**0.00**
11.25	0.89	0.00	0.00	24.25	3.30	0.00	0.00
11.50	0.98	0.00	0.00	24.50	3.30	0.00	0.00
11.75	1.17	0.00	0.00	24.75	3.30	0.00	0.00
12.00	1.65	0.00	0.00	25.00	3.30	0.00	0.00
12.25	2.13	0.00	0.00	25.25	3.30	0.00	0.00
12.50	2.32	0.00	0.00	25.50	3.30	0.00	0.00
12.75	2.41	0.00	0.00	25.75	3.30	0.00	0.00

Hydrograph for Subcatchment DA1: Pervious (continued)

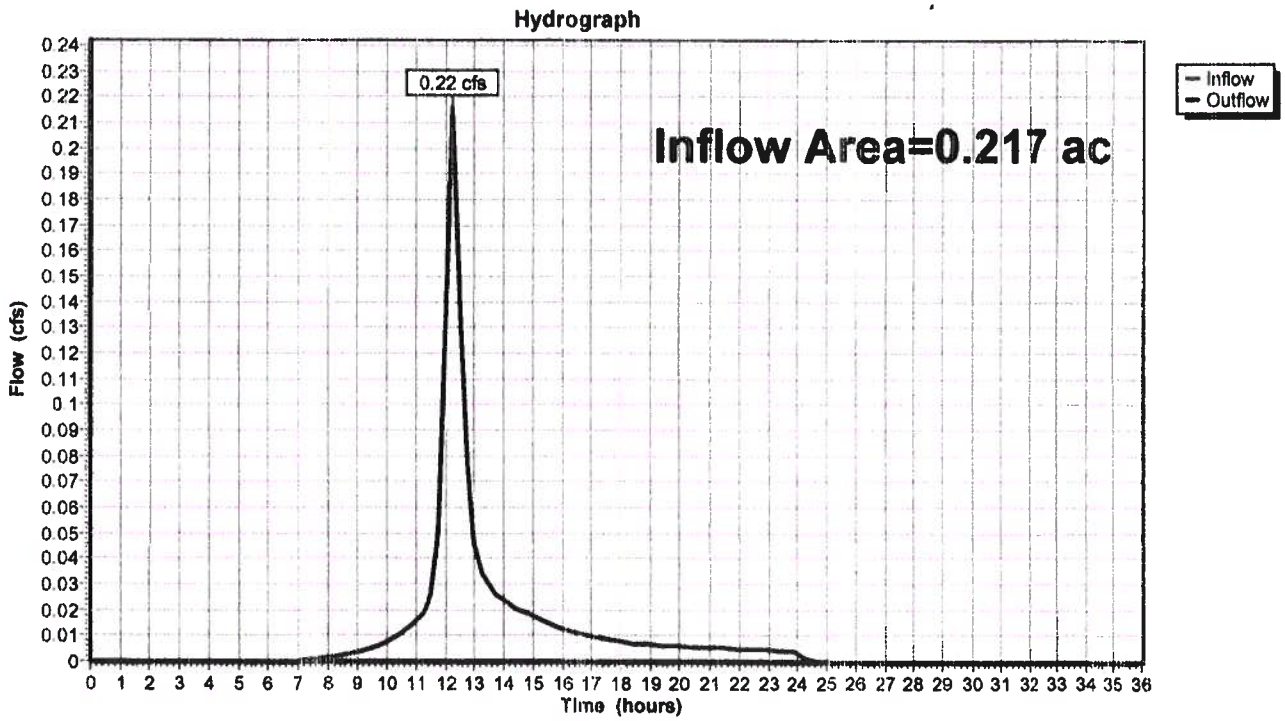
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
26.00	3.30	0.00	0.00
26.25	3.30	0.00	0.00
26.50	3.30	0.00	0.00
26.75	3.30	0.00	0.00
27.00	3.30	0.00	0.00
27.25	3.30	0.00	0.00
27.50	3.30	0.00	0.00
27.75	3.30	0.00	0.00
28.00	3.30	0.00	0.00
28.25	3.30	0.00	0.00
28.50	3.30	0.00	0.00
28.75	3.30	0.00	0.00
29.00	3.30	0.00	0.00
29.25	3.30	0.00	0.00
29.50	3.30	0.00	0.00
29.75	3.30	0.00	0.00
30.00	3.30	0.00	0.00
30.25	3.30	0.00	0.00
30.50	3.30	0.00	0.00
30.75	3.30	0.00	0.00
31.00	3.30	0.00	0.00
31.25	3.30	0.00	0.00
31.50	3.30	0.00	0.00
31.75	3.30	0.00	0.00
32.00	3.30	0.00	0.00
32.25	3.30	0.00	0.00
32.50	3.30	0.00	0.00
32.75	3.30	0.00	0.00
33.00	3.30	0.00	0.00
33.25	3.30	0.00	0.00
33.50	3.30	0.00	0.00
33.75	3.30	0.00	0.00
34.00	3.30	0.00	0.00
34.25	3.30	0.00	0.00
34.50	3.30	0.00	0.00
34.75	3.30	0.00	0.00
35.00	3.30	0.00	0.00
35.25	3.30	0.00	0.00
35.50	3.30	0.00	0.00
35.75	3.30	0.00	0.00
36.00	3.30	0.00	0.00

Summary for Reach 1R: (new Reach)

Inflow Area = 0.217 ac, 37.11% Impervious, Inflow Depth = 1.43"
Inflow = 0.22 cfs @ 12.25 hrs, Volume= 0.026 af
Outflow = 0.22 cfs @ 12.25 hrs, Volume= 0.026 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.25 hrs

Reach 1R: (new Reach)

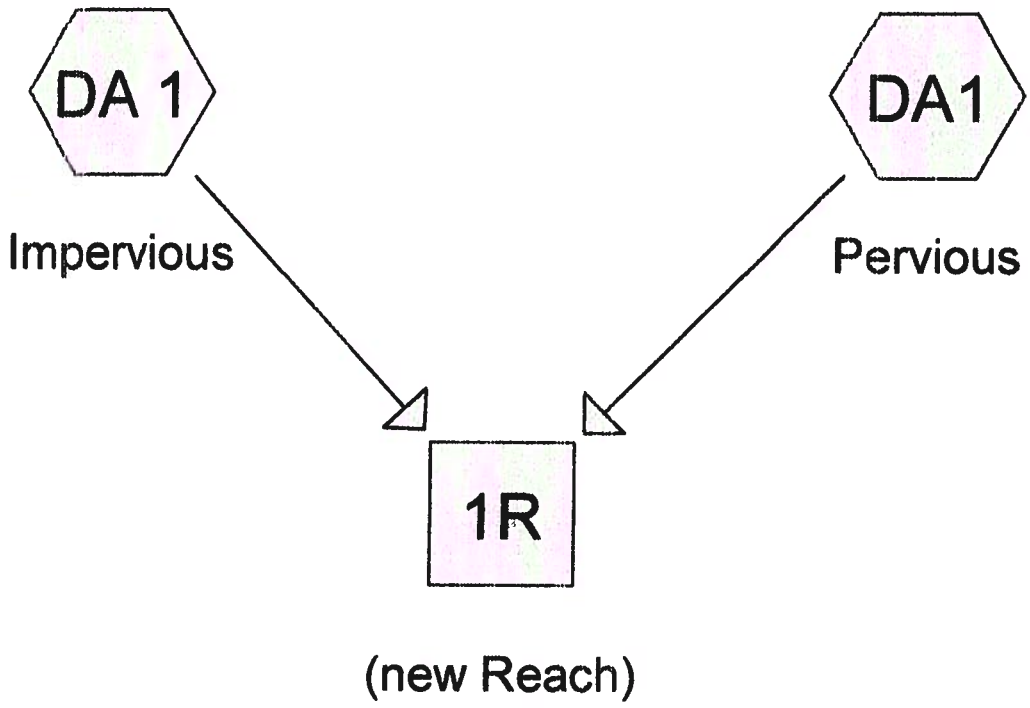


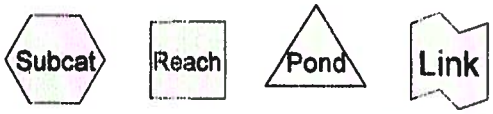
Hydrograph for Reach 1R: (new Reach)

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	13.00	0.05		0.05
0.25	0.00		0.00	13.25	0.03		0.03
0.50	0.00		0.00	13.50	0.03		0.03
0.75	0.00		0.00	13.75	0.03		0.03
1.00	0.00		0.00	14.00	0.02		0.02
1.25	0.00		0.00	14.25	0.02		0.02
1.50	0.00		0.00	14.50	0.02		0.02
1.75	0.00		0.00	14.75	0.02		0.02
2.00	0.00		0.00	15.00	0.02		0.02
2.25	0.00		0.00	15.25	0.02		0.02
2.50	0.00		0.00	15.50	0.02		0.02
2.75	0.00		0.00	15.75	0.01		0.01
3.00	0.00		0.00	16.00	0.01		0.01
3.25	0.00		0.00	16.25	0.01		0.01
3.50	0.00		0.00	16.50	0.01		0.01
3.75	0.00		0.00	16.75	0.01		0.01
4.00	0.00		0.00	17.00	0.01		0.01
4.25	0.00		0.00	17.25	0.01		0.01
4.50	0.00		0.00	17.50	0.01		0.01
4.75	0.00		0.00	17.75	0.01		0.01
5.00	0.00		0.00	18.00	0.01		0.01
5.25	0.00		0.00	18.25	0.01		0.01
5.50	0.00		0.00	18.50	0.01		0.01
5.75	0.00		0.00	18.75	0.01		0.01
6.00	0.00		0.00	19.00	0.01		0.01
6.25	0.00		0.00	19.25	0.01		0.01
6.50	0.00		0.00	19.50	0.01		0.01
6.75	0.00		0.00	19.75	0.01		0.01
7.00	0.00		0.00	20.00	0.01		0.01
7.25	0.00		0.00	20.25	0.01		0.01
7.50	0.00		0.00	20.50	0.01		0.01
7.75	0.00		0.00	20.75	0.01		0.01
8.00	0.00		0.00	21.00	0.01		0.01
8.25	0.00		0.00	21.25	0.01		0.01
8.50	0.00		0.00	21.50	0.01		0.01
8.75	0.00		0.00	21.75	0.01		0.01
9.00	0.00		0.00	22.00	0.00		0.00
9.25	0.00		0.00	22.25	0.00		0.00
9.50	0.01		0.01	22.50	0.00		0.00
9.75	0.01		0.01	22.75	0.00		0.00
10.00	0.01		0.01	23.00	0.00		0.00
10.25	0.01		0.01	23.25	0.00		0.00
10.50	0.01		0.01	23.50	0.00		0.00
10.75	0.01		0.01	23.75	0.00		0.00
11.00	0.02		0.02	24.00	0.00		0.00
11.25	0.02		0.02	24.25	0.00		0.00
11.50	0.03		0.03	24.50	0.00		0.00
11.75	0.05		0.05	24.75	0.00		0.00
12.00	0.14		0.14	25.00	0.00		0.00
12.25	**0.22**		**0.22**	25.25	0.00		0.00
12.50	0.14		0.14	25.50	0.00		0.00
12.75	0.07		0.07	25.75	0.00		0.00

Hydrograph for Reach 1R: (new Reach) (continued)

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
26.00	0.00		0.00
26.25	0.00		0.00
26.50	0.00		0.00
26.75	0.00		0.00
27.00	0.00		0.00
27.25	0.00		0.00
27.50	0.00		0.00
27.75	0.00		0.00
28.00	0.00		0.00
28.25	0.00		0.00
28.50	0.00		0.00
28.75	0.00		0.00
29.00	0.00		0.00
29.25	0.00		0.00
29.50	0.00		0.00
29.75	0.00		0.00
30.00	0.00		0.00
30.25	0.00		0.00
30.50	0.00		0.00
30.75	0.00		0.00
31.00	0.00		0.00
31.25	0.00		0.00
31.50	0.00		0.00
31.75	0.00		0.00
32.00	0.00		0.00
32.25	0.00		0.00
32.50	0.00		0.00
32.75	0.00		0.00
33.00	0.00		0.00
33.25	0.00		0.00
33.50	0.00		0.00
33.75	0.00		0.00
34.00	0.00		0.00
34.25	0.00		0.00
34.50	0.00		0.00
34.75	0.00		0.00
35.00	0.00		0.00
35.25	0.00		0.00
35.50	0.00		0.00
35.75	0.00		0.00
36.00	0.00		0.00





Routing Diagram for 220003 Maloney DA 4 10 yr Postdeveloped
Prepared by rba, Printed 6/3/2020
HydroCAD® 10.00-15 s/n 01102 © 2015 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.068	39	>75% Grass cover, Good, HSG A (DA1)
0.068	76	Porous pavement (DA 1)
0.081	98	roofs (DA 1)
0.217	**73**	**TOTAL AREA**

Summary for Subcatchment DA 1: Impervious

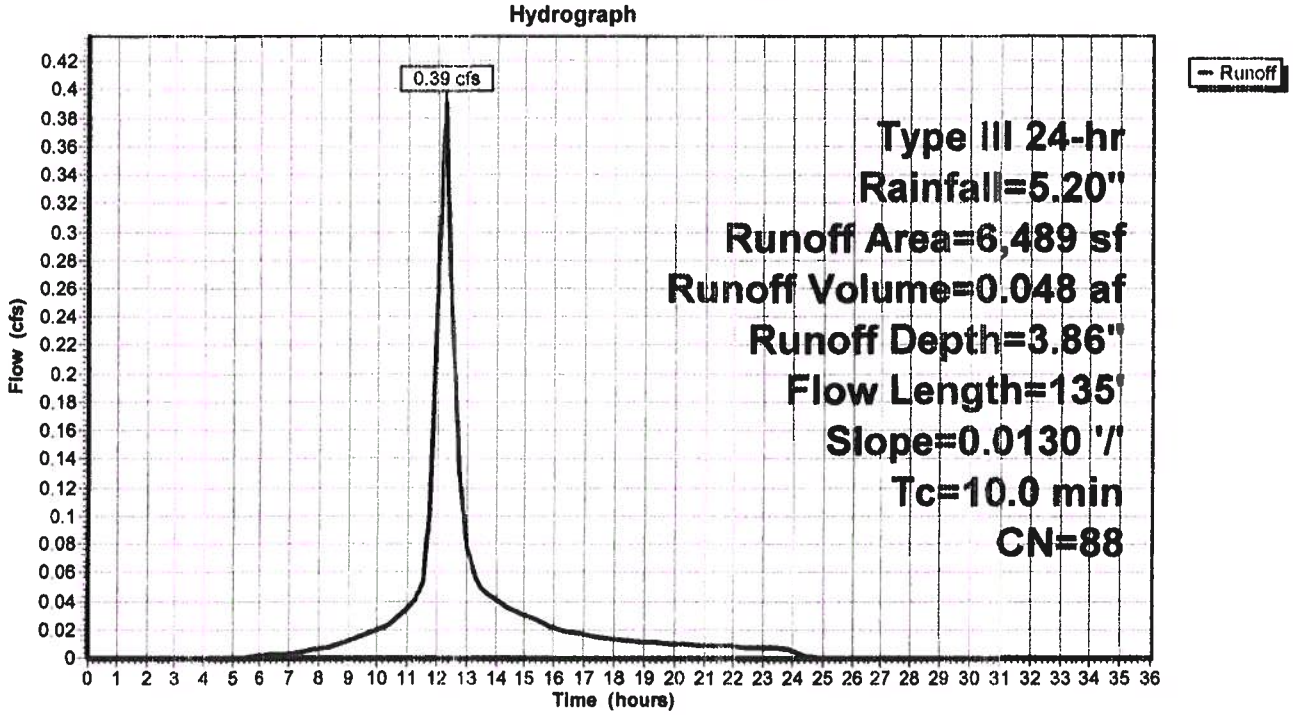
Runoff = 0.39 cfs @ 12.25 hrs, Volume= 0.048 af, Depth= 3.86"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.25 hrs
Type III 24-hr Rainfall=5.20"

	Area (sf)	CN	Description
*	3,508	98	roofs
*	2,981	76	Porous pavement
	6,489	88	Weighted Average
	2,981		45.94% Pervious Area
	3,508		54.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	135	0.0130	1.25		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
1.8	135	Total, Increased to minimum Tc = 10.0 min			

Subcatchment DA 1: Impervious



Hydrograph for Subcatchment DA 1: Impervious

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.00	3.90	2.64	0.08
0.25	0.01	0.00	0.00	13.25	3.99	2.72	0.06
0.50	0.03	0.00	0.00	13.50	4.07	2.80	0.05
0.75	0.04	0.00	0.00	13.75	4.15	2.87	0.04
1.00	0.05	0.00	0.00	14.00	4.22	2.93	0.04
1.25	0.06	0.00	0.00	14.25	4.28	2.99	0.04
1.50	0.08	0.00	0.00	14.50	4.34	3.04	0.03
1.75	0.09	0.00	0.00	14.75	4.39	3.09	0.03
2.00	0.10	0.00	0.00	15.00	4.44	3.14	0.03
2.25	0.12	0.00	0.00	15.25	4.49	3.19	0.03
2.50	0.13	0.00	0.00	15.50	4.53	3.23	0.03
2.75	0.15	0.00	0.00	15.75	4.57	3.26	0.02
3.00	0.16	0.00	0.00	16.00	4.61	3.30	0.02
3.25	0.18	0.00	0.00	16.25	4.64	3.33	0.02
3.50	0.19	0.00	0.00	16.50	4.67	3.36	0.02
3.75	0.21	0.00	0.00	16.75	4.70	3.39	0.02
4.00	0.22	0.00	0.00	17.00	4.73	3.41	0.02
4.25	0.24	0.00	0.00	17.25	4.76	3.44	0.02
4.50	0.26	0.00	0.00	17.50	4.78	3.46	0.01
4.75	0.28	0.00	0.00	17.75	4.80	3.48	0.01
5.00	0.30	0.00	0.00	18.00	4.83	3.50	0.01
5.25	0.31	0.00	0.00	18.25	4.85	3.52	0.01
5.50	0.33	0.00	0.00	18.50	4.87	3.54	0.01
5.75	0.35	0.00	0.00	18.75	4.89	3.56	0.01
6.00	0.37	0.01	0.00	19.00	4.90	3.58	0.01
6.25	0.40	0.01	0.00	19.25	4.92	3.60	0.01
6.50	0.42	0.01	0.00	19.50	4.94	3.61	0.01
6.75	0.44	0.02	0.00	19.75	4.96	3.63	0.01
7.00	0.47	0.03	0.00	20.00	4.98	3.65	0.01
7.25	0.50	0.03	0.00	20.25	4.99	3.66	0.01
7.50	0.53	0.04	0.00	20.50	5.01	3.68	0.01
7.75	0.56	0.05	0.01	20.75	5.03	3.69	0.01
8.00	0.59	0.06	0.01	21.00	5.04	3.71	0.01
8.25	0.63	0.07	0.01	21.25	5.06	3.72	0.01
8.50	0.67	0.09	0.01	21.50	5.07	3.74	0.01
8.75	0.71	0.11	0.01	21.75	5.09	3.75	0.01
9.00	0.76	0.13	0.01	22.00	5.10	3.76	0.01
9.25	0.81	0.15	0.01	22.25	5.11	3.78	0.01
9.50	0.86	0.18	0.02	22.50	5.13	3.79	0.01
9.75	0.92	0.21	0.02	22.75	5.14	3.80	0.01
10.00	0.98	0.24	0.02	23.00	5.15	3.81	0.01
10.25	1.05	0.28	0.02	23.25	5.17	3.83	0.01
10.50	1.13	0.33	0.03	23.50	5.18	3.84	0.01
10.75	1.21	0.38	0.03	23.75	5.19	3.85	0.01
11.00	1.30	0.44	0.03	24.00	**5.20**	**3.86**	0.01
11.25	1.41	0.52	0.04	24.25	5.20	3.86	0.00
11.50	1.55	0.62	0.05	24.50	5.20	3.86	0.00
11.75	1.85	0.84	0.10	24.75	5.20	3.86	0.00
12.00	2.60	1.47	0.26	25.00	5.20	3.86	0.00
12.25	3.35	2.13	**0.39**	25.25	5.20	3.86	0.00
12.50	3.65	2.41	0.25	25.50	5.20	3.86	0.00
12.75	3.79	2.53	0.13	25.75	5.20	3.86	0.00

Hydrograph for Subcatchment DA 1: Impervious (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
26.00	5.20	3.86	0.00
26.25	5.20	3.86	0.00
26.50	5.20	3.86	0.00
26.75	5.20	3.86	0.00
27.00	5.20	3.86	0.00
27.25	5.20	3.86	0.00
27.50	5.20	3.86	0.00
27.75	5.20	3.86	0.00
28.00	5.20	3.86	0.00
28.25	5.20	3.86	0.00
28.50	5.20	3.86	0.00
28.75	5.20	3.86	0.00
29.00	5.20	3.86	0.00
29.25	5.20	3.86	0.00
29.50	5.20	3.86	0.00
29.75	5.20	3.86	0.00
30.00	5.20	3.86	0.00
30.25	5.20	3.86	0.00
30.50	5.20	3.86	0.00
30.75	5.20	3.86	0.00
31.00	5.20	3.86	0.00
31.25	5.20	3.86	0.00
31.50	5.20	3.86	0.00
31.75	5.20	3.86	0.00
32.00	5.20	3.86	0.00
32.25	5.20	3.86	0.00
32.50	5.20	3.86	0.00
32.75	5.20	3.86	0.00
33.00	5.20	3.86	0.00
33.25	5.20	3.86	0.00
33.50	5.20	3.86	0.00
33.75	5.20	3.86	0.00
34.00	5.20	3.86	0.00
34.25	5.20	3.86	0.00
34.50	5.20	3.86	0.00
34.75	5.20	3.86	0.00
35.00	5.20	3.86	0.00
35.25	5.20	3.86	0.00
35.50	5.20	3.86	0.00
35.75	5.20	3.86	0.00
36.00	5.20	3.86	0.00

Summary for Subcatchment DA1: Pervious

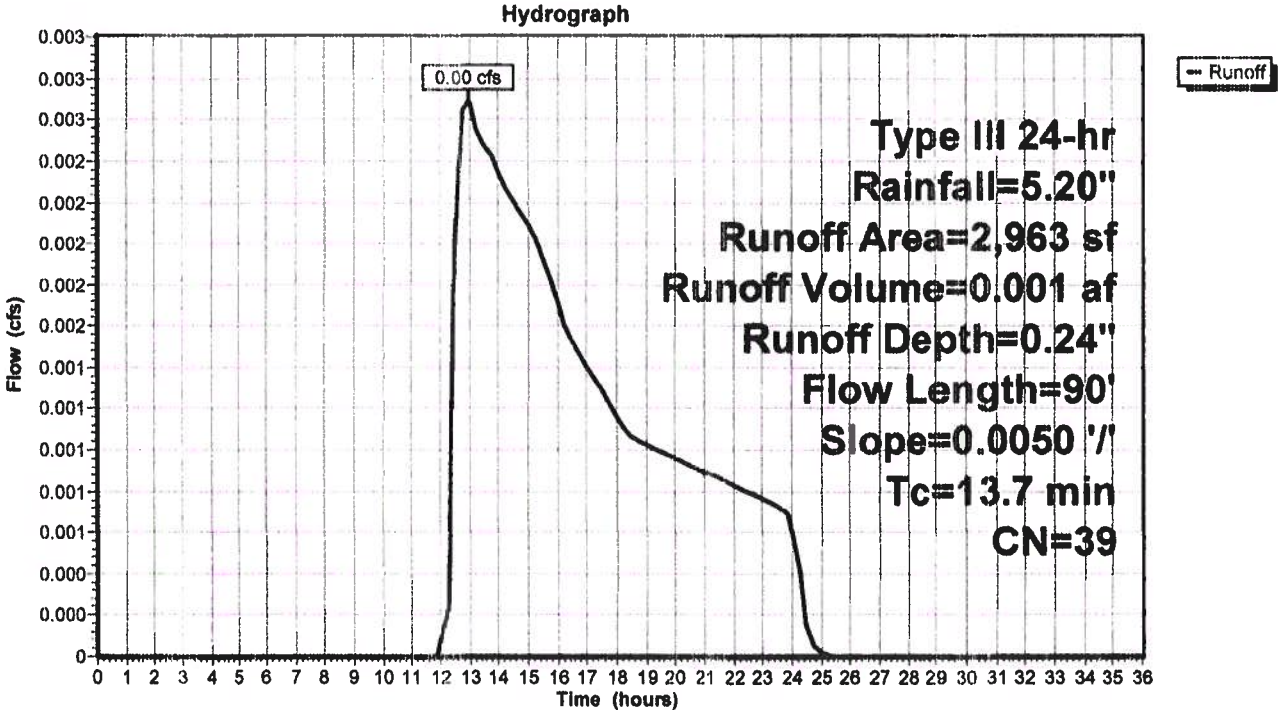
Runoff = 0.00 cfs @ 12.93 hrs, Volume= 0.001 af, Depth= 0.24"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.25 hrs
Type III 24-hr Rainfall=5.20"

Area (sf)	CN	Description
2,963	39	>75% Grass cover, Good, HSG A
2,963		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	90	0.0050	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 8.90"

Subcatchment DA1: Pervious



Hydrograph for Subcatchment DA1: Pervious

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.00	3.90	0.04	**0.00**
0.25	0.01	0.00	0.00	13.25	3.99	0.05	0.00
0.50	0.03	0.00	0.00	13.50	4.07	0.05	0.00
0.75	0.04	0.00	0.00	13.75	4.15	0.06	0.00
1.00	0.05	0.00	0.00	14.00	4.22	0.07	0.00
1.25	0.06	0.00	0.00	14.25	4.28	0.08	0.00
1.50	0.08	0.00	0.00	14.50	4.34	0.09	0.00
1.75	0.09	0.00	0.00	14.75	4.39	0.09	0.00
2.00	0.10	0.00	0.00	15.00	4.44	0.10	0.00
2.25	0.12	0.00	0.00	15.25	4.49	0.11	0.00
2.50	0.13	0.00	0.00	15.50	4.53	0.12	0.00
2.75	0.15	0.00	0.00	15.75	4.57	0.12	0.00
3.00	0.16	0.00	0.00	16.00	4.61	0.13	0.00
3.25	0.18	0.00	0.00	16.25	4.64	0.13	0.00
3.50	0.19	0.00	0.00	16.50	4.67	0.14	0.00
3.75	0.21	0.00	0.00	16.75	4.70	0.14	0.00
4.00	0.22	0.00	0.00	17.00	4.73	0.15	0.00
4.25	0.24	0.00	0.00	17.25	4.76	0.15	0.00
4.50	0.26	0.00	0.00	17.50	4.78	0.16	0.00
4.75	0.28	0.00	0.00	17.75	4.80	0.16	0.00
5.00	0.30	0.00	0.00	18.00	4.83	0.17	0.00
5.25	0.31	0.00	0.00	18.25	4.85	0.17	0.00
5.50	0.33	0.00	0.00	18.50	4.87	0.17	0.00
5.75	0.35	0.00	0.00	18.75	4.89	0.18	0.00
6.00	0.37	0.00	0.00	19.00	4.90	0.18	0.00
6.25	0.40	0.00	0.00	19.25	4.92	0.18	0.00
6.50	0.42	0.00	0.00	19.50	4.94	0.19	0.00
6.75	0.44	0.00	0.00	19.75	4.96	0.19	0.00
7.00	0.47	0.00	0.00	20.00	4.98	0.20	0.00
7.25	0.50	0.00	0.00	20.25	4.99	0.20	0.00
7.50	0.53	0.00	0.00	20.50	5.01	0.20	0.00
7.75	0.56	0.00	0.00	20.75	5.03	0.21	0.00
8.00	0.59	0.00	0.00	21.00	5.04	0.21	0.00
8.25	0.63	0.00	0.00	21.25	5.06	0.21	0.00
8.50	0.67	0.00	0.00	21.50	5.07	0.21	0.00
8.75	0.71	0.00	0.00	21.75	5.09	0.22	0.00
9.00	0.76	0.00	0.00	22.00	5.10	0.22	0.00
9.25	0.81	0.00	0.00	22.25	5.11	0.22	0.00
9.50	0.86	0.00	0.00	22.50	5.13	0.23	0.00
9.75	0.92	0.00	0.00	22.75	5.14	0.23	0.00
10.00	0.98	0.00	0.00	23.00	5.15	0.23	0.00
10.25	1.05	0.00	0.00	23.25	5.17	0.23	0.00
10.50	1.13	0.00	0.00	23.50	5.18	0.24	0.00
10.75	1.21	0.00	0.00	23.75	5.19	0.24	0.00
11.00	1.30	0.00	0.00	24.00	**5.20**	**0.24**	0.00
11.25	1.41	0.00	0.00	24.25	5.20	0.24	0.00
11.50	1.55	0.00	0.00	24.50	5.20	0.24	0.00
11.75	1.85	0.00	0.00	24.75	5.20	0.24	0.00
12.00	2.60	0.00	0.00	25.00	5.20	0.24	0.00
12.25	3.35	0.00	0.00	25.25	5.20	0.24	0.00
12.50	3.65	0.02	0.00	25.50	5.20	0.24	0.00
12.75	3.79	0.03	0.00	25.75	5.20	0.24	0.00

Hydrograph for Subcatchment DA1: Pervious (continued)

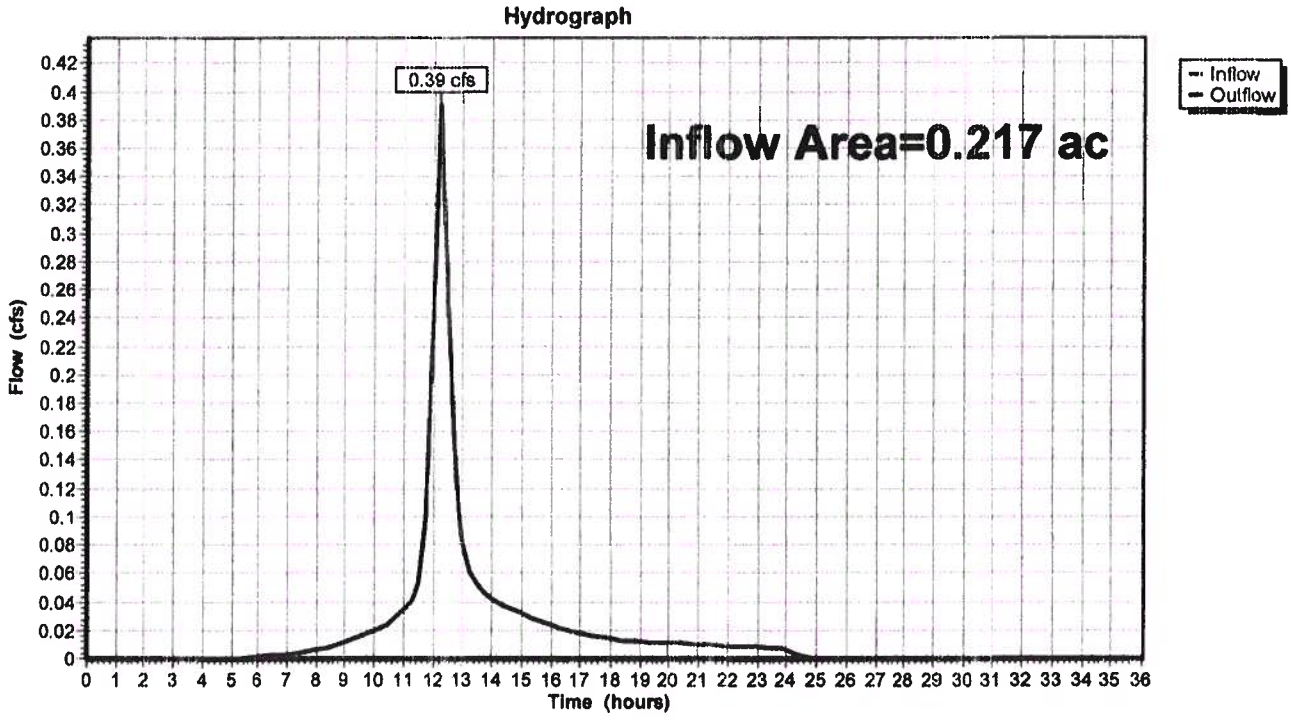
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
26.00	5.20	0.24	0.00
26.25	5.20	0.24	0.00
26.50	5.20	0.24	0.00
26.75	5.20	0.24	0.00
27.00	5.20	0.24	0.00
27.25	5.20	0.24	0.00
27.50	5.20	0.24	0.00
27.75	5.20	0.24	0.00
28.00	5.20	0.24	0.00
28.25	5.20	0.24	0.00
28.50	5.20	0.24	0.00
28.75	5.20	0.24	0.00
29.00	5.20	0.24	0.00
29.25	5.20	0.24	0.00
29.50	5.20	0.24	0.00
29.75	5.20	0.24	0.00
30.00	5.20	0.24	0.00
30.25	5.20	0.24	0.00
30.50	5.20	0.24	0.00
30.75	5.20	0.24	0.00
31.00	5.20	0.24	0.00
31.25	5.20	0.24	0.00
31.50	5.20	0.24	0.00
31.75	5.20	0.24	0.00
32.00	5.20	0.24	0.00
32.25	5.20	0.24	0.00
32.50	5.20	0.24	0.00
32.75	5.20	0.24	0.00
33.00	5.20	0.24	0.00
33.25	5.20	0.24	0.00
33.50	5.20	0.24	0.00
33.75	5.20	0.24	0.00
34.00	5.20	0.24	0.00
34.25	5.20	0.24	0.00
34.50	5.20	0.24	0.00
34.75	5.20	0.24	0.00
35.00	5.20	0.24	0.00
35.25	5.20	0.24	0.00
35.50	5.20	0.24	0.00
35.75	5.20	0.24	0.00
36.00	5.20	0.24	0.00

Summary for Reach 1R: (new Reach)

Inflow Area = 0.217 ac, 37.11% Impervious, Inflow Depth = 2.73"
Inflow = 0.39 cfs @ 12.25 hrs, Volume= 0.049 af
Outflow = 0.39 cfs @ 12.25 hrs, Volume= 0.049 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.25 hrs

Reach 1R: (new Reach)

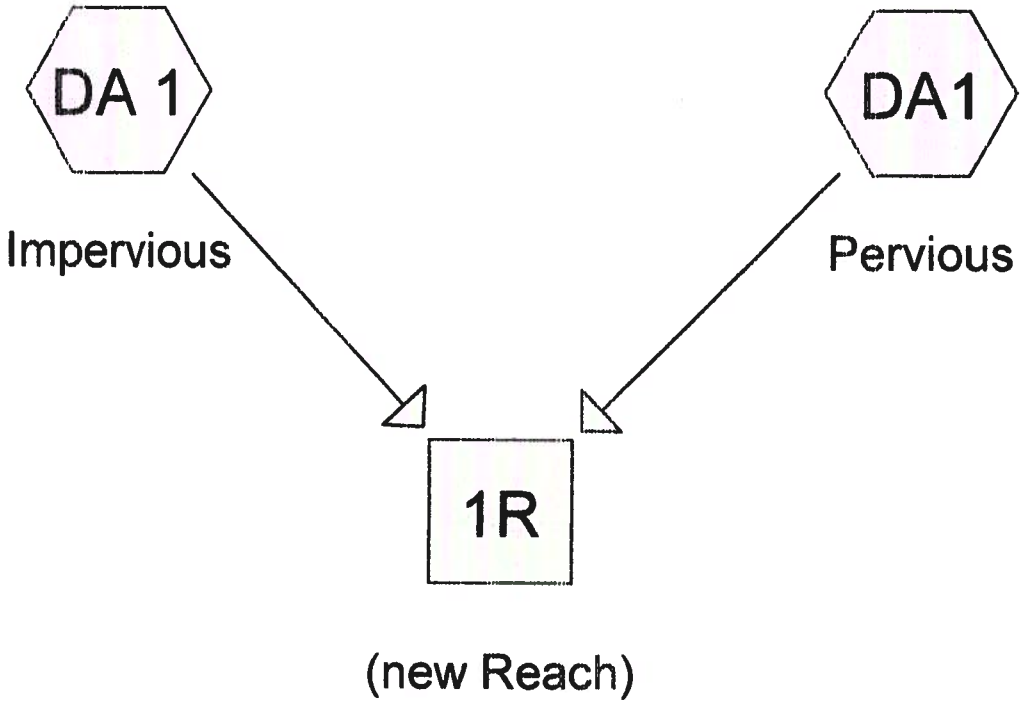


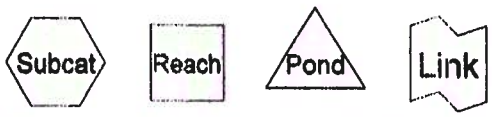
Hydrograph for Reach 1R: (new Reach)

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	13.00	0.08		0.08
0.25	0.00		0.00	13.25	0.06		0.06
0.50	0.00		0.00	13.50	0.05		0.05
0.75	0.00		0.00	13.75	0.05		0.05
1.00	0.00		0.00	14.00	0.04		0.04
1.25	0.00		0.00	14.25	0.04		0.04
1.50	0.00		0.00	14.50	0.04		0.04
1.75	0.00		0.00	14.75	0.03		0.03
2.00	0.00		0.00	15.00	0.03		0.03
2.25	0.00		0.00	15.25	0.03		0.03
2.50	0.00		0.00	15.50	0.03		0.03
2.75	0.00		0.00	15.75	0.03		0.03
3.00	0.00		0.00	16.00	0.02		0.02
3.25	0.00		0.00	16.25	0.02		0.02
3.50	0.00		0.00	16.50	0.02		0.02
3.75	0.00		0.00	16.75	0.02		0.02
4.00	0.00		0.00	17.00	0.02		0.02
4.25	0.00		0.00	17.25	0.02		0.02
4.50	0.00		0.00	17.50	0.02		0.02
4.75	0.00		0.00	17.75	0.01		0.01
5.00	0.00		0.00	18.00	0.01		0.01
5.25	0.00		0.00	18.25	0.01		0.01
5.50	0.00		0.00	18.50	0.01		0.01
5.75	0.00		0.00	18.75	0.01		0.01
6.00	0.00		0.00	19.00	0.01		0.01
6.25	0.00		0.00	19.25	0.01		0.01
6.50	0.00		0.00	19.50	0.01		0.01
6.75	0.00		0.00	19.75	0.01		0.01
7.00	0.00		0.00	20.00	0.01		0.01
7.25	0.00		0.00	20.25	0.01		0.01
7.50	0.00		0.00	20.50	0.01		0.01
7.75	0.01		0.01	20.75	0.01		0.01
8.00	0.01		0.01	21.00	0.01		0.01
8.25	0.01		0.01	21.25	0.01		0.01
8.50	0.01		0.01	21.50	0.01		0.01
8.75	0.01		0.01	21.75	0.01		0.01
9.00	0.01		0.01	22.00	0.01		0.01
9.25	0.01		0.01	22.25	0.01		0.01
9.50	0.02		0.02	22.50	0.01		0.01
9.75	0.02		0.02	22.75	0.01		0.01
10.00	0.02		0.02	23.00	0.01		0.01
10.25	0.02		0.02	23.25	0.01		0.01
10.50	0.03		0.03	23.50	0.01		0.01
10.75	0.03		0.03	23.75	0.01		0.01
11.00	0.03		0.03	24.00	0.01		0.01
11.25	0.04		0.04	24.25	0.00		0.00
11.50	0.05		0.05	24.50	0.00		0.00
11.75	0.10		0.10	24.75	0.00		0.00
12.00	0.26		0.26	25.00	0.00		0.00
12.25	**0.39**		**0.39**	25.25	0.00		0.00
12.50	0.25		0.25	25.50	0.00		0.00
12.75	0.13		0.13	25.75	0.00		0.00

Hydrograph for Reach 1R: (new Reach) (continued)

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
26.00	0.00		0.00
26.25	0.00		0.00
26.50	0.00		0.00
26.75	0.00		0.00
27.00	0.00		0.00
27.25	0.00		0.00
27.50	0.00		0.00
27.75	0.00		0.00
28.00	0.00		0.00
28.25	0.00		0.00
28.50	0.00		0.00
28.75	0.00		0.00
29.00	0.00		0.00
29.25	0.00		0.00
29.50	0.00		0.00
29.75	0.00		0.00
30.00	0.00		0.00
30.25	0.00		0.00
30.50	0.00		0.00
30.75	0.00		0.00
31.00	0.00		0.00
31.25	0.00		0.00
31.50	0.00		0.00
31.75	0.00		0.00
32.00	0.00		0.00
32.25	0.00		0.00
32.50	0.00		0.00
32.75	0.00		0.00
33.00	0.00		0.00
33.25	0.00		0.00
33.50	0.00		0.00
33.75	0.00		0.00
34.00	0.00		0.00
34.25	0.00		0.00
34.50	0.00		0.00
34.75	0.00		0.00
35.00	0.00		0.00
35.25	0.00		0.00
35.50	0.00		0.00
35.75	0.00		0.00
36.00	0.00		0.00





Routing Diagram for 220003 Maloney DA 4 100 yr Postdeveloped
Prepared by rba, Printed 6/3/2020
HydroCAD® 10.00-15 s/n 01102 © 2015 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.068	39	>75% Grass cover, Good, HSG A (DA1)
0.068	76	Porous pavement (DA 1)
0.081	98	roofs (DA 1)
0.217	**73**	**TOTAL AREA**

Summary for Subcatchment DA 1: Impervious

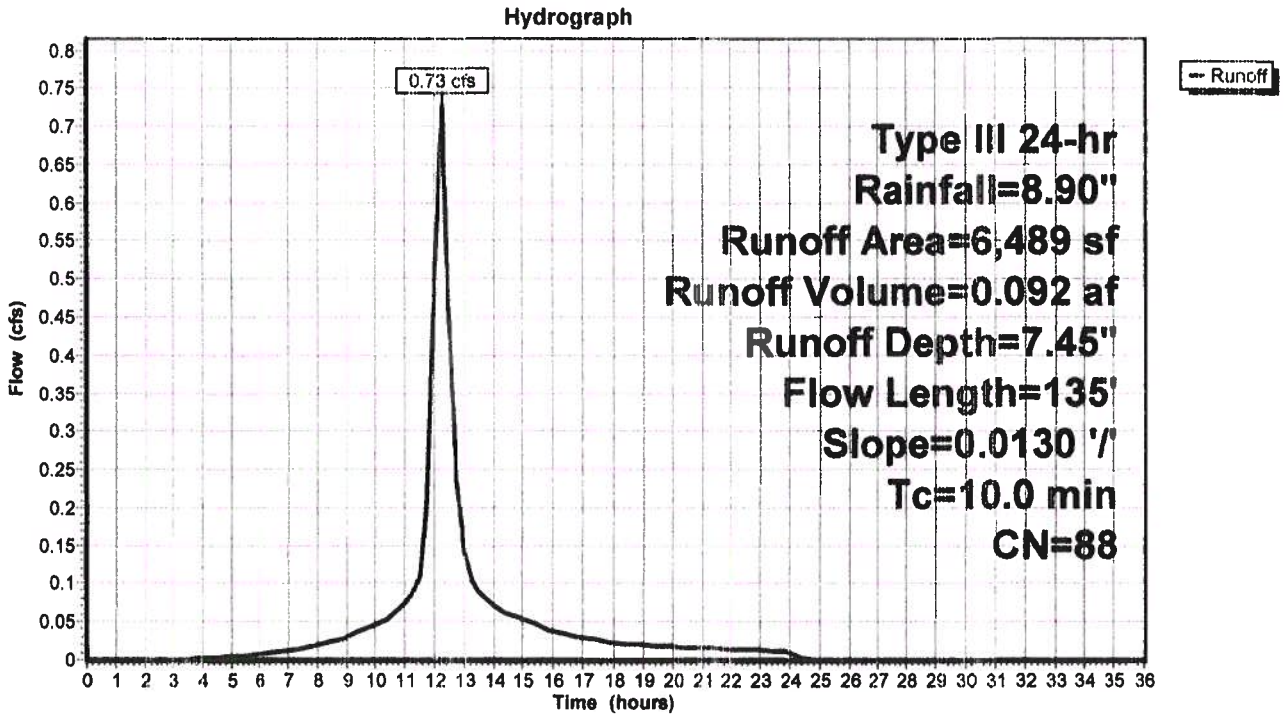
Runoff = 0.73 cfs @ 12.24 hrs, Volume= 0.092 af, Depth= 7.45"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.25 hrs
Type III 24-hr Rainfall=8.90"

	Area (sf)	CN	Description
*	3,508	98	roofs
*	2,981	76	Porous pavement
	6,489	88	Weighted Average
	2,981		45.94% Pervious Area
	3,508		54.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	135	0.0130	1.25		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
1.8	135	Total, Increased to minimum Tc = 10.0 min			

Subcatchment DA 1: Impervious



Hydrograph for Subcatchment DA 1: Impervious

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.00	6.67	5.28	0.14
0.25	0.02	0.00	0.00	13.25	6.83	5.43	0.10
0.50	0.04	0.00	0.00	13.50	6.97	5.57	0.09
0.75	0.07	0.00	0.00	13.75	7.10	5.69	0.08
1.00	0.09	0.00	0.00	14.00	7.22	5.81	0.07
1.25	0.11	0.00	0.00	14.25	7.32	5.91	0.07
1.50	0.13	0.00	0.00	14.50	7.42	6.01	0.06
1.75	0.16	0.00	0.00	14.75	7.52	6.10	0.06
2.00	0.18	0.00	0.00	15.00	7.60	6.18	0.05
2.25	0.20	0.00	0.00	15.25	7.68	6.26	0.05
2.50	0.22	0.00	0.00	15.50	7.76	6.33	0.05
2.75	0.25	0.00	0.00	15.75	7.82	6.40	0.04
3.00	0.27	0.00	0.00	16.00	7.89	6.46	0.04
3.25	0.30	0.00	0.00	16.25	7.94	6.51	0.03
3.50	0.33	0.00	0.00	16.50	8.00	6.56	0.03
3.75	0.35	0.00	0.00	16.75	8.05	6.61	0.03
4.00	0.38	0.01	0.00	17.00	8.09	6.66	0.03
4.25	0.41	0.01	0.00	17.25	8.14	6.70	0.03
4.50	0.44	0.02	0.00	17.50	8.18	6.75	0.03
4.75	0.47	0.03	0.00	17.75	8.22	6.79	0.02
5.00	0.51	0.03	0.00	18.00	8.26	6.82	0.02
5.25	0.54	0.04	0.01	18.25	8.29	6.86	0.02
5.50	0.57	0.05	0.01	18.50	8.33	6.89	0.02
5.75	0.61	0.07	0.01	18.75	8.36	6.92	0.02
6.00	0.64	0.08	0.01	19.00	8.39	6.95	0.02
6.25	0.68	0.09	0.01	19.25	8.43	6.99	0.02
6.50	0.72	0.11	0.01	19.50	8.46	7.02	0.02
6.75	0.76	0.13	0.01	19.75	8.49	7.05	0.02
7.00	0.81	0.15	0.01	20.00	8.52	7.07	0.02
7.25	0.85	0.17	0.01	20.25	8.55	7.10	0.02
7.50	0.90	0.20	0.02	20.50	8.57	7.13	0.02
7.75	0.96	0.23	0.02	20.75	8.60	7.16	0.02
8.00	1.01	0.26	0.02	21.00	8.63	7.18	0.02
8.25	1.08	0.30	0.02	21.25	8.65	7.21	0.02
8.50	1.14	0.34	0.02	21.50	8.68	7.23	0.02
8.75	1.22	0.39	0.03	21.75	8.70	7.26	0.01
9.00	1.30	0.44	0.03	22.00	8.73	7.28	0.01
9.25	1.38	0.50	0.03	22.25	8.75	7.30	0.01
9.50	1.48	0.56	0.04	22.50	8.78	7.33	0.01
9.75	1.58	0.64	0.04	22.75	8.80	7.35	0.01
10.00	1.68	0.72	0.05	23.00	8.82	7.37	0.01
10.25	1.80	0.81	0.05	23.25	8.84	7.39	0.01
10.50	1.93	0.91	0.06	23.50	8.86	7.41	0.01
10.75	2.07	1.02	0.06	23.75	8.88	7.43	0.01
11.00	2.23	1.15	0.07	24.00	**8.90**	**7.45**	0.01
11.25	2.41	1.31	0.09	24.25	8.90	7.45	0.00
11.50	2.65	1.51	0.11	24.50	8.90	7.45	0.00
11.75	3.16	1.96	0.20	24.75	8.90	7.45	0.00
12.00	4.45	3.15	0.49	25.00	8.90	7.45	0.00
12.25	5.74	4.37	**0.73**	25.25	8.90	7.45	0.00
12.50	6.25	4.86	0.46	25.50	8.90	7.45	0.00
12.75	6.49	5.10	0.24	25.75	8.90	7.45	0.00

Hydrograph for Subcatchment DA 1: Impervious (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
26.00	8.90	7.45	0.00
26.25	8.90	7.45	0.00
26.50	8.90	7.45	0.00
26.75	8.90	7.45	0.00
27.00	8.90	7.45	0.00
27.25	8.90	7.45	0.00
27.50	8.90	7.45	0.00
27.75	8.90	7.45	0.00
28.00	8.90	7.45	0.00
28.25	8.90	7.45	0.00
28.50	8.90	7.45	0.00
28.75	8.90	7.45	0.00
29.00	8.90	7.45	0.00
29.25	8.90	7.45	0.00
29.50	8.90	7.45	0.00
29.75	8.90	7.45	0.00
30.00	8.90	7.45	0.00
30.25	8.90	7.45	0.00
30.50	8.90	7.45	0.00
30.75	8.90	7.45	0.00
31.00	8.90	7.45	0.00
31.25	8.90	7.45	0.00
31.50	8.90	7.45	0.00
31.75	8.90	7.45	0.00
32.00	8.90	7.45	0.00
32.25	8.90	7.45	0.00
32.50	8.90	7.45	0.00
32.75	8.90	7.45	0.00
33.00	8.90	7.45	0.00
33.25	8.90	7.45	0.00
33.50	8.90	7.45	0.00
33.75	8.90	7.45	0.00
34.00	8.90	7.45	0.00
34.25	8.90	7.45	0.00
34.50	8.90	7.45	0.00
34.75	8.90	7.45	0.00
35.00	8.90	7.45	0.00
35.25	8.90	7.45	0.00
35.50	8.90	7.45	0.00
35.75	8.90	7.45	0.00
36.00	8.90	7.45	0.00

Summary for Subcatchment DA1: Pervious

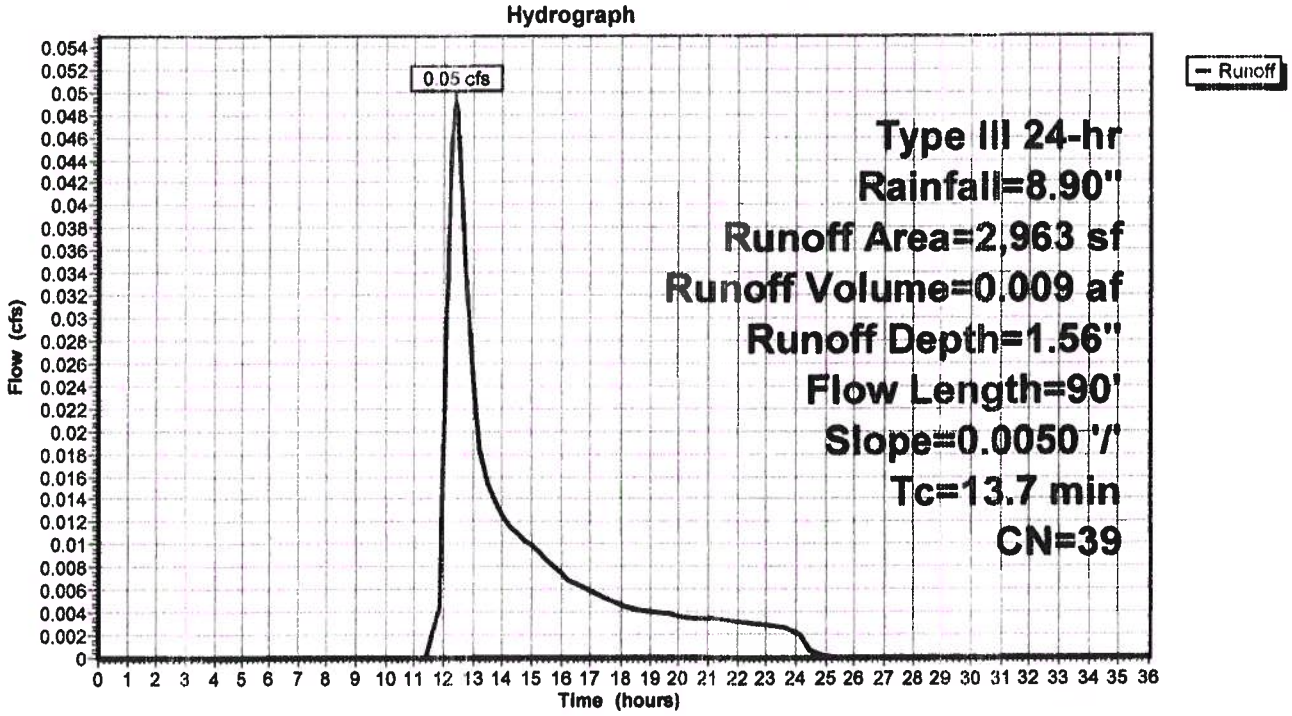
Runoff = 0.05 cfs @ 12.42 hrs, Volume= 0.009 af, Depth= 1.56"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.25 hrs
Type III 24-hr Rainfall=8.90"

Area (sf)	CN	Description
2,963	39	>75% Grass cover, Good, HSG A
2,963		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	90	0.0050	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 8.90"

Subcatchment DA1: Pervious



Hydrograph for Subcatchment DA1: Pervious

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.00	6.67	0.66	0.02
0.25	0.02	0.00	0.00	13.25	6.83	0.71	0.02
0.50	0.04	0.00	0.00	13.50	6.97	0.76	0.02
0.75	0.07	0.00	0.00	13.75	7.10	0.81	0.01
1.00	0.09	0.00	0.00	14.00	7.22	0.85	0.01
1.25	0.11	0.00	0.00	14.25	7.32	0.89	0.01
1.50	0.13	0.00	0.00	14.50	7.42	0.93	0.01
1.75	0.16	0.00	0.00	14.75	7.52	0.96	0.01
2.00	0.18	0.00	0.00	15.00	7.60	1.00	0.01
2.25	0.20	0.00	0.00	15.25	7.68	1.03	0.01
2.50	0.22	0.00	0.00	15.50	7.76	1.06	0.01
2.75	0.25	0.00	0.00	15.75	7.82	1.08	0.01
3.00	0.27	0.00	0.00	16.00	7.89	1.11	0.01
3.25	0.30	0.00	0.00	16.25	7.94	1.13	0.01
3.50	0.33	0.00	0.00	16.50	8.00	1.16	0.01
3.75	0.35	0.00	0.00	16.75	8.05	1.18	0.01
4.00	0.38	0.00	0.00	17.00	8.09	1.20	0.01
4.25	0.41	0.00	0.00	17.25	8.14	1.22	0.01
4.50	0.44	0.00	0.00	17.50	8.18	1.23	0.01
4.75	0.47	0.00	0.00	17.75	8.22	1.25	0.00
5.00	0.51	0.00	0.00	18.00	8.26	1.27	0.00
5.25	0.54	0.00	0.00	18.25	8.29	1.28	0.00
5.50	0.57	0.00	0.00	18.50	8.33	1.30	0.00
5.75	0.61	0.00	0.00	18.75	8.36	1.31	0.00
6.00	0.64	0.00	0.00	19.00	8.39	1.33	0.00
6.25	0.68	0.00	0.00	19.25	8.43	1.34	0.00
6.50	0.72	0.00	0.00	19.50	8.46	1.35	0.00
6.75	0.76	0.00	0.00	19.75	8.49	1.37	0.00
7.00	0.81	0.00	0.00	20.00	8.52	1.38	0.00
7.25	0.85	0.00	0.00	20.25	8.55	1.39	0.00
7.50	0.90	0.00	0.00	20.50	8.57	1.41	0.00
7.75	0.96	0.00	0.00	20.75	8.60	1.42	0.00
8.00	1.01	0.00	0.00	21.00	8.63	1.43	0.00
8.25	1.08	0.00	0.00	21.25	8.65	1.44	0.00
8.50	1.14	0.00	0.00	21.50	8.68	1.45	0.00
8.75	1.22	0.00	0.00	21.75	8.70	1.47	0.00
9.00	1.30	0.00	0.00	22.00	8.73	1.48	0.00
9.25	1.38	0.00	0.00	22.25	8.75	1.49	0.00
9.50	1.48	0.00	0.00	22.50	8.78	1.50	0.00
9.75	1.58	0.00	0.00	22.75	8.80	1.51	0.00
10.00	1.68	0.00	0.00	23.00	8.82	1.52	0.00
10.25	1.80	0.00	0.00	23.25	8.84	1.53	0.00
10.50	1.93	0.00	0.00	23.50	8.86	1.54	0.00
10.75	2.07	0.00	0.00	23.75	8.88	1.55	0.00
11.00	2.23	0.00	0.00	24.00	**8.90**	**1.56**	0.00
11.25	2.41	0.00	0.00	24.25	8.90	1.56	0.00
11.50	2.65	0.00	0.00	24.50	8.90	1.56	0.00
11.75	3.16	0.00	0.00	24.75	8.90	1.56	0.00
12.00	4.45	0.10	0.01	25.00	8.90	1.56	0.00
12.25	5.74	0.37	0.05	25.25	8.90	1.56	0.00
12.50	6.25	0.52	**0.05**	25.50	8.90	1.56	0.00
12.75	6.49	0.59	0.03	25.75	8.90	1.56	0.00

Hydrograph for Subcatchment DA1: Pervious (continued)

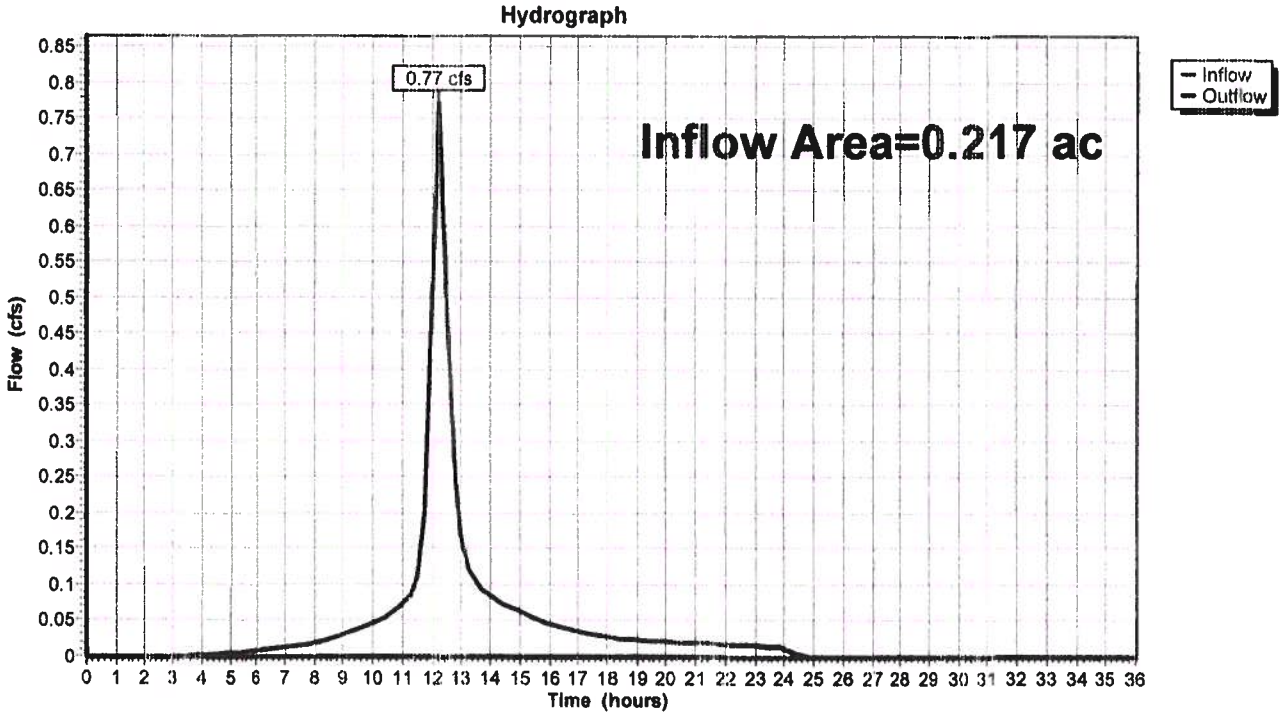
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
26.00	8.90	1.56	0.00
26.25	8.90	1.56	0.00
26.50	8.90	1.56	0.00
26.75	8.90	1.56	0.00
27.00	8.90	1.56	0.00
27.25	8.90	1.56	0.00
27.50	8.90	1.56	0.00
27.75	8.90	1.56	0.00
28.00	8.90	1.56	0.00
28.25	8.90	1.56	0.00
28.50	8.90	1.56	0.00
28.75	8.90	1.56	0.00
29.00	8.90	1.56	0.00
29.25	8.90	1.56	0.00
29.50	8.90	1.56	0.00
29.75	8.90	1.56	0.00
30.00	8.90	1.56	0.00
30.25	8.90	1.56	0.00
30.50	8.90	1.56	0.00
30.75	8.90	1.56	0.00
31.00	8.90	1.56	0.00
31.25	8.90	1.56	0.00
31.50	8.90	1.56	0.00
31.75	8.90	1.56	0.00
32.00	8.90	1.56	0.00
32.25	8.90	1.56	0.00
32.50	8.90	1.56	0.00
32.75	8.90	1.56	0.00
33.00	8.90	1.56	0.00
33.25	8.90	1.56	0.00
33.50	8.90	1.56	0.00
33.75	8.90	1.56	0.00
34.00	8.90	1.56	0.00
34.25	8.90	1.56	0.00
34.50	8.90	1.56	0.00
34.75	8.90	1.56	0.00
35.00	8.90	1.56	0.00
35.25	8.90	1.56	0.00
35.50	8.90	1.56	0.00
35.75	8.90	1.56	0.00
36.00	8.90	1.56	0.00

Summary for Reach 1R: (new Reach)

Inflow Area = 0.217 ac, 37.11% Impervious, Inflow Depth = 5.60"
Inflow = 0.77 cfs @ 12.25 hrs, Volume= 0.101 af
Outflow = 0.77 cfs @ 12.25 hrs, Volume= 0.101 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.25 hrs

Reach 1R: (new Reach)

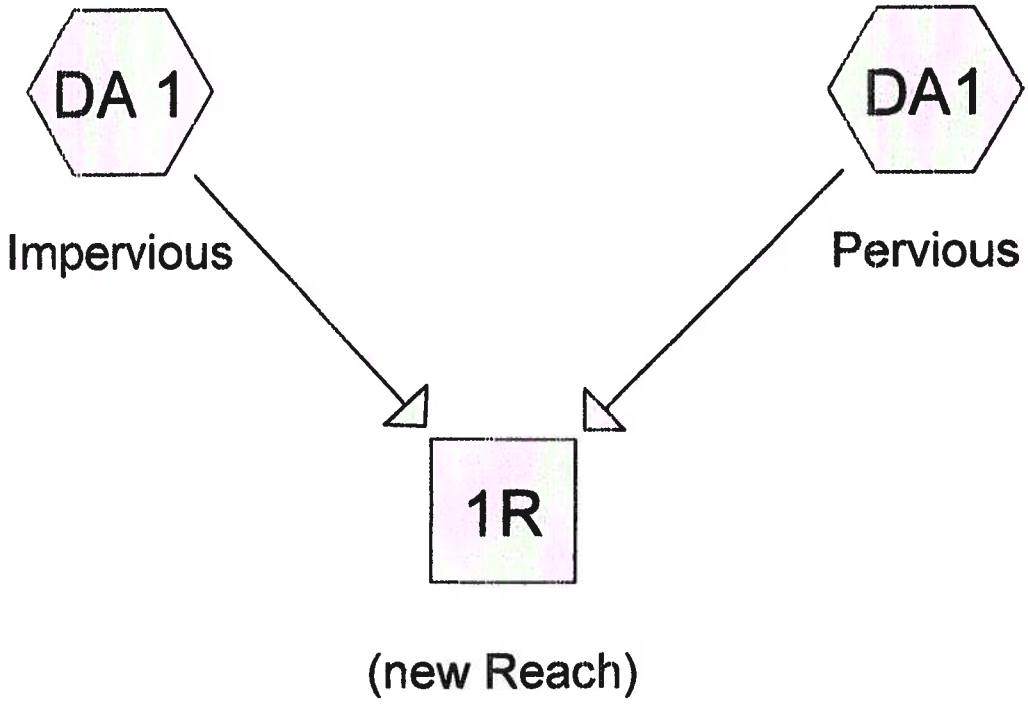


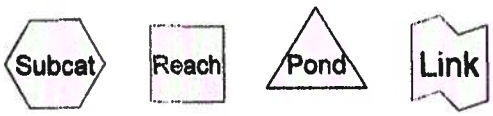
Hydrograph for Reach 1R: (new Reach)

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	13.00	0.17		0.17
0.25	0.00		0.00	13.25	0.12		0.12
0.50	0.00		0.00	13.50	0.10		0.10
0.75	0.00		0.00	13.75	0.09		0.09
1.00	0.00		0.00	14.00	0.08		0.08
1.25	0.00		0.00	14.25	0.08		0.08
1.50	0.00		0.00	14.50	0.07		0.07
1.75	0.00		0.00	14.75	0.07		0.07
2.00	0.00		0.00	15.00	0.06		0.06
2.25	0.00		0.00	15.25	0.06		0.06
2.50	0.00		0.00	15.50	0.05		0.05
2.75	0.00		0.00	15.75	0.05		0.05
3.00	0.00		0.00	16.00	0.05		0.05
3.25	0.00		0.00	16.25	0.04		0.04
3.50	0.00		0.00	16.50	0.04		0.04
3.75	0.00		0.00	16.75	0.04		0.04
4.00	0.00		0.00	17.00	0.03		0.03
4.25	0.00		0.00	17.25	0.03		0.03
4.50	0.00		0.00	17.50	0.03		0.03
4.75	0.00		0.00	17.75	0.03		0.03
5.00	0.00		0.00	18.00	0.03		0.03
5.25	0.01		0.01	18.25	0.03		0.03
5.50	0.01		0.01	18.50	0.02		0.02
5.75	0.01		0.01	18.75	0.02		0.02
6.00	0.01		0.01	19.00	0.02		0.02
6.25	0.01		0.01	19.25	0.02		0.02
6.50	0.01		0.01	19.50	0.02		0.02
6.75	0.01		0.01	19.75	0.02		0.02
7.00	0.01		0.01	20.00	0.02		0.02
7.25	0.01		0.01	20.25	0.02		0.02
7.50	0.02		0.02	20.50	0.02		0.02
7.75	0.02		0.02	20.75	0.02		0.02
8.00	0.02		0.02	21.00	0.02		0.02
8.25	0.02		0.02	21.25	0.02		0.02
8.50	0.02		0.02	21.50	0.02		0.02
8.75	0.03		0.03	21.75	0.02		0.02
9.00	0.03		0.03	22.00	0.02		0.02
9.25	0.03		0.03	22.25	0.02		0.02
9.50	0.04		0.04	22.50	0.02		0.02
9.75	0.04		0.04	22.75	0.02		0.02
10.00	0.05		0.05	23.00	0.02		0.02
10.25	0.05		0.05	23.25	0.02		0.02
10.50	0.06		0.06	23.50	0.01		0.01
10.75	0.06		0.06	23.75	0.01		0.01
11.00	0.07		0.07	24.00	0.01		0.01
11.25	0.09		0.09	24.25	0.01		0.01
11.50	0.11		0.11	24.50	0.00		0.00
11.75	0.20		0.20	24.75	0.00		0.00
12.00	0.50		0.50	25.00	0.00		0.00
12.25	**0.77**		**0.77**	25.25	0.00		0.00
12.50	0.51		0.51	25.50	0.00		0.00
12.75	0.27		0.27	25.75	0.00		0.00

Hydrograph for Reach 1R: (new Reach) (continued)

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
26.00	0.00		0.00
26.25	0.00		0.00
26.50	0.00		0.00
26.75	0.00		0.00
27.00	0.00		0.00
27.25	0.00		0.00
27.50	0.00		0.00
27.75	0.00		0.00
28.00	0.00		0.00
28.25	0.00		0.00
28.50	0.00		0.00
28.75	0.00		0.00
29.00	0.00		0.00
29.25	0.00		0.00
29.50	0.00		0.00
29.75	0.00		0.00
30.00	0.00		0.00
30.25	0.00		0.00
30.50	0.00		0.00
30.75	0.00		0.00
31.00	0.00		0.00
31.25	0.00		0.00
31.50	0.00		0.00
31.75	0.00		0.00
32.00	0.00		0.00
32.25	0.00		0.00
32.50	0.00		0.00
32.75	0.00		0.00
33.00	0.00		0.00
33.25	0.00		0.00
33.50	0.00		0.00
33.75	0.00		0.00
34.00	0.00		0.00
34.25	0.00		0.00
34.50	0.00		0.00
34.75	0.00		0.00
35.00	0.00		0.00
35.25	0.00		0.00
35.50	0.00		0.00
35.75	0.00		0.00
36.00	0.00		0.00





Routing Diagram for 220003 Maloney DA 4 NJDEP Water Quality
Prepared by rba, Printed 6/3/2020
HydroCAD® 10.00-15 s/n 01102 © 2015 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.068	39	>75% Grass cover, Good, HSG A (DA1)
0.068	76	Porous pavement (DA 1)
0.081	98	roofs (DA 1)
0.217	**73**	**TOTAL AREA**

Summary for Subcatchment DA 1: Impervious

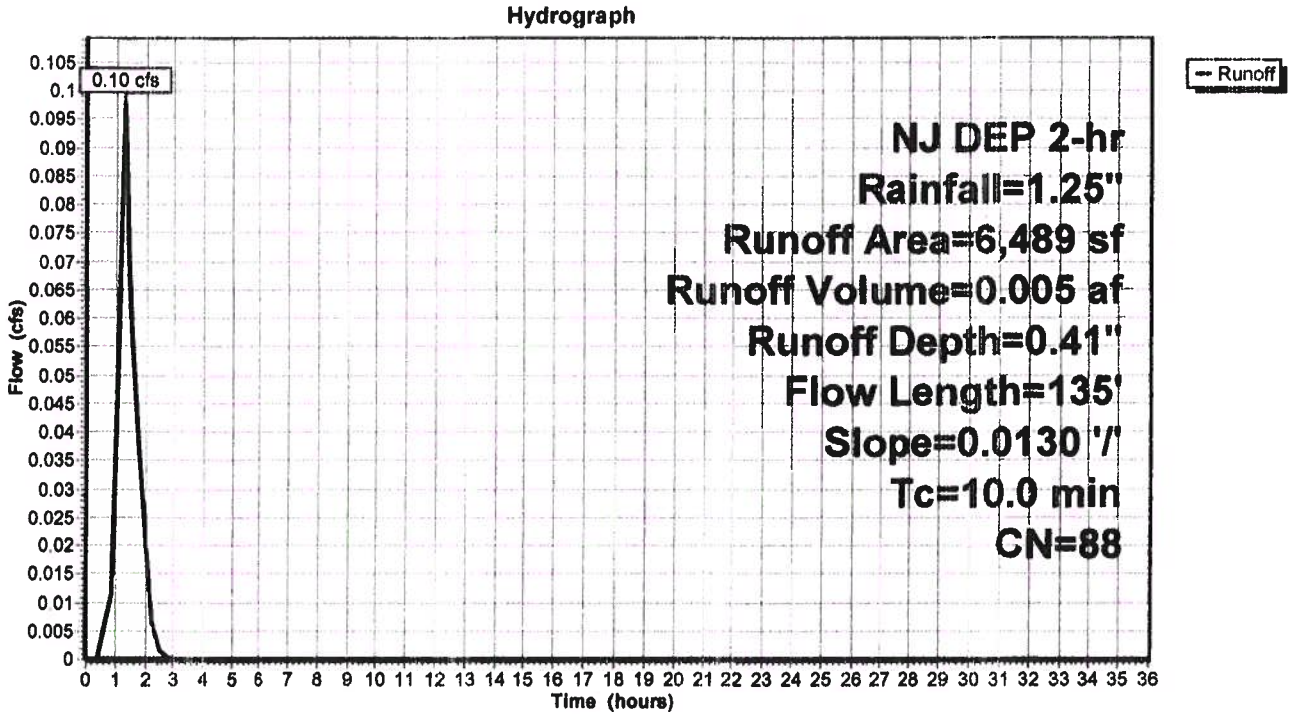
Runoff = 0.10 cfs @ 1.29 hrs, Volume= 0.005 af, Depth= 0.41"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.25 hrs
NJ DEP 2-hr Rainfall=1.25"

	Area (sf)	CN	Description
*	3,508	98	roofs
*	2,981	76	Porous pavement
	6,489	88	Weighted Average
	2,981		45.94% Pervious Area
	3,508		54.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	135	0.0130	1.25		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
1.8	135	Total, Increased to minimum Tc = 10.0 min			

Subcatchment DA 1: Impervious



Hydrograph for Subcatchment DA 1: Impervious

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.00	1.25	0.41	0.00
0.25	0.03	0.00	0.00	13.25	1.25	0.41	0.00
0.50	0.10	0.00	0.00	13.50	1.25	0.41	0.00
0.75	0.20	0.00	0.00	13.75	1.25	0.41	0.00
1.00	0.63	0.07	0.02	14.00	1.25	0.41	0.00
1.25	1.05	0.28	**0.10**	14.25	1.25	0.41	0.00
1.50	1.15	0.34	0.06	14.50	1.25	0.41	0.00
1.75	1.23	0.39	0.04	14.75	1.25	0.41	0.00
2.00	**1.25**	**0.41**	0.02	15.00	1.25	0.41	0.00
2.25	1.25	0.41	0.01	15.25	1.25	0.41	0.00
2.50	1.25	0.41	0.00	15.50	1.25	0.41	0.00
2.75	1.25	0.41	0.00	15.75	1.25	0.41	0.00
3.00	1.25	0.41	0.00	16.00	1.25	0.41	0.00
3.25	1.25	0.41	0.00	16.25	1.25	0.41	0.00
3.50	1.25	0.41	0.00	16.50	1.25	0.41	0.00
3.75	1.25	0.41	0.00	16.75	1.25	0.41	0.00
4.00	1.25	0.41	0.00	17.00	1.25	0.41	0.00
4.25	1.25	0.41	0.00	17.25	1.25	0.41	0.00
4.50	1.25	0.41	0.00	17.50	1.25	0.41	0.00
4.75	1.25	0.41	0.00	17.75	1.25	0.41	0.00
5.00	1.25	0.41	0.00	18.00	1.25	0.41	0.00
5.25	1.25	0.41	0.00	18.25	1.25	0.41	0.00
5.50	1.25	0.41	0.00	18.50	1.25	0.41	0.00
5.75	1.25	0.41	0.00	18.75	1.25	0.41	0.00
6.00	1.25	0.41	0.00	19.00	1.25	0.41	0.00
6.25	1.25	0.41	0.00	19.25	1.25	0.41	0.00
6.50	1.25	0.41	0.00	19.50	1.25	0.41	0.00
6.75	1.25	0.41	0.00	19.75	1.25	0.41	0.00
7.00	1.25	0.41	0.00	20.00	1.25	0.41	0.00
7.25	1.25	0.41	0.00	20.25	1.25	0.41	0.00
7.50	1.25	0.41	0.00	20.50	1.25	0.41	0.00
7.75	1.25	0.41	0.00	20.75	1.25	0.41	0.00
8.00	1.25	0.41	0.00	21.00	1.25	0.41	0.00
8.25	1.25	0.41	0.00	21.25	1.25	0.41	0.00
8.50	1.25	0.41	0.00	21.50	1.25	0.41	0.00
8.75	1.25	0.41	0.00	21.75	1.25	0.41	0.00
9.00	1.25	0.41	0.00	22.00	1.25	0.41	0.00
9.25	1.25	0.41	0.00	22.25	1.25	0.41	0.00
9.50	1.25	0.41	0.00	22.50	1.25	0.41	0.00
9.75	1.25	0.41	0.00	22.75	1.25	0.41	0.00
10.00	1.25	0.41	0.00	23.00	1.25	0.41	0.00
10.25	1.25	0.41	0.00	23.25	1.25	0.41	0.00
10.50	1.25	0.41	0.00	23.50	1.25	0.41	0.00
10.75	1.25	0.41	0.00	23.75	1.25	0.41	0.00
11.00	1.25	0.41	0.00	24.00	1.25	0.41	0.00
11.25	1.25	0.41	0.00	24.25	1.25	0.41	0.00
11.50	1.25	0.41	0.00	24.50	1.25	0.41	0.00
11.75	1.25	0.41	0.00	24.75	1.25	0.41	0.00
12.00	1.25	0.41	0.00	25.00	1.25	0.41	0.00
12.25	1.25	0.41	0.00	25.25	1.25	0.41	0.00
12.50	1.25	0.41	0.00	25.50	1.25	0.41	0.00
12.75	1.25	0.41	0.00	25.75	1.25	0.41	0.00

Hydrograph for Subcatchment DA 1: Impervious (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
26.00	1.25	0.41	0.00
26.25	1.25	0.41	0.00
26.50	1.25	0.41	0.00
26.75	1.25	0.41	0.00
27.00	1.25	0.41	0.00
27.25	1.25	0.41	0.00
27.50	1.25	0.41	0.00
27.75	1.25	0.41	0.00
28.00	1.25	0.41	0.00
28.25	1.25	0.41	0.00
28.50	1.25	0.41	0.00
28.75	1.25	0.41	0.00
29.00	1.25	0.41	0.00
29.25	1.25	0.41	0.00
29.50	1.25	0.41	0.00
29.75	1.25	0.41	0.00
30.00	1.25	0.41	0.00
30.25	1.25	0.41	0.00
30.50	1.25	0.41	0.00
30.75	1.25	0.41	0.00
31.00	1.25	0.41	0.00
31.25	1.25	0.41	0.00
31.50	1.25	0.41	0.00
31.75	1.25	0.41	0.00
32.00	1.25	0.41	0.00
32.25	1.25	0.41	0.00
32.50	1.25	0.41	0.00
32.75	1.25	0.41	0.00
33.00	1.25	0.41	0.00
33.25	1.25	0.41	0.00
33.50	1.25	0.41	0.00
33.75	1.25	0.41	0.00
34.00	1.25	0.41	0.00
34.25	1.25	0.41	0.00
34.50	1.25	0.41	0.00
34.75	1.25	0.41	0.00
35.00	1.25	0.41	0.00
35.25	1.25	0.41	0.00
35.50	1.25	0.41	0.00
35.75	1.25	0.41	0.00
36.00	1.25	0.41	0.00

Summary for Subcatchment DA1: Pervious

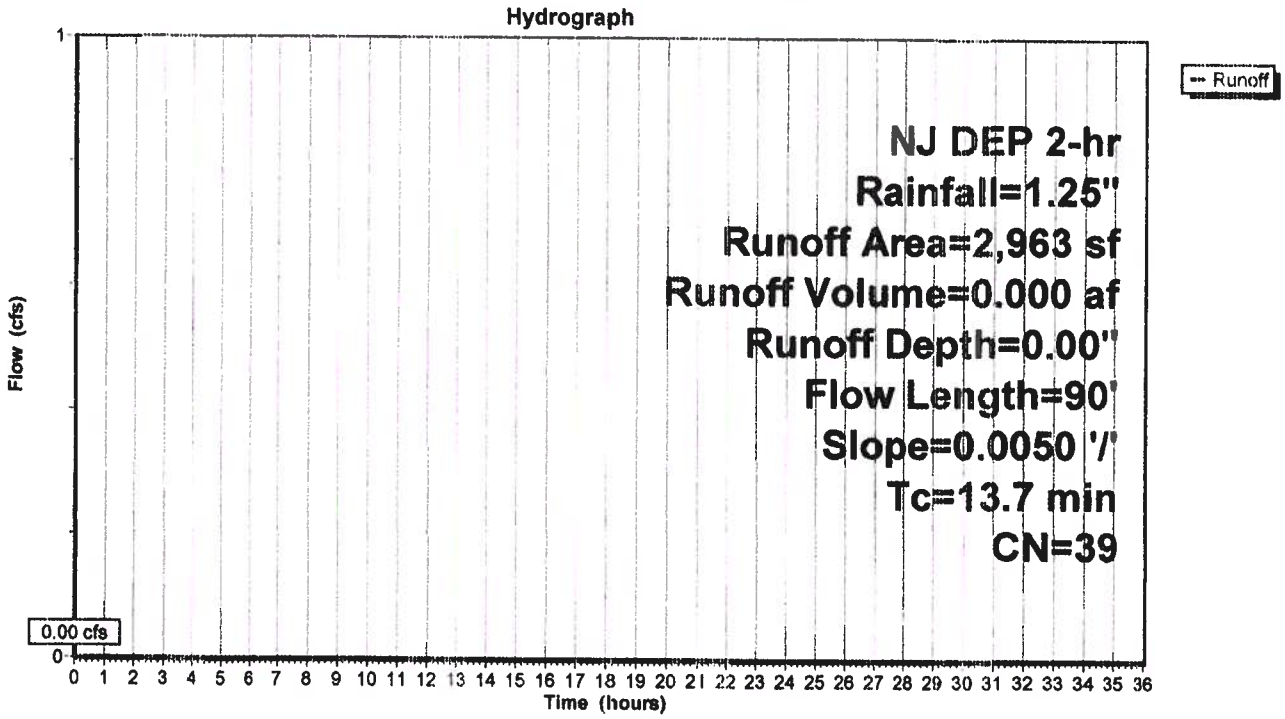
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.25 hrs
NJ DEP 2-hr Rainfall=1.25"

Area (sf)	CN	Description
2,963	39	>75% Grass cover, Good, HSG A
2,963		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	90	0.0050	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 8.90"

Subcatchment DA1: Pervious



Hydrograph for Subcatchment DA1: Pervious

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	**0.00**	**0.00**	13.00	1.25	0.00	0.00
0.25	0.03	0.00	0.00	13.25	1.25	0.00	0.00
0.50	0.10	0.00	0.00	13.50	1.25	0.00	0.00
0.75	0.20	0.00	0.00	13.75	1.25	0.00	0.00
1.00	0.63	0.00	0.00	14.00	1.25	0.00	0.00
1.25	1.05	0.00	0.00	14.25	1.25	0.00	0.00
1.50	1.15	0.00	0.00	14.50	1.25	0.00	0.00
1.75	1.23	0.00	0.00	14.75	1.25	0.00	0.00
2.00	**1.25**	0.00	0.00	15.00	1.25	0.00	0.00
2.25	1.25	0.00	0.00	15.25	1.25	0.00	0.00
2.50	1.25	0.00	0.00	15.50	1.25	0.00	0.00
2.75	1.25	0.00	0.00	15.75	1.25	0.00	0.00
3.00	1.25	0.00	0.00	16.00	1.25	0.00	0.00
3.25	1.25	0.00	0.00	16.25	1.25	0.00	0.00
3.50	1.25	0.00	0.00	16.50	1.25	0.00	0.00
3.75	1.25	0.00	0.00	16.75	1.25	0.00	0.00
4.00	1.25	0.00	0.00	17.00	1.25	0.00	0.00
4.25	1.25	0.00	0.00	17.25	1.25	0.00	0.00
4.50	1.25	0.00	0.00	17.50	1.25	0.00	0.00
4.75	1.25	0.00	0.00	17.75	1.25	0.00	0.00
5.00	1.25	0.00	0.00	18.00	1.25	0.00	0.00
5.25	1.25	0.00	0.00	18.25	1.25	0.00	0.00
5.50	1.25	0.00	0.00	18.50	1.25	0.00	0.00
5.75	1.25	0.00	0.00	18.75	1.25	0.00	0.00
6.00	1.25	0.00	0.00	19.00	1.25	0.00	0.00
6.25	1.25	0.00	0.00	19.25	1.25	0.00	0.00
6.50	1.25	0.00	0.00	19.50	1.25	0.00	0.00
6.75	1.25	0.00	0.00	19.75	1.25	0.00	0.00
7.00	1.25	0.00	0.00	20.00	1.25	0.00	0.00
7.25	1.25	0.00	0.00	20.25	1.25	0.00	0.00
7.50	1.25	0.00	0.00	20.50	1.25	0.00	0.00
7.75	1.25	0.00	0.00	20.75	1.25	0.00	0.00
8.00	1.25	0.00	0.00	21.00	1.25	0.00	0.00
8.25	1.25	0.00	0.00	21.25	1.25	0.00	0.00
8.50	1.25	0.00	0.00	21.50	1.25	0.00	0.00
8.75	1.25	0.00	0.00	21.75	1.25	0.00	0.00
9.00	1.25	0.00	0.00	22.00	1.25	0.00	0.00
9.25	1.25	0.00	0.00	22.25	1.25	0.00	0.00
9.50	1.25	0.00	0.00	22.50	1.25	0.00	0.00
9.75	1.25	0.00	0.00	22.75	1.25	0.00	0.00
10.00	1.25	0.00	0.00	23.00	1.25	0.00	0.00
10.25	1.25	0.00	0.00	23.25	1.25	0.00	0.00
10.50	1.25	0.00	0.00	23.50	1.25	0.00	0.00
10.75	1.25	0.00	0.00	23.75	1.25	0.00	0.00
11.00	1.25	0.00	0.00	24.00	1.25	0.00	0.00
11.25	1.25	0.00	0.00	24.25	1.25	0.00	0.00
11.50	1.25	0.00	0.00	24.50	1.25	0.00	0.00
11.75	1.25	0.00	0.00	24.75	1.25	0.00	0.00
12.00	1.25	0.00	0.00	25.00	1.25	0.00	0.00
12.25	1.25	0.00	0.00	25.25	1.25	0.00	0.00
12.50	1.25	0.00	0.00	25.50	1.25	0.00	0.00
12.75	1.25	0.00	0.00	25.75	1.25	0.00	0.00

Hydrograph for Subcatchment DA1: Pervious (continued)

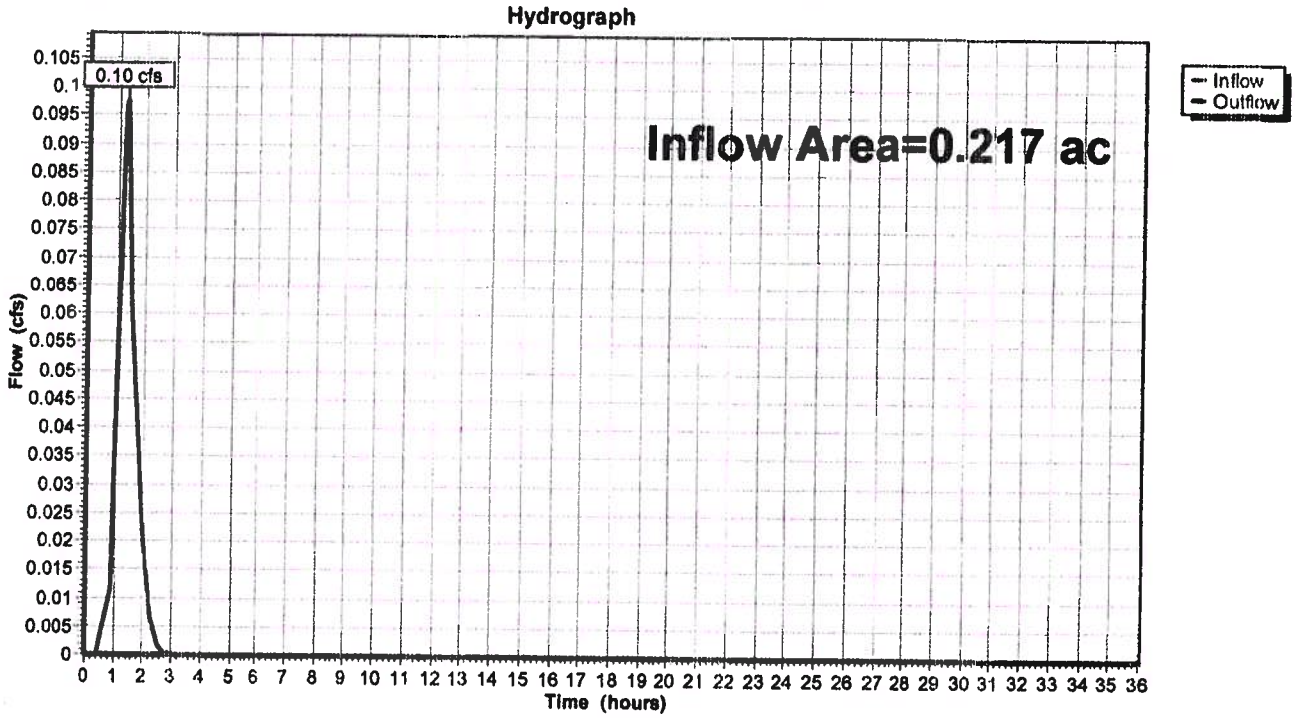
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
26.00	1.25	0.00	0.00
26.25	1.25	0.00	0.00
26.50	1.25	0.00	0.00
26.75	1.25	0.00	0.00
27.00	1.25	0.00	0.00
27.25	1.25	0.00	0.00
27.50	1.25	0.00	0.00
27.75	1.25	0.00	0.00
28.00	1.25	0.00	0.00
28.25	1.25	0.00	0.00
28.50	1.25	0.00	0.00
28.75	1.25	0.00	0.00
29.00	1.25	0.00	0.00
29.25	1.25	0.00	0.00
29.50	1.25	0.00	0.00
29.75	1.25	0.00	0.00
30.00	1.25	0.00	0.00
30.25	1.25	0.00	0.00
30.50	1.25	0.00	0.00
30.75	1.25	0.00	0.00
31.00	1.25	0.00	0.00
31.25	1.25	0.00	0.00
31.50	1.25	0.00	0.00
31.75	1.25	0.00	0.00
32.00	1.25	0.00	0.00
32.25	1.25	0.00	0.00
32.50	1.25	0.00	0.00
32.75	1.25	0.00	0.00
33.00	1.25	0.00	0.00
33.25	1.25	0.00	0.00
33.50	1.25	0.00	0.00
33.75	1.25	0.00	0.00
34.00	1.25	0.00	0.00
34.25	1.25	0.00	0.00
34.50	1.25	0.00	0.00
34.75	1.25	0.00	0.00
35.00	1.25	0.00	0.00
35.25	1.25	0.00	0.00
35.50	1.25	0.00	0.00
35.75	1.25	0.00	0.00
36.00	1.25	0.00	0.00

Summary for Reach 1R: (new Reach)

Inflow Area = 0.217 ac, 37.11% Impervious, Inflow Depth = 0.28"
Inflow = 0.10 cfs @ 1.29 hrs, Volume= 0.005 af
Outflow = 0.10 cfs @ 1.29 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.25 hrs

Reach 1R: (new Reach)

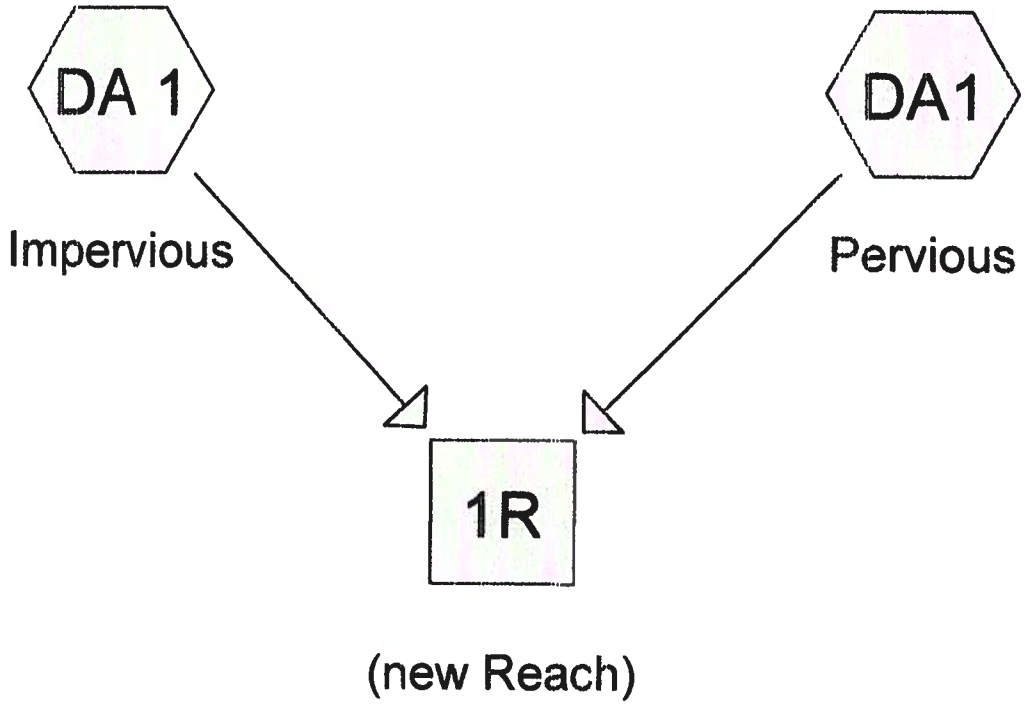


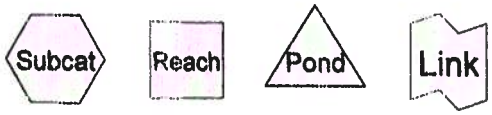
Hydrograph for Reach 1R: (new Reach)

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	13.00	0.00		0.00
0.25	0.00		0.00	13.25	0.00		0.00
0.50	0.00		0.00	13.50	0.00		0.00
0.75	0.00		0.00	13.75	0.00		0.00
1.00	0.02		0.02	14.00	0.00		0.00
1.25	**0.10**		**0.10**	14.25	0.00		0.00
1.50	0.06		0.06	14.50	0.00		0.00
1.75	0.04		0.04	14.75	0.00		0.00
2.00	0.02		0.02	15.00	0.00		0.00
2.25	0.01		0.01	15.25	0.00		0.00
2.50	0.00		0.00	15.50	0.00		0.00
2.75	0.00		0.00	15.75	0.00		0.00
3.00	0.00		0.00	16.00	0.00		0.00
3.25	0.00		0.00	16.25	0.00		0.00
3.50	0.00		0.00	16.50	0.00		0.00
3.75	0.00		0.00	16.75	0.00		0.00
4.00	0.00		0.00	17.00	0.00		0.00
4.25	0.00		0.00	17.25	0.00		0.00
4.50	0.00		0.00	17.50	0.00		0.00
4.75	0.00		0.00	17.75	0.00		0.00
5.00	0.00		0.00	18.00	0.00		0.00
5.25	0.00		0.00	18.25	0.00		0.00
5.50	0.00		0.00	18.50	0.00		0.00
5.75	0.00		0.00	18.75	0.00		0.00
6.00	0.00		0.00	19.00	0.00		0.00
6.25	0.00		0.00	19.25	0.00		0.00
6.50	0.00		0.00	19.50	0.00		0.00
6.75	0.00		0.00	19.75	0.00		0.00
7.00	0.00		0.00	20.00	0.00		0.00
7.25	0.00		0.00	20.25	0.00		0.00
7.50	0.00		0.00	20.50	0.00		0.00
7.75	0.00		0.00	20.75	0.00		0.00
8.00	0.00		0.00	21.00	0.00		0.00
8.25	0.00		0.00	21.25	0.00		0.00
8.50	0.00		0.00	21.50	0.00		0.00
8.75	0.00		0.00	21.75	0.00		0.00
9.00	0.00		0.00	22.00	0.00		0.00
9.25	0.00		0.00	22.25	0.00		0.00
9.50	0.00		0.00	22.50	0.00		0.00
9.75	0.00		0.00	22.75	0.00		0.00
10.00	0.00		0.00	23.00	0.00		0.00
10.25	0.00		0.00	23.25	0.00		0.00
10.50	0.00		0.00	23.50	0.00		0.00
10.75	0.00		0.00	23.75	0.00		0.00
11.00	0.00		0.00	24.00	0.00		0.00
11.25	0.00		0.00	24.25	0.00		0.00
11.50	0.00		0.00	24.50	0.00		0.00
11.75	0.00		0.00	24.75	0.00		0.00
12.00	0.00		0.00	25.00	0.00		0.00
12.25	0.00		0.00	25.25	0.00		0.00
12.50	0.00		0.00	25.50	0.00		0.00
12.75	0.00		0.00	25.75	0.00		0.00

Hydrograph for Reach 1R: (new Reach) (continued)

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
26.00	0.00		0.00
26.25	0.00		0.00
26.50	0.00		0.00
26.75	0.00		0.00
27.00	0.00		0.00
27.25	0.00		0.00
27.50	0.00		0.00
27.75	0.00		0.00
28.00	0.00		0.00
28.25	0.00		0.00
28.50	0.00		0.00
28.75	0.00		0.00
29.00	0.00		0.00
29.25	0.00		0.00
29.50	0.00		0.00
29.75	0.00		0.00
30.00	0.00		0.00
30.25	0.00		0.00
30.50	0.00		0.00
30.75	0.00		0.00
31.00	0.00		0.00
31.25	0.00		0.00
31.50	0.00		0.00
31.75	0.00		0.00
32.00	0.00		0.00
32.25	0.00		0.00
32.50	0.00		0.00
32.75	0.00		0.00
33.00	0.00		0.00
33.25	0.00		0.00
33.50	0.00		0.00
33.75	0.00		0.00
34.00	0.00		0.00
34.25	0.00		0.00
34.50	0.00		0.00
34.75	0.00		0.00
35.00	0.00		0.00
35.25	0.00		0.00
35.50	0.00		0.00
35.75	0.00		0.00
36.00	0.00		0.00





Routing Diagram for 220003 Maloney DA 5 2 yr Postdeveloped
Prepared by rba, Printed 6/3/2020
HydroCAD® 10.00-15 s/n 01102 © 2015 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.054	39	>75% Grass cover, Good, HSG A (DA1)
0.039	76	Porous pavement (DA 1)
0.058	98	roofs (DA 1)
0.150	**71**	**TOTAL AREA**

Summary for Subcatchment DA 1: Impervious

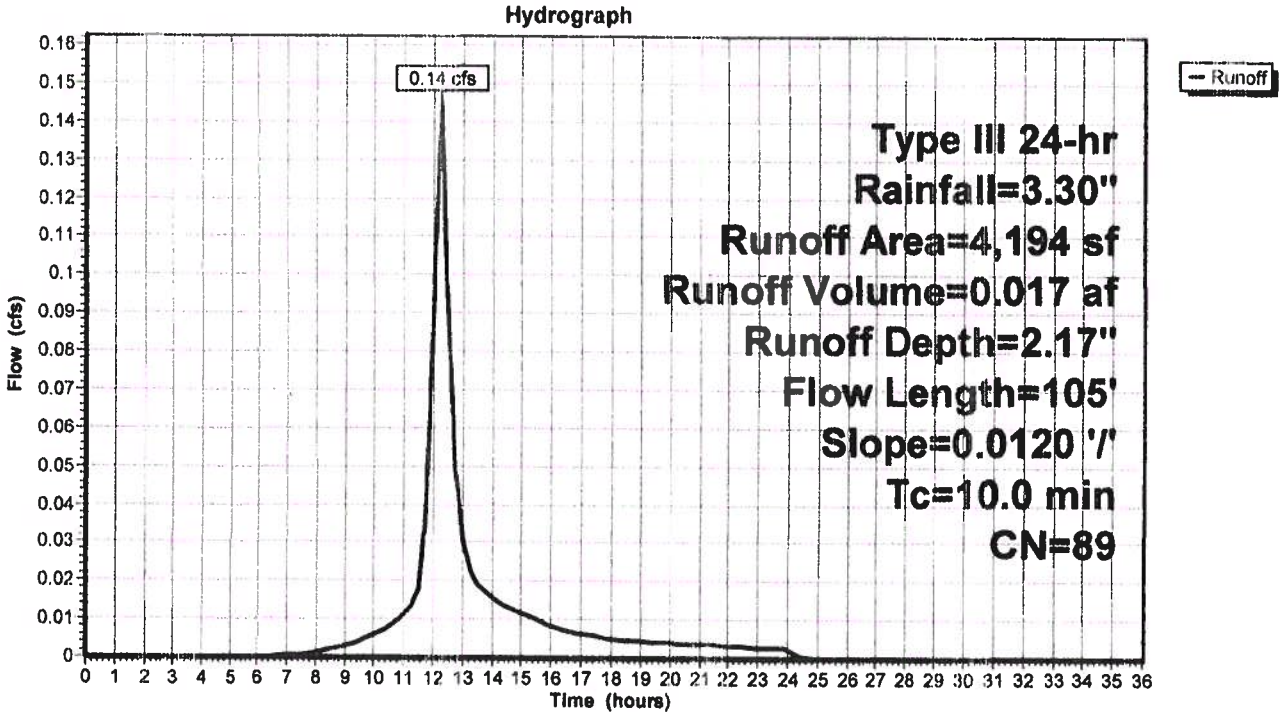
Runoff = 0.14 cfs @ 12.25 hrs, Volume= 0.017 af, Depth= 2.17"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.25 hrs
Type III 24-hr Rainfall=3.30"

	Area (sf)	CN	Description
*	2,513	98	roofs
*	1,681	76	Porous pavement
	4,194	89	Weighted Average
	1,681		40.08% Pervious Area
	2,513		59.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	105	0.0120	1.15		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
1.5	105	Total, Increased to minimum Tc = 10.0 min			

Subcatchment DA 1: Impervious



Hydrograph for Subcatchment DA 1: Impervious

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.00	2.47	1.43	0.03
0.25	0.01	0.00	0.00	13.25	2.53	1.48	0.02
0.50	0.02	0.00	0.00	13.50	2.59	1.53	0.02
0.75	0.02	0.00	0.00	13.75	2.63	1.57	0.02
1.00	0.03	0.00	0.00	14.00	2.68	1.61	0.02
1.25	0.04	0.00	0.00	14.25	2.72	1.64	0.01
1.50	0.05	0.00	0.00	14.50	2.75	1.68	0.01
1.75	0.06	0.00	0.00	14.75	2.79	1.71	0.01
2.00	0.07	0.00	0.00	15.00	2.82	1.74	0.01
2.25	0.07	0.00	0.00	15.25	2.85	1.76	0.01
2.50	0.08	0.00	0.00	15.50	2.88	1.79	0.01
2.75	0.09	0.00	0.00	15.75	2.90	1.81	0.01
3.00	0.10	0.00	0.00	16.00	2.92	1.83	0.01
3.25	0.11	0.00	0.00	16.25	2.94	1.85	0.01
3.50	0.12	0.00	0.00	16.50	2.96	1.87	0.01
3.75	0.13	0.00	0.00	16.75	2.98	1.88	0.01
4.00	0.14	0.00	0.00	17.00	3.00	1.90	0.01
4.25	0.15	0.00	0.00	17.25	3.02	1.92	0.01
4.50	0.16	0.00	0.00	17.50	3.03	1.93	0.01
4.75	0.18	0.00	0.00	17.75	3.05	1.94	0.01
5.00	0.19	0.00	0.00	18.00	3.06	1.96	0.01
5.25	0.20	0.00	0.00	18.25	3.08	1.97	0.00
5.50	0.21	0.00	0.00	18.50	3.09	1.98	0.00
5.75	0.22	0.00	0.00	18.75	3.10	1.99	0.00
6.00	0.24	0.00	0.00	19.00	3.11	2.00	0.00
6.25	0.25	0.00	0.00	19.25	3.12	2.01	0.00
6.50	0.27	0.00	0.00	19.50	3.14	2.02	0.00
6.75	0.28	0.00	0.00	19.75	3.15	2.03	0.00
7.00	0.30	0.00	0.00	20.00	3.16	2.04	0.00
7.25	0.32	0.00	0.00	20.25	3.17	2.05	0.00
7.50	0.34	0.01	0.00	20.50	3.18	2.06	0.00
7.75	0.36	0.01	0.00	20.75	3.19	2.07	0.00
8.00	0.38	0.01	0.00	21.00	3.20	2.08	0.00
8.25	0.40	0.02	0.00	21.25	3.21	2.09	0.00
8.50	0.42	0.02	0.00	21.50	3.22	2.10	0.00
8.75	0.45	0.03	0.00	21.75	3.23	2.11	0.00
9.00	0.48	0.04	0.00	22.00	3.24	2.11	0.00
9.25	0.51	0.05	0.00	22.25	3.25	2.12	0.00
9.50	0.55	0.06	0.00	22.50	3.25	2.13	0.00
9.75	0.58	0.07	0.00	22.75	3.26	2.14	0.00
10.00	0.62	0.09	0.01	23.00	3.27	2.15	0.00
10.25	0.67	0.11	0.01	23.25	3.28	2.15	0.00
10.50	0.71	0.13	0.01	23.50	3.29	2.16	0.00
10.75	0.77	0.15	0.01	23.75	3.29	2.17	0.00
11.00	0.83	0.18	0.01	24.00	**3.30**	**2.17**	0.00
11.25	0.89	0.22	0.01	24.25	3.30	2.17	0.00
11.50	0.98	0.27	0.02	24.50	3.30	2.17	0.00
11.75	1.17	0.40	0.03	24.75	3.30	2.17	0.00
12.00	1.65	0.75	0.09	25.00	3.30	2.17	0.00
12.25	2.13	1.13	**0.14**	25.25	3.30	2.17	0.00
12.50	2.32	1.30	0.09	25.50	3.30	2.17	0.00
12.75	2.41	1.37	0.05	25.75	3.30	2.17	0.00

Hydrograph for Subcatchment DA 1: Impervious (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
26.00	3.30	2.17	0.00
26.25	3.30	2.17	0.00
26.50	3.30	2.17	0.00
26.75	3.30	2.17	0.00
27.00	3.30	2.17	0.00
27.25	3.30	2.17	0.00
27.50	3.30	2.17	0.00
27.75	3.30	2.17	0.00
28.00	3.30	2.17	0.00
28.25	3.30	2.17	0.00
28.50	3.30	2.17	0.00
28.75	3.30	2.17	0.00
29.00	3.30	2.17	0.00
29.25	3.30	2.17	0.00
29.50	3.30	2.17	0.00
29.75	3.30	2.17	0.00
30.00	3.30	2.17	0.00
30.25	3.30	2.17	0.00
30.50	3.30	2.17	0.00
30.75	3.30	2.17	0.00
31.00	3.30	2.17	0.00
31.25	3.30	2.17	0.00
31.50	3.30	2.17	0.00
31.75	3.30	2.17	0.00
32.00	3.30	2.17	0.00
32.25	3.30	2.17	0.00
32.50	3.30	2.17	0.00
32.75	3.30	2.17	0.00
33.00	3.30	2.17	0.00
33.25	3.30	2.17	0.00
33.50	3.30	2.17	0.00
33.75	3.30	2.17	0.00
34.00	3.30	2.17	0.00
34.25	3.30	2.17	0.00
34.50	3.30	2.17	0.00
34.75	3.30	2.17	0.00
35.00	3.30	2.17	0.00
35.25	3.30	2.17	0.00
35.50	3.30	2.17	0.00
35.75	3.30	2.17	0.00
36.00	3.30	2.17	0.00

Summary for Subcatchment DA1: Pervious

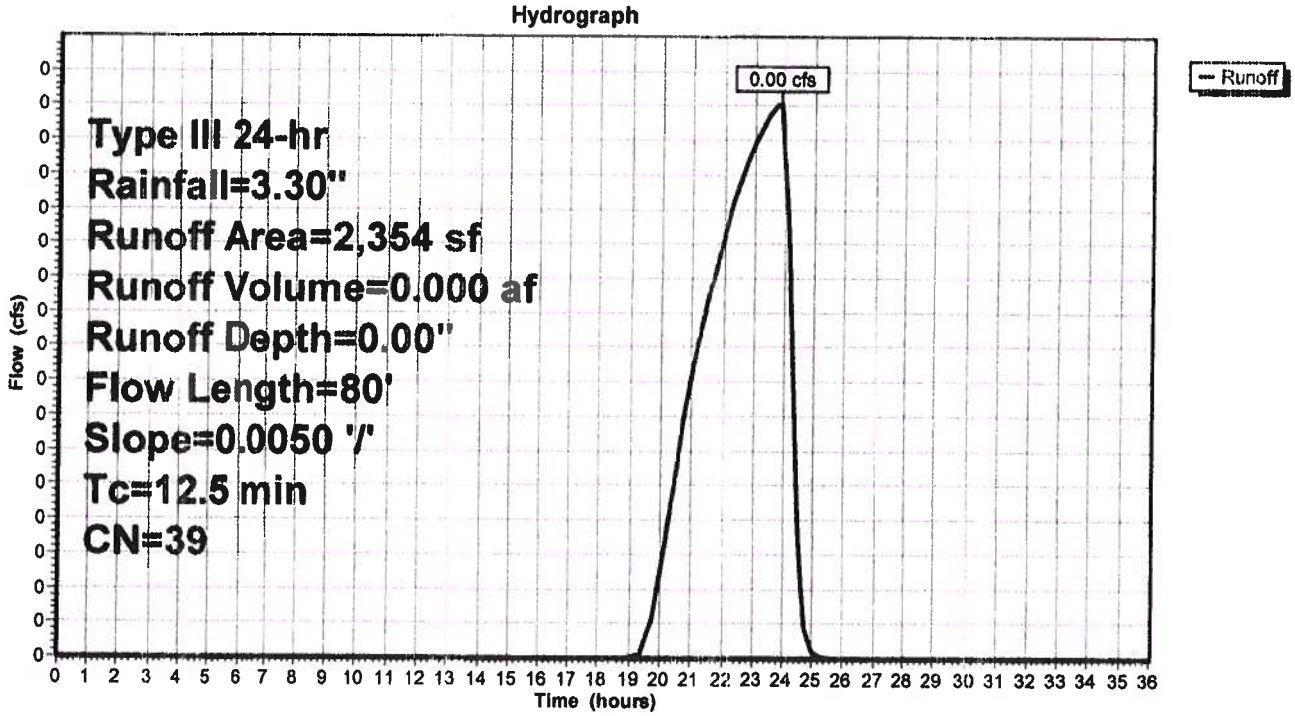
Runoff = 0.00 cfs @ 23.84 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.25 hrs
Type III 24-hr Rainfall=3.30"

Area (sf)	CN	Description
2,354	39	>75% Grass cover, Good, HSG A
2,354		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	80	0.0050	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 8.90"

Subcatchment DA1: Pervious



Hydrograph for Subcatchment DA1: Pervious

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.00	2.47	0.00	0.00
0.25	0.01	0.00	0.00	13.25	2.53	0.00	0.00
0.50	0.02	0.00	0.00	13.50	2.59	0.00	0.00
0.75	0.02	0.00	0.00	13.75	2.63	0.00	0.00
1.00	0.03	0.00	0.00	14.00	2.68	0.00	0.00
1.25	0.04	0.00	0.00	14.25	2.72	0.00	0.00
1.50	0.05	0.00	0.00	14.50	2.75	0.00	0.00
1.75	0.06	0.00	0.00	14.75	2.79	0.00	0.00
2.00	0.07	0.00	0.00	15.00	2.82	0.00	0.00
2.25	0.07	0.00	0.00	15.25	2.85	0.00	0.00
2.50	0.08	0.00	0.00	15.50	2.88	0.00	0.00
2.75	0.09	0.00	0.00	15.75	2.90	0.00	0.00
3.00	0.10	0.00	0.00	16.00	2.92	0.00	0.00
3.25	0.11	0.00	0.00	16.25	2.94	0.00	0.00
3.50	0.12	0.00	0.00	16.50	2.96	0.00	0.00
3.75	0.13	0.00	0.00	16.75	2.98	0.00	0.00
4.00	0.14	0.00	0.00	17.00	3.00	0.00	0.00
4.25	0.15	0.00	0.00	17.25	3.02	0.00	0.00
4.50	0.16	0.00	0.00	17.50	3.03	0.00	0.00
4.75	0.18	0.00	0.00	17.75	3.05	0.00	0.00
5.00	0.19	0.00	0.00	18.00	3.06	0.00	0.00
5.25	0.20	0.00	0.00	18.25	3.08	0.00	0.00
5.50	0.21	0.00	0.00	18.50	3.09	0.00	0.00
5.75	0.22	0.00	0.00	18.75	3.10	0.00	0.00
6.00	0.24	0.00	0.00	19.00	3.11	0.00	0.00
6.25	0.25	0.00	0.00	19.25	3.12	0.00	0.00
6.50	0.27	0.00	0.00	19.50	3.14	0.00	0.00
6.75	0.28	0.00	0.00	19.75	3.15	0.00	0.00
7.00	0.30	0.00	0.00	20.00	3.16	0.00	0.00
7.25	0.32	0.00	0.00	20.25	3.17	0.00	0.00
7.50	0.34	0.00	0.00	20.50	3.18	0.00	0.00
7.75	0.36	0.00	0.00	20.75	3.19	0.00	0.00
8.00	0.38	0.00	0.00	21.00	3.20	0.00	0.00
8.25	0.40	0.00	0.00	21.25	3.21	0.00	0.00
8.50	0.42	0.00	0.00	21.50	3.22	0.00	0.00
8.75	0.45	0.00	0.00	21.75	3.23	0.00	0.00
9.00	0.48	0.00	0.00	22.00	3.24	0.00	0.00
9.25	0.51	0.00	0.00	22.25	3.25	0.00	0.00
9.50	0.55	0.00	0.00	22.50	3.25	0.00	0.00
9.75	0.58	0.00	0.00	22.75	3.26	0.00	0.00
10.00	0.62	0.00	0.00	23.00	3.27	0.00	0.00
10.25	0.67	0.00	0.00	23.25	3.28	0.00	0.00
10.50	0.71	0.00	0.00	23.50	3.29	0.00	0.00
10.75	0.77	0.00	0.00	23.75	3.29	0.00	**0.00**
11.00	0.83	0.00	0.00	24.00	**3.30**	**0.00**	0.00
11.25	0.89	0.00	0.00	24.25	3.30	0.00	0.00
11.50	0.98	0.00	0.00	24.50	3.30	0.00	0.00
11.75	1.17	0.00	0.00	24.75	3.30	0.00	0.00
12.00	1.65	0.00	0.00	25.00	3.30	0.00	0.00
12.25	2.13	0.00	0.00	25.25	3.30	0.00	0.00
12.50	2.32	0.00	0.00	25.50	3.30	0.00	0.00
12.75	2.41	0.00	0.00	25.75	3.30	0.00	0.00

Hydrograph for Subcatchment DA1: Pervious (continued)

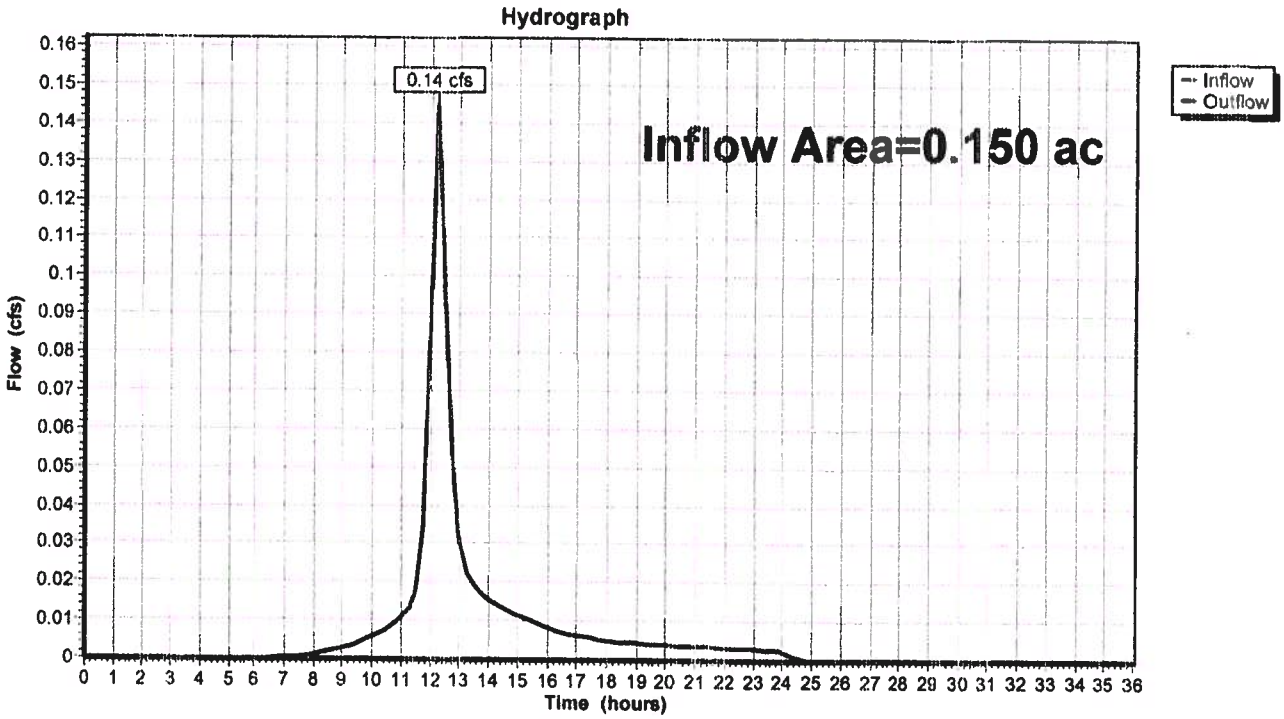
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
26.00	3.30	0.00	0.00
26.25	3.30	0.00	0.00
26.50	3.30	0.00	0.00
26.75	3.30	0.00	0.00
27.00	3.30	0.00	0.00
27.25	3.30	0.00	0.00
27.50	3.30	0.00	0.00
27.75	3.30	0.00	0.00
28.00	3.30	0.00	0.00
28.25	3.30	0.00	0.00
28.50	3.30	0.00	0.00
28.75	3.30	0.00	0.00
29.00	3.30	0.00	0.00
29.25	3.30	0.00	0.00
29.50	3.30	0.00	0.00
29.75	3.30	0.00	0.00
30.00	3.30	0.00	0.00
30.25	3.30	0.00	0.00
30.50	3.30	0.00	0.00
30.75	3.30	0.00	0.00
31.00	3.30	0.00	0.00
31.25	3.30	0.00	0.00
31.50	3.30	0.00	0.00
31.75	3.30	0.00	0.00
32.00	3.30	0.00	0.00
32.25	3.30	0.00	0.00
32.50	3.30	0.00	0.00
32.75	3.30	0.00	0.00
33.00	3.30	0.00	0.00
33.25	3.30	0.00	0.00
33.50	3.30	0.00	0.00
33.75	3.30	0.00	0.00
34.00	3.30	0.00	0.00
34.25	3.30	0.00	0.00
34.50	3.30	0.00	0.00
34.75	3.30	0.00	0.00
35.00	3.30	0.00	0.00
35.25	3.30	0.00	0.00
35.50	3.30	0.00	0.00
35.75	3.30	0.00	0.00
36.00	3.30	0.00	0.00

Summary for Reach 1R: (new Reach)

Inflow Area = 0.150 ac, 38.38% Impervious, Inflow Depth = 1.39"
Inflow = 0.14 cfs @ 12.25 hrs, Volume= 0.017 af
Outflow = 0.14 cfs @ 12.25 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.25 hrs

Reach 1R: (new Reach)

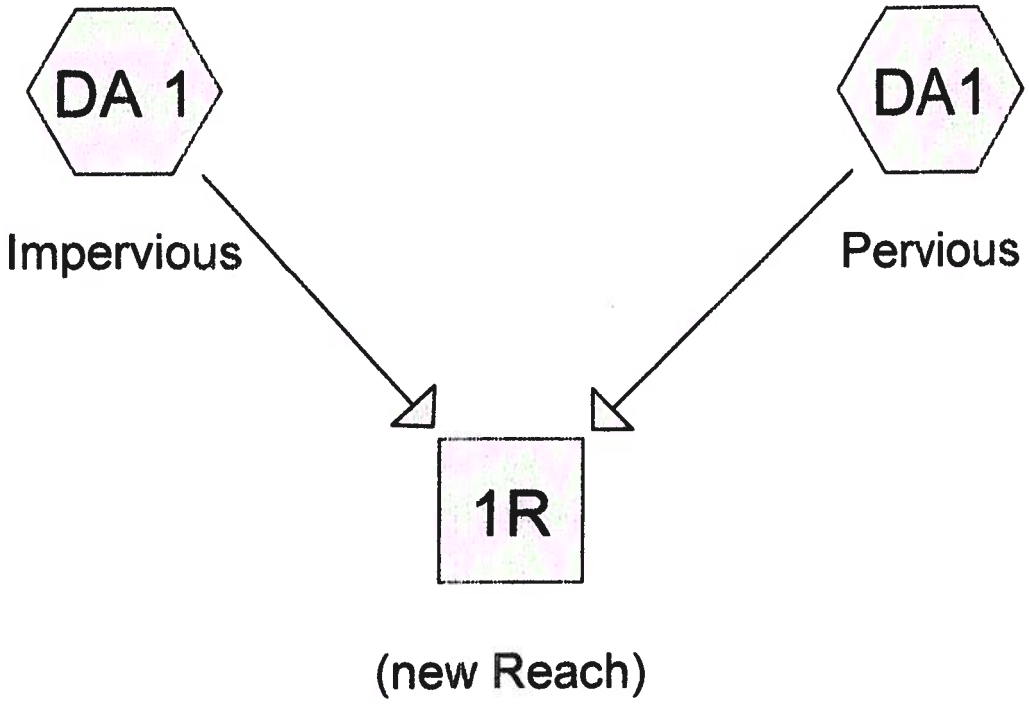


Hydrograph for Reach 1R: (new Reach)

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	13.00	0.03		0.03
0.25	0.00		0.00	13.25	0.02		0.02
0.50	0.00		0.00	13.50	0.02		0.02
0.75	0.00		0.00	13.75	0.02		0.02
1.00	0.00		0.00	14.00	0.02		0.02
1.25	0.00		0.00	14.25	0.01		0.01
1.50	0.00		0.00	14.50	0.01		0.01
1.75	0.00		0.00	14.75	0.01		0.01
2.00	0.00		0.00	15.00	0.01		0.01
2.25	0.00		0.00	15.25	0.01		0.01
2.50	0.00		0.00	15.50	0.01		0.01
2.75	0.00		0.00	15.75	0.01		0.01
3.00	0.00		0.00	16.00	0.01		0.01
3.25	0.00		0.00	16.25	0.01		0.01
3.50	0.00		0.00	16.50	0.01		0.01
3.75	0.00		0.00	16.75	0.01		0.01
4.00	0.00		0.00	17.00	0.01		0.01
4.25	0.00		0.00	17.25	0.01		0.01
4.50	0.00		0.00	17.50	0.01		0.01
4.75	0.00		0.00	17.75	0.01		0.01
5.00	0.00		0.00	18.00	0.01		0.01
5.25	0.00		0.00	18.25	0.00		0.00
5.50	0.00		0.00	18.50	0.00		0.00
5.75	0.00		0.00	18.75	0.00		0.00
6.00	0.00		0.00	19.00	0.00		0.00
6.25	0.00		0.00	19.25	0.00		0.00
6.50	0.00		0.00	19.50	0.00		0.00
6.75	0.00		0.00	19.75	0.00		0.00
7.00	0.00		0.00	20.00	0.00		0.00
7.25	0.00		0.00	20.25	0.00		0.00
7.50	0.00		0.00	20.50	0.00		0.00
7.75	0.00		0.00	20.75	0.00		0.00
8.00	0.00		0.00	21.00	0.00		0.00
8.25	0.00		0.00	21.25	0.00		0.00
8.50	0.00		0.00	21.50	0.00		0.00
8.75	0.00		0.00	21.75	0.00		0.00
9.00	0.00		0.00	22.00	0.00		0.00
9.25	0.00		0.00	22.25	0.00		0.00
9.50	0.00		0.00	22.50	0.00		0.00
9.75	0.00		0.00	22.75	0.00		0.00
10.00	0.01		0.01	23.00	0.00		0.00
10.25	0.01		0.01	23.25	0.00		0.00
10.50	0.01		0.01	23.50	0.00		0.00
10.75	0.01		0.01	23.75	0.00		0.00
11.00	0.01		0.01	24.00	0.00		0.00
11.25	0.01		0.01	24.25	0.00		0.00
11.50	0.02		0.02	24.50	0.00		0.00
11.75	0.03		0.03	24.75	0.00		0.00
12.00	0.09		0.09	25.00	0.00		0.00
12.25	**0.14**		**0.14**	25.25	0.00		0.00
12.50	0.09		0.09	25.50	0.00		0.00
12.75	0.05		0.05	25.75	0.00		0.00

Hydrograph for Reach 1R: (new Reach) (continued)

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
26.00	0.00		0.00
26.25	0.00		0.00
26.50	0.00		0.00
26.75	0.00		0.00
27.00	0.00		0.00
27.25	0.00		0.00
27.50	0.00		0.00
27.75	0.00		0.00
28.00	0.00		0.00
28.25	0.00		0.00
28.50	0.00		0.00
28.75	0.00		0.00
29.00	0.00		0.00
29.25	0.00		0.00
29.50	0.00		0.00
29.75	0.00		0.00
30.00	0.00		0.00
30.25	0.00		0.00
30.50	0.00		0.00
30.75	0.00		0.00
31.00	0.00		0.00
31.25	0.00		0.00
31.50	0.00		0.00
31.75	0.00		0.00
32.00	0.00		0.00
32.25	0.00		0.00
32.50	0.00		0.00
32.75	0.00		0.00
33.00	0.00		0.00
33.25	0.00		0.00
33.50	0.00		0.00
33.75	0.00		0.00
34.00	0.00		0.00
34.25	0.00		0.00
34.50	0.00		0.00
34.75	0.00		0.00
35.00	0.00		0.00
35.25	0.00		0.00
35.50	0.00		0.00
35.75	0.00		0.00
36.00	0.00		0.00



Routing Diagram for 220003 Maloney DA 5 10 yr Postdeveloped
Prepared by rba, Printed 6/3/2020
HydroCAD® 10.00-15 s/n 01102 © 2015 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.054	39	>75% Grass cover, Good, HSG A (DA1)
0.039	76	Porous pavement (DA 1)
0.058	98	roofs (DA 1)
0.150	**71**	**TOTAL AREA**

Summary for Subcatchment DA 1: Impervious

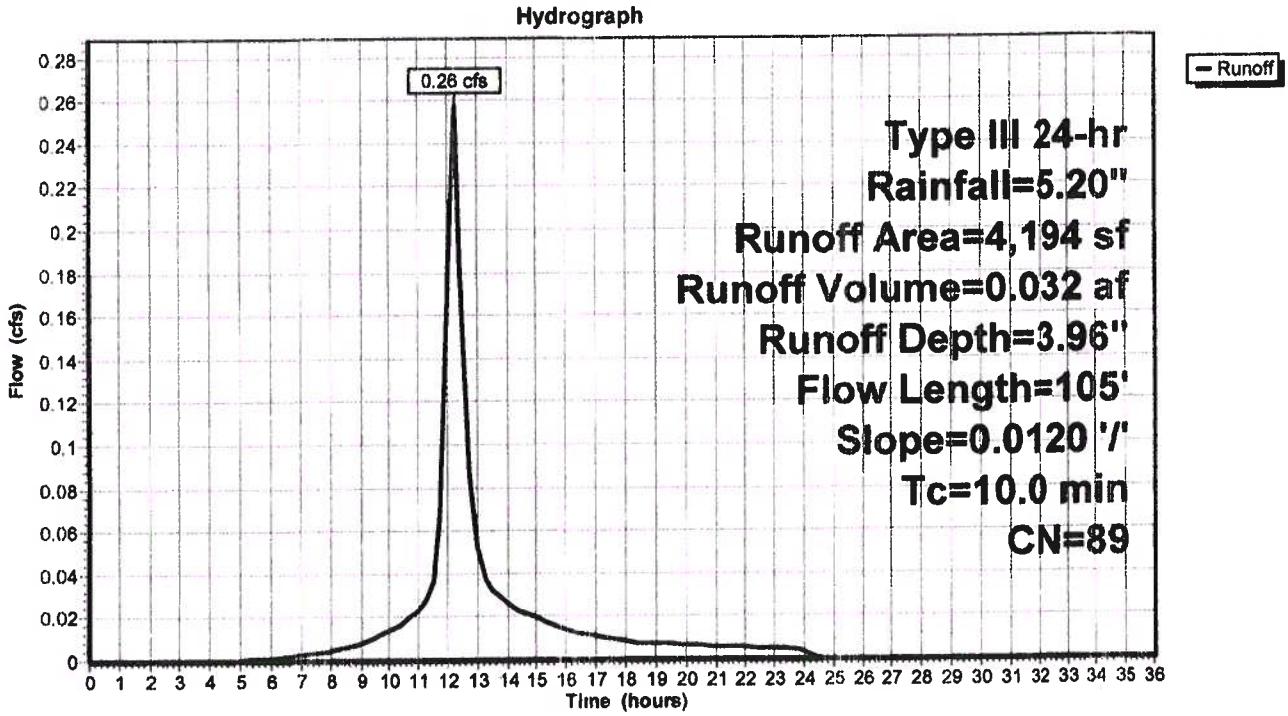
Runoff = 0.26 cfs @ 12.25 hrs, Volume= 0.032 af, Depth= 3.96"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.25 hrs
Type III 24-hr Rainfall=5.20"

	Area (sf)	CN	Description
*	2,513	98	roofs
*	1,681	76	Porous pavement
	4,194	89	Weighted Average
	1,681		40.08% Pervious Area
	2,513		59.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	105	0.0120	1.15		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
1.5	105	Total, Increased to minimum Tc = 10.0 min			

Subcatchment DA 1: Impervious



Hydrograph for Subcatchment DA 1: Impervious

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.00	3.90	2.73	0.05
0.25	0.01	0.00	0.00	13.25	3.99	2.81	0.04
0.50	0.03	0.00	0.00	13.50	4.07	2.89	0.03
0.75	0.04	0.00	0.00	13.75	4.15	2.96	0.03
1.00	0.05	0.00	0.00	14.00	4.22	3.03	0.03
1.25	0.06	0.00	0.00	14.25	4.28	3.09	0.02
1.50	0.08	0.00	0.00	14.50	4.34	3.14	0.02
1.75	0.09	0.00	0.00	14.75	4.39	3.19	0.02
2.00	0.10	0.00	0.00	15.00	4.44	3.24	0.02
2.25	0.12	0.00	0.00	15.25	4.49	3.28	0.02
2.50	0.13	0.00	0.00	15.50	4.53	3.33	0.02
2.75	0.15	0.00	0.00	15.75	4.57	3.36	0.02
3.00	0.16	0.00	0.00	16.00	4.61	3.40	0.01
3.25	0.18	0.00	0.00	16.25	4.64	3.43	0.01
3.50	0.19	0.00	0.00	16.50	4.67	3.46	0.01
3.75	0.21	0.00	0.00	16.75	4.70	3.49	0.01
4.00	0.22	0.00	0.00	17.00	4.73	3.51	0.01
4.25	0.24	0.00	0.00	17.25	4.76	3.54	0.01
4.50	0.26	0.00	0.00	17.50	4.78	3.56	0.01
4.75	0.28	0.00	0.00	17.75	4.80	3.58	0.01
5.00	0.30	0.00	0.00	18.00	4.83	3.61	0.01
5.25	0.31	0.00	0.00	18.25	4.85	3.62	0.01
5.50	0.33	0.01	0.00	18.50	4.87	3.64	0.01
5.75	0.35	0.01	0.00	18.75	4.89	3.66	0.01
6.00	0.37	0.01	0.00	19.00	4.90	3.68	0.01
6.25	0.40	0.02	0.00	19.25	4.92	3.70	0.01
6.50	0.42	0.02	0.00	19.50	4.94	3.72	0.01
6.75	0.44	0.03	0.00	19.75	4.96	3.73	0.01
7.00	0.47	0.03	0.00	20.00	4.98	3.75	0.01
7.25	0.50	0.04	0.00	20.25	4.99	3.77	0.01
7.50	0.53	0.05	0.00	20.50	5.01	3.78	0.01
7.75	0.56	0.06	0.00	20.75	5.03	3.80	0.01
8.00	0.59	0.08	0.00	21.00	5.04	3.81	0.01
8.25	0.63	0.09	0.01	21.25	5.06	3.83	0.01
8.50	0.67	0.11	0.01	21.50	5.07	3.84	0.01
8.75	0.71	0.13	0.01	21.75	5.09	3.85	0.01
9.00	0.76	0.15	0.01	22.00	5.10	3.87	0.01
9.25	0.81	0.18	0.01	22.25	5.11	3.88	0.01
9.50	0.86	0.20	0.01	22.50	5.13	3.89	0.01
9.75	0.92	0.24	0.01	22.75	5.14	3.91	0.00
10.00	0.98	0.27	0.01	23.00	5.15	3.92	0.00
10.25	1.05	0.32	0.02	23.25	5.17	3.93	0.00
10.50	1.13	0.37	0.02	23.50	5.18	3.94	0.00
10.75	1.21	0.42	0.02	23.75	5.19	3.95	0.00
11.00	1.30	0.48	0.02	24.00	**5.20**	**3.96**	0.00
11.25	1.41	0.56	0.03	24.25	5.20	3.96	0.00
11.50	1.55	0.67	0.04	24.50	5.20	3.96	0.00
11.75	1.85	0.90	0.07	24.75	5.20	3.96	0.00
12.00	2.60	1.54	0.17	25.00	5.20	3.96	0.00
12.25	3.35	2.22	**0.26**	25.25	5.20	3.96	0.00
12.50	3.65	2.50	0.16	25.50	5.20	3.96	0.00
12.75	3.79	2.63	0.09	25.75	5.20	3.96	0.00

Hydrograph for Subcatchment DA 1: Impervious (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
26.00	5.20	3.96	0.00
26.25	5.20	3.96	0.00
26.50	5.20	3.96	0.00
26.75	5.20	3.96	0.00
27.00	5.20	3.96	0.00
27.25	5.20	3.96	0.00
27.50	5.20	3.96	0.00
27.75	5.20	3.96	0.00
28.00	5.20	3.96	0.00
28.25	5.20	3.96	0.00
28.50	5.20	3.96	0.00
28.75	5.20	3.96	0.00
29.00	5.20	3.96	0.00
29.25	5.20	3.96	0.00
29.50	5.20	3.96	0.00
29.75	5.20	3.96	0.00
30.00	5.20	3.96	0.00
30.25	5.20	3.96	0.00
30.50	5.20	3.96	0.00
30.75	5.20	3.96	0.00
31.00	5.20	3.96	0.00
31.25	5.20	3.96	0.00
31.50	5.20	3.96	0.00
31.75	5.20	3.96	0.00
32.00	5.20	3.96	0.00
32.25	5.20	3.96	0.00
32.50	5.20	3.96	0.00
32.75	5.20	3.96	0.00
33.00	5.20	3.96	0.00
33.25	5.20	3.96	0.00
33.50	5.20	3.96	0.00
33.75	5.20	3.96	0.00
34.00	5.20	3.96	0.00
34.25	5.20	3.96	0.00
34.50	5.20	3.96	0.00
34.75	5.20	3.96	0.00
35.00	5.20	3.96	0.00
35.25	5.20	3.96	0.00
35.50	5.20	3.96	0.00
35.75	5.20	3.96	0.00
36.00	5.20	3.96	0.00

Summary for Subcatchment DA1: Pervious

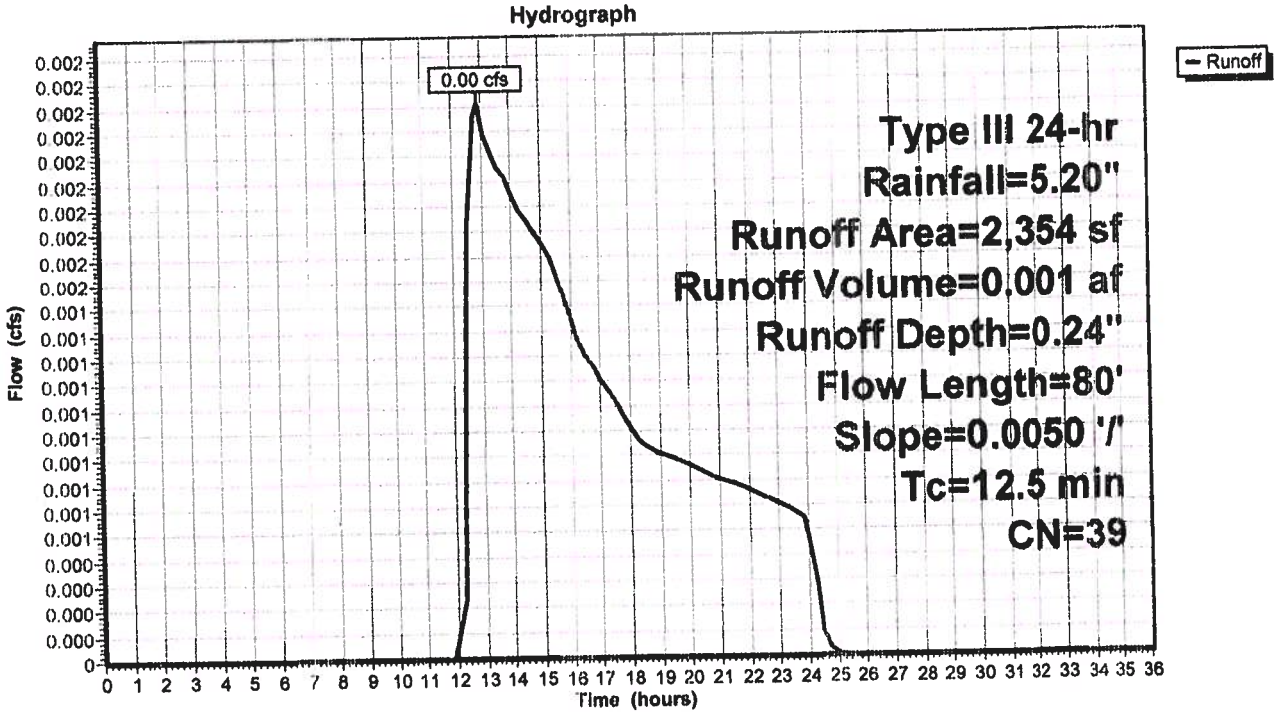
Runoff = 0.00 cfs @ 12.87 hrs, Volume= 0.001 af, Depth= 0.24"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.25 hrs
Type III 24-hr Rainfall=5.20"

Area (sf)	CN	Description
2,354	39	>75% Grass cover, Good, HSG A
2,354		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	80	0.0050	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 8.90"

Subcatchment DA1: Pervious



Hydrograph for Subcatchment DA1: Pervious

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.00	3.90	0.04	0.00
0.25	0.01	0.00	0.00	13.25	3.99	0.05	0.00
0.50	0.03	0.00	0.00	13.50	4.07	0.05	0.00
0.75	0.04	0.00	0.00	13.75	4.15	0.06	0.00
1.00	0.05	0.00	0.00	14.00	4.22	0.07	0.00
1.25	0.06	0.00	0.00	14.25	4.28	0.08	0.00
1.50	0.08	0.00	0.00	14.50	4.34	0.09	0.00
1.75	0.09	0.00	0.00	14.75	4.39	0.09	0.00
2.00	0.10	0.00	0.00	15.00	4.44	0.10	0.00
2.25	0.12	0.00	0.00	15.25	4.49	0.11	0.00
2.50	0.13	0.00	0.00	15.50	4.53	0.12	0.00
2.75	0.15	0.00	0.00	15.75	4.57	0.12	0.00
3.00	0.16	0.00	0.00	16.00	4.61	0.13	0.00
3.25	0.18	0.00	0.00	16.25	4.64	0.13	0.00
3.50	0.19	0.00	0.00	16.50	4.67	0.14	0.00
3.75	0.21	0.00	0.00	16.75	4.70	0.14	0.00
4.00	0.22	0.00	0.00	17.00	4.73	0.15	0.00
4.25	0.24	0.00	0.00	17.25	4.76	0.15	0.00
4.50	0.26	0.00	0.00	17.50	4.78	0.16	0.00
4.75	0.28	0.00	0.00	17.75	4.80	0.16	0.00
5.00	0.30	0.00	0.00	18.00	4.83	0.17	0.00
5.25	0.31	0.00	0.00	18.25	4.85	0.17	0.00
5.50	0.33	0.00	0.00	18.50	4.87	0.17	0.00
5.75	0.35	0.00	0.00	18.75	4.89	0.18	0.00
6.00	0.37	0.00	0.00	19.00	4.90	0.18	0.00
6.25	0.40	0.00	0.00	19.25	4.92	0.18	0.00
6.50	0.42	0.00	0.00	19.50	4.94	0.19	0.00
6.75	0.44	0.00	0.00	19.75	4.96	0.19	0.00
7.00	0.47	0.00	0.00	20.00	4.98	0.20	0.00
7.25	0.50	0.00	0.00	20.25	4.99	0.20	0.00
7.50	0.53	0.00	0.00	20.50	5.01	0.20	0.00
7.75	0.56	0.00	0.00	20.75	5.03	0.21	0.00
8.00	0.59	0.00	0.00	21.00	5.04	0.21	0.00
8.25	0.63	0.00	0.00	21.25	5.06	0.21	0.00
8.50	0.67	0.00	0.00	21.50	5.07	0.21	0.00
8.75	0.71	0.00	0.00	21.75	5.09	0.22	0.00
9.00	0.76	0.00	0.00	22.00	5.10	0.22	0.00
9.25	0.81	0.00	0.00	22.25	5.11	0.22	0.00
9.50	0.86	0.00	0.00	22.50	5.13	0.23	0.00
9.75	0.92	0.00	0.00	22.75	5.14	0.23	0.00
10.00	0.98	0.00	0.00	23.00	5.15	0.23	0.00
10.25	1.05	0.00	0.00	23.25	5.17	0.23	0.00
10.50	1.13	0.00	0.00	23.50	5.18	0.24	0.00
10.75	1.21	0.00	0.00	23.75	5.19	0.24	0.00
11.00	1.30	0.00	0.00	24.00	**5.20**	**0.24**	0.00
11.25	1.41	0.00	0.00	24.25	5.20	0.24	0.00
11.50	1.55	0.00	0.00	24.50	5.20	0.24	0.00
11.75	1.85	0.00	0.00	24.75	5.20	0.24	0.00
12.00	2.60	0.00	0.00	25.00	5.20	0.24	0.00
12.25	3.35	0.00	0.00	25.25	5.20	0.24	0.00
12.50	3.65	0.02	0.00	25.50	5.20	0.24	0.00
12.75	3.79	0.03	**0.00**	25.75	5.20	0.24	0.00

Hydrograph for Subcatchment DA1: Pervious (continued)

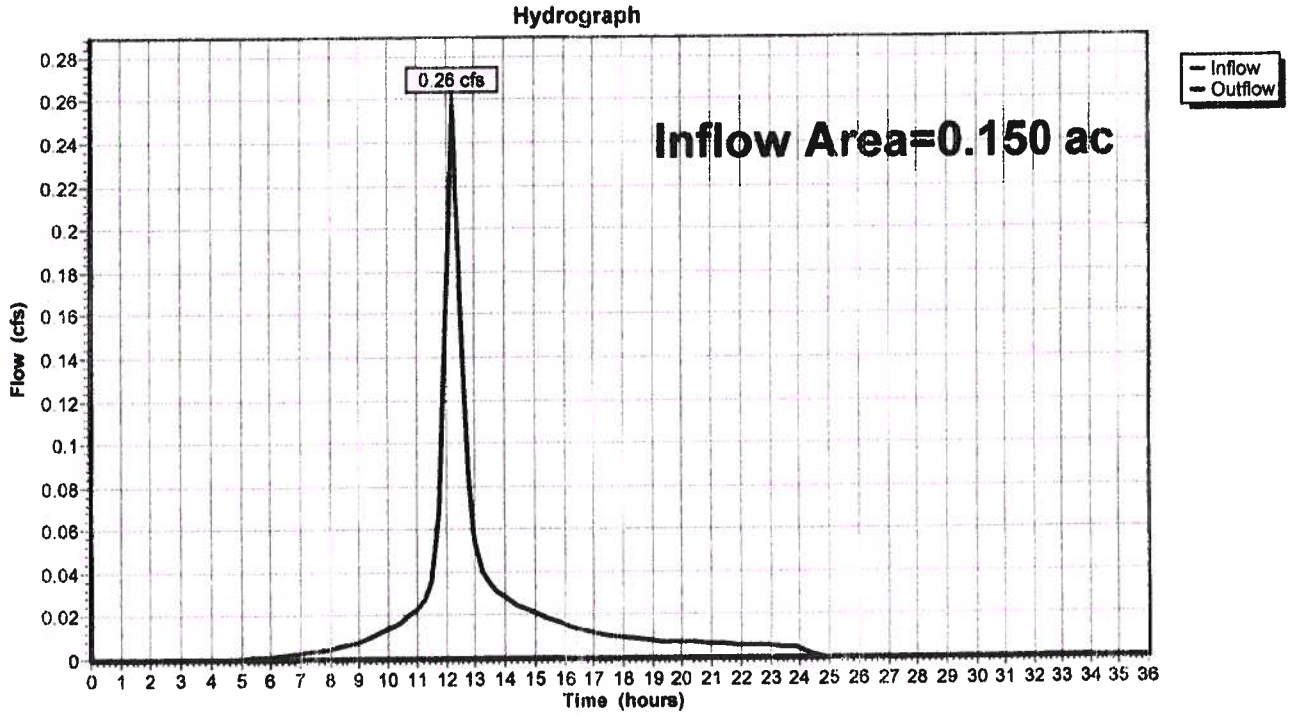
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
26.00	5.20	0.24	0.00
26.25	5.20	0.24	0.00
26.50	5.20	0.24	0.00
26.75	5.20	0.24	0.00
27.00	5.20	0.24	0.00
27.25	5.20	0.24	0.00
27.50	5.20	0.24	0.00
27.75	5.20	0.24	0.00
28.00	5.20	0.24	0.00
28.25	5.20	0.24	0.00
28.50	5.20	0.24	0.00
28.75	5.20	0.24	0.00
29.00	5.20	0.24	0.00
29.25	5.20	0.24	0.00
29.50	5.20	0.24	0.00
29.75	5.20	0.24	0.00
30.00	5.20	0.24	0.00
30.25	5.20	0.24	0.00
30.50	5.20	0.24	0.00
30.75	5.20	0.24	0.00
31.00	5.20	0.24	0.00
31.25	5.20	0.24	0.00
31.50	5.20	0.24	0.00
31.75	5.20	0.24	0.00
32.00	5.20	0.24	0.00
32.25	5.20	0.24	0.00
32.50	5.20	0.24	0.00
32.75	5.20	0.24	0.00
33.00	5.20	0.24	0.00
33.25	5.20	0.24	0.00
33.50	5.20	0.24	0.00
33.75	5.20	0.24	0.00
34.00	5.20	0.24	0.00
34.25	5.20	0.24	0.00
34.50	5.20	0.24	0.00
34.75	5.20	0.24	0.00
35.00	5.20	0.24	0.00
35.25	5.20	0.24	0.00
35.50	5.20	0.24	0.00
35.75	5.20	0.24	0.00
36.00	5.20	0.24	0.00

Summary for Reach 1R: (new Reach)

Inflow Area = 0.150 ac, 38.38% Impervious, Inflow Depth = 2.63"
Inflow = 0.26 cfs @ 12.25 hrs, Volume= 0.033 af
Outflow = 0.26 cfs @ 12.25 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.25 hrs

Reach 1R: (new Reach)

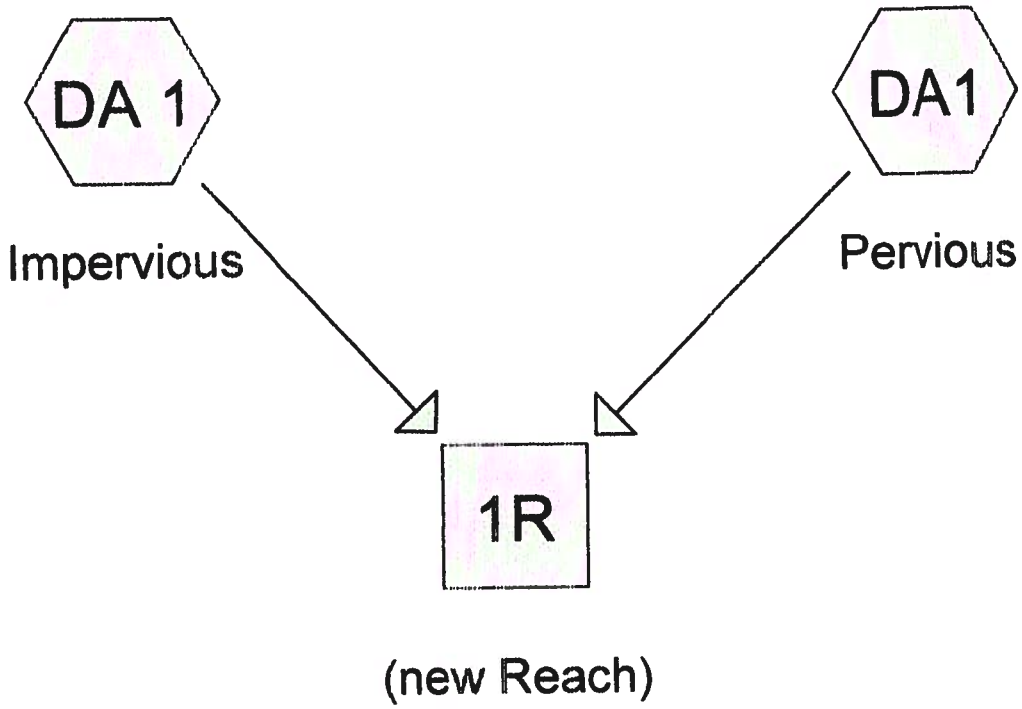


Hydrograph for Reach 1R: (new Reach)

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	13.00	0.05		0.05
0.25	0.00		0.00	13.25	0.04		0.04
0.50	0.00		0.00	13.50	0.03		0.03
0.75	0.00		0.00	13.75	0.03		0.03
1.00	0.00		0.00	14.00	0.03		0.03
1.25	0.00		0.00	14.25	0.03		0.03
1.50	0.00		0.00	14.50	0.02		0.02
1.75	0.00		0.00	14.75	0.02		0.02
2.00	0.00		0.00	15.00	0.02		0.02
2.25	0.00		0.00	15.25	0.02		0.02
2.50	0.00		0.00	15.50	0.02		0.02
2.75	0.00		0.00	15.75	0.02		0.02
3.00	0.00		0.00	16.00	0.02		0.02
3.25	0.00		0.00	16.25	0.01		0.01
3.50	0.00		0.00	16.50	0.01		0.01
3.75	0.00		0.00	16.75	0.01		0.01
4.00	0.00		0.00	17.00	0.01		0.01
4.25	0.00		0.00	17.25	0.01		0.01
4.50	0.00		0.00	17.50	0.01		0.01
4.75	0.00		0.00	17.75	0.01		0.01
5.00	0.00		0.00	18.00	0.01		0.01
5.25	0.00		0.00	18.25	0.01		0.01
5.50	0.00		0.00	18.50	0.01		0.01
5.75	0.00		0.00	18.75	0.01		0.01
6.00	0.00		0.00	19.00	0.01		0.01
6.25	0.00		0.00	19.25	0.01		0.01
6.50	0.00		0.00	19.50	0.01		0.01
6.75	0.00		0.00	19.75	0.01		0.01
7.00	0.00		0.00	20.00	0.01		0.01
7.25	0.00		0.00	20.25	0.01		0.01
7.50	0.00		0.00	20.50	0.01		0.01
7.75	0.00		0.00	20.75	0.01		0.01
8.00	0.00		0.00	21.00	0.01		0.01
8.25	0.01		0.01	21.25	0.01		0.01
8.50	0.01		0.01	21.50	0.01		0.01
8.75	0.01		0.01	21.75	0.01		0.01
9.00	0.01		0.01	22.00	0.01		0.01
9.25	0.01		0.01	22.25	0.01		0.01
9.50	0.01		0.01	22.50	0.01		0.01
9.75	0.01		0.01	22.75	0.01		0.01
10.00	0.01		0.01	23.00	0.01		0.01
10.25	0.02		0.02	23.25	0.01		0.01
10.50	0.02		0.02	23.50	0.01		0.01
10.75	0.02		0.02	23.75	0.00		0.00
11.00	0.02		0.02	24.00	0.00		0.00
11.25	0.03		0.03	24.25	0.00		0.00
11.50	0.04		0.04	24.50	0.00		0.00
11.75	0.07		0.07	24.75	0.00		0.00
12.00	0.17		0.17	25.00	0.00		0.00
12.25	**0.26**		**0.26**	25.25	0.00		0.00
12.50	0.17		0.17	25.50	0.00		0.00
12.75	0.09		0.09	25.75	0.00		0.00

Hydrograph for Reach 1R: (new Reach) (continued)

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
26.00	0.00		0.00
26.25	0.00		0.00
26.50	0.00		0.00
26.75	0.00		0.00
27.00	0.00		0.00
27.25	0.00		0.00
27.50	0.00		0.00
27.75	0.00		0.00
28.00	0.00		0.00
28.25	0.00		0.00
28.50	0.00		0.00
28.75	0.00		0.00
29.00	0.00		0.00
29.25	0.00		0.00
29.50	0.00		0.00
29.75	0.00		0.00
30.00	0.00		0.00
30.25	0.00		0.00
30.50	0.00		0.00
30.75	0.00		0.00
31.00	0.00		0.00
31.25	0.00		0.00
31.50	0.00		0.00
31.75	0.00		0.00
32.00	0.00		0.00
32.25	0.00		0.00
32.50	0.00		0.00
32.75	0.00		0.00
33.00	0.00		0.00
33.25	0.00		0.00
33.50	0.00		0.00
33.75	0.00		0.00
34.00	0.00		0.00
34.25	0.00		0.00
34.50	0.00		0.00
34.75	0.00		0.00
35.00	0.00		0.00
35.25	0.00		0.00
35.50	0.00		0.00
35.75	0.00		0.00
36.00	0.00		0.00



Routing Diagram for 220003 Maloney DA 5 100 yr Postdeveloped
Prepared by rba, Printed 6/3/2020
HydroCAD® 10.00-15 s/n 01102 © 2015 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.054	39	>75% Grass cover, Good, HSG A (DA1)
0.039	76	Porous pavement (DA 1)
0.058	98	roofs (DA 1)
0.150	**71**	**TOTAL AREA**

Summary for Subcatchment DA 1: Impervious

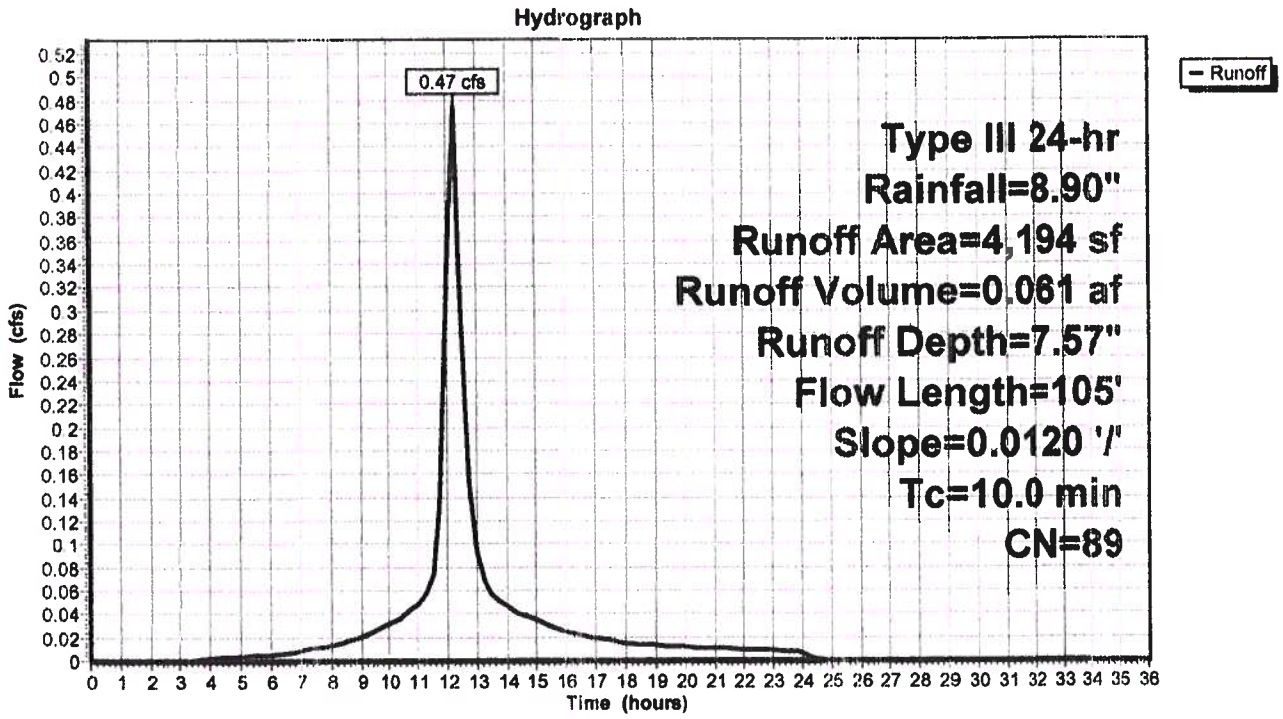
Runoff = 0.47 cfs @ 12.24 hrs, Volume= 0.061 af, Depth= 7.57"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.25 hrs
Type III 24-hr Rainfall=8.90"

	Area (sf)	CN	Description
*	2,513	98	roofs
*	1,681	76	Porous pavement
	4,194	89	Weighted Average
	1,681		40.08% Pervious Area
	2,513		59.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	105	0.0120	1.15		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
1.5	105	Total, Increased to minimum Tc = 10.0 min			

Subcatchment DA 1: Impervious



Hydrograph for Subcatchment DA 1: Impervious

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.00	6.67	5.39	0.09
0.25	0.02	0.00	0.00	13.25	6.83	5.54	0.07
0.50	0.04	0.00	0.00	13.50	6.97	5.68	0.06
0.75	0.07	0.00	0.00	13.75	7.10	5.81	0.05
1.00	0.09	0.00	0.00	14.00	7.22	5.92	0.05
1.25	0.11	0.00	0.00	14.25	7.32	6.02	0.04
1.50	0.13	0.00	0.00	14.50	7.42	6.12	0.04
1.75	0.16	0.00	0.00	14.75	7.52	6.21	0.04
2.00	0.18	0.00	0.00	15.00	7.60	6.30	0.03
2.25	0.20	0.00	0.00	15.25	7.68	6.38	0.03
2.50	0.22	0.00	0.00	15.50	7.76	6.45	0.03
2.75	0.25	0.00	0.00	15.75	7.82	6.51	0.03
3.00	0.27	0.00	0.00	16.00	7.89	6.57	0.02
3.25	0.30	0.00	0.00	16.25	7.94	6.63	0.02
3.50	0.33	0.00	0.00	16.50	8.00	6.68	0.02
3.75	0.35	0.01	0.00	16.75	8.05	6.73	0.02
4.00	0.38	0.01	0.00	17.00	8.09	6.78	0.02
4.25	0.41	0.02	0.00	17.25	8.14	6.82	0.02
4.50	0.44	0.03	0.00	17.50	8.18	6.87	0.02
4.75	0.47	0.03	0.00	17.75	8.22	6.90	0.02
5.00	0.51	0.04	0.00	18.00	8.26	6.94	0.01
5.25	0.54	0.06	0.00	18.25	8.29	6.98	0.01
5.50	0.57	0.07	0.00	18.50	8.33	7.01	0.01
5.75	0.61	0.08	0.00	18.75	8.36	7.04	0.01
6.00	0.64	0.10	0.01	19.00	8.39	7.07	0.01
6.25	0.68	0.11	0.01	19.25	8.43	7.11	0.01
6.50	0.72	0.13	0.01	19.50	8.46	7.14	0.01
6.75	0.76	0.15	0.01	19.75	8.49	7.17	0.01
7.00	0.81	0.17	0.01	20.00	8.52	7.19	0.01
7.25	0.85	0.20	0.01	20.25	8.55	7.22	0.01
7.50	0.90	0.23	0.01	20.50	8.57	7.25	0.01
7.75	0.96	0.26	0.01	20.75	8.60	7.28	0.01
8.00	1.01	0.29	0.01	21.00	8.63	7.30	0.01
8.25	1.08	0.33	0.01	21.25	8.65	7.33	0.01
8.50	1.14	0.38	0.02	21.50	8.68	7.35	0.01
8.75	1.22	0.43	0.02	21.75	8.70	7.38	0.01
9.00	1.30	0.48	0.02	22.00	8.73	7.40	0.01
9.25	1.38	0.54	0.02	22.25	8.75	7.43	0.01
9.50	1.48	0.61	0.03	22.50	8.78	7.45	0.01
9.75	1.58	0.69	0.03	22.75	8.80	7.47	0.01
10.00	1.68	0.77	0.03	23.00	8.82	7.49	0.01
10.25	1.80	0.86	0.03	23.25	8.84	7.51	0.01
10.50	1.93	0.97	0.04	23.50	8.86	7.53	0.01
10.75	2.07	1.09	0.04	23.75	8.88	7.55	0.01
11.00	2.23	1.22	0.05	24.00	**8.90**	**7.57**	0.01
11.25	2.41	1.38	0.06	24.25	8.90	7.57	0.00
11.50	2.65	1.59	0.07	24.50	8.90	7.57	0.00
11.75	3.16	2.05	0.13	24.75	8.90	7.57	0.00
12.00	4.45	3.25	0.32	25.00	8.90	7.57	0.00
12.25	5.74	4.48	**0.47**	25.25	8.90	7.57	0.00
12.50	6.25	4.98	0.30	25.50	8.90	7.57	0.00
12.75	6.49	5.21	0.15	25.75	8.90	7.57	0.00

Hydrograph for Subcatchment DA 1: Impervious (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
26.00	8.90	7.57	0.00
26.25	8.90	7.57	0.00
26.50	8.90	7.57	0.00
26.75	8.90	7.57	0.00
27.00	8.90	7.57	0.00
27.25	8.90	7.57	0.00
27.50	8.90	7.57	0.00
27.75	8.90	7.57	0.00
28.00	8.90	7.57	0.00
28.25	8.90	7.57	0.00
28.50	8.90	7.57	0.00
28.75	8.90	7.57	0.00
29.00	8.90	7.57	0.00
29.25	8.90	7.57	0.00
29.50	8.90	7.57	0.00
29.75	8.90	7.57	0.00
30.00	8.90	7.57	0.00
30.25	8.90	7.57	0.00
30.50	8.90	7.57	0.00
30.75	8.90	7.57	0.00
31.00	8.90	7.57	0.00
31.25	8.90	7.57	0.00
31.50	8.90	7.57	0.00
31.75	8.90	7.57	0.00
32.00	8.90	7.57	0.00
32.25	8.90	7.57	0.00
32.50	8.90	7.57	0.00
32.75	8.90	7.57	0.00
33.00	8.90	7.57	0.00
33.25	8.90	7.57	0.00
33.50	8.90	7.57	0.00
33.75	8.90	7.57	0.00
34.00	8.90	7.57	0.00
34.25	8.90	7.57	0.00
34.50	8.90	7.57	0.00
34.75	8.90	7.57	0.00
35.00	8.90	7.57	0.00
35.25	8.90	7.57	0.00
35.50	8.90	7.57	0.00
35.75	8.90	7.57	0.00
36.00	8.90	7.57	0.00

Summary for Subcatchment DA1: Pervious

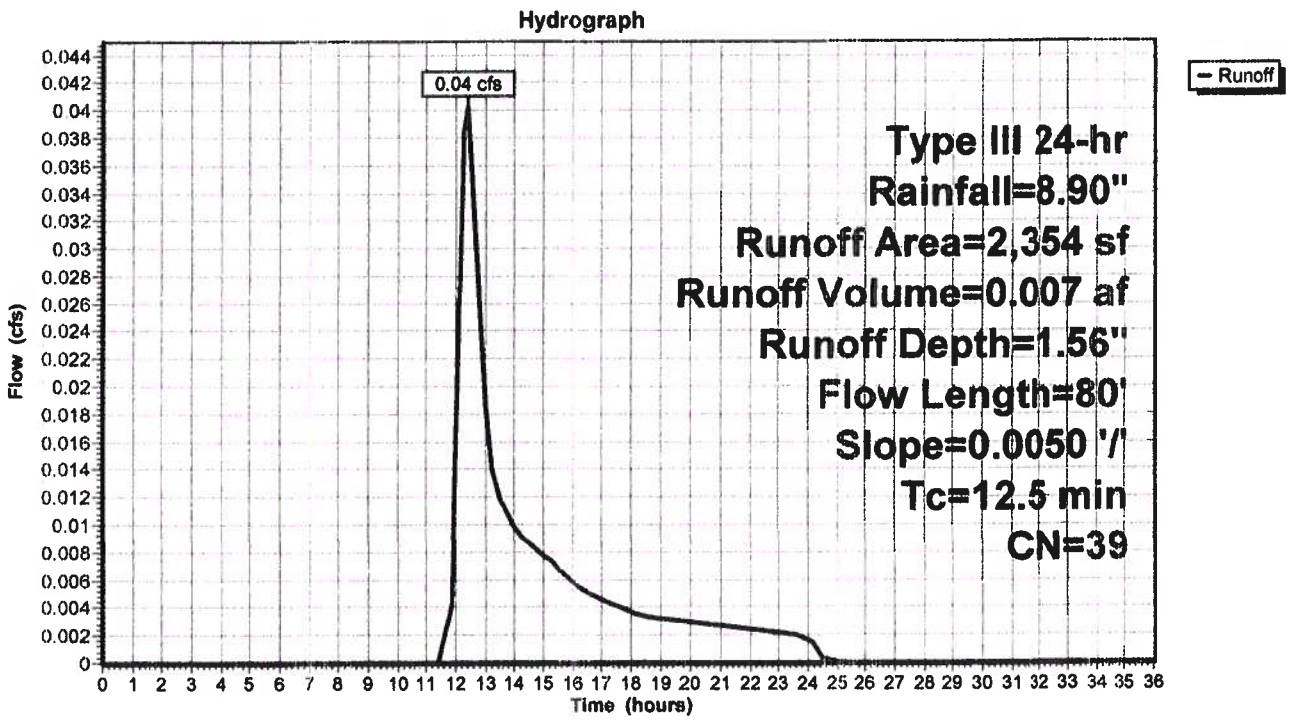
Runoff = 0.04 cfs @ 12.38 hrs, Volume= 0.007 af, Depth= 1.56"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.25 hrs
Type III 24-hr Rainfall=8.90"

Area (sf)	CN	Description
2,354	39	>75% Grass cover, Good, HSG A
2,354		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	80	0.0050	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 8.90"

Subcatchment DA1: Pervious



Hydrograph for Subcatchment DA1: Pervious

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.02	0.00	0.00
0.50	0.04	0.00	0.00
0.75	0.07	0.00	0.00
1.00	0.09	0.00	0.00
1.25	0.11	0.00	0.00
1.50	0.13	0.00	0.00
1.75	0.16	0.00	0.00
2.00	0.18	0.00	0.00
2.25	0.20	0.00	0.00
2.50	0.22	0.00	0.00
2.75	0.25	0.00	0.00
3.00	0.27	0.00	0.00
3.25	0.30	0.00	0.00
3.50	0.33	0.00	0.00
3.75	0.35	0.00	0.00
4.00	0.38	0.00	0.00
4.25	0.41	0.00	0.00
4.50	0.44	0.00	0.00
4.75	0.47	0.00	0.00
5.00	0.51	0.00	0.00
5.25	0.54	0.00	0.00
5.50	0.57	0.00	0.00
5.75	0.61	0.00	0.00
6.00	0.64	0.00	0.00
6.25	0.68	0.00	0.00
6.50	0.72	0.00	0.00
6.75	0.76	0.00	0.00
7.00	0.81	0.00	0.00
7.25	0.85	0.00	0.00
7.50	0.90	0.00	0.00
7.75	0.96	0.00	0.00
8.00	1.01	0.00	0.00
8.25	1.08	0.00	0.00
8.50	1.14	0.00	0.00
8.75	1.22	0.00	0.00
9.00	1.30	0.00	0.00
9.25	1.38	0.00	0.00
9.50	1.48	0.00	0.00
9.75	1.58	0.00	0.00
10.00	1.68	0.00	0.00
10.25	1.80	0.00	0.00
10.50	1.93	0.00	0.00
10.75	2.07	0.00	0.00
11.00	2.23	0.00	0.00
11.25	2.41	0.00	0.00
11.50	2.65	0.00	0.00
11.75	3.16	0.00	0.00
12.00	4.45	0.10	0.01
12.25	5.74	0.37	0.04
12.50	6.25	0.52	**0.04**
12.75	6.49	0.59	0.03
13.00	6.67	0.66	0.02
13.25	6.83	0.71	0.01
13.50	6.97	0.76	0.01
13.75	7.10	0.81	0.01
14.00	7.22	0.85	0.01
14.25	7.32	0.89	0.01
14.50	7.42	0.93	0.01
14.75	7.52	0.96	0.01
15.00	7.60	1.00	0.01
15.25	7.68	1.03	0.01
15.50	7.76	1.06	0.01
15.75	7.82	1.08	0.01
16.00	7.89	1.11	0.01
16.25	7.94	1.13	0.01
16.50	8.00	1.16	0.01
16.75	8.05	1.18	0.00
17.00	8.09	1.20	0.00
17.25	8.14	1.22	0.00
17.50	8.18	1.23	0.00
17.75	8.22	1.25	0.00
18.00	8.26	1.27	0.00
18.25	8.29	1.28	0.00
18.50	8.33	1.30	0.00
18.75	8.36	1.31	0.00
19.00	8.39	1.33	0.00
19.25	8.43	1.34	0.00
19.50	8.46	1.35	0.00
19.75	8.49	1.37	0.00
20.00	8.52	1.38	0.00
20.25	8.55	1.39	0.00
20.50	8.57	1.41	0.00
20.75	8.60	1.42	0.00
21.00	8.63	1.43	0.00
21.25	8.65	1.44	0.00
21.50	8.68	1.45	0.00
21.75	8.70	1.47	0.00
22.00	8.73	1.48	0.00
22.25	8.75	1.49	0.00
22.50	8.78	1.50	0.00
22.75	8.80	1.51	0.00
23.00	8.82	1.52	0.00
23.25	8.84	1.53	0.00
23.50	8.86	1.54	0.00
23.75	8.88	1.55	0.00
24.00	**8.90**	**1.56**	0.00
24.25	8.90	1.56	0.00
24.50	8.90	1.56	0.00
24.75	8.90	1.56	0.00
25.00	8.90	1.56	0.00
25.25	8.90	1.56	0.00
25.50	8.90	1.56	0.00
25.75	8.90	1.56	0.00

Hydrograph for Subcatchment DA1: Pervious (continued)

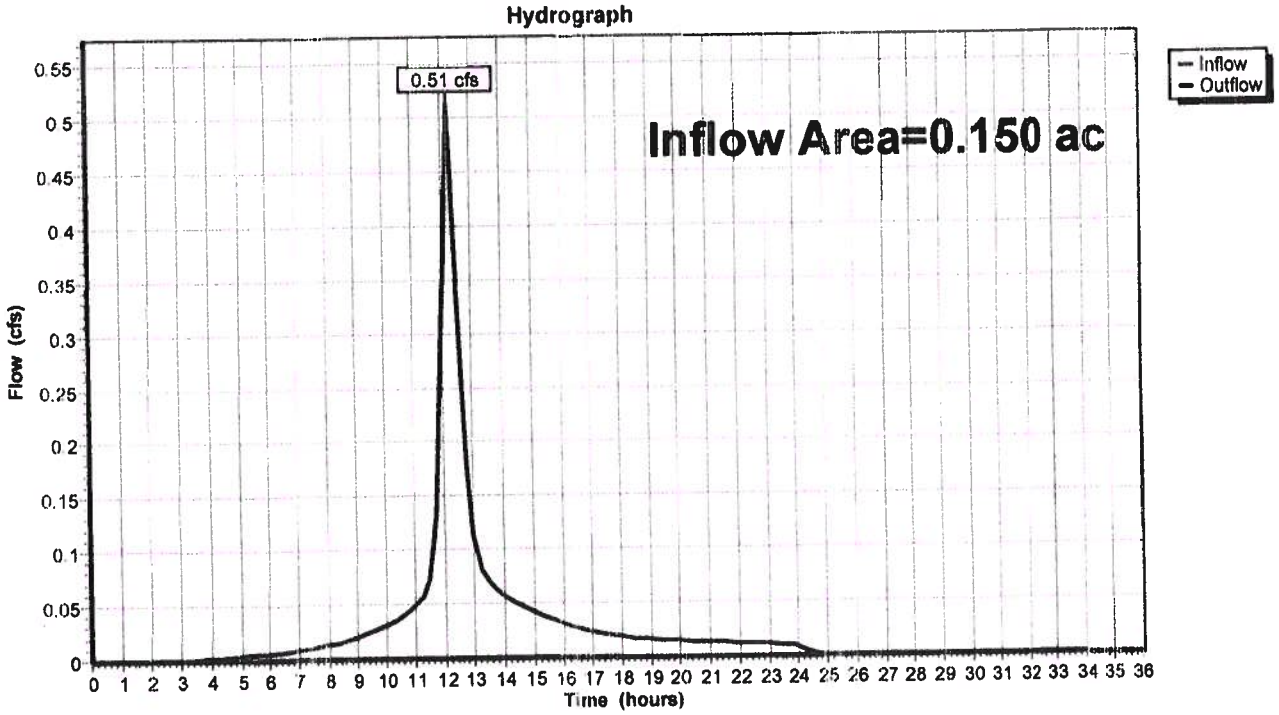
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
26.00	8.90	1.56	0.00
26.25	8.90	1.56	0.00
26.50	8.90	1.56	0.00
26.75	8.90	1.56	0.00
27.00	8.90	1.56	0.00
27.25	8.90	1.56	0.00
27.50	8.90	1.56	0.00
27.75	8.90	1.56	0.00
28.00	8.90	1.56	0.00
28.25	8.90	1.56	0.00
28.50	8.90	1.56	0.00
28.75	8.90	1.56	0.00
29.00	8.90	1.56	0.00
29.25	8.90	1.56	0.00
29.50	8.90	1.56	0.00
29.75	8.90	1.56	0.00
30.00	8.90	1.56	0.00
30.25	8.90	1.56	0.00
30.50	8.90	1.56	0.00
30.75	8.90	1.56	0.00
31.00	8.90	1.56	0.00
31.25	8.90	1.56	0.00
31.50	8.90	1.56	0.00
31.75	8.90	1.56	0.00
32.00	8.90	1.56	0.00
32.25	8.90	1.56	0.00
32.50	8.90	1.56	0.00
32.75	8.90	1.56	0.00
33.00	8.90	1.56	0.00
33.25	8.90	1.56	0.00
33.50	8.90	1.56	0.00
33.75	8.90	1.56	0.00
34.00	8.90	1.56	0.00
34.25	8.90	1.56	0.00
34.50	8.90	1.56	0.00
34.75	8.90	1.56	0.00
35.00	8.90	1.56	0.00
35.25	8.90	1.56	0.00
35.50	8.90	1.56	0.00
35.75	8.90	1.56	0.00
36.00	8.90	1.56	0.00

Summary for Reach 1R: (new Reach)

Inflow Area = 0.150 ac, 38.38% Impervious, Inflow Depth = 5.41"
Inflow = 0.51 cfs @ 12.25 hrs, Volume= 0.068 af
Outflow = 0.51 cfs @ 12.25 hrs, Volume= 0.068 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.25 hrs

Reach 1R: (new Reach)

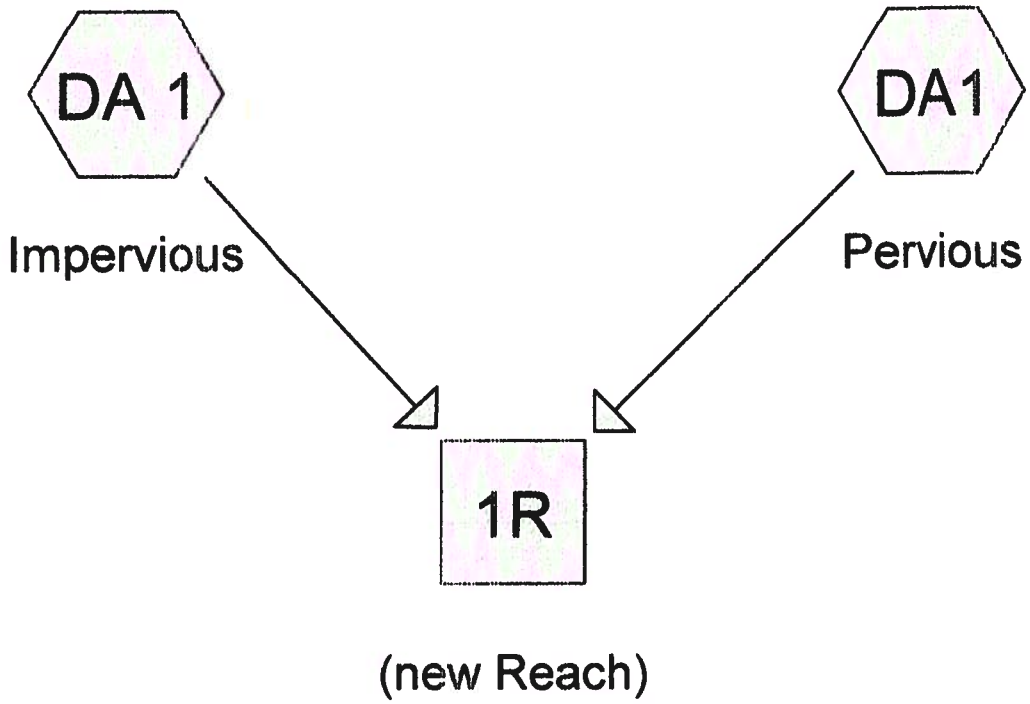


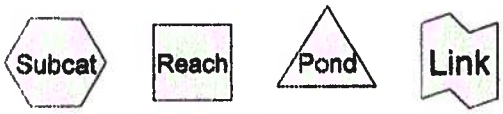
Hydrograph for Reach 1R: (new Reach)

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	13.00	0.11		0.11
0.25	0.00		0.00	13.25	0.08		0.08
0.50	0.00		0.00	13.50	0.07		0.07
0.75	0.00		0.00	13.75	0.06		0.06
1.00	0.00		0.00	14.00	0.06		0.06
1.25	0.00		0.00	14.25	0.05		0.05
1.50	0.00		0.00	14.50	0.05		0.05
1.75	0.00		0.00	14.75	0.04		0.04
2.00	0.00		0.00	15.00	0.04		0.04
2.25	0.00		0.00	15.25	0.04		0.04
2.50	0.00		0.00	15.50	0.04		0.04
2.75	0.00		0.00	15.75	0.03		0.03
3.00	0.00		0.00	16.00	0.03		0.03
3.25	0.00		0.00	16.25	0.03		0.03
3.50	0.00		0.00	16.50	0.03		0.03
3.75	0.00		0.00	16.75	0.02		0.02
4.00	0.00		0.00	17.00	0.02		0.02
4.25	0.00		0.00	17.25	0.02		0.02
4.50	0.00		0.00	17.50	0.02		0.02
4.75	0.00		0.00	17.75	0.02		0.02
5.00	0.00		0.00	18.00	0.02		0.02
5.25	0.00		0.00	18.25	0.02		0.02
5.50	0.00		0.00	18.50	0.02		0.02
5.75	0.00		0.00	18.75	0.02		0.02
6.00	0.01		0.01	19.00	0.02		0.02
6.25	0.01		0.01	19.25	0.02		0.02
6.50	0.01		0.01	19.50	0.02		0.02
6.75	0.01		0.01	19.75	0.01		0.01
7.00	0.01		0.01	20.00	0.01		0.01
7.25	0.01		0.01	20.25	0.01		0.01
7.50	0.01		0.01	20.50	0.01		0.01
7.75	0.01		0.01	20.75	0.01		0.01
8.00	0.01		0.01	21.00	0.01		0.01
8.25	0.01		0.01	21.25	0.01		0.01
8.50	0.02		0.02	21.50	0.01		0.01
8.75	0.02		0.02	21.75	0.01		0.01
9.00	0.02		0.02	22.00	0.01		0.01
9.25	0.02		0.02	22.25	0.01		0.01
9.50	0.03		0.03	22.50	0.01		0.01
9.75	0.03		0.03	22.75	0.01		0.01
10.00	0.03		0.03	23.00	0.01		0.01
10.25	0.03		0.03	23.25	0.01		0.01
10.50	0.04		0.04	23.50	0.01		0.01
10.75	0.04		0.04	23.75	0.01		0.01
11.00	0.05		0.05	24.00	0.01		0.01
11.25	0.06		0.06	24.25	0.00		0.00
11.50	0.07		0.07	24.50	0.00		0.00
11.75	0.13		0.13	24.75	0.00		0.00
12.00	0.33		0.33	25.00	0.00		0.00
12.25	**0.51**		**0.51**	25.25	0.00		0.00
12.50	0.34		0.34	25.50	0.00		0.00
12.75	0.18		0.18	25.75	0.00		0.00

Hydrograph for Reach 1R: (new Reach) (continued)

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
26.00	0.00		0.00
26.25	0.00		0.00
26.50	0.00		0.00
26.75	0.00		0.00
27.00	0.00		0.00
27.25	0.00		0.00
27.50	0.00		0.00
27.75	0.00		0.00
28.00	0.00		0.00
28.25	0.00		0.00
28.50	0.00		0.00
28.75	0.00		0.00
29.00	0.00		0.00
29.25	0.00		0.00
29.50	0.00		0.00
29.75	0.00		0.00
30.00	0.00		0.00
30.25	0.00		0.00
30.50	0.00		0.00
30.75	0.00		0.00
31.00	0.00		0.00
31.25	0.00		0.00
31.50	0.00		0.00
31.75	0.00		0.00
32.00	0.00		0.00
32.25	0.00		0.00
32.50	0.00		0.00
32.75	0.00		0.00
33.00	0.00		0.00
33.25	0.00		0.00
33.50	0.00		0.00
33.75	0.00		0.00
34.00	0.00		0.00
34.25	0.00		0.00
34.50	0.00		0.00
34.75	0.00		0.00
35.00	0.00		0.00
35.25	0.00		0.00
35.50	0.00		0.00
35.75	0.00		0.00
36.00	0.00		0.00





Routing Diagram for 220003 Maloney DA 5 NJDEP Water Quality
Prepared by rba, Printed 6/3/2020
HydroCAD® 10.00-15 s/n 01102 © 2015 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.054	39	>75% Grass cover, Good, HSG A (DA1)
0.039	76	Porous pavement (DA 1)
0.058	98	roofs (DA 1)
0.150	**71**	**TOTAL AREA**

Summary for Subcatchment DA 1: Impervious

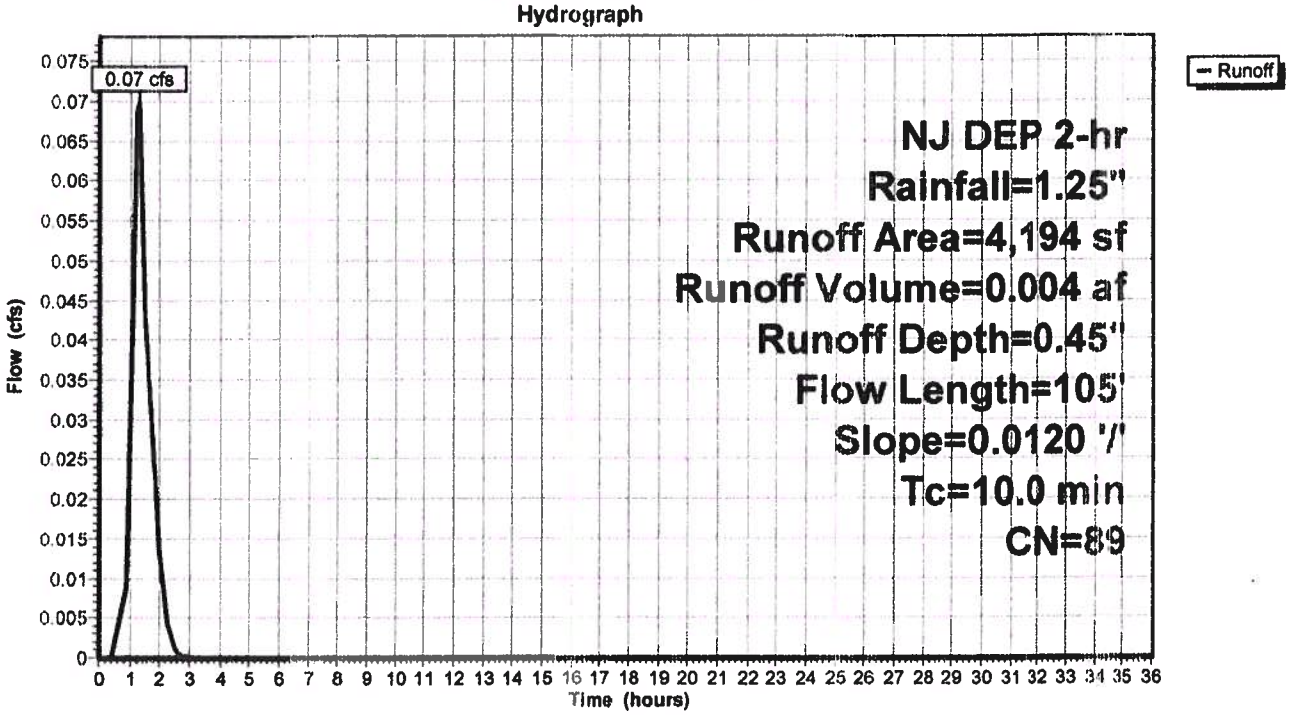
Runoff = 0.07 cfs @ 1.29 hrs, Volume= 0.004 af, Depth= 0.45"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.25 hrs
NJ DEP 2-hr Rainfall=1.25"

	Area (sf)	CN	Description
*	2,513	98	roofs
*	1,681	76	Porous pavement
	4,194	89	Weighted Average
	1,681		40.08% Pervious Area
	2,513		59.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	105	0.0120	1.15		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
1.5	105	Total, Increased to minimum Tc = 10.0 min			

Subcatchment DA 1: Impervious



Hydrograph for Subcatchment DA 1: Impervious

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.00	1.25	0.45	0.00
0.25	0.03	0.00	0.00	13.25	1.25	0.45	0.00
0.50	0.10	0.00	0.00	13.50	1.25	0.45	0.00
0.75	0.20	0.00	0.00	13.75	1.25	0.45	0.00
1.00	0.63	0.09	0.02	14.00	1.25	0.45	0.00
1.25	1.05	0.32	**0.07**	14.25	1.25	0.45	0.00
1.50	1.15	0.38	0.04	14.50	1.25	0.45	0.00
1.75	1.23	0.43	0.03	14.75	1.25	0.45	0.00
2.00	**1.25**	**0.45**	0.01	15.00	1.25	0.45	0.00
2.25	1.25	0.45	0.00	15.25	1.25	0.45	0.00
2.50	1.25	0.45	0.00	15.50	1.25	0.45	0.00
2.75	1.25	0.45	0.00	15.75	1.25	0.45	0.00
3.00	1.25	0.45	0.00	16.00	1.25	0.45	0.00
3.25	1.25	0.45	0.00	16.25	1.25	0.45	0.00
3.50	1.25	0.45	0.00	16.50	1.25	0.45	0.00
3.75	1.25	0.45	0.00	16.75	1.25	0.45	0.00
4.00	1.25	0.45	0.00	17.00	1.25	0.45	0.00
4.25	1.25	0.45	0.00	17.25	1.25	0.45	0.00
4.50	1.25	0.45	0.00	17.50	1.25	0.45	0.00
4.75	1.25	0.45	0.00	17.75	1.25	0.45	0.00
5.00	1.25	0.45	0.00	18.00	1.25	0.45	0.00
5.25	1.25	0.45	0.00	18.25	1.25	0.45	0.00
5.50	1.25	0.45	0.00	18.50	1.25	0.45	0.00
5.75	1.25	0.45	0.00	18.75	1.25	0.45	0.00
6.00	1.25	0.45	0.00	19.00	1.25	0.45	0.00
6.25	1.25	0.45	0.00	19.25	1.25	0.45	0.00
6.50	1.25	0.45	0.00	19.50	1.25	0.45	0.00
6.75	1.25	0.45	0.00	19.75	1.25	0.45	0.00
7.00	1.25	0.45	0.00	20.00	1.25	0.45	0.00
7.25	1.25	0.45	0.00	20.25	1.25	0.45	0.00
7.50	1.25	0.45	0.00	20.50	1.25	0.45	0.00
7.75	1.25	0.45	0.00	20.75	1.25	0.45	0.00
8.00	1.25	0.45	0.00	21.00	1.25	0.45	0.00
8.25	1.25	0.45	0.00	21.25	1.25	0.45	0.00
8.50	1.25	0.45	0.00	21.50	1.25	0.45	0.00
8.75	1.25	0.45	0.00	21.75	1.25	0.45	0.00
9.00	1.25	0.45	0.00	22.00	1.25	0.45	0.00
9.25	1.25	0.45	0.00	22.25	1.25	0.45	0.00
9.50	1.25	0.45	0.00	22.50	1.25	0.45	0.00
9.75	1.25	0.45	0.00	22.75	1.25	0.45	0.00
10.00	1.25	0.45	0.00	23.00	1.25	0.45	0.00
10.25	1.25	0.45	0.00	23.25	1.25	0.45	0.00
10.50	1.25	0.45	0.00	23.50	1.25	0.45	0.00
10.75	1.25	0.45	0.00	23.75	1.25	0.45	0.00
11.00	1.25	0.45	0.00	24.00	1.25	0.45	0.00
11.25	1.25	0.45	0.00	24.25	1.25	0.45	0.00
11.50	1.25	0.45	0.00	24.50	1.25	0.45	0.00
11.75	1.25	0.45	0.00	24.75	1.25	0.45	0.00
12.00	1.25	0.45	0.00	25.00	1.25	0.45	0.00
12.25	1.25	0.45	0.00	25.25	1.25	0.45	0.00
12.50	1.25	0.45	0.00	25.50	1.25	0.45	0.00
12.75	1.25	0.45	0.00	25.75	1.25	0.45	0.00

Hydrograph for Subcatchment DA 1: Impervious (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
26.00	1.25	0.45	0.00
26.25	1.25	0.45	0.00
26.50	1.25	0.45	0.00
26.75	1.25	0.45	0.00
27.00	1.25	0.45	0.00
27.25	1.25	0.45	0.00
27.50	1.25	0.45	0.00
27.75	1.25	0.45	0.00
28.00	1.25	0.45	0.00
28.25	1.25	0.45	0.00
28.50	1.25	0.45	0.00
28.75	1.25	0.45	0.00
29.00	1.25	0.45	0.00
29.25	1.25	0.45	0.00
29.50	1.25	0.45	0.00
29.75	1.25	0.45	0.00
30.00	1.25	0.45	0.00
30.25	1.25	0.45	0.00
30.50	1.25	0.45	0.00
30.75	1.25	0.45	0.00
31.00	1.25	0.45	0.00
31.25	1.25	0.45	0.00
31.50	1.25	0.45	0.00
31.75	1.25	0.45	0.00
32.00	1.25	0.45	0.00
32.25	1.25	0.45	0.00
32.50	1.25	0.45	0.00
32.75	1.25	0.45	0.00
33.00	1.25	0.45	0.00
33.25	1.25	0.45	0.00
33.50	1.25	0.45	0.00
33.75	1.25	0.45	0.00
34.00	1.25	0.45	0.00
34.25	1.25	0.45	0.00
34.50	1.25	0.45	0.00
34.75	1.25	0.45	0.00
35.00	1.25	0.45	0.00
35.25	1.25	0.45	0.00
35.50	1.25	0.45	0.00
35.75	1.25	0.45	0.00
36.00	1.25	0.45	0.00

Summary for Subcatchment DA1: Pervious

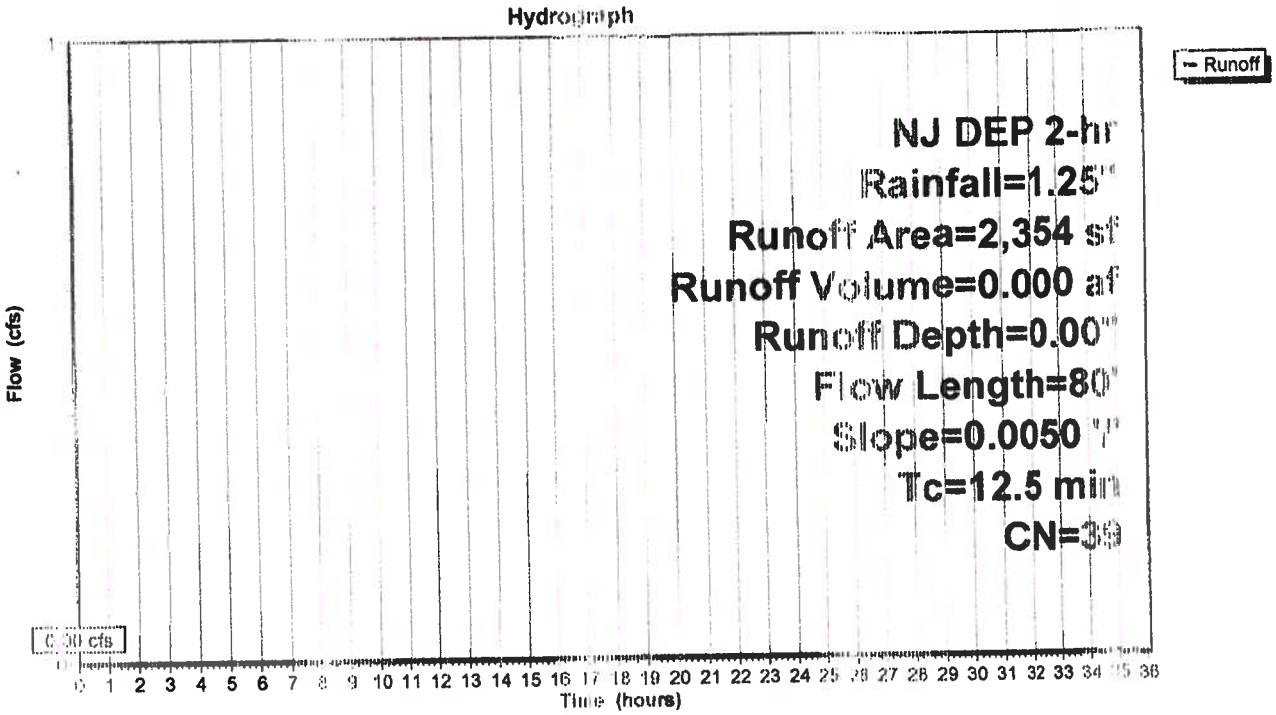
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.25 hrs
NJ DEP 2-hr Rainfall=1.25"

Area (sf)	CN	Description
2,354	39	>75% Grass cover, Good, HSG A
2,354		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	80	0.0050	0.11		**Sheet Flow,** Grass: Dense n= 0.240 P2= 8.90"

Subcatchment DA1: Pervious



Hydrograph for Subcatchment DA1: Pervious

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	**0.00**	**0.00**	13.00	1.25	0.00	0.00
0.25	0.03	0.00	0.00	13.25	1.25	0.00	0.00
0.50	0.10	0.00	0.00	13.50	1.25	0.00	0.00
0.75	0.20	0.00	0.00	13.75	1.25	0.00	0.00
1.00	0.63	0.00	0.00	14.00	1.25	0.00	0.00
1.25	1.05	0.00	0.00	14.25	1.25	0.00	0.00
1.50	1.15	0.00	0.00	14.50	1.25	0.00	0.00
1.75	1.23	0.00	0.00	14.75	1.25	0.00	0.00
2.00	**1.25**	0.00	0.00	15.00	1.25	0.00	0.00
2.25	1.25	0.00	0.00	15.25	1.25	0.00	0.00
2.50	1.25	0.00	0.00	15.50	1.25	0.00	0.00
2.75	1.25	0.00	0.00	15.75	1.25	0.00	0.00
3.00	1.25	0.00	0.00	16.00	1.25	0.00	0.00
3.25	1.25	0.00	0.00	16.25	1.25	0.00	0.00
3.50	1.25	0.00	0.00	16.50	1.25	0.00	0.00
3.75	1.25	0.00	0.00	16.75	1.25	0.00	0.00
4.00	1.25	0.00	0.00	17.00	1.25	0.00	0.00
4.25	1.25	0.00	0.00	17.25	1.25	0.00	0.00
4.50	1.25	0.00	0.00	17.50	1.25	0.00	0.00
4.75	1.25	0.00	0.00	17.75	1.25	0.00	0.00
5.00	1.25	0.00	0.00	18.00	1.25	0.00	0.00
5.25	1.25	0.00	0.00	18.25	1.25	0.00	0.00
5.50	1.25	0.00	0.00	18.50	1.25	0.00	0.00
5.75	1.25	0.00	0.00	18.75	1.25	0.00	0.00
6.00	1.25	0.00	0.00	19.00	1.25	0.00	0.00
6.25	1.25	0.00	0.00	19.25	1.25	0.00	0.00
6.50	1.25	0.00	0.00	19.50	1.25	0.00	0.00
6.75	1.25	0.00	0.00	19.75	1.25	0.00	0.00
7.00	1.25	0.00	0.00	20.00	1.25	0.00	0.00
7.25	1.25	0.00	0.00	20.25	1.25	0.00	0.00
7.50	1.25	0.00	0.00	20.50	1.25	0.00	0.00
7.75	1.25	0.00	0.00	20.75	1.25	0.00	0.00
8.00	1.25	0.00	0.00	21.00	1.25	0.00	0.00
8.25	1.25	0.00	0.00	21.25	1.25	0.00	0.00
8.50	1.25	0.00	0.00	21.50	1.25	0.00	0.00
8.75	1.25	0.00	0.00	21.75	1.25	0.00	0.00
9.00	1.25	0.00	0.00	22.00	1.25	0.00	0.00
9.25	1.25	0.00	0.00	22.25	1.25	0.00	0.00
9.50	1.25	0.00	0.00	22.50	1.25	0.00	0.00
9.75	1.25	0.00	0.00	22.75	1.25	0.00	0.00
10.00	1.25	0.00	0.00	23.00	1.25	0.00	0.00
10.25	1.25	0.00	0.00	23.25	1.25	0.00	0.00
10.50	1.25	0.00	0.00	23.50	1.25	0.00	0.00
10.75	1.25	0.00	0.00	23.75	1.25	0.00	0.00
11.00	1.25	0.00	0.00	24.00	1.25	0.00	0.00
11.25	1.25	0.00	0.00	24.25	1.25	0.00	0.00
11.50	1.25	0.00	0.00	24.50	1.25	0.00	0.00
11.75	1.25	0.00	0.00	24.75	1.25	0.00	0.00
12.00	1.25	0.00	0.00	25.00	1.25	0.00	0.00
12.25	1.25	0.00	0.00	25.25	1.25	0.00	0.00
12.50	1.25	0.00	0.00	25.50	1.25	0.00	0.00
12.75	1.25	0.00	0.00	25.75	1.25	0.00	0.00

Hydrograph for Subcatchment DA1: Pervious (continued)

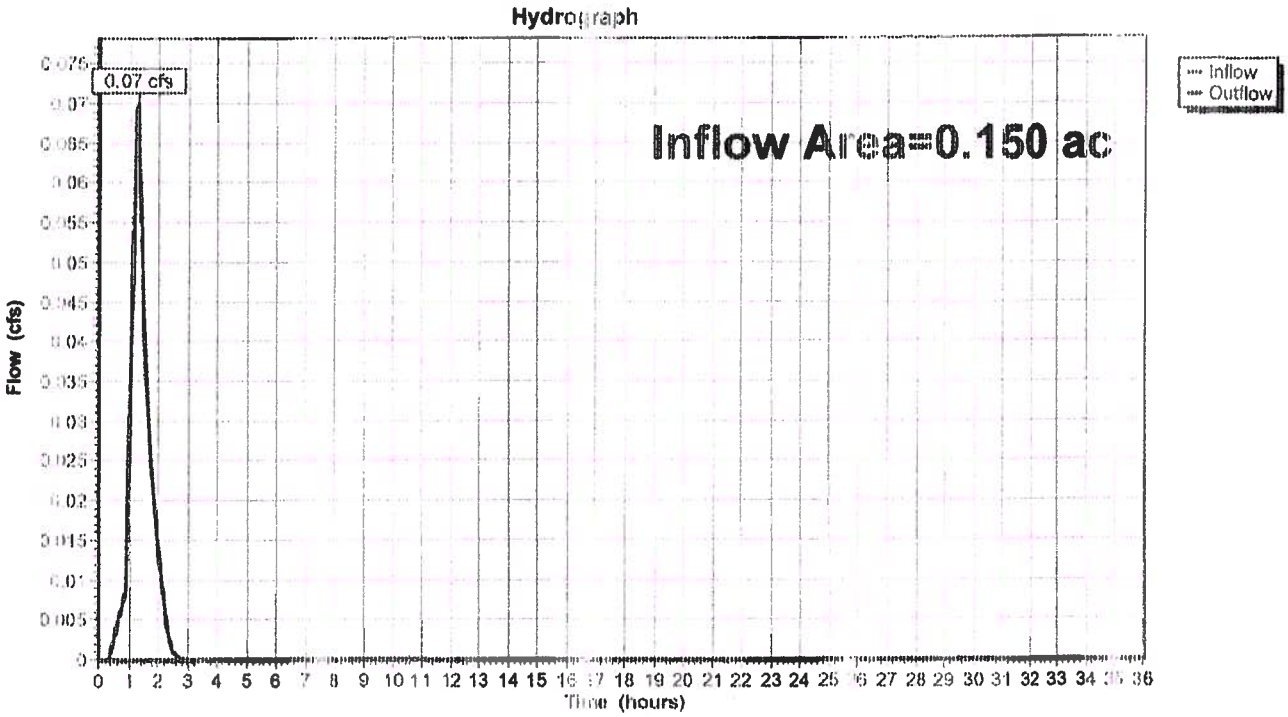
Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
26.00	1.25	0.00	0.00
26.25	1.25	0.00	0.00
26.50	1.25	0.00	0.00
26.75	1.25	0.00	0.00
27.00	1.25	0.00	0.00
27.25	1.25	0.00	0.00
27.50	1.25	0.00	0.00
27.75	1.25	0.00	0.00
28.00	1.25	0.00	0.00
28.25	1.25	0.00	0.00
28.50	1.25	0.00	0.00
28.75	1.25	0.00	0.00
29.00	1.25	0.00	0.00
29.25	1.25	0.00	0.00
29.50	1.25	0.00	0.00
29.75	1.25	0.00	0.00
30.00	1.25	0.00	0.00
30.25	1.25	0.00	0.00
30.50	1.25	0.00	0.00
30.75	1.25	0.00	0.00
31.00	1.25	0.00	0.00
31.25	1.25	0.00	0.00
31.50	1.25	0.00	0.00
31.75	1.25	0.00	0.00
32.00	1.25	0.00	0.00
32.25	1.25	0.00	0.00
32.50	1.25	0.00	0.00
32.75	1.25	0.00	0.00
33.00	1.25	0.00	0.00
33.25	1.25	0.00	0.00
33.50	1.25	0.00	0.00
33.75	1.25	0.00	0.00
34.00	1.25	0.00	0.00
34.25	1.25	0.00	0.00
34.50	1.25	0.00	0.00
34.75	1.25	0.00	0.00
35.00	1.25	0.00	0.00
35.25	1.25	0.00	0.00
35.50	1.25	0.00	0.00
35.75	1.25	0.00	0.00
36.00	1.25	0.00	0.00

Summary for Reach 1R: (new Reach)

Inflow Area = 0.150 ac, 38.38% Impervious, Inflow Depth = 0.29"
Inflow = 0.07 cfs @ 1.29 hrs, Volume= 0.004 af
Outflow = 0.07 cfs @ 1.29 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.25 hrs

Reach 1R: (new Reach)



Hydrograph for Reach 1R: (new Reach)

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
0.00	0.00		0.00	13.00	0.00		0.00
0.25	0.00		0.00	13.25	0.00		0.00
0.50	0.00		0.00	13.50	0.00		0.00
0.75	0.00		0.00	13.75	0.00		0.00
1.00	0.02		0.02	14.00	0.00		0.00
1.25	**0.07**		**0.07**	14.25	0.00		0.00
1.50	0.04		0.04	14.50	0.00		0.00
1.75	0.03		0.03	14.75	0.00		0.00
2.00	0.01		0.01	15.00	0.00		0.00
2.25	0.00		0.00	15.25	0.00		0.00
2.50	0.00		0.00	15.50	0.00		0.00
2.75	0.00		0.00	15.75	0.00		0.00
3.00	0.00		0.00	16.00	0.00		0.00
3.25	0.00		0.00	16.25	0.00		0.00
3.50	0.00		0.00	16.50	0.00		0.00
3.75	0.00		0.00	16.75	0.00		0.00
4.00	0.00		0.00	17.00	0.00		0.00
4.25	0.00		0.00	17.25	0.00		0.00
4.50	0.00		0.00	17.50	0.00		0.00
4.75	0.00		0.00	17.75	0.00		0.00
5.00	0.00		0.00	18.00	0.00		0.00
5.25	0.00		0.00	18.25	0.00		0.00
5.50	0.00		0.00	18.50	0.00		0.00
5.75	0.00		0.00	18.75	0.00		0.00
6.00	0.00		0.00	19.00	0.00		0.00
6.25	0.00		0.00	19.25	0.00		0.00
6.50	0.00		0.00	19.50	0.00		0.00
6.75	0.00		0.00	19.75	0.00		0.00
7.00	0.00		0.00	20.00	0.00		0.00
7.25	0.00		0.00	20.25	0.00		0.00
7.50	0.00		0.00	20.50	0.00		0.00
7.75	0.00		0.00	20.75	0.00		0.00
8.00	0.00		0.00	21.00	0.00		0.00
8.25	0.00		0.00	21.25	0.00		0.00
8.50	0.00		0.00	21.50	0.00		0.00
8.75	0.00		0.00	21.75	0.00		0.00
9.00	0.00		0.00	22.00	0.00		0.00
9.25	0.00		0.00	22.25	0.00		0.00
9.50	0.00		0.00	22.50	0.00		0.00
9.75	0.00		0.00	22.75	0.00		0.00
10.00	0.00		0.00	23.00	0.00		0.00
10.25	0.00		0.00	23.25	0.00		0.00
10.50	0.00		0.00	23.50	0.00		0.00
10.75	0.00		0.00	23.75	0.00		0.00
11.00	0.00		0.00	24.00	0.00		0.00
11.25	0.00		0.00	24.25	0.00		0.00
11.50	0.00		0.00	24.50	0.00		0.00
11.75	0.00		0.00	24.75	0.00		0.00
12.00	0.00		0.00	25.00	0.00		0.00
12.25	0.00		0.00	25.25	0.00		0.00
12.50	0.00		0.00	25.50	0.00		0.00
12.75	0.00		0.00	25.75	0.00		0.00

Hydrograph for Reach 1R: (new Reach) (continued)

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)
26.00	0.00		0.00
26.25	0.00		0.00
26.50	0.00		0.00
26.75	0.00		0.00
27.00	0.00		0.00
27.25	0.00		0.00
27.50	0.00		0.00
27.75	0.00		0.00
28.00	0.00		0.00
28.25	0.00		0.00
28.50	0.00		0.00
28.75	0.00		0.00
29.00	0.00		0.00
29.25	0.00		0.00
29.50	0.00		0.00
29.75	0.00		0.00
30.00	0.00		0.00
30.25	0.00		0.00
30.50	0.00		0.00
30.75	0.00		0.00
31.00	0.00		0.00
31.25	0.00		0.00
31.50	0.00		0.00
31.75	0.00		0.00
32.00	0.00		0.00
32.25	0.00		0.00
32.50	0.00		0.00
32.75	0.00		0.00
33.00	0.00		0.00
33.25	0.00		0.00
33.50	0.00		0.00
33.75	0.00		0.00
34.00	0.00		0.00
34.25	0.00		0.00
34.50	0.00		0.00
34.75	0.00		0.00
35.00	0.00		0.00
35.25	0.00		0.00
35.50	0.00		0.00
35.75	0.00		0.00
36.00	0.00		0.00