

# Stormwater Management Report

## Seasonal Aerial Forest Ropes Course Kueffner/Stoddard Mansfield, Connecticut

September 2012



146 Hartford Road  
Manchester, CT 06040

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## Stormwater Management Report Seasonal Aerial Forest Ropes Course

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## Stormwater Management Report Seasonal Aerial Forest Ropes Course

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## 1 Executive Summary

The Applicant (Kueffner/Stoddard) proposes to develop a Seasonal Aerial Forest Ropes Course on less than ten acres of an approximately 120-acre parcel of land along Route 195 in Mansfield, Connecticut. In addition to the high ropes course and the aerial tree-mounted features, the proposed facility will include the installation of an entrance driveway, parking area, and stormwater treatment/management swales. These ground-mounted site improvements are limited to the northern portion of the property and will disturb approximately 1.25 acres of land.

The majority of stormwater runoff from the proposed improvements will be captured by shallow stormwater treatment/management swales prior to discharging to the existing wetland system along Route 195. These stormwater swales will improve stormwater quality by promoting infiltration of runoff, and will partially attenuate peak flows leaving the site by providing some temporary storage and promoting sheet flow discharge.

Existing and proposed hydrologic conditions for the developed area were evaluated. The evaluation demonstrates a slight increase in stormwater peak discharge from the proposed site for the 2-, 10-, 25-, and 100-year storm events as compared to existing conditions. Although peak stormwater flows will slightly increase in proposed conditions, the overall magnitude of the increases will not be significant (approximately 1 cubic-foot-per-second overall increase during a 25-year storm event).

Erosion and sedimentation control details and narratives for construction periods are provided in the site plans. E&S details and procedures are consistent with the 2002 Guidelines for Soil Erosion and Sedimentation Control, and town requirements.

## 2 Existing Conditions

The site is located along the south side of Route 195 approximately one-quarter mile west of Baxter Road in Mansfield, Connecticut. A Site Location Map is included as *Figure 1*.

In general, existing on-site drainage conditions may be characterized as follows:

- Runoff from approximately one acre of land on the eastern portion of the site sheet flows to the north, towards Route 195, down the existing hillside. Runoff from both the site and portions of Route 195 discharge into a wetland at the northeast corner of the site (denoted as Wetland “A” in the existing watershed analysis). This wetland drains easterly along Route 195. This outfall is denoted as link 1L, “Eastern Outfall”.
- The remaining portions of the site follow a similar drainage pattern. Runoff sheet flows to the north, where it combines with runoff from Route 195 in one of two wetlands at the northwest corner of the site. The two wetlands (denoted as Wetland “B” and Wetland “C”) are connected by a 12 inch corrugated metal pipe. These wetlands drain into a catch basin with an at-grade inlet, through a reinforced concrete pipe and culvert end discharging north of Route 195. The catch basin is denoted as link 2L, “Western Outfall”.

The overall stormwater catchment areas contributing to the various outfalls were delineated to evaluate the existing hydrological conditions. In total, approximately 13.32 acres of land contribute to the subject drainage areas. These drainage areas are illustrated on sheet DRA-01 (Existing Drainage Areas), which is included in *Appendix A* along with the existing watershed model. Underlying soil types, as characterized by the Natural Resources Conservation Service Web Soil Survey, are depicted in *Figure 2*.

### 3 Proposed Conditions

Although the total facility will occupy slightly less than 10 acres of land, most facility components will be aerial tree-mounted features to support the high-ropes course. As such, only 1.25 acres of this land will be disturbed to construct necessary ground-mounted features, including an entrance driveway, a gravel parking area, a level pad for a temporary ticket/equipment storage shed, and several stormwater treatment/management swales. Overall, drainage patterns will continue to function the same as compared to existing conditions.

Five stormwater treatment/management swales will be installed along the northern (downgradient) edges of the proposed gravel parking area. These swales have been designed to capture runoff from the majority of the parking area, and will provide some storage volume for the attenuation of peak flows as well as for improvement of water quality. Excess stormwater leaving the swales will discharge via earthen weir, promoting sheet flow towards the wetland systems. Of the total 13.32 acre contributing drainage area, approximately 6.94 acres are captured by the proposed stormwater swales. The drainage model for proposed conditions has been further defined to model the performance of each stormwater swale.

The following tables summarize peak existing vs. proposed stormwater flows and volumes for the watershed analysis.

Table 1 2 Year Design Storm			
Design Point	Existing Flow (CFS)	Proposed Flow (CFS)	Net Change (CFS)
Eastern Outfall	0.01	0.09	0.08
Western Outfall	0.00	0.08	0.08
<b>Total</b>	<b>0.01</b>	<b>0.14</b>	<b>0.16</b>

Table 2 10 Year Design Storm			
Design Point	Existing Flow (CFS)	Proposed Flow (CFS)	Net Change (CFS)
Eastern Outfall	0.16	0.46	0.30
Western Outfall	0.11	0.62	0.51
<b>Total</b>	<b>0.27</b>	<b>1.08</b>	<b>0.81</b>

Table 3 25 Year Design Storm			
Design Point	Existing Flow (CFS)	Proposed Flow (CFS)	Net Change (CFS)
Eastern Outfall	0.32	0.67	0.35
Western Outfall	0.28	0.99	0.71
<b>Total</b>	<b>0.60</b>	<b>1.66</b>	<b>1.06</b>

Table 4 100 Year Design Storm			
Design Point	Existing Flow (CFS)	Proposed Flow (CFS)	Net Change (CFS)
Eastern Outfall	0.77	1.17	0.40
Western Outfall	1.43	1.92	0.49
Total	2.20	3.09	0.89

Although peak stormwater flows will slightly increase in proposed conditions, the overall magnitude of the increases will not be significant relative to the frequency of the storm event (approximately 1 cubic-foot-per-second overall increase during a 25-year storm event). Moreover, installation of a detention system would require additional clearing, earthwork and impact to the existing wooded site, and would concentrate discharge outflows. *(Note that care has been taken to preserve large, established trees via the non-linear orientation and layout of the parking area.)*

Runoff catchment areas for the redevelopment were delineated to evaluate proposed hydrologic conditions. These watersheds are illustrated on sheet DRA-02, which is presented with associated calculations in *Appendix B*.

## 4 Construction Stormwater Management and Soil Erosion and Sedimentation Control

A detailed E&S control plan has been prepared for the site. During construction, measures will be taken to reduce erosion and manage sedimentation from disturbed surfaces. The following Best Management Practices (BMPs) will be employed:

- Existing stormwater collection structures (catch basins) will be fitted with filter fabric inserts to remove sediments from the run-off prior to entering the receiving drainage systems.
- Silt fence will be installed at clearing limits and the down-gradient perimeter of the disturbed portion of the site.
- Construction Entrances will be installed to prevent tracking of sediment off site.

These BMPs will protect downstream stormwater collection systems following construction. The plan has been prepared in accordance with the 2002 Erosion and Sedimentation Control Guidelines (DEEP Bulletin 34).

Erosion and sedimentation control (E&S) details and narratives for construction periods are provided in the site plans. E&S details and procedures are consistent with the 2002 Guidelines for Soil Erosion and Sedimentation Control (DEEP Bulletin 34), and town requirements.

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### 4.1 Post-Construction Stormwater Management

At the end of construction, all areas disturbed by construction activities shall be stabilized. As a result, the potential for erosion at this site after construction is minimal. Perimeter controls (i.e., silt fence) will be actively maintained until final stabilization of those portions of the site up-gradient of the perimeter control. Temporary perimeter controls will be removed after final stabilization.

The water quality of runoff from the developed site will be improved using widely accepted Best Management Practices (BMPs). The goal of the post-construction stormwater management is to remove 80% of the total suspended solids from stormwater. Water quality will be achieved for the site through the utilization of the stormwater management/treatment swales. Weir outlets will provide settling time necessary to remove sediment from the first-flush of runoff (1-inch of rainfall). This goal is consistent with those of Connecticut and federal stormwater regulations.

The required water quality volume (WQV) to be stored for the areas draining to the stormwater quality swales is 3,074 cubic feet, based on the drainage area collected by the swales, and conservatively assuming the gravel surface is completely impervious. The water quality swales provide a total storage volume of approximately 3,370 cubic feet. Therefore, the

proposed stormwater quality swales will provide the required WQV for the contributing drainage area. A spreadsheet depicting the WQV required for the contributing drainage areas is included in *Appendix B*.

These design measures incorporate commonly used Best Management Practices and follows guidelines set forth by the CT DEEP Stormwater Quality Manual and the Connecticut and federal stormwater regulations.

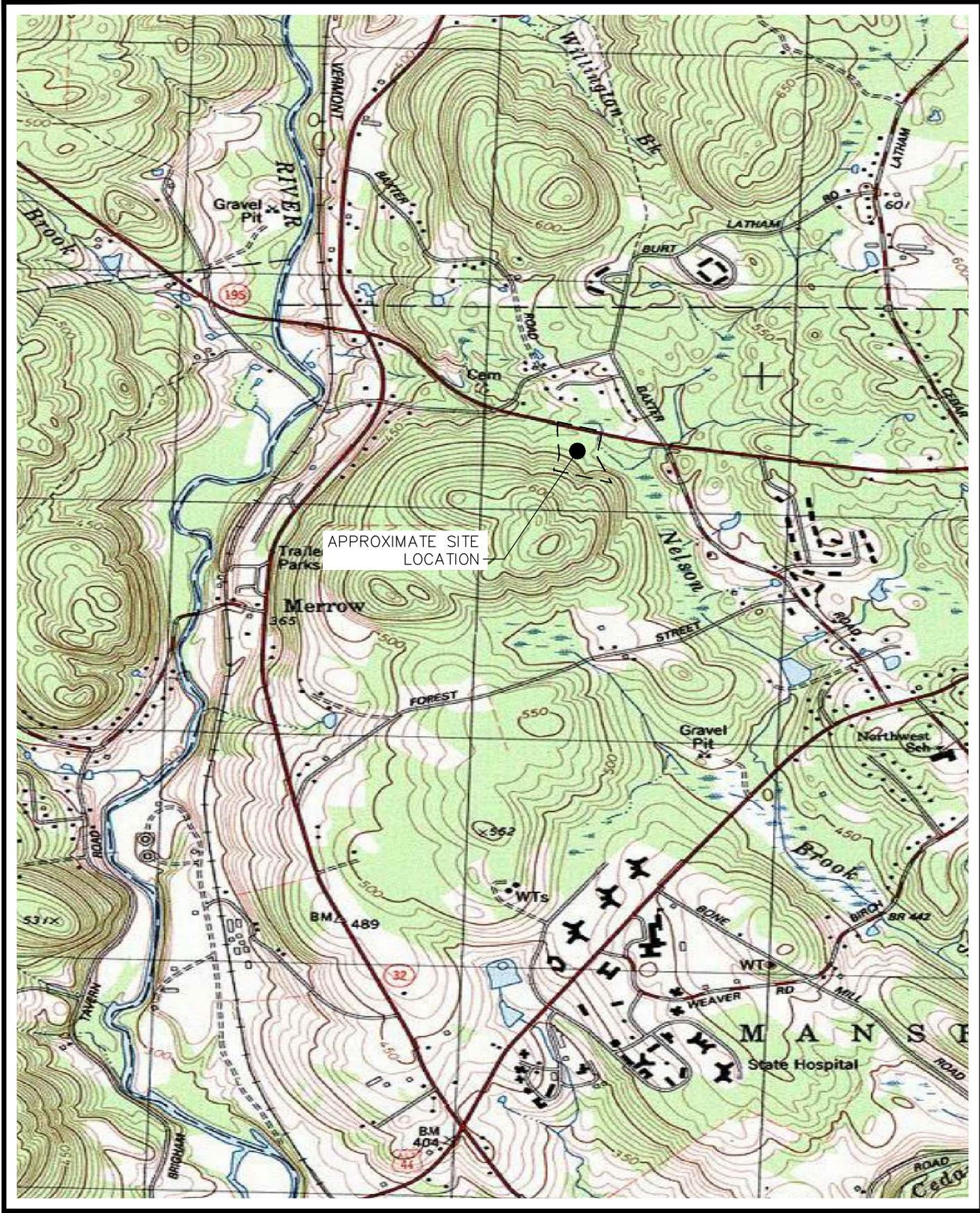
## 5 Methods

The watershed analysis for existing and proposed conditions was completed using the HydroCAD Software Solutions computer program. The HydroCAD program is based on NRCS TR-20 methods. The methods described in the NRCS TR-55 manual were followed to calculate the curve number and time of concentration input data for this model. A curve number of 98 was used for paved surfaces, while curve numbers of 76 to 91 were used for gravel parking lot surfaces depending on underlying soil types. Pervious surfaces were modeled using curve numbers of 32 to 80 depending on the general surface conditions and underlying soil types. These values are acceptable for surfaces over Hydrological Group-‘A’ soils per the NRCS TR-55 Drainage Manual.

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## Figures

*Site Location Map*



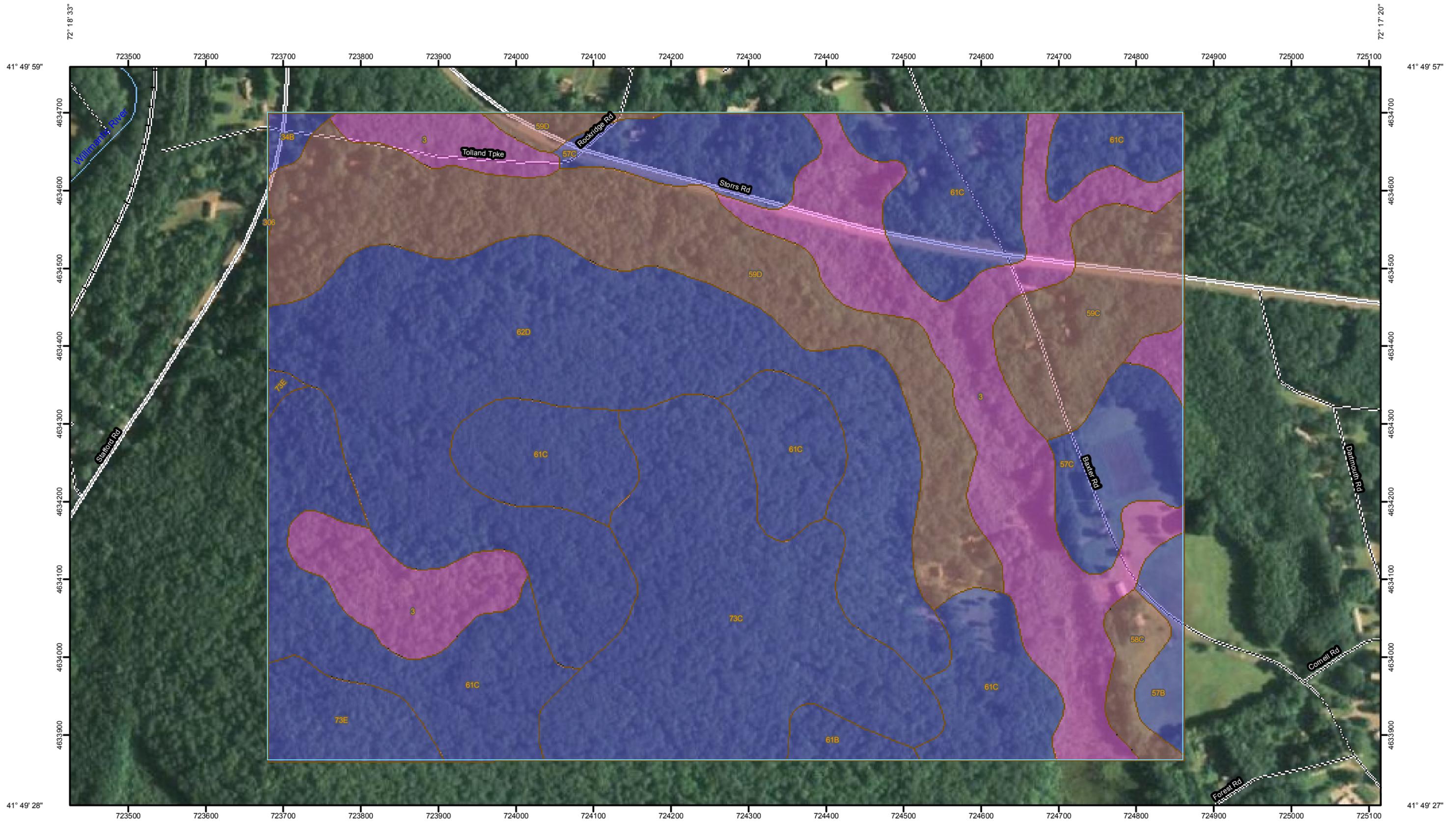
SCALE:
HORZ.: 1" = 1000'
VERT.:
DATUM:
HORZ.:
VERT.:
0 500 1000
GRAPHIC SCALE



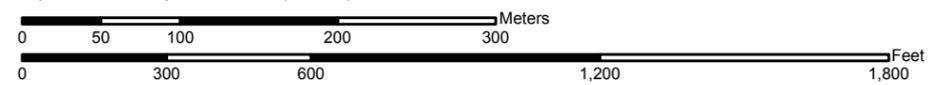
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KUEFFNER/STODDARD  
 SITE LOCATION MAP  
 SEASONAL AERIAL FOREST ROPES COURSE  
 MANSFIELD CONNECTICUT

PROJ. No.: 20111004.A30  
 DATE: 09/25/2012  
 Figure 1



Map Scale: 1:4,670 if printed on B size (11" x 17") sheet.



## MAP LEGEND

### Area of Interest (AOI)

 Area of Interest (AOI)

### Soils

 Soil Map Units

### Soil Ratings

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

### Political Features

 Cities

### Water Features

 Streams and Canals

### Transportation

 Rails  
 Interstate Highways  
 US Routes  
 Major Roads  
 Local Roads

## MAP INFORMATION

Map Scale: 1:4,670 if printed on B size (11" × 17") sheet.

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>

Coordinate System: UTM Zone 18N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut

Survey Area Data: Version 10, Mar 31, 2011

Date(s) aerial images were photographed: 8/16/2006

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

## Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — State of Connecticut (CT600)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
3	Ridgebury, Leicester, and Whitman soils, extremely stony	D	39.4	16.2%
34B	Merrimac sandy loam, 3 to 8 percent slopes	B	1.0	0.4%
57B	Gloucester gravelly sandy loam, 3 to 8 percent slopes	B	3.0	1.2%
57C	Gloucester gravelly sandy loam, 8 to 15 percent slopes	B	14.4	5.9%
58C	Gloucester gravelly sandy loam, 8 to 15 percent slopes, very stony	A	2.8	1.2%
59C	Gloucester gravelly sandy loam, 3 to 15 percent slopes, extremely stony	A	11.1	4.6%
59D	Gloucester gravelly sandy loam, 15 to 35 percent slopes, extremely stony	A	30.4	12.5%
61B	Canton and Charlton soils, 3 to 8 percent slopes, very stony	B	2.0	0.8%
61C	Canton and Charlton soils, 8 to 15 percent slopes, very stony	B	49.0	20.2%
62D	Canton and Charlton soils, 15 to 35 percent slopes, extremely stony	B	51.7	21.3%
73C	Charlton-Chatfield complex, 3 to 15 percent slopes, very rocky	B	32.2	13.3%
73E	Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky	B	5.7	2.3%
306	Udorthents-Urban land complex	B	0.0	0.0%
<b>Totals for Area of Interest</b>			<b>242.7</b>	<b>100.0%</b>

## Description

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

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

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

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

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

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

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

## Rating Options

*Aggregation Method:* Dominant Condition

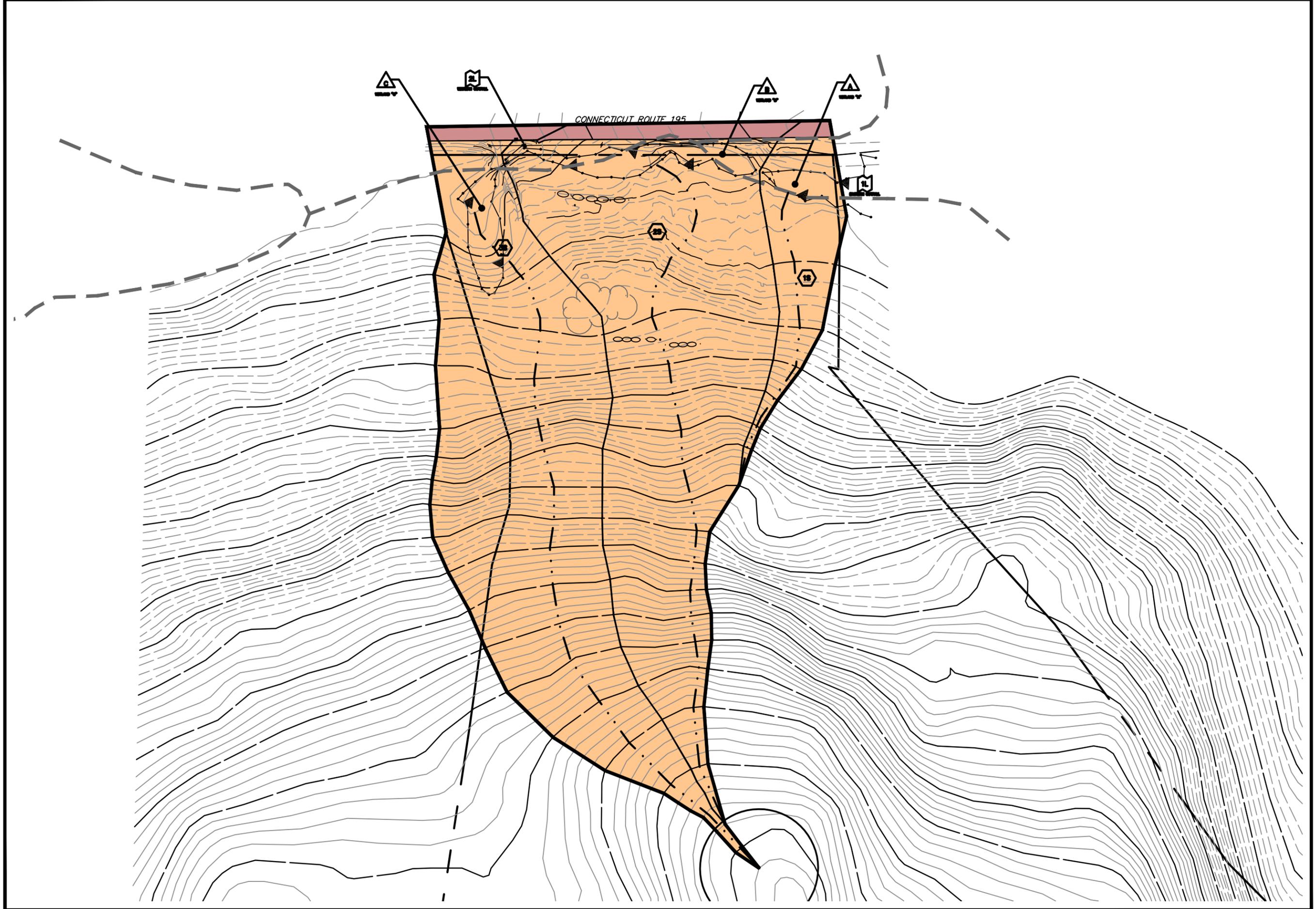
*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Higher

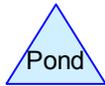
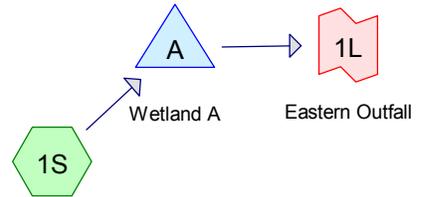
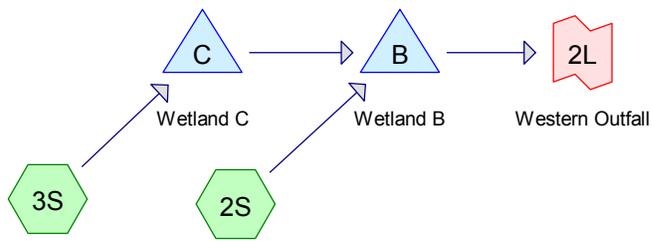
## **Appendix A**

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### Existing Drainage Modeling



SCALE: HORIZ.: 1" = 60'	
VERT.: 1" = 30'	
DATUM: HORIZ.: NAD 83	
VERT.: NAVD 88	
0 30 60	
GRAPHIC SCALE	
 <b>FUSS &amp; O'NEILL</b>	
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CONNECTICUT	
KUEFFER / STODDARD	
EXISTING DRAINAGE AREAS	
SEASONAL AERIAL FOREST ROPES COURSE	
MANSFIELD	
PROJ. No.: 2011 1004.A30	
DATE: SEPTEMBER 2012	
<b>DRA-01</b>	



## Existing

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Page 2

### Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.410	98	Paved parking, HSG B (1S, 2S, 3S)
12.120	32	Woods/grass comb., Good, HSG A (1S, 2S, 3S)
0.340	58	Woods/grass comb., Good, HSG B (2S, 3S)
0.400	79	Woods/grass comb., Good, HSG D (1S, 2S)
<b>13.270</b>	<b>36</b>	<b>TOTAL AREA</b>

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### Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
12.120	HSG A	1S, 2S, 3S
0.750	HSG B	1S, 2S, 3S
0.000	HSG C	
0.400	HSG D	1S, 2S
0.000	Other	
<b>13.270</b>		<b>TOTAL AREA</b>

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Type III 24-hr 2-Year Rainfall=3.20"

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Page 4

**Summary for Subcatchment 1S:**

Runoff = 0.01 cfs @ 15.31 hrs, Volume= 0.005 af, Depth= 0.06"

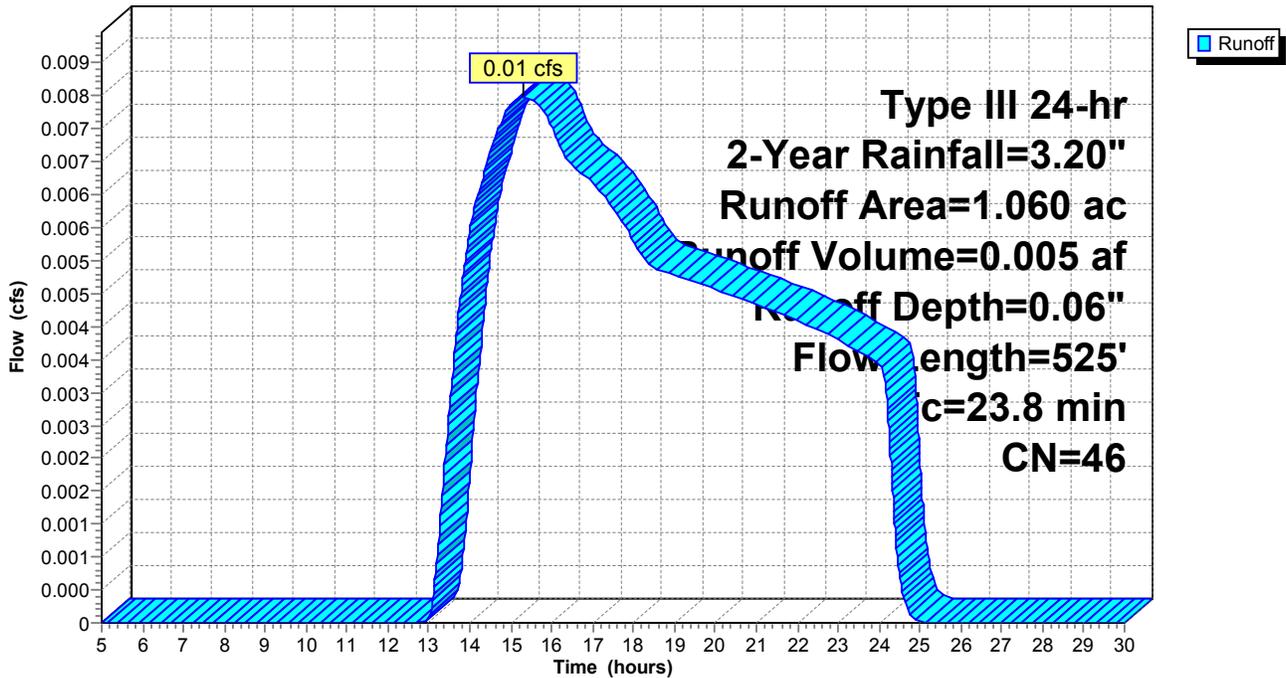
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-Year Rainfall=3.20"

Area (ac)	CN	Description
0.040	98	Paved parking, HSG B
0.760	32	Woods/grass comb., Good, HSG A
0.000	58	Woods/grass comb., Good, HSG B
0.260	79	Woods/grass comb., Good, HSG D
1.060	46	Weighted Average
1.020		96.23% Pervious Area
0.040		3.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	100	0.1900	0.11		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
8.6	425	0.1080	0.82		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
23.8	525	Total			

**Subcatchment 1S:**

Hydrograph



**Existing**

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Type III 24-hr 2-Year Rainfall=3.20"

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Page 5

**Summary for Subcatchment 2S:**

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Type III 24-hr 2-Year Rainfall=3.20"

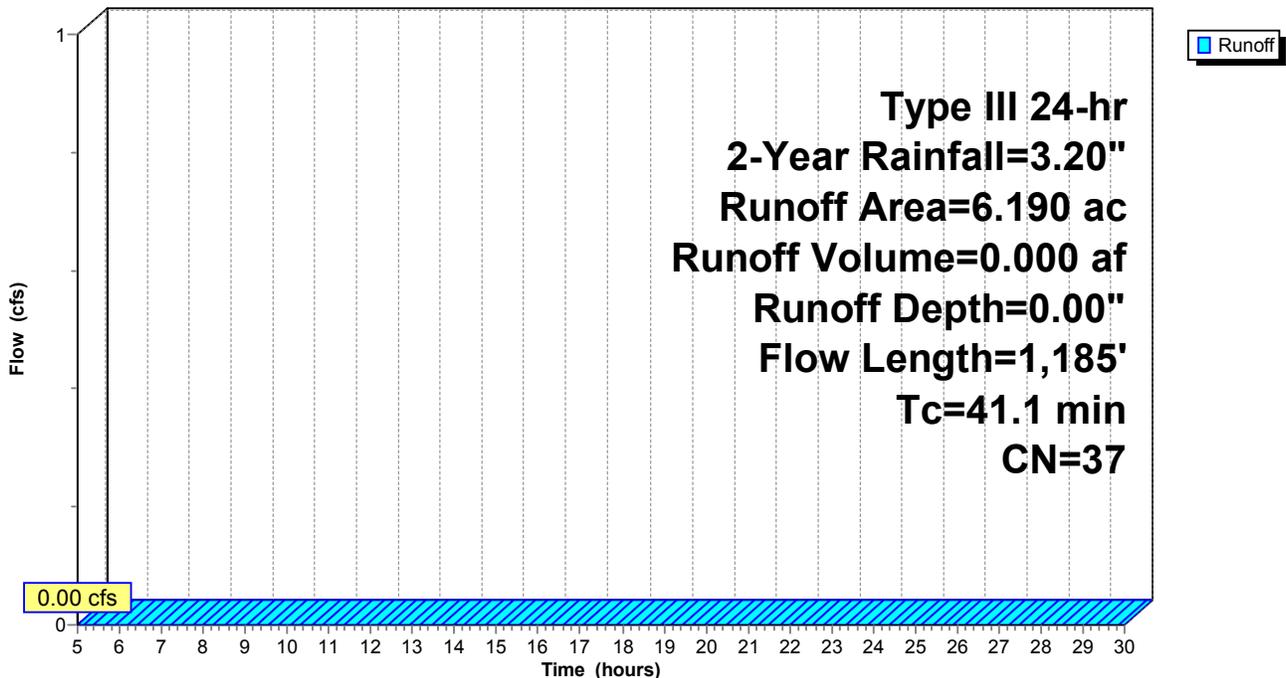
Area (ac)	CN	Description
0.250	98	Paved parking, HSG B
5.600	32	Woods/grass comb., Good, HSG A
0.200	58	Woods/grass comb., Good, HSG B
0.140	79	Woods/grass comb., Good, HSG D
6.190	37	Weighted Average
5.940		95.96% Pervious Area
0.250		4.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.5	100	0.0800	0.08		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
19.6	1,085	0.1360	0.92		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
41.1	1,185	Total			

**Subcatchment 2S:**

Hydrograph



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Type III 24-hr 2-Year Rainfall=3.20"

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**Summary for Subcatchment 3S:**

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-Year Rainfall=3.20"

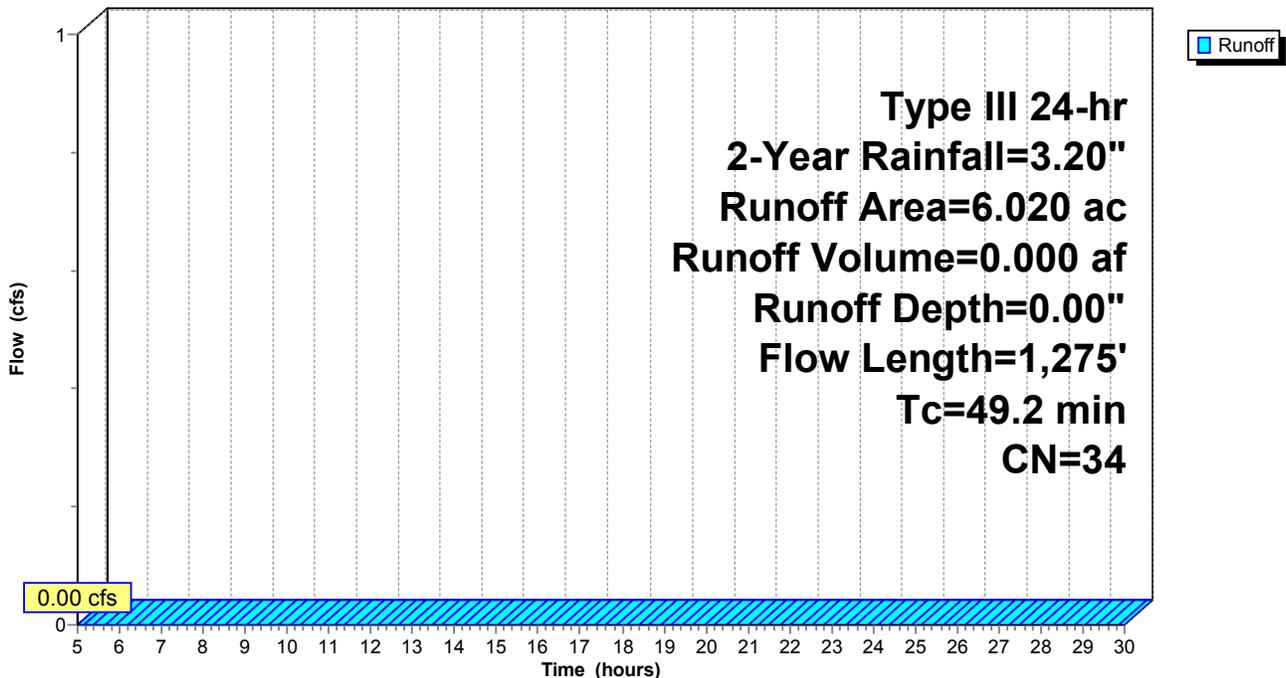
Area (ac)	CN	Description
0.120	98	Paved parking, HSG B
* 5.760	32	Woods/grass comb., Good, HSG A
0.140	58	Woods/grass comb., Good, HSG B
0.000	79	Woods/grass comb., Good, HSG D
6.020	34	Weighted Average
5.900		98.01% Pervious Area
0.120		1.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.3	100	0.0400	0.06		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
20.9	1,175	0.1400	0.94		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
49.2	1,275	Total			

**Subcatchment 3S:**

Hydrograph



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Type III 24-hr 2-Year Rainfall=3.20"

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**Summary for Pond A: Wetland A**

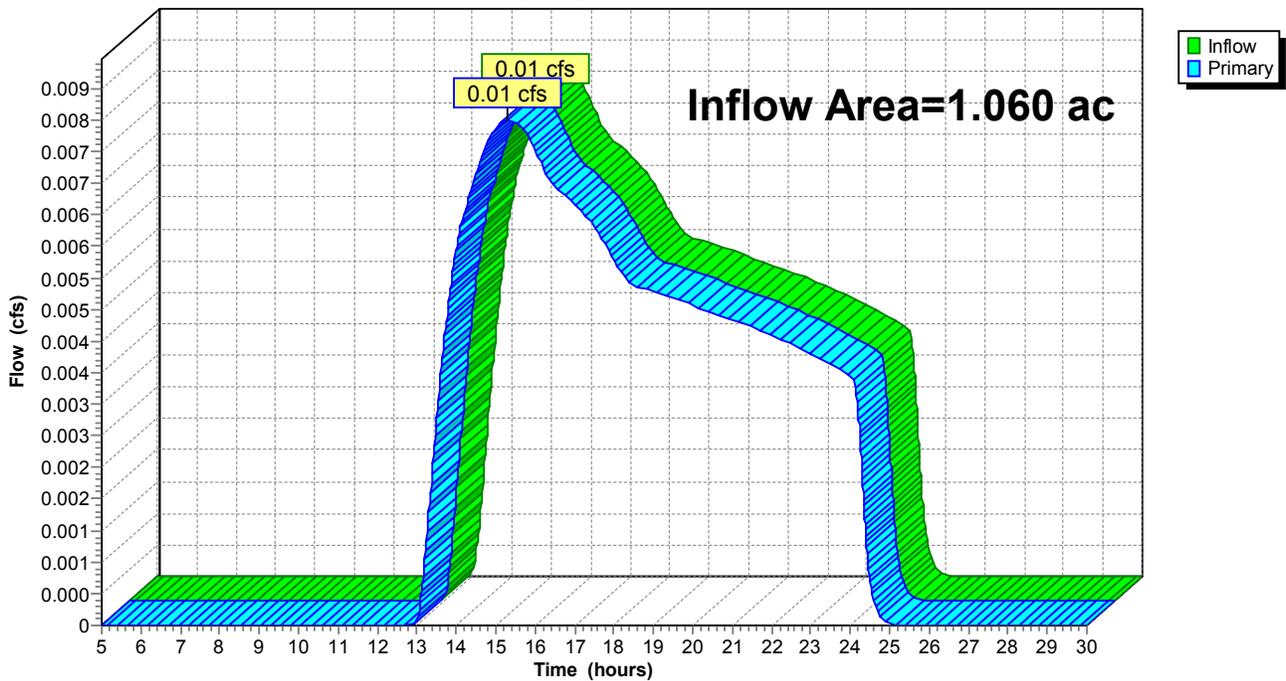
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.060 ac, 3.77% Impervious, Inflow Depth = 0.06" for 2-Year event  
Inflow = 0.01 cfs @ 15.31 hrs, Volume= 0.005 af  
Primary = 0.01 cfs @ 15.31 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Pond A: Wetland A**

Hydrograph



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Type III 24-hr 2-Year Rainfall=3.20"

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**Summary for Pond B: Wetland B**

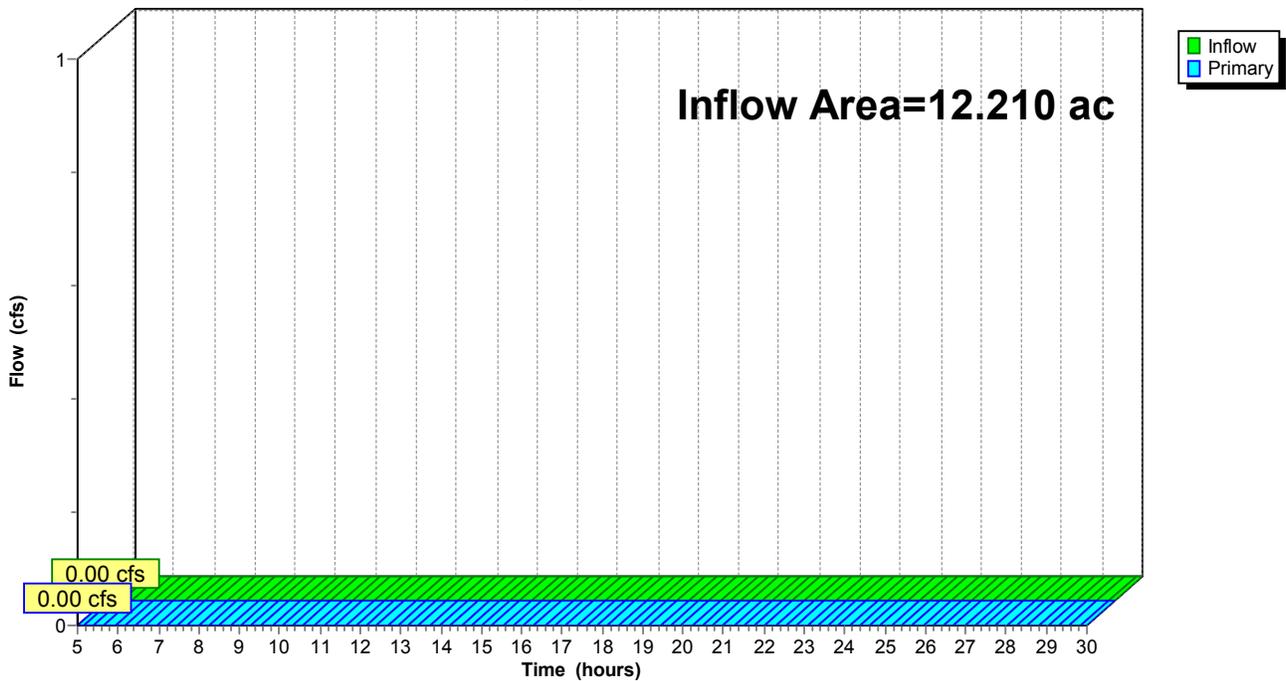
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 12.210 ac, 3.03% Impervious, Inflow Depth = 0.00" for 2-Year event  
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af  
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Pond B: Wetland B**

Hydrograph



**Existing**

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Type III 24-hr 2-Year Rainfall=3.20"

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**Summary for Pond C: Wetland C**

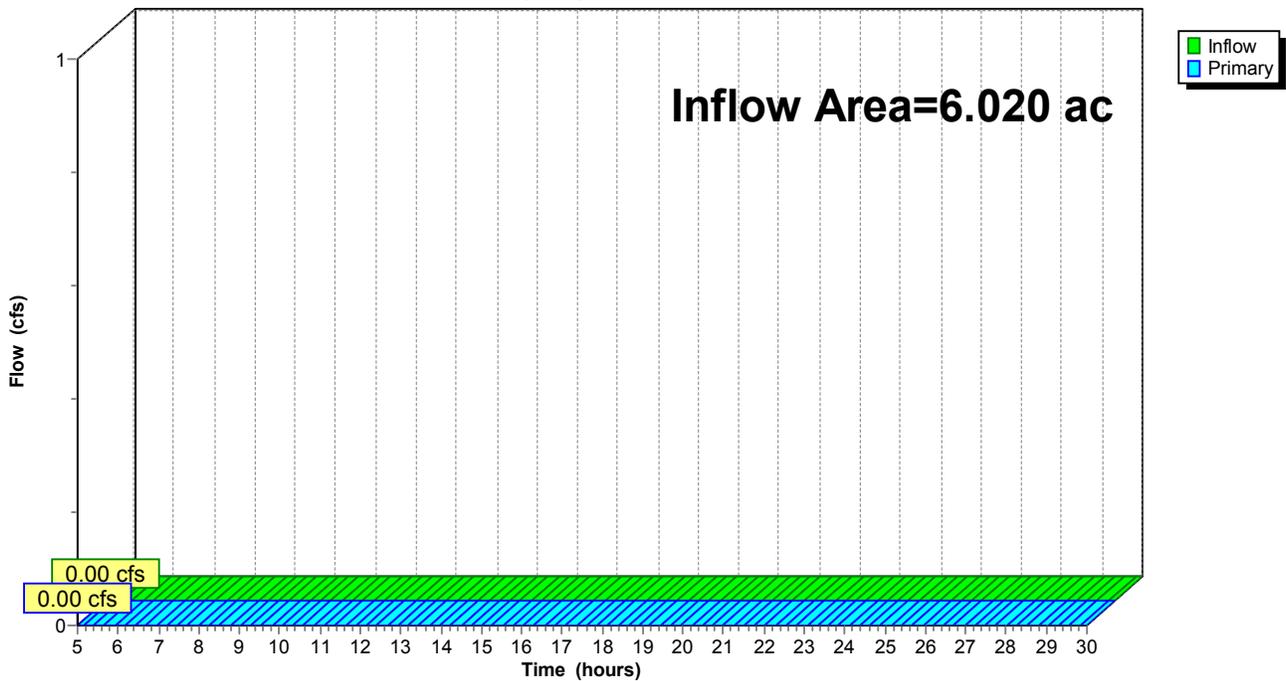
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 6.020 ac, 1.99% Impervious, Inflow Depth = 0.00" for 2-Year event  
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af  
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Pond C: Wetland C**

Hydrograph



**Existing**

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Type III 24-hr 2-Year Rainfall=3.20"

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Page 10

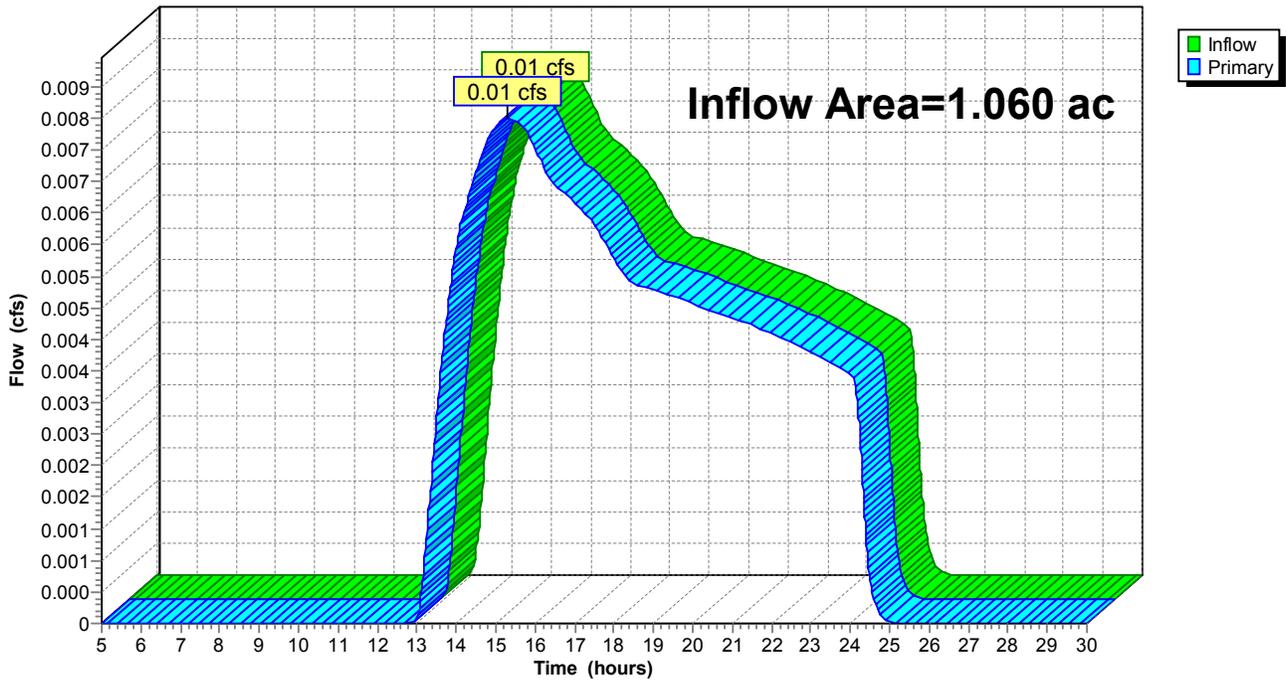
**Summary for Link 1L: Eastern Outfall**

Inflow Area = 1.060 ac, 3.77% Impervious, Inflow Depth = 0.06" for 2-Year event  
Inflow = 0.01 cfs @ 15.31 hrs, Volume= 0.005 af  
Primary = 0.01 cfs @ 15.31 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Link 1L: Eastern Outfall**

Hydrograph



**Existing**

Prepared by Fuss & O'Neill Inc.

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Type III 24-hr 2-Year Rainfall=3.20"

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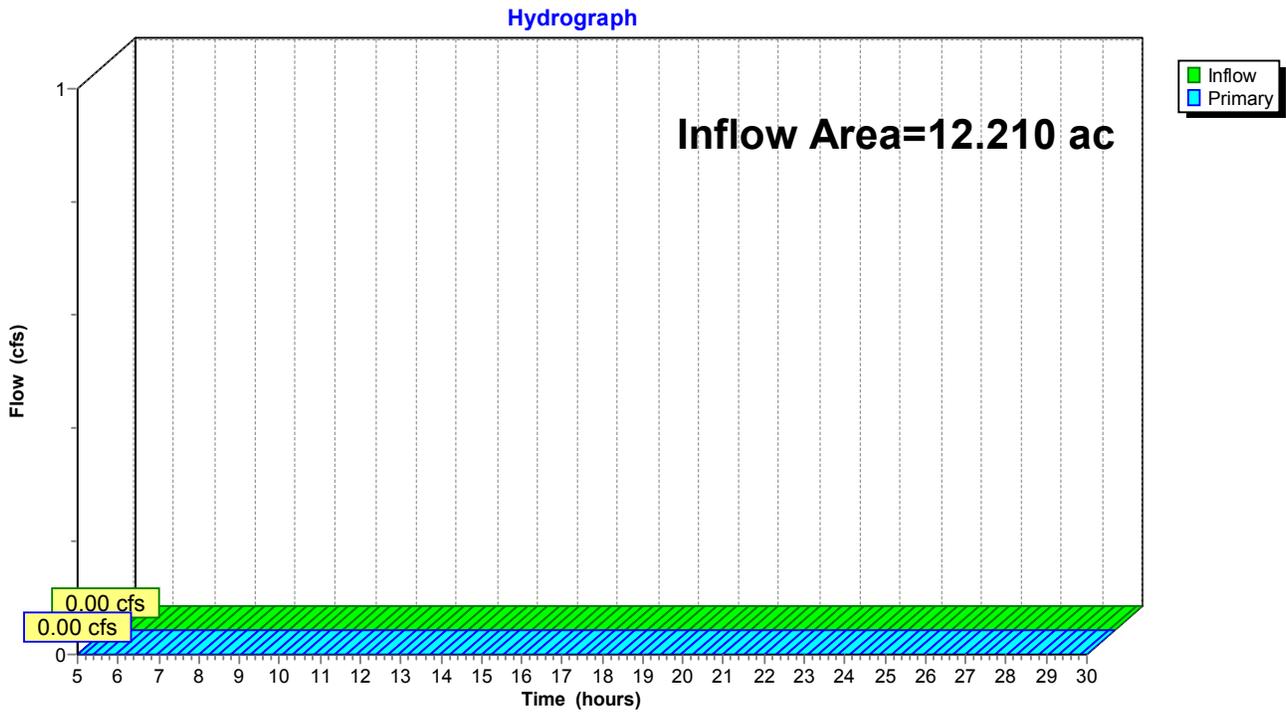
Page 11

**Summary for Link 2L: Western Outfall**

Inflow Area = 12.210 ac, 3.03% Impervious, Inflow Depth = 0.00" for 2-Year event  
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af  
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Link 2L: Western Outfall**



**Existing**

Prepared by Fuss & O'Neill Inc.

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Type III 24-hr 10-Year Rainfall=4.80"

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**Summary for Subcatchment 1S:**

Runoff = 0.16 cfs @ 12.56 hrs, Volume= 0.037 af, Depth= 0.42"

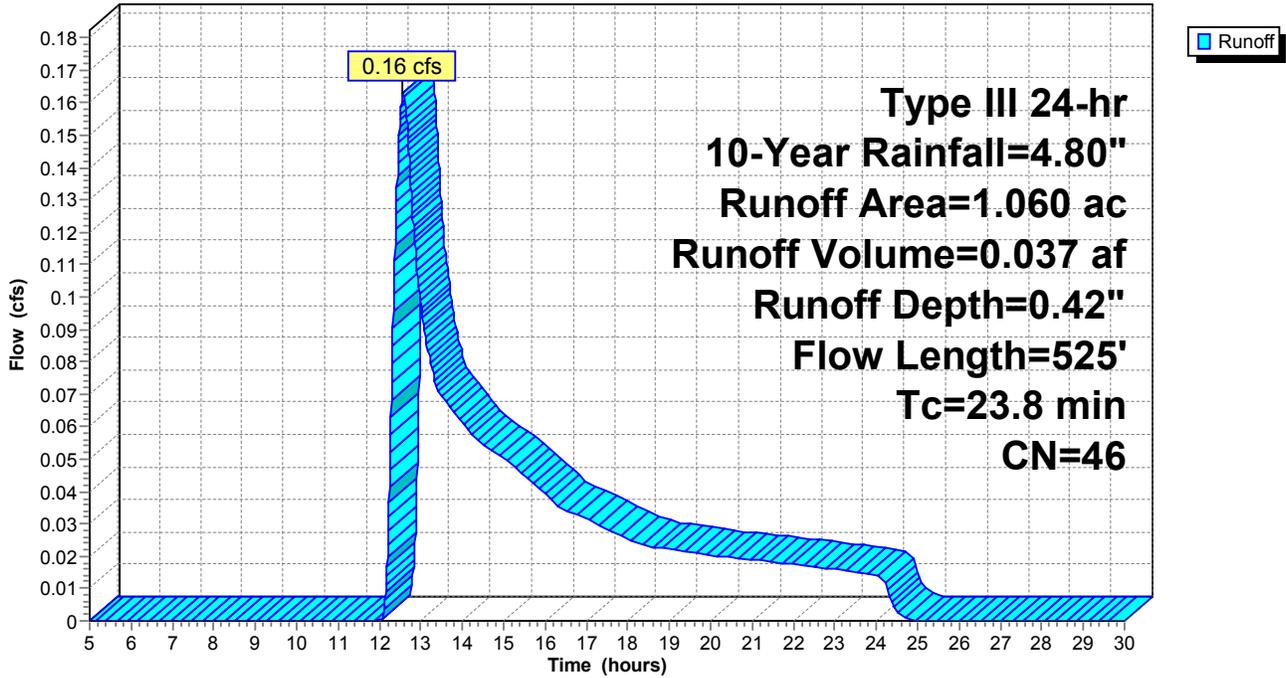
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.80"

Area (ac)	CN	Description
0.040	98	Paved parking, HSG B
0.760	32	Woods/grass comb., Good, HSG A
0.000	58	Woods/grass comb., Good, HSG B
0.260	79	Woods/grass comb., Good, HSG D
1.060	46	Weighted Average
1.020		96.23% Pervious Area
0.040		3.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	100	0.1900	0.11		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
8.6	425	0.1080	0.82		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
23.8	525	Total			

**Subcatchment 1S:**

Hydrograph



**Existing**

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Type III 24-hr 10-Year Rainfall=4.80"

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**Summary for Subcatchment 2S:**

Runoff = 0.09 cfs @ 15.39 hrs, Volume= 0.054 af, Depth= 0.11"

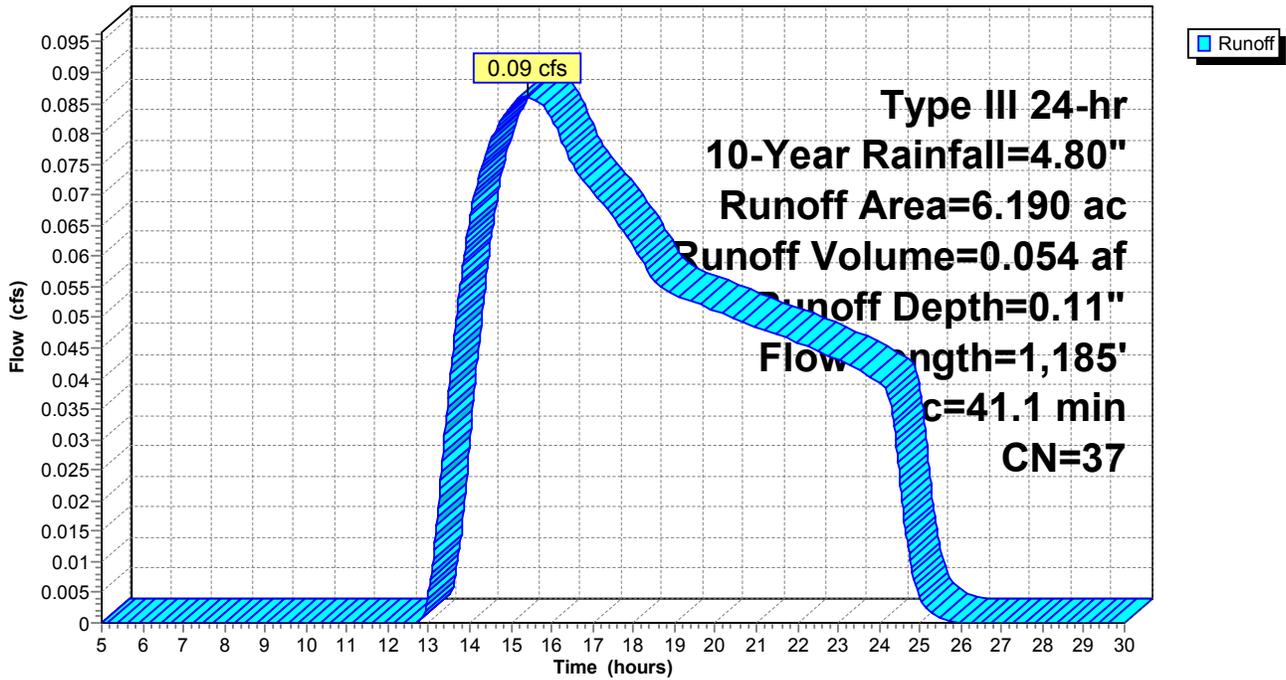
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.80"

Area (ac)	CN	Description
0.250	98	Paved parking, HSG B
5.600	32	Woods/grass comb., Good, HSG A
0.200	58	Woods/grass comb., Good, HSG B
0.140	79	Woods/grass comb., Good, HSG D
6.190	37	Weighted Average
5.940		95.96% Pervious Area
0.250		4.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.5	100	0.0800	0.08		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
19.6	1,085	0.1360	0.92		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
41.1	1,185	Total			

**Subcatchment 2S:**

Hydrograph



**Existing**

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Type III 24-hr 10-Year Rainfall=4.80"

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**Summary for Subcatchment 3S:**

Runoff = 0.03 cfs @ 17.44 hrs, Volume= 0.021 af, Depth= 0.04"

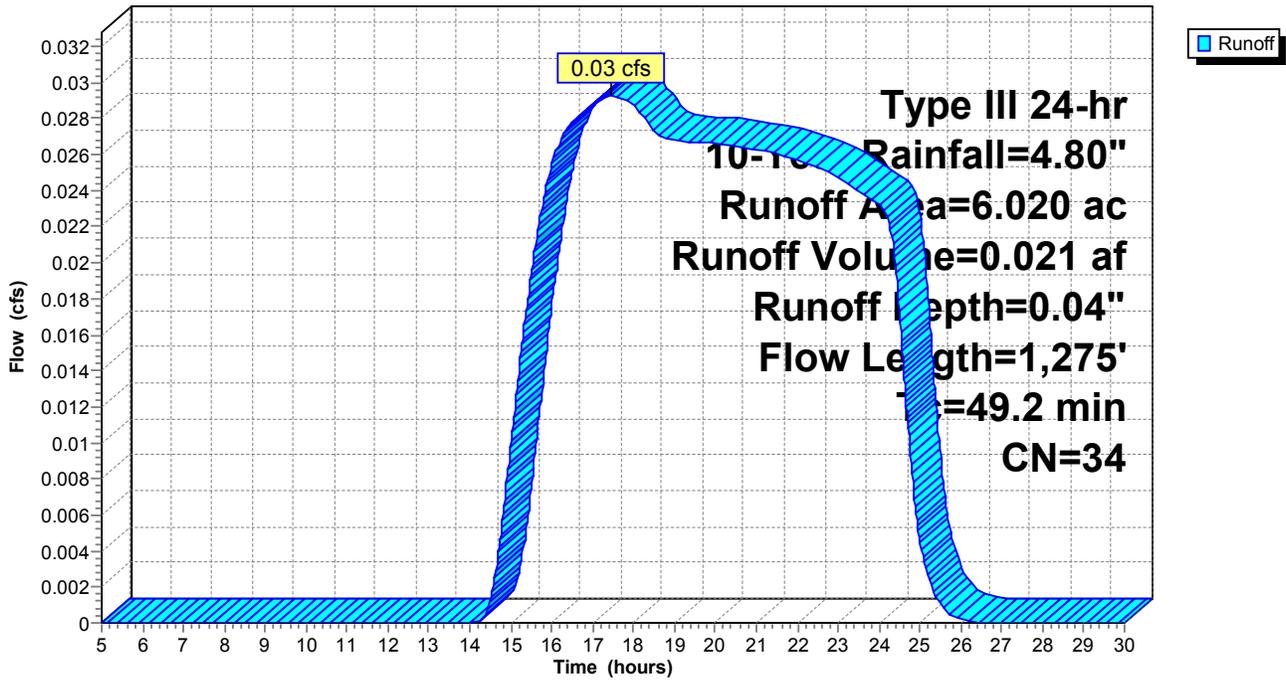
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.80"

Area (ac)	CN	Description
0.120	98	Paved parking, HSG B
* 5.760	32	Woods/grass comb., Good, HSG A
0.140	58	Woods/grass comb., Good, HSG B
0.000	79	Woods/grass comb., Good, HSG D
6.020	34	Weighted Average
5.900		98.01% Pervious Area
0.120		1.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.3	100	0.0400	0.06		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
20.9	1,175	0.1400	0.94		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
49.2	1,275	Total			

**Subcatchment 3S:**

Hydrograph



**Existing**

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Type III 24-hr 10-Year Rainfall=4.80"

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**Summary for Pond A: Wetland A**

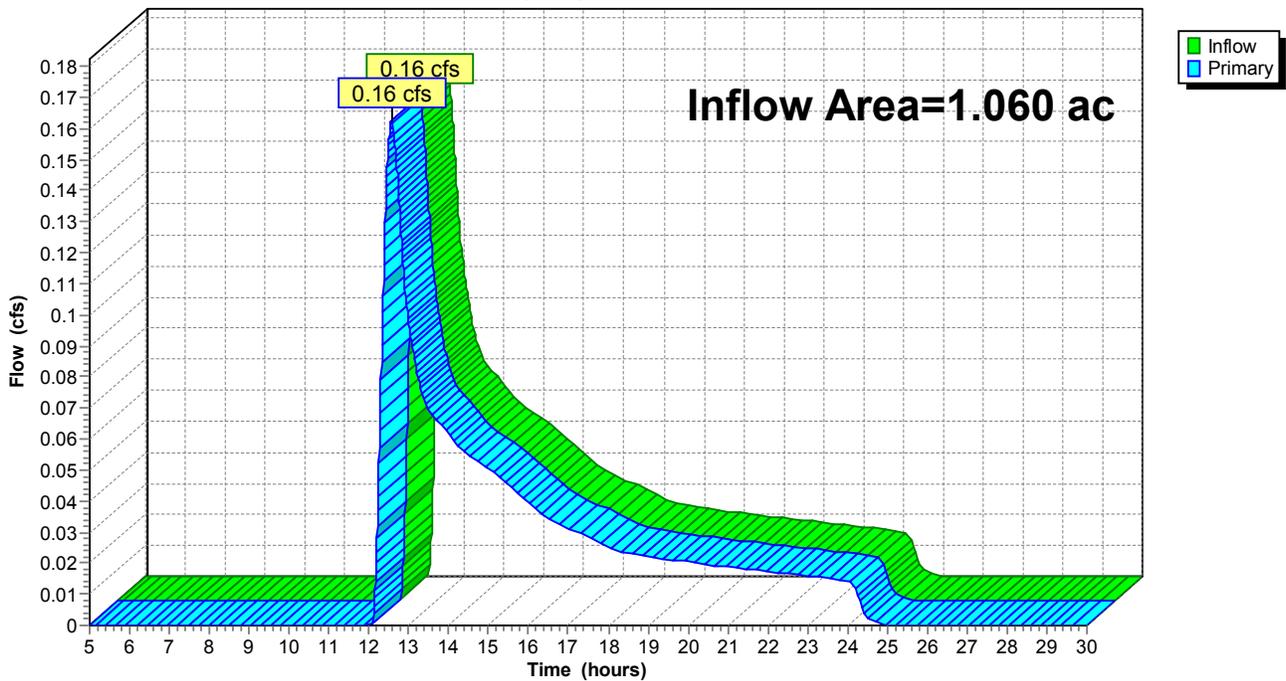
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.060 ac, 3.77% Impervious, Inflow Depth = 0.42" for 10-Year event  
Inflow = 0.16 cfs @ 12.56 hrs, Volume= 0.037 af  
Primary = 0.16 cfs @ 12.56 hrs, Volume= 0.037 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Pond A: Wetland A**

**Hydrograph**



**Existing**

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Type III 24-hr 10-Year Rainfall=4.80"

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**Summary for Pond B: Wetland B**

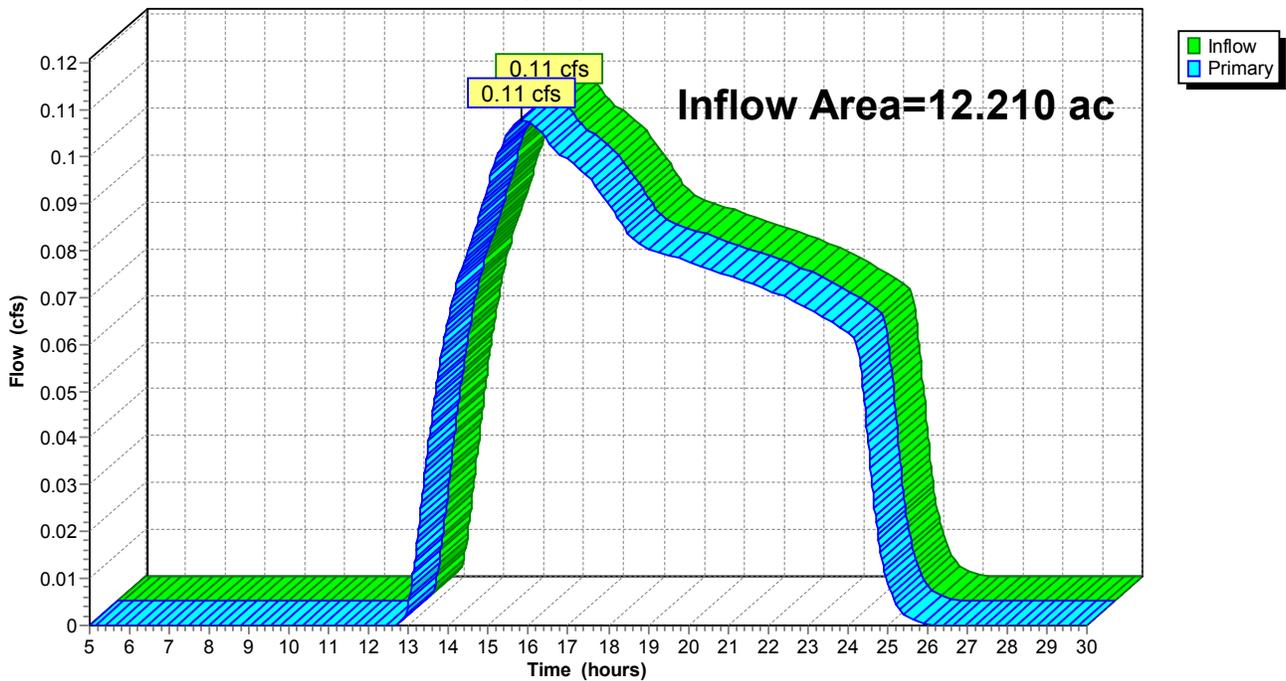
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 12.210 ac, 3.03% Impervious, Inflow Depth = 0.07" for 10-Year event  
Inflow = 0.11 cfs @ 15.85 hrs, Volume= 0.075 af  
Primary = 0.11 cfs @ 15.85 hrs, Volume= 0.075 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Pond B: Wetland B**

Hydrograph



**Existing**

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Type III 24-hr 10-Year Rainfall=4.80"

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**Summary for Pond C: Wetland C**

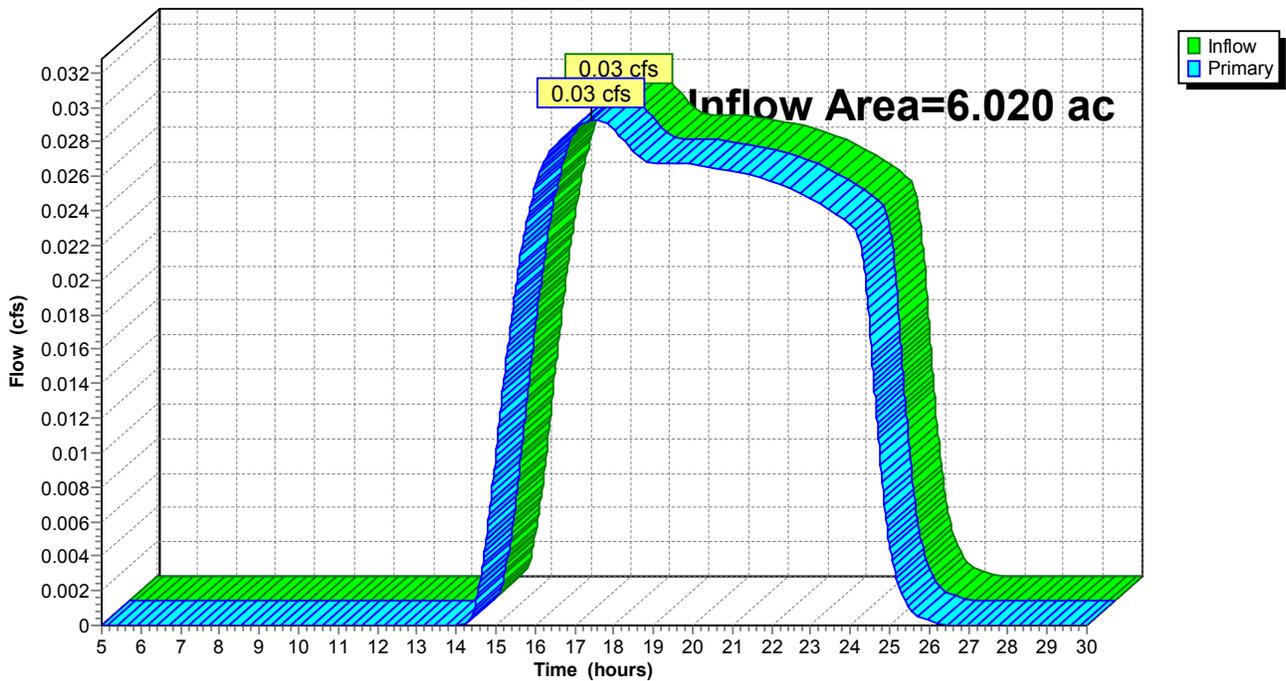
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 6.020 ac, 1.99% Impervious, Inflow Depth = 0.04" for 10-Year event  
Inflow = 0.03 cfs @ 17.44 hrs, Volume= 0.021 af  
Primary = 0.03 cfs @ 17.44 hrs, Volume= 0.021 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Pond C: Wetland C**

**Hydrograph**



**Existing**

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Type III 24-hr 10-Year Rainfall=4.80"

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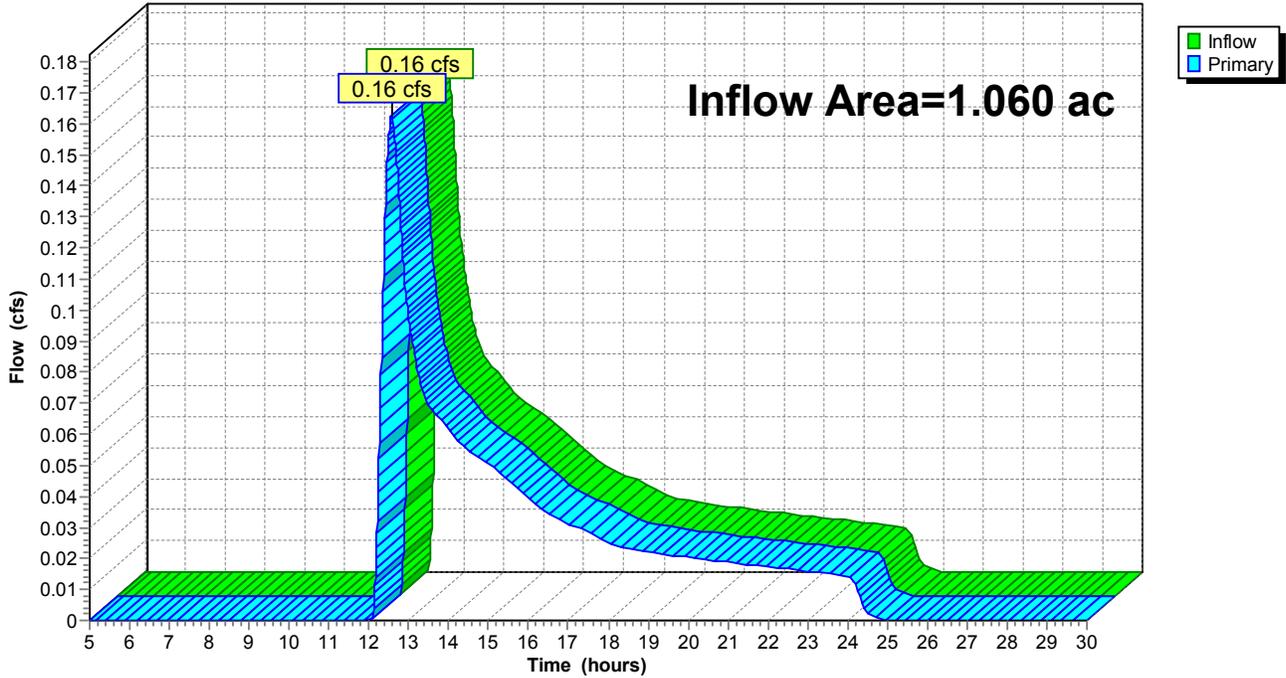
**Summary for Link 1L: Eastern Outfall**

Inflow Area = 1.060 ac, 3.77% Impervious, Inflow Depth = 0.42" for 10-Year event  
Inflow = 0.16 cfs @ 12.56 hrs, Volume= 0.037 af  
Primary = 0.16 cfs @ 12.56 hrs, Volume= 0.037 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Link 1L: Eastern Outfall**

Hydrograph



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Type III 24-hr 10-Year Rainfall=4.80"

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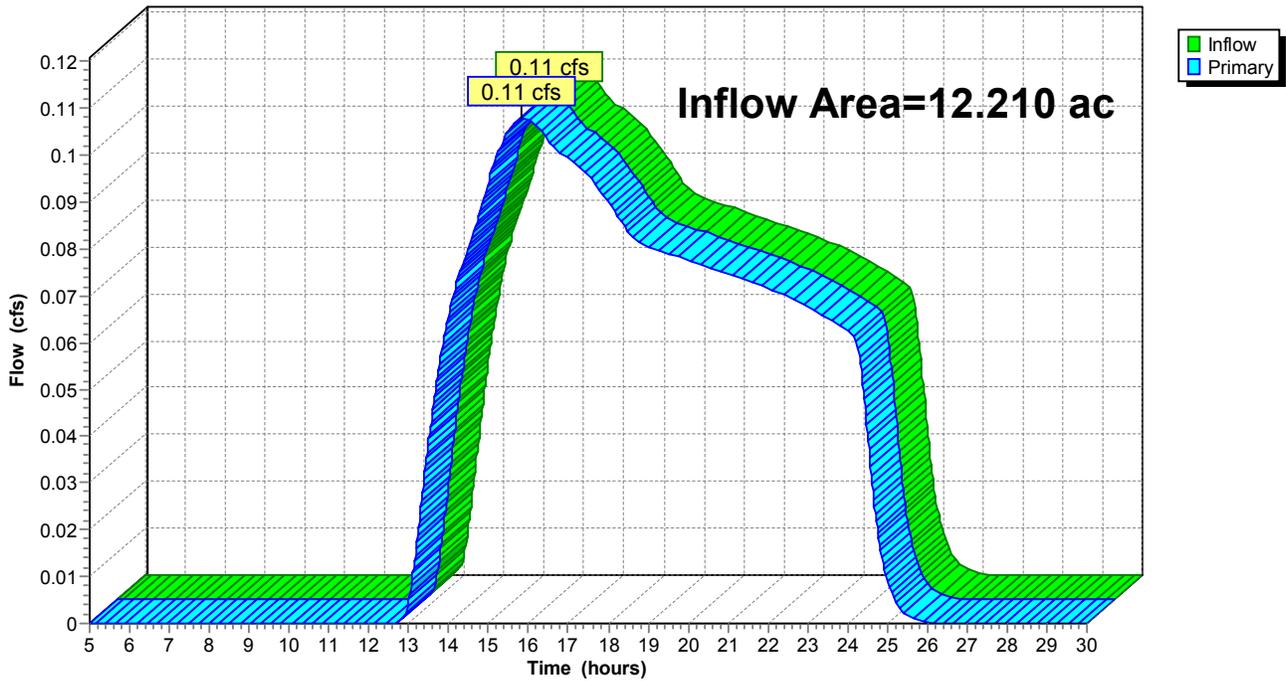
**Summary for Link 2L: Western Outfall**

Inflow Area = 12.210 ac, 3.03% Impervious, Inflow Depth = 0.07" for 10-Year event  
Inflow = 0.11 cfs @ 15.85 hrs, Volume= 0.075 af  
Primary = 0.11 cfs @ 15.85 hrs, Volume= 0.075 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Link 2L: Western Outfall**

Hydrograph



**Existing**

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Type III 24-hr 25-Year Rainfall=5.50"

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**Summary for Subcatchment 1S:**

Runoff = 0.32 cfs @ 12.50 hrs, Volume= 0.059 af, Depth= 0.67"

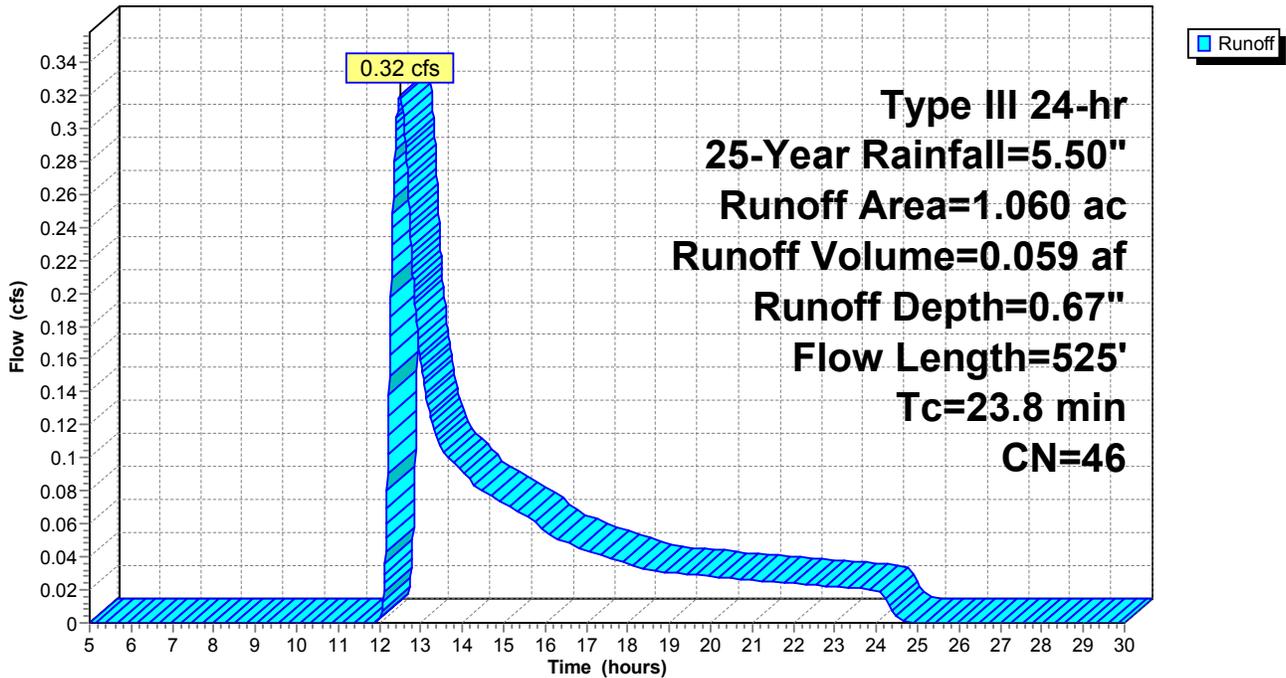
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.50"

Area (ac)	CN	Description
0.040	98	Paved parking, HSG B
0.760	32	Woods/grass comb., Good, HSG A
0.000	58	Woods/grass comb., Good, HSG B
0.260	79	Woods/grass comb., Good, HSG D
1.060	46	Weighted Average
1.020		96.23% Pervious Area
0.040		3.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	100	0.1900	0.11		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
8.6	425	0.1080	0.82		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
23.8	525	Total			

**Subcatchment 1S:**

Hydrograph



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Type III 24-hr 25-Year Rainfall=5.50"

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**Summary for Subcatchment 2S:**

Runoff = 0.21 cfs @ 13.84 hrs, Volume= 0.118 af, Depth= 0.23"

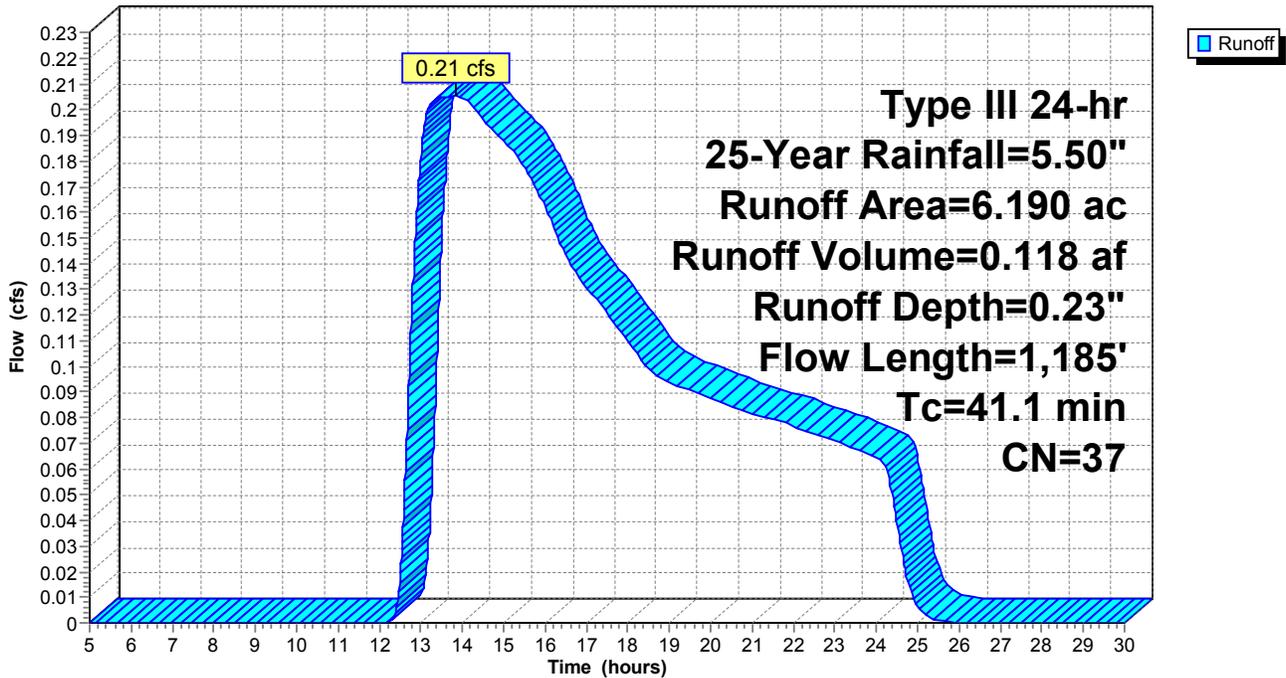
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.50"

Area (ac)	CN	Description
0.250	98	Paved parking, HSG B
5.600	32	Woods/grass comb., Good, HSG A
0.200	58	Woods/grass comb., Good, HSG B
0.140	79	Woods/grass comb., Good, HSG D
6.190	37	Weighted Average
5.940		95.96% Pervious Area
0.250		4.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.5	100	0.0800	0.08		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
19.6	1,085	0.1360	0.92		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
41.1	1,185	Total			

**Subcatchment 2S:**

Hydrograph



**Existing**

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Type III 24-hr 25-Year Rainfall=5.50"

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**Summary for Subcatchment 3S:**

Runoff = 0.10 cfs @ 15.47 hrs, Volume= 0.062 af, Depth= 0.12"

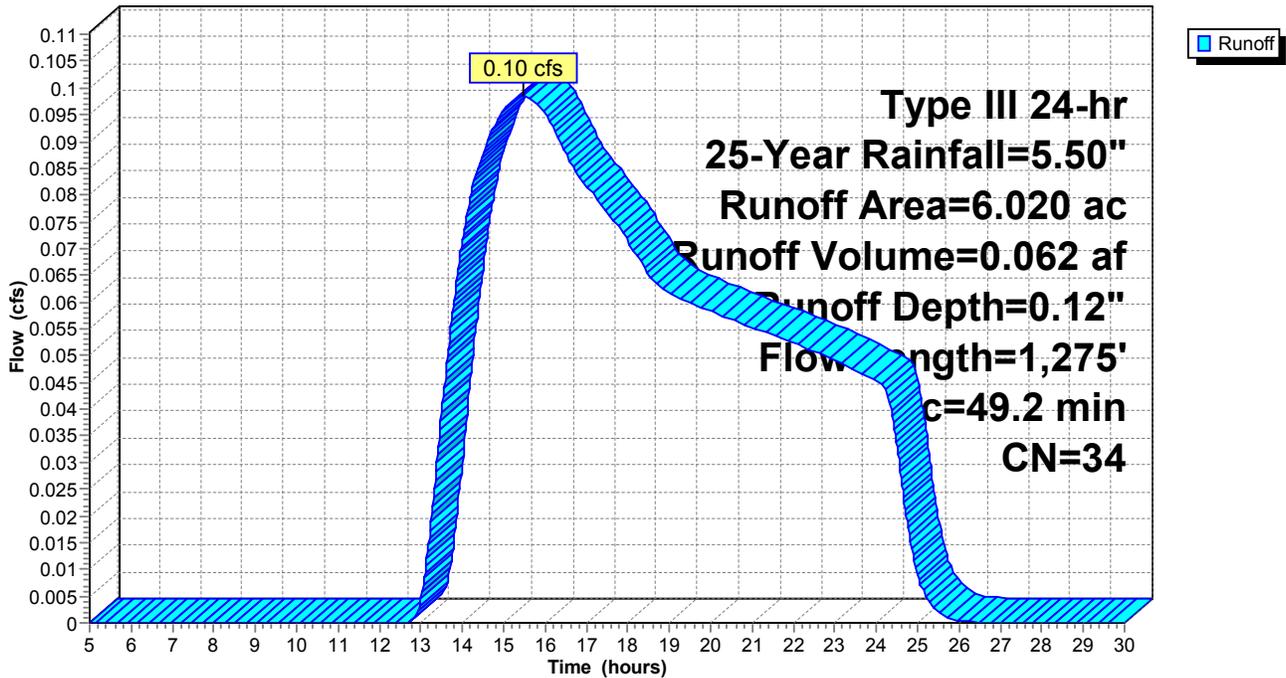
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.50"

Area (ac)	CN	Description
0.120	98	Paved parking, HSG B
* 5.760	32	Woods/grass comb., Good, HSG A
0.140	58	Woods/grass comb., Good, HSG B
0.000	79	Woods/grass comb., Good, HSG D
6.020	34	Weighted Average
5.900		98.01% Pervious Area
0.120		1.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.3	100	0.0400	0.06		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
20.9	1,175	0.1400	0.94		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
49.2	1,275	Total			

**Subcatchment 3S:**

Hydrograph



**Existing**

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Type III 24-hr 25-Year Rainfall=5.50"

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**Summary for Pond A: Wetland A**

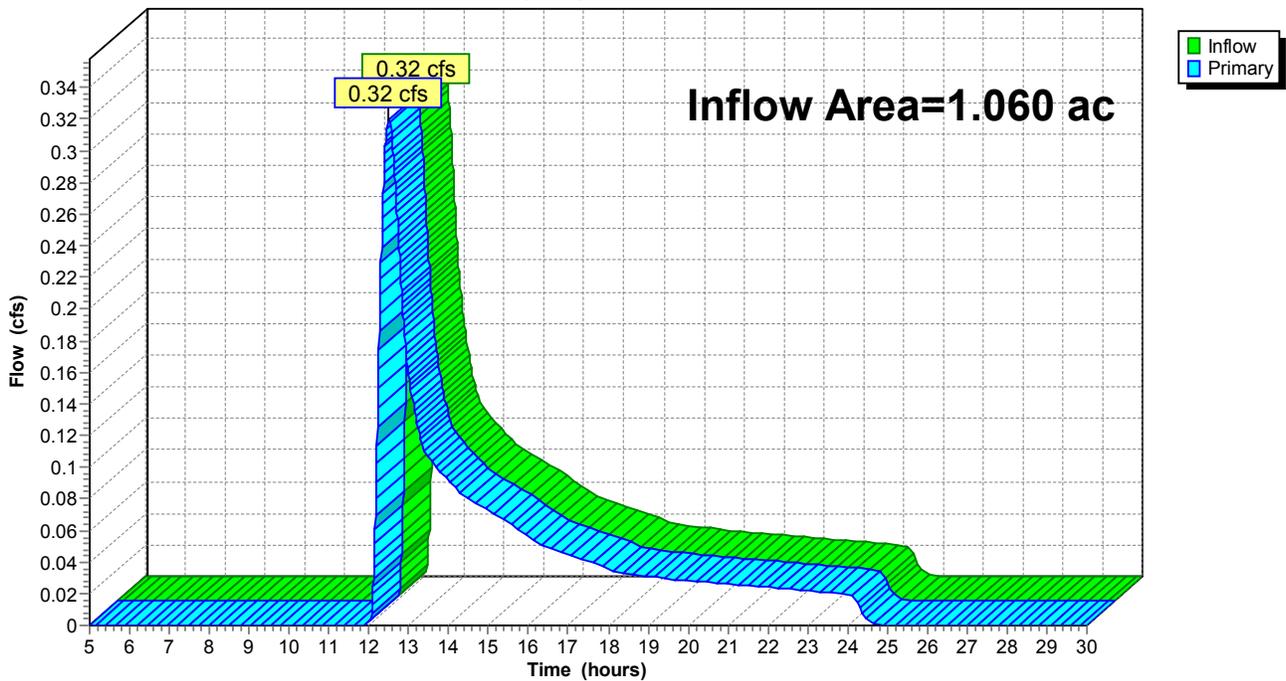
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.060 ac, 3.77% Impervious, Inflow Depth = 0.67" for 25-Year event  
Inflow = 0.32 cfs @ 12.50 hrs, Volume= 0.059 af  
Primary = 0.32 cfs @ 12.50 hrs, Volume= 0.059 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Pond A: Wetland A**

**Hydrograph**



**Existing**

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Type III 24-hr 25-Year Rainfall=5.50"

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**Summary for Pond B: Wetland B**

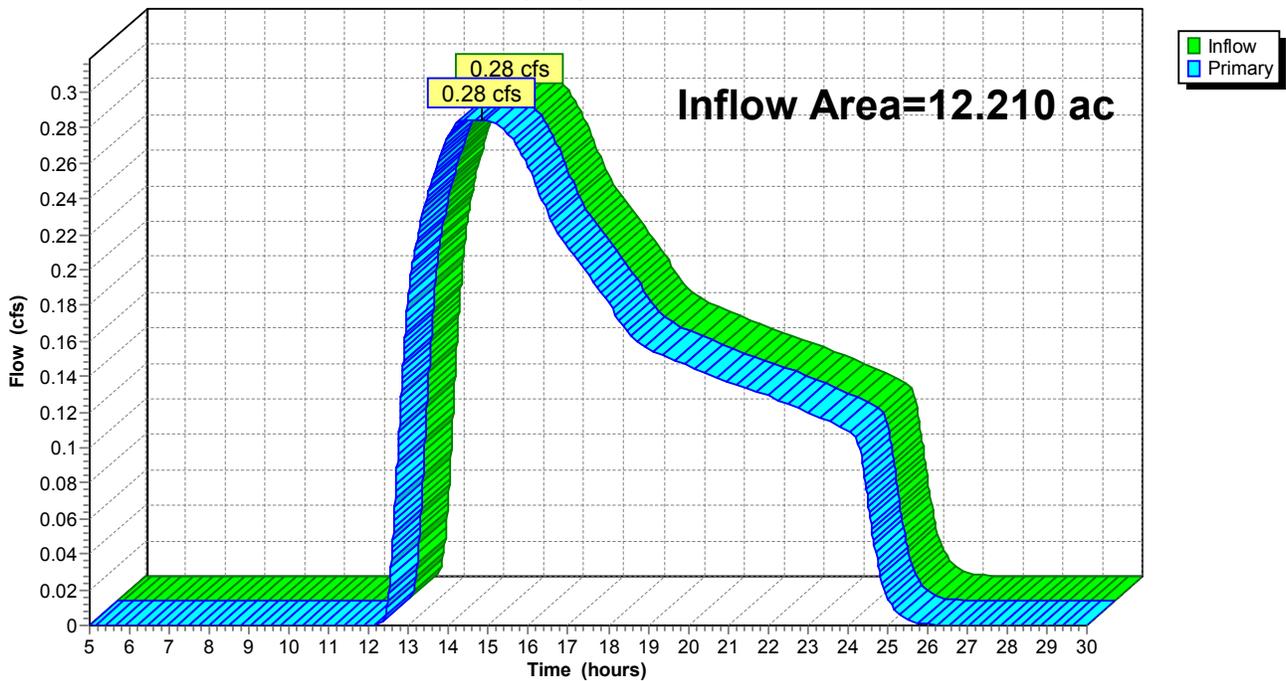
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 12.210 ac, 3.03% Impervious, Inflow Depth = 0.18" for 25-Year event  
Inflow = 0.28 cfs @ 14.84 hrs, Volume= 0.181 af  
Primary = 0.28 cfs @ 14.84 hrs, Volume= 0.181 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Pond B: Wetland B**

**Hydrograph**



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Type III 24-hr 25-Year Rainfall=5.50"

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**Summary for Pond C: Wetland C**

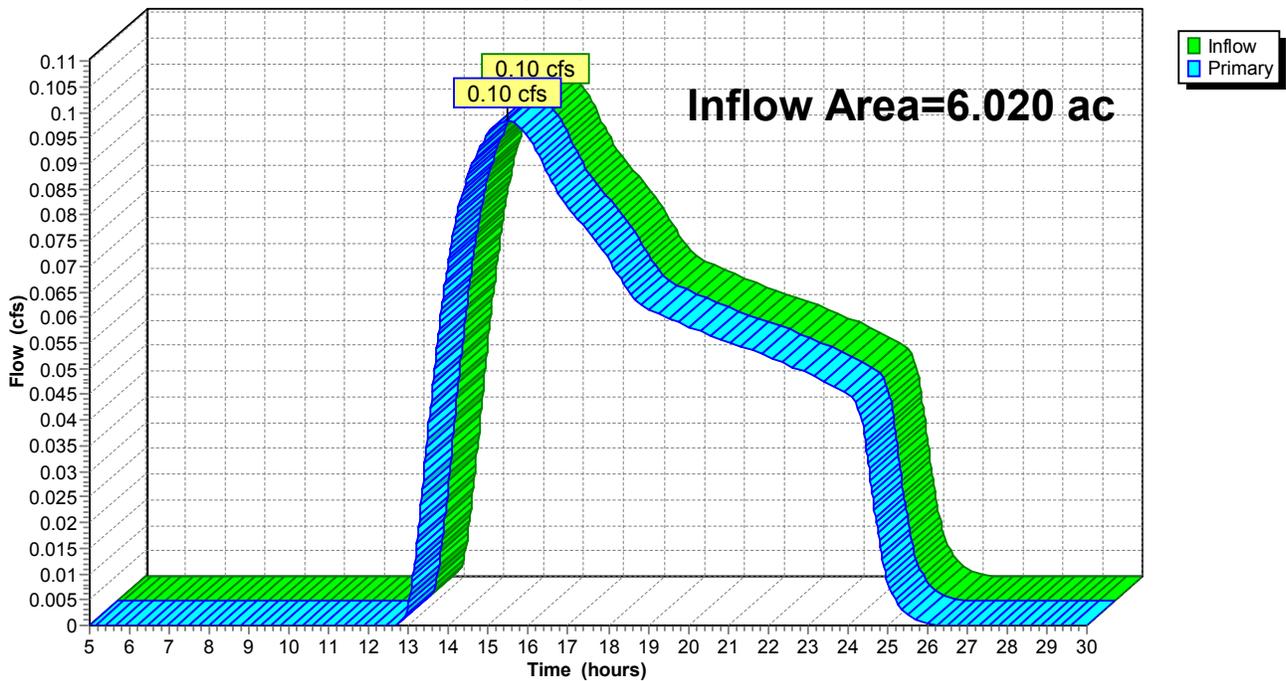
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 6.020 ac, 1.99% Impervious, Inflow Depth = 0.12" for 25-Year event  
Inflow = 0.10 cfs @ 15.47 hrs, Volume= 0.062 af  
Primary = 0.10 cfs @ 15.47 hrs, Volume= 0.062 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Pond C: Wetland C**

Hydrograph



**Existing**

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Type III 24-hr 25-Year Rainfall=5.50"

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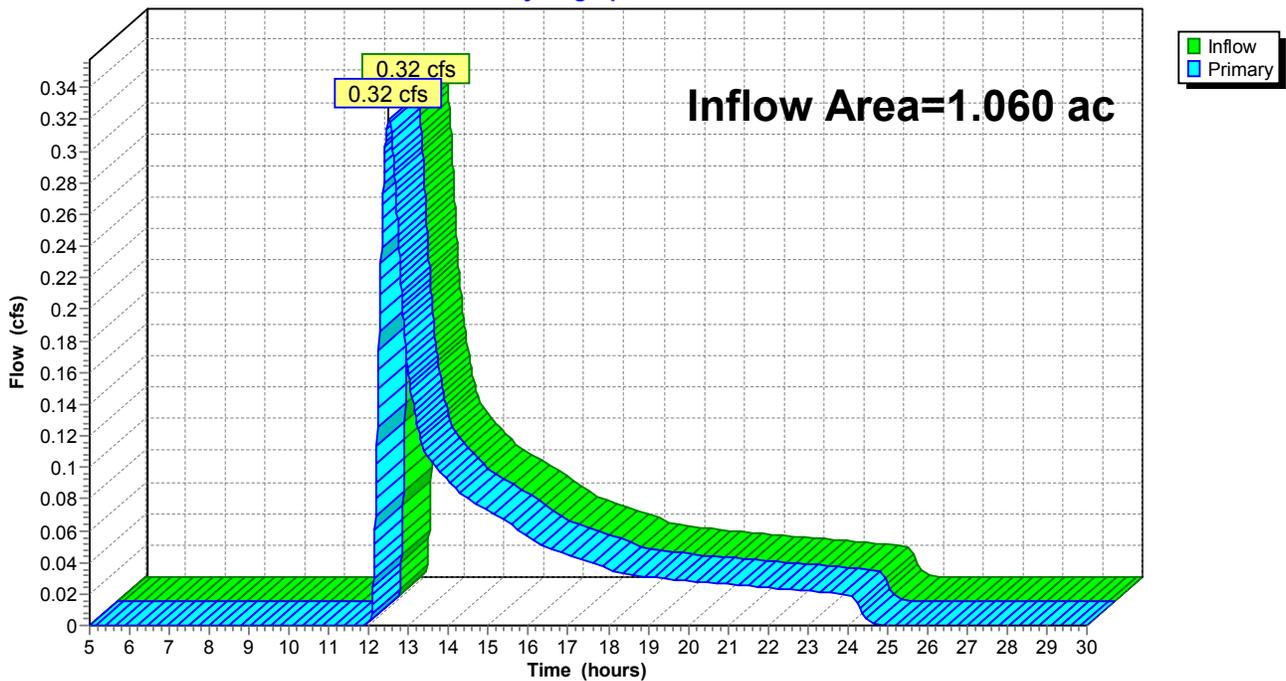
**Summary for Link 1L: Eastern Outfall**

Inflow Area = 1.060 ac, 3.77% Impervious, Inflow Depth = 0.67" for 25-Year event  
Inflow = 0.32 cfs @ 12.50 hrs, Volume= 0.059 af  
Primary = 0.32 cfs @ 12.50 hrs, Volume= 0.059 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Link 1L: Eastern Outfall**

Hydrograph



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Type III 24-hr 25-Year Rainfall=5.50"

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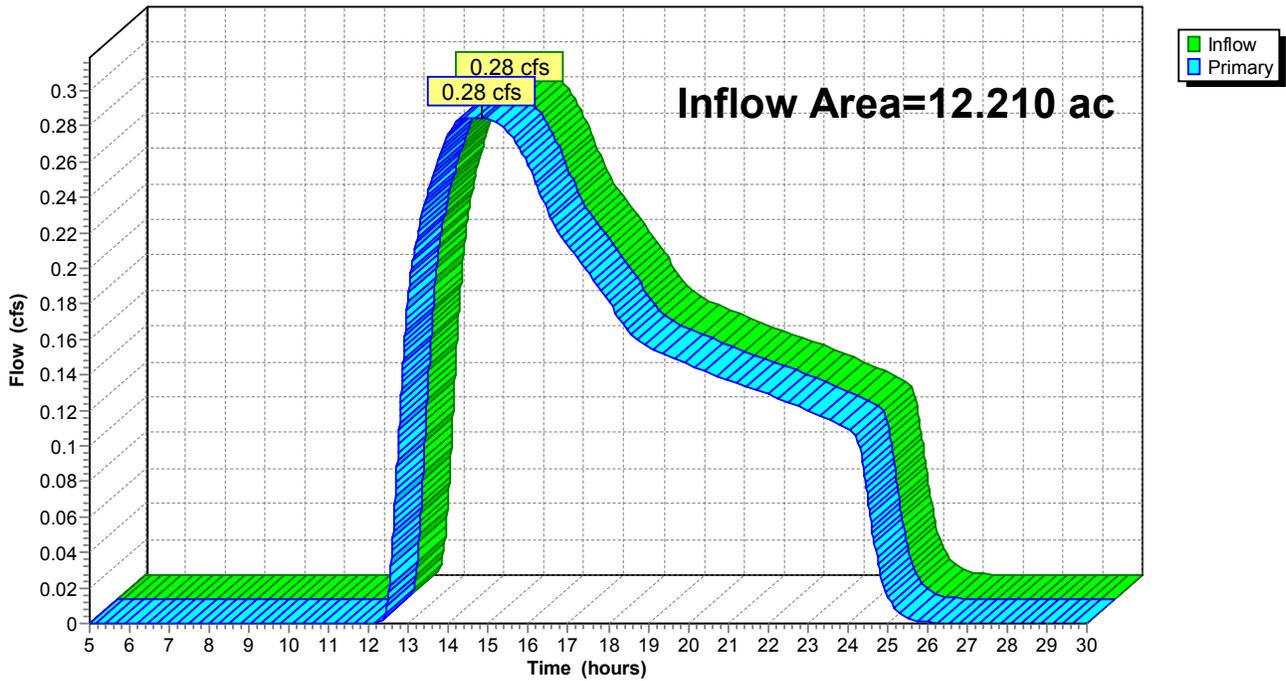
**Summary for Link 2L: Western Outfall**

Inflow Area = 12.210 ac, 3.03% Impervious, Inflow Depth = 0.18" for 25-Year event  
Inflow = 0.28 cfs @ 14.84 hrs, Volume= 0.181 af  
Primary = 0.28 cfs @ 14.84 hrs, Volume= 0.181 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Link 2L: Western Outfall**

Hydrograph



**Existing**

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Type III 24-hr 100-Year Rainfall=6.90"

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**Summary for Subcatchment 1S:**

Runoff = 0.77 cfs @ 12.41 hrs, Volume= 0.112 af, Depth= 1.27"

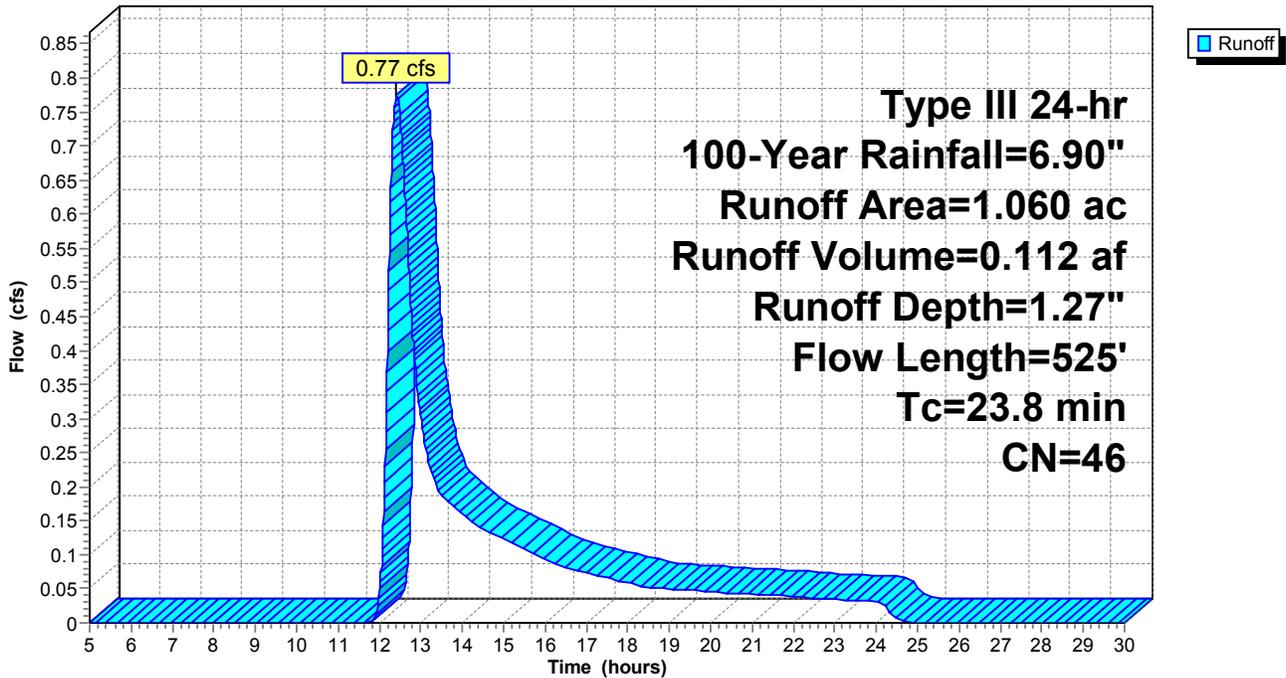
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-Year Rainfall=6.90"

Area (ac)	CN	Description
0.040	98	Paved parking, HSG B
0.760	32	Woods/grass comb., Good, HSG A
0.000	58	Woods/grass comb., Good, HSG B
0.260	79	Woods/grass comb., Good, HSG D
1.060	46	Weighted Average
1.020		96.23% Pervious Area
0.040		3.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	100	0.1900	0.11		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
8.6	425	0.1080	0.82		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
23.8	525	Total			

**Subcatchment 1S:**

Hydrograph



**Existing**

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Type III 24-hr 100-Year Rainfall=6.90"

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**Summary for Subcatchment 2S:**

Runoff = 1.04 cfs @ 12.83 hrs, Volume= 0.307 af, Depth= 0.60"

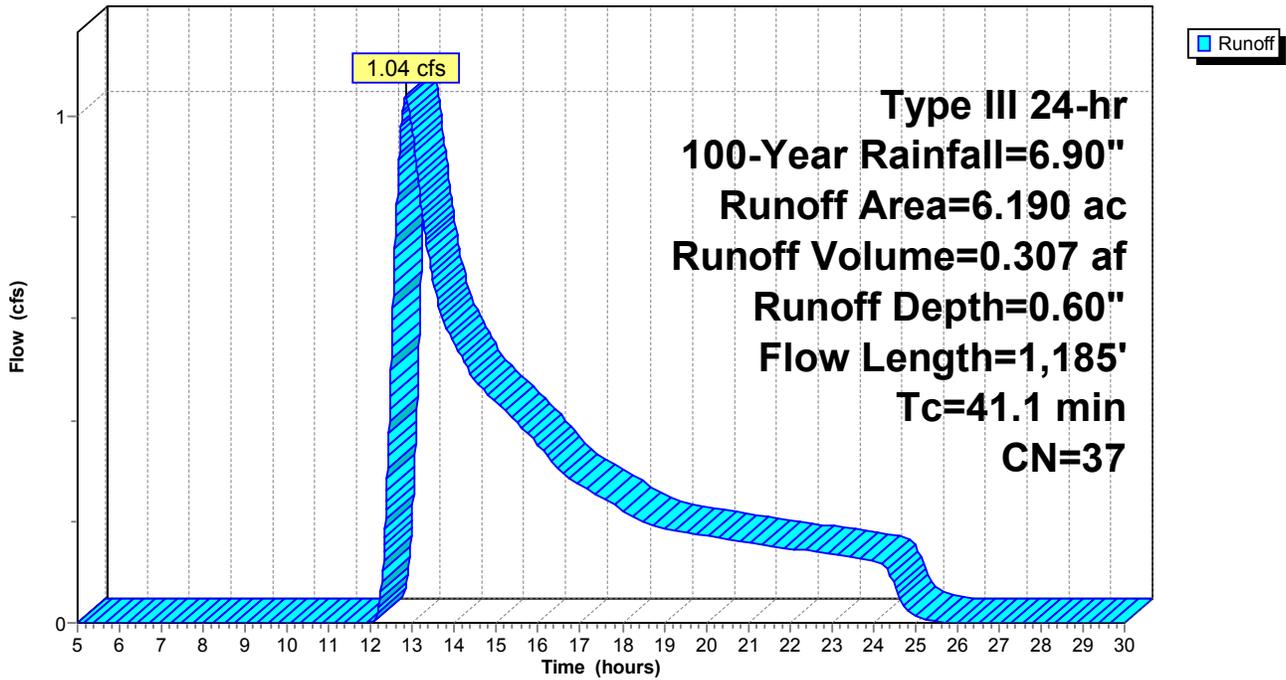
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-Year Rainfall=6.90"

Area (ac)	CN	Description
0.250	98	Paved parking, HSG B
5.600	32	Woods/grass comb., Good, HSG A
0.200	58	Woods/grass comb., Good, HSG B
0.140	79	Woods/grass comb., Good, HSG D
6.190	37	Weighted Average
5.940		95.96% Pervious Area
0.250		4.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.5	100	0.0800	0.08		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
19.6	1,085	0.1360	0.92		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
41.1	1,185	Total			

**Subcatchment 2S:**

Hydrograph



**Existing**

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Type III 24-hr 100-Year Rainfall=6.90"

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**Summary for Subcatchment 3S:**

Runoff = 0.46 cfs @ 13.12 hrs, Volume= 0.204 af, Depth= 0.41"

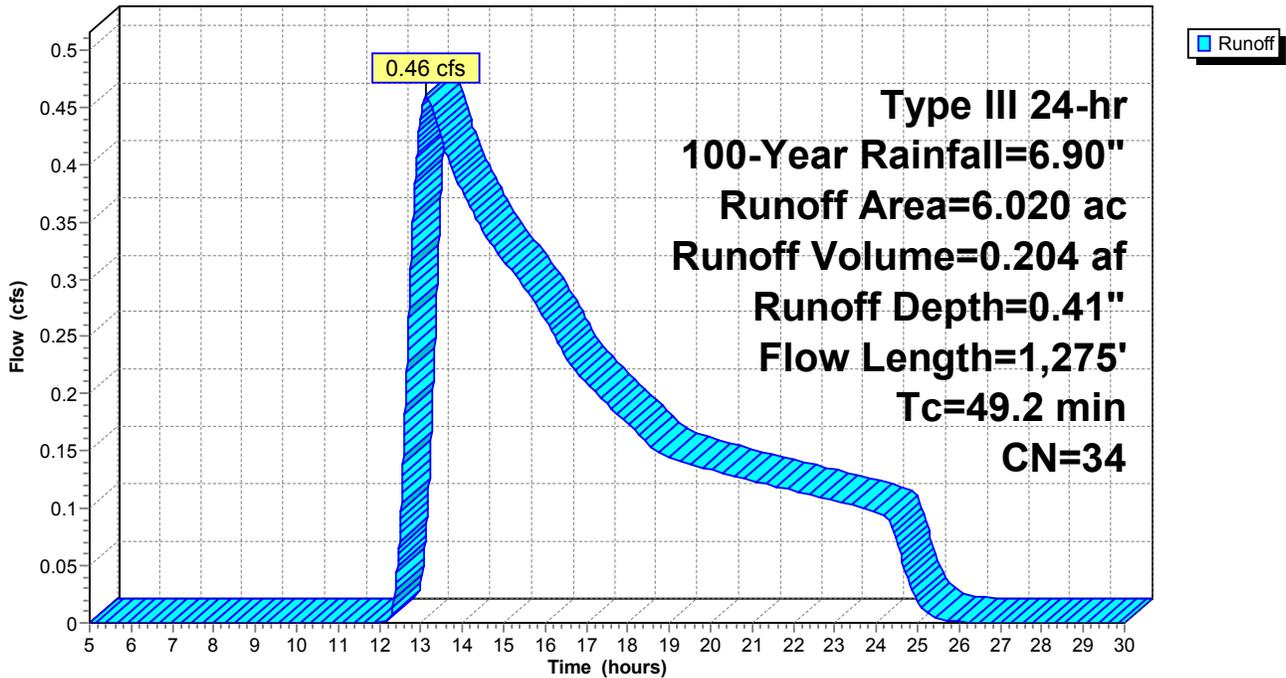
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-Year Rainfall=6.90"

Area (ac)	CN	Description
0.120	98	Paved parking, HSG B
* 5.760	32	Woods/grass comb., Good, HSG A
0.140	58	Woods/grass comb., Good, HSG B
0.000	79	Woods/grass comb., Good, HSG D
6.020	34	Weighted Average
5.900		98.01% Pervious Area
0.120		1.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.3	100	0.0400	0.06		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
20.9	1,175	0.1400	0.94		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
49.2	1,275	Total			

**Subcatchment 3S:**

Hydrograph



**Existing**

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Type III 24-hr 100-Year Rainfall=6.90"

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**Summary for Pond A: Wetland A**

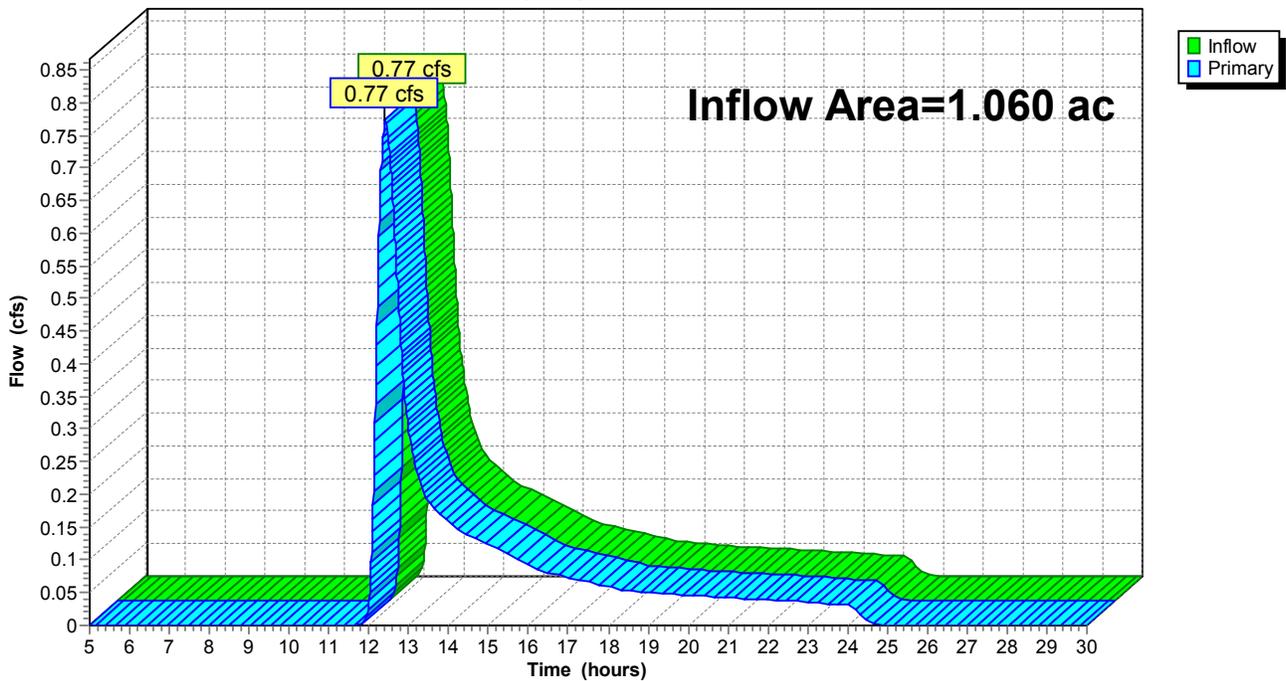
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.060 ac, 3.77% Impervious, Inflow Depth = 1.27" for 100-Year event  
Inflow = 0.77 cfs @ 12.41 hrs, Volume= 0.112 af  
Primary = 0.77 cfs @ 12.41 hrs, Volume= 0.112 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Pond A: Wetland A**

**Hydrograph**



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Type III 24-hr 100-Year Rainfall=6.90"

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**Summary for Pond B: Wetland B**

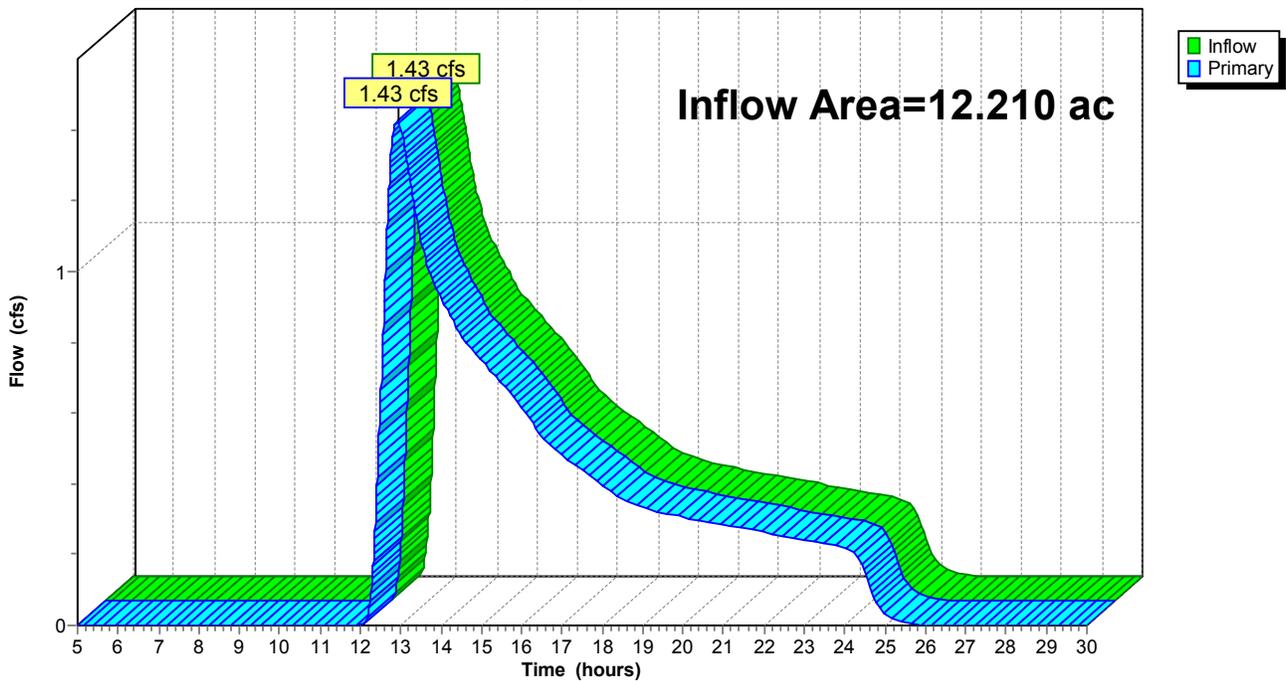
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 12.210 ac, 3.03% Impervious, Inflow Depth = 0.50" for 100-Year event  
Inflow = 1.43 cfs @ 12.92 hrs, Volume= 0.511 af  
Primary = 1.43 cfs @ 12.92 hrs, Volume= 0.511 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Pond B: Wetland B**

Hydrograph



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**Summary for Pond C: Wetland C**

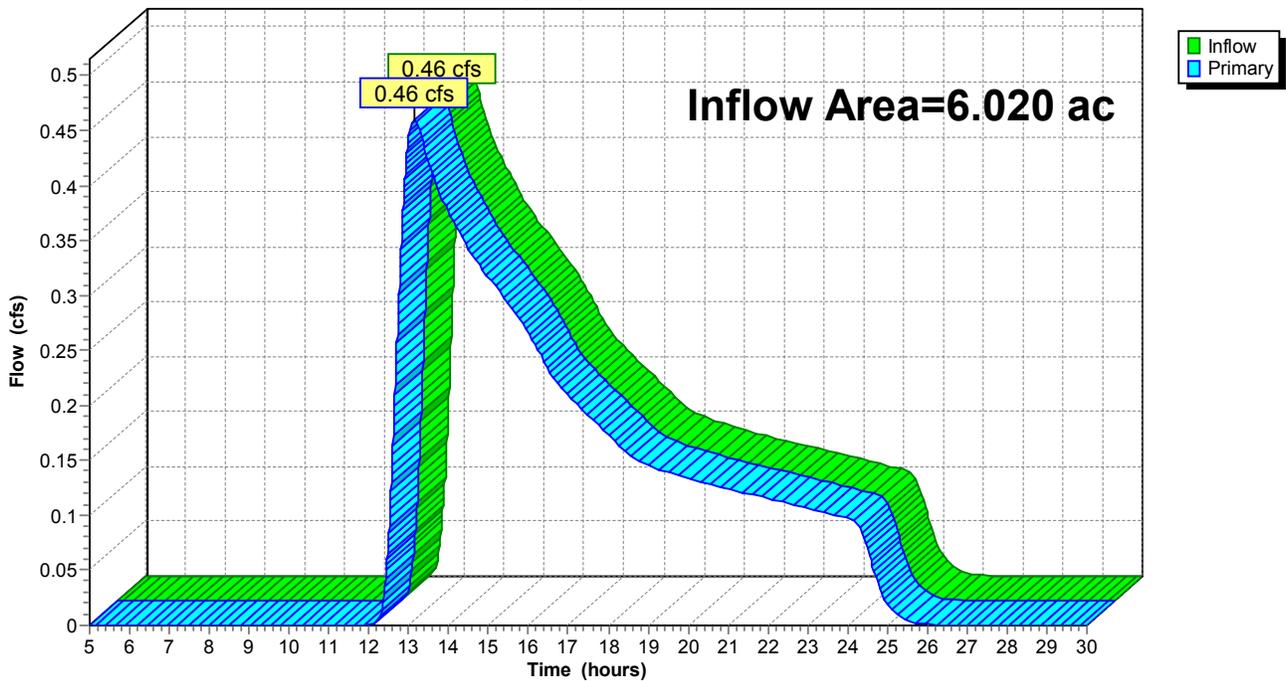
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 6.020 ac, 1.99% Impervious, Inflow Depth = 0.41" for 100-Year event  
Inflow = 0.46 cfs @ 13.12 hrs, Volume= 0.204 af  
Primary = 0.46 cfs @ 13.12 hrs, Volume= 0.204 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Pond C: Wetland C**

**Hydrograph**



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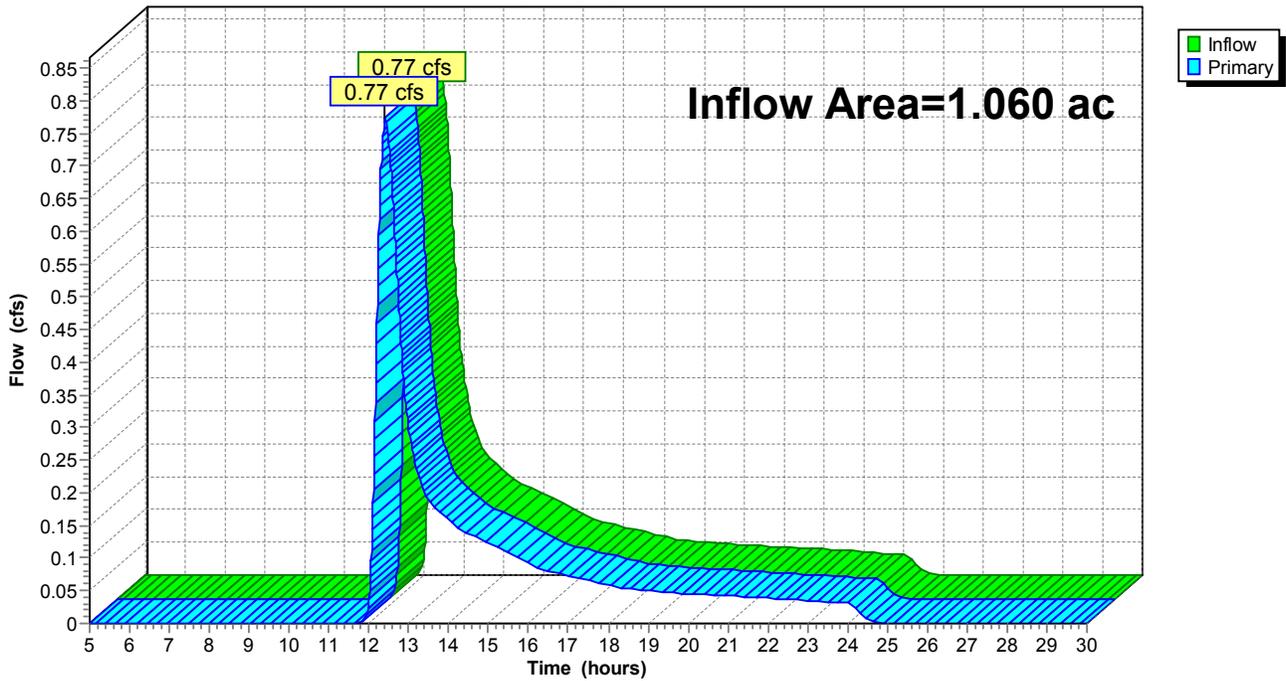
**Summary for Link 1L: Eastern Outfall**

Inflow Area = 1.060 ac, 3.77% Impervious, Inflow Depth = 1.27" for 100-Year event  
Inflow = 0.77 cfs @ 12.41 hrs, Volume= 0.112 af  
Primary = 0.77 cfs @ 12.41 hrs, Volume= 0.112 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Link 1L: Eastern Outfall**

Hydrograph



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Type III 24-hr 100-Year Rainfall=6.90"

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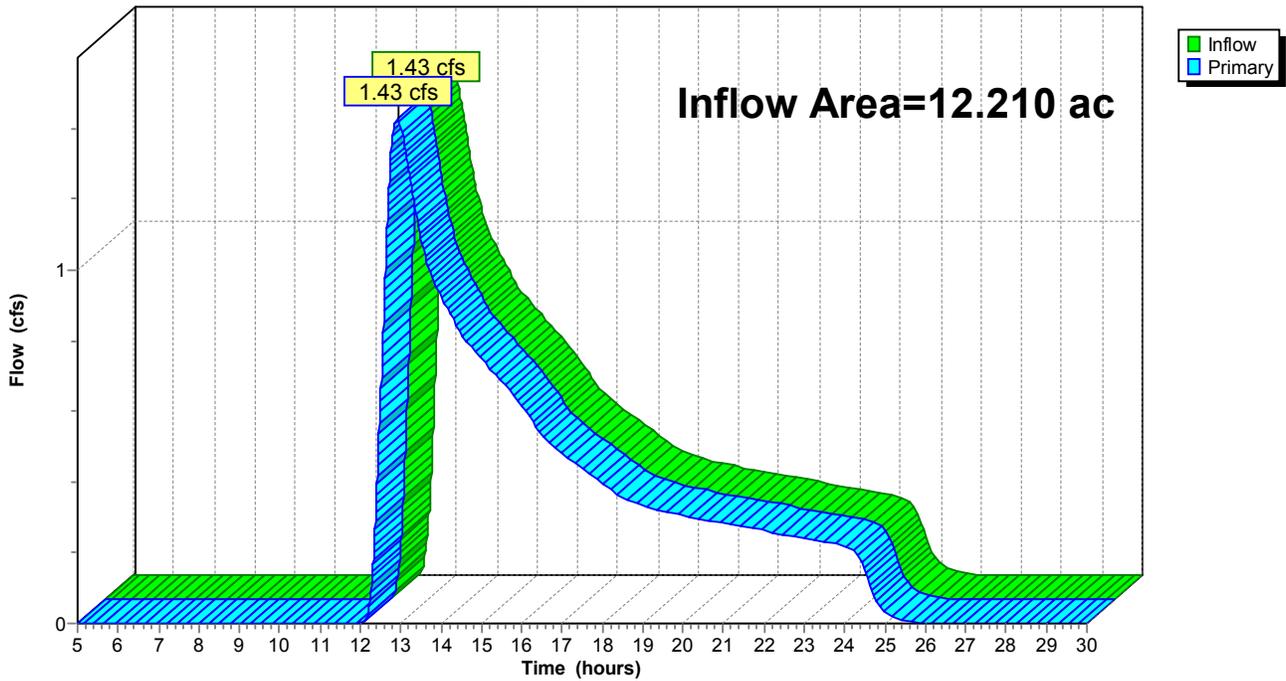
**Summary for Link 2L: Western Outfall**

Inflow Area = 12.210 ac, 3.03% Impervious, Inflow Depth = 0.50" for 100-Year event  
Inflow = 1.43 cfs @ 12.92 hrs, Volume= 0.511 af  
Primary = 1.43 cfs @ 12.92 hrs, Volume= 0.511 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Link 2L: Western Outfall**

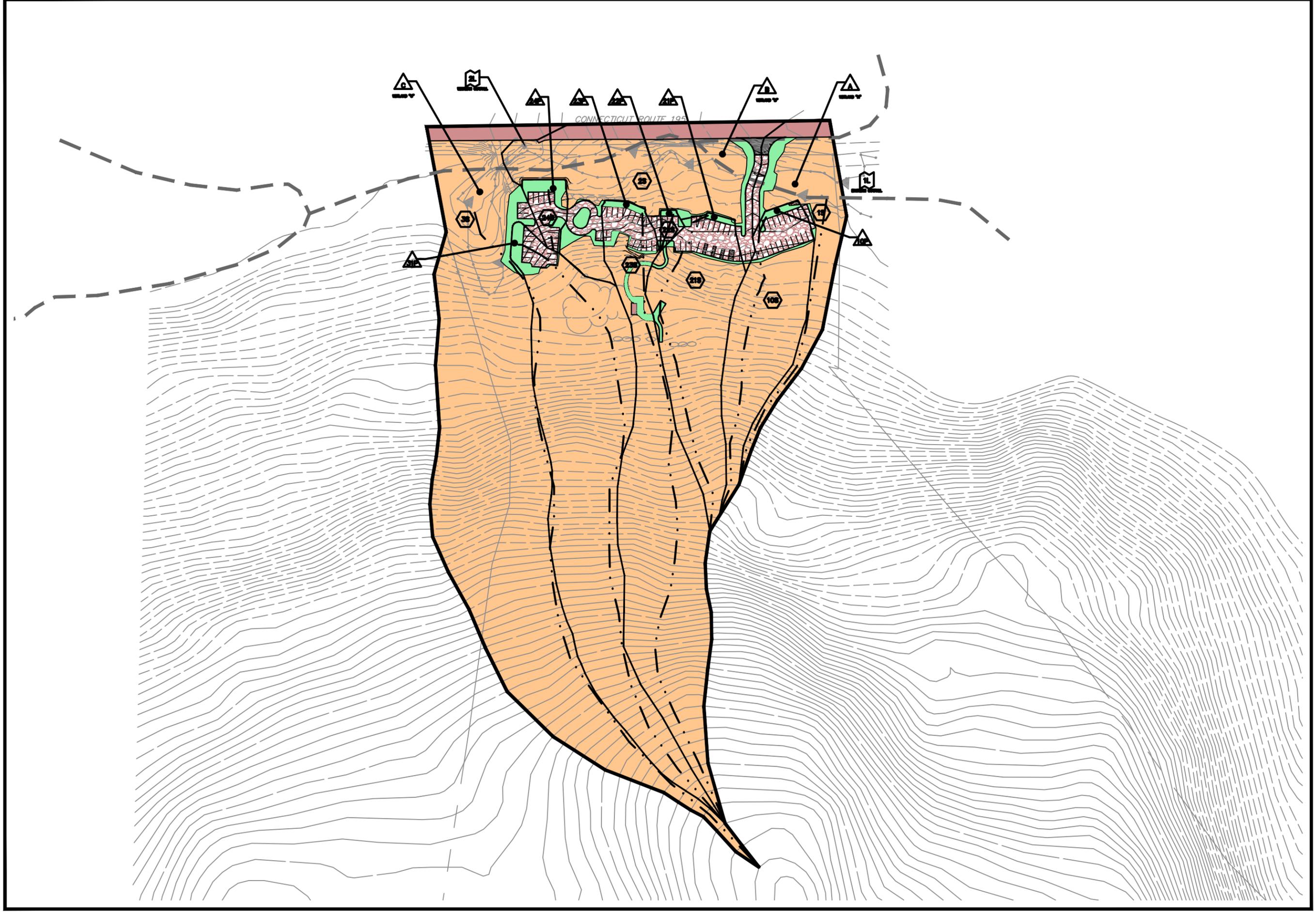
Hydrograph



## **Appendix B**

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### Proposed Drainage Modeling



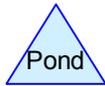
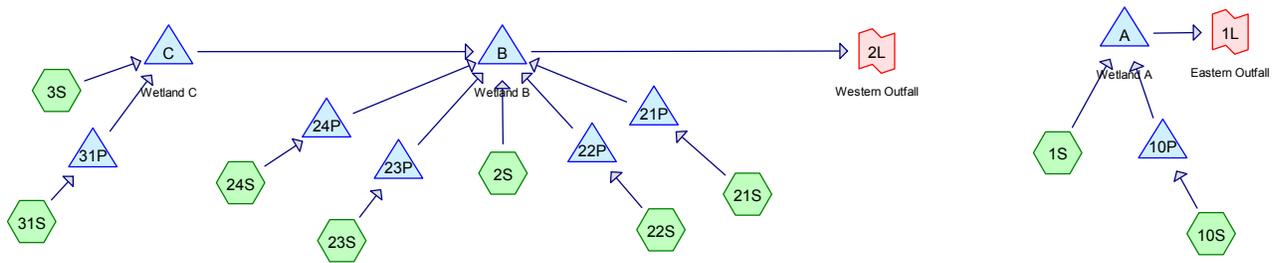
SCALE:	HORIZ.: 1" = 60'
	VERT.: 1" = 30'
DATUM:	HORIZ.: NAD 83
	VERT.: NAVD 88
0 30 60 GRAPHIC SCALE	

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SEASONAL AERIAL FOREST ROPES COURSE  
CONNECTICUT  
MANSFIELD

PROJ. No.: 2011 1004.A30
DATE: SEPTEMBER 2012

**DRA-02**



**Routing Diagram for Proposed**  
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Page 2

### Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.400	39	>75% Grass cover, Good, HSG A (1S, 2S, 3S, 10S, 21S, 22S, 23S, 24S, 31S)
0.060	80	>75% Grass cover, Good, HSG D (1S, 2S)
0.710	76	Gravel roads, HSG A (1S, 2S, 3S, 10S, 21S, 22S, 23S, 24S, 31S)
0.020	91	Gravel roads, HSG D (1S, 2S)
0.445	98	Paved parking, HSG B (1S, 2S, 3S, 23S)
11.040	32	Woods/grass comb., Good, HSG A (1S, 2S, 3S, 10S, 21S, 23S, 24S, 31S)
0.350	58	Woods/grass comb., Good, HSG B (2S, 3S)
0.290	79	Woods/grass comb., Good, HSG D (1S, 2S)
<b>13.315</b>	<b>39</b>	<b>TOTAL AREA</b>

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### Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
12.150	HSG A	1S, 2S, 3S, 10S, 21S, 22S, 23S, 24S, 31S
0.795	HSG B	1S, 2S, 3S, 23S
0.000	HSG C	
0.370	HSG D	1S, 2S
0.000	Other	
<b>13.315</b>		<b>TOTAL AREA</b>

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Type III 24-hr 2-Year Rainfall=3.20"

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**Summary for Subcatchment 1S:**

Runoff = 0.09 cfs @ 12.56 hrs, Volume= 0.019 af, Depth= 0.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-Year Rainfall=3.20"

Area (ac)	CN	Description
0.070	98	Paved parking, HSG B
0.030	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.010	91	Gravel roads, HSG D
0.020	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.040	80	>75% Grass cover, Good, HSG D
0.360	32	Woods/grass comb., Good, HSG A
0.000	58	Woods/grass comb., Good, HSG B
0.220	79	Woods/grass comb., Good, HSG D
0.750	57	Weighted Average
0.680		90.67% Pervious Area
0.070		9.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	100	0.1900	0.11		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
8.3	415	0.1110	0.83		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
23.5	515	Total			

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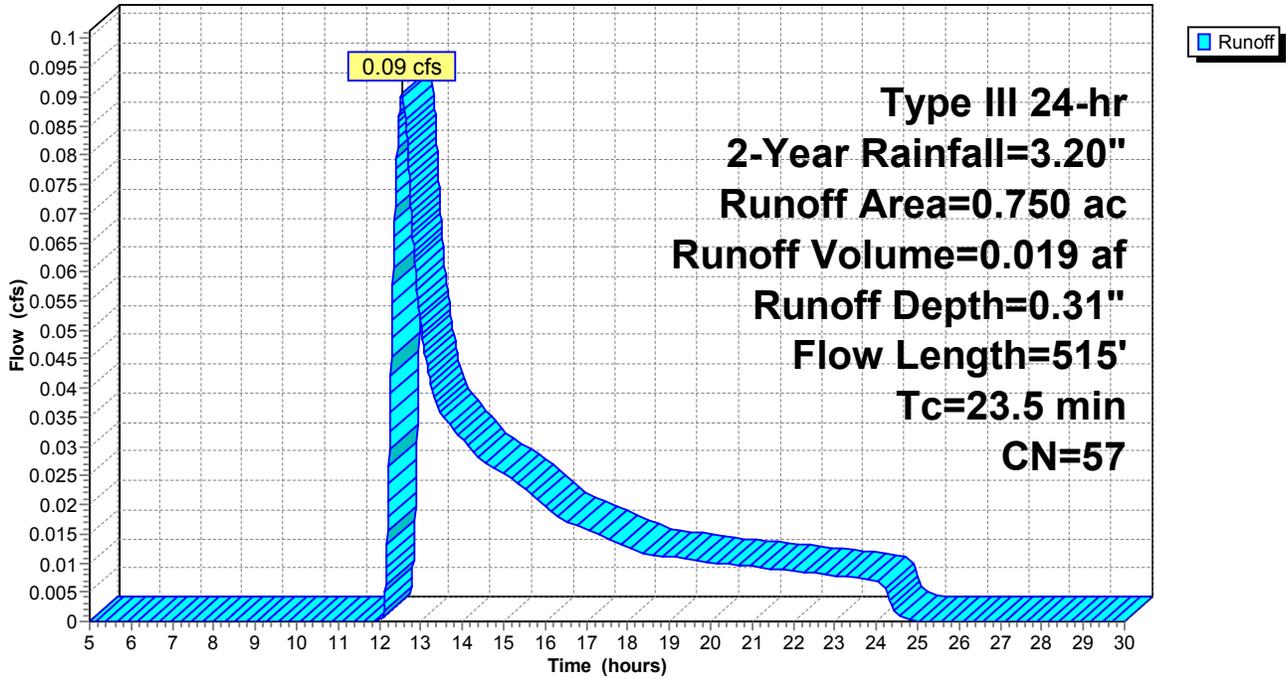
Type III 24-hr 2-Year Rainfall=3.20"

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**Subcatchment 1S:**

**Hydrograph**



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Type III 24-hr 2-Year Rainfall=3.20"

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**Summary for Subcatchment 2S:**

Runoff = 0.08 cfs @ 12.65 hrs, Volume= 0.025 af, Depth= 0.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-Year Rainfall=3.20"

Area (ac)	CN	Description
0.250	98	Paved parking, HSG B
0.100	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.010	91	Gravel roads, HSG D
0.090	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.020	80	>75% Grass cover, Good, HSG D
0.780	32	Woods/grass comb., Good, HSG A
0.210	58	Woods/grass comb., Good, HSG B
0.070	79	Woods/grass comb., Good, HSG D
1.530	53	Weighted Average
1.280		83.66% Pervious Area
0.250		16.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0900	0.08		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
2.9	115	0.0700	0.66		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
0.2	60	0.0670	4.17		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
1.2	50	0.0800	0.71		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
24.8	325	Total			

**Proposed**

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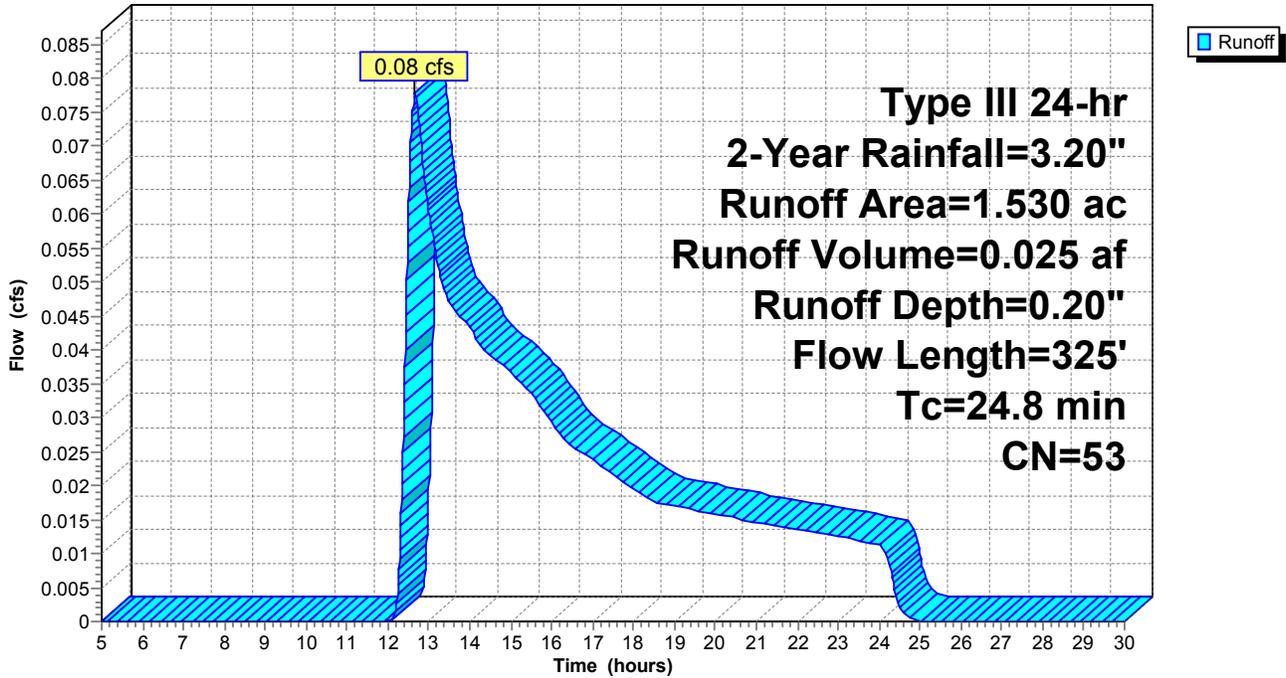
Type III 24-hr 2-Year Rainfall=3.20"

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**Subcatchment 2S:**

Hydrograph



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Type III 24-hr 2-Year Rainfall=3.20"

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**Summary for Subcatchment 3S:**

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Type III 24-hr 2-Year Rainfall=3.20"

Area (ac)	CN	Description
0.120	98	Paved parking, HSG B
0.030	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.000	91	Gravel roads, HSG D
0.060	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.000	80	>75% Grass cover, Good, HSG D
3.750	32	Woods/grass comb., Good, HSG A
0.140	58	Woods/grass comb., Good, HSG B
0.000	79	Woods/grass comb., Good, HSG D
4.100	35	Weighted Average
3.980		97.07% Pervious Area
0.120		2.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.3	100	0.0400	0.06		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
20.9	1,175	0.1400	0.94		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
49.2	1,275	Total			

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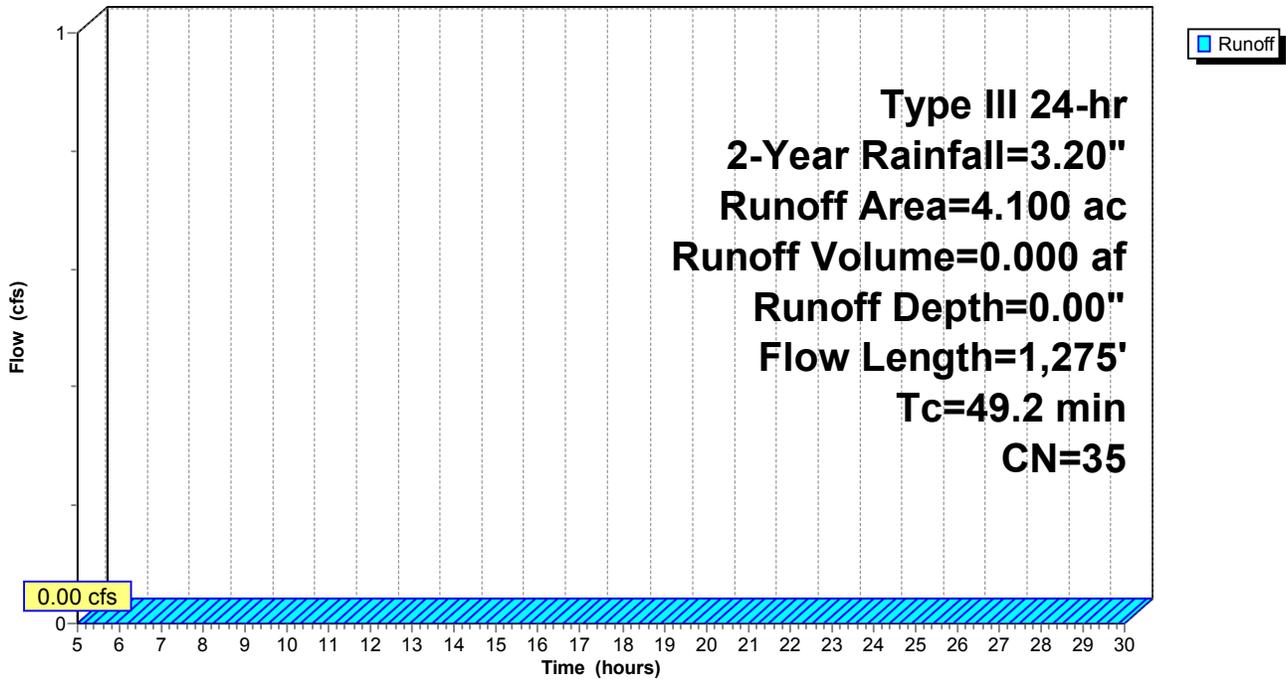
Type III 24-hr 2-Year Rainfall=3.20"

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**Subcatchment 3S:**

**Hydrograph**



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**Summary for Subcatchment 10S:**

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Type III 24-hr 2-Year Rainfall=3.20"

Area (ac)	CN	Description
0.000	98	Paved parking, HSG B
0.130	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.000	91	Gravel roads, HSG D
0.030	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.000	80	>75% Grass cover, Good, HSG D
0.790	32	Woods/grass comb., Good, HSG A
0.000	58	Woods/grass comb., Good, HSG B
0.000	79	Woods/grass comb., Good, HSG D
0.950	38	Weighted Average
0.950		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.6	100	0.1000	0.08		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
5.8	345	0.1590	1.00		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
0.4	70	0.0360	3.05		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
25.8	515	Total			

**Proposed**

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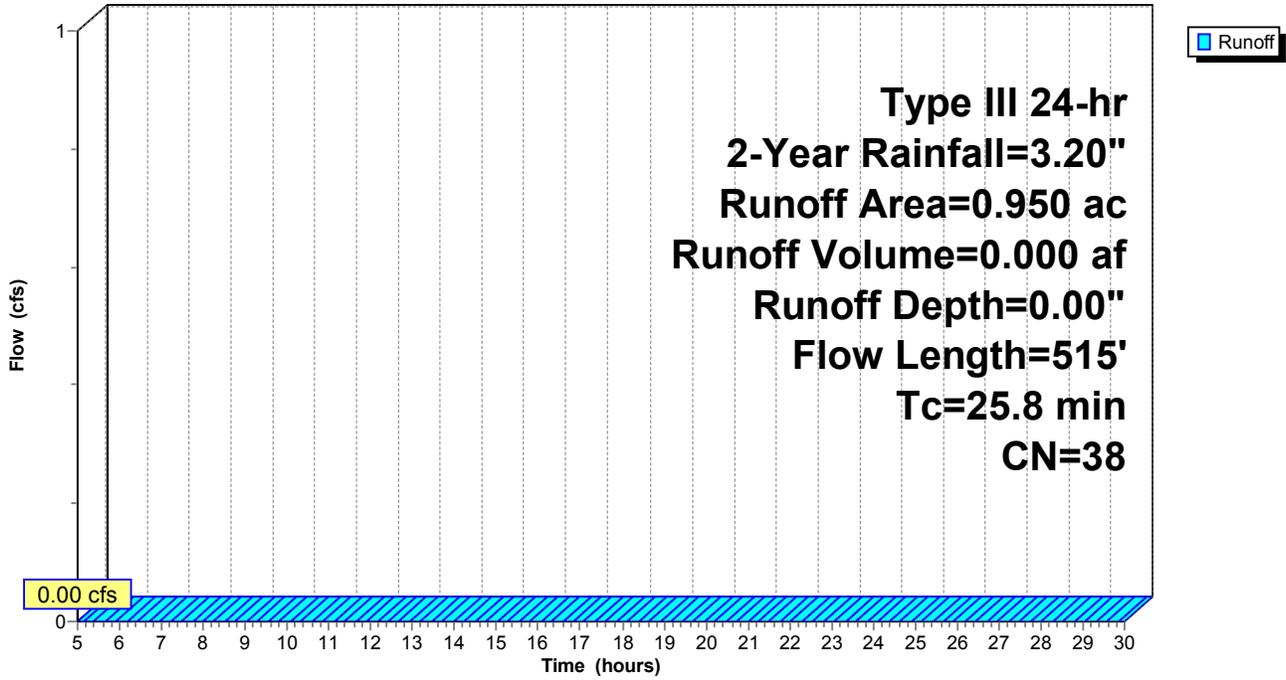
Type III 24-hr 2-Year Rainfall=3.20"

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**Subcatchment 10S:**

**Hydrograph**



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**Summary for Subcatchment 21S:**

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Type III 24-hr 2-Year Rainfall=3.20"

Area (ac)	CN	Description
0.000	98	Paved parking, HSG B
0.140	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.000	91	Gravel roads, HSG D
0.040	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.000	80	>75% Grass cover, Good, HSG D
0.960	32	Woods/grass comb., Good, HSG A
0.000	58	Woods/grass comb., Good, HSG B
0.000	79	Woods/grass comb., Good, HSG D
1.140	38	Weighted Average
1.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.7	100	0.1500	0.10		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
7.1	395	0.1390	0.93		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
0.4	80	0.0375	3.12		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
24.2	575	Total			

**Proposed**

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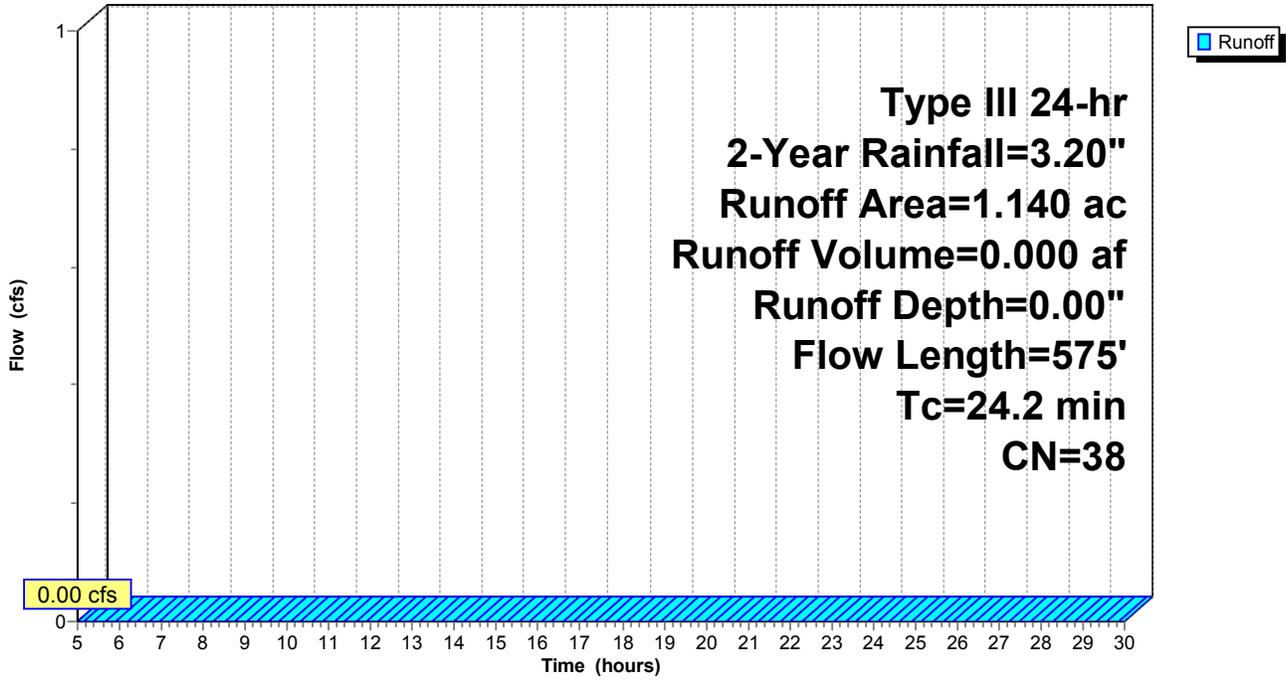
Type III 24-hr 2-Year Rainfall=3.20"

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**Subcatchment 21S:**

**Hydrograph**



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**Summary for Subcatchment 22S:**

Runoff = 0.02 cfs @ 12.13 hrs, Volume= 0.002 af, Depth= 0.44"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-Year Rainfall=3.20"

Area (ac)	CN	Description
0.000	98	Paved parking, HSG B
0.030	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.000	91	Gravel roads, HSG D
0.020	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.000	80	>75% Grass cover, Good, HSG D
0.000	32	Woods/grass comb., Good, HSG A
0.000	58	Woods/grass comb., Good, HSG B
0.000	79	Woods/grass comb., Good, HSG D
0.050	61	Weighted Average
0.050		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	20	0.0750	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
0.6	45	0.0780	1.25		<b>Sheet Flow,</b> n= 0.020 P2= 3.20"
6.7	65	Total			

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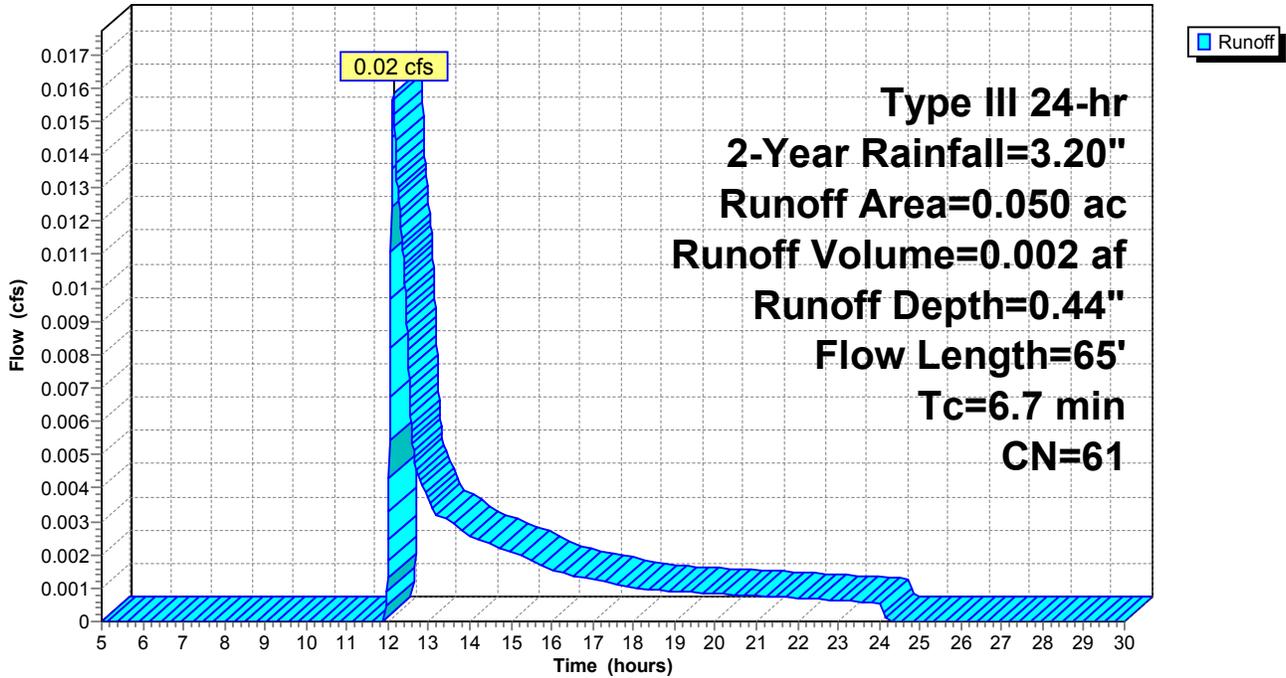
Type III 24-hr 2-Year Rainfall=3.20"

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**Subcatchment 22S:**

**Hydrograph**



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**Summary for Subcatchment 23S:**

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Type III 24-hr 2-Year Rainfall=3.20"

Area (ac)	CN	Description
0.005	98	Paved parking, HSG B
0.110	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.000	91	Gravel roads, HSG D
0.050	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.000	80	>75% Grass cover, Good, HSG D
1.950	32	Woods/grass comb., Good, HSG A
0.000	58	Woods/grass comb., Good, HSG B
0.000	79	Woods/grass comb., Good, HSG D
2.115	35	Weighted Average
2.110		99.76% Pervious Area
0.005		0.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.7	100	0.0700	0.07		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
14.8	900	0.1640	1.01		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
0.2	65	0.0850	4.69		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
37.7	1,065	Total			

**Proposed**

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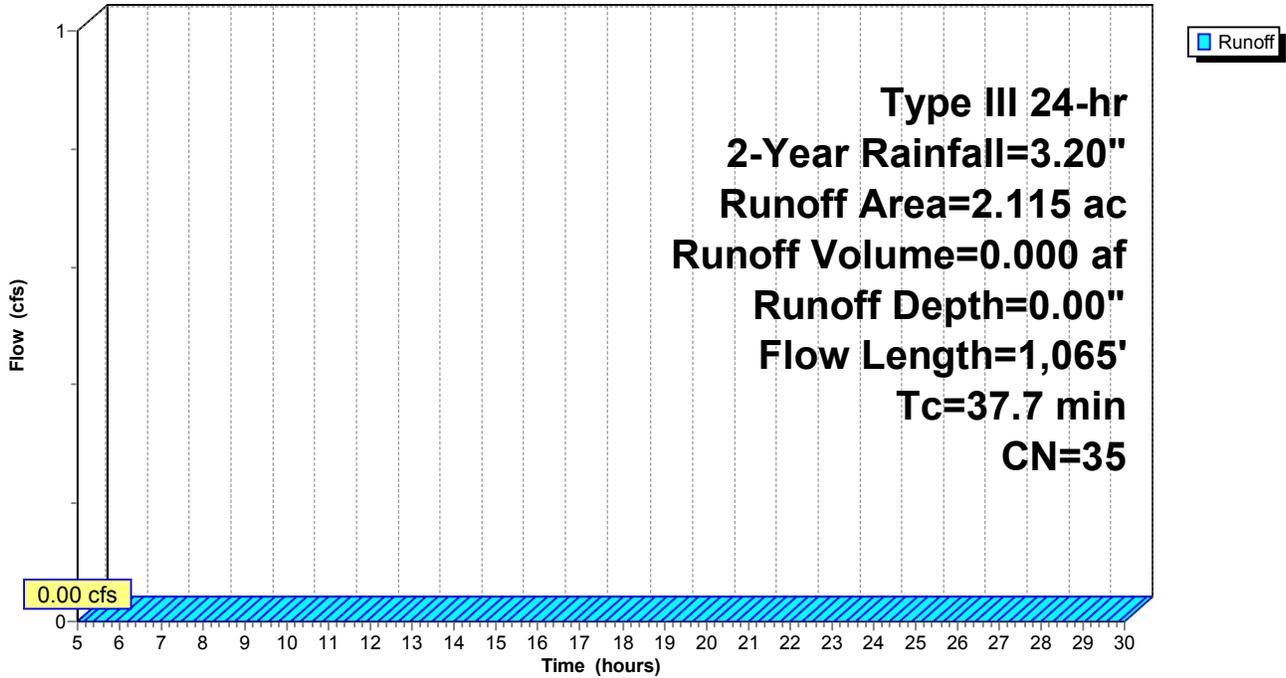
Type III 24-hr 2-Year Rainfall=3.20"

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**Subcatchment 23S:**

**Hydrograph**



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Type III 24-hr 2-Year Rainfall=3.20"

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**Summary for Subcatchment 24S:**

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.01 cfs @ 12.30 hrs, Volume= 0.003 af, Depth= 0.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Type III 24-hr 2-Year Rainfall=3.20"

Area (ac)	CN	Description
0.000	98	Paved parking, HSG B
0.080	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.000	91	Gravel roads, HSG D
0.040	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.000	80	>75% Grass cover, Good, HSG D
0.060	32	Woods/grass comb., Good, HSG A
0.000	58	Woods/grass comb., Good, HSG B
0.000	79	Woods/grass comb., Good, HSG D
0.180	53	Weighted Average
0.180		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0780	1.47		<b>Sheet Flow,</b> n= 0.020 P2= 3.20"

**Proposed**

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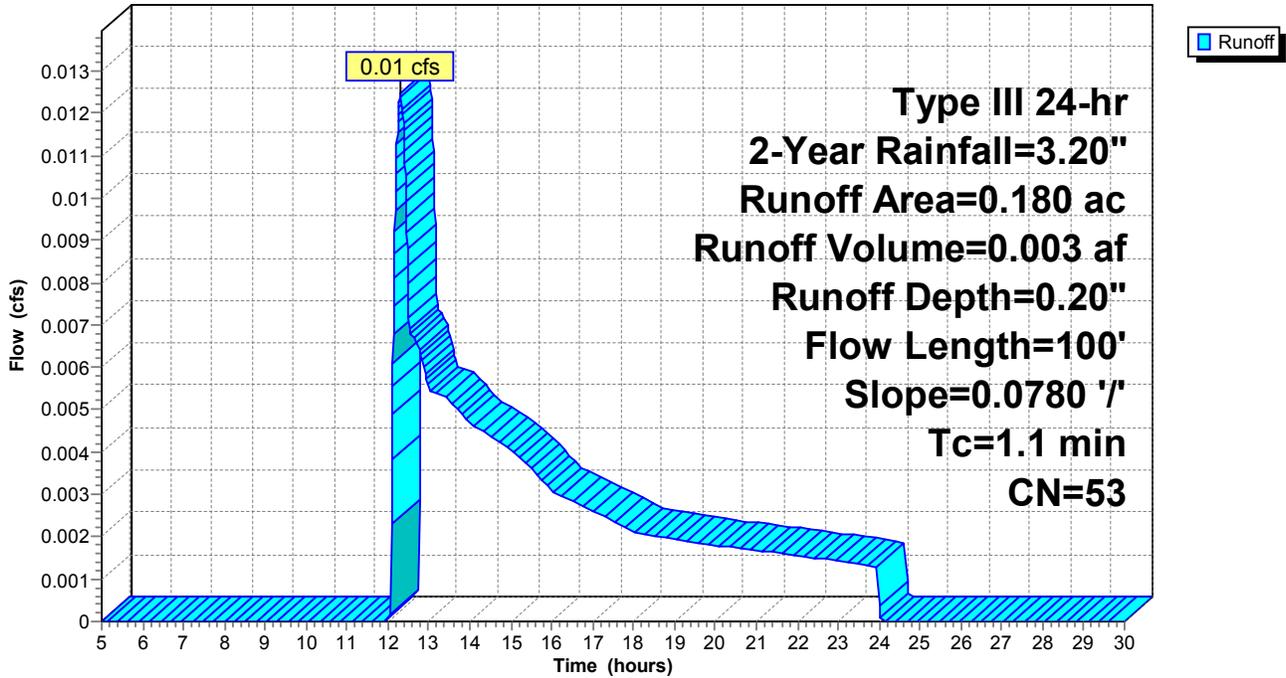
Type III 24-hr 2-Year Rainfall=3.20"

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**Subcatchment 24S:**

Hydrograph



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Type III 24-hr 2-Year Rainfall=3.20"

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**Summary for Subcatchment 31S:**

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-Year Rainfall=3.20"

Area (ac)	CN	Description
0.000	98	Paved parking, HSG B
0.060	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.000	91	Gravel roads, HSG D
0.050	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.000	80	>75% Grass cover, Good, HSG D
2.390	32	Woods/grass comb., Good, HSG A
0.000	58	Woods/grass comb., Good, HSG B
0.000	79	Woods/grass comb., Good, HSG D
2.500	33	Weighted Average
2.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0900	0.08		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
16.3	940	0.1480	0.96		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
0.2	68	0.1030	5.17		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
37.0	1,108	Total			

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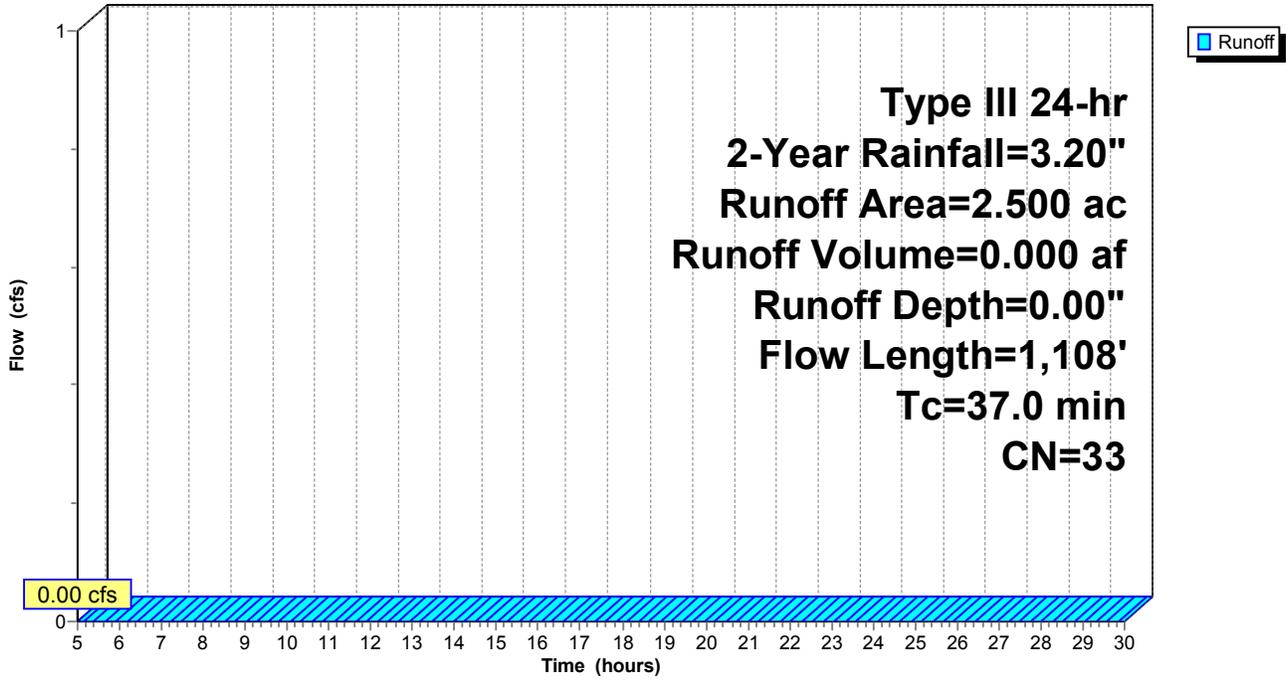
Type III 24-hr 2-Year Rainfall=3.20"

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**Subcatchment 31S:**

**Hydrograph**



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**Summary for Pond 10P:**

Inflow Area = 0.950 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Year event  
 Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af  
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af  
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
 Peak Elev= 100.00' @ 5.00 hrs Surf.Area= 0.003 ac Storage= 0.000 af

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

Volume	Invert	Avail.Storage	Storage Description
#1	102.00'	0.023 af	<b>2.00'W x 55.00'L x 2.00'H Prismatic Z=3.0</b>
#2	100.00'	0.002 af	<b>2.00'W x 55.00'L x 2.00'H Prismatic</b>
			0.005 af Overall x 40.0% Voids
		0.025 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	103.00'	<b>55.0' long x 1.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.62 2.64 2.64 2.68 2.75 2.86 2.92 3.07 3.07 3.03 3.28 3.32
#2	Discarded	100.00'	<b>15.900 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 93.50'

**Discarded OutFlow** Max=0.00 cfs @ 5.00 hrs HW=100.00' (Free Discharge)  
 ↑2=Exfiltration (Passes 0.00 cfs of 0.04 cfs potential flow)

**Primary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=100.00' TW=0.00' (Dynamic Tailwater)  
 ↑1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Proposed**

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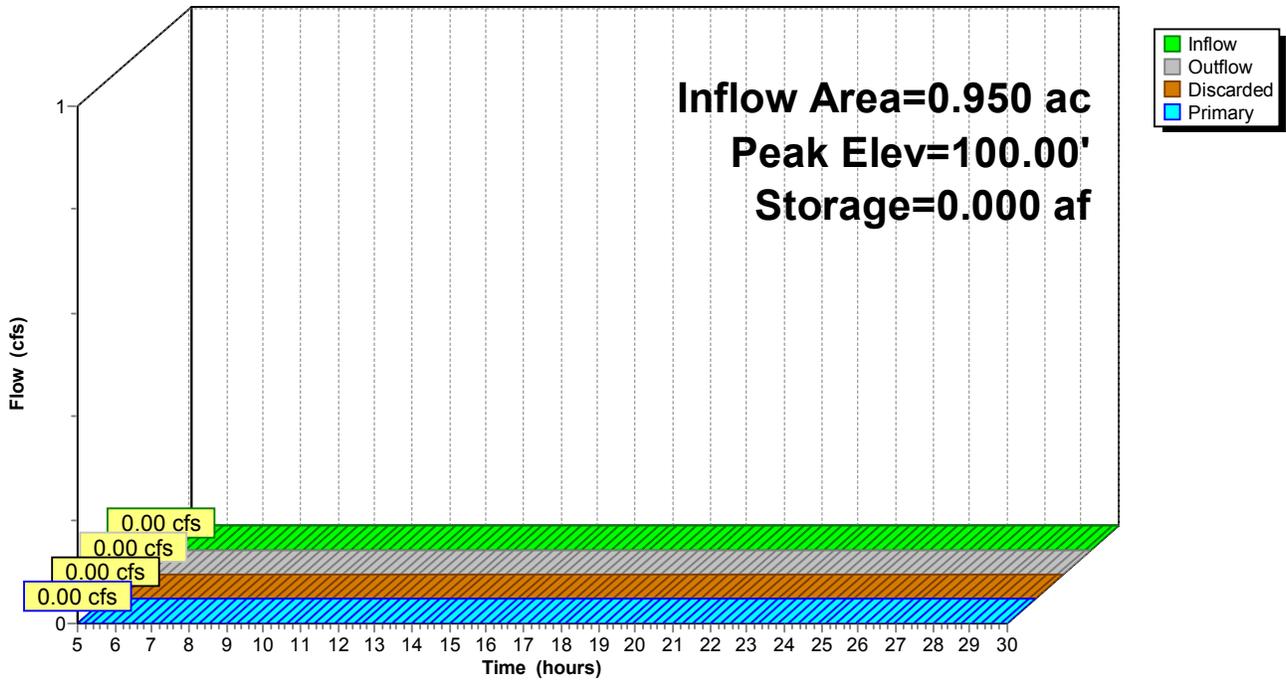
Type III 24-hr 2-Year Rainfall=3.20"

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**Pond 10P:**

Hydrograph



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Type III 24-hr 2-Year Rainfall=3.20"

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**Summary for Pond 21P:**

Inflow Area = 1.140 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Year event  
 Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af  
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af  
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
 Peak Elev= 100.00' @ 5.00 hrs Surf.Area= 0.002 ac Storage= 0.000 af

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

Volume	Invert	Avail.Storage	Storage Description
#1	102.00'	0.019 af	<b>2.00'W x 43.00'L x 2.00'H Prismatic Z=3.0</b>
#2	100.00'	0.002 af	<b>2.00'W x 43.00'L x 2.00'H Prismatic</b>
			0.004 af Overall x 40.0% Voids
		0.020 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	103.00'	<b>43.0' long x 1.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.62 2.64 2.64 2.68 2.75 2.86 2.92 3.07 3.07 3.03 3.28 3.32
#2	Discarded	100.00'	<b>15.900 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 93.50'

**Discarded OutFlow** Max=0.00 cfs @ 5.00 hrs HW=100.00' (Free Discharge)  
 ↑2=Exfiltration (Passes 0.00 cfs of 0.03 cfs potential flow)

**Primary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=100.00' TW=0.00' (Dynamic Tailwater)  
 ↑1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Proposed**

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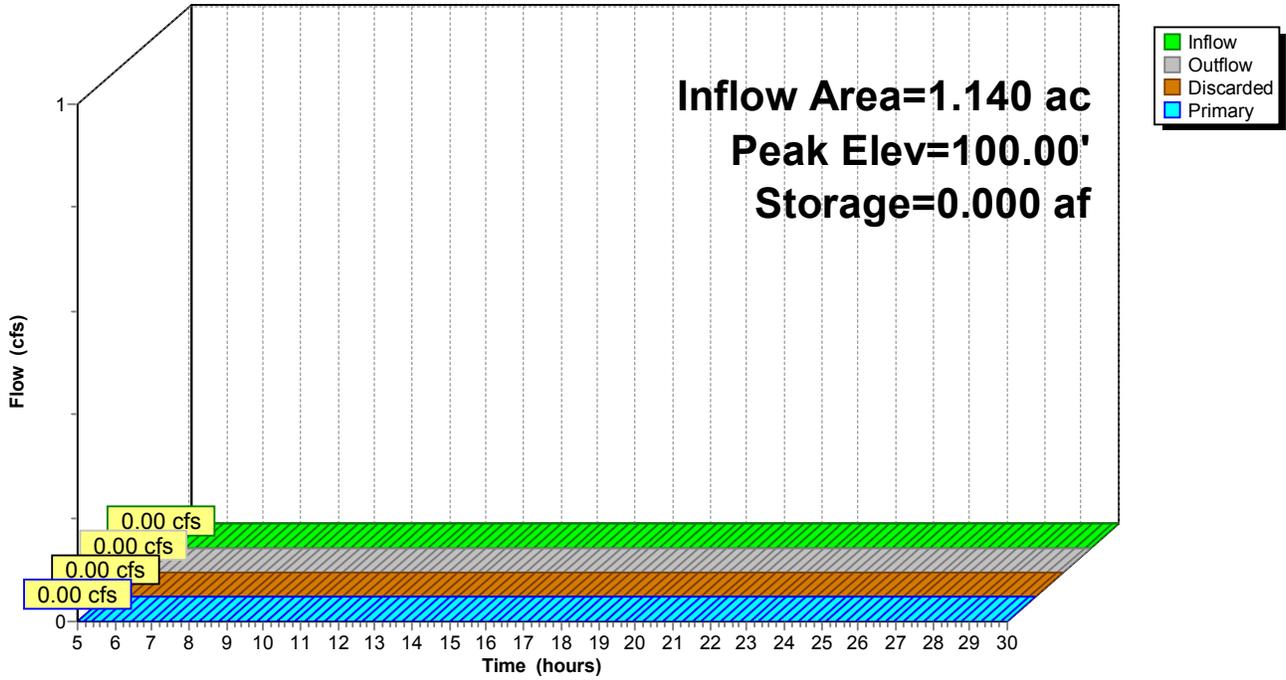
Type III 24-hr 2-Year Rainfall=3.20"

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**Pond 21P:**

Hydrograph



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Type III 24-hr 2-Year Rainfall=3.20"

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**Summary for Pond 22P:**

[87] Warning: Oscillations may require Finer Routing or smaller dt

Inflow Area = 0.050 ac, 0.00% Impervious, Inflow Depth = 0.44" for 2-Year event  
 Inflow = 0.02 cfs @ 12.13 hrs, Volume= 0.002 af  
 Outflow = 0.02 cfs @ 12.15 hrs, Volume= 0.002 af, Atten= 2%, Lag= 1.2 min  
 Discarded = 0.02 cfs @ 12.15 hrs, Volume= 0.002 af  
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
 Peak Elev= 100.00' @ 12.15 hrs Surf.Area= 0.001 ac Storage= 0.000 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 0.0 min ( 915.4 - 915.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	102.00'	0.010 af	<b>2.00'W x 21.00'L x 2.00'H Prismaoid Z=3.0</b>
#2	100.00'	0.001 af	<b>2.00'W x 21.00'L x 2.00'H Prismaoid</b>
			0.002 af Overall x 40.0% Voids
		0.011 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	103.00'	<b>21.0' long x 1.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.62 2.64 2.64 2.68 2.75 2.86 2.92 3.07 3.07 3.03 3.28 3.32
#2	Discarded	100.00'	<b>15.900 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 93.50'

**Discarded OutFlow** Max=0.02 cfs @ 12.15 hrs HW=100.00' (Free Discharge)  
 ↑2=Exfiltration ( Controls 0.02 cfs)

**Primary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=100.00' TW=0.00' (Dynamic Tailwater)  
 ↑1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Proposed**

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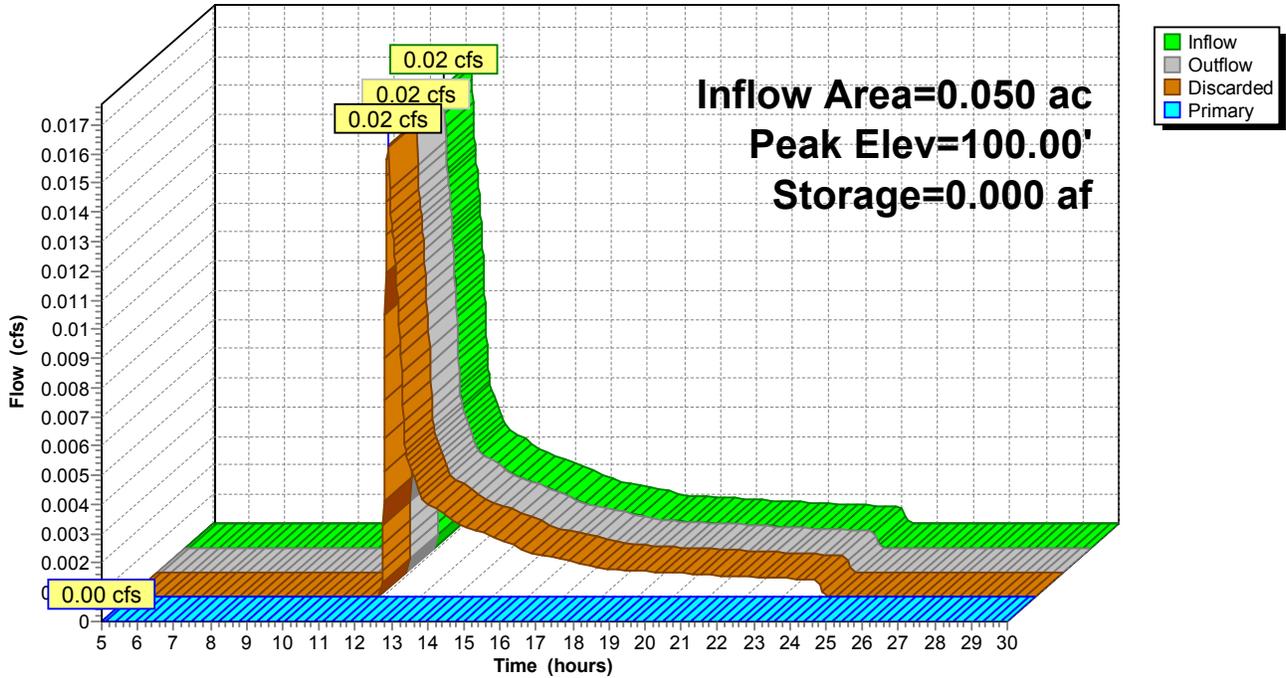
Type III 24-hr 2-Year Rainfall=3.20"

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**Pond 22P:**

Hydrograph



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**Summary for Pond 23P:**

Inflow Area = 2.115 ac, 0.24% Impervious, Inflow Depth = 0.00" for 2-Year event  
 Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af  
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af  
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
 Peak Elev= 100.00' @ 5.00 hrs Surf.Area= 0.003 ac Storage= 0.000 af

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

Volume	Invert	Avail.Storage	Storage Description
#1	102.00'	0.025 af	<b>2.00'W x 60.00'L x 2.00'H Prismatic Z=3.0</b>
#2	100.00'	0.002 af	<b>2.00'W x 60.00'L x 2.00'H Prismatic</b>
			0.006 af Overall x 40.0% Voids
		0.027 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	103.00'	<b>60.0' long x 1.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.62 2.64 2.64 2.68 2.75 2.86 2.92 3.07 3.07 3.03 3.28 3.32
#2	Discarded	100.00'	<b>15.900 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 93.50'

**Discarded OutFlow** Max=0.00 cfs @ 5.00 hrs HW=100.00' (Free Discharge)  
 ↑2=Exfiltration (Passes 0.00 cfs of 0.04 cfs potential flow)

**Primary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=100.00' TW=0.00' (Dynamic Tailwater)  
 ↑1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Proposed**

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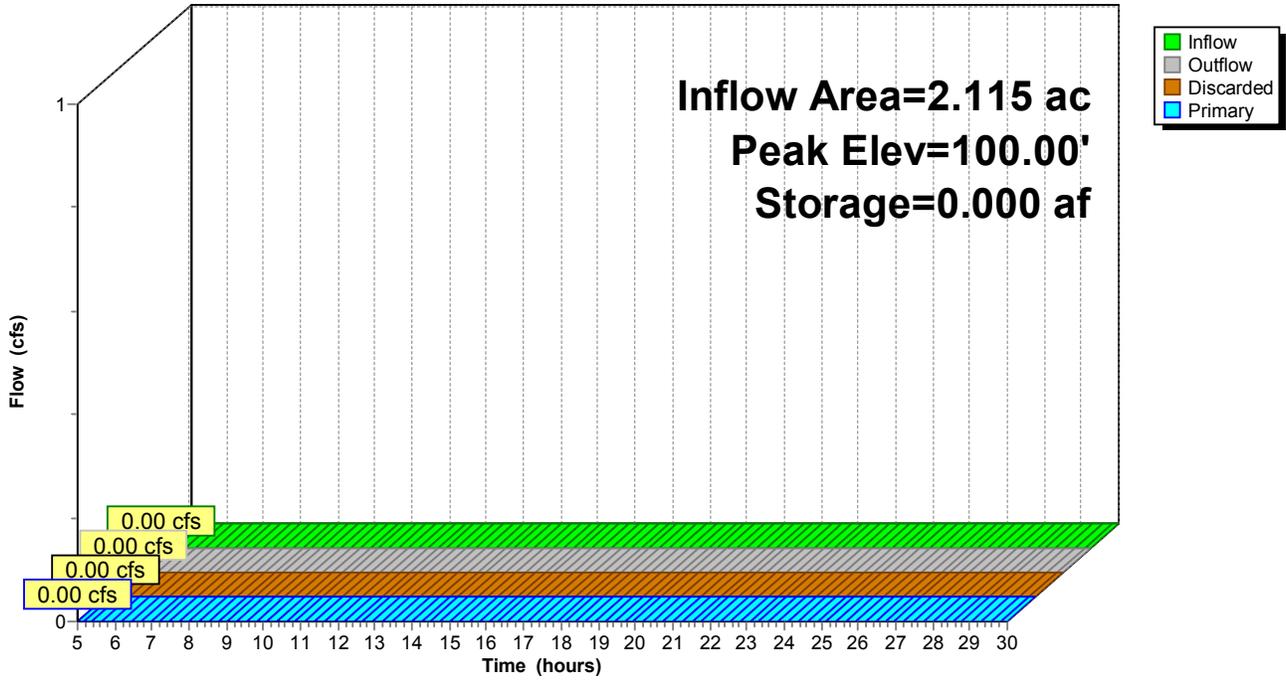
Type III 24-hr 2-Year Rainfall=3.20"

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**Pond 23P:**

Hydrograph



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**Summary for Pond 24P:**

Inflow Area = 0.180 ac, 0.00% Impervious, Inflow Depth = 0.20" for 2-Year event  
 Inflow = 0.01 cfs @ 12.30 hrs, Volume= 0.003 af  
 Outflow = 0.01 cfs @ 12.30 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.01 cfs @ 12.30 hrs, Volume= 0.003 af  
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
 Peak Elev= 100.00' @ 5.00 hrs Surf.Area= 0.003 ac Storage= 0.000 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 0.0 min ( 969.5 - 969.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	102.00'	0.028 af	<b>2.00'W x 70.00'L x 2.00'H Prismatic Z=3.0</b>
#2	100.00'	0.003 af	<b>2.00'W x 70.00'L x 2.00'H Prismatic</b>
			0.006 af Overall x 40.0% Voids
		0.031 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	103.00'	<b>70.0' long x 1.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.62 2.64 2.64 2.68 2.75 2.86 2.92 3.07 3.07 3.03 3.28 3.32
#2	Discarded	100.00'	<b>15.900 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 93.50'

**Discarded OutFlow** Max=0.00 cfs @ 12.30 hrs HW=100.00' (Free Discharge)  
 ↑2=Exfiltration (Passes 0.00 cfs of 0.05 cfs potential flow)

**Primary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=100.00' TW=0.00' (Dynamic Tailwater)  
 ↑1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

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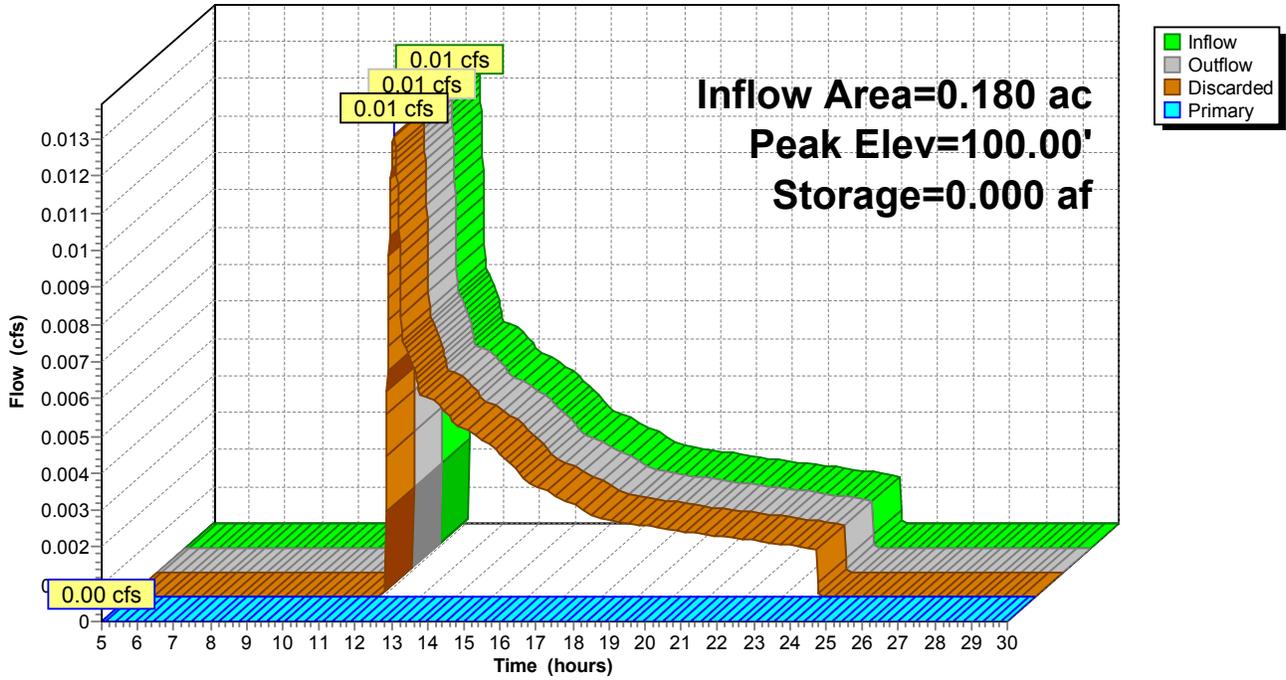
Type III 24-hr 2-Year Rainfall=3.20"

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**Pond 24P:**

Hydrograph



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Type III 24-hr 2-Year Rainfall=3.20"

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**Summary for Pond 31P:**

Inflow Area = 2.500 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Year event  
 Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af  
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af  
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
 Peak Elev= 100.00' @ 5.00 hrs Surf.Area= 0.021 ac Storage= 0.000 af

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

Volume	Invert	Avail.Storage	Storage Description
#1	102.00'	0.066 af	<b>13.00'W x 69.00'L x 2.00'H Prismatic Z=3.0</b>
#2	100.00'	0.016 af	<b>13.00'W x 69.00'L x 2.00'H Prismatic</b>
			0.041 af Overall x 40.0% Voids
		0.082 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	103.00'	<b>69.0' long x 1.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.62 2.64 2.64 2.68 2.75 2.86 2.92 3.07 3.07 3.03 3.28 3.32
#2	Discarded	100.00'	<b>15.900 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 93.50'

**Discarded OutFlow** Max=0.00 cfs @ 5.00 hrs HW=100.00' (Free Discharge)  
 ↑2=Exfiltration (Passes 0.00 cfs of 0.33 cfs potential flow)

**Primary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=100.00' TW=0.00' (Dynamic Tailwater)  
 ↑1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

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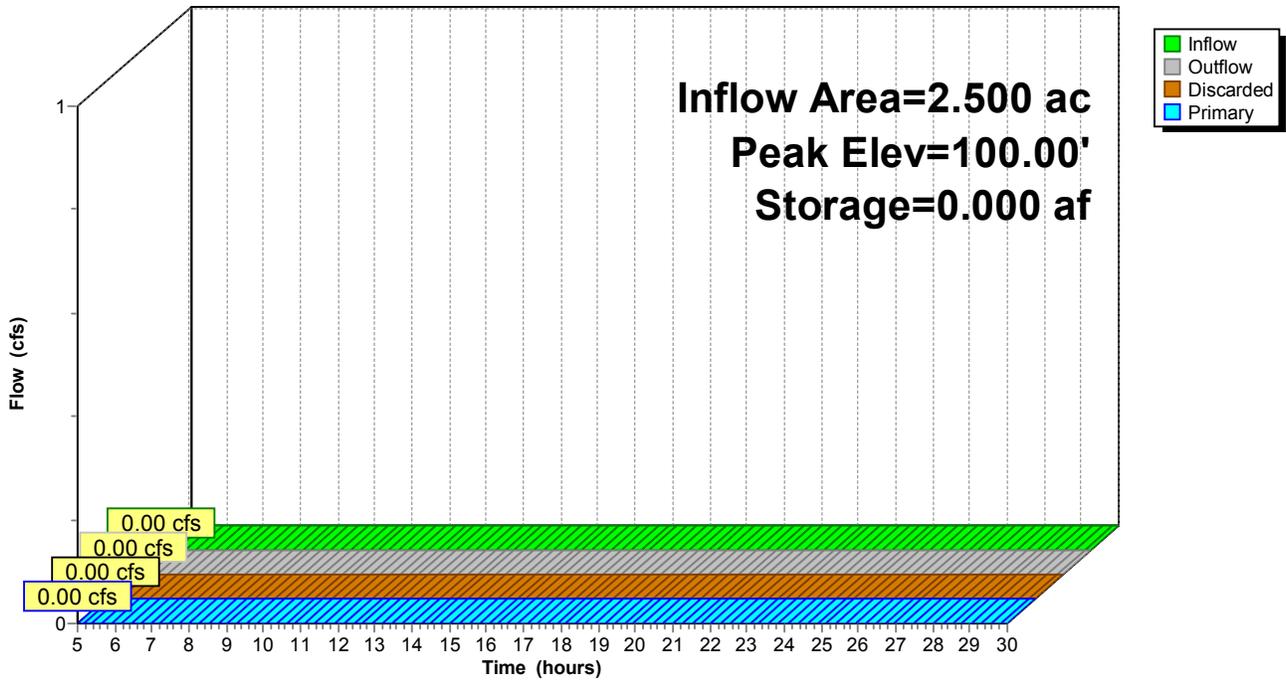
Type III 24-hr 2-Year Rainfall=3.20"

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**Pond 31P:**

Hydrograph



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**Summary for Pond A: Wetland A**

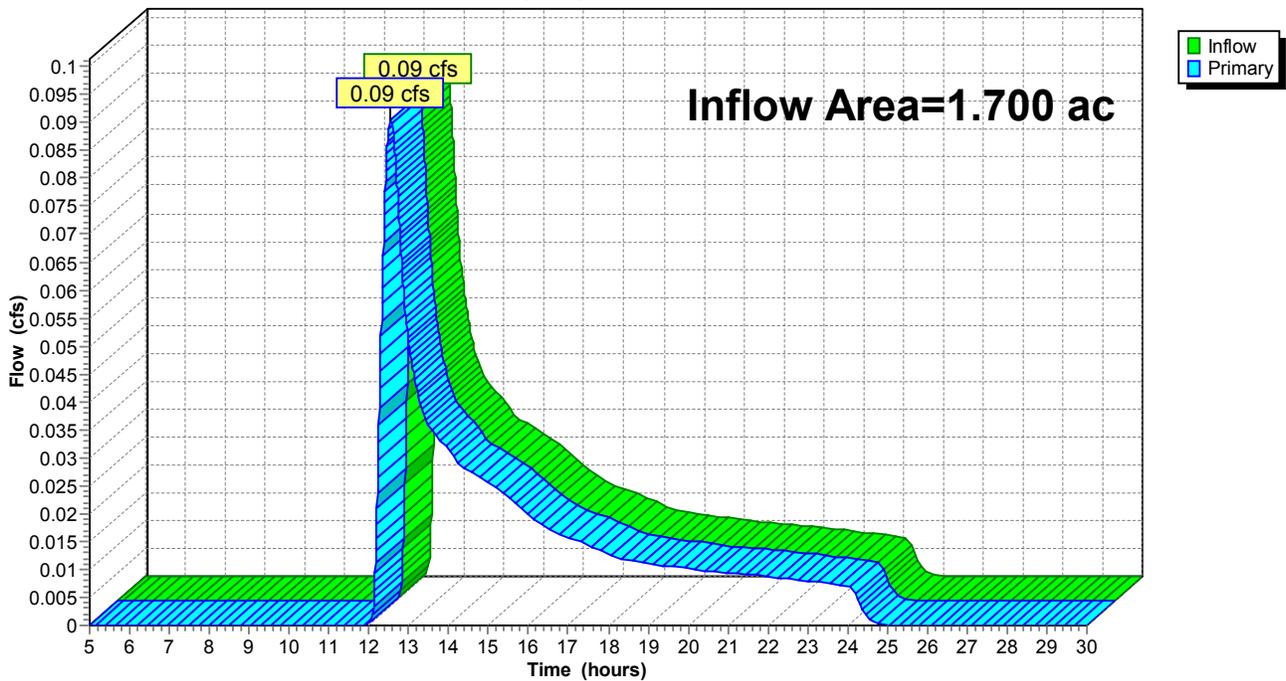
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.700 ac, 4.12% Impervious, Inflow Depth = 0.14" for 2-Year event  
Inflow = 0.09 cfs @ 12.56 hrs, Volume= 0.019 af  
Primary = 0.09 cfs @ 12.56 hrs, Volume= 0.019 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Pond A: Wetland A**

**Hydrograph**



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**Summary for Pond B: Wetland B**

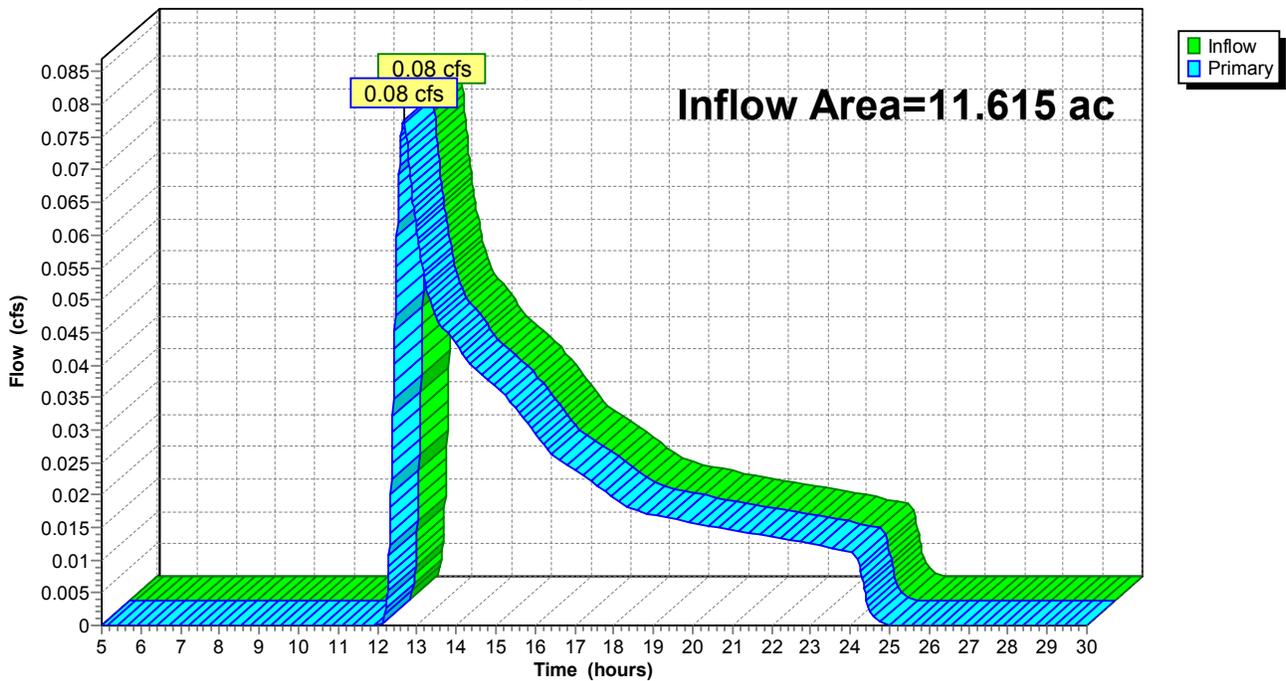
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 11.615 ac, 3.23% Impervious, Inflow Depth = 0.03" for 2-Year event  
Inflow = 0.08 cfs @ 12.65 hrs, Volume= 0.025 af  
Primary = 0.08 cfs @ 12.65 hrs, Volume= 0.025 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Pond B: Wetland B**

**Hydrograph**



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**Summary for Pond C: Wetland C**

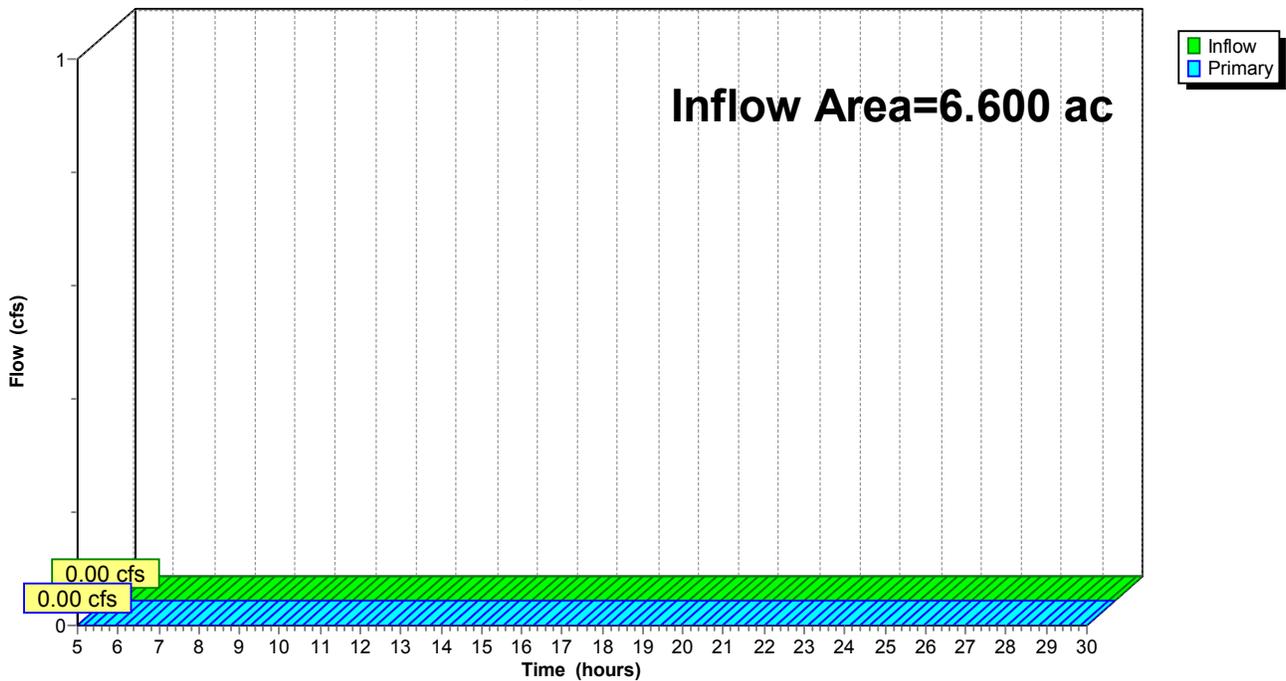
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 6.600 ac, 1.82% Impervious, Inflow Depth = 0.00" for 2-Year event  
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af  
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Pond C: Wetland C**

Hydrograph



**Proposed**

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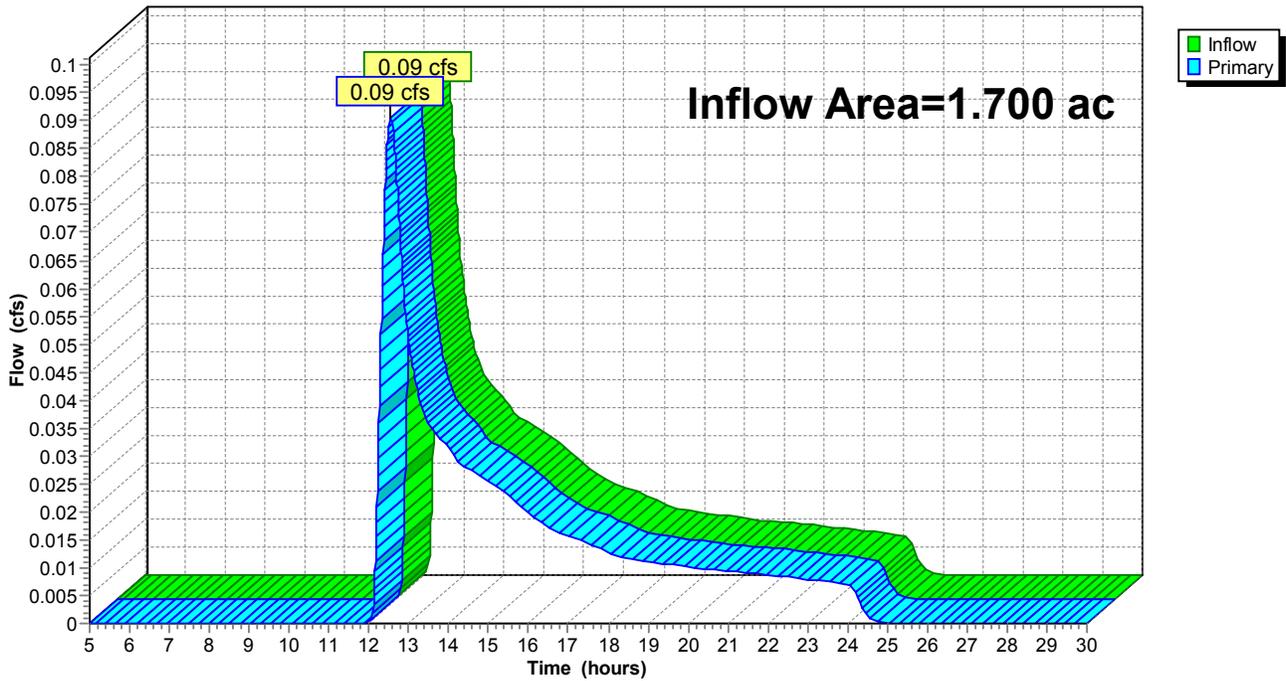
**Summary for Link 1L: Eastern Outfall**

Inflow Area = 1.700 ac, 4.12% Impervious, Inflow Depth = 0.14" for 2-Year event  
Inflow = 0.09 cfs @ 12.56 hrs, Volume= 0.019 af  
Primary = 0.09 cfs @ 12.56 hrs, Volume= 0.019 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Link 1L: Eastern Outfall**

Hydrograph



**Proposed**

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Type III 24-hr 2-Year Rainfall=3.20"

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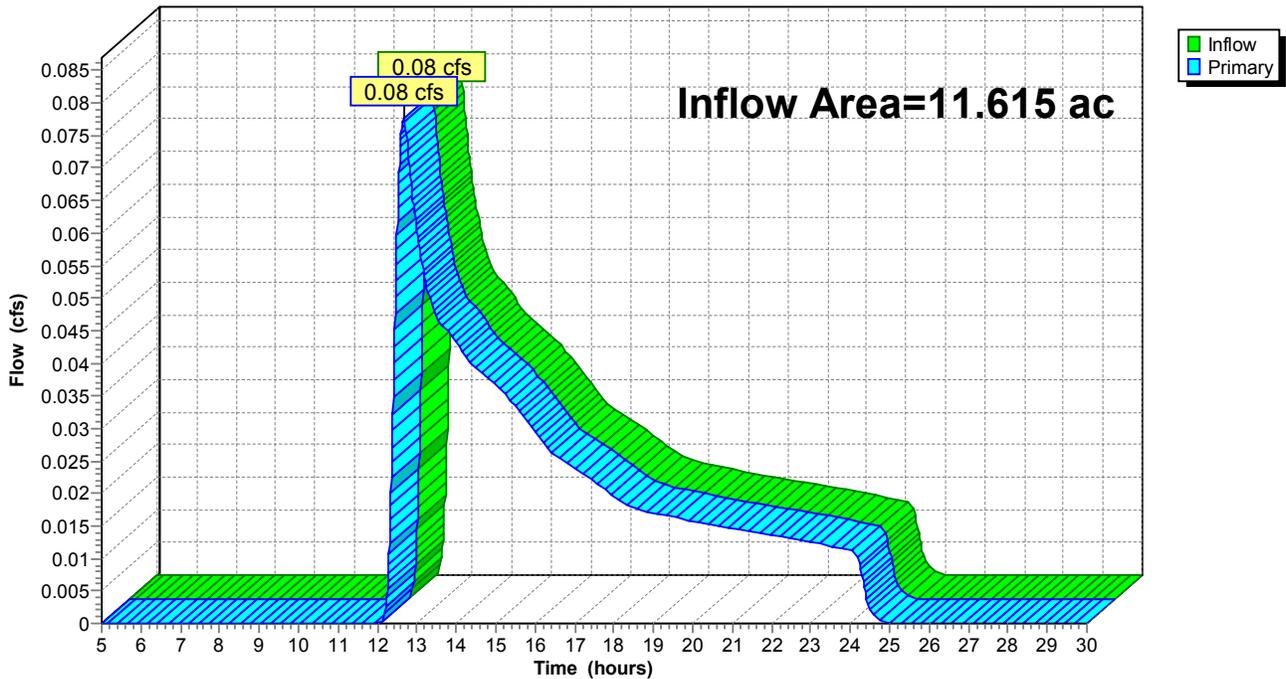
**Summary for Link 2L: Western Outfall**

Inflow Area = 11.615 ac, 3.23% Impervious, Inflow Depth = 0.03" for 2-Year event  
Inflow = 0.08 cfs @ 12.65 hrs, Volume= 0.025 af  
Primary = 0.08 cfs @ 12.65 hrs, Volume= 0.025 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Link 2L: Western Outfall**

Hydrograph



**Proposed**

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Type III 24-hr 10-Year Rainfall=4.80"

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**Summary for Subcatchment 1S:**

Runoff = 0.46 cfs @ 12.40 hrs, Volume= 0.062 af, Depth= 1.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.80"

Area (ac)	CN	Description
0.070	98	Paved parking, HSG B
0.030	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.010	91	Gravel roads, HSG D
0.020	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.040	80	>75% Grass cover, Good, HSG D
0.360	32	Woods/grass comb., Good, HSG A
0.000	58	Woods/grass comb., Good, HSG B
0.220	79	Woods/grass comb., Good, HSG D
0.750	57	Weighted Average
0.680		90.67% Pervious Area
0.070		9.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	100	0.1900	0.11		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
8.3	415	0.1110	0.83		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
23.5	515	Total			

**Proposed**

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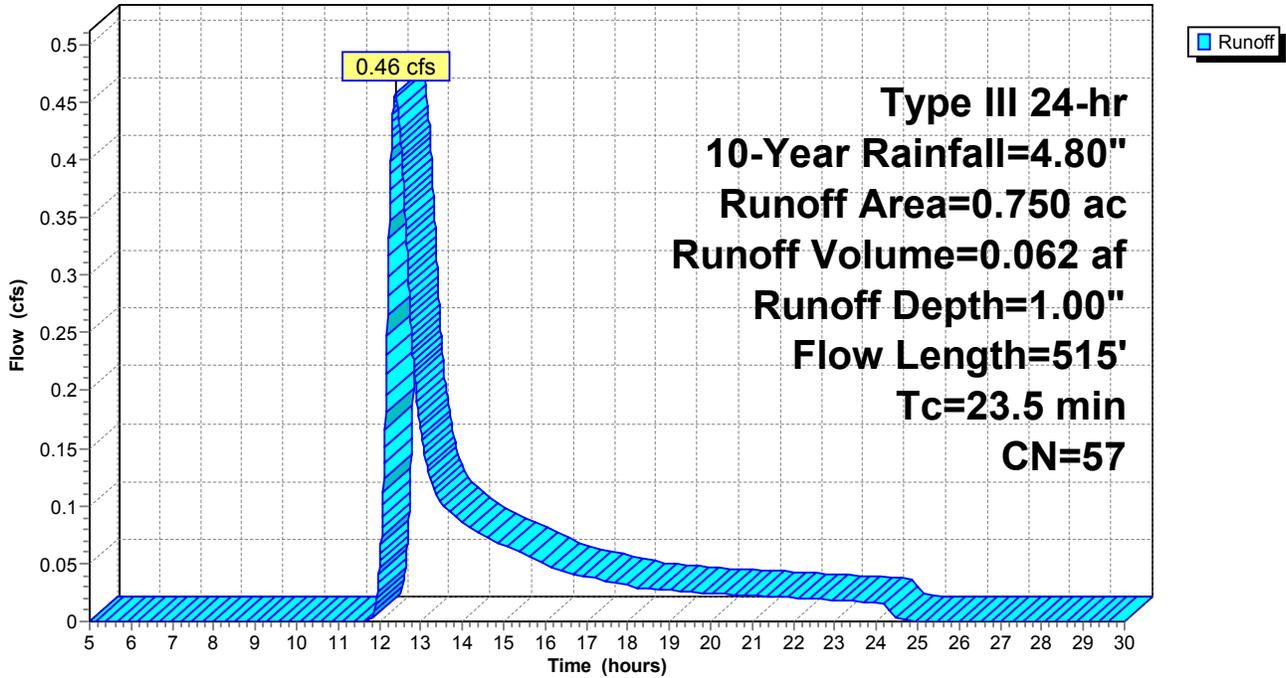
Type III 24-hr 10-Year Rainfall=4.80"

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**Subcatchment 1S:**

Hydrograph



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**Summary for Subcatchment 2S:**

Runoff = 0.62 cfs @ 12.45 hrs, Volume= 0.098 af, Depth= 0.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.80"

Area (ac)	CN	Description
0.250	98	Paved parking, HSG B
0.100	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.010	91	Gravel roads, HSG D
0.090	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.020	80	>75% Grass cover, Good, HSG D
0.780	32	Woods/grass comb., Good, HSG A
0.210	58	Woods/grass comb., Good, HSG B
0.070	79	Woods/grass comb., Good, HSG D
1.530	53	Weighted Average
1.280		83.66% Pervious Area
0.250		16.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0900	0.08		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
2.9	115	0.0700	0.66		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
0.2	60	0.0670	4.17		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
1.2	50	0.0800	0.71		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
24.8	325	Total			

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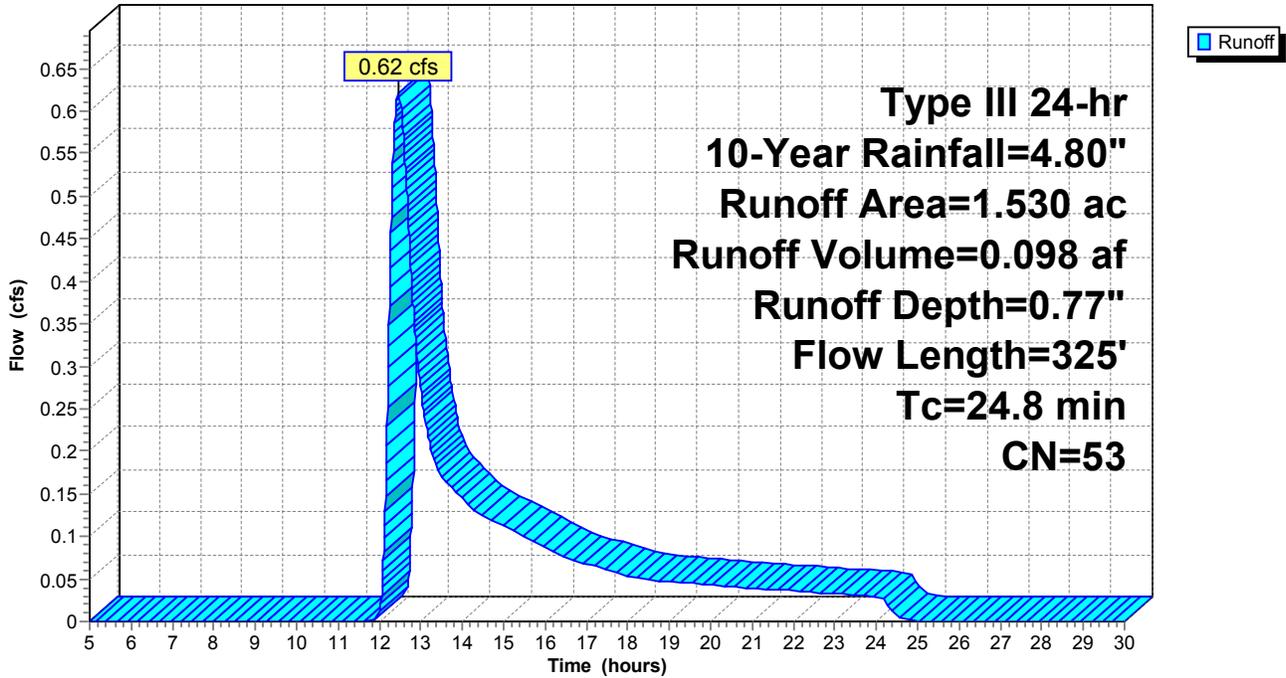
Type III 24-hr 10-Year Rainfall=4.80"

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**Subcatchment 2S:**

Hydrograph



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Type III 24-hr 10-Year Rainfall=4.80"

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**Summary for Subcatchment 3S:**

Runoff = 0.03 cfs @ 16.13 hrs, Volume= 0.020 af, Depth= 0.06"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.80"

Area (ac)	CN	Description
0.120	98	Paved parking, HSG B
0.030	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.000	91	Gravel roads, HSG D
0.060	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.000	80	>75% Grass cover, Good, HSG D
3.750	32	Woods/grass comb., Good, HSG A
0.140	58	Woods/grass comb., Good, HSG B
0.000	79	Woods/grass comb., Good, HSG D
4.100	35	Weighted Average
3.980		97.07% Pervious Area
0.120		2.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.3	100	0.0400	0.06		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
20.9	1,175	0.1400	0.94		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
49.2	1,275	Total			

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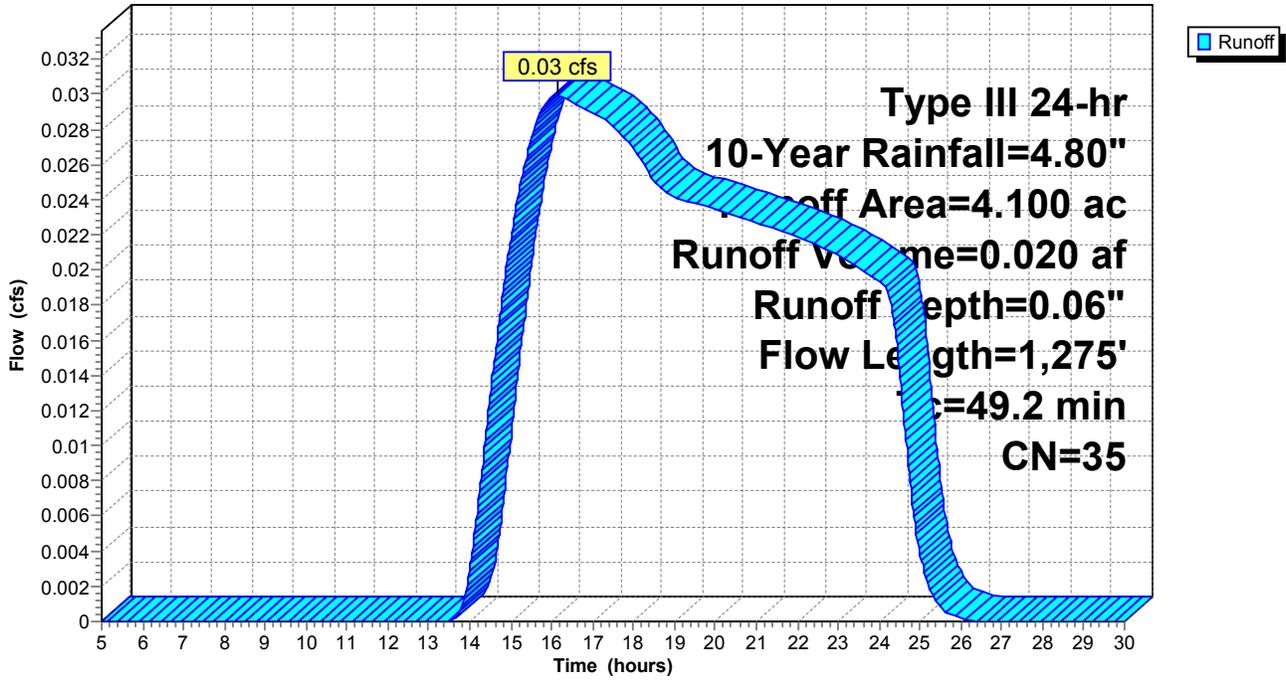
Type III 24-hr 10-Year Rainfall=4.80"

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**Subcatchment 3S:**

Hydrograph



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Type III 24-hr 10-Year Rainfall=4.80"

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**Summary for Subcatchment 10S:**

Runoff = 0.02 cfs @ 14.88 hrs, Volume= 0.010 af, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.80"

Area (ac)	CN	Description
0.000	98	Paved parking, HSG B
0.130	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.000	91	Gravel roads, HSG D
0.030	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.000	80	>75% Grass cover, Good, HSG D
0.790	32	Woods/grass comb., Good, HSG A
0.000	58	Woods/grass comb., Good, HSG B
0.000	79	Woods/grass comb., Good, HSG D
0.950	38	Weighted Average
0.950		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.6	100	0.1000	0.08		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
5.8	345	0.1590	1.00		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
0.4	70	0.0360	3.05		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
25.8	515	Total			

**Proposed**

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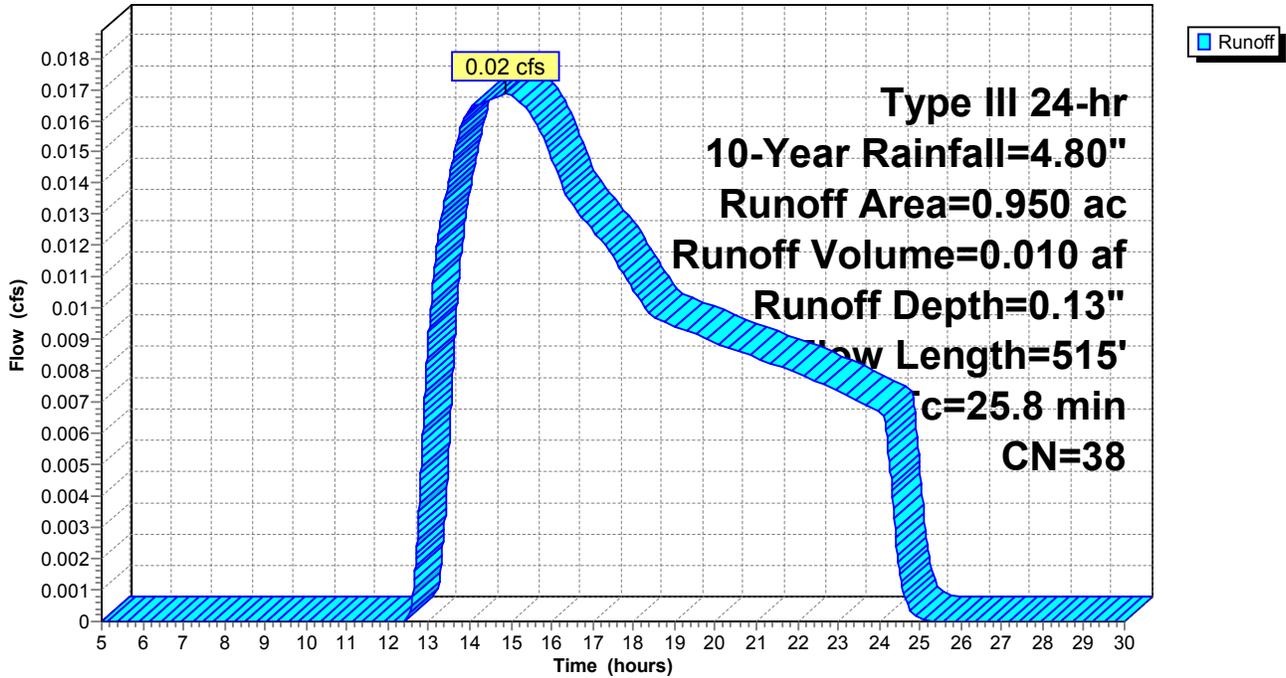
Type III 24-hr 10-Year Rainfall=4.80"

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**Subcatchment 10S:**

Hydrograph



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Type III 24-hr 10-Year Rainfall=4.80"

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**Summary for Subcatchment 21S:**

Runoff = 0.02 cfs @ 14.87 hrs, Volume= 0.013 af, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Type III 24-hr 10-Year Rainfall=4.80"

Area (ac)	CN	Description
0.000	98	Paved parking, HSG B
0.140	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.000	91	Gravel roads, HSG D
0.040	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.000	80	>75% Grass cover, Good, HSG D
0.960	32	Woods/grass comb., Good, HSG A
0.000	58	Woods/grass comb., Good, HSG B
0.000	79	Woods/grass comb., Good, HSG D
1.140	38	Weighted Average
1.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.7	100	0.1500	0.10		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
7.1	395	0.1390	0.93		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
0.4	80	0.0375	3.12		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
24.2	575	Total			

**Proposed**

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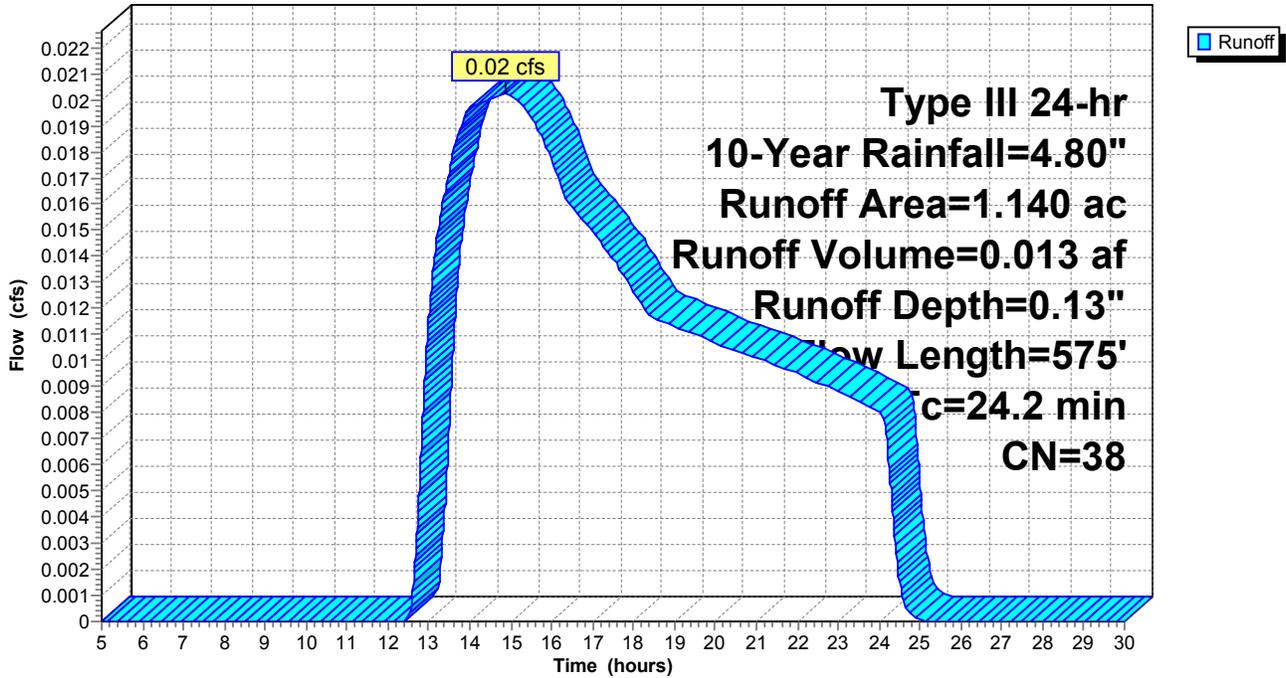
Type III 24-hr 10-Year Rainfall=4.80"

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**Subcatchment 21S:**

Hydrograph



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**Summary for Subcatchment 22S:**

Runoff = 0.06 cfs @ 12.11 hrs, Volume= 0.005 af, Depth= 1.25"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.80"

Area (ac)	CN	Description
0.000	98	Paved parking, HSG B
0.030	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.000	91	Gravel roads, HSG D
0.020	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.000	80	>75% Grass cover, Good, HSG D
0.000	32	Woods/grass comb., Good, HSG A
0.000	58	Woods/grass comb., Good, HSG B
0.000	79	Woods/grass comb., Good, HSG D
0.050	61	Weighted Average
0.050		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	20	0.0750	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
0.6	45	0.0780	1.25		<b>Sheet Flow,</b> n= 0.020 P2= 3.20"
6.7	65	Total			

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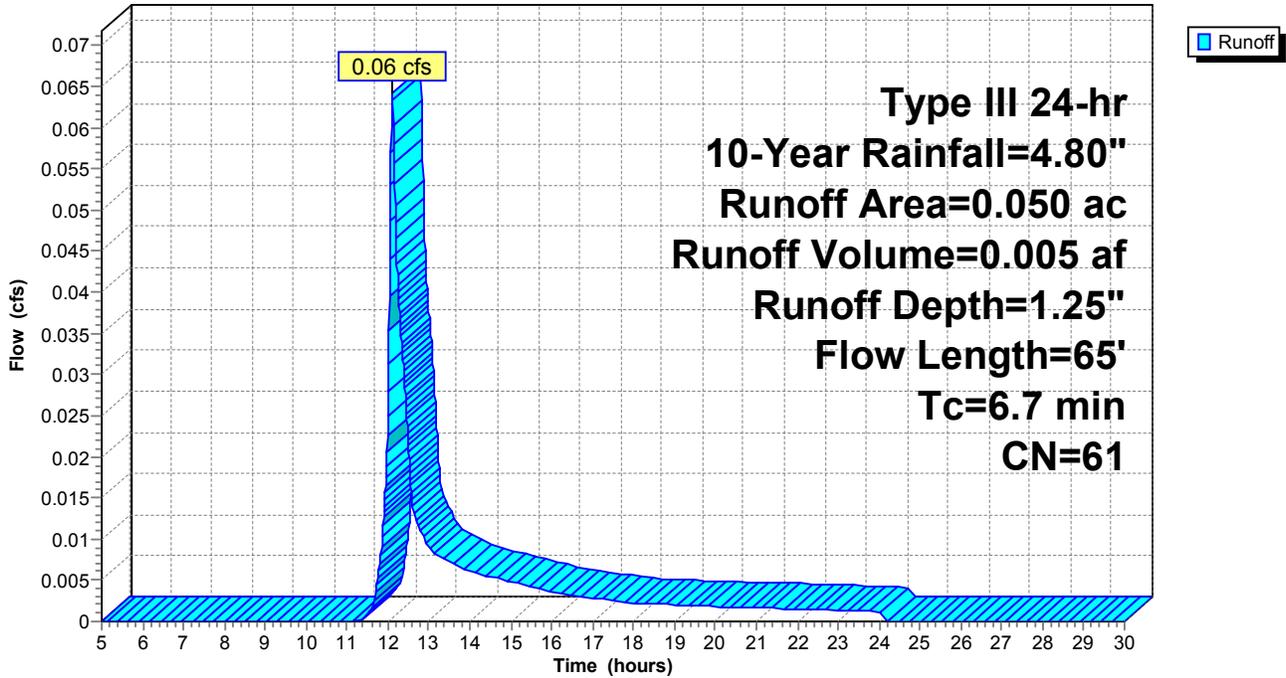
Type III 24-hr 10-Year Rainfall=4.80"

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**Subcatchment 22S:**

**Hydrograph**



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Type III 24-hr 10-Year Rainfall=4.80"

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**Summary for Subcatchment 23S:**

Runoff = 0.02 cfs @ 15.96 hrs, Volume= 0.011 af, Depth= 0.06"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.80"

Area (ac)	CN	Description
0.005	98	Paved parking, HSG B
0.110	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.000	91	Gravel roads, HSG D
0.050	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.000	80	>75% Grass cover, Good, HSG D
1.950	32	Woods/grass comb., Good, HSG A
0.000	58	Woods/grass comb., Good, HSG B
0.000	79	Woods/grass comb., Good, HSG D
2.115	35	Weighted Average
2.110		99.76% Pervious Area
0.005		0.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.7	100	0.0700	0.07		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
14.8	900	0.1640	1.01		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
0.2	65	0.0850	4.69		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
37.7	1,065	Total			

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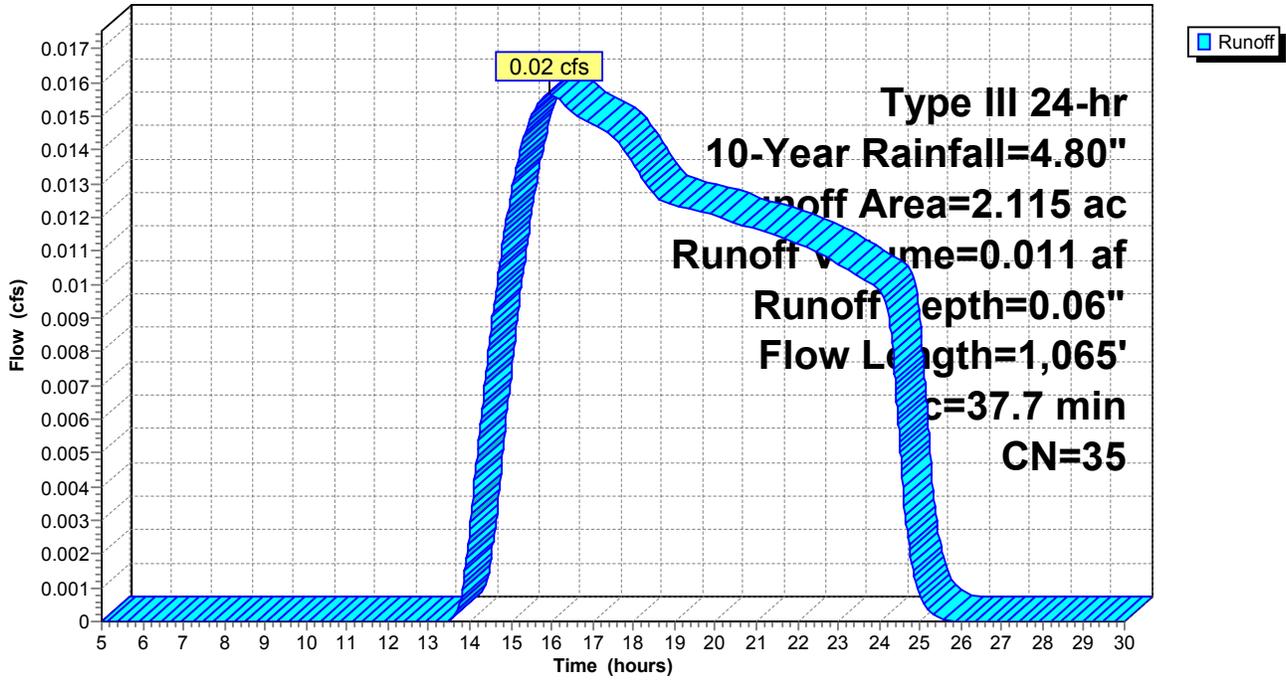
Type III 24-hr 10-Year Rainfall=4.80"

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**Subcatchment 23S:**

Hydrograph



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Type III 24-hr 10-Year Rainfall=4.80"

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**Summary for Subcatchment 24S:**

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.14 cfs @ 12.03 hrs, Volume= 0.012 af, Depth= 0.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Type III 24-hr 10-Year Rainfall=4.80"

Area (ac)	CN	Description
0.000	98	Paved parking, HSG B
0.080	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.000	91	Gravel roads, HSG D
0.040	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.000	80	>75% Grass cover, Good, HSG D
0.060	32	Woods/grass comb., Good, HSG A
0.000	58	Woods/grass comb., Good, HSG B
0.000	79	Woods/grass comb., Good, HSG D
0.180	53	Weighted Average
0.180		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0780	1.47		<b>Sheet Flow,</b> n= 0.020 P2= 3.20"

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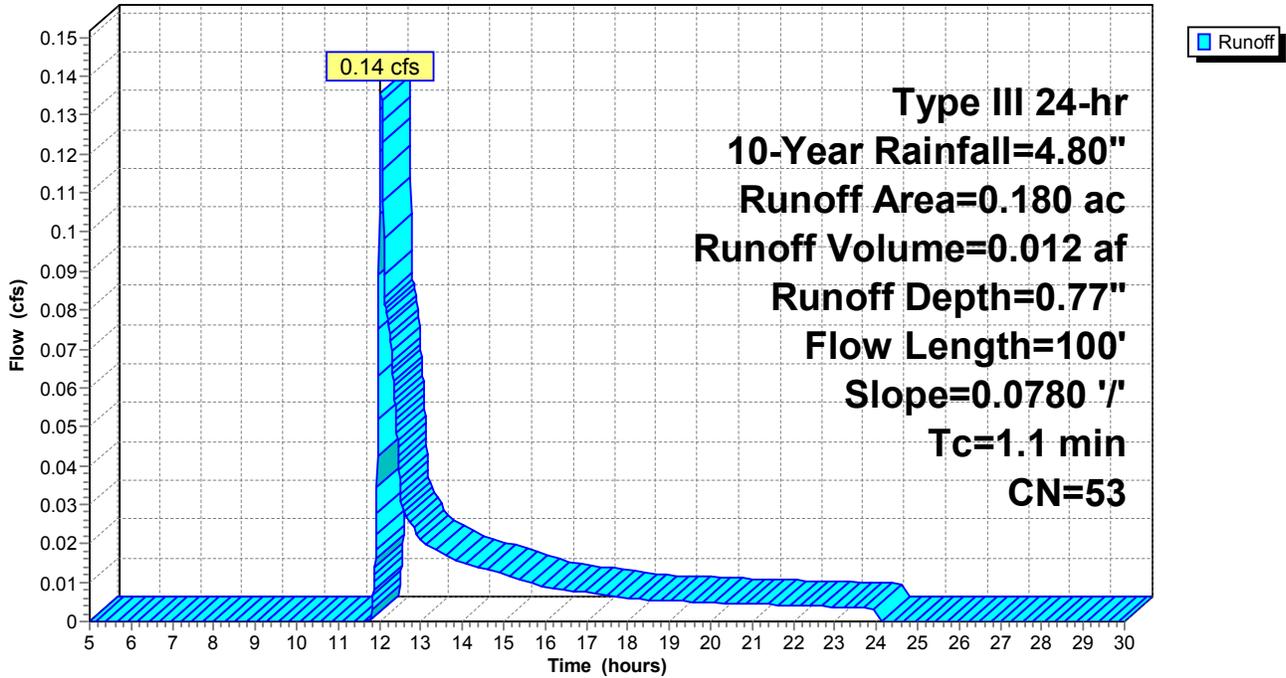
Type III 24-hr 10-Year Rainfall=4.80"

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**Subcatchment 24S:**

**Hydrograph**



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**Summary for Subcatchment 31S:**

Runoff = 0.01 cfs @ 21.50 hrs, Volume= 0.005 af, Depth= 0.03"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=4.80"

Area (ac)	CN	Description
0.000	98	Paved parking, HSG B
0.060	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.000	91	Gravel roads, HSG D
0.050	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.000	80	>75% Grass cover, Good, HSG D
2.390	32	Woods/grass comb., Good, HSG A
0.000	58	Woods/grass comb., Good, HSG B
0.000	79	Woods/grass comb., Good, HSG D
2.500	33	Weighted Average
2.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0900	0.08		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
16.3	940	0.1480	0.96		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
0.2	68	0.1030	5.17		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
37.0	1,108	Total			

**Proposed**

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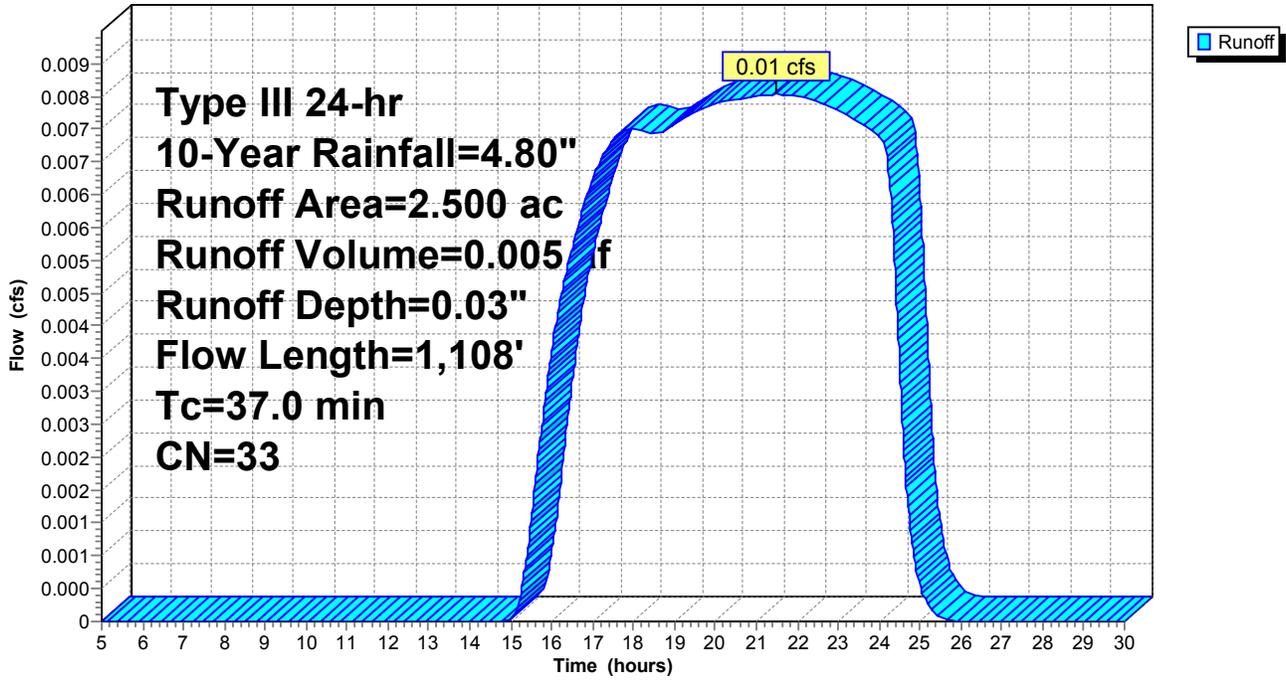
Type III 24-hr 10-Year Rainfall=4.80"

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**Subcatchment 31S:**

Hydrograph



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**Summary for Pond 10P:**

Inflow Area = 0.950 ac, 0.00% Impervious, Inflow Depth = 0.13" for 10-Year event  
 Inflow = 0.02 cfs @ 14.88 hrs, Volume= 0.010 af  
 Outflow = 0.02 cfs @ 14.88 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.02 cfs @ 14.88 hrs, Volume= 0.010 af  
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
 Peak Elev= 100.00' @ 5.00 hrs Surf.Area= 0.003 ac Storage= 0.000 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 0.0 min ( 1,061.8 - 1,061.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	102.00'	0.023 af	<b>2.00'W x 55.00'L x 2.00'H Prismatic Z=3.0</b>
#2	100.00'	0.002 af	<b>2.00'W x 55.00'L x 2.00'H Prismatic</b>
			0.005 af Overall x 40.0% Voids
		0.025 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	103.00'	<b>55.0' long x 1.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.62 2.64 2.64 2.68 2.75 2.86 2.92 3.07 3.07 3.03 3.28 3.32
#2	Discarded	100.00'	<b>15.900 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 93.50'

**Discarded OutFlow** Max=0.00 cfs @ 14.88 hrs HW=100.00' (Free Discharge)  
 ↑2=Exfiltration (Passes 0.00 cfs of 0.04 cfs potential flow)

**Primary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=100.00' TW=0.00' (Dynamic Tailwater)  
 ↑1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

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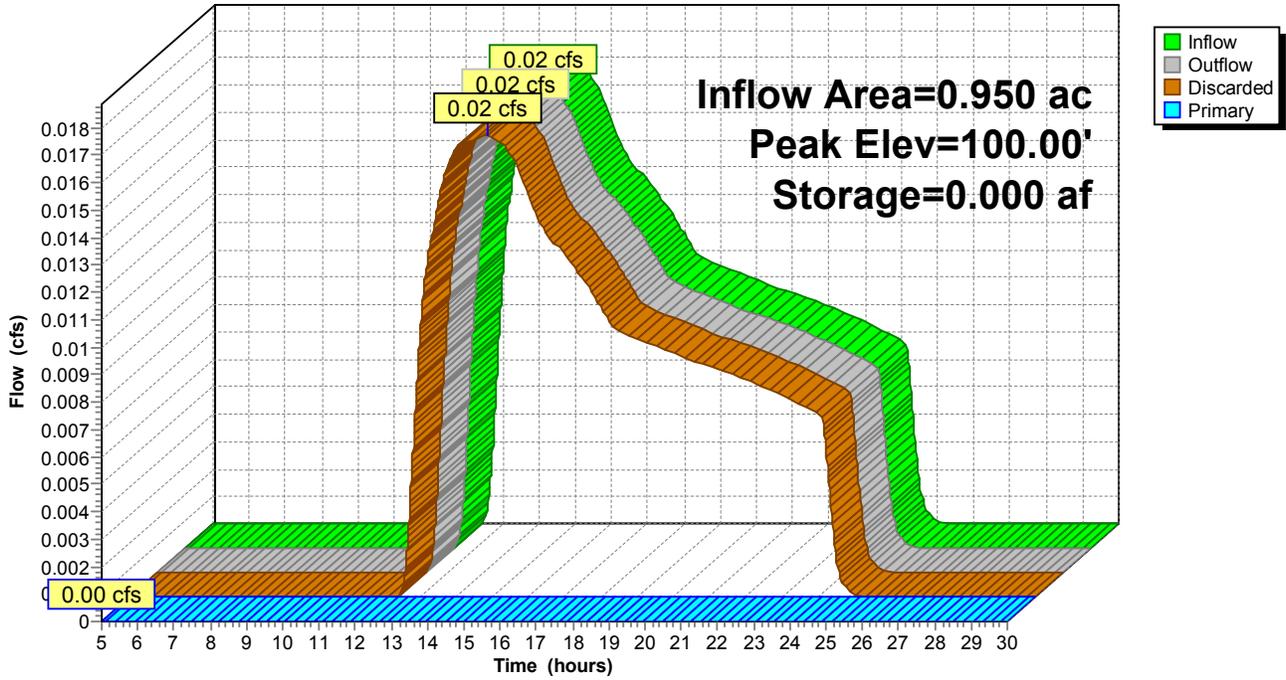
Type III 24-hr 10-Year Rainfall=4.80"

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**Pond 10P:**

Hydrograph



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Type III 24-hr 10-Year Rainfall=4.80"

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**Summary for Pond 21P:**

Inflow Area = 1.140 ac, 0.00% Impervious, Inflow Depth = 0.13" for 10-Year event  
 Inflow = 0.02 cfs @ 14.87 hrs, Volume= 0.013 af  
 Outflow = 0.02 cfs @ 14.87 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.02 cfs @ 14.87 hrs, Volume= 0.013 af  
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
 Peak Elev= 100.00' @ 14.87 hrs Surf.Area= 0.002 ac Storage= 0.000 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 0.0 min ( 1,060.3 - 1,060.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	102.00'	0.019 af	<b>2.00'W x 43.00'L x 2.00'H Prismatic Z=3.0</b>
#2	100.00'	0.002 af	<b>2.00'W x 43.00'L x 2.00'H Prismatic</b>
			0.004 af Overall x 40.0% Voids
		0.020 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	103.00'	<b>43.0' long x 1.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.62 2.64 2.64 2.68 2.75 2.86 2.92 3.07 3.07 3.03 3.28 3.32
#2	Discarded	100.00'	<b>15.900 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 93.50'

**Discarded OutFlow** Max=0.03 cfs @ 14.87 hrs HW=100.00' (Free Discharge)  
 ↑2=Exfiltration ( Controls 0.03 cfs)

**Primary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=100.00' TW=0.00' (Dynamic Tailwater)  
 ↑1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

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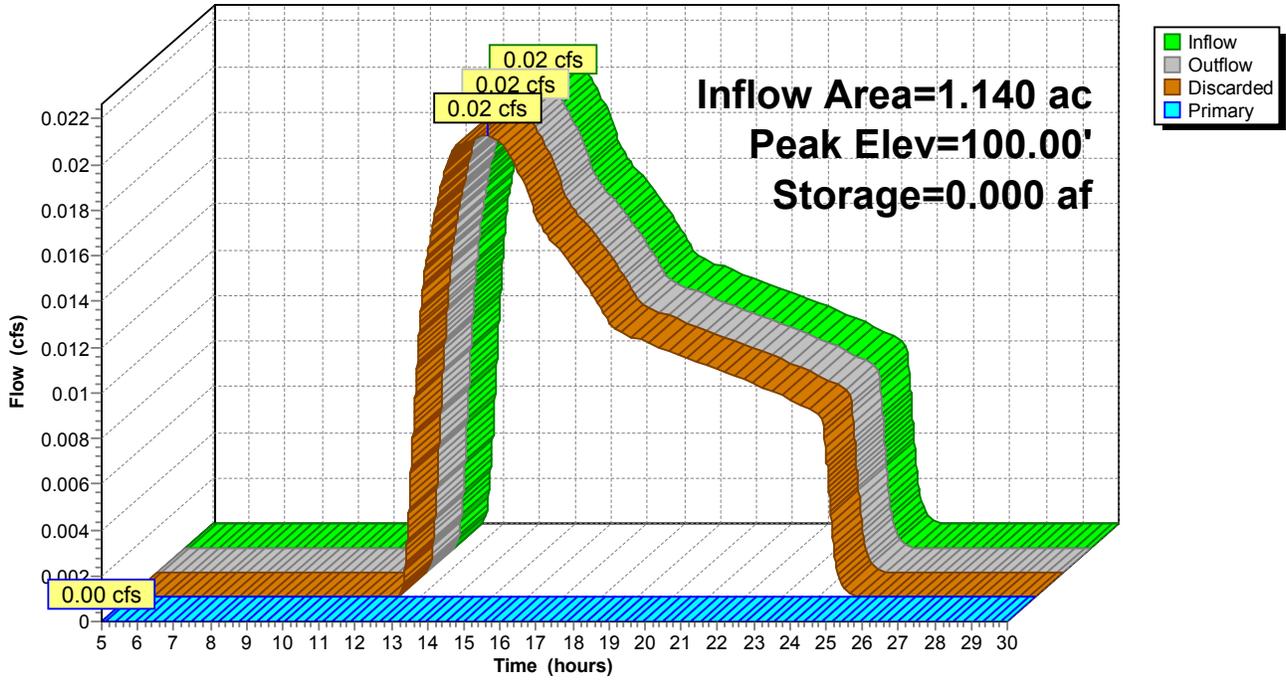
Type III 24-hr 10-Year Rainfall=4.80"

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**Pond 21P:**

Hydrograph



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Type III 24-hr 10-Year Rainfall=4.80"

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**Summary for Pond 22P:**

[87] Warning: Oscillations may require Finer Routing or smaller dt

Inflow Area = 0.050 ac, 0.00% Impervious, Inflow Depth = 1.25" for 10-Year event  
 Inflow = 0.06 cfs @ 12.11 hrs, Volume= 0.005 af  
 Outflow = 0.04 cfs @ 12.30 hrs, Volume= 0.005 af, Atten= 44%, Lag= 11.4 min  
 Discarded = 0.04 cfs @ 12.30 hrs, Volume= 0.005 af  
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
 Peak Elev= 102.00' @ 12.30 hrs Surf.Area= 0.002 ac Storage= 0.001 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 8.8 min ( 884.8 - 876.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	102.00'	0.010 af	<b>2.00'W x 21.00'L x 2.00'H Prismatic Z=3.0</b>
#2	100.00'	0.001 af	<b>2.00'W x 21.00'L x 2.00'H Prismatic</b>
			0.002 af Overall x 40.0% Voids
		0.011 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	103.00'	<b>21.0' long x 1.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.62 2.64 2.64 2.68 2.75 2.86 2.92 3.07 3.07 3.03 3.28 3.32
#2	Discarded	100.00'	<b>15.900 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 93.50'

**Discarded OutFlow** Max=0.04 cfs @ 12.30 hrs HW=102.00' (Free Discharge)  
 ↑2=Exfiltration ( Controls 0.04 cfs)

**Primary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=100.00' TW=0.00' (Dynamic Tailwater)  
 ↑1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Proposed**

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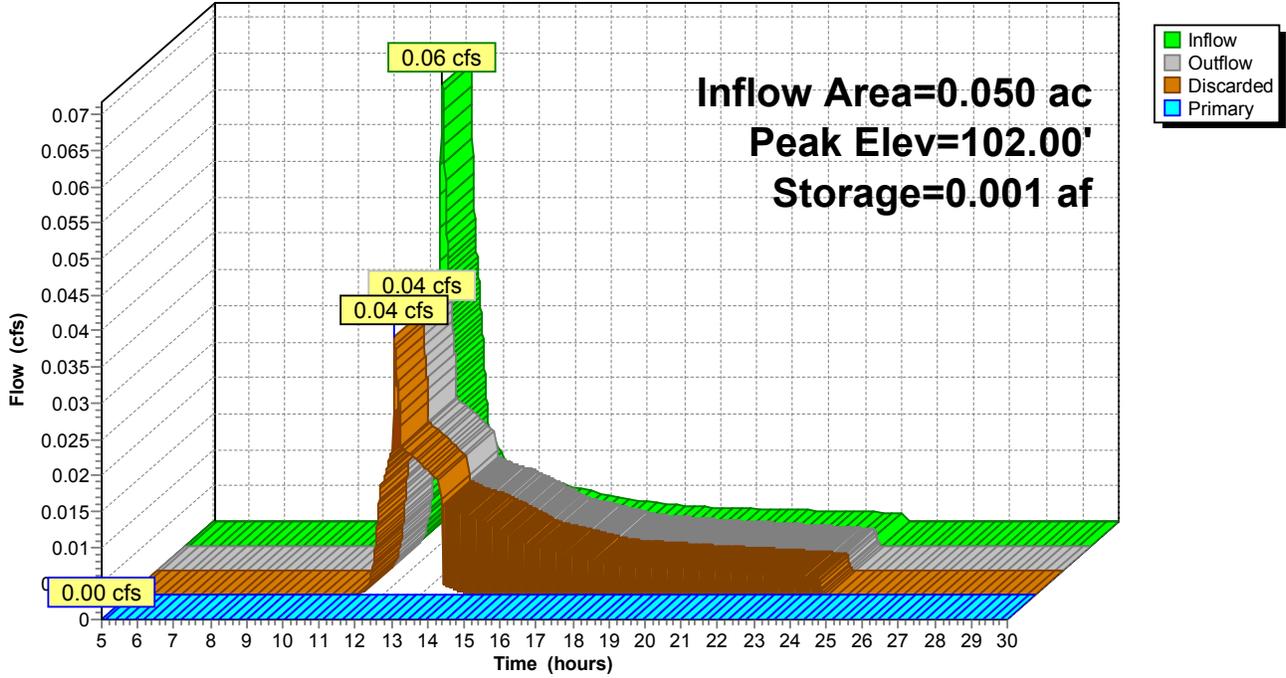
Type III 24-hr 10-Year Rainfall=4.80"

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**Pond 22P:**

Hydrograph



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**Summary for Pond 23P:**

Inflow Area = 2.115 ac, 0.24% Impervious, Inflow Depth = 0.06" for 10-Year event  
 Inflow = 0.02 cfs @ 15.96 hrs, Volume= 0.011 af  
 Outflow = 0.02 cfs @ 15.96 hrs, Volume= 0.011 af, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.02 cfs @ 15.96 hrs, Volume= 0.011 af  
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
 Peak Elev= 100.00' @ 5.00 hrs Surf.Area= 0.003 ac Storage= 0.000 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	102.00'	0.025 af	<b>2.00'W x 60.00'L x 2.00'H Prismatic Z=3.0</b>
#2	100.00'	0.002 af	<b>2.00'W x 60.00'L x 2.00'H Prismatic</b>
			0.006 af Overall x 40.0% Voids
		0.027 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	103.00'	<b>60.0' long x 1.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.62 2.64 2.64 2.68 2.75 2.86 2.92 3.07 3.07 3.03 3.28 3.32
#2	Discarded	100.00'	<b>15.900 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 93.50'

**Discarded OutFlow** Max=0.00 cfs @ 15.96 hrs HW=100.00' (Free Discharge)  
 ↑2=Exfiltration (Passes 0.00 cfs of 0.04 cfs potential flow)

**Primary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=100.00' TW=0.00' (Dynamic Tailwater)  
 ↑1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Proposed**

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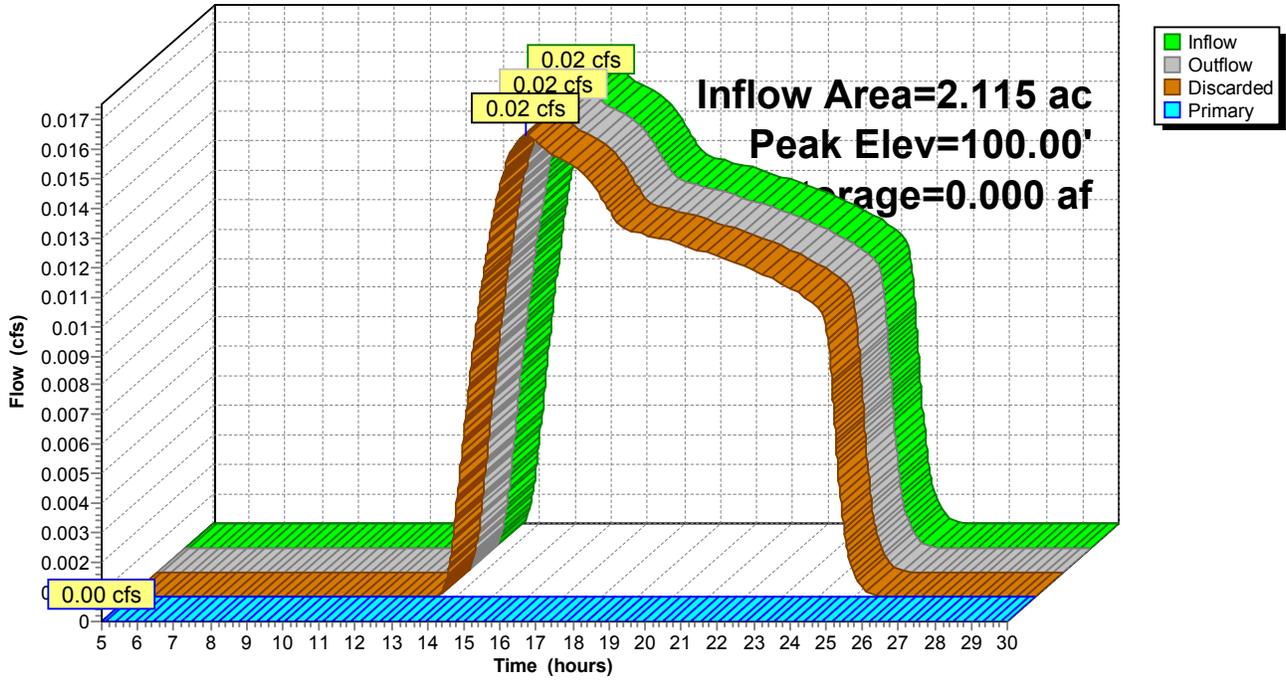
Type III 24-hr 10-Year Rainfall=4.80"

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**Pond 23P:**

Hydrograph



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**Summary for Pond 24P:**

[87] Warning: Oscillations may require Finer Routing or smaller dt

Inflow Area = 0.180 ac, 0.00% Impervious, Inflow Depth = 0.77" for 10-Year event  
 Inflow = 0.14 cfs @ 12.03 hrs, Volume= 0.012 af  
 Outflow = 0.06 cfs @ 12.36 hrs, Volume= 0.012 af, Atten= 57%, Lag= 19.8 min  
 Discarded = 0.06 cfs @ 12.36 hrs, Volume= 0.012 af  
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
 Peak Elev= 100.80' @ 12.36 hrs Surf.Area= 0.003 ac Storage= 0.001 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 3.1 min ( 903.9 - 900.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	102.00'	0.028 af	<b>2.00'W x 70.00'L x 2.00'H Prismatic Z=3.0</b>
#2	100.00'	0.003 af	<b>2.00'W x 70.00'L x 2.00'H Prismatic</b>
			0.006 af Overall x 40.0% Voids
		0.031 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	103.00'	<b>70.0' long x 1.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.62 2.64 2.64 2.68 2.75 2.86 2.92 3.07 3.07 3.03 3.28 3.32
#2	Discarded	100.00'	<b>15.900 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 93.50'

**Discarded OutFlow** Max=0.06 cfs @ 12.36 hrs HW=100.80' (Free Discharge)  
 ↑2=Exfiltration ( Controls 0.06 cfs)

**Primary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=100.00' TW=0.00' (Dynamic Tailwater)  
 ↑1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Proposed**

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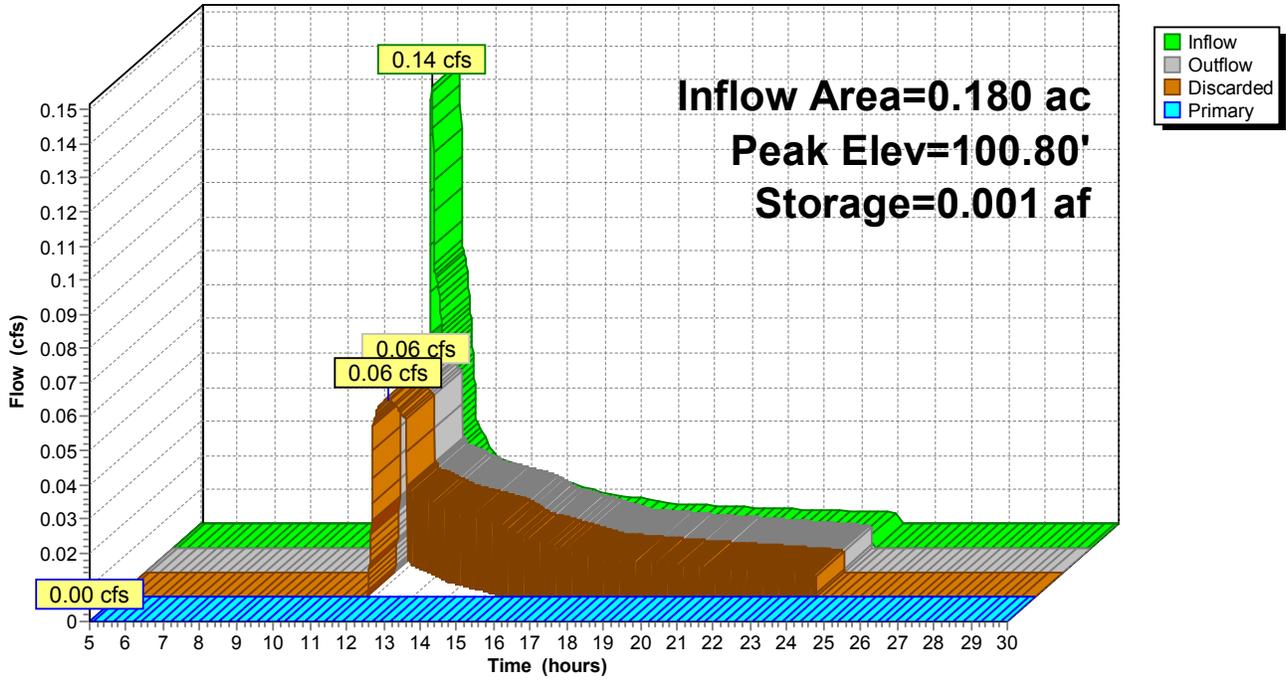
Type III 24-hr 10-Year Rainfall=4.80"

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**Pond 24P:**

Hydrograph



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**Summary for Pond 31P:**

Inflow Area = 2.500 ac, 0.00% Impervious, Inflow Depth = 0.03" for 10-Year event  
 Inflow = 0.01 cfs @ 21.50 hrs, Volume= 0.005 af  
 Outflow = 0.01 cfs @ 21.50 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.01 cfs @ 21.50 hrs, Volume= 0.005 af  
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
 Peak Elev= 100.00' @ 5.00 hrs Surf.Area= 0.021 ac Storage= 0.000 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 0.0 min ( 1,218.8 - 1,218.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	102.00'	0.066 af	<b>13.00'W x 69.00'L x 2.00'H Prismatic Z=3.0</b>
#2	100.00'	0.016 af	<b>13.00'W x 69.00'L x 2.00'H Prismatic</b>
			0.041 af Overall x 40.0% Voids
		0.082 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	103.00'	<b>69.0' long x 1.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.62 2.64 2.64 2.68 2.75 2.86 2.92 3.07 3.07 3.03 3.28 3.32
#2	Discarded	100.00'	<b>15.900 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 93.50'

**Discarded OutFlow** Max=0.00 cfs @ 21.50 hrs HW=100.00' (Free Discharge)  
 ↑2=Exfiltration (Passes 0.00 cfs of 0.33 cfs potential flow)

**Primary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=100.00' TW=0.00' (Dynamic Tailwater)  
 ↑1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Proposed**

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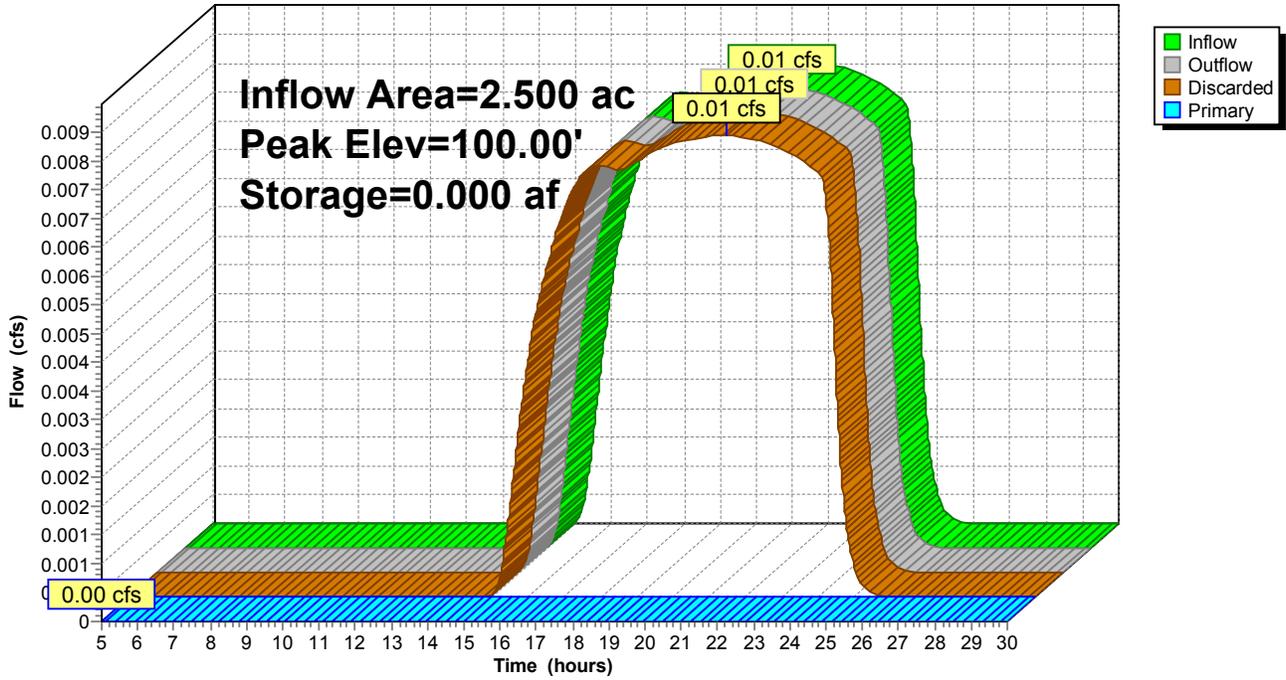
Type III 24-hr 10-Year Rainfall=4.80"

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**Pond 31P:**

Hydrograph



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**Summary for Pond A: Wetland A**

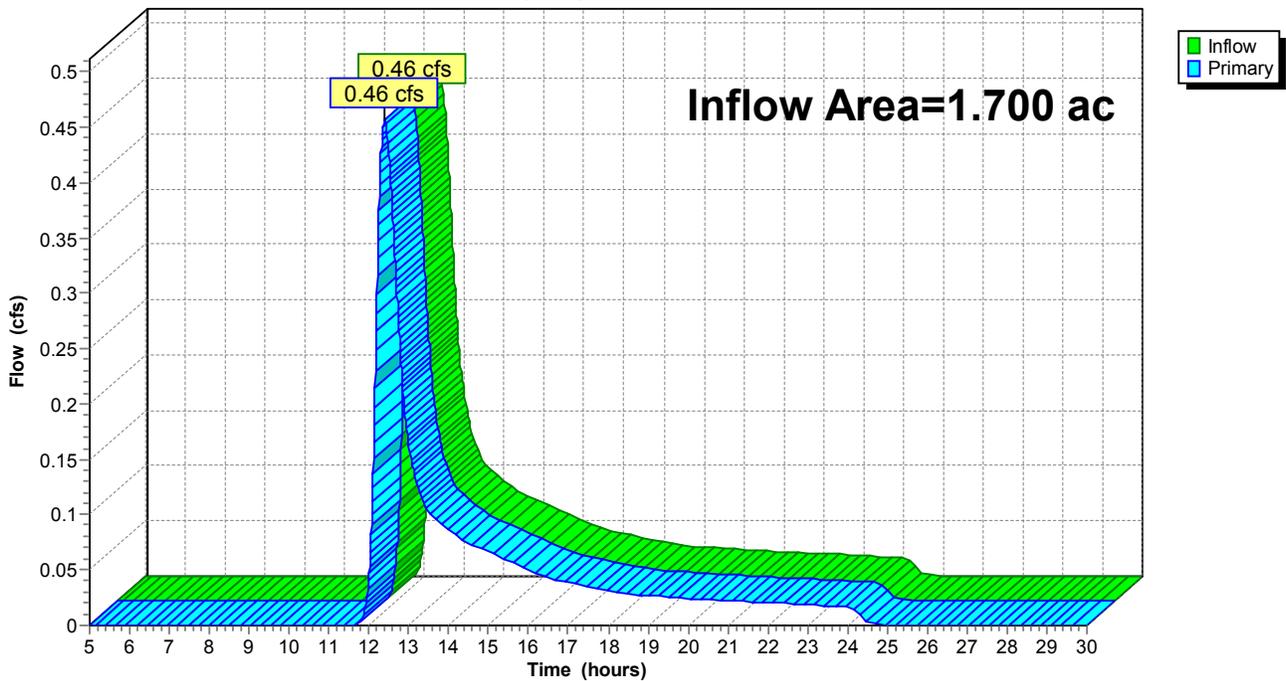
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.700 ac, 4.12% Impervious, Inflow Depth = 0.44" for 10-Year event  
Inflow = 0.46 cfs @ 12.40 hrs, Volume= 0.062 af  
Primary = 0.46 cfs @ 12.40 hrs, Volume= 0.062 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Pond A: Wetland A**

**Hydrograph**



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**Summary for Pond B: Wetland B**

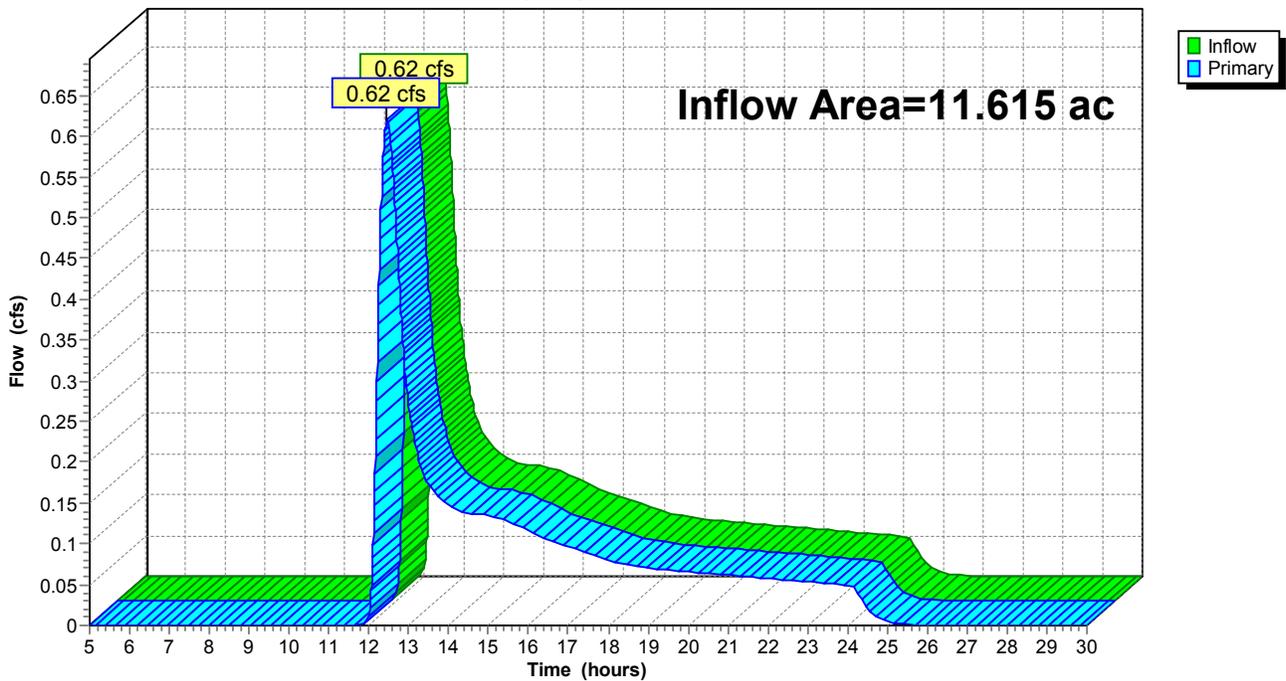
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 11.615 ac, 3.23% Impervious, Inflow Depth = 0.12" for 10-Year event  
Inflow = 0.62 cfs @ 12.45 hrs, Volume= 0.119 af  
Primary = 0.62 cfs @ 12.45 hrs, Volume= 0.119 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Pond B: Wetland B**

**Hydrograph**



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**Summary for Pond C: Wetland C**

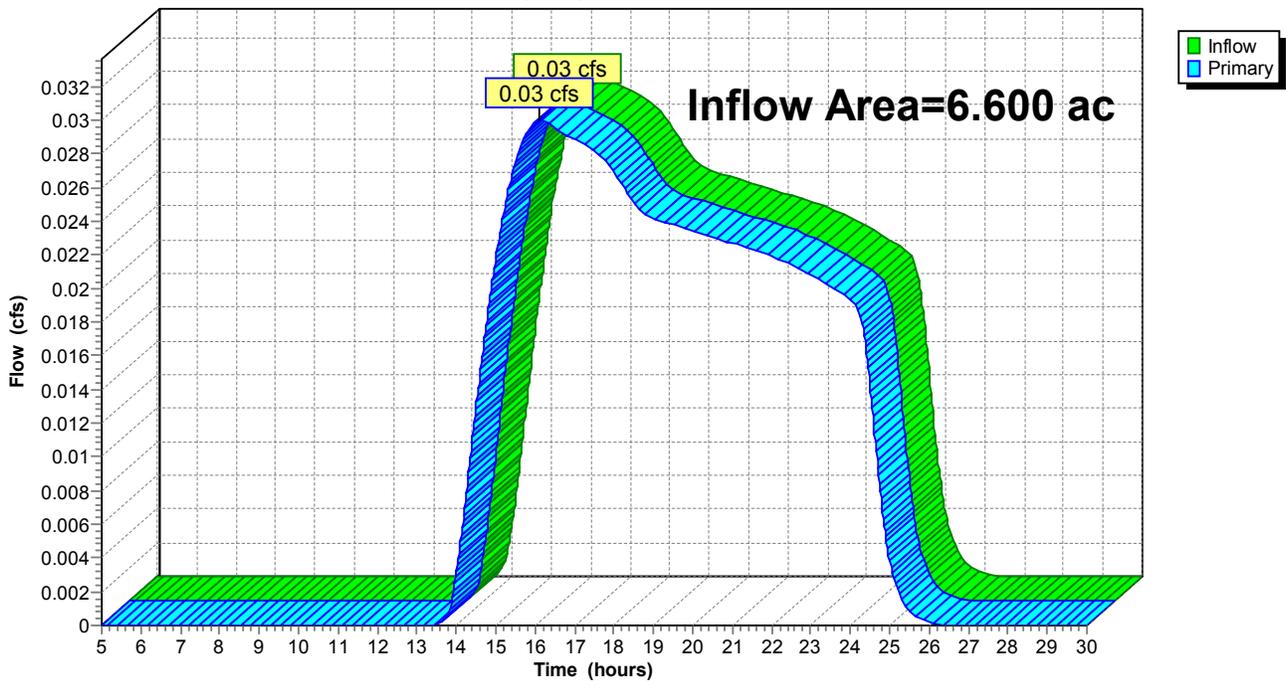
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 6.600 ac, 1.82% Impervious, Inflow Depth = 0.04" for 10-Year event  
Inflow = 0.03 cfs @ 16.13 hrs, Volume= 0.020 af  
Primary = 0.03 cfs @ 16.13 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Pond C: Wetland C**

Hydrograph



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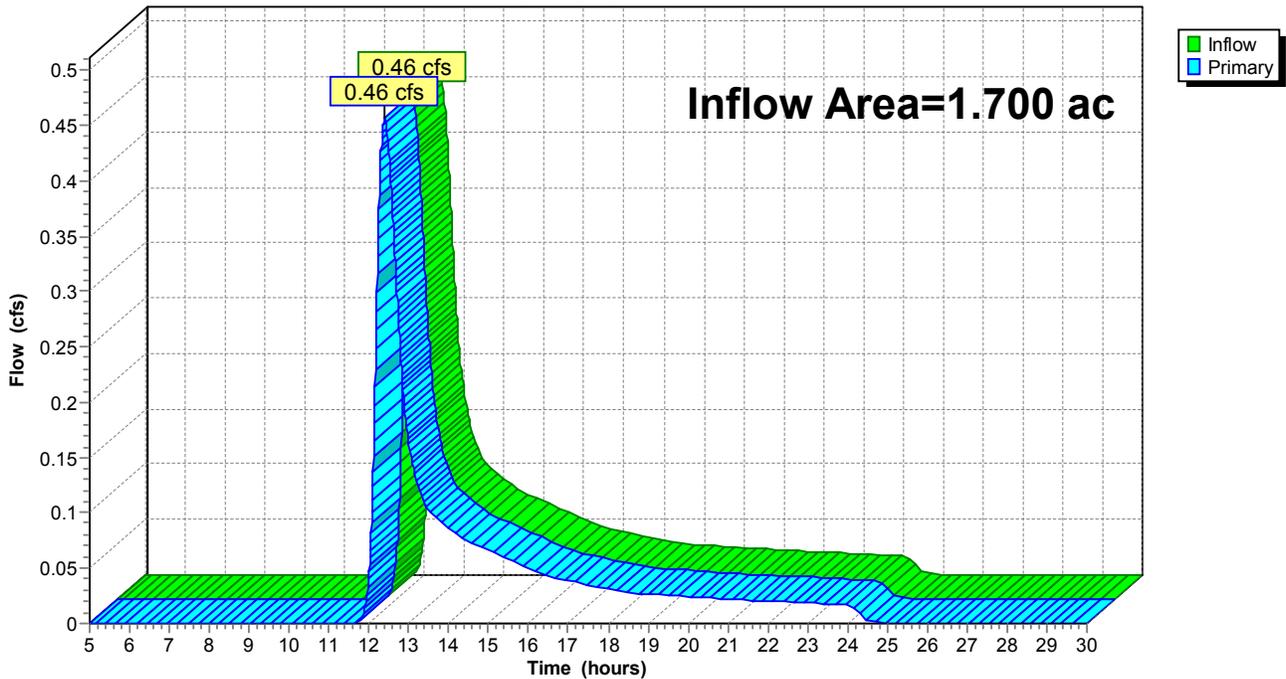
**Summary for Link 1L: Eastern Outfall**

Inflow Area = 1.700 ac, 4.12% Impervious, Inflow Depth = 0.44" for 10-Year event  
Inflow = 0.46 cfs @ 12.40 hrs, Volume= 0.062 af  
Primary = 0.46 cfs @ 12.40 hrs, Volume= 0.062 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Link 1L: Eastern Outfall**

Hydrograph



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Type III 24-hr 10-Year Rainfall=4.80"

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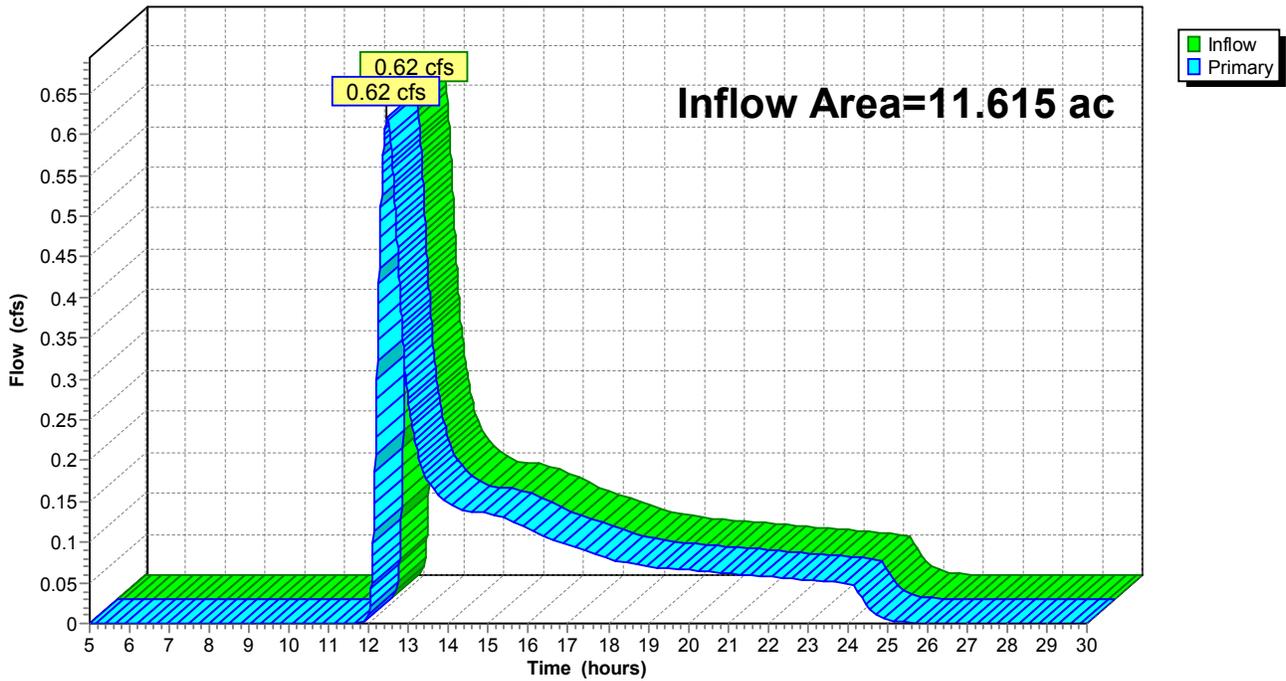
**Summary for Link 2L: Western Outfall**

Inflow Area = 11.615 ac, 3.23% Impervious, Inflow Depth = 0.12" for 10-Year event  
Inflow = 0.62 cfs @ 12.45 hrs, Volume= 0.119 af  
Primary = 0.62 cfs @ 12.45 hrs, Volume= 0.119 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Link 2L: Western Outfall**

Hydrograph



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Type III 24-hr 25-Year Rainfall=5.50"

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**Summary for Subcatchment 1S:**

Runoff = 0.67 cfs @ 12.37 hrs, Volume= 0.086 af, Depth= 1.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.50"

Area (ac)	CN	Description
0.070	98	Paved parking, HSG B
0.030	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.010	91	Gravel roads, HSG D
0.020	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.040	80	>75% Grass cover, Good, HSG D
0.360	32	Woods/grass comb., Good, HSG A
0.000	58	Woods/grass comb., Good, HSG B
0.220	79	Woods/grass comb., Good, HSG D
0.750	57	Weighted Average
0.680		90.67% Pervious Area
0.070		9.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	100	0.1900	0.11		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
8.3	415	0.1110	0.83		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
23.5	515	Total			

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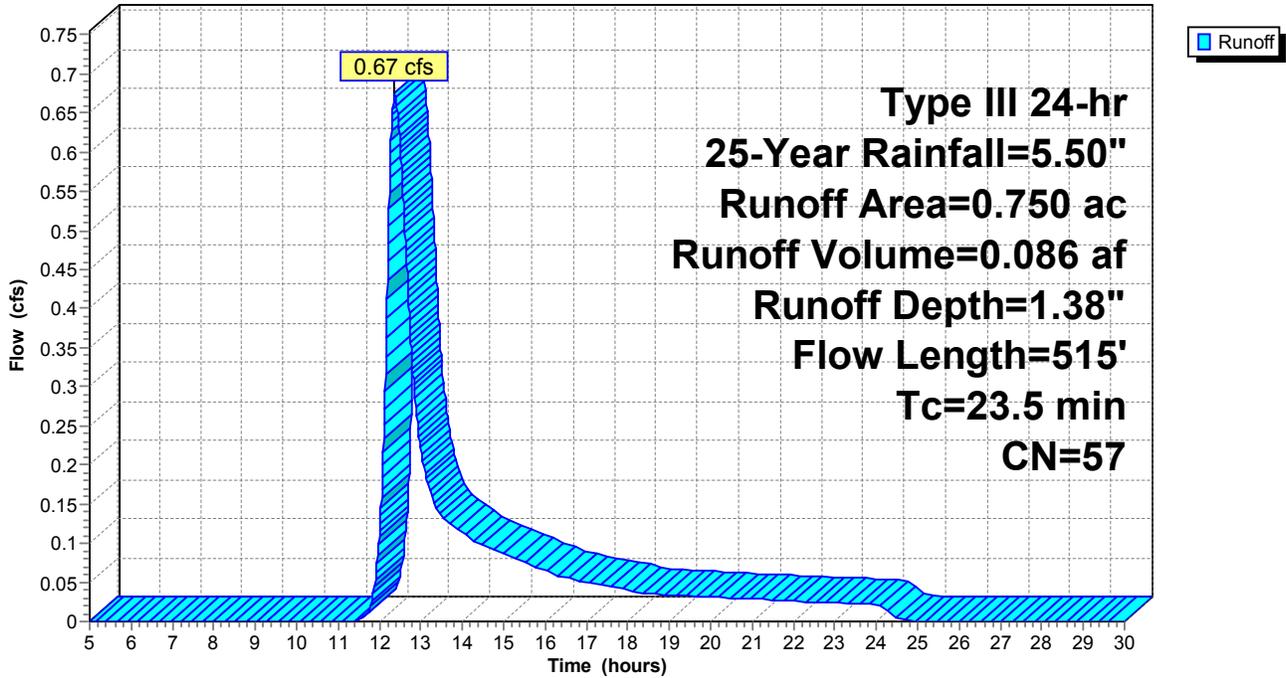
Type III 24-hr 25-Year Rainfall=5.50"

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**Subcatchment 1S:**

Hydrograph



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**Summary for Subcatchment 2S:**

Runoff = 0.99 cfs @ 12.42 hrs, Volume= 0.141 af, Depth= 1.10"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.50"

Area (ac)	CN	Description
0.250	98	Paved parking, HSG B
0.100	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.010	91	Gravel roads, HSG D
0.090	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.020	80	>75% Grass cover, Good, HSG D
0.780	32	Woods/grass comb., Good, HSG A
0.210	58	Woods/grass comb., Good, HSG B
0.070	79	Woods/grass comb., Good, HSG D
1.530	53	Weighted Average
1.280		83.66% Pervious Area
0.250		16.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0900	0.08		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
2.9	115	0.0700	0.66		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
0.2	60	0.0670	4.17		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
1.2	50	0.0800	0.71		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
24.8	325	Total			

**Proposed**

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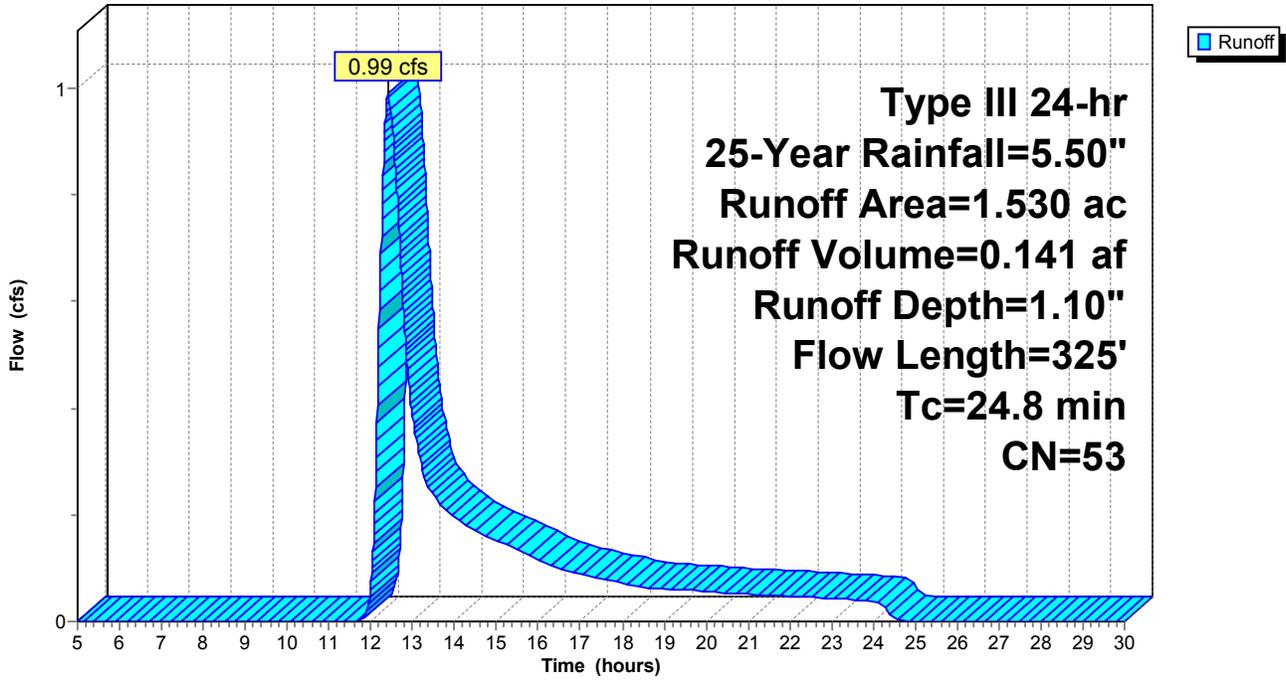
Type III 24-hr 25-Year Rainfall=5.50"

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**Subcatchment 2S:**

Hydrograph



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Type III 24-hr 25-Year Rainfall=5.50"

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**Summary for Subcatchment 3S:**

Runoff = 0.09 cfs @ 15.14 hrs, Volume= 0.054 af, Depth= 0.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.50"

Area (ac)	CN	Description
0.120	98	Paved parking, HSG B
0.030	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.000	91	Gravel roads, HSG D
0.060	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.000	80	>75% Grass cover, Good, HSG D
3.750	32	Woods/grass comb., Good, HSG A
0.140	58	Woods/grass comb., Good, HSG B
0.000	79	Woods/grass comb., Good, HSG D
4.100	35	Weighted Average
3.980		97.07% Pervious Area
0.120		2.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.3	100	0.0400	0.06		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
20.9	1,175	0.1400	0.94		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
49.2	1,275	Total			

**Proposed**

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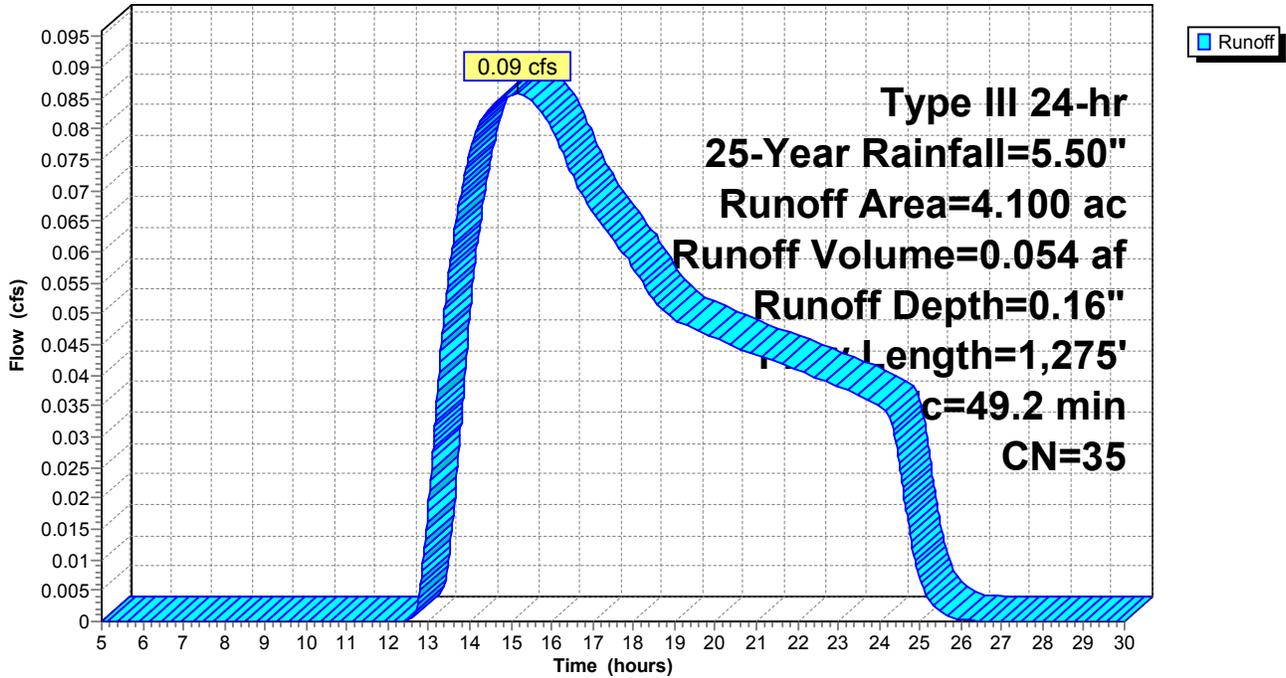
Type III 24-hr 25-Year Rainfall=5.50"

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**Subcatchment 3S:**

Hydrograph



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**Summary for Subcatchment 10S:**

Runoff = 0.05 cfs @ 12.76 hrs, Volume= 0.021 af, Depth= 0.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Type III 24-hr 25-Year Rainfall=5.50"

Area (ac)	CN	Description
0.000	98	Paved parking, HSG B
0.130	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.000	91	Gravel roads, HSG D
0.030	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.000	80	>75% Grass cover, Good, HSG D
0.790	32	Woods/grass comb., Good, HSG A
0.000	58	Woods/grass comb., Good, HSG B
0.000	79	Woods/grass comb., Good, HSG D
0.950	38	Weighted Average
0.950		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.6	100	0.1000	0.08		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
5.8	345	0.1590	1.00		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
0.4	70	0.0360	3.05		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
25.8	515	Total			

**Proposed**

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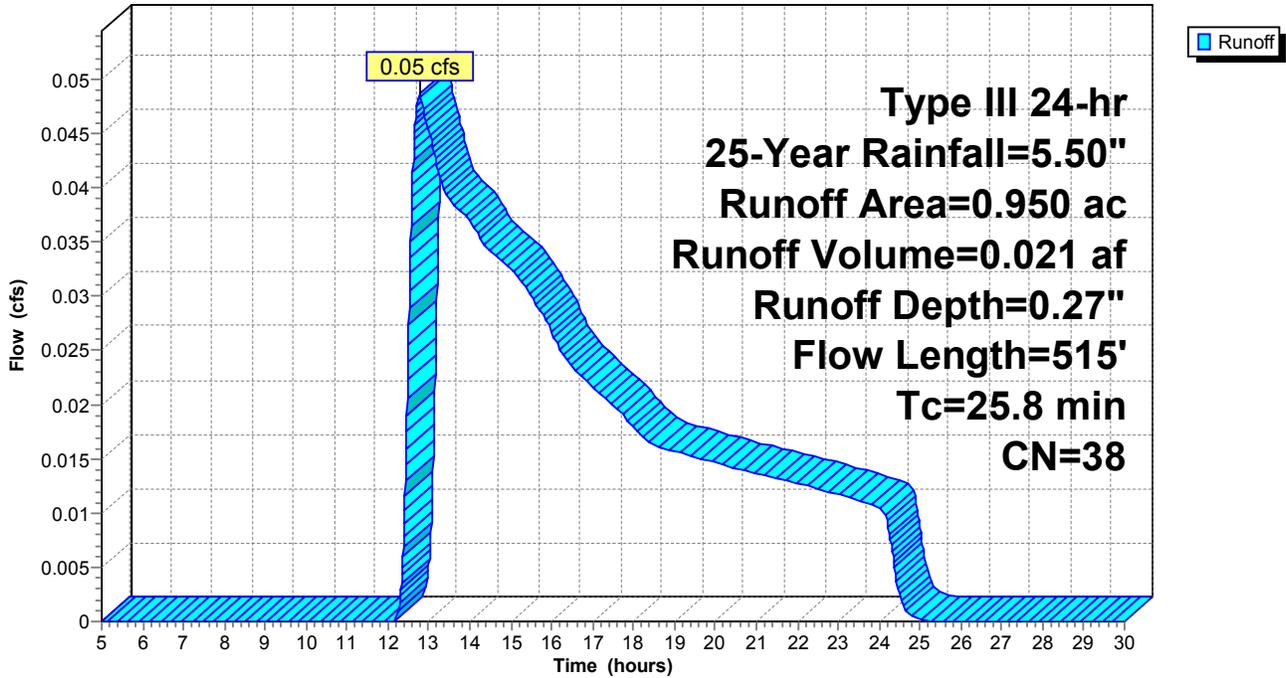
Type III 24-hr 25-Year Rainfall=5.50"

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**Subcatchment 10S:**

Hydrograph



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**Summary for Subcatchment 21S:**

Runoff = 0.06 cfs @ 12.72 hrs, Volume= 0.026 af, Depth= 0.27"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Type III 24-hr 25-Year Rainfall=5.50"

Area (ac)	CN	Description
0.000	98	Paved parking, HSG B
0.140	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.000	91	Gravel roads, HSG D
0.040	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.000	80	>75% Grass cover, Good, HSG D
0.960	32	Woods/grass comb., Good, HSG A
0.000	58	Woods/grass comb., Good, HSG B
0.000	79	Woods/grass comb., Good, HSG D
1.140	38	Weighted Average
1.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.7	100	0.1500	0.10		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
7.1	395	0.1390	0.93		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
0.4	80	0.0375	3.12		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
24.2	575	Total			

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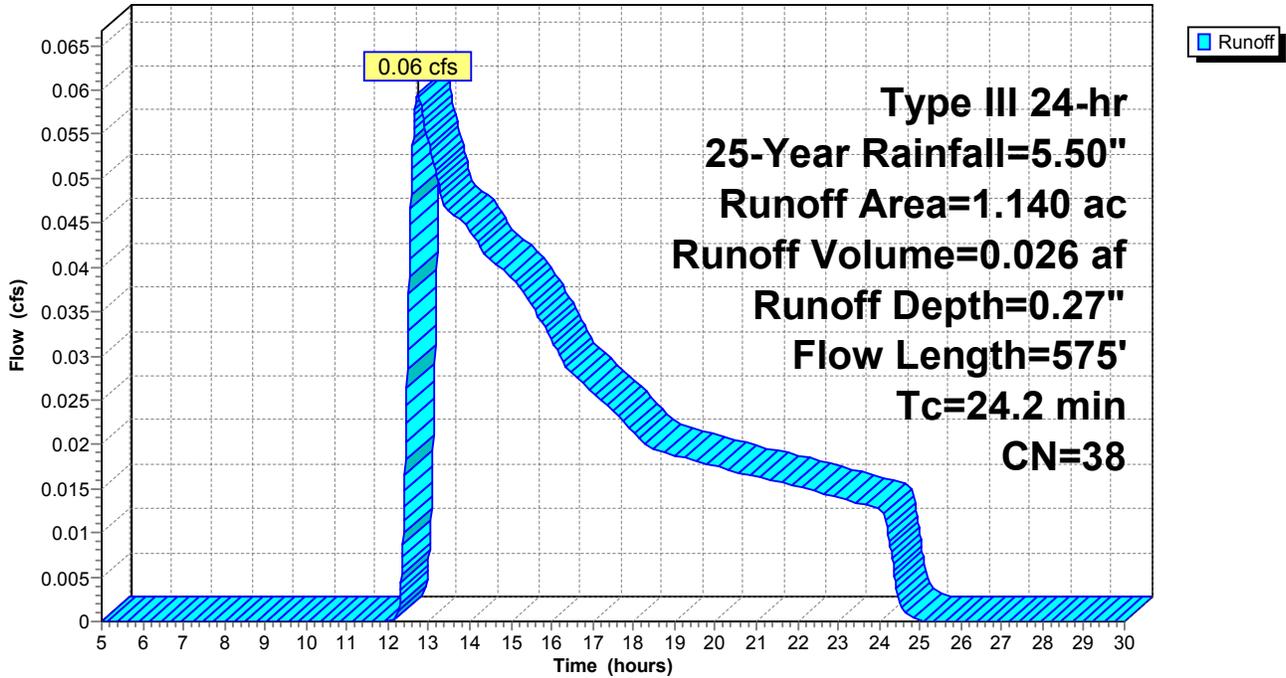
Type III 24-hr 25-Year Rainfall=5.50"

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**Subcatchment 21S:**

Hydrograph



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Type III 24-hr 25-Year Rainfall=5.50"

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**Summary for Subcatchment 22S:**

Runoff = 0.09 cfs @ 12.11 hrs, Volume= 0.007 af, Depth= 1.68"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.50"

Area (ac)	CN	Description
0.000	98	Paved parking, HSG B
0.030	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.000	91	Gravel roads, HSG D
0.020	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.000	80	>75% Grass cover, Good, HSG D
0.000	32	Woods/grass comb., Good, HSG A
0.000	58	Woods/grass comb., Good, HSG B
0.000	79	Woods/grass comb., Good, HSG D
0.050	61	Weighted Average
0.050		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	20	0.0750	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
0.6	45	0.0780	1.25		<b>Sheet Flow,</b> n= 0.020 P2= 3.20"
6.7	65	Total			

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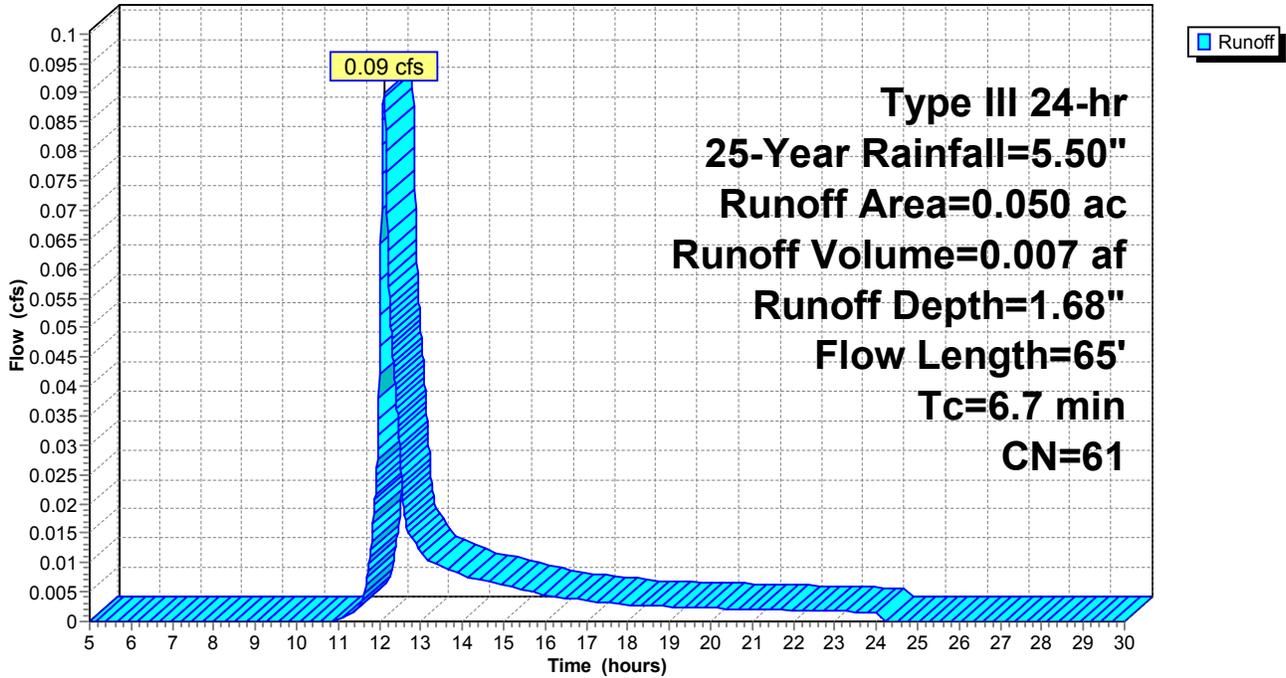
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**Subcatchment 22S:**

**Hydrograph**



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**Summary for Subcatchment 23S:**

Runoff = 0.04 cfs @ 14.95 hrs, Volume= 0.028 af, Depth= 0.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=5.50"

Area (ac)	CN	Description
0.005	98	Paved parking, HSG B
0.110	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.000	91	Gravel roads, HSG D
0.050	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.000	80	>75% Grass cover, Good, HSG D
1.950	32	Woods/grass comb., Good, HSG A
0.000	58	Woods/grass comb., Good, HSG B
0.000	79	Woods/grass comb., Good, HSG D
2.115	35	Weighted Average
2.110		99.76% Pervious Area
0.005		0.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.7	100	0.0700	0.07		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
14.8	900	0.1640	1.01		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
0.2	65	0.0850	4.69		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
37.7	1,065	Total			

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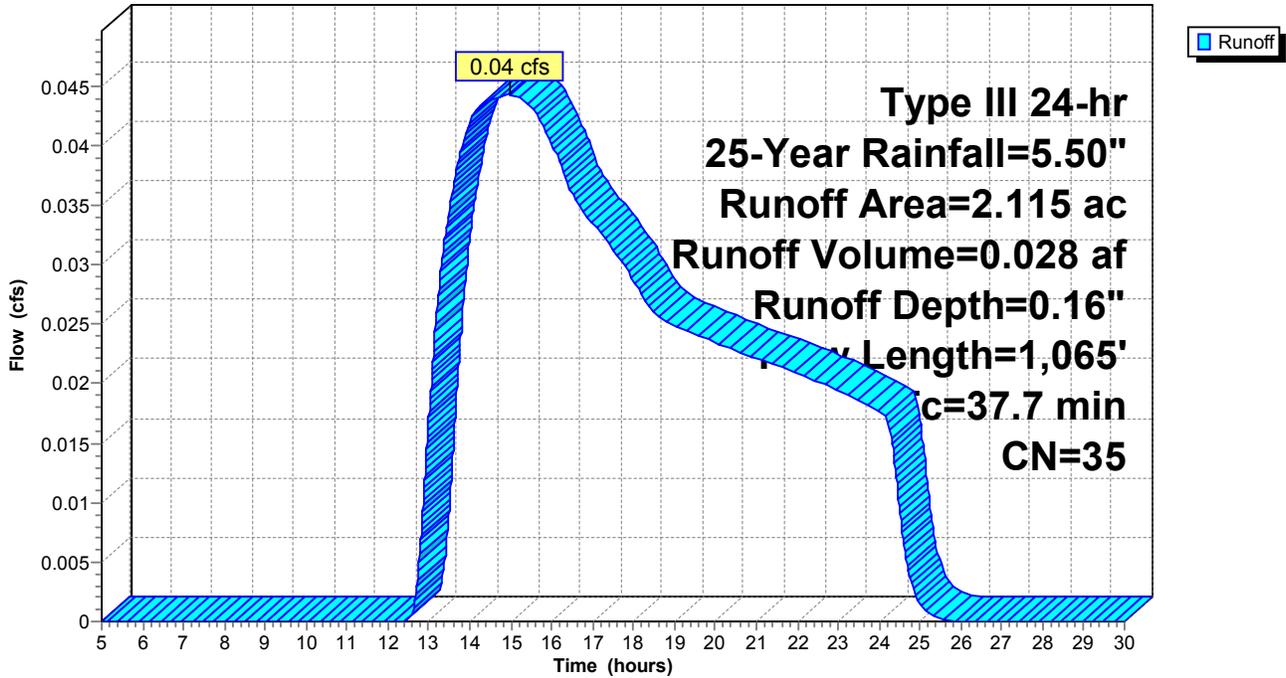
Type III 24-hr 25-Year Rainfall=5.50"

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**Subcatchment 23S:**

Hydrograph



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**Summary for Subcatchment 24S:**

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.22 cfs @ 12.03 hrs, Volume= 0.017 af, Depth= 1.10"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Type III 24-hr 25-Year Rainfall=5.50"

Area (ac)	CN	Description
0.000	98	Paved parking, HSG B
0.080	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.000	91	Gravel roads, HSG D
0.040	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.000	80	>75% Grass cover, Good, HSG D
0.060	32	Woods/grass comb., Good, HSG A
0.000	58	Woods/grass comb., Good, HSG B
0.000	79	Woods/grass comb., Good, HSG D
0.180	53	Weighted Average
0.180		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0780	1.47		<b>Sheet Flow,</b> n= 0.020 P2= 3.20"

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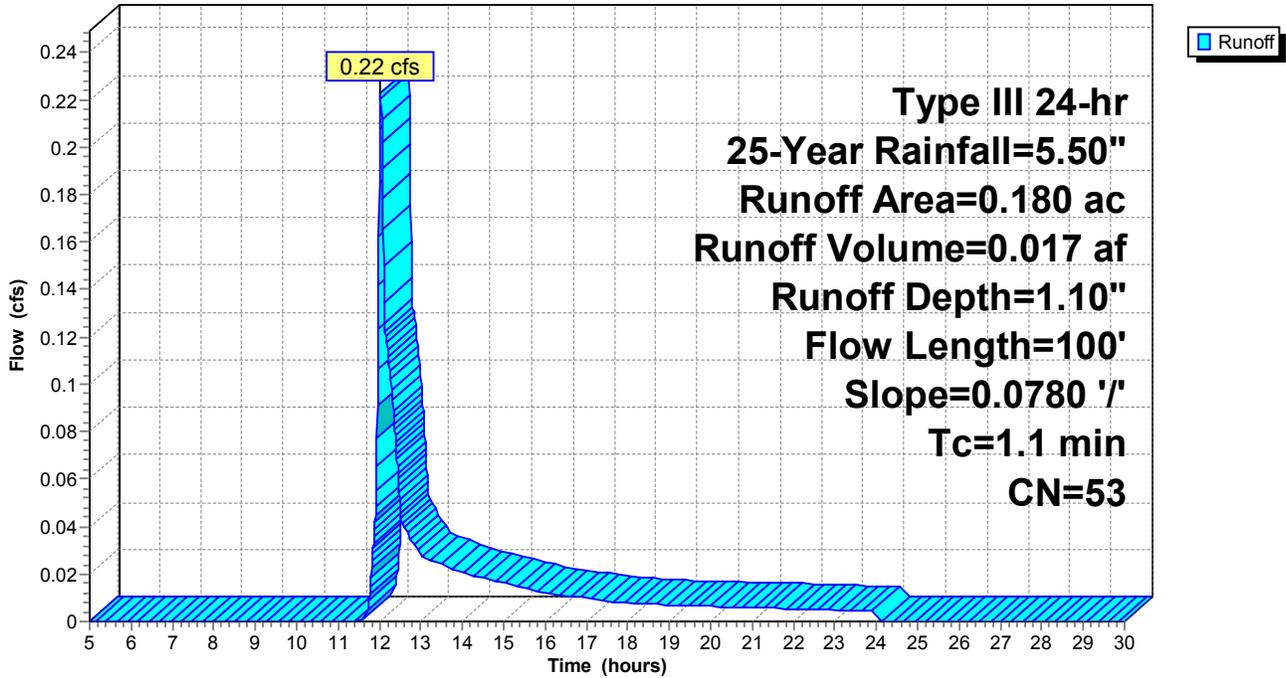
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**Subcatchment 24S:**

**Hydrograph**



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Type III 24-hr 25-Year Rainfall=5.50"

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**Summary for Subcatchment 31S:**

Runoff = 0.03 cfs @ 15.58 hrs, Volume= 0.020 af, Depth= 0.10"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Type III 24-hr 25-Year Rainfall=5.50"

Area (ac)	CN	Description
0.000	98	Paved parking, HSG B
0.060	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.000	91	Gravel roads, HSG D
0.050	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.000	80	>75% Grass cover, Good, HSG D
2.390	32	Woods/grass comb., Good, HSG A
0.000	58	Woods/grass comb., Good, HSG B
0.000	79	Woods/grass comb., Good, HSG D
2.500	33	Weighted Average
2.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0900	0.08		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
16.3	940	0.1480	0.96		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
0.2	68	0.1030	5.17		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
37.0	1,108	Total			

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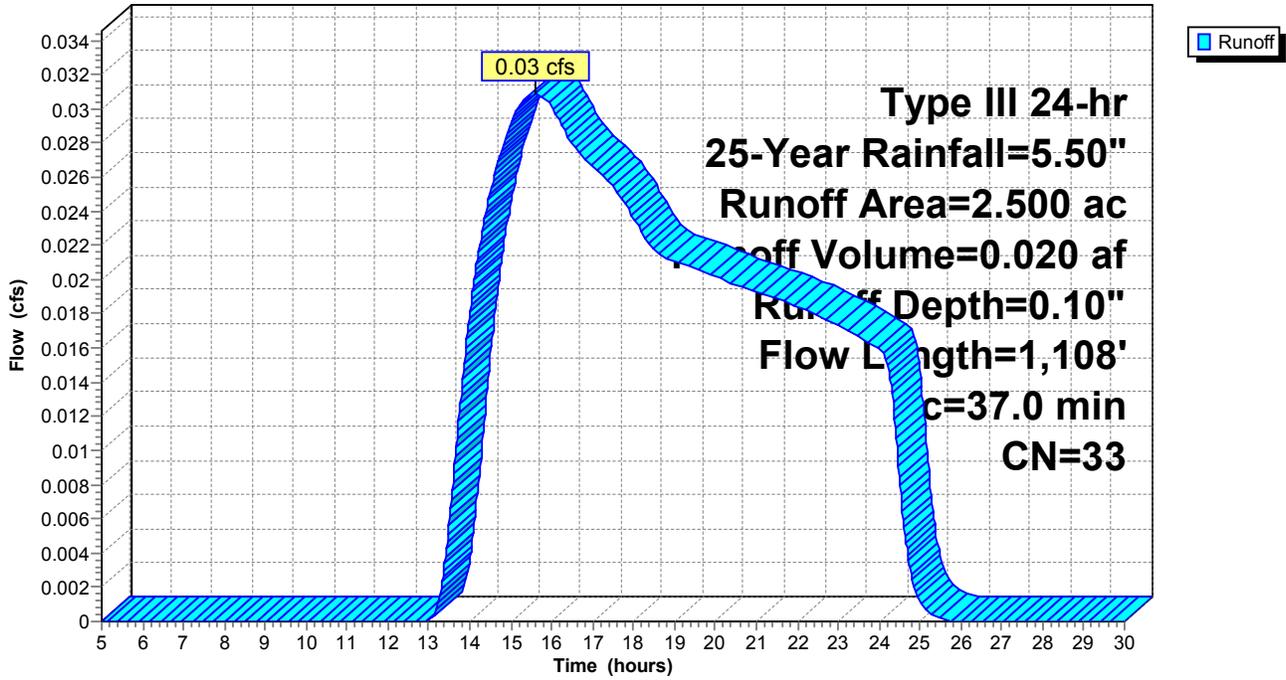
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**Subcatchment 31S:**

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**Summary for Pond 10P:**

[87] Warning: Oscillations may require Finer Routing or smaller dt

Inflow Area = 0.950 ac, 0.00% Impervious, Inflow Depth = 0.27" for 25-Year event  
 Inflow = 0.05 cfs @ 12.76 hrs, Volume= 0.021 af  
 Outflow = 0.04 cfs @ 13.21 hrs, Volume= 0.021 af, Atten= 14%, Lag= 27.2 min  
 Discarded = 0.04 cfs @ 13.21 hrs, Volume= 0.021 af  
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
 Peak Elev= 100.21' @ 13.21 hrs Surf.Area= 0.003 ac Storage= 0.000 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 0.6 min ( 1,011.9 - 1,011.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	102.00'	0.023 af	<b>2.00'W x 55.00'L x 2.00'H Prismaoid Z=3.0</b>
#2	100.00'	0.002 af	<b>2.00'W x 55.00'L x 2.00'H Prismaoid</b>
			0.005 af Overall x 40.0% Voids
		0.025 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	103.00'	<b>55.0' long x 1.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.62 2.64 2.64 2.68 2.75 2.86 2.92 3.07 3.07 3.03 3.28 3.32
#2	Discarded	100.00'	<b>15.900 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 93.50'

**Discarded OutFlow** Max=0.04 cfs @ 13.21 hrs HW=100.21' (Free Discharge)  
 ↑2=Exfiltration ( Controls 0.04 cfs)

**Primary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=100.00' TW=0.00' (Dynamic Tailwater)  
 ↑1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

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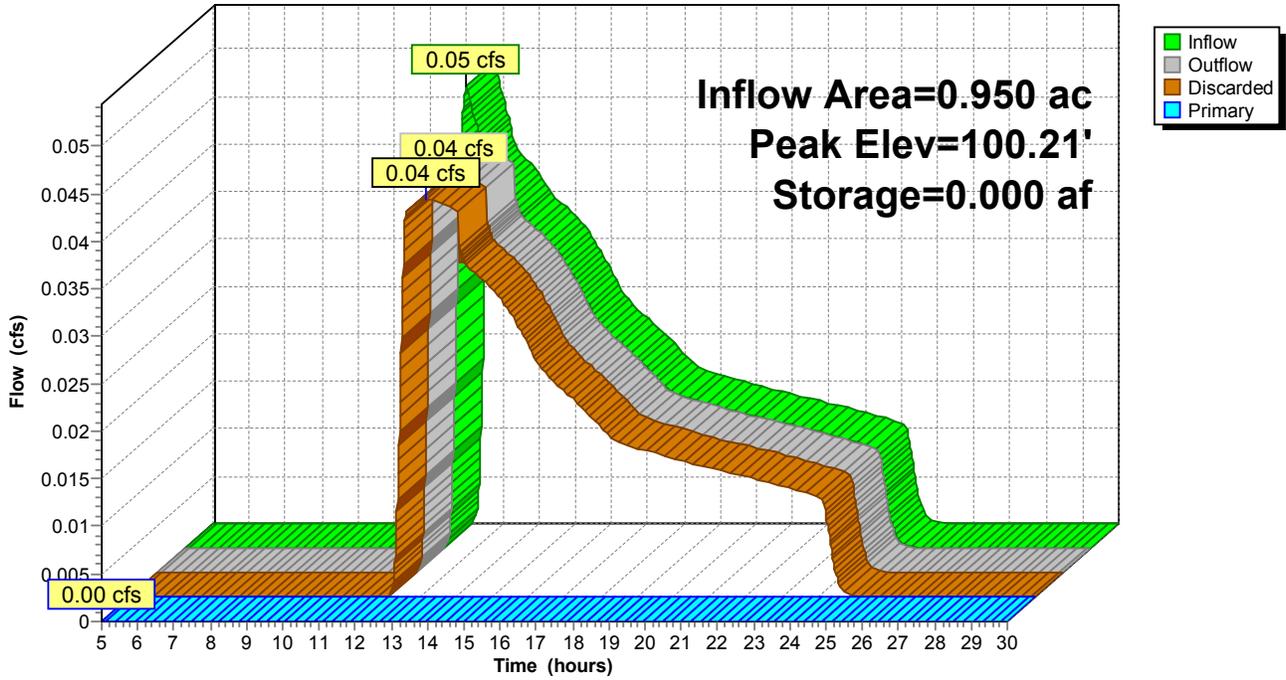
Type III 24-hr 25-Year Rainfall=5.50"

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**Pond 10P:**

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**Summary for Pond 21P:**

[87] Warning: Oscillations may require Finer Routing or smaller dt

Inflow Area = 1.140 ac, 0.00% Impervious, Inflow Depth = 0.27" for 25-Year event  
 Inflow = 0.06 cfs @ 12.72 hrs, Volume= 0.026 af  
 Outflow = 0.04 cfs @ 14.42 hrs, Volume= 0.026 af, Atten= 31%, Lag= 102.0 min  
 Discarded = 0.04 cfs @ 14.42 hrs, Volume= 0.026 af  
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
 Peak Elev= 101.97' @ 14.41 hrs Surf.Area= 0.002 ac Storage= 0.002 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 12.4 min ( 1,022.3 - 1,009.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	102.00'	0.019 af	<b>2.00'W x 43.00'L x 2.00'H Prismaoid Z=3.0</b>
#2	100.00'	0.002 af	<b>2.00'W x 43.00'L x 2.00'H Prismaoid</b>
			0.004 af Overall x 40.0% Voids
		0.020 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	103.00'	<b>43.0' long x 1.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.62 2.64 2.64 2.68 2.75 2.86 2.92 3.07 3.07 3.03 3.28 3.32
#2	Discarded	100.00'	<b>15.900 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 93.50'

**Discarded OutFlow** Max=0.04 cfs @ 14.42 hrs HW=101.97' (Free Discharge)  
 ↑2=Exfiltration ( Controls 0.04 cfs)

**Primary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=100.00' TW=0.00' (Dynamic Tailwater)  
 ↑1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

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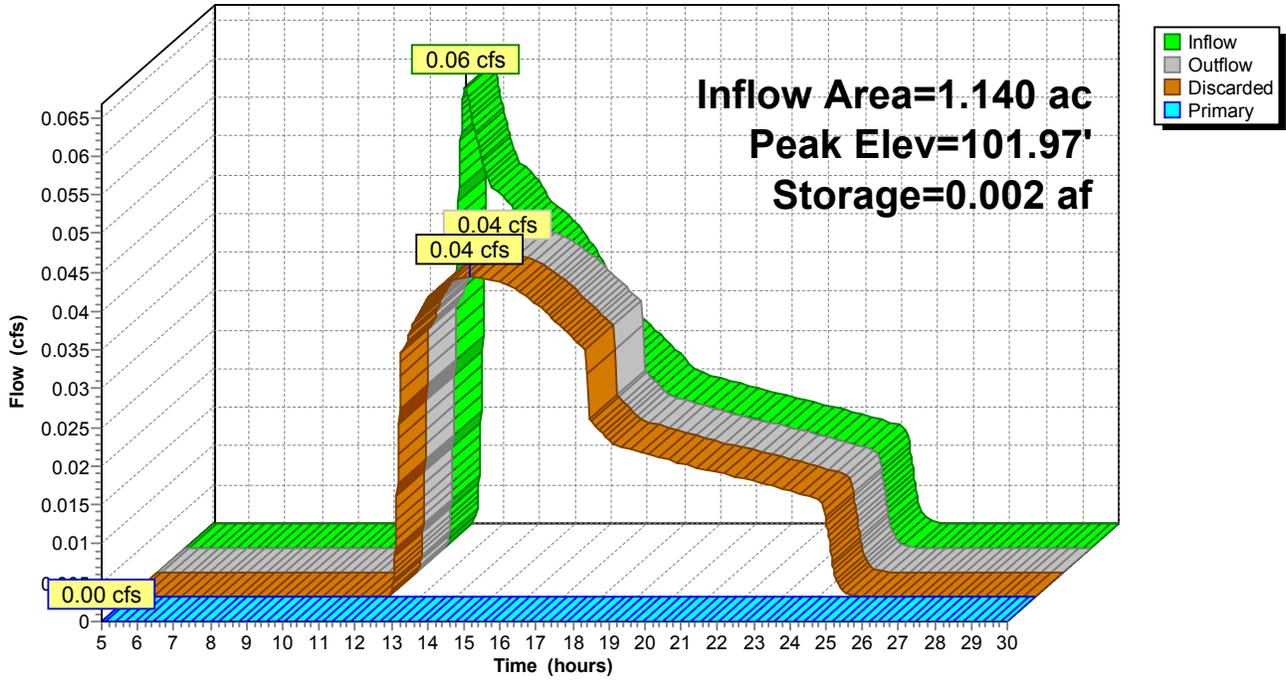
Type III 24-hr 25-Year Rainfall=5.50"

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**Pond 21P:**

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**Summary for Pond 22P:**

[87] Warning: Oscillations may require Finer Routing or smaller dt

Inflow Area = 0.050 ac, 0.00% Impervious, Inflow Depth = 1.68" for 25-Year event  
 Inflow = 0.09 cfs @ 12.11 hrs, Volume= 0.007 af  
 Outflow = 0.05 cfs @ 12.32 hrs, Volume= 0.007 af, Atten= 48%, Lag= 12.6 min  
 Discarded = 0.05 cfs @ 12.32 hrs, Volume= 0.007 af  
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
 Peak Elev= 102.19' @ 12.32 hrs Surf.Area= 0.003 ac Storage= 0.001 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 9.0 min ( 875.4 - 866.4 )

Volume	Invert	Avail.Storage	Storage Description
#1	102.00'	0.010 af	<b>2.00'W x 21.00'L x 2.00'H Prismaoid Z=3.0</b>
#2	100.00'	0.001 af	<b>2.00'W x 21.00'L x 2.00'H Prismaoid</b>
			0.002 af Overall x 40.0% Voids
		0.011 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	103.00'	<b>21.0' long x 1.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.62 2.64 2.64 2.68 2.75 2.86 2.92 3.07 3.07 3.03 3.28 3.32
#2	Discarded	100.00'	<b>15.900 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 93.50'

**Discarded OutFlow** Max=0.05 cfs @ 12.32 hrs HW=102.19' (Free Discharge)  
 ↑2=Exfiltration ( Controls 0.05 cfs)

**Primary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=100.00' TW=0.00' (Dynamic Tailwater)  
 ↑1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

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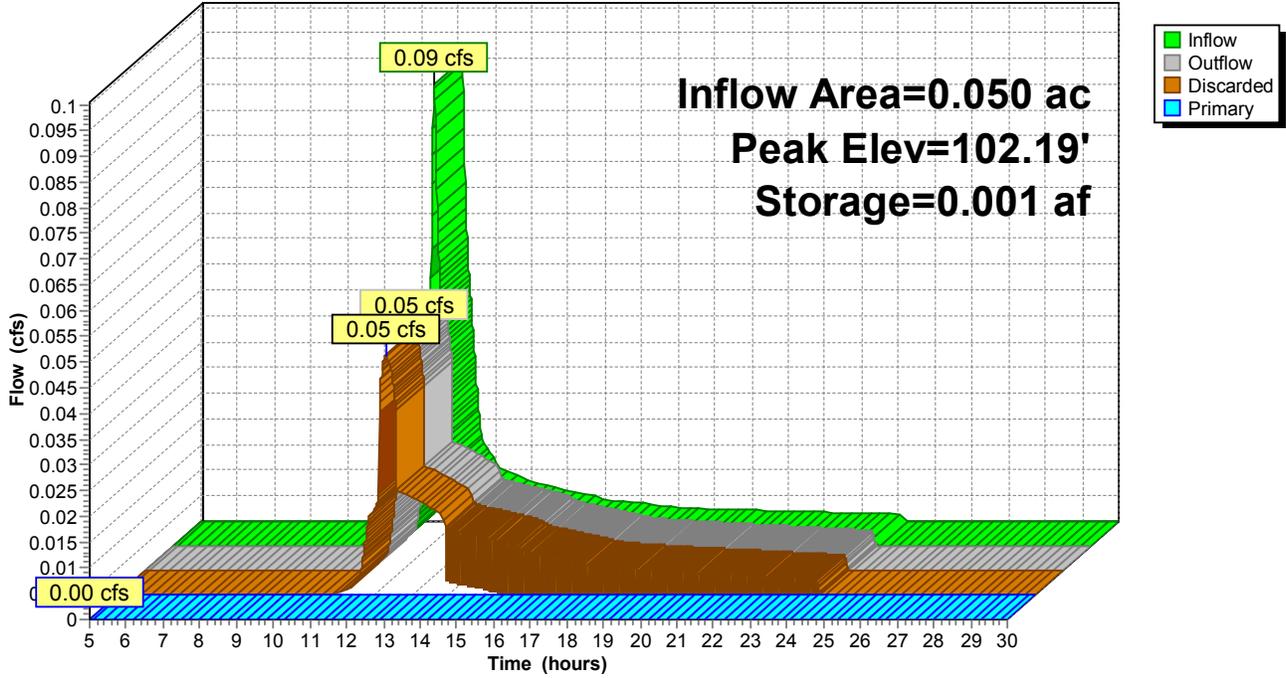
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**Pond 22P:**

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**Summary for Pond 23P:**

Inflow Area = 2.115 ac, 0.24% Impervious, Inflow Depth = 0.16" for 25-Year event  
 Inflow = 0.04 cfs @ 14.95 hrs, Volume= 0.028 af  
 Outflow = 0.04 cfs @ 15.14 hrs, Volume= 0.028 af, Atten= 0%, Lag= 11.3 min  
 Discarded = 0.04 cfs @ 15.14 hrs, Volume= 0.028 af  
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
 Peak Elev= 100.01' @ 15.14 hrs Surf.Area= 0.003 ac Storage= 0.000 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 0.0 min ( 1,069.9 - 1,069.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	102.00'	0.025 af	<b>2.00'W x 60.00'L x 2.00'H Prismatic Z=3.0</b>
#2	100.00'	0.002 af	<b>2.00'W x 60.00'L x 2.00'H Prismatic</b>
			0.006 af Overall x 40.0% Voids
		0.027 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	103.00'	<b>60.0' long x 1.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.62 2.64 2.64 2.68 2.75 2.86 2.92 3.07 3.07 3.03 3.28 3.32
#2	Discarded	100.00'	<b>15.900 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 93.50'

**Discarded OutFlow** Max=0.04 cfs @ 15.14 hrs HW=100.01' (Free Discharge)  
 ↑2=Exfiltration ( Controls 0.04 cfs)

**Primary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=100.00' TW=0.00' (Dynamic Tailwater)  
 ↑1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

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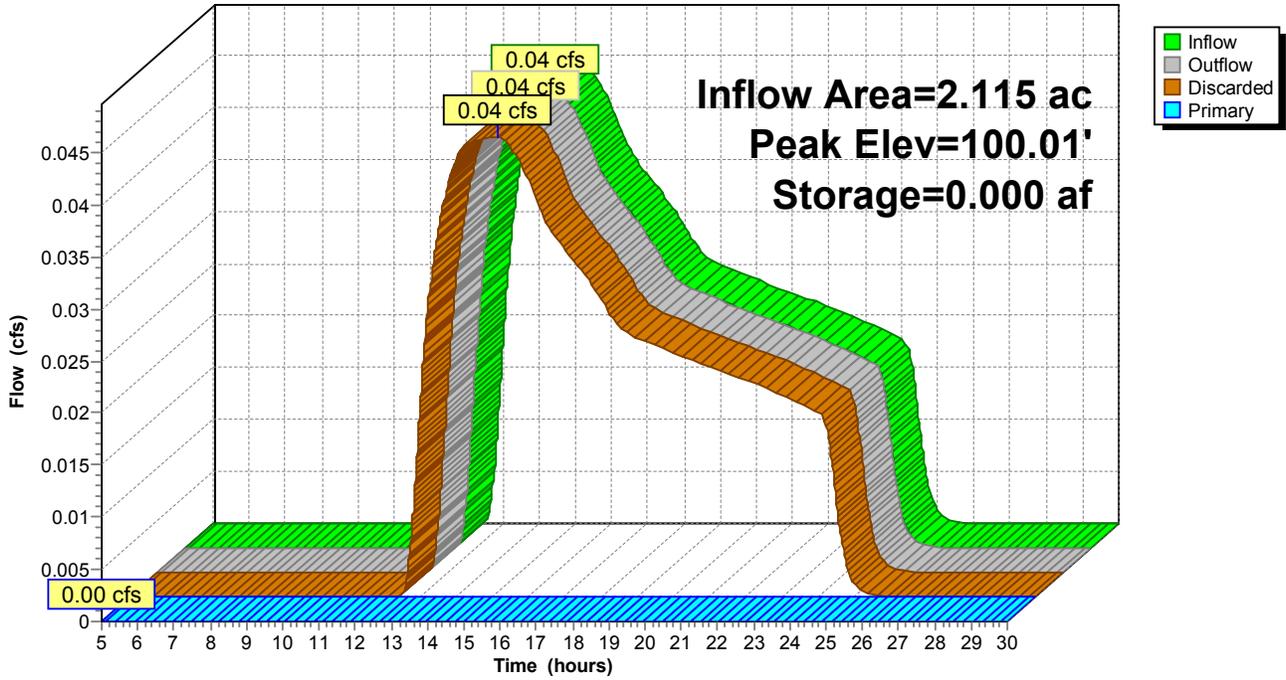
Type III 24-hr 25-Year Rainfall=5.50"

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**Pond 23P:**

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Type III 24-hr 25-Year Rainfall=5.50"

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**Summary for Pond 24P:**

[87] Warning: Oscillations may require Finer Routing or smaller dt

Inflow Area = 0.180 ac, 0.00% Impervious, Inflow Depth = 1.10" for 25-Year event  
 Inflow = 0.22 cfs @ 12.03 hrs, Volume= 0.017 af  
 Outflow = 0.07 cfs @ 12.42 hrs, Volume= 0.017 af, Atten= 70%, Lag= 23.8 min  
 Discarded = 0.07 cfs @ 12.42 hrs, Volume= 0.017 af  
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
 Peak Elev= 101.98' @ 12.42 hrs Surf.Area= 0.003 ac Storage= 0.003 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 8.5 min ( 895.2 - 886.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	102.00'	0.028 af	<b>2.00'W x 70.00'L x 2.00'H Prismaoid Z=3.0</b>
#2	100.00'	0.003 af	<b>2.00'W x 70.00'L x 2.00'H Prismaoid</b>
			0.006 af Overall x 40.0% Voids
		0.031 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	103.00'	<b>70.0' long x 1.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.62 2.64 2.64 2.68 2.75 2.86 2.92 3.07 3.07 3.03 3.28 3.32
#2	Discarded	100.00'	<b>15.900 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 93.50'

**Discarded OutFlow** Max=0.07 cfs @ 12.42 hrs HW=101.98' (Free Discharge)  
 ↑2=Exfiltration ( Controls 0.07 cfs)

**Primary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=100.00' TW=0.00' (Dynamic Tailwater)  
 ↑1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

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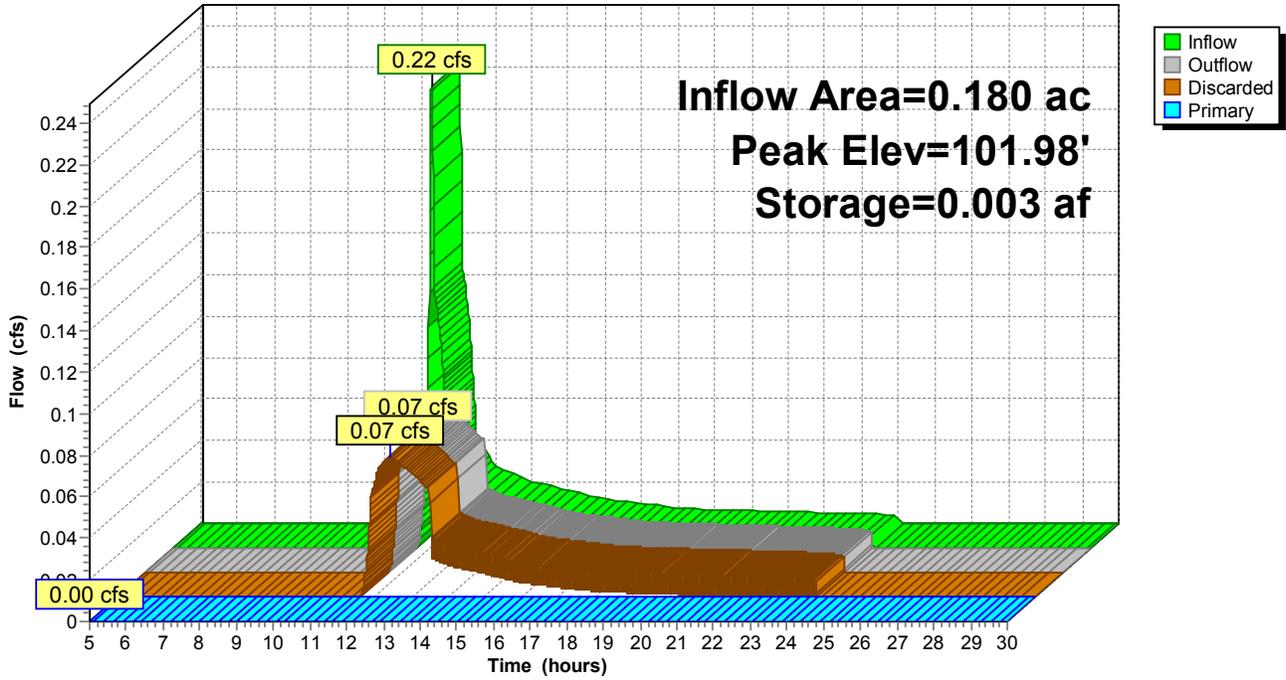
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**Pond 24P:**

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**Summary for Pond 31P:**

Inflow Area = 2.500 ac, 0.00% Impervious, Inflow Depth = 0.10" for 25-Year event  
 Inflow = 0.03 cfs @ 15.58 hrs, Volume= 0.020 af  
 Outflow = 0.03 cfs @ 15.58 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.03 cfs @ 15.58 hrs, Volume= 0.020 af  
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
 Peak Elev= 100.00' @ 5.00 hrs Surf.Area= 0.021 ac Storage= 0.000 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 0.0 min ( 1,114.6 - 1,114.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	102.00'	0.066 af	<b>13.00'W x 69.00'L x 2.00'H Prismatic Z=3.0</b>
#2	100.00'	0.016 af	<b>13.00'W x 69.00'L x 2.00'H Prismatic</b>
			0.041 af Overall x 40.0% Voids
		0.082 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	103.00'	<b>69.0' long x 1.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.62 2.64 2.64 2.68 2.75 2.86 2.92 3.07 3.07 3.03 3.28 3.32
#2	Discarded	100.00'	<b>15.900 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 93.50'

**Discarded OutFlow** Max=0.00 cfs @ 15.58 hrs HW=100.00' (Free Discharge)  
 ↑2=Exfiltration (Passes 0.00 cfs of 0.33 cfs potential flow)

**Primary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=100.00' TW=0.00' (Dynamic Tailwater)  
 ↑1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

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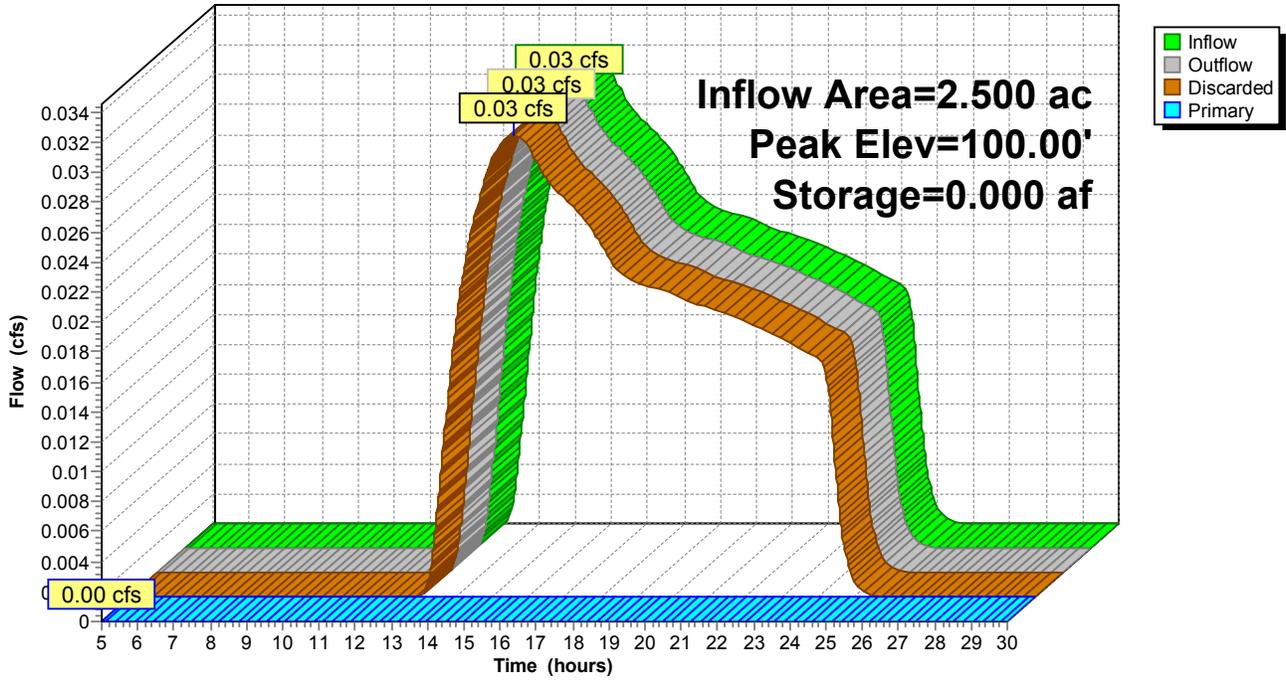
Type III 24-hr 25-Year Rainfall=5.50"

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**Pond 31P:**

Hydrograph



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**Summary for Pond A: Wetland A**

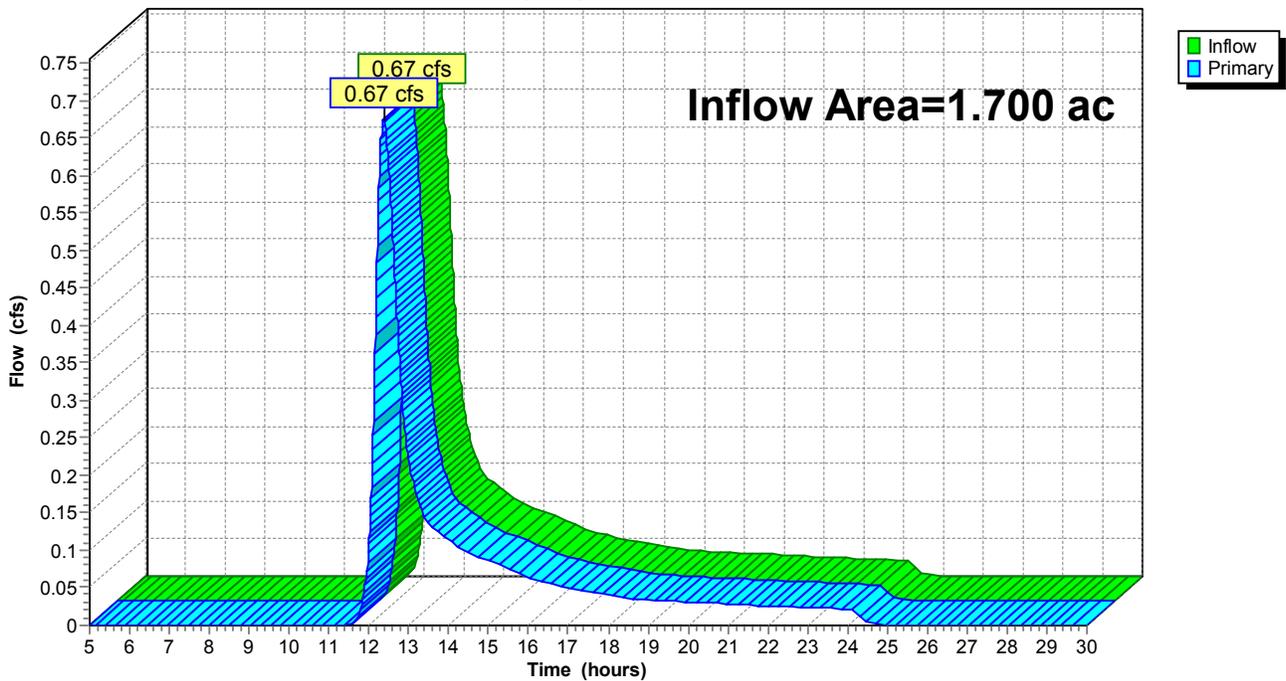
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.700 ac, 4.12% Impervious, Inflow Depth = 0.61" for 25-Year event  
Inflow = 0.67 cfs @ 12.37 hrs, Volume= 0.086 af  
Primary = 0.67 cfs @ 12.37 hrs, Volume= 0.086 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Pond A: Wetland A**

**Hydrograph**



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**Summary for Pond B: Wetland B**

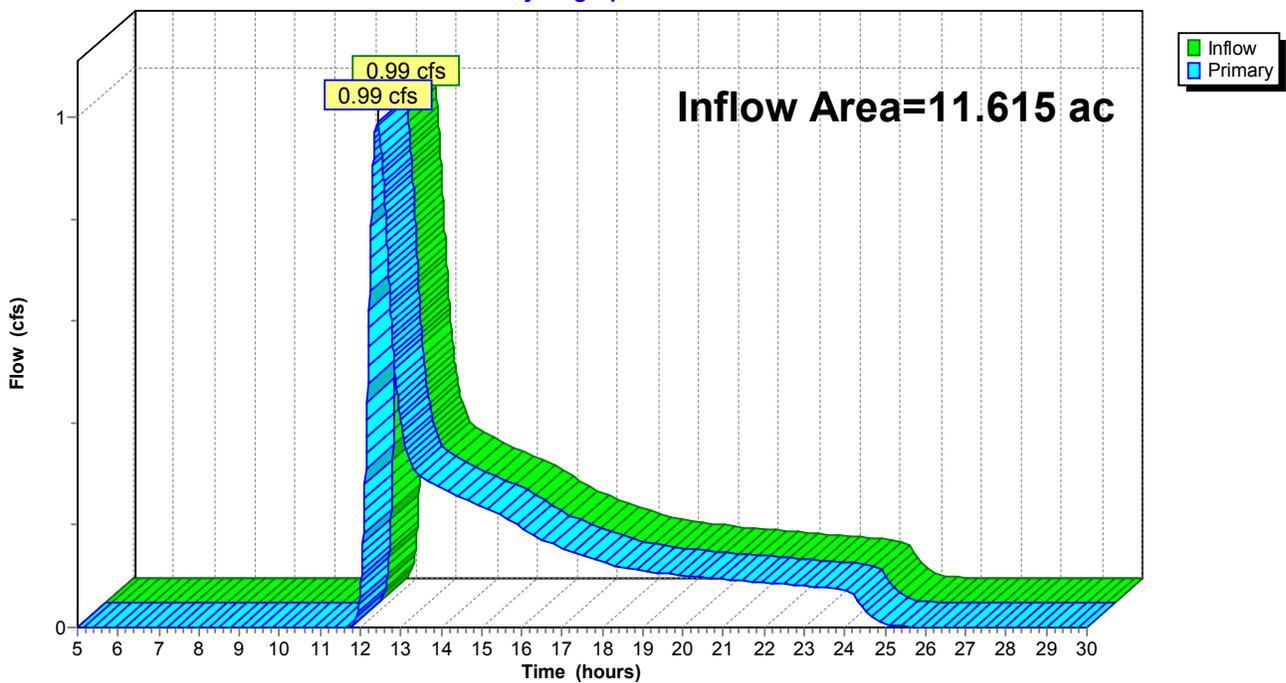
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 11.615 ac, 3.23% Impervious, Inflow Depth = 0.20" for 25-Year event  
Inflow = 0.99 cfs @ 12.42 hrs, Volume= 0.194 af  
Primary = 0.99 cfs @ 12.42 hrs, Volume= 0.194 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Pond B: Wetland B**

Hydrograph



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Type III 24-hr 25-Year Rainfall=5.50"

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**Summary for Pond C: Wetland C**

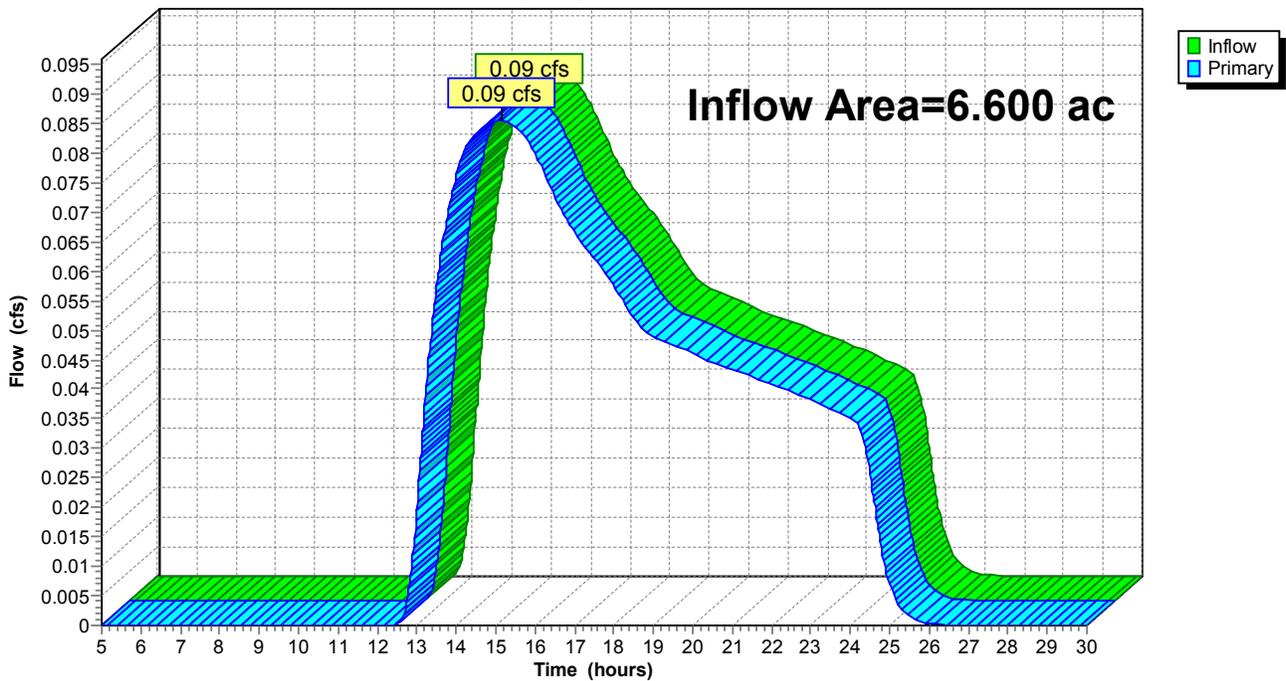
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 6.600 ac, 1.82% Impervious, Inflow Depth = 0.10" for 25-Year event  
Inflow = 0.09 cfs @ 15.14 hrs, Volume= 0.054 af  
Primary = 0.09 cfs @ 15.14 hrs, Volume= 0.054 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Pond C: Wetland C**

Hydrograph



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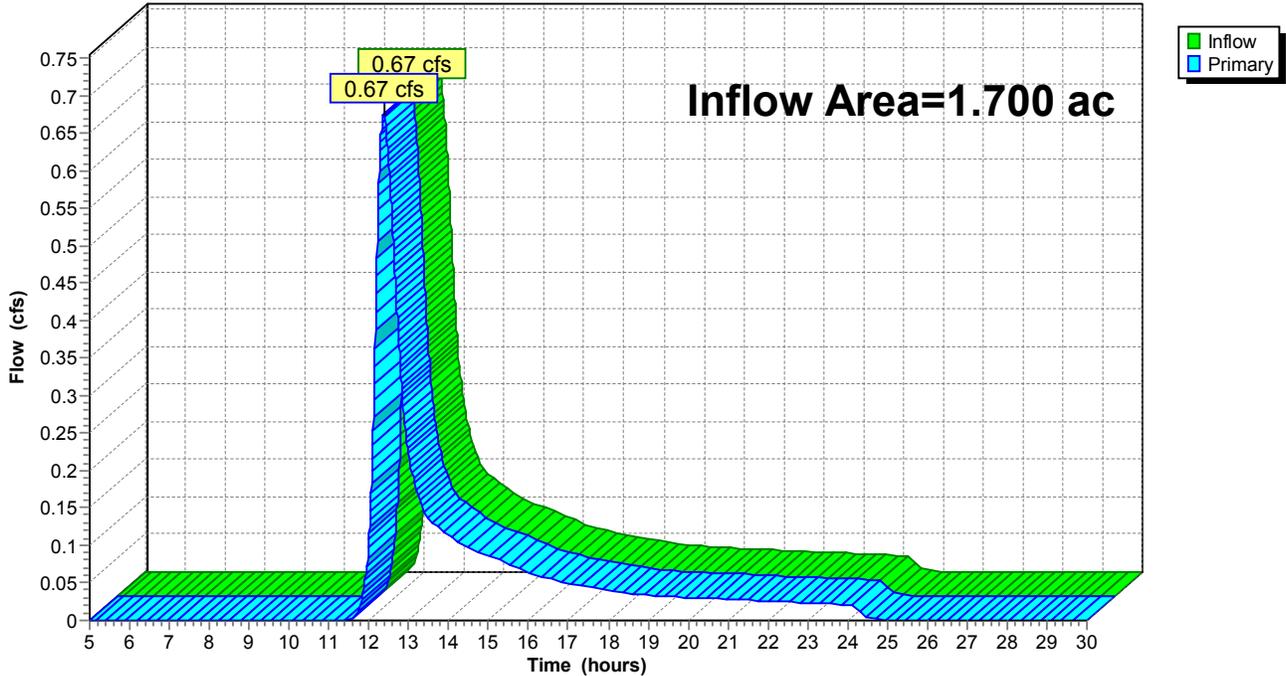
**Summary for Link 1L: Eastern Outfall**

Inflow Area = 1.700 ac, 4.12% Impervious, Inflow Depth = 0.61" for 25-Year event  
Inflow = 0.67 cfs @ 12.37 hrs, Volume= 0.086 af  
Primary = 0.67 cfs @ 12.37 hrs, Volume= 0.086 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Link 1L: Eastern Outfall**

Hydrograph



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Type III 24-hr 25-Year Rainfall=5.50"

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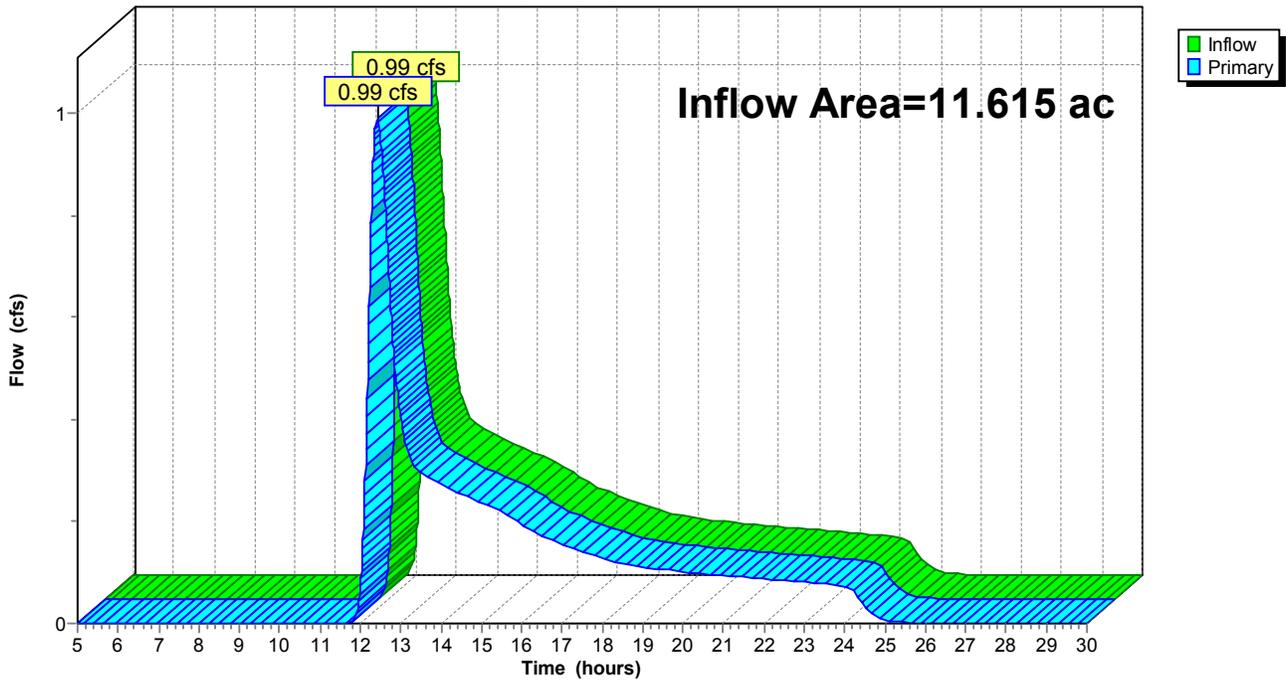
**Summary for Link 2L: Western Outfall**

Inflow Area = 11.615 ac, 3.23% Impervious, Inflow Depth = 0.20" for 25-Year event  
Inflow = 0.99 cfs @ 12.42 hrs, Volume= 0.194 af  
Primary = 0.99 cfs @ 12.42 hrs, Volume= 0.194 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Link 2L: Western Outfall**

Hydrograph



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Type III 24-hr 100-Year Rainfall=6.90"

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**Summary for Subcatchment 1S:**

Runoff = 1.17 cfs @ 12.35 hrs, Volume= 0.140 af, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-Year Rainfall=6.90"

Area (ac)	CN	Description
0.070	98	Paved parking, HSG B
0.030	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.010	91	Gravel roads, HSG D
0.020	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.040	80	>75% Grass cover, Good, HSG D
0.360	32	Woods/grass comb., Good, HSG A
0.000	58	Woods/grass comb., Good, HSG B
0.220	79	Woods/grass comb., Good, HSG D
0.750	57	Weighted Average
0.680		90.67% Pervious Area
0.070		9.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	100	0.1900	0.11		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
8.3	415	0.1110	0.83		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
23.5	515	Total			

**Proposed**

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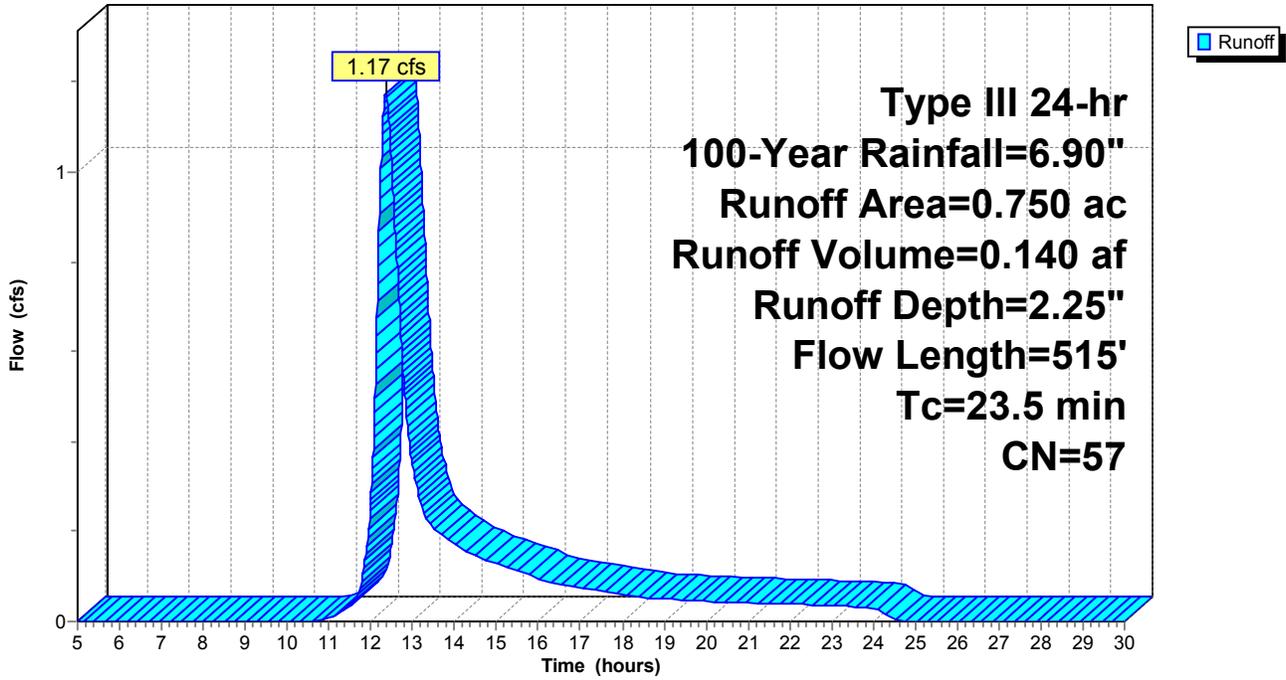
Type III 24-hr 100-Year Rainfall=6.90"

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**Subcatchment 1S:**

Hydrograph



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Type III 24-hr 100-Year Rainfall=6.90"

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**Summary for Subcatchment 2S:**

Runoff = 1.87 cfs @ 12.38 hrs, Volume= 0.239 af, Depth= 1.88"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-Year Rainfall=6.90"

Area (ac)	CN	Description
0.250	98	Paved parking, HSG B
0.100	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.010	91	Gravel roads, HSG D
0.090	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.020	80	>75% Grass cover, Good, HSG D
0.780	32	Woods/grass comb., Good, HSG A
0.210	58	Woods/grass comb., Good, HSG B
0.070	79	Woods/grass comb., Good, HSG D
1.530	53	Weighted Average
1.280		83.66% Pervious Area
0.250		16.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0900	0.08		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
2.9	115	0.0700	0.66		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
0.2	60	0.0670	4.17		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
1.2	50	0.0800	0.71		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
24.8	325	Total			

**Proposed**

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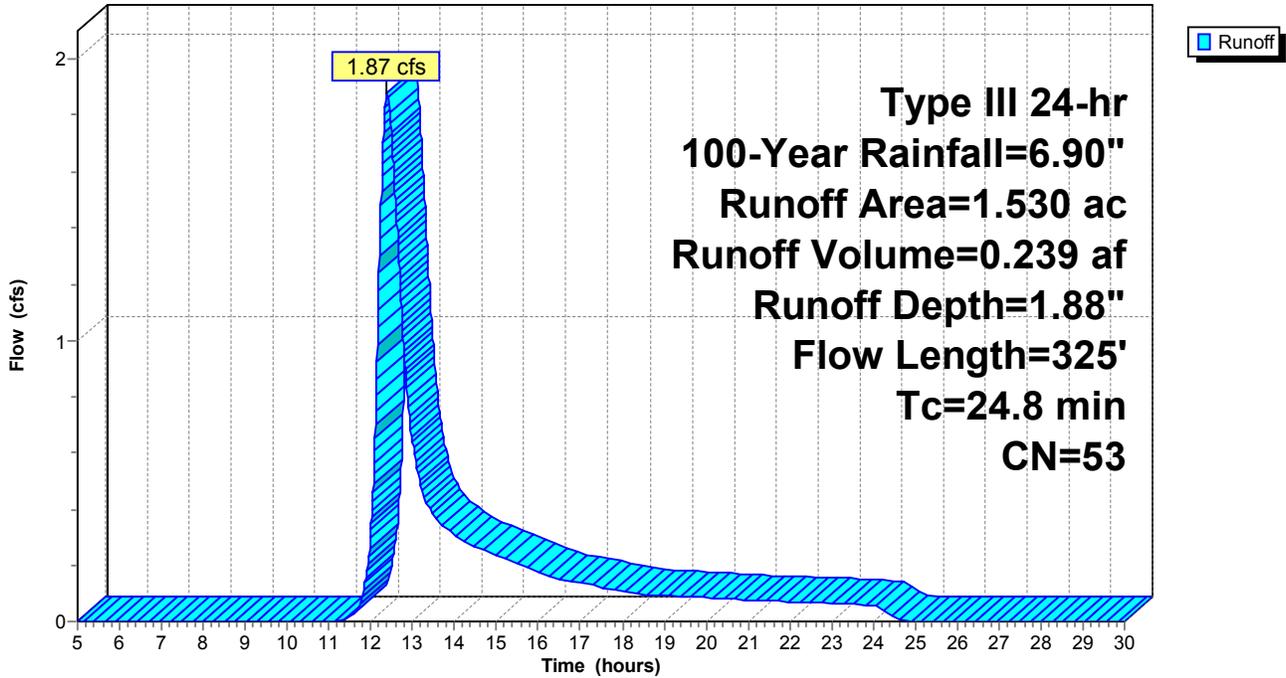
Type III 24-hr 100-Year Rainfall=6.90"

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**Subcatchment 2S:**

Hydrograph



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**Summary for Subcatchment 3S:**

Runoff = 0.41 cfs @ 13.06 hrs, Volume= 0.159 af, Depth= 0.47"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-Year Rainfall=6.90"

Area (ac)	CN	Description
0.120	98	Paved parking, HSG B
0.030	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.000	91	Gravel roads, HSG D
0.060	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.000	80	>75% Grass cover, Good, HSG D
3.750	32	Woods/grass comb., Good, HSG A
0.140	58	Woods/grass comb., Good, HSG B
0.000	79	Woods/grass comb., Good, HSG D
4.100	35	Weighted Average
3.980		97.07% Pervious Area
0.120		2.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.3	100	0.0400	0.06		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
20.9	1,175	0.1400	0.94		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
49.2	1,275	Total			

**Proposed**

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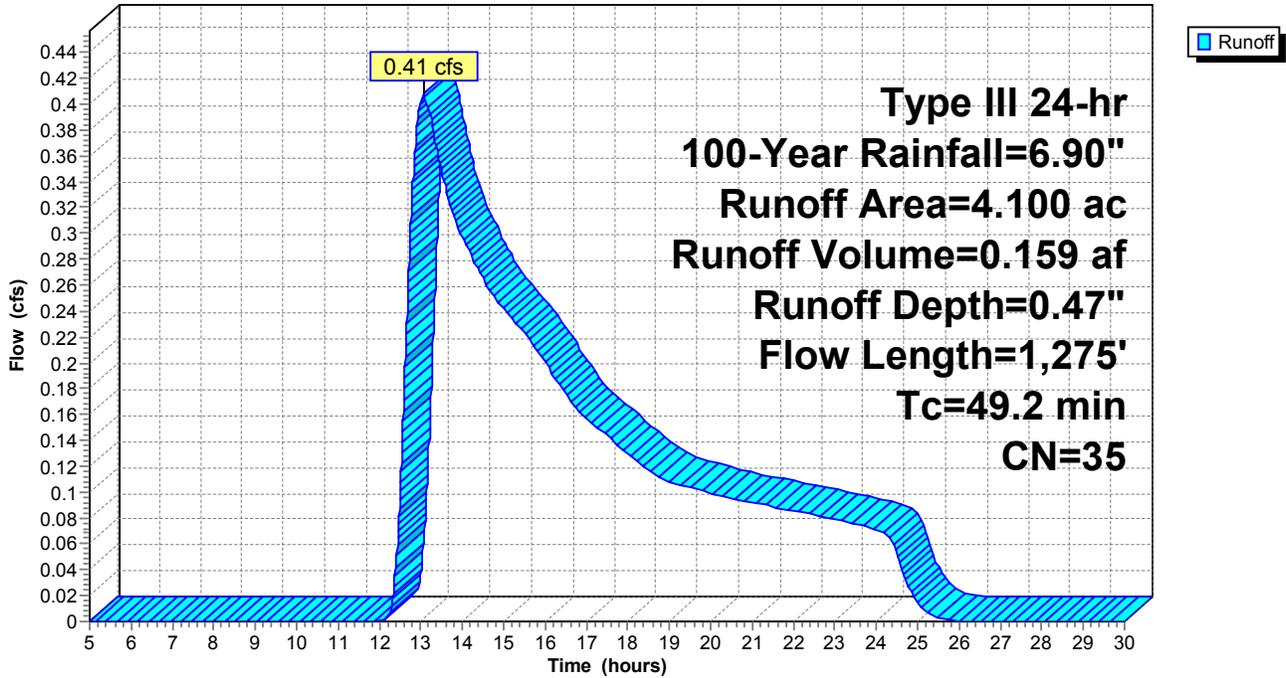
Type III 24-hr 100-Year Rainfall=6.90"

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**Subcatchment 3S:**

**Hydrograph**



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Type III 24-hr 100-Year Rainfall=6.90"

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**Summary for Subcatchment 10S:**

Runoff = 0.24 cfs @ 12.58 hrs, Volume= 0.052 af, Depth= 0.66"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-Year Rainfall=6.90"

Area (ac)	CN	Description
0.000	98	Paved parking, HSG B
0.130	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.000	91	Gravel roads, HSG D
0.030	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.000	80	>75% Grass cover, Good, HSG D
0.790	32	Woods/grass comb., Good, HSG A
0.000	58	Woods/grass comb., Good, HSG B
0.000	79	Woods/grass comb., Good, HSG D
0.950	38	Weighted Average
0.950		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.6	100	0.1000	0.08		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
5.8	345	0.1590	1.00		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
0.4	70	0.0360	3.05		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
25.8	515	Total			

**Proposed**

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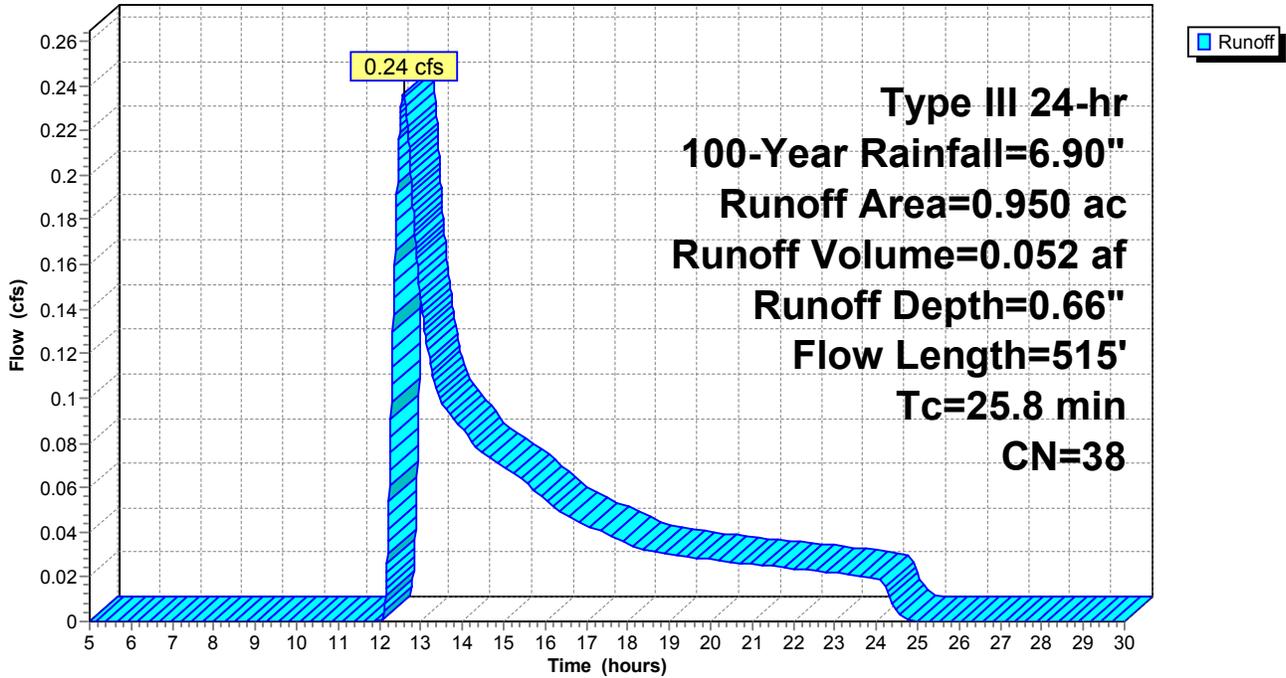
Type III 24-hr 100-Year Rainfall=6.90"

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**Subcatchment 10S:**

Hydrograph



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**Summary for Subcatchment 21S:**

Runoff = 0.29 cfs @ 12.56 hrs, Volume= 0.063 af, Depth= 0.66"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-Year Rainfall=6.90"

Area (ac)	CN	Description
0.000	98	Paved parking, HSG B
0.140	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.000	91	Gravel roads, HSG D
0.040	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.000	80	>75% Grass cover, Good, HSG D
0.960	32	Woods/grass comb., Good, HSG A
0.000	58	Woods/grass comb., Good, HSG B
0.000	79	Woods/grass comb., Good, HSG D
1.140	38	Weighted Average
1.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.7	100	0.1500	0.10		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
7.1	395	0.1390	0.93		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
0.4	80	0.0375	3.12		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
24.2	575	Total			

**Proposed**

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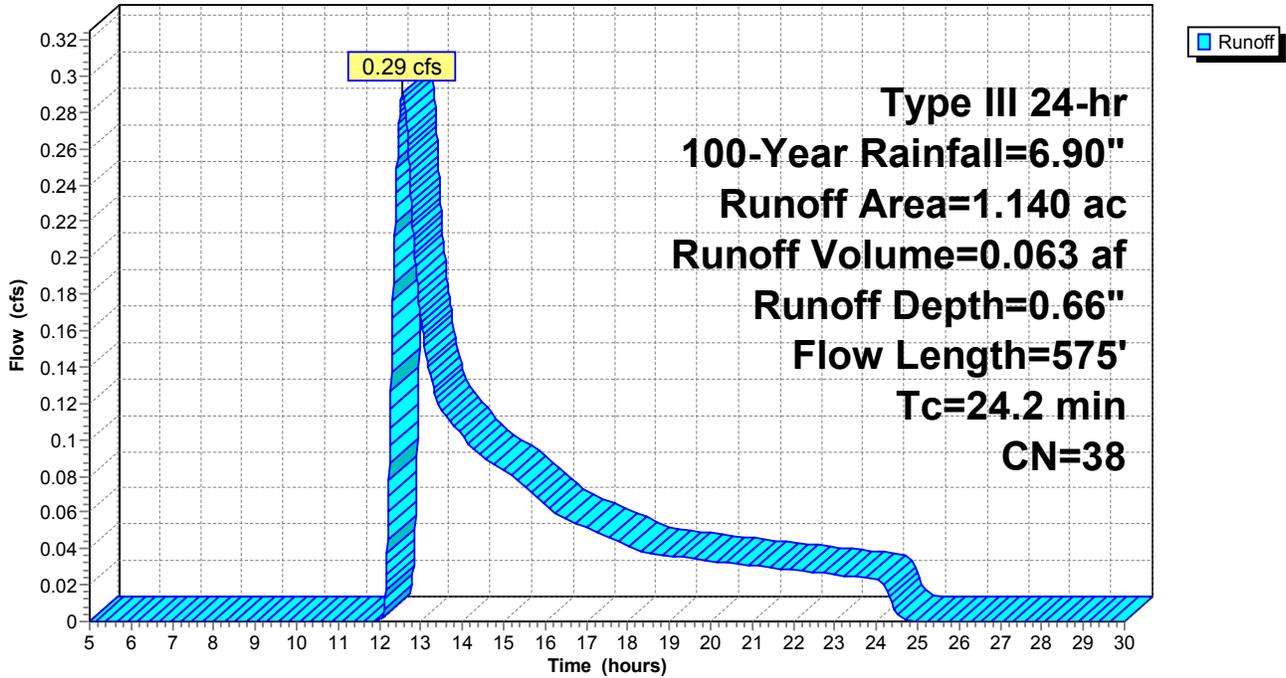
Type III 24-hr 100-Year Rainfall=6.90"

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**Subcatchment 21S:**

**Hydrograph**



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**Summary for Subcatchment 22S:**

Runoff = 0.15 cfs @ 12.10 hrs, Volume= 0.011 af, Depth= 2.63"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-Year Rainfall=6.90"

Area (ac)	CN	Description
0.000	98	Paved parking, HSG B
0.030	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.000	91	Gravel roads, HSG D
0.020	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.000	80	>75% Grass cover, Good, HSG D
0.000	32	Woods/grass comb., Good, HSG A
0.000	58	Woods/grass comb., Good, HSG B
0.000	79	Woods/grass comb., Good, HSG D
0.050	61	Weighted Average
0.050		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	20	0.0750	0.05		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
0.6	45	0.0780	1.25		<b>Sheet Flow,</b> n= 0.020 P2= 3.20"
6.7	65	Total			

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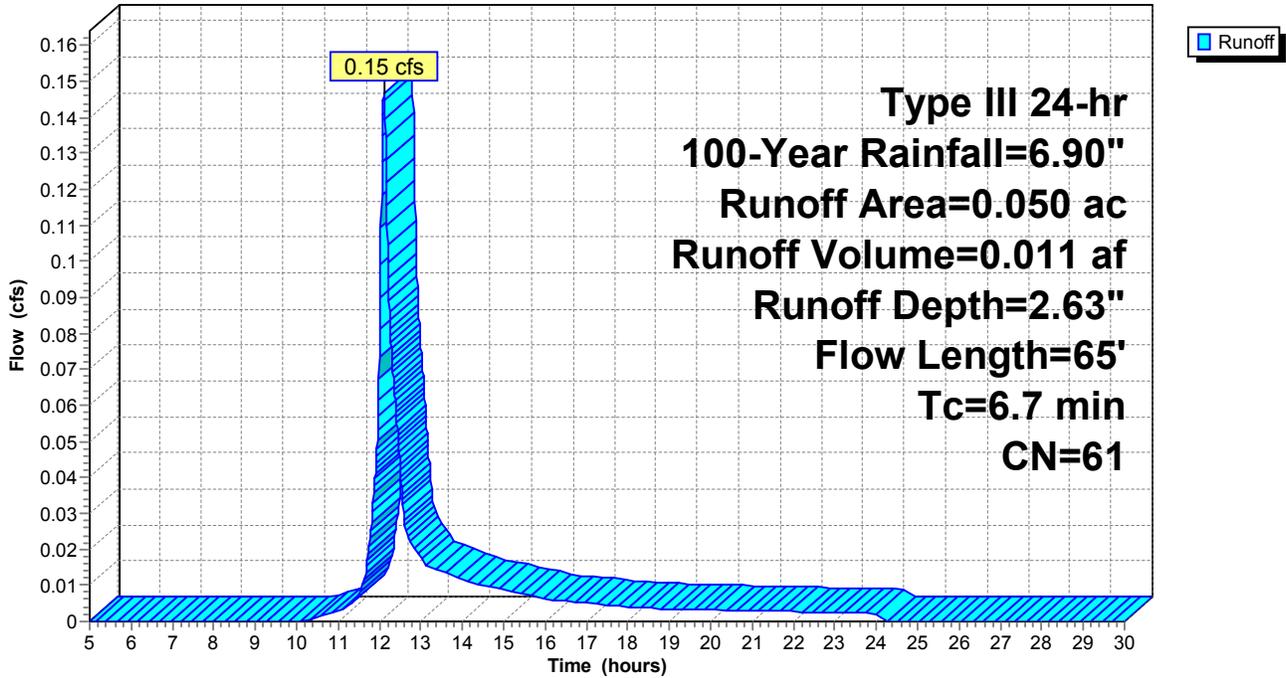
Type III 24-hr 100-Year Rainfall=6.90"

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**Subcatchment 22S:**

**Hydrograph**



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Type III 24-hr 100-Year Rainfall=6.90"

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**Summary for Subcatchment 23S:**

Runoff = 0.24 cfs @ 12.86 hrs, Volume= 0.082 af, Depth= 0.47"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-Year Rainfall=6.90"

Area (ac)	CN	Description
0.005	98	Paved parking, HSG B
0.110	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.000	91	Gravel roads, HSG D
0.050	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.000	80	>75% Grass cover, Good, HSG D
1.950	32	Woods/grass comb., Good, HSG A
0.000	58	Woods/grass comb., Good, HSG B
0.000	79	Woods/grass comb., Good, HSG D
2.115	35	Weighted Average
2.110		99.76% Pervious Area
0.005		0.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.7	100	0.0700	0.07		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
14.8	900	0.1640	1.01		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
0.2	65	0.0850	4.69		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
37.7	1,065	Total			

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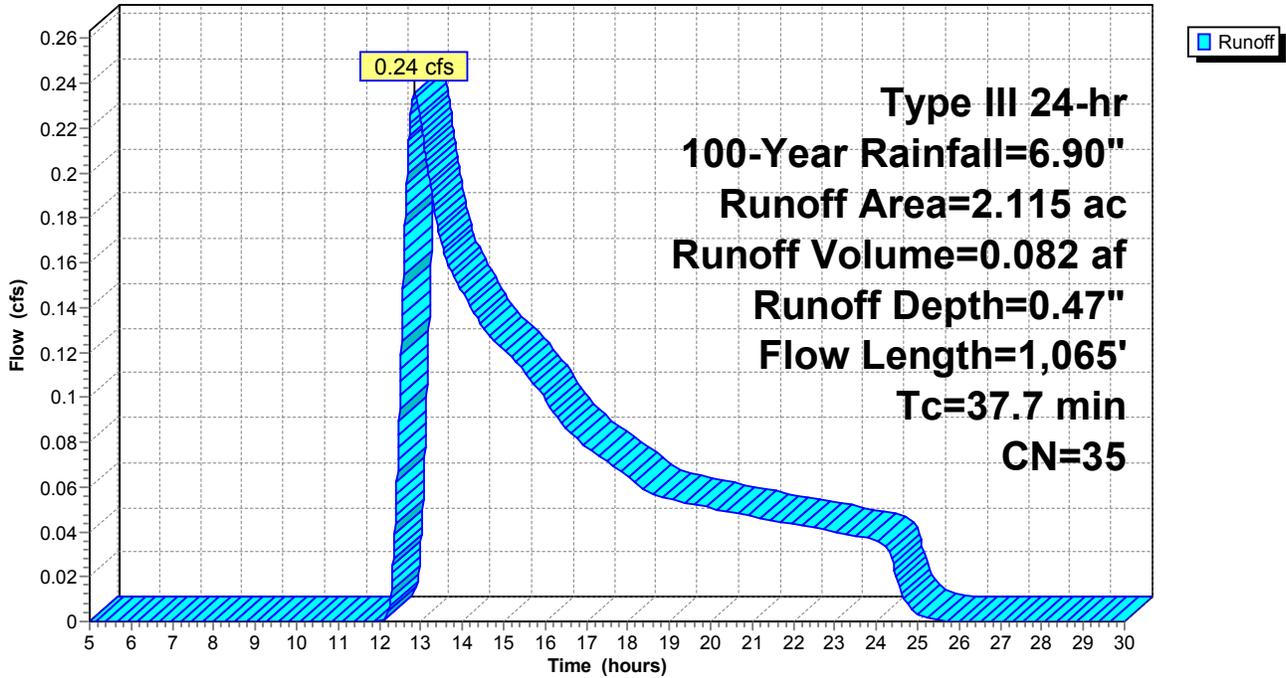
Type III 24-hr 100-Year Rainfall=6.90"

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**Subcatchment 23S:**

Hydrograph



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Type III 24-hr 100-Year Rainfall=6.90"

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**Summary for Subcatchment 24S:**

[49] Hint: Tc<2dt may require smaller dt

Runoff = 0.43 cfs @ 12.02 hrs, Volume= 0.028 af, Depth= 1.88"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

Type III 24-hr 100-Year Rainfall=6.90"

Area (ac)	CN	Description
0.000	98	Paved parking, HSG B
0.080	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.000	91	Gravel roads, HSG D
0.040	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.000	80	>75% Grass cover, Good, HSG D
0.060	32	Woods/grass comb., Good, HSG A
0.000	58	Woods/grass comb., Good, HSG B
0.000	79	Woods/grass comb., Good, HSG D
0.180	53	Weighted Average
0.180		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0780	1.47		<b>Sheet Flow,</b> n= 0.020 P2= 3.20"

**Proposed**

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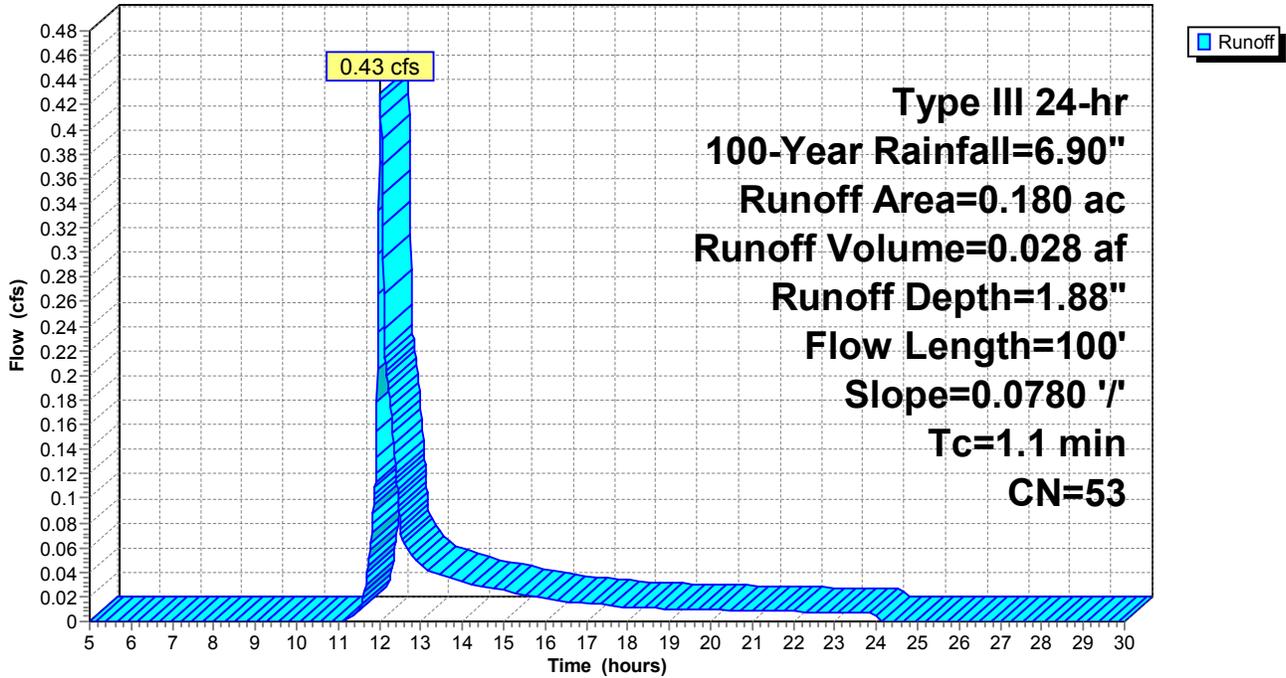
Type III 24-hr 100-Year Rainfall=6.90"

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**Subcatchment 24S:**

**Hydrograph**



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**Summary for Subcatchment 31S:**

Runoff = 0.15 cfs @ 12.99 hrs, Volume= 0.073 af, Depth= 0.35"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-Year Rainfall=6.90"

Area (ac)	CN	Description
0.000	98	Paved parking, HSG B
0.060	76	Gravel roads, HSG A
0.000	85	Gravel roads, HSG B
0.000	91	Gravel roads, HSG D
0.050	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.000	80	>75% Grass cover, Good, HSG D
2.390	32	Woods/grass comb., Good, HSG A
0.000	58	Woods/grass comb., Good, HSG B
0.000	79	Woods/grass comb., Good, HSG D
2.500	33	Weighted Average
2.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	100	0.0900	0.08		<b>Sheet Flow,</b> Woods: Dense underbrush n= 0.800 P2= 3.20"
16.3	940	0.1480	0.96		<b>Shallow Concentrated Flow,</b> Forest w/Heavy Litter Kv= 2.5 fps
0.2	68	0.1030	5.17		<b>Shallow Concentrated Flow,</b> Unpaved Kv= 16.1 fps
37.0	1,108	Total			

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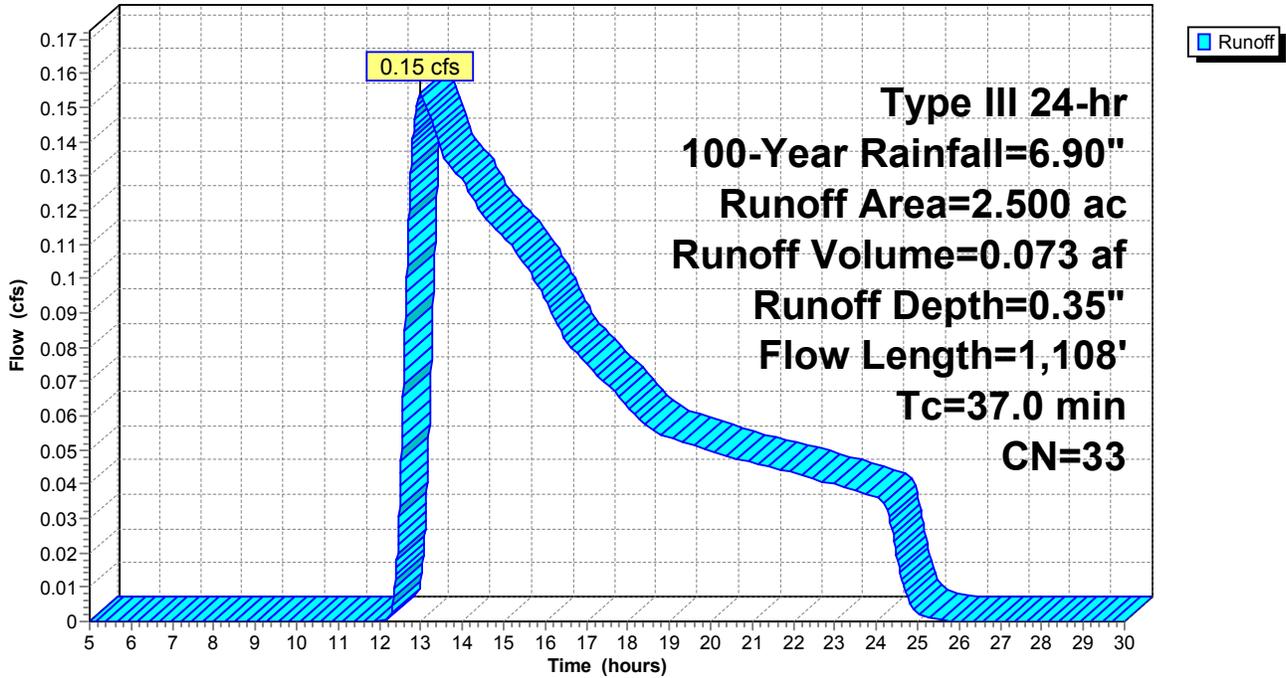
Type III 24-hr 100-Year Rainfall=6.90"

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**Subcatchment 31S:**

Hydrograph



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**Summary for Pond 10P:**

[87] Warning: Oscillations may require Finer Routing or smaller dt

Inflow Area = 0.950 ac, 0.00% Impervious, Inflow Depth = 0.66" for 100-Year event  
 Inflow = 0.24 cfs @ 12.58 hrs, Volume= 0.052 af  
 Outflow = 0.17 cfs @ 12.88 hrs, Volume= 0.052 af, Atten= 30%, Lag= 18.1 min  
 Discarded = 0.17 cfs @ 12.88 hrs, Volume= 0.052 af  
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
 Peak Elev= 102.50' @ 12.88 hrs Surf.Area= 0.009 ac Storage= 0.004 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 14.5 min ( 973.2 - 958.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	102.00'	0.023 af	<b>2.00'W x 55.00'L x 2.00'H Prismaoid Z=3.0</b>
#2	100.00'	0.002 af	<b>2.00'W x 55.00'L x 2.00'H Prismaoid</b>
			0.005 af Overall x 40.0% Voids
		0.025 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	103.00'	<b>55.0' long x 1.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.62 2.64 2.64 2.68 2.75 2.86 2.92 3.07 3.07 3.03 3.28 3.32
#2	Discarded	100.00'	<b>15.900 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 93.50'

**Discarded OutFlow** Max=0.17 cfs @ 12.88 hrs HW=102.50' (Free Discharge)  
 ↑2=Exfiltration ( Controls 0.17 cfs)

**Primary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=100.00' TW=0.00' (Dynamic Tailwater)  
 ↑1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Proposed**

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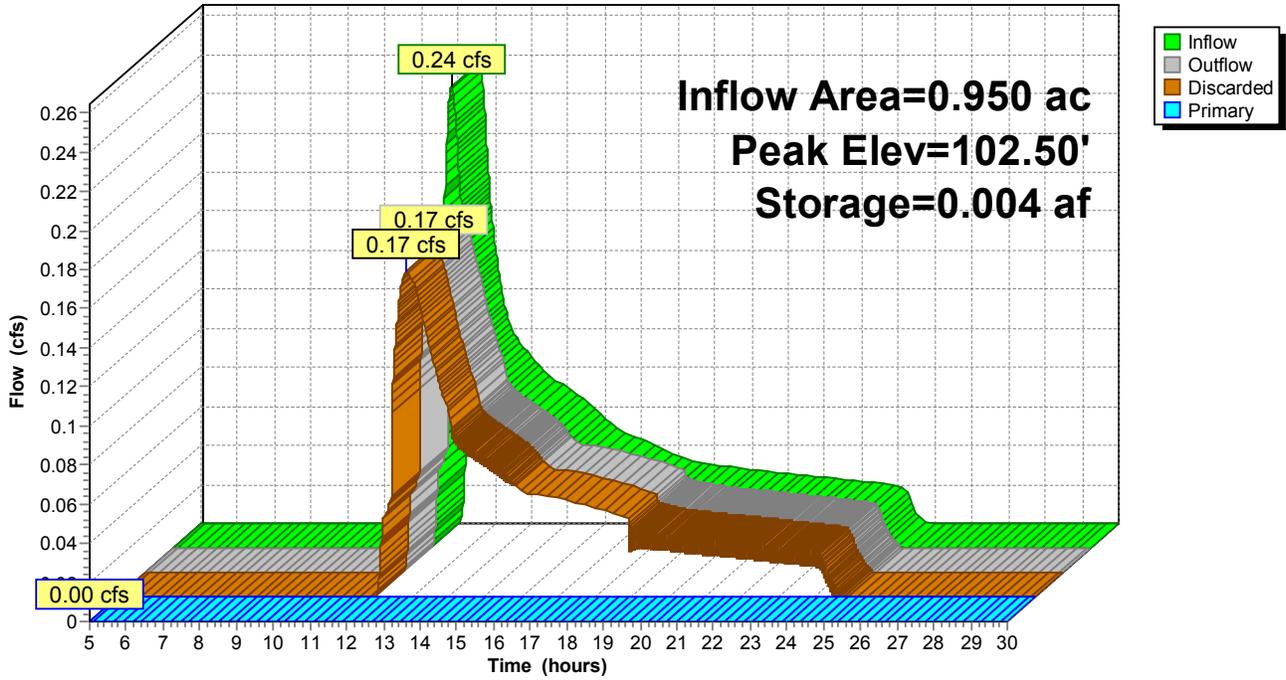
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**Pond 10P:**

Hydrograph



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**Summary for Pond 21P:**

[87] Warning: Oscillations may require Finer Routing or smaller dt

Inflow Area = 1.140 ac, 0.00% Impervious, Inflow Depth = 0.66" for 100-Year event  
 Inflow = 0.29 cfs @ 12.56 hrs, Volume= 0.063 af  
 Outflow = 0.18 cfs @ 12.92 hrs, Volume= 0.063 af, Atten= 37%, Lag= 21.7 min  
 Discarded = 0.18 cfs @ 12.92 hrs, Volume= 0.063 af  
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
 Peak Elev= 102.88' @ 12.92 hrs Surf.Area= 0.010 ac Storage= 0.006 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 17.8 min ( 975.0 - 957.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	102.00'	0.019 af	<b>2.00'W x 43.00'L x 2.00'H Prismatic Z=3.0</b>
#2	100.00'	0.002 af	<b>2.00'W x 43.00'L x 2.00'H Prismatic</b>
			0.004 af Overall x 40.0% Voids
		0.020 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	103.00'	<b>43.0' long x 1.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.62 2.64 2.64 2.68 2.75 2.86 2.92 3.07 3.07 3.03 3.28 3.32
#2	Discarded	100.00'	<b>15.900 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 93.50'

**Discarded OutFlow** Max=0.18 cfs @ 12.92 hrs HW=102.88' (Free Discharge)  
 ↑2=Exfiltration ( Controls 0.18 cfs)

**Primary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=100.00' TW=0.00' (Dynamic Tailwater)  
 ↑1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

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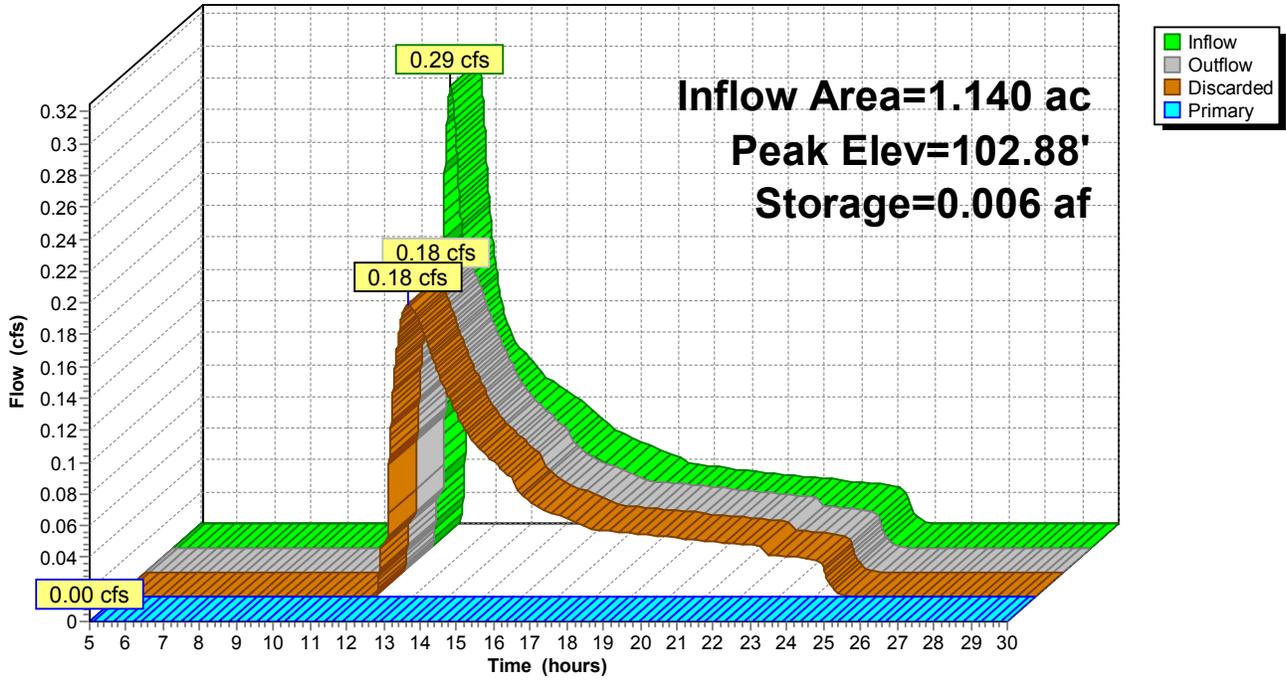
Type III 24-hr 100-Year Rainfall=6.90"

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**Pond 21P:**

Hydrograph



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**Summary for Pond 22P:**

[87] Warning: Oscillations may require Finer Routing or smaller dt

Inflow Area = 0.050 ac, 0.00% Impervious, Inflow Depth = 2.63" for 100-Year event  
 Inflow = 0.15 cfs @ 12.10 hrs, Volume= 0.011 af  
 Outflow = 0.07 cfs @ 12.32 hrs, Volume= 0.011 af, Atten= 52%, Lag= 12.9 min  
 Discarded = 0.07 cfs @ 12.32 hrs, Volume= 0.011 af  
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
 Peak Elev= 102.55' @ 12.32 hrs Surf.Area= 0.004 ac Storage= 0.002 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 11.2 min ( 863.8 - 852.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	102.00'	0.010 af	<b>2.00'W x 21.00'L x 2.00'H Prismaoid Z=3.0</b>
#2	100.00'	0.001 af	<b>2.00'W x 21.00'L x 2.00'H Prismaoid</b>
			0.002 af Overall x 40.0% Voids
		0.011 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	103.00'	<b>21.0' long x 1.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.62 2.64 2.64 2.68 2.75 2.86 2.92 3.07 3.07 3.03 3.28 3.32
#2	Discarded	100.00'	<b>15.900 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 93.50'

**Discarded OutFlow** Max=0.07 cfs @ 12.32 hrs HW=102.55' (Free Discharge)  
 ↑2=Exfiltration ( Controls 0.07 cfs)

**Primary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=100.00' TW=0.00' (Dynamic Tailwater)  
 ↑1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Proposed**

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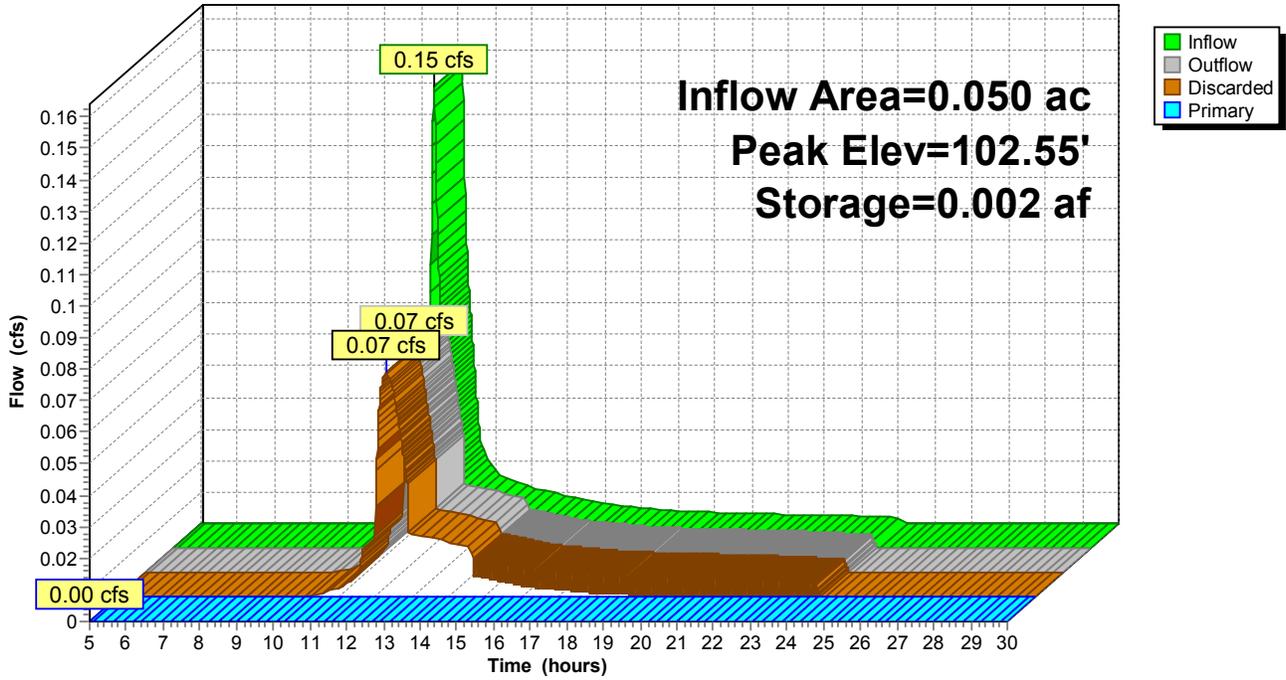
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**Pond 22P:**

Hydrograph



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**Summary for Pond 23P:**

[87] Warning: Oscillations may require Finer Routing or smaller dt

Inflow Area = 2.115 ac, 0.24% Impervious, Inflow Depth = 0.47" for 100-Year event  
 Inflow = 0.24 cfs @ 12.86 hrs, Volume= 0.082 af  
 Outflow = 0.19 cfs @ 13.31 hrs, Volume= 0.082 af, Atten= 21%, Lag= 27.2 min  
 Discarded = 0.19 cfs @ 13.31 hrs, Volume= 0.082 af  
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
 Peak Elev= 102.52' @ 13.31 hrs Surf.Area= 0.010 ac Storage= 0.005 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 17.3 min ( 1,013.6 - 996.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	102.00'	0.025 af	<b>2.00'W x 60.00'L x 2.00'H Prismaoid Z=3.0</b>
#2	100.00'	0.002 af	<b>2.00'W x 60.00'L x 2.00'H Prismaoid</b>
			0.006 af Overall x 40.0% Voids
		0.027 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	103.00'	<b>60.0' long x 1.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.62 2.64 2.64 2.68 2.75 2.86 2.92 3.07 3.07 3.03 3.28 3.32
#2	Discarded	100.00'	<b>15.900 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 93.50'

**Discarded OutFlow** Max=0.19 cfs @ 13.31 hrs HW=102.52' (Free Discharge)  
 ↑2=Exfiltration ( Controls 0.19 cfs)

**Primary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=100.00' TW=0.00' (Dynamic Tailwater)  
 ↑1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Proposed**

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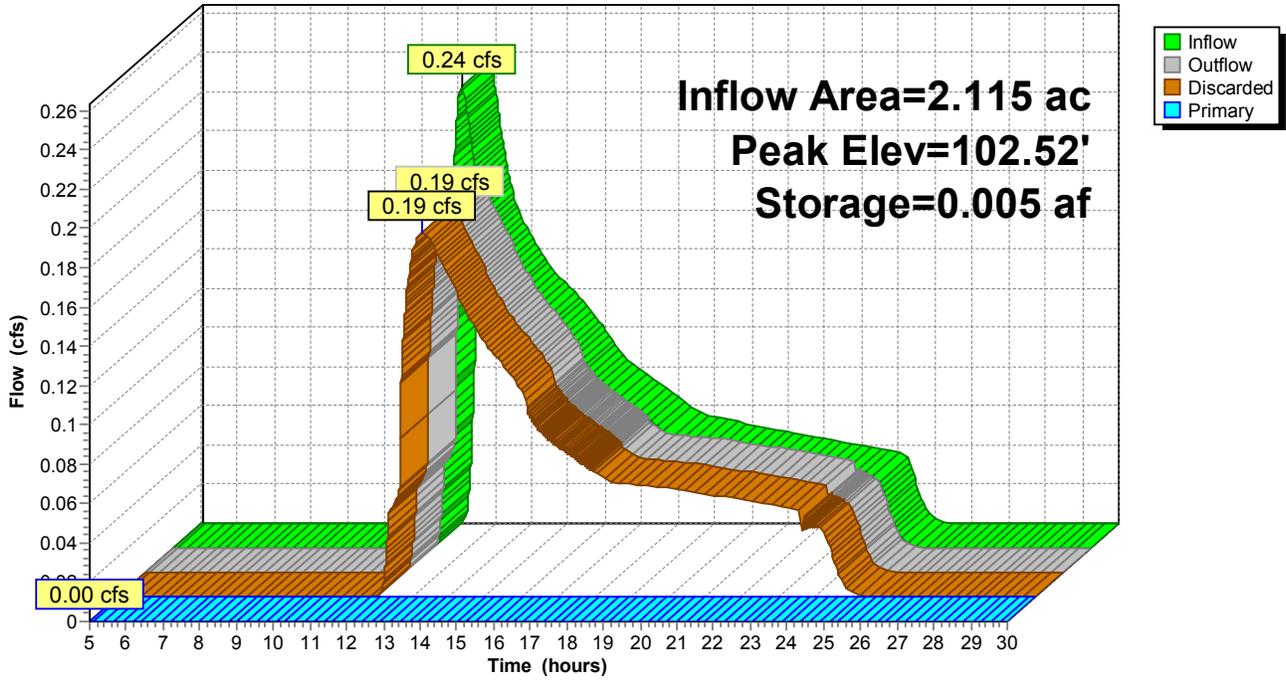
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**Pond 23P:**

Hydrograph



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**Summary for Pond 24P:**

[87] Warning: Oscillations may require Finer Routing or smaller dt

Inflow Area = 0.180 ac, 0.00% Impervious, Inflow Depth = 1.88" for 100-Year event  
 Inflow = 0.43 cfs @ 12.02 hrs, Volume= 0.028 af  
 Outflow = 0.18 cfs @ 12.26 hrs, Volume= 0.028 af, Atten= 59%, Lag= 14.1 min  
 Discarded = 0.18 cfs @ 12.26 hrs, Volume= 0.028 af  
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
 Peak Elev= 102.32' @ 12.26 hrs Surf.Area= 0.010 ac Storage= 0.004 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 9.8 min ( 878.0 - 868.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	102.00'	0.028 af	<b>2.00'W x 70.00'L x 2.00'H Prismaoid Z=3.0</b>
#2	100.00'	0.003 af	<b>2.00'W x 70.00'L x 2.00'H Prismaoid</b>
			0.006 af Overall x 40.0% Voids
		0.031 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	103.00'	<b>70.0' long x 1.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.62 2.64 2.64 2.68 2.75 2.86 2.92 3.07 3.07 3.03 3.28 3.32
#2	Discarded	100.00'	<b>15.900 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 93.50'

**Discarded OutFlow** Max=0.18 cfs @ 12.26 hrs HW=102.32' (Free Discharge)  
 ↑2=Exfiltration ( Controls 0.18 cfs)

**Primary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=100.00' TW=0.00' (Dynamic Tailwater)  
 ↑1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

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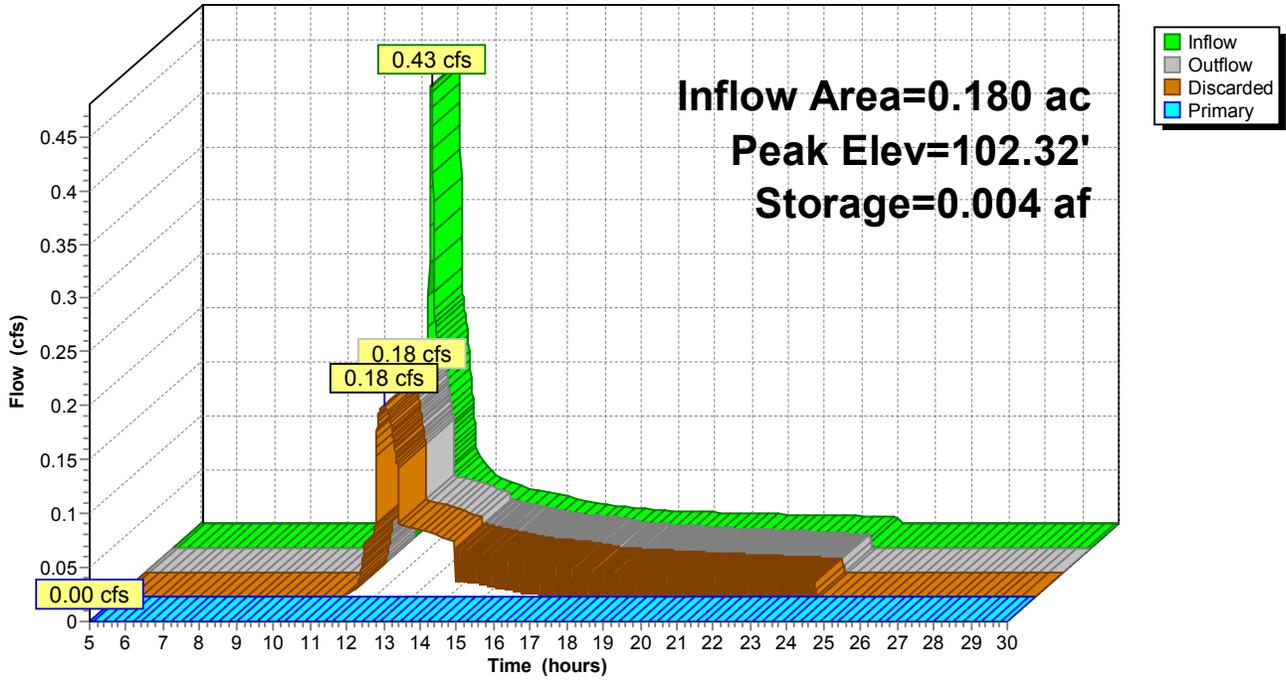
Type III 24-hr 100-Year Rainfall=6.90"

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**Pond 24P:**

Hydrograph



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**Summary for Pond 31P:**

Inflow Area = 2.500 ac, 0.00% Impervious, Inflow Depth = 0.35" for 100-Year event  
 Inflow = 0.15 cfs @ 12.99 hrs, Volume= 0.073 af  
 Outflow = 0.15 cfs @ 12.99 hrs, Volume= 0.073 af, Atten= 0%, Lag= 0.0 min  
 Discarded = 0.15 cfs @ 12.99 hrs, Volume= 0.073 af  
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
 Peak Elev= 100.00' @ 12.96 hrs Surf.Area= 0.021 ac Storage= 0.000 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 0.0 min ( 1,019.3 - 1,019.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	102.00'	0.066 af	<b>13.00'W x 69.00'L x 2.00'H Prismatic Z=3.0</b>
#2	100.00'	0.016 af	<b>13.00'W x 69.00'L x 2.00'H Prismatic</b>
			0.041 af Overall x 40.0% Voids
		0.082 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	103.00'	<b>69.0' long x 1.5' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.62 2.64 2.64 2.68 2.75 2.86 2.92 3.07 3.07 3.03 3.28 3.32
#2	Discarded	100.00'	<b>15.900 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = 93.50'

**Discarded OutFlow** Max=0.33 cfs @ 12.99 hrs HW=100.00' (Free Discharge)  
 ↑2=Exfiltration ( Controls 0.33 cfs)

**Primary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=100.00' TW=0.00' (Dynamic Tailwater)  
 ↑1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

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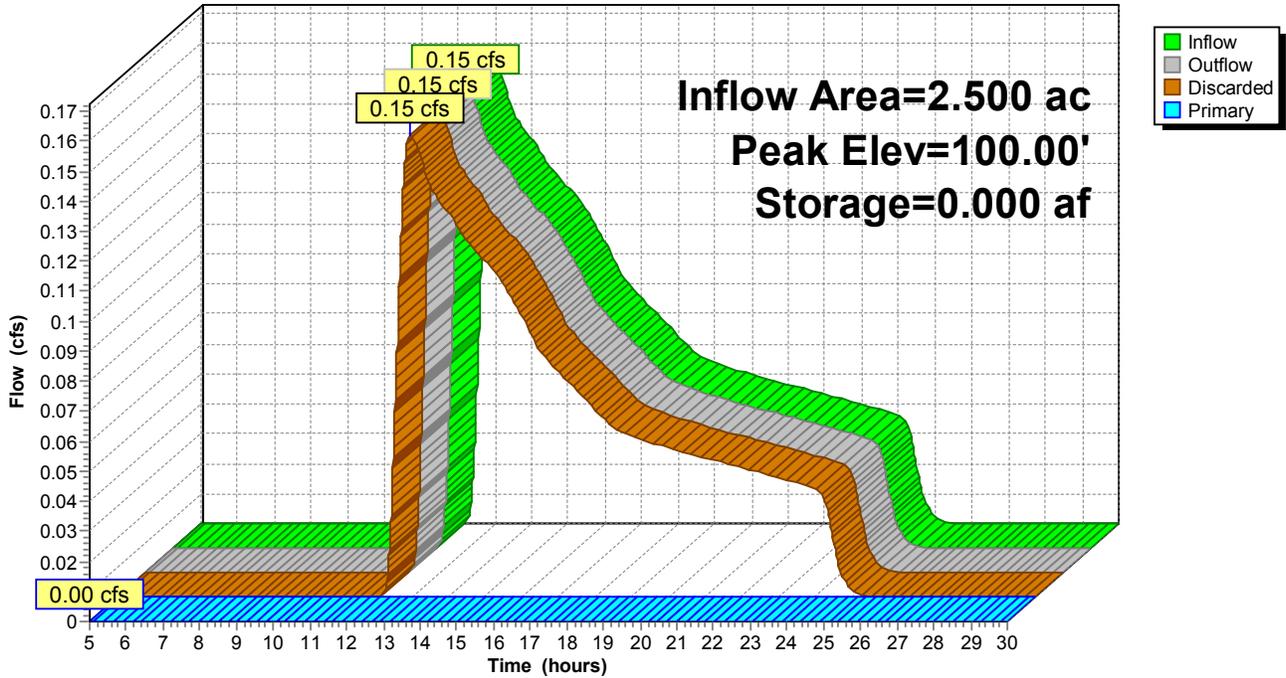
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**Pond 31P:**

Hydrograph



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**Summary for Pond A: Wetland A**

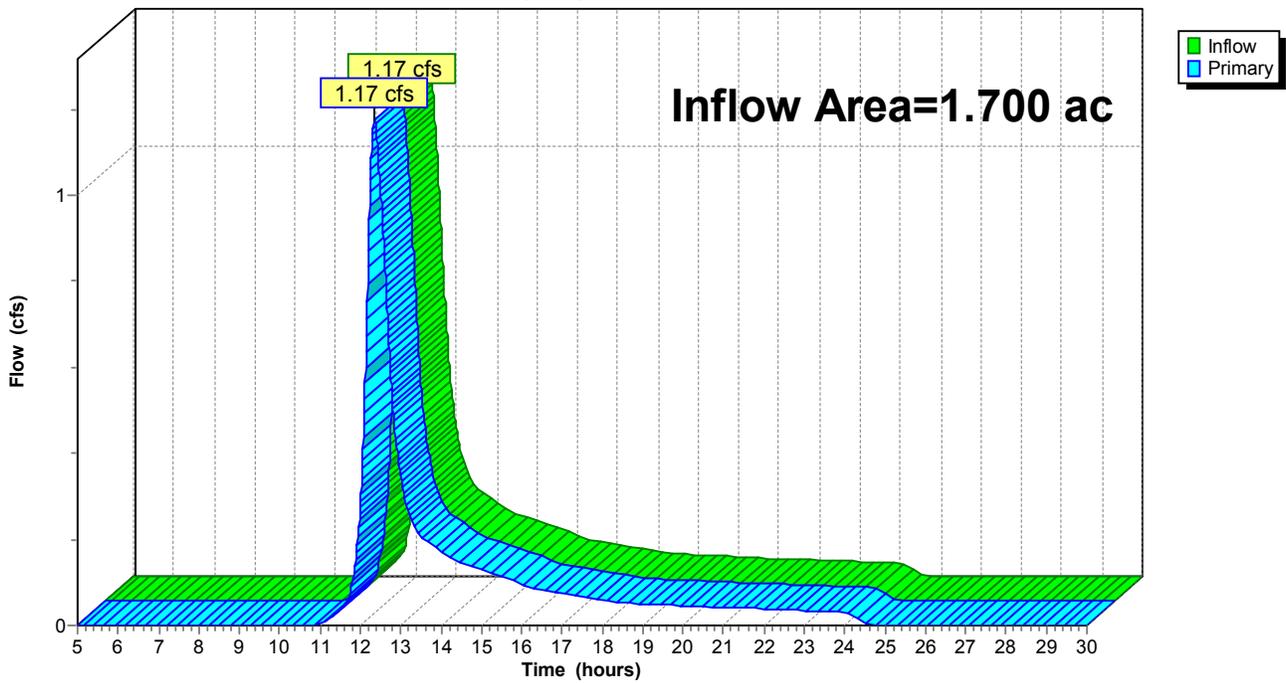
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.700 ac, 4.12% Impervious, Inflow Depth = 0.99" for 100-Year event  
Inflow = 1.17 cfs @ 12.35 hrs, Volume= 0.140 af  
Primary = 1.17 cfs @ 12.35 hrs, Volume= 0.140 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Pond A: Wetland A**

Hydrograph



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**Summary for Pond B: Wetland B**

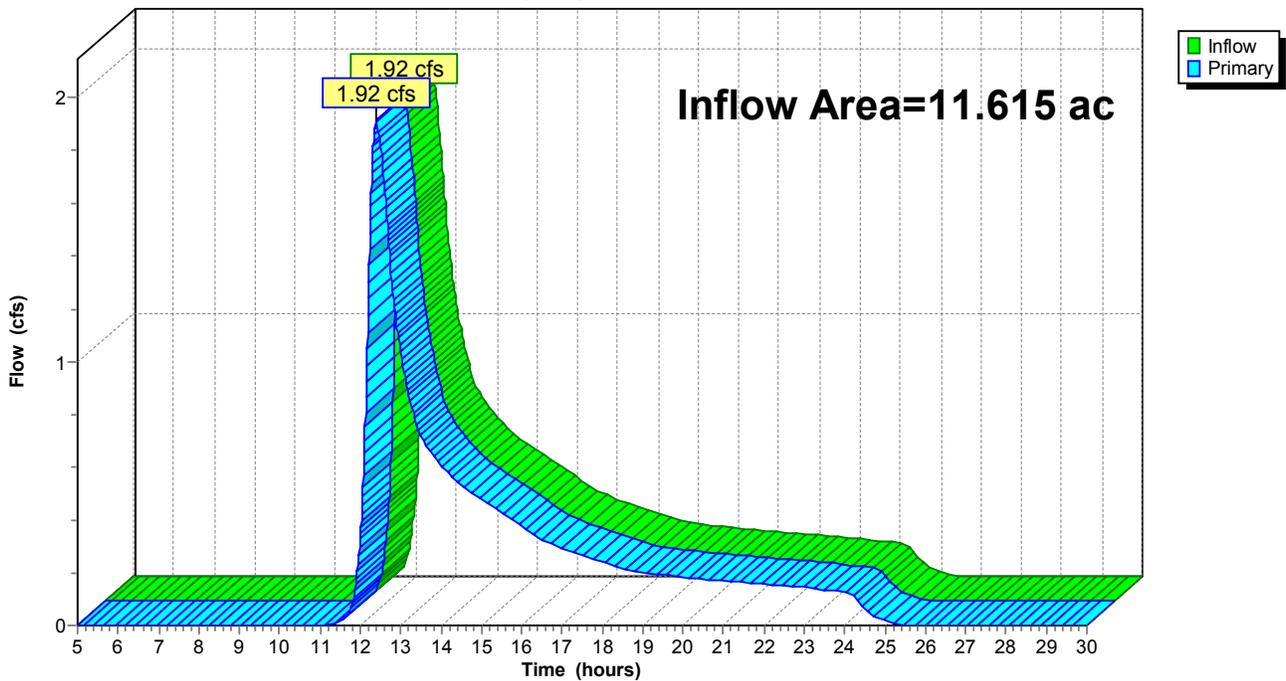
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 11.615 ac, 3.23% Impervious, Inflow Depth = 0.41" for 100-Year event  
Inflow = 1.92 cfs @ 12.40 hrs, Volume= 0.399 af  
Primary = 1.92 cfs @ 12.40 hrs, Volume= 0.399 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Pond B: Wetland B**

Hydrograph



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**Summary for Pond C: Wetland C**

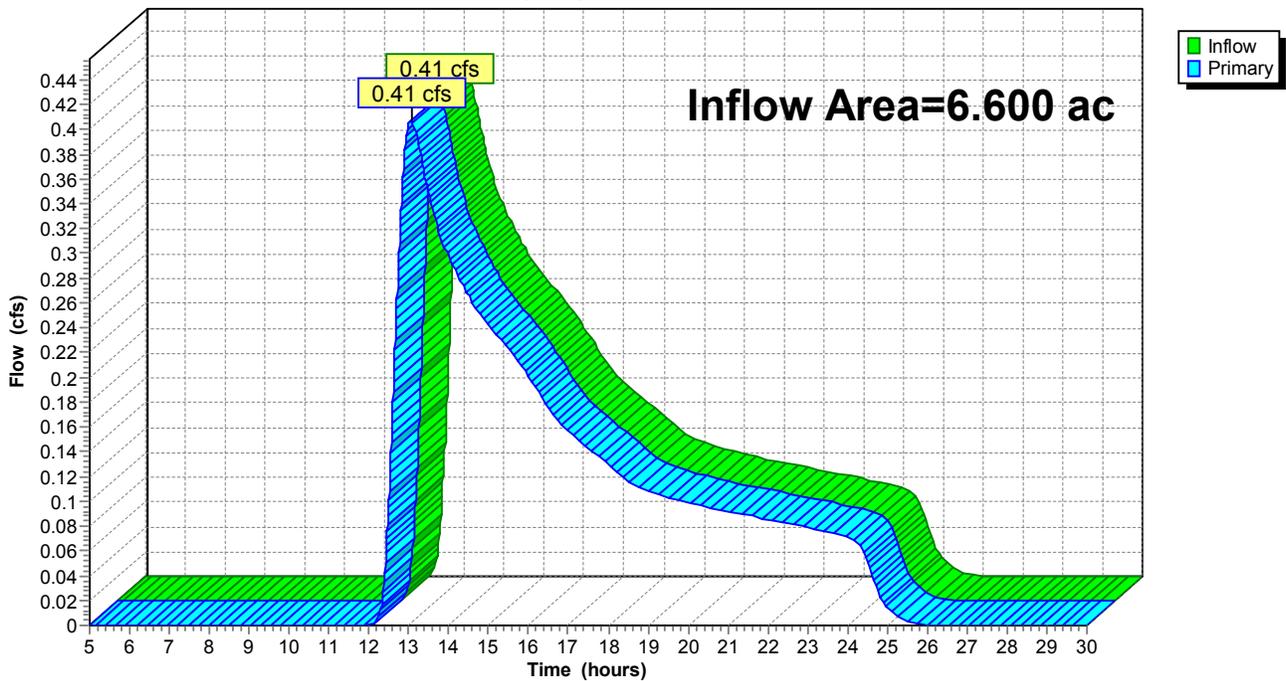
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 6.600 ac, 1.82% Impervious, Inflow Depth = 0.29" for 100-Year event  
Inflow = 0.41 cfs @ 13.06 hrs, Volume= 0.159 af  
Primary = 0.41 cfs @ 13.06 hrs, Volume= 0.159 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Pond C: Wetland C**

**Hydrograph**



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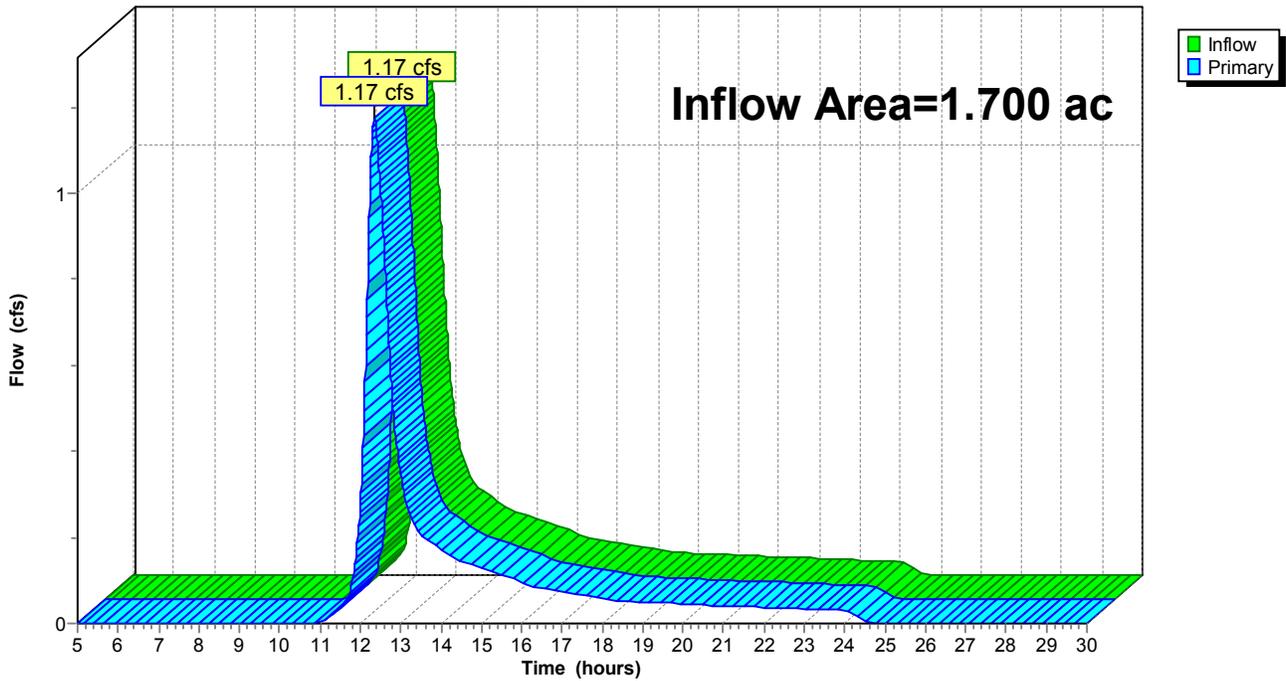
**Summary for Link 1L: Eastern Outfall**

Inflow Area = 1.700 ac, 4.12% Impervious, Inflow Depth = 0.99" for 100-Year event  
Inflow = 1.17 cfs @ 12.35 hrs, Volume= 0.140 af  
Primary = 1.17 cfs @ 12.35 hrs, Volume= 0.140 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Link 1L: Eastern Outfall**

Hydrograph



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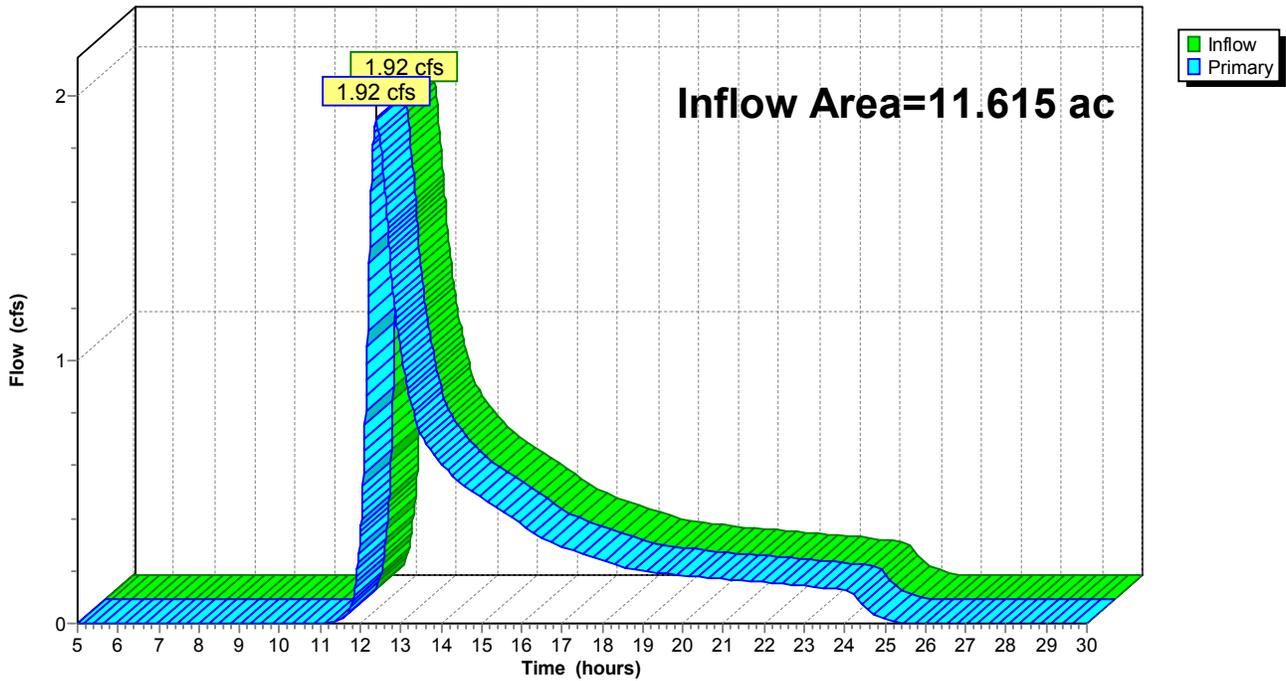
**Summary for Link 2L: Western Outfall**

Inflow Area = 11.615 ac, 3.23% Impervious, Inflow Depth = 0.41" for 100-Year event  
Inflow = 1.92 cfs @ 12.40 hrs, Volume= 0.399 af  
Primary = 1.92 cfs @ 12.40 hrs, Volume= 0.399 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs

**Link 2L: Western Outfall**

Hydrograph



Water Quality Volume & Flow

---

Water Quality Volume (WQV)

Input		
Impervious	A (ac)	
	I (%)	0.08
Area	A (ac)	6.94
P		1
Equations		
R		0.122
<b>WQV</b>	ac-ft	<b>0.070557</b>
<b>WQV</b>	cf	<b>3074</b>
<b>Provided</b>	cf	<b>3370</b>

Water Quality Flow (WQF)

Equations		
Q		0.122
CN		82.44879
<i>therefore,</i>	<i>la</i>	<i>0.597</i>
<i>la/P</i>		<i>0.597</i>
Tc	min	18.8
<i>qu</i>	<i>csm/in</i>	<i>175</i>
<b>WQF</b>	cfs	<b>0.231514</b>

\*Table 4-1 in Ch. 4, TR-55)

\*Exhibit 4-III in Ch. 4, TR-55)