

SOUTH HADLEY SQUARE

SMALL RETAIL DEVELOPMENT PROJECT

STORMWATER REPORT



July 12, 2013



CIVIL • STRUCTURAL • PROJECT MANAGERS

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SECTION 1

DRAINAGE REPORT

PROJECT PURPOSE

The overall purpose of the proposed small retail development project is to construct a new 6,000 SF, three (3) rental units building to provide goods and services to the general public, and utilize an existing and pad-ready parcel within the South Hadley Square retail center. The project is the result of inquiries from various retailers looking to locate at the strategically located and desirable retail plaza or center, and is being proposed by AVR Realty Corporation for KHC-South South Hadley Associates, LLC.

The purpose of this Stormwater Analysis and Drainage Report was to determine the stormwater peak flows for the pre-construction or existing condition and post-construction condition for the project of concern, ensure that the proposed project can be accommodated by the existing stormwater detention pond, and present the results of the analysis. The analyses were completed using HydroCAD 9.1, a hydrology and hydraulics or stormwater modeling program. For the drainage analysis and mitigation design, we also utilized an on-site surficial soil investigation, Natural Resource Conservation Service (NRCS) soil map and data, internet-based MASS GIS maps, and an on-the-ground survey topographic survey with existing conditions plan.

PROJECT LOCATION

The project of concern is located at the center frontage parcel within the South Hadley Square Plaza at 50 Willimansett Street (Route 33) in South Hadley, MA. The parcel of interest is located just south the Chicopee Savings Bank and north of Holyoke Pediatrics. The site can also be located at coordinates 42° 13' 20" N and 72° 34' 18" W on the Springfield North, MA USGS quadrangle or as seen below in a Google Earth view (see Figure 1).

Based on review of USDA NRCS soil survey, Hampshire County Central Part, the soils with the area of interest are 255A, Windsor Loamy Sands with 0-3% ground slopes. The soil within the project location is of a Hydrologic Soil Group (HSG) of "A" with rapid soil permeability. Based on a review of a Drainage Report completed by Almer Huntley Jr & Associates for the original 1995-96 Mater Site Plan and development, the same soils were identified with a infiltration rate of 5 min/inch or 12 inches/hour.

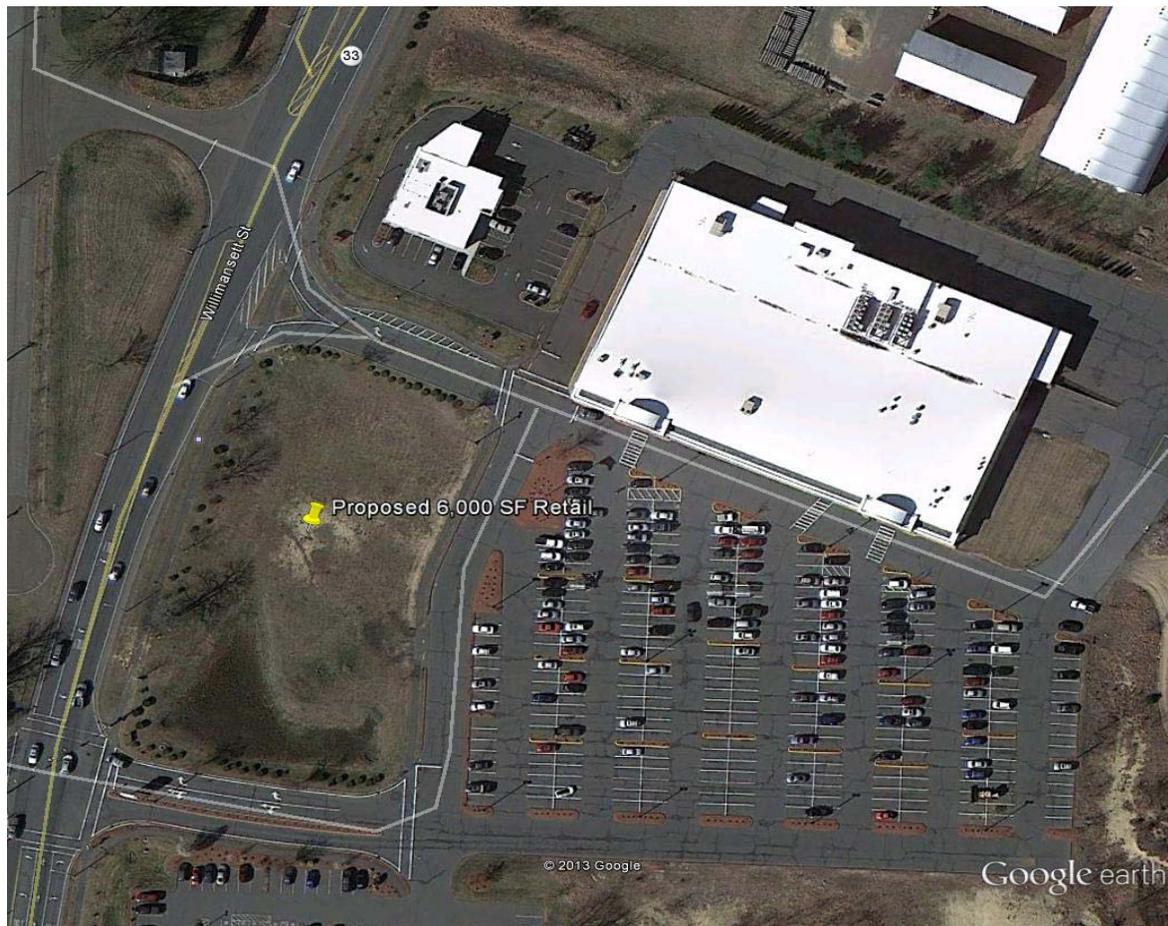


Figure 1. Aerial view of project location at SHS Plaza on Willimansett St. (Google).

METHOD OF DRAINAGE ANALYSIS

The Natural Resource Conservation Service (formerly Soil Conservation Service, or SCS) method of analysis was utilized for this project. The SCS method is based on TR-20 and is widely accepted as standard engineering practice within the civil engineering profession for storm water runoff or hydrology analysis. The SCS method of hydrology analysis utilizes the drainage area, hydraulic length, average terrain slope, and soil conditions as input to calculate peak flows and total volume of runoff for the catchment or watershed and the specific synthetic or statistical rain event.

HDG modeled the 2, 10, and 25-year statistical rain events for both the pre and post construction condition scenarios, with the 25-year event being the Town of South Hadley design requirements under Section 8.09. The total anticipated rainfall for the 2-year, 10-year, and 25-year rain events appear to be 3.0-inches, 4.5-inches, and 5.4-inches, respectively. The SCS statistical rain events are for a twenty-four (24) hour period, and are considered a Type III distribution based on the project location.

EXISTING DRAINAGE CONDITIONS

The 1.462 acre parcel of interest is currently undeveloped, but was part of a 1995-96 Master Site Plan for the South Hadley Square retail center or plaza that was prepared by Almer Huntley, Jr. & Associates for Heflin Associates. Due to economic and market conditions over the years, only 51% of the permitted total building coverage at the plaza has been developed. Based on review of the Master Site Plan available at the Town Hall and Google Earth dimensional measurements, it appears the total permitted building coverage was 151,050 SF (+/-) and current building coverage is estimated at 77,015 SF (+/-) with the Big Y being the largest building at 58,000 SF. Please note that the 17,300 SF retail building that was to be adjacent to the Big-Y and the 60,000 SF building that was to be located to the southeast from the Big-Y building were approved and permitted in 1996, but have not been constructed or developed at this point in time.

Furthermore, based on review of the 1995-96 Master Site Plan, field or site reconnaissance, and current Existing Conditions topographic survey with base plan, it appears that there are essentially three paved drainage areas from the Big-Y parking area that are routed toward the detention pond of concern. The Big-Y parking areas and stormwater flows are routed via overland flow to catch basins (CB) 11, 12, and 13. The areas are 35,536 SF, 64,556 SF, and 11,010 SF, respectively, with CB11 being routed to drain manhole (DMH) 2, and CB12 and CB13 being routed to DMH3, with both flows then being routed onto the detention basin.

In addition to the Big-Y parking areas, the adjacent driveways route runoff toward CB7, CB9, CB10, and CB14. Runoff from driveway area 7 of 5,375 SF is routed to CB7, and then direct into the detention pond at southwest corner. Driveway areas 9 and 10 with catchment areas of 15,000 SF and 9,700 SF are routed to CB9 and CB10, into DMH2, and then onto the detention pond. CB14 currently receives no runoff as it is located above grade within the project parcel, but the piping is routed to DMH3 and was constructed for the purpose of collecting runoff from the subject parcel and the developed scenario.

Within the 63,685 SF subject parcel, approximately 37,865 SF of very pervious grass covered soil exists at the northern half of the parcel and fully infiltrates into the ground. Any rainfall exceeding the infiltration capacity of the soil at this area will travel via overland flow to a low relative depression area at elevation 236. Approximately 9,670 SF of the southern half of parcel is also grass covered and rainfall events at this portion of terrain will be routed directly to the detention basin. The maximum detention basin area is 14,650 SF when measured at the outlet control elevation of 237. Due to the topography, approximately 1,500 SF of the parcel is routed offsite toward Willimansett Street and the Town storm sewer system.

PROPOSED DRAINAGE CONDITIONS

For the proposed or constructed condition, the total drainage area essentially remains the same. The sub-catchment areas from the Big-Y parking lot and adjoining driveways still route the same area of

stormwater runoff toward the previously described catch basins, drain manholes, piping and onto the detention pond of interest, including CB7, CB9, CB10, CB11, CB12, and CB13. In addition and based on conservative analysis and design assumptions, the detention pond area of 14,650 SF is also considered to remain impervious and provide direct rain event runoff to the detention pond itself.

The only alterations or modification of stormwater runoff surface treatment and routing are from the developed areas within the subject parcel. Based on the proposed grading and desire to minimize the quantity of fill, yet still provide a viable stormwater system design, approximately 16,191 SF of the redeveloped area, will be routed to a new a catch basin, CB1, and 29,200 SF of redeveloped area will be routed to a new catch basin, CB2, and only 2,145 SF of post-construction condition redeveloped area will be routed to the existing catch basin labeled as CB14. The areas routed to CB1, CB2, and CB14 include roof, asphalt paved parking and driveways, sidewalks, and landscaping. It should be noted that the total area of soil disturbance is estimated to be 39,328 SF for the total project.

Both CB1 and CB2 will route their respective stormwater runoff directly in to the existing and slightly modified detention basin. As can be seen from detailed review of the HydroCAD report, Post Condition, the modified detention basin provides slightly larger surface area per elevation and total cumulative storage volume and easily accommodates the additional runoff for the constructed condition, which should be anticipated as the detention pond was designed for the build-out or fully constructed scenario for the areas intended to be routed to this detention pond.

However, it is important to note that the existing detention pond was easily capable of accommodating and infiltrating all previous and additional paved surface and roof runoff without any detention pond size or grading modifications, yet the detention pond grading modifications are necessary to allow the proposed building and parking area configuration. Please also note that based on our review of the original 1995-96 Site Plan grading and Drainage Report prepared by Almer Huntley Jr. & Associates, all runoff routed to this detention pond was infiltrated into the ground up to and including the 25-year design rain event.

RESULTS

Table 1 and Table 2 indicate the overall stormwater model results for the pre or existing condition and post construction condition, respectively. Table 1 represents the overall peak runoff for the catchments and respective NRCS (formerly SCS) rain events at design point 1, the detention pond per the site plan or node Pond P-2 within HydroCAD models. Table 2 represents the overall peak flows at same design point 1, for the constructed site improvements for the same respective NRCS design rain events.

Table 1.0. Pre-Construction peak runoff inflow and elevations (at Detention Pond).

STORM EVENT	RAINFALL (in.)	Peak Inflow (cfs)	Peak Infiltration (cfs)	Peak Pond Elevation (ft)
2-year	3.0	5.35	2.22	234.76
10-year	4.5	6.18	2.46	235.26
25-year	5.4	6.69	2.60	235.54

Table 2.0. Post-Construction peak runoff inflow and elevations (at Detention Pond).

STORM EVENT	RAINFALL (in.)	Peak Inflow (cfs)	Peak Infiltration (cfs)	Peak Pond Elevation (ft)
2-year	3.0	7.60	2.57	234.86
10-year	4.5	9.56	2.83	235.47
25-year	5.4	10.28	2.99	235.81

CONCLUSIONS

From review of Table 1 and Table 2 and the listed HydroCAD results, it can be seen that the existing detention pond can readily accommodate the proposed additional development on Parcel 2 within the South Hadley Square Plaza, including the 6,000 SF retail building with associated parking, driveways, and landscaping. It can also be seen that the existing on-site soil conditions for the area and specifically the detention pond bottom and sidewalls (pond grading) are very favorable to groundwater recharge or infiltration, a best management practice.

It is understood that no runoff is discharged to the Town of South Hadley Storm Sewer system for any of the rain events shown including the required 25-year design rain event, nor is there any discharge to the Town storm sewer system for the 50-year and 100-year rain events (not shown) and that the pond bottom elevation is 234.0 and overflow outlet control elevation 237.0. Please note that the results are based on the current or existing level of development and proposed 6,000 SF building development within parcel 2 of the South Hadley Square Plaza.

The positive modeling results assume that the development will be constructed as shown on the proposed Site Plan, prepared by Hudson Design Group, P.C. In addition, it is also assumed that system maintenance and cleaning or removal of leaves and other debris from catch basins and control structures occurs on an as-needed basis to ensure proper operation.

LIMITATIONS

The storm water analyses were performed in accordance with standard civil engineering practice, and rely on information provided by others as well as published or on-line information. Areas of potential runoff analysis were limited to those areas within the bounds of property owned or believed to impact the property of concern or be part of a specific watershed or catchment.

Hudson Design Group, P.C. shall not be responsible for construction or installation not conforming to the plans, nor shall Hudson Design Group, P.C. be responsible for maintenance of any stormwater management system. It shall also be understood that the SCS Time Lag Method of drainage analyses was originally formulated to assist with the development of farmland and crop production. The SCS method has become one standard method of hydrologic analysis within civil engineering community, yet may be conservative for use on very small areas of modern development and provide runoff results that are greater or more conservative than actual conditions (pre or post construction).

SECTION 2

NRCS SOIL DATA

Hydrologic Soil Group—Hampshire County, Massachusetts, Central Part
(SHS Parcel 2 Development, HSG)



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: 1:767 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:15,840.

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: Hampshire County, Massachusetts, Central Part

Survey Area Data: Version 7, Sep 22, 2012

Date(s) aerial images were photographed: 7/30/2003

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 — Hampshire County, Massachusetts, Central Part (MA609)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
255A	Windsor loamy sand, 0 to 3 percent slopes	A	2.8	100.0%
Totals for Area of Interest			2.8	100.0%

Description

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

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

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

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

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

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

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

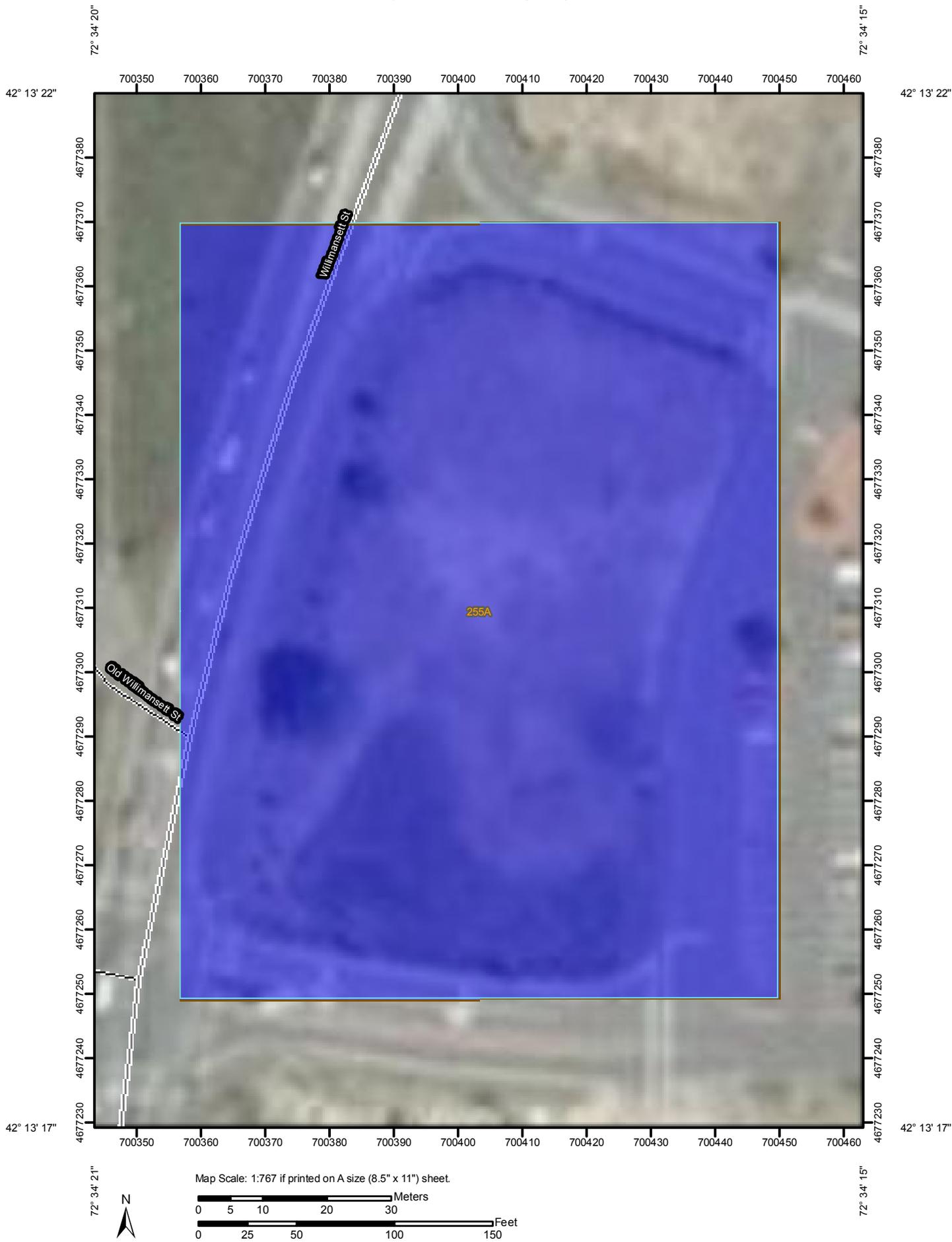
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Depth to Water Table—Hampshire County, Massachusetts, Central Part
(SHS Parcel 2 Development)



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Units

Soil Ratings

 0 - 25

 25 - 50

 50 - 100

 100 - 150

 150 - 200

 > 200

Political Features

 Cities

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

MAP INFORMATION

Map Scale: 1:767 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:15,840.

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Depth to Water Table

Depth to Water Table— Summary by Map Unit — Hampshire County, Massachusetts, Central Part (MA609)				
Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
255A	Windsor loamy sand, 0 to 3 percent slopes	>200	2.8	100.0%
Totals for Area of Interest			2.8	100.0%

Description

"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Rating Options

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

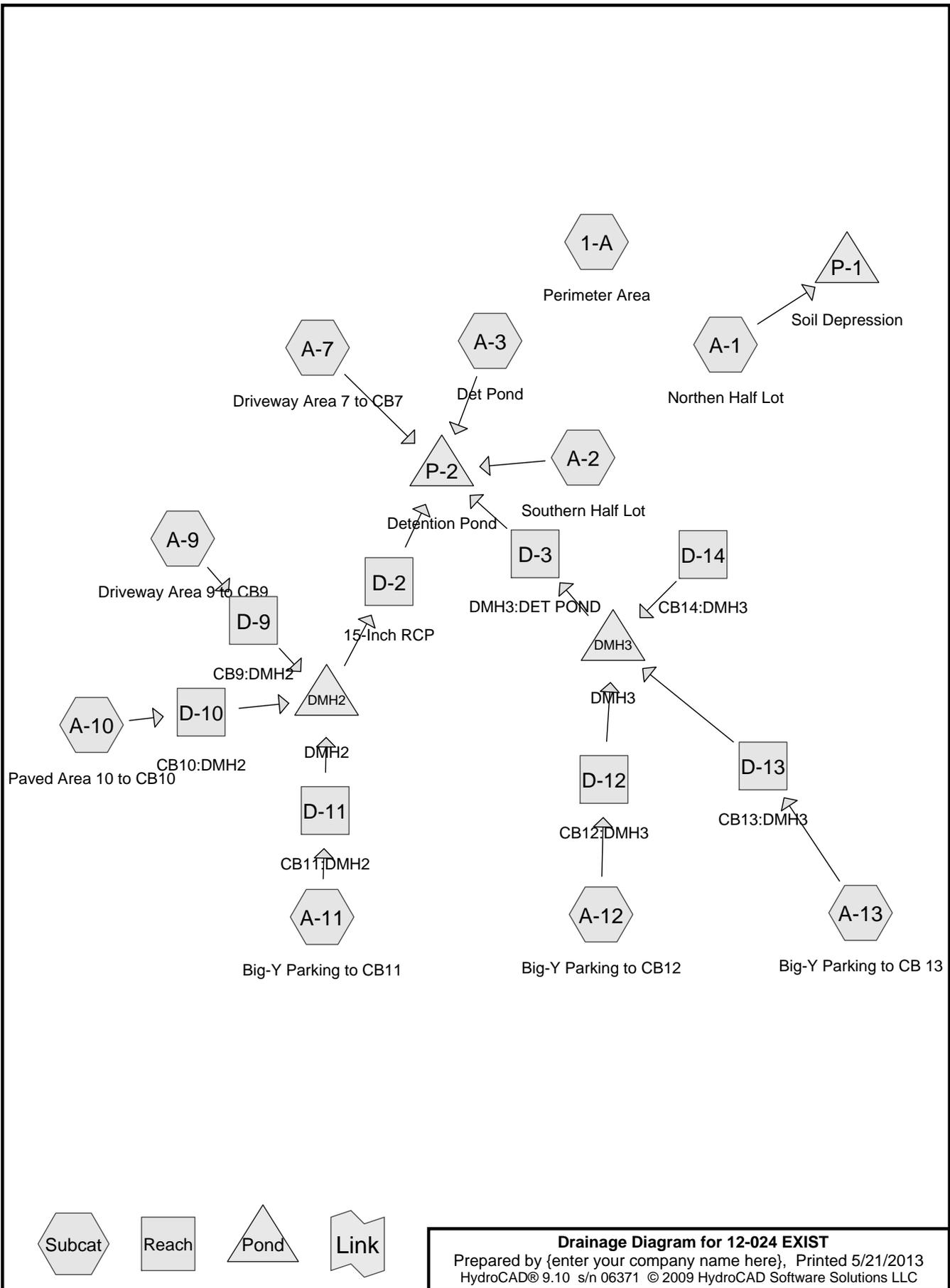
Interpret Nulls as Zero: No

Beginning Month: January

Ending Month: December

SECTION 3A

HYDROCAD DATA (PRE)



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Page 2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.034	79	Grass Area (1-A)
0.222	79	Grass Cover & Some Exposed Soil (A-2)
0.027	79	Grass Strip (A-9)
0.869	79	Undeveloped Grass & Exposed Soil Area (A-1)
0.336	98	Full Pond Area (A-3)
0.317	98	N-S Driveway (A-9)
0.223	98	Paved Apron and Travel Aisle (A-10)
0.123	98	Paved Driveway, northern half (A-7)
2.551	98	Paved Parking (A-11, A-12, A-13)
4.703		TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
4.703	Other	1-A, A-1, A-10, A-11, A-12, A-13, A-2, A-3, A-7, A-9
4.703		TOTAL AREA

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Fill (inches)
1	D-10	234.04	233.80	50.0	0.0048	0.013	12.0	0.0	0.0
2	D-11	233.95	233.60	52.0	0.0067	0.013	12.0	0.0	0.0
3	D-12	234.29	234.04	56.0	0.0045	0.013	12.0	0.0	0.0
4	D-13	233.78	233.77	50.0	0.0002	0.014	12.0	0.0	0.0
5	D-14	233.86	233.85	20.0	0.0005	0.013	12.0	0.0	0.0
6	D-2	233.48	233.47	32.0	0.0003	0.013	15.0	0.0	0.0
7	D-3	233.91	233.52	60.0	0.0065	0.013	15.0	0.0	0.0
8	D-9	233.82	233.73	12.0	0.0075	0.013	12.0	0.0	0.0

12-024 EXIST

Type III 24-hr 2-year Rainfall=3.00"

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Time span=1.00-20.00 hrs, dt=0.02 hrs, 951 points
 Runoff by SCS TR-20 method, UH=SCS
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1-A: Perimeter Area Runoff Area=1,500 sf 0.00% Impervious Runoff Depth>1.09"
 Flow Length=15' Slope=0.0050 '/ Tc=1.6 min CN=79 Runoff=0.05 cfs 0.003 af

Subcatchment A-1: Northern Half Lot Runoff Area=37,865 sf 0.00% Impervious Runoff Depth>1.09"
 Flow Length=260' Slope=0.0110 '/ Tc=10.6 min CN=79 Runoff=1.01 cfs 0.079 af

Subcatchment A-10: Paved Area 10 to Runoff Area=9,700 sf 100.00% Impervious Runoff Depth>2.64"
 Flow Length=200' Slope=0.0080 '/ Tc=4.6 min CN=98 Runoff=0.68 cfs 0.049 af

Subcatchment A-11: Big-Y Parking to Runoff Area=35,536 sf 100.00% Impervious Runoff Depth>2.64"
 Flow Length=467' Slope=0.0113 '/ Tc=7.7 min CN=98 Runoff=2.24 cfs 0.179 af

Subcatchment A-12: Big-Y Parking to Runoff Area=64,556 sf 100.00% Impervious Runoff Depth>2.64"
 Flow Length=445' Slope=0.0115 '/ Tc=7.3 min CN=98 Runoff=4.12 cfs 0.326 af

Subcatchment A-13: Big-Y Parking to CB Runoff Area=11,010 sf 100.00% Impervious Runoff Depth>2.64"
 Flow Length=236' Slope=0.0150 '/ Tc=3.9 min CN=98 Runoff=0.79 cfs 0.056 af

Subcatchment A-2: Southern Half Lot Runoff Area=9,670 sf 0.00% Impervious Runoff Depth>1.09"
 Flow Length=50' Slope=0.0200 '/ Tc=2.1 min CN=79 Runoff=0.35 cfs 0.020 af

Subcatchment A-3: Det Pond Runoff Area=14,650 sf 100.00% Impervious Runoff Depth>2.63"
 Flow Length=156' Slope=0.0010 '/ Tc=10.8 min CN=98 Runoff=0.84 cfs 0.074 af

Subcatchment A-7: Driveway Area 7 to CB7 Runoff Area=5,375 sf 100.00% Impervious Runoff Depth>2.64"
 Flow Length=200' Slope=0.0074 '/ Tc=4.8 min CN=98 Runoff=0.37 cfs 0.027 af

Subcatchment A-9: Driveway Area 9 to CB9 Runoff Area=15,000 sf 92.05% Impervious Runoff Depth>2.42"
 Flow Length=395' Slope=0.0100 '/ Tc=8.0 min CN=96 Runoff=0.90 cfs 0.069 af

Reach D-10: CB10:DMH2 Avg. Flow Depth=0.36' Max Vel=2.67 fps Inflow=0.68 cfs 0.049 af
 12.0" Round Pipe n=0.013 L=50.0' S=0.0048 '/ Capacity=2.47 cfs Outflow=0.67 cfs 0.049 af

Reach D-11: CB11:DMH2 Avg. Flow Depth=0.65' Max Vel=4.09 fps Inflow=2.24 cfs 0.179 af
 12.0" Round Pipe n=0.013 L=52.0' S=0.0067 '/ Capacity=2.92 cfs Outflow=2.22 cfs 0.179 af

Reach D-12: CB12:DMH3 Avg. Flow Depth=1.00' Max Vel=3.46 fps Inflow=4.12 cfs 0.326 af
 12.0" Round Pipe n=0.013 L=56.0' S=0.0045 '/ Capacity=2.38 cfs Outflow=2.38 cfs 0.325 af

Reach D-13: CB13:DMH3 Avg. Flow Depth=1.00' Max Vel=0.68 fps Inflow=0.79 cfs 0.056 af
 12.0" Round Pipe n=0.014 L=50.0' S=0.0002 '/ Capacity=0.47 cfs Outflow=0.50 cfs 0.056 af

Reach D-14: CB14:DMH3 Avg. Flow Depth=0.00' Max Vel=0.00 fps
 12.0" Round Pipe n=0.013 L=20.0' S=0.0005 '/ Capacity=0.80 cfs Outflow=0.00 cfs 0.000 af

Reach D-2: 15-Inch RCP Avg. Flow Depth=1.25' Max Vel=1.06 fps Inflow=3.73 cfs 0.297 af
 15.0" Round Pipe n=0.013 L=32.0' S=0.0003 '/ Capacity=1.14 cfs Outflow=1.19 cfs 0.297 af

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Type III 24-hr 2-year Rainfall=3.00"

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Reach D-3: DMH3:DET POND Avg. Flow Depth=0.66' Max Vel=4.34 fps Inflow=2.87 cfs 0.381 af
15.0" Round Pipe n=0.013 L=60.0' S=0.0065 '/ Capacity=5.21 cfs Outflow=2.85 cfs 0.381 af

Reach D-9: CB9:DMH2 Avg. Flow Depth=0.37' Max Vel=3.40 fps Inflow=0.90 cfs 0.069 af
12.0" Round Pipe n=0.013 L=12.0' S=0.0075 '/ Capacity=3.09 cfs Outflow=0.90 cfs 0.069 af

Pond DMH2: DMH2 Peak Elev=234.51' Storage=0.001 af Inflow=3.73 cfs 0.298 af
Outflow=3.73 cfs 0.297 af

Pond DMH3: DMH3 Peak Elev=234.77' Storage=0.001 af Inflow=2.87 cfs 0.381 af
Outflow=2.87 cfs 0.381 af

Pond P-1: Soil Depression Peak Elev=235.51' Storage=243 cf Inflow=1.01 cfs 0.079 af
Outflow=0.74 cfs 0.079 af

Pond P-2: Detention Pond Peak Elev=234.76' Storage=6,752 cf Inflow=5.35 cfs 0.799 af
Discarded=2.22 cfs 0.799 af Primary=0.00 cfs 0.000 af Outflow=2.22 cfs 0.799 af

Total Runoff Area = 4.703 ac Runoff Volume = 0.882 af Average Runoff Depth = 2.25"
24.52% Pervious = 1.153 ac 75.48% Impervious = 3.550 ac

12-024 EXIST

Type III 24-hr 2-year Rainfall=3.00"

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Summary for Subcatchment 1-A: Perimeter Area

Runoff = 0.05 cfs @ 12.03 hrs, Volume= 0.003 af, Depth> 1.09"

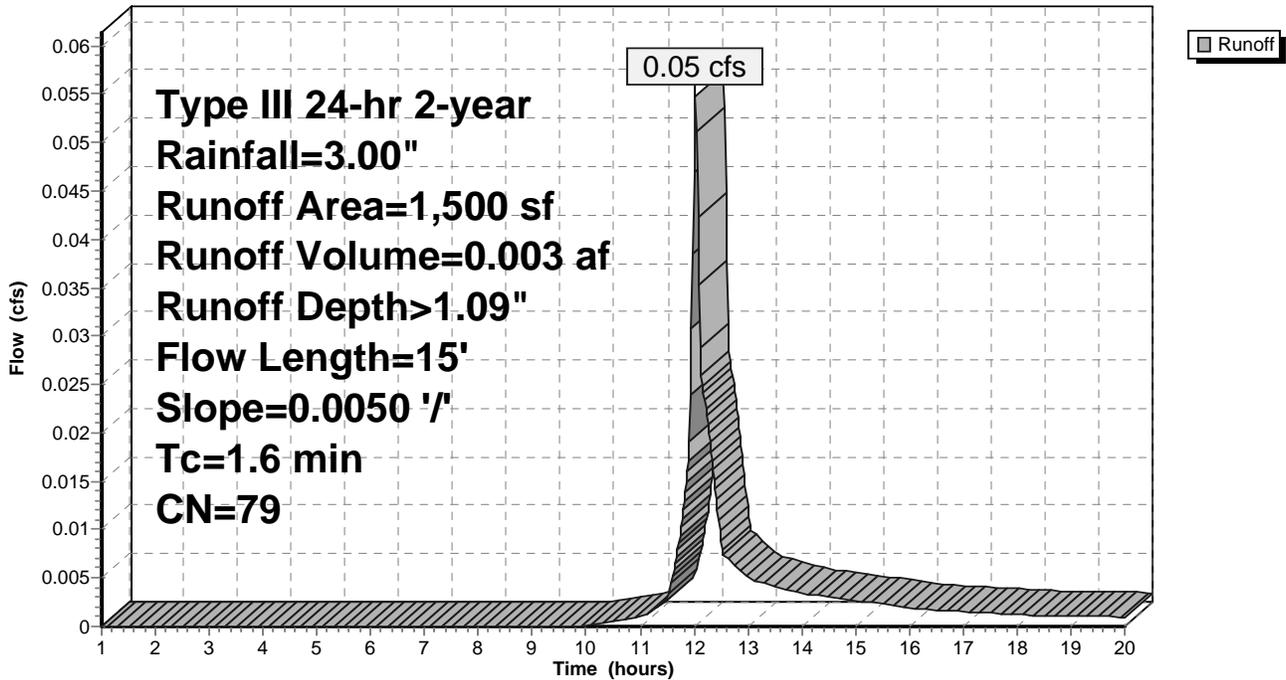
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 2-year Rainfall=3.00"

Area (sf)	CN	Description
* 1,500	79	Grass Area
1,500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	15	0.0050	0.16		Lag/CN Method,

Subcatchment 1-A: Perimeter Area

Hydrograph



12-024 EXIST

Type III 24-hr 2-year Rainfall=3.00"

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Summary for Subcatchment A-1: Northen Half Lot

Runoff = 1.01 cfs @ 12.15 hrs, Volume= 0.079 af, Depth> 1.09"

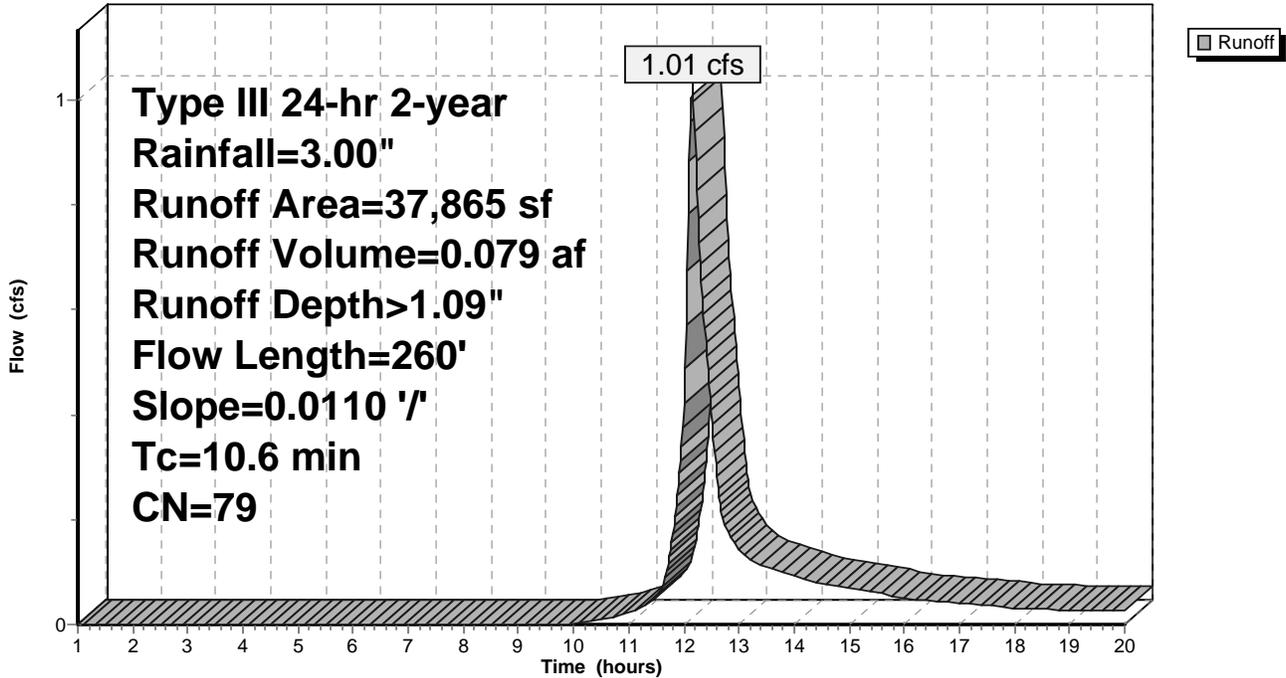
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-year Rainfall=3.00"

Area (sf)	CN	Description
* 37,865	79	Undeveloped Grass & Exposed Soil Area
37,865		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	260	0.0110	0.41		Lag/CN Method,

Subcatchment A-1: Northen Half Lot

Hydrograph



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Type III 24-hr 2-year Rainfall=3.00"

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Summary for Subcatchment A-10: Paved Area 10 to CB10

Runoff = 0.68 cfs @ 12.07 hrs, Volume= 0.049 af, Depth> 2.64"

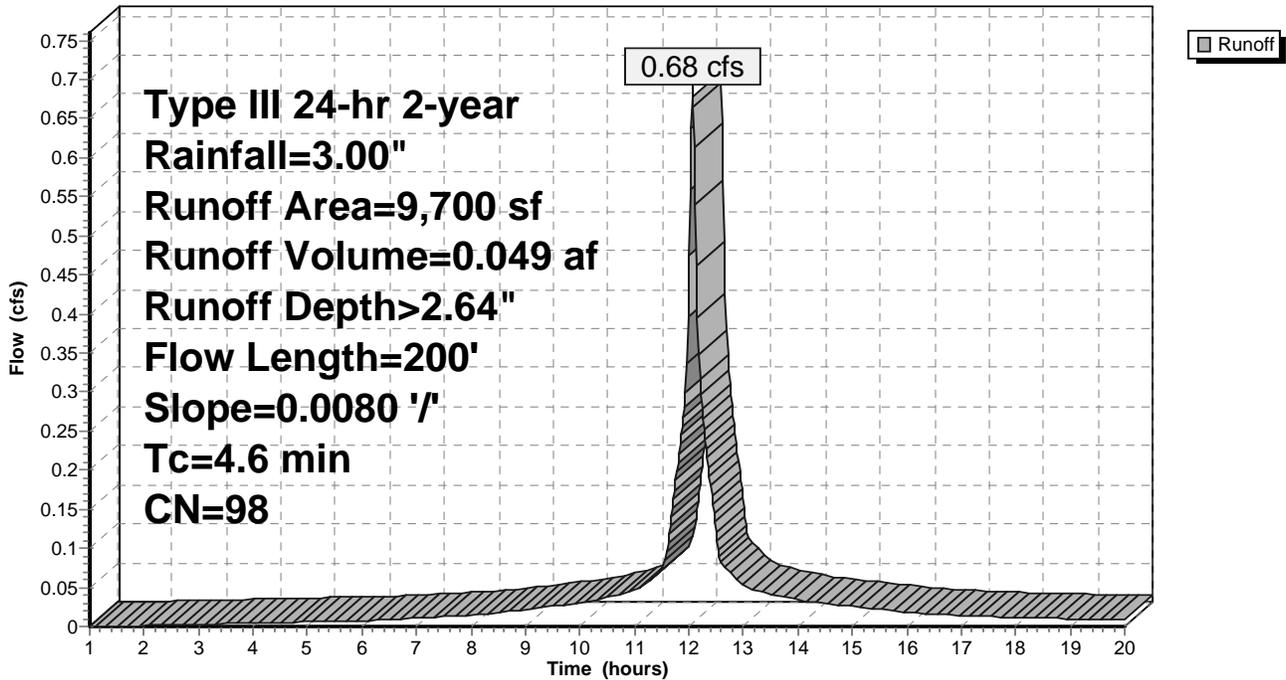
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 2-year Rainfall=3.00"

Area (sf)	CN	Description
* 9,700	98	Paved Apron and Travel Aisle
9,700		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	200	0.0080	0.72		Lag/CN Method,

Subcatchment A-10: Paved Area 10 to CB10

Hydrograph



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Type III 24-hr 2-year Rainfall=3.00"

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Summary for Subcatchment A-11: Big-Y Parking to CB11

Runoff = 2.24 cfs @ 12.11 hrs, Volume= 0.179 af, Depth> 2.64"

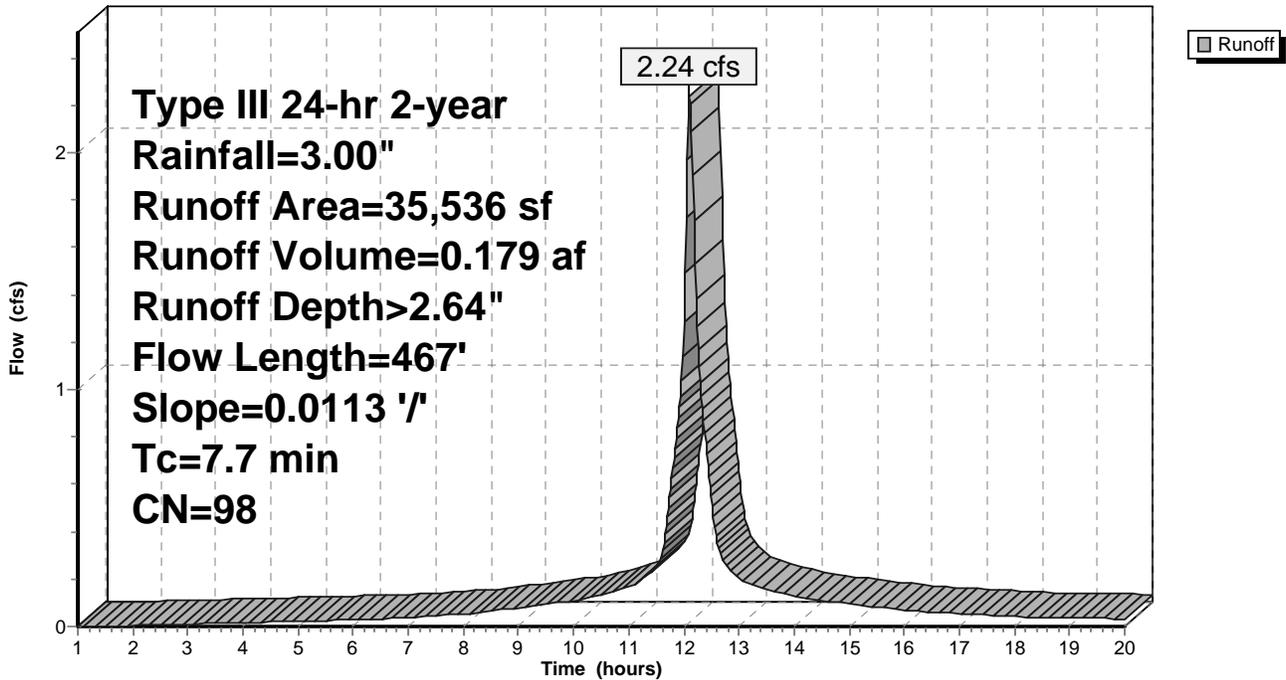
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-year Rainfall=3.00"

Area (sf)	CN	Description
* 35,536	98	Paved Parking
35,536		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	467	0.0113	1.01		Lag/CN Method,

Subcatchment A-11: Big-Y Parking to CB11

Hydrograph



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Type III 24-hr 2-year Rainfall=3.00"

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Summary for Subcatchment A-12: Big-Y Parking to CB12

Runoff = 4.12 cfs @ 12.10 hrs, Volume= 0.326 af, Depth> 2.64"

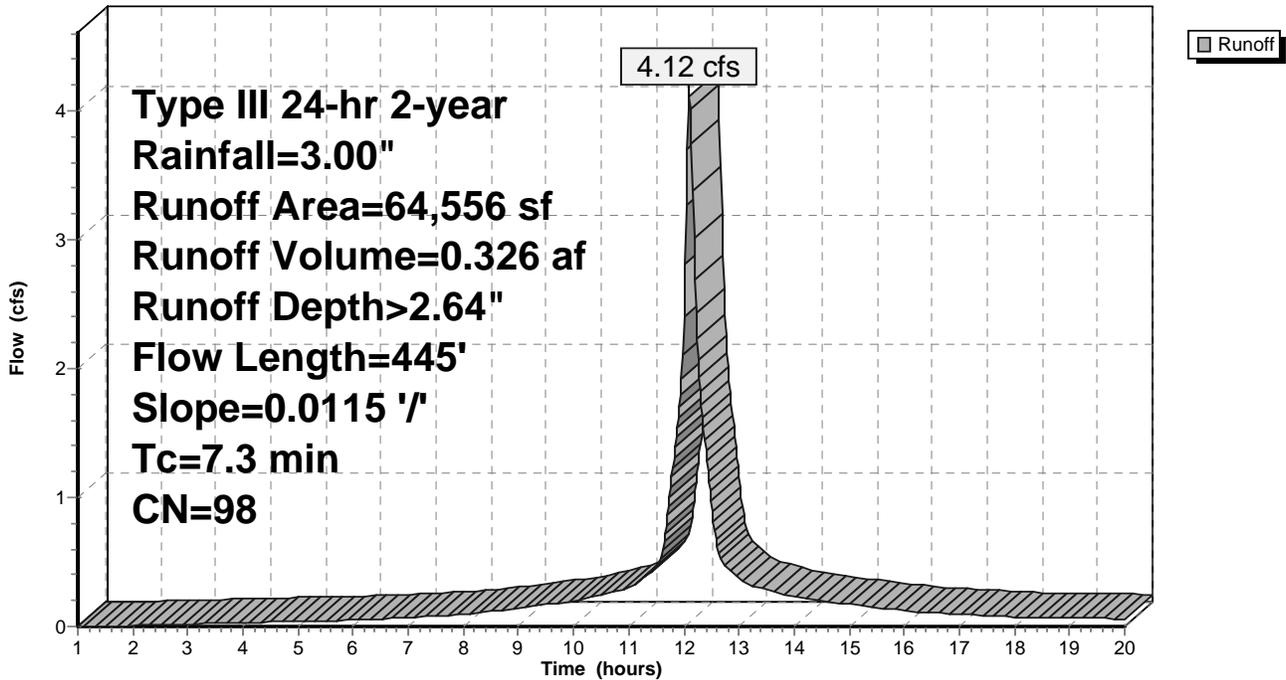
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-year Rainfall=3.00"

Area (sf)	CN	Description
* 64,556	98	Paved Parking
64,556		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	445	0.0115	1.01		Lag/CN Method,

Subcatchment A-12: Big-Y Parking to CB12

Hydrograph



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Type III 24-hr 2-year Rainfall=3.00"

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Summary for Subcatchment A-13: Big-Y Parking to CB 13

Runoff = 0.79 cfs @ 12.06 hrs, Volume= 0.056 af, Depth> 2.64"

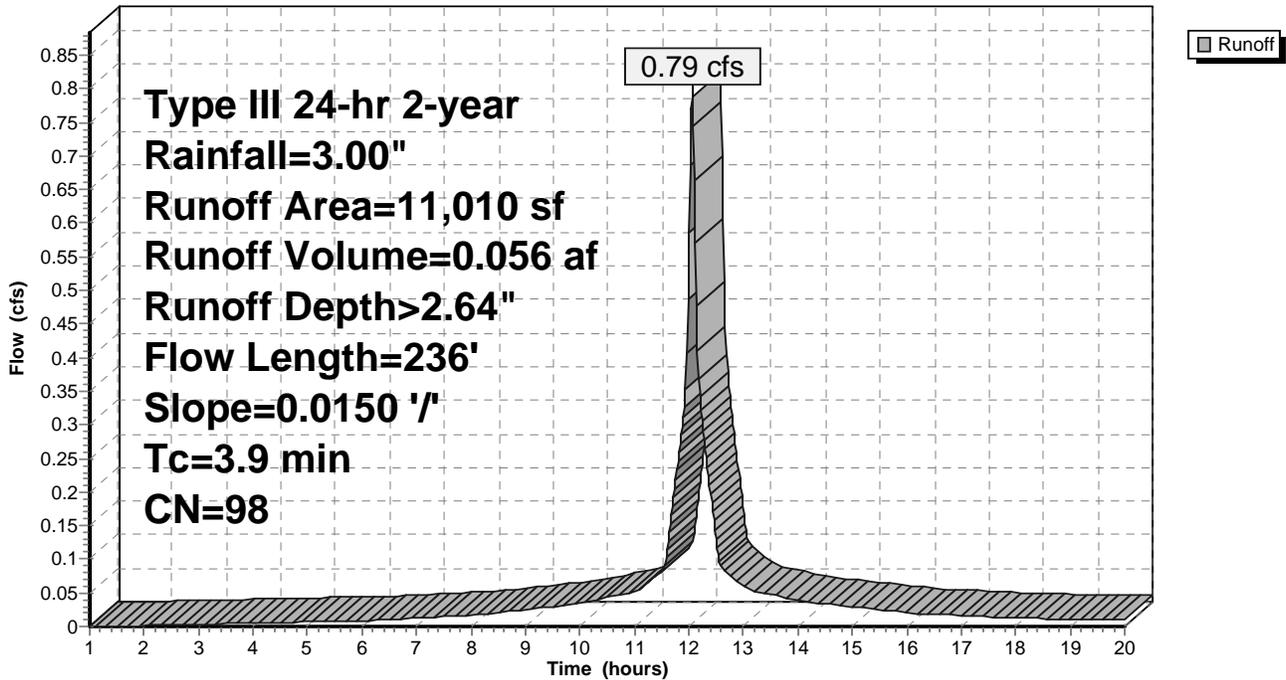
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-year Rainfall=3.00"

Area (sf)	CN	Description
* 11,010	98	Paved Parking
11,010		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	236	0.0150	1.02		Lag/CN Method,

Subcatchment A-13: Big-Y Parking to CB 13

Hydrograph



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Type III 24-hr 2-year Rainfall=3.00"

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Summary for Subcatchment A-2: Southern Half Lot

Runoff = 0.35 cfs @ 12.04 hrs, Volume= 0.020 af, Depth> 1.09"

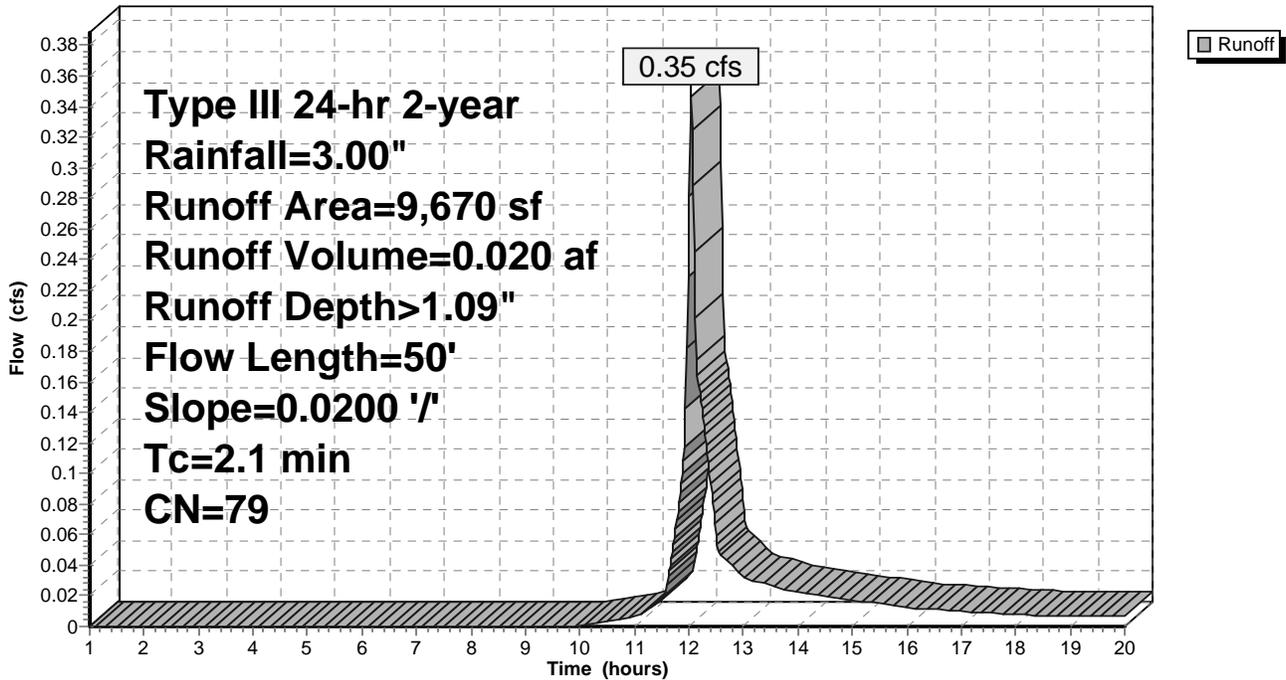
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 2-year Rainfall=3.00"

Area (sf)	CN	Description
* 9,670	79	Grass Cover & Some Exposed Soil
9,670		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	50	0.0200	0.40		Lag/CN Method,

Subcatchment A-2: Southern Half Lot

Hydrograph



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Type III 24-hr 2-year Rainfall=3.00"

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Summary for Subcatchment A-3: Det Pond

Runoff = 0.84 cfs @ 12.14 hrs, Volume= 0.074 af, Depth> 2.63"

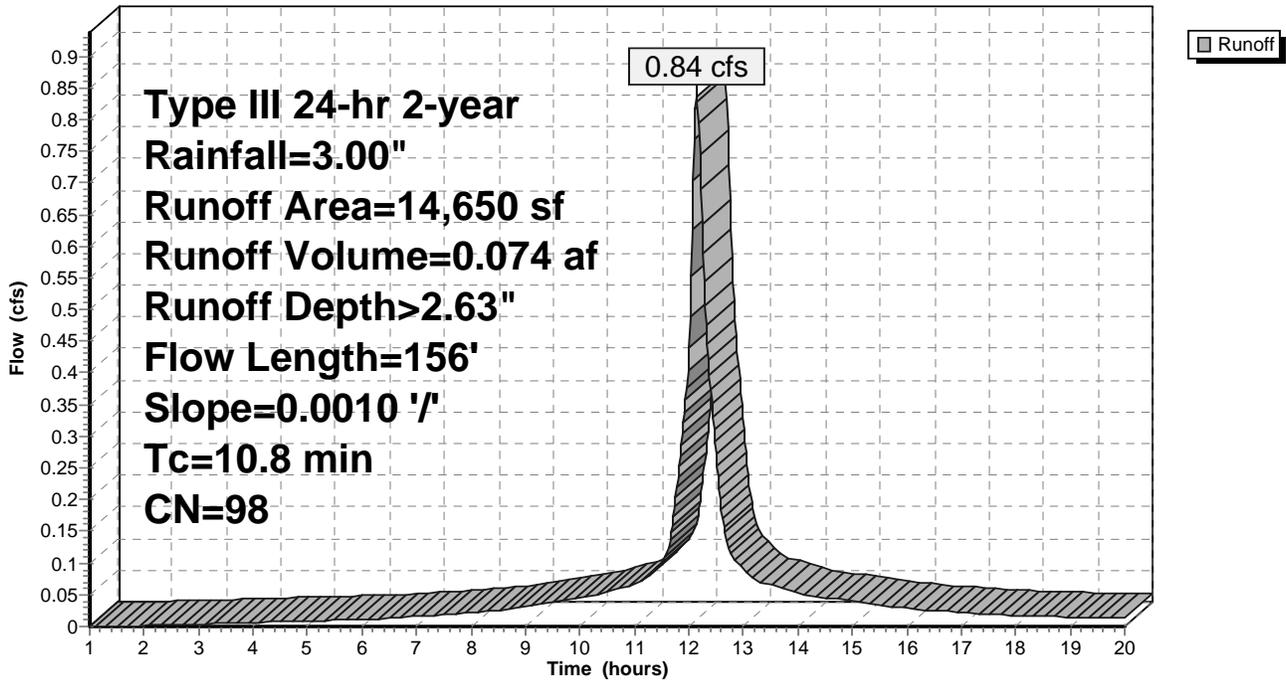
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-year Rainfall=3.00"

Area (sf)	CN	Description
* 14,650	98	Full Pond Area
14,650		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	156	0.0010	0.24		Lag/CN Method,

Subcatchment A-3: Det Pond

Hydrograph



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Type III 24-hr 2-year Rainfall=3.00"

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Summary for Subcatchment A-7: Driveway Area 7 to CB7

Runoff = 0.37 cfs @ 12.07 hrs, Volume= 0.027 af, Depth> 2.64"

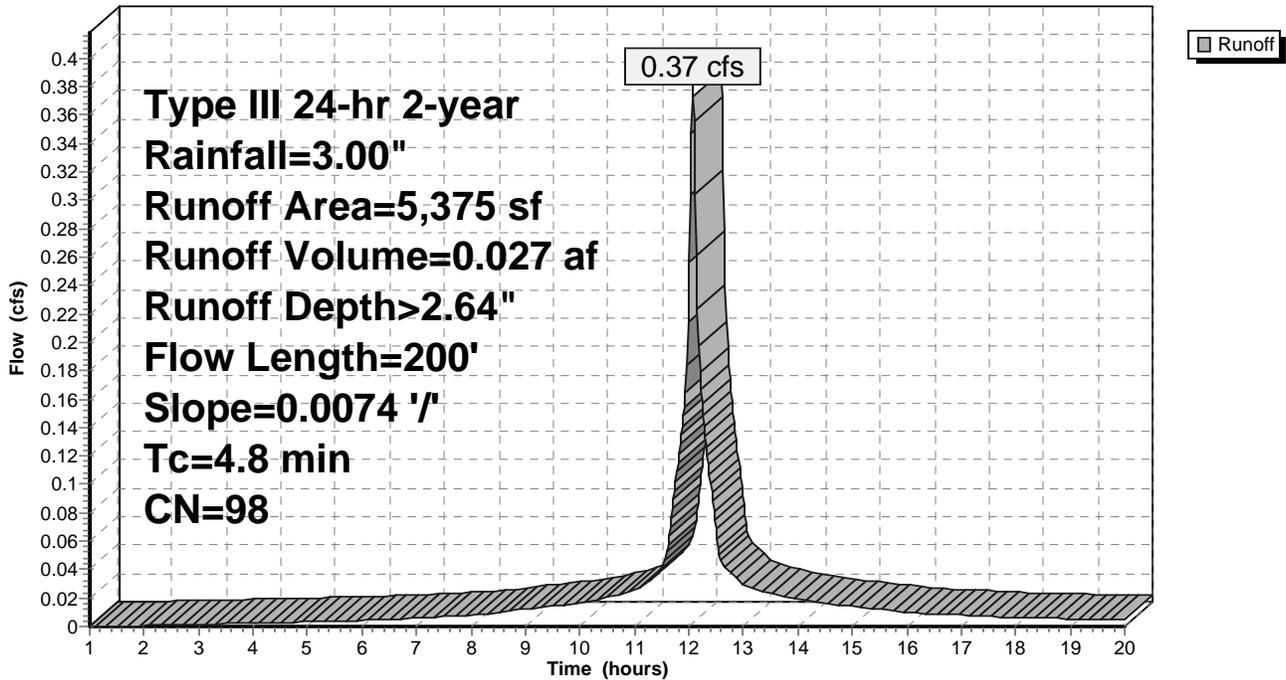
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 2-year Rainfall=3.00"

Area (sf)	CN	Description
* 5,375	98	Paved Driveway, northern half
5,375		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	200	0.0074	0.69		Lag/CN Method,

Subcatchment A-7: Driveway Area 7 to CB7

Hydrograph



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Type III 24-hr 2-year Rainfall=3.00"

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Summary for Subcatchment A-9: Driveway Area 9 to CB9

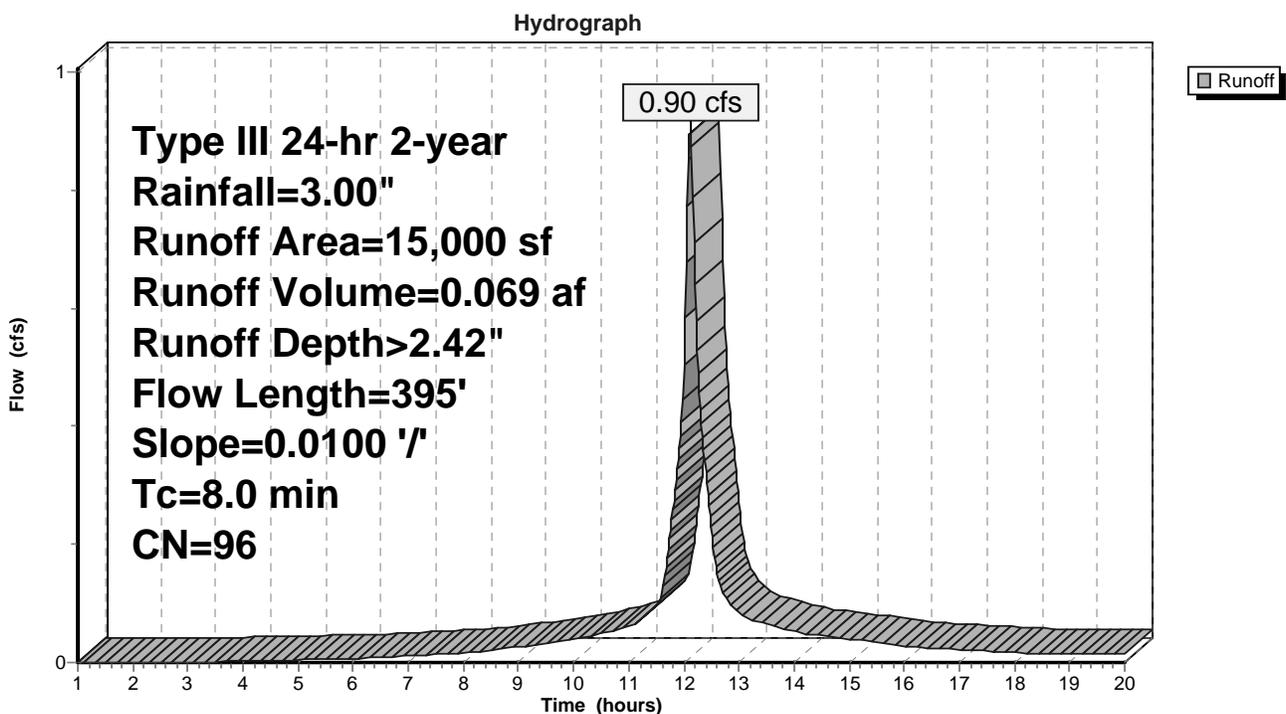
Runoff = 0.90 cfs @ 12.11 hrs, Volume= 0.069 af, Depth> 2.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 2-year Rainfall=3.00"

	Area (sf)	CN	Description
*	1,192	79	Grass Strip
*	13,808	98	N-S Driveway
	15,000	96	Weighted Average
	1,192		7.95% Pervious Area
	13,808		92.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	395	0.0100	0.82		Lag/CN Method,

Subcatchment A-9: Driveway Area 9 to CB9



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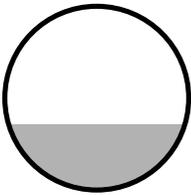
Summary for Reach D-10: CB10:DMH2

Inflow Area = 0.223 ac, 100.00% Impervious, Inflow Depth > 2.64" for 2-year event
 Inflow = 0.68 cfs @ 12.07 hrs, Volume= 0.049 af
 Outflow = 0.67 cfs @ 12.07 hrs, Volume= 0.049 af, Atten= 1%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Max. Velocity= 2.67 fps, Min. Travel Time= 0.3 min
 Avg. Velocity = 0.91 fps, Avg. Travel Time= 0.9 min

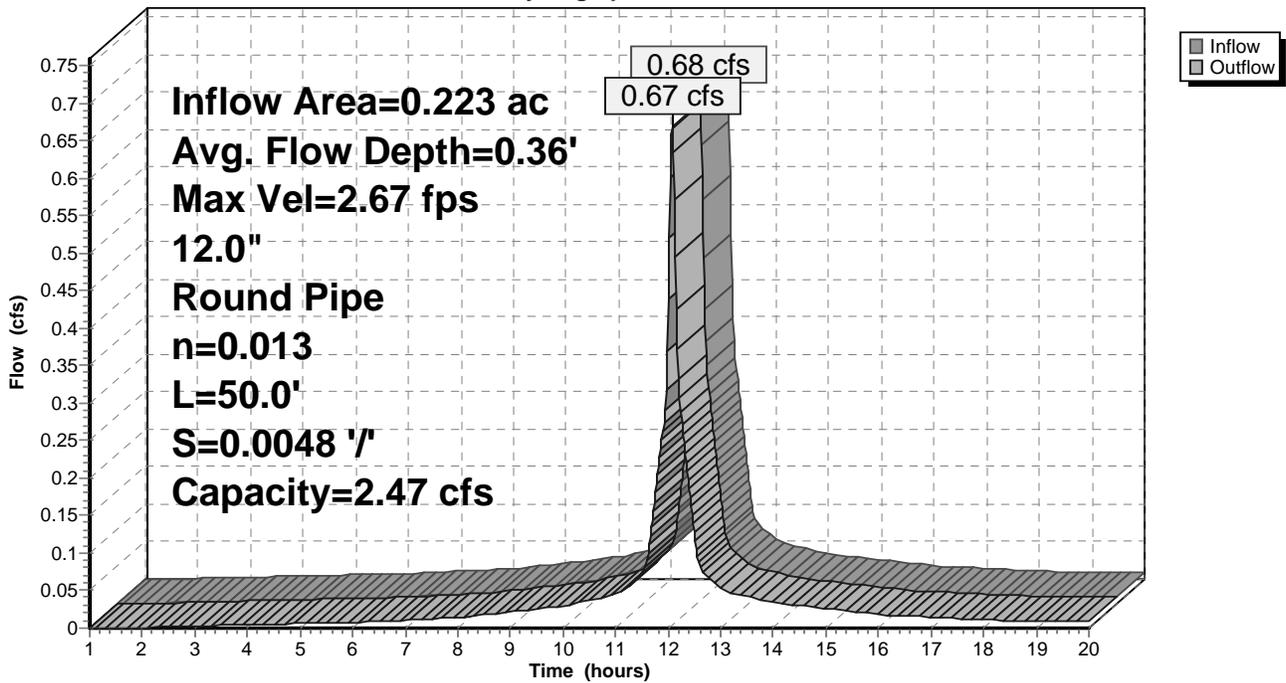
Peak Storage= 13 cf @ 12.07 hrs
 Average Depth at Peak Storage= 0.36'
 Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.47 cfs

12.0" Round Pipe
 n= 0.013
 Length= 50.0' Slope= 0.0048 '/'
 Inlet Invert= 234.04', Outlet Invert= 233.80'



Reach D-10: CB10:DMH2

Hydrograph



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Type III 24-hr 2-year Rainfall=3.00"

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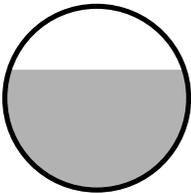
Summary for Reach D-11: CB11:DMH2

Inflow Area = 0.816 ac, 100.00% Impervious, Inflow Depth > 2.64" for 2-year event
 Inflow = 2.24 cfs @ 12.11 hrs, Volume= 0.179 af
 Outflow = 2.22 cfs @ 12.11 hrs, Volume= 0.179 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Max. Velocity= 4.09 fps, Min. Travel Time= 0.2 min
 Avg. Velocity = 1.51 fps, Avg. Travel Time= 0.6 min

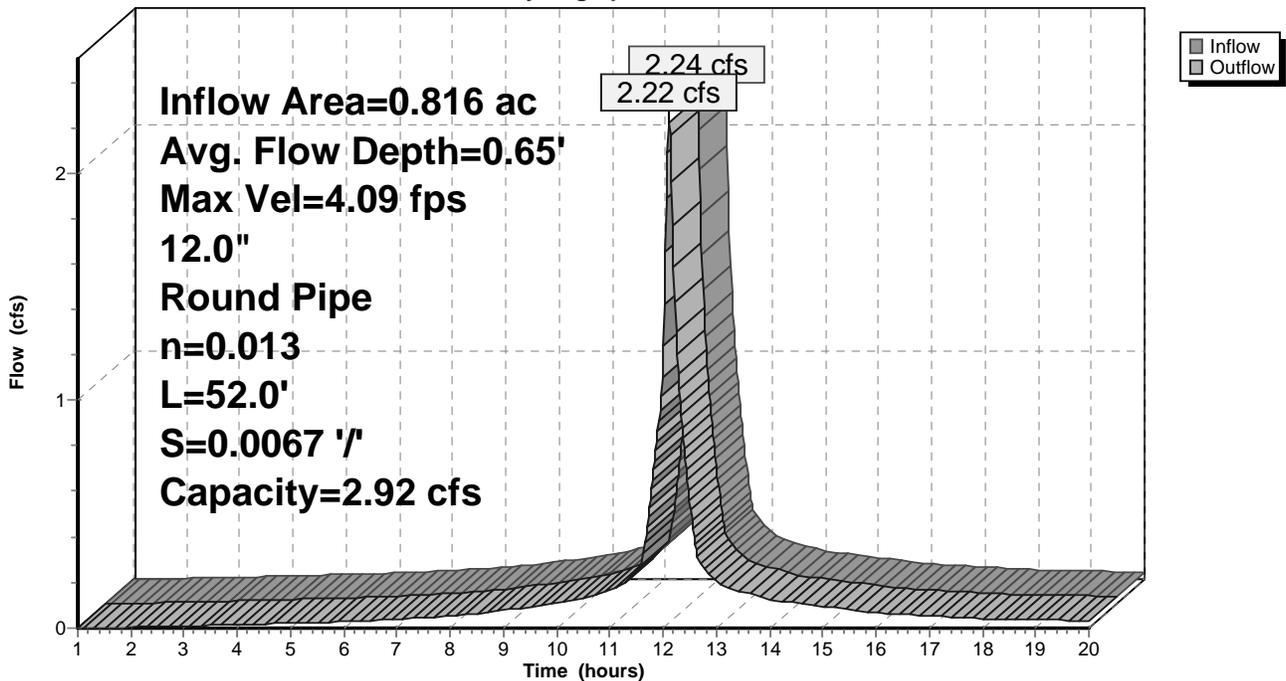
Peak Storage= 28 cf @ 12.11 hrs
 Average Depth at Peak Storage= 0.65'
 Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.92 cfs

12.0" Round Pipe
 n= 0.013
 Length= 52.0' Slope= 0.0067 '/'
 Inlet Invert= 233.95', Outlet Invert= 233.60'



Reach D-11: CB11:DMH2

Hydrograph



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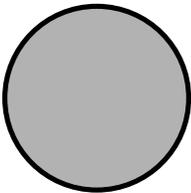
Summary for Reach D-12: CB12:DMH3

Inflow Area = 1.482 ac, 100.00% Impervious, Inflow Depth > 2.64" for 2-year event
Inflow = 4.12 cfs @ 12.10 hrs, Volume= 0.326 af
Outflow = 2.38 cfs @ 12.04 hrs, Volume= 0.325 af, Atten= 42%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
Max. Velocity= 3.46 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.55 fps, Avg. Travel Time= 0.6 min

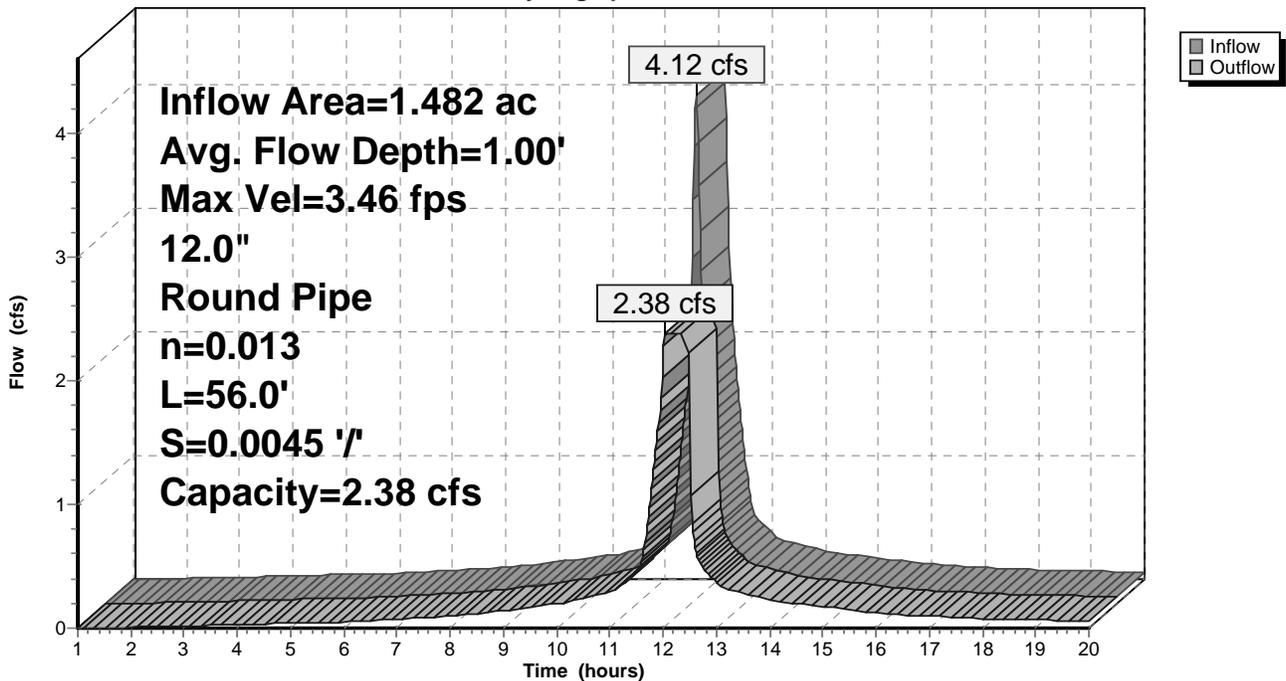
Peak Storage= 44 cf @ 12.02 hrs
Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.38 cfs

12.0" Round Pipe
n= 0.013
Length= 56.0' Slope= 0.0045 '/'
Inlet Invert= 234.29', Outlet Invert= 234.04'



Reach D-12: CB12:DMH3

Hydrograph



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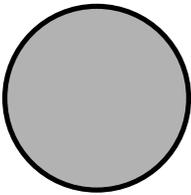
Summary for Reach D-13: CB13:DMH3

Inflow Area = 0.253 ac, 100.00% Impervious, Inflow Depth > 2.64" for 2-year event
Inflow = 0.79 cfs @ 12.06 hrs, Volume= 0.056 af
Outflow = 0.50 cfs @ 12.02 hrs, Volume= 0.056 af, Atten= 37%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
Max. Velocity= 0.68 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 0.29 fps, Avg. Travel Time= 2.9 min

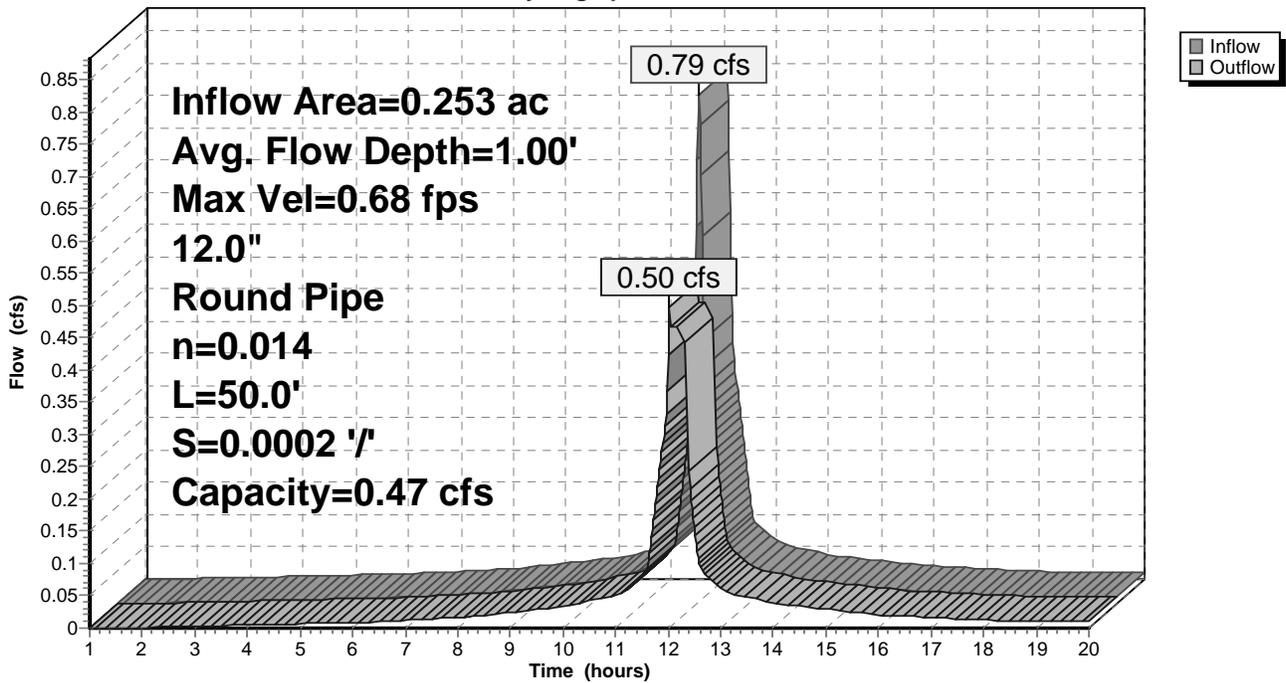
Peak Storage= 39 cf @ 12.02 hrs
Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 0.47 cfs

12.0" Round Pipe
n= 0.014
Length= 50.0' Slope= 0.0002 '/'
Inlet Invert= 233.78', Outlet Invert= 233.77'



Reach D-13: CB13:DMH3

Hydrograph



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Summary for Reach D-14: CB14:DMH3

Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs

Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min

Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs

Average Depth at Peak Storage= 0.00'

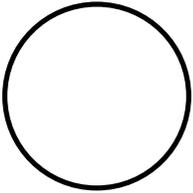
Bank-Full Depth= 1.00', Capacity at Bank-Full= 0.80 cfs

12.0" Round Pipe

n= 0.013

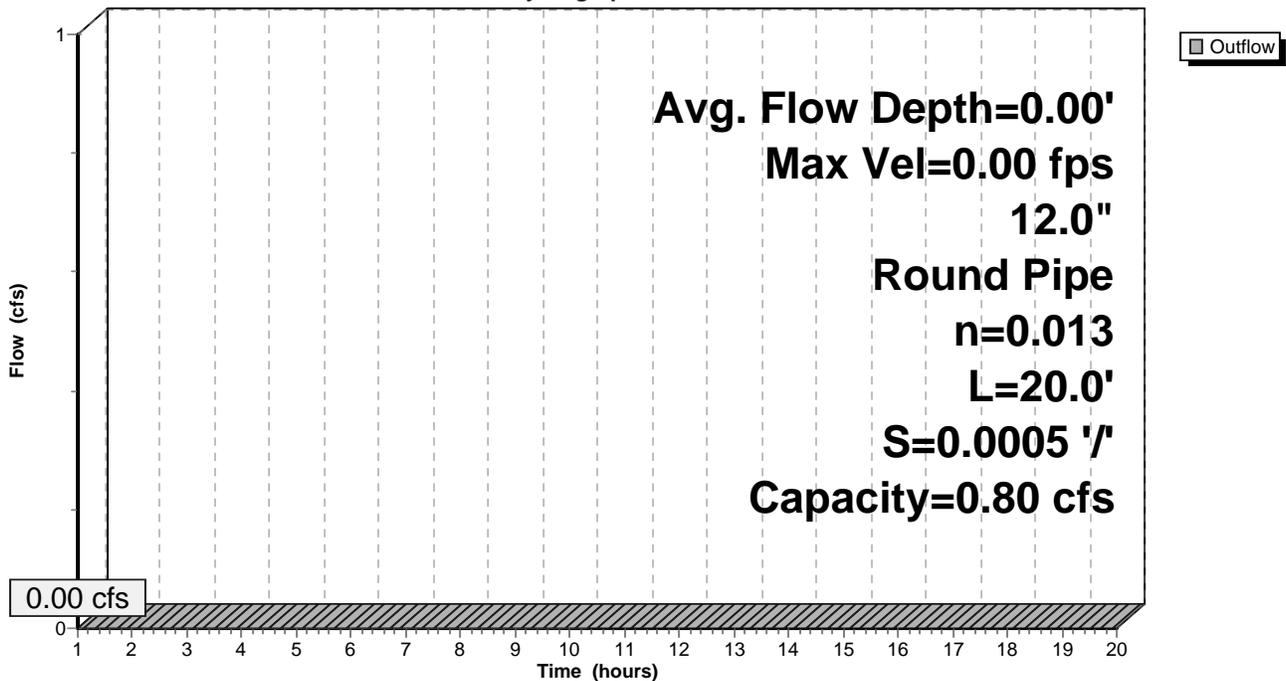
Length= 20.0' Slope= 0.0005 '/

Inlet Invert= 233.86', Outlet Invert= 233.85'



Reach D-14: CB14:DMH3

Hydrograph



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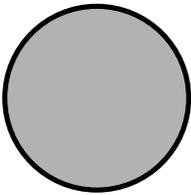
Summary for Reach D-2: 15-Inch RCP

Inflow Area = 1.383 ac, 98.02% Impervious, Inflow Depth > 2.58" for 2-year event
Inflow = 3.73 cfs @ 12.11 hrs, Volume= 0.297 af
Outflow = 1.19 cfs @ 11.85 hrs, Volume= 0.297 af, Atten= 68%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
Max. Velocity= 1.06 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.56 fps, Avg. Travel Time= 0.9 min

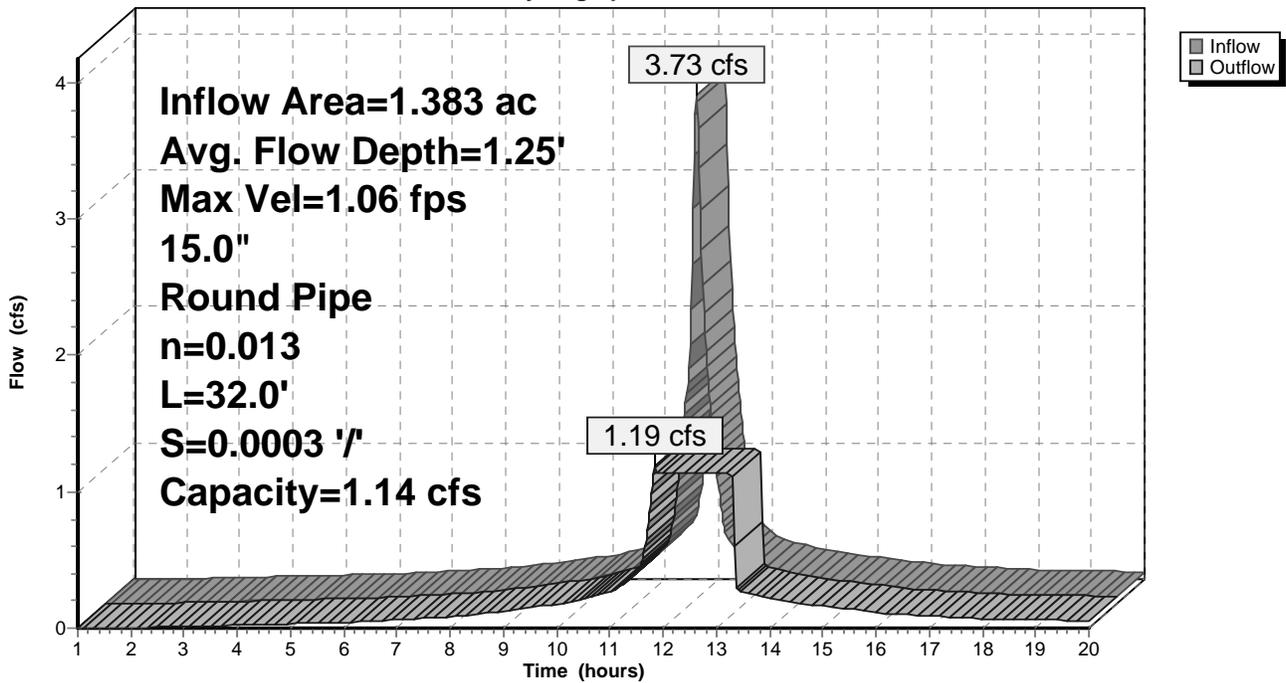
Peak Storage= 39 cf @ 11.86 hrs
Average Depth at Peak Storage= 1.25'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 1.14 cfs

15.0" Round Pipe
n= 0.013
Length= 32.0' Slope= 0.0003 '/
Inlet Invert= 233.48', Outlet Invert= 233.47'



Reach D-2: 15-Inch RCP

Hydrograph



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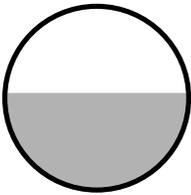
Summary for Reach D-3: DMH3:DET POND

Inflow Area = 1.735 ac, 100.00% Impervious, Inflow Depth > 2.63" for 2-year event
Inflow = 2.87 cfs @ 12.02 hrs, Volume= 0.381 af
Outflow = 2.85 cfs @ 12.04 hrs, Volume= 0.381 af, Atten= 1%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
Max. Velocity= 4.34 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.82 fps, Avg. Travel Time= 0.5 min

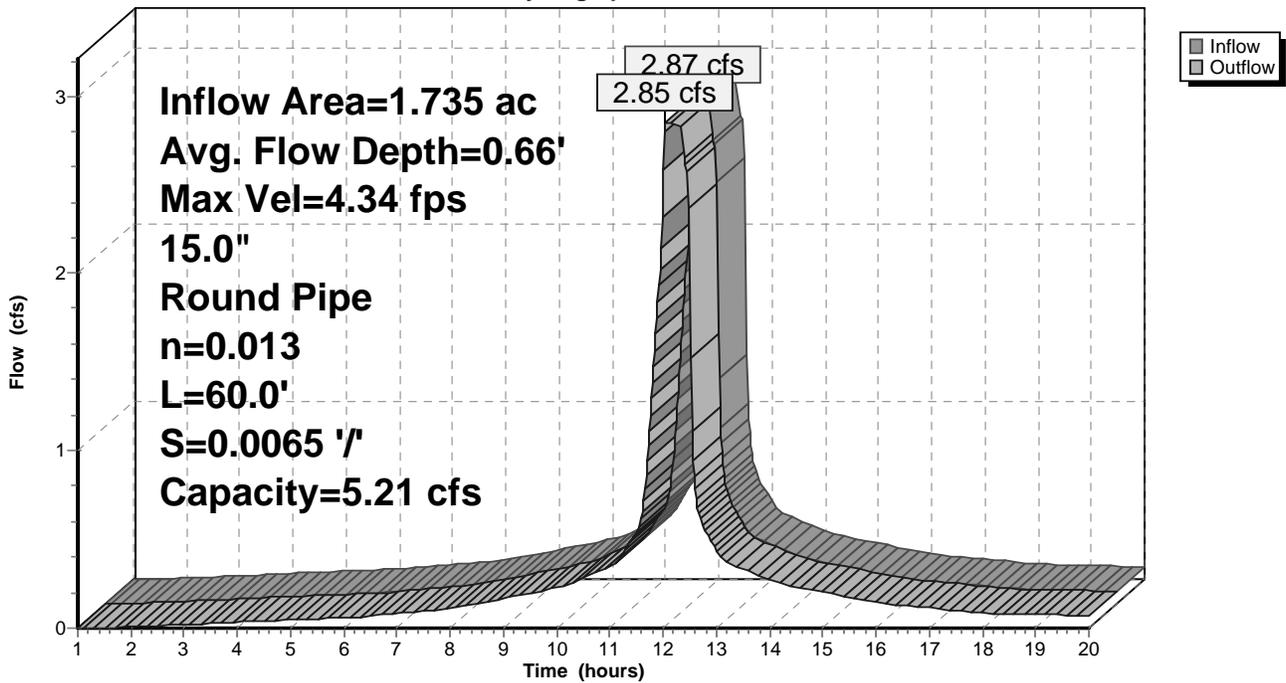
Peak Storage= 39 cf @ 12.04 hrs
Average Depth at Peak Storage= 0.66'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 5.21 cfs

15.0" Round Pipe
n= 0.013 Concrete pipe, bends & connections
Length= 60.0' Slope= 0.0065 '/
Inlet Invert= 233.91', Outlet Invert= 233.52'



Reach D-3: DMH3:DET POND

Hydrograph



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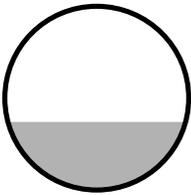
Summary for Reach D-9: CB9:DMH2

Inflow Area = 0.344 ac, 92.05% Impervious, Inflow Depth > 2.42" for 2-year event
Inflow = 0.90 cfs @ 12.11 hrs, Volume= 0.069 af
Outflow = 0.90 cfs @ 12.11 hrs, Volume= 0.069 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
Max. Velocity= 3.40 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.20 fps, Avg. Travel Time= 0.2 min

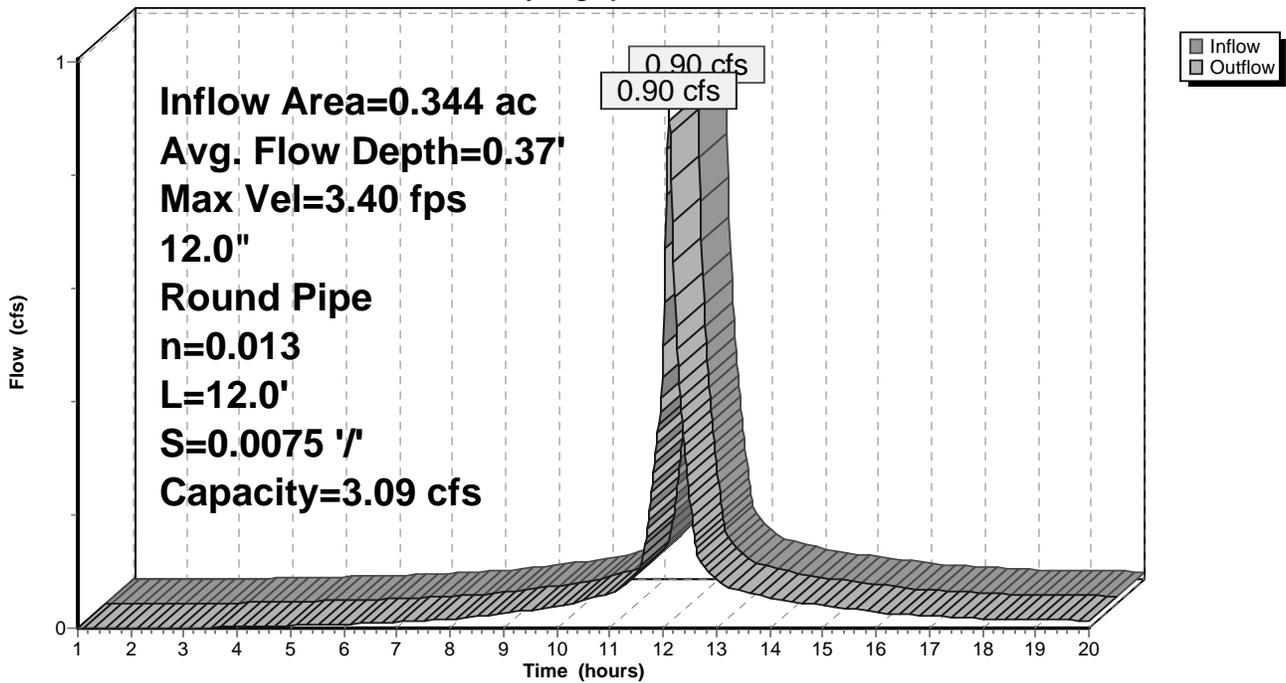
Peak Storage= 3 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.37'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.09 cfs

12.0" Round Pipe
n= 0.013
Length= 12.0' Slope= 0.0075 '/'
Inlet Invert= 233.82', Outlet Invert= 233.73'



Reach D-9: CB9:DMH2

Hydrograph



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Type III 24-hr 2-year Rainfall=3.00"

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Summary for Pond DMH2: DMH2

Inflow Area = 1.383 ac, 98.02% Impervious, Inflow Depth > 2.58" for 2-year event
 Inflow = 3.73 cfs @ 12.10 hrs, Volume= 0.298 af
 Outflow = 3.73 cfs @ 12.11 hrs, Volume= 0.297 af, Atten= 0%, Lag= 0.1 min
 Primary = 3.73 cfs @ 12.11 hrs, Volume= 0.297 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Peak Elev= 234.51' @ 12.11 hrs Surf.Area= 0.001 ac Storage= 0.001 af

Plug-Flow detention time= 0.4 min calculated for 0.297 af (100% of inflow)
 Center-of-Mass det. time= 0.3 min (735.7 - 735.4)

Volume	Invert	Avail.Storage	Storage Description
#1	233.48'	0.003 af	6.00'D x 4.52'H Vertical Cone/Cylinder

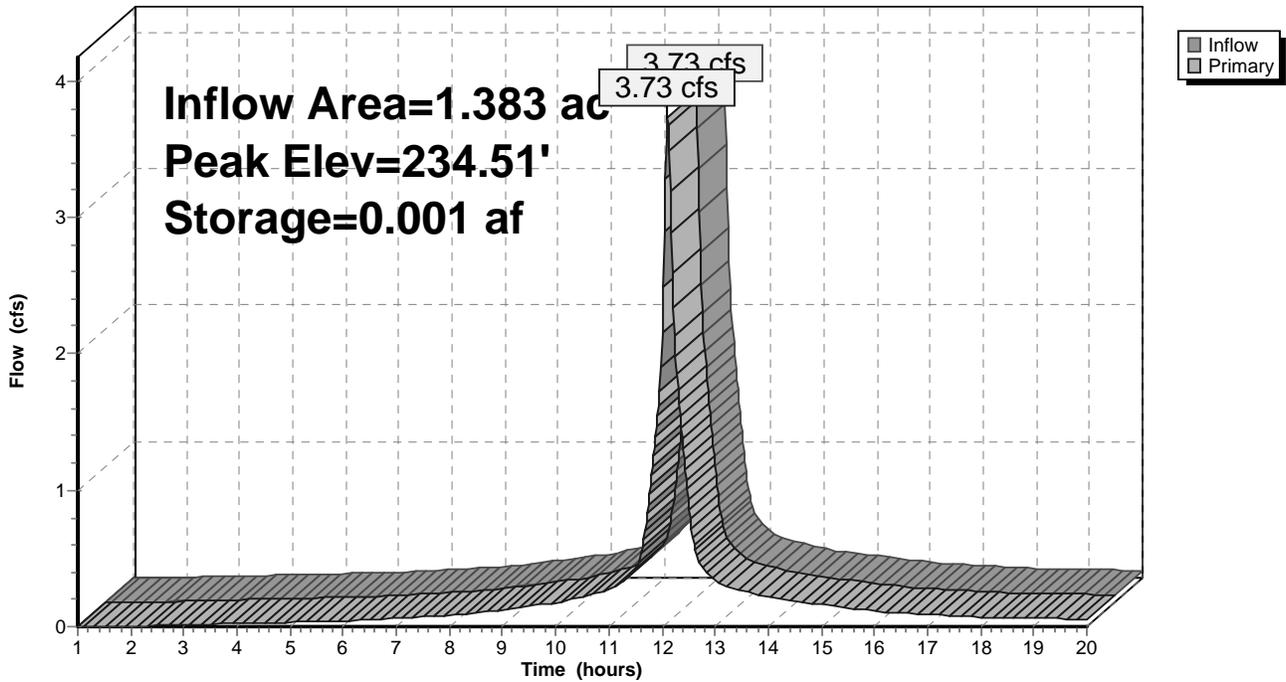
Device	Routing	Invert	Outlet Devices
#1	Primary	233.48'	15.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=3.71 cfs @ 12.11 hrs HW=234.51' (Free Discharge)

↑1=Orifice/Grate (Orifice Controls 3.71 cfs @ 3.45 fps)

Pond DMH2: DMH2

Hydrograph



12-024 EXIST

Type III 24-hr 2-year Rainfall=3.00"

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Summary for Pond DMH3: DMH3

Inflow Area = 1.735 ac, 100.00% Impervious, Inflow Depth > 2.63" for 2-year event
 Inflow = 2.87 cfs @ 12.02 hrs, Volume= 0.381 af
 Outflow = 2.87 cfs @ 12.02 hrs, Volume= 0.381 af, Atten= 0%, Lag= 0.0 min
 Primary = 2.87 cfs @ 12.02 hrs, Volume= 0.381 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Peak Elev= 234.77' @ 12.02 hrs Surf.Area= 0.001 ac Storage= 0.001 af

Plug-Flow detention time= 0.3 min calculated for 0.381 af (100% of inflow)
 Center-of-Mass det. time= 0.3 min (732.7 - 732.4)

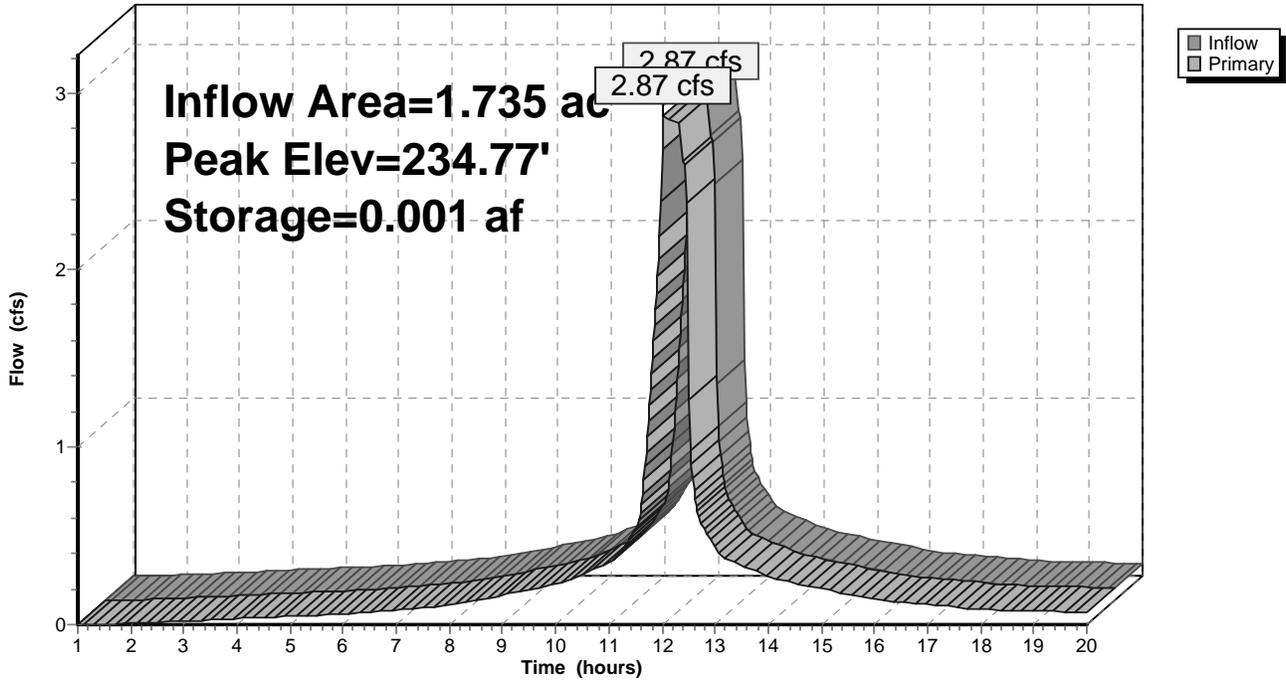
Volume	Invert	Avail.Storage	Storage Description
#1	233.91'	0.003 af	6.00'D x 4.28'H Vertical Cone/Cylinder

Device	Routing	Invert	Outlet Devices
#1	Primary	233.91'	15.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=2.87 cfs @ 12.02 hrs HW=234.77' (Free Discharge)
 ↳ **1=Orifice/Grate** (Orifice Controls 2.87 cfs @ 3.17 fps)

Pond DMH3: DMH3

Hydrograph



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Type III 24-hr 2-year Rainfall=3.00"

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Summary for Pond P-1: Soil Depression

Inflow Area = 0.869 ac, 0.00% Impervious, Inflow Depth > 1.09" for 2-year event
 Inflow = 1.01 cfs @ 12.15 hrs, Volume= 0.079 af
 Outflow = 0.74 cfs @ 12.28 hrs, Volume= 0.079 af, Atten= 27%, Lag= 7.3 min
 Discarded = 0.74 cfs @ 12.28 hrs, Volume= 0.079 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Peak Elev= 235.51' @ 12.28 hrs Surf.Area= 2,659 sf Storage= 243 cf

Plug-Flow detention time= 1.9 min calculated for 0.079 af (100% of inflow)
 Center-of-Mass det. time= 1.8 min (814.1 - 812.2)

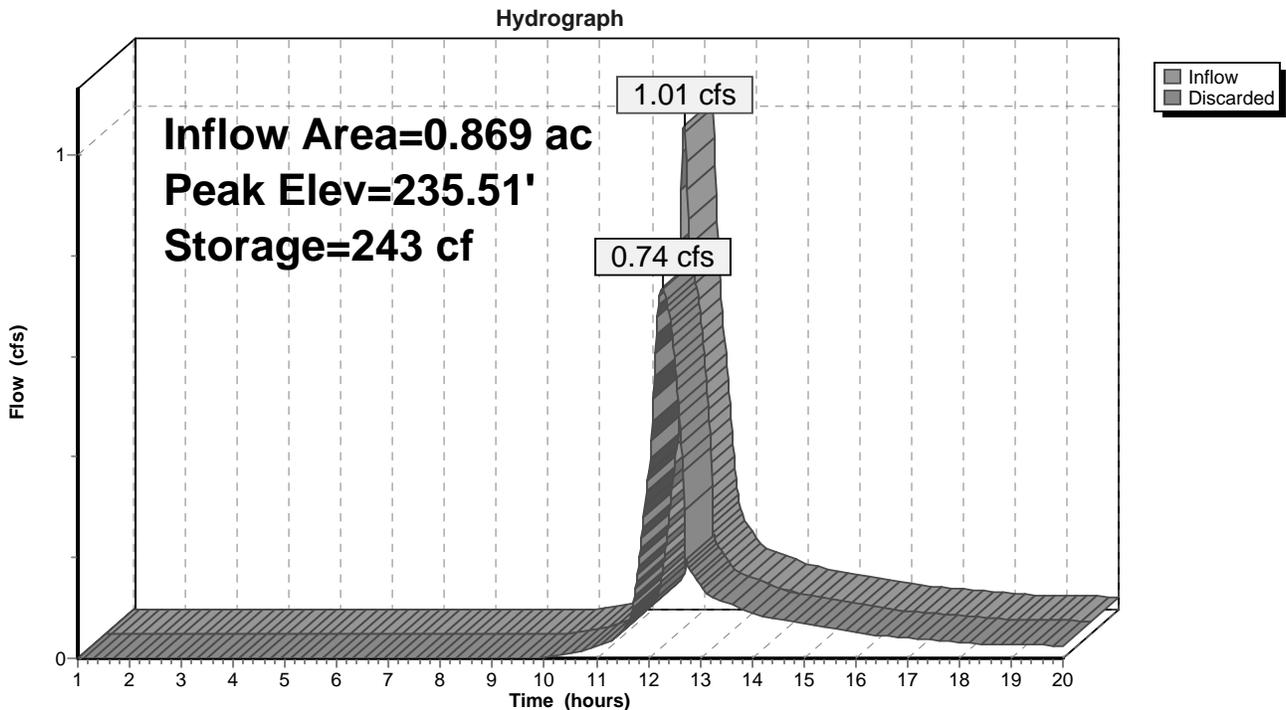
Volume	Invert	Avail.Storage	Storage Description
#1	235.38'	2,968 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
235.38	1,200	0	0
236.00	8,375	2,968	2,968

Device	Routing	Invert	Outlet Devices
#1	Discarded	235.38'	12.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.74 cfs @ 12.28 hrs HW=235.51' (Free Discharge)
 ↳1=Exfiltration (Exfiltration Controls 0.74 cfs)

Pond P-1: Soil Depression



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Type III 24-hr 2-year Rainfall=3.00"

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Summary for Pond P-2: Detention Pond

Inflow Area = 3.799 ac, 93.44% Impervious, Inflow Depth > 2.52" for 2-year event
 Inflow = 5.35 cfs @ 12.09 hrs, Volume= 0.799 af
 Outflow = 2.22 cfs @ 12.60 hrs, Volume= 0.799 af, Atten= 59%, Lag= 30.4 min
 Discarded = 2.22 cfs @ 12.60 hrs, Volume= 0.799 af
 Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Peak Elev= 234.76' @ 12.60 hrs Surf.Area= 9,596 sf Storage= 6,752 cf
 Flood Elev= 237.00' Surf.Area= 14,655 sf Storage= 33,679 cf

Plug-Flow detention time= 20.1 min calculated for 0.799 af (100% of inflow)
 Center-of-Mass det. time= 19.7 min (759.2 - 739.4)

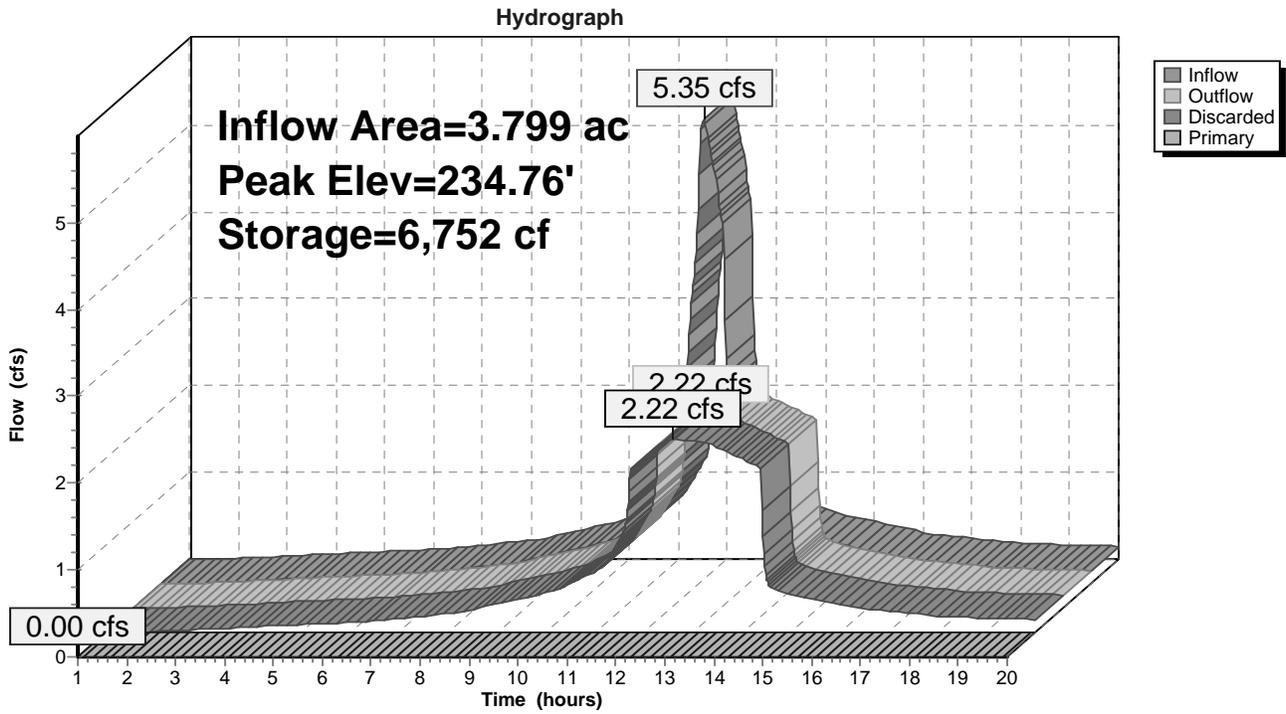
Volume	Invert	Avail.Storage	Storage Description
#1	234.00'	49,209 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
234.00	8,080	0	0
235.00	10,065	9,073	9,073
236.00	12,246	11,156	20,228
237.00	14,655	13,451	33,679
238.00	16,406	15,531	49,209

Device	Routing	Invert	Outlet Devices
#1	Primary	237.00'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Discarded	234.00'	10.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=2.22 cfs @ 12.60 hrs HW=234.76' (Free Discharge)
 ↑**2=Exfiltration** (Exfiltration Controls 2.22 cfs)

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=234.00' (Free Discharge)
 ↑**1=Orifice/Grate** (Controls 0.00 cfs)

Pond P-2: Detention Pond



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Type III 24-hr 10-year Rainfall=4.50"

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Time span=1.00-20.00 hrs, dt=0.02 hrs, 951 points
 Runoff by SCS TR-20 method, UH=SCS
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1-A: Perimeter Area Runoff Area=1,500 sf 0.00% Impervious Runoff Depth>2.21"
 Flow Length=15' Slope=0.0050 '/ Tc=1.6 min CN=79 Runoff=0.11 cfs 0.006 af

Subcatchment A-1: Northern Half Lot Runoff Area=37,865 sf 0.00% Impervious Runoff Depth>2.21"
 Flow Length=260' Slope=0.0110 '/ Tc=10.6 min CN=79 Runoff=2.07 cfs 0.160 af

Subcatchment A-10: Paved Area 10 to Runoff Area=9,700 sf 100.00% Impervious Runoff Depth>4.07"
 Flow Length=200' Slope=0.0080 '/ Tc=4.6 min CN=98 Runoff=1.03 cfs 0.075 af

Subcatchment A-11: Big-Y Parking to Runoff Area=35,536 sf 100.00% Impervious Runoff Depth>4.06"
 Flow Length=467' Slope=0.0113 '/ Tc=7.7 min CN=98 Runoff=3.38 cfs 0.276 af

Subcatchment A-12: Big-Y Parking to Runoff Area=64,556 sf 100.00% Impervious Runoff Depth>4.06"
 Flow Length=445' Slope=0.0115 '/ Tc=7.3 min CN=98 Runoff=6.23 cfs 0.502 af

Subcatchment A-13: Big-Y Parking to CB Runoff Area=11,010 sf 100.00% Impervious Runoff Depth>4.07"
 Flow Length=236' Slope=0.0150 '/ Tc=3.9 min CN=98 Runoff=1.19 cfs 0.086 af

Subcatchment A-2: Southern Half Lot Runoff Area=9,670 sf 0.00% Impervious Runoff Depth>2.21"
 Flow Length=50' Slope=0.0200 '/ Tc=2.1 min CN=79 Runoff=0.71 cfs 0.041 af

Subcatchment A-3: Det Pond Runoff Area=14,650 sf 100.00% Impervious Runoff Depth>4.06"
 Flow Length=156' Slope=0.0010 '/ Tc=10.8 min CN=98 Runoff=1.27 cfs 0.114 af

Subcatchment A-7: Driveway Area 7 to CB7 Runoff Area=5,375 sf 100.00% Impervious Runoff Depth>4.07"
 Flow Length=200' Slope=0.0074 '/ Tc=4.8 min CN=98 Runoff=0.56 cfs 0.042 af

Subcatchment A-9: Driveway Area 9 to CB9 Runoff Area=15,000 sf 92.05% Impervious Runoff Depth>3.84"
 Flow Length=395' Slope=0.0100 '/ Tc=8.0 min CN=96 Runoff=1.39 cfs 0.110 af

Reach D-10: CB10:DMH2 Avg. Flow Depth=0.45' Max Vel=2.99 fps Inflow=1.03 cfs 0.075 af
 12.0" Round Pipe n=0.013 L=50.0' S=0.0048 '/ Capacity=2.47 cfs Outflow=1.01 cfs 0.075 af

Reach D-11: CB11:DMH2 Avg. Flow Depth=1.00' Max Vel=4.24 fps Inflow=3.38 cfs 0.276 af
 12.0" Round Pipe n=0.013 L=52.0' S=0.0067 '/ Capacity=2.92 cfs Outflow=2.92 cfs 0.276 af

Reach D-12: CB12:DMH3 Avg. Flow Depth=1.00' Max Vel=3.45 fps Inflow=6.23 cfs 0.502 af
 12.0" Round Pipe n=0.013 L=56.0' S=0.0045 '/ Capacity=2.38 cfs Outflow=2.52 cfs 0.502 af

Reach D-13: CB13:DMH3 Avg. Flow Depth=1.00' Max Vel=0.68 fps Inflow=1.19 cfs 0.086 af
 12.0" Round Pipe n=0.014 L=50.0' S=0.0002 '/ Capacity=0.47 cfs Outflow=0.50 cfs 0.086 af

Reach D-14: CB14:DMH3 Avg. Flow Depth=0.00' Max Vel=0.00 fps
 12.0" Round Pipe n=0.013 L=20.0' S=0.0005 '/ Capacity=0.80 cfs Outflow=0.00 cfs 0.000 af

Reach D-2: 15-Inch RCP Avg. Flow Depth=1.25' Max Vel=1.06 fps Inflow=5.28 cfs 0.462 af
 15.0" Round Pipe n=0.013 L=32.0' S=0.0003 '/ Capacity=1.14 cfs Outflow=1.19 cfs 0.462 af

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Reach D-3: DMH3:DET POND Avg. Flow Depth=0.67' Max Vel=4.38 fps Inflow=2.97 cfs 0.588 af
15.0" Round Pipe n=0.013 L=60.0' S=0.0065 '/ Capacity=5.21 cfs Outflow=2.94 cfs 0.588 af

Reach D-9: CB9:DMH2 Avg. Flow Depth=0.47' Max Vel=3.82 fps Inflow=1.39 cfs 0.110 af
12.0" Round Pipe n=0.013 L=12.0' S=0.0075 '/ Capacity=3.09 cfs Outflow=1.38 cfs 0.110 af

Pond DMH2: DMH2 Peak Elev=234.90' Storage=0.001 af Inflow=5.26 cfs 0.462 af
Outflow=5.28 cfs 0.462 af

Pond DMH3: DMH3 Peak Elev=234.79' Storage=0.001 af Inflow=2.98 cfs 0.588 af
Outflow=2.97 cfs 0.588 af

Pond P-1: Soil Depression Peak Elev=235.67' Storage=847 cf Inflow=2.07 cfs 0.160 af
Outflow=1.27 cfs 0.160 af

Pond P-2: Detention Pond Peak Elev=235.26' Storage=11,785 cf Inflow=6.18 cfs 1.246 af
Discarded=2.46 cfs 1.245 af Primary=0.00 cfs 0.000 af Outflow=2.46 cfs 1.245 af

Total Runoff Area = 4.703 ac Runoff Volume = 1.412 af Average Runoff Depth = 3.60"
24.52% Pervious = 1.153 ac 75.48% Impervious = 3.550 ac

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Summary for Subcatchment 1-A: Perimeter Area

Runoff = 0.11 cfs @ 12.03 hrs, Volume= 0.006 af, Depth> 2.21"

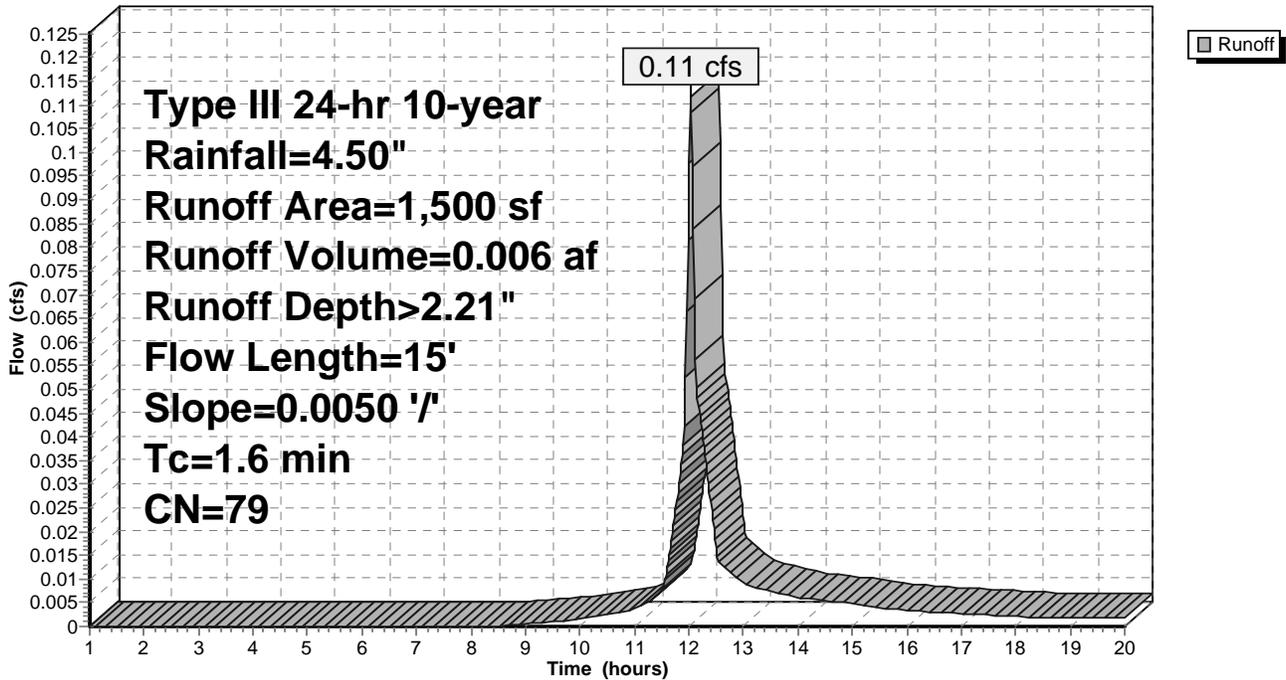
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 10-year Rainfall=4.50"

Area (sf)	CN	Description
* 1,500	79	Grass Area
1,500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	15	0.0050	0.16		Lag/CN Method,

Subcatchment 1-A: Perimeter Area

Hydrograph



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Type III 24-hr 10-year Rainfall=4.50"

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Summary for Subcatchment A-1: Northen Half Lot

Runoff = 2.07 cfs @ 12.15 hrs, Volume= 0.160 af, Depth> 2.21"

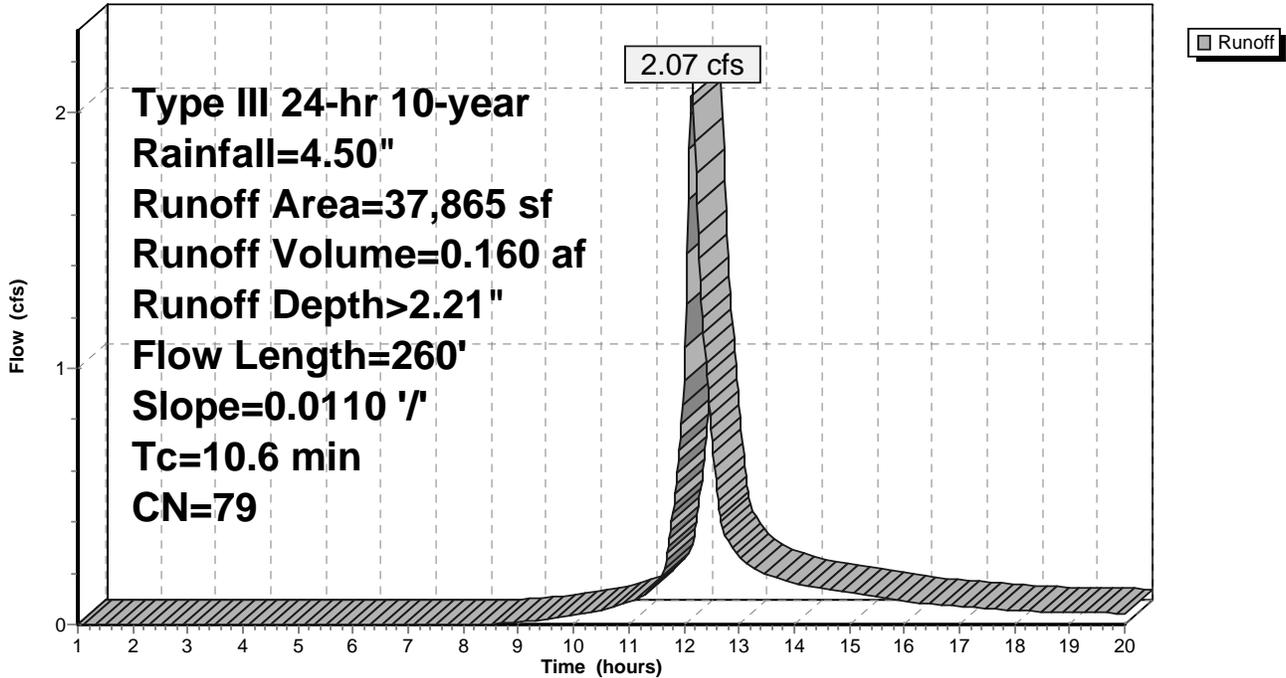
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 10-year Rainfall=4.50"

Area (sf)	CN	Description
* 37,865	79	Undeveloped Grass & Exposed Soil Area
37,865		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	260	0.0110	0.41		Lag/CN Method,

Subcatchment A-1: Northen Half Lot

Hydrograph



Summary for Subcatchment A-10: Paved Area 10 to CB10

Runoff = 1.03 cfs @ 12.06 hrs, Volume= 0.075 af, Depth> 4.07"

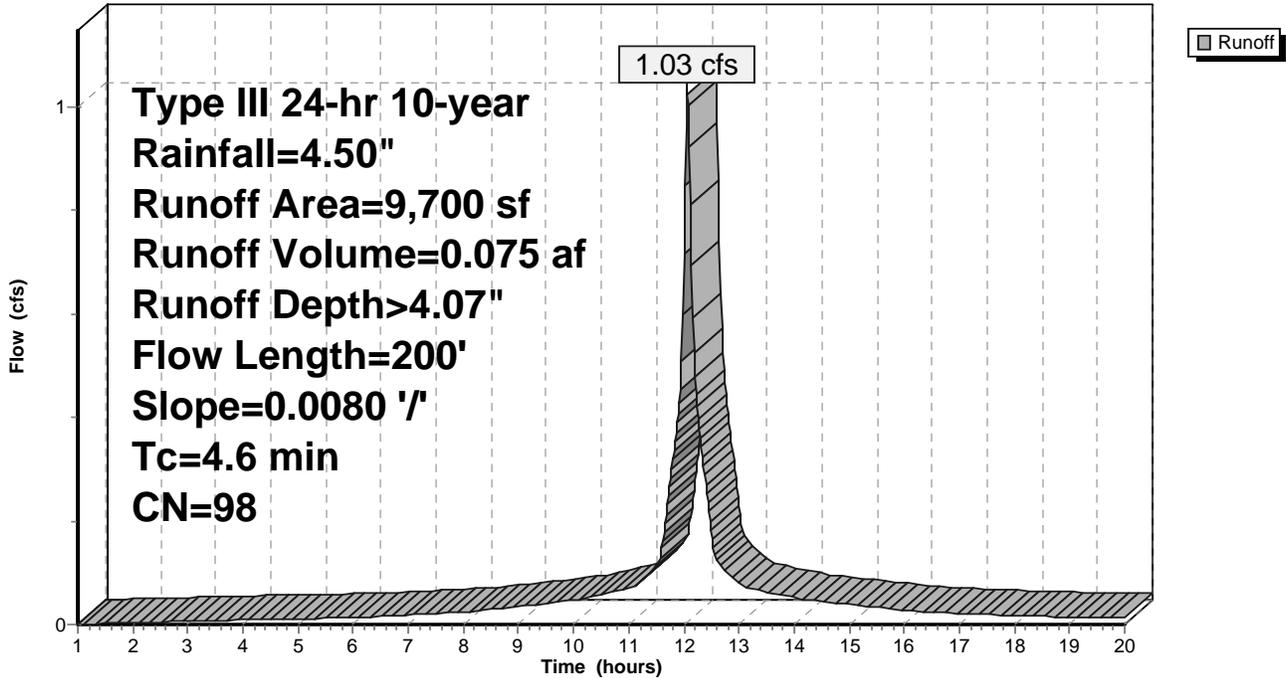
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 10-year Rainfall=4.50"

Area (sf)	CN	Description
* 9,700	98	Paved Apron and Travel Aisle
9,700		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	200	0.0080	0.72		Lag/CN Method,

Subcatchment A-10: Paved Area 10 to CB10

Hydrograph



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Summary for Subcatchment A-11: Big-Y Parking to CB11

Runoff = 3.38 cfs @ 12.10 hrs, Volume= 0.276 af, Depth> 4.06"

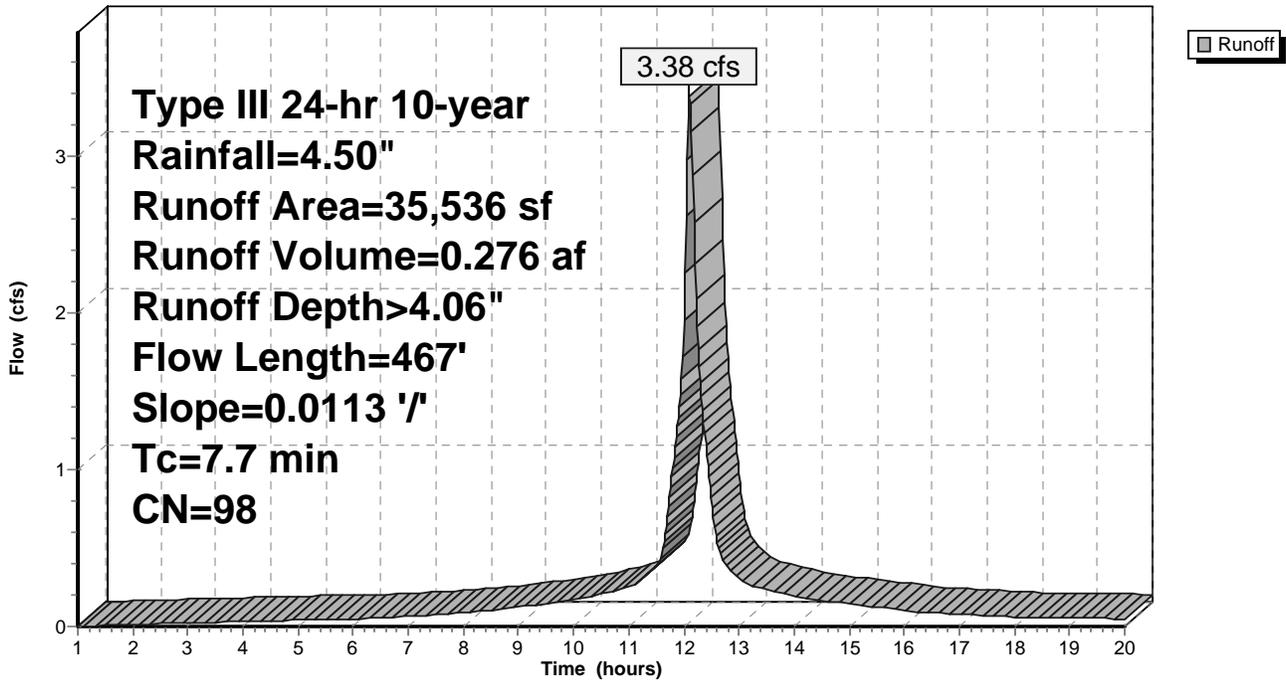
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 10-year Rainfall=4.50"

Area (sf)	CN	Description
* 35,536	98	Paved Parking
35,536		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	467	0.0113	1.01		Lag/CN Method,

Subcatchment A-11: Big-Y Parking to CB11

Hydrograph



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Summary for Subcatchment A-12: Big-Y Parking to CB12

Runoff = 6.23 cfs @ 12.10 hrs, Volume= 0.502 af, Depth> 4.06"

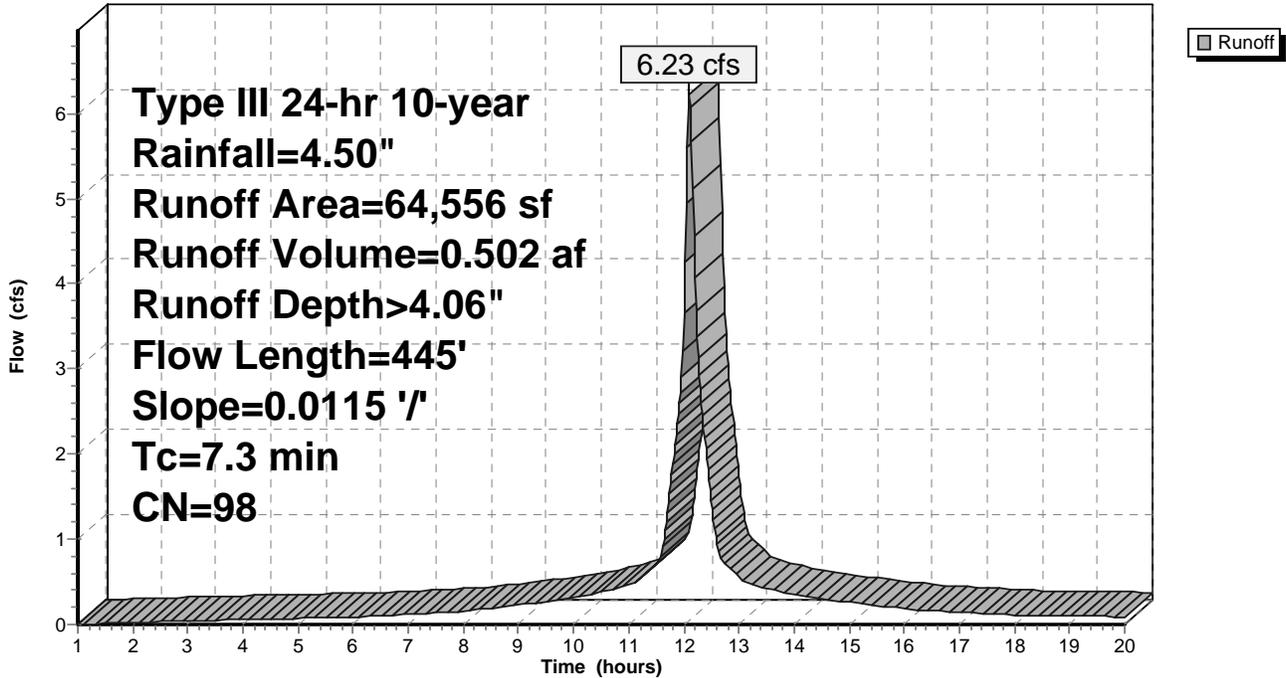
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-year Rainfall=4.50"

Area (sf)	CN	Description
* 64,556	98	Paved Parking
64,556		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	445	0.0115	1.01		Lag/CN Method,

Subcatchment A-12: Big-Y Parking to CB12

Hydrograph



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Summary for Subcatchment A-13: Big-Y Parking to CB 13

Runoff = 1.19 cfs @ 12.06 hrs, Volume= 0.086 af, Depth> 4.07"

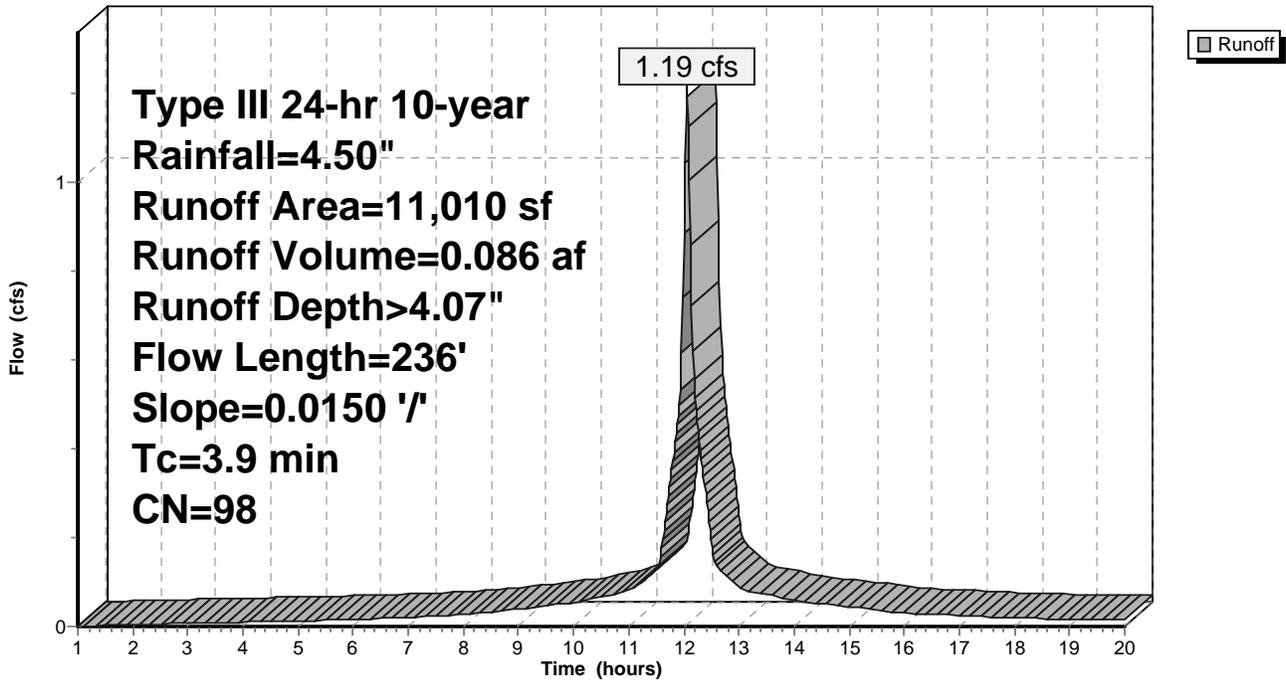
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-year Rainfall=4.50"

Area (sf)	CN	Description
* 11,010	98	Paved Parking
11,010		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	236	0.0150	1.02		Lag/CN Method,

Subcatchment A-13: Big-Y Parking to CB 13

Hydrograph



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Summary for Subcatchment A-2: Southern Half Lot

Runoff = 0.71 cfs @ 12.04 hrs, Volume= 0.041 af, Depth> 2.21"

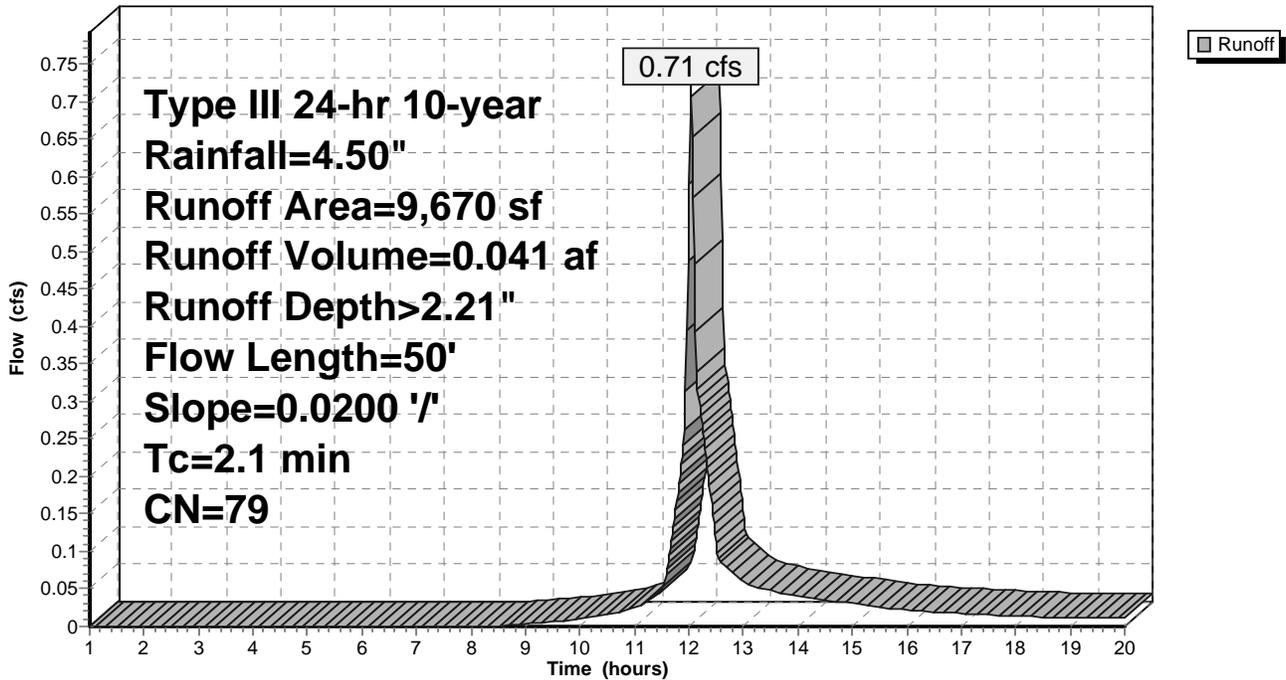
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 10-year Rainfall=4.50"

Area (sf)	CN	Description
* 9,670	79	Grass Cover & Some Exposed Soil
9,670		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	50	0.0200	0.40		Lag/CN Method,

Subcatchment A-2: Southern Half Lot

Hydrograph



Summary for Subcatchment A-3: Det Pond

Runoff = 1.27 cfs @ 12.14 hrs, Volume= 0.114 af, Depth> 4.06"

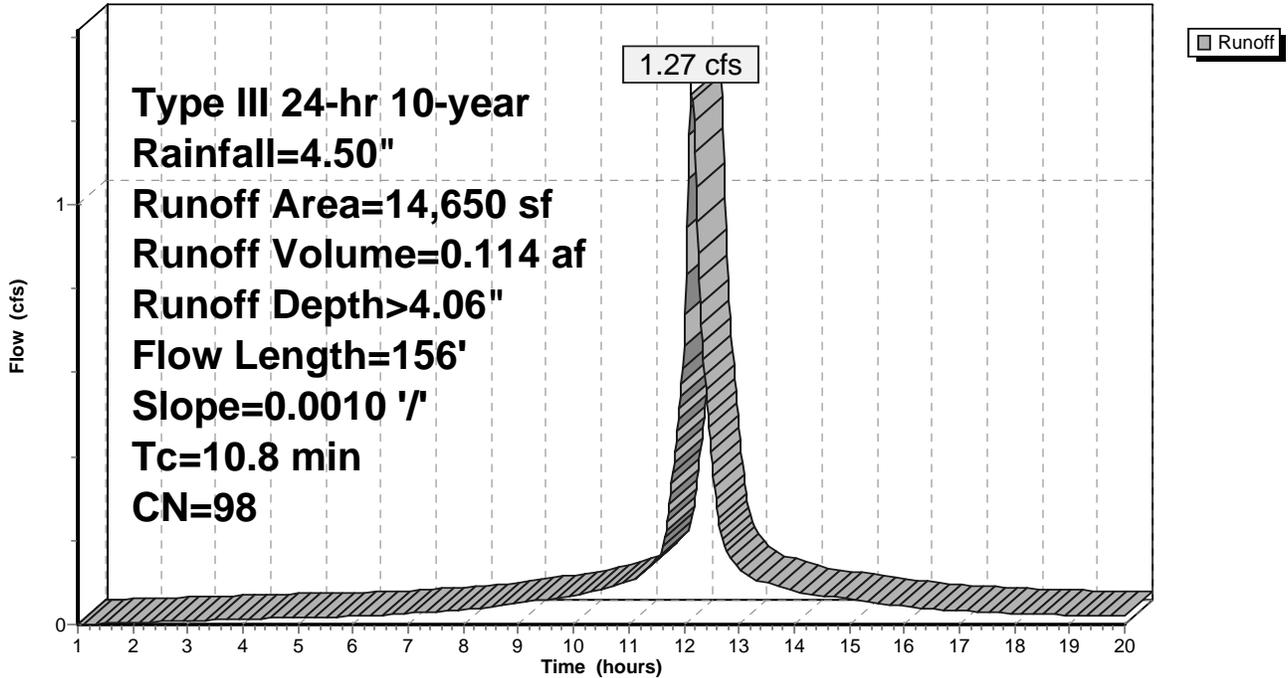
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 10-year Rainfall=4.50"

Area (sf)	CN	Description
* 14,650	98	Full Pond Area
14,650		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	156	0.0010	0.24		Lag/CN Method,

Subcatchment A-3: Det Pond

Hydrograph



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Type III 24-hr 10-year Rainfall=4.50"

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Summary for Subcatchment A-7: Driveway Area 7 to CB7

Runoff = 0.56 cfs @ 12.07 hrs, Volume= 0.042 af, Depth> 4.07"

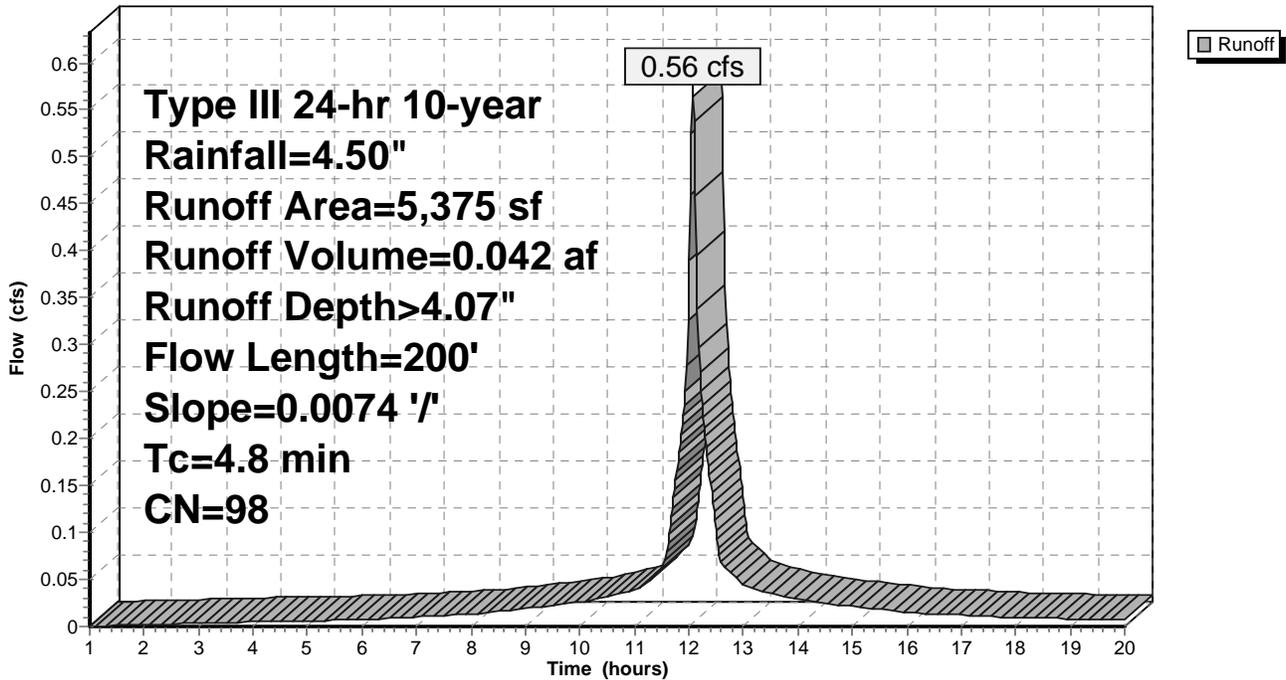
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 10-year Rainfall=4.50"

Area (sf)	CN	Description
* 5,375	98	Paved Driveway, northern half
5,375		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	200	0.0074	0.69		Lag/CN Method,

Subcatchment A-7: Driveway Area 7 to CB7

Hydrograph



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Type III 24-hr 10-year Rainfall=4.50"

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Summary for Subcatchment A-9: Driveway Area 9 to CB9

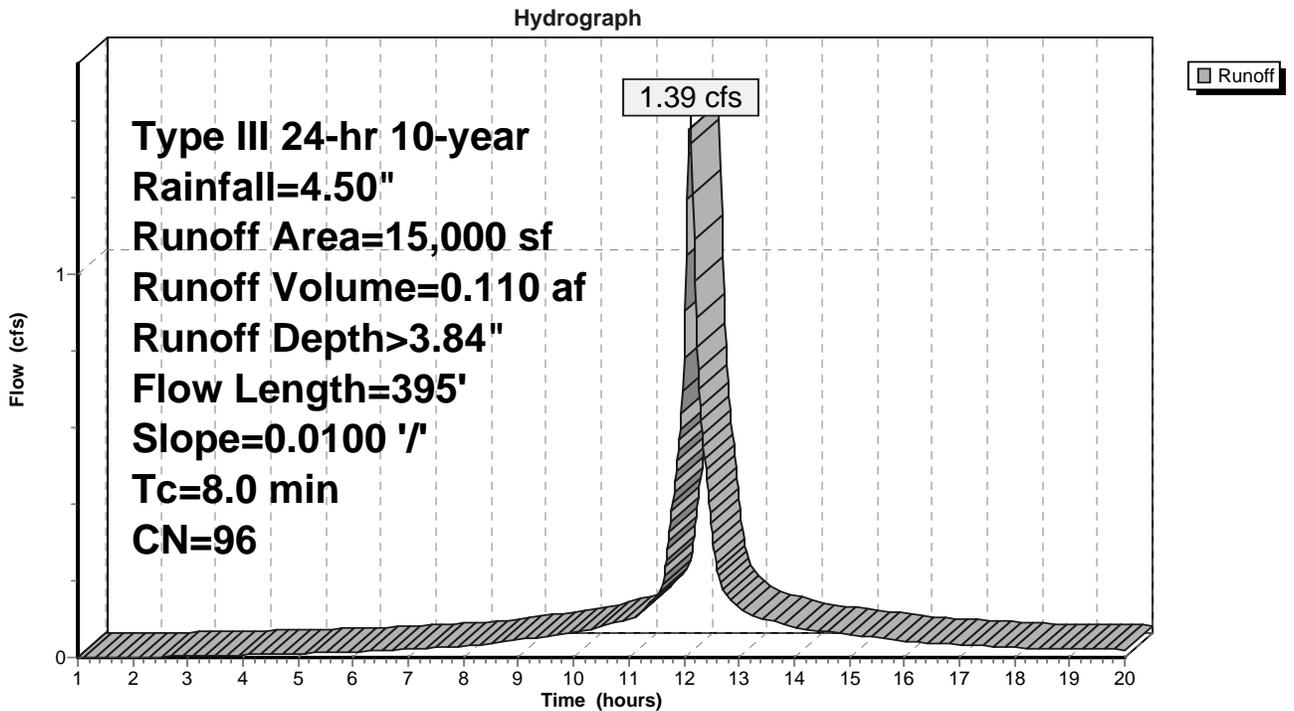
Runoff = 1.39 cfs @ 12.11 hrs, Volume= 0.110 af, Depth> 3.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 10-year Rainfall=4.50"

	Area (sf)	CN	Description
*	1,192	79	Grass Strip
*	13,808	98	N-S Driveway
	15,000	96	Weighted Average
	1,192		7.95% Pervious Area
	13,808		92.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	395	0.0100	0.82		Lag/CN Method,

Subcatchment A-9: Driveway Area 9 to CB9



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Type III 24-hr 10-year Rainfall=4.50"

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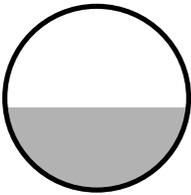
Summary for Reach D-10: CB10:DMH2

Inflow Area = 0.223 ac, 100.00% Impervious, Inflow Depth > 4.07" for 10-year event
 Inflow = 1.03 cfs @ 12.06 hrs, Volume= 0.075 af
 Outflow = 1.01 cfs @ 12.07 hrs, Volume= 0.075 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Max. Velocity= 2.99 fps, Min. Travel Time= 0.3 min
 Avg. Velocity = 1.04 fps, Avg. Travel Time= 0.8 min

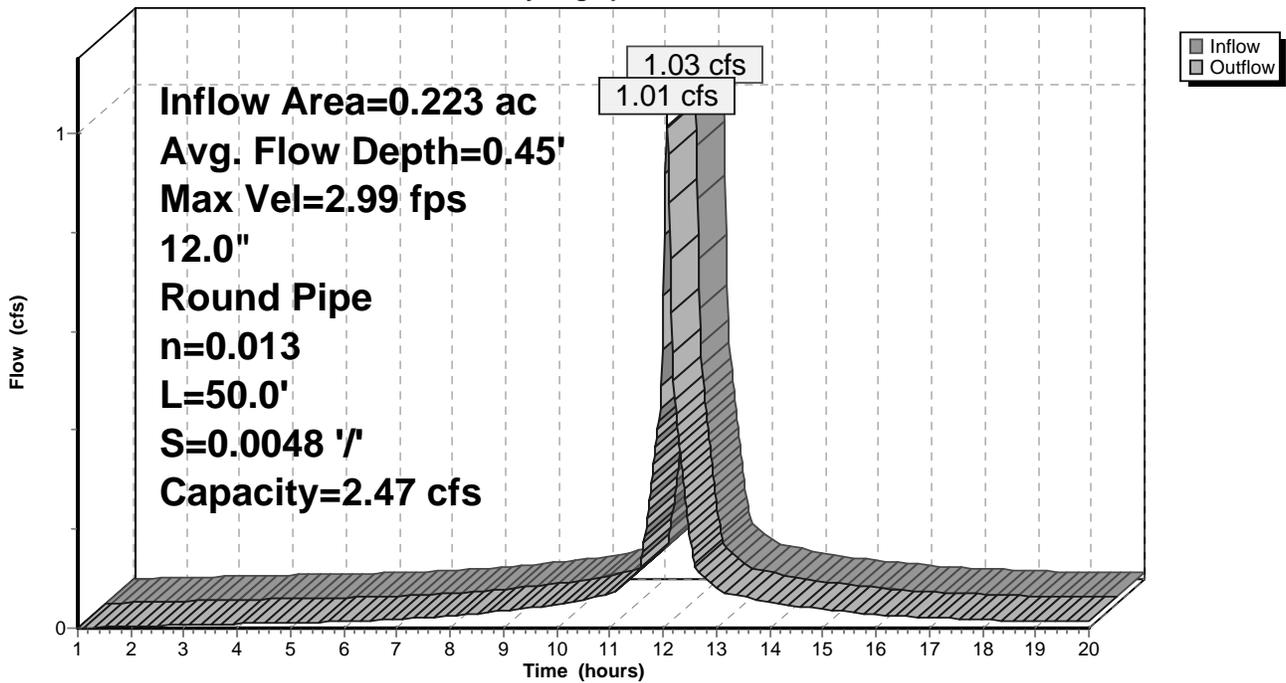
Peak Storage= 17 cf @ 12.07 hrs
 Average Depth at Peak Storage= 0.45'
 Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.47 cfs

12.0" Round Pipe
 n= 0.013
 Length= 50.0' Slope= 0.0048 '/'
 Inlet Invert= 234.04', Outlet Invert= 233.80'



Reach D-10: CB10:DMH2

Hydrograph



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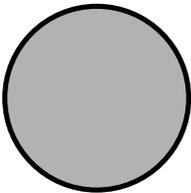
Summary for Reach D-11: CB11:DMH2

Inflow Area = 0.816 ac, 100.00% Impervious, Inflow Depth > 4.06" for 10-year event
 Inflow = 3.38 cfs @ 12.10 hrs, Volume= 0.276 af
 Outflow = 2.92 cfs @ 12.10 hrs, Volume= 0.276 af, Atten= 14%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Max. Velocity= 4.24 fps, Min. Travel Time= 0.2 min
 Avg. Velocity = 1.72 fps, Avg. Travel Time= 0.5 min

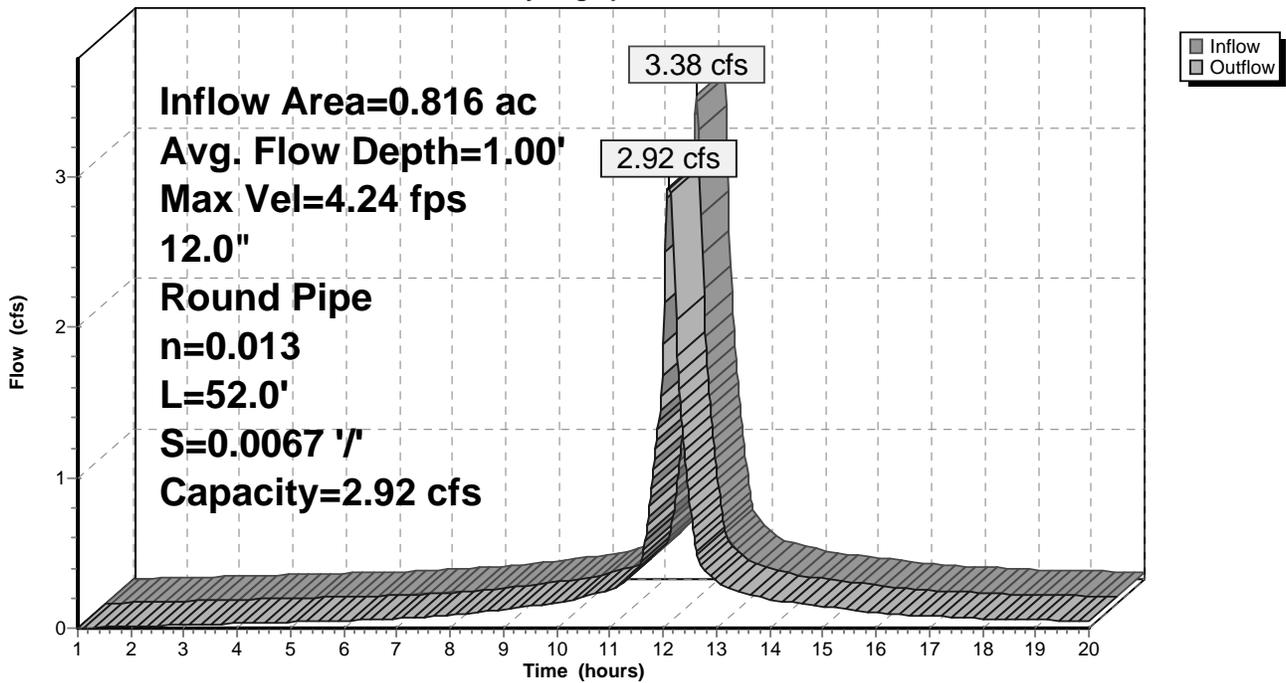
Peak Storage= 41 cf @ 12.08 hrs
 Average Depth at Peak Storage= 1.00'
 Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.92 cfs

12.0" Round Pipe
 n= 0.013
 Length= 52.0' Slope= 0.0067 '/'
 Inlet Invert= 233.95', Outlet Invert= 233.60'



Reach D-11: CB11:DMH2

Hydrograph



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Type III 24-hr 10-year Rainfall=4.50"

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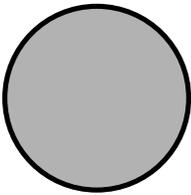
Summary for Reach D-12: CB12:DMH3

Inflow Area = 1.482 ac, 100.00% Impervious, Inflow Depth > 4.06" for 10-year event
Inflow = 6.23 cfs @ 12.10 hrs, Volume= 0.502 af
Outflow = 2.52 cfs @ 11.92 hrs, Volume= 0.502 af, Atten= 59%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
Max. Velocity= 3.45 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.75 fps, Avg. Travel Time= 0.5 min

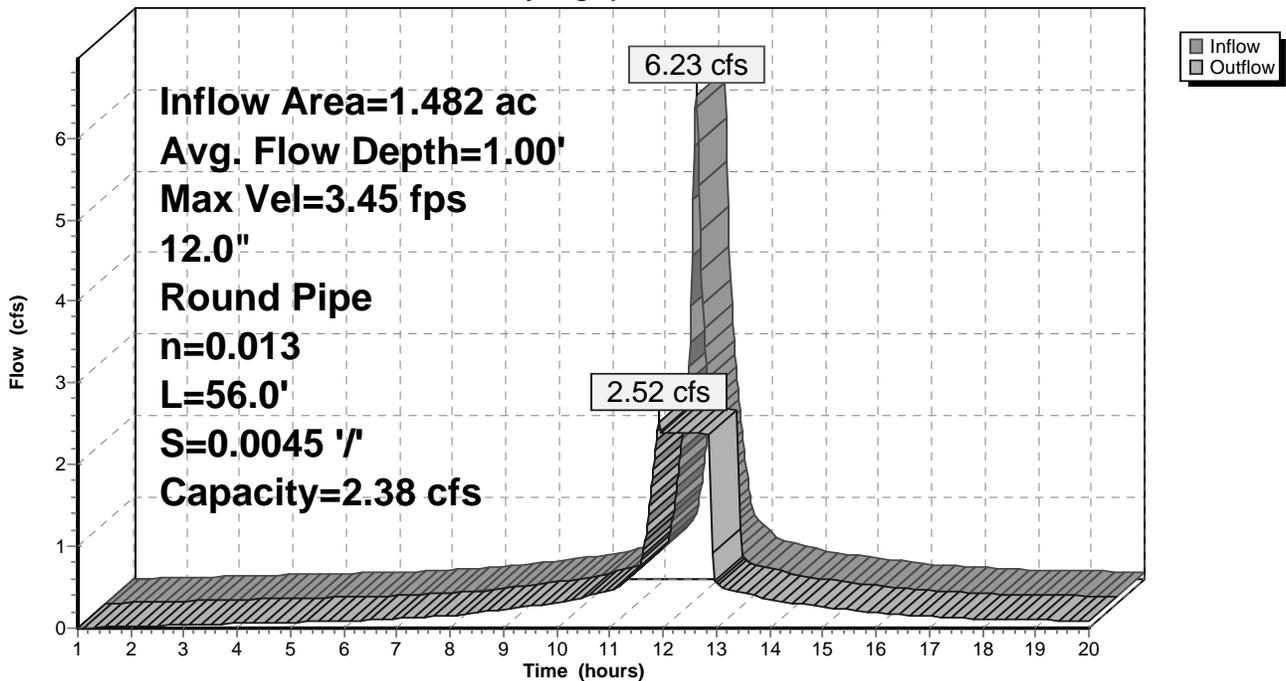
Peak Storage= 44 cf @ 11.94 hrs
Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.38 cfs

12.0" Round Pipe
n= 0.013
Length= 56.0' Slope= 0.0045 '/
Inlet Invert= 234.29', Outlet Invert= 234.04'



Reach D-12: CB12:DMH3

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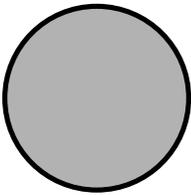
Summary for Reach D-13: CB13:DMH3

Inflow Area = 0.253 ac, 100.00% Impervious, Inflow Depth > 4.07" for 10-year event
Inflow = 1.19 cfs @ 12.06 hrs, Volume= 0.086 af
Outflow = 0.50 cfs @ 11.96 hrs, Volume= 0.086 af, Atten= 58%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
Max. Velocity= 0.68 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 0.33 fps, Avg. Travel Time= 2.5 min

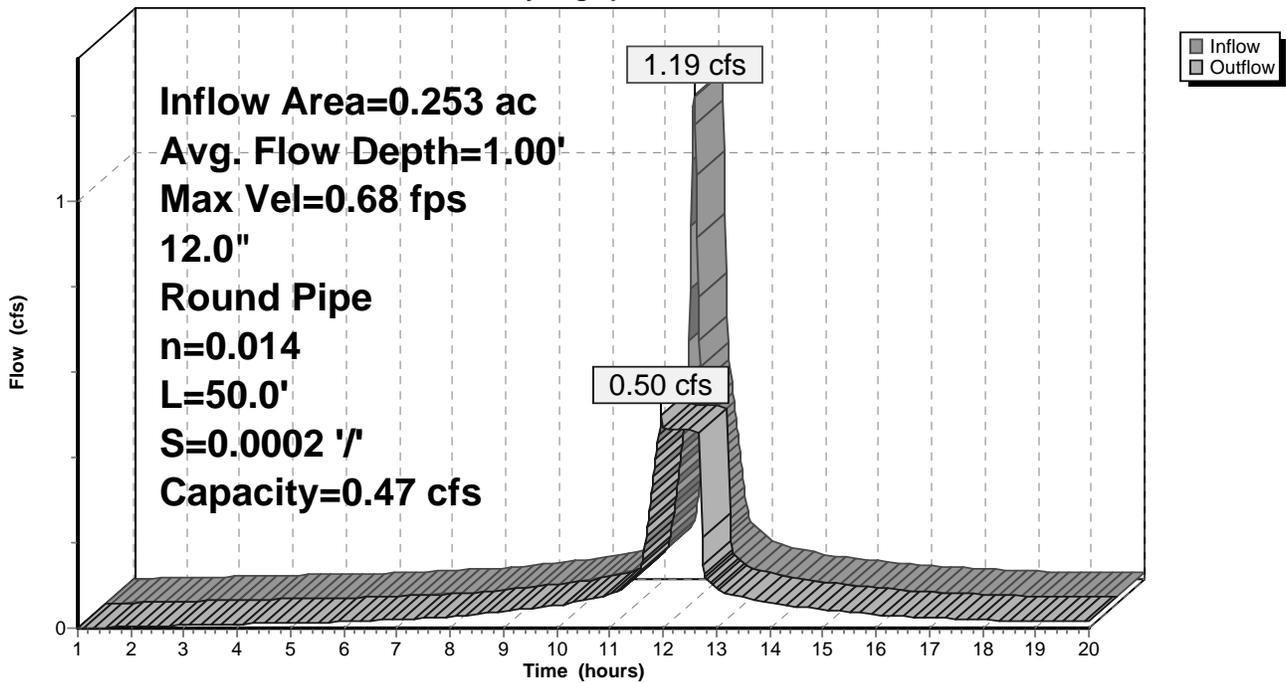
Peak Storage= 39 cf @ 11.96 hrs
Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 0.47 cfs

12.0" Round Pipe
n= 0.014
Length= 50.0' Slope= 0.0002 '/'
Inlet Invert= 233.78', Outlet Invert= 233.77'



Reach D-13: CB13:DMH3

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Summary for Reach D-14: CB14:DMH3

Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs

Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min

Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs

Average Depth at Peak Storage= 0.00'

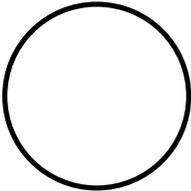
Bank-Full Depth= 1.00', Capacity at Bank-Full= 0.80 cfs

12.0" Round Pipe

n= 0.013

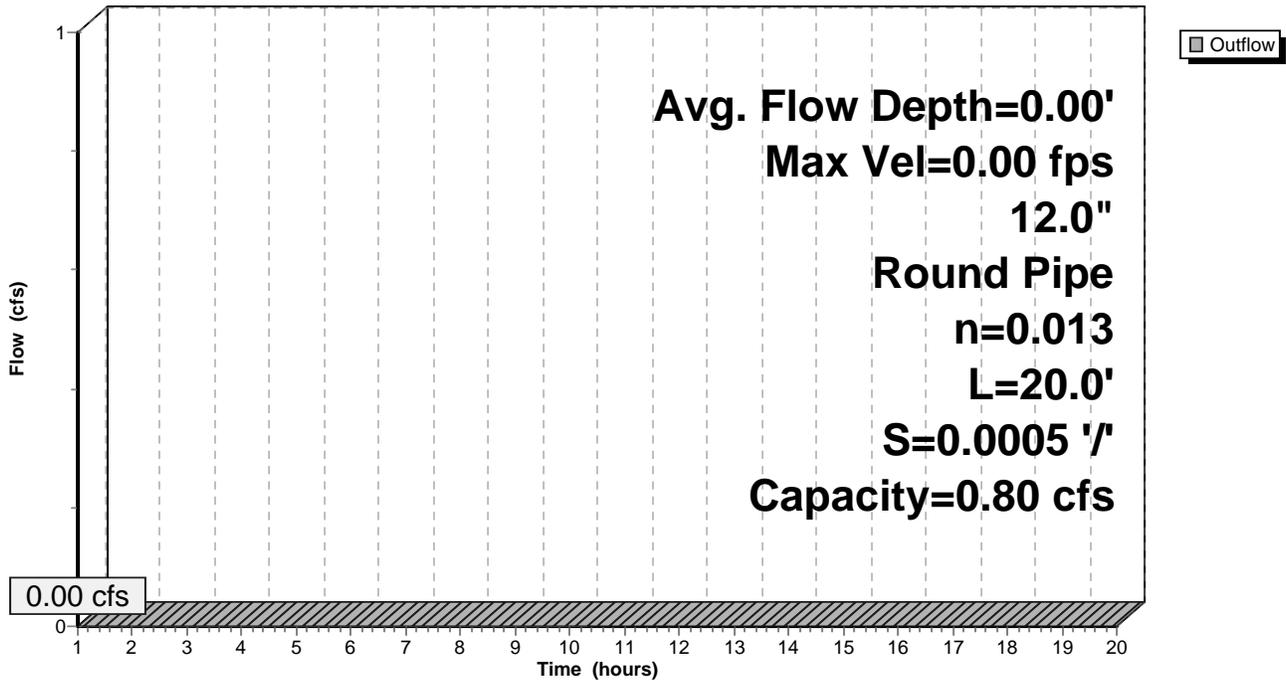
Length= 20.0' Slope= 0.0005 '/

Inlet Invert= 233.86', Outlet Invert= 233.85'



Reach D-14: CB14:DMH3

Hydrograph



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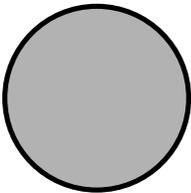
Summary for Reach D-2: 15-Inch RCP

Inflow Area = 1.383 ac, 98.02% Impervious, Inflow Depth > 4.01" for 10-year event
Inflow = 5.28 cfs @ 12.09 hrs, Volume= 0.462 af
Outflow = 1.19 cfs @ 11.73 hrs, Volume= 0.462 af, Atten= 77%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
Max. Velocity= 1.06 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.64 fps, Avg. Travel Time= 0.8 min

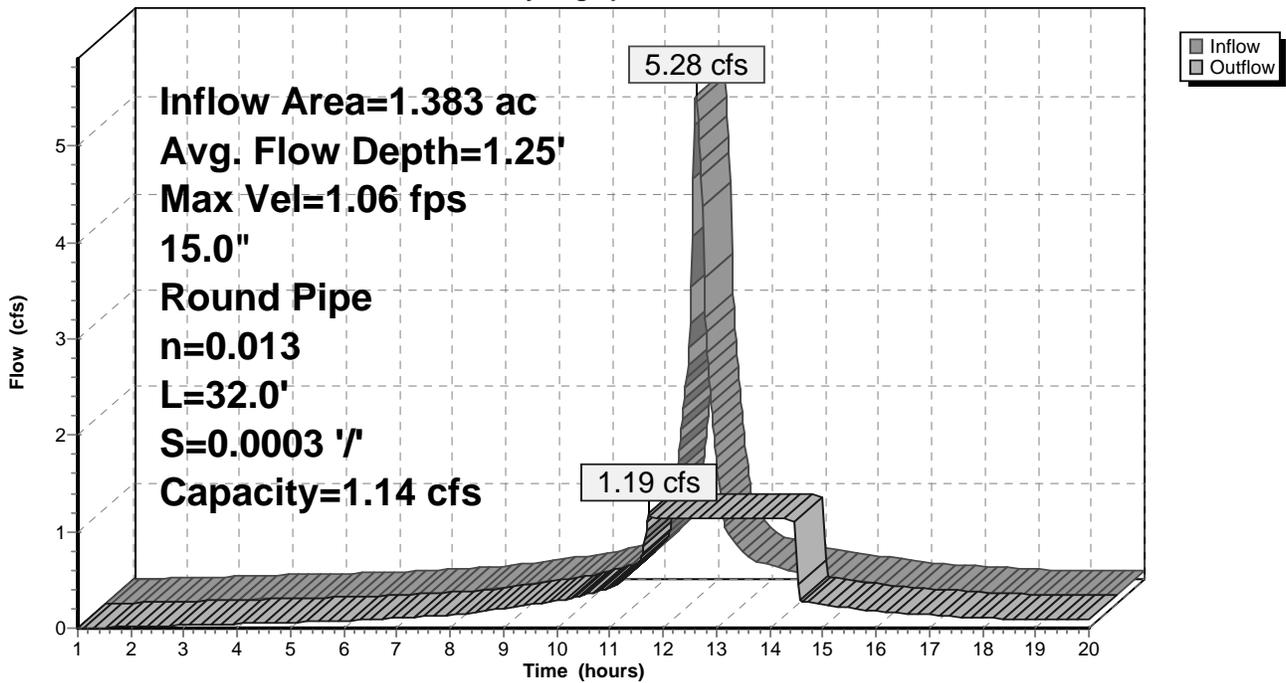
Peak Storage= 39 cf @ 11.74 hrs
Average Depth at Peak Storage= 1.25'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 1.14 cfs

15.0" Round Pipe
n= 0.013
Length= 32.0' Slope= 0.0003 '/
Inlet Invert= 233.48', Outlet Invert= 233.47'



Reach D-2: 15-Inch RCP

Hydrograph



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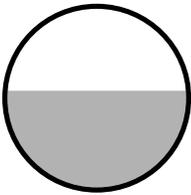
Summary for Reach D-3: DMH3:DET POND

Inflow Area = 1.735 ac, 100.00% Impervious, Inflow Depth > 4.07" for 10-year event
 Inflow = 2.97 cfs @ 11.92 hrs, Volume= 0.588 af
 Outflow = 2.94 cfs @ 11.93 hrs, Volume= 0.588 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Max. Velocity= 4.38 fps, Min. Travel Time= 0.2 min
 Avg. Velocity = 2.08 fps, Avg. Travel Time= 0.5 min

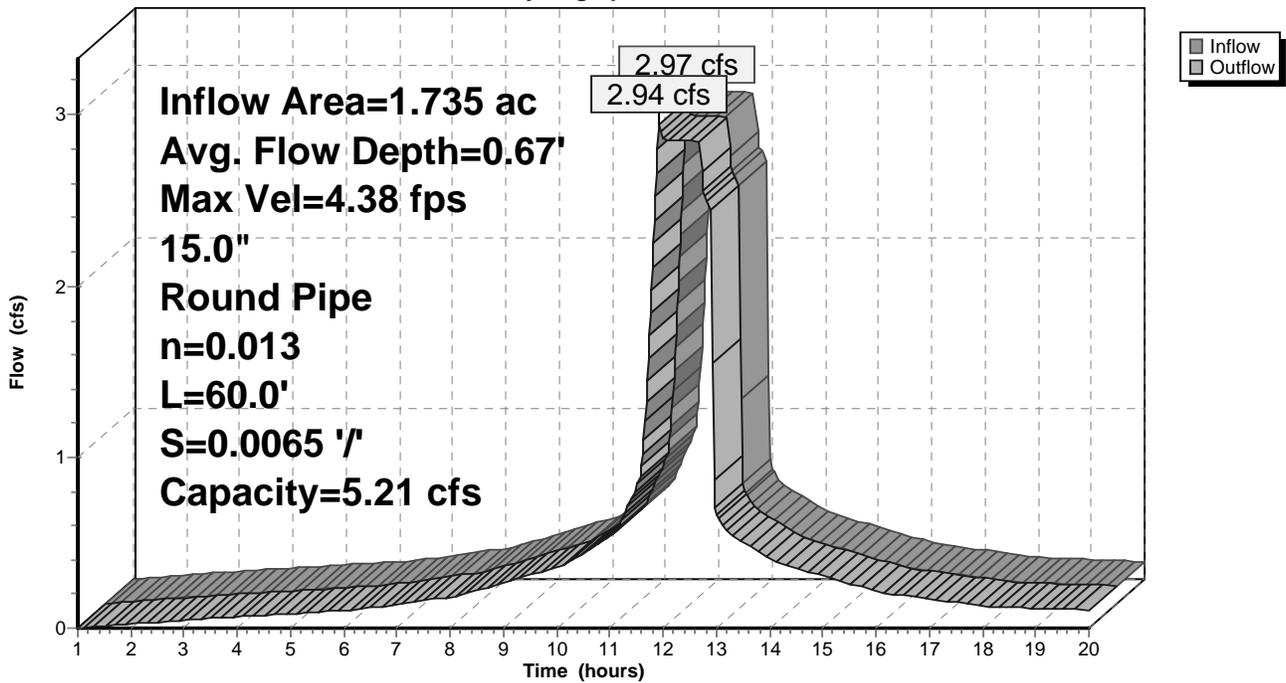
Peak Storage= 41 cf @ 11.93 hrs
 Average Depth at Peak Storage= 0.67'
 Bank-Full Depth= 1.25', Capacity at Bank-Full= 5.21 cfs

15.0" Round Pipe
 n= 0.013 Concrete pipe, bends & connections
 Length= 60.0' Slope= 0.0065 '/
 Inlet Invert= 233.91', Outlet Invert= 233.52'



Reach D-3: DMH3:DET POND

Hydrograph



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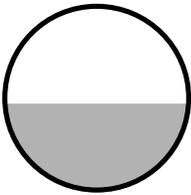
Summary for Reach D-9: CB9:DMH2

Inflow Area = 0.344 ac, 92.05% Impervious, Inflow Depth > 3.84" for 10-year event
 Inflow = 1.39 cfs @ 12.11 hrs, Volume= 0.110 af
 Outflow = 1.38 cfs @ 12.11 hrs, Volume= 0.110 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Max. Velocity= 3.82 fps, Min. Travel Time= 0.1 min
 Avg. Velocity = 1.36 fps, Avg. Travel Time= 0.1 min

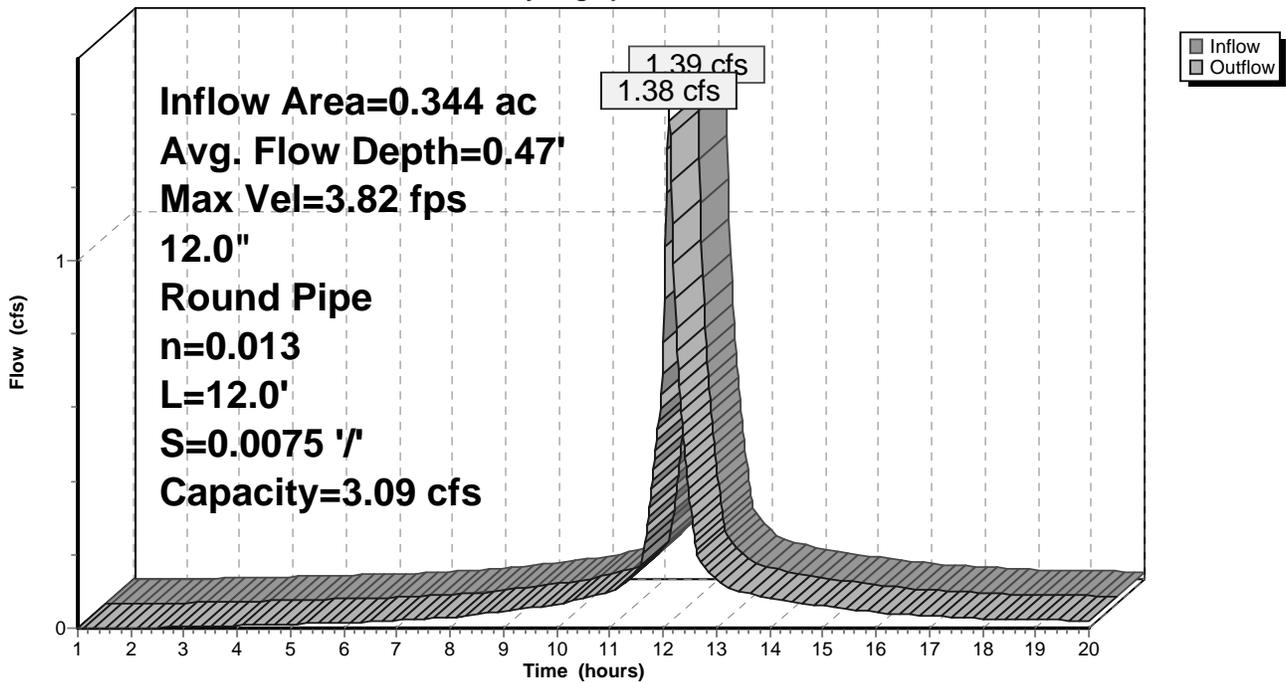
Peak Storage= 4 cf @ 12.11 hrs
 Average Depth at Peak Storage= 0.47'
 Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.09 cfs

12.0" Round Pipe
 n= 0.013
 Length= 12.0' Slope= 0.0075 '/'
 Inlet Invert= 233.82', Outlet Invert= 233.73'



Reach D-9: CB9:DMH2

Hydrograph



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Type III 24-hr 10-year Rainfall=4.50"

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Summary for Pond DMH2: DMH2

Inflow Area = 1.383 ac, 98.02% Impervious, Inflow Depth > 4.01" for 10-year event
Inflow = 5.26 cfs @ 12.09 hrs, Volume= 0.462 af
Outflow = 5.28 cfs @ 12.09 hrs, Volume= 0.462 af, Atten= 0%, Lag= 0.0 min
Primary = 5.28 cfs @ 12.09 hrs, Volume= 0.462 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Peak Elev= 234.90' @ 12.09 hrs Surf.Area= 0.001 ac Storage= 0.001 af

Plug-Flow detention time= 0.3 min calculated for 0.462 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (727.5 - 727.3)

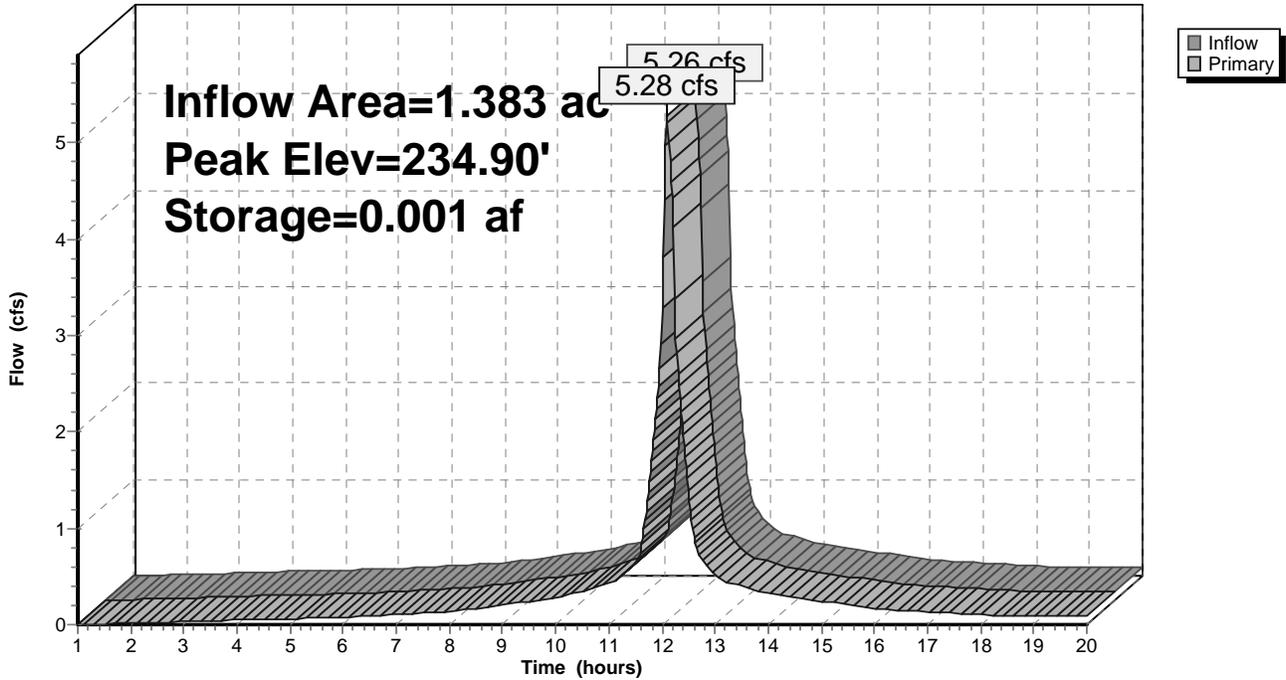
Volume	Invert	Avail.Storage	Storage Description
#1	233.48'	0.003 af	6.00'D x 4.52'H Vertical Cone/Cylinder

Device	Routing	Invert	Outlet Devices
#1	Primary	233.48'	15.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=5.25 cfs @ 12.09 hrs HW=234.89' (Free Discharge)
↑**1=Orifice/Grate** (Orifice Controls 5.25 cfs @ 4.27 fps)

Pond DMH2: DMH2

Hydrograph



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Type III 24-hr 10-year Rainfall=4.50"

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Summary for Pond DMH3: DMH3

Inflow Area = 1.735 ac, 100.00% Impervious, Inflow Depth > 4.07" for 10-year event
 Inflow = 2.98 cfs @ 11.92 hrs, Volume= 0.588 af
 Outflow = 2.97 cfs @ 11.92 hrs, Volume= 0.588 af, Atten= 0%, Lag= 0.1 min
 Primary = 2.97 cfs @ 11.92 hrs, Volume= 0.588 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Peak Elev= 234.79' @ 11.92 hrs Surf.Area= 0.001 ac Storage= 0.001 af

Plug-Flow detention time= 0.3 min calculated for 0.587 af (100% of inflow)
 Center-of-Mass det. time= 0.2 min (728.0 - 727.8)

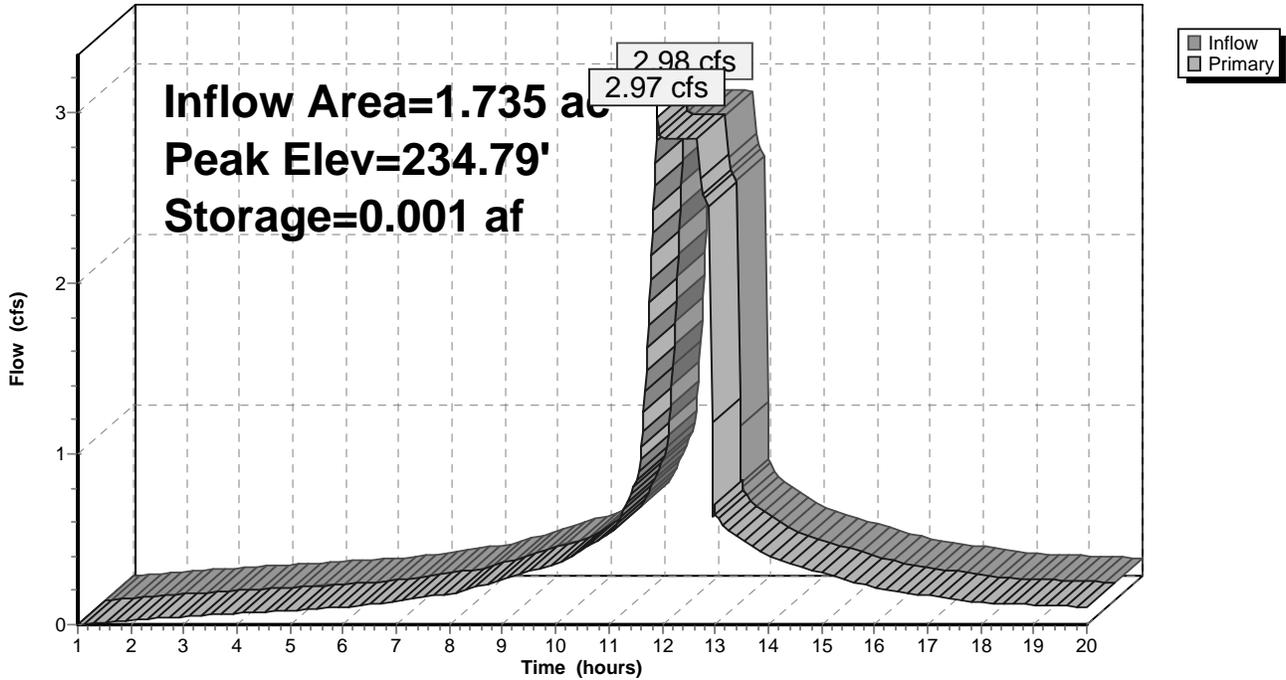
Volume	Invert	Avail.Storage	Storage Description
#1	233.91'	0.003 af	6.00'D x 4.28'H Vertical Cone/Cylinder

Device	Routing	Invert	Outlet Devices
#1	Primary	233.91'	15.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=2.96 cfs @ 11.92 hrs HW=234.79' (Free Discharge)
 ↳ **1=Orifice/Grate** (Orifice Controls 2.96 cfs @ 3.20 fps)

Pond DMH3: DMH3

Hydrograph



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Type III 24-hr 10-year Rainfall=4.50"

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Summary for Pond P-1: Soil Depression

Inflow Area = 0.869 ac, 0.00% Impervious, Inflow Depth > 2.21" for 10-year event
 Inflow = 2.07 cfs @ 12.15 hrs, Volume= 0.160 af
 Outflow = 1.27 cfs @ 12.32 hrs, Volume= 0.160 af, Atten= 39%, Lag= 10.2 min
 Discarded = 1.27 cfs @ 12.32 hrs, Volume= 0.160 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Peak Elev= 235.67' @ 12.32 hrs Surf.Area= 4,587 sf Storage= 847 cf

Plug-Flow detention time= 4.4 min calculated for 0.160 af (100% of inflow)
 Center-of-Mass det. time= 4.3 min (800.8 - 796.5)

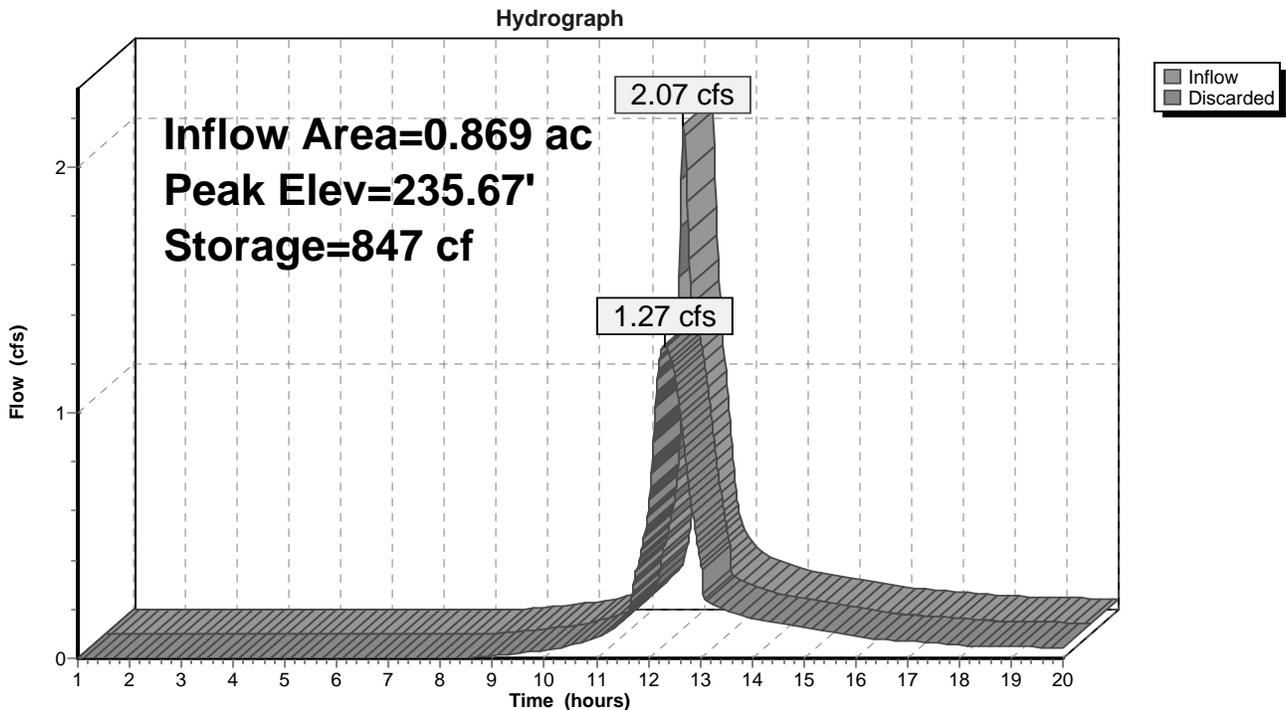
Volume	Invert	Avail.Storage	Storage Description
#1	235.38'	2,968 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
235.38	1,200	0	0
236.00	8,375	2,968	2,968

Device	Routing	Invert	Outlet Devices
#1	Discarded	235.38'	12.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=1.27 cfs @ 12.32 hrs HW=235.67' (Free Discharge)
 ↳1=Exfiltration (Exfiltration Controls 1.27 cfs)

Pond P-1: Soil Depression



Summary for Pond P-2: Detention Pond

Inflow Area = 3.799 ac, 93.44% Impervious, Inflow Depth > 3.93" for 10-year event
 Inflow = 6.18 cfs @ 12.08 hrs, Volume= 1.246 af
 Outflow = 2.46 cfs @ 12.96 hrs, Volume= 1.245 af, Atten= 60%, Lag= 52.5 min
 Discarded = 2.46 cfs @ 12.96 hrs, Volume= 1.245 af
 Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Peak Elev= 235.26' @ 12.96 hrs Surf.Area= 10,637 sf Storage= 11,785 cf
 Flood Elev= 237.00' Surf.Area= 14,655 sf Storage= 33,679 cf

Plug-Flow detention time= 35.3 min calculated for 1.245 af (100% of inflow)
 Center-of-Mass det. time= 35.0 min (773.4 - 738.4)

Volume	Invert	Avail.Storage	Storage Description
#1	234.00'	49,209 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
234.00	8,080	0	0
235.00	10,065	9,073	9,073
236.00	12,246	11,156	20,228
237.00	14,655	13,451	33,679
238.00	16,406	15,531	49,209

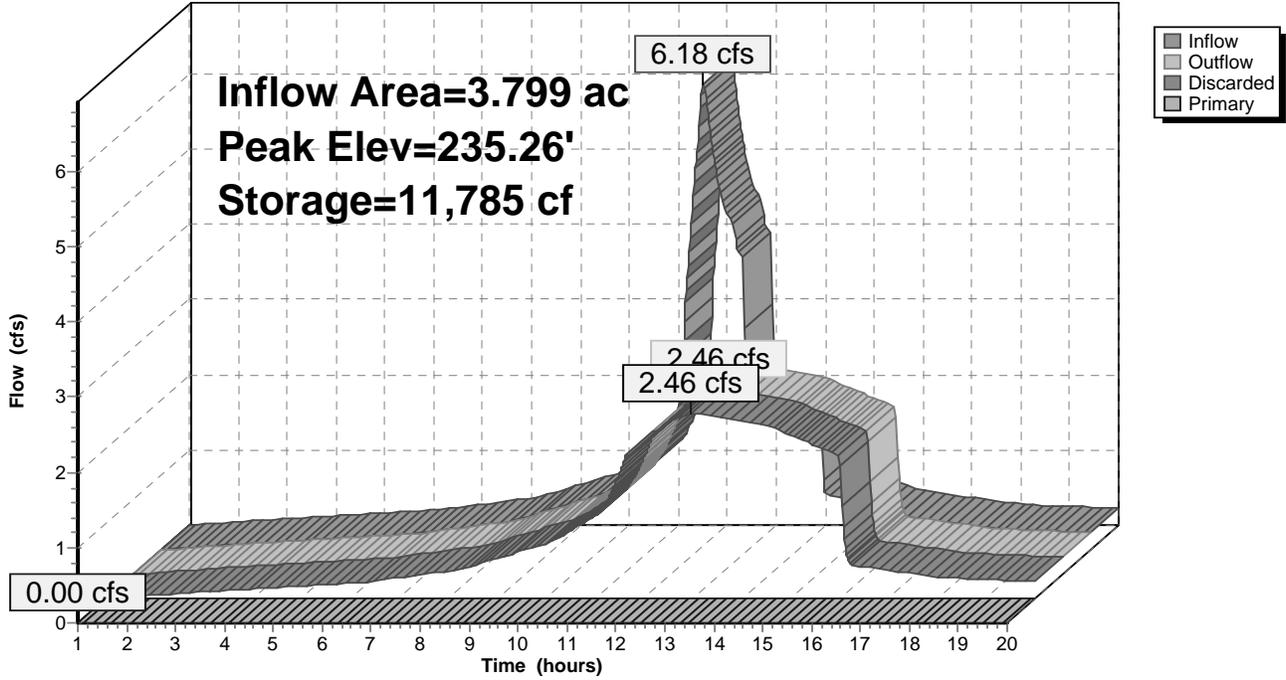
Device	Routing	Invert	Outlet Devices
#1	Primary	237.00'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Discarded	234.00'	10.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=2.46 cfs @ 12.96 hrs HW=235.26' (Free Discharge)
 ↑**2=Exfiltration** (Exfiltration Controls 2.46 cfs)

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=234.00' (Free Discharge)
 ↑**1=Orifice/Grate** (Controls 0.00 cfs)

Pond P-2: Detention Pond

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Time span=1.00-20.00 hrs, dt=0.02 hrs, 951 points
 Runoff by SCS TR-20 method, UH=SCS
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1-A: Perimeter Area Runoff Area=1,500 sf 0.00% Impervious Runoff Depth>2.95"
 Flow Length=15' Slope=0.0050 '/ Tc=1.6 min CN=79 Runoff=0.15 cfs 0.008 af

Subcatchment A-1: Northern Half Lot Runoff Area=37,865 sf 0.00% Impervious Runoff Depth>2.94"
 Flow Length=260' Slope=0.0110 '/ Tc=10.6 min CN=79 Runoff=2.75 cfs 0.213 af

Subcatchment A-10: Paved Area 10 to Runoff Area=9,700 sf 100.00% Impervious Runoff Depth>4.93"
 Flow Length=200' Slope=0.0080 '/ Tc=4.6 min CN=98 Runoff=1.23 cfs 0.091 af

Subcatchment A-11: Big-Y Parking to Runoff Area=35,536 sf 100.00% Impervious Runoff Depth>4.92"
 Flow Length=467' Slope=0.0113 '/ Tc=7.7 min CN=98 Runoff=4.07 cfs 0.335 af

Subcatchment A-12: Big-Y Parking to Runoff Area=64,556 sf 100.00% Impervious Runoff Depth>4.92"
 Flow Length=445' Slope=0.0115 '/ Tc=7.3 min CN=98 Runoff=7.49 cfs 0.608 af

Subcatchment A-13: Big-Y Parking to CB Runoff Area=11,010 sf 100.00% Impervious Runoff Depth>4.93"
 Flow Length=236' Slope=0.0150 '/ Tc=3.9 min CN=98 Runoff=1.43 cfs 0.104 af

Subcatchment A-2: Southern Half Lot Runoff Area=9,670 sf 0.00% Impervious Runoff Depth>2.95"
 Flow Length=50' Slope=0.0200 '/ Tc=2.1 min CN=79 Runoff=0.94 cfs 0.054 af

Subcatchment A-3: Det Pond Runoff Area=14,650 sf 100.00% Impervious Runoff Depth>4.92"
 Flow Length=156' Slope=0.0010 '/ Tc=10.8 min CN=98 Runoff=1.52 cfs 0.138 af

Subcatchment A-7: Driveway Area 7 to CB7 Runoff Area=5,375 sf 100.00% Impervious Runoff Depth>4.93"
 Flow Length=200' Slope=0.0074 '/ Tc=4.8 min CN=98 Runoff=0.68 cfs 0.051 af

Subcatchment A-9: Driveway Area 9 to CB9 Runoff Area=15,000 sf 92.05% Impervious Runoff Depth>4.69"
 Flow Length=395' Slope=0.0100 '/ Tc=8.0 min CN=96 Runoff=1.68 cfs 0.135 af

Reach D-10: CB10:DMH2 Avg. Flow Depth=0.50' Max Vel=3.13 fps Inflow=1.23 cfs 0.091 af
 12.0" Round Pipe n=0.013 L=50.0' S=0.0048 '/ Capacity=2.47 cfs Outflow=1.22 cfs 0.091 af

Reach D-11: CB11:DMH2 Avg. Flow Depth=1.00' Max Vel=4.22 fps Inflow=4.07 cfs 0.335 af
 12.0" Round Pipe n=0.013 L=52.0' S=0.0067 '/ Capacity=2.92 cfs Outflow=3.03 cfs 0.335 af

Reach D-12: CB12:DMH3 Avg. Flow Depth=1.00' Max Vel=3.46 fps Inflow=7.49 cfs 0.608 af
 12.0" Round Pipe n=0.013 L=56.0' S=0.0045 '/ Capacity=2.38 cfs Outflow=2.48 cfs 0.608 af

Reach D-13: CB13:DMH3 Avg. Flow Depth=1.00' Max Vel=0.68 fps Inflow=1.43 cfs 0.104 af
 12.0" Round Pipe n=0.014 L=50.0' S=0.0002 '/ Capacity=0.47 cfs Outflow=0.49 cfs 0.104 af

Reach D-14: CB14:DMH3 Avg. Flow Depth=0.00' Max Vel=0.00 fps
 12.0" Round Pipe n=0.013 L=20.0' S=0.0005 '/ Capacity=0.80 cfs Outflow=0.00 cfs 0.000 af

Reach D-2: 15-Inch RCP Avg. Flow Depth=1.25' Max Vel=1.06 fps Inflow=5.75 cfs 0.561 af
 15.0" Round Pipe n=0.013 L=32.0' S=0.0003 '/ Capacity=1.14 cfs Outflow=1.15 cfs 0.560 af

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Reach D-3: DMH3:DET POND Avg. Flow Depth=0.67' Max Vel=4.36 fps Inflow=2.93 cfs 0.711 af
 15.0" Round Pipe n=0.013 L=60.0' S=0.0065 '/ Capacity=5.21 cfs Outflow=2.90 cfs 0.711 af

Reach D-9: CB9:DMH2 Avg. Flow Depth=0.52' Max Vel=4.00 fps Inflow=1.68 cfs 0.135 af
 12.0" Round Pipe n=0.013 L=12.0' S=0.0075 '/ Capacity=3.09 cfs Outflow=1.67 cfs 0.135 af

Pond DMH2: DMH2 Peak Elev=235.05' Storage=0.001 af Inflow=5.74 cfs 0.561 af
 Outflow=5.75 cfs 0.561 af

Pond DMH3: DMH3 Peak Elev=234.79' Storage=0.001 af Inflow=2.94 cfs 0.712 af
 Outflow=2.93 cfs 0.711 af

Pond P-1: Soil Depression Peak Elev=235.76' Storage=1,317 cf Inflow=2.75 cfs 0.213 af
 Outflow=1.57 cfs 0.213 af

Pond P-2: Detention Pond Peak Elev=235.54' Storage=14,788 cf Inflow=6.69 cfs 1.515 af
 Discarded=2.60 cfs 1.514 af Primary=0.00 cfs 0.000 af Outflow=2.60 cfs 1.514 af

Total Runoff Area = 4.703 ac Runoff Volume = 1.737 af Average Runoff Depth = 4.43"
24.52% Pervious = 1.153 ac 75.48% Impervious = 3.550 ac

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Type III 24-hr 25-year Rainfall=5.40"

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Summary for Subcatchment 1-A: Perimeter Area

Runoff = 0.15 cfs @ 12.03 hrs, Volume= 0.008 af, Depth> 2.95"

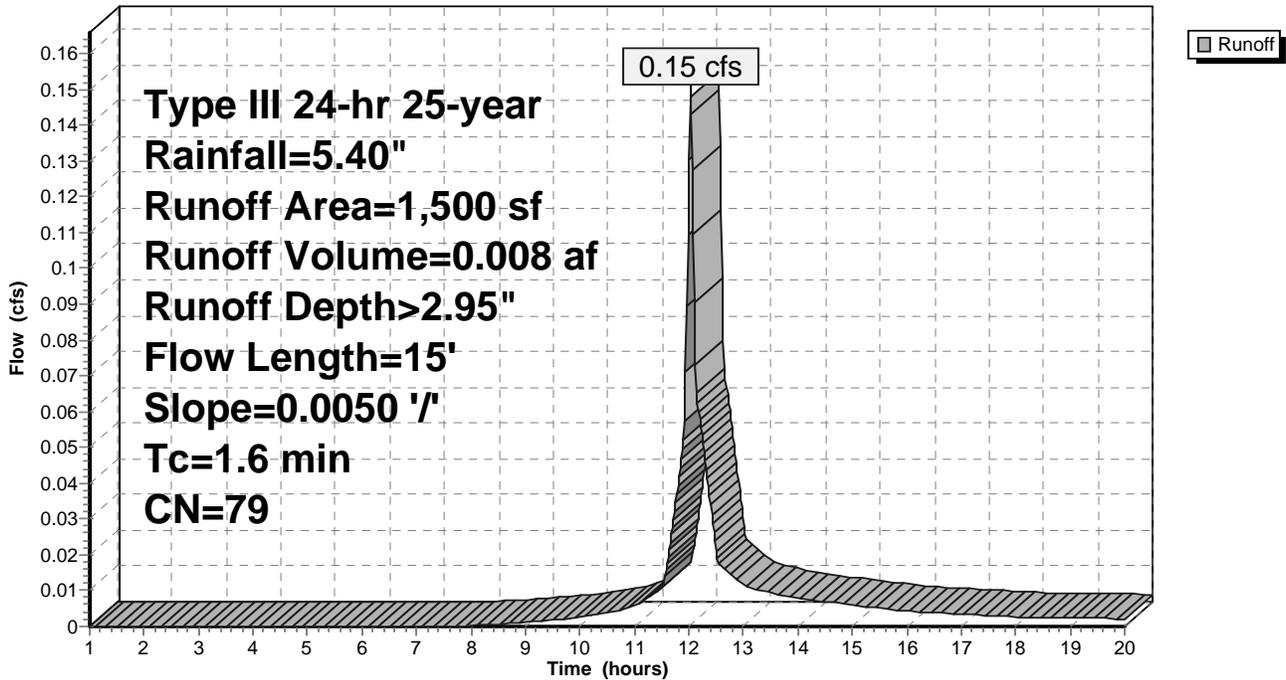
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
* 1,500	79	Grass Area
1,500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	15	0.0050	0.16		Lag/CN Method,

Subcatchment 1-A: Perimeter Area

Hydrograph



12-024 EXIST

Type III 24-hr 25-year Rainfall=5.40"

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Summary for Subcatchment A-1: Northern Half Lot

Runoff = 2.75 cfs @ 12.15 hrs, Volume= 0.213 af, Depth> 2.94"

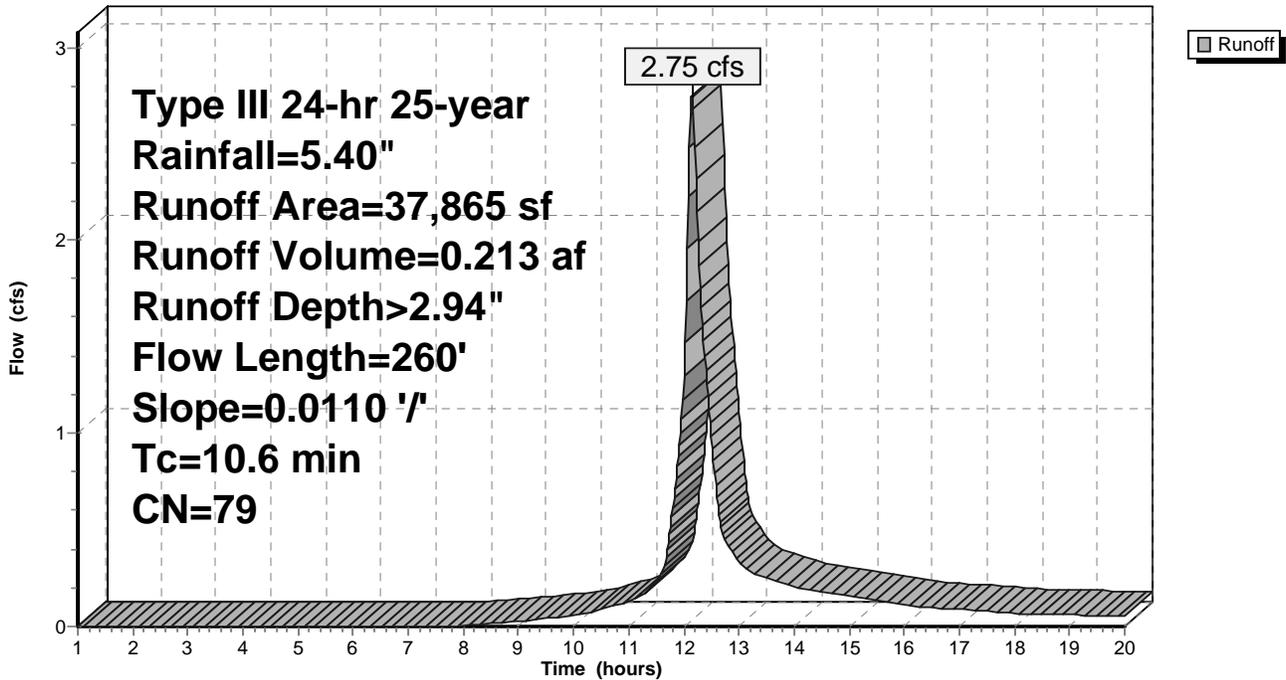
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
* 37,865	79	Undeveloped Grass & Exposed Soil Area
37,865		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	260	0.0110	0.41		Lag/CN Method,

Subcatchment A-1: Northern Half Lot

Hydrograph



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Type III 24-hr 25-year Rainfall=5.40"

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Summary for Subcatchment A-10: Paved Area 10 to CB10

Runoff = 1.23 cfs @ 12.06 hrs, Volume= 0.091 af, Depth> 4.93"

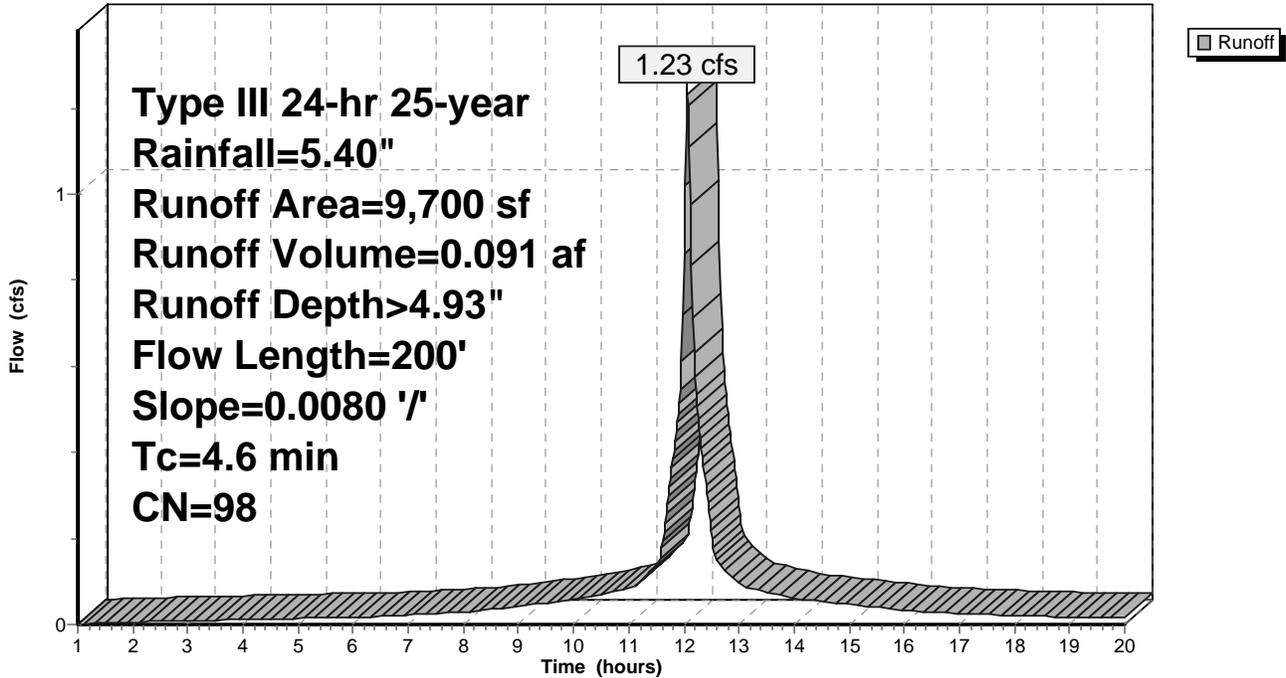
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
* 9,700	98	Paved Apron and Travel Aisle
9,700		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	200	0.0080	0.72		Lag/CN Method,

Subcatchment A-10: Paved Area 10 to CB10

Hydrograph



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Type III 24-hr 25-year Rainfall=5.40"

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Summary for Subcatchment A-11: Big-Y Parking to CB11

Runoff = 4.07 cfs @ 12.10 hrs, Volume= 0.335 af, Depth> 4.92"

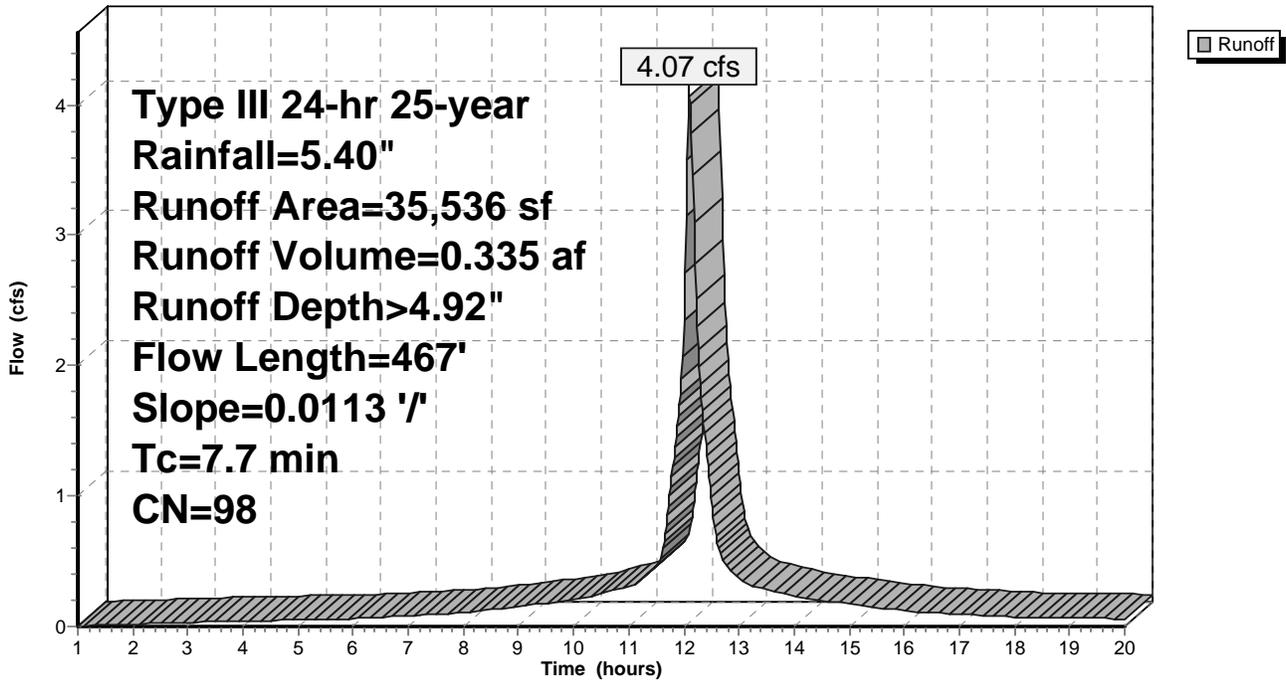
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
* 35,536	98	Paved Parking
35,536		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	467	0.0113	1.01		Lag/CN Method,

Subcatchment A-11: Big-Y Parking to CB11

Hydrograph



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Type III 24-hr 25-year Rainfall=5.40"

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Summary for Subcatchment A-12: Big-Y Parking to CB12

Runoff = 7.49 cfs @ 12.10 hrs, Volume= 0.608 af, Depth> 4.92"

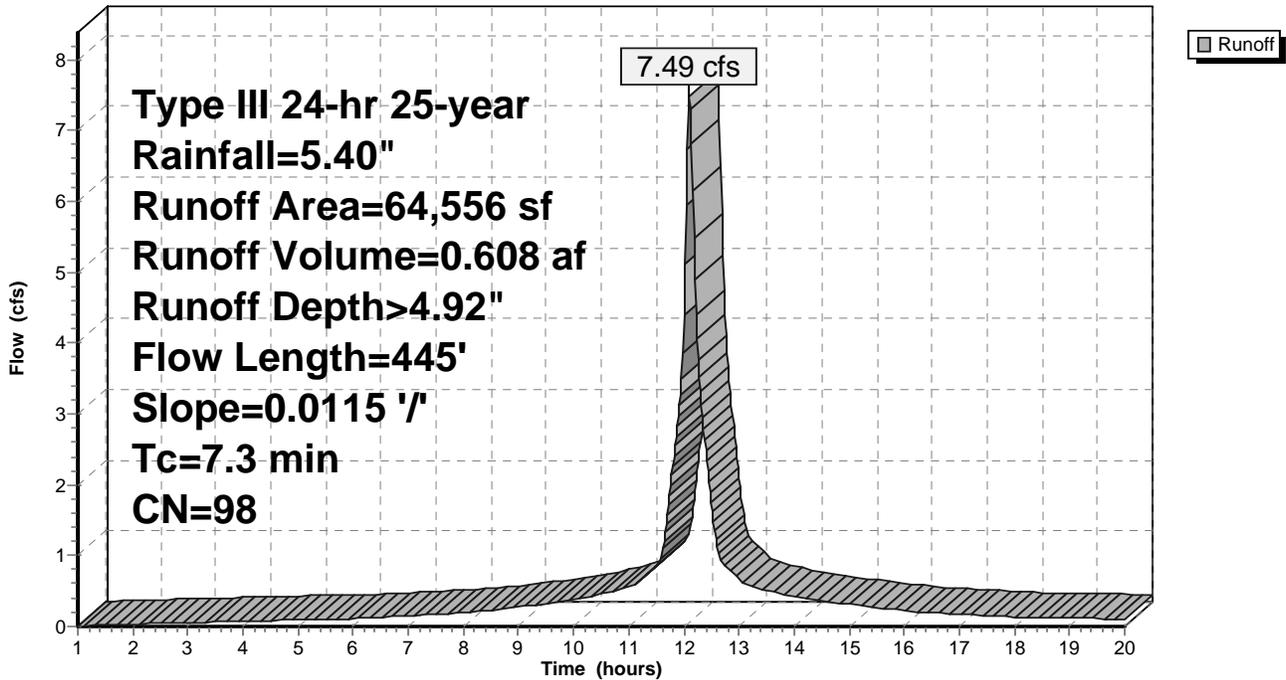
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
* 64,556	98	Paved Parking
64,556		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	445	0.0115	1.01		Lag/CN Method,

Subcatchment A-12: Big-Y Parking to CB12

Hydrograph



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Type III 24-hr 25-year Rainfall=5.40"

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Summary for Subcatchment A-13: Big-Y Parking to CB 13

Runoff = 1.43 cfs @ 12.06 hrs, Volume= 0.104 af, Depth> 4.93"

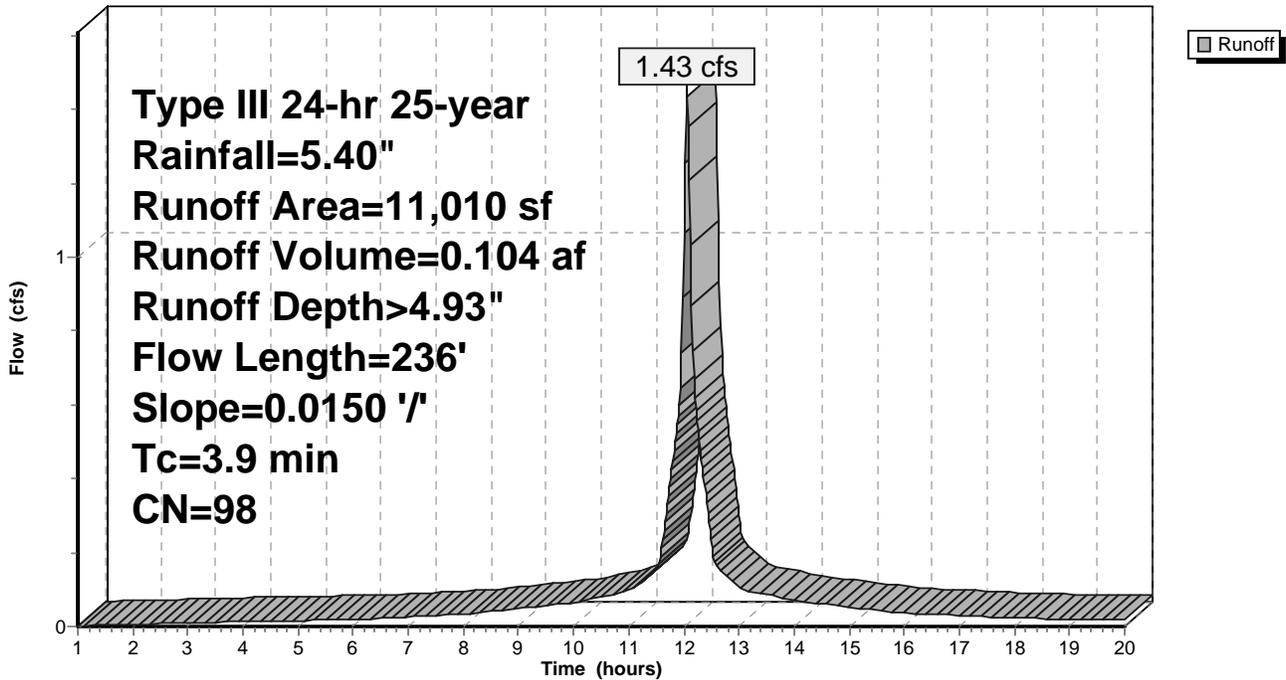
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
* 11,010	98	Paved Parking
11,010		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	236	0.0150	1.02		Lag/CN Method,

Subcatchment A-13: Big-Y Parking to CB 13

Hydrograph



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Type III 24-hr 25-year Rainfall=5.40"

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Summary for Subcatchment A-2: Southern Half Lot

Runoff = 0.94 cfs @ 12.03 hrs, Volume= 0.054 af, Depth> 2.95"

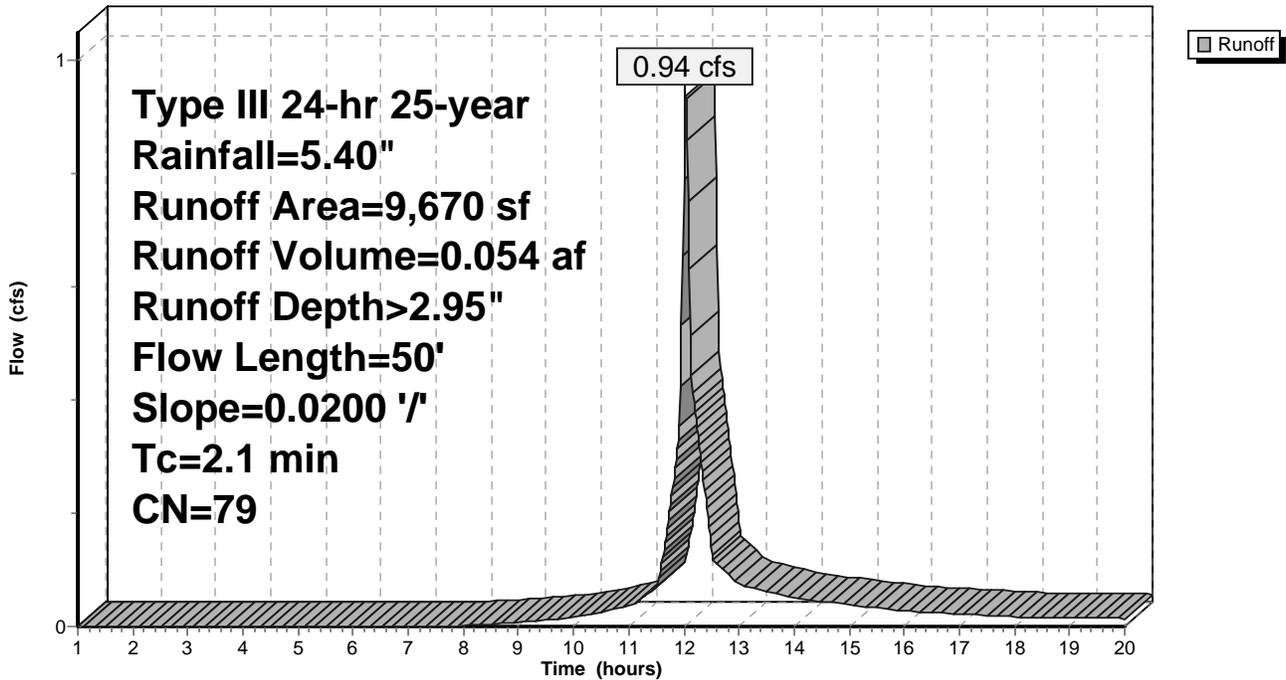
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
* 9,670	79	Grass Cover & Some Exposed Soil
9,670		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	50	0.0200	0.40		Lag/CN Method,

Subcatchment A-2: Southern Half Lot

Hydrograph



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Type III 24-hr 25-year Rainfall=5.40"

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Summary for Subcatchment A-3: Det Pond

Runoff = 1.52 cfs @ 12.14 hrs, Volume= 0.138 af, Depth> 4.92"

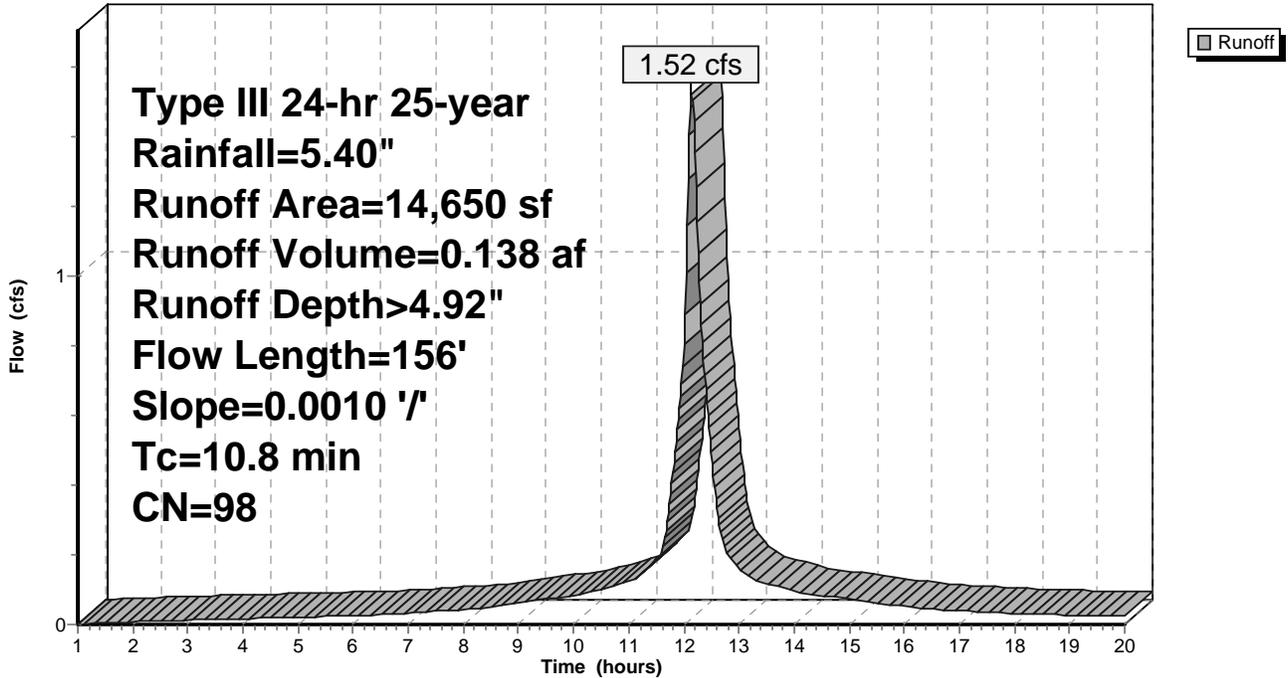
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
* 14,650	98	Full Pond Area
14,650		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	156	0.0010	0.24		Lag/CN Method,

Subcatchment A-3: Det Pond

Hydrograph



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Type III 24-hr 25-year Rainfall=5.40"

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Summary for Subcatchment A-7: Driveway Area 7 to CB7

Runoff = 0.68 cfs @ 12.07 hrs, Volume= 0.051 af, Depth> 4.93"

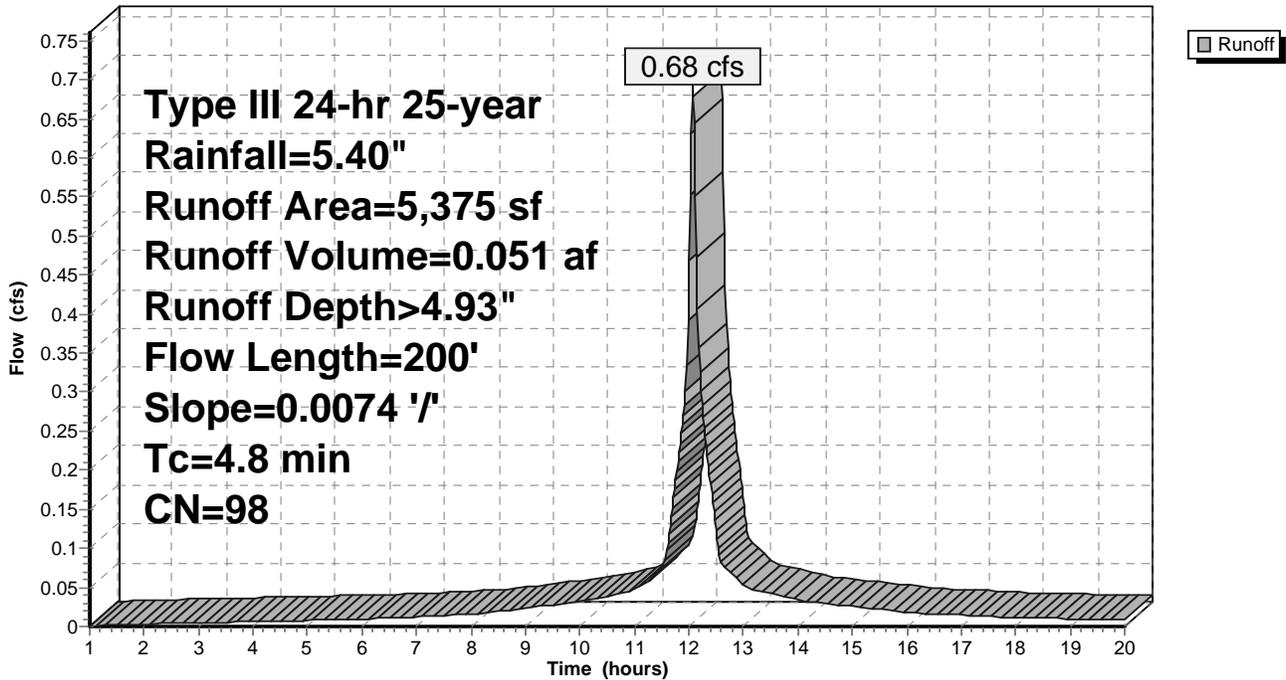
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
* 5,375	98	Paved Driveway, northern half
5,375		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	200	0.0074	0.69		Lag/CN Method,

Subcatchment A-7: Driveway Area 7 to CB7

Hydrograph



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Type III 24-hr 25-year Rainfall=5.40"

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Summary for Subcatchment A-9: Driveway Area 9 to CB9

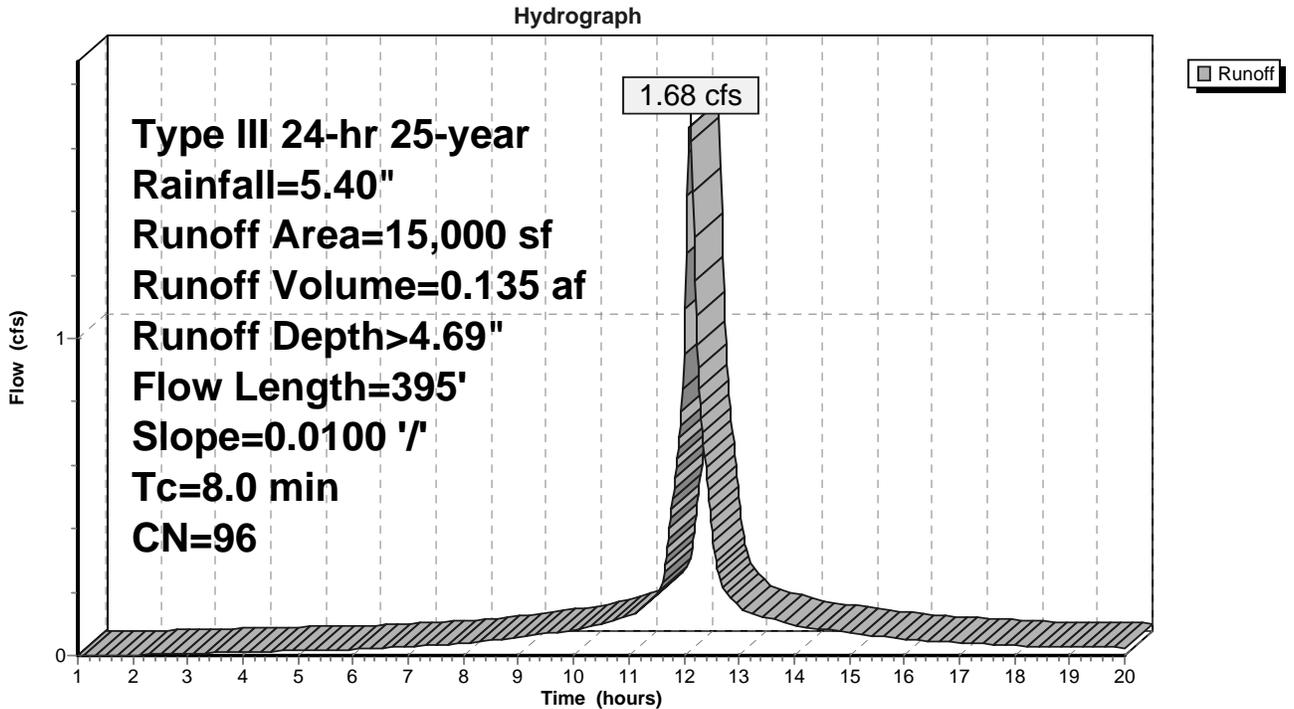
Runoff = 1.68 cfs @ 12.11 hrs, Volume= 0.135 af, Depth> 4.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 25-year Rainfall=5.40"

	Area (sf)	CN	Description
*	1,192	79	Grass Strip
*	13,808	98	N-S Driveway
	15,000	96	Weighted Average
	1,192		7.95% Pervious Area
	13,808		92.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	395	0.0100	0.82		Lag/CN Method,

Subcatchment A-9: Driveway Area 9 to CB9



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Type III 24-hr 25-year Rainfall=5.40"

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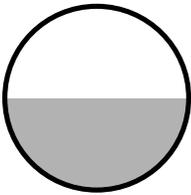
Summary for Reach D-10: CB10:DMH2

Inflow Area = 0.223 ac, 100.00% Impervious, Inflow Depth > 4.93" for 25-year event
Inflow = 1.23 cfs @ 12.06 hrs, Volume= 0.091 af
Outflow = 1.22 cfs @ 12.07 hrs, Volume= 0.091 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
Max. Velocity= 3.13 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.11 fps, Avg. Travel Time= 0.8 min

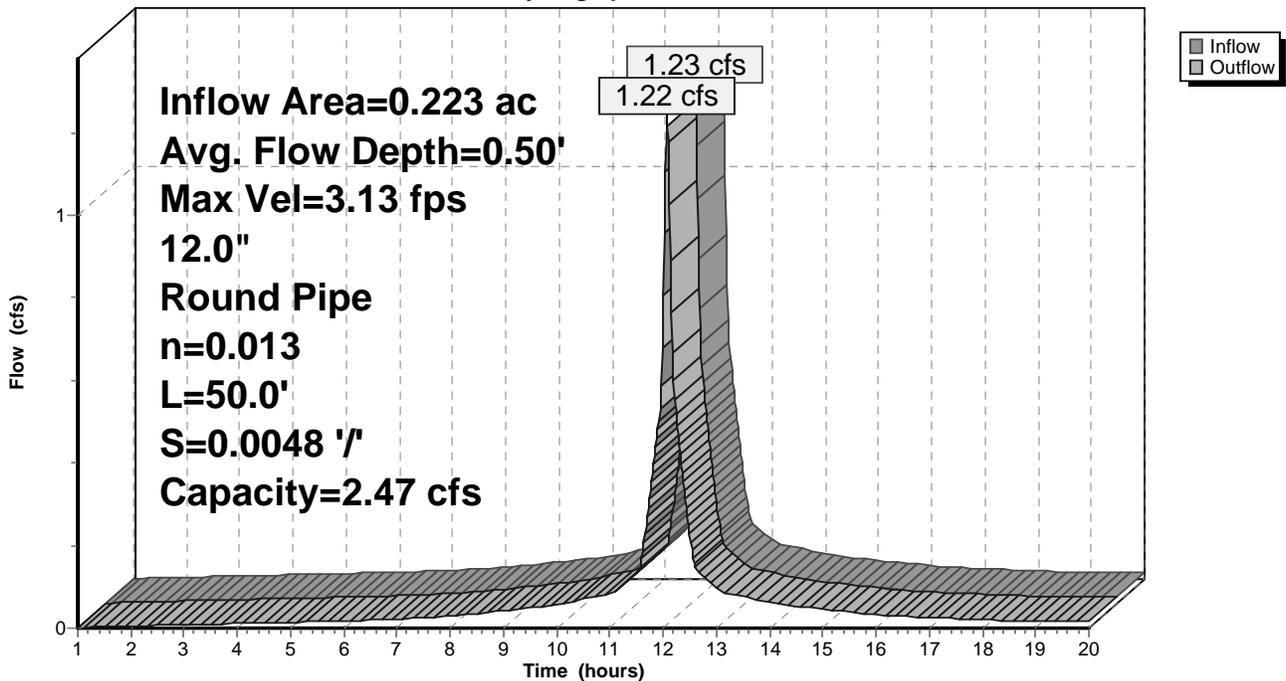
Peak Storage= 20 cf @ 12.07 hrs
Average Depth at Peak Storage= 0.50'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.47 cfs

12.0" Round Pipe
n= 0.013
Length= 50.0' Slope= 0.0048 '/'
Inlet Invert= 234.04', Outlet Invert= 233.80'



Reach D-10: CB10:DMH2

Hydrograph



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Type III 24-hr 25-year Rainfall=5.40"

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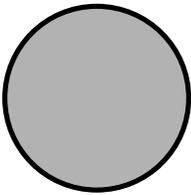
Summary for Reach D-11: CB11:DMH2

Inflow Area = 0.816 ac, 100.00% Impervious, Inflow Depth > 4.92" for 25-year event
 Inflow = 4.07 cfs @ 12.10 hrs, Volume= 0.335 af
 Outflow = 3.03 cfs @ 12.05 hrs, Volume= 0.335 af, Atten= 25%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Max. Velocity= 4.22 fps, Min. Travel Time= 0.2 min
 Avg. Velocity = 1.82 fps, Avg. Travel Time= 0.5 min

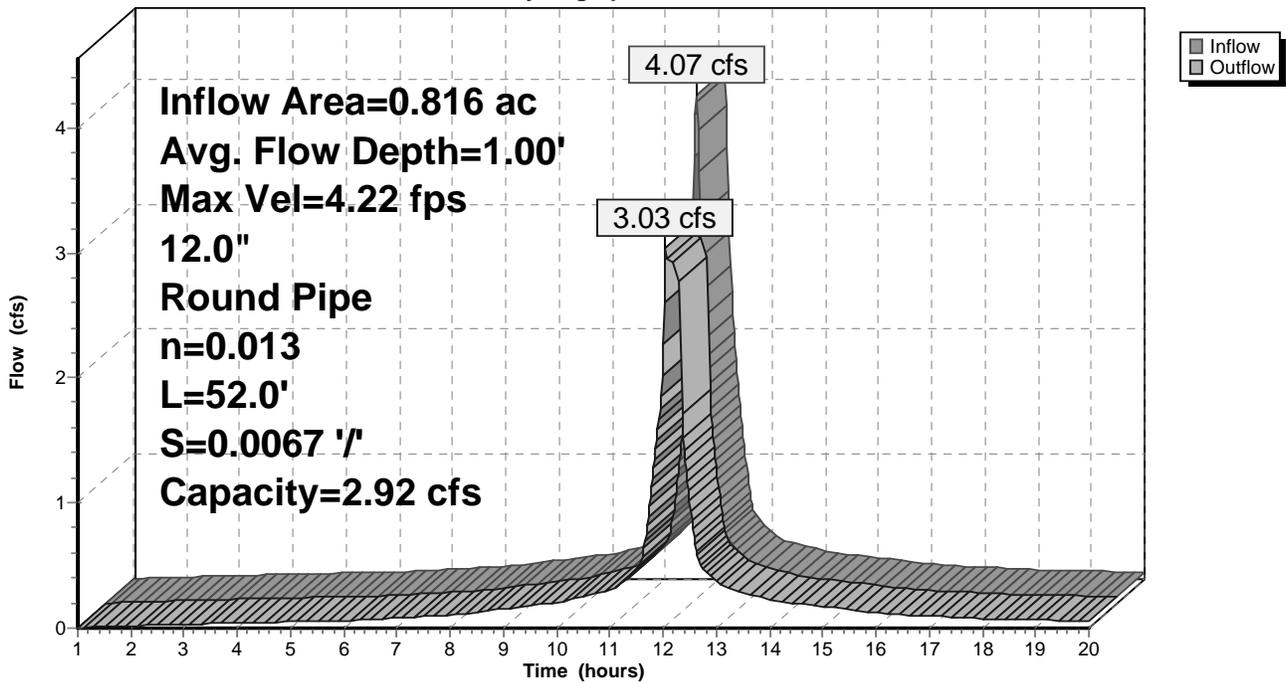
Peak Storage= 41 cf @ 12.06 hrs
 Average Depth at Peak Storage= 1.00'
 Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.92 cfs

12.0" Round Pipe
 n= 0.013
 Length= 52.0' Slope= 0.0067 '/'
 Inlet Invert= 233.95', Outlet Invert= 233.60'



Reach D-11: CB11:DMH2

Hydrograph



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Type III 24-hr 25-year Rainfall=5.40"

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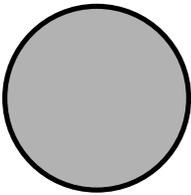
Summary for Reach D-12: CB12:DMH3

Inflow Area = 1.482 ac, 100.00% Impervious, Inflow Depth > 4.92" for 25-year event
Inflow = 7.49 cfs @ 12.10 hrs, Volume= 0.608 af
Outflow = 2.48 cfs @ 11.84 hrs, Volume= 0.608 af, Atten= 67%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
Max. Velocity= 3.46 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.86 fps, Avg. Travel Time= 0.5 min

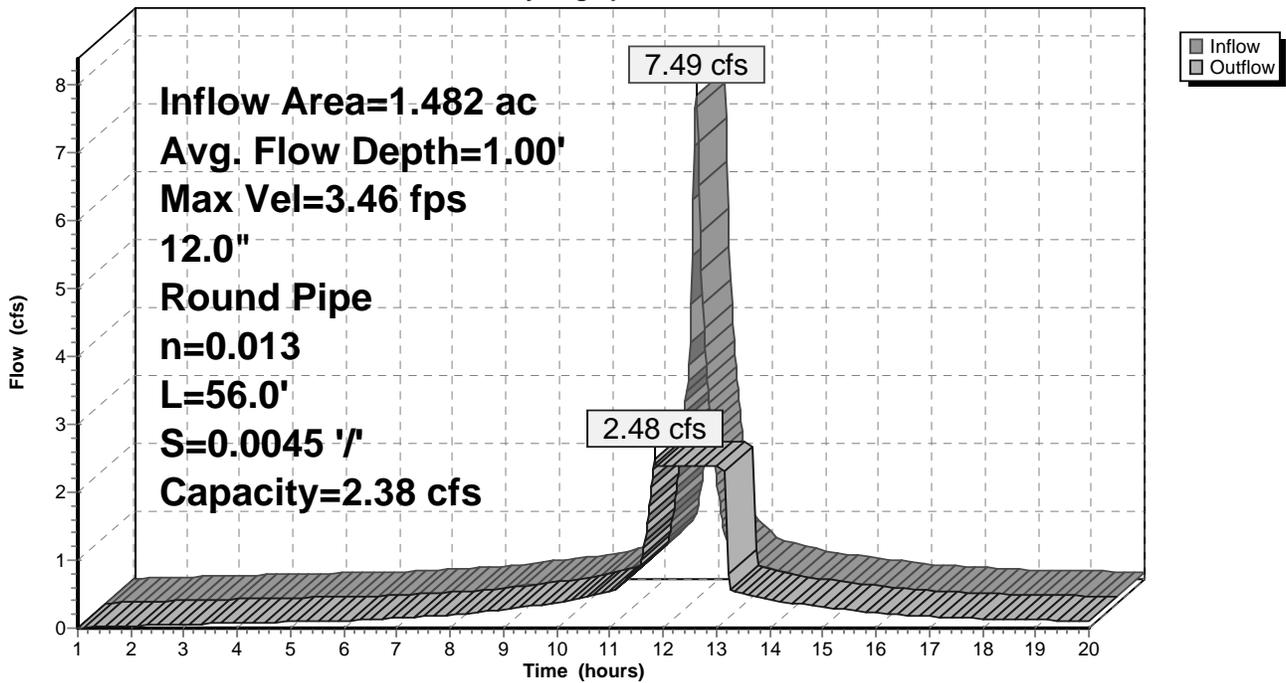
Peak Storage= 44 cf @ 11.86 hrs
Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.38 cfs

12.0" Round Pipe
n= 0.013
Length= 56.0' Slope= 0.0045 '/'
Inlet Invert= 234.29', Outlet Invert= 234.04'



Reach D-12: CB12:DMH3

Hydrograph



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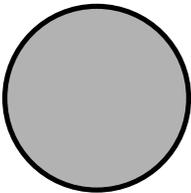
Summary for Reach D-13: CB13:DMH3

Inflow Area = 0.253 ac, 100.00% Impervious, Inflow Depth > 4.93" for 25-year event
Inflow = 1.43 cfs @ 12.06 hrs, Volume= 0.104 af
Outflow = 0.49 cfs @ 11.88 hrs, Volume= 0.104 af, Atten= 66%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
Max. Velocity= 0.68 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 0.35 fps, Avg. Travel Time= 2.4 min

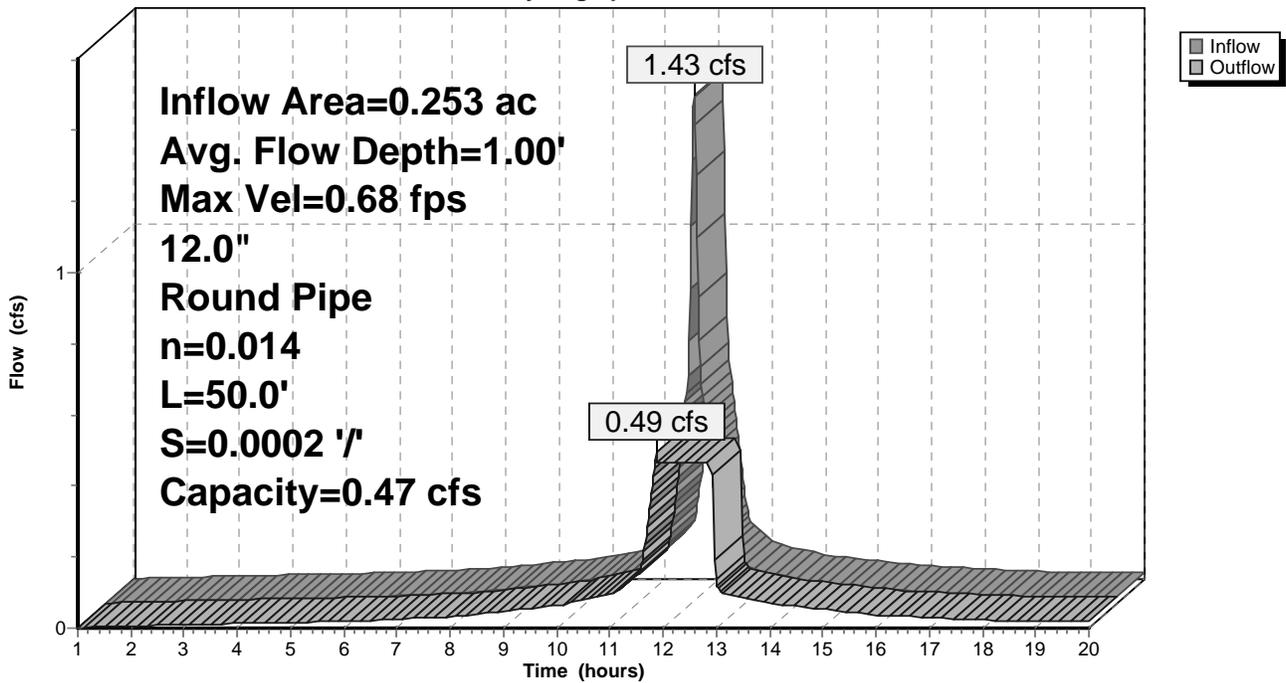
Peak Storage= 39 cf @ 11.88 hrs
Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 0.47 cfs

12.0" Round Pipe
n= 0.014
Length= 50.0' Slope= 0.0002 '/
Inlet Invert= 233.78', Outlet Invert= 233.77'



Reach D-13: CB13:DMH3

Hydrograph



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Summary for Reach D-14: CB14:DMH3

Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs

Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min

Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs

Average Depth at Peak Storage= 0.00'

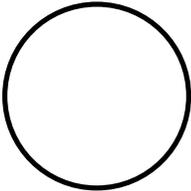
Bank-Full Depth= 1.00', Capacity at Bank-Full= 0.80 cfs

12.0" Round Pipe

n= 0.013

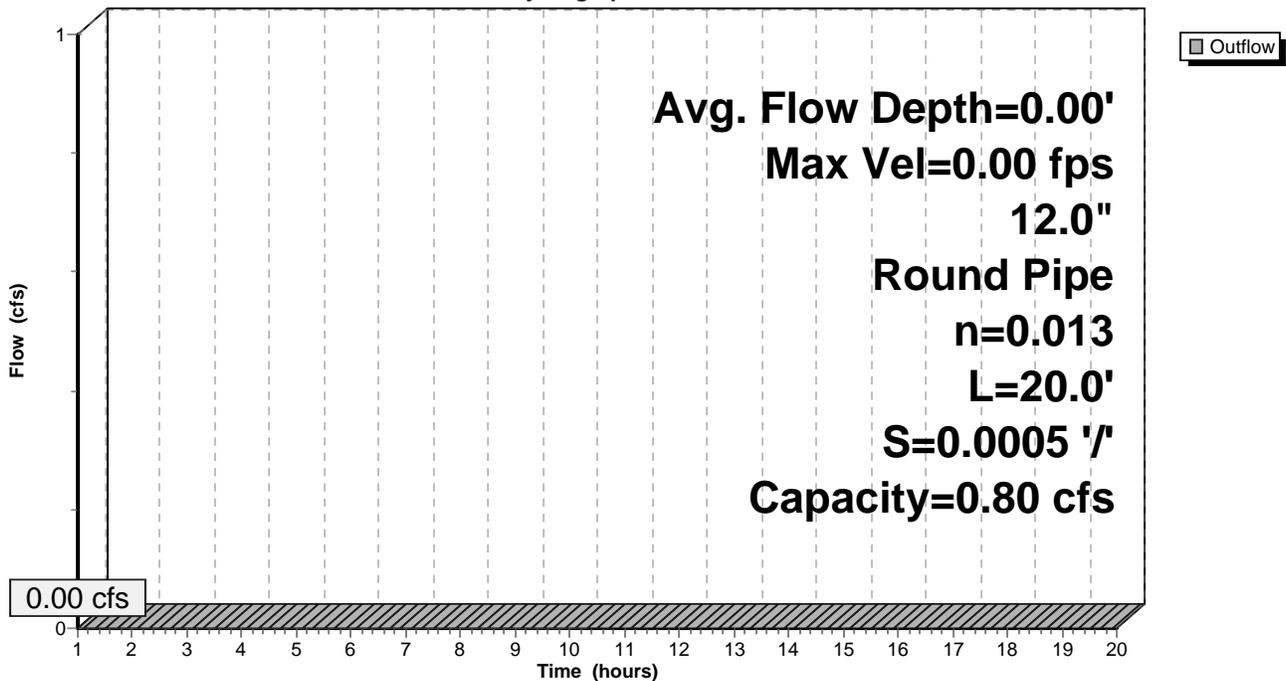
Length= 20.0' Slope= 0.0005 '/

Inlet Invert= 233.86', Outlet Invert= 233.85'



Reach D-14: CB14:DMH3

Hydrograph



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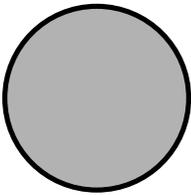
Summary for Reach D-2: 15-Inch RCP

Inflow Area = 1.383 ac, 98.02% Impervious, Inflow Depth > 4.86" for 25-year event
Inflow = 5.75 cfs @ 12.10 hrs, Volume= 0.561 af
Outflow = 1.15 cfs @ 11.68 hrs, Volume= 0.560 af, Atten= 80%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
Max. Velocity= 1.06 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.68 fps, Avg. Travel Time= 0.8 min

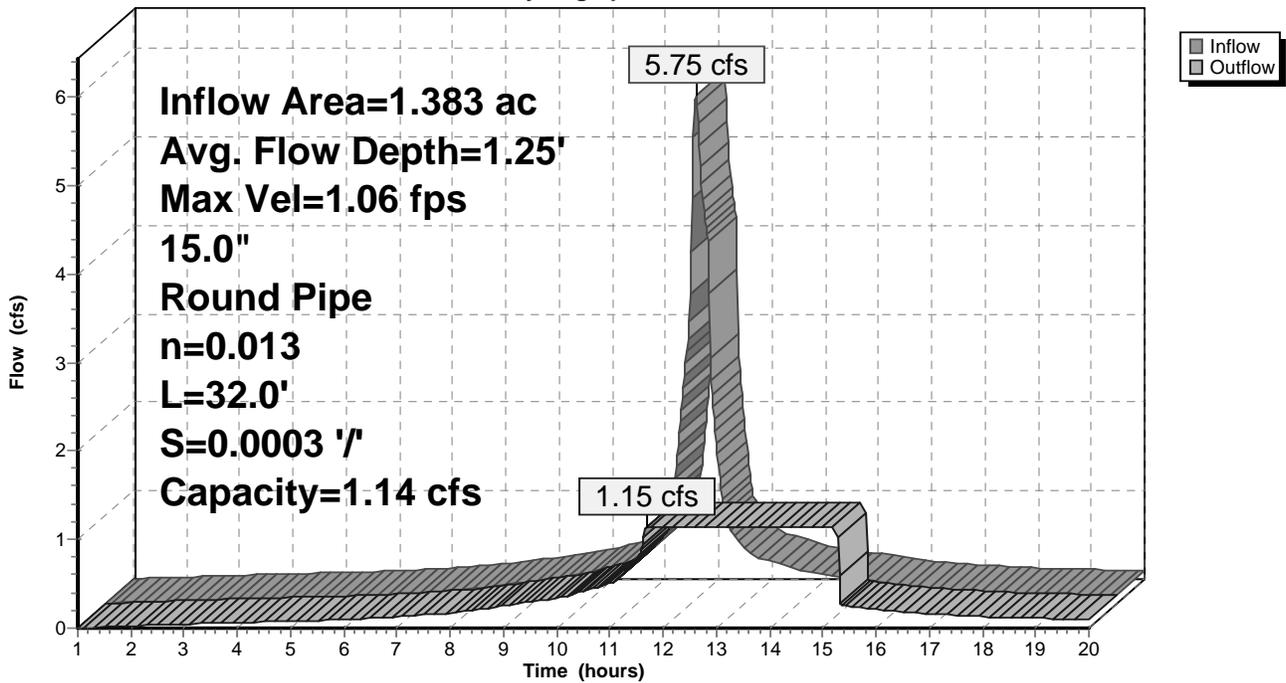
Peak Storage= 39 cf @ 11.68 hrs
Average Depth at Peak Storage= 1.25'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 1.14 cfs

15.0" Round Pipe
n= 0.013
Length= 32.0' Slope= 0.0003 '/
Inlet Invert= 233.48', Outlet Invert= 233.47'



Reach D-2: 15-Inch RCP

Hydrograph



12-024 EXIST

Type III 24-hr 25-year Rainfall=5.40"

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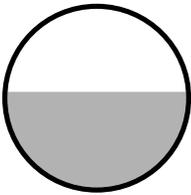
Summary for Reach D-3: DMH3:DET POND

Inflow Area = 1.735 ac, 100.00% Impervious, Inflow Depth > 4.92" for 25-year event
 Inflow = 2.93 cfs @ 11.85 hrs, Volume= 0.711 af
 Outflow = 2.90 cfs @ 11.86 hrs, Volume= 0.711 af, Atten= 1%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Max. Velocity= 4.36 fps, Min. Travel Time= 0.2 min
 Avg. Velocity = 2.22 fps, Avg. Travel Time= 0.4 min

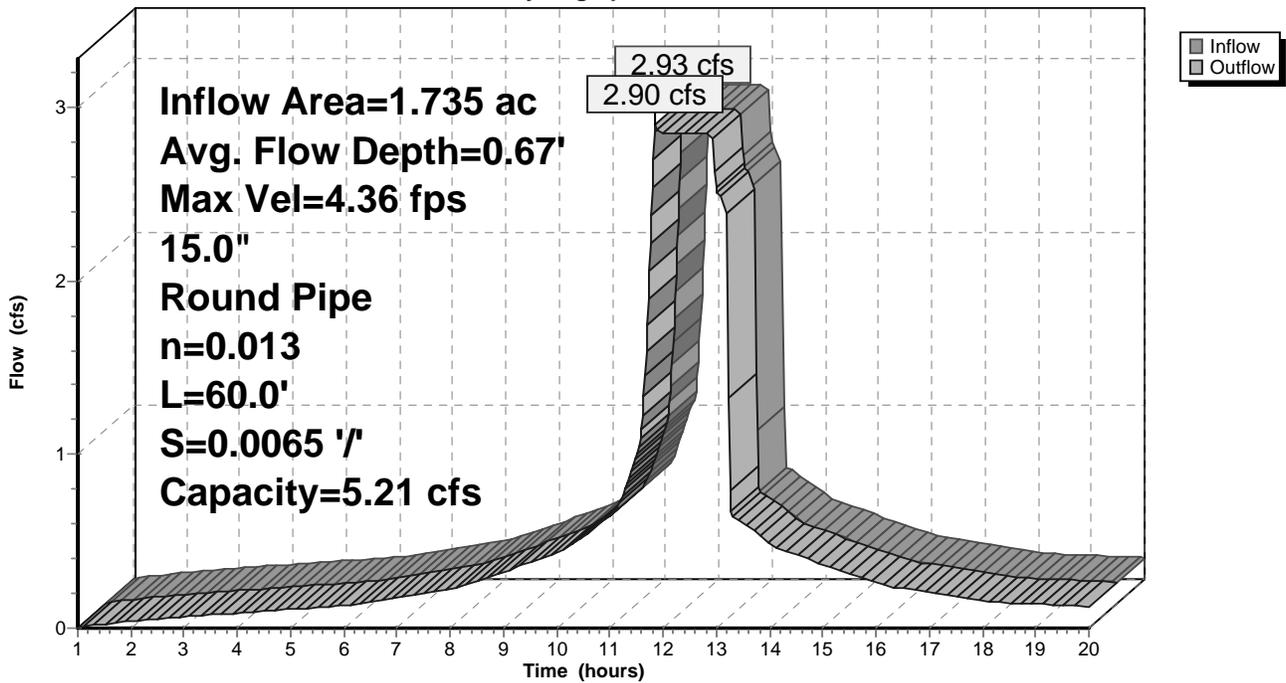
Peak Storage= 40 cf @ 11.85 hrs
 Average Depth at Peak Storage= 0.67'
 Bank-Full Depth= 1.25', Capacity at Bank-Full= 5.21 cfs

15.0" Round Pipe
 n= 0.013 Concrete pipe, bends & connections
 Length= 60.0' Slope= 0.0065 '/
 Inlet Invert= 233.91', Outlet Invert= 233.52'



Reach D-3: DMH3:DET POND

Hydrograph



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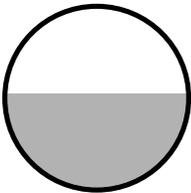
Summary for Reach D-9: CB9:DMH2

Inflow Area = 0.344 ac, 92.05% Impervious, Inflow Depth > 4.69" for 25-year event
 Inflow = 1.68 cfs @ 12.11 hrs, Volume= 0.135 af
 Outflow = 1.67 cfs @ 12.11 hrs, Volume= 0.135 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Max. Velocity= 4.00 fps, Min. Travel Time= 0.0 min
 Avg. Velocity = 1.45 fps, Avg. Travel Time= 0.1 min

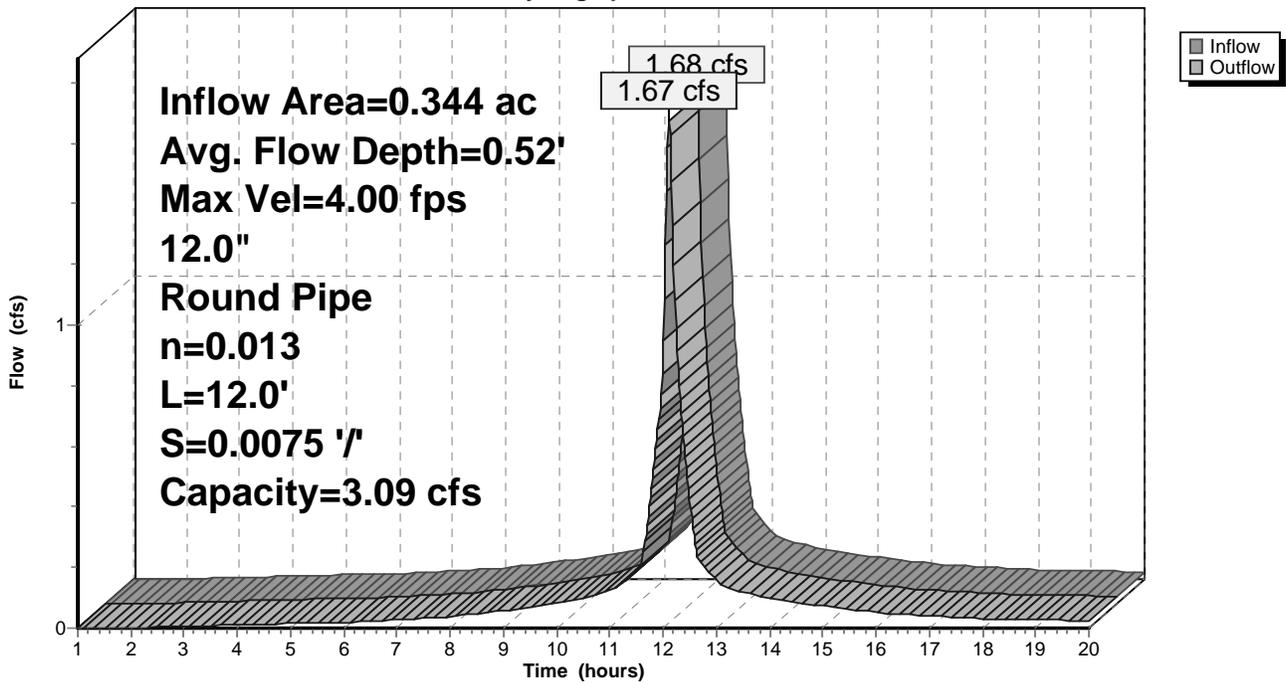
Peak Storage= 5 cf @ 12.11 hrs
 Average Depth at Peak Storage= 0.52'
 Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.09 cfs

12.0" Round Pipe
 n= 0.013
 Length= 12.0' Slope= 0.0075 '/'
 Inlet Invert= 233.82', Outlet Invert= 233.73'



Reach D-9: CB9:DMH2

Hydrograph



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Type III 24-hr 25-year Rainfall=5.40"

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Summary for Pond DMH2: DMH2

Inflow Area = 1.383 ac, 98.02% Impervious, Inflow Depth > 4.87" for 25-year event
 Inflow = 5.74 cfs @ 12.09 hrs, Volume= 0.561 af
 Outflow = 5.75 cfs @ 12.10 hrs, Volume= 0.561 af, Atten= 0%, Lag= 0.3 min
 Primary = 5.75 cfs @ 12.10 hrs, Volume= 0.561 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Peak Elev= 235.05' @ 12.10 hrs Surf.Area= 0.001 ac Storage= 0.001 af

Plug-Flow detention time= 0.3 min calculated for 0.561 af (100% of inflow)
 Center-of-Mass det. time= 0.2 min (724.4 - 724.2)

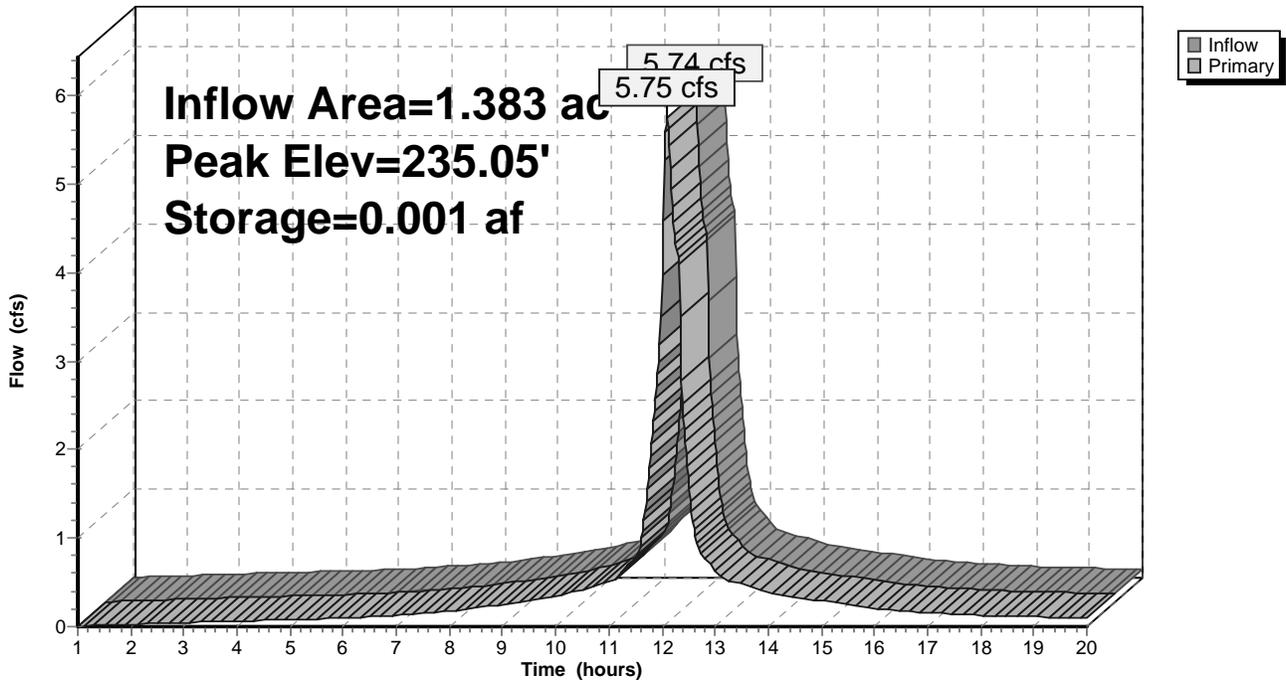
Volume	Invert	Avail.Storage	Storage Description
#1	233.48'	0.003 af	6.00'D x 4.52'H Vertical Cone/Cylinder

Device	Routing	Invert	Outlet Devices
#1	Primary	233.48'	15.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=5.74 cfs @ 12.10 hrs HW=235.05' (Free Discharge)
 ↳ **1=Orifice/Grate** (Orifice Controls 5.74 cfs @ 4.68 fps)

Pond DMH2: DMH2

Hydrograph



12-024 EXIST

Type III 24-hr 25-year Rainfall=5.40"

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Summary for Pond DMH3: DMH3

Inflow Area = 1.735 ac, 100.00% Impervious, Inflow Depth > 4.92" for 25-year event
 Inflow = 2.94 cfs @ 11.85 hrs, Volume= 0.712 af
 Outflow = 2.93 cfs @ 11.85 hrs, Volume= 0.711 af, Atten= 0%, Lag= 0.1 min
 Primary = 2.93 cfs @ 11.85 hrs, Volume= 0.711 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Peak Elev= 234.79' @ 11.85 hrs Surf.Area= 0.001 ac Storage= 0.001 af

Plug-Flow detention time= 0.3 min calculated for 0.711 af (100% of inflow)
 Center-of-Mass det. time= 0.2 min (727.8 - 727.6)

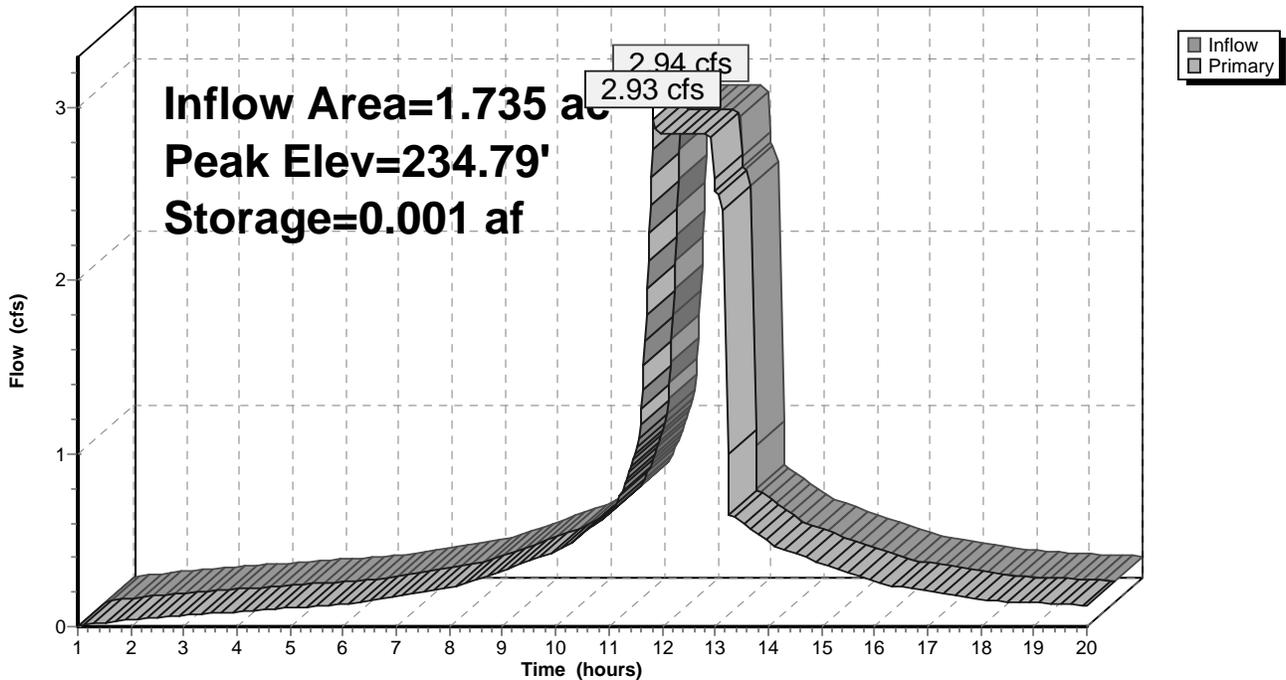
Volume	Invert	Avail.Storage	Storage Description
#1	233.91'	0.003 af	6.00'D x 4.28'H Vertical Cone/Cylinder

Device	Routing	Invert	Outlet Devices
#1	Primary	233.91'	15.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=2.91 cfs @ 11.85 hrs HW=234.78' (Free Discharge)
 ↳ **1=Orifice/Grate** (Orifice Controls 2.91 cfs @ 3.18 fps)

Pond DMH3: DMH3

Hydrograph



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Type III 24-hr 25-year Rainfall=5.40"

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Summary for Pond P-1: Soil Depression

Inflow Area = 0.869 ac, 0.00% Impervious, Inflow Depth > 2.94" for 25-year event
 Inflow = 2.75 cfs @ 12.15 hrs, Volume= 0.213 af
 Outflow = 1.57 cfs @ 12.34 hrs, Volume= 0.213 af, Atten= 43%, Lag= 11.5 min
 Discarded = 1.57 cfs @ 12.34 hrs, Volume= 0.213 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Peak Elev= 235.76' @ 12.34 hrs Surf.Area= 5,650 sf Storage= 1,317 cf

Plug-Flow detention time= 5.7 min calculated for 0.213 af (100% of inflow)
 Center-of-Mass det. time= 5.7 min (795.6 - 790.0)

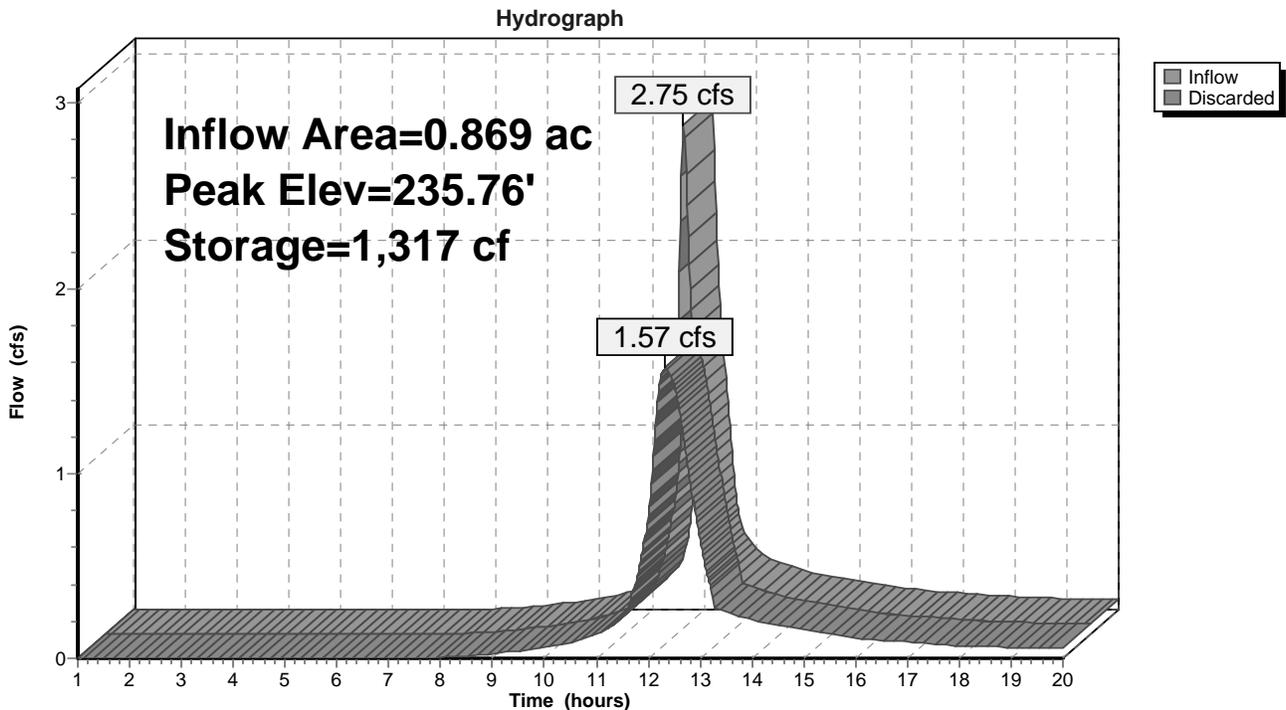
Volume	Invert	Avail.Storage	Storage Description
#1	235.38'	2,968 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
235.38	1,200	0	0
236.00	8,375	2,968	2,968

Device	Routing	Invert	Outlet Devices
#1	Discarded	235.38'	12.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=1.57 cfs @ 12.34 hrs HW=235.76' (Free Discharge)
 ↳1=Exfiltration (Exfiltration Controls 1.57 cfs)

Pond P-1: Soil Depression



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Type III 24-hr 25-year Rainfall=5.40"

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Summary for Pond P-2: Detention Pond

Inflow Area = 3.799 ac, 93.44% Impervious, Inflow Depth > 4.78" for 25-year event
 Inflow = 6.69 cfs @ 12.08 hrs, Volume= 1.515 af
 Outflow = 2.60 cfs @ 13.25 hrs, Volume= 1.514 af, Atten= 61%, Lag= 70.1 min
 Discarded = 2.60 cfs @ 13.25 hrs, Volume= 1.514 af
 Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Peak Elev= 235.54' @ 13.25 hrs Surf.Area= 11,236 sf Storage= 14,788 cf
 Flood Elev= 237.00' Surf.Area= 14,655 sf Storage= 33,679 cf

Plug-Flow detention time= 44.2 min calculated for 1.512 af (100% of inflow)
 Center-of-Mass det. time= 43.8 min (784.4 - 740.6)

Volume	Invert	Avail.Storage	Storage Description
#1	234.00'	49,209 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
234.00	8,080	0	0
235.00	10,065	9,073	9,073
236.00	12,246	11,156	20,228
237.00	14,655	13,451	33,679
238.00	16,406	15,531	49,209

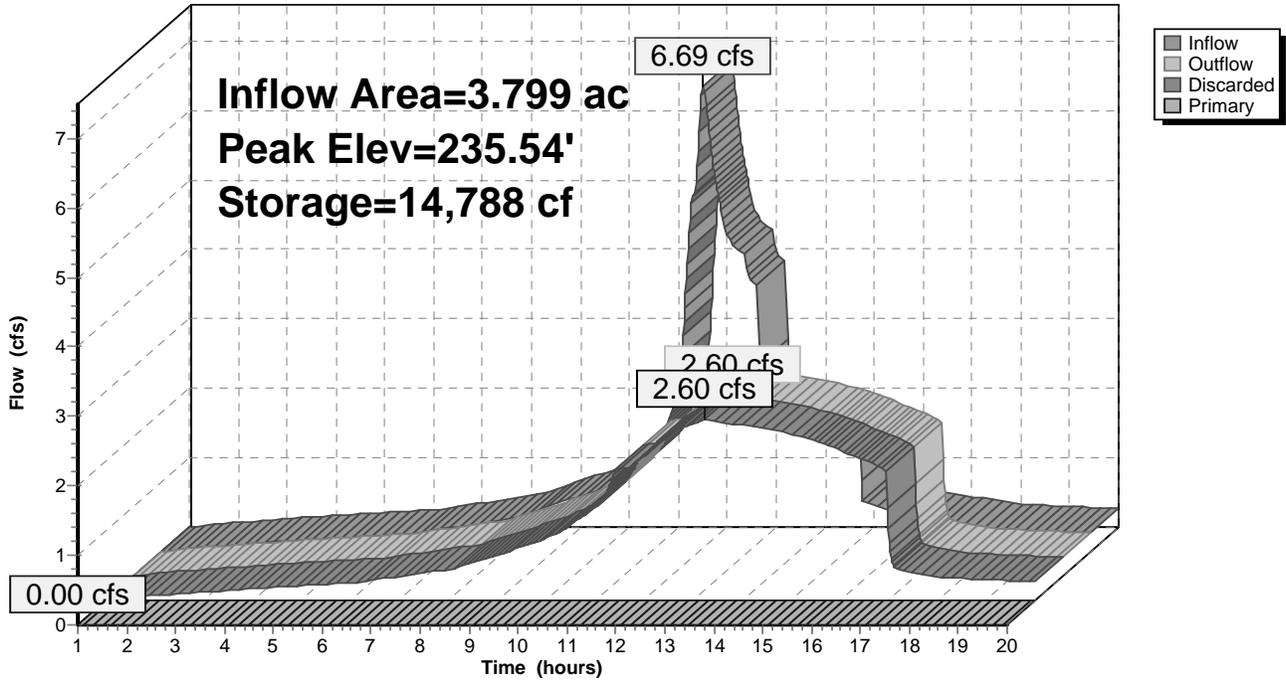
Device	Routing	Invert	Outlet Devices
#1	Primary	237.00'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Discarded	234.00'	10.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=2.60 cfs @ 13.25 hrs HW=235.54' (Free Discharge)
 ↑**2=Exfiltration** (Exfiltration Controls 2.60 cfs)

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=234.00' (Free Discharge)
 ↑**1=Orifice/Grate** (Controls 0.00 cfs)

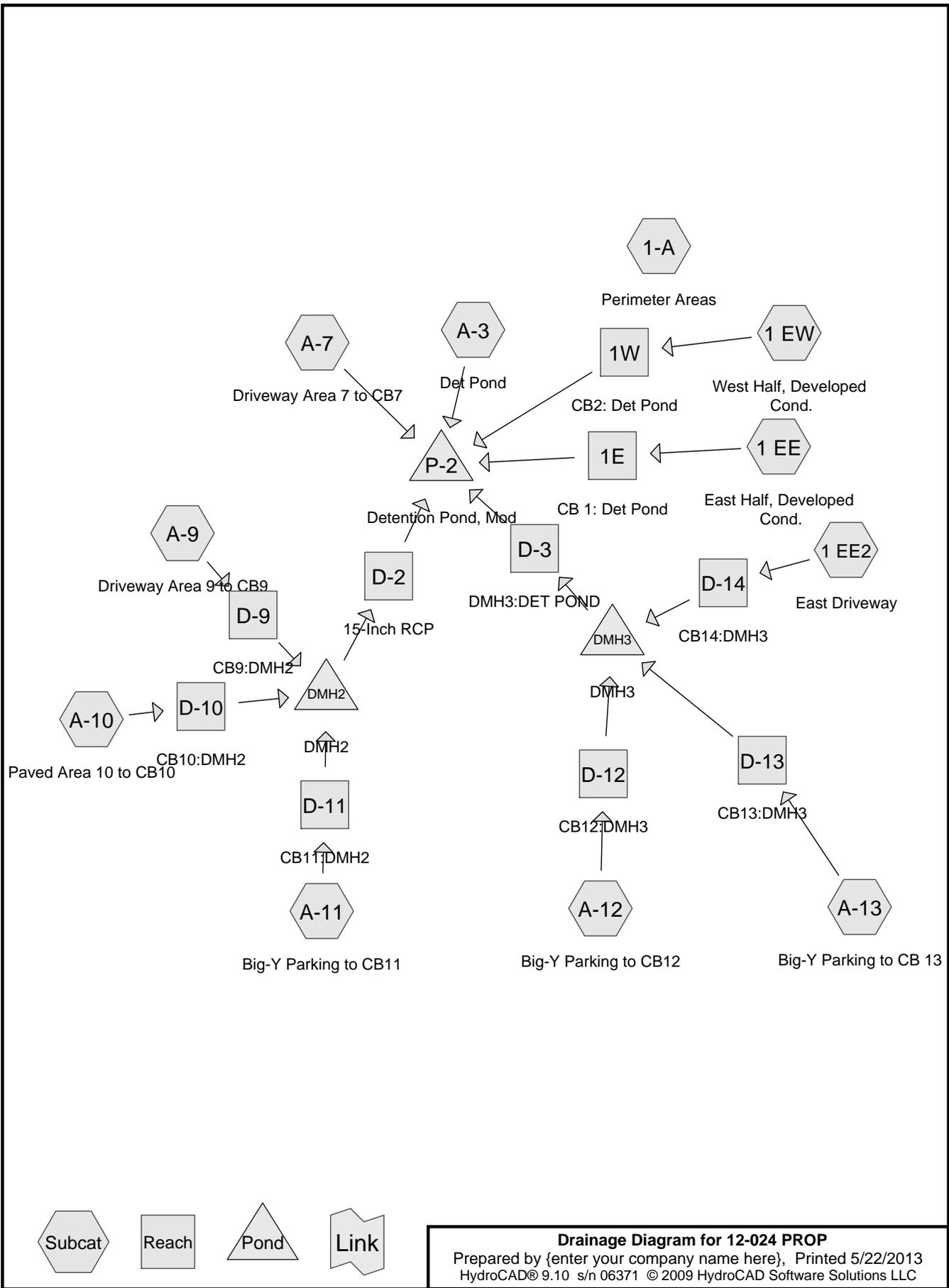
Pond P-2: Detention Pond

Hydrograph



SECTION 3B

HYDROCAD DATA (POST)



Drainage Diagram for 12-024 PROP
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.027	79	Grass Strip (A-9)
0.023	79	Grassed Island (1 EE2)
0.103	79	Internal Landscaped Areas (1 EE, 1 EW)
0.034	79	Landscaped Perimter Prop (1-A)
0.329	79	Outer Landscaped Areas (1 EE, 1 EW)
0.026	98	1/2 of East Internal N-S Drive (1 EE2)
0.138	98	Building (1 EE, 1 EW)
0.317	98	N-S Driveway (A-9)
0.473	98	Parking & Driveway Pavement & Sidewalks (1 EE, 1 EW)
0.223	98	Paved Apron and Travel Aisle (A-10)
0.123	98	Paved Driveway, northen half (A-7)
2.551	98	Paved Parking (A-11, A-12, A-13)
0.336	98	Wet Det Pond@ Elv 237 (A-3)
4.703		TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
4.703	Other	1 EE, 1 EE2, 1 EW, 1-A, A-10, A-11, A-12, A-13, A-3, A-7, A-9
4.703		TOTAL AREA

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Fill (inches)
1	1E	234.00	233.75	34.0	0.0074	0.013	12.0	0.0	0.0
2	1W	234.00	233.75	55.0	0.0045	0.013	12.0	0.0	0.0
3	D-10	234.04	233.80	50.0	0.0048	0.013	12.0	0.0	0.0
4	D-11	233.95	233.60	52.0	0.0067	0.013	12.0	0.0	0.0
5	D-12	234.29	234.04	56.0	0.0045	0.013	12.0	0.0	0.0
6	D-13	233.78	233.77	50.0	0.0002	0.014	12.0	0.0	0.0
7	D-14	233.86	233.85	20.0	0.0005	0.013	12.0	0.0	0.0
8	D-2	233.48	233.47	32.0	0.0003	0.013	15.0	0.0	0.0
9	D-3	233.91	233.52	60.0	0.0065	0.013	15.0	0.0	0.0
10	D-9	233.82	233.73	12.0	0.0075	0.013	12.0	0.0	0.0

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Type III 24-hr 2-year Rainfall=3.00"

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Time span=1.00-20.00 hrs, dt=0.02 hrs, 951 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1 EE: East Half, Developed Runoff Area=16,191 sf 45.07% Impervious Runoff Depth>1.70"
Flow Length=236' Slope=0.0110 '/' Tc=7.3 min CN=88 Runoff=0.76 cfs 0.053 af

Subcatchment 1 EE2: East Driveway Runoff Area=2,145 sf 52.87% Impervious Runoff Depth>1.78"
Flow Length=160' Slope=0.0068 '/' Tc=6.5 min CN=89 Runoff=0.11 cfs 0.007 af

Subcatchment 1 EW: West Half, Developed Runoff Area=29,199 sf 66.08% Impervious Runoff Depth>2.04"
Flow Length=230' Slope=0.0115 '/' Tc=5.9 min CN=92 Runoff=1.67 cfs 0.114 af

Subcatchment 1-A: Perimeter Areas Runoff Area=1,500 sf 0.00% Impervious Runoff Depth>1.09"
Flow Length=15' Slope=0.0050 '/' Tc=1.6 min CN=79 Runoff=0.05 cfs 0.003 af

Subcatchment A-10: Paved Area 10 to Runoff Area=9,700 sf 100.00% Impervious Runoff Depth>2.64"
Flow Length=200' Slope=0.0080 '/' Tc=4.6 min CN=98 Runoff=0.68 cfs 0.049 af

Subcatchment A-11: Big-Y Parking to Runoff Area=35,536 sf 100.00% Impervious Runoff Depth>2.64"
Flow Length=467' Slope=0.0113 '/' Tc=7.7 min CN=98 Runoff=2.24 cfs 0.179 af

Subcatchment A-12: Big-Y Parking to Runoff Area=64,556 sf 100.00% Impervious Runoff Depth>2.64"
Flow Length=445' Slope=0.0115 '/' Tc=7.3 min CN=98 Runoff=4.12 cfs 0.326 af

Subcatchment A-13: Big-Y Parking to CB Runoff Area=11,010 sf 100.00% Impervious Runoff Depth>2.64"
Flow Length=236' Slope=0.0150 '/' Tc=3.9 min CN=98 Runoff=0.79 cfs 0.056 af

Subcatchment A-3: Det Pond Runoff Area=14,650 sf 100.00% Impervious Runoff Depth>2.63"
Flow Length=156' Slope=0.0010 '/' Tc=10.8 min CN=98 Runoff=0.84 cfs 0.074 af

Subcatchment A-7: Driveway Area 7 to CB7 Runoff Area=5,375 sf 100.00% Impervious Runoff Depth>2.64"
Flow Length=200' Slope=0.0074 '/' Tc=4.8 min CN=98 Runoff=0.37 cfs 0.027 af

Subcatchment A-9: Driveway Area 9 to CB9 Runoff Area=15,000 sf 92.05% Impervious Runoff Depth>2.42"
Flow Length=395' Slope=0.0100 '/' Tc=8.0 min CN=96 Runoff=0.90 cfs 0.069 af

Reach 1E: CB 1: Det Pond Avg. Flow Depth=0.34' Max Vel=3.22 fps Inflow=0.76 cfs 0.053 af
12.0" Round Pipe n=0.013 L=34.0' S=0.0074 '/' Capacity=3.06 cfs Outflow=0.75 cfs 0.053 af

Reach 1W: CB2: Det Pond Avg. Flow Depth=0.61' Max Vel=3.30 fps Inflow=1.67 cfs 0.114 af
12.0" Round Pipe n=0.013 L=55.0' S=0.0045 '/' Capacity=2.40 cfs Outflow=1.66 cfs 0.114 af

Reach D-10: CB10:DMH2 Avg. Flow Depth=0.36' Max Vel=2.67 fps Inflow=0.68 cfs 0.049 af
12.0" Round Pipe n=0.013 L=50.0' S=0.0048 '/' Capacity=2.47 cfs Outflow=0.67 cfs 0.049 af

Reach D-11: CB11:DMH2 Avg. Flow Depth=0.65' Max Vel=4.09 fps Inflow=2.24 cfs 0.179 af
12.0" Round Pipe n=0.013 L=52.0' S=0.0067 '/' Capacity=2.92 cfs Outflow=2.22 cfs 0.179 af

Reach D-12: CB12:DMH3 Avg. Flow Depth=1.00' Max Vel=3.46 fps Inflow=4.12 cfs 0.326 af
12.0" Round Pipe n=0.013 L=56.0' S=0.0045 '/' Capacity=2.38 cfs Outflow=2.38 cfs 0.325 af

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Type III 24-hr 2-year Rainfall=3.00"

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Reach D-13: CB13:DMH3 Avg. Flow Depth=1.00' Max Vel=0.68 fps Inflow=0.79 cfs 0.056 af
 12.0" Round Pipe n=0.014 L=50.0' S=0.0002 '/ Capacity=0.47 cfs Outflow=0.50 cfs 0.056 af

Reach D-14: CB14:DMH3 Avg. Flow Depth=0.25' Max Vel=0.71 fps Inflow=0.11 cfs 0.007 af
 12.0" Round Pipe n=0.013 L=20.0' S=0.0005 '/ Capacity=0.80 cfs Outflow=0.11 cfs 0.007 af

Reach D-2: 15-Inch RCP Avg. Flow Depth=1.25' Max Vel=1.06 fps Inflow=3.73 cfs 0.297 af
 15.0" Round Pipe n=0.013 L=32.0' S=0.0003 '/ Capacity=1.14 cfs Outflow=1.19 cfs 0.297 af

Reach D-3: DMH3:DET POND Avg. Flow Depth=0.67' Max Vel=4.38 fps Inflow=2.95 cfs 0.388 af
 15.0" Round Pipe n=0.013 L=60.0' S=0.0065 '/ Capacity=5.21 cfs Outflow=2.95 cfs 0.388 af

Reach D-9: CB9:DMH2 Avg. Flow Depth=0.37' Max Vel=3.40 fps Inflow=0.90 cfs 0.069 af
 12.0" Round Pipe n=0.013 L=12.0' S=0.0075 '/ Capacity=3.09 cfs Outflow=0.90 cfs 0.069 af

Pond DMH2: DMH2 Peak Elev=234.51' Storage=0.001 af Inflow=3.73 cfs 0.298 af
 Outflow=3.73 cfs 0.297 af

Pond DMH3: DMH3 Peak Elev=234.79' Storage=0.001 af Inflow=2.95 cfs 0.388 af
 Outflow=2.95 cfs 0.388 af

Pond P-2: Detention Pond, Mod Peak Elev=234.86' Storage=8,894 cf Inflow=7.60 cfs 0.953 af
 Discarded=2.57 cfs 0.952 af Primary=0.00 cfs 0.000 af Outflow=2.57 cfs 0.952 af

Total Runoff Area = 4.703 ac Runoff Volume = 0.956 af Average Runoff Depth = 2.44"
10.98% Pervious = 0.517 ac 89.02% Impervious = 4.186 ac

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Summary for Subcatchment 1 EE: East Half, Developed Cond.

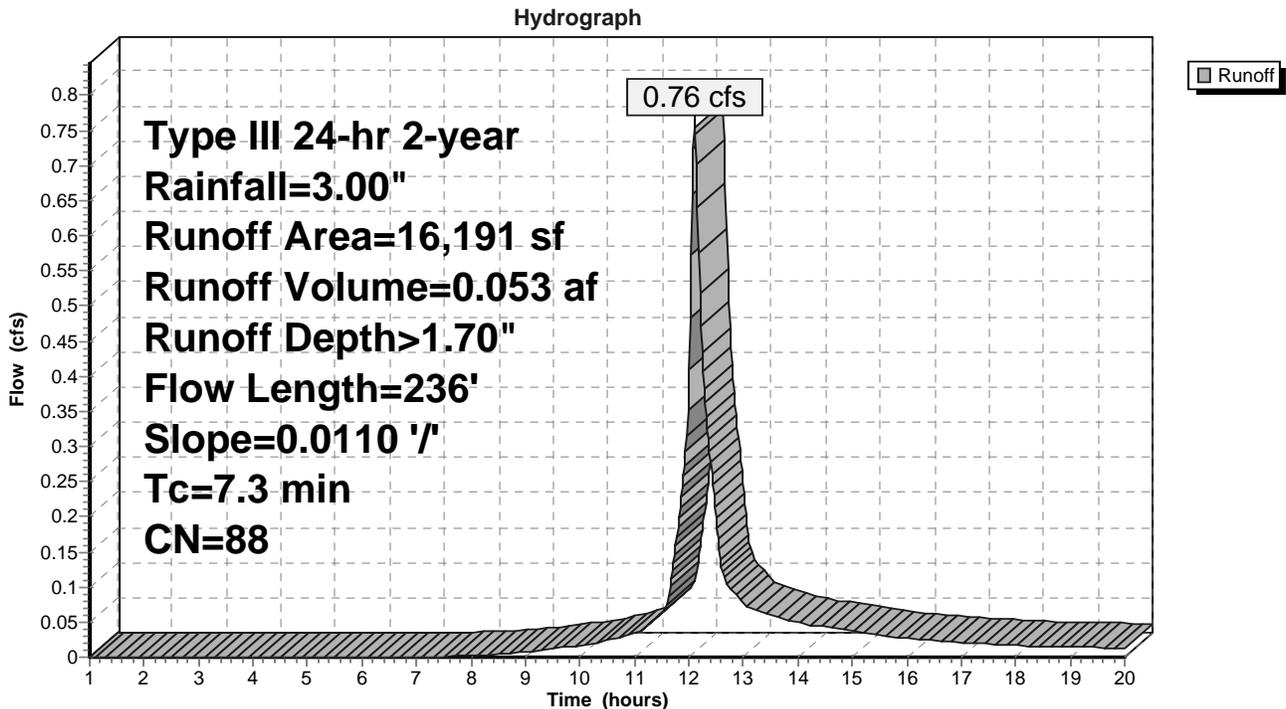
Runoff = 0.76 cfs @ 12.10 hrs, Volume= 0.053 af, Depth> 1.70"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-year Rainfall=3.00"

	Area (sf)	CN	Description
*	4,297	98	Parking & Driveway Pavement & Sidewalks
*	3,000	98	Building
*	2,240	79	Internal Landscaped Areas
*	6,654	79	Outer Landscaped Areas
	16,191	88	Weighted Average
	8,894		54.93% Pervious Area
	7,297		45.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	236	0.0110	0.54		Lag/CN Method,

Subcatchment 1 EE: East Half, Developed Cond.



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Type III 24-hr 2-year Rainfall=3.00"

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Summary for Subcatchment 1 EE2: East Driveway

Runoff = 0.11 cfs @ 12.09 hrs, Volume= 0.007 af, Depth> 1.78"

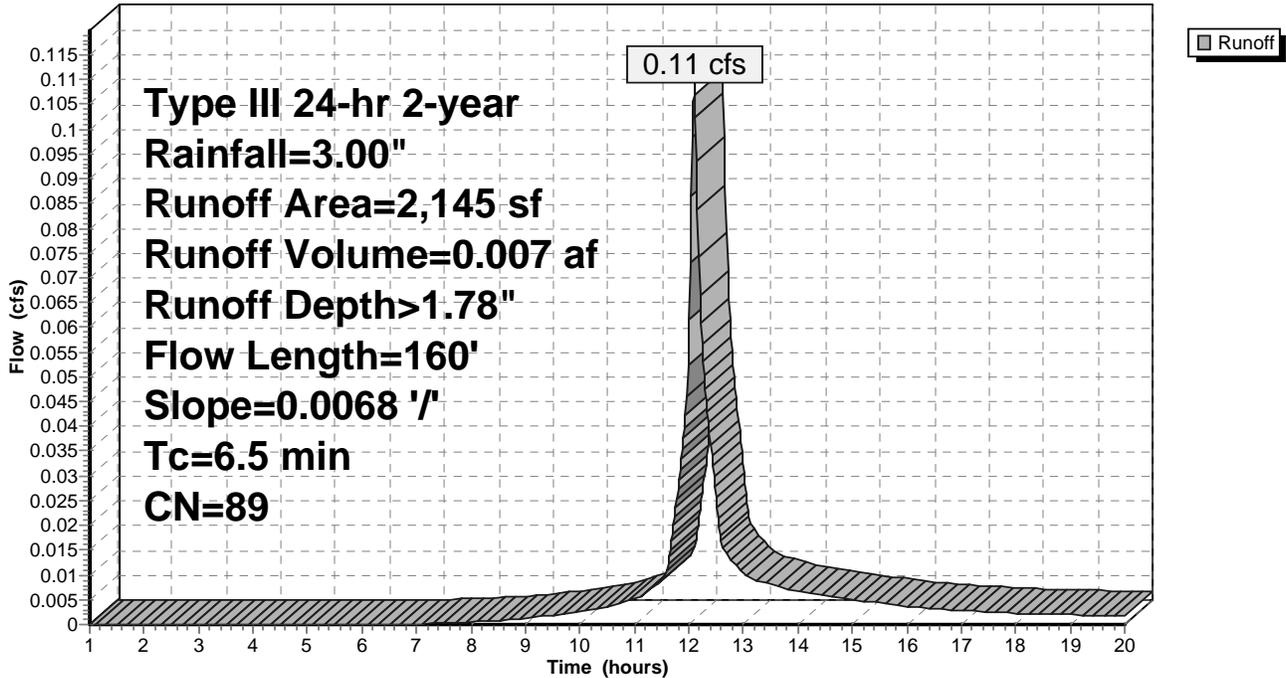
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 2-year Rainfall=3.00"

	Area (sf)	CN	Description
*	1,011	79	Grassed Island
*	1,134	98	1/2 of East Internal N-S Drive
	2,145	89	Weighted Average
	1,011		47.13% Pervious Area
	1,134		52.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	160	0.0068	0.41		Lag/CN Method,

Subcatchment 1 EE2: East Driveway

Hydrograph



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Type III 24-hr 2-year Rainfall=3.00"

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Summary for Subcatchment 1 EW: West Half, Developed Cond.

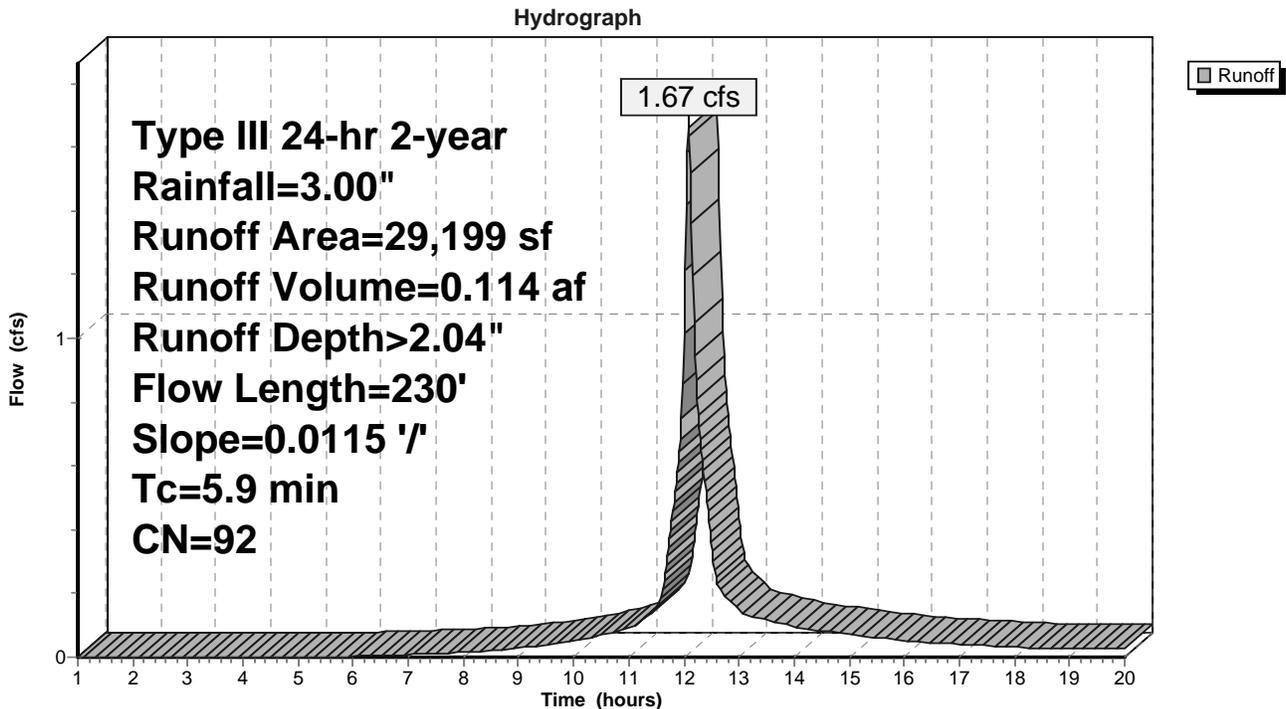
Runoff = 1.67 cfs @ 12.08 hrs, Volume= 0.114 af, Depth> 2.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-year Rainfall=3.00"

	Area (sf)	CN	Description
*	16,294	98	Parking & Driveway Pavement & Sidewalks
*	3,000	98	Building
*	2,240	79	Internal Landscaped Areas
*	7,665	79	Outer Landscaped Areas
	29,199	92	Weighted Average
	9,905		33.92% Pervious Area
	19,294		66.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	230	0.0115	0.65		Lag/CN Method,

Subcatchment 1 EW: West Half, Developed Cond.



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Summary for Subcatchment 1-A: Perimeter Areas

Runoff = 0.05 cfs @ 12.03 hrs, Volume= 0.003 af, Depth> 1.09"

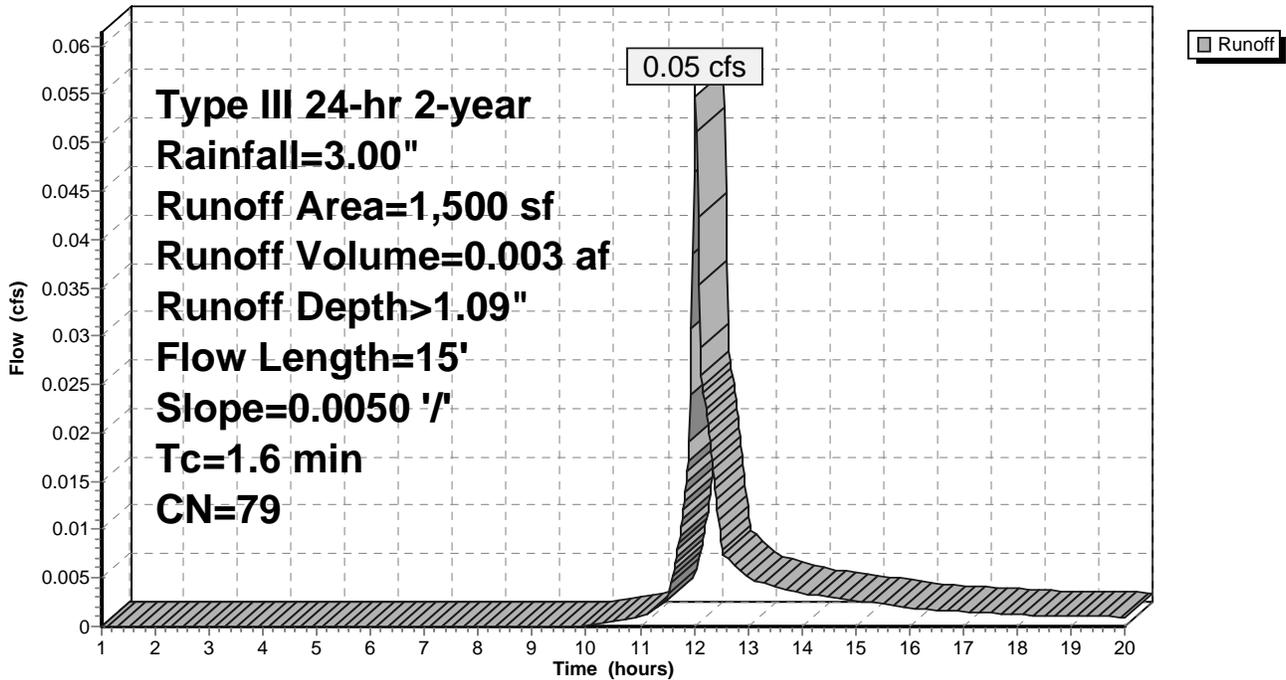
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-year Rainfall=3.00"

Area (sf)	CN	Description
* 1,500	79	Landscaped Perimeter Prop
1,500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	15	0.0050	0.16		Lag/CN Method,

Subcatchment 1-A: Perimeter Areas

Hydrograph



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Type III 24-hr 2-year Rainfall=3.00"

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Summary for Subcatchment A-10: Paved Area 10 to CB10

Runoff = 0.68 cfs @ 12.07 hrs, Volume= 0.049 af, Depth> 2.64"

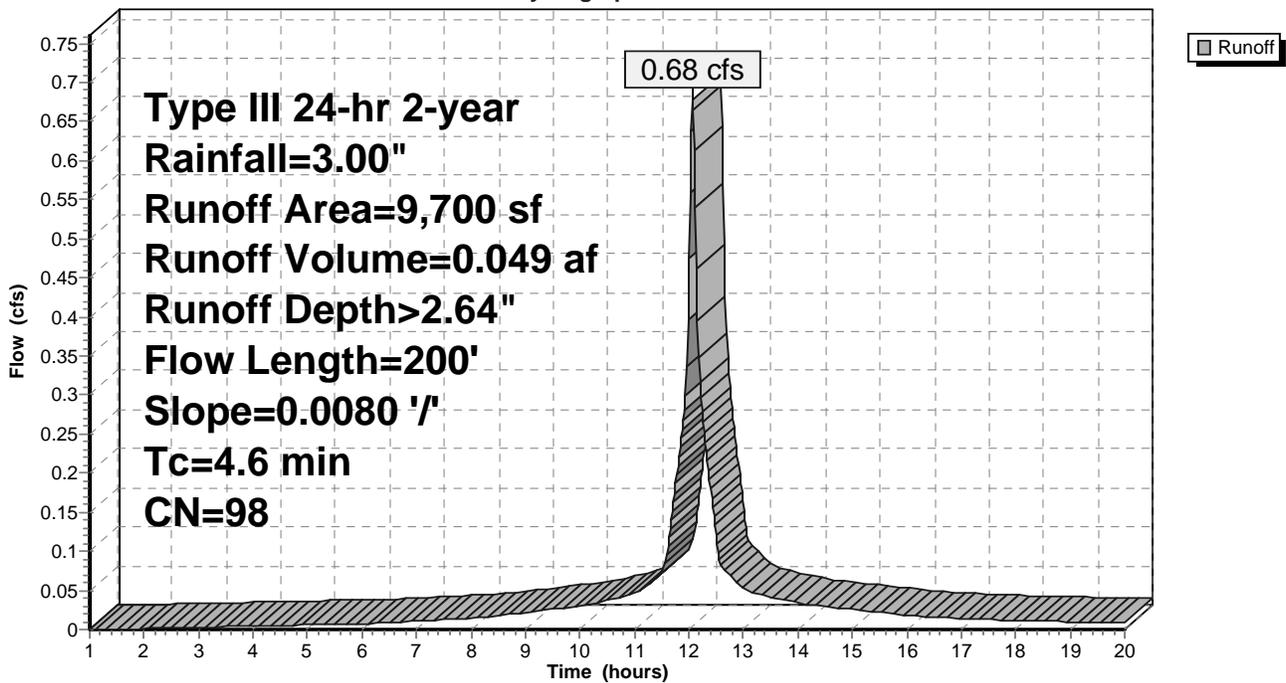
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 2-year Rainfall=3.00"

Area (sf)	CN	Description
* 9,700	98	Paved Apron and Travel Aisle
9,700		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	200	0.0080	0.72		Lag/CN Method,

Subcatchment A-10: Paved Area 10 to CB10

Hydrograph



Summary for Subcatchment A-11: Big-Y Parking to CB11

Runoff = 2.24 cfs @ 12.11 hrs, Volume= 0.179 af, Depth> 2.64"

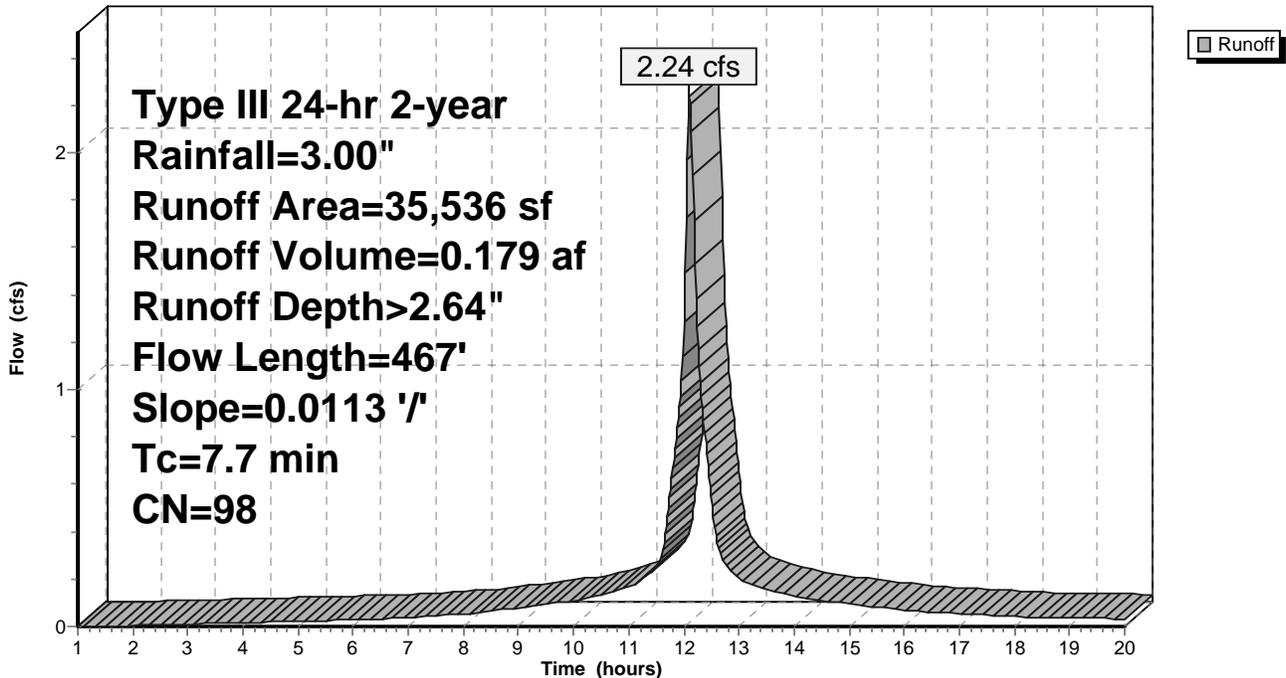
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 2-year Rainfall=3.00"

Area (sf)	CN	Description
* 35,536	98	Paved Parking
35,536		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	467	0.0113	1.01		Lag/CN Method,

Subcatchment A-11: Big-Y Parking to CB11

Hydrograph



Summary for Subcatchment A-12: Big-Y Parking to CB12

Runoff = 4.12 cfs @ 12.10 hrs, Volume= 0.326 af, Depth> 2.64"

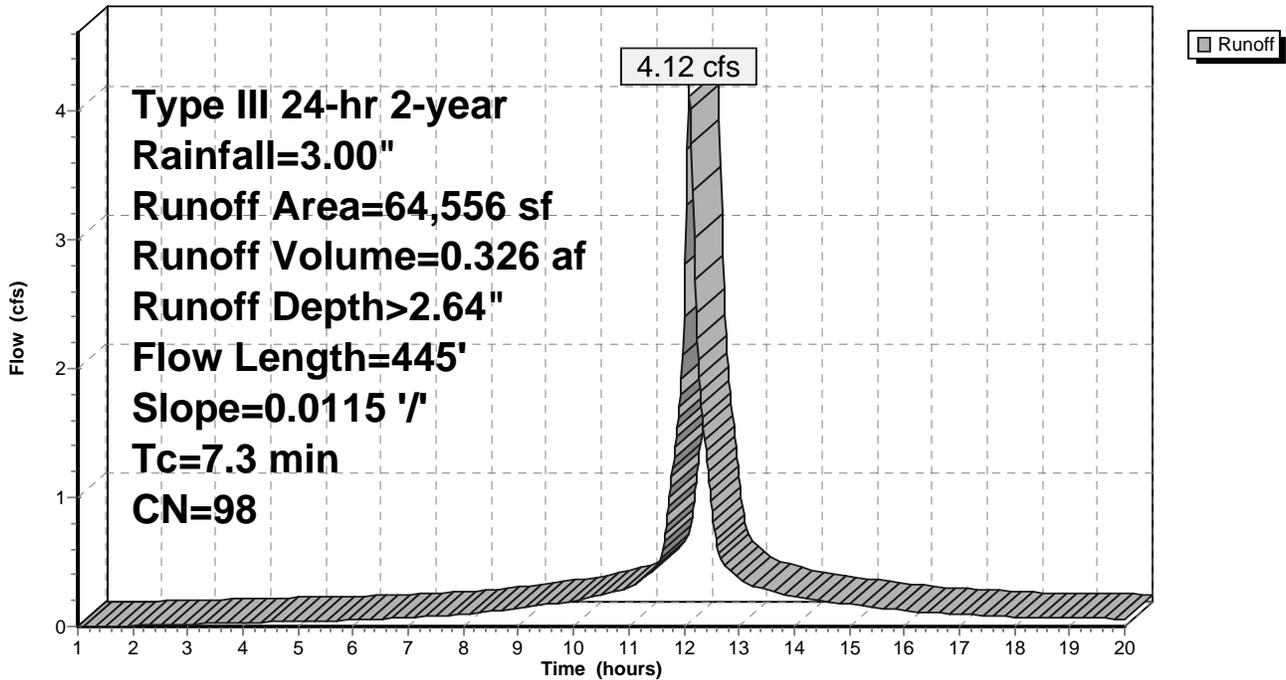
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 2-year Rainfall=3.00"

Area (sf)	CN	Description
* 64,556	98	Paved Parking
64,556		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	445	0.0115	1.01		Lag/CN Method,

Subcatchment A-12: Big-Y Parking to CB12

Hydrograph



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Type III 24-hr 2-year Rainfall=3.00"

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Summary for Subcatchment A-13: Big-Y Parking to CB 13

Runoff = 0.79 cfs @ 12.06 hrs, Volume= 0.056 af, Depth> 2.64"

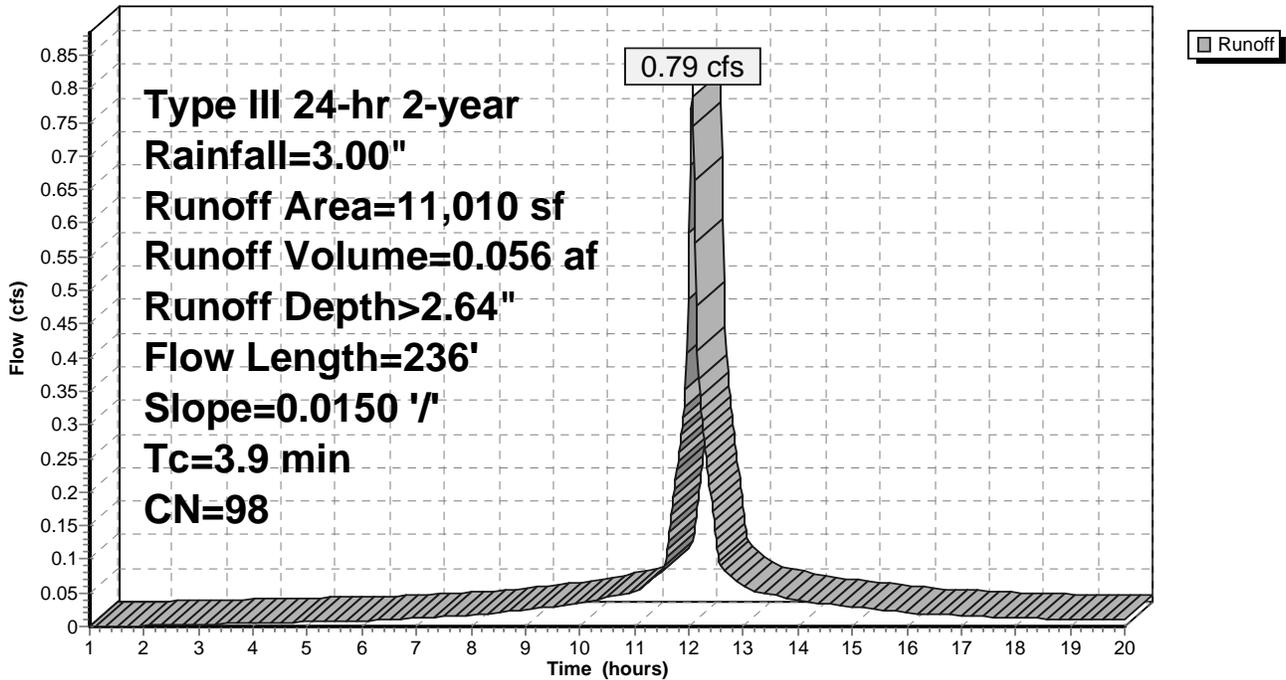
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 2-year Rainfall=3.00"

Area (sf)	CN	Description
* 11,010	98	Paved Parking
11,010		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	236	0.0150	1.02		Lag/CN Method,

Subcatchment A-13: Big-Y Parking to CB 13

Hydrograph



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Summary for Subcatchment A-3: Det Pond

Runoff = 0.84 cfs @ 12.14 hrs, Volume= 0.074 af, Depth> 2.63"

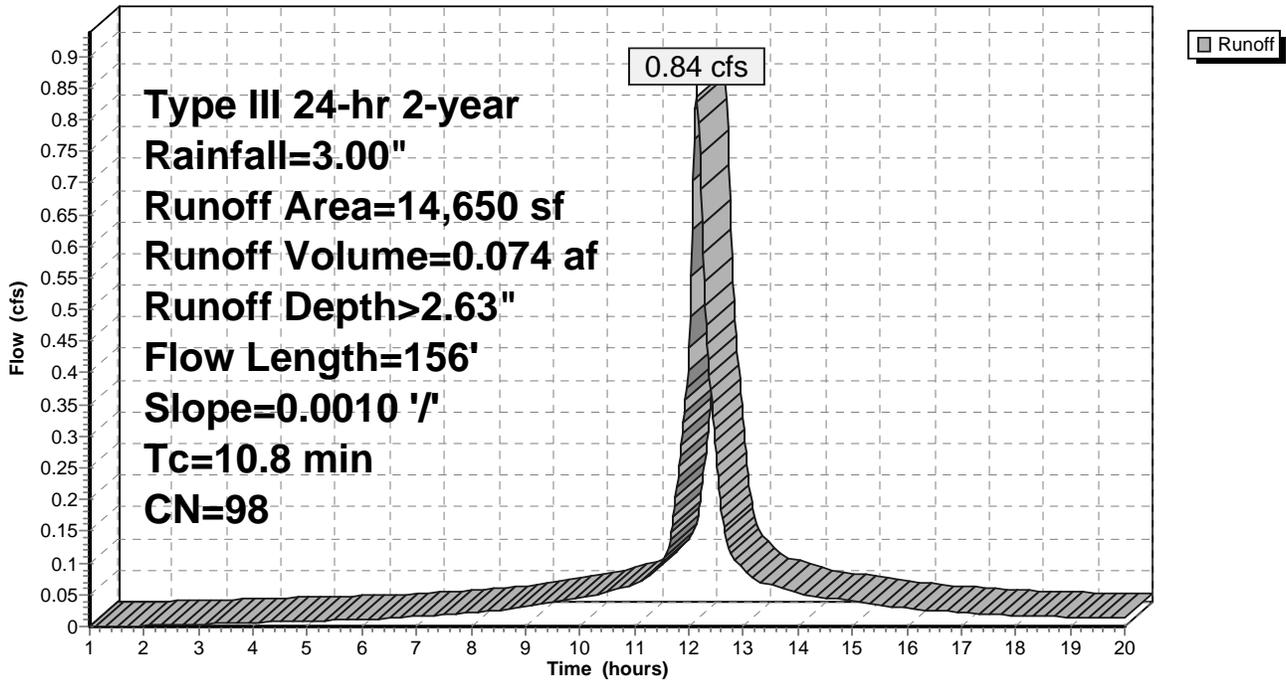
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-year Rainfall=3.00"

Area (sf)	CN	Description
* 14,650	98	Wet Det Pond@ Elv 237
14,650		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	156	0.0010	0.24		Lag/CN Method,

Subcatchment A-3: Det Pond

Hydrograph



Summary for Subcatchment A-7: Driveway Area 7 to CB7

Runoff = 0.37 cfs @ 12.07 hrs, Volume= 0.027 af, Depth> 2.64"

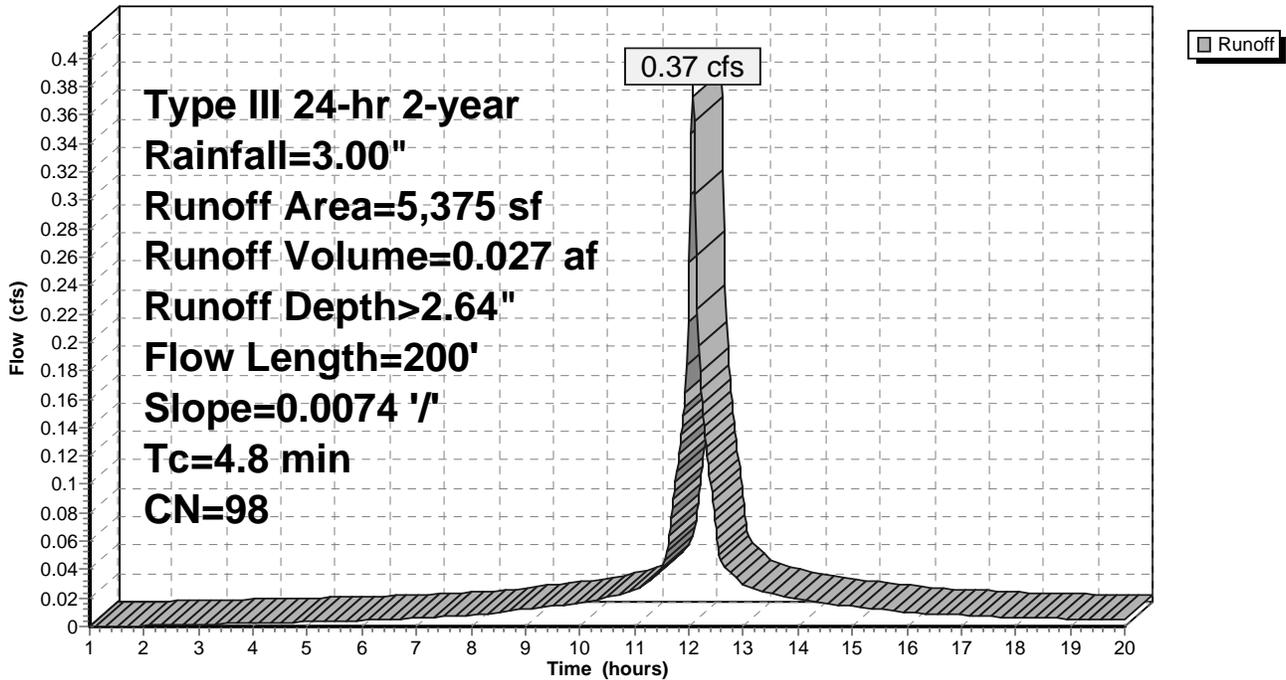
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 2-year Rainfall=3.00"

Area (sf)	CN	Description
* 5,375	98	Paved Driveway, northern half
5,375		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	200	0.0074	0.69		Lag/CN Method,

Subcatchment A-7: Driveway Area 7 to CB7

Hydrograph



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Type III 24-hr 2-year Rainfall=3.00"

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Summary for Subcatchment A-9: Driveway Area 9 to CB9

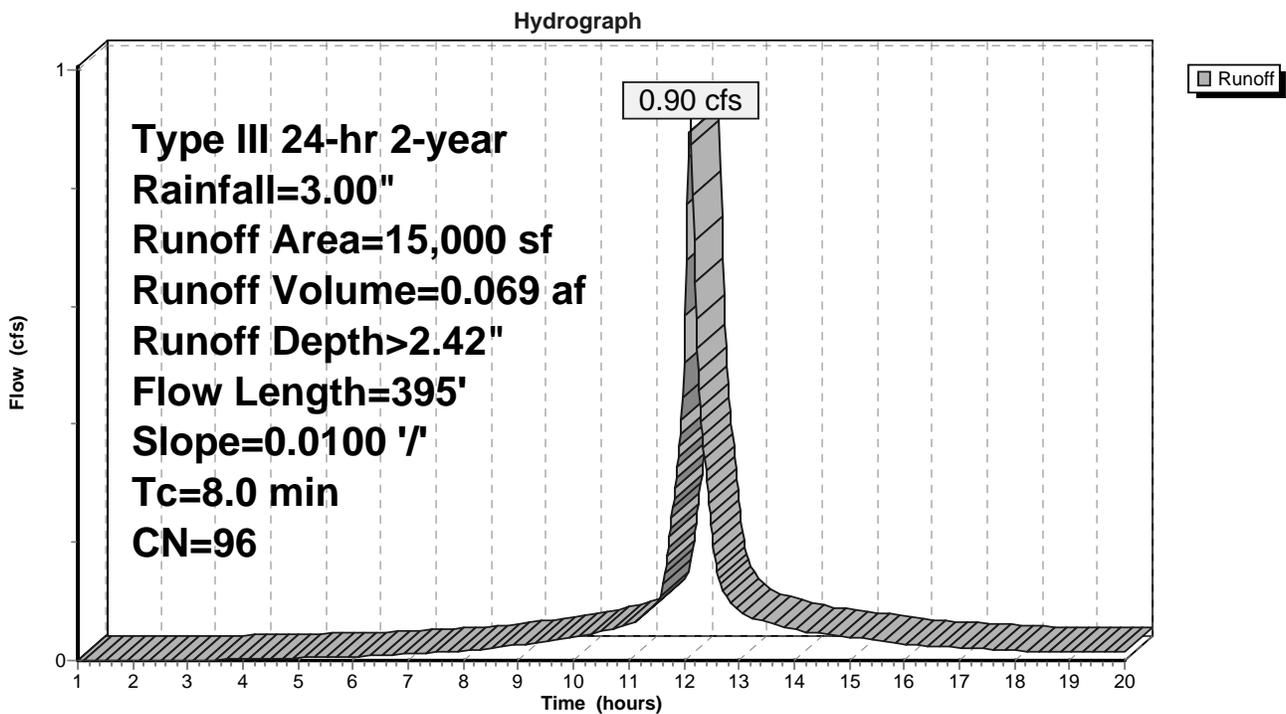
Runoff = 0.90 cfs @ 12.11 hrs, Volume= 0.069 af, Depth> 2.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 2-year Rainfall=3.00"

	Area (sf)	CN	Description
*	1,192	79	Grass Strip
*	13,808	98	N-S Driveway
	15,000	96	Weighted Average
	1,192		7.95% Pervious Area
	13,808		92.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	395	0.0100	0.82		Lag/CN Method,

Subcatchment A-9: Driveway Area 9 to CB9



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Type III 24-hr 2-year Rainfall=3.00"

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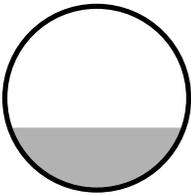
Summary for Reach 1E: CB 1: Det Pond

Inflow Area = 0.372 ac, 45.07% Impervious, Inflow Depth > 1.70" for 2-year event
 Inflow = 0.76 cfs @ 12.10 hrs, Volume= 0.053 af
 Outflow = 0.75 cfs @ 12.11 hrs, Volume= 0.053 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Max. Velocity= 3.22 fps, Min. Travel Time= 0.2 min
 Avg. Velocity = 1.22 fps, Avg. Travel Time= 0.5 min

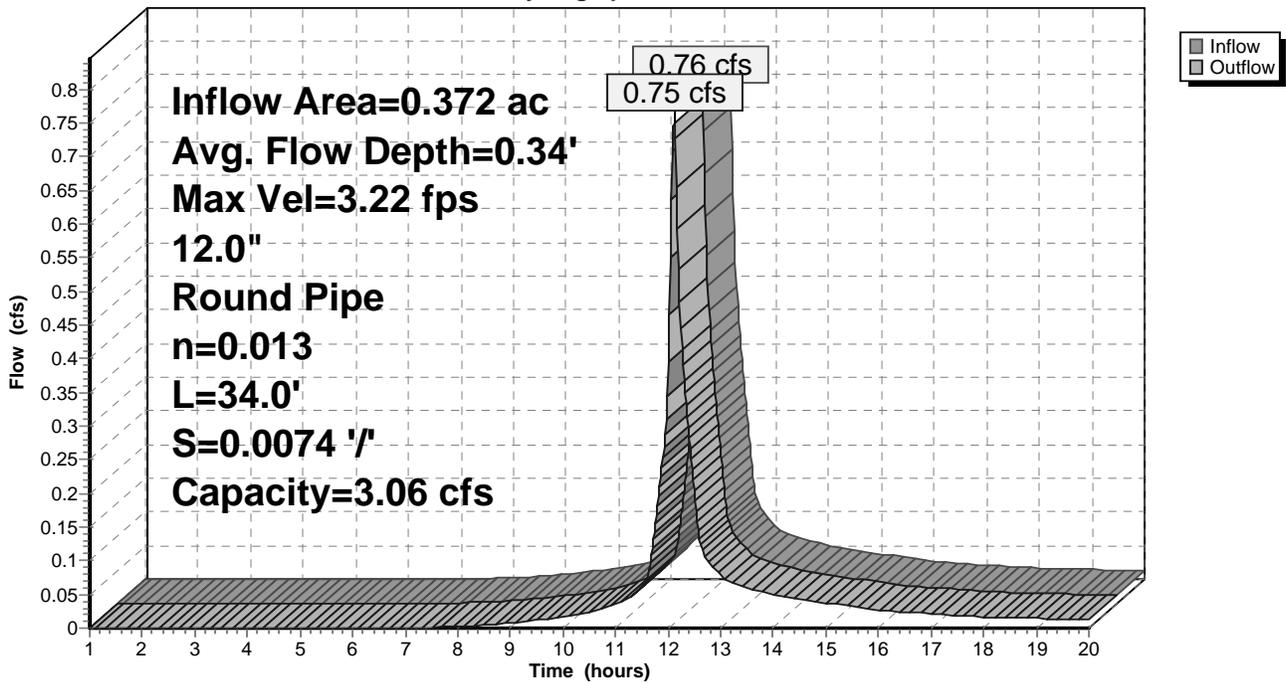
Peak Storage= 8 cf @ 12.11 hrs
 Average Depth at Peak Storage= 0.34'
 Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.06 cfs

12.0" Round Pipe
 n= 0.013
 Length= 34.0' Slope= 0.0074 '/'
 Inlet Invert= 234.00', Outlet Invert= 233.75'



Reach 1E: CB 1: Det Pond

Hydrograph



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Type III 24-hr 2-year Rainfall=3.00"

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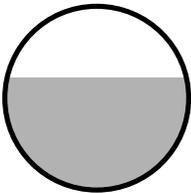
Summary for Reach 1W: CB2: Det Pond

Inflow Area = 0.670 ac, 66.08% Impervious, Inflow Depth > 2.04" for 2-year event
 Inflow = 1.67 cfs @ 12.08 hrs, Volume= 0.114 af
 Outflow = 1.66 cfs @ 12.09 hrs, Volume= 0.114 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Max. Velocity= 3.30 fps, Min. Travel Time= 0.3 min
 Avg. Velocity = 1.22 fps, Avg. Travel Time= 0.8 min

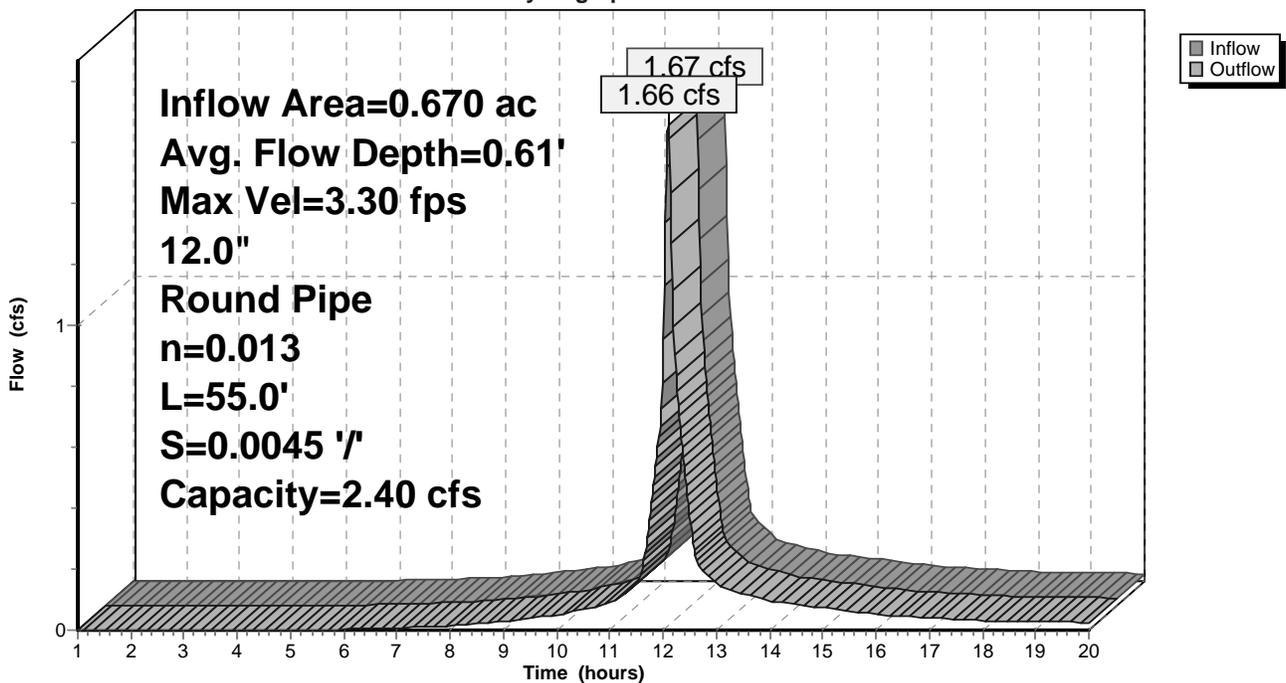
Peak Storage= 28 cf @ 12.09 hrs
 Average Depth at Peak Storage= 0.61'
 Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.40 cfs

12.0" Round Pipe
 n= 0.013
 Length= 55.0' Slope= 0.0045 '/
 Inlet Invert= 234.00', Outlet Invert= 233.75'



Reach 1W: CB2: Det Pond

Hydrograph



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Type III 24-hr 2-year Rainfall=3.00"

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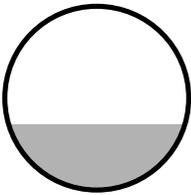
Summary for Reach D-10: CB10:DMH2

Inflow Area = 0.223 ac, 100.00% Impervious, Inflow Depth > 2.64" for 2-year event
 Inflow = 0.68 cfs @ 12.07 hrs, Volume= 0.049 af
 Outflow = 0.67 cfs @ 12.07 hrs, Volume= 0.049 af, Atten= 1%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Max. Velocity= 2.67 fps, Min. Travel Time= 0.3 min
 Avg. Velocity = 0.91 fps, Avg. Travel Time= 0.9 min

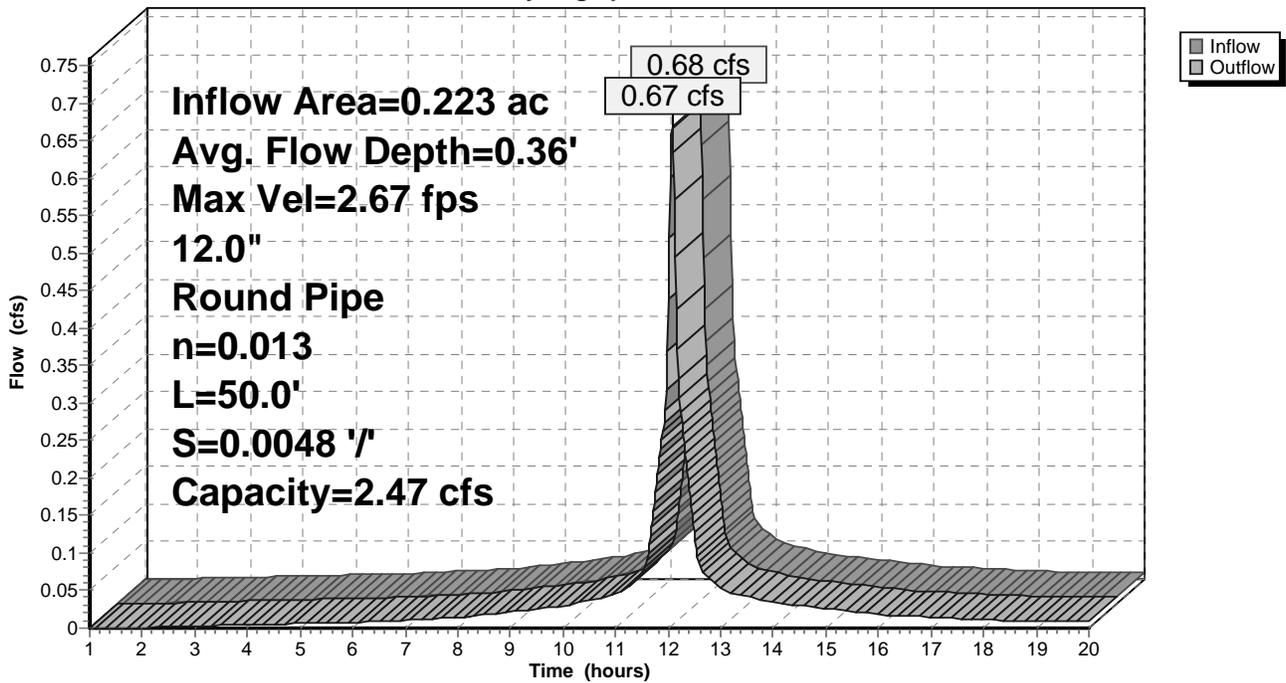
Peak Storage= 13 cf @ 12.07 hrs
 Average Depth at Peak Storage= 0.36'
 Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.47 cfs

12.0" Round Pipe
 n= 0.013
 Length= 50.0' Slope= 0.0048 '/'
 Inlet Invert= 234.04', Outlet Invert= 233.80'



Reach D-10: CB10:DMH2

Hydrograph



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Type III 24-hr 2-year Rainfall=3.00"

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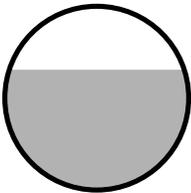
Summary for Reach D-11: CB11:DMH2

Inflow Area = 0.816 ac, 100.00% Impervious, Inflow Depth > 2.64" for 2-year event
 Inflow = 2.24 cfs @ 12.11 hrs, Volume= 0.179 af
 Outflow = 2.22 cfs @ 12.11 hrs, Volume= 0.179 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Max. Velocity= 4.09 fps, Min. Travel Time= 0.2 min
 Avg. Velocity = 1.51 fps, Avg. Travel Time= 0.6 min

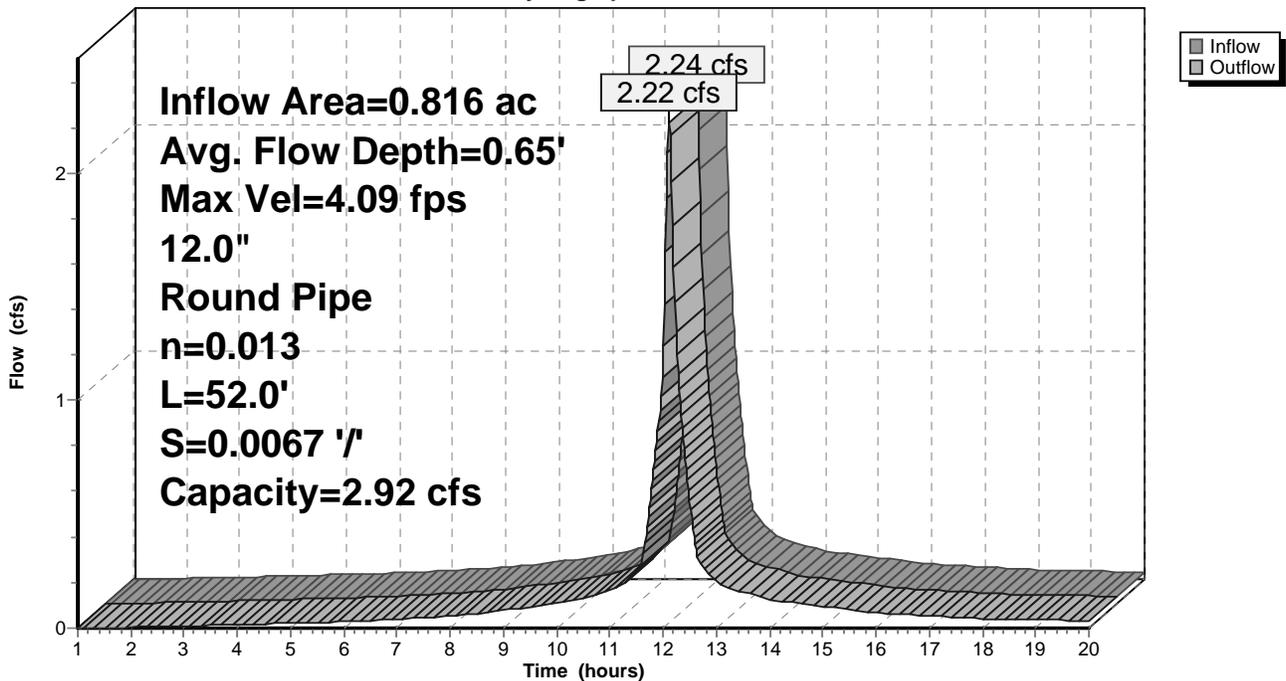
Peak Storage= 28 cf @ 12.11 hrs
 Average Depth at Peak Storage= 0.65'
 Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.92 cfs

12.0" Round Pipe
 n= 0.013
 Length= 52.0' Slope= 0.0067 '/'
 Inlet Invert= 233.95', Outlet Invert= 233.60'



Reach D-11: CB11:DMH2

Hydrograph



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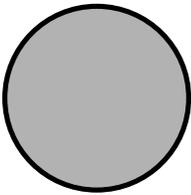
Summary for Reach D-12: CB12:DMH3

Inflow Area = 1.482 ac, 100.00% Impervious, Inflow Depth > 2.64" for 2-year event
 Inflow = 4.12 cfs @ 12.10 hrs, Volume= 0.326 af
 Outflow = 2.38 cfs @ 12.04 hrs, Volume= 0.325 af, Atten= 42%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Max. Velocity= 3.46 fps, Min. Travel Time= 0.3 min
 Avg. Velocity = 1.55 fps, Avg. Travel Time= 0.6 min

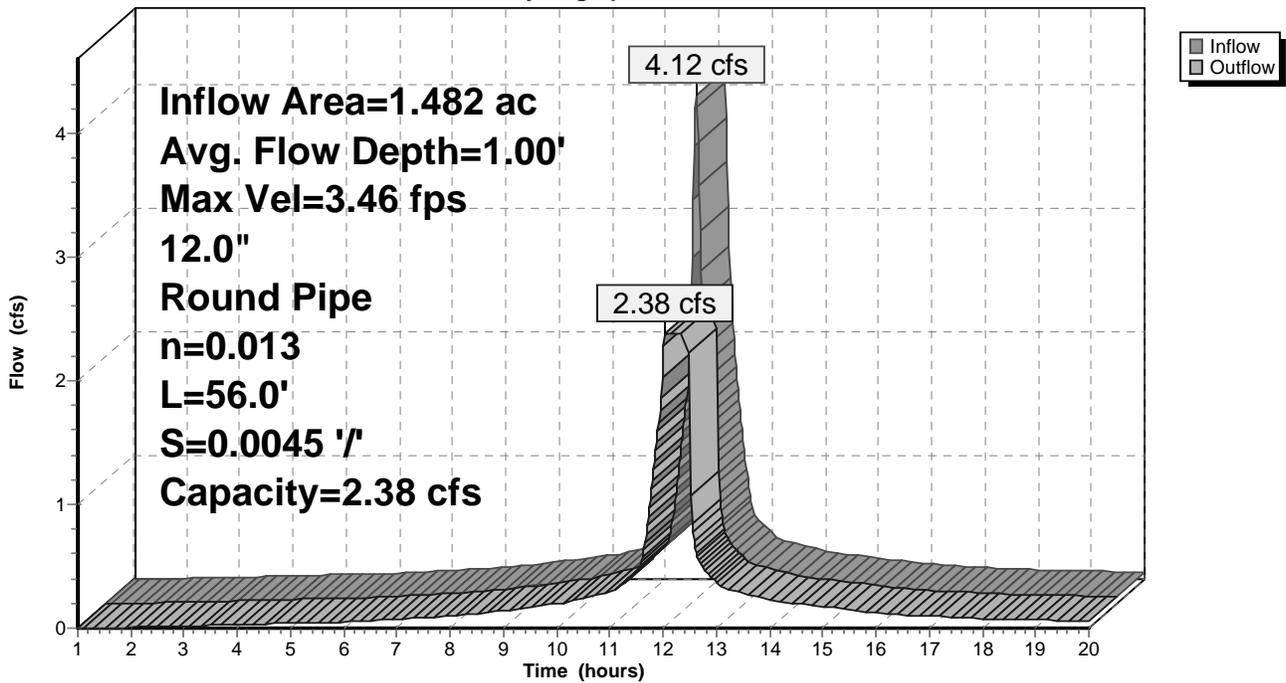
Peak Storage= 44 cf @ 12.02 hrs
 Average Depth at Peak Storage= 1.00'
 Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.38 cfs

12.0" Round Pipe
 n= 0.013
 Length= 56.0' Slope= 0.0045 '/'
 Inlet Invert= 234.29', Outlet Invert= 234.04'



Reach D-12: CB12:DMH3

Hydrograph



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Type III 24-hr 2-year Rainfall=3.00"

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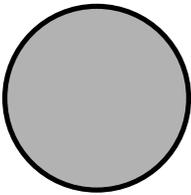
Summary for Reach D-13: CB13:DMH3

Inflow Area = 0.253 ac, 100.00% Impervious, Inflow Depth > 2.64" for 2-year event
 Inflow = 0.79 cfs @ 12.06 hrs, Volume= 0.056 af
 Outflow = 0.50 cfs @ 12.02 hrs, Volume= 0.056 af, Atten= 37%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Max. Velocity= 0.68 fps, Min. Travel Time= 1.2 min
 Avg. Velocity = 0.29 fps, Avg. Travel Time= 2.9 min

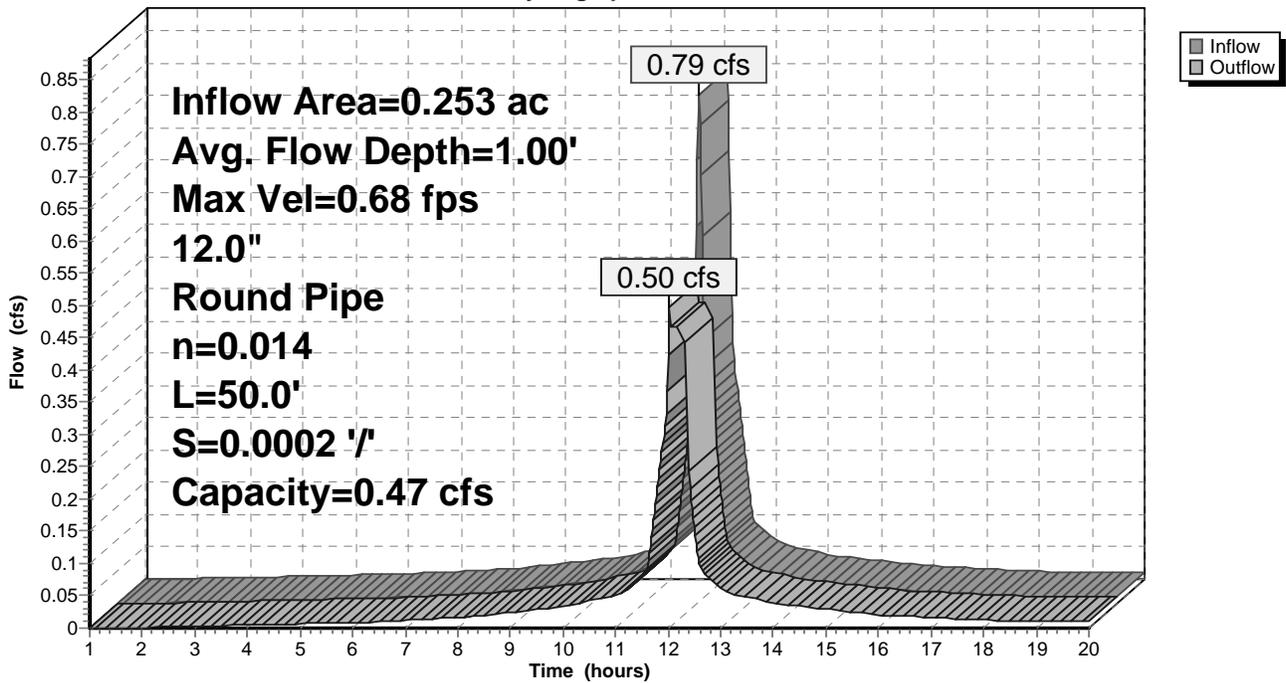
Peak Storage= 39 cf @ 12.02 hrs
 Average Depth at Peak Storage= 1.00'
 Bank-Full Depth= 1.00', Capacity at Bank-Full= 0.47 cfs

12.0" Round Pipe
 n= 0.014
 Length= 50.0' Slope= 0.0002 '/'
 Inlet Invert= 233.78', Outlet Invert= 233.77'



Reach D-13: CB13:DMH3

Hydrograph



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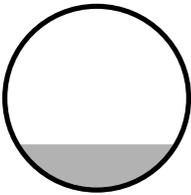
Summary for Reach D-14: CB14:DMH3

Inflow Area = 0.049 ac, 52.87% Impervious, Inflow Depth > 1.78" for 2-year event
Inflow = 0.11 cfs @ 12.09 hrs, Volume= 0.007 af
Outflow = 0.11 cfs @ 12.11 hrs, Volume= 0.007 af, Atten= 1%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.71 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.26 fps, Avg. Travel Time= 1.3 min

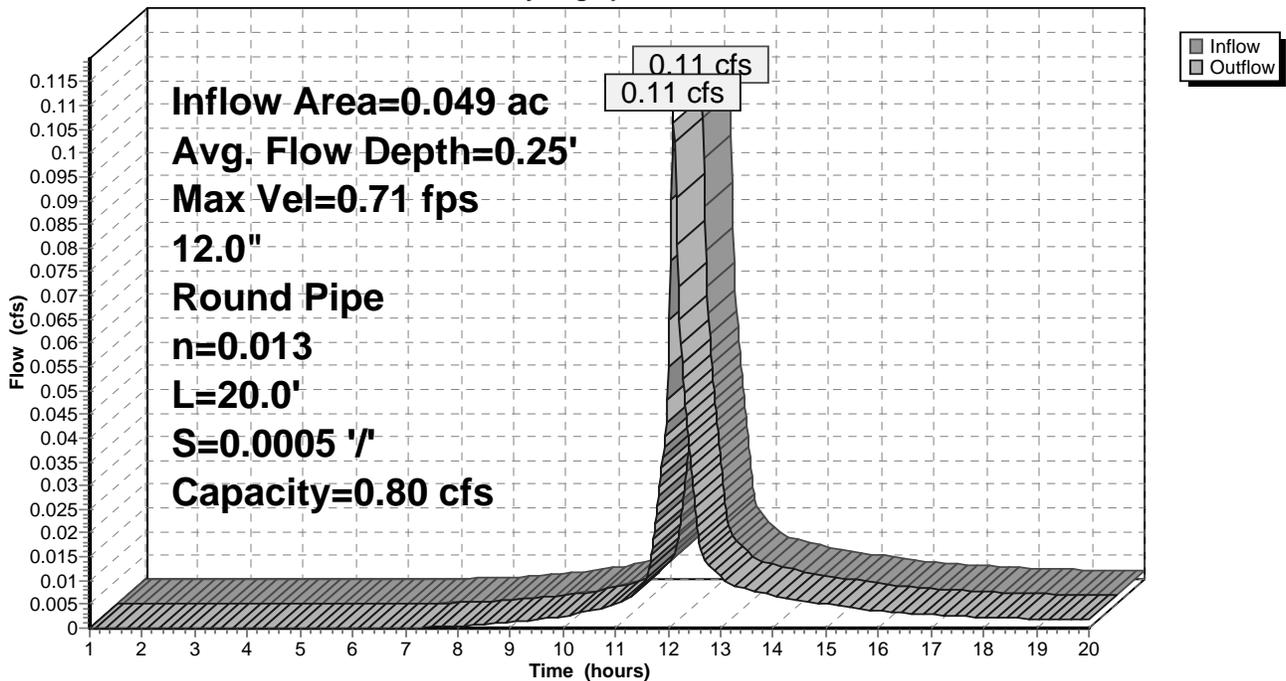
Peak Storage= 3 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.25'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 0.80 cfs

12.0" Round Pipe
n= 0.013
Length= 20.0' Slope= 0.0005 '/'
Inlet Invert= 233.86', Outlet Invert= 233.85'



Reach D-14: CB14:DMH3

Hydrograph



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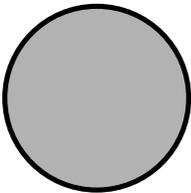
Summary for Reach D-2: 15-Inch RCP

Inflow Area = 1.383 ac, 98.02% Impervious, Inflow Depth > 2.58" for 2-year event
 Inflow = 3.73 cfs @ 12.11 hrs, Volume= 0.297 af
 Outflow = 1.19 cfs @ 11.85 hrs, Volume= 0.297 af, Atten= 68%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Max. Velocity= 1.06 fps, Min. Travel Time= 0.5 min
 Avg. Velocity = 0.56 fps, Avg. Travel Time= 0.9 min

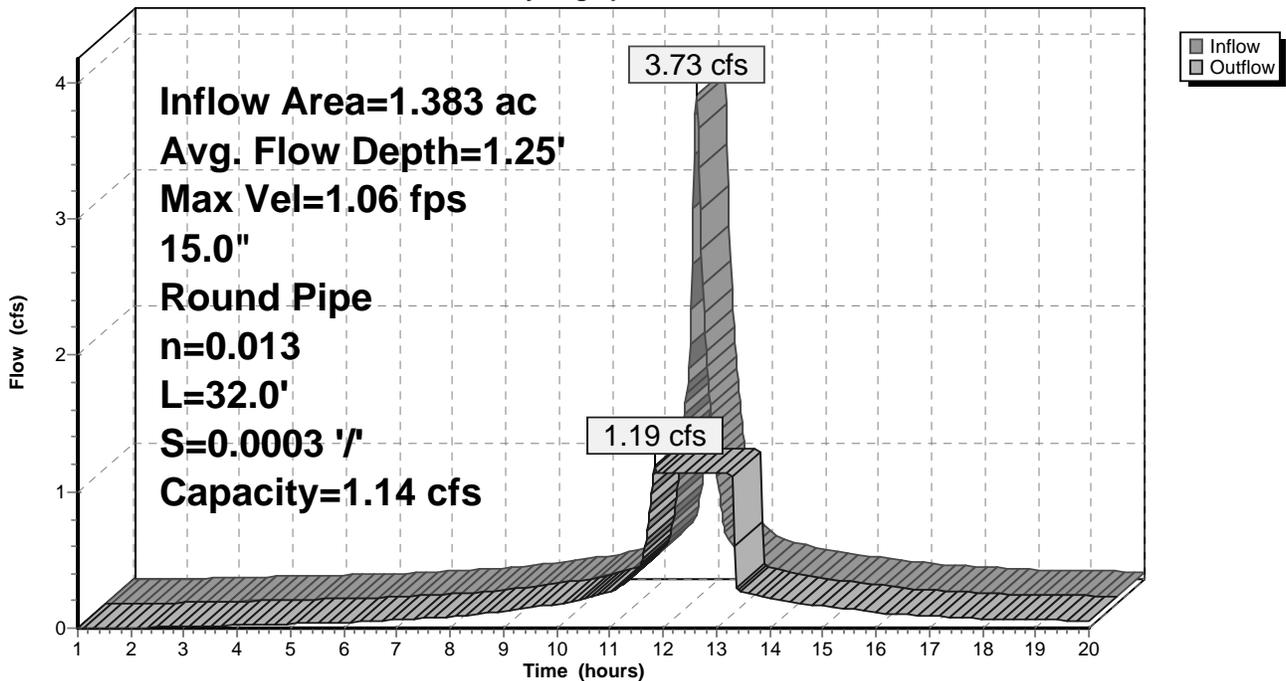
Peak Storage= 39 cf @ 11.86 hrs
 Average Depth at Peak Storage= 1.25'
 Bank-Full Depth= 1.25', Capacity at Bank-Full= 1.14 cfs

15.0" Round Pipe
 n= 0.013
 Length= 32.0' Slope= 0.0003 '/
 Inlet Invert= 233.48', Outlet Invert= 233.47'



Reach D-2: 15-Inch RCP

Hydrograph



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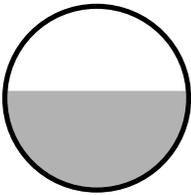
Summary for Reach D-3: DMH3:DET POND

Inflow Area = 1.784 ac, 98.70% Impervious, Inflow Depth > 2.61" for 2-year event
 Inflow = 2.95 cfs @ 12.11 hrs, Volume= 0.388 af
 Outflow = 2.95 cfs @ 12.12 hrs, Volume= 0.388 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Max. Velocity= 4.38 fps, Min. Travel Time= 0.2 min
 Avg. Velocity = 1.83 fps, Avg. Travel Time= 0.5 min

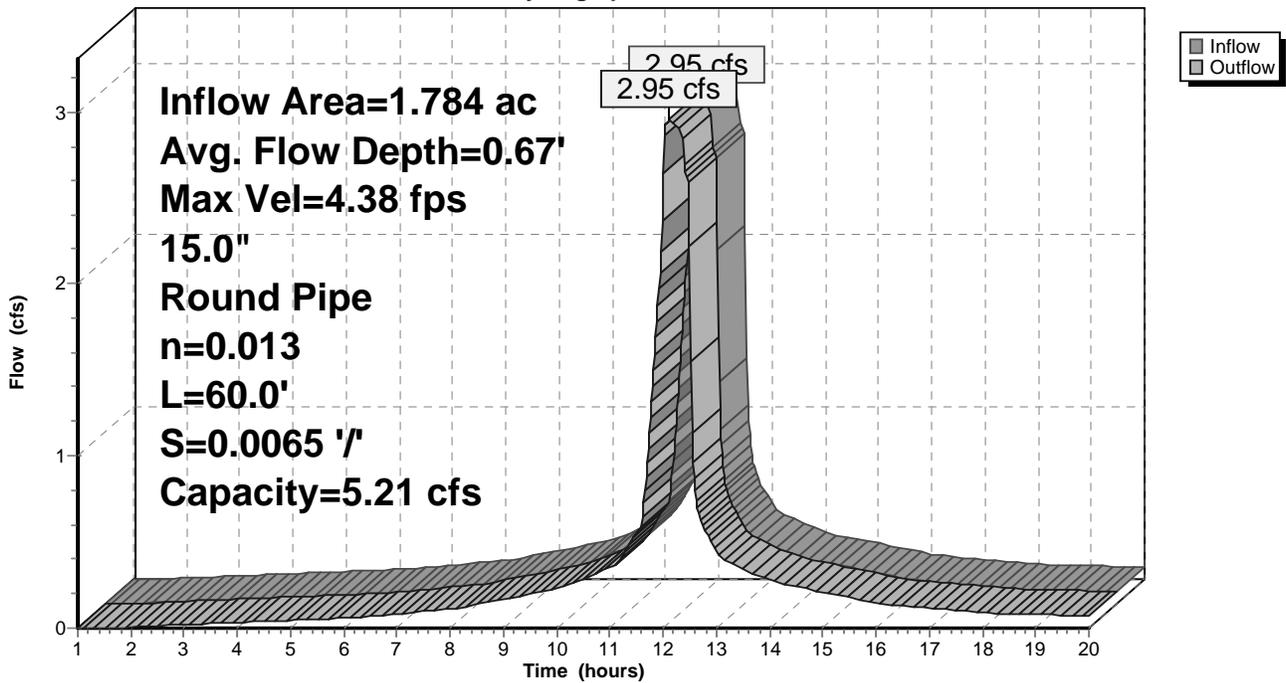
Peak Storage= 40 cf @ 12.12 hrs
 Average Depth at Peak Storage= 0.67'
 Bank-Full Depth= 1.25', Capacity at Bank-Full= 5.21 cfs

15.0" Round Pipe
 n= 0.013 Concrete pipe, bends & connections
 Length= 60.0' Slope= 0.0065 '/
 Inlet Invert= 233.91', Outlet Invert= 233.52'



Reach D-3: DMH3:DET POND

Hydrograph



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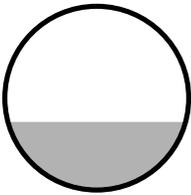
Summary for Reach D-9: CB9:DMH2

Inflow Area = 0.344 ac, 92.05% Impervious, Inflow Depth > 2.42" for 2-year event
 Inflow = 0.90 cfs @ 12.11 hrs, Volume= 0.069 af
 Outflow = 0.90 cfs @ 12.11 hrs, Volume= 0.069 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Max. Velocity= 3.40 fps, Min. Travel Time= 0.1 min
 Avg. Velocity = 1.20 fps, Avg. Travel Time= 0.2 min

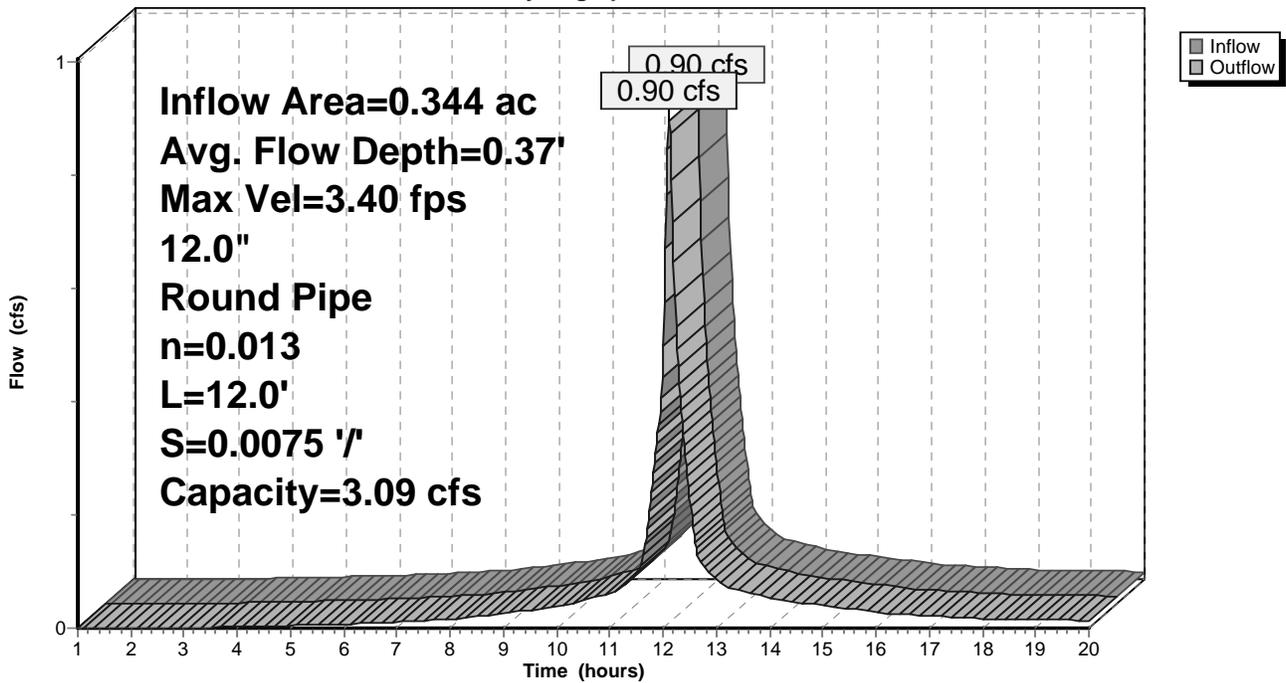
Peak Storage= 3 cf @ 12.11 hrs
 Average Depth at Peak Storage= 0.37'
 Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.09 cfs

12.0" Round Pipe
 n= 0.013
 Length= 12.0' Slope= 0.0075 '/'
 Inlet Invert= 233.82', Outlet Invert= 233.73'



Reach D-9: CB9:DMH2

Hydrograph



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Type III 24-hr 2-year Rainfall=3.00"

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Summary for Pond DMH2: DMH2

Inflow Area = 1.383 ac, 98.02% Impervious, Inflow Depth > 2.58" for 2-year event
 Inflow = 3.73 cfs @ 12.10 hrs, Volume= 0.298 af
 Outflow = 3.73 cfs @ 12.11 hrs, Volume= 0.297 af, Atten= 0%, Lag= 0.1 min
 Primary = 3.73 cfs @ 12.11 hrs, Volume= 0.297 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Peak Elev= 234.51' @ 12.11 hrs Surf.Area= 0.001 ac Storage= 0.001 af

Plug-Flow detention time= 0.4 min calculated for 0.297 af (100% of inflow)
 Center-of-Mass det. time= 0.3 min (735.7 - 735.4)

Volume	Invert	Avail.Storage	Storage Description
#1	233.48'	0.003 af	6.00'D x 4.52'H Vertical Cone/Cylinder

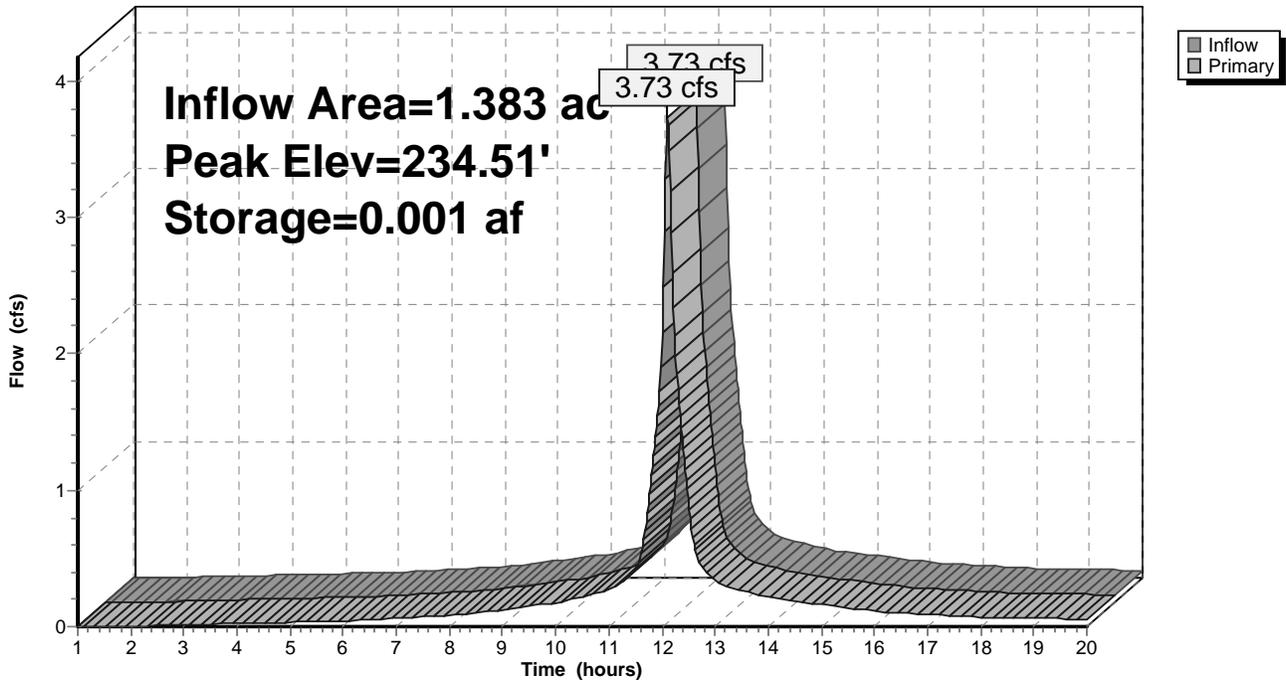
Device	Routing	Invert	Outlet Devices
#1	Primary	233.48'	15.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=3.71 cfs @ 12.11 hrs HW=234.51' (Free Discharge)

↑1=Orifice/Grate (Orifice Controls 3.71 cfs @ 3.45 fps)

Pond DMH2: DMH2

Hydrograph



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Type III 24-hr 2-year Rainfall=3.00"

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Summary for Pond DMH3: DMH3

Inflow Area = 1.784 ac, 98.70% Impervious, Inflow Depth > 2.61" for 2-year event
 Inflow = 2.95 cfs @ 12.11 hrs, Volume= 0.388 af
 Outflow = 2.95 cfs @ 12.11 hrs, Volume= 0.388 af, Atten= 0%, Lag= 0.4 min
 Primary = 2.95 cfs @ 12.11 hrs, Volume= 0.388 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Peak Elev= 234.79' @ 12.11 hrs Surf.Area= 0.001 ac Storage= 0.001 af

Plug-Flow detention time= 0.3 min calculated for 0.388 af (100% of inflow)
 Center-of-Mass det. time= 0.3 min (733.6 - 733.4)

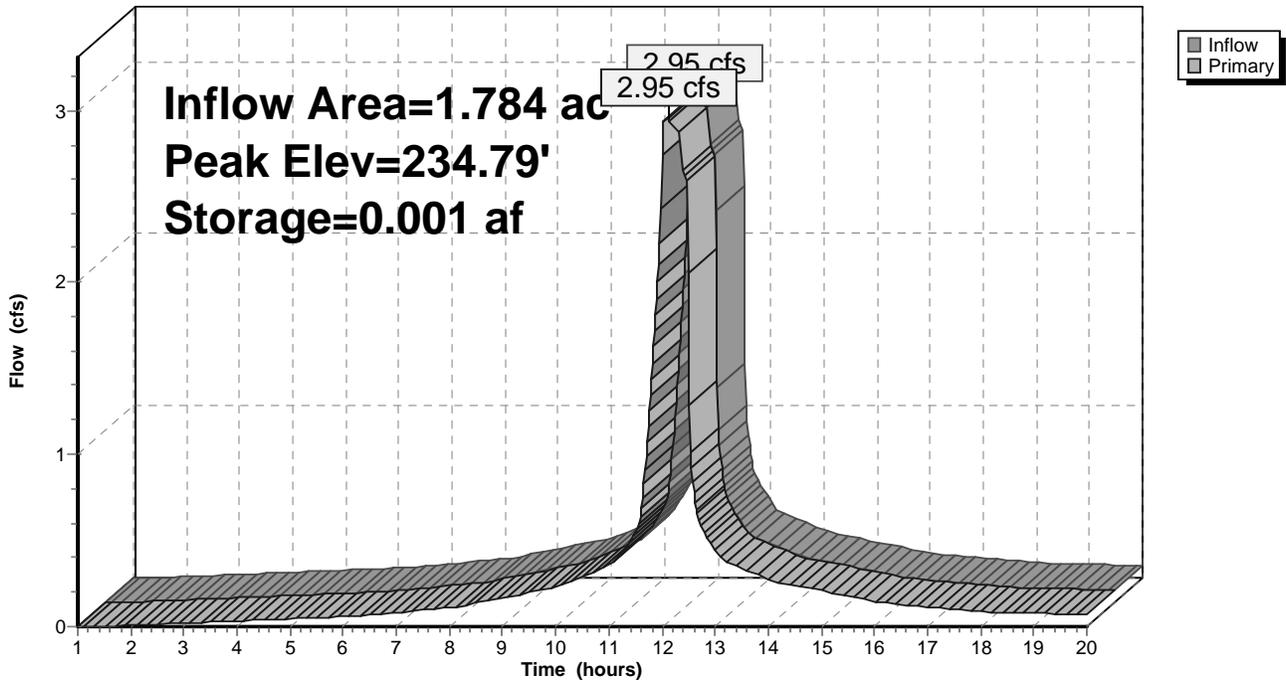
Volume	Invert	Avail.Storage	Storage Description
#1	233.91'	0.003 af	6.00'D x 4.28'H Vertical Cone/Cylinder

Device	Routing	Invert	Outlet Devices
#1	Primary	233.91'	15.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=2.95 cfs @ 12.11 hrs HW=234.79' (Free Discharge)
 ↳ **1=Orifice/Grate** (Orifice Controls 2.95 cfs @ 3.20 fps)

Pond DMH3: DMH3

Hydrograph



12-024 PROP

Type III 24-hr 2-year Rainfall=3.00"

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Summary for Pond P-2: Detention Pond, Mod

Inflow Area = 4.669 ac, 89.67% Impervious, Inflow Depth > 2.45" for 2-year event
 Inflow = 7.60 cfs @ 12.10 hrs, Volume= 0.953 af
 Outflow = 2.57 cfs @ 12.60 hrs, Volume= 0.952 af, Atten= 66%, Lag= 29.7 min
 Discarded = 2.57 cfs @ 12.60 hrs, Volume= 0.952 af
 Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Peak Elev= 234.86' @ 12.60 hrs Surf.Area= 11,094 sf Storage= 8,894 cf
 Flood Elev= 237.00' Surf.Area= 15,480 sf Storage= 37,112 cf

Plug-Flow detention time= 23.0 min calculated for 0.952 af (100% of inflow)
 Center-of-Mass det. time= 22.7 min (767.1 - 744.4)

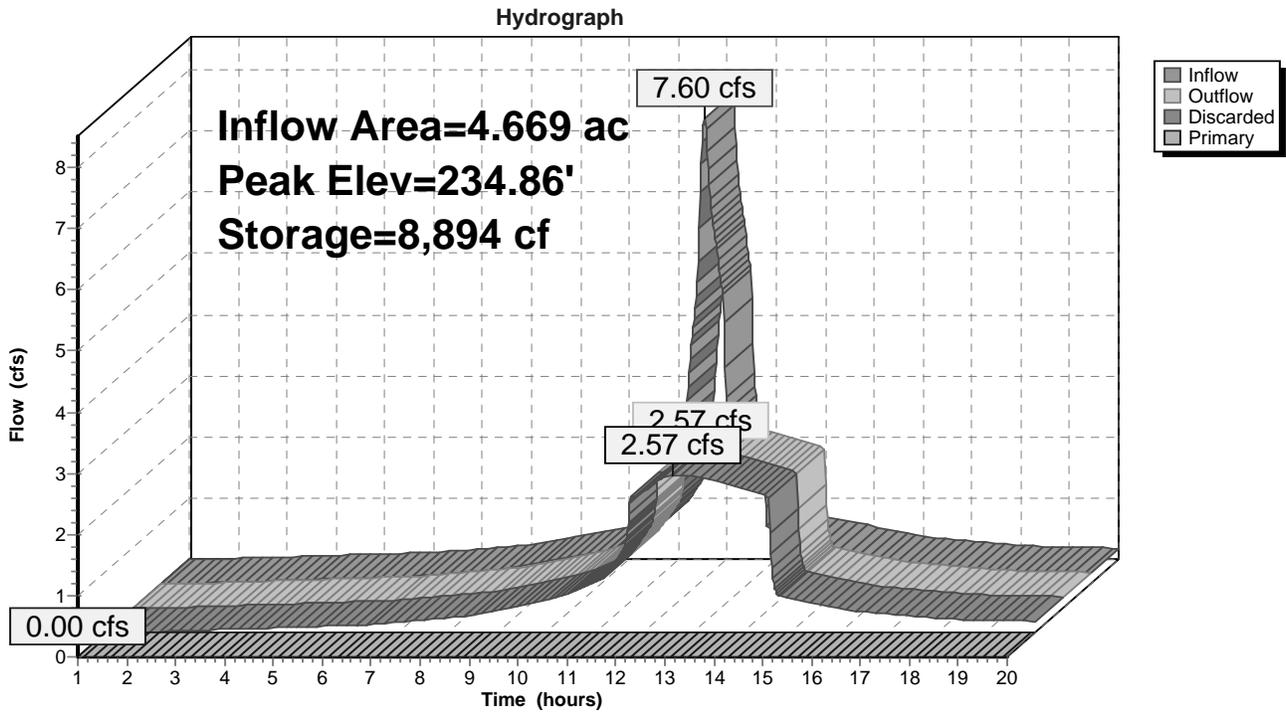
Volume	Invert	Avail.Storage	Storage Description
#1	234.00'	52,592 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
234.00	9,516	0	0
235.00	11,344	10,430	10,430
236.00	13,270	12,307	22,737
237.00	15,480	14,375	37,112
238.00	15,480	15,480	52,592

Device	Routing	Invert	Outlet Devices
#1	Primary	237.00'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Discarded	234.00'	10.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=2.57 cfs @ 12.60 hrs HW=234.86' (Free Discharge)
 ↑**2=Exfiltration** (Exfiltration Controls 2.57 cfs)

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=234.00' (Free Discharge)
 ↑**1=Orifice/Grate** (Controls 0.00 cfs)

Pond P-2: Detention Pond, Mod



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Type III 24-hr 10-year Rainfall=4.50"

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Time span=1.00-20.00 hrs, dt=0.02 hrs, 951 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1 EE: East Half, Developed Runoff Area=16,191 sf 45.07% Impervious Runoff Depth>3.01"
Flow Length=236' Slope=0.0110 '/ Tc=7.3 min CN=88 Runoff=1.31 cfs 0.093 af

Subcatchment 1 EE2: East Driveway Runoff Area=2,145 sf 52.87% Impervious Runoff Depth>3.11"
Flow Length=160' Slope=0.0068 '/ Tc=6.5 min CN=89 Runoff=0.18 cfs 0.013 af

Subcatchment 1 EW: West Half, Developed Runoff Area=29,199 sf 66.08% Impervious Runoff Depth>3.41"
Flow Length=230' Slope=0.0115 '/ Tc=5.9 min CN=92 Runoff=2.71 cfs 0.190 af

Subcatchment 1-A: Perimeter Areas Runoff Area=1,500 sf 0.00% Impervious Runoff Depth>2.21"
Flow Length=15' Slope=0.0050 '/ Tc=1.6 min CN=79 Runoff=0.11 cfs 0.006 af

Subcatchment A-10: Paved Area 10 to Runoff Area=9,700 sf 100.00% Impervious Runoff Depth>4.07"
Flow Length=200' Slope=0.0080 '/ Tc=4.6 min CN=98 Runoff=1.03 cfs 0.075 af

Subcatchment A-11: Big-Y Parking to Runoff Area=35,536 sf 100.00% Impervious Runoff Depth>4.06"
Flow Length=467' Slope=0.0113 '/ Tc=7.7 min CN=98 Runoff=3.38 cfs 0.276 af

Subcatchment A-12: Big-Y Parking to Runoff Area=64,556 sf 100.00% Impervious Runoff Depth>4.06"
Flow Length=445' Slope=0.0115 '/ Tc=7.3 min CN=98 Runoff=6.23 cfs 0.502 af

Subcatchment A-13: Big-Y Parking to CB Runoff Area=11,010 sf 100.00% Impervious Runoff Depth>4.07"
Flow Length=236' Slope=0.0150 '/ Tc=3.9 min CN=98 Runoff=1.19 cfs 0.086 af

Subcatchment A-3: Det Pond Runoff Area=14,650 sf 100.00% Impervious Runoff Depth>4.06"
Flow Length=156' Slope=0.0010 '/ Tc=10.8 min CN=98 Runoff=1.27 cfs 0.114 af

Subcatchment A-7: Driveway Area 7 to CB7 Runoff Area=5,375 sf 100.00% Impervious Runoff Depth>4.07"
Flow Length=200' Slope=0.0074 '/ Tc=4.8 min CN=98 Runoff=0.56 cfs 0.042 af

Subcatchment A-9: Driveway Area 9 to CB9 Runoff Area=15,000 sf 92.05% Impervious Runoff Depth>3.84"
Flow Length=395' Slope=0.0100 '/ Tc=8.0 min CN=96 Runoff=1.39 cfs 0.110 af

Reach 1E: CB 1: Det Pond Avg. Flow Depth=0.46' Max Vel=3.73 fps Inflow=1.31 cfs 0.093 af
12.0" Round Pipe n=0.013 L=34.0' S=0.0074 '/ Capacity=3.06 cfs Outflow=1.30 cfs 0.093 af

Reach 1W: CB2: Det Pond Avg. Flow Depth=1.00' Max Vel=3.48 fps Inflow=2.71 cfs 0.190 af
12.0" Round Pipe n=0.013 L=55.0' S=0.0045 '/ Capacity=2.40 cfs Outflow=2.50 cfs 0.190 af

Reach D-10: CB10:DMH2 Avg. Flow Depth=0.45' Max Vel=2.99 fps Inflow=1.03 cfs 0.075 af
12.0" Round Pipe n=0.013 L=50.0' S=0.0048 '/ Capacity=2.47 cfs Outflow=1.01 cfs 0.075 af

Reach D-11: CB11:DMH2 Avg. Flow Depth=1.00' Max Vel=4.24 fps Inflow=3.38 cfs 0.276 af
12.0" Round Pipe n=0.013 L=52.0' S=0.0067 '/ Capacity=2.92 cfs Outflow=2.92 cfs 0.276 af

Reach D-12: CB12:DMH3 Avg. Flow Depth=1.00' Max Vel=3.45 fps Inflow=6.23 cfs 0.502 af
12.0" Round Pipe n=0.013 L=56.0' S=0.0045 '/ Capacity=2.38 cfs Outflow=2.52 cfs 0.502 af

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Type III 24-hr 10-year Rainfall=4.50"

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Reach D-13: CB13:DMH3 Avg. Flow Depth=1.00' Max Vel=0.68 fps Inflow=1.19 cfs 0.086 af
 12.0" Round Pipe n=0.014 L=50.0' S=0.0002 '/ Capacity=0.47 cfs Outflow=0.50 cfs 0.086 af

Reach D-14: CB14:DMH3 Avg. Flow Depth=0.33' Max Vel=0.82 fps Inflow=0.18 cfs 0.013 af
 12.0" Round Pipe n=0.013 L=20.0' S=0.0005 '/ Capacity=0.80 cfs Outflow=0.18 cfs 0.013 af

Reach D-2: 15-Inch RCP Avg. Flow Depth=1.25' Max Vel=1.06 fps Inflow=5.28 cfs 0.462 af
 15.0" Round Pipe n=0.013 L=32.0' S=0.0003 '/ Capacity=1.14 cfs Outflow=1.19 cfs 0.462 af

Reach D-3: DMH3:DET POND Avg. Flow Depth=0.68' Max Vel=4.40 fps Inflow=3.04 cfs 0.600 af
 15.0" Round Pipe n=0.013 L=60.0' S=0.0065 '/ Capacity=5.21 cfs Outflow=3.03 cfs 0.600 af

Reach D-9: CB9:DMH2 Avg. Flow Depth=0.47' Max Vel=3.82 fps Inflow=1.39 cfs 0.110 af
 12.0" Round Pipe n=0.013 L=12.0' S=0.0075 '/ Capacity=3.09 cfs Outflow=1.38 cfs 0.110 af

Pond DMH2: DMH2 Peak Elev=234.90' Storage=0.001 af Inflow=5.26 cfs 0.462 af
 Outflow=5.28 cfs 0.462 af

Pond DMH3: DMH3 Peak Elev=234.81' Storage=0.001 af Inflow=3.05 cfs 0.601 af
 Outflow=3.04 cfs 0.600 af

Pond P-2: Detention Pond, Mod Peak Elev=235.47' Storage=15,938 cf Inflow=9.56 cfs 1.501 af
 Discarded=2.83 cfs 1.500 af Primary=0.00 cfs 0.000 af Outflow=2.83 cfs 1.500 af

Total Runoff Area = 4.703 ac Runoff Volume = 1.508 af Average Runoff Depth = 3.85"
10.98% Pervious = 0.517 ac 89.02% Impervious = 4.186 ac

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Type III 24-hr 10-year Rainfall=4.50"

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Summary for Subcatchment 1 EE: East Half, Developed Cond.

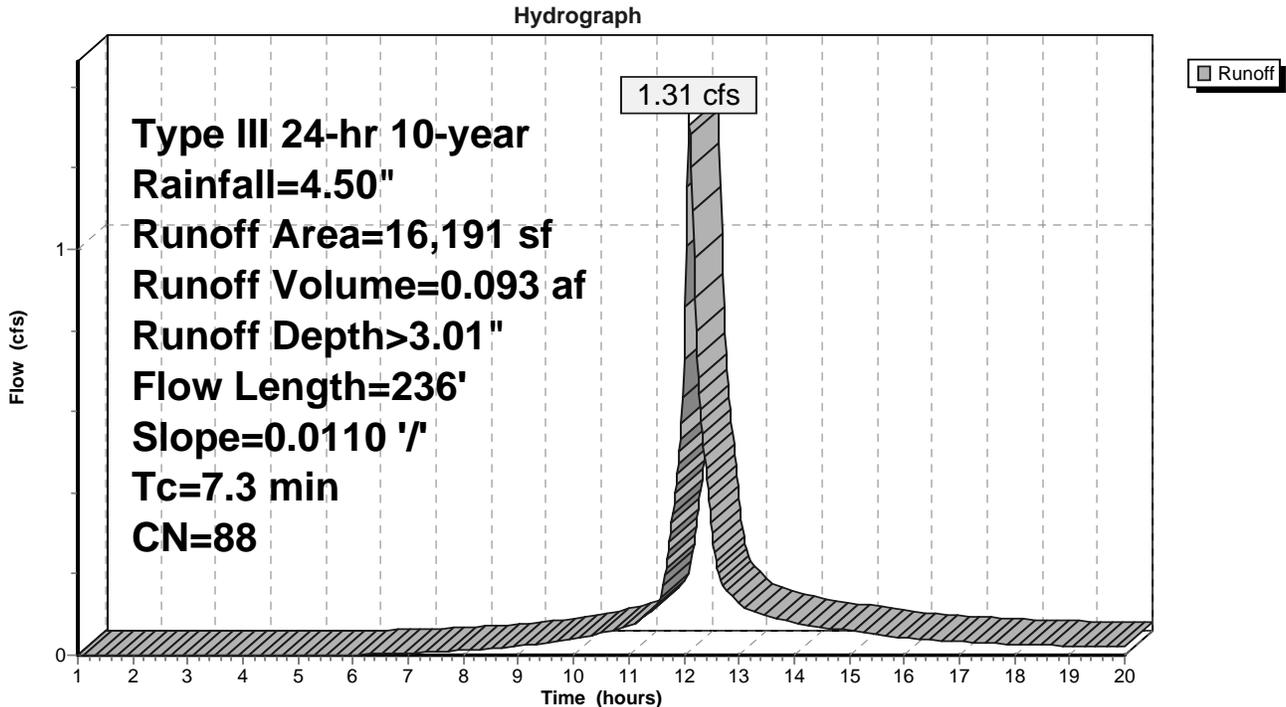
Runoff = 1.31 cfs @ 12.10 hrs, Volume= 0.093 af, Depth> 3.01"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 10-year Rainfall=4.50"

	Area (sf)	CN	Description
*	4,297	98	Parking & Driveway Pavement & Sidewalks
*	3,000	98	Building
*	2,240	79	Internal Landscaped Areas
*	6,654	79	Outer Landscaped Areas
	16,191	88	Weighted Average
	8,894		54.93% Pervious Area
	7,297		45.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	236	0.0110	0.54		Lag/CN Method,

Subcatchment 1 EE: East Half, Developed Cond.



Summary for Subcatchment 1 EE2: East Driveway

Runoff = 0.18 cfs @ 12.09 hrs, Volume= 0.013 af, Depth> 3.11"

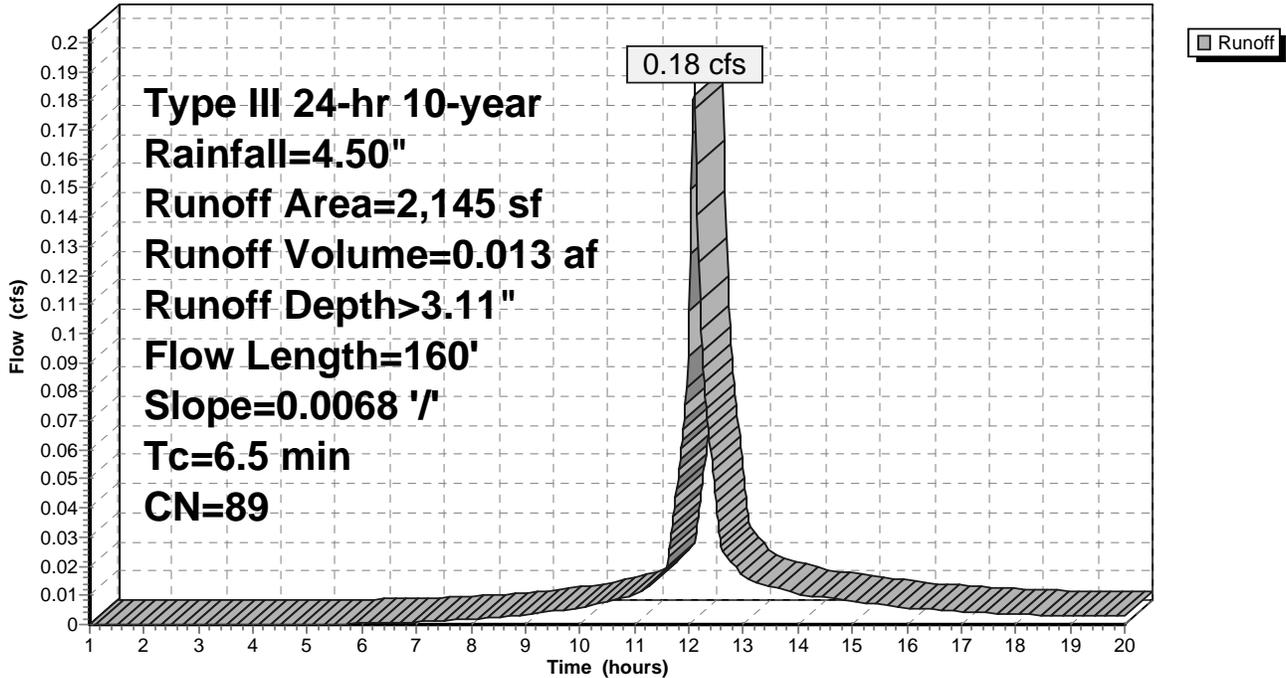
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 10-year Rainfall=4.50"

	Area (sf)	CN	Description
*	1,011	79	Grassed Island
*	1,134	98	1/2 of East Internal N-S Drive
	2,145	89	Weighted Average
	1,011		47.13% Pervious Area
	1,134		52.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	160	0.0068	0.41		Lag/CN Method,

Subcatchment 1 EE2: East Driveway

Hydrograph



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Type III 24-hr 10-year Rainfall=4.50"

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Summary for Subcatchment 1 EW: West Half, Developed Cond.

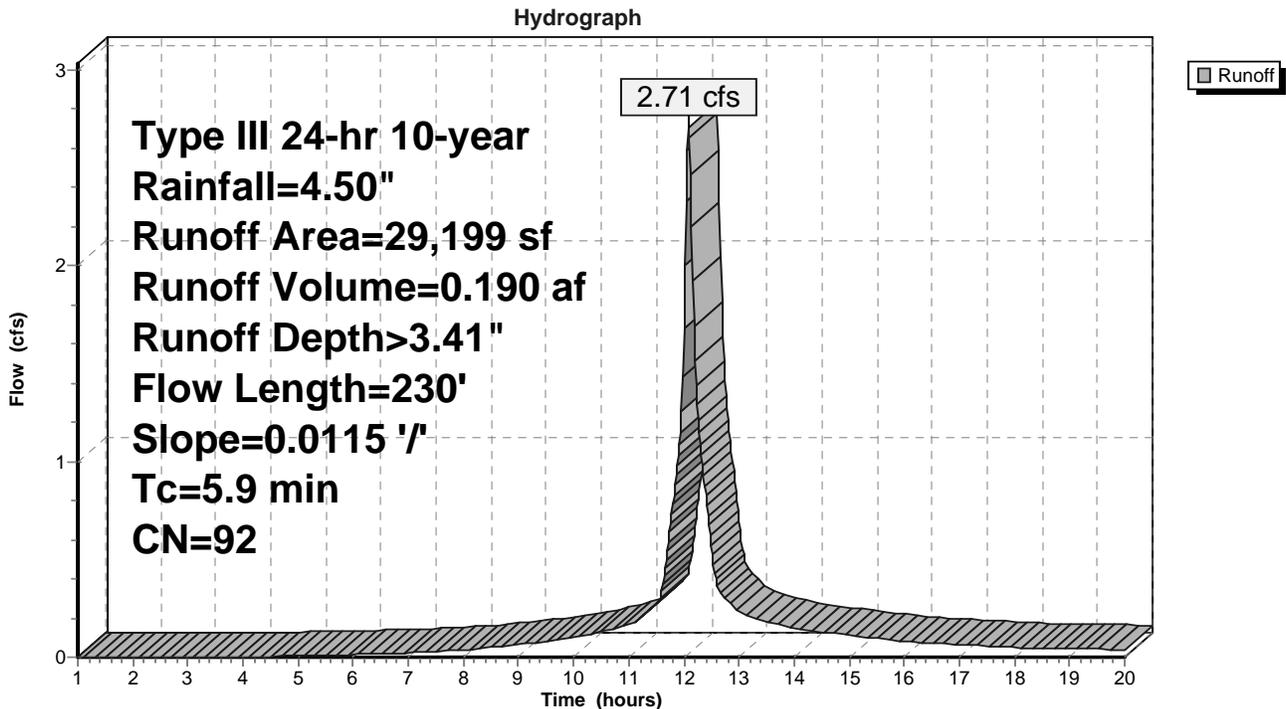
Runoff = 2.71 cfs @ 12.08 hrs, Volume= 0.190 af, Depth> 3.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 10-year Rainfall=4.50"

	Area (sf)	CN	Description
*	16,294	98	Parking & Driveway Pavement & Sidewalks
*	3,000	98	Building
*	2,240	79	Internal Landscaped Areas
*	7,665	79	Outer Landscaped Areas
	29,199	92	Weighted Average
	9,905		33.92% Pervious Area
	19,294		66.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	230	0.0115	0.65		Lag/CN Method,

Subcatchment 1 EW: West Half, Developed Cond.



Summary for Subcatchment 1-A: Perimeter Areas

Runoff = 0.11 cfs @ 12.03 hrs, Volume= 0.006 af, Depth> 2.21"

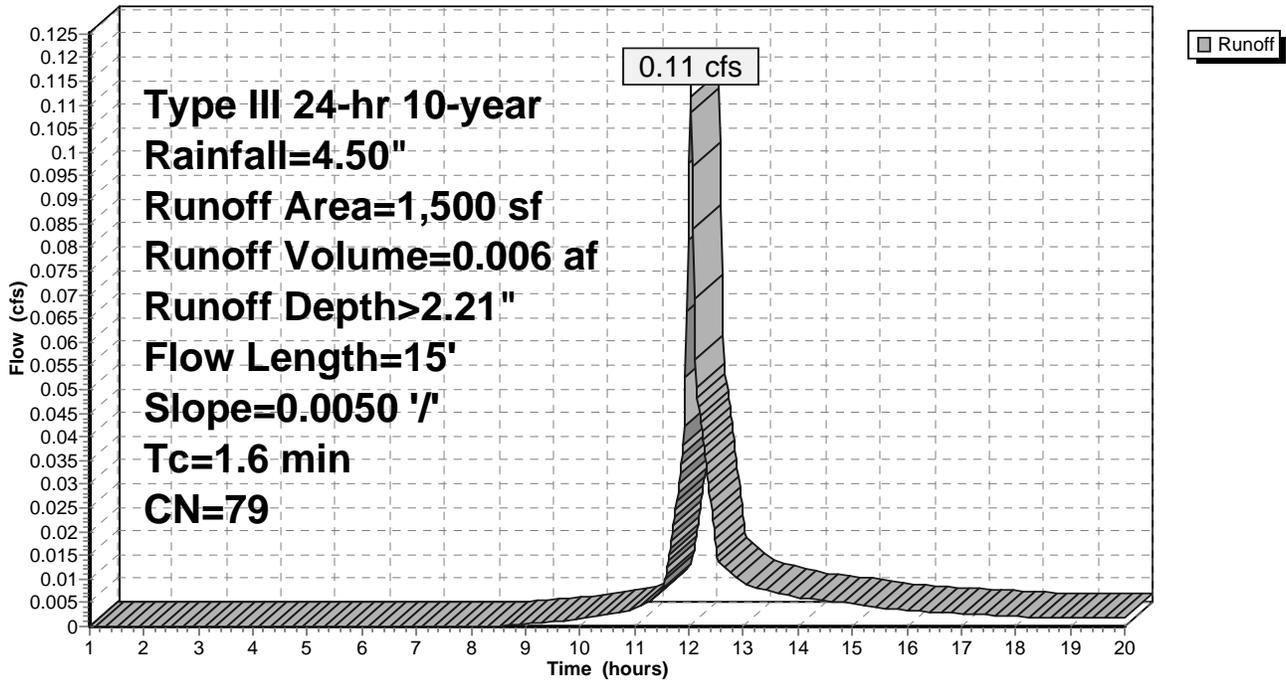
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 10-year Rainfall=4.50"

Area (sf)	CN	Description
* 1,500	79	Landscaped Perimter Prop
1,500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	15	0.0050	0.16		Lag/CN Method,

Subcatchment 1-A: Perimeter Areas

Hydrograph



Summary for Subcatchment A-10: Paved Area 10 to CB10

Runoff = 1.03 cfs @ 12.06 hrs, Volume= 0.075 af, Depth> 4.07"

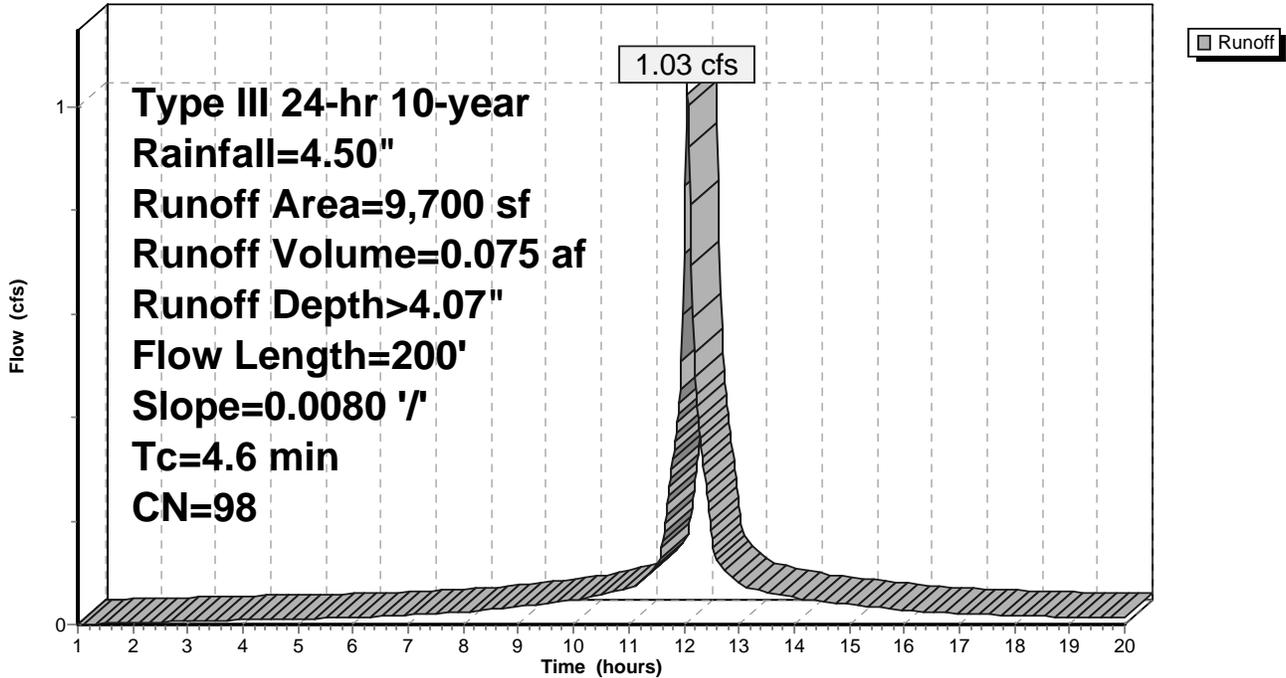
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 10-year Rainfall=4.50"

Area (sf)	CN	Description
* 9,700	98	Paved Apron and Travel Aisle
9,700		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	200	0.0080	0.72		Lag/CN Method,

Subcatchment A-10: Paved Area 10 to CB10

Hydrograph



Summary for Subcatchment A-11: Big-Y Parking to CB11

Runoff = 3.38 cfs @ 12.10 hrs, Volume= 0.276 af, Depth> 4.06"

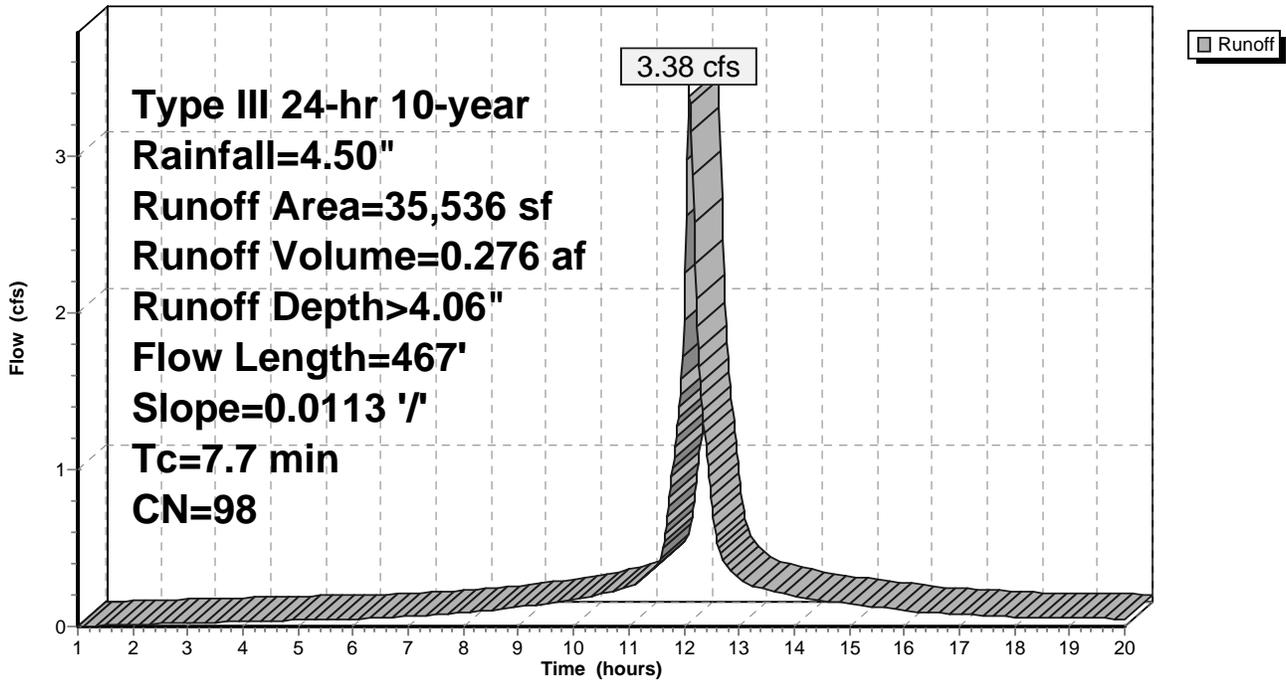
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 10-year Rainfall=4.50"

Area (sf)	CN	Description
* 35,536	98	Paved Parking
35,536		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	467	0.0113	1.01		Lag/CN Method,

Subcatchment A-11: Big-Y Parking to CB11

Hydrograph



Summary for Subcatchment A-12: Big-Y Parking to CB12

Runoff = 6.23 cfs @ 12.10 hrs, Volume= 0.502 af, Depth> 4.06"

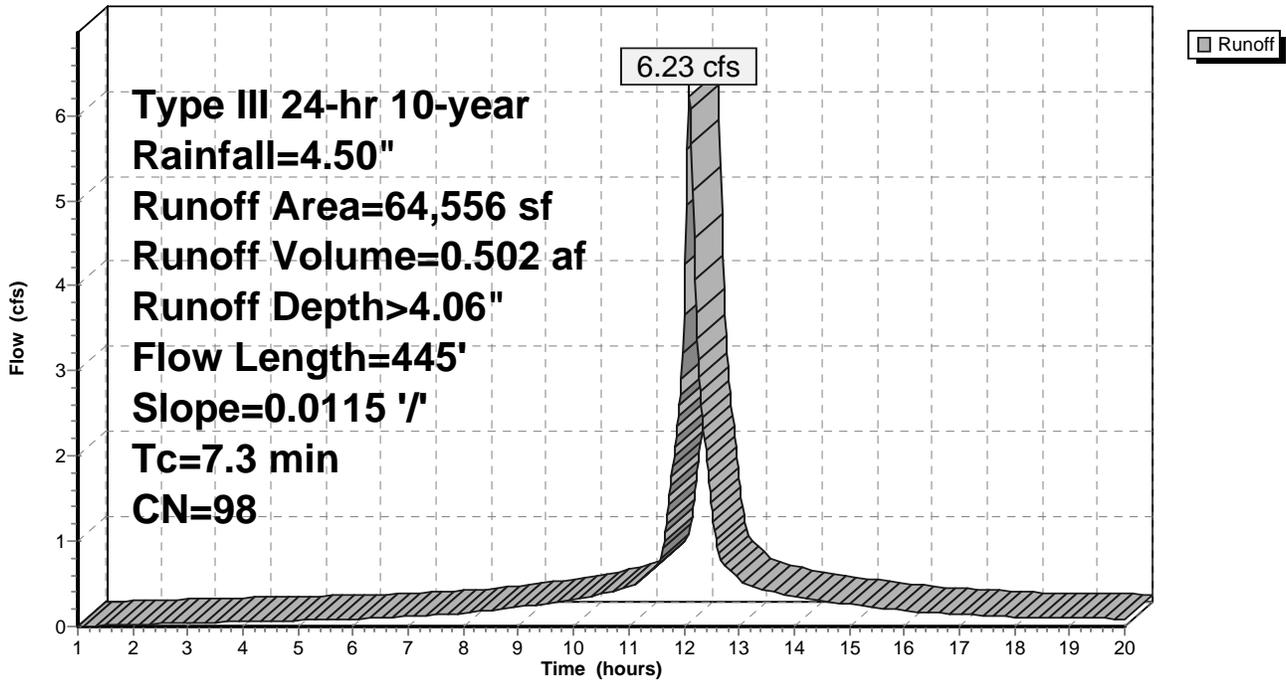
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 10-year Rainfall=4.50"

Area (sf)	CN	Description
* 64,556	98	Paved Parking
64,556		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	445	0.0115	1.01		Lag/CN Method,

Subcatchment A-12: Big-Y Parking to CB12

Hydrograph



Summary for Subcatchment A-13: Big-Y Parking to CB 13

Runoff = 1.19 cfs @ 12.06 hrs, Volume= 0.086 af, Depth> 4.07"

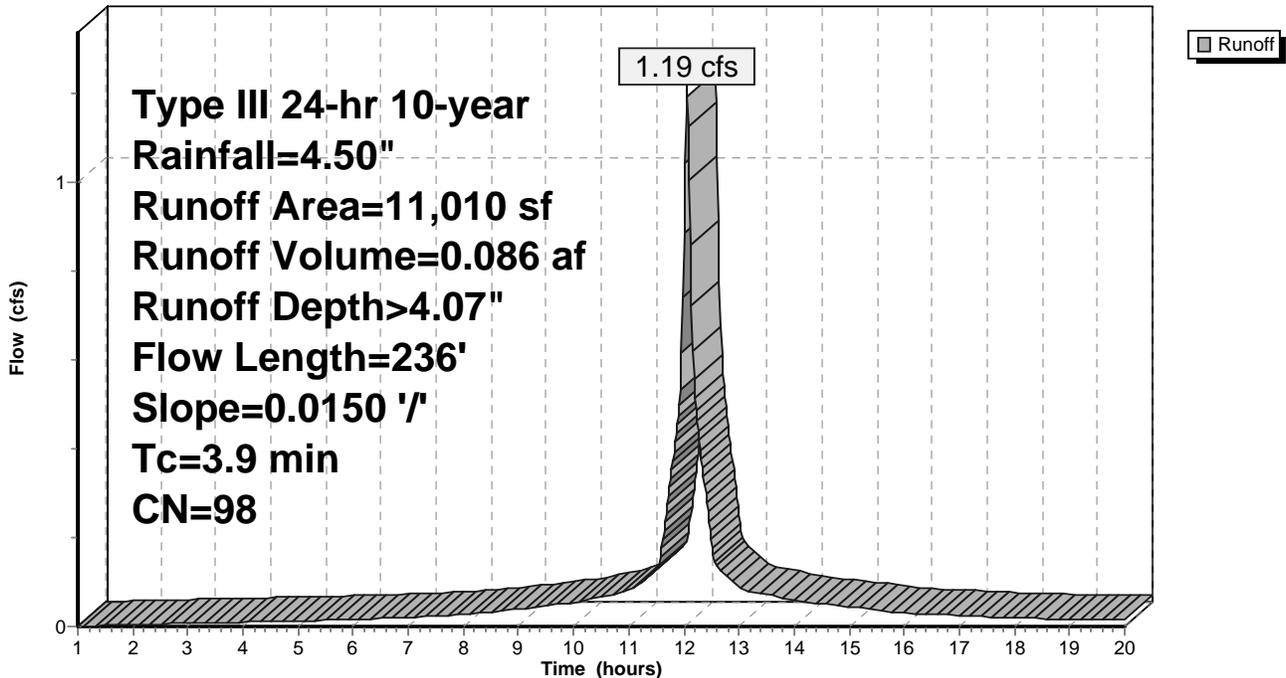
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 10-year Rainfall=4.50"

Area (sf)	CN	Description
* 11,010	98	Paved Parking
11,010		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	236	0.0150	1.02		Lag/CN Method,

Subcatchment A-13: Big-Y Parking to CB 13

Hydrograph



Summary for Subcatchment A-3: Det Pond

Runoff = 1.27 cfs @ 12.14 hrs, Volume= 0.114 af, Depth> 4.06"

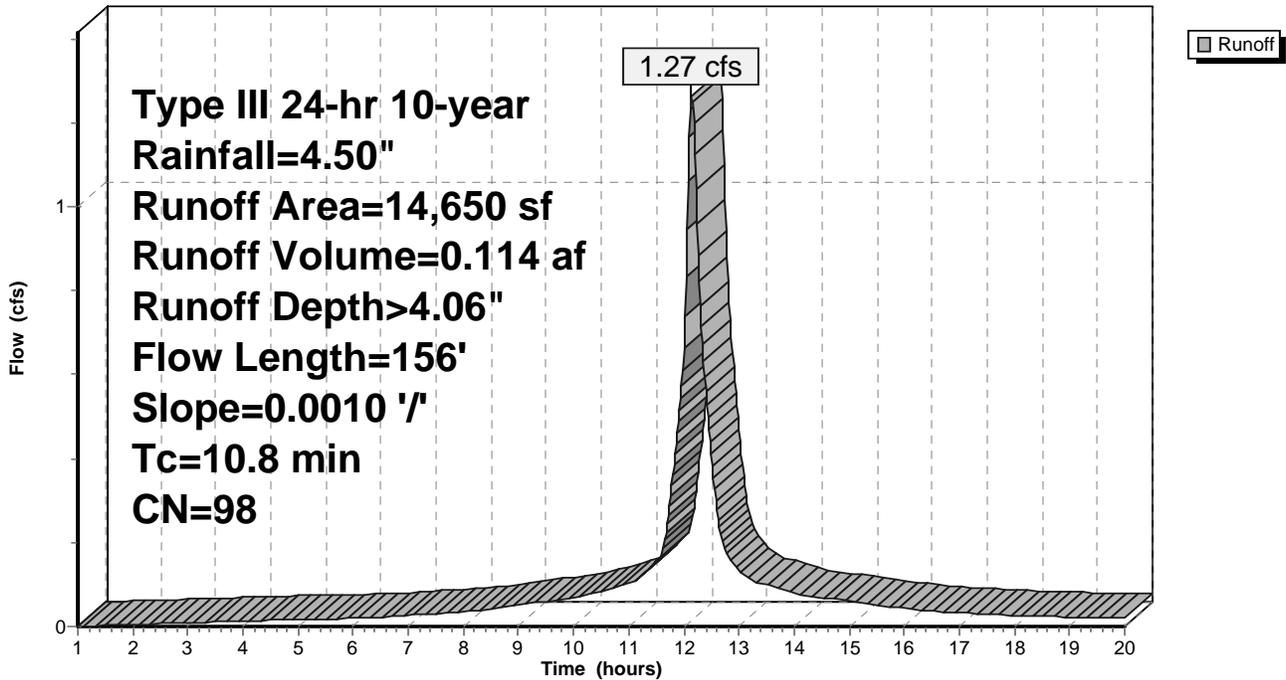
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-year Rainfall=4.50"

Area (sf)	CN	Description
* 14,650	98	Wet Det Pond@ Elv 237
14,650		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	156	0.0010	0.24		Lag/CN Method,

Subcatchment A-3: Det Pond

Hydrograph



Summary for Subcatchment A-7: Driveway Area 7 to CB7

Runoff = 0.56 cfs @ 12.07 hrs, Volume= 0.042 af, Depth> 4.07"

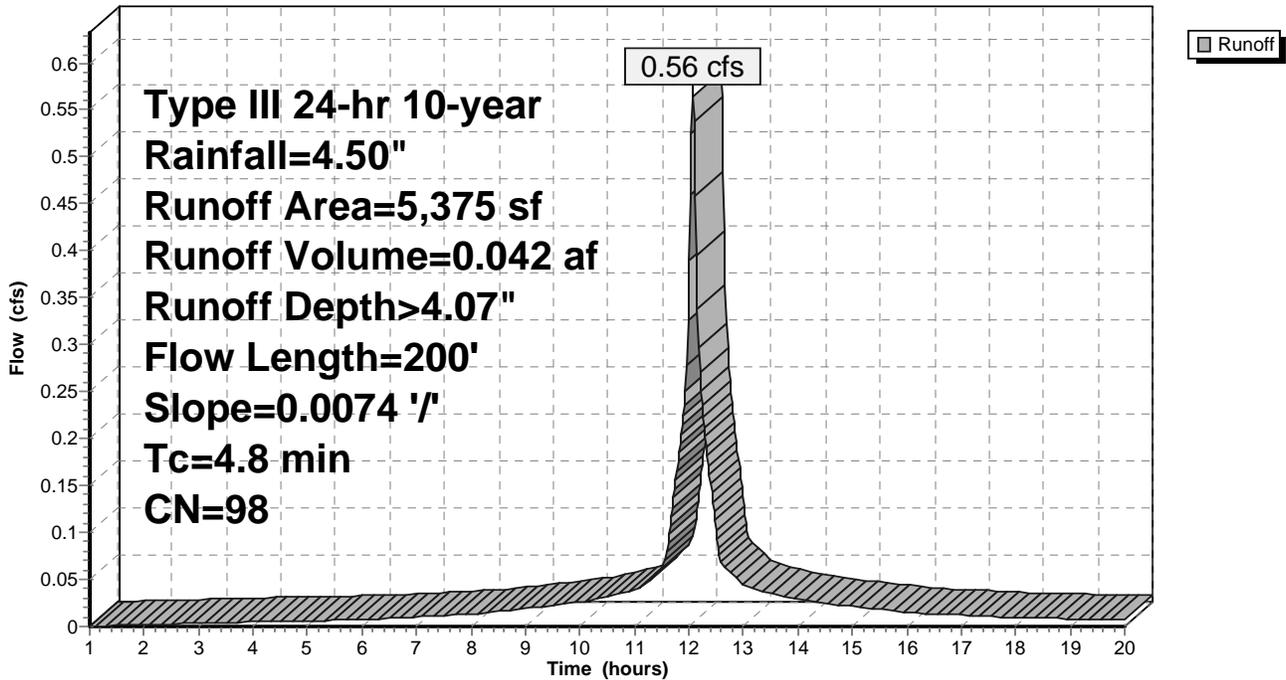
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 10-year Rainfall=4.50"

Area (sf)	CN	Description
* 5,375	98	Paved Driveway, northern half
5,375		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	200	0.0074	0.69		Lag/CN Method,

Subcatchment A-7: Driveway Area 7 to CB7

Hydrograph



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Type III 24-hr 10-year Rainfall=4.50"

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Summary for Subcatchment A-9: Driveway Area 9 to CB9

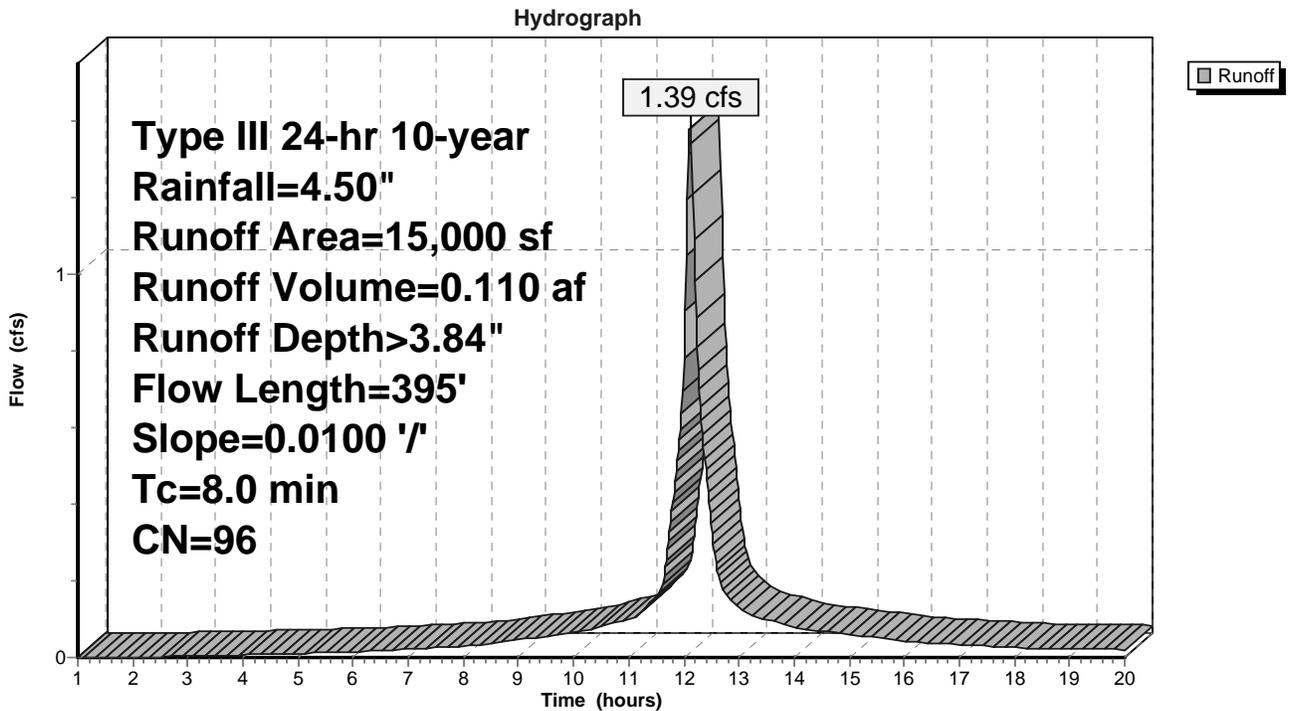
Runoff = 1.39 cfs @ 12.11 hrs, Volume= 0.110 af, Depth> 3.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-year Rainfall=4.50"

	Area (sf)	CN	Description
*	1,192	79	Grass Strip
*	13,808	98	N-S Driveway
	15,000	96	Weighted Average
	1,192		7.95% Pervious Area
	13,808		92.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	395	0.0100	0.82		Lag/CN Method,

Subcatchment A-9: Driveway Area 9 to CB9



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Type III 24-hr 10-year Rainfall=4.50"

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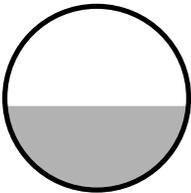
Summary for Reach 1E: CB 1: Det Pond

Inflow Area = 0.372 ac, 45.07% Impervious, Inflow Depth > 3.01" for 10-year event
 Inflow = 1.31 cfs @ 12.10 hrs, Volume= 0.093 af
 Outflow = 1.30 cfs @ 12.11 hrs, Volume= 0.093 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Max. Velocity= 3.73 fps, Min. Travel Time= 0.2 min
 Avg. Velocity = 1.37 fps, Avg. Travel Time= 0.4 min

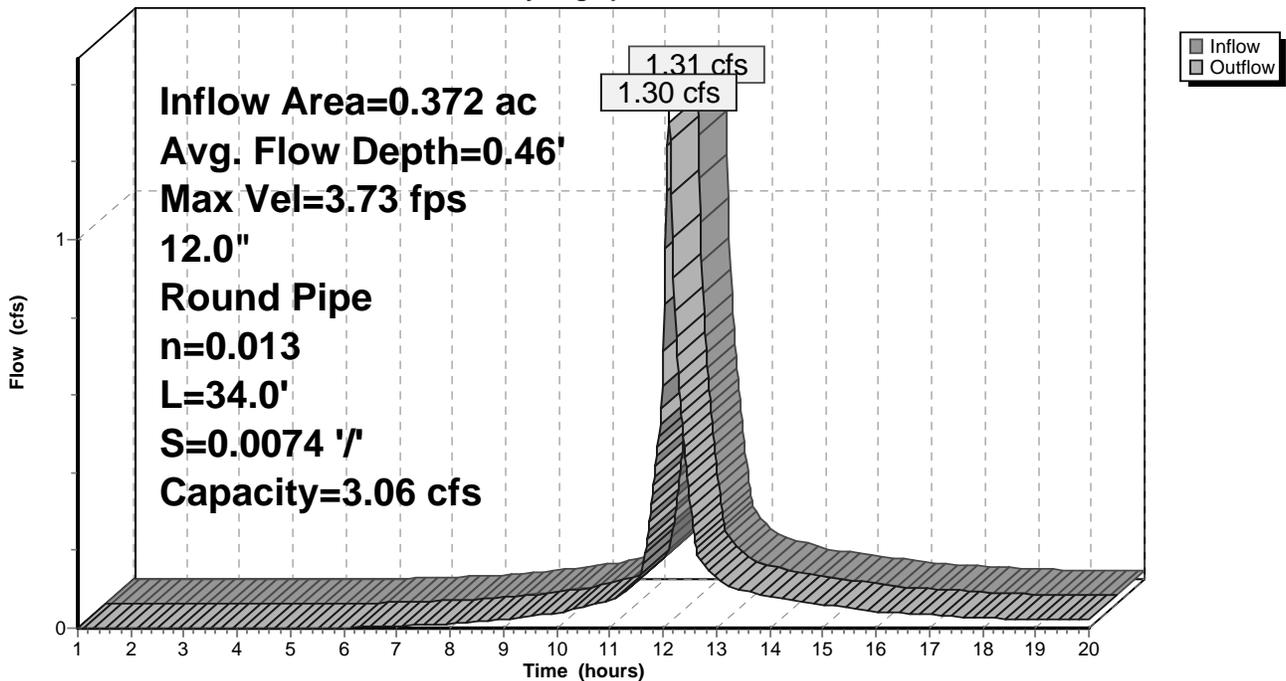
Peak Storage= 12 cf @ 12.10 hrs
 Average Depth at Peak Storage= 0.46'
 Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.06 cfs

12.0" Round Pipe
 n= 0.013
 Length= 34.0' Slope= 0.0074 '/'
 Inlet Invert= 234.00', Outlet Invert= 233.75'



Reach 1E: CB 1: Det Pond

Hydrograph



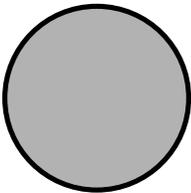
Summary for Reach 1W: CB2: Det Pond

Inflow Area = 0.670 ac, 66.08% Impervious, Inflow Depth > 3.41" for 10-year event
 Inflow = 2.71 cfs @ 12.08 hrs, Volume= 0.190 af
 Outflow = 2.50 cfs @ 12.07 hrs, Volume= 0.190 af, Atten= 8%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Max. Velocity= 3.48 fps, Min. Travel Time= 0.3 min
 Avg. Velocity = 1.37 fps, Avg. Travel Time= 0.7 min

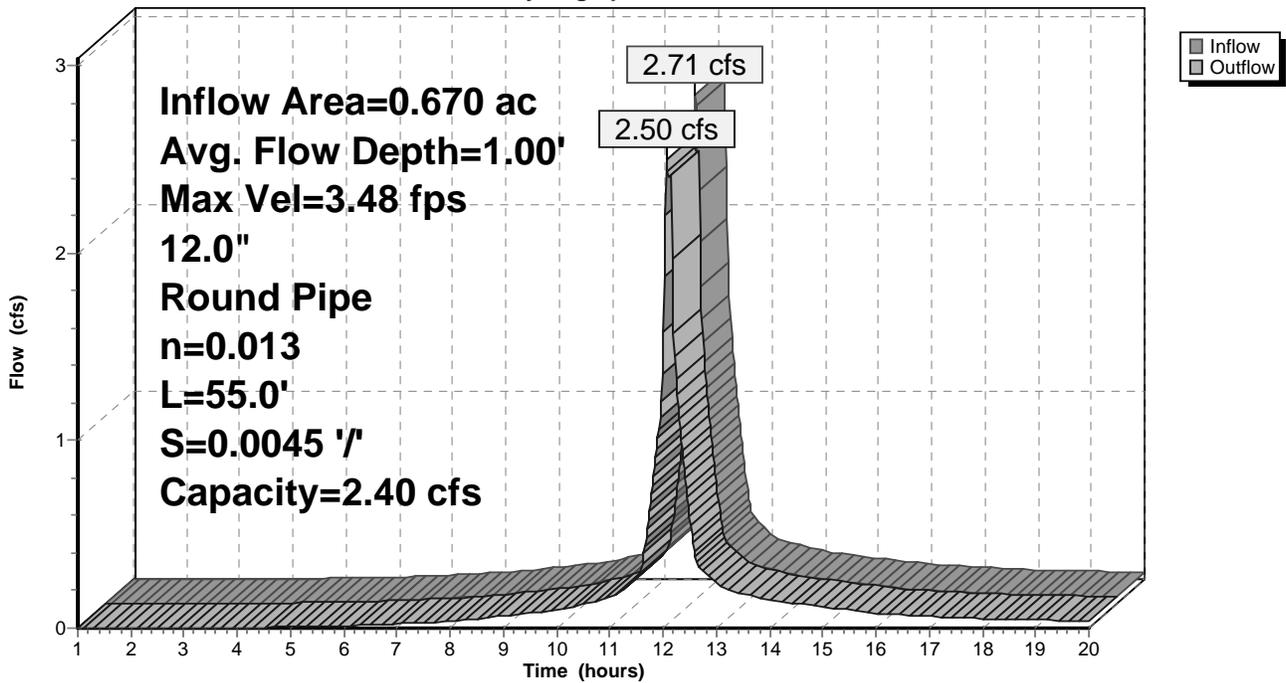
Peak Storage= 43 cf @ 12.08 hrs
 Average Depth at Peak Storage= 1.00'
 Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.40 cfs

12.0" Round Pipe
 n= 0.013
 Length= 55.0' Slope= 0.0045 '/
 Inlet Invert= 234.00', Outlet Invert= 233.75'



Reach 1W: CB2: Det Pond

Hydrograph



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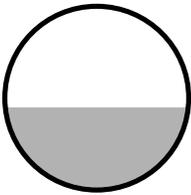
Summary for Reach D-10: CB10:DMH2

Inflow Area = 0.223 ac, 100.00% Impervious, Inflow Depth > 4.07" for 10-year event
 Inflow = 1.03 cfs @ 12.06 hrs, Volume= 0.075 af
 Outflow = 1.01 cfs @ 12.07 hrs, Volume= 0.075 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Max. Velocity= 2.99 fps, Min. Travel Time= 0.3 min
 Avg. Velocity = 1.04 fps, Avg. Travel Time= 0.8 min

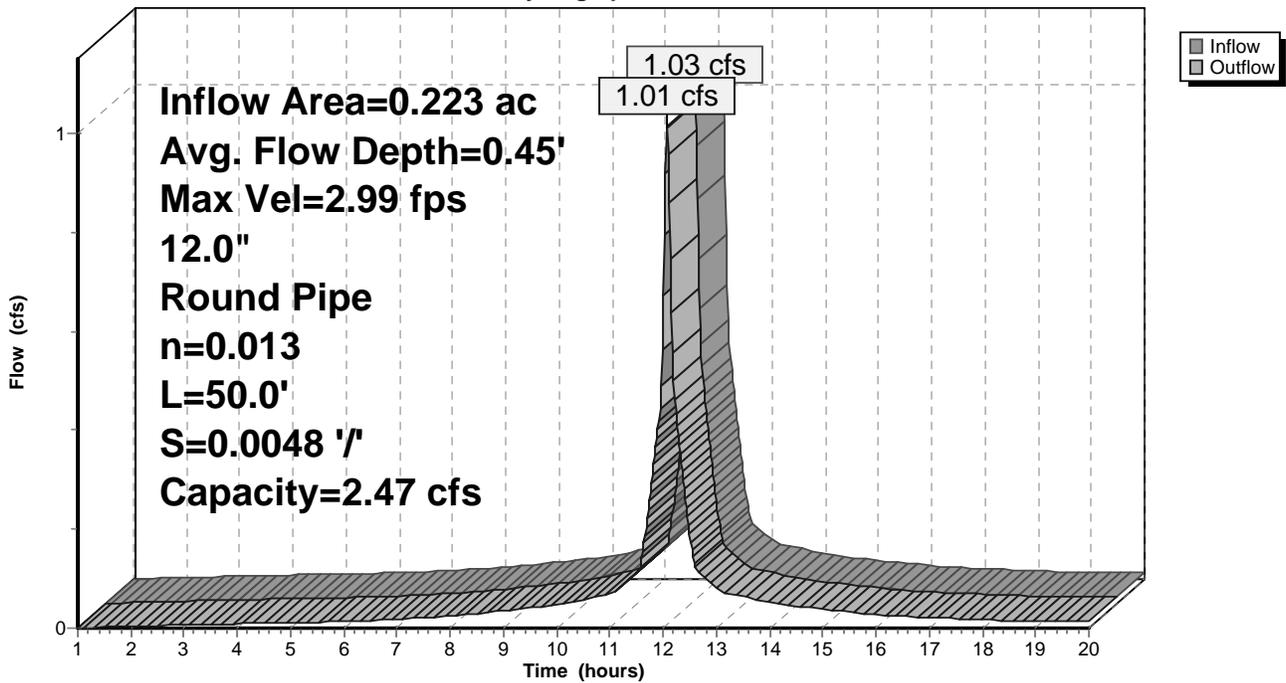
Peak Storage= 17 cf @ 12.07 hrs
 Average Depth at Peak Storage= 0.45'
 Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.47 cfs

12.0" Round Pipe
 n= 0.013
 Length= 50.0' Slope= 0.0048 '/'
 Inlet Invert= 234.04', Outlet Invert= 233.80'



Reach D-10: CB10:DMH2

Hydrograph



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Type III 24-hr 10-year Rainfall=4.50"

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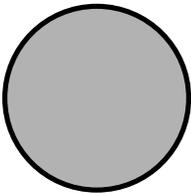
Summary for Reach D-11: CB11:DMH2

Inflow Area = 0.816 ac, 100.00% Impervious, Inflow Depth > 4.06" for 10-year event
 Inflow = 3.38 cfs @ 12.10 hrs, Volume= 0.276 af
 Outflow = 2.92 cfs @ 12.10 hrs, Volume= 0.276 af, Atten= 14%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Max. Velocity= 4.24 fps, Min. Travel Time= 0.2 min
 Avg. Velocity = 1.72 fps, Avg. Travel Time= 0.5 min

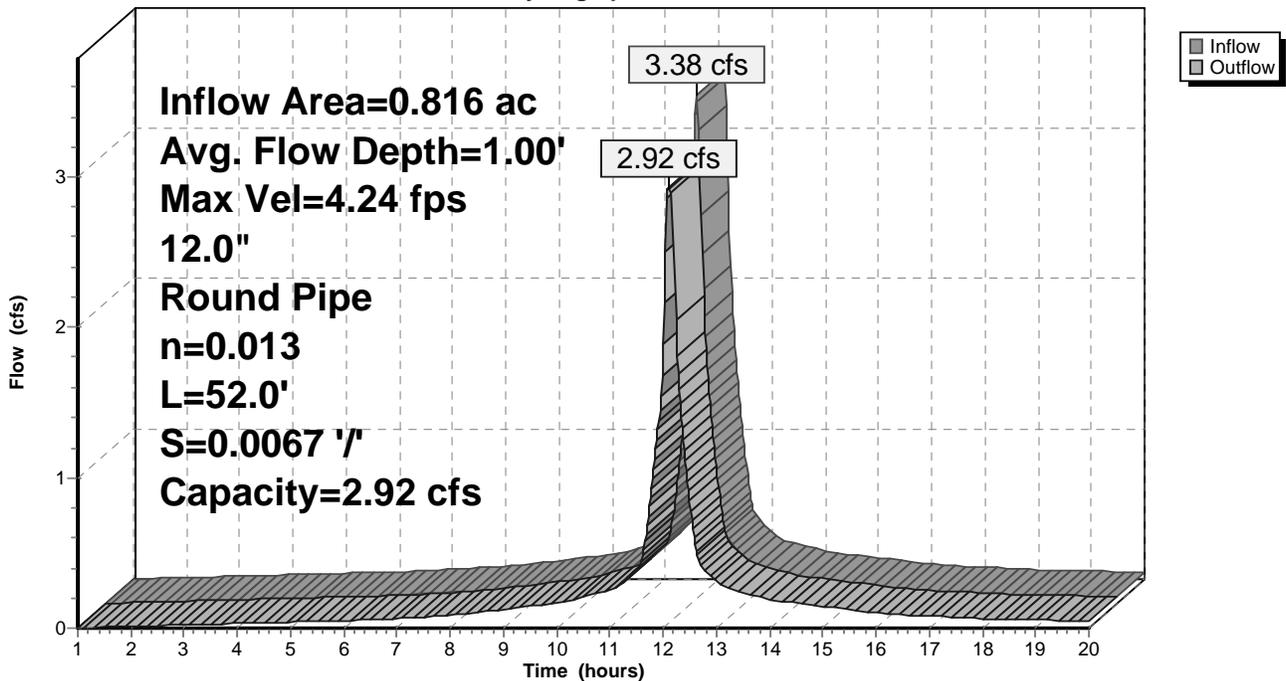
Peak Storage= 41 cf @ 12.08 hrs
 Average Depth at Peak Storage= 1.00'
 Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.92 cfs

12.0" Round Pipe
 n= 0.013
 Length= 52.0' Slope= 0.0067 '/'
 Inlet Invert= 233.95', Outlet Invert= 233.60'



Reach D-11: CB11:DMH2

Hydrograph



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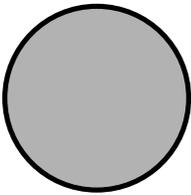
Summary for Reach D-12: CB12:DMH3

Inflow Area = 1.482 ac, 100.00% Impervious, Inflow Depth > 4.06" for 10-year event
 Inflow = 6.23 cfs @ 12.10 hrs, Volume= 0.502 af
 Outflow = 2.52 cfs @ 11.92 hrs, Volume= 0.502 af, Atten= 59%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Max. Velocity= 3.45 fps, Min. Travel Time= 0.3 min
 Avg. Velocity = 1.75 fps, Avg. Travel Time= 0.5 min

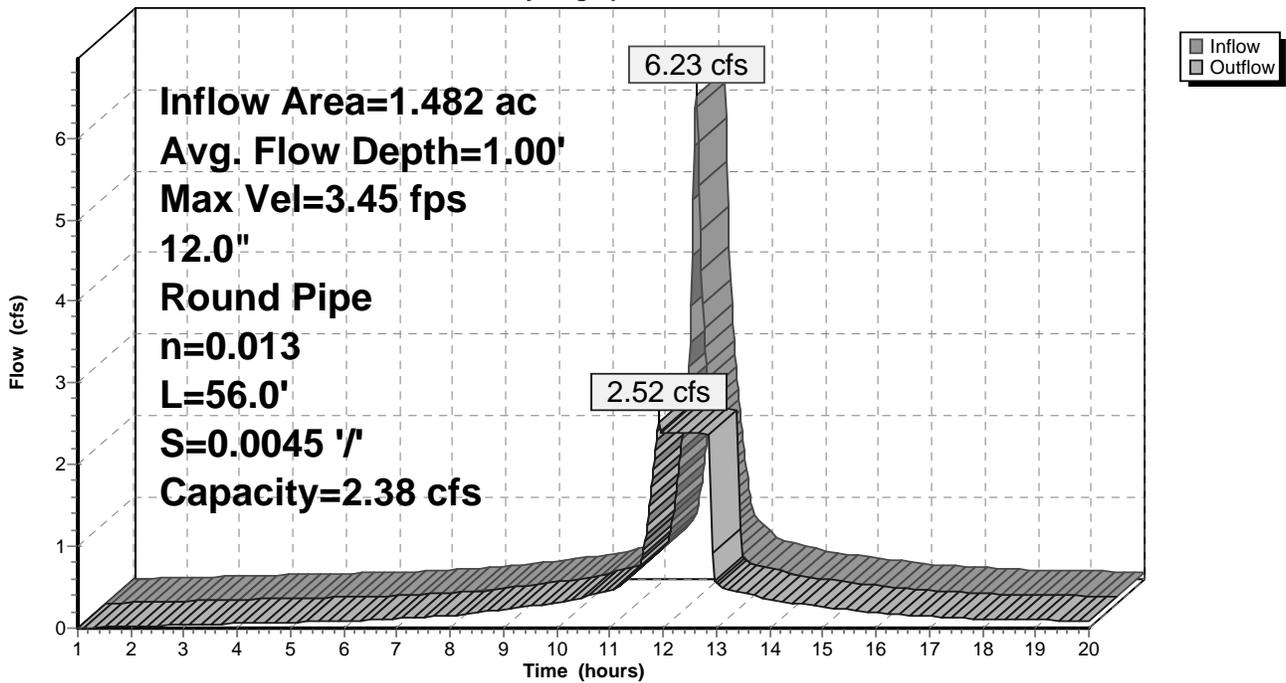
Peak Storage= 44 cf @ 11.94 hrs
 Average Depth at Peak Storage= 1.00'
 Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.38 cfs

12.0" Round Pipe
 n= 0.013
 Length= 56.0' Slope= 0.0045 '/
 Inlet Invert= 234.29', Outlet Invert= 234.04'



Reach D-12: CB12:DMH3

Hydrograph



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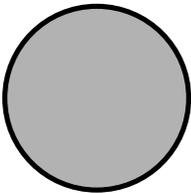
Summary for Reach D-13: CB13:DMH3

Inflow Area = 0.253 ac, 100.00% Impervious, Inflow Depth > 4.07" for 10-year event
 Inflow = 1.19 cfs @ 12.06 hrs, Volume= 0.086 af
 Outflow = 0.50 cfs @ 11.96 hrs, Volume= 0.086 af, Atten= 58%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Max. Velocity= 0.68 fps, Min. Travel Time= 1.2 min
 Avg. Velocity = 0.33 fps, Avg. Travel Time= 2.5 min

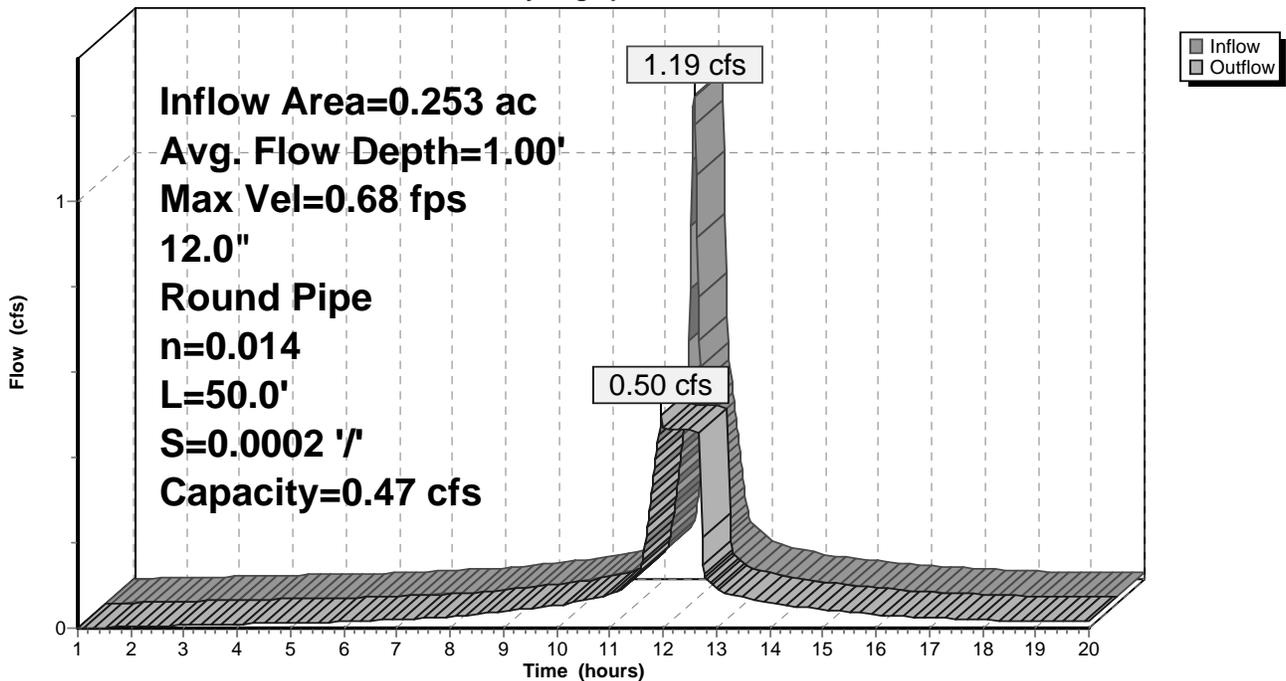
Peak Storage= 39 cf @ 11.96 hrs
 Average Depth at Peak Storage= 1.00'
 Bank-Full Depth= 1.00', Capacity at Bank-Full= 0.47 cfs

12.0" Round Pipe
 n= 0.014
 Length= 50.0' Slope= 0.0002 '/'
 Inlet Invert= 233.78', Outlet Invert= 233.77'



Reach D-13: CB13:DMH3

Hydrograph



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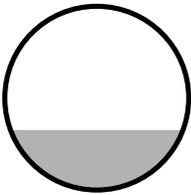
Summary for Reach D-14: CB14:DMH3

Inflow Area = 0.049 ac, 52.87% Impervious, Inflow Depth > 3.11" for 10-year event
Inflow = 0.18 cfs @ 12.09 hrs, Volume= 0.013 af
Outflow = 0.18 cfs @ 12.10 hrs, Volume= 0.013 af, Atten= 1%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.82 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 0.29 fps, Avg. Travel Time= 1.1 min

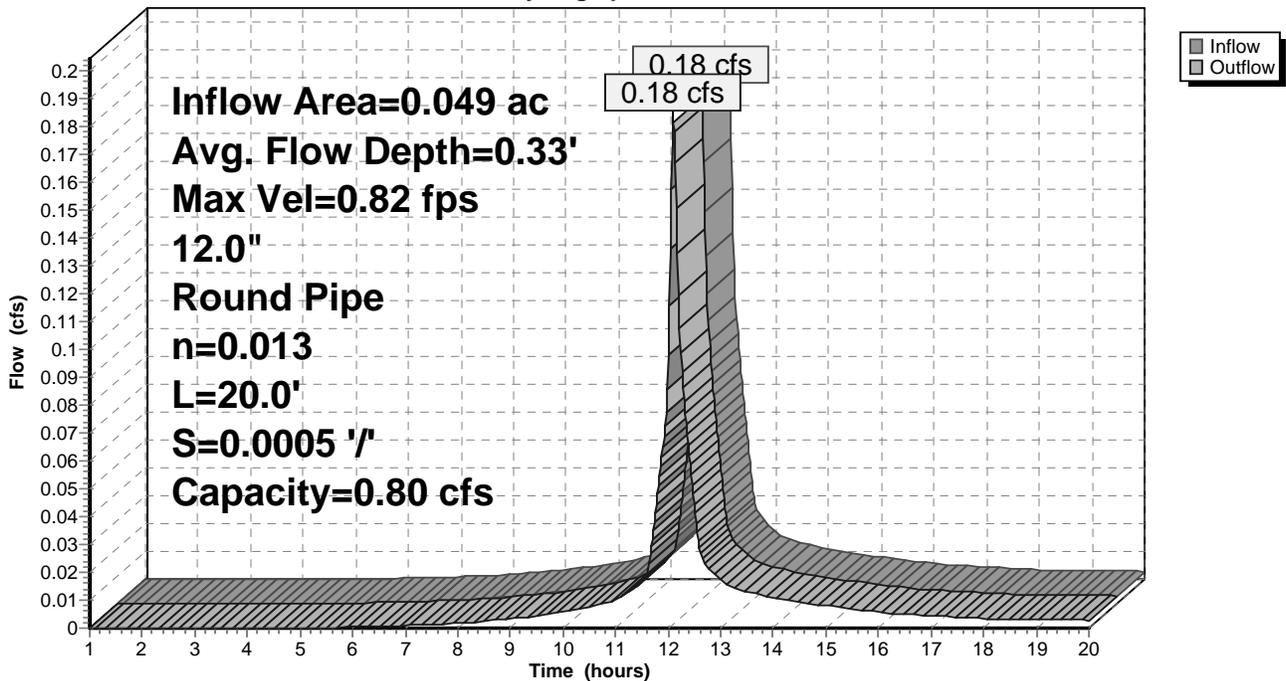
Peak Storage= 4 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.33'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 0.80 cfs

12.0" Round Pipe
n= 0.013
Length= 20.0' Slope= 0.0005 '/'
Inlet Invert= 233.86', Outlet Invert= 233.85'



Reach D-14: CB14:DMH3

Hydrograph



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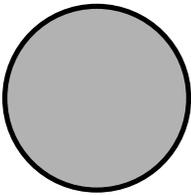
Summary for Reach D-2: 15-Inch RCP

Inflow Area = 1.383 ac, 98.02% Impervious, Inflow Depth > 4.01" for 10-year event
 Inflow = 5.28 cfs @ 12.09 hrs, Volume= 0.462 af
 Outflow = 1.19 cfs @ 11.73 hrs, Volume= 0.462 af, Atten= 77%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Max. Velocity= 1.06 fps, Min. Travel Time= 0.5 min
 Avg. Velocity = 0.64 fps, Avg. Travel Time= 0.8 min

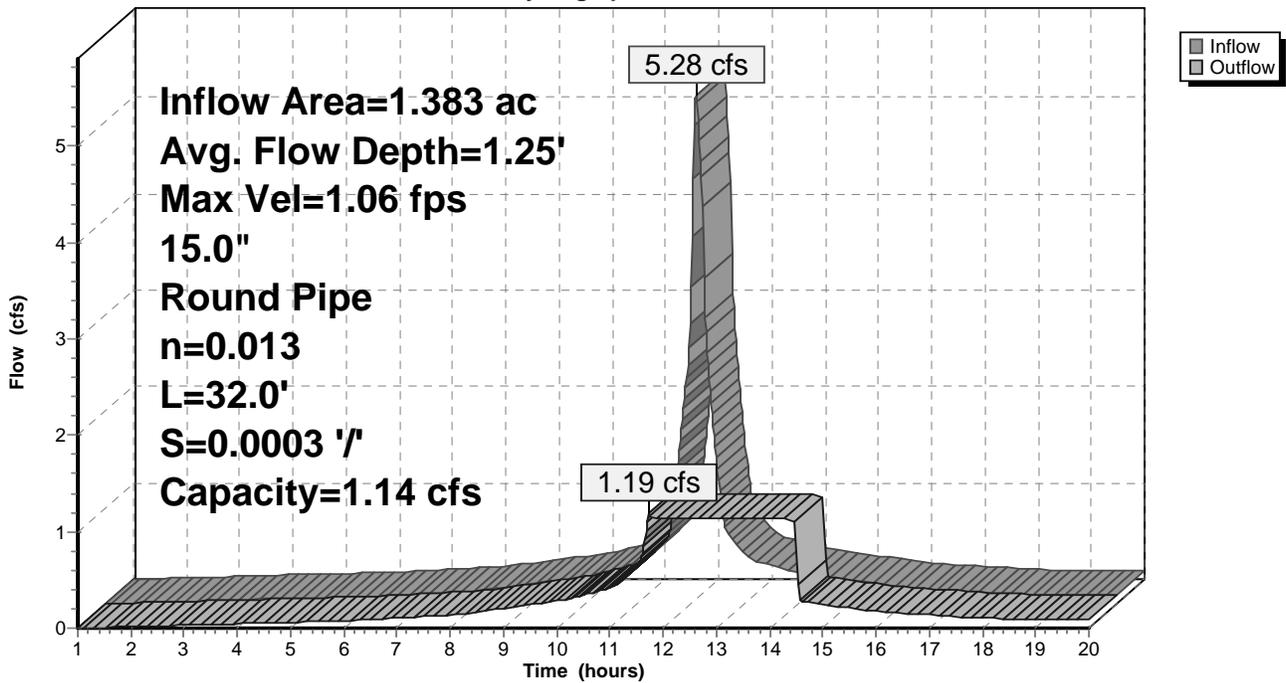
Peak Storage= 39 cf @ 11.74 hrs
 Average Depth at Peak Storage= 1.25'
 Bank-Full Depth= 1.25', Capacity at Bank-Full= 1.14 cfs

15.0" Round Pipe
 n= 0.013
 Length= 32.0' Slope= 0.0003 '/
 Inlet Invert= 233.48', Outlet Invert= 233.47'



Reach D-2: 15-Inch RCP

Hydrograph



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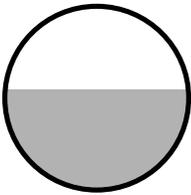
Summary for Reach D-3: DMH3:DET POND

Inflow Area = 1.784 ac, 98.70% Impervious, Inflow Depth > 4.04" for 10-year event
 Inflow = 3.04 cfs @ 11.92 hrs, Volume= 0.600 af
 Outflow = 3.03 cfs @ 12.11 hrs, Volume= 0.600 af, Atten= 0%, Lag= 11.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Max. Velocity= 4.40 fps, Min. Travel Time= 0.2 min
 Avg. Velocity = 2.09 fps, Avg. Travel Time= 0.5 min

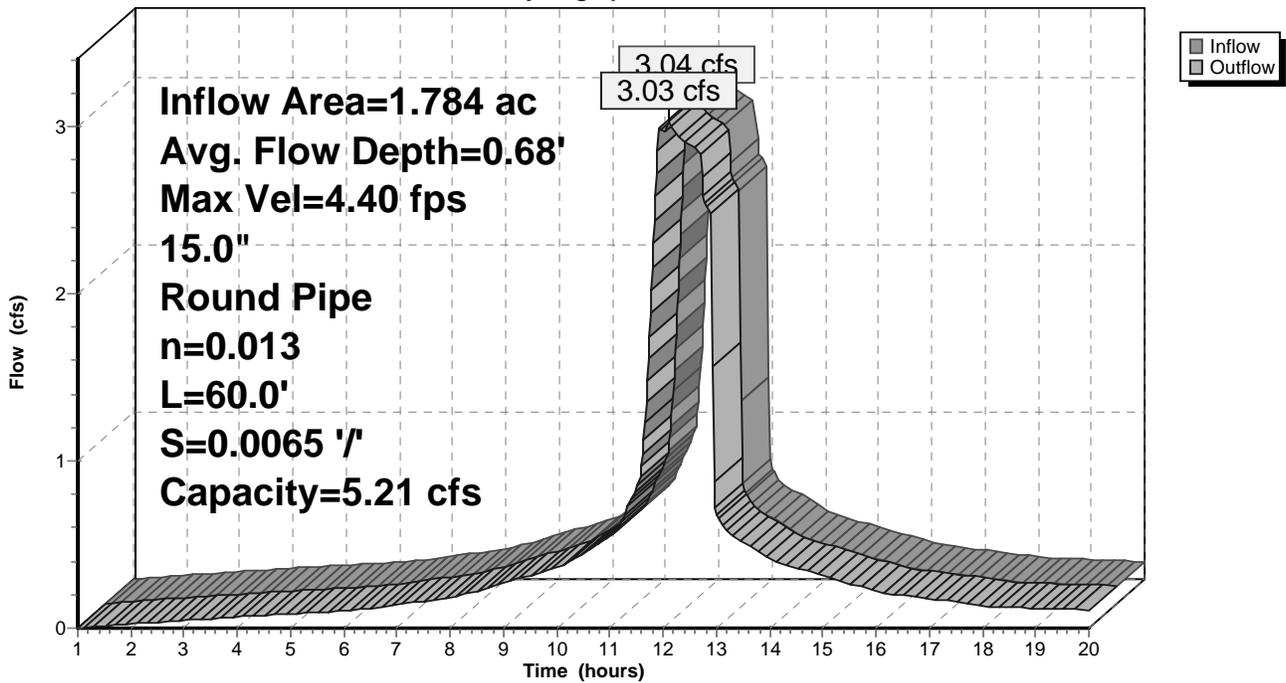
Peak Storage= 41 cf @ 12.11 hrs
 Average Depth at Peak Storage= 0.68'
 Bank-Full Depth= 1.25', Capacity at Bank-Full= 5.21 cfs

15.0" Round Pipe
 n= 0.013 Concrete pipe, bends & connections
 Length= 60.0' Slope= 0.0065 '/
 Inlet Invert= 233.91', Outlet Invert= 233.52'



Reach D-3: DMH3:DET POND

Hydrograph



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Type III 24-hr 10-year Rainfall=4.50"

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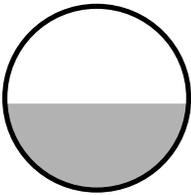
Summary for Reach D-9: CB9:DMH2

Inflow Area = 0.344 ac, 92.05% Impervious, Inflow Depth > 3.84" for 10-year event
 Inflow = 1.39 cfs @ 12.11 hrs, Volume= 0.110 af
 Outflow = 1.38 cfs @ 12.11 hrs, Volume= 0.110 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Max. Velocity= 3.82 fps, Min. Travel Time= 0.1 min
 Avg. Velocity = 1.36 fps, Avg. Travel Time= 0.1 min

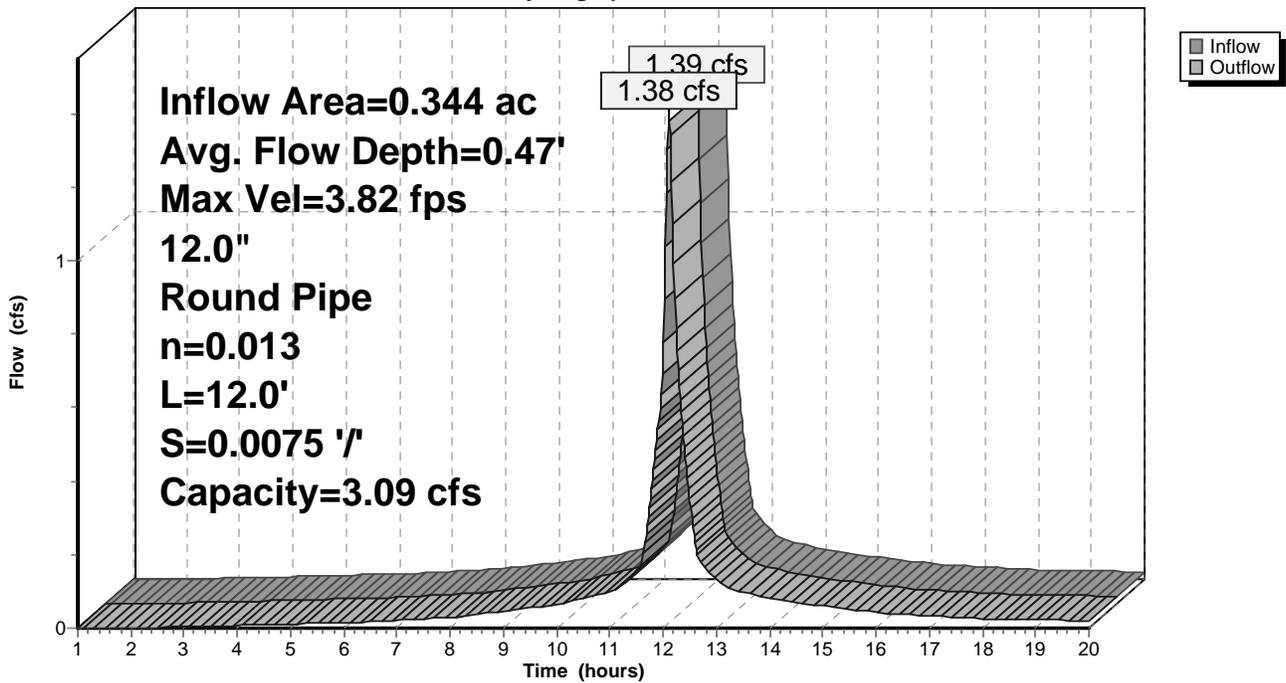
Peak Storage= 4 cf @ 12.11 hrs
 Average Depth at Peak Storage= 0.47'
 Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.09 cfs

12.0" Round Pipe
 n= 0.013
 Length= 12.0' Slope= 0.0075 '/'
 Inlet Invert= 233.82', Outlet Invert= 233.73'



Reach D-9: CB9:DMH2

Hydrograph



Summary for Pond DMH2: DMH2

Inflow Area = 1.383 ac, 98.02% Impervious, Inflow Depth > 4.01" for 10-year event
 Inflow = 5.26 cfs @ 12.09 hrs, Volume= 0.462 af
 Outflow = 5.28 cfs @ 12.09 hrs, Volume= 0.462 af, Atten= 0%, Lag= 0.0 min
 Primary = 5.28 cfs @ 12.09 hrs, Volume= 0.462 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Peak Elev= 234.90' @ 12.09 hrs Surf.Area= 0.001 ac Storage= 0.001 af

Plug-Flow detention time= 0.3 min calculated for 0.462 af (100% of inflow)
 Center-of-Mass det. time= 0.2 min (727.5 - 727.3)

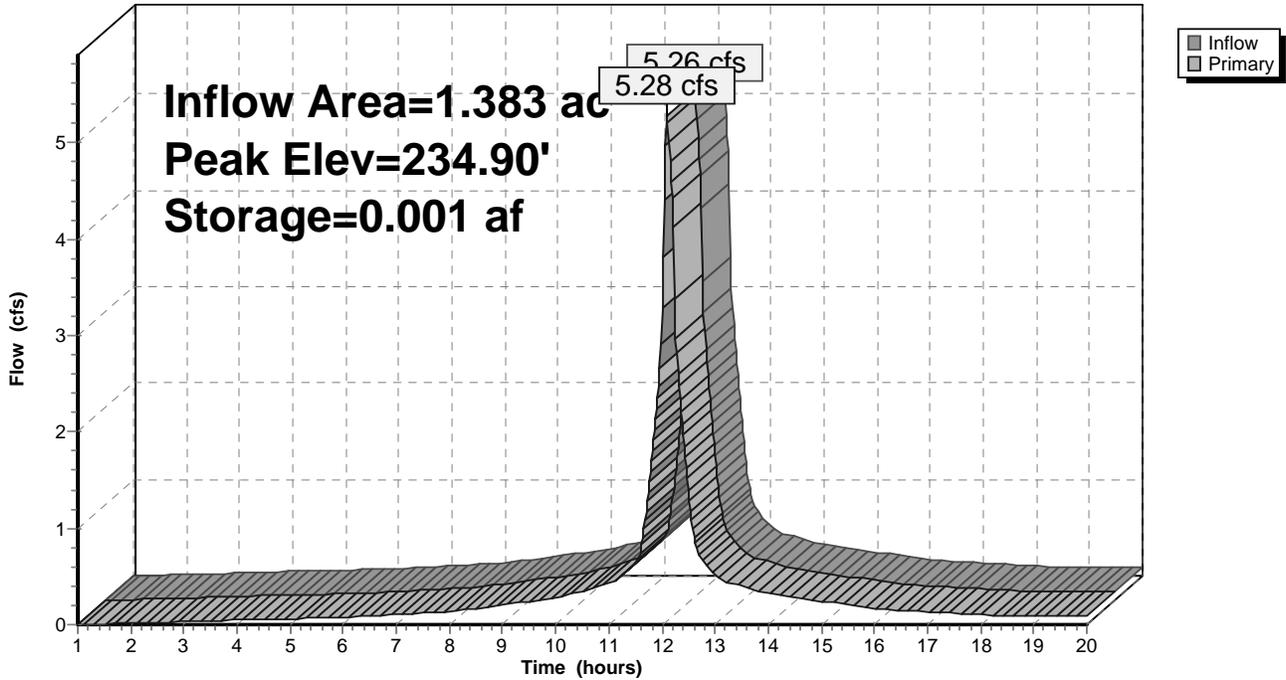
Volume	Invert	Avail.Storage	Storage Description
#1	233.48'	0.003 af	6.00'D x 4.52'H Vertical Cone/Cylinder

Device	Routing	Invert	Outlet Devices
#1	Primary	233.48'	15.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=5.25 cfs @ 12.09 hrs HW=234.89' (Free Discharge)
 ↳ **1=Orifice/Grate** (Orifice Controls 5.25 cfs @ 4.27 fps)

Pond DMH2: DMH2

Hydrograph



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Type III 24-hr 10-year Rainfall=4.50"

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Summary for Pond DMH3: DMH3

Inflow Area = 1.784 ac, 98.70% Impervious, Inflow Depth > 4.04" for 10-year event
 Inflow = 3.05 cfs @ 11.92 hrs, Volume= 0.601 af
 Outflow = 3.04 cfs @ 11.92 hrs, Volume= 0.600 af, Atten= 0%, Lag= 0.1 min
 Primary = 3.04 cfs @ 11.92 hrs, Volume= 0.600 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Peak Elev= 234.81' @ 11.92 hrs Surf.Area= 0.001 ac Storage= 0.001 af

Plug-Flow detention time= 0.3 min calculated for 0.600 af (100% of inflow)
 Center-of-Mass det. time= 0.2 min (728.9 - 728.7)

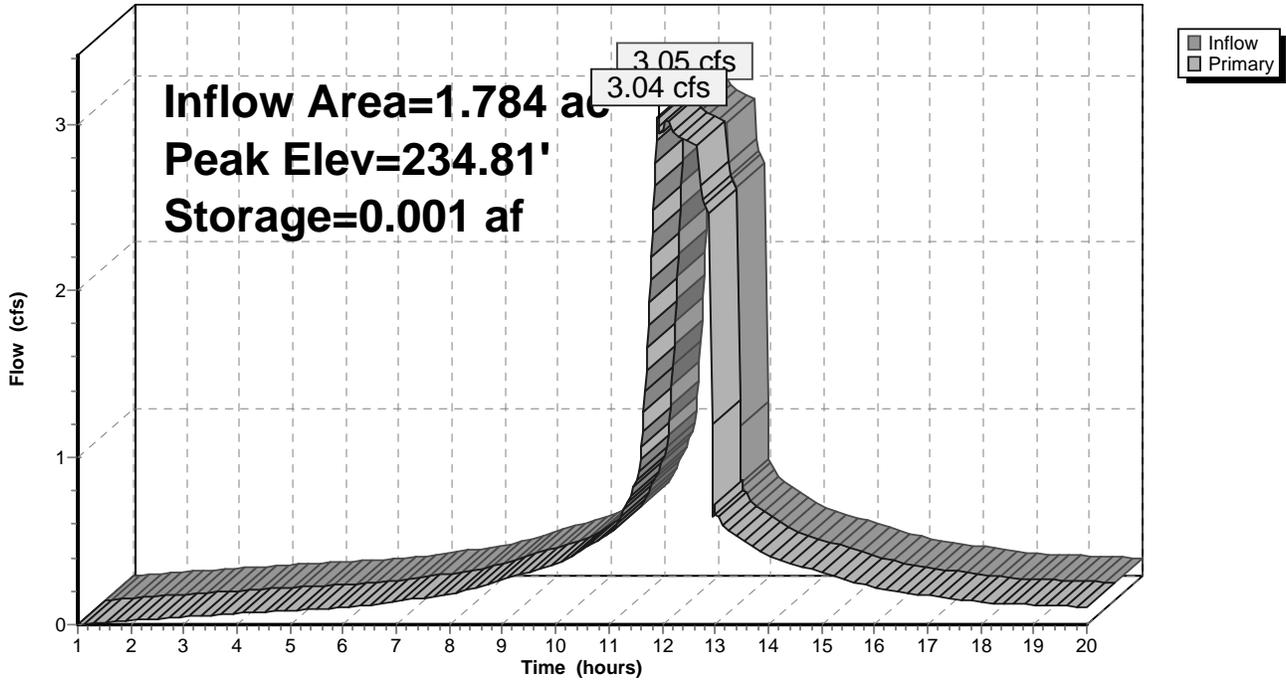
Volume	Invert	Avail.Storage	Storage Description
#1	233.91'	0.003 af	6.00'D x 4.28'H Vertical Cone/Cylinder

Device	Routing	Invert	Outlet Devices
#1	Primary	233.91'	15.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=3.03 cfs @ 11.92 hrs HW=234.80' (Free Discharge)
 ↳ **1=Orifice/Grate** (Orifice Controls 3.03 cfs @ 3.22 fps)

Pond DMH3: DMH3

Hydrograph



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Type III 24-hr 10-year Rainfall=4.50"

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Summary for Pond P-2: Detention Pond, Mod

Inflow Area = 4.669 ac, 89.67% Impervious, Inflow Depth > 3.86" for 10-year event
 Inflow = 9.56 cfs @ 12.11 hrs, Volume= 1.501 af
 Outflow = 2.83 cfs @ 12.95 hrs, Volume= 1.500 af, Atten= 70%, Lag= 50.7 min
 Discarded = 2.83 cfs @ 12.95 hrs, Volume= 1.500 af
 Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Peak Elev= 235.47' @ 12.95 hrs Surf.Area= 12,244 sf Storage= 15,938 cf
 Flood Elev= 237.00' Surf.Area= 15,480 sf Storage= 37,112 cf

Plug-Flow detention time= 42.2 min calculated for 1.498 af (100% of inflow)
 Center-of-Mass det. time= 41.8 min (783.5 - 741.6)

Volume	Invert	Avail.Storage	Storage Description
#1	234.00'	52,592 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
234.00	9,516	0	0
235.00	11,344	10,430	10,430
236.00	13,270	12,307	22,737
237.00	15,480	14,375	37,112
238.00	15,480	15,480	52,592

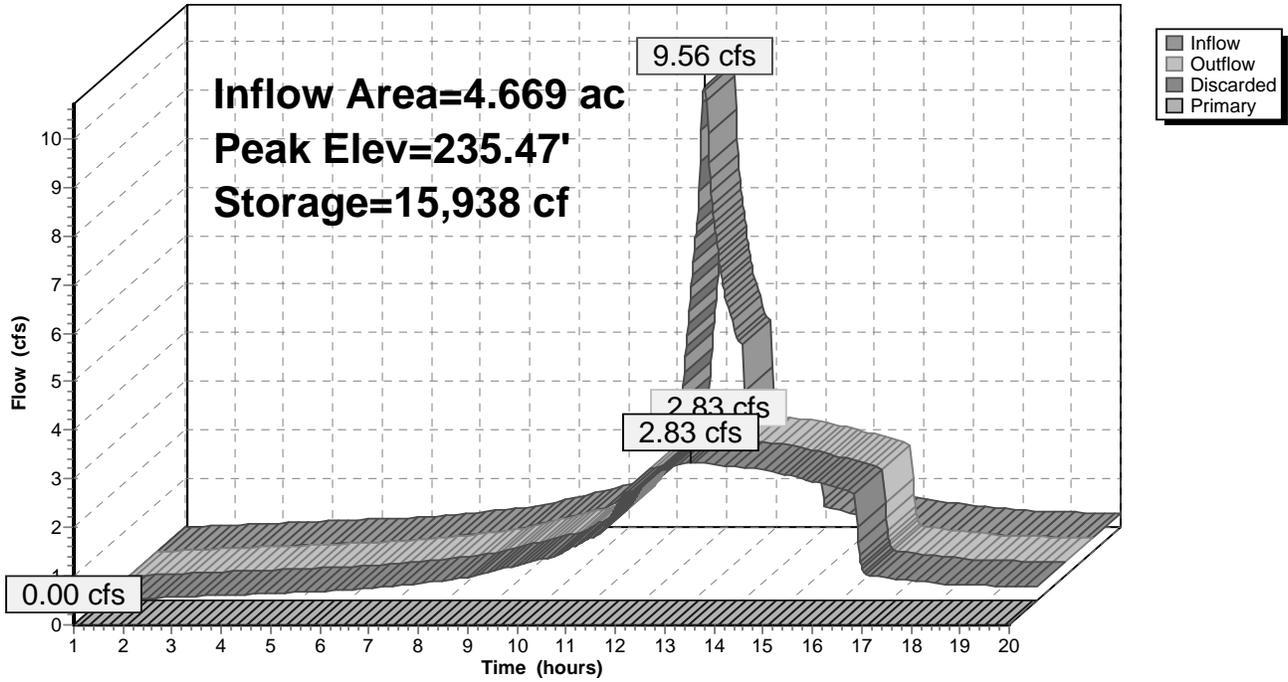
Device	Routing	Invert	Outlet Devices
#1	Primary	237.00'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Discarded	234.00'	10.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=2.83 cfs @ 12.95 hrs HW=235.47' (Free Discharge)
 ↑**2=Exfiltration** (Exfiltration Controls 2.83 cfs)

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=234.00' (Free Discharge)
 ↑**1=Orifice/Grate** (Controls 0.00 cfs)

Pond P-2: Detention Pond, Mod

Hydrograph



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Type III 24-hr 25-year Rainfall=5.40"

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Time span=1.00-20.00 hrs, dt=0.02 hrs, 951 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1 EE: East Half, Developed Runoff Area=16,191 sf 45.07% Impervious Runoff Depth>3.82"
Flow Length=236' Slope=0.0110 '/ Tc=7.3 min CN=88 Runoff=1.64 cfs 0.118 af

Subcatchment 1 EE2: East Driveway Runoff Area=2,145 sf 52.87% Impervious Runoff Depth>3.93"
Flow Length=160' Slope=0.0068 '/ Tc=6.5 min CN=89 Runoff=0.23 cfs 0.016 af

Subcatchment 1 EW: West Half, Developed Runoff Area=29,199 sf 66.08% Impervious Runoff Depth>4.25"
Flow Length=230' Slope=0.0115 '/ Tc=5.9 min CN=92 Runoff=3.33 cfs 0.237 af

Subcatchment 1-A: Perimeter Areas Runoff Area=1,500 sf 0.00% Impervious Runoff Depth>2.95"
Flow Length=15' Slope=0.0050 '/ Tc=1.6 min CN=79 Runoff=0.15 cfs 0.008 af

Subcatchment A-10: Paved Area 10 to Runoff Area=9,700 sf 100.00% Impervious Runoff Depth>4.93"
Flow Length=200' Slope=0.0080 '/ Tc=4.6 min CN=98 Runoff=1.23 cfs 0.091 af

Subcatchment A-11: Big-Y Parking to Runoff Area=35,536 sf 100.00% Impervious Runoff Depth>4.92"
Flow Length=467' Slope=0.0113 '/ Tc=7.7 min CN=98 Runoff=4.07 cfs 0.335 af

Subcatchment A-12: Big-Y Parking to Runoff Area=64,556 sf 100.00% Impervious Runoff Depth>4.92"
Flow Length=445' Slope=0.0115 '/ Tc=7.3 min CN=98 Runoff=7.49 cfs 0.608 af

Subcatchment A-13: Big-Y Parking to CB Runoff Area=11,010 sf 100.00% Impervious Runoff Depth>4.93"
Flow Length=236' Slope=0.0150 '/ Tc=3.9 min CN=98 Runoff=1.43 cfs 0.104 af

Subcatchment A-3: Det Pond Runoff Area=14,650 sf 100.00% Impervious Runoff Depth>4.92"
Flow Length=156' Slope=0.0010 '/ Tc=10.8 min CN=98 Runoff=1.52 cfs 0.138 af

Subcatchment A-7: Driveway Area 7 to CB7 Runoff Area=5,375 sf 100.00% Impervious Runoff Depth>4.93"
Flow Length=200' Slope=0.0074 '/ Tc=4.8 min CN=98 Runoff=0.68 cfs 0.051 af

Subcatchment A-9: Driveway Area 9 to CB9 Runoff Area=15,000 sf 92.05% Impervious Runoff Depth>4.69"
Flow Length=395' Slope=0.0100 '/ Tc=8.0 min CN=96 Runoff=1.68 cfs 0.135 af

Reach 1E: CB 1: Det Pond Avg. Flow Depth=0.52' Max Vel=3.95 fps Inflow=1.64 cfs 0.118 af
12.0" Round Pipe n=0.013 L=34.0' S=0.0074 '/ Capacity=3.06 cfs Outflow=1.63 cfs 0.118 af

Reach 1W: CB2: Det Pond Avg. Flow Depth=1.00' Max Vel=3.49 fps Inflow=3.33 cfs 0.237 af
12.0" Round Pipe n=0.013 L=55.0' S=0.0045 '/ Capacity=2.40 cfs Outflow=2.40 cfs 0.237 af

Reach D-10: CB10:DMH2 Avg. Flow Depth=0.50' Max Vel=3.13 fps Inflow=1.23 cfs 0.091 af
12.0" Round Pipe n=0.013 L=50.0' S=0.0048 '/ Capacity=2.47 cfs Outflow=1.22 cfs 0.091 af

Reach D-11: CB11:DMH2 Avg. Flow Depth=1.00' Max Vel=4.22 fps Inflow=4.07 cfs 0.335 af
12.0" Round Pipe n=0.013 L=52.0' S=0.0067 '/ Capacity=2.92 cfs Outflow=3.03 cfs 0.335 af

Reach D-12: CB12:DMH3 Avg. Flow Depth=1.00' Max Vel=3.46 fps Inflow=7.49 cfs 0.608 af
12.0" Round Pipe n=0.013 L=56.0' S=0.0045 '/ Capacity=2.38 cfs Outflow=2.48 cfs 0.608 af

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Type III 24-hr 25-year Rainfall=5.40"

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Reach D-13: CB13:DMH3 Avg. Flow Depth=1.00' Max Vel=0.68 fps Inflow=1.43 cfs 0.104 af
 12.0" Round Pipe n=0.014 L=50.0' S=0.0002 '/ Capacity=0.47 cfs Outflow=0.49 cfs 0.104 af

Reach D-14: CB14:DMH3 Avg. Flow Depth=0.37' Max Vel=0.87 fps Inflow=0.23 cfs 0.016 af
 12.0" Round Pipe n=0.013 L=20.0' S=0.0005 '/ Capacity=0.80 cfs Outflow=0.23 cfs 0.016 af

Reach D-2: 15-Inch RCP Avg. Flow Depth=1.25' Max Vel=1.06 fps Inflow=5.75 cfs 0.561 af
 15.0" Round Pipe n=0.013 L=32.0' S=0.0003 '/ Capacity=1.14 cfs Outflow=1.15 cfs 0.560 af

Reach D-3: DMH3:DET POND Avg. Flow Depth=0.69' Max Vel=4.42 fps Inflow=3.07 cfs 0.728 af
 15.0" Round Pipe n=0.013 L=60.0' S=0.0065 '/ Capacity=5.21 cfs Outflow=3.07 cfs 0.727 af

Reach D-9: CB9:DMH2 Avg. Flow Depth=0.52' Max Vel=4.00 fps Inflow=1.68 cfs 0.135 af
 12.0" Round Pipe n=0.013 L=12.0' S=0.0075 '/ Capacity=3.09 cfs Outflow=1.67 cfs 0.135 af

Pond DMH2: DMH2 Peak Elev=235.05' Storage=0.001 af Inflow=5.74 cfs 0.561 af
 Outflow=5.75 cfs 0.561 af

Pond DMH3: DMH3 Peak Elev=234.81' Storage=0.001 af Inflow=3.07 cfs 0.728 af
 Outflow=3.07 cfs 0.728 af

Pond P-2: Detention Pond, Mod Peak Elev=235.81' Storage=20,223 cf Inflow=10.28 cfs 1.832 af
 Discarded=2.99 cfs 1.831 af Primary=0.00 cfs 0.000 af Outflow=2.99 cfs 1.831 af

Total Runoff Area = 4.703 ac Runoff Volume = 1.841 af Average Runoff Depth = 4.70"
10.98% Pervious = 0.517 ac 89.02% Impervious = 4.186 ac

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Type III 24-hr 25-year Rainfall=5.40"

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Summary for Subcatchment 1 EE: East Half, Developed Cond.

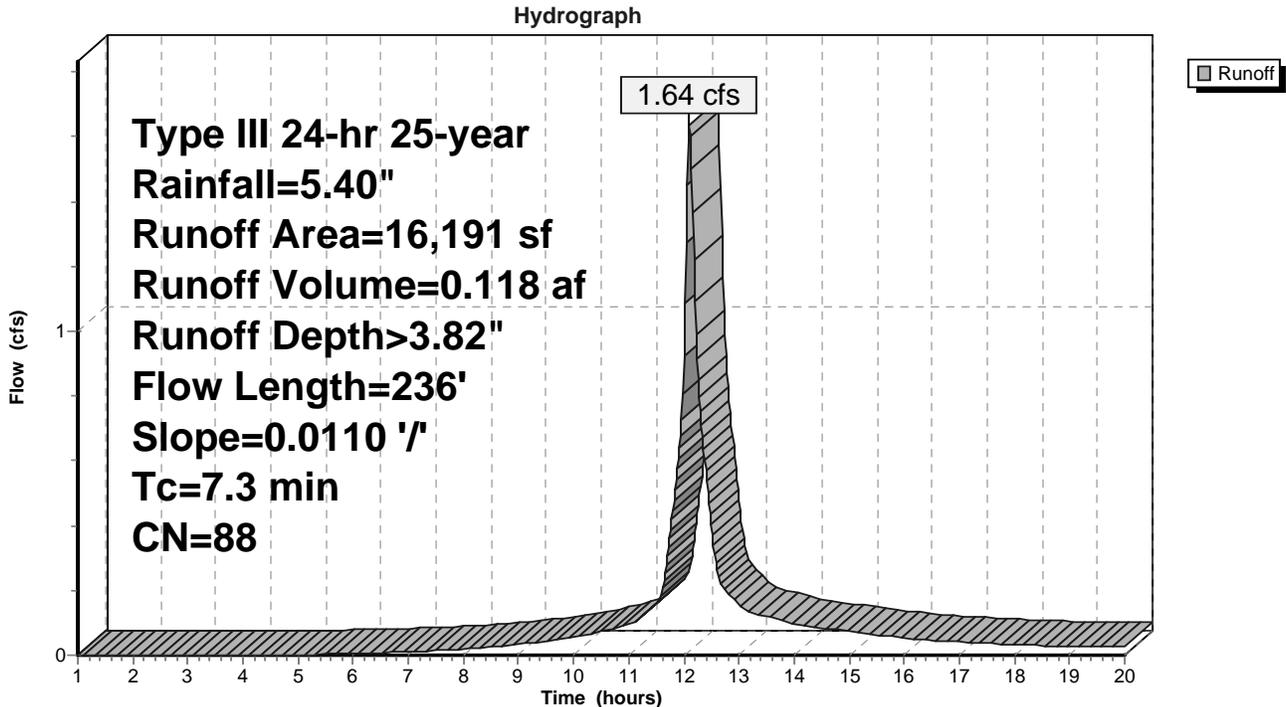
Runoff = 1.64 cfs @ 12.10 hrs, Volume= 0.118 af, Depth> 3.82"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 25-year Rainfall=5.40"

	Area (sf)	CN	Description
*	4,297	98	Parking & Driveway Pavement & Sidewalks
*	3,000	98	Building
*	2,240	79	Internal Landscaped Areas
*	6,654	79	Outer Landscaped Areas
	16,191	88	Weighted Average
	8,894		54.93% Pervious Area
	7,297		45.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	236	0.0110	0.54		Lag/CN Method,

Subcatchment 1 EE: East Half, Developed Cond.



Summary for Subcatchment 1 EE2: East Driveway

Runoff = 0.23 cfs @ 12.09 hrs, Volume= 0.016 af, Depth> 3.93"

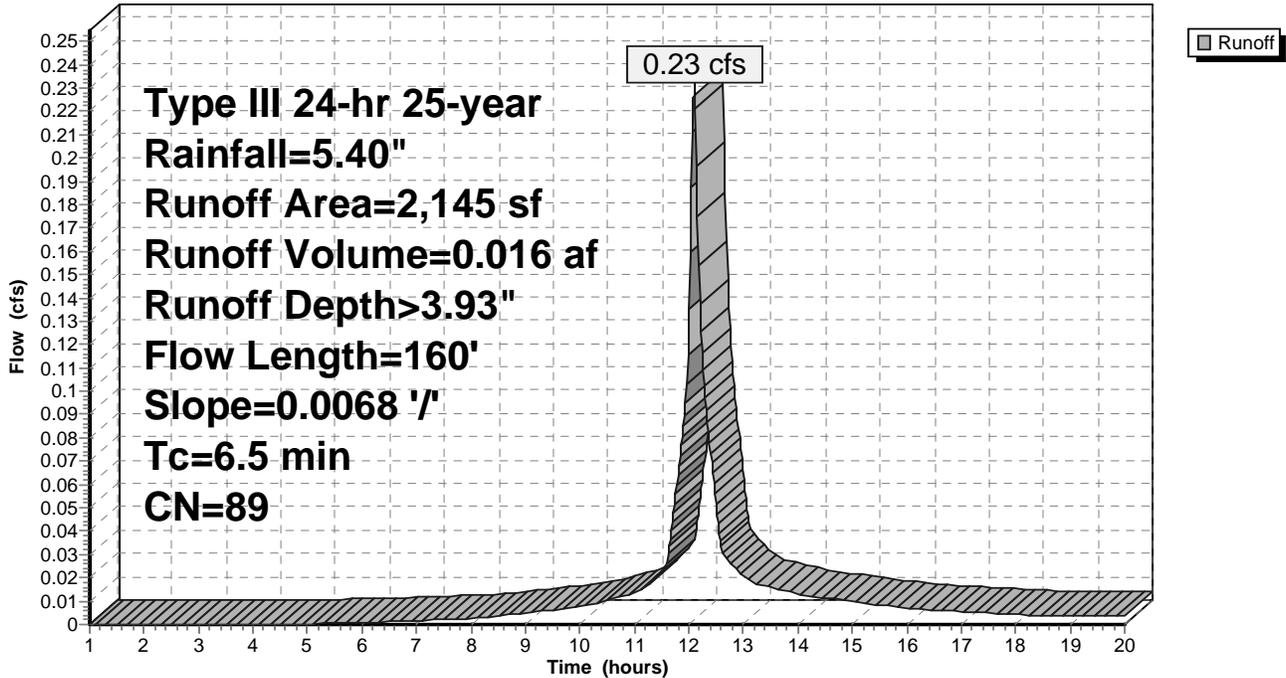
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 25-year Rainfall=5.40"

	Area (sf)	CN	Description
*	1,011	79	Grassed Island
*	1,134	98	1/2 of East Internal N-S Drive
	2,145	89	Weighted Average
	1,011		47.13% Pervious Area
	1,134		52.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	160	0.0068	0.41		Lag/CN Method,

Subcatchment 1 EE2: East Driveway

Hydrograph



12-024 PROP

Type III 24-hr 25-year Rainfall=5.40"

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Summary for Subcatchment 1 EW: West Half, Developed Cond.

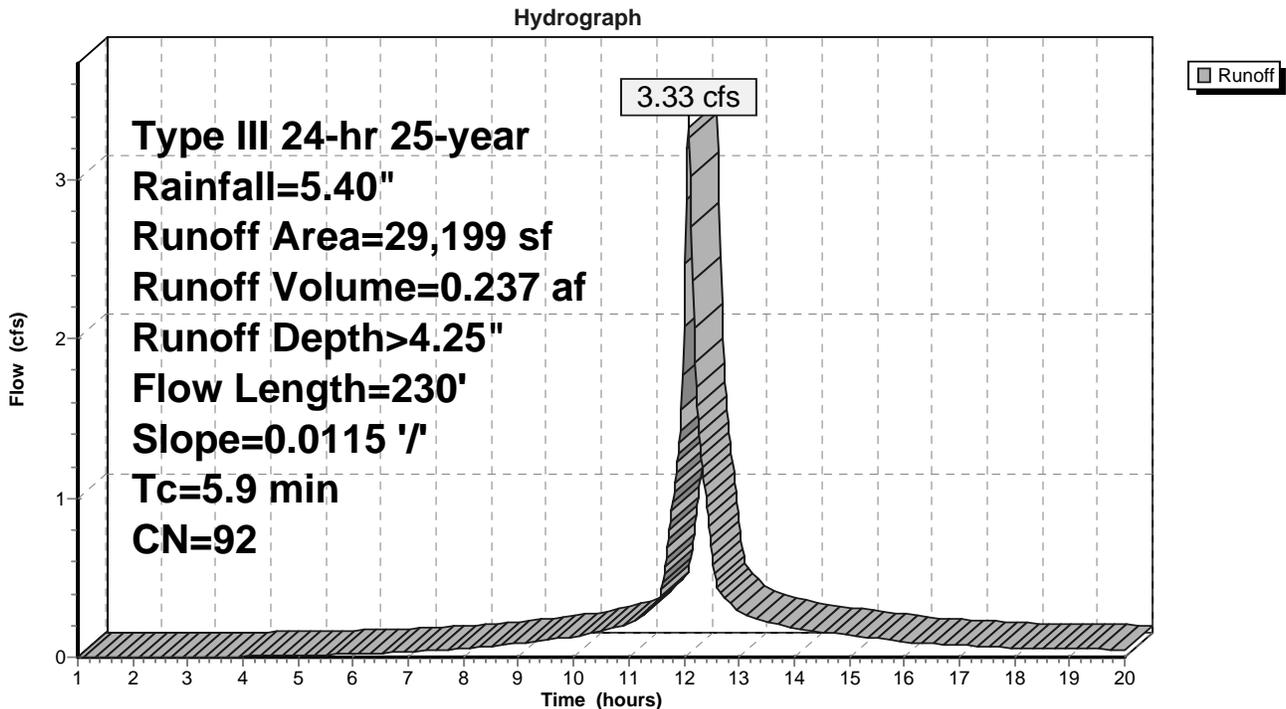
Runoff = 3.33 cfs @ 12.08 hrs, Volume= 0.237 af, Depth> 4.25"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 25-year Rainfall=5.40"

	Area (sf)	CN	Description
*	16,294	98	Parking & Driveway Pavement & Sidewalks
*	3,000	98	Building
*	2,240	79	Internal Landscaped Areas
*	7,665	79	Outer Landscaped Areas
	29,199	92	Weighted Average
	9,905		33.92% Pervious Area
	19,294		66.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	230	0.0115	0.65		Lag/CN Method,

Subcatchment 1 EW: West Half, Developed Cond.



Summary for Subcatchment 1-A: Perimeter Areas

Runoff = 0.15 cfs @ 12.03 hrs, Volume= 0.008 af, Depth> 2.95"

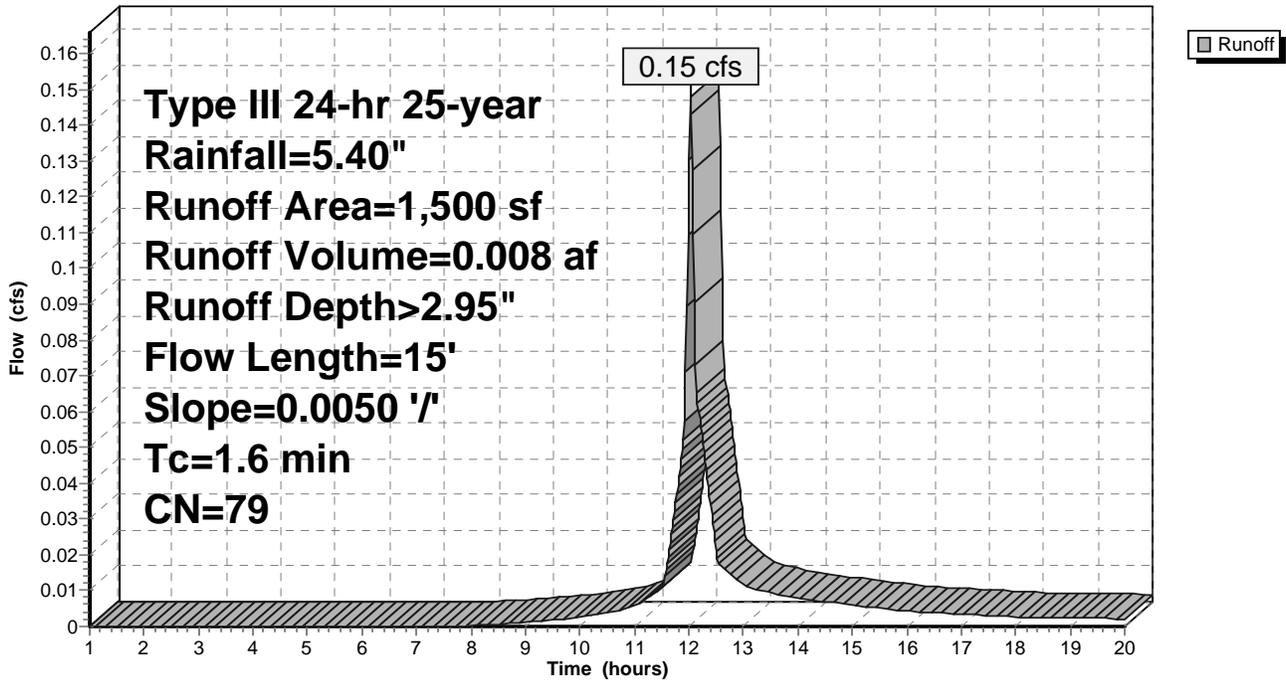
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
* 1,500	79	Landscaped Perimter Prop
1,500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	15	0.0050	0.16		Lag/CN Method,

Subcatchment 1-A: Perimeter Areas

Hydrograph



Summary for Subcatchment A-10: Paved Area 10 to CB10

Runoff = 1.23 cfs @ 12.06 hrs, Volume= 0.091 af, Depth> 4.93"

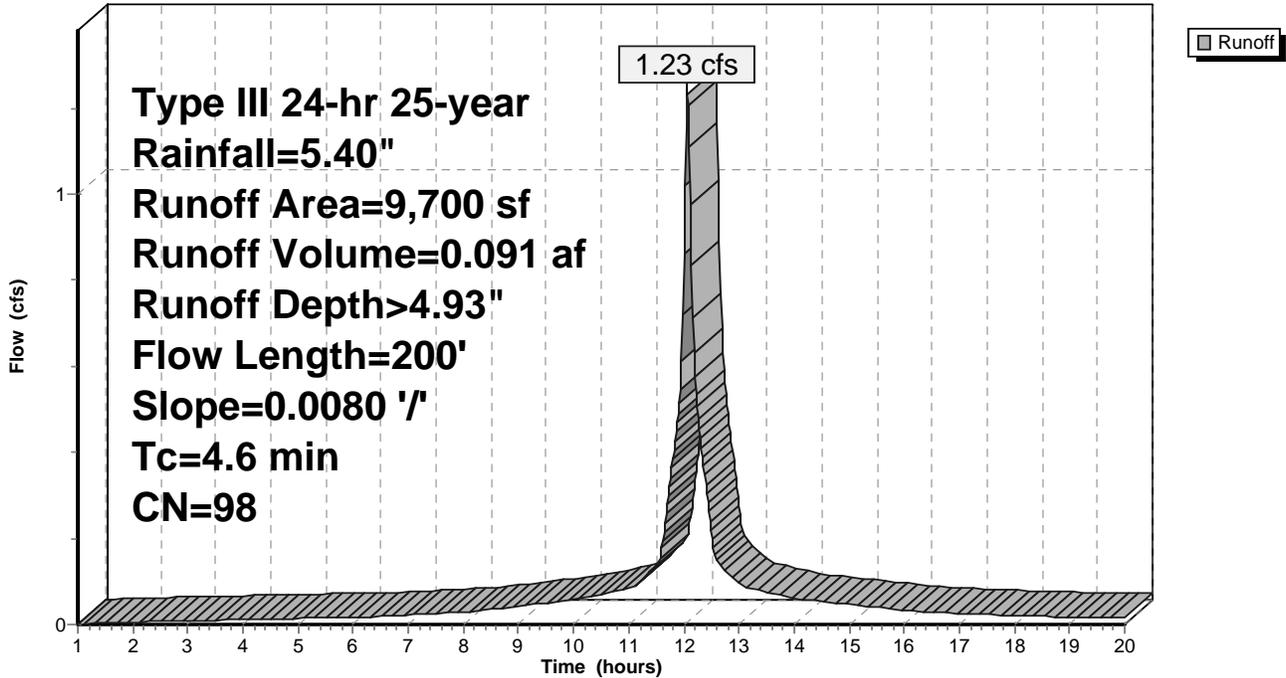
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
* 9,700	98	Paved Apron and Travel Aisle
9,700		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	200	0.0080	0.72		Lag/CN Method,

Subcatchment A-10: Paved Area 10 to CB10

Hydrograph



Summary for Subcatchment A-11: Big-Y Parking to CB11

Runoff = 4.07 cfs @ 12.10 hrs, Volume= 0.335 af, Depth> 4.92"

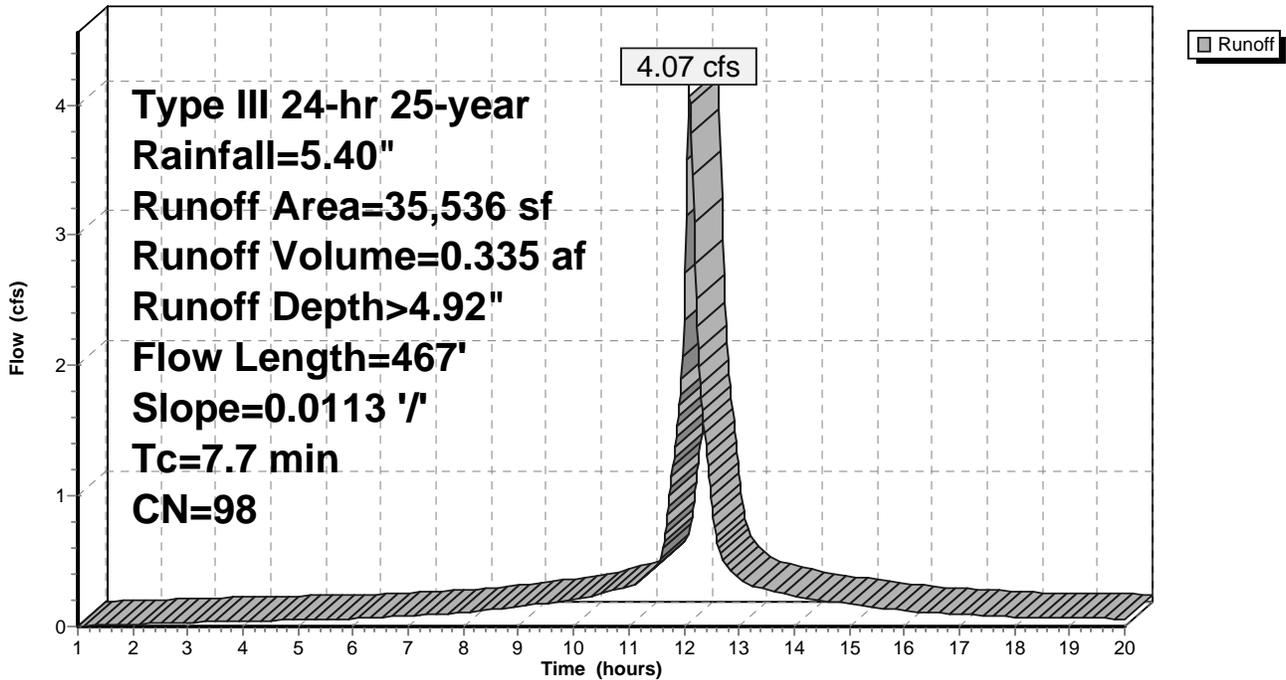
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
* 35,536	98	Paved Parking
35,536		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	467	0.0113	1.01		Lag/CN Method,

Subcatchment A-11: Big-Y Parking to CB11

Hydrograph



Summary for Subcatchment A-12: Big-Y Parking to CB12

Runoff = 7.49 cfs @ 12.10 hrs, Volume= 0.608 af, Depth> 4.92"

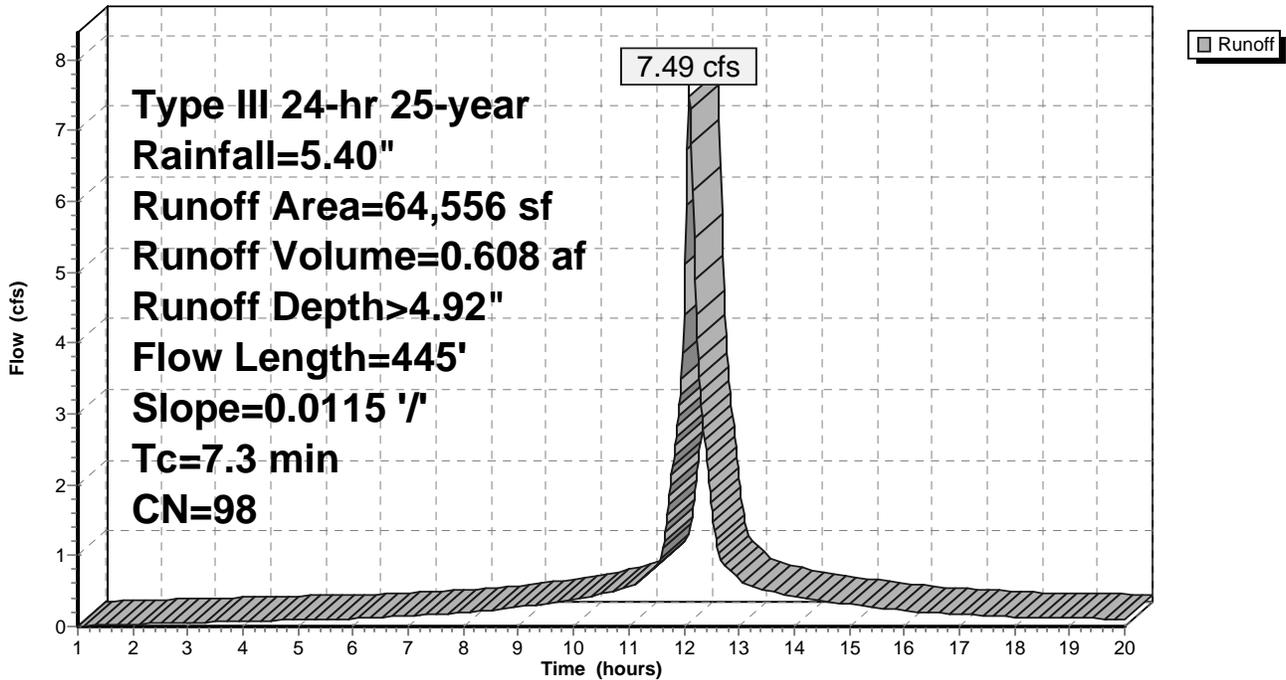
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
* 64,556	98	Paved Parking
64,556		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	445	0.0115	1.01		Lag/CN Method,

Subcatchment A-12: Big-Y Parking to CB12

Hydrograph



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Type III 24-hr 25-year Rainfall=5.40"

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Summary for Subcatchment A-13: Big-Y Parking to CB 13

Runoff = 1.43 cfs @ 12.06 hrs, Volume= 0.104 af, Depth> 4.93"

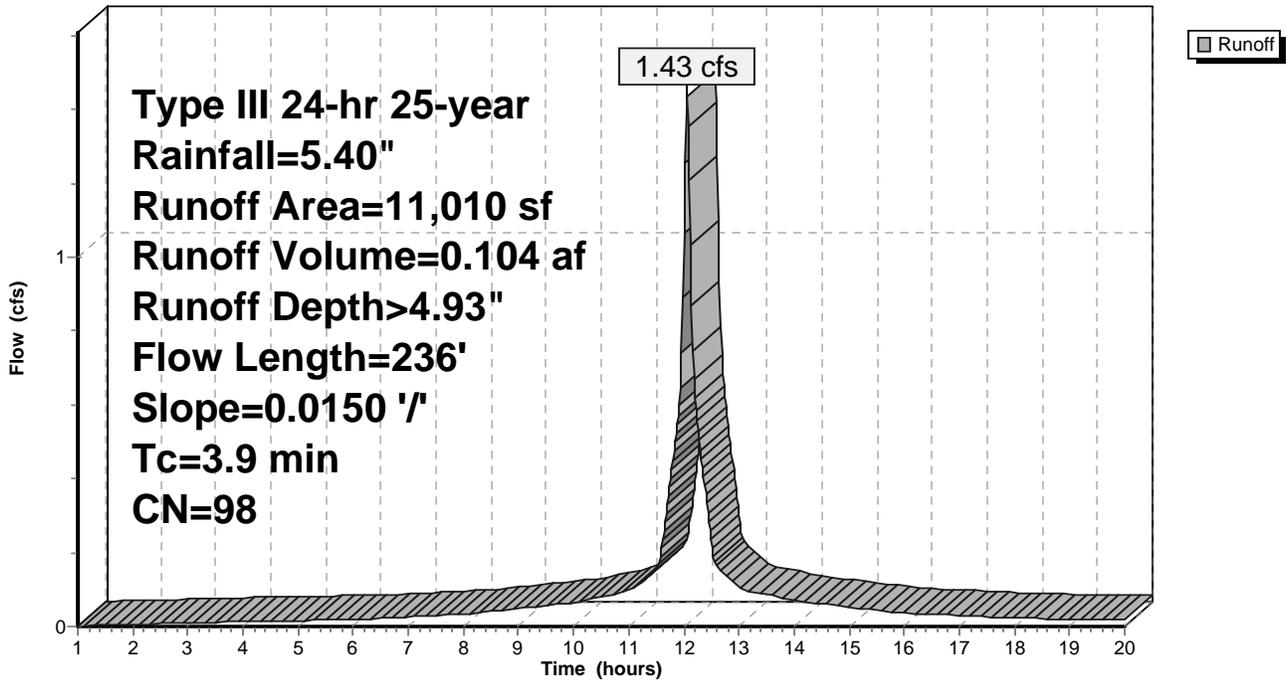
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
* 11,010	98	Paved Parking
11,010		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	236	0.0150	1.02		Lag/CN Method,

Subcatchment A-13: Big-Y Parking to CB 13

Hydrograph



Summary for Subcatchment A-3: Det Pond

Runoff = 1.52 cfs @ 12.14 hrs, Volume= 0.138 af, Depth> 4.92"

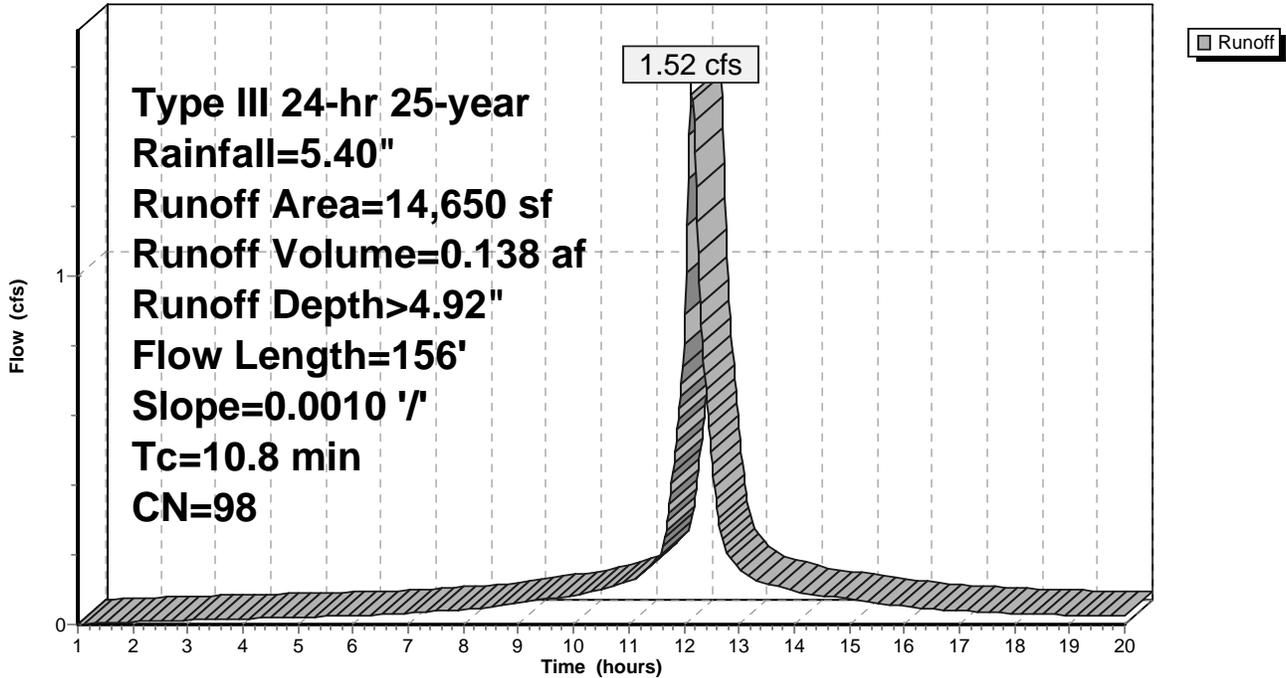
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
* 14,650	98	Wet Det Pond@ Elv 237
14,650		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	156	0.0010	0.24		Lag/CN Method,

Subcatchment A-3: Det Pond

Hydrograph



Summary for Subcatchment A-7: Driveway Area 7 to CB7

Runoff = 0.68 cfs @ 12.07 hrs, Volume= 0.051 af, Depth> 4.93"

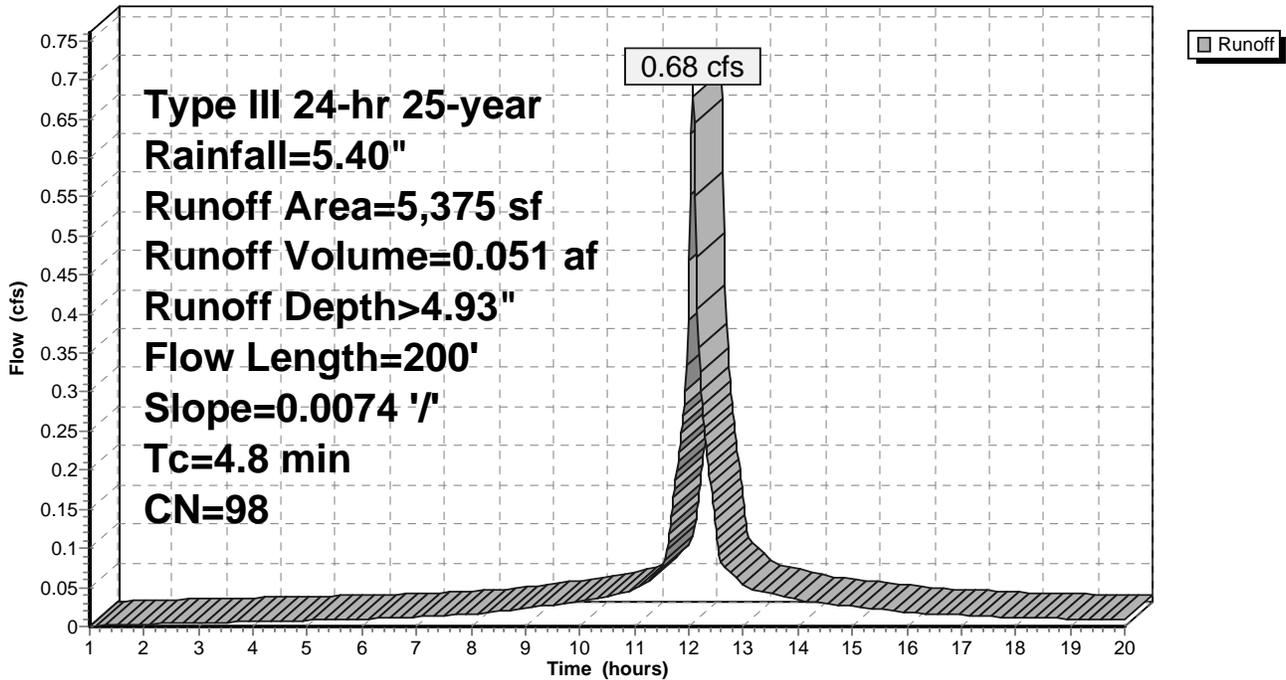
Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 25-year Rainfall=5.40"

Area (sf)	CN	Description
* 5,375	98	Paved Driveway, northern half
5,375		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	200	0.0074	0.69		Lag/CN Method,

Subcatchment A-7: Driveway Area 7 to CB7

Hydrograph



Summary for Subcatchment A-9: Driveway Area 9 to CB9

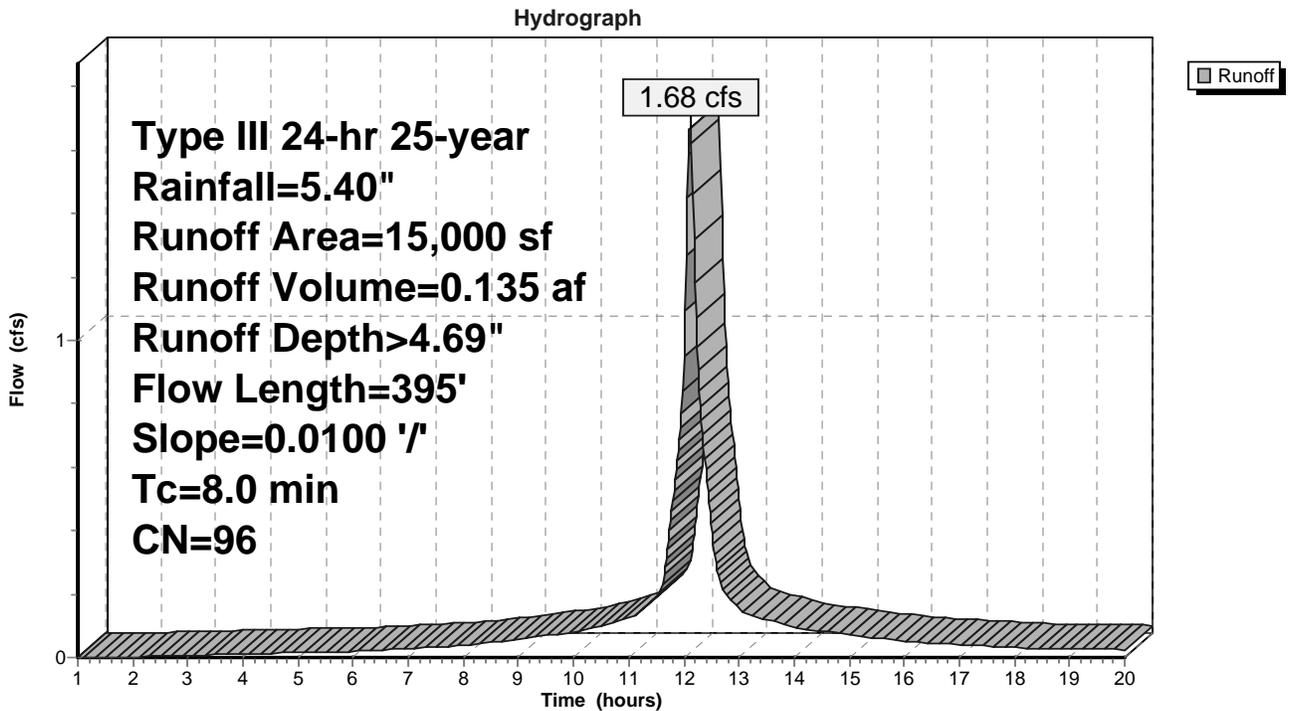
Runoff = 1.68 cfs @ 12.11 hrs, Volume= 0.135 af, Depth> 4.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Type III 24-hr 25-year Rainfall=5.40"

	Area (sf)	CN	Description
*	1,192	79	Grass Strip
*	13,808	98	N-S Driveway
	15,000	96	Weighted Average
	1,192		7.95% Pervious Area
	13,808		92.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	395	0.0100	0.82		Lag/CN Method,

Subcatchment A-9: Driveway Area 9 to CB9



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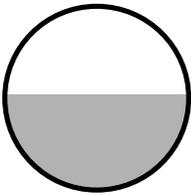
Summary for Reach 1E: CB 1: Det Pond

Inflow Area = 0.372 ac, 45.07% Impervious, Inflow Depth > 3.82" for 25-year event
 Inflow = 1.64 cfs @ 12.10 hrs, Volume= 0.118 af
 Outflow = 1.63 cfs @ 12.11 hrs, Volume= 0.118 af, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Max. Velocity= 3.95 fps, Min. Travel Time= 0.1 min
 Avg. Velocity = 1.44 fps, Avg. Travel Time= 0.4 min

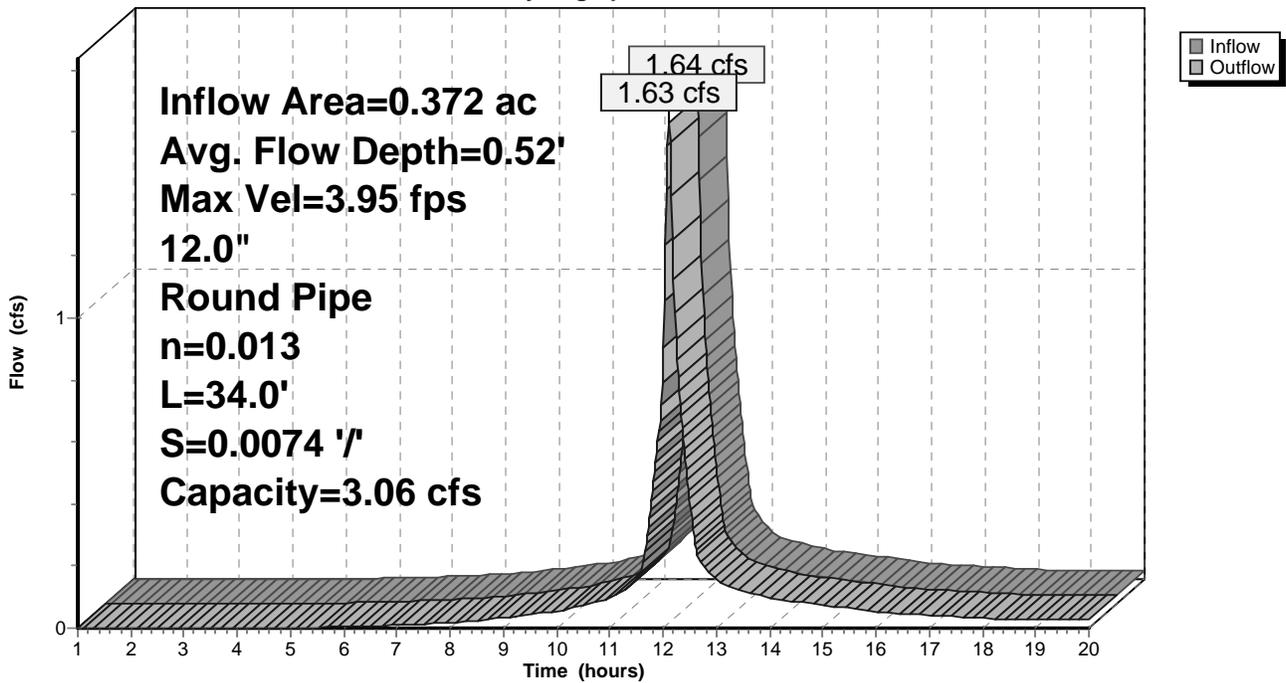
Peak Storage= 14 cf @ 12.10 hrs
 Average Depth at Peak Storage= 0.52'
 Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.06 cfs

12.0" Round Pipe
 n= 0.013
 Length= 34.0' Slope= 0.0074 '/'
 Inlet Invert= 234.00', Outlet Invert= 233.75'



Reach 1E: CB 1: Det Pond

Hydrograph



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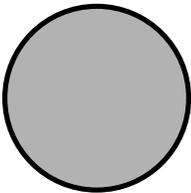
Summary for Reach 1W: CB2: Det Pond

Inflow Area = 0.670 ac, 66.08% Impervious, Inflow Depth > 4.25" for 25-year event
 Inflow = 3.33 cfs @ 12.08 hrs, Volume= 0.237 af
 Outflow = 2.40 cfs @ 12.06 hrs, Volume= 0.237 af, Atten= 28%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Max. Velocity= 3.49 fps, Min. Travel Time= 0.3 min
 Avg. Velocity = 1.45 fps, Avg. Travel Time= 0.6 min

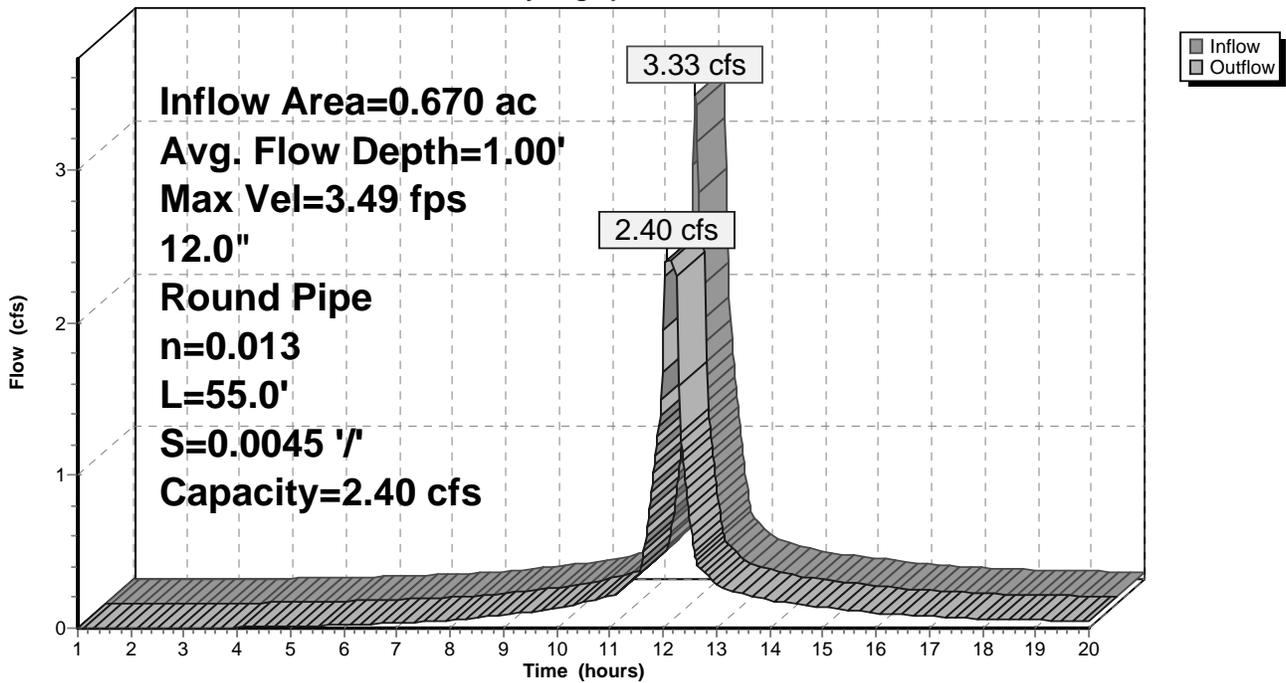
Peak Storage= 43 cf @ 12.04 hrs
 Average Depth at Peak Storage= 1.00'
 Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.40 cfs

12.0" Round Pipe
 n= 0.013
 Length= 55.0' Slope= 0.0045 '/
 Inlet Invert= 234.00', Outlet Invert= 233.75'



Reach 1W: CB2: Det Pond

Hydrograph



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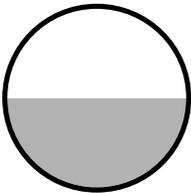
Summary for Reach D-10: CB10:DMH2

Inflow Area = 0.223 ac, 100.00% Impervious, Inflow Depth > 4.93" for 25-year event
Inflow = 1.23 cfs @ 12.06 hrs, Volume= 0.091 af
Outflow = 1.22 cfs @ 12.07 hrs, Volume= 0.091 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
Max. Velocity= 3.13 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.11 fps, Avg. Travel Time= 0.8 min

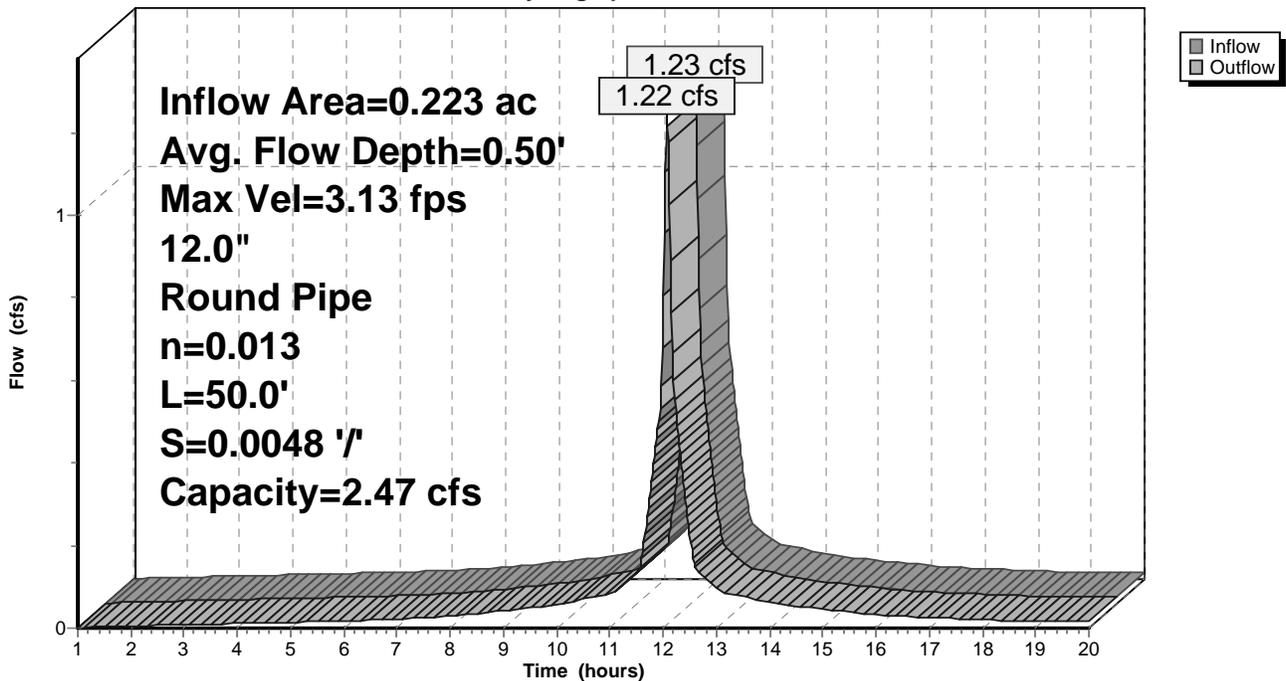
Peak Storage= 20 cf @ 12.07 hrs
Average Depth at Peak Storage= 0.50'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.47 cfs

12.0" Round Pipe
n= 0.013
Length= 50.0' Slope= 0.0048 '/'
Inlet Invert= 234.04', Outlet Invert= 233.80'



Reach D-10: CB10:DMH2

Hydrograph



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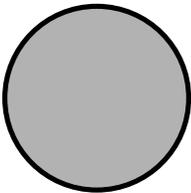
Summary for Reach D-11: CB11:DMH2

Inflow Area = 0.816 ac, 100.00% Impervious, Inflow Depth > 4.92" for 25-year event
 Inflow = 4.07 cfs @ 12.10 hrs, Volume= 0.335 af
 Outflow = 3.03 cfs @ 12.05 hrs, Volume= 0.335 af, Atten= 25%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Max. Velocity= 4.22 fps, Min. Travel Time= 0.2 min
 Avg. Velocity = 1.82 fps, Avg. Travel Time= 0.5 min

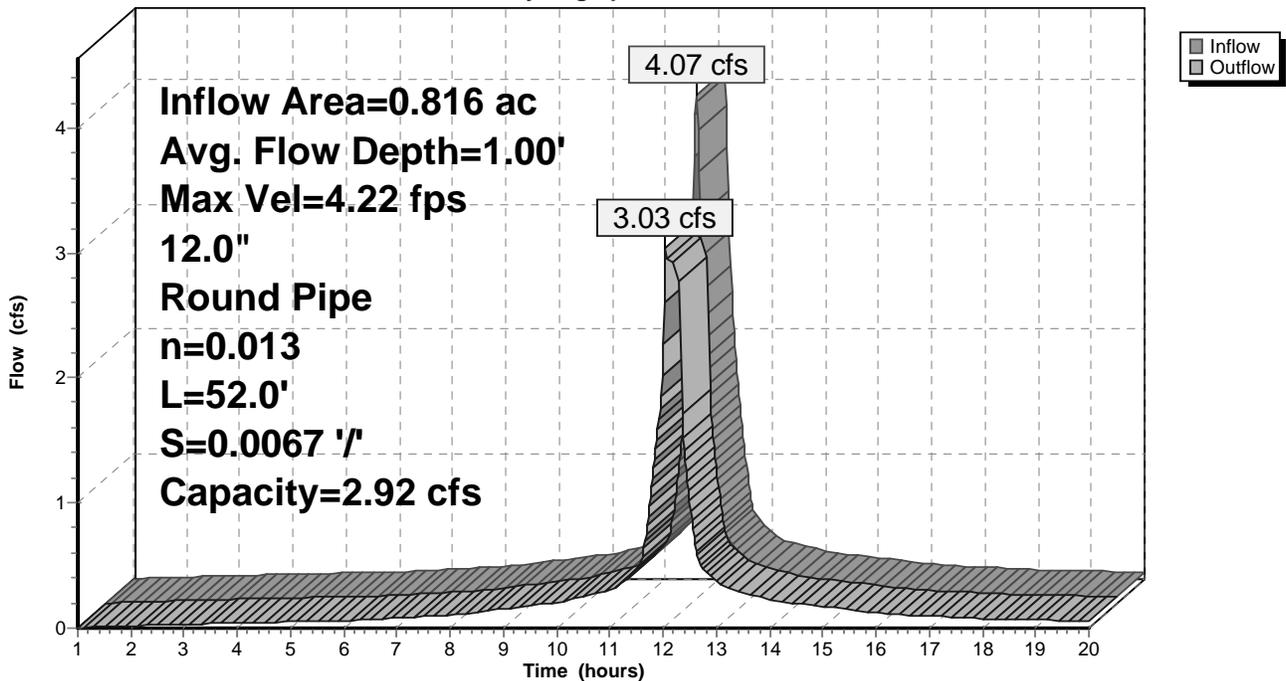
Peak Storage= 41 cf @ 12.06 hrs
 Average Depth at Peak Storage= 1.00'
 Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.92 cfs

12.0" Round Pipe
 n= 0.013
 Length= 52.0' Slope= 0.0067 '/'
 Inlet Invert= 233.95', Outlet Invert= 233.60'



Reach D-11: CB11:DMH2

Hydrograph



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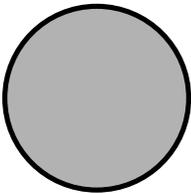
Summary for Reach D-12: CB12:DMH3

Inflow Area = 1.482 ac, 100.00% Impervious, Inflow Depth > 4.92" for 25-year event
 Inflow = 7.49 cfs @ 12.10 hrs, Volume= 0.608 af
 Outflow = 2.48 cfs @ 11.84 hrs, Volume= 0.608 af, Atten= 67%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Max. Velocity= 3.46 fps, Min. Travel Time= 0.3 min
 Avg. Velocity = 1.86 fps, Avg. Travel Time= 0.5 min

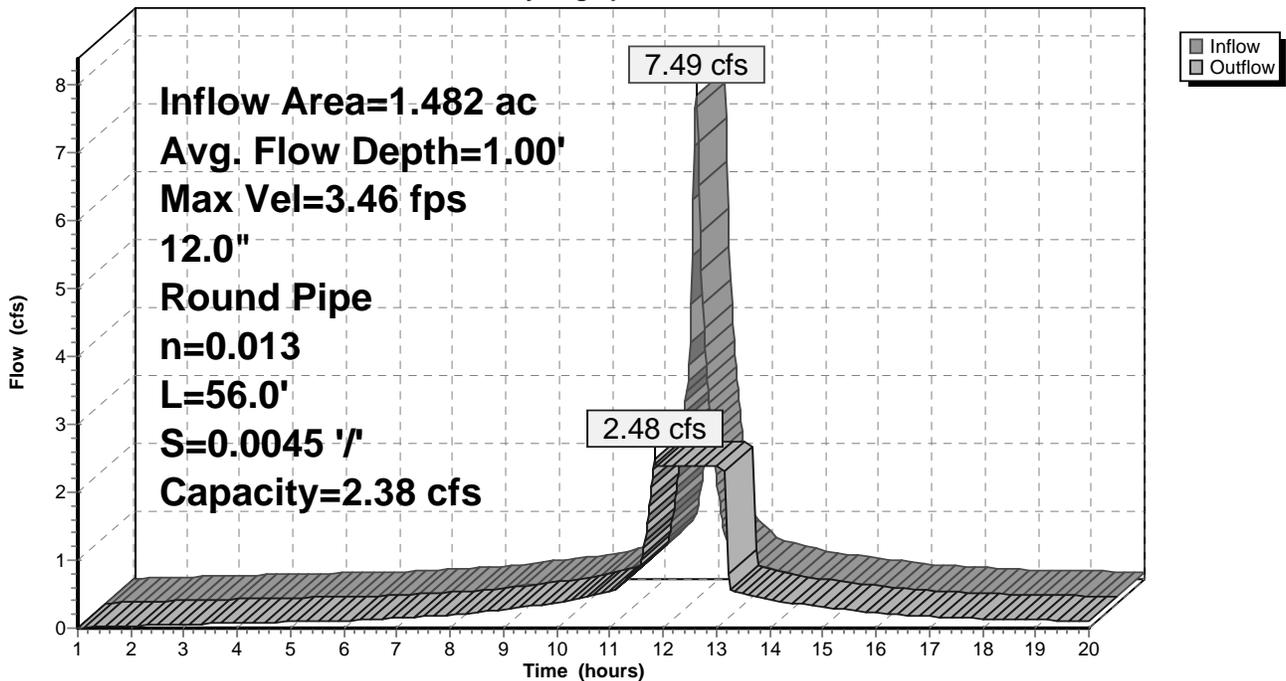
Peak Storage= 44 cf @ 11.86 hrs
 Average Depth at Peak Storage= 1.00'
 Bank-Full Depth= 1.00', Capacity at Bank-Full= 2.38 cfs

12.0" Round Pipe
 n= 0.013
 Length= 56.0' Slope= 0.0045 '/'
 Inlet Invert= 234.29', Outlet Invert= 234.04'



Reach D-12: CB12:DMH3

Hydrograph



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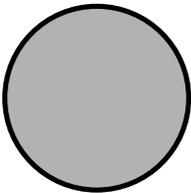
Summary for Reach D-13: CB13:DMH3

Inflow Area = 0.253 ac, 100.00% Impervious, Inflow Depth > 4.93" for 25-year event
 Inflow = 1.43 cfs @ 12.06 hrs, Volume= 0.104 af
 Outflow = 0.49 cfs @ 11.88 hrs, Volume= 0.104 af, Atten= 66%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Max. Velocity= 0.68 fps, Min. Travel Time= 1.2 min
 Avg. Velocity = 0.35 fps, Avg. Travel Time= 2.4 min

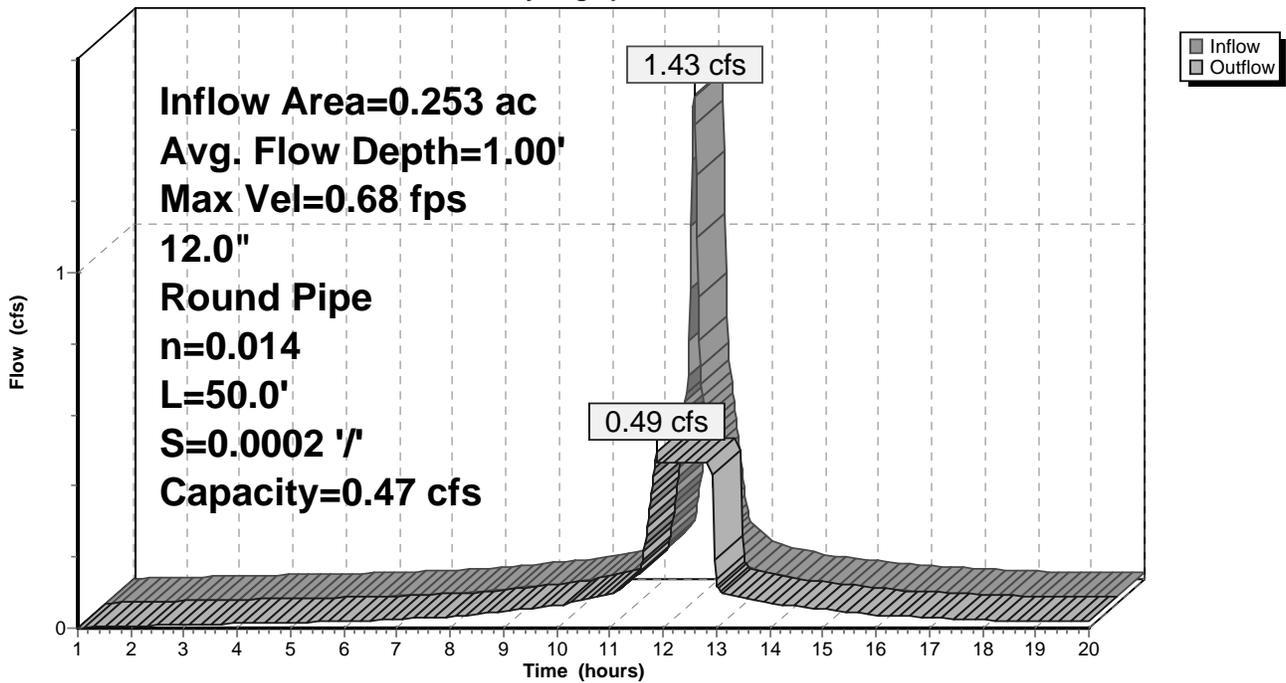
Peak Storage= 39 cf @ 11.88 hrs
 Average Depth at Peak Storage= 1.00'
 Bank-Full Depth= 1.00', Capacity at Bank-Full= 0.47 cfs

12.0" Round Pipe
 n= 0.014
 Length= 50.0' Slope= 0.0002 '/'
 Inlet Invert= 233.78', Outlet Invert= 233.77'



Reach D-13: CB13:DMH3

Hydrograph



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Type III 24-hr 25-year Rainfall=5.40"

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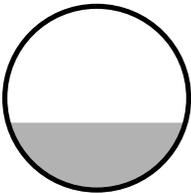
Summary for Reach D-14: CB14:DMH3

Inflow Area = 0.049 ac, 52.87% Impervious, Inflow Depth > 3.93" for 25-year event
 Inflow = 0.23 cfs @ 12.09 hrs, Volume= 0.016 af
 Outflow = 0.23 cfs @ 12.10 hrs, Volume= 0.016 af, Atten= 1%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Max. Velocity= 0.87 fps, Min. Travel Time= 0.4 min
 Avg. Velocity = 0.31 fps, Avg. Travel Time= 1.1 min

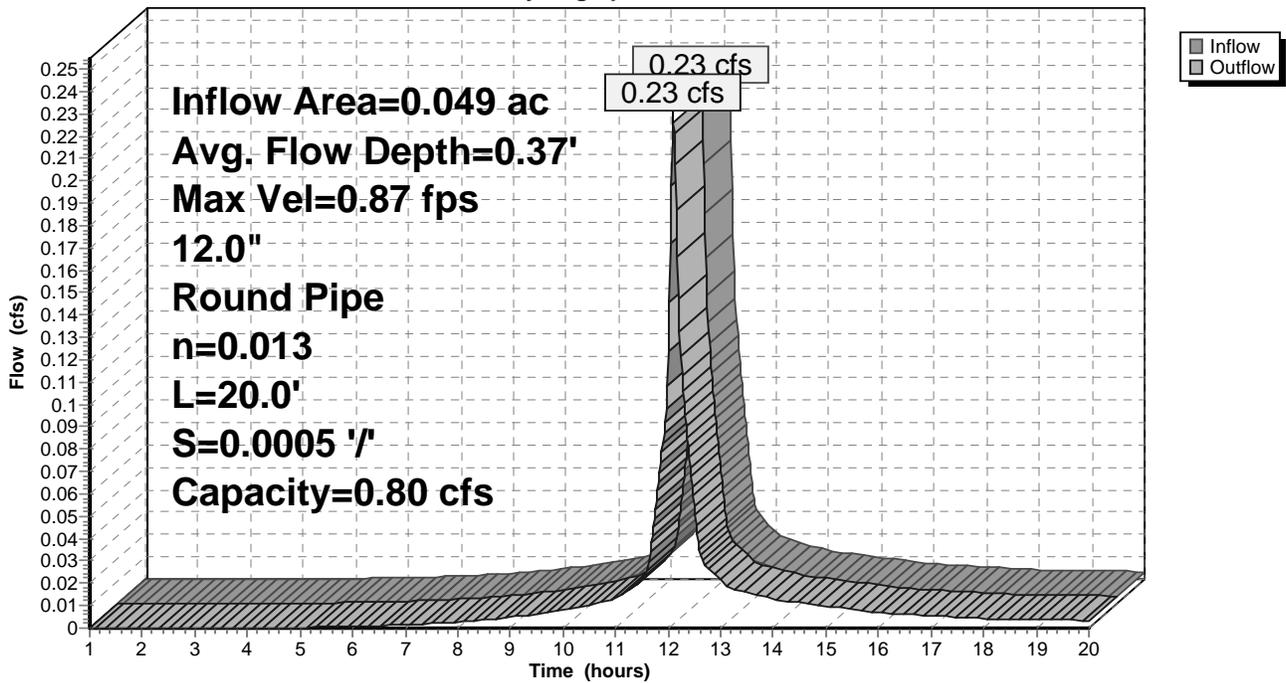
Peak Storage= 5 cf @ 12.10 hrs
 Average Depth at Peak Storage= 0.37'
 Bank-Full Depth= 1.00', Capacity at Bank-Full= 0.80 cfs

12.0" Round Pipe
 n= 0.013
 Length= 20.0' Slope= 0.0005 '/'
 Inlet Invert= 233.86', Outlet Invert= 233.85'



Reach D-14: CB14:DMH3

Hydrograph



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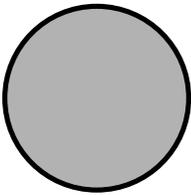
Summary for Reach D-2: 15-Inch RCP

Inflow Area = 1.383 ac, 98.02% Impervious, Inflow Depth > 4.86" for 25-year event
 Inflow = 5.75 cfs @ 12.10 hrs, Volume= 0.561 af
 Outflow = 1.15 cfs @ 11.68 hrs, Volume= 0.560 af, Atten= 80%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Max. Velocity= 1.06 fps, Min. Travel Time= 0.5 min
 Avg. Velocity = 0.68 fps, Avg. Travel Time= 0.8 min

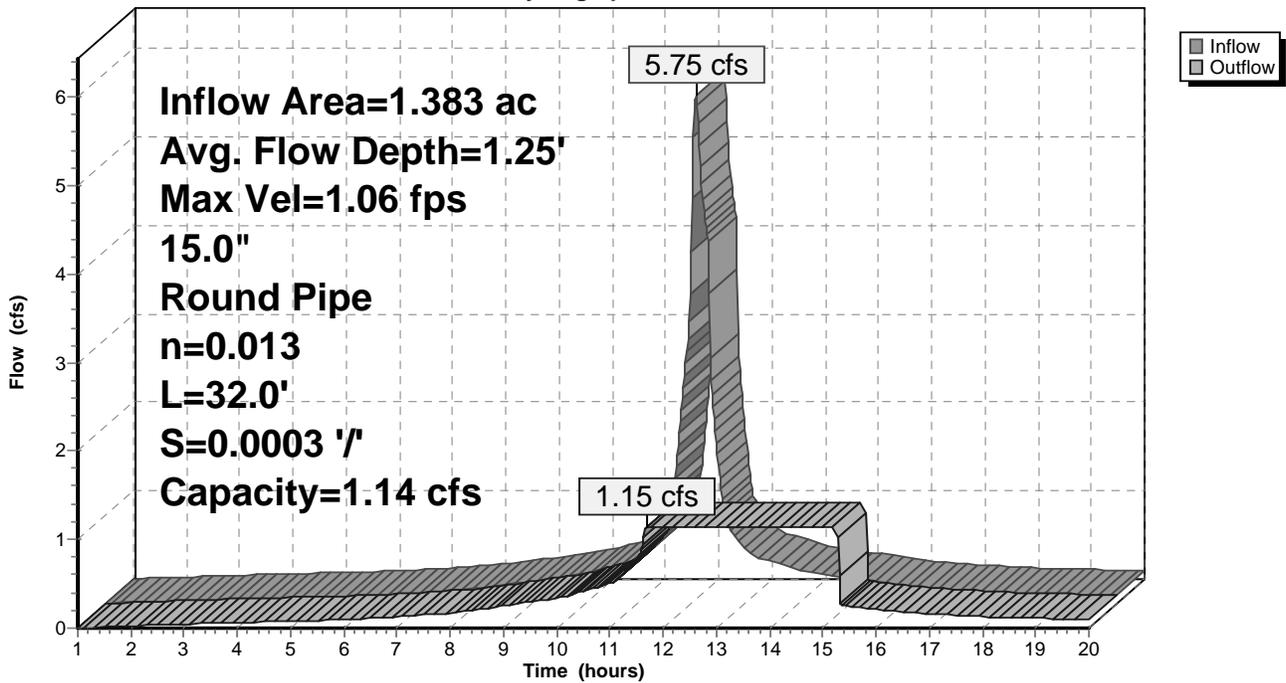
Peak Storage= 39 cf @ 11.68 hrs
 Average Depth at Peak Storage= 1.25'
 Bank-Full Depth= 1.25', Capacity at Bank-Full= 1.14 cfs

15.0" Round Pipe
 n= 0.013
 Length= 32.0' Slope= 0.0003 '/
 Inlet Invert= 233.48', Outlet Invert= 233.47'



Reach D-2: 15-Inch RCP

Hydrograph



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Type III 24-hr 25-year Rainfall=5.40"

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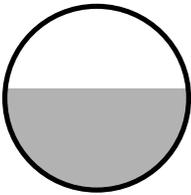
Summary for Reach D-3: DMH3:DET POND

Inflow Area = 1.784 ac, 98.70% Impervious, Inflow Depth > 4.89" for 25-year event
 Inflow = 3.07 cfs @ 12.10 hrs, Volume= 0.728 af
 Outflow = 3.07 cfs @ 12.11 hrs, Volume= 0.727 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Max. Velocity= 4.42 fps, Min. Travel Time= 0.2 min
 Avg. Velocity = 2.24 fps, Avg. Travel Time= 0.4 min

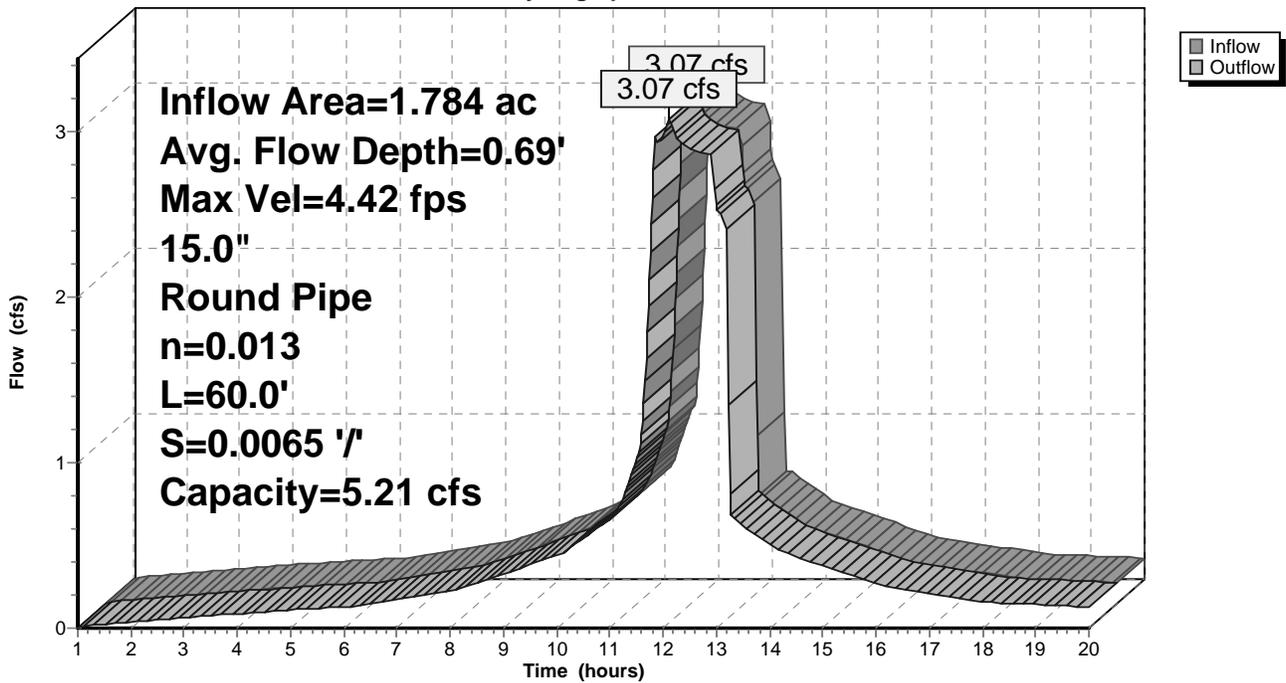
Peak Storage= 42 cf @ 12.11 hrs
 Average Depth at Peak Storage= 0.69'
 Bank-Full Depth= 1.25', Capacity at Bank-Full= 5.21 cfs

15.0" Round Pipe
 n= 0.013 Concrete pipe, bends & connections
 Length= 60.0' Slope= 0.0065 '/
 Inlet Invert= 233.91', Outlet Invert= 233.52'



Reach D-3: DMH3:DET POND

Hydrograph



12-024 PROP

Type III 24-hr 25-year Rainfall=5.40"

Prepared by {enter your company name here}

Printed 5/22/2013

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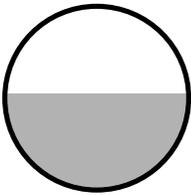
Summary for Reach D-9: CB9:DMH2

Inflow Area = 0.344 ac, 92.05% Impervious, Inflow Depth > 4.69" for 25-year event
 Inflow = 1.68 cfs @ 12.11 hrs, Volume= 0.135 af
 Outflow = 1.67 cfs @ 12.11 hrs, Volume= 0.135 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Max. Velocity= 4.00 fps, Min. Travel Time= 0.0 min
 Avg. Velocity = 1.45 fps, Avg. Travel Time= 0.1 min

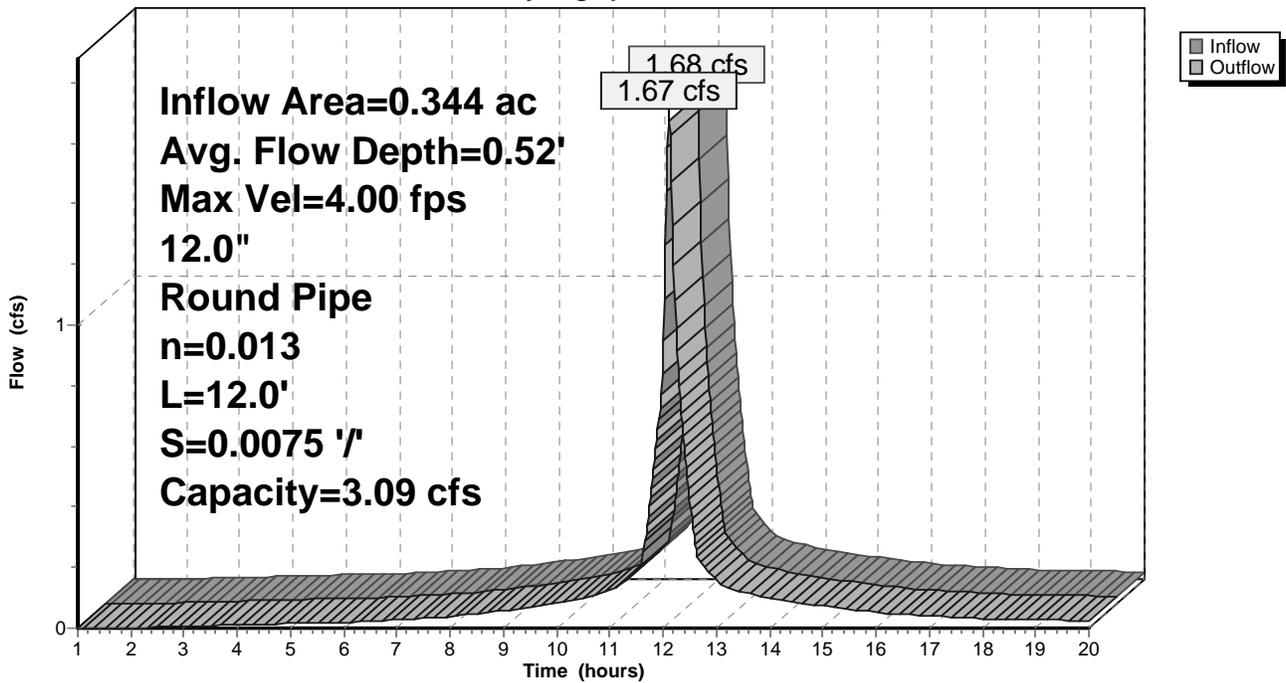
Peak Storage= 5 cf @ 12.11 hrs
 Average Depth at Peak Storage= 0.52'
 Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.09 cfs

12.0" Round Pipe
 n= 0.013
 Length= 12.0' Slope= 0.0075 '/
 Inlet Invert= 233.82', Outlet Invert= 233.73'



Reach D-9: CB9:DMH2

Hydrograph



12-024 PROP

Type III 24-hr 25-year Rainfall=5.40"

Prepared by {enter your company name here}

Printed 5/22/2013

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Summary for Pond DMH2: DMH2

Inflow Area = 1.383 ac, 98.02% Impervious, Inflow Depth > 4.87" for 25-year event
 Inflow = 5.74 cfs @ 12.09 hrs, Volume= 0.561 af
 Outflow = 5.75 cfs @ 12.10 hrs, Volume= 0.561 af, Atten= 0%, Lag= 0.3 min
 Primary = 5.75 cfs @ 12.10 hrs, Volume= 0.561 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Peak Elev= 235.05' @ 12.10 hrs Surf.Area= 0.001 ac Storage= 0.001 af

Plug-Flow detention time= 0.3 min calculated for 0.561 af (100% of inflow)
 Center-of-Mass det. time= 0.2 min (724.4 - 724.2)

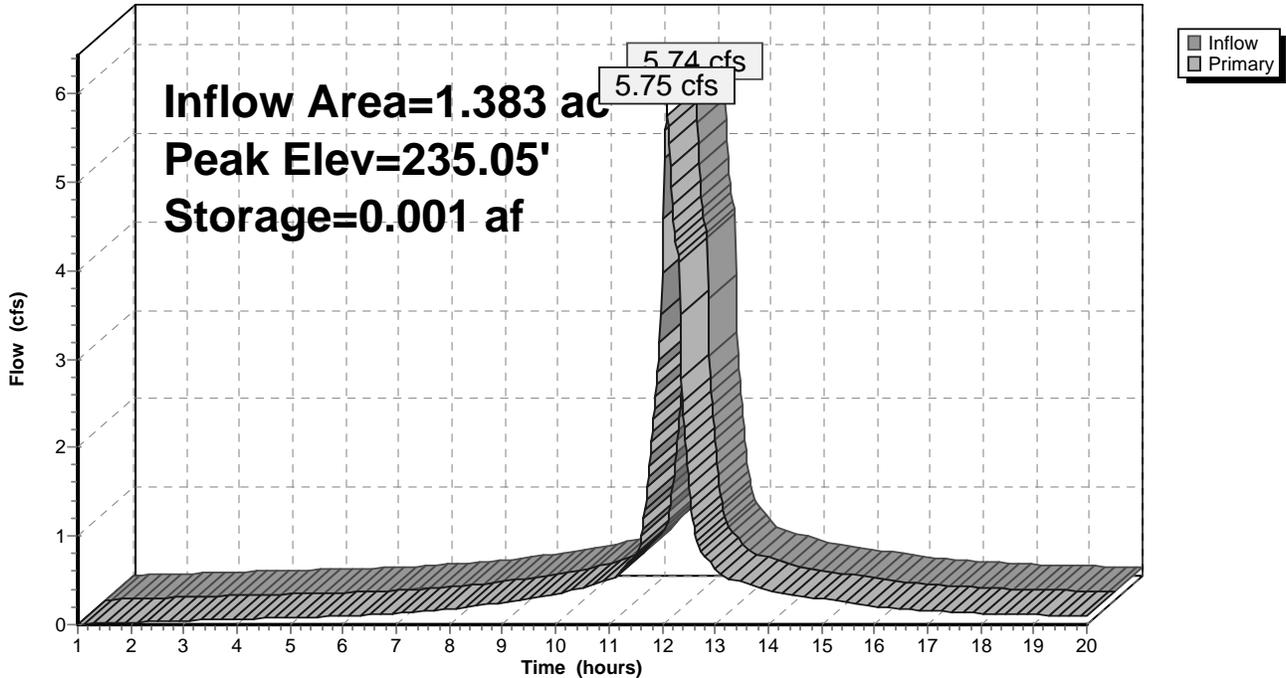
Volume	Invert	Avail.Storage	Storage Description
#1	233.48'	0.003 af	6.00'D x 4.52'H Vertical Cone/Cylinder

Device	Routing	Invert	Outlet Devices
#1	Primary	233.48'	15.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=5.74 cfs @ 12.10 hrs HW=235.05' (Free Discharge)
 ↳ **1=Orifice/Grate** (Orifice Controls 5.74 cfs @ 4.68 fps)

Pond DMH2: DMH2

Hydrograph



Summary for Pond DMH3: DMH3

Inflow Area = 1.784 ac, 98.70% Impervious, Inflow Depth > 4.89" for 25-year event
 Inflow = 3.07 cfs @ 12.10 hrs, Volume= 0.728 af
 Outflow = 3.07 cfs @ 12.10 hrs, Volume= 0.728 af, Atten= 0%, Lag= 0.1 min
 Primary = 3.07 cfs @ 12.10 hrs, Volume= 0.728 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs
 Peak Elev= 234.81' @ 12.10 hrs Surf.Area= 0.001 ac Storage= 0.001 af

Plug-Flow detention time= 0.3 min calculated for 0.727 af (100% of inflow)
 Center-of-Mass det. time= 0.2 min (728.6 - 728.4)

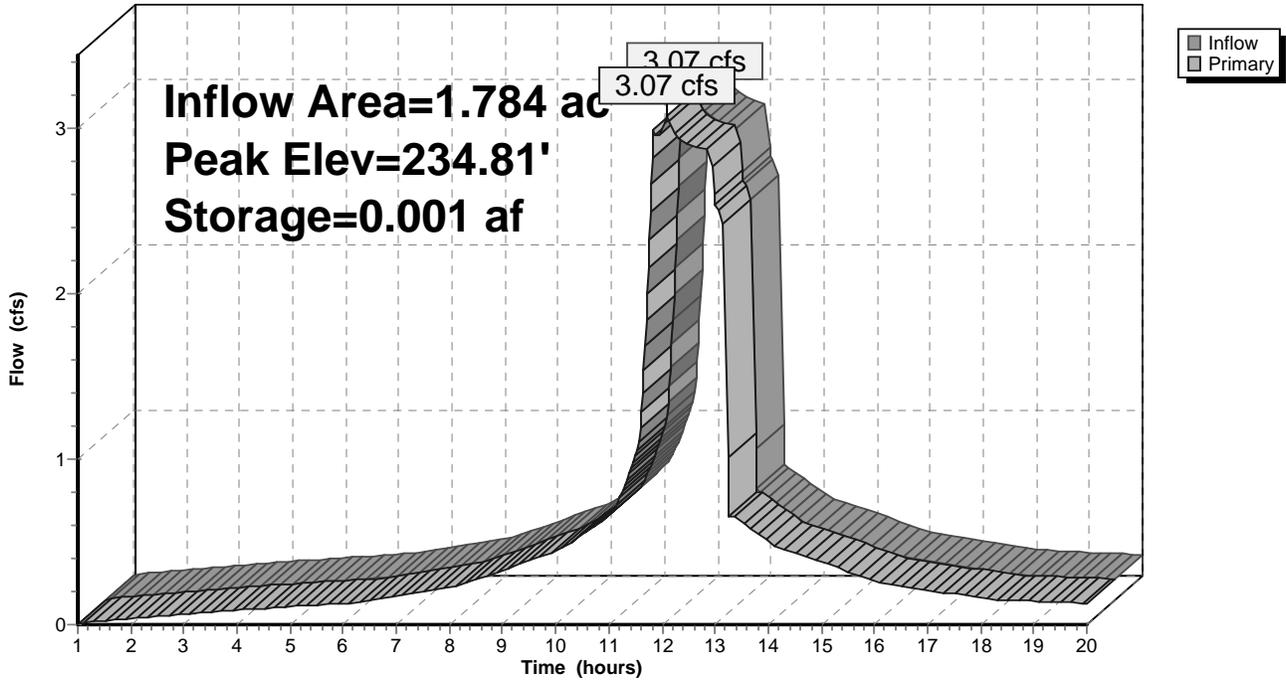
Volume	Invert	Avail.Storage	Storage Description
#1	233.91'	0.003 af	6.00'D x 4.28'H Vertical Cone/Cylinder

Device	Routing	Invert	Outlet Devices
#1	Primary	233.91'	15.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=3.07 cfs @ 12.10 hrs HW=234.81' (Free Discharge)
 ↳ **1=Orifice/Grate** (Orifice Controls 3.07 cfs @ 3.24 fps)

Pond DMH3: DMH3

Hydrograph



Summary for Pond P-2: Detention Pond, Mod

Inflow Area = 4.669 ac, 89.67% Impervious, Inflow Depth > 4.71" for 25-year event
 Inflow = 10.28 cfs @ 12.11 hrs, Volume= 1.832 af
 Outflow = 2.99 cfs @ 13.24 hrs, Volume= 1.831 af, Atten= 71%, Lag= 68.0 min
 Discarded = 2.99 cfs @ 13.24 hrs, Volume= 1.831 af
 Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-20.00 hrs, dt= 0.02 hrs / 2
 Peak Elev= 235.81' @ 13.24 hrs Surf.Area= 12,900 sf Storage= 20,223 cf
 Flood Elev= 237.00' Surf.Area= 15,480 sf Storage= 37,112 cf

Plug-Flow detention time= 53.7 min calculated for 1.829 af (100% of inflow)
 Center-of-Mass det. time= 53.3 min (795.8 - 742.6)

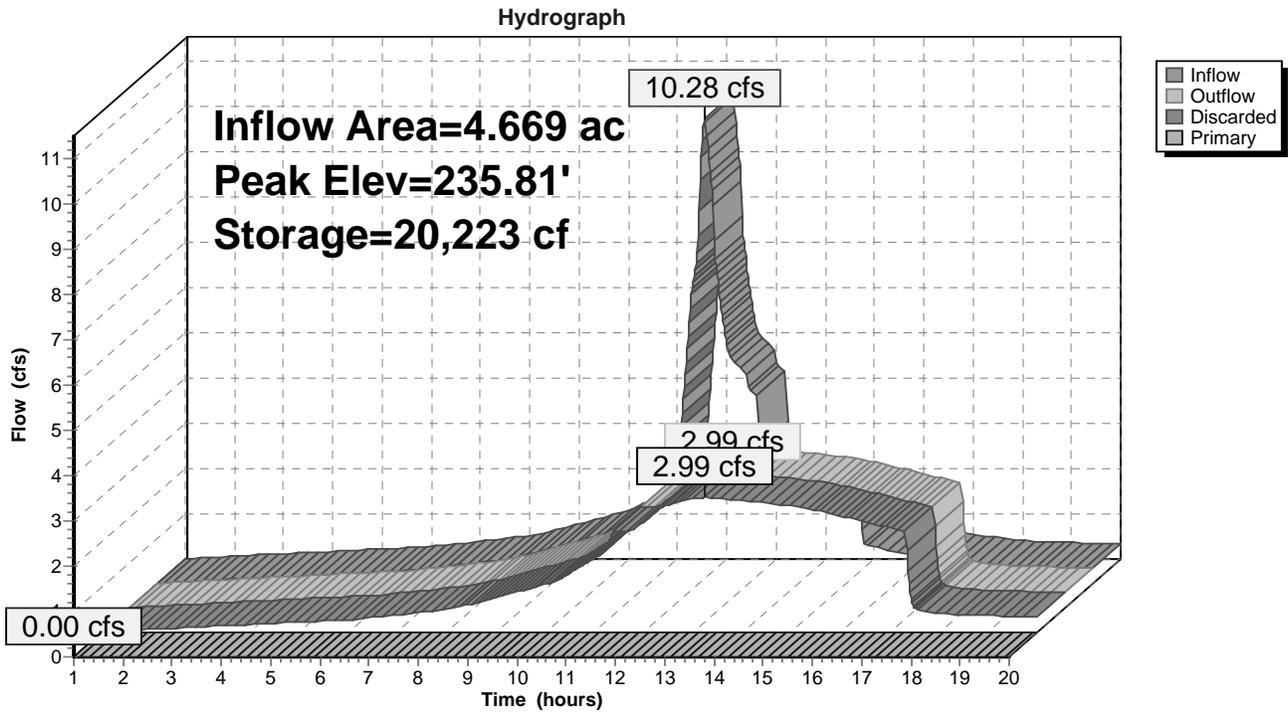
Volume	Invert	Avail.Storage	Storage Description
#1	234.00'	52,592 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
234.00	9,516	0	0
235.00	11,344	10,430	10,430
236.00	13,270	12,307	22,737
237.00	15,480	14,375	37,112
238.00	15,480	15,480	52,592

Device	Routing	Invert	Outlet Devices
#1	Primary	237.00'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Discarded	234.00'	10.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=2.99 cfs @ 13.24 hrs HW=235.81' (Free Discharge)
 ↑**2=Exfiltration** (Exfiltration Controls 2.99 cfs)

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=234.00' (Free Discharge)
 ↑**1=Orifice/Grate** (Controls 0.00 cfs)

Pond P-2: Detention Pond, Mod



SECTION 4

TSS REMOVAL WORKSHEET

Hudson Design Group LLC
 116 Pleasant Street, Suite 302A
 Easthampton, MA 01027

TSS Removal Calculation Worksheet

Project: 6,000 SF Retail Building
 Location: SHS Plaza, Parcel 2, S. Hadkey, MA

Proj. No.: 12-024
 Date: 5/23/12
 Computed by: MM

A BMP	B TSS Removal Rate (%)	C Starting TSS Load*	D Amount Removed (BxC)	E Remaining Load (C-D)
Parking Lot Sweeping	10	1.00	0.1	0.90
Hooded CB	25	0.90	0.23	0.68
Infiltration Basin	80	0.68	0.54	0.14

Total TSS Removal=

87%

Notes:

*Starting TSS Load for first BMP= 1.00. TSS load for subsequent BMP's is equal to the Remaining Load (E) from the previous BMP.

SECTION 5

O&M PLAN



May 30, 2013

KHC South Hadley Associates, LLC
C/O AVR Realty Company
1 Executive Boulevard
Yonkers, NY 10701
Attn: Mr. Brian Ferruggiari

RE: Stormwater Management System
HDG Project No. 12-024

ANNUAL MAINTENANCE & INSPECTION

Project Location: South Hadley Square Plaza, Willimansett Street, South Hadley, MA Parcel 2, Map and Lot 14-66.

Tentative responsible Contractor: Safety Kleen

IMPERVIOUS AREAS: At-grade impervious areas such as parking areas and sidewalks shall be broom swept by mechanical means by May 1st of each year, or 1-time per year as conditions warrant and allow. The selected Contractor shall properly dispose of all debris at an approved site and if requested, provide service documentation to the Town of South Hadley.

CATCH BASINS: Storm sewer or drainage catch basin sumps shall be cleaned of debris and sediment by May 1st or 1-times per year as conditions warrant. Sediment and debris shall be disposed of in a proper fashion and location. During cleaning of each catch basin sump, a visual inspection of the overall condition of catch basin grate, interior sidewalls, exiting pipe elbow (or hood, as applicable) shall be completed to ensure proper operation and good working condition. The catch basin sumps shall be cleaned using a vacuum truck or clam shell bucket. The selected Contractor shall properly dispose of all debris at an approved site and if requested, provide service documentation to the Town of South Hadley.

DETENTION POND: Every two (2) years, the detention pond shall be inspected from the surface for evidence of sediment mounding and debris. If sediment and debris are observed during inspection, the sediment and debris shall be removed or cleaned (excavated) to maximum feasible extent with equipment. The selected Contractor shall properly dispose of all debris at an approved site and if requested, provide service documentation to the Town of South Hadley.