PRELIMINARY STORMWATER MANAGEMENT PLAN

Canopy Hill

Village of Union Grove, Racine County, Wisconsin

PEG Project Number: 959.00-WI

February 4, 2021

May 3, 2021

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Questions and comments can be directed to:

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INTRODUCTION

The proposed project consists of a 156-acre single- and multi-family residential subdivision with a future assisted senior living component located north of Seventh Avenue and West of USH 45 in the Village of Union Grove, Racine County, Wisconsin. Access to the development will be primarily from USH 45 (South Colony Avenue) in two locations: at the proposed westerly extension of 58th Road on the north and proposed Kiddle Lane on the south. Proposed Kiddle Lane is approximately 650 feet north of 7th Avenue.

The Village of Union Grove, the County of Racine, and the Wisconsin DNR have jurisdiction on the site with regards to stormwater requirements. The 100-year post development peak runoff discharge shall not exceed 0.30 cubic feet per second per developed acre. The 2-year post-development peak runoff discharge shall not exceed 0.04 cfs per developed acre. In addition, the site will have 80% TSS removal. PEG has prepared a plan which will meet these requirements. A location map that illustrates the tract of land is included in **Appendix 1**.

DESIGN CRITERIA

Village of Union Grove .....Chapter 95

Wisconsin Department of Natural Resources:.....NR 216 & NR 151

Water Quantity: The Village of Union Grove requires the 100-year post development peak runoff discharge not exceed 0.30 cubic feet per second per developed acre and the 2-year post-development peak runoff discharge not exceed 0.04 cfs per developed acre

Water Quality: The minimum Village and DNR requirements are to remove 80% of the total suspended solids (TSS) load on an average annual basis from the runoff from the site.

Infiltration: Infiltration is required for sites containing soils suitable for infiltration. In this case, the soil is clay soils have been observe on the site during borings which are not suitable for infiltration. Per NR 151, the site is exempt from the need to do infiltration and thus infiltration is not provided as part of this plan.

Protective Areas: Wetlands are found on the site. Swales have been provided adjacent to the property line to catch runoff from the lots and prevent it from entering the wetland areas. Therefore, no protective area is required.

ANALYSIS METHODS

HydroCAD® (Version 10.00) software has been used to analyze stormwater characteristics for this stormwater management plan. HydroCAD uses the accepted TR-55 methodology for determining peak discharge runoff rates. The design rainfall depths for the 1-year, 2-year, 10-year and 100-year storm events are 2.34, 2.64, 3.73, and 6.06 inches are based on the latest edition of the Point Rainfall Intensity-Duration-Frequency Relationships for Milwaukee, Wisconsin as prepared by Southeastern Wisconsin Regional Planning Commission (SEWRPC). MSE 3 24-hour rainfall distributions are used in the analysis.

TSS reduction characteristics for the proposed water quality facilities were determined using WinSLAMM® (Version 10.4.1) Source Loading and Management Model.

EXISTING CONDITIONS

The existing site consists of 156 acres of a cropland, woods, and wetlands. Drainage on the site is divided into two main areas: the north creek watershed, and the south creek watershed. For purposes of peak flow reduction, the discharge points for the two watersheds were examined separately. Overall drainage for both areas is generally from west to east.

Soil types on the site consist primarily of silt loams and silty clay loams from the Markham, Ashkum, Elliot, Moreley, and Blount soil series. A smaller area of Aztalan sandy loam exists on the north central side of the site. All these soils are classified as hydrologic soil group "C" except for the Ashkum silty clay loam which is B/D type soil. Since the soils are predominantly clayey soils, the Ashkum is not anticipated to be well drained, therefore, group "C" type soils are used for determining all existing and proposed runoff curve numbers.

There are two streams/creeks that traverse through the site. The first creek (identified as "North Creek") enters the site from the north property line and leaves under USH 45 via a newly installed 7-foot by 10-foot box culvert. The second creek enters the site from the south and meanders along the south property line, exiting under USH 45 via a 6-foot by 6-foot box culvert. Both streams carry upstream runoff from large offsite watersheds.

The north upstream watershed consists of approximately 1,237 acres and the south upstream watershed consists of approximately 615 acres. Modeling the existing creeks as ponds with the culverts under USH 45 as outlet structures will provide the 100-year water surface elevations that will be used in the design of structural and non-structural improvements associated with the development. Other minor offsite areas also drain onto the property and will be passed through the site either through the proposed ponds or through bypass pipes and swales. There are no mapped floodplains / floodways on the site. The site is ultimately tributary to the West Branch of the Root River Canal.

POST-DEVELOPMENT CONDITIONS

Canopy Hill is to be developed into 188 single-family residential lots, thirty-seven (37) 2-unit multi-family buildings, three (3) 20-unit multi-family buildings and a 3.4-acre assisted senior living area. The proposed development will be constructed in three (3) phases. Four (4) storm water ponds will be constructed on the site to provide the peak flow attenuation and water quality.

The storm water ponds will be constructed with a permanent water surface depth of at least 5 feet. High water elevations (100-year) will be kept at least 1-foot below the top of berm. The ponds will have an emergency spillway lined with high performance turf reinforcement, and a safety shelf below the normal water elevation. All ponds will have clay liners that will be constructed with the onsite clay soils provided they are approved by a geotechnical engineer before placement.

The offsite areas tributary to the north creek will be handled as follows: Area OFF-1 will continue to flow through the creek along is current alignment. Area OFF-2 will be routed back to the west as it is now and will combine with Area OFF-1. Areas OFF-3, OFF-4, and OFF-6 will be conveyed through Pond 1, located south of the westerly extension of 58th Road and will ultimately discharge to the creek. Area OFF-9 will be routed through Pond 2, located immediately north of St. Robert Bellarmine Catholic Church, and will ultimately discharge to the creek. Areas OFF-5, and OFF-7 will continue to go directly to the north creek.

The offsite areas tributary to the south creek will be handled as follows: Area OFF-10 will be routed through Pond 3 and Area OFF-11will continue to go directly to the south creek along is current alignment.

The offsite areas peak flow for the 100-year and 2-year storms will be manually added to the allowable peak flow based on the 0.04 cfs/ac and 0.3 cfs/ac for the developed areas.

SUMMARY OF RESULTS

Existing Conditions

Refer to **Appendix 2** for routing.

Existing Drainage Summary

Area	Area (ac)	CN	Tc (min)	Peak Flows 1-year (cfs)	Peak Flows 2-year (cfs)	Peak Flows 10-year (cfs)	Peak Flows 100-year (cfs)
EX-1	1,237.0	72	162.9	132.97	185.29	421.93	1,053.65
EX-2	614.9	75	141.6	95.47	129.17	273.80	641.50

Proposed Conditions

Refer to **Appendix 3** for routing.

Allowable Flows – North (2 Year & 100-Year)

Area	Area (ac)	Peak Flows 2-year (cfs)	Peak Flows 100-year (cfs)
OFFSTE (OFF-3, OFF-4, OFF-6)	21.2	14.43	77.83
OFF-9	21.6	3.73	23.81
PR-1, -2, -3	92.0	3.68*	27.60*
UN-1, -2	5.0	0.20*	1.50*
TOTAL NORTH	139.8	**24.22**	**137.96**
**Flows derived using the area and allowable release rate of 0.04 cfs/ac for the 2-year event and 0.3 cfs/ac for the 100-year event.*			

Allowable Flows- North (1 Year & 10-Year Existing to Post)

Area	Peak Flows 1-Year (cfs)	Peak Flows 2-Year (cfs)	Peak Flows 10-Year (cfs)	Peak Flows 100-year (cfs)
EXISTING (ONLY AREA GOING TO POND)	15.09	24.22	47.90	137.96
POST DEVELOPMENT	10.63	16.10	42.38	136.10

Proposed Flows - North

Area	Area (ac)	CN	Tc (min)	Peak Flows 1-year (cfs)	Peak Flows 2-year (cfs)	Peak Flows 10-year (cfs)	Peak Flows 100-year (cfs)
OFF-3	11.6	71	19.2	4.35	6.38	15.40	39.00
OFF-4	5.7	72	14.9	2.74	3.94	9.12	22.49
OFF-6	3.9	81	10.0	4.96	6.29	11.52	23.56
PR-1	25.5	82	10.0	32.40	41.12	75.34	154.05
POND 1	---	---	---	3.63	4.79	7.36	11.09
OFF-9	21.6	70	104.2	2.58	3.73	9.08	23.81
PR-2	50.4	81	10.0	64.04	81.28	148.91	304.47
PR-3	16.1	76	23.8	8.88	11.98	24.90	56.65
POND 2	---	---	---	6.73	10.83	33.13	90.18
PR SITE NORTH	---	---	---	**10.63**	**16.10**	**41.74**	**104.88**

Allowable Flows - South

Area	Area (ac)	Peak Flows 2-year (cfs)	Peak Flows 100-year (cfs)
OFF-10	21.6	4.33	27.96
PR-4, -5	36.6	1.46*	10.98*
TOTAL SOUTH	---	**5.79**	**38.94**

**Flows derived using the area and allowable release rate of 0.04 cfs/ac for the 2-year event and 0.3 cfs/ac for the 100-year event.*

Allowable Flows- North (1 Year & 10-Year Existing to Post)

Area	Peak Flows 1-Year (cfs)	Peak Flows 2-Year (cfs)	Peak Flows 10-Year (cfs)	Peak Flows 100-year (cfs)
EXISTING (ONLY AREA GOING TO POND)	6.27	8.88	20.81	53.27
POST DEVELOPMENT	3.69	4.96	14.66	36.38

Proposed Flows - South

Area	Area (ac)	CN	Tc (min)	Peak Flows 1-year (cfs)	Peak Flows 2-year (cfs)	Peak Flows 10-year (cfs)	Peak Flows 100-year (cfs)
PR-4	24.7	81	15.6	25.28	32.17	59.29	121.94
OFF-10	21.6	70	83.4	2.97	4.33	10.63	27.96
POND 3	---	---	---	2.52	3.80	10.61	31.49
PR-5	11.9	82	10.0	15.78	19.84	35.64	71.81
POND 4	---	---	---	0.84	1.21	2.71	4.90
PR SITE SOUTH	---	---	---	3.32	**4.96**	13.26	**36.38**

Basin Data

Pond	Normal Water Elev.	Peak W.S. Elev. 2-year	Peak W.S. Elev. 100-year	Top of Berm Elev.
POND 1	763.0	764.3	768.4	770.0
POND 2	760.0	762.1	765.6	767.0
POND 3	767.0	767.8	769.8	771.0
POND 4	757.0	757.6	759.2	762.0

The modeling indicates that the pond will detain the flows so that the peak flow during the 2-year storm event will be less than the required 0.04 cfs/acre of onsite and the 100-year storm event will be less than the required 0.3 cfs/acre of onsite. The offsite area which will be passed through the ponds were manually added to the allowable flow charts. Furthermore, the 1-year storm event is detained so that the proposed peak flow is less than the existing peak flows.

Creek Data

Creek	Existing Peak W.S. Elev 100 yr	Proposed Peak W.S. Elev 100 yr
NORTH @ USH 45	764.2	764.0
SOUTH @ USH 45	760.1	760.1

The proposed north and south creek elevation will remain the same as existing conditions.

Runoff Water Quality

Post-development water quality will be obtained in the wet ponds. A minimum of 80% removal is achieved in these areas.

Water Quality Summary

Area/Pond	Ponds of TSS Generated	Pounds of TSS Remaining	Percent Removal
North	23,361	4,658	80.06%
South	7,236	1,199	83.43%

Infiltration

Due to the exclusive clay soils which were observed during borings completed by Gestra Engineering, the soils within the site are not suitable for infiltration.

Protective Areas

Wetlands are found on the site. Grading on lots adjacent to the wetlands has been minimized to avoid the wetland areas. Swales have been provided adjacent to the property line to catch runoff from the lots and prevent it from entering the wetland areas. Therefore, no protective area is required.

Stormwater Conveyance System

Storm sewer was sized to accommodate the 10-year design storm event intensity using rational method and manning's formula. Refer to the storm sewer calculations in **Appendix 5**.

Pond Details

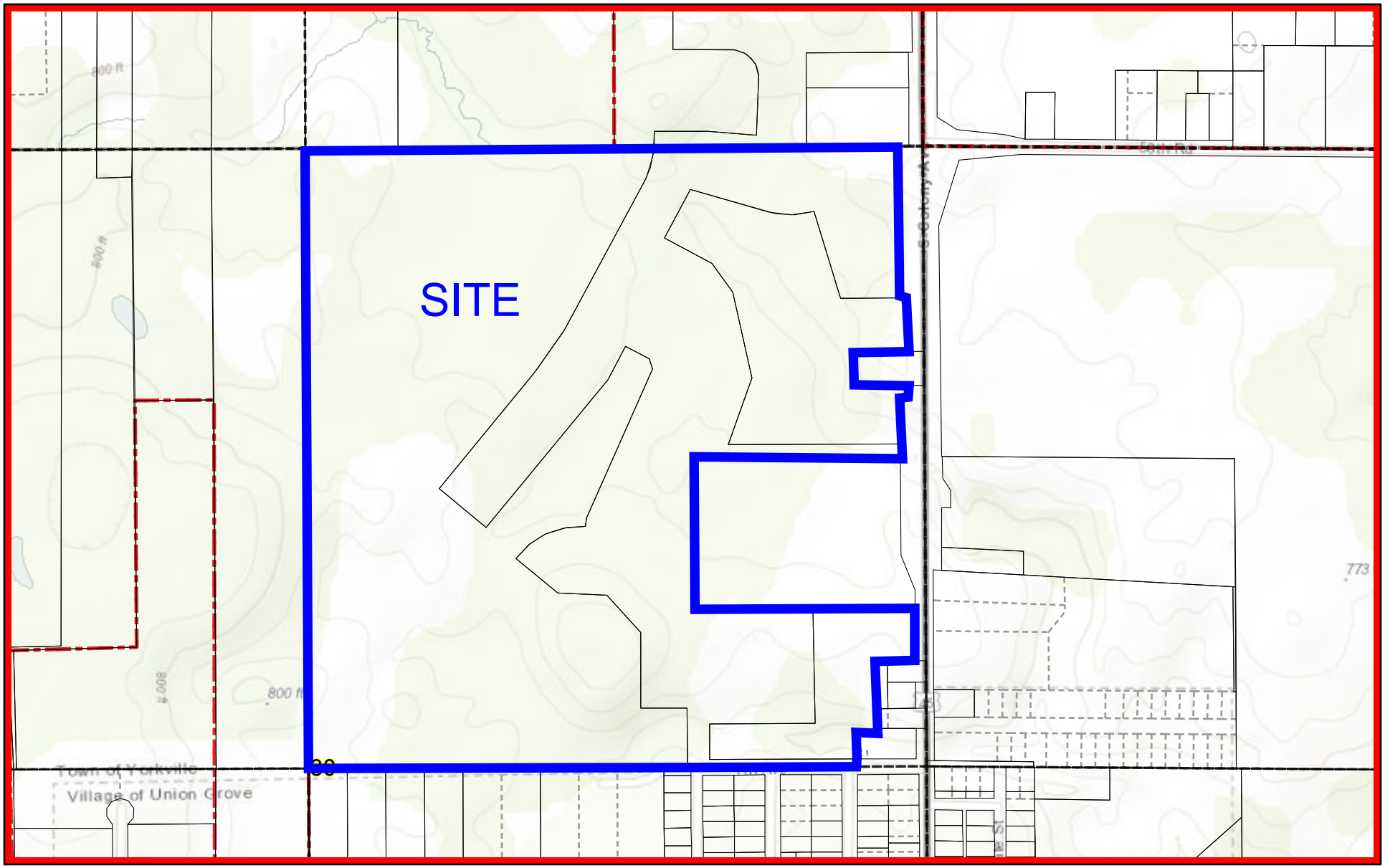
Details of Ponds 1, 2, and 3 can be found in the Construction Documents for Phase 1. Pond 4 is for a future phase so the detail is not included in the current Construction Documents.

CONCLUSION

The stormwater management features for the development have been designed to comply with the Village of Union Grove Ordinance and WDNR regulations. All proposed runoff up to the 100-year storm event will be routed to the stormwater ponds. Stormwater will be treated to remove at least 80% total suspended solids annually via the wet ponds. Maintenance is expected to occur on a regular basis. An agreement with the Village of Union Grove will be executed to ensure this occurs.

APPENDIX 1

ArcGIS WebMap



April 10, 2019

1:9,600

0 0.05 0.1 0.2 mi

0 0.07 0.15 0.3 km

Quarter Quarter Section

Quarter Section

Sections

Tax Parcels

Parcel Tie Lines

Municipal Boundaries

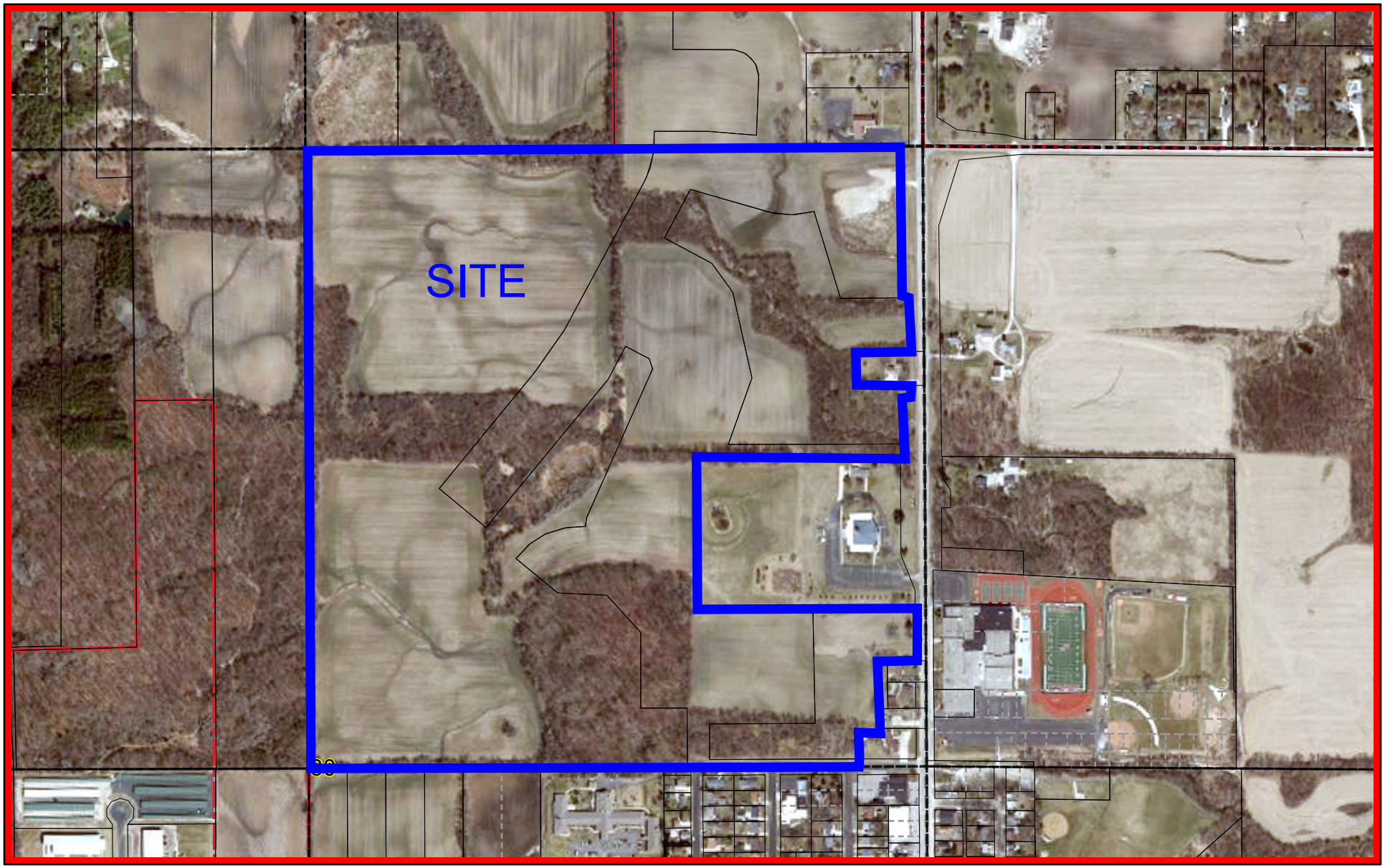
Water lines

Waterbody

Racine County, SEWRPC, Sources: Esri, HERE, Garmin, Intermap,

ArcGIS WebApp Builder

ArcGIS WebMap



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0 0.05 0.1 0.2 mi

0 0.07 0.15 0.3 km

Quarter Quarter Section

Quarter Section

Sections

Tax Parcels

Parcel Tie Lines

Municipal Boundaries

Water lines

Waterbody

2015 Spring Aerial

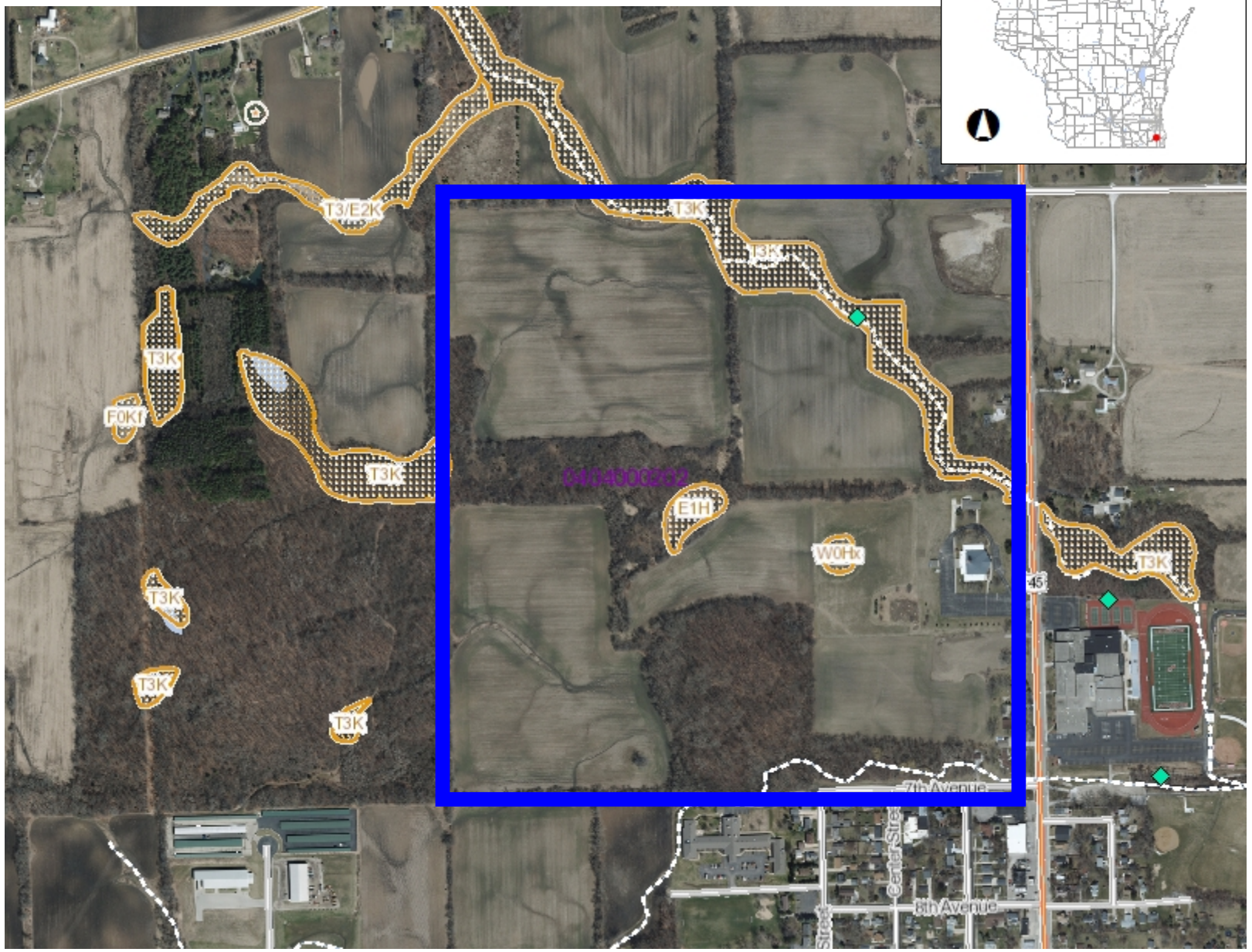
Red: Band_1

Green: Band_2

Racine County, SEWRPC, Sources: Esri, HERE, Garmin, Intermap,

ArcGIS WebApp Builder

Surface Water Data Viewer Map



Legend

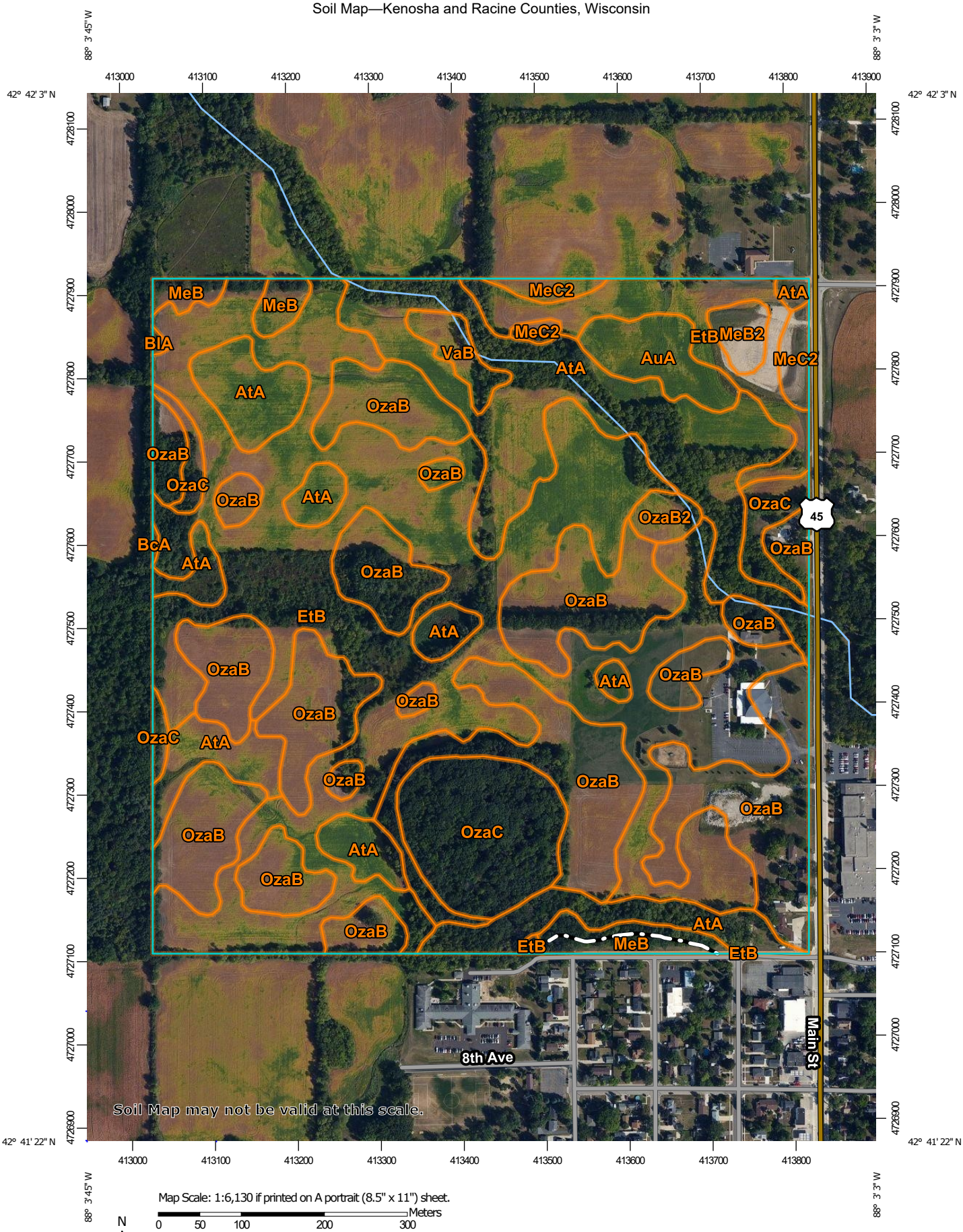
- Wetland Identifications and Confirmations
- Wetland Class Points
  - Dammed pond
  - Excavated pond
  - Filled excavated pond
  - Filled/drained wetland
  - Wetland too small to delineate
- Filled Points
- Wetland Class Areas
  - Wetland
  - Upland
- Filled Areas
- Wetland Class Points
  - Dammed pond
  - Excavated pond
  - Filled excavated pond
  - Filled/drained wetland
  - Wetland too small to delineate
- Filled Points
- Wetland Class Areas
  - Wetland
  - Upland
- Filled Areas
- Intermittent Streams
- 24K Hydrography Streams and Rivers
- 24K Hydrography Lakes and Open Water
- 10-digit HUCs (Watersheds)
- Municipality
- State Boundaries
- County Boundaries
- Major Roads
  - Interstate Highway

Notes

0.3 0 0.13 0.3 Miles

NAD_1983_HARN_Wisconsin_TM

1: 7,920



Map Scale: 1:6,130 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 50 100 200 300

Feet
0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

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

Soil Survey Area: Kenosha and Racine Counties, Wisconsin
Survey Area Data: Version 15, Sep 12, 2018

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

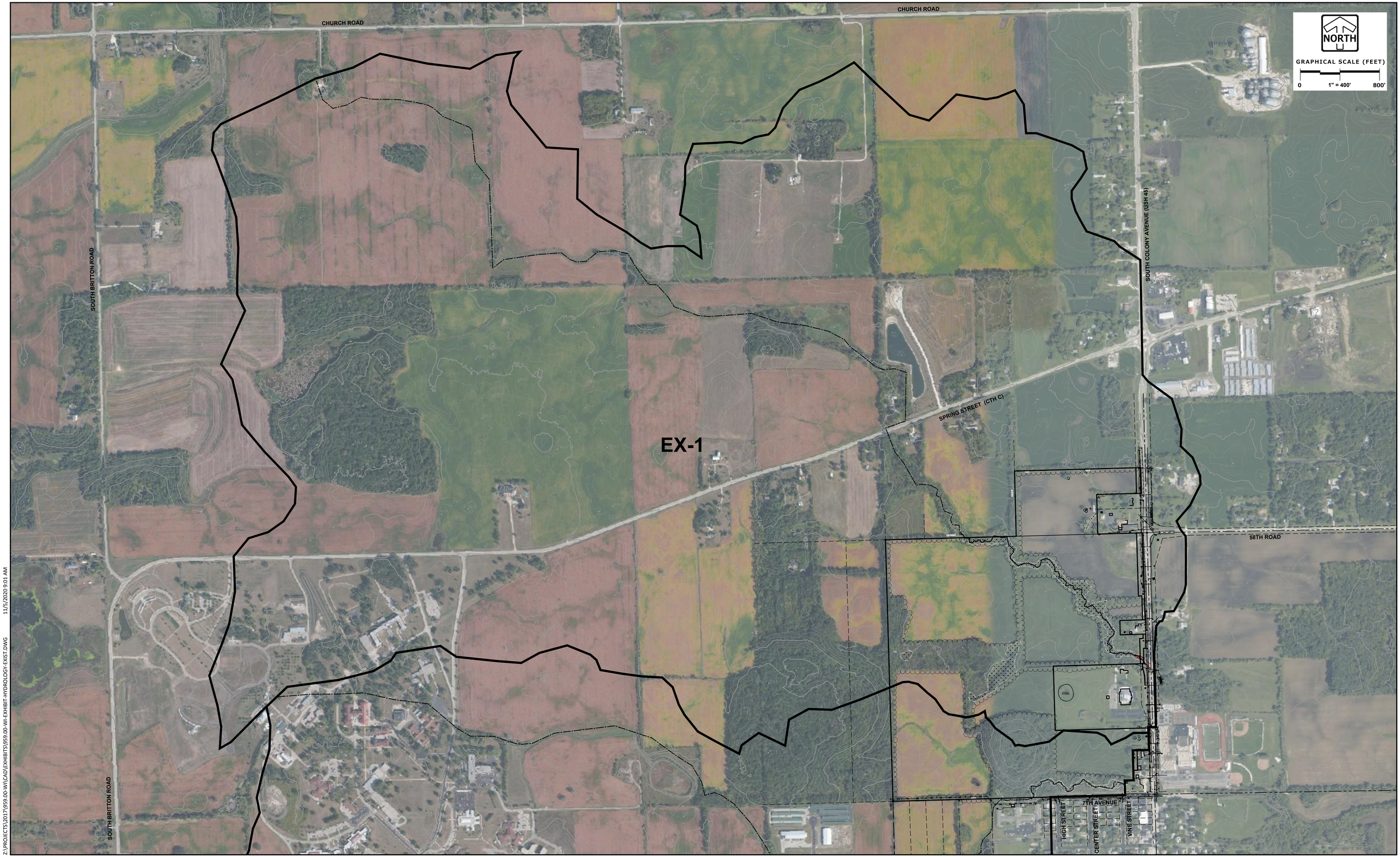
Date(s) aerial images were photographed: Apr 29, 2011—Mar 28, 2012

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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AtA	Ashkum silty clay loam, 0 to 2 percent slopes	30.6	19.2%
AuA	Aztalan sandy loam, 1 to 3 percent slopes	3.1	2.0%
BcA	Beecher silt loam, 1 to 3 percent slopes	0.1	0.0%
BlA	Blount silt loam, 1 to 3 percent slopes	0.1	0.1%
EtB	Elliott silty clay loam, 2 to 6 percent slopes	59.3	37.3%
MeB	Markham silt loam, 2 to 6 percent slopes	3.4	2.1%
MeB2	Markham silt loam, 2 to 6 percent slopes, eroded	1.2	0.7%
MeC2	Markham silt loam, 6 to 12 percent slopes, eroded	1.9	1.2%
OzaB	Ozaukee silt loam, 2 to 6 percent slopes	46.4	29.2%
OzaB2	Ozaukee silt loam, 2 to 6 percent slopes, eroded	1.0	0.6%
OzaC	Ozaukee silt loam, 6 to 12 percent slopes	10.6	6.7%
VaB	Varna silt loam, 2 to 6 percent slopes	1.4	0.9%
Totals for Area of Interest		**159.1**	**100.0%**

APPENDIX 2



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CANOPY HILL - Hydrology Exhibit - Existing Conditions - North Creek

11/06/20

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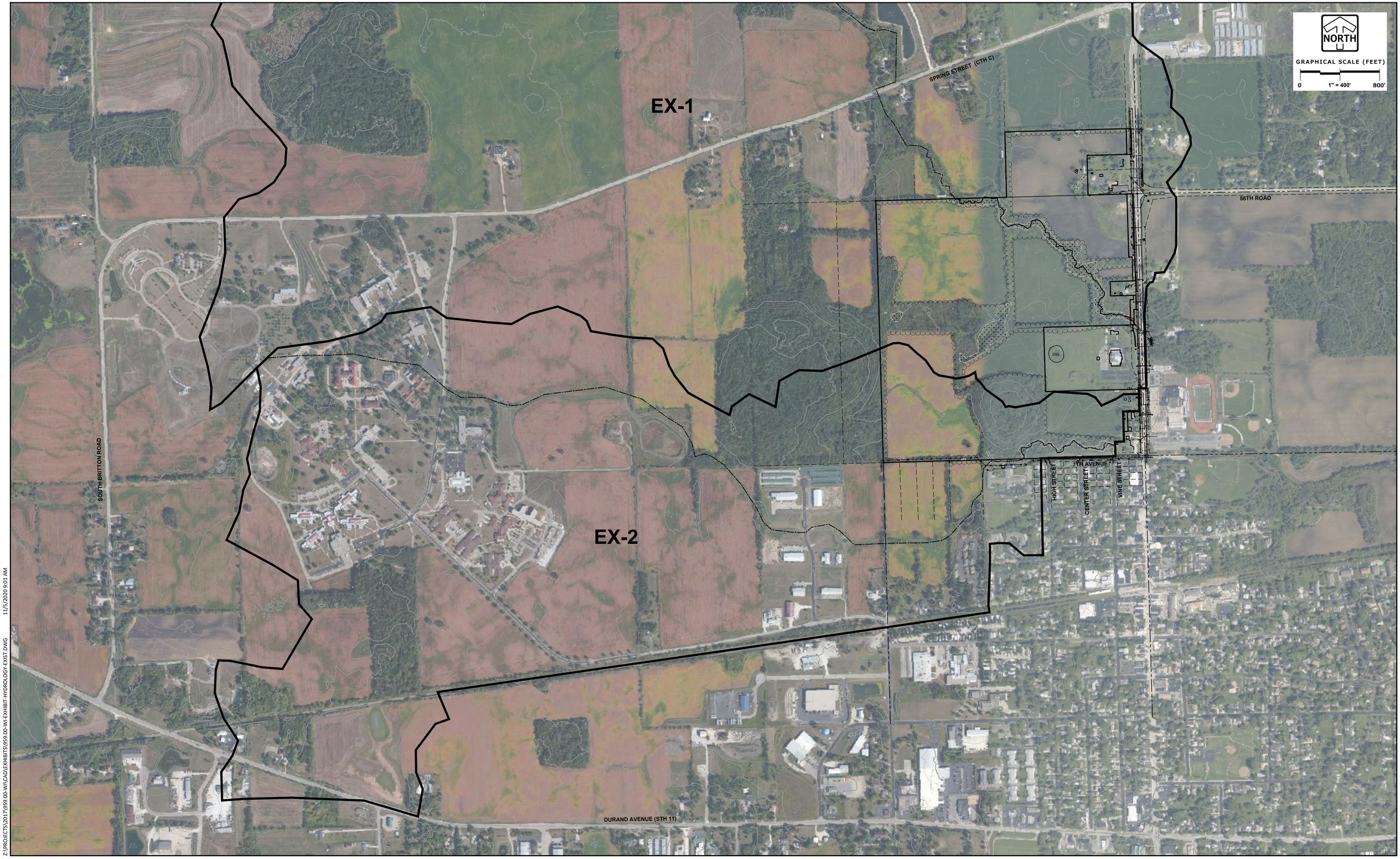
PLAN | DESIGN | DELIVER

PEGJOB# 959.00



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CANOPY HILL - Hydrology Exhibit - Existing Conditions - South Creek

11/06/20

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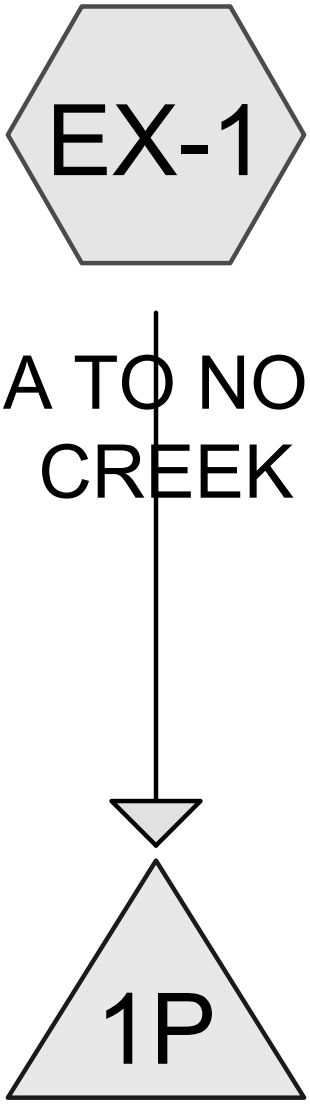
PLAN | DESIGN | DELIVER

PEGJOB# 959.00



Subcat Reach Pond Link

Routing Diagram for 959.00-WI_HCAD_CANOPY HILL NORTH
Prepared by Pinnacle Engineering Group, Printed 5/3/2021

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
60.000	86	INSTITUTIONAL - 50% OPEN SPACE (EX-1)
956.400	71	Meadow, non-grazed, HSG C (EX-1)
4.300	98	PAVEMENT & ROOFS (EX-1)
216.300	70	Woods, Good, HSG C (EX-1)

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1P	753.44	751.47	202.0	0.0098	0.013	120.0	84.0	0.0

Summary for Subcatchment EX-1: AREA TO NORTH CREEK

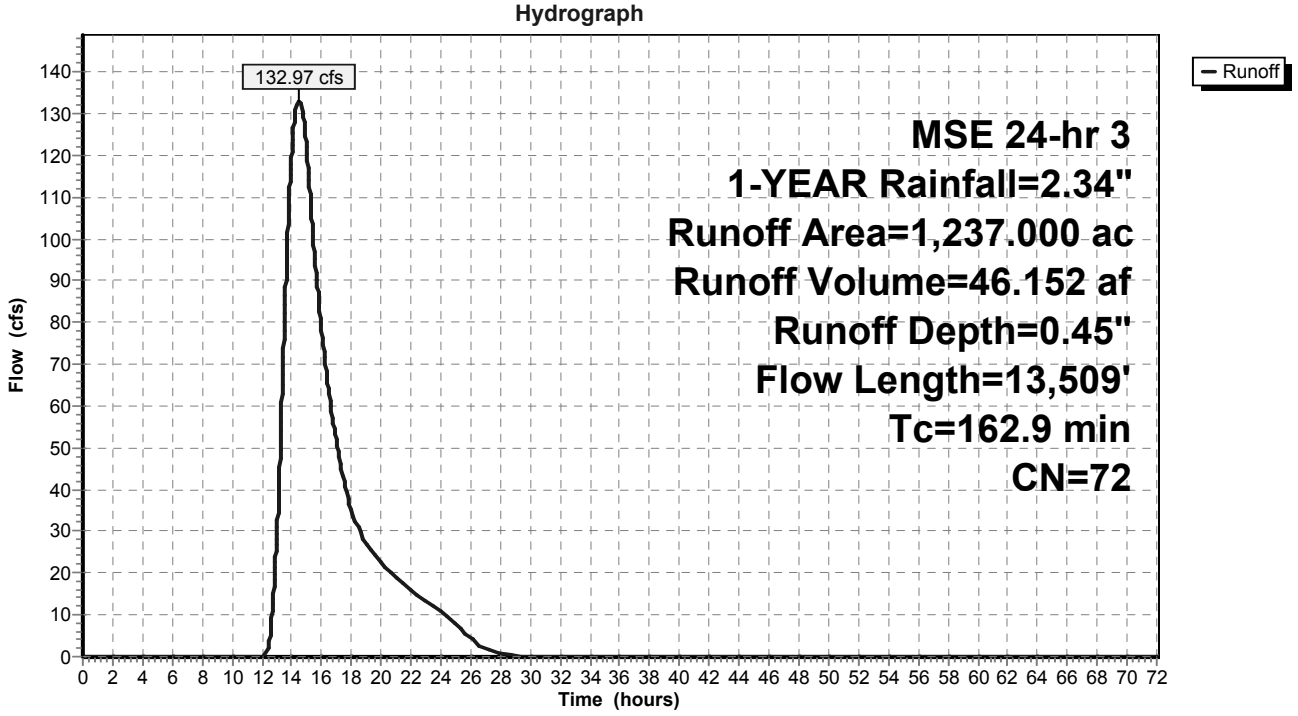
Runoff = 132.97 cfs @ 14.48 hrs, Volume= 46.152 af, Depth= 0.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 1-YEAR Rainfall=2.34"

	Area (ac)	CN	Description
*	4.300	98	PAVEMENT & ROOFS
*	60.000	86	INSTITUTIONAL - 50% OPEN SPACE
	956.400	71	Meadow, non-grazed, HSG C
	216.300	70	Woods, Good, HSG C
	1,237.000	72	Weighted Average
	1,232.700		99.65% Pervious Area
	4.300		0.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	300	0.0200	0.40		**Sheet Flow, SEGMENT 1** Cultivated: Residue<=20% n= 0.060 P2= 2.57"
114.0	6,000	0.0077	0.88		**Shallow Concentrated Flow, SEGMENT 2** Nearly Bare & Untilled Kv= 10.0 fps
36.3	7,209	0.0055	3.31	22.05	**Parabolic Channel, SEGMENT 3** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.025
162.9	13,509	Total			

Subcatchment EX-1: AREA TO NORTH CREEK



Summary for Pond 1P: NORTH CREEK @ 45

Inflow Area = 1,237.000 ac, 0.35% Impervious, Inflow Depth = 0.45" for 1-YEAR event
Inflow = 132.97 cfs @ 14.48 hrs, Volume= 46.152 af
Outflow = 132.93 cfs @ 14.49 hrs, Volume= 46.152 af, Atten= 0%, Lag= 0.6 min
Primary = 132.93 cfs @ 14.49 hrs, Volume= 46.152 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 756.02' @ 14.49 hrs Surf.Area= 2,117 sf Storage= 2,824 cf

Plug-Flow detention time= 0.3 min calculated for 46.145 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (999.2 - 998.9)

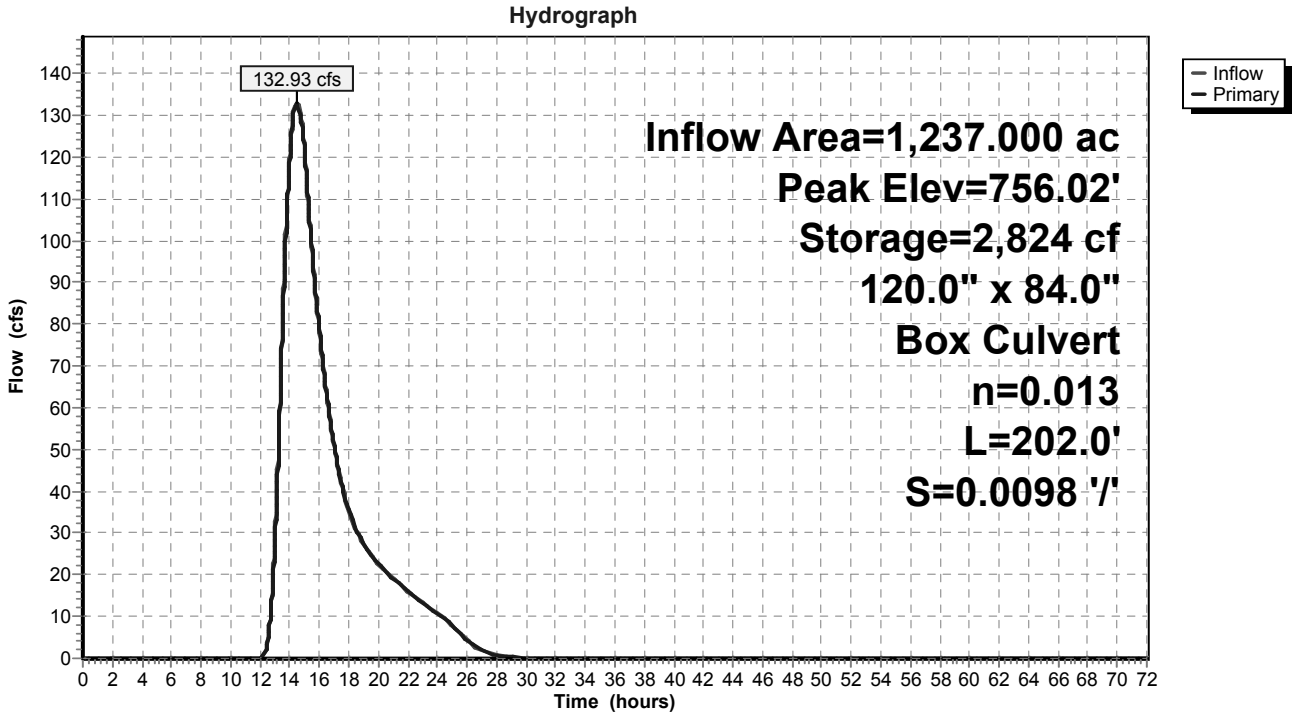
Volume	Invert	Avail.Storage	Storage Description
#1	753.44'	1,325,994 cf	**ACTIVE STORAGE VOLUME (Irregular)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
753.44	0	0.0	0	0	0
754.00	581	145.0	108	108	1,674
755.00	1,370	268.0	948	1,056	5,721
756.00	2,048	730.0	1,698	2,754	42,416
757.00	5,733	1,393.0	3,736	6,490	154,430
758.00	13,083	1,825.0	9,159	15,649	265,069
759.00	28,462	2,602.0	20,281	35,929	538,806
760.00	47,112	3,455.0	37,397	73,327	949,964
761.00	74,209	3,753.0	60,150	133,476	1,120,933
762.00	117,171	4,712.0	94,876	228,352	1,766,952
763.00	204,471	5,562.0	158,809	387,161	2,461,913
764.00	491,349	6,940.0	337,595	724,756	3,832,869
765.00	718,287	8,112.0	601,238	1,325,994	5,236,710

Device	Routing	Invert	Outlet Devices
#1	Primary	753.44'	**120.0" W x 84.0" H Box BOX CULVERT** L= 202.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 753.44' / 751.47' S= 0.0098 '/' Cc= 0.900 n= 0.013 Concrete, trowel finish, Flow Area= 70.00 sf

Primary OutFlow Max=132.93 cfs @ 14.49 hrs HW=756.02' (Free Discharge)
↑—**1=BOX CULVERT** (Inlet Controls 132.93 cfs @ 5.15 fps)

Pond 1P: NORTH CREEK @ 45



Summary for Subcatchment EX-1: AREA TO NORTH CREEK

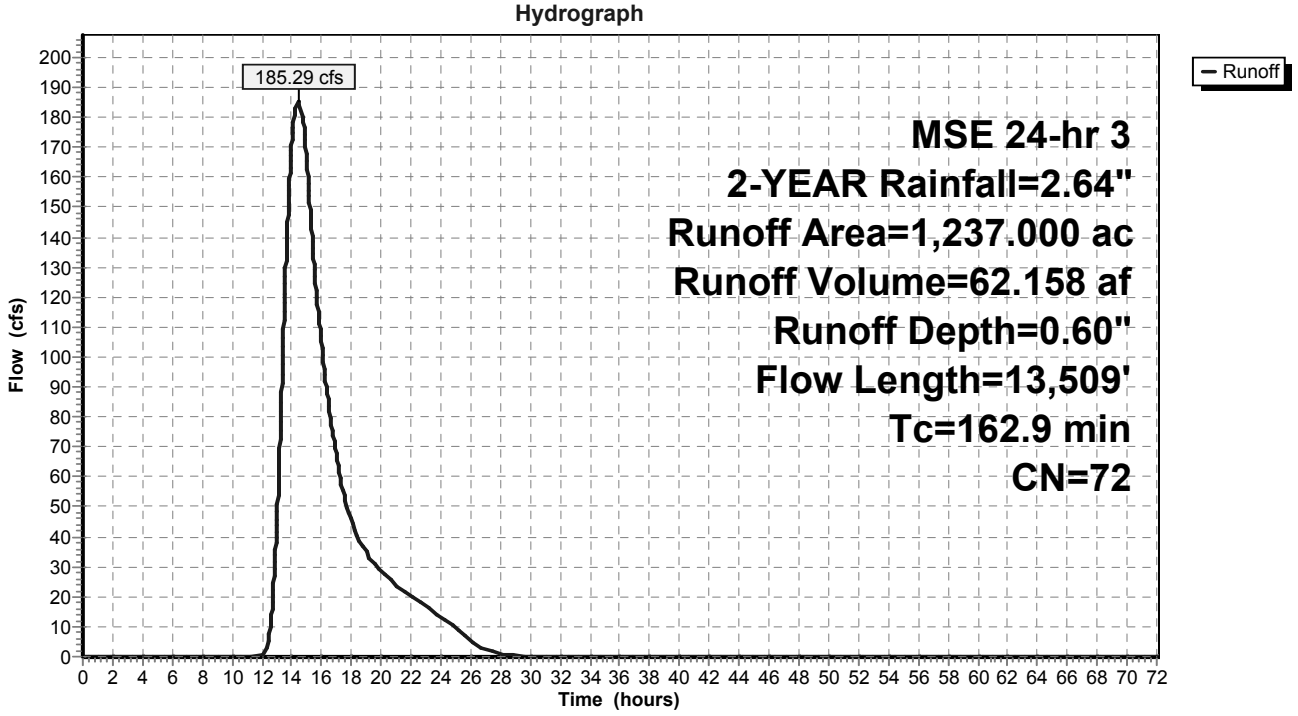
Runoff = 185.29 cfs @ 14.47 hrs, Volume= 62.158 af, Depth= 0.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-YEAR Rainfall=2.64"

	Area (ac)	CN	Description
*	4.300	98	PAVEMENT & ROOFS
*	60.000	86	INSTITUTIONAL - 50% OPEN SPACE
	956.400	71	Meadow, non-grazed, HSG C
	216.300	70	Woods, Good, HSG C
	1,237.000	72	Weighted Average
	1,232.700		99.65% Pervious Area
	4.300		0.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	300	0.0200	0.40		**Sheet Flow, SEGMENT 1** Cultivated: Residue<=20% n= 0.060 P2= 2.57"
114.0	6,000	0.0077	0.88		**Shallow Concentrated Flow, SEGMENT 2** Nearly Bare & Untilled Kv= 10.0 fps
36.3	7,209	0.0055	3.31	22.05	**Parabolic Channel, SEGMENT 3** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.025
162.9	13,509	Total			

Subcatchment EX-1: AREA TO NORTH CREEK



Summary for Pond 1P: NORTH CREEK @ 45

Inflow Area = 1,237.000 ac, 0.35% Impervious, Inflow Depth = 0.60" for 2-YEAR event
Inflow = 185.29 cfs @ 14.47 hrs, Volume= 62.158 af
Outflow = 185.29 cfs @ 14.48 hrs, Volume= 62.158 af, Atten= 0%, Lag= 0.4 min
Primary = 185.29 cfs @ 14.48 hrs, Volume= 62.158 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 756.66' @ 14.48 hrs Surf.Area= 4,472 sf Storage= 5,211 cf

Plug-Flow detention time= 0.5 min calculated for 62.158 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (990.9 - 990.5)

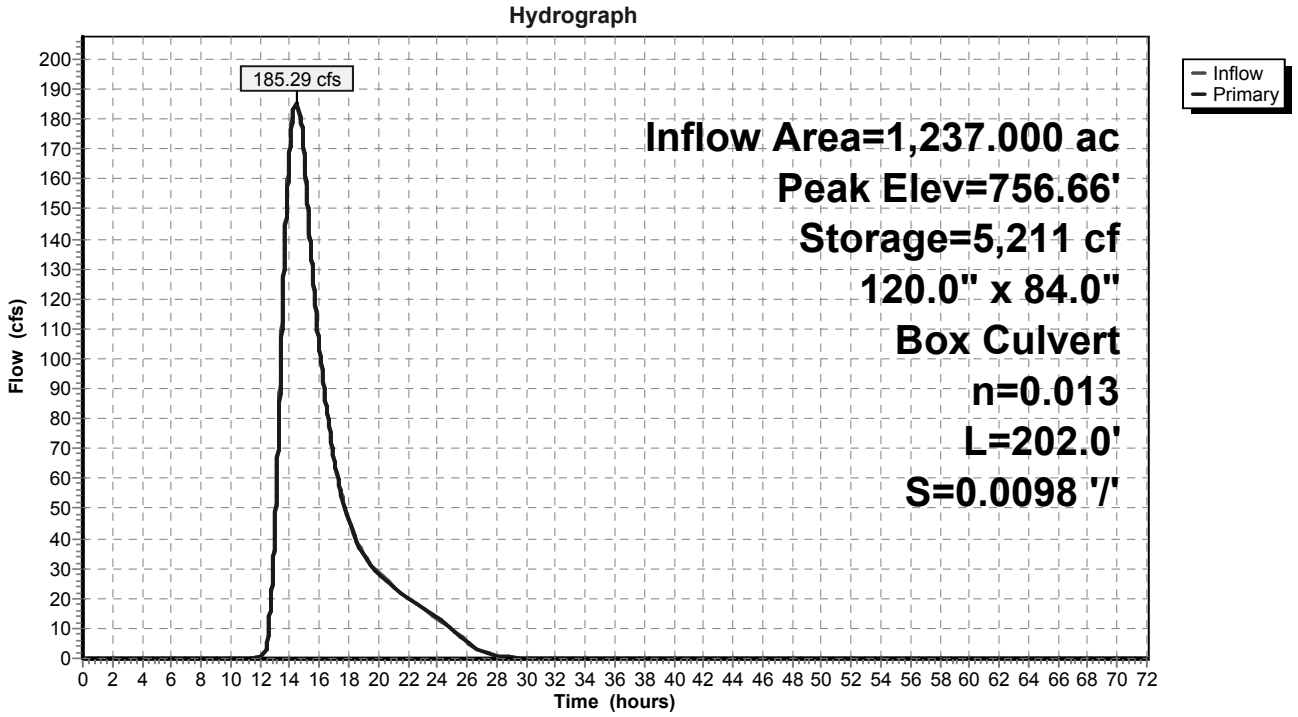
Volume	Invert	Avail.Storage	Storage Description
#1	753.44'	1,325,994 cf	**ACTIVE STORAGE VOLUME (Irregular)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
753.44	0	0.0	0	0	0
754.00	581	145.0	108	108	1,674
755.00	1,370	268.0	948	1,056	5,721
756.00	2,048	730.0	1,698	2,754	42,416
757.00	5,733	1,393.0	3,736	6,490	154,430
758.00	13,083	1,825.0	9,159	15,649	265,069
759.00	28,462	2,602.0	20,281	35,929	538,806
760.00	47,112	3,455.0	37,397	73,327	949,964
761.00	74,209	3,753.0	60,150	133,476	1,120,933
762.00	117,171	4,712.0	94,876	228,352	1,766,952
763.00	204,471	5,562.0	158,809	387,161	2,461,913
764.00	491,349	6,940.0	337,595	724,756	3,832,869
765.00	718,287	8,112.0	601,238	1,325,994	5,236,710

Device	Routing	Invert	Outlet Devices
#1	Primary	753.44'	**120.0" W x 84.0" H Box BOX CULVERT** L= 202.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 753.44' / 751.47' S= 0.0098 '/' Cc= 0.900 n= 0.013 Concrete, trowel finish, Flow Area= 70.00 sf

Primary OutFlow Max=185.28 cfs @ 14.48 hrs HW=756.66' (Free Discharge)
↑—**1=BOX CULVERT** (Inlet Controls 185.28 cfs @ 5.76 fps)

Pond 1P: NORTH CREEK @ 45



Summary for Subcatchment EX-1: AREA TO NORTH CREEK

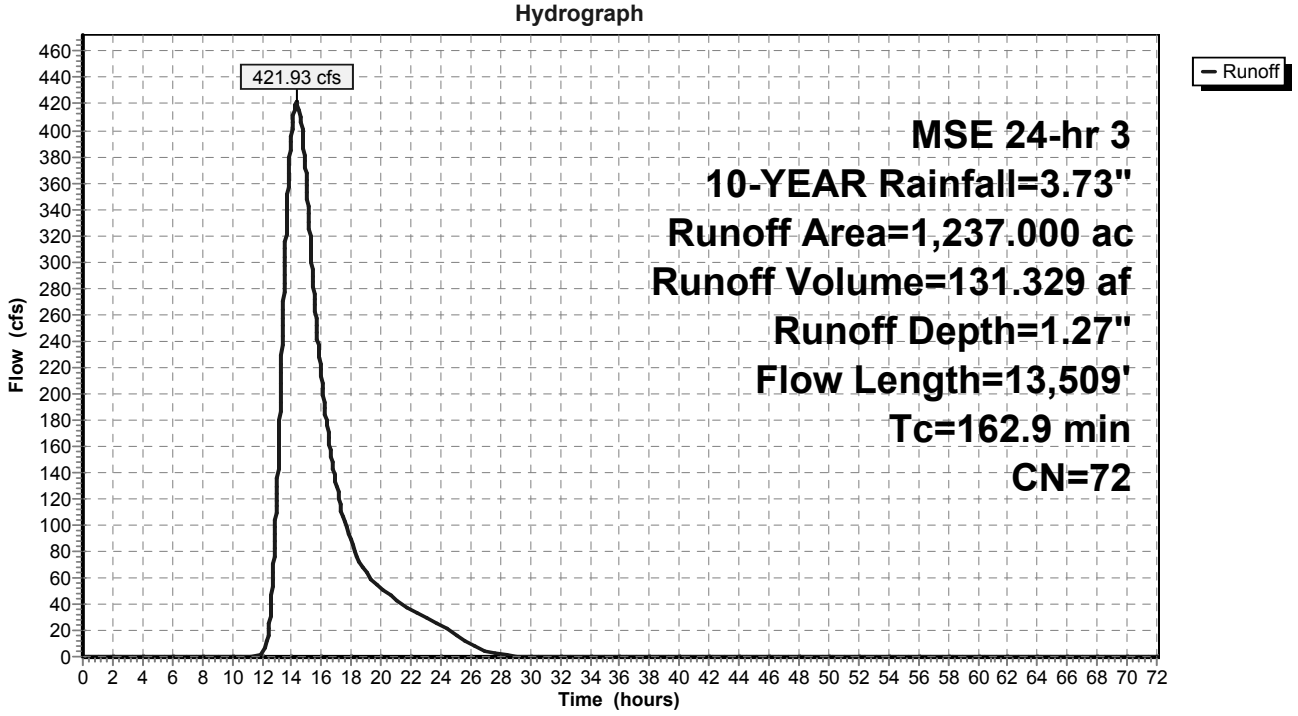
Runoff = 421.93 cfs @ 14.30 hrs, Volume= 131.329 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-YEAR Rainfall=3.73"

	Area (ac)	CN	Description
*	4.300	98	PAVEMENT & ROOFS
*	60.000	86	INSTITUTIONAL - 50% OPEN SPACE
	956.400	71	Meadow, non-grazed, HSG C
	216.300	70	Woods, Good, HSG C
	1,237.000	72	Weighted Average
	1,232.700		99.65% Pervious Area
	4.300		0.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	300	0.0200	0.40		**Sheet Flow, SEGMENT 1** Cultivated: Residue<=20% n= 0.060 P2= 2.57"
114.0	6,000	0.0077	0.88		**Shallow Concentrated Flow, SEGMENT 2** Nearly Bare & Untilled Kv= 10.0 fps
36.3	7,209	0.0055	3.31	22.05	**Parabolic Channel, SEGMENT 3** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.025
162.9	13,509	Total			

Subcatchment EX-1: AREA TO NORTH CREEK



Summary for Pond 1P: NORTH CREEK @ 45

Inflow Area = 1,237.000 ac, 0.35% Impervious, Inflow Depth = 1.27" for 10-YEAR event
Inflow = 421.93 cfs @ 14.30 hrs, Volume= 131.329 af
Outflow = 420.34 cfs @ 14.35 hrs, Volume= 131.329 af, Atten= 0%, Lag= 3.1 min
Primary = 420.34 cfs @ 14.35 hrs, Volume= 131.329 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 759.00' @ 14.35 hrs Surf.Area= 28,395 sf Storage= 35,841 cf

Plug-Flow detention time= 0.9 min calculated for 131.329 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (973.0 - 972.2)

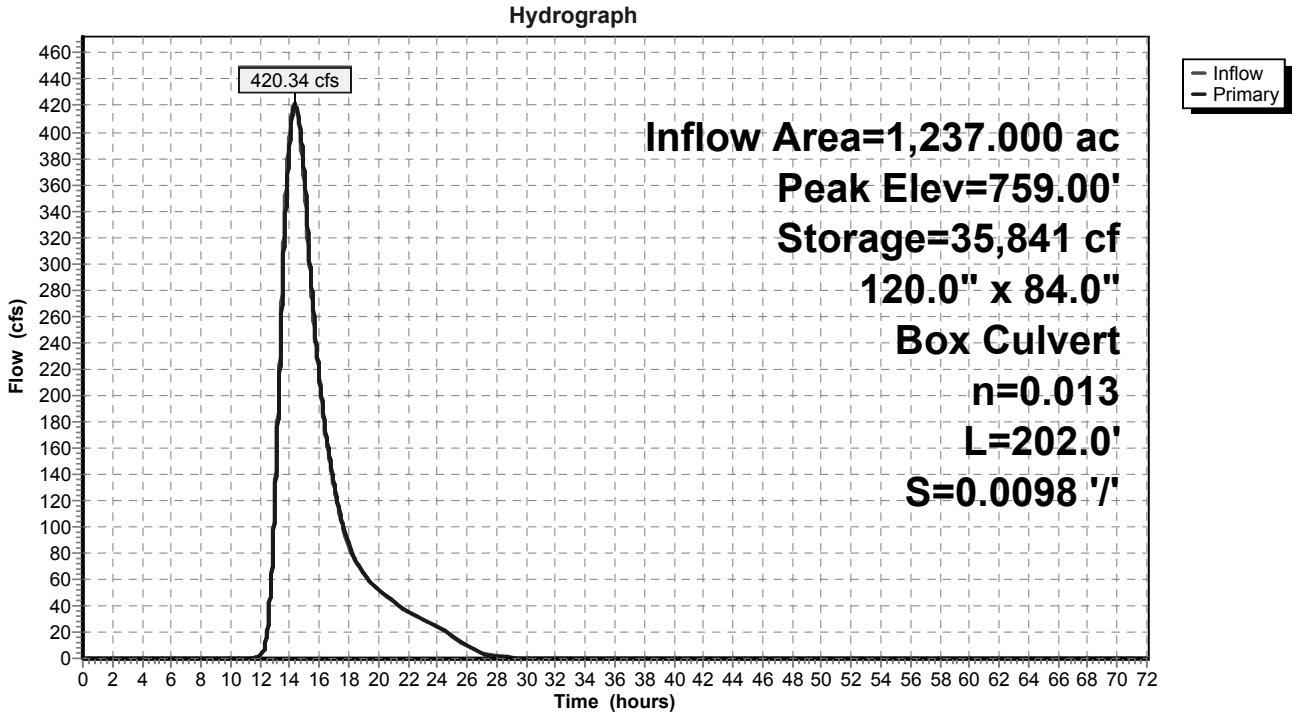
Volume	Invert	Avail.Storage	Storage Description
#1	753.44'	1,325,994 cf	**ACTIVE STORAGE VOLUME (Irregular)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
753.44	0	0.0	0	0	0
754.00	581	145.0	108	108	1,674
755.00	1,370	268.0	948	1,056	5,721
756.00	2,048	730.0	1,698	2,754	42,416
757.00	5,733	1,393.0	3,736	6,490	154,430
758.00	13,083	1,825.0	9,159	15,649	265,069
759.00	28,462	2,602.0	20,281	35,929	538,806
760.00	47,112	3,455.0	37,397	73,327	949,964
761.00	74,209	3,753.0	60,150	133,476	1,120,933
762.00	117,171	4,712.0	94,876	228,352	1,766,952
763.00	204,471	5,562.0	158,809	387,161	2,461,913
764.00	491,349	6,940.0	337,595	724,756	3,832,869
765.00	718,287	8,112.0	601,238	1,325,994	5,236,710

Device	Routing	Invert	Outlet Devices
#1	Primary	753.44'	**120.0" W x 84.0" H Box BOX CULVERT** L= 202.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 753.44' / 751.47' S= 0.0098 '/' Cc= 0.900 n= 0.013 Concrete, trowel finish, Flow Area= 70.00 sf

Primary OutFlow Max=420.33 cfs @ 14.35 hrs HW=759.00' (Free Discharge)
↑—**1=BOX CULVERT** (Inlet Controls 420.33 cfs @ 7.57 fps)

Pond 1P: NORTH CREEK @ 45



Summary for Subcatchment EX-1: AREA TO NORTH CREEK

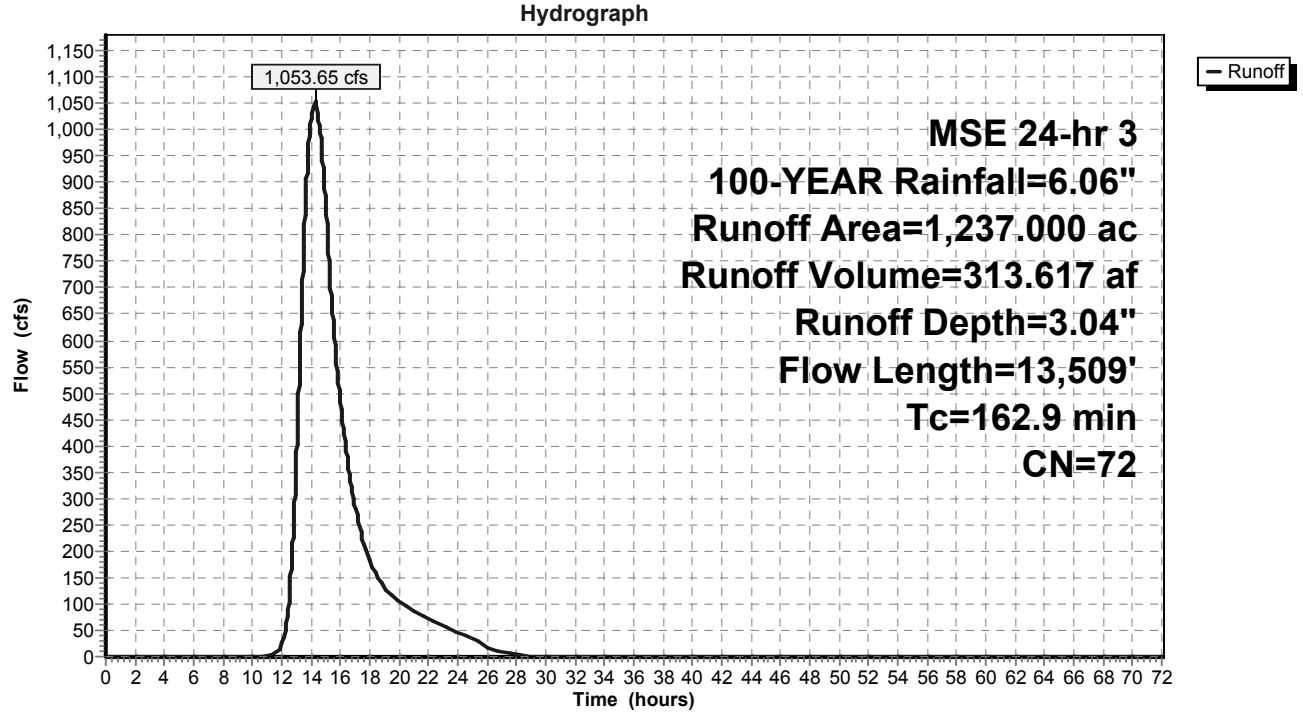
Runoff = 1,053.65 cfs @ 14.30 hrs, Volume= 313.617 af, Depth= 3.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.06"

	Area (ac)	CN	Description
*	4.300	98	PAVEMENT & ROOFS
*	60.000	86	INSTITUTIONAL - 50% OPEN SPACE
	956.400	71	Meadow, non-grazed, HSG C
	216.300	70	Woods, Good, HSG C
	1,237.000	72	Weighted Average
	1,232.700		99.65% Pervious Area
	4.300		0.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	300	0.0200	0.40		**Sheet Flow, SEGMENT 1** Cultivated: Residue<=20% n= 0.060 P2= 2.57"
114.0	6,000	0.0077	0.88		**Shallow Concentrated Flow, SEGMENT 2** Nearly Bare & Untilled Kv= 10.0 fps
36.3	7,209	0.0055	3.31	22.05	**Parabolic Channel, SEGMENT 3** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.025
162.9	13,509	Total			

Subcatchment EX-1: AREA TO NORTH CREEK



Summary for Pond 1P: NORTH CREEK @ 45

Inflow Area = 1,237.000 ac, 0.35% Impervious, Inflow Depth = 3.04" for 100-YEAR event
Inflow = 1,053.65 cfs @ 14.30 hrs, Volume= 313.617 af
Outflow = 900.58 cfs @ 14.89 hrs, Volume= 313.617 af, Atten= 15%, Lag= 35.6 min
Primary = 900.58 cfs @ 14.89 hrs, Volume= 313.617 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 764.23' @ 14.89 hrs Surf.Area= 542,512 sf Storage= 860,305 cf

Plug-Flow detention time= 6.7 min calculated for 313.574 af (100% of inflow)
Center-of-Mass det. time= 6.7 min (960.3 - 953.6)

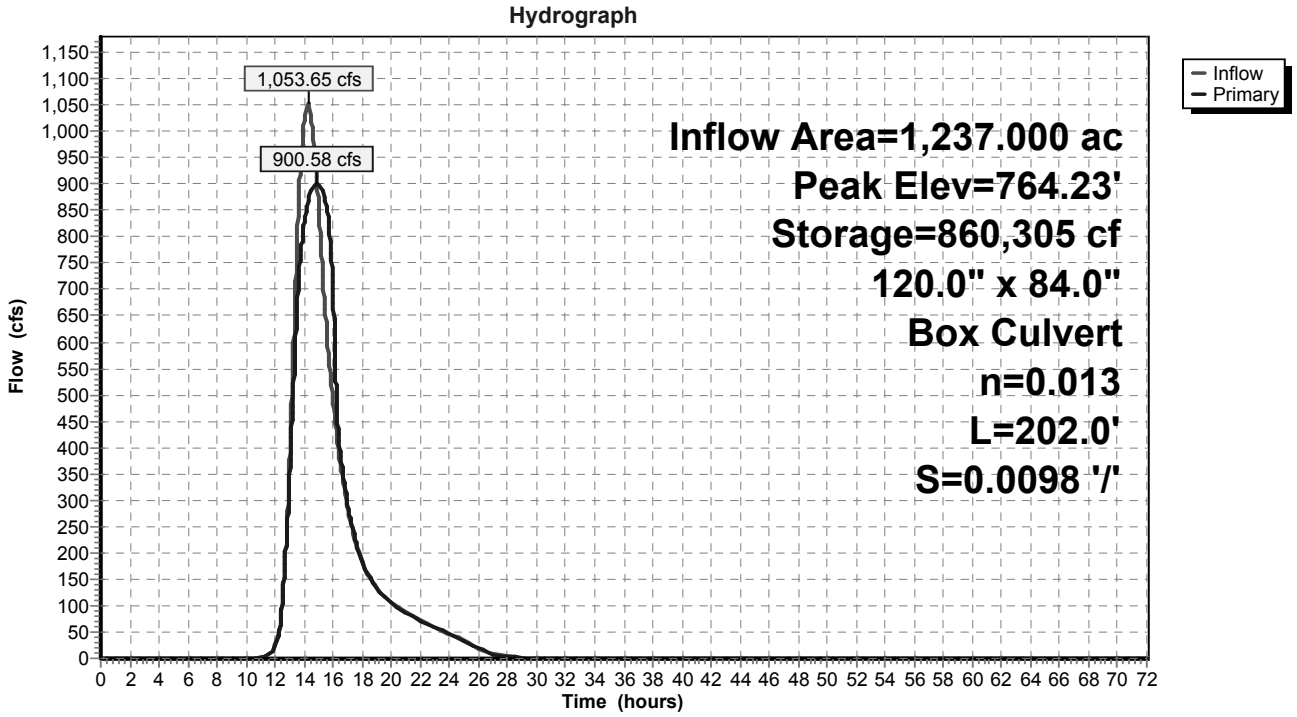
Volume	Invert	Avail.Storage	Storage Description
#1	753.44'	1,325,994 cf	**ACTIVE STORAGE VOLUME (Irregular)** Listed below

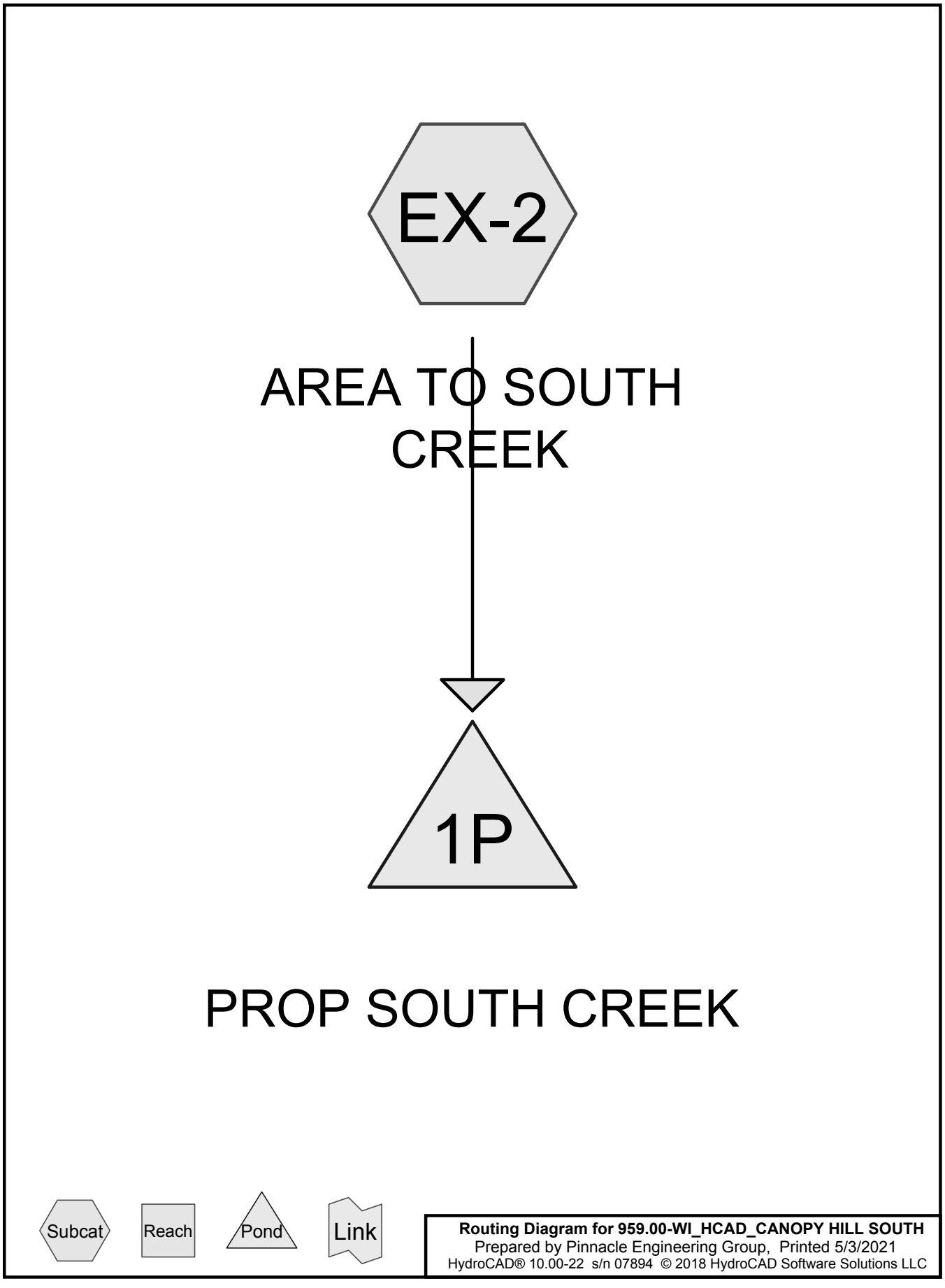
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
753.44	0	0.0	0	0	0
754.00	581	145.0	108	108	1,674
755.00	1,370	268.0	948	1,056	5,721
756.00	2,048	730.0	1,698	2,754	42,416
757.00	5,733	1,393.0	3,736	6,490	154,430
758.00	13,083	1,825.0	9,159	15,649	265,069
759.00	28,462	2,602.0	20,281	35,929	538,806
760.00	47,112	3,455.0	37,397	73,327	949,964
761.00	74,209	3,753.0	60,150	133,476	1,120,933
762.00	117,171	4,712.0	94,876	228,352	1,766,952
763.00	204,471	5,562.0	158,809	387,161	2,461,913
764.00	491,349	6,940.0	337,595	724,756	3,832,869
765.00	718,287	8,112.0	601,238	1,325,994	5,236,710

Device	Routing	Invert	Outlet Devices
#1	Primary	753.44'	**120.0" W x 84.0" H Box BOX CULVERT** L= 202.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 753.44' / 751.47' S= 0.0098 '/' Cc= 0.900 n= 0.013 Concrete, trowel finish, Flow Area= 70.00 sf

Primary OutFlow Max=900.58 cfs @ 14.89 hrs HW=764.23' (Free Discharge)
↑—**1=BOX CULVERT** (Inlet Controls 900.58 cfs @ 12.87 fps)

Pond 1P: NORTH CREEK @ 45





Routing Diagram for 959.00-WI_HCAD_CANOPY HILL SOUTH
Prepared by Pinnacle Engineering Group, Printed 5/3/2021

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
17.000	83	1/4 acre lots, 38% imp, HSG C (EX-2)
121.000	86	INSTITUTIONAL - 50% OPEN SPACE (EX-2)
375.300	71	Meadow, non-grazed, HSG C (EX-2)
31.500	91	Urban industrial, 72% imp, HSG C (EX-2)
70.100	70	Woods, Good, HSG C (EX-2)

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1P	750.60	748.10	500.0	0.0050	0.013	72.0	72.0	0.0

Summary for Subcatchment EX-2: AREA TO SOUTH CREEK

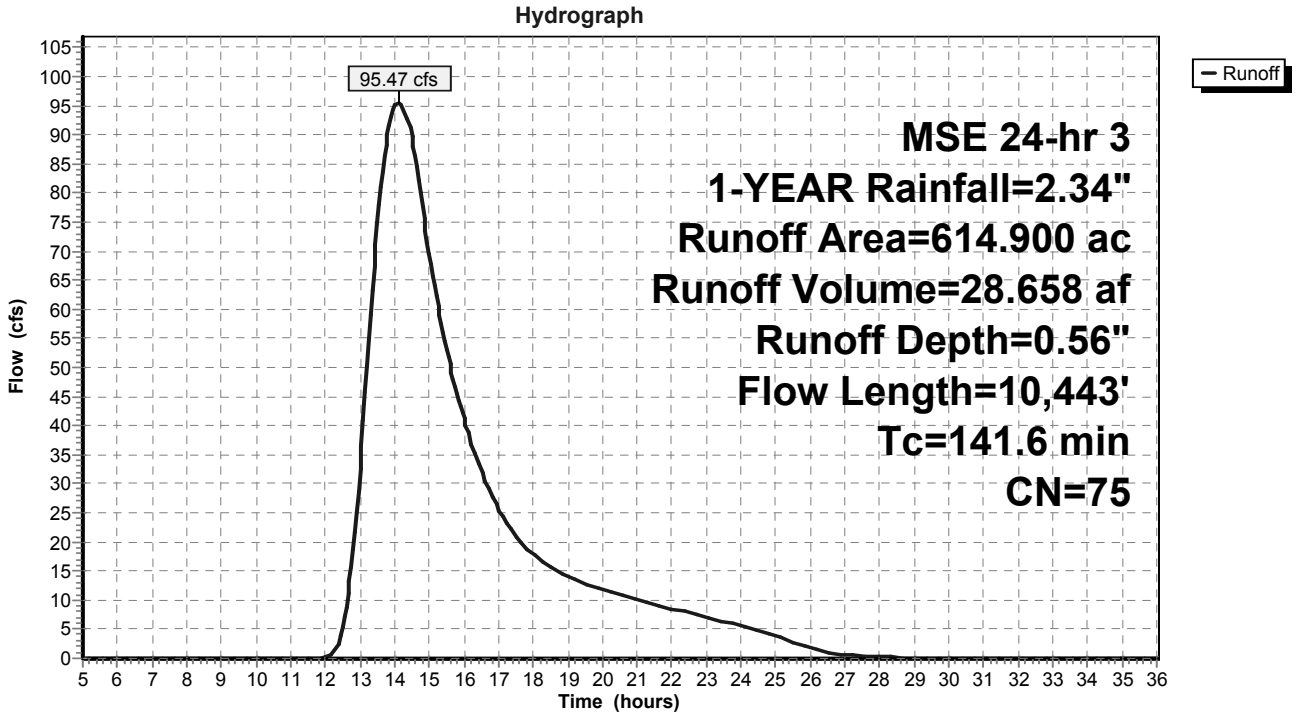
Runoff = 95.47 cfs @ 14.12 hrs, Volume= 28.658 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-YEAR Rainfall=2.34"

	Area (ac)	CN	Description
*	121.000	86	INSTITUTIONAL - 50% OPEN SPACE
	17.000	83	1/4 acre lots, 38% imp, HSG C
	31.500	91	Urban industrial, 72% imp, HSG C
	375.300	71	Meadow, non-grazed, HSG C
	70.100	70	Woods, Good, HSG C
	614.900	75	Weighted Average
	585.760		95.26% Pervious Area
	29.140		4.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.3	250	0.0300	0.22		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 2.57"
21.9	1,650	0.0070	1.25		**Shallow Concentrated Flow, SC FLOW** Grassed Waterway Kv= 15.0 fps
88.3	5,300	0.0100	1.00		**Shallow Concentrated Flow, SC FLOW - FIELD** Nearly Bare & Untilled Kv= 10.0 fps
12.1	3,243	0.0100	4.46	29.73	**Parabolic Channel, DITCH FLOW** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.025
141.6	10,443	Total			

Subcatchment EX-2: AREA TO SOUTH CREEK



Summary for Pond 1P: PROP SOUTH CREEK

[90] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 614.900 ac, 4.74% Impervious, Inflow Depth = 0.56" for 1-YEAR event
Inflow = 95.47 cfs @ 14.12 hrs, Volume= 28.658 af
Outflow = 95.47 cfs @ 14.13 hrs, Volume= 28.658 af, Atten= 0%, Lag= 0.5 min
Primary = 95.47 cfs @ 14.13 hrs, Volume= 28.658 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 753.51' @ 14.13 hrs Surf.Area= 5,651 sf Storage= 5,113 cf

Plug-Flow detention time= 0.5 min calculated for 28.611 af (100% of inflow)
Center-of-Mass det. time= 0.5 min (969.0 - 968.5)

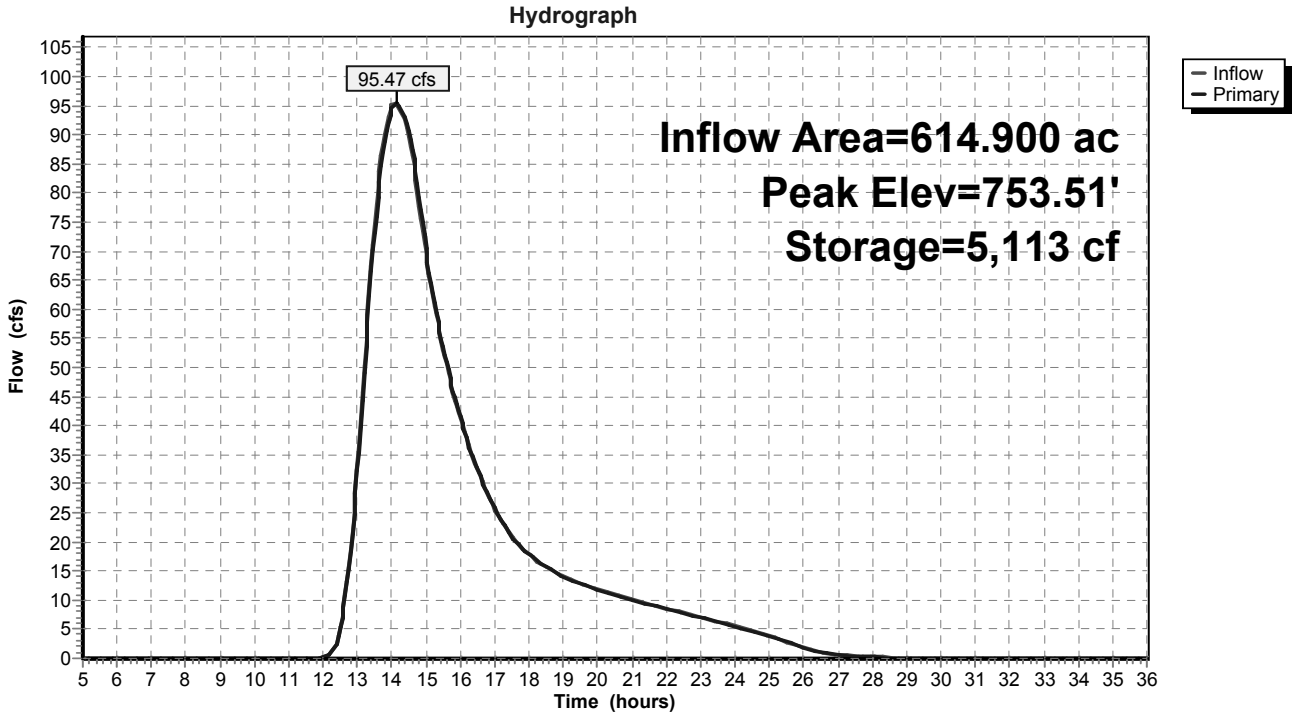
Volume	Invert	Avail.Storage	Storage Description
#1	750.60'	443,473 cf	**CULVERT STORAGE AREA (Irregular)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
750.60	0	0.0	0	0	0
751.00	130	96.0	17	17	734
752.00	726	130.0	388	405	1,355
753.00	3,475	539.0	1,930	2,335	23,132
754.00	7,764	951.0	5,478	7,813	71,989
755.00	14,548	1,084.0	10,980	18,793	93,551
756.00	25,619	1,276.0	19,824	38,617	129,628
757.00	41,134	1,583.0	33,072	71,689	199,489
758.00	60,081	1,878.0	50,309	121,998	280,756
759.00	93,198	2,513.0	76,036	198,034	502,651
760.00	124,742	2,323.0	108,588	306,621	575,810
761.00	149,330	2,832.0	136,852	443,473	784,629

Device	Routing	Invert	Outlet Devices
#1	Primary	750.60'	**72.0" W x 72.0" H Box Culvert** L= 500.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 750.60' / 748.10' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 36.00 sf
#2	Primary	758.50'	**160.0 deg x 15.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.47 (C= 3.09)
#3	Primary	758.60'	**170.0 deg Sharp-Crested Vee/Trap Weir** Cv= 2.46 (C= 3.08)

Primary OutFlow Max=95.45 cfs @ 14.13 hrs HW=753.51' (Free Discharge)
- **1=Culvert** (Inlet Controls 95.45 cfs @ 5.47 fps)
- **2=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)
- **3=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Pond 1P: PROP SOUTH CREEK



Summary for Subcatchment EX-2: AREA TO SOUTH CREEK

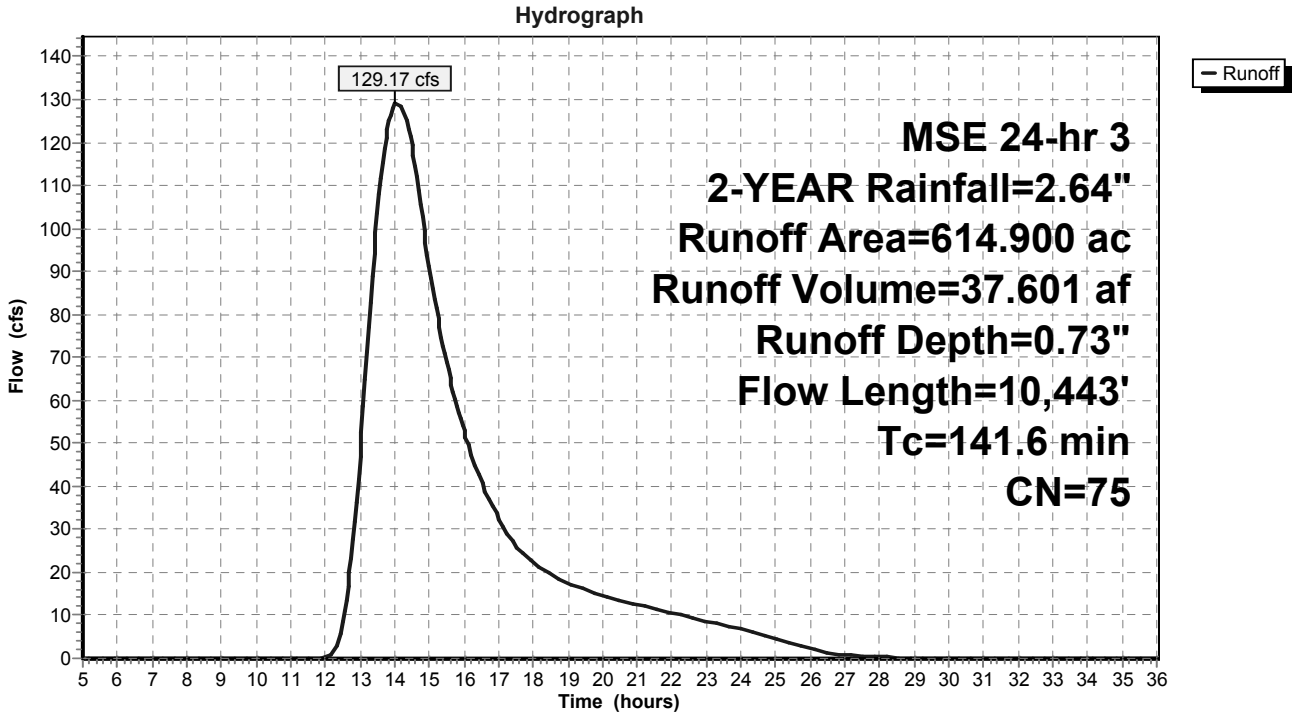
Runoff = 129.17 cfs @ 14.03 hrs, Volume= 37.601 af, Depth= 0.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-YEAR Rainfall=2.64"

	Area (ac)	CN	Description
*	121.000	86	INSTITUTIONAL - 50% OPEN SPACE
	17.000	83	1/4 acre lots, 38% imp, HSG C
	31.500	91	Urban industrial, 72% imp, HSG C
	375.300	71	Meadow, non-grazed, HSG C
	70.100	70	Woods, Good, HSG C
	614.900	75	Weighted Average
	585.760		95.26% Pervious Area
	29.140		4.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.3	250	0.0300	0.22		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 2.57"
21.9	1,650	0.0070	1.25		**Shallow Concentrated Flow, SC FLOW** Grassed Waterway Kv= 15.0 fps
88.3	5,300	0.0100	1.00		**Shallow Concentrated Flow, SC FLOW - FIELD** Nearly Bare & Untilled Kv= 10.0 fps
12.1	3,243	0.0100	4.46	29.73	**Parabolic Channel, DITCH FLOW** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.025
141.6	10,443	Total			

Subcatchment EX-2: AREA TO SOUTH CREEK



Summary for Pond 1P: PROP SOUTH CREEK

Inflow Area = 614.900 ac, 4.74% Impervious, Inflow Depth = 0.73" for 2-YEAR event
Inflow = 129.17 cfs @ 14.03 hrs, Volume= 37.601 af
Outflow = 128.90 cfs @ 14.12 hrs, Volume= 37.601 af, Atten= 0%, Lag= 5.3 min
Primary = 128.90 cfs @ 14.12 hrs, Volume= 37.601 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 754.15' @ 14.12 hrs Surf.Area= 8,791 sf Storage= 9,474 cf

Plug-Flow detention time= 0.7 min calculated for 37.541 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (962.3 - 961.6)

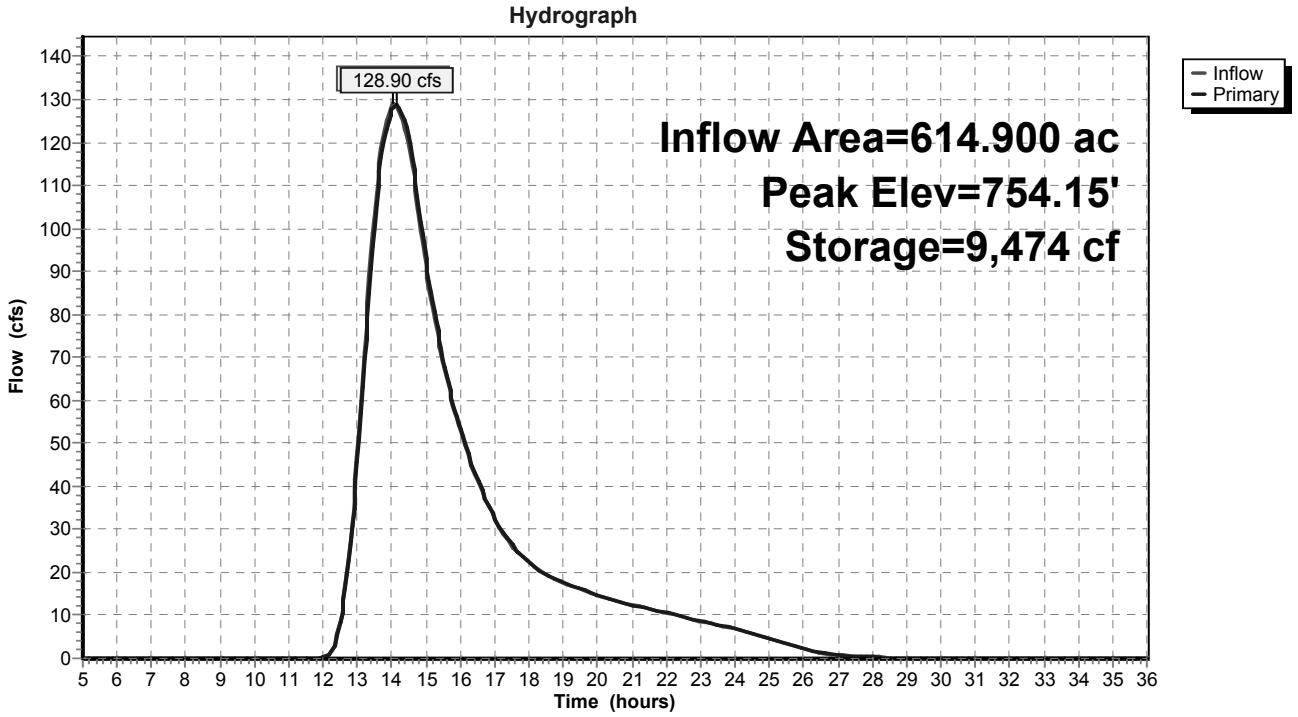
Volume	Invert	Avail.Storage	Storage Description
#1	750.60'	443,473 cf	**CULVERT STORAGE AREA (Irregular)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
750.60	0	0.0	0	0	0
751.00	130	96.0	17	17	734
752.00	726	130.0	388	405	1,355
753.00	3,475	539.0	1,930	2,335	23,132
754.00	7,764	951.0	5,478	7,813	71,989
755.00	14,548	1,084.0	10,980	18,793	93,551
756.00	25,619	1,276.0	19,824	38,617	129,628
757.00	41,134	1,583.0	33,072	71,689	199,489
758.00	60,081	1,878.0	50,309	121,998	280,756
759.00	93,198	2,513.0	76,036	198,034	502,651
760.00	124,742	2,323.0	108,588	306,621	575,810
761.00	149,330	2,832.0	136,852	443,473	784,629

Device	Routing	Invert	Outlet Devices
#1	Primary	750.60'	**72.0" W x 72.0" H Box Culvert** L= 500.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 750.60' / 748.10' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 36.00 sf
#2	Primary	758.50'	**160.0 deg x 15.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.47 (C= 3.09)
#3	Primary	758.60'	**170.0 deg Sharp-Crested Vee/Trap Weir** Cv= 2.46 (C= 3.08)

Primary OutFlow Max=128.86 cfs @ 14.12 hrs HW=754.15' (Free Discharge)
- **1=Culvert** (Inlet Controls 128.86 cfs @ 6.05 fps)
- **2=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)
- **3=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Pond 1P: PROP SOUTH CREEK



Summary for Subcatchment EX-2: AREA TO SOUTH CREEK

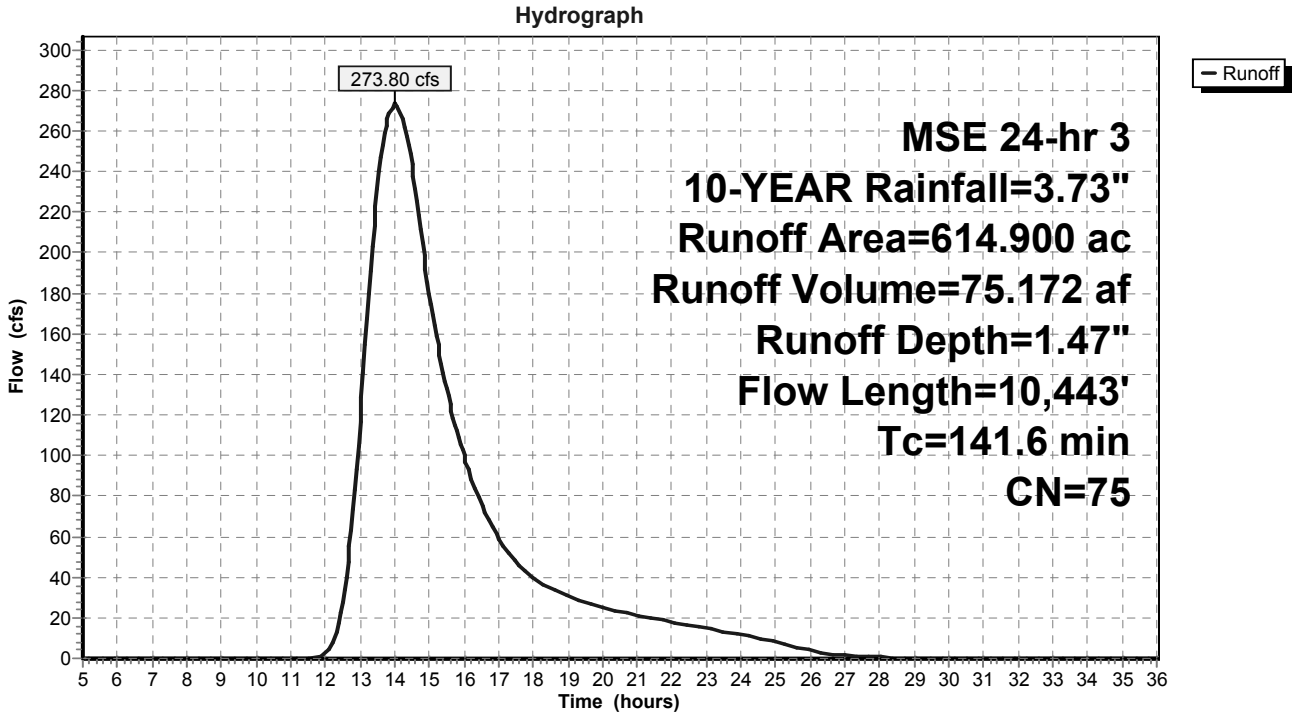
Runoff = 273.80 cfs @ 14.00 hrs, Volume= 75.172 af, Depth= 1.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-YEAR Rainfall=3.73"

	Area (ac)	CN	Description
*	121.000	86	INSTITUTIONAL - 50% OPEN SPACE
	17.000	83	1/4 acre lots, 38% imp, HSG C
	31.500	91	Urban industrial, 72% imp, HSG C
	375.300	71	Meadow, non-grazed, HSG C
	70.100	70	Woods, Good, HSG C
	614.900	75	Weighted Average
	585.760		95.26% Pervious Area
	29.140		4.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.3	250	0.0300	0.22		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 2.57"
21.9	1,650	0.0070	1.25		**Shallow Concentrated Flow, SC FLOW** Grassed Waterway Kv= 15.0 fps
88.3	5,300	0.0100	1.00		**Shallow Concentrated Flow, SC FLOW - FIELD** Nearly Bare & Untilled Kv= 10.0 fps
12.1	3,243	0.0100	4.46	29.73	**Parabolic Channel, DITCH FLOW** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.025
141.6	10,443	Total			

Subcatchment EX-2: AREA TO SOUTH CREEK



Summary for Pond 1P: PROP SOUTH CREEK

Inflow Area = 614.900 ac, 4.74% Impervious, Inflow Depth = 1.47" for 10-YEAR event
Inflow = 273.80 cfs @ 14.00 hrs, Volume= 75.172 af
Outflow = 269.30 cfs @ 14.16 hrs, Volume= 75.172 af, Atten= 2%, Lag= 9.1 min
Primary = 269.30 cfs @ 14.16 hrs, Volume= 75.172 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 756.64' @ 14.16 hrs Surf.Area= 35,484 sf Storage= 59,645 cf

Plug-Flow detention time= 1.8 min calculated for 75.051 af (100% of inflow)
Center-of-Mass det. time= 1.8 min (947.5 - 945.7)

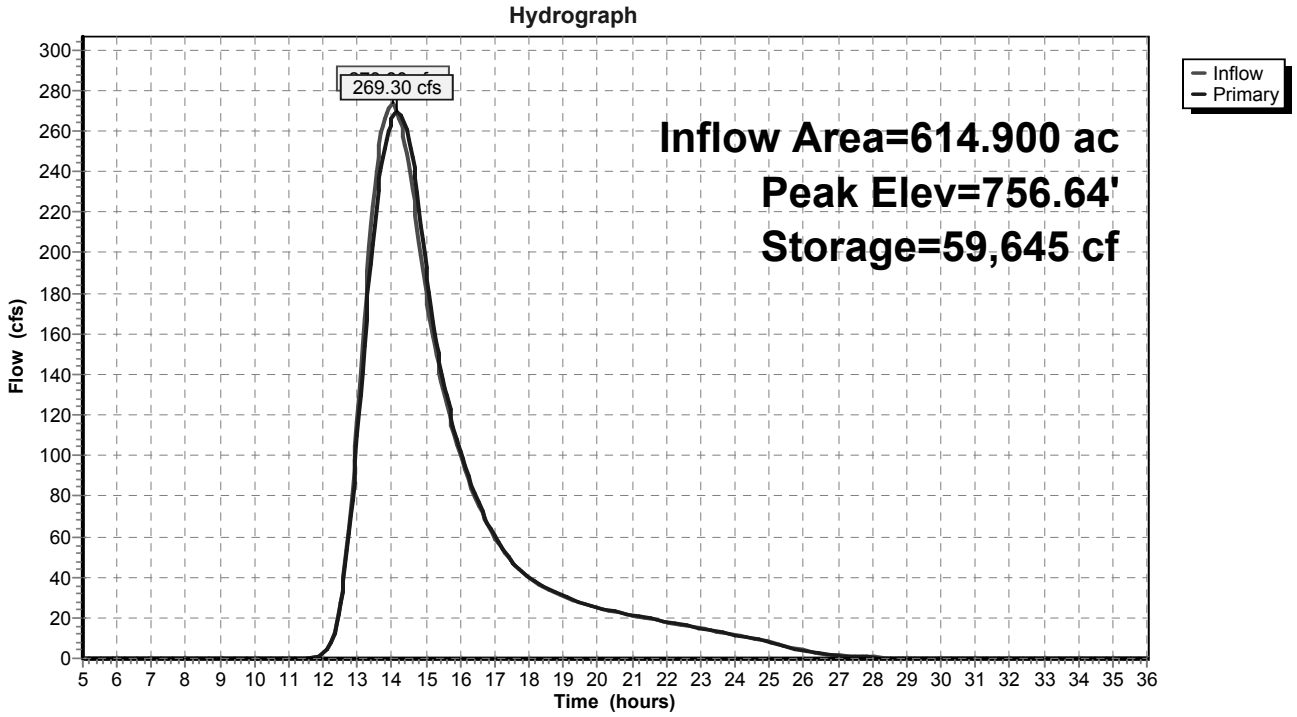
Volume	Invert	Avail.Storage	Storage Description
#1	750.60'	443,473 cf	**CULVERT STORAGE AREA (Irregular)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
750.60	0	0.0	0	0	0
751.00	130	96.0	17	17	734
752.00	726	130.0	388	405	1,355
753.00	3,475	539.0	1,930	2,335	23,132
754.00	7,764	951.0	5,478	7,813	71,989
755.00	14,548	1,084.0	10,980	18,793	93,551
756.00	25,619	1,276.0	19,824	38,617	129,628
757.00	41,134	1,583.0	33,072	71,689	199,489
758.00	60,081	1,878.0	50,309	121,998	280,756
759.00	93,198	2,513.0	76,036	198,034	502,651
760.00	124,742	2,323.0	108,588	306,621	575,810
761.00	149,330	2,832.0	136,852	443,473	784,629

Device	Routing	Invert	Outlet Devices
#1	Primary	750.60'	**72.0" W x 72.0" H Box Culvert** L= 500.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 750.60' / 748.10' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 36.00 sf
#2	Primary	758.50'	**160.0 deg x 15.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.47 (C= 3.09)
#3	Primary	758.60'	**170.0 deg Sharp-Crested Vee/Trap Weir** Cv= 2.46 (C= 3.08)

Primary OutFlow Max=269.26 cfs @ 14.16 hrs HW=756.64' (Free Discharge)
- **1=Culvert** (Barrel Controls 269.26 cfs @ 9.91 fps)
- **2=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)
- **3=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Pond 1P: PROP SOUTH CREEK



Summary for Subcatchment EX-2: AREA TO SOUTH CREEK

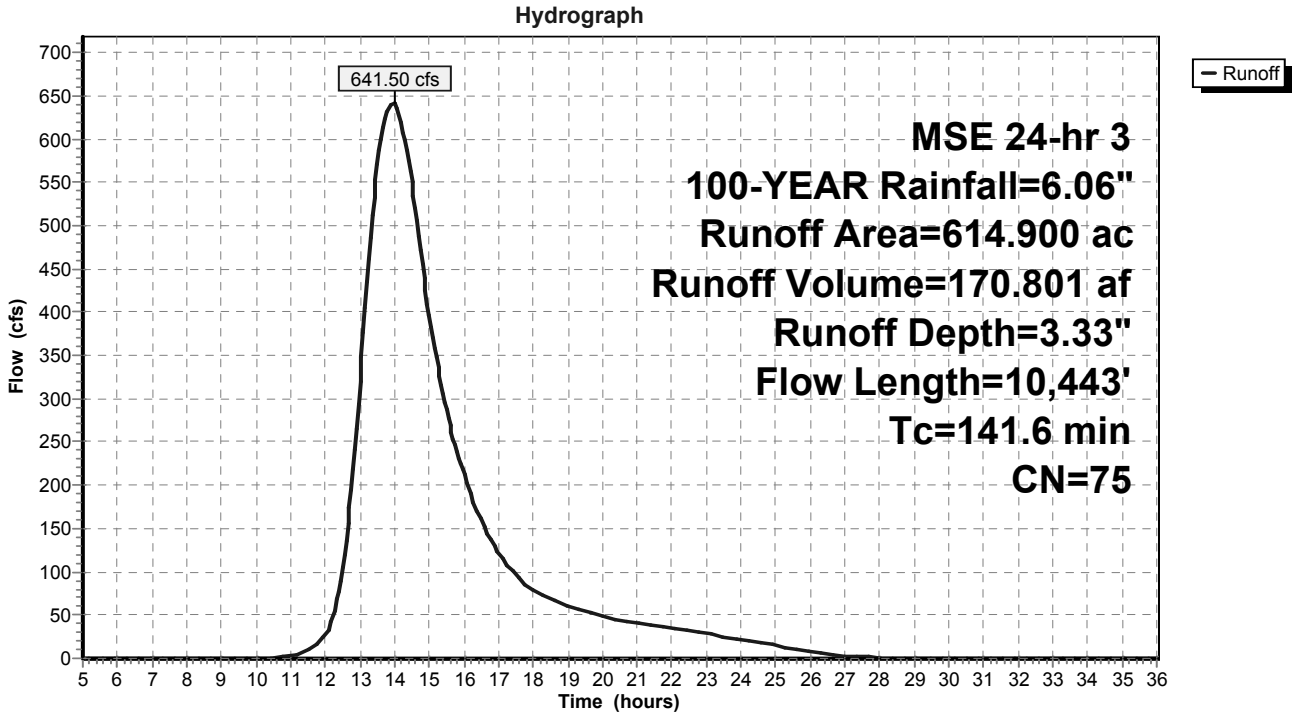
Runoff = 641.50 cfs @ 13.98 hrs, Volume= 170.801 af, Depth= 3.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.06"

	Area (ac)	CN	Description
*	121.000	86	INSTITUTIONAL - 50% OPEN SPACE
	17.000	83	1/4 acre lots, 38% imp, HSG C
	31.500	91	Urban industrial, 72% imp, HSG C
	375.300	71	Meadow, non-grazed, HSG C
	70.100	70	Woods, Good, HSG C
	614.900	75	Weighted Average
	585.760		95.26% Pervious Area
	29.140		4.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.3	250	0.0300	0.22		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 2.57"
21.9	1,650	0.0070	1.25		**Shallow Concentrated Flow, SC FLOW** Grassed Waterway Kv= 15.0 fps
88.3	5,300	0.0100	1.00		**Shallow Concentrated Flow, SC FLOW - FIELD** Nearly Bare & Untilled Kv= 10.0 fps
12.1	3,243	0.0100	4.46	29.73	**Parabolic Channel, DITCH FLOW** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.025
141.6	10,443	Total			

Subcatchment EX-2: AREA TO SOUTH CREEK



Summary for Pond 1P: PROP SOUTH CREEK

Inflow Area = 614.900 ac, 4.74% Impervious, Inflow Depth = 3.33" for 100-YEAR event
Inflow = 641.50 cfs @ 13.98 hrs, Volume= 170.801 af
Outflow = 635.57 cfs @ 14.06 hrs, Volume= 170.801 af, Atten= 1%, Lag= 4.7 min
Primary = 635.57 cfs @ 14.06 hrs, Volume= 170.801 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 760.12' @ 14.06 hrs Surf.Area= 127,681 sf Storage= 322,979 cf

Plug-Flow detention time= 5.6 min calculated for 170.526 af (100% of inflow)
Center-of-Mass det. time= 5.6 min (934.2 - 928.7)

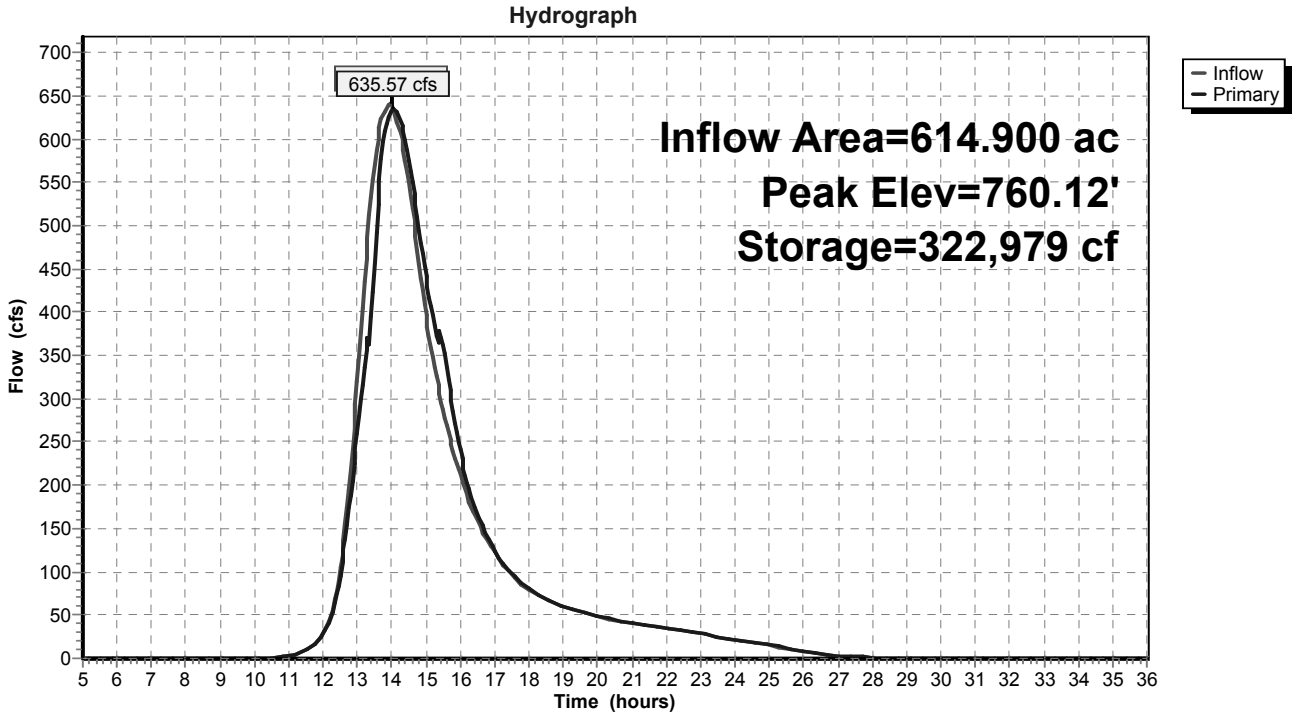
Volume	Invert	Avail.Storage	Storage Description
#1	750.60'	443,473 cf	**CULVERT STORAGE AREA (Irregular)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
750.60	0	0.0	0	0	0
751.00	130	96.0	17	17	734
752.00	726	130.0	388	405	1,355
753.00	3,475	539.0	1,930	2,335	23,132
754.00	7,764	951.0	5,478	7,813	71,989
755.00	14,548	1,084.0	10,980	18,793	93,551
756.00	25,619	1,276.0	19,824	38,617	129,628
757.00	41,134	1,583.0	33,072	71,689	199,489
758.00	60,081	1,878.0	50,309	121,998	280,756
759.00	93,198	2,513.0	76,036	198,034	502,651
760.00	124,742	2,323.0	108,588	306,621	575,810
761.00	149,330	2,832.0	136,852	443,473	784,629

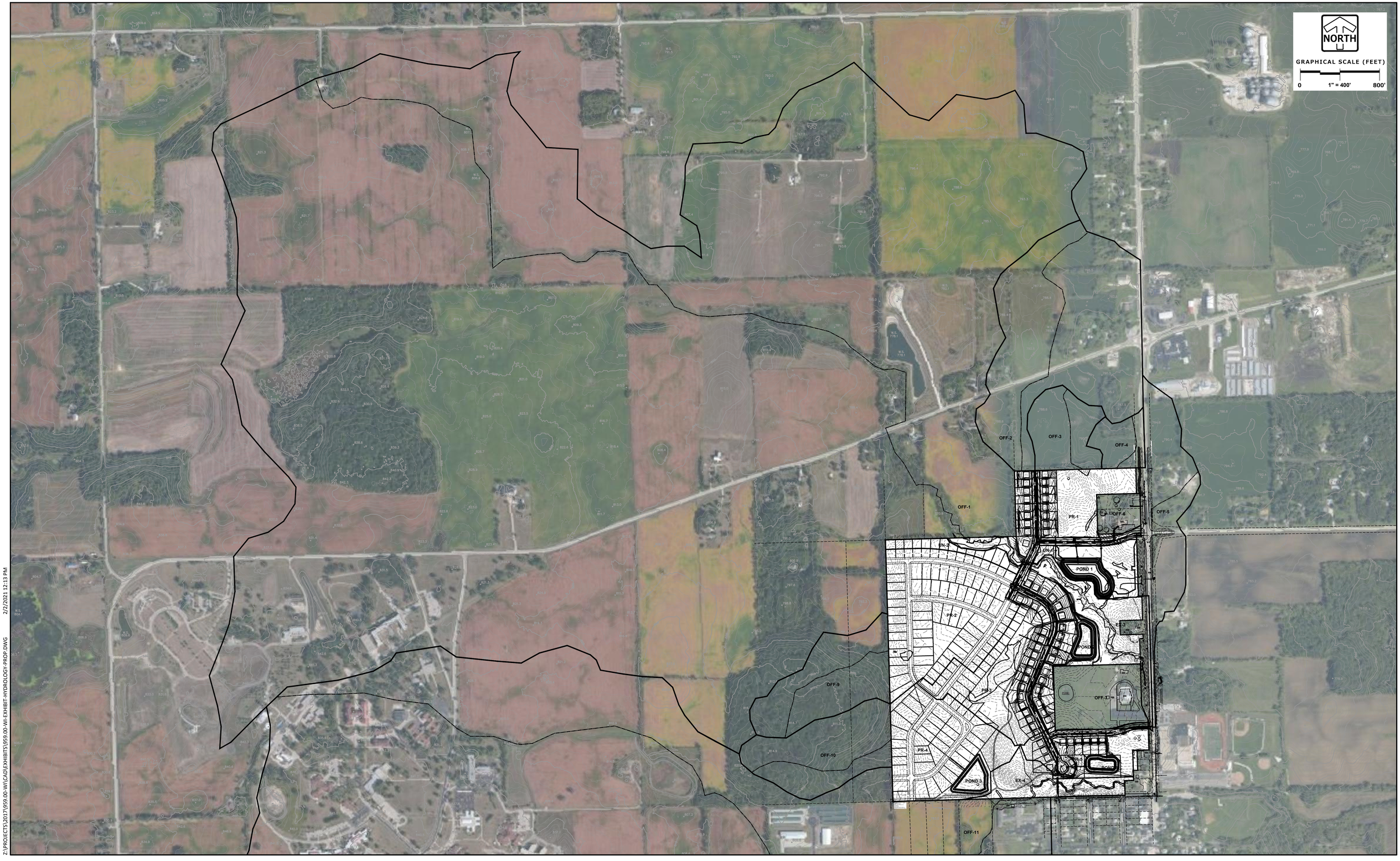
Device	Routing	Invert	Outlet Devices
#1	Primary	750.60'	**72.0" W x 72.0" H Box Culvert** L= 500.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 750.60' / 748.10' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 36.00 sf
#2	Primary	758.50'	**160.0 deg x 15.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.47 (C= 3.09)
#3	Primary	758.60'	**170.0 deg Sharp-Crested Vee/Trap Weir** Cv= 2.46 (C= 3.08)

Primary OutFlow Max=635.38 cfs @ 14.06 hrs HW=760.12' (Free Discharge)
- **1=Culvert** (Barrel Controls 413.31 cfs @ 11.48 fps)
- **2=Sharp-Crested Vee/Trap Weir** (Weir Controls 142.12 cfs @ 3.63 fps)
- **3=Sharp-Crested Vee/Trap Weir** (Weir Controls 79.96 cfs @ 3.03 fps)

Pond 1P: PROP SOUTH CREEK



APPENDIX 3



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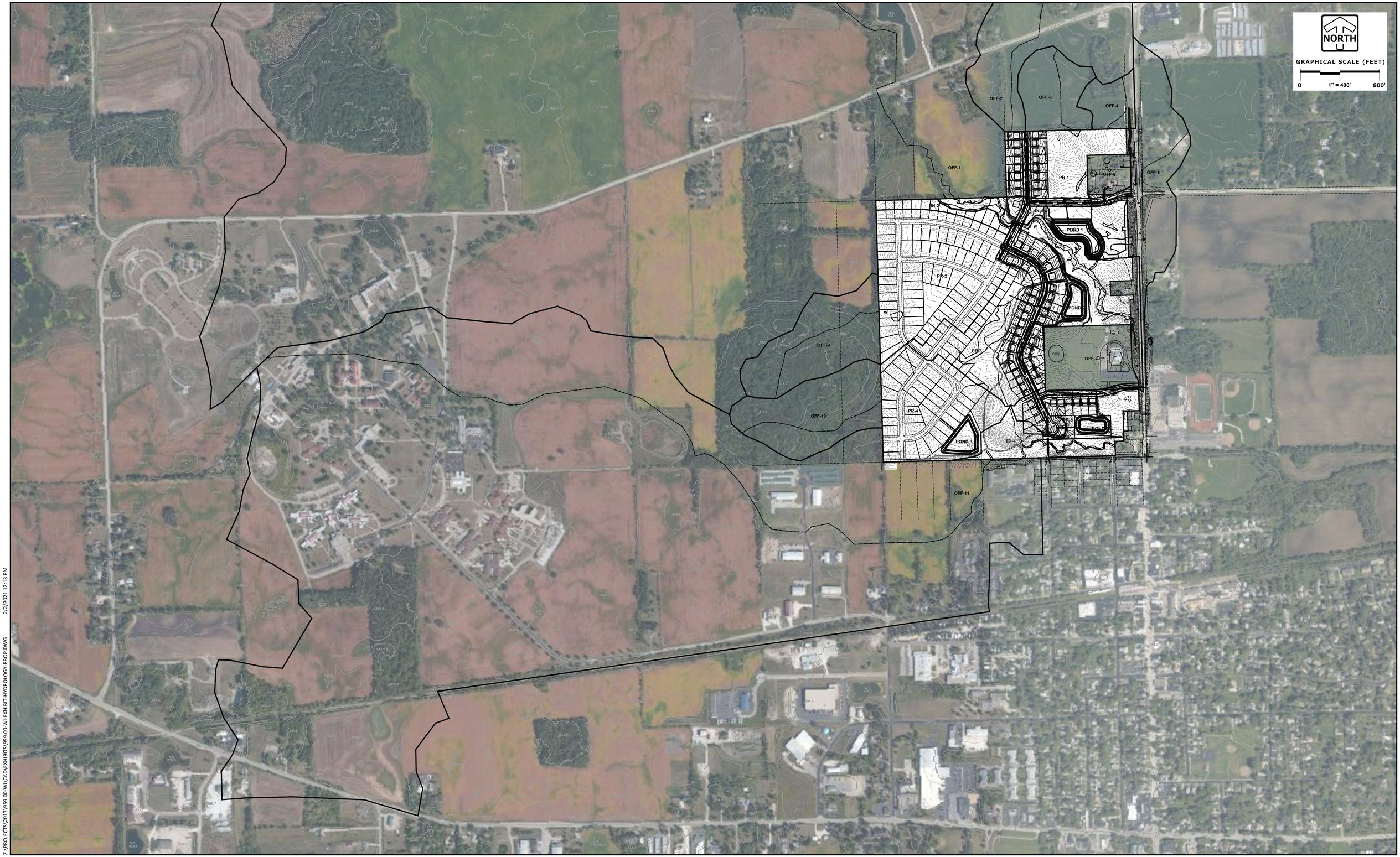
CANOPY HILL - Hydrology Exhibit - Proposed Conditions - North Creek

11/06/20

PINNACLE ENGINEERING GROUP
20725 WATERTOWN ROAD | SUITE 100 | BROOKFIELD, WI 53186 | WWW.PINNACLE-ENGR.COM |

PLAN | DESIGN | DELIVER

PEGJOB# 959.00



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CANOPY HILL - Hydrology Exhibit - Proposed Conditions - South Creek

11/06/20

PINNACLE ENGINEERING GROUP
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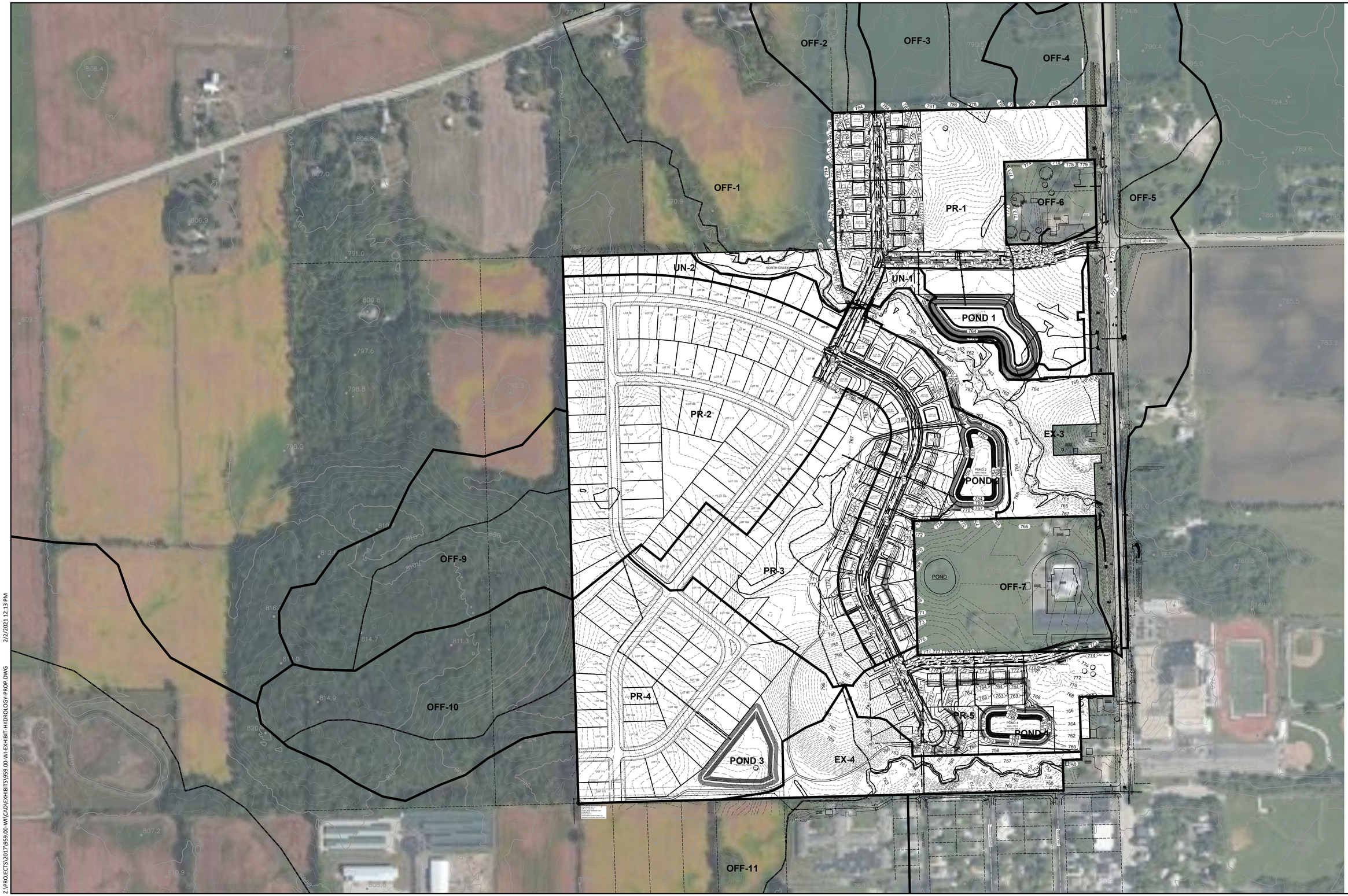
PLAN | DESIGN | DELIVER

PEGJOB# 959.00



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CANOPY HILL - Hydrology Exhibit - Proposed Conditions

11/06/20

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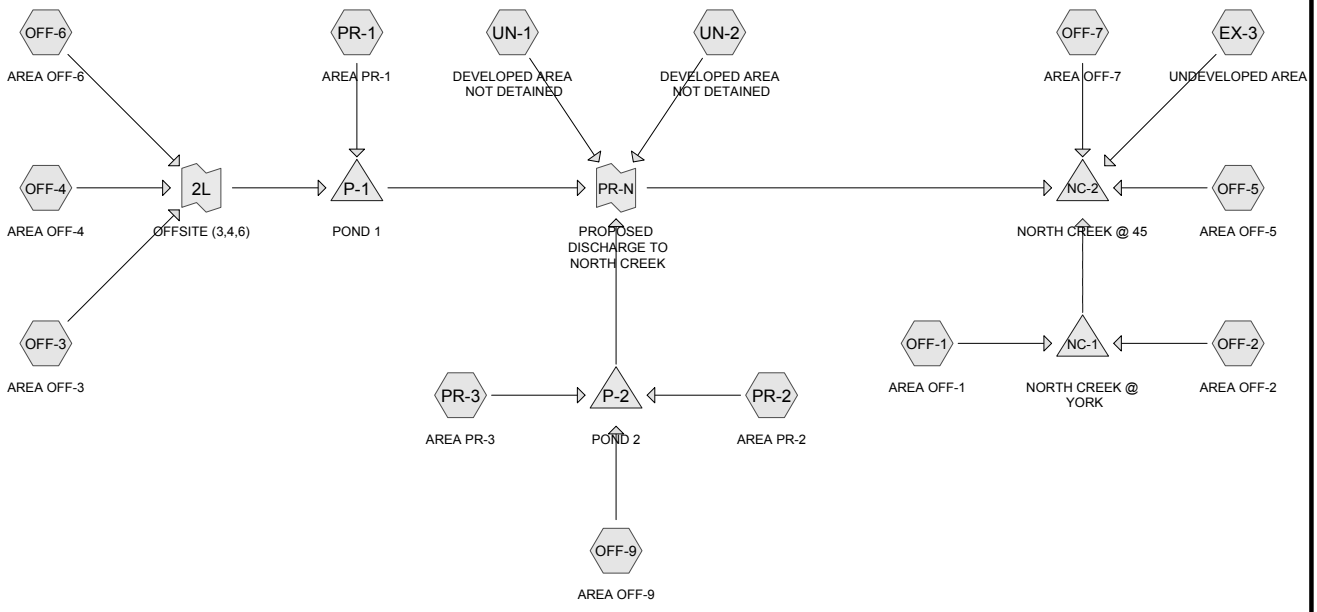
PEGJOB# 959.00



Subcat Reach Pond Link

Routing Diagram for 959.00-WI_HCAD_CANOPY HILL NORTH
Prepared by Pinnacle Engineering Group, Printed 5/3/2021

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.800	79	1 acre lots, 20% imp, HSG C (EX-3, OFF-7)
12.700	82	1/2 acre lots, 25% imp, HSG C (PR-1)
57.600	81	1/3 acre lots, 30% imp, HSG C (PR-2, PR-3, UN-2)
12.800	77	2 acre lots, 12% imp, HSG C (OFF-2)
22.000	74	>75% Grass cover, Good, HSG C (EX-3, OFF-5, OFF-7, UN-1)
2.000	82	Farmsteads, HSG C (OFF-5)
2.800	74	GREENSPACE (OFF-6)
1.100	98	IMPERVIOUS AREA (OFF-6)
60.000	86	INSTITUTIONAL - 50% OPEN SPACE (OFF-1)
914.000	71	Meadow, non-grazed, HSG C (OFF-1, OFF-2, OFF-3, OFF-4, OFF-5, OFF-9)
1.500	74	Outlot 1 (PR-2)
8.400	98	Paved parking & roofs (OFF-1, OFF-2, OFF-4, OFF-5)
1.100	98	Paved parking, HSG C (EX-3)
0.400	98	Paved roads w/curbs & sewers (OFF-7)
1.400	74	Pond Outlot (PR-2)
1.400	98	Pond Water Surface (PR-2)
12.800	80	SF (PR-1)
6.000	94	Urban commercial, 85% imp, HSG C (OFF-7)
117.300	70	Woods, Good, HSG C (OFF-1, OFF-9, PR-3)

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatc Number
0.000	0.000	1.800	0.000	0.000	1.800	1 acre lots, 20% imp	
0.000	0.000	12.700	0.000	0.000	12.700	1/2 acre lots, 25% imp	
0.000	0.000	57.600	0.000	0.000	57.600	1/3 acre lots, 30% imp	
0.000	0.000	12.800	0.000	0.000	12.800	2 acre lots, 12% imp	
0.000	0.000	22.000	0.000	0.000	22.000	>75% Grass cover, Good	
0.000	0.000	2.000	0.000	0.000	2.000	Farmsteads	
0.000	0.000	0.000	0.000	2.800	2.800	GREENSPACE	
0.000	0.000	0.000	0.000	1.100	1.100	IMPERVIOUS AREA	
0.000	0.000	0.000	0.000	60.000	60.000	INSTITUTIONAL - 50% OPEN SPACE	
0.000	0.000	914.000	0.000	0.000	914.000	Meadow, non-grazed	
0.000	0.000	0.000	0.000	1.500	1.500	Outlot 1	
0.000	0.000	1.100	0.000	0.000	1.100	Paved parking	
0.000	0.000	0.000	0.000	8.400	8.400	Paved parking & roofs	
0.000	0.000	0.000	0.000	0.400	0.400	Paved roads w/curbs & sewers	
0.000	0.000	0.000	0.000	1.400	1.400	Pond Outlot	
0.000	0.000	0.000	0.000	1.400	1.400	Pond Water Surface	
0.000	0.000	0.000	0.000	12.800	12.800	SF	
0.000	0.000	6.000	0.000	0.000	6.000	Urban commercial, 85% imp	
0.000	0.000	117.300	0.000	0.000	117.300	Woods, Good	

Summary for Subcatchment EX-3: UNDEVELOPED AREA

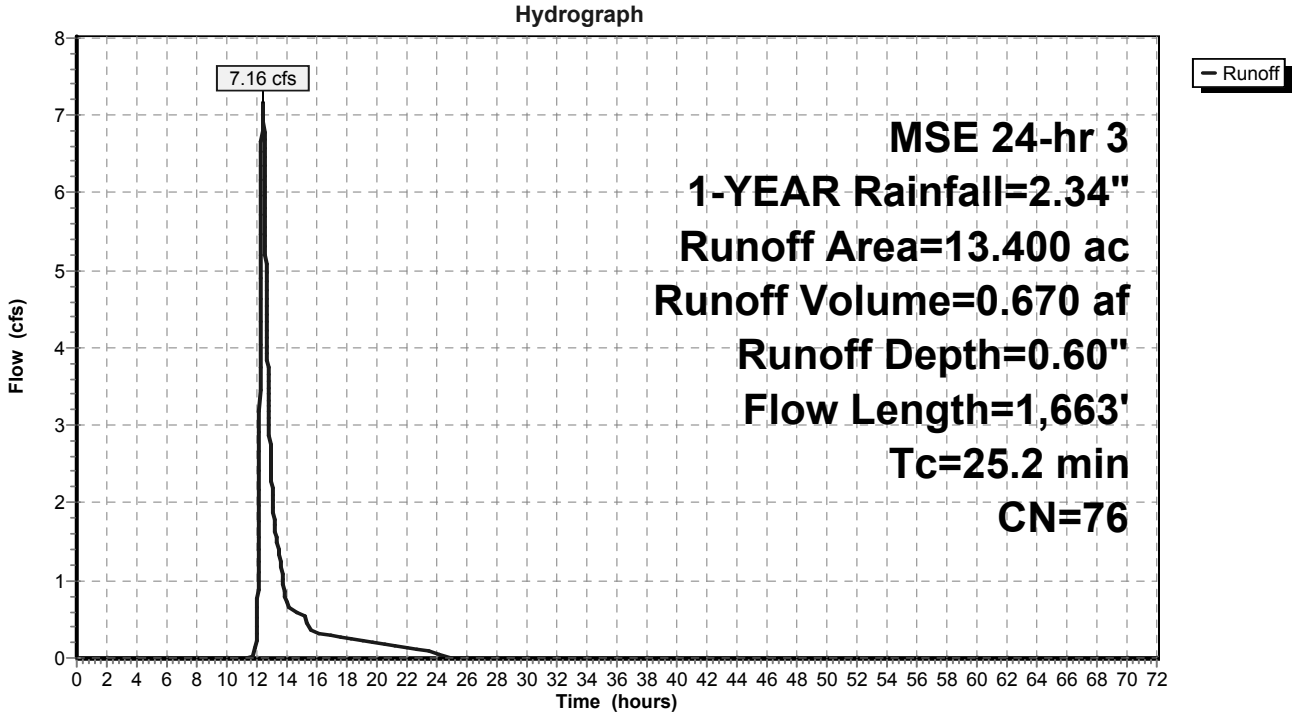
Runoff = 7.16 cfs @ 12.40 hrs, Volume= 0.670 af, Depth= 0.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 1-YEAR Rainfall=2.34"

Area (ac)	CN	Description
0.800	79	1 acre lots, 20% imp, HSG C
1.100	98	Paved parking, HSG C
11.500	74	>75% Grass cover, Good, HSG C
13.400	76	Weighted Average
12.140		90.60% Pervious Area
1.260		9.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	100	0.0480	0.22		**Sheet Flow, SEGMENT AB** Grass: Short n= 0.150 P2= 2.57"
3.5	600	0.0320	2.88		**Shallow Concentrated Flow, SEGMENT BC** Unpaved Kv= 16.1 fps
14.0	963	0.0058	1.14		**Shallow Concentrated Flow, SEGMENT CD** Grassed Waterway Kv= 15.0 fps
25.2	1,663	Total			

Subcatchment EX-3: UNDEVELOPED AREA



Summary for Subcatchment OFF-1: AREA OFF-1

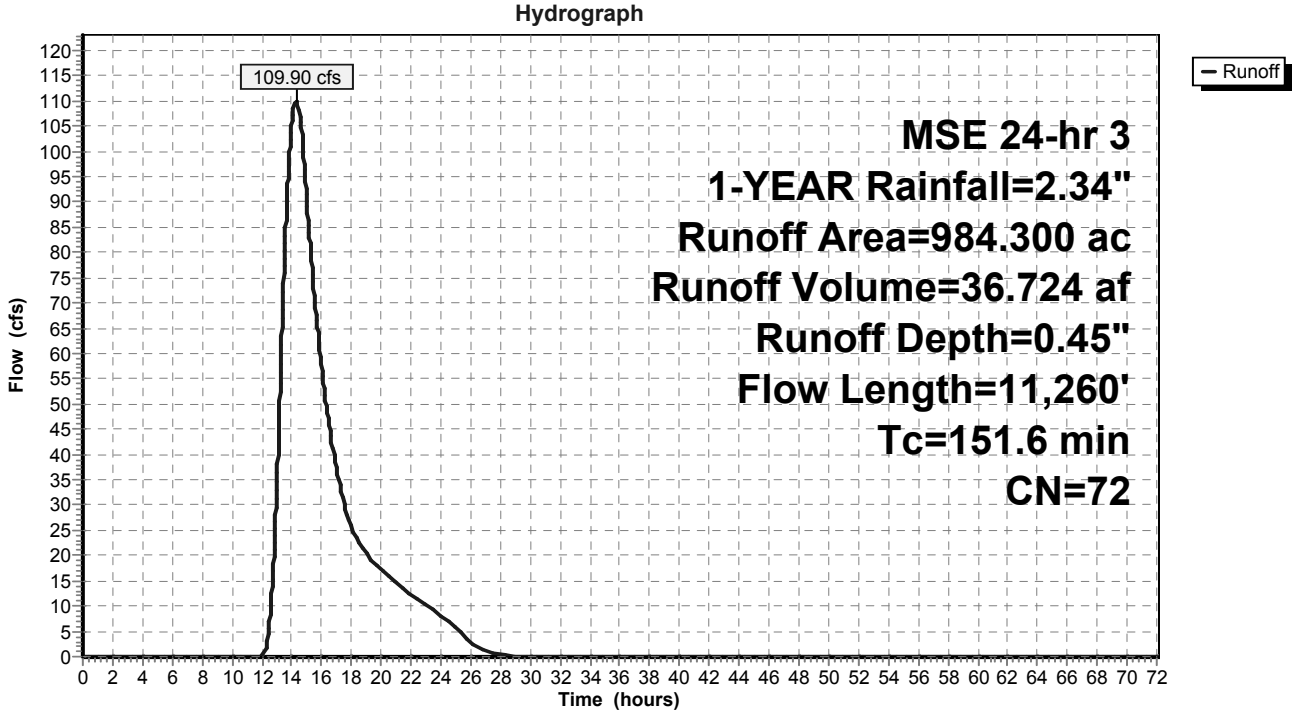
Runoff = 109.90 cfs @ 14.32 hrs, Volume= 36.724 af, Depth= 0.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 1-YEAR Rainfall=2.34"

Area (ac)	CN	Description
4.300	98	Paved parking & roofs
60.000	86	INSTITUTIONAL - 50% OPEN SPACE
830.000	71	Meadow, non-grazed, HSG C
90.000	70	Woods, Good, HSG C
984.300	72	Weighted Average
980.000		99.56% Pervious Area
4.300		0.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	300	0.0200	0.40		**Sheet Flow, SHEET** Cultivated: Residue<=20% n= 0.060 P2= 2.57"
114.0	6,000	0.0077	0.88		**Shallow Concentrated Flow, SC FLOW** Nearly Bare & Untilled Kv= 10.0 fps
25.0	4,960	0.0055	3.31	22.05	**Parabolic Channel, DITCH FLOW** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.025
151.6	11,260	Total			

Subcatchment OFF-1: AREA OFF-1



Summary for Subcatchment OFF-2: AREA OFF-2

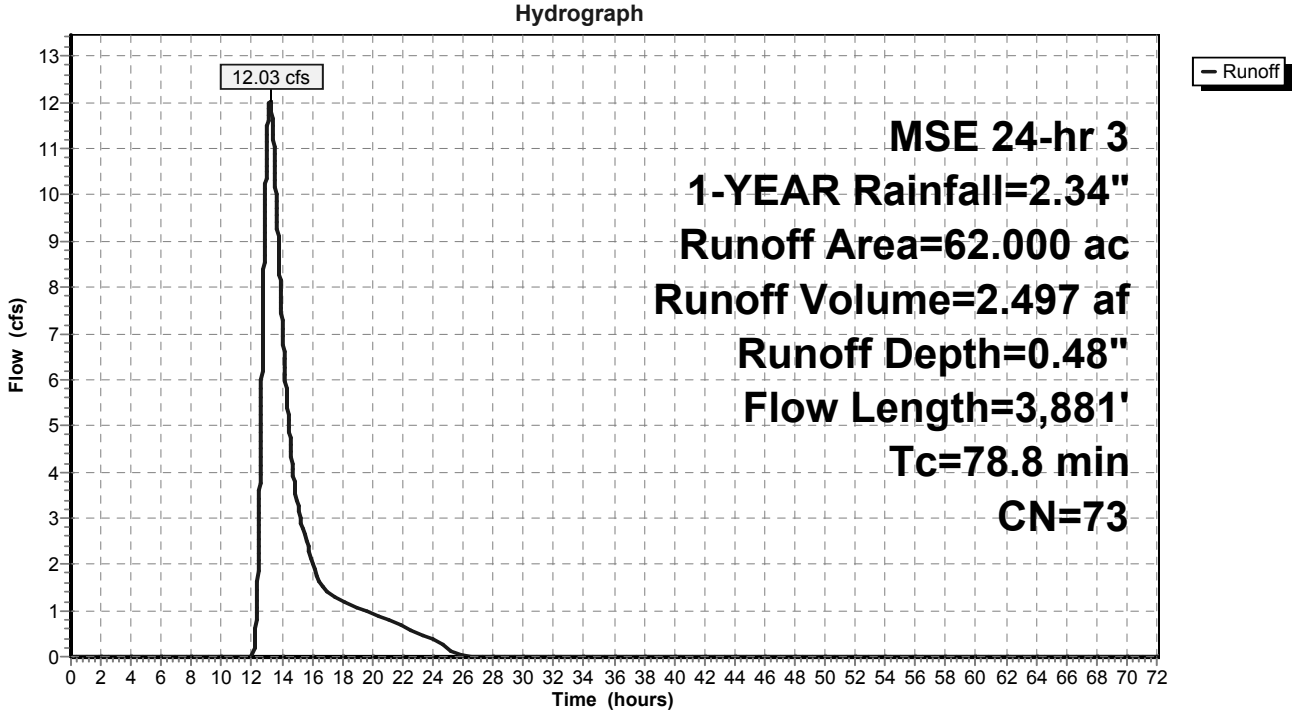
Runoff = 12.03 cfs @ 13.22 hrs, Volume= 2.497 af, Depth= 0.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 1-YEAR Rainfall=2.34"

Area (ac)	CN	Description
1.600	98	Paved parking & roofs
12.800	77	2 acre lots, 12% imp, HSG C
47.600	71	Meadow, non-grazed, HSG C
62.000	73	Weighted Average
58.864		94.94% Pervious Area
3.136		5.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	300	0.0150	0.35		**Sheet Flow, SHEET** Cultivated: Residue<=20% n= 0.060 P2= 2.57"
61.3	2,600	0.0050	0.71		**Shallow Concentrated Flow, SC FLOW** Nearly Bare & Untilled Kv= 10.0 fps
3.3	981	0.0130	4.99	139.93	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=2.30' Z= 4.0 '/' Top.W=21.40' n= 0.040
78.8	3,881	Total			

Subcatchment OFF-2: AREA OFF-2



Summary for Subcatchment OFF-3: AREA OFF-3

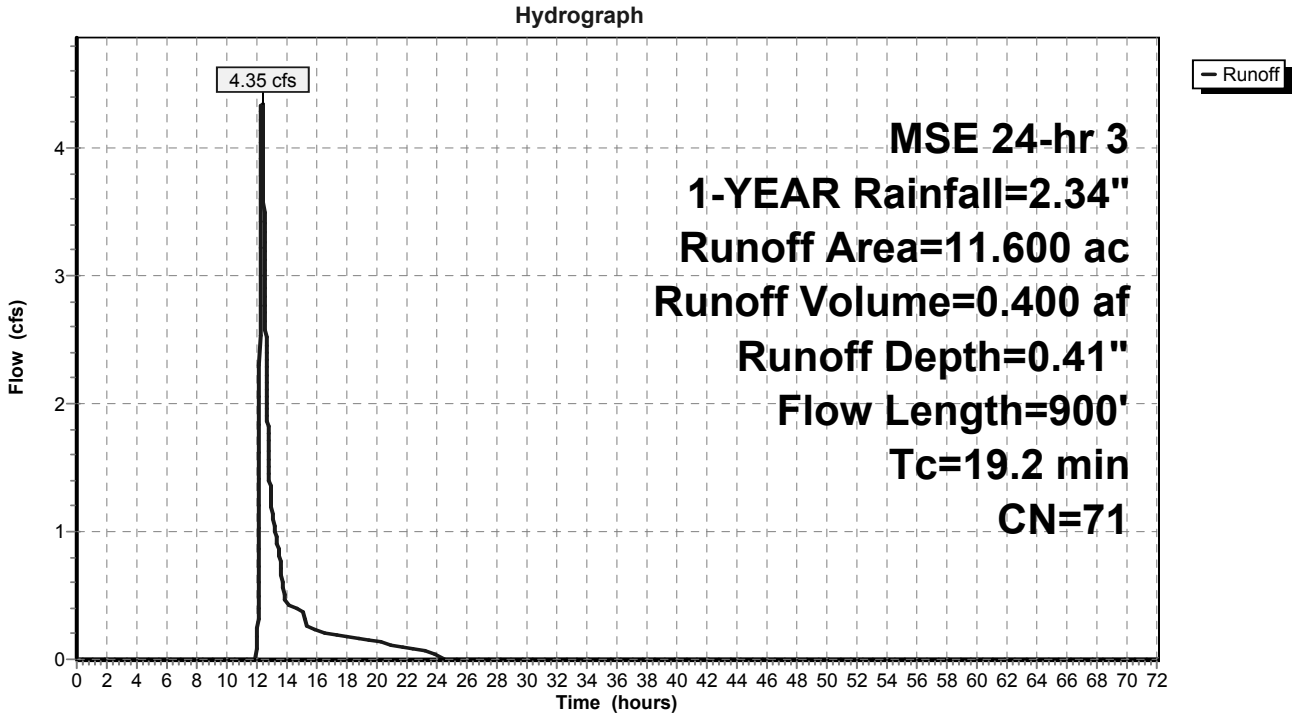
Runoff = 4.35 cfs @ 12.34 hrs, Volume= 0.400 af, Depth= 0.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 1-YEAR Rainfall=2.34"

Area (ac)	CN	Description
11.600	71	Meadow, non-grazed, HSG C
11.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	200	0.0150	0.32		**Sheet Flow, SHEET** Cultivated: Residue<=20% n= 0.060 P2= 2.57"
8.9	700	0.0170	1.30		**Shallow Concentrated Flow, SC FLOW** Nearly Bare & Untilled Kv= 10.0 fps
19.2	900	Total			

Subcatchment OFF-3: AREA OFF-3



Summary for Subcatchment OFF-4: AREA OFF-4

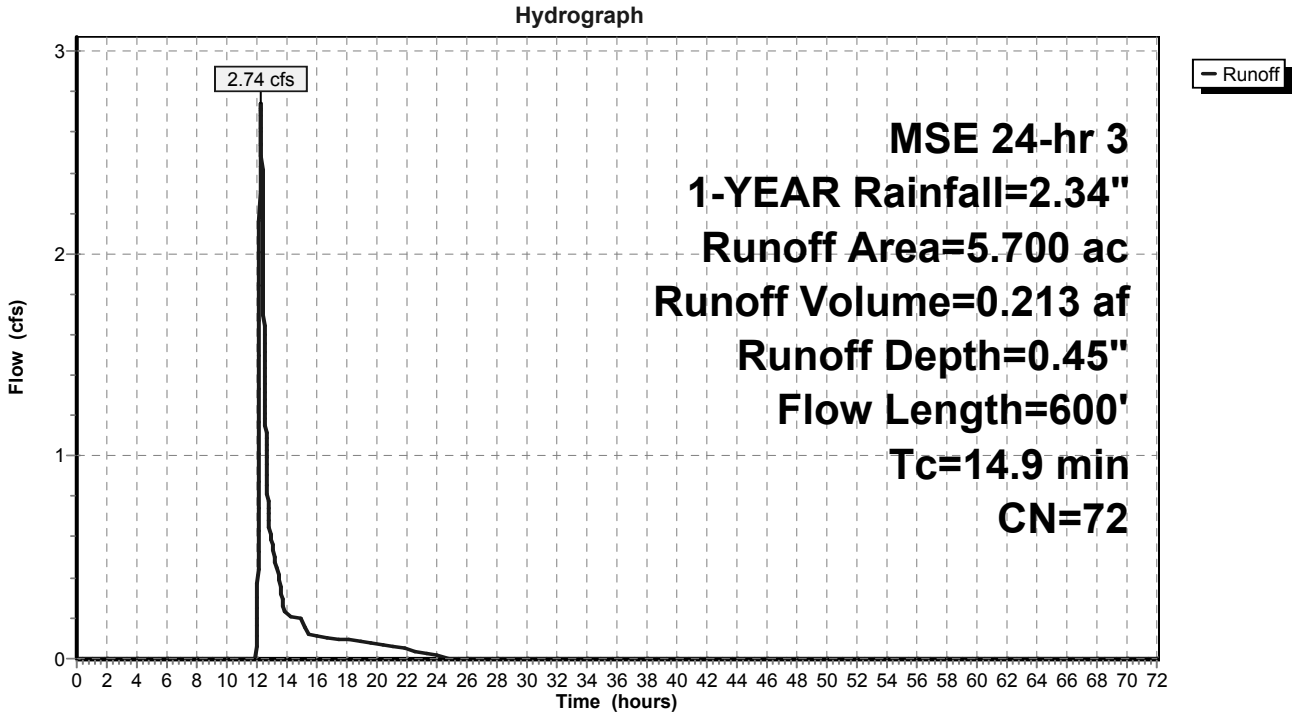
Runoff = 2.74 cfs @ 12.27 hrs, Volume= 0.213 af, Depth= 0.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 1-YEAR Rainfall=2.34"

Area (ac)	CN	Description
0.300	98	Paved parking & roofs
5.400	71	Meadow, non-grazed, HSG C
5.700	72	Weighted Average
5.400		94.74% Pervious Area
0.300		5.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	300	0.0280	0.45		**Sheet Flow, SHEET** Cultivated: Residue<=20% n= 0.060 P2= 2.57"
3.8	300	0.0170	1.30		**Shallow Concentrated Flow, SC FLOW** Nearly Bare & Untilled Kv= 10.0 fps
14.9	600	Total			

Subcatchment OFF-4: AREA OFF-4



Summary for Subcatchment OFF-5: AREA OFF-5

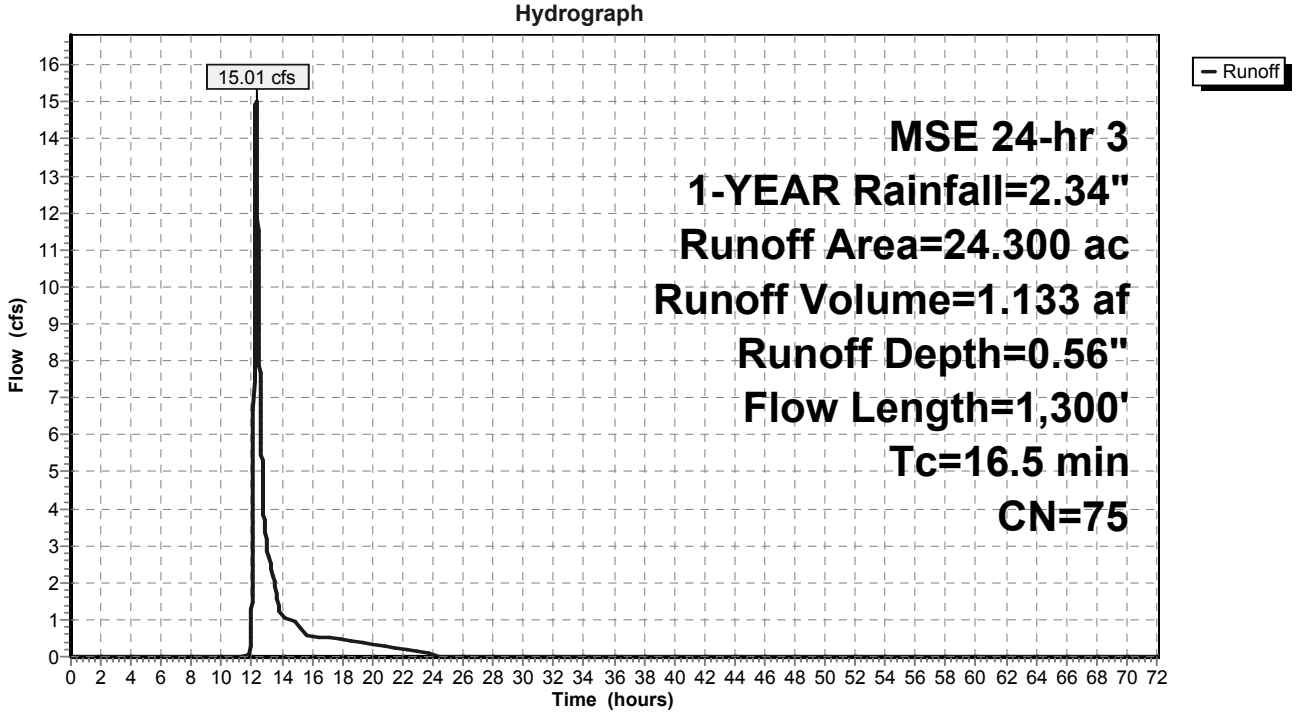
Runoff = 15.01 cfs @ 12.27 hrs, Volume= 1.133 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 1-YEAR Rainfall=2.34"

Area (ac)	CN	Description
2.200	98	Paved parking & roofs
2.000	82	Farmsteads, HSG C
17.400	71	Meadow, non-grazed, HSG C
2.700	74	>75% Grass cover, Good, HSG C
24.300	75	Weighted Average
22.100		90.95% Pervious Area
2.200		9.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	200	0.0130	0.31		**Sheet Flow, SHEET** Cultivated: Residue<=20% n= 0.060 P2= 2.57"
2.8	400	0.0250	2.37		**Shallow Concentrated Flow, SC FLOW** Grassed Waterway Kv= 15.0 fps
2.8	700	0.0040	4.15	44.31	**Parabolic Channel, DITCH FLOW** W=8.00' D=2.00' Area=10.7 sf Perim=9.2' n= 0.025
16.5	1,300	Total			

Subcatchment OFF-5: AREA OFF-5



Summary for Subcatchment OFF-6: AREA OFF-6

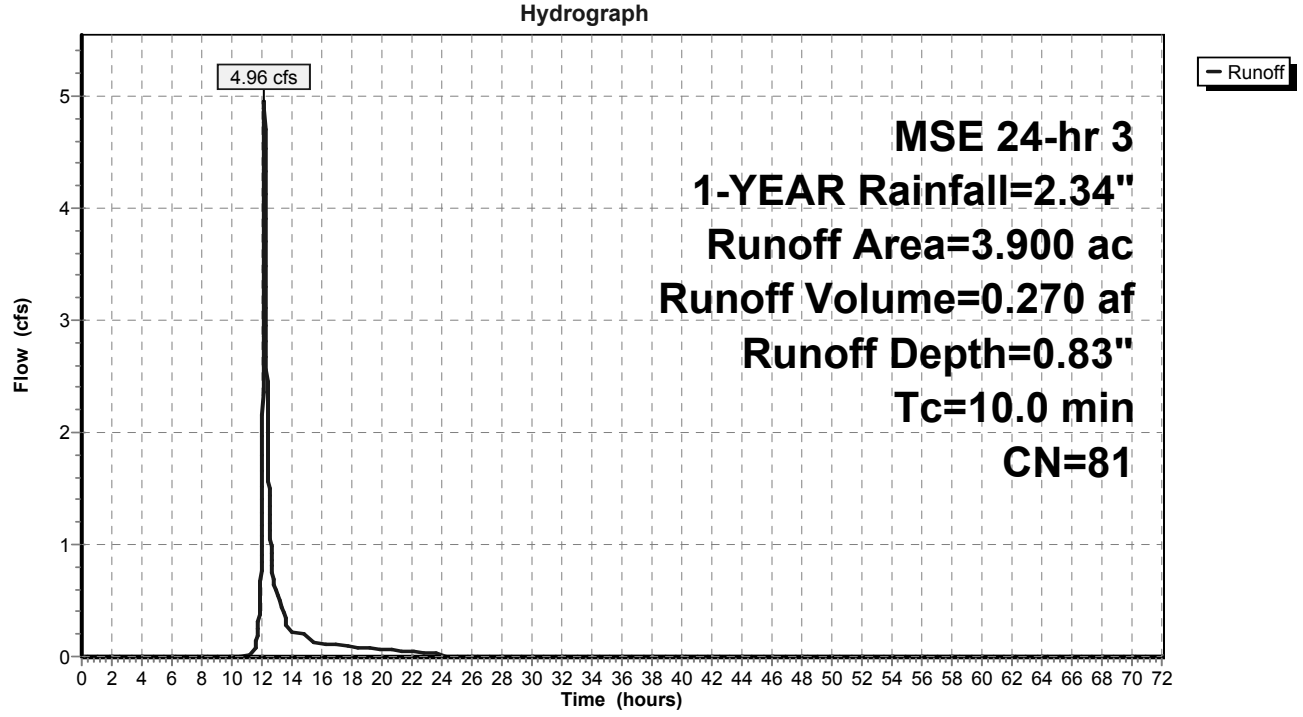
Runoff = 4.96 cfs @ 12.18 hrs, Volume= 0.270 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 1-YEAR Rainfall=2.34"

	Area (ac)	CN	Description
*	1.100	98	IMPERVIOUS AREA
*	2.800	74	GREENSPACE
	3.900	81	Weighted Average
	2.800		71.79% Pervious Area
	1.100		28.21% Impervious Area

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

Subcatchment OFF-6: AREA OFF-6



Summary for Subcatchment OFF-7: AREA OFF-7

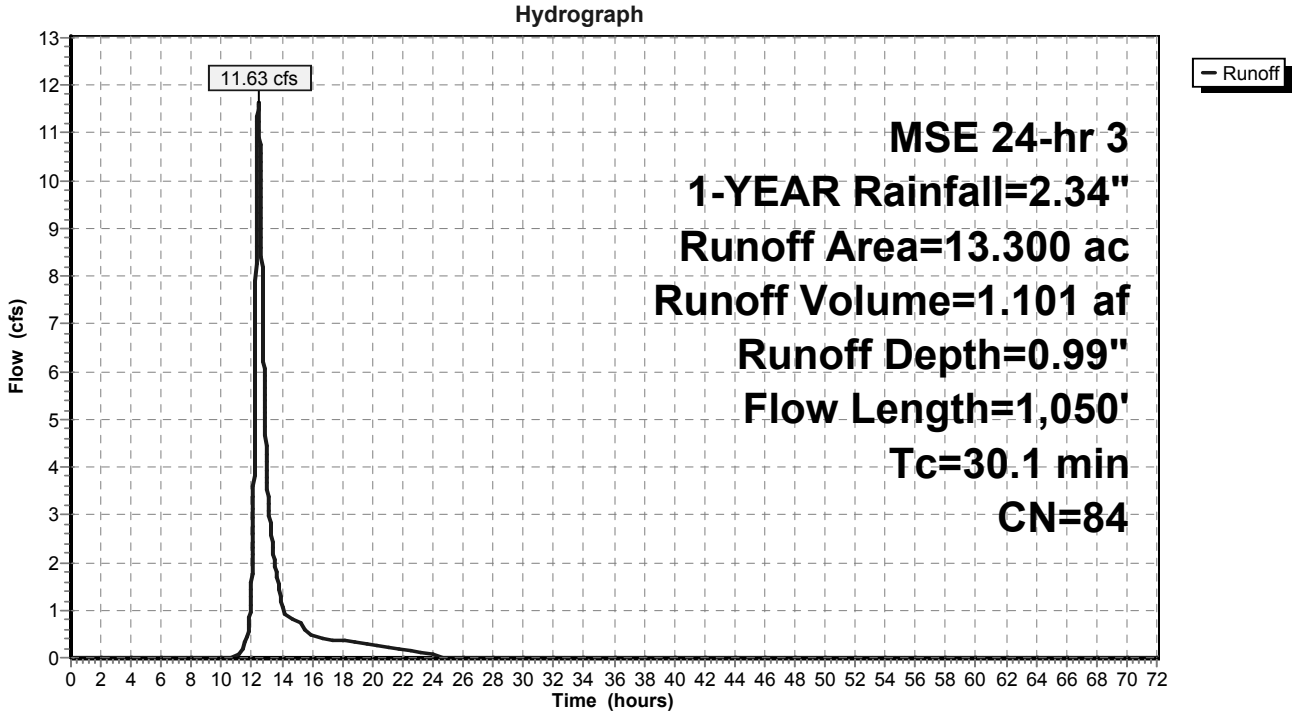
Runoff = 11.63 cfs @ 12.44 hrs, Volume= 1.101 af, Depth= 0.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 1-YEAR Rainfall=2.34"

Area (ac)	CN	Description
0.400	98	Paved roads w/curbs & sewers
1.000	79	1 acre lots, 20% imp, HSG C
6.000	94	Urban commercial, 85% imp, HSG C
5.900	74	>75% Grass cover, Good, HSG C
13.300	84	Weighted Average
7.600		57.14% Pervious Area
5.700		42.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.1	150	0.0250	0.12		**Sheet Flow, SHEET** Grass: Dense n= 0.240 P2= 2.57"
10.0	900	0.0100	1.50		**Shallow Concentrated Flow, SC FLOW** Grassed Waterway Kv= 15.0 fps
30.1	1,050	Total			

Subcatchment OFF-7: AREA OFF-7



Summary for Subcatchment OFF-9: AREA OFF-9

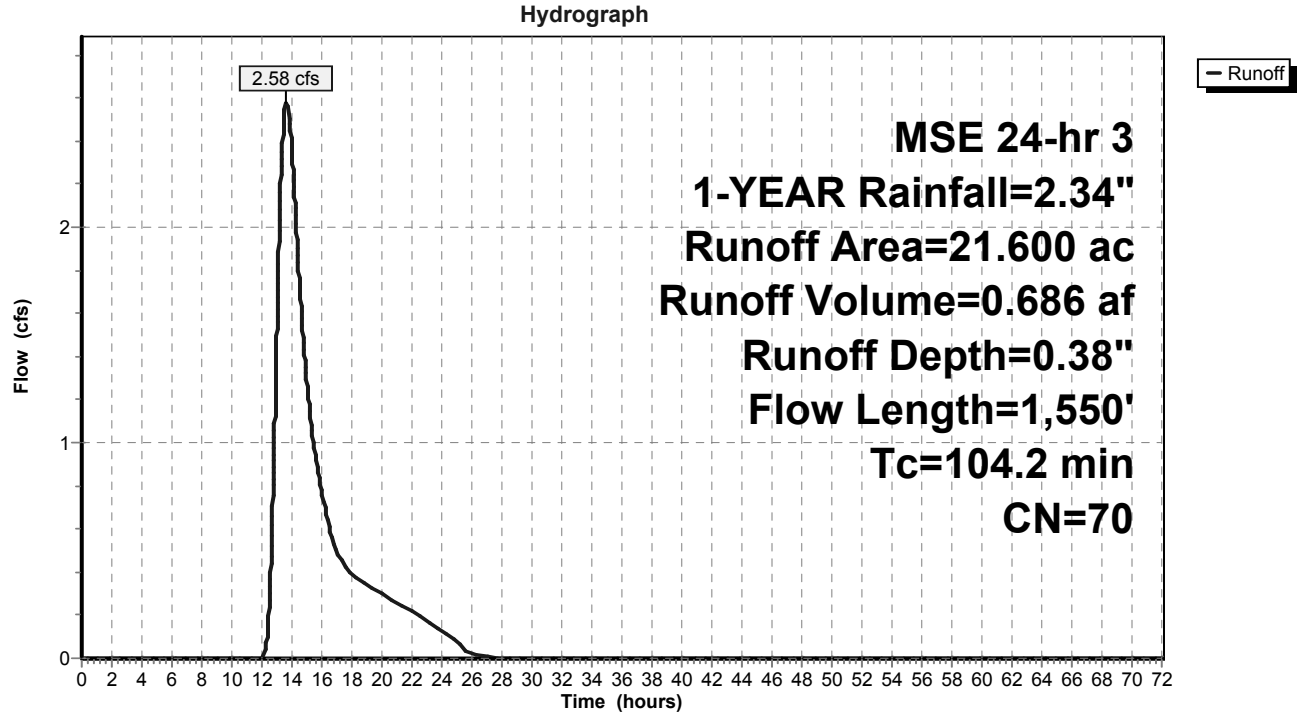
Runoff = 2.58 cfs @ 13.66 hrs, Volume= 0.686 af, Depth= 0.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 1-YEAR Rainfall=2.34"

Area (ac)	CN	Description
2.000	71	Meadow, non-grazed, HSG C
19.600	70	Woods, Good, HSG C
21.600	70	Weighted Average
21.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
76.1	300	0.0100	0.07		**Sheet Flow, SHEET** Woods: Light underbrush n= 0.400 P2= 2.57"
28.1	1,250	0.0220	0.74		**Shallow Concentrated Flow, SC FLOW** Woodland Kv= 5.0 fps
104.2	1,550	Total			

Subcatchment OFF-9: AREA OFF-9



Summary for Subcatchment PR-1: AREA PR-1

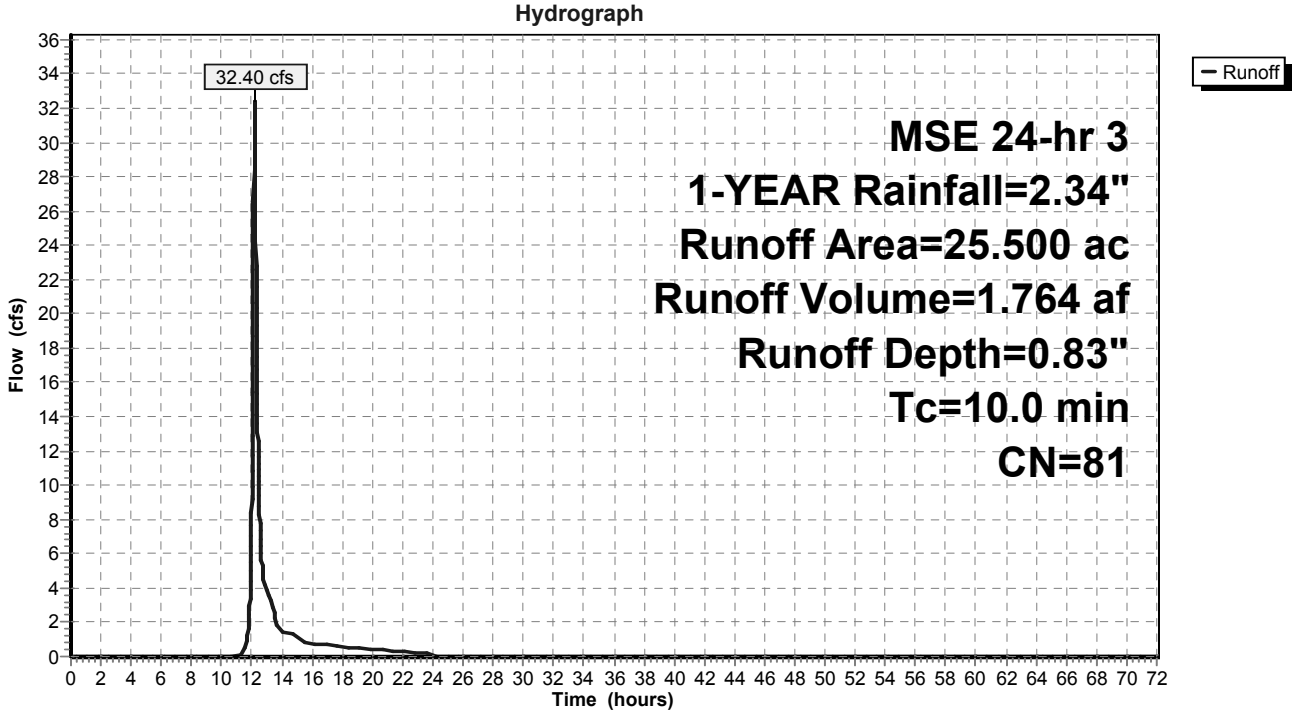
Runoff = 32.40 cfs @ 12.18 hrs, Volume= 1.764 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 1-YEAR Rainfall=2.34"

	Area (ac)	CN	Description
*	12.800	80	SF
*	12.700	82	1/2 acre lots, 25% imp, HSG C
	25.500	81	Weighted Average
	22.325		87.55% Pervious Area
	3.175		12.45% Impervious Area

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

Subcatchment PR-1: AREA PR-1



Summary for Subcatchment PR-2: AREA PR-2

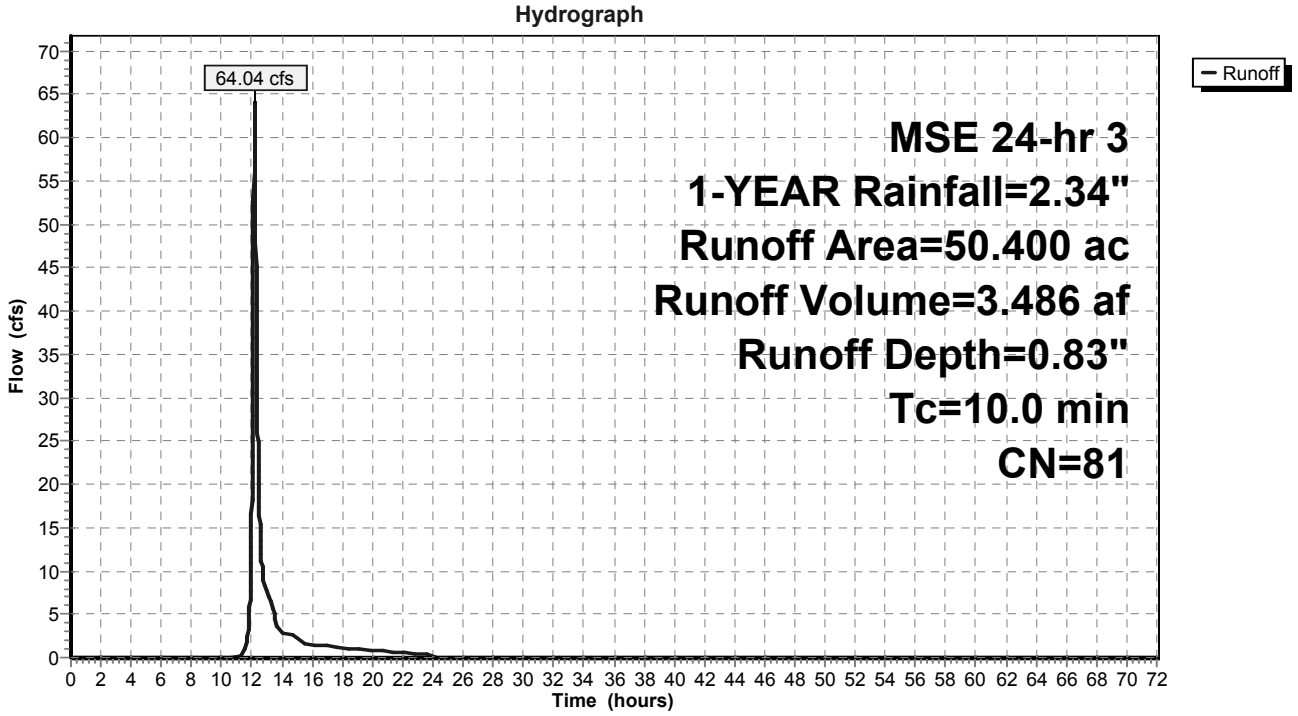
Runoff = 64.04 cfs @ 12.18 hrs, Volume= 3.486 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 1-YEAR Rainfall=2.34"

	Area (ac)	CN	Description
	46.100	81	1/3 acre lots, 30% imp, HSG C
*	1.500	74	Outlot 1
*	1.400	74	Pond Outlot
*	1.400	98	Pond Water Surface
	50.400	81	Weighted Average
	35.170		69.78% Pervious Area
	15.230		30.22% Impervious Area

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

Subcatchment PR-2: AREA PR-2



Summary for Subcatchment PR-3: AREA PR-3

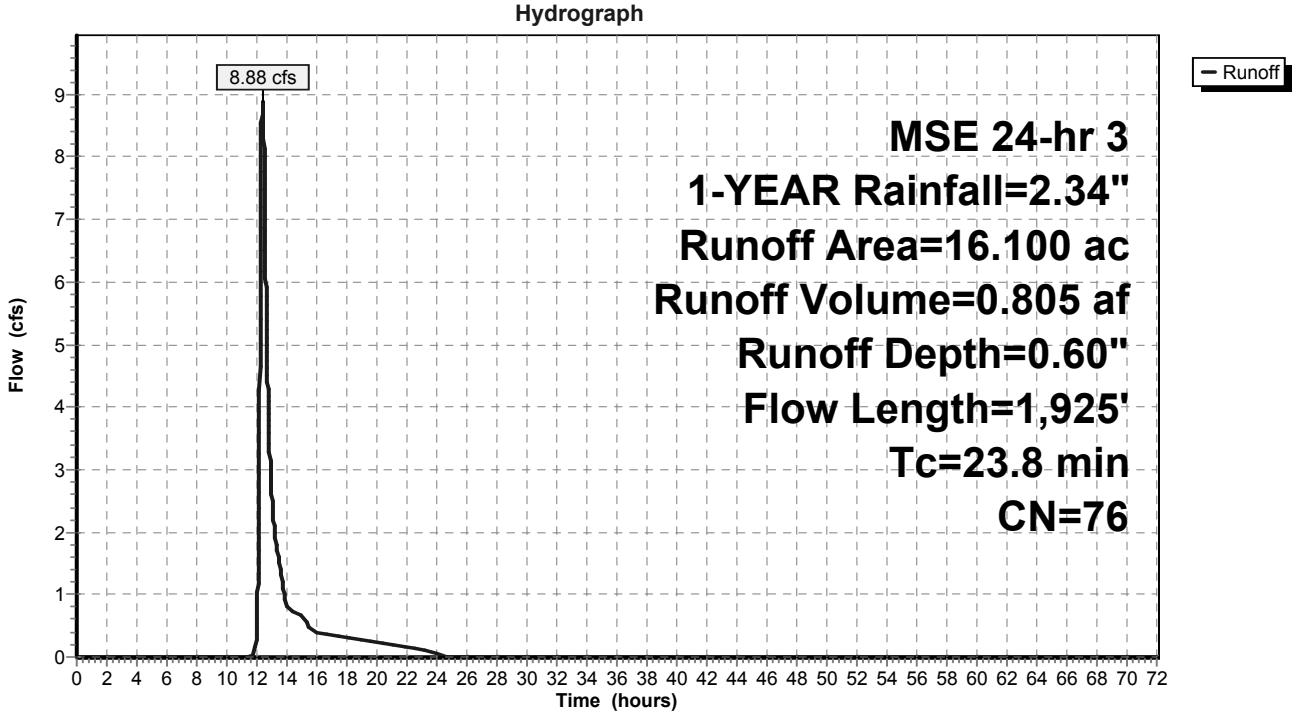
Runoff = 8.88 cfs @ 12.38 hrs, Volume= 0.805 af, Depth= 0.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 1-YEAR Rainfall=2.34"

Area (ac)	CN	Description
7.700	70	Woods, Good, HSG C
8.400	81	1/3 acre lots, 30% imp, HSG C
16.100	76	Weighted Average
13.580		84.35% Pervious Area
2.520		15.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	100	0.0400	0.14		**Sheet Flow, SHEET FLOW** Grass: Dense n= 0.240 P2= 2.57"
0.7	209	0.0861	4.72		**Shallow Concentrated Flow, SHALLOW CONCENTRATED** Unpaved Kv= 16.1 fps
9.3	963	0.0114	1.72		**Shallow Concentrated Flow, SHALLOW CONCENTRATED** Unpaved Kv= 16.1 fps
1.7	653	0.0077	6.32	19.85	**Pipe Channel, STORM SEWER** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
23.8	1,925	Total			

Subcatchment PR-3: AREA PR-3



Summary for Subcatchment UN-1: DEVELOPED AREA NOT DETAINED

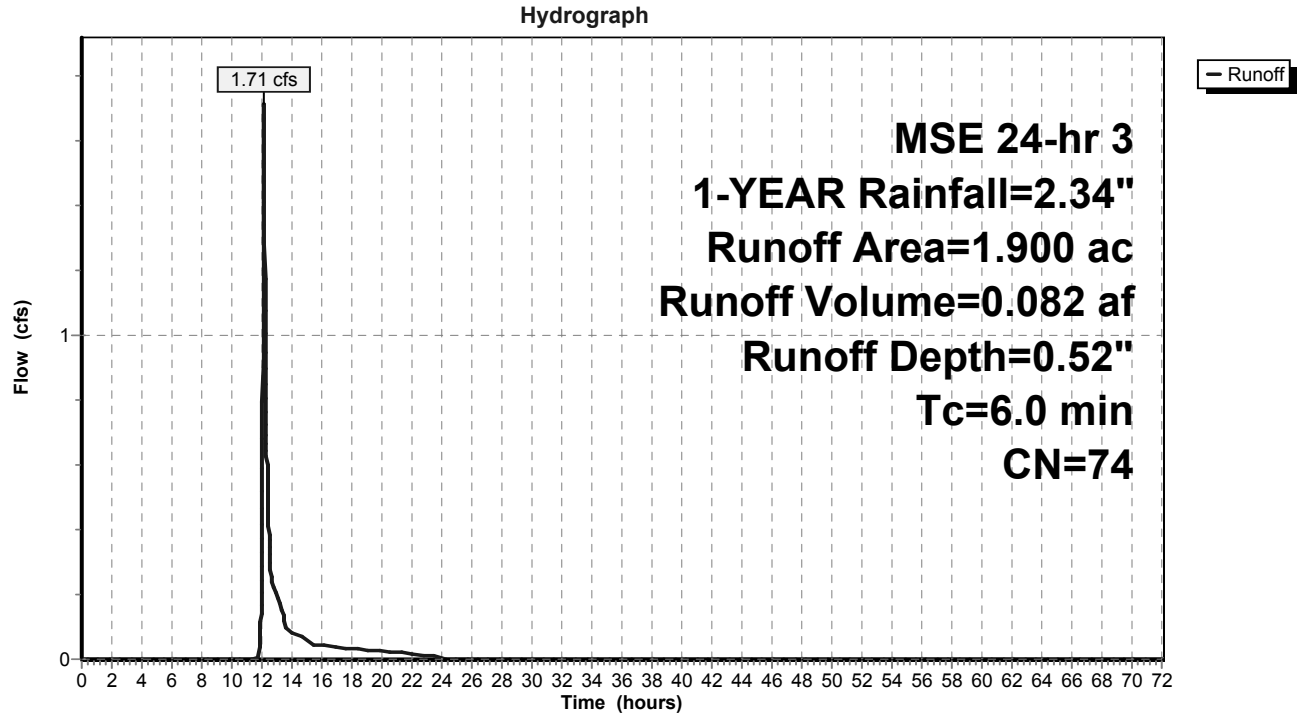
Runoff = 1.71 cfs @ 12.14 hrs, Volume= 0.082 af, Depth= 0.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 1-YEAR Rainfall=2.34"

Area (ac)	CN	Description
1.900	74	>75% Grass cover, Good, HSG C
1.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Subcatchment UN-1: DEVELOPED AREA NOT DETAINED



Summary for Subcatchment UN-2: DEVELOPED AREA NOT DETAINED

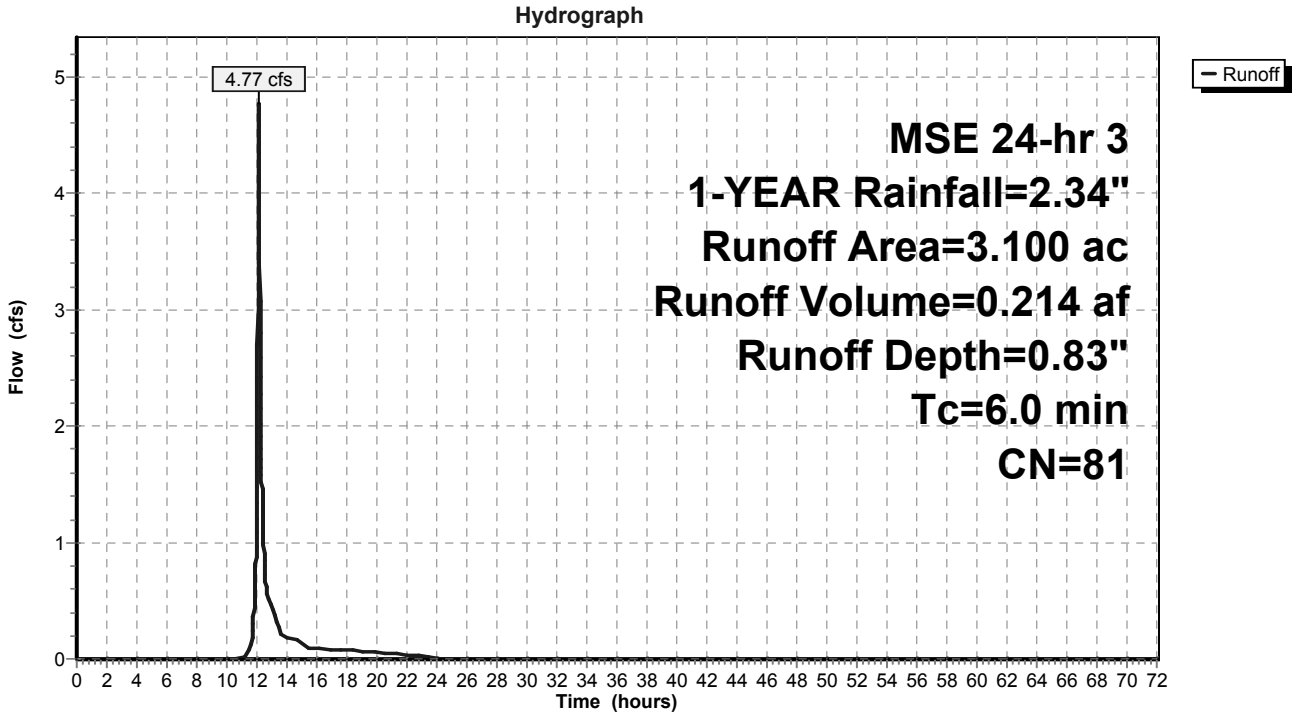
Runoff = 4.77 cfs @ 12.14 hrs, Volume= 0.214 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 1-YEAR Rainfall=2.34"

Area (ac)	CN	Description
3.100	81	1/3 acre lots, 30% imp, HSG C
2.170		70.00% Pervious Area
0.930		30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Subcatchment UN-2: DEVELOPED AREA NOT DETAINED



Summary for Pond NC-1: NORTH CREEK @ YORK

[44] Hint: Outlet device #1 is below defined storage

Inflow Area = 1,046.300 ac, 0.71% Impervious, Inflow Depth = 0.45" for 1-YEAR event
Inflow = 115.53 cfs @ 14.31 hrs, Volume= 39.221 af
Outflow = 115.52 cfs @ 14.32 hrs, Volume= 39.220 af, Atten= 0%, Lag= 0.3 min
Primary = 115.52 cfs @ 14.32 hrs, Volume= 39.220 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 763.83' @ 14.32 hrs Surf.Area= 2,374 sf Storage= 1,539 cf

Plug-Flow detention time= 0.1 min calculated for 39.220 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (982.6 - 982.5)

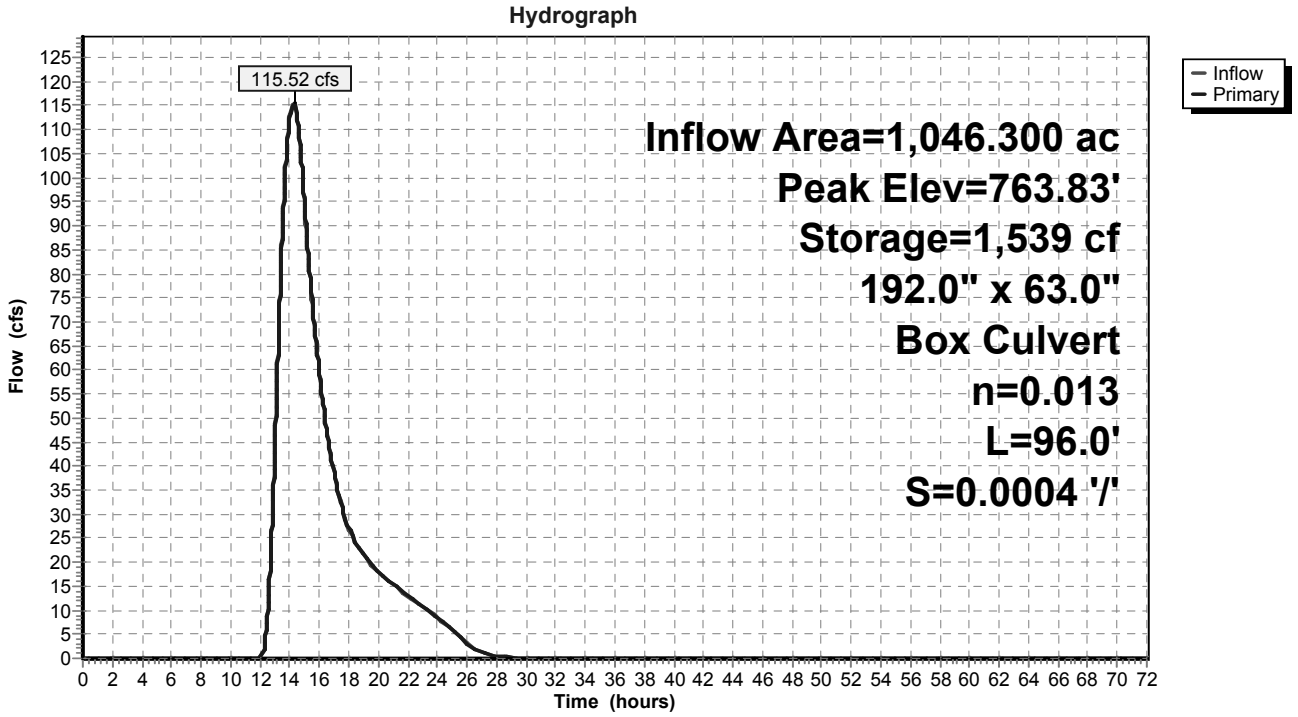
Volume	Invert	Avail.Storage	Storage Description
#1	762.30'	1,077,353 cf	**UPSTREAM STORAGE AREA (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
762.30	0	0.0	0	0	0
763.00	932	603.0	217	217	28,936
764.00	2,759	918.0	1,765	1,982	67,070
765.00	8,694	1,672.0	5,450	7,433	222,479
766.00	20,259	1,787.0	14,075	21,507	254,181
767.00	47,027	1,911.0	32,717	54,225	290,718
768.00	88,000	2,285.0	66,452	120,677	415,617
769.00	163,208	1,973.0	123,684	244,361	521,357
770.00	227,240	2,760.0	194,343	438,704	817,782
772.00	421,316	3,460.0	638,650	1,077,353	1,164,318

Device	Routing	Invert	Outlet Devices
#1	Primary	761.69'	**192.0" W x 63.0" H Box Culvert** L= 96.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 761.69' / 761.65' S= 0.0004 '/' Cc= 0.900 n= 0.013, Flow Area= 84.00 sf

Primary OutFlow Max=115.51 cfs @ 14.32 hrs HW=763.83' TW=755.96' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 115.51 cfs @ 4.50 fps)

Pond NC-1: NORTH CREEK @ YORK



Summary for Pond NC-2: NORTH CREEK @ 45

Inflow Area = 1,237.100 ac, 3.22% Impervious, Inflow Depth > 0.48" for 1-YEAR event
Inflow = 128.21 cfs @ 14.32 hrs, Volume= 49.842 af
Outflow = 128.21 cfs @ 14.32 hrs, Volume= 49.842 af, Atten= 0%, Lag= 0.1 min
Primary = 128.21 cfs @ 14.32 hrs, Volume= 49.842 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 755.96' @ 14.32 hrs Surf.Area= 2,019 sf Storage= 2,681 cf

Plug-Flow detention time= 0.3 min calculated for 49.842 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (1,009.3 - 1,009.0)

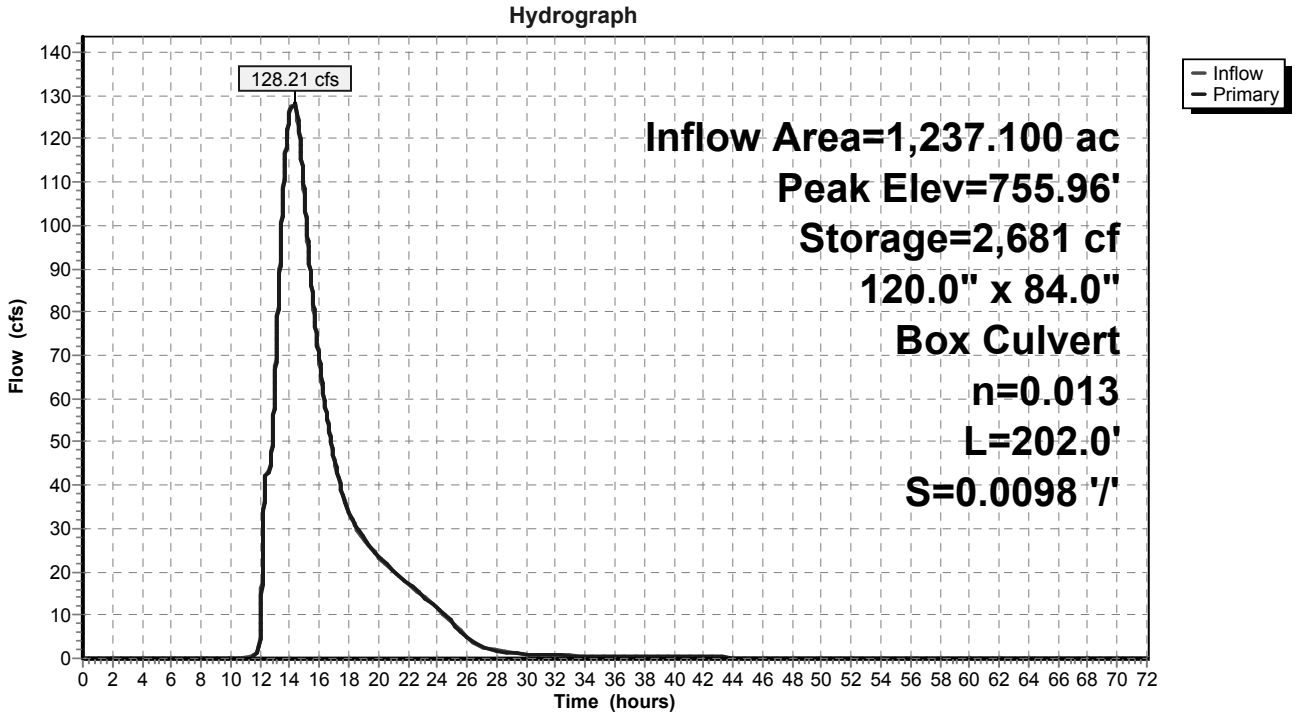
Volume	Invert	Avail.Storage	Storage Description
#1	753.44'	1,242,057 cf	**ACTIVE STORAGE VOLUME (Irregular)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
753.44	0	0.0	0	0	0
754.00	581	145.0	108	108	1,674
755.00	1,370	268.0	948	1,056	5,721
756.00	2,048	730.0	1,698	2,754	42,416
757.00	5,733	1,393.0	3,736	6,490	154,430
758.00	13,083	1,825.0	9,159	15,649	265,069
759.00	27,851	1,986.0	20,008	35,656	313,932
760.00	47,111	1,975.0	37,062	72,718	317,925
761.00	74,209	3,753.0	60,149	132,867	1,128,378
762.00	117,171	4,712.0	94,876	227,743	1,774,396
763.00	188,304	5,439.0	151,338	379,081	2,361,682
764.00	280,708	6,208.0	232,974	612,055	3,074,445
765.00	314,048	4,703.0	297,222	909,277	4,381,203
766.00	351,870	4,619.0	332,780	1,242,057	4,443,690

Device	Routing	Invert	Outlet Devices
#1	Primary	753.44'	**120.0" W x 84.0" H Box BOX CULVERT** L= 202.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 753.44' / 751.47' S= 0.0098 '/' Cc= 0.900 n= 0.013 Concrete, trowel finish, Flow Area= 70.00 sf

Primary OutFlow Max=128.20 cfs @ 14.32 hrs HW=755.96' (Free Discharge)
1=BOX CULVERT (Inlet Controls 128.20 cfs @ 5.09 fps)

Pond NC-2: NORTH CREEK @ 45



Summary for Pond P-1: POND 1

Inflow Area = 46.700 ac, 9.80% Impervious, Inflow Depth = 0.68" for 1-YEAR event
Inflow = 41.70 cfs @ 12.19 hrs, Volume= 2.646 af
Outflow = 3.63 cfs @ 13.58 hrs, Volume= 2.554 af, Atten= 91%, Lag= 83.3 min
Primary = 3.63 cfs @ 13.58 hrs, Volume= 2.554 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 764.01' @ 13.58 hrs Surf.Area= 64,951 sf Storage= 62,899 cf

Plug-Flow detention time= 399.7 min calculated for 2.553 af (96% of inflow)
Center-of-Mass det. time= 381.6 min (1,218.4 - 836.8)

Volume	Invert	Avail.Storage	Storage Description
#1	763.00'	551,935 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

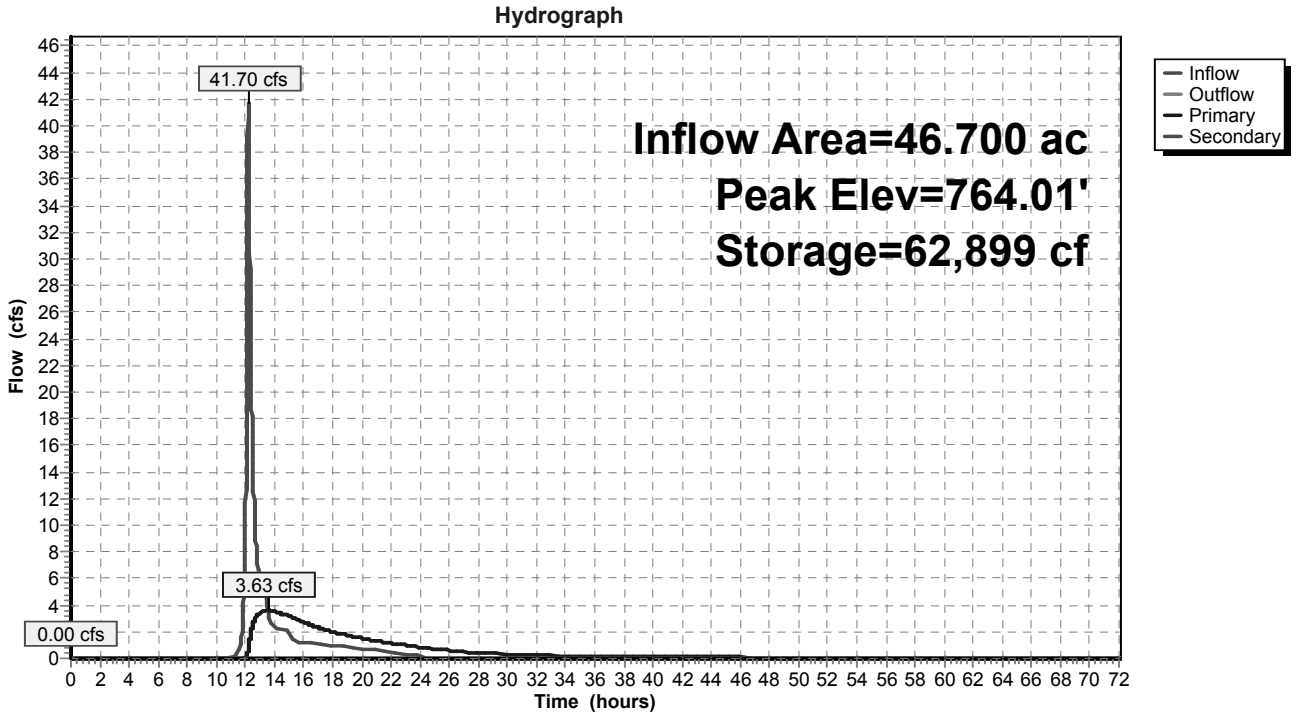
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
763.00	59,577	0	0
764.00	64,896	62,237	62,237
765.00	70,316	67,606	129,843
766.00	75,836	73,076	202,919
767.00	81,457	78,647	281,565
768.00	87,179	84,318	365,883
769.00	93,001	90,090	455,973
770.00	98,923	95,962	551,935

Device	Routing	Invert	Outlet Devices
#1	Primary	763.00'	**15.0" Round CULVERT** L= 110.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 763.00' / 762.00' S= 0.0091 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Secondary	769.00'	**50.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=3.63 cfs @ 13.58 hrs HW=764.01' TW=0.00' (Dynamic Tailwater)
↑—**1=CULVERT** (Barrel Controls 3.63 cfs @ 4.66 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=763.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P-1: POND 1



Summary for Pond P-2: POND 2

Inflow Area = 88.100 ac, 20.15% Impervious, Inflow Depth = 0.68" for 1-YEAR event
Inflow = 68.17 cfs @ 12.19 hrs, Volume= 4.977 af
Outflow = 6.73 cfs @ 13.76 hrs, Volume= 4.868 af, Atten= 90%, Lag= 94.1 min
Primary = 6.73 cfs @ 13.76 hrs, Volume= 4.868 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 761.76' @ 13.76 hrs Surf.Area= 68,643 sf Storage= 110,521 cf

Plug-Flow detention time= 381.6 min calculated for 4.868 af (98% of inflow)
Center-of-Mass det. time= 369.2 min (1,218.7 - 849.5)

Volume	Invert	Avail.Storage	Storage Description
#1	760.00'	613,278 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

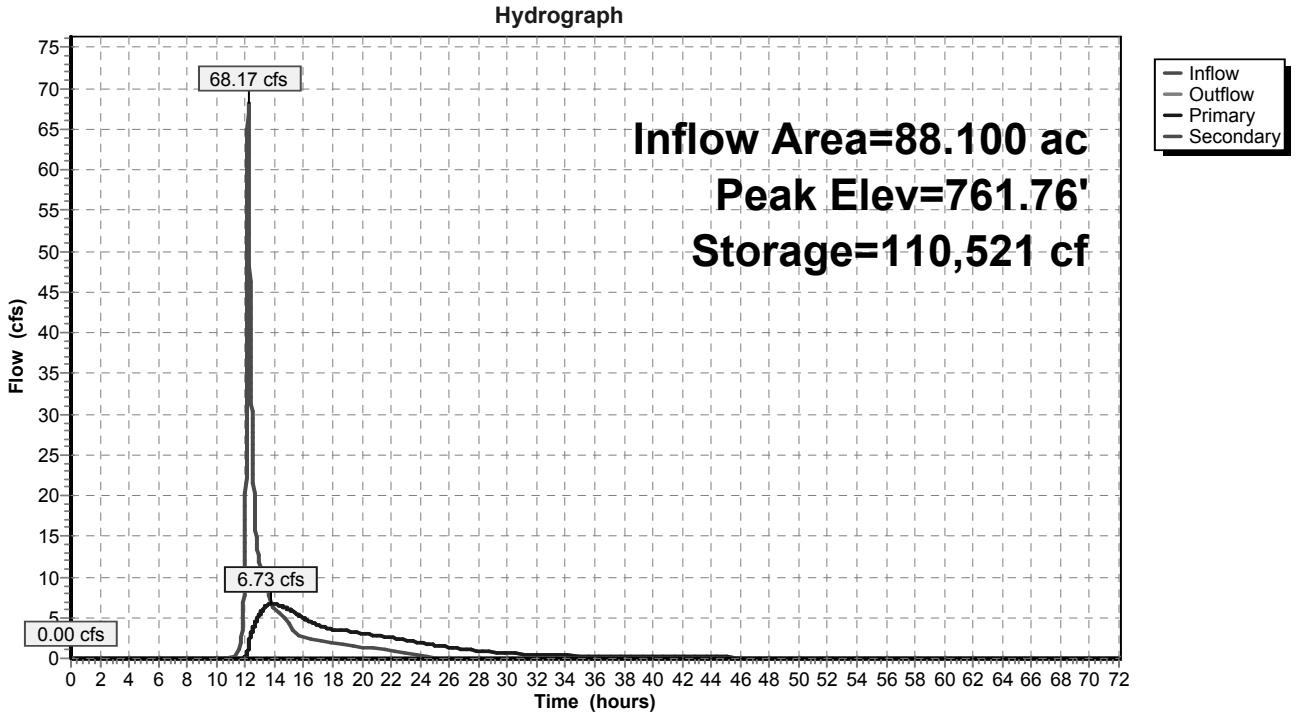
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
760.00	54,486	0	0
761.00	64,778	59,632	59,632
762.00	69,845	67,312	126,944
763.00	75,397	72,621	199,565
764.00	81,523	78,460	278,025
765.00	92,446	86,985	365,009
766.00	121,411	106,929	471,938
767.00	161,270	141,341	613,278

Device	Routing	Invert	Outlet Devices
#1	Primary	760.00'	**12.0" Round Culvert** L= 146.2' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 760.00' / 759.00' S= 0.0068 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Primary	761.10'	**48.0" Round Culvert** L= 141.4' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 761.10' / 759.00' S= 0.0149 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 12.57 sf
#3	Secondary	766.00'	**50.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=6.73 cfs @ 13.76 hrs HW=761.76' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 3.39 cfs @ 4.32 fps)
└─**2=Culvert** (Inlet Controls 3.34 cfs @ 2.45 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=760.00' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P-2: POND 2

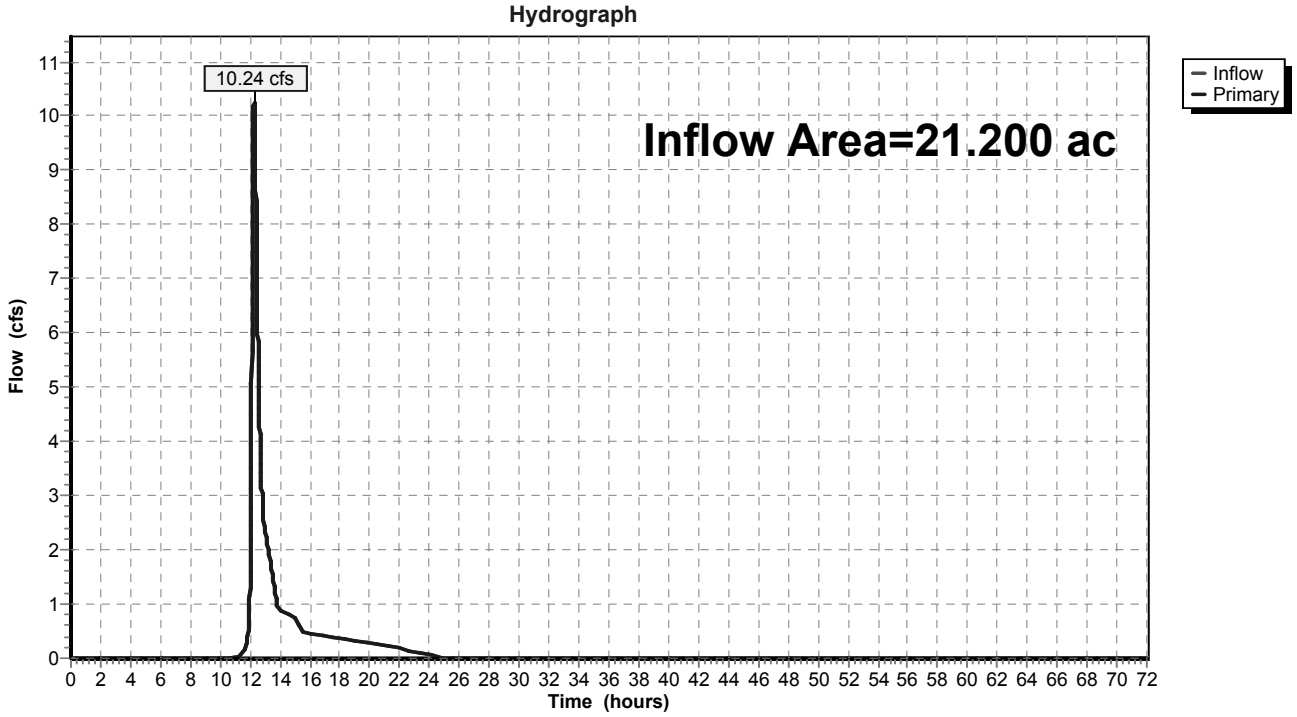


Summary for Link 2L: OFFSITE (3,4,6)

Inflow Area = 21.200 ac, 6.60% Impervious, Inflow Depth = 0.50" for 1-YEAR event
Inflow = 10.24 cfs @ 12.25 hrs, Volume= 0.882 af
Primary = 10.24 cfs @ 12.25 hrs, Volume= 0.882 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 2L: OFFSITE (3,4,6)

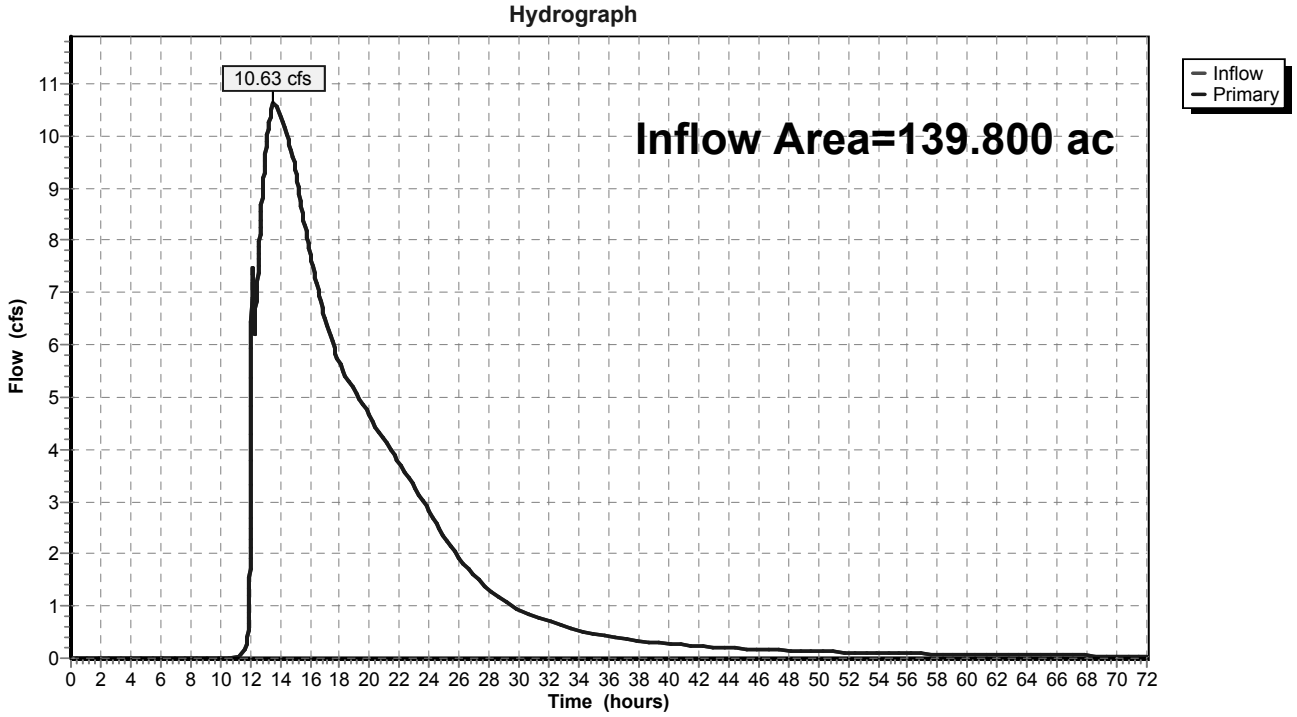


Summary for Link PR-N: PROPOSED DISCHARGE TO NORTH CREEK

Inflow Area = 139.800 ac, 16.63% Impervious, Inflow Depth > 0.66" for 1-YEAR event
Inflow = 10.63 cfs @ 13.55 hrs, Volume= 7.718 af
Primary = 10.63 cfs @ 13.55 hrs, Volume= 7.718 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link PR-N: PROPOSED DISCHARGE TO NORTH CREEK



Summary for Subcatchment EX-3: UNDEVELOPED AREA

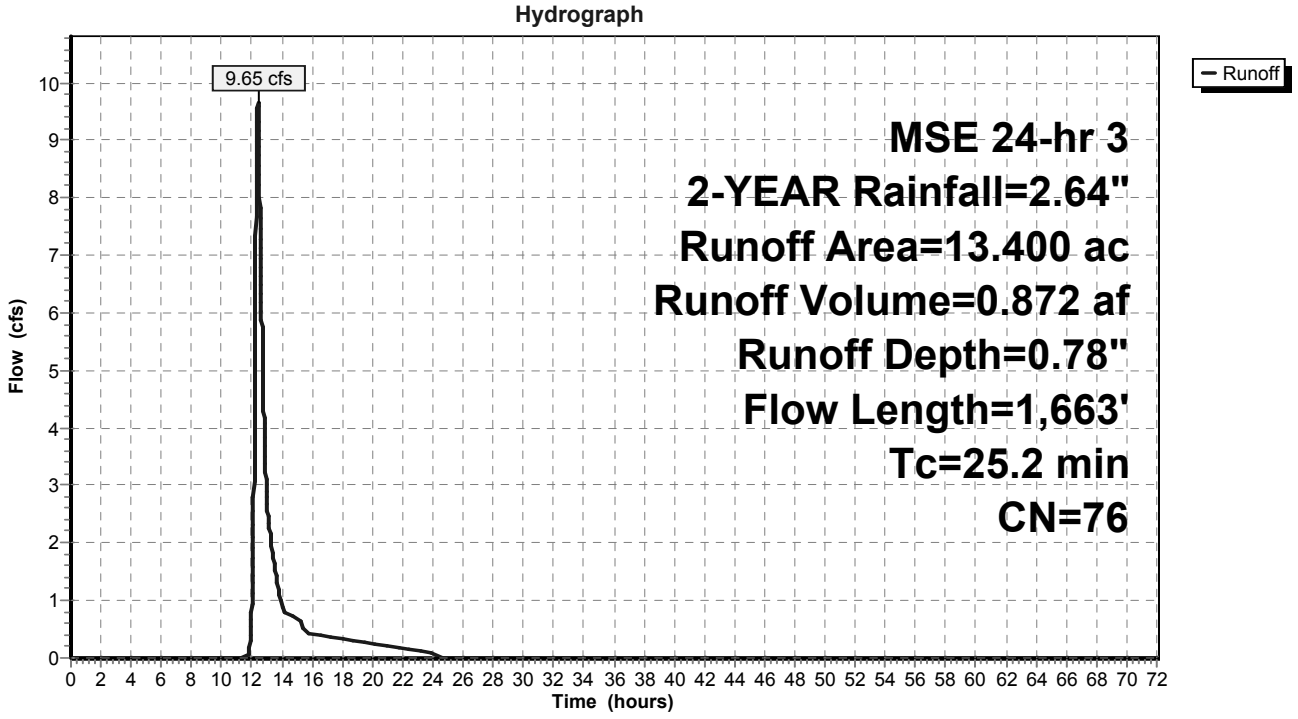
Runoff = 9.65 cfs @ 12.40 hrs, Volume= 0.872 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-YEAR Rainfall=2.64"

Area (ac)	CN	Description
0.800	79	1 acre lots, 20% imp, HSG C
1.100	98	Paved parking, HSG C
11.500	74	>75% Grass cover, Good, HSG C
13.400	76	Weighted Average
12.140		90.60% Pervious Area
1.260		9.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	100	0.0480	0.22		**Sheet Flow, SEGMENT AB** Grass: Short n= 0.150 P2= 2.57"
3.5	600	0.0320	2.88		**Shallow Concentrated Flow, SEGMENT BC** Unpaved Kv= 16.1 fps
14.0	963	0.0058	1.14		**Shallow Concentrated Flow, SEGMENT CD** Grassed Waterway Kv= 15.0 fps
25.2	1,663	Total			

Subcatchment EX-3: UNDEVELOPED AREA



Summary for Subcatchment OFF-1: AREA OFF-1

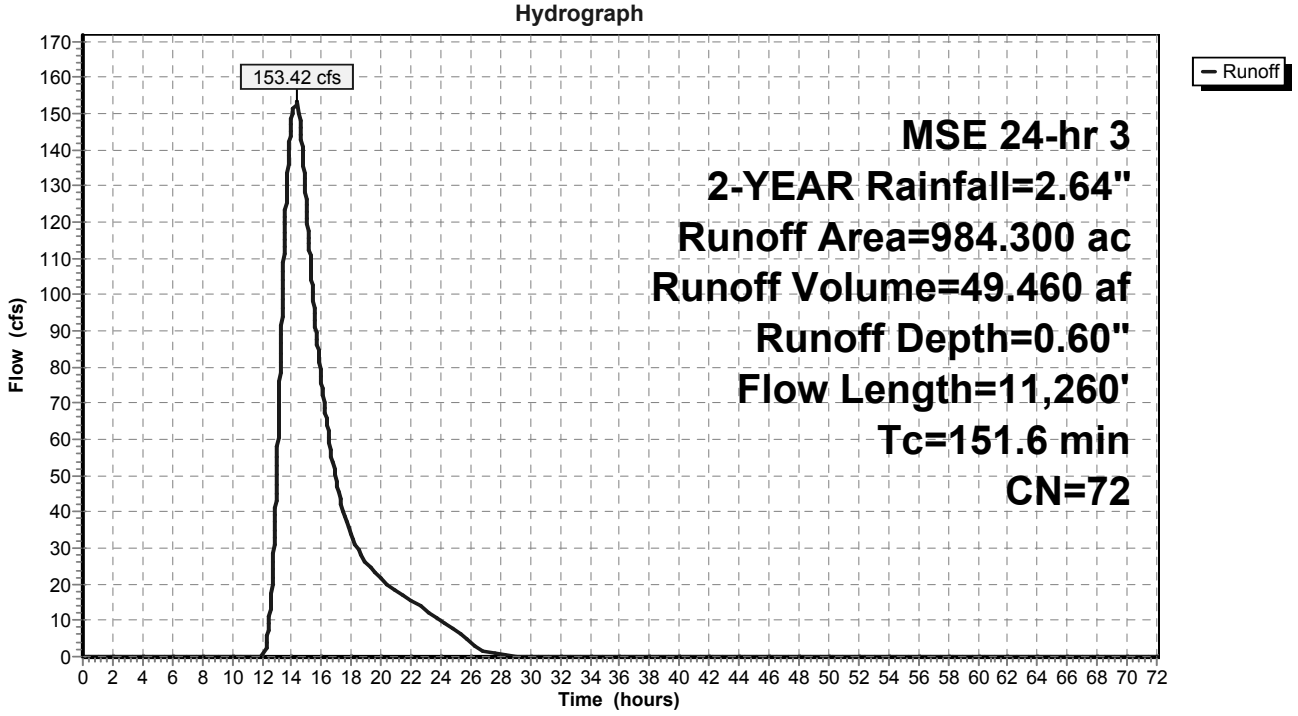
Runoff = 153.42 cfs @ 14.31 hrs, Volume= 49.460 af, Depth= 0.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-YEAR Rainfall=2.64"

Area (ac)	CN	Description
4.300	98	Paved parking & roofs
60.000	86	INSTITUTIONAL - 50% OPEN SPACE
830.000	71	Meadow, non-grazed, HSG C
90.000	70	Woods, Good, HSG C
984.300	72	Weighted Average
980.000		99.56% Pervious Area
4.300		0.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	300	0.0200	0.40		**Sheet Flow, SHEET** Cultivated: Residue<=20% n= 0.060 P2= 2.57"
114.0	6,000	0.0077	0.88		**Shallow Concentrated Flow, SC FLOW** Nearly Bare & Untilled Kv= 10.0 fps
25.0	4,960	0.0055	3.31	22.05	**Parabolic Channel, DITCH FLOW** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.025
151.6	11,260	Total			

Subcatchment OFF-1: AREA OFF-1



Summary for Subcatchment OFF-2: AREA OFF-2

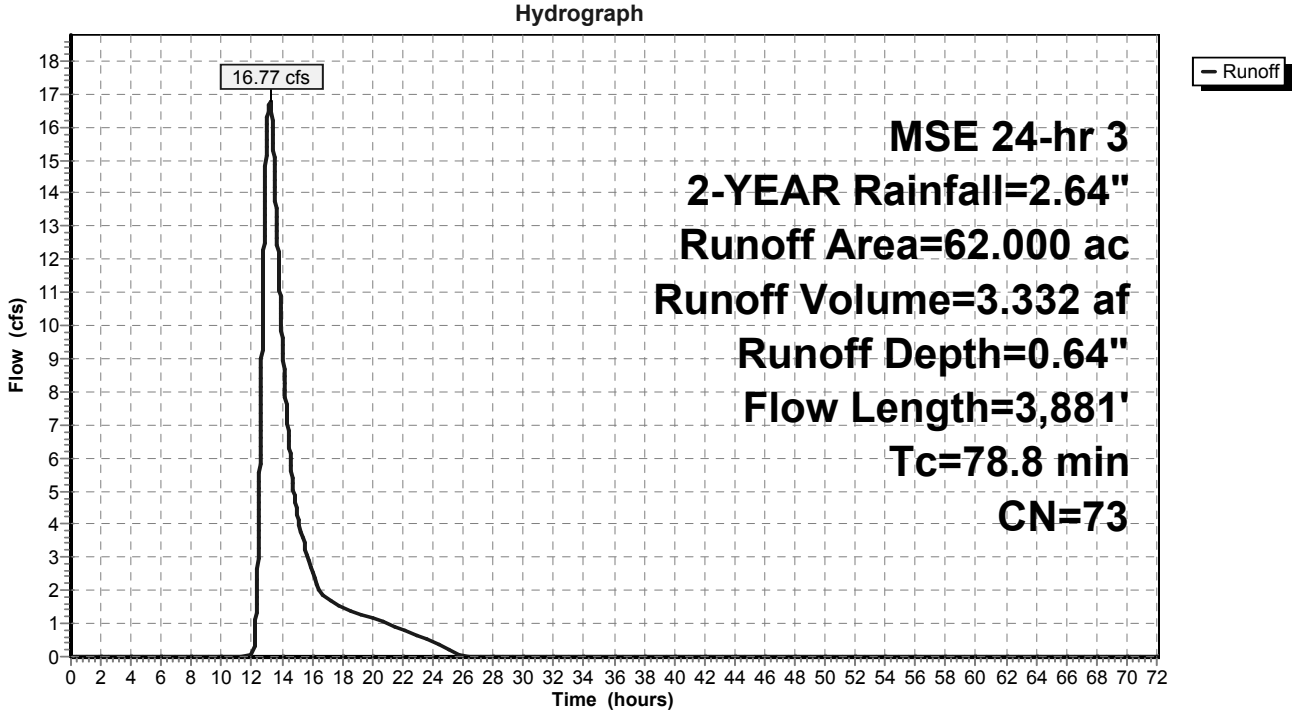
Runoff = 16.77 cfs @ 13.22 hrs, Volume= 3.332 af, Depth= 0.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-YEAR Rainfall=2.64"

Area (ac)	CN	Description
1.600	98	Paved parking & roofs
12.800	77	2 acre lots, 12% imp, HSG C
47.600	71	Meadow, non-grazed, HSG C
62.000	73	Weighted Average
58.864		94.94% Pervious Area
3.136		5.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	300	0.0150	0.35		**Sheet Flow, SHEET** Cultivated: Residue<=20% n= 0.060 P2= 2.57"
61.3	2,600	0.0050	0.71		**Shallow Concentrated Flow, SC FLOW** Nearly Bare & Untilled Kv= 10.0 fps
3.3	981	0.0130	4.99	139.93	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=2.30' Z= 4.0 '/' Top.W=21.40' n= 0.040
78.8	3,881	Total			

Subcatchment OFF-2: AREA OFF-2



Summary for Subcatchment OFF-3: AREA OFF-3

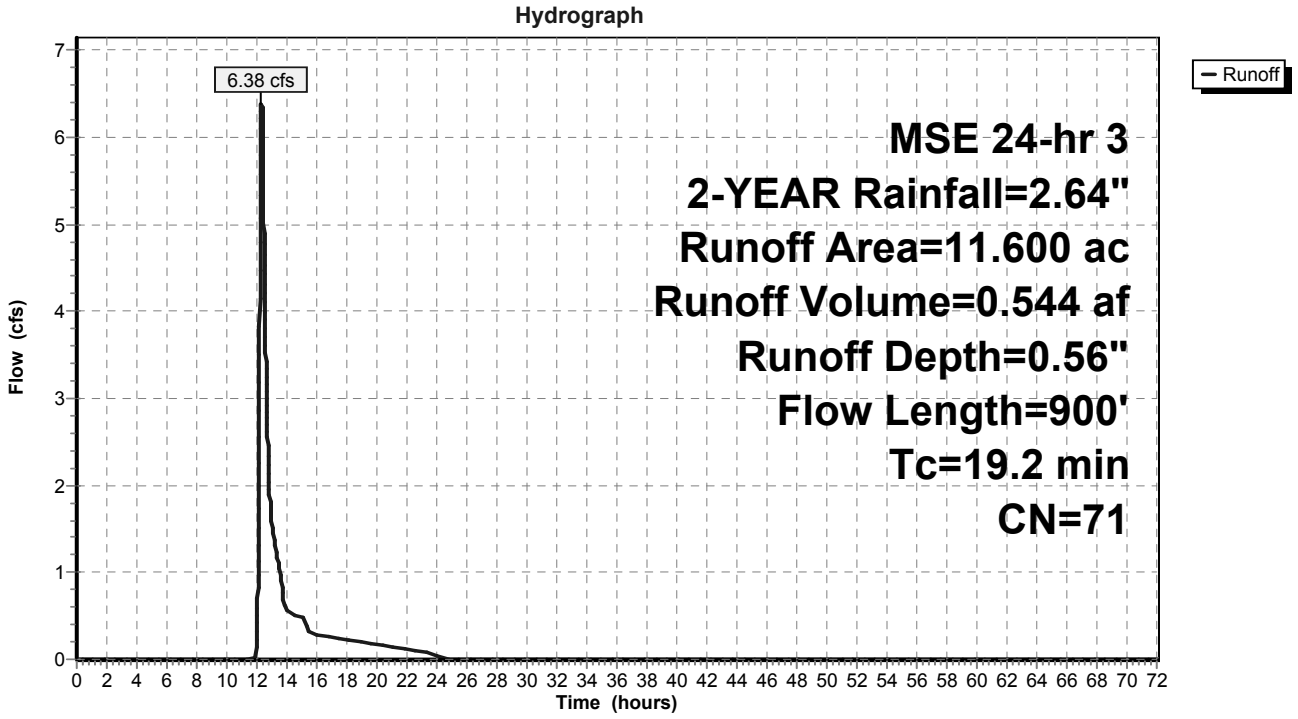
Runoff = 6.38 cfs @ 12.33 hrs, Volume= 0.544 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-YEAR Rainfall=2.64"

Area (ac)	CN	Description
11.600	71	Meadow, non-grazed, HSG C
11.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	200	0.0150	0.32		**Sheet Flow, SHEET** Cultivated: Residue<=20% n= 0.060 P2= 2.57"
8.9	700	0.0170	1.30		**Shallow Concentrated Flow, SC FLOW** Nearly Bare & Untilled Kv= 10.0 fps
19.2	900	Total			

Subcatchment OFF-3: AREA OFF-3



Summary for Subcatchment OFF-4: AREA OFF-4

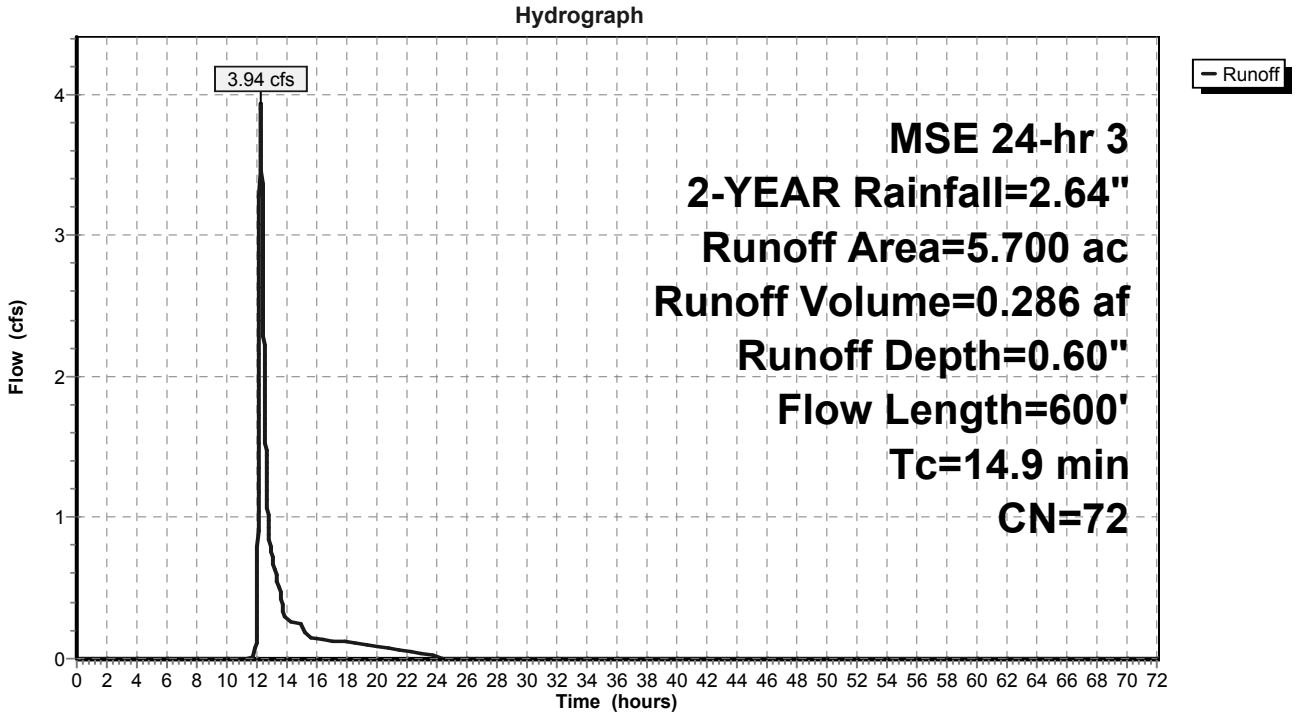
Runoff = 3.94 cfs @ 12.26 hrs, Volume= 0.286 af, Depth= 0.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-YEAR Rainfall=2.64"

Area (ac)	CN	Description
0.300	98	Paved parking & roofs
5.400	71	Meadow, non-grazed, HSG C
5.700	72	Weighted Average
5.400		94.74% Pervious Area
0.300		5.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	300	0.0280	0.45		**Sheet Flow, SHEET** Cultivated: Residue<=20% n= 0.060 P2= 2.57"
3.8	300	0.0170	1.30		**Shallow Concentrated Flow, SC FLOW** Nearly Bare & Untilled Kv= 10.0 fps
14.9	600	Total			

Subcatchment OFF-4: AREA OFF-4



Summary for Subcatchment OFF-5: AREA OFF-5

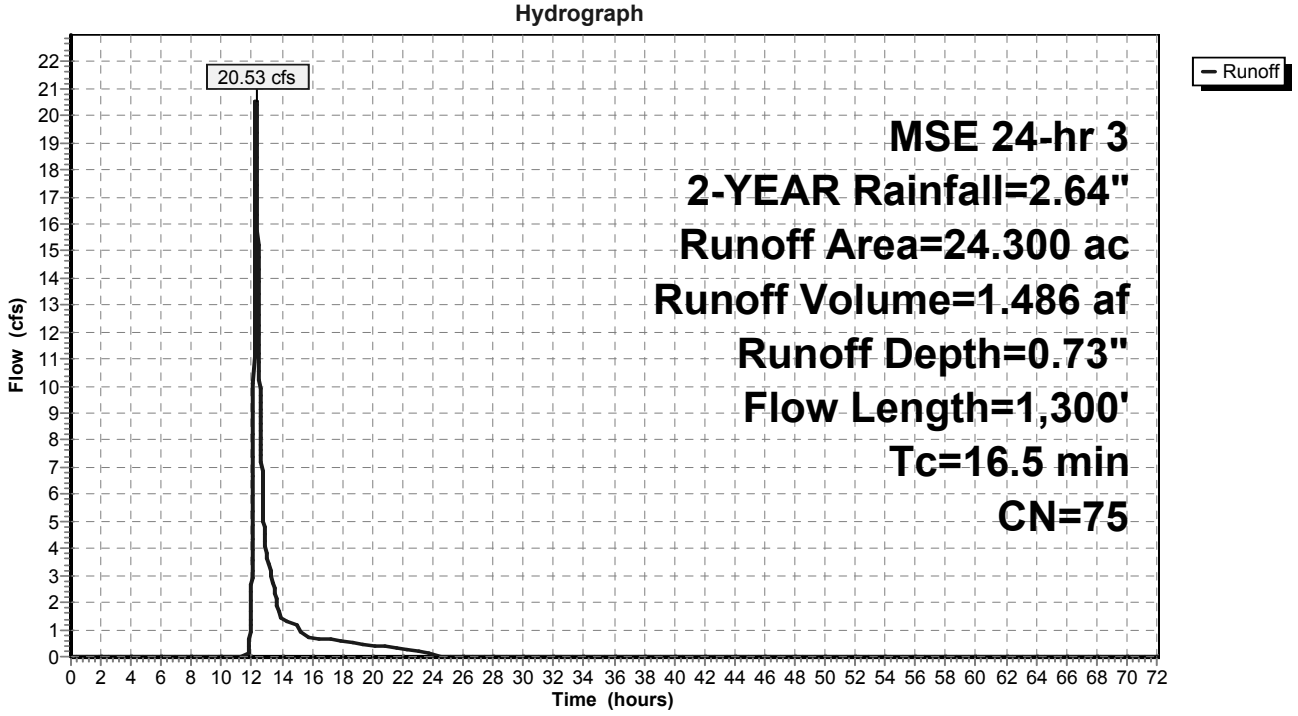
Runoff = 20.53 cfs @ 12.27 hrs, Volume= 1.486 af, Depth= 0.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-YEAR Rainfall=2.64"

Area (ac)	CN	Description
2.200	98	Paved parking & roofs
2.000	82	Farmsteads, HSG C
17.400	71	Meadow, non-grazed, HSG C
2.700	74	>75% Grass cover, Good, HSG C
24.300	75	Weighted Average
22.100		90.95% Pervious Area
2.200		9.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	200	0.0130	0.31		**Sheet Flow, SHEET** Cultivated: Residue<=20% n= 0.060 P2= 2.57"
2.8	400	0.0250	2.37		**Shallow Concentrated Flow, SC FLOW** Grassed Waterway Kv= 15.0 fps
2.8	700	0.0040	4.15	44.31	**Parabolic Channel, DITCH FLOW** W=8.00' D=2.00' Area=10.7 sf Perim=9.2' n= 0.025
16.5	1,300	Total			

Subcatchment OFF-5: AREA OFF-5



Summary for Subcatchment OFF-6: AREA OFF-6

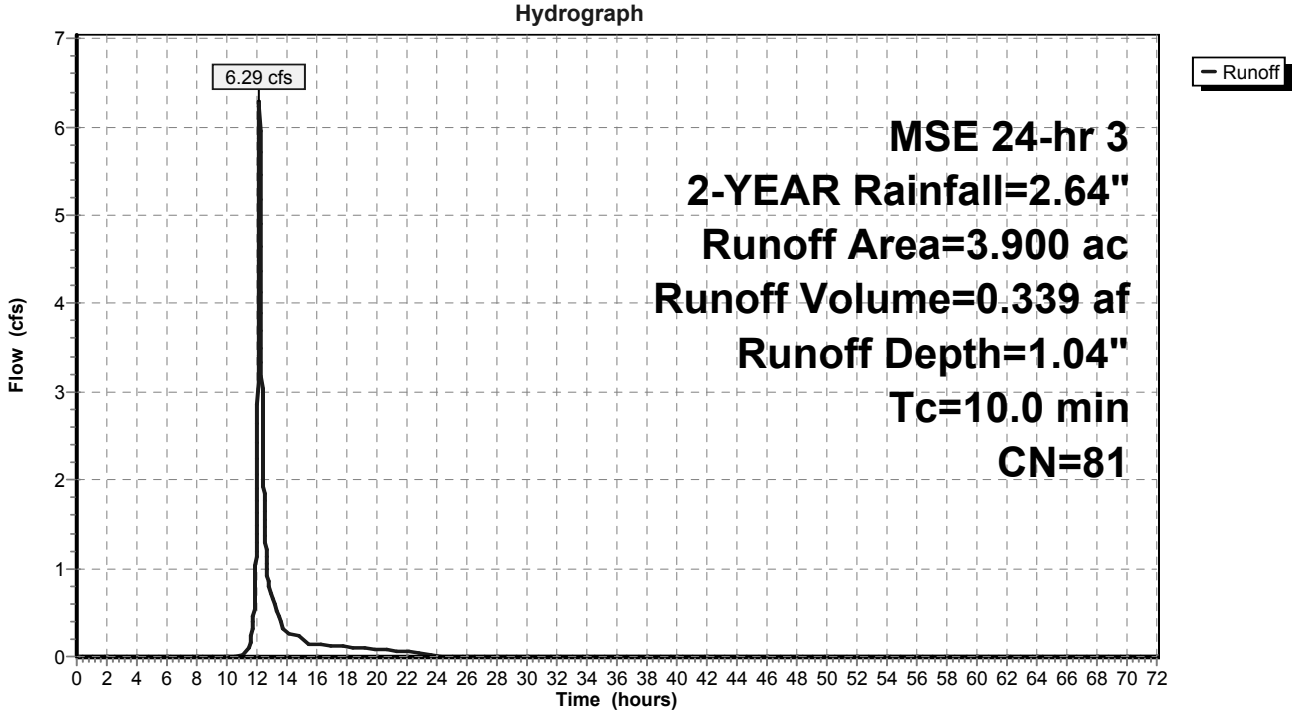
Runoff = 6.29 cfs @ 12.18 hrs, Volume= 0.339 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-YEAR Rainfall=2.64"

	Area (ac)	CN	Description
*	1.100	98	IMPERVIOUS AREA
*	2.800	74	GREENSPACE
	3.900	81	Weighted Average
	2.800		71.79% Pervious Area
	1.100		28.21% Impervious Area

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

Subcatchment OFF-6: AREA OFF-6



Summary for Subcatchment OFF-7: AREA OFF-7

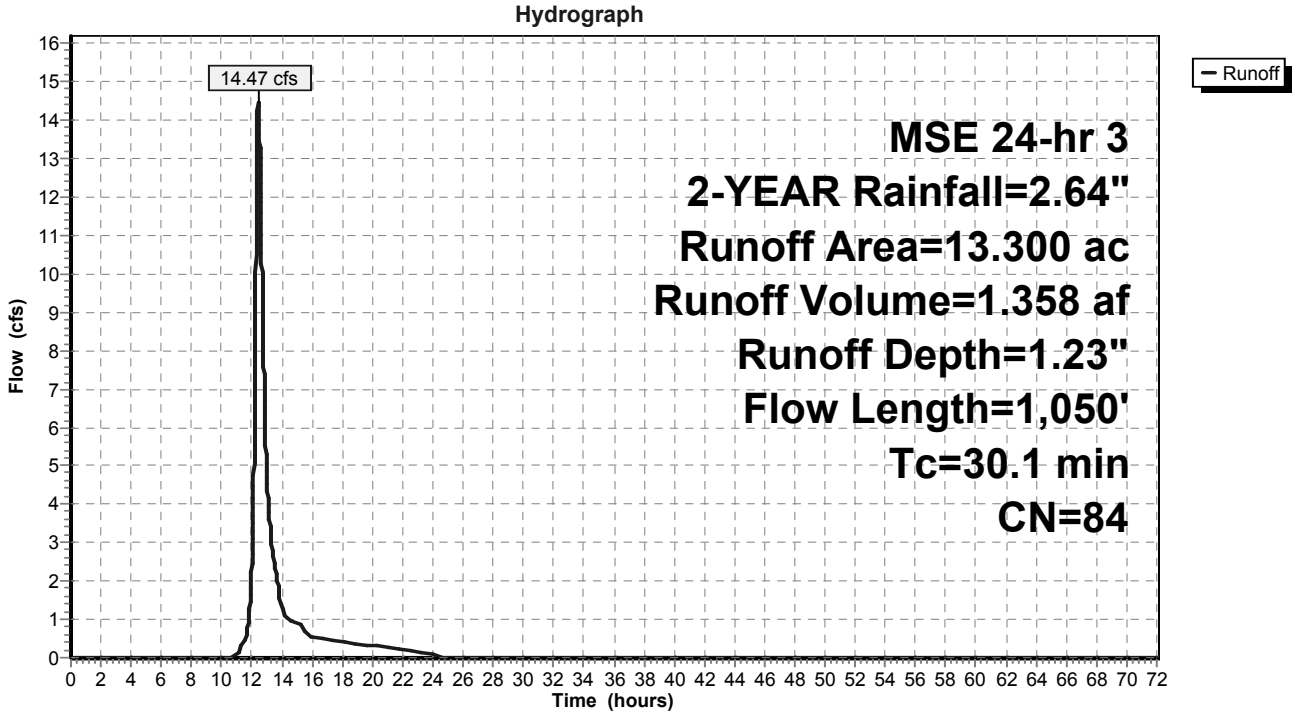
Runoff = 14.47 cfs @ 12.44 hrs, Volume= 1.358 af, Depth= 1.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-YEAR Rainfall=2.64"

Area (ac)	CN	Description
0.400	98	Paved roads w/curbs & sewers
1.000	79	1 acre lots, 20% imp, HSG C
6.000	94	Urban commercial, 85% imp, HSG C
5.900	74	>75% Grass cover, Good, HSG C
13.300	84	Weighted Average
7.600		57.14% Pervious Area
5.700		42.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.1	150	0.0250	0.12		**Sheet Flow, SHEET** Grass: Dense n= 0.240 P2= 2.57"
10.0	900	0.0100	1.50		**Shallow Concentrated Flow, SC FLOW** Grassed Waterway Kv= 15.0 fps
30.1	1,050	Total			

Subcatchment OFF-7: AREA OFF-7



Summary for Subcatchment OFF-9: AREA OFF-9

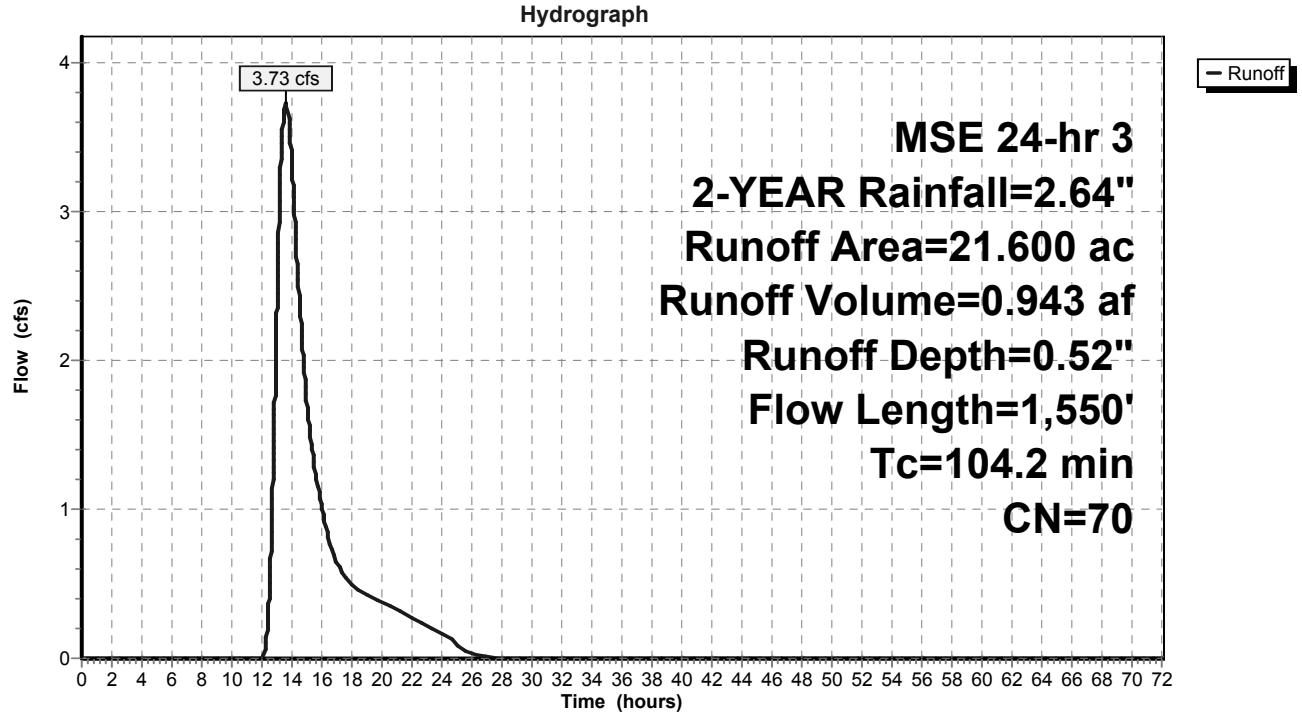
Runoff = 3.73 cfs @ 13.55 hrs, Volume= 0.943 af, Depth= 0.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-YEAR Rainfall=2.64"

Area (ac)	CN	Description
2.000	71	Meadow, non-grazed, HSG C
19.600	70	Woods, Good, HSG C
21.600	70	Weighted Average
21.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
76.1	300	0.0100	0.07		**Sheet Flow, SHEET** Woods: Light underbrush n= 0.400 P2= 2.57"
28.1	1,250	0.0220	0.74		**Shallow Concentrated Flow, SC FLOW** Woodland Kv= 5.0 fps
104.2	1,550	Total			

Subcatchment OFF-9: AREA OFF-9



Summary for Subcatchment PR-1: AREA PR-1

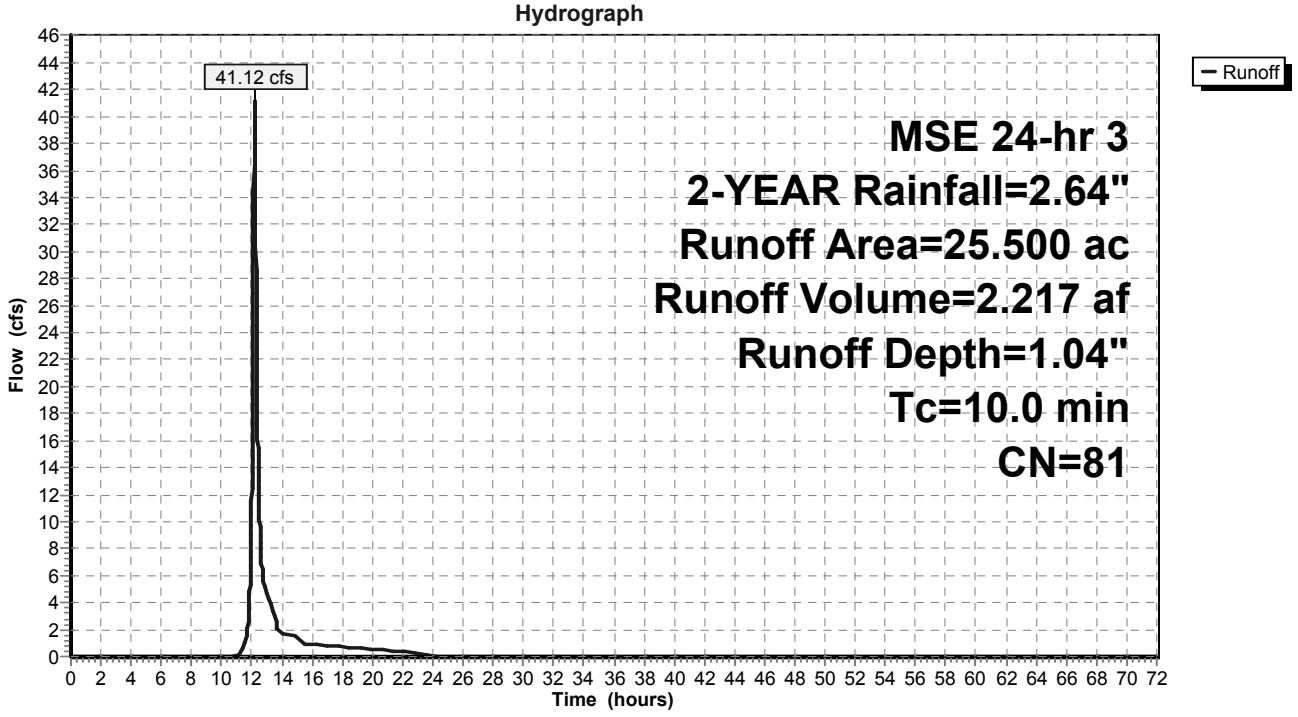
Runoff = 41.12 cfs @ 12.18 hrs, Volume= 2.217 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-YEAR Rainfall=2.64"

	Area (ac)	CN	Description
*	12.800	80	SF
*	12.700	82	1/2 acre lots, 25% imp, HSG C
	25.500	81	Weighted Average
	22.325		87.55% Pervious Area
	3.175		12.45% Impervious Area

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

Subcatchment PR-1: AREA PR-1



Summary for Subcatchment PR-2: AREA PR-2

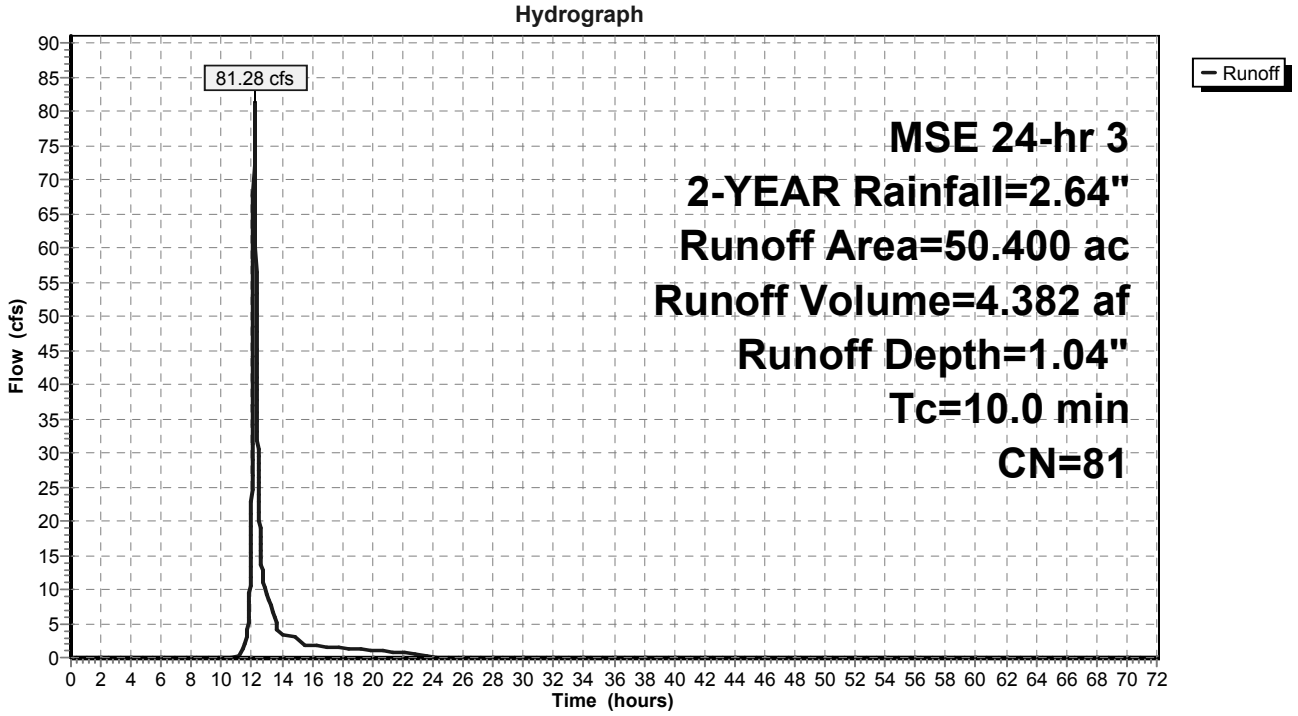
Runoff = 81.28 cfs @ 12.18 hrs, Volume= 4.382 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-YEAR Rainfall=2.64"

	Area (ac)	CN	Description
	46.100	81	1/3 acre lots, 30% imp, HSG C
*	1.500	74	Outlot 1
*	1.400	74	Pond Outlot
*	1.400	98	Pond Water Surface
	50.400	81	Weighted Average
	35.170		69.78% Pervious Area
	15.230		30.22% Impervious Area

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

Subcatchment PR-2: AREA PR-2



Summary for Subcatchment PR-3: AREA PR-3

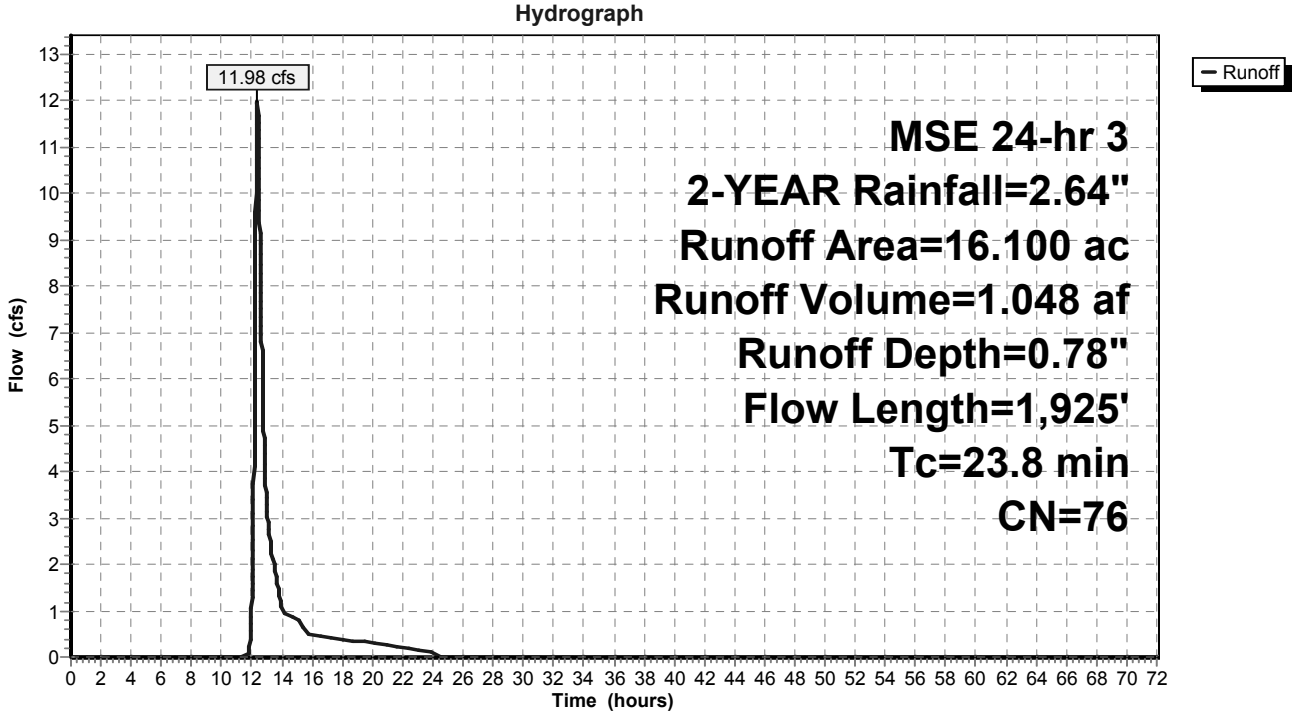
Runoff = 11.98 cfs @ 12.37 hrs, Volume= 1.048 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-YEAR Rainfall=2.64"

Area (ac)	CN	Description
7.700	70	Woods, Good, HSG C
8.400	81	1/3 acre lots, 30% imp, HSG C
16.100	76	Weighted Average
13.580		84.35% Pervious Area
2.520		15.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	100	0.0400	0.14		**Sheet Flow, SHEET FLOW** Grass: Dense n= 0.240 P2= 2.57"
0.7	209	0.0861	4.72		**Shallow Concentrated Flow, SHALLOW CONCENTRATED** Unpaved Kv= 16.1 fps
9.3	963	0.0114	1.72		**Shallow Concentrated Flow, SHALLOW CONCENTRATED** Unpaved Kv= 16.1 fps
1.7	653	0.0077	6.32	19.85	**Pipe Channel, STORM SEWER** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
23.8	1,925	Total			

Subcatchment PR-3: AREA PR-3



Summary for Subcatchment UN-1: DEVELOPED AREA NOT DETAINED

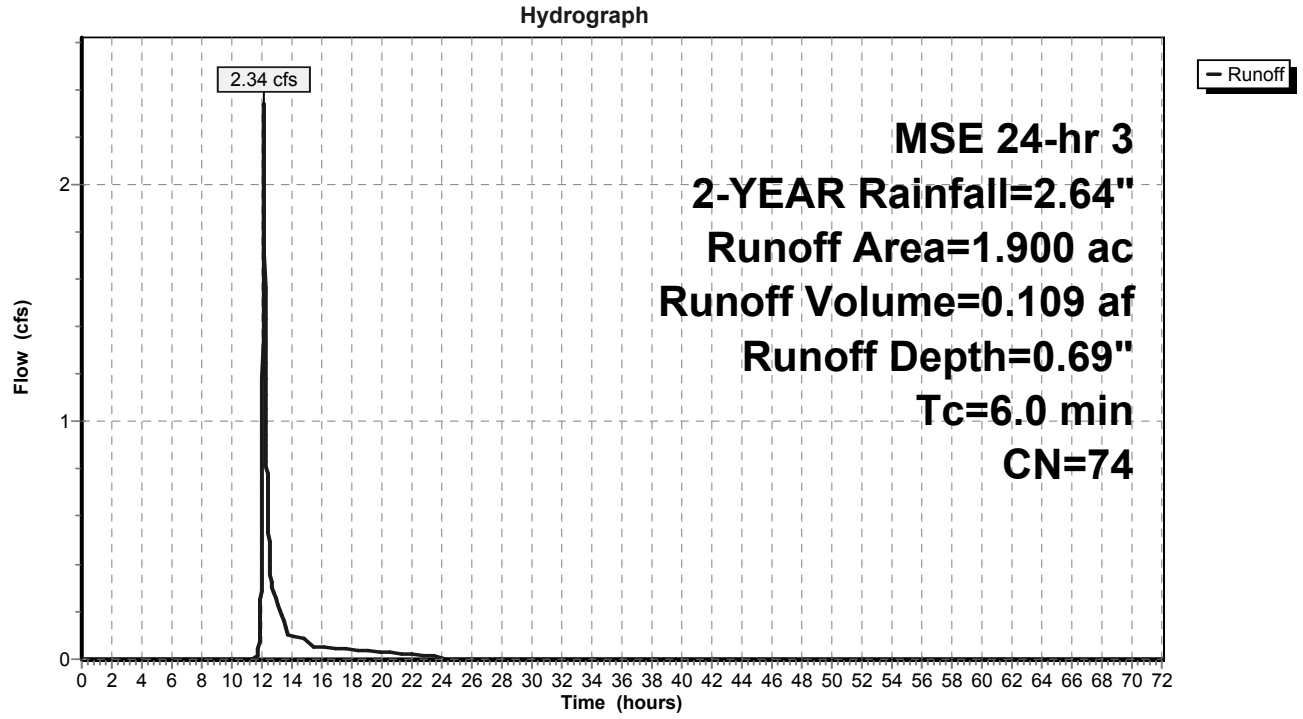
Runoff = 2.34 cfs @ 12.14 hrs, Volume= 0.109 af, Depth= 0.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-YEAR Rainfall=2.64"

Area (ac)	CN	Description
1.900	74	>75% Grass cover, Good, HSG C
1.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Subcatchment UN-1: DEVELOPED AREA NOT DETAINED



Summary for Subcatchment UN-2: DEVELOPED AREA NOT DETAINED

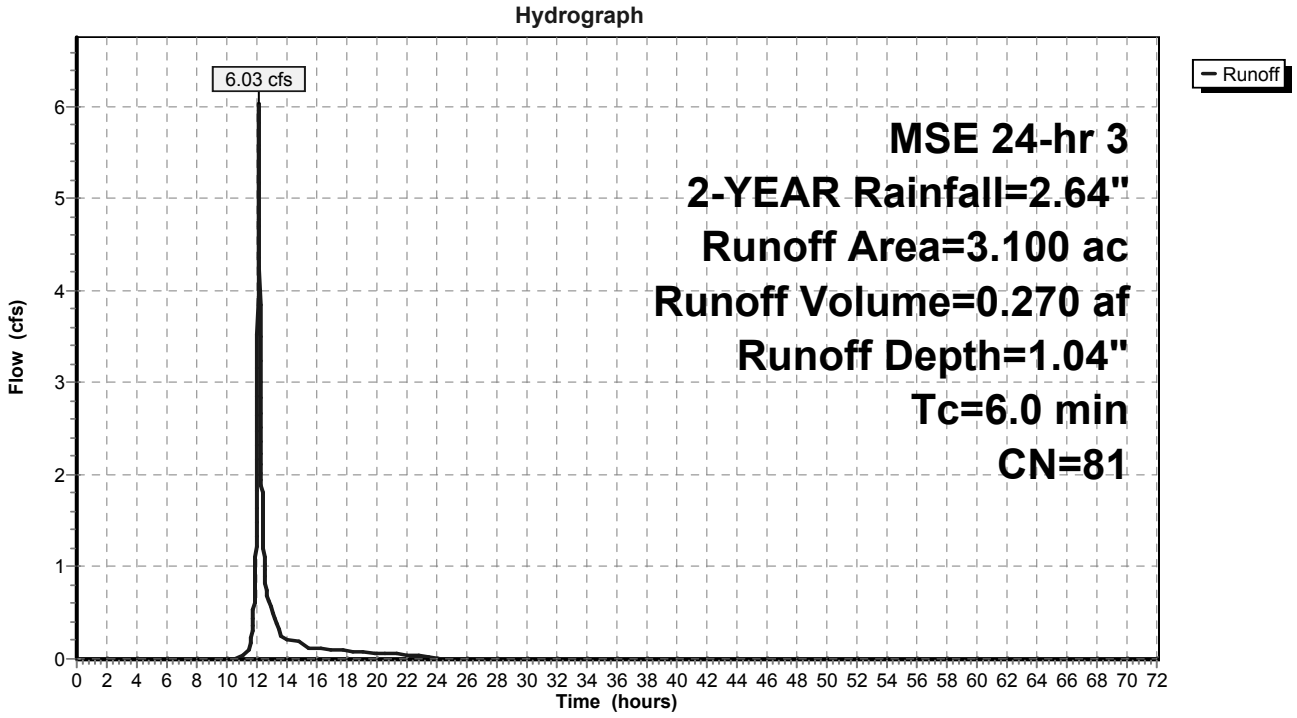
Runoff = 6.03 cfs @ 12.14 hrs, Volume= 0.270 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 2-YEAR Rainfall=2.64"

Area (ac)	CN	Description
3.100	81	1/3 acre lots, 30% imp, HSG C
2.170		70.00% Pervious Area
0.930		30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Subcatchment UN-2: DEVELOPED AREA NOT DETAINED



Summary for Pond NC-1: NORTH CREEK @ YORK

[44] Hint: Outlet device #1 is below defined storage

Inflow Area = 1,046.300 ac, 0.71% Impervious, Inflow Depth = 0.61" for 2-YEAR event
Inflow = 161.13 cfs @ 14.15 hrs, Volume= 52.793 af
Outflow = 161.08 cfs @ 14.17 hrs, Volume= 52.792 af, Atten= 0%, Lag= 1.2 min
Primary = 161.08 cfs @ 14.17 hrs, Volume= 52.792 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 764.34' @ 14.17 hrs Surf.Area= 4,385 sf Storage= 3,173 cf

Plug-Flow detention time= 0.2 min calculated for 52.785 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (974.4 - 974.2)

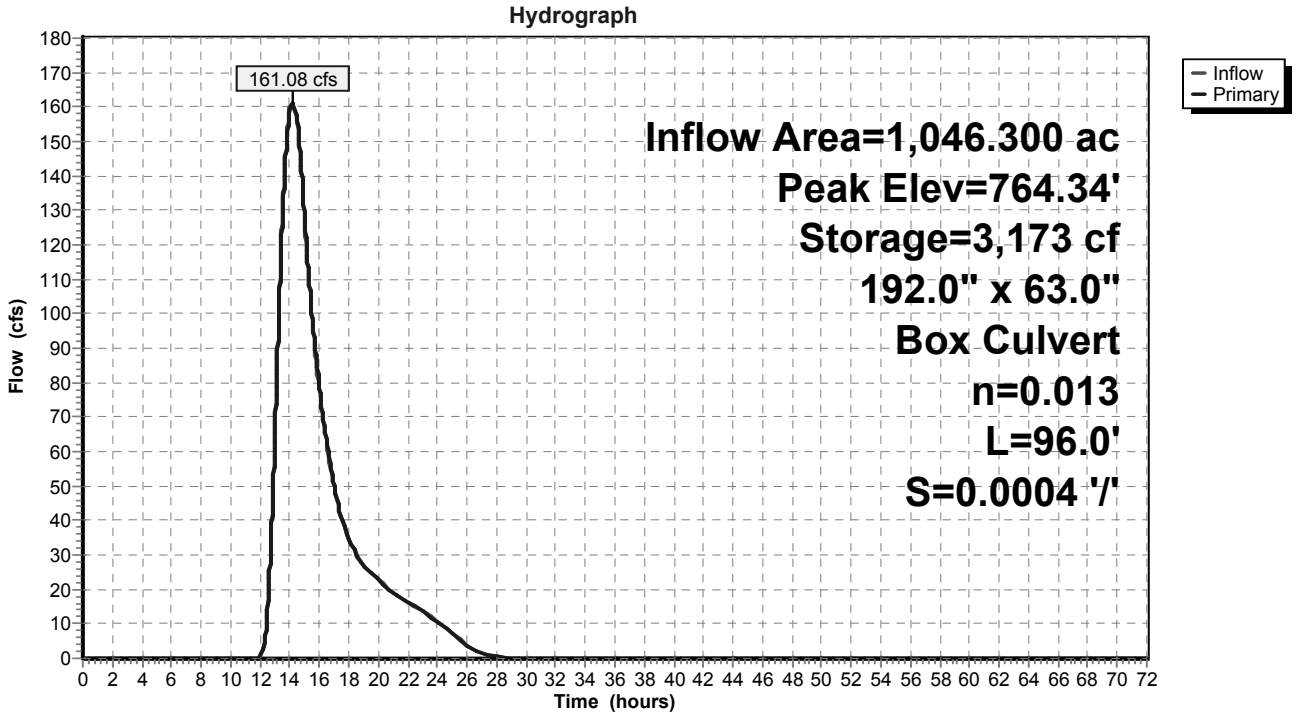
Volume	Invert	Avail.Storage	Storage Description
#1	762.30'	1,077,353 cf	**UPSTREAM STORAGE AREA (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
762.30	0	0.0	0	0	0
763.00	932	603.0	217	217	28,936
764.00	2,759	918.0	1,765	1,982	67,070
765.00	8,694	1,672.0	5,450	7,433	222,479
766.00	20,259	1,787.0	14,075	21,507	254,181
767.00	47,027	1,911.0	32,717	54,225	290,718
768.00	88,000	2,285.0	66,452	120,677	415,617
769.00	163,208	1,973.0	123,684	244,361	521,357
770.00	227,240	2,760.0	194,343	438,704	817,782
772.00	421,316	3,460.0	638,650	1,077,353	1,164,318

Device	Routing	Invert	Outlet Devices
#1	Primary	761.69'	**192.0" W x 63.0" H Box Culvert** L= 96.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 761.69' / 761.65' S= 0.0004 '/' Cc= 0.900 n= 0.013, Flow Area= 84.00 sf

Primary OutFlow Max=161.08 cfs @ 14.17 hrs HW=764.34' TW=756.59' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 161.08 cfs @ 5.07 fps)

Pond NC-1: NORTH CREEK @ YORK



Summary for Pond NC-2: NORTH CREEK @ 45

Inflow Area = 1,237.100 ac, 3.22% Impervious, Inflow Depth > 0.64" for 2-YEAR event
Inflow = 179.19 cfs @ 14.16 hrs, Volume= 66.441 af
Outflow = 179.16 cfs @ 14.17 hrs, Volume= 66.441 af, Atten= 0%, Lag= 0.7 min
Primary = 179.16 cfs @ 14.17 hrs, Volume= 66.441 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 756.59' @ 14.17 hrs Surf.Area= 4,209 sf Storage= 4,945 cf

Plug-Flow detention time= 0.3 min calculated for 66.441 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (994.9 - 994.6)

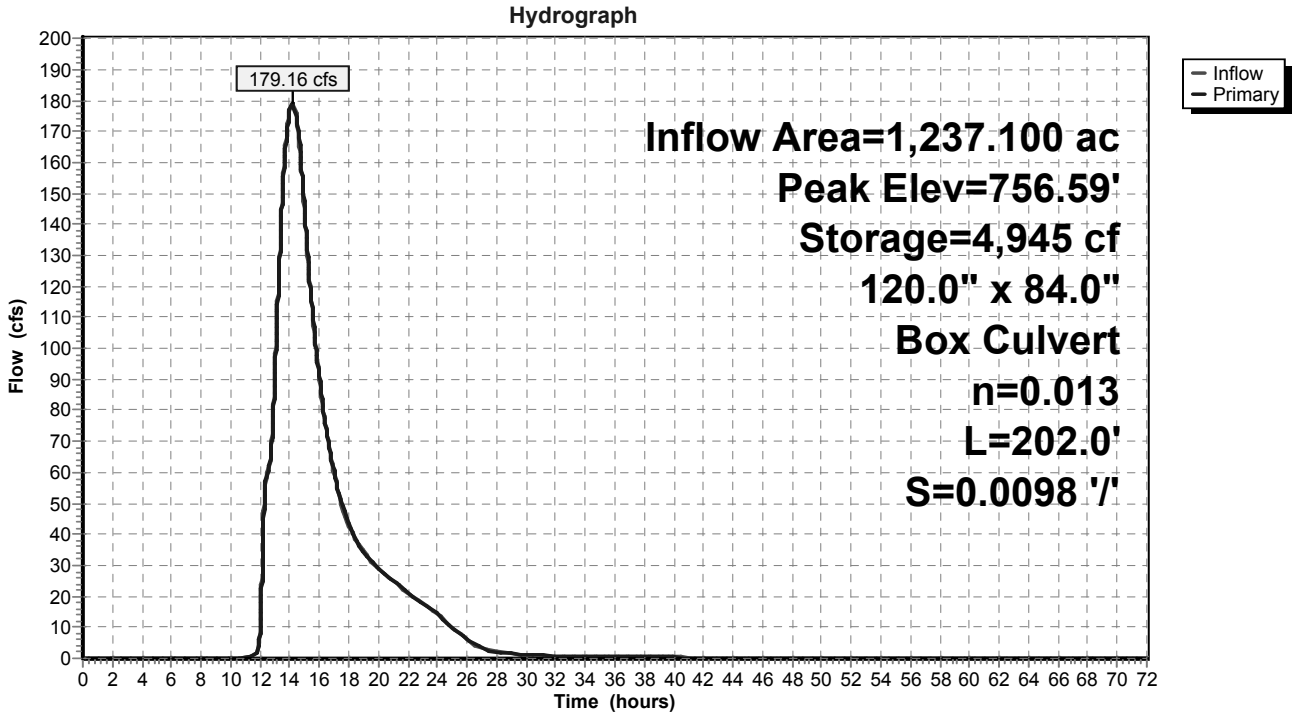
Volume	Invert	Avail.Storage	Storage Description
#1	753.44'	1,242,057 cf	**ACTIVE STORAGE VOLUME (Irregular)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
753.44	0	0.0	0	0	0
754.00	581	145.0	108	108	1,674
755.00	1,370	268.0	948	1,056	5,721
756.00	2,048	730.0	1,698	2,754	42,416
757.00	5,733	1,393.0	3,736	6,490	154,430
758.00	13,083	1,825.0	9,159	15,649	265,069
759.00	27,851	1,986.0	20,008	35,656	313,932
760.00	47,111	1,975.0	37,062	72,718	317,925
761.00	74,209	3,753.0	60,149	132,867	1,128,378
762.00	117,171	4,712.0	94,876	227,743	1,774,396
763.00	188,304	5,439.0	151,338	379,081	2,361,682
764.00	280,708	6,208.0	232,974	612,055	3,074,445
765.00	314,048	4,703.0	297,222	909,277	4,381,203
766.00	351,870	4,619.0	332,780	1,242,057	4,443,690

Device	Routing	Invert	Outlet Devices
#1	Primary	753.44'	**120.0" W x 84.0" H Box BOX CULVERT** L= 202.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 753.44' / 751.47' S= 0.0098 '/' Cc= 0.900 n= 0.013 Concrete, trowel finish, Flow Area= 70.00 sf

Primary OutFlow Max=179.16 cfs @ 14.17 hrs HW=756.59' (Free Discharge)
1=BOX CULVERT (Inlet Controls 179.16 cfs @ 5.69 fps)

Pond NC-2: NORTH CREEK @ 45



Summary for Pond P-1: POND 1

Inflow Area = 46.700 ac, 9.80% Impervious, Inflow Depth = 0.87" for 2-YEAR event
Inflow = 54.29 cfs @ 12.19 hrs, Volume= 3.387 af
Outflow = 4.79 cfs @ 13.53 hrs, Volume= 3.293 af, Atten= 91%, Lag= 80.5 min
Primary = 4.79 cfs @ 13.53 hrs, Volume= 3.293 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 764.28' @ 13.53 hrs Surf.Area= 66,425 sf Storage= 80,764 cf

Plug-Flow detention time= 364.0 min calculated for 3.293 af (97% of inflow)
Center-of-Mass det. time= 349.0 min (1,180.4 - 831.4)

Volume	Invert	Avail.Storage	Storage Description
#1	763.00'	551,935 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

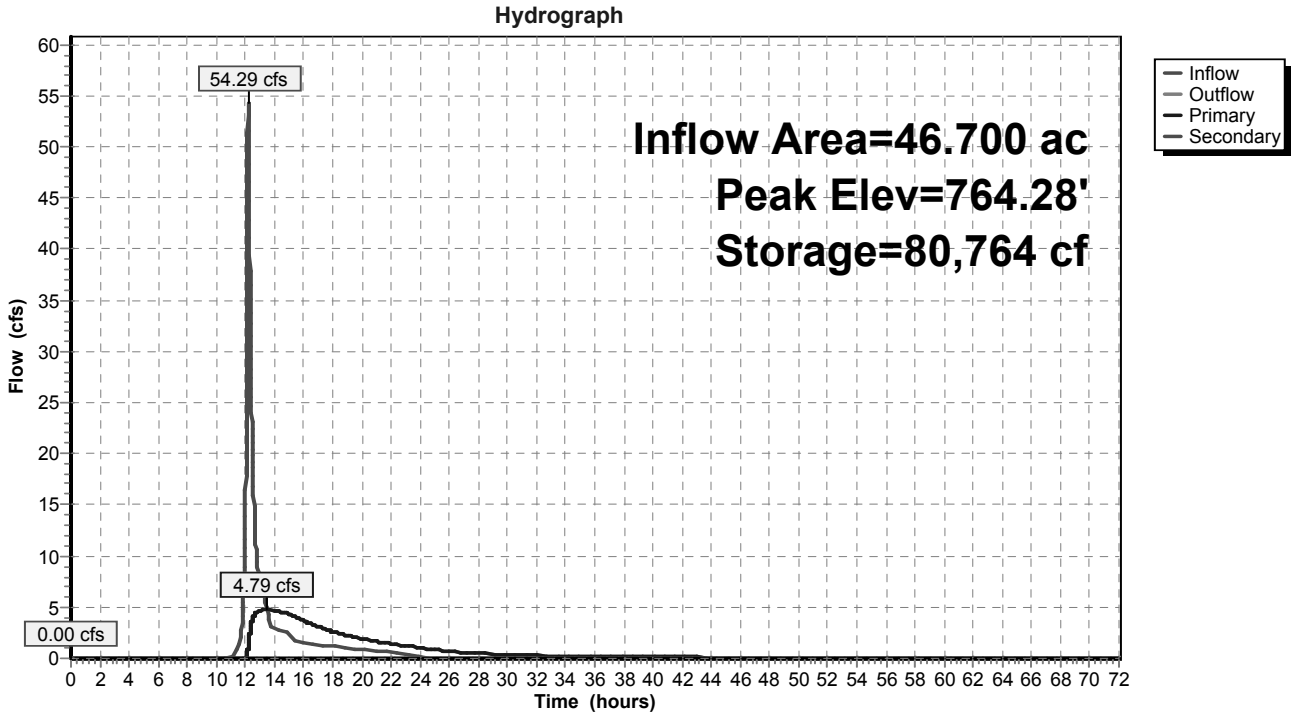
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
763.00	59,577	0	0
764.00	64,896	62,237	62,237
765.00	70,316	67,606	129,843
766.00	75,836	73,076	202,919
767.00	81,457	78,647	281,565
768.00	87,179	84,318	365,883
769.00	93,001	90,090	455,973
770.00	98,923	95,962	551,935

Device	Routing	Invert	Outlet Devices
#1	Primary	763.00'	**15.0" Round CULVERT** L= 110.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 763.00' / 762.00' S= 0.0091 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Secondary	769.00'	**50.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=4.79 cfs @ 13.53 hrs HW=764.28' TW=0.00' (Dynamic Tailwater)
↑—**1=CULVERT** (Inlet Controls 4.79 cfs @ 3.90 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=763.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P-1: POND 1



Summary for Pond P-2: POND 2

Inflow Area = 88.100 ac, 20.15% Impervious, Inflow Depth = 0.87" for 2-YEAR event
Inflow = 87.31 cfs @ 12.19 hrs, Volume= 6.373 af
Outflow = 10.83 cfs @ 13.57 hrs, Volume= 6.262 af, Atten= 88%, Lag= 83.2 min
Primary = 10.83 cfs @ 13.57 hrs, Volume= 6.262 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 762.08' @ 13.57 hrs Surf.Area= 70,308 sf Storage= 132,785 cf

Plug-Flow detention time= 332.8 min calculated for 6.261 af (98% of inflow)
Center-of-Mass det. time= 323.1 min (1,168.0 - 844.9)

Volume	Invert	Avail.Storage	Storage Description
#1	760.00'	613,278 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

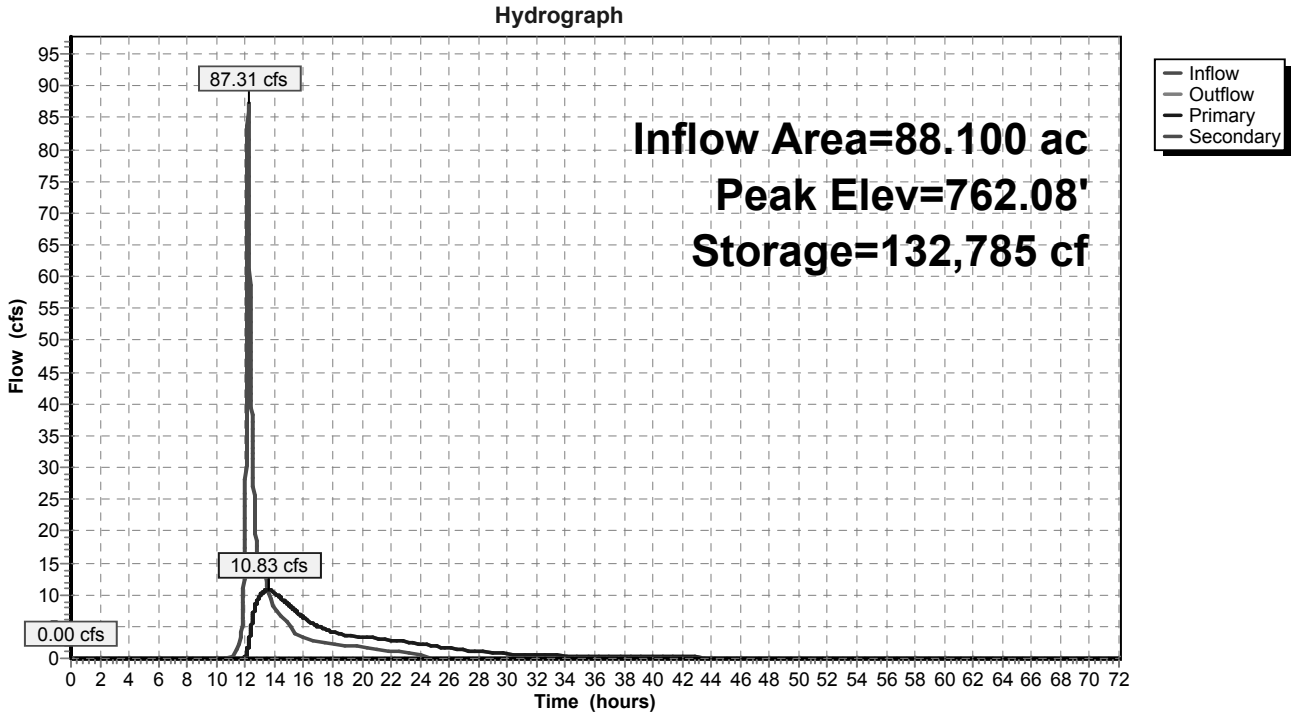
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
760.00	54,486	0	0
761.00	64,778	59,632	59,632
762.00	69,845	67,312	126,944
763.00	75,397	72,621	199,565
764.00	81,523	78,460	278,025
765.00	92,446	86,985	365,009
766.00	121,411	106,929	471,938
767.00	161,270	141,341	613,278

Device	Routing	Invert	Outlet Devices
#1	Primary	760.00'	**12.0" Round Culvert** L= 146.2' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 760.00' / 759.00' S= 0.0068 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Primary	761.10'	**48.0" Round Culvert** L= 141.4' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 761.10' / 759.00' S= 0.0149 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 12.57 sf
#3	Secondary	766.00'	**50.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=10.83 cfs @ 13.57 hrs HW=762.08' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 3.69 cfs @ 4.69 fps)
└─**2=Culvert** (Inlet Controls 7.15 cfs @ 2.98 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=760.00' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P-2: POND 2

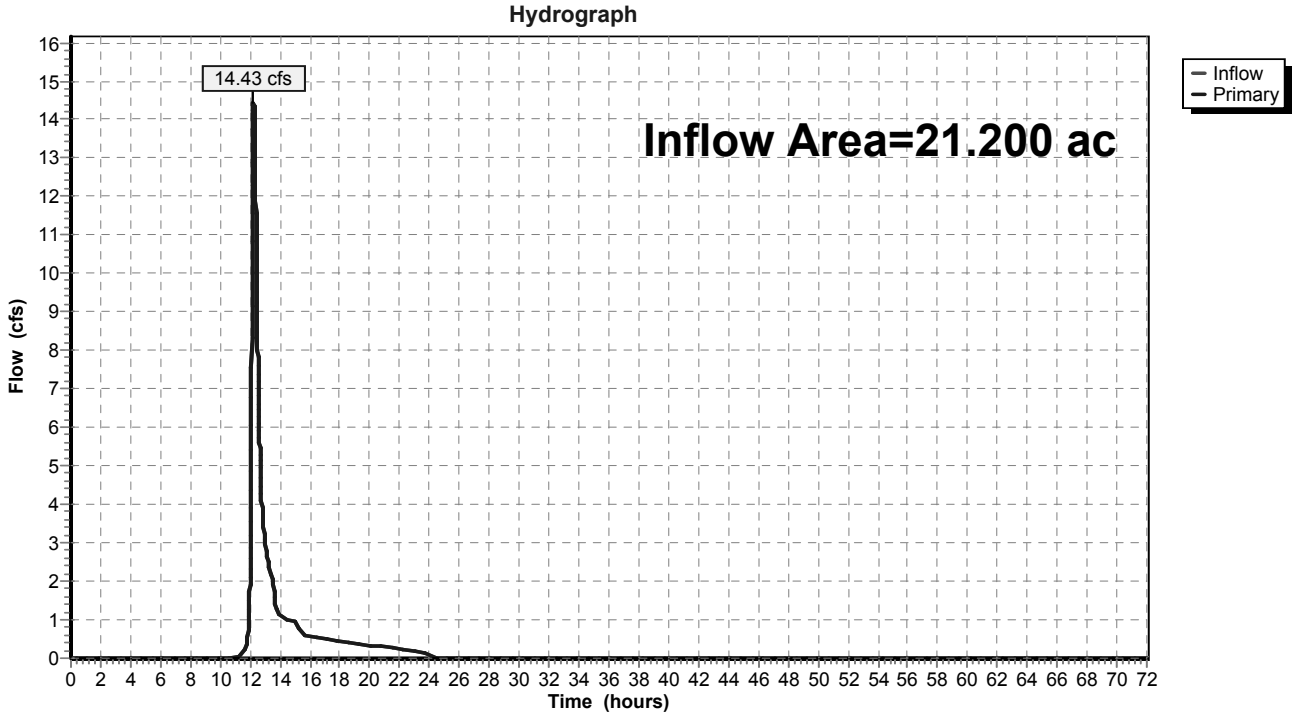


Summary for Link 2L: OFFSITE (3,4,6)

Inflow Area = 21.200 ac, 6.60% Impervious, Inflow Depth = 0.66" for 2-YEAR event
Inflow = 14.43 cfs @ 12.24 hrs, Volume= 1.169 af
Primary = 14.43 cfs @ 12.24 hrs, Volume= 1.169 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 2L: OFFSITE (3,4,6)

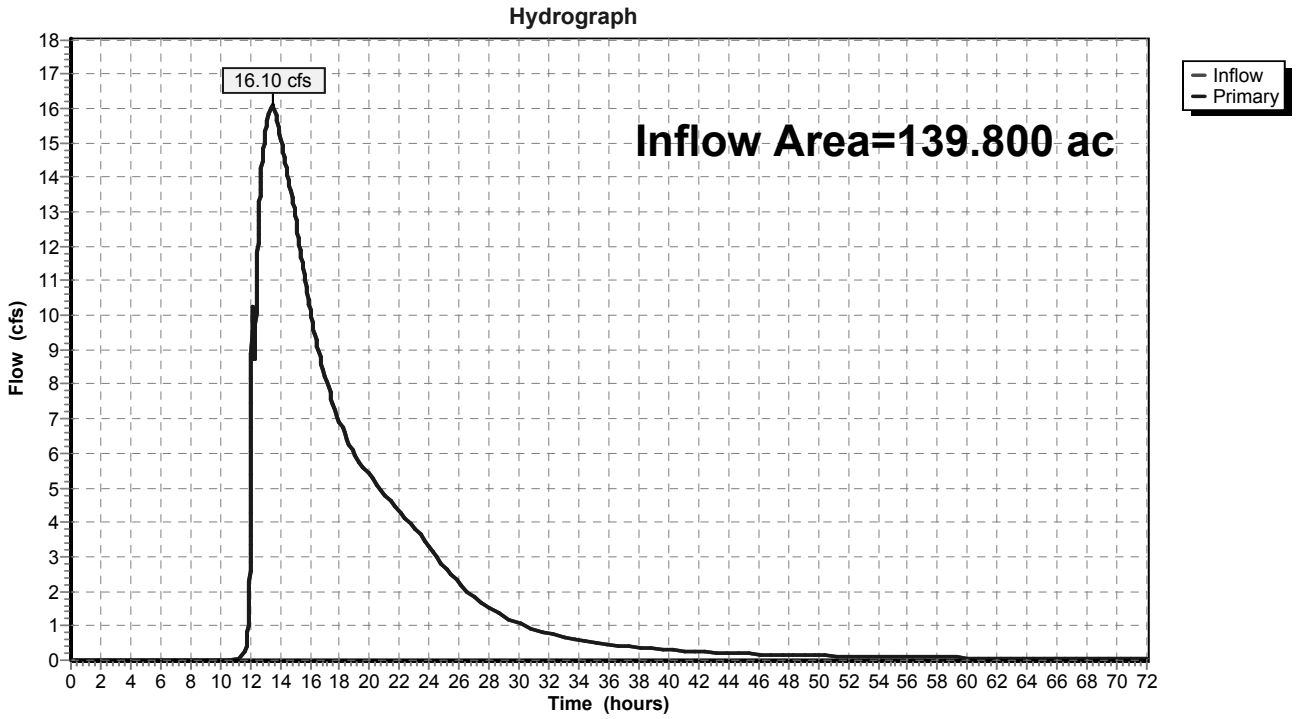


Summary for Link PR-N: PROPOSED DISCHARGE TO NORTH CREEK

Inflow Area = 139.800 ac, 16.63% Impervious, Inflow Depth > 0.85" for 2-YEAR event
Inflow = 16.10 cfs @ 13.47 hrs, Volume= 9.933 af
Primary = 16.10 cfs @ 13.47 hrs, Volume= 9.933 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link PR-N: PROPOSED DISCHARGE TO NORTH CREEK



Summary for Subcatchment EX-3: UNDEVELOPED AREA

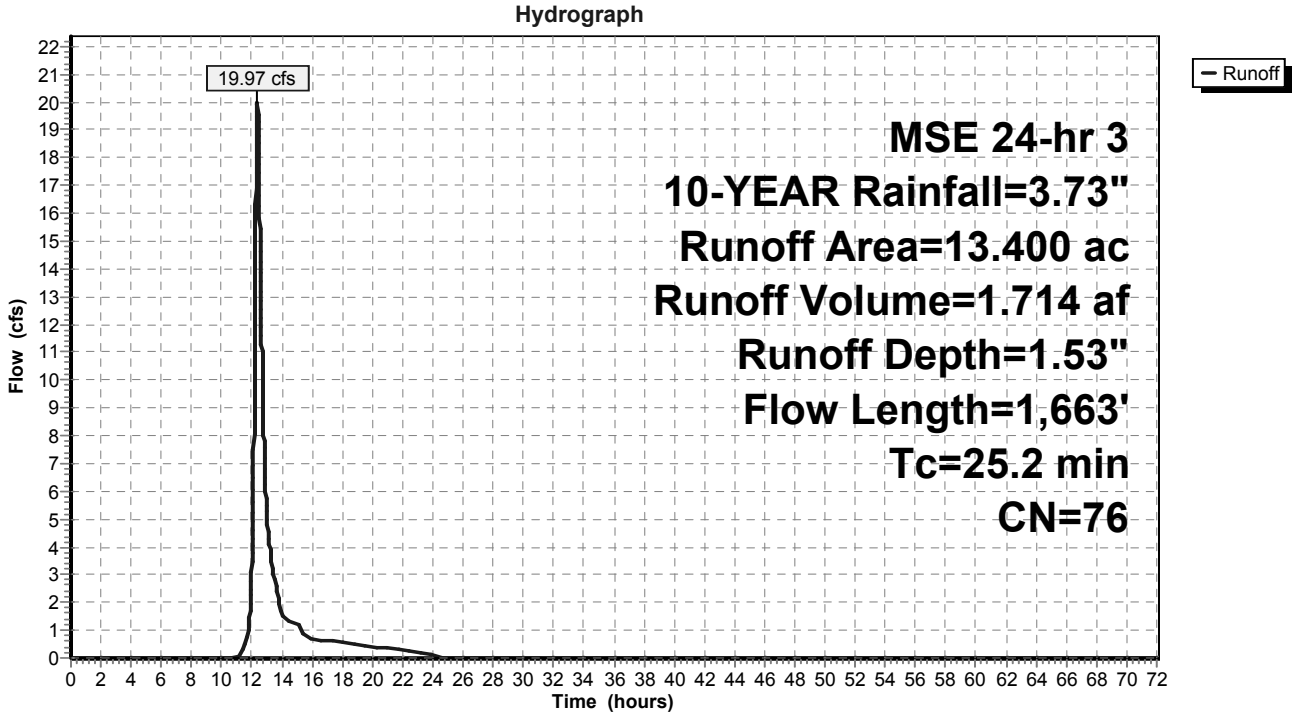
Runoff = 19.97 cfs @ 12.38 hrs, Volume= 1.714 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-YEAR Rainfall=3.73"

Area (ac)	CN	Description
0.800	79	1 acre lots, 20% imp, HSG C
1.100	98	Paved parking, HSG C
11.500	74	>75% Grass cover, Good, HSG C
13.400	76	Weighted Average
12.140		90.60% Pervious Area
1.260		9.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	100	0.0480	0.22		**Sheet Flow, SEGMENT AB** Grass: Short n= 0.150 P2= 2.57"
3.5	600	0.0320	2.88		**Shallow Concentrated Flow, SEGMENT BC** Unpaved Kv= 16.1 fps
14.0	963	0.0058	1.14		**Shallow Concentrated Flow, SEGMENT CD** Grassed Waterway Kv= 15.0 fps
25.2	1,663	Total			

Subcatchment EX-3: UNDEVELOPED AREA



Summary for Subcatchment OFF-1: AREA OFF-1

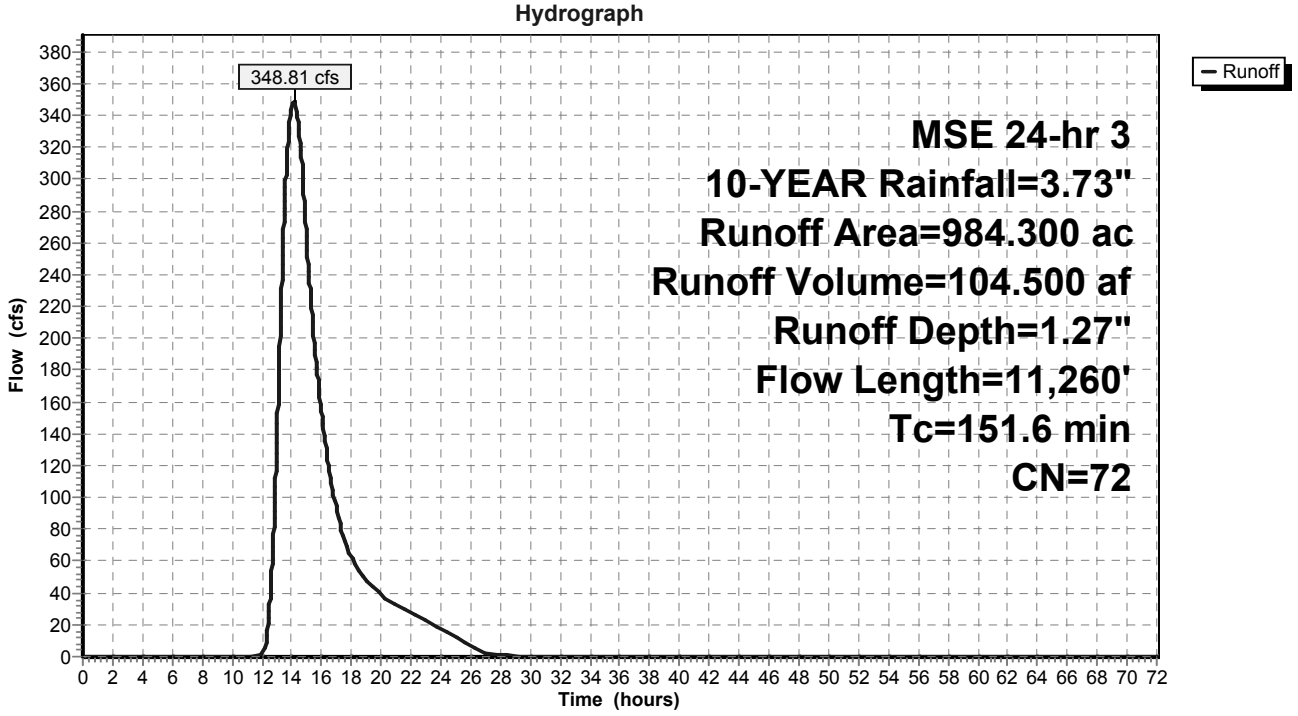
Runoff = 348.81 cfs @ 14.15 hrs, Volume= 104.500 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-YEAR Rainfall=3.73"

Area (ac)	CN	Description
4.300	98	Paved parking & roofs
60.000	86	INSTITUTIONAL - 50% OPEN SPACE
830.000	71	Meadow, non-grazed, HSG C
90.000	70	Woods, Good, HSG C
984.300	72	Weighted Average
980.000		99.56% Pervious Area
4.300		0.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	300	0.0200	0.40		**Sheet Flow, SHEET** Cultivated: Residue<=20% n= 0.060 P2= 2.57"
114.0	6,000	0.0077	0.88		**Shallow Concentrated Flow, SC FLOW** Nearly Bare & Untilled Kv= 10.0 fps
25.0	4,960	0.0055	3.31	22.05	**Parabolic Channel, DITCH FLOW** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.025
151.6	11,260	Total			

Subcatchment OFF-1: AREA OFF-1



Summary for Subcatchment OFF-2: AREA OFF-2

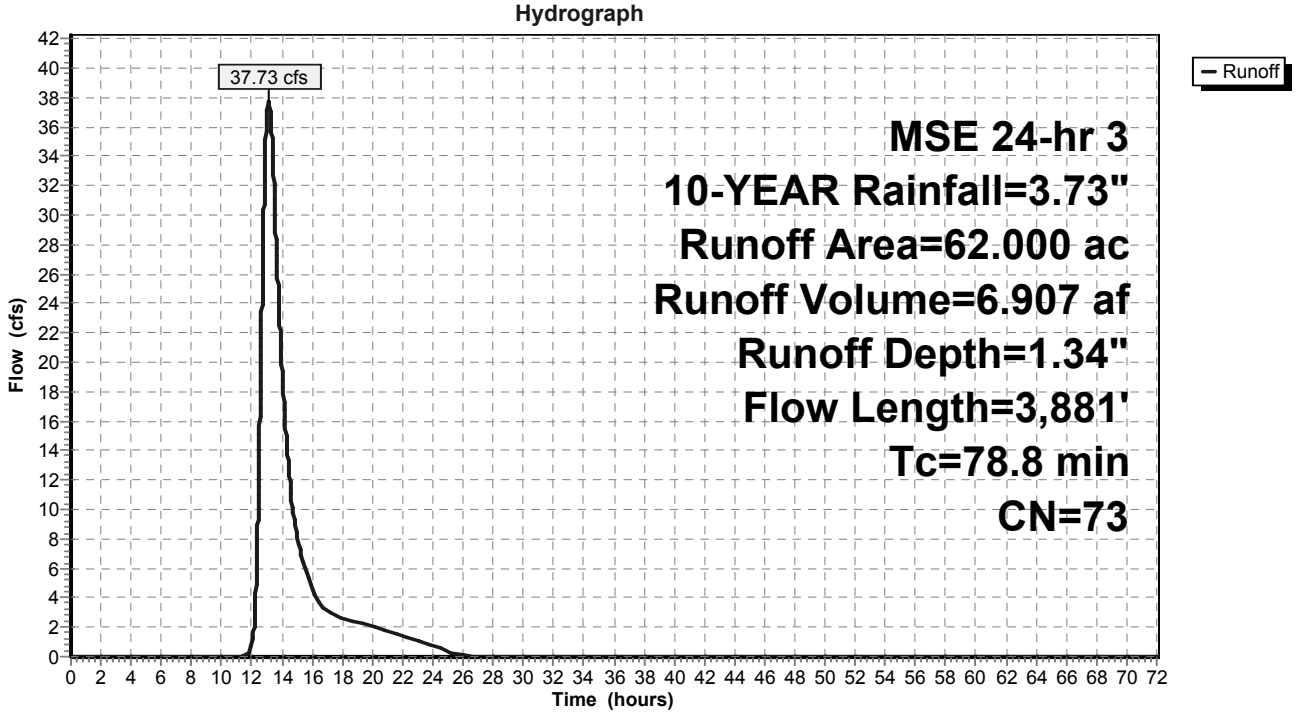
Runoff = 37.73 cfs @ 13.13 hrs, Volume= 6.907 af, Depth= 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-YEAR Rainfall=3.73"

Area (ac)	CN	Description
1.600	98	Paved parking & roofs
12.800	77	2 acre lots, 12% imp, HSG C
47.600	71	Meadow, non-grazed, HSG C
62.000	73	Weighted Average
58.864		94.94% Pervious Area
3.136		5.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	300	0.0150	0.35		**Sheet Flow, SHEET** Cultivated: Residue<=20% n= 0.060 P2= 2.57"
61.3	2,600	0.0050	0.71		**Shallow Concentrated Flow, SC FLOW** Nearly Bare & Untilled Kv= 10.0 fps
3.3	981	0.0130	4.99	139.93	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=2.30' Z= 4.0 '/' Top.W=21.40' n= 0.040
78.8	3,881	Total			

Subcatchment OFF-2: AREA OFF-2



Summary for Subcatchment OFF-3: AREA OFF-3

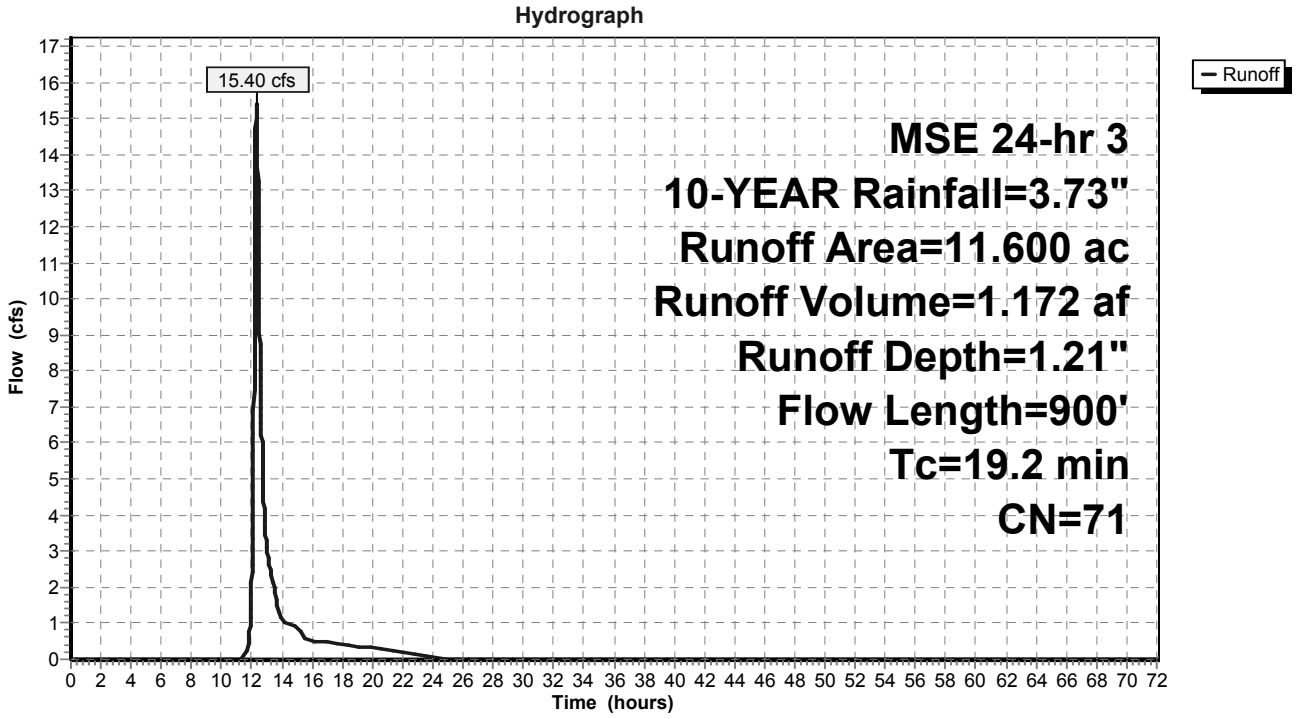
Runoff = 15.40 cfs @ 12.31 hrs, Volume= 1.172 af, Depth= 1.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-YEAR Rainfall=3.73"

Area (ac)	CN	Description
11.600	71	Meadow, non-grazed, HSG C
11.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	200	0.0150	0.32		**Sheet Flow, SHEET** Cultivated: Residue<=20% n= 0.060 P2= 2.57"
8.9	700	0.0170	1.30		**Shallow Concentrated Flow, SC FLOW** Nearly Bare & Untilled Kv= 10.0 fps
19.2	900	Total			

Subcatchment OFF-3: AREA OFF-3



Summary for Subcatchment OFF-4: AREA OFF-4

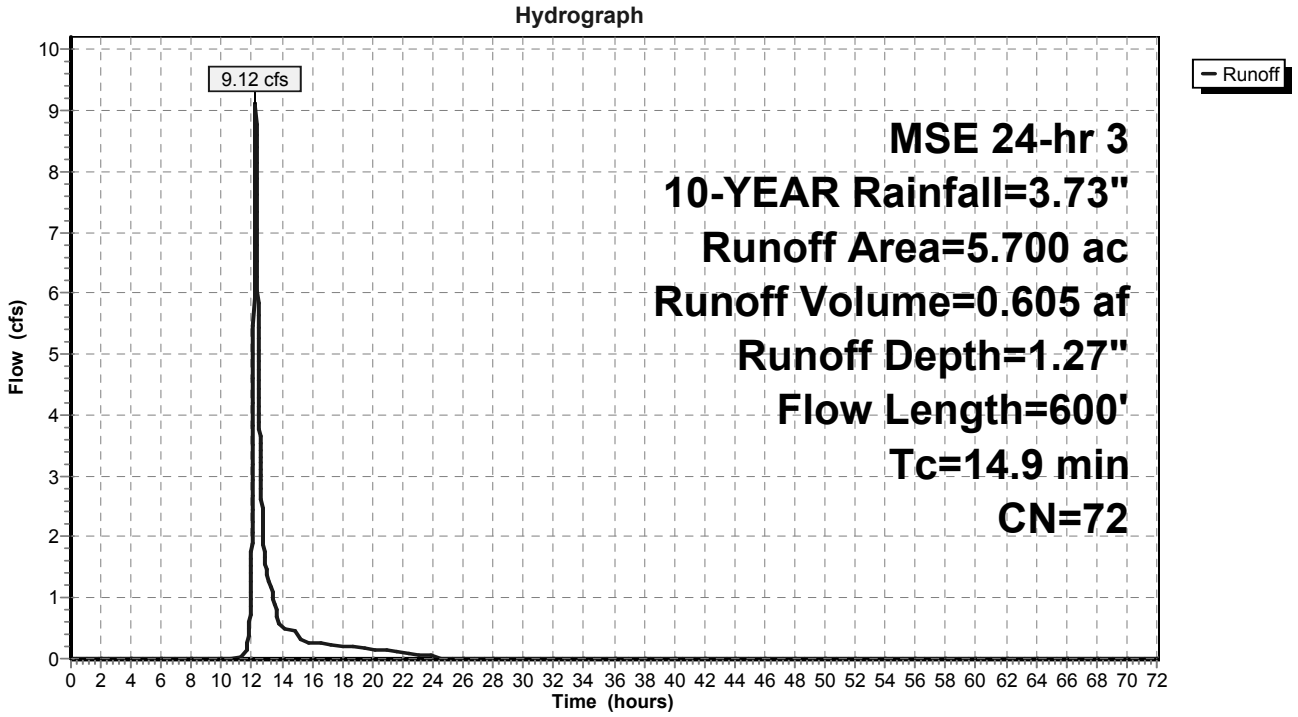
Runoff = 9.12 cfs @ 12.24 hrs, Volume= 0.605 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-YEAR Rainfall=3.73"

Area (ac)	CN	Description
0.300	98	Paved parking & roofs
5.400	71	Meadow, non-grazed, HSG C
5.700	72	Weighted Average
5.400		94.74% Pervious Area
0.300		5.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	300	0.0280	0.45		**Sheet Flow, SHEET** Cultivated: Residue<=20% n= 0.060 P2= 2.57"
3.8	300	0.0170	1.30		**Shallow Concentrated Flow, SC FLOW** Nearly Bare & Untilled Kv= 10.0 fps
14.9	600	Total			

Subcatchment OFF-4: AREA OFF-4



Summary for Subcatchment OFF-5: AREA OFF-5

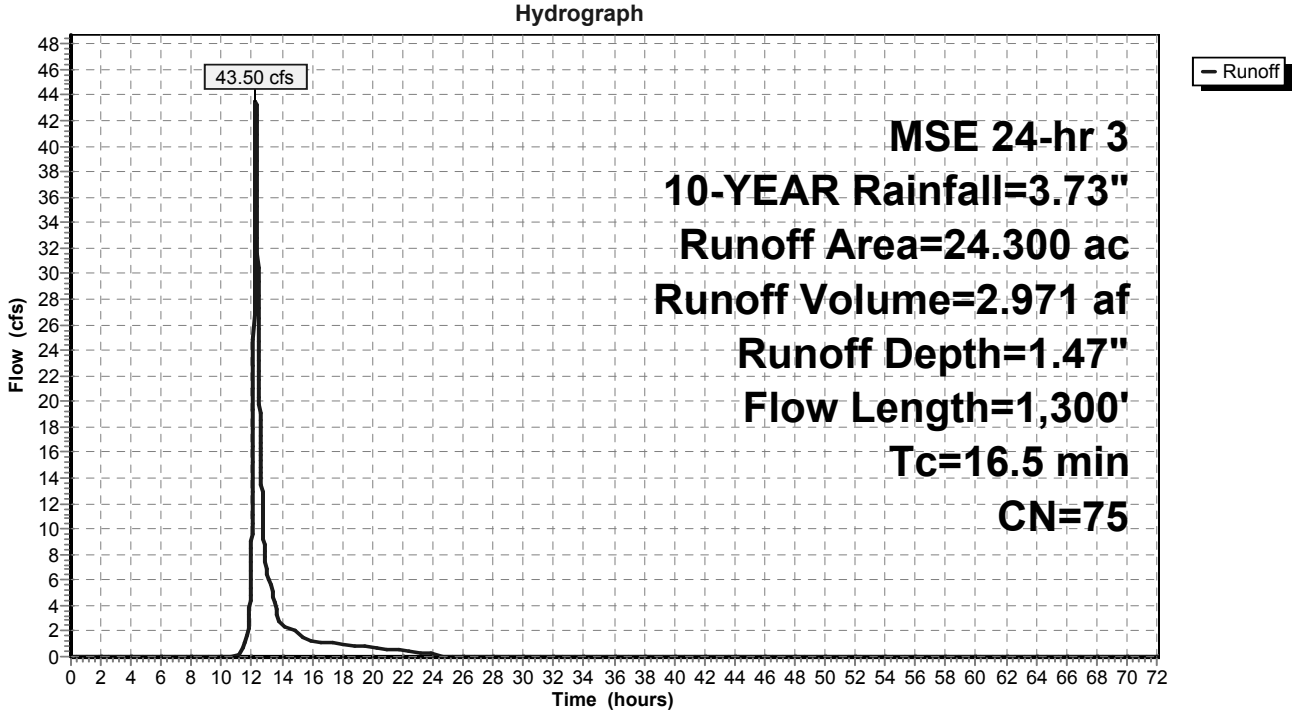
Runoff = 43.50 cfs @ 12.26 hrs, Volume= 2.971 af, Depth= 1.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-YEAR Rainfall=3.73"

Area (ac)	CN	Description
2.200	98	Paved parking & roofs
2.000	82	Farmsteads, HSG C
17.400	71	Meadow, non-grazed, HSG C
2.700	74	>75% Grass cover, Good, HSG C
24.300	75	Weighted Average
22.100		90.95% Pervious Area
2.200		9.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	200	0.0130	0.31		**Sheet Flow, SHEET** Cultivated: Residue<=20% n= 0.060 P2= 2.57"
2.8	400	0.0250	2.37		**Shallow Concentrated Flow, SC FLOW** Grassed Waterway Kv= 15.0 fps
2.8	700	0.0040	4.15	44.31	**Parabolic Channel, DITCH FLOW** W=8.00' D=2.00' Area=10.7 sf Perim=9.2' n= 0.025
16.5	1,300	Total			

Subcatchment OFF-5: AREA OFF-5



Summary for Subcatchment OFF-6: AREA OFF-6

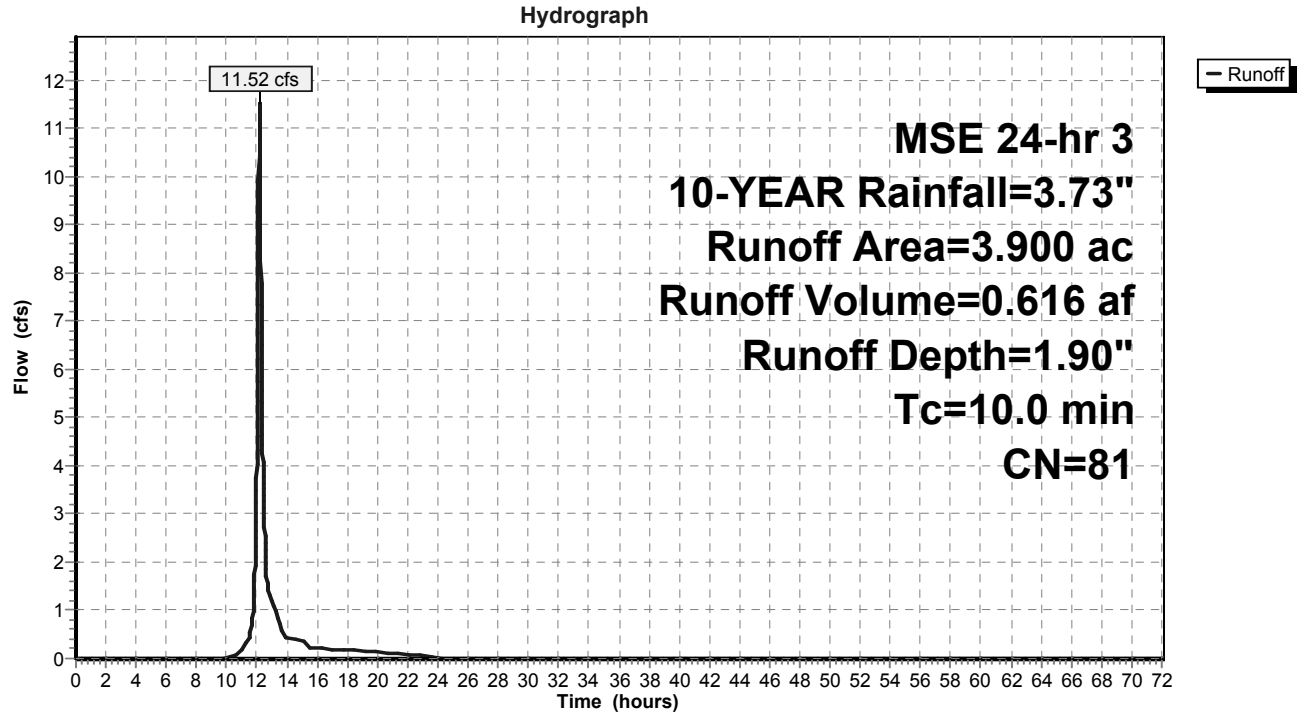
Runoff = 11.52 cfs @ 12.18 hrs, Volume= 0.616 af, Depth= 1.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-YEAR Rainfall=3.73"

	Area (ac)	CN	Description
*	1.100	98	IMPERVIOUS AREA
*	2.800	74	GREENSPACE
	3.900	81	Weighted Average
	2.800		71.79% Pervious Area
	1.100		28.21% Impervious Area

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

Subcatchment OFF-6: AREA OFF-6



Summary for Subcatchment OFF-7: AREA OFF-7

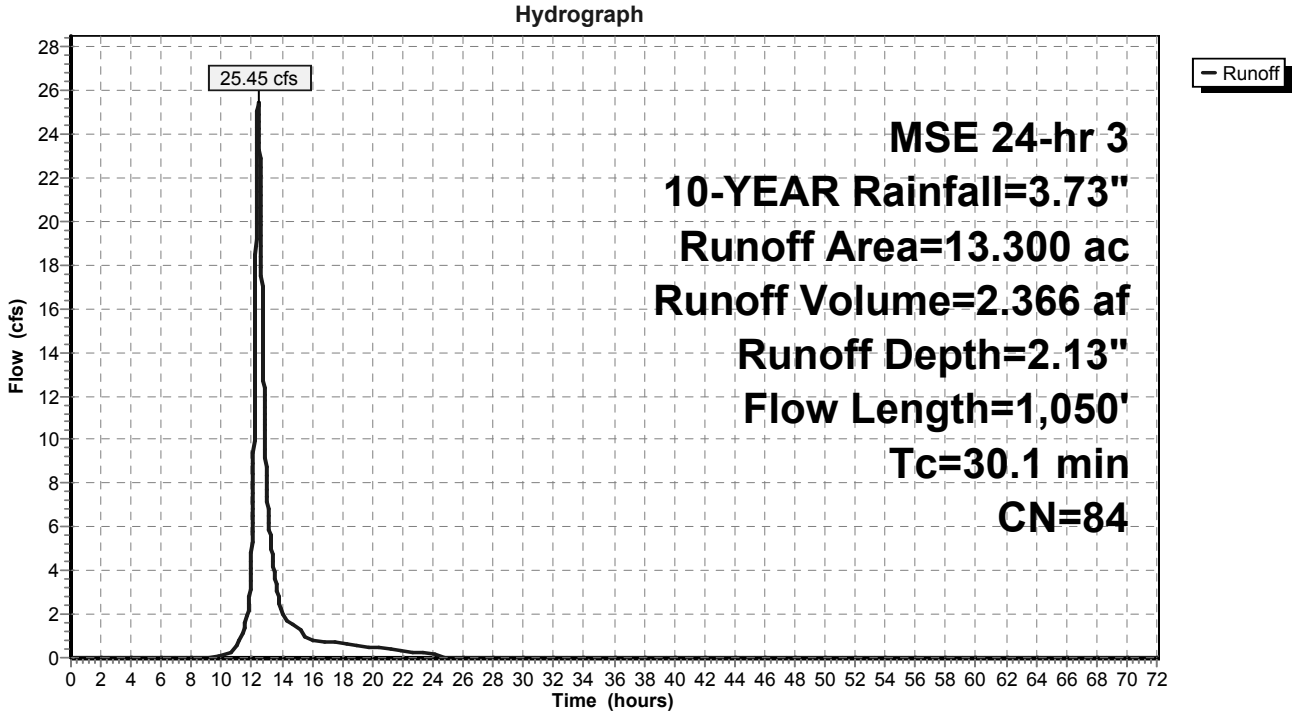
Runoff = 25.45 cfs @ 12.41 hrs, Volume= 2.366 af, Depth= 2.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-YEAR Rainfall=3.73"

Area (ac)	CN	Description
0.400	98	Paved roads w/curbs & sewers
1.000	79	1 acre lots, 20% imp, HSG C
6.000	94	Urban commercial, 85% imp, HSG C
5.900	74	>75% Grass cover, Good, HSG C
13.300	84	Weighted Average
7.600		57.14% Pervious Area
5.700		42.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.1	150	0.0250	0.12		**Sheet Flow, SHEET** Grass: Dense n= 0.240 P2= 2.57"
10.0	900	0.0100	1.50		**Shallow Concentrated Flow, SC FLOW** Grassed Waterway Kv= 15.0 fps
30.1	1,050	Total			

Subcatchment OFF-7: AREA OFF-7



Summary for Subcatchment OFF-9: AREA OFF-9

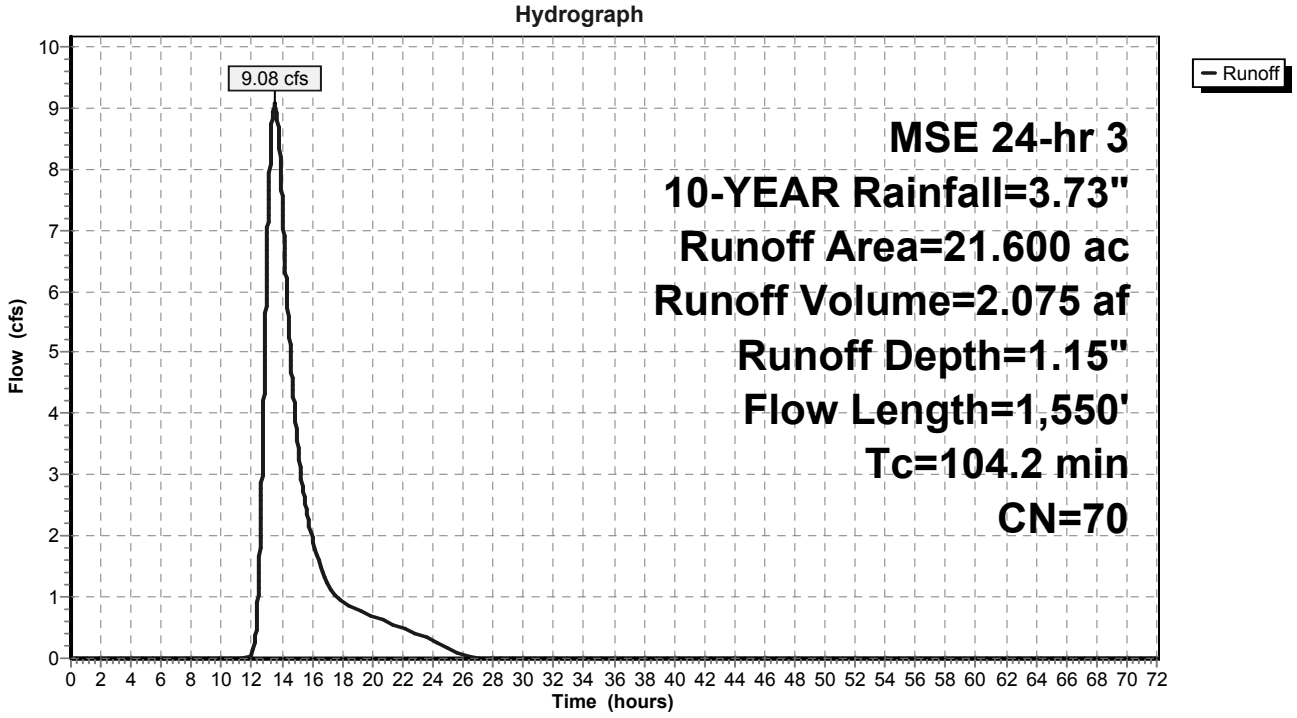
Runoff = 9.08 cfs @ 13.54 hrs, Volume= 2.075 af, Depth= 1.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-YEAR Rainfall=3.73"

Area (ac)	CN	Description
2.000	71	Meadow, non-grazed, HSG C
19.600	70	Woods, Good, HSG C
21.600	70	Weighted Average
21.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
76.1	300	0.0100	0.07		**Sheet Flow, SHEET** Woods: Light underbrush n= 0.400 P2= 2.57"
28.1	1,250	0.0220	0.74		**Shallow Concentrated Flow, SC FLOW** Woodland Kv= 5.0 fps
104.2	1,550	Total			

Subcatchment OFF-9: AREA OFF-9



Summary for Subcatchment PR-1: AREA PR-1

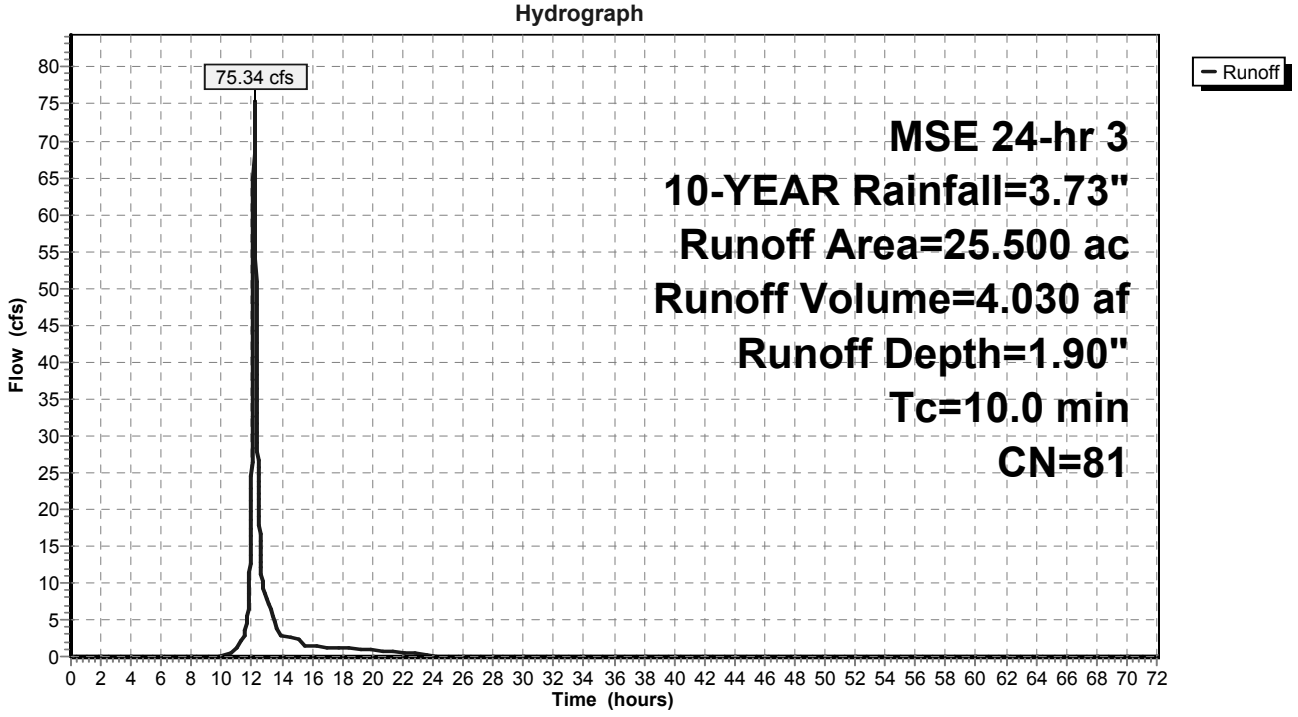
Runoff = 75.34 cfs @ 12.18 hrs, Volume= 4.030 af, Depth= 1.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-YEAR Rainfall=3.73"

	Area (ac)	CN	Description
*	12.800	80	SF
*	12.700	82	1/2 acre lots, 25% imp, HSG C
	25.500	81	Weighted Average
	22.325		87.55% Pervious Area
	3.175		12.45% Impervious Area

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

Subcatchment PR-1: AREA PR-1



Summary for Subcatchment PR-2: AREA PR-2

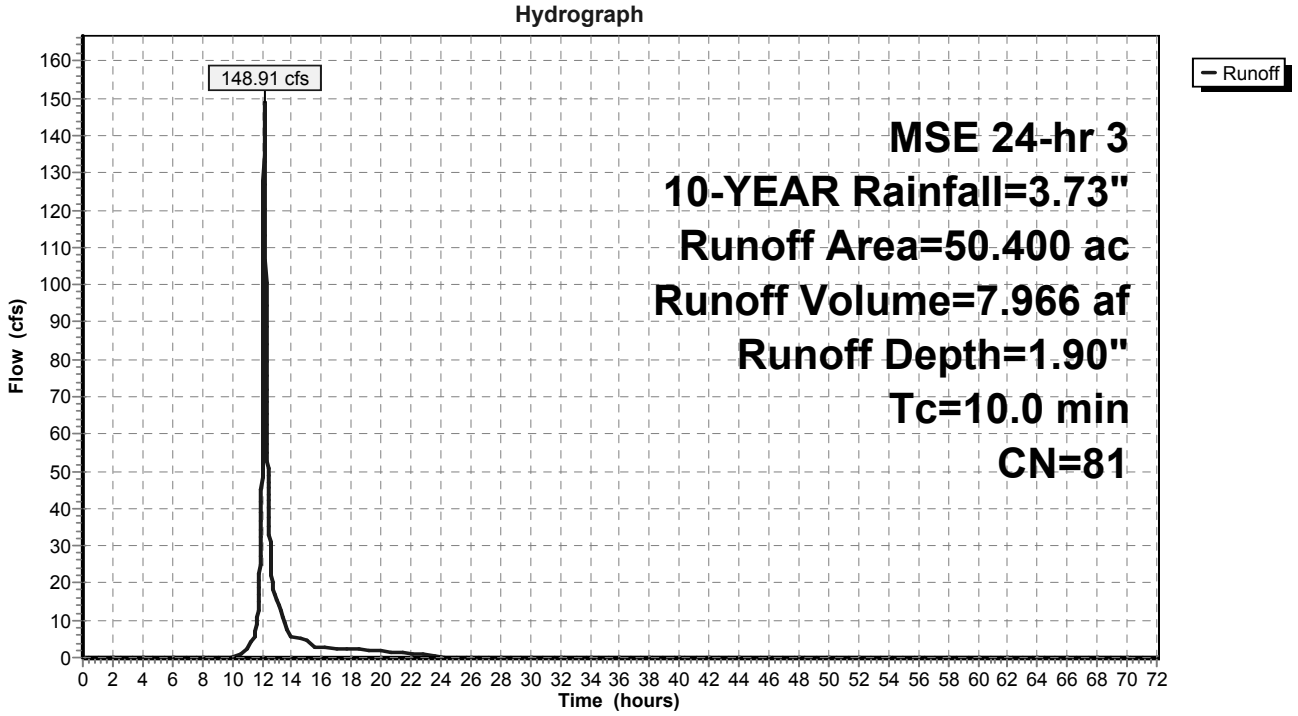
Runoff = 148.91 cfs @ 12.18 hrs, Volume= 7.966 af, Depth= 1.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-YEAR Rainfall=3.73"

	Area (ac)	CN	Description
	46.100	81	1/3 acre lots, 30% imp, HSG C
*	1.500	74	Outlot 1
*	1.400	74	Pond Outlot
*	1.400	98	Pond Water Surface
	50.400	81	Weighted Average
	35.170		69.78% Pervious Area
	15.230		30.22% Impervious Area

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

Subcatchment PR-2: AREA PR-2



Summary for Subcatchment PR-3: AREA PR-3

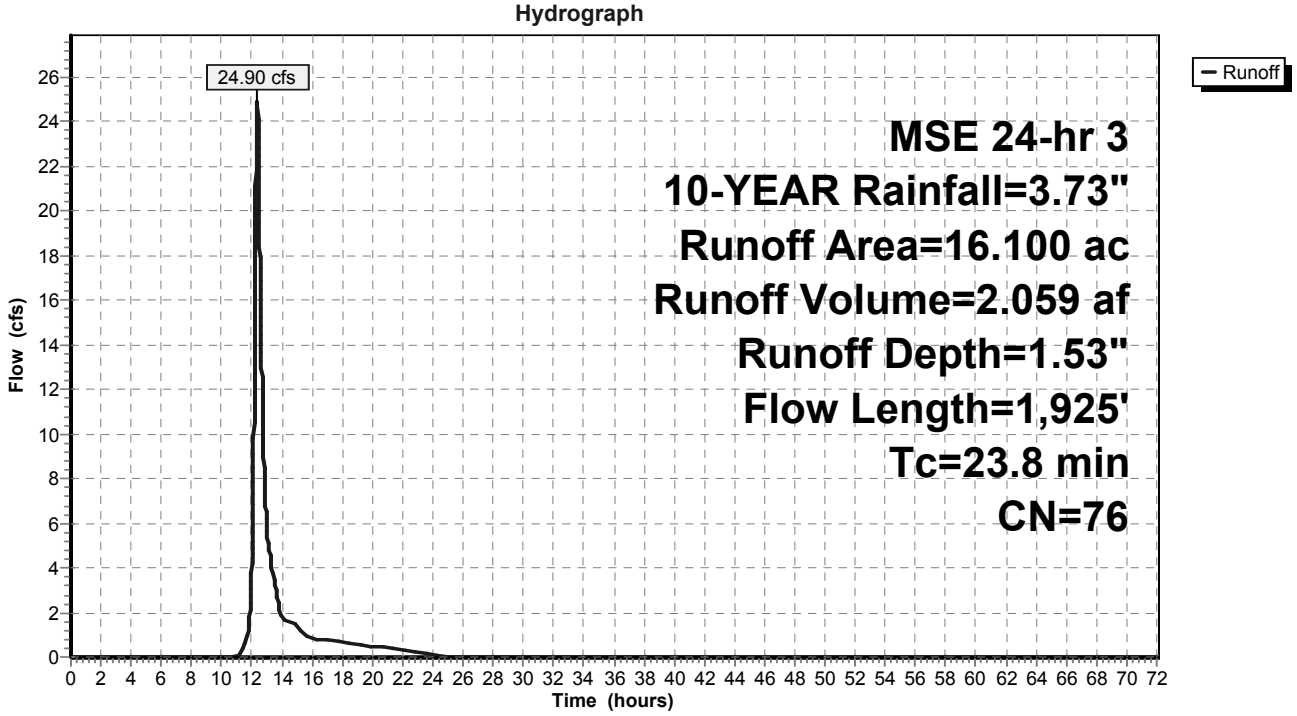
Runoff = 24.90 cfs @ 12.35 hrs, Volume= 2.059 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-YEAR Rainfall=3.73"

Area (ac)	CN	Description
7.700	70	Woods, Good, HSG C
8.400	81	1/3 acre lots, 30% imp, HSG C
16.100	76	Weighted Average
13.580		84.35% Pervious Area
2.520		15.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	100	0.0400	0.14		**Sheet Flow, SHEET FLOW** Grass: Dense n= 0.240 P2= 2.57"
0.7	209	0.0861	4.72		**Shallow Concentrated Flow, SHALLOW CONCENTRATED** Unpaved Kv= 16.1 fps
9.3	963	0.0114	1.72		**Shallow Concentrated Flow, SHALLOW CONCENTRATED** Unpaved Kv= 16.1 fps
1.7	653	0.0077	6.32	19.85	**Pipe Channel, STORM SEWER** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
23.8	1,925	Total			

Subcatchment PR-3: AREA PR-3



Summary for Subcatchment UN-1: DEVELOPED AREA NOT DETAINED

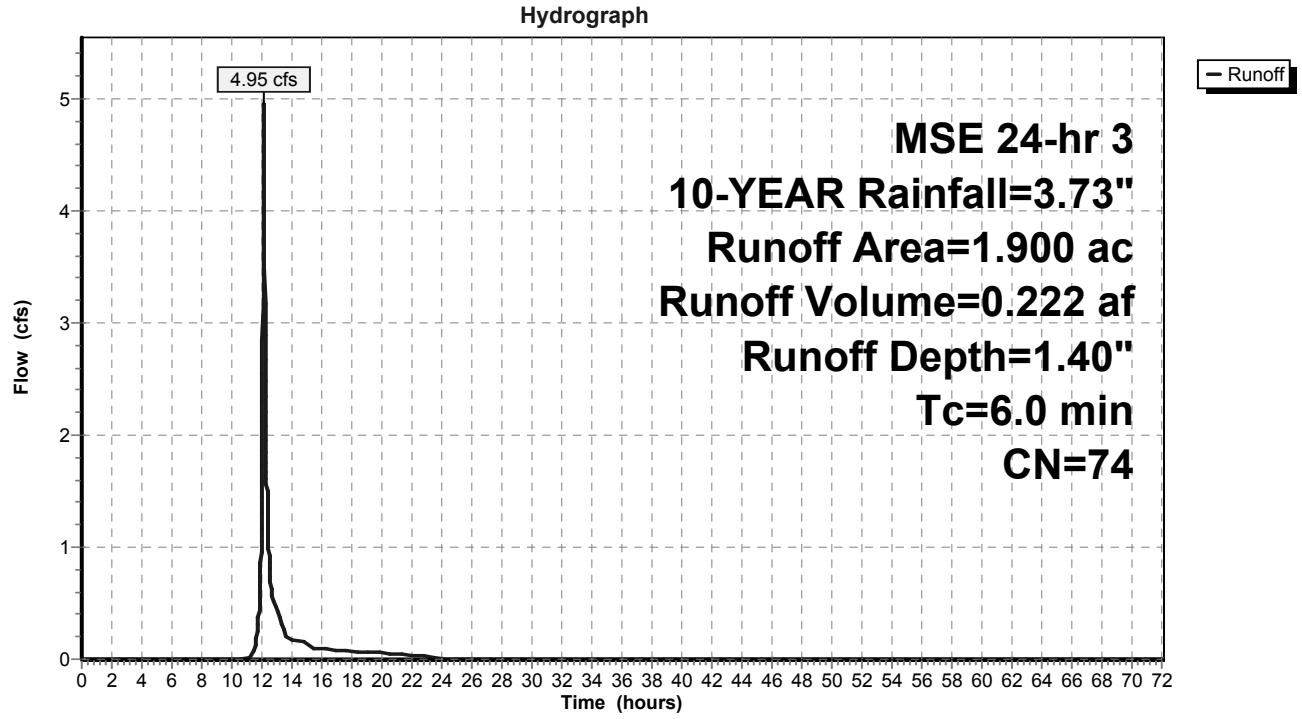
Runoff = 4.95 cfs @ 12.14 hrs, Volume= 0.222 af, Depth= 1.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-YEAR Rainfall=3.73"

Area (ac)	CN	Description
1.900	74	>75% Grass cover, Good, HSG C
1.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Subcatchment UN-1: DEVELOPED AREA NOT DETAINED



Summary for Subcatchment UN-2: DEVELOPED AREA NOT DETAINED

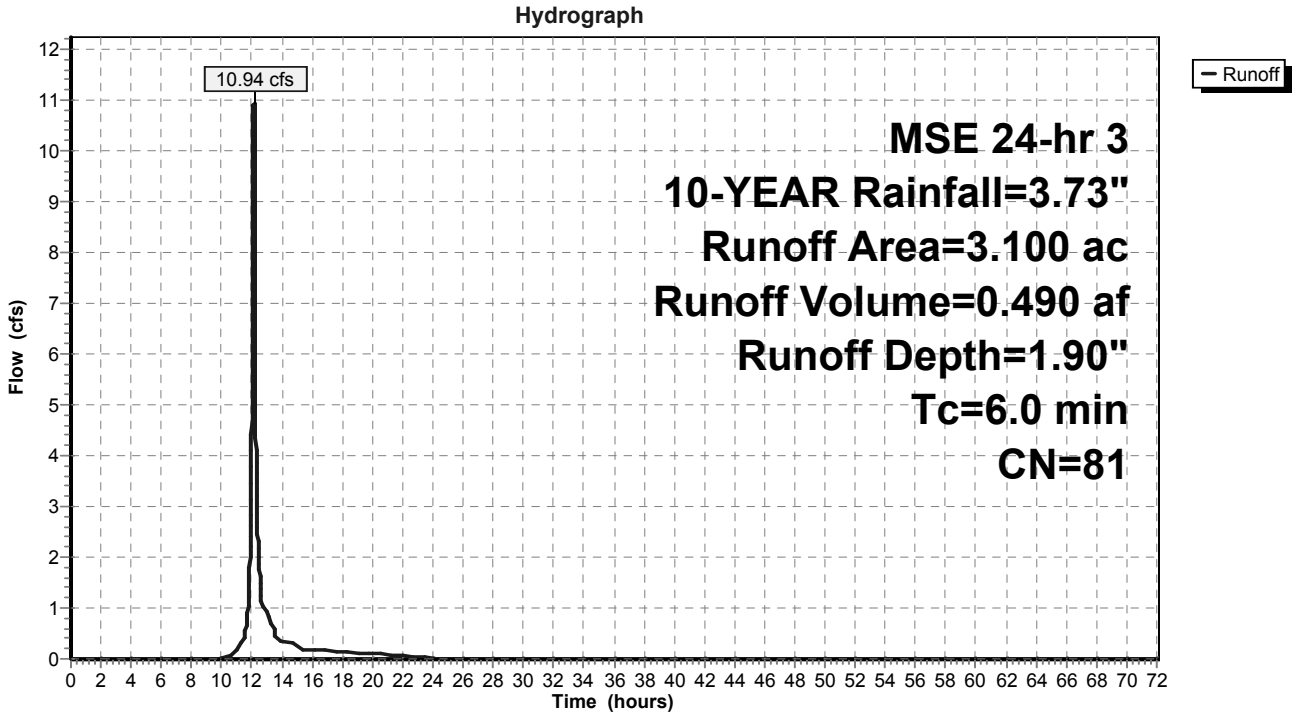
Runoff = 10.94 cfs @ 12.13 hrs, Volume= 0.490 af, Depth= 1.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 10-YEAR Rainfall=3.73"

Area (ac)	CN	Description
3.100	81	1/3 acre lots, 30% imp, HSG C
2.170		70.00% Pervious Area
0.930		30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Subcatchment UN-2: DEVELOPED AREA NOT DETAINED



Summary for Pond NC-1: NORTH CREEK @ YORK

[44] Hint: Outlet device #1 is below defined storage

Inflow Area = 1,046.300 ac, 0.71% Impervious, Inflow Depth = 1.28" for 10-YEAR event
Inflow = 366.76 cfs @ 13.99 hrs, Volume= 111.407 af
Outflow = 365.94 cfs @ 14.13 hrs, Volume= 111.407 af, Atten= 0%, Lag= 8.3 min
Primary = 365.94 cfs @ 14.13 hrs, Volume= 111.407 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 766.20' @ 14.13 hrs Surf.Area= 24,833 sf Storage= 26,113 cf

Plug-Flow detention time= 0.6 min calculated for 111.391 af (100% of inflow)
Center-of-Mass det. time= 0.6 min (956.5 - 956.0)

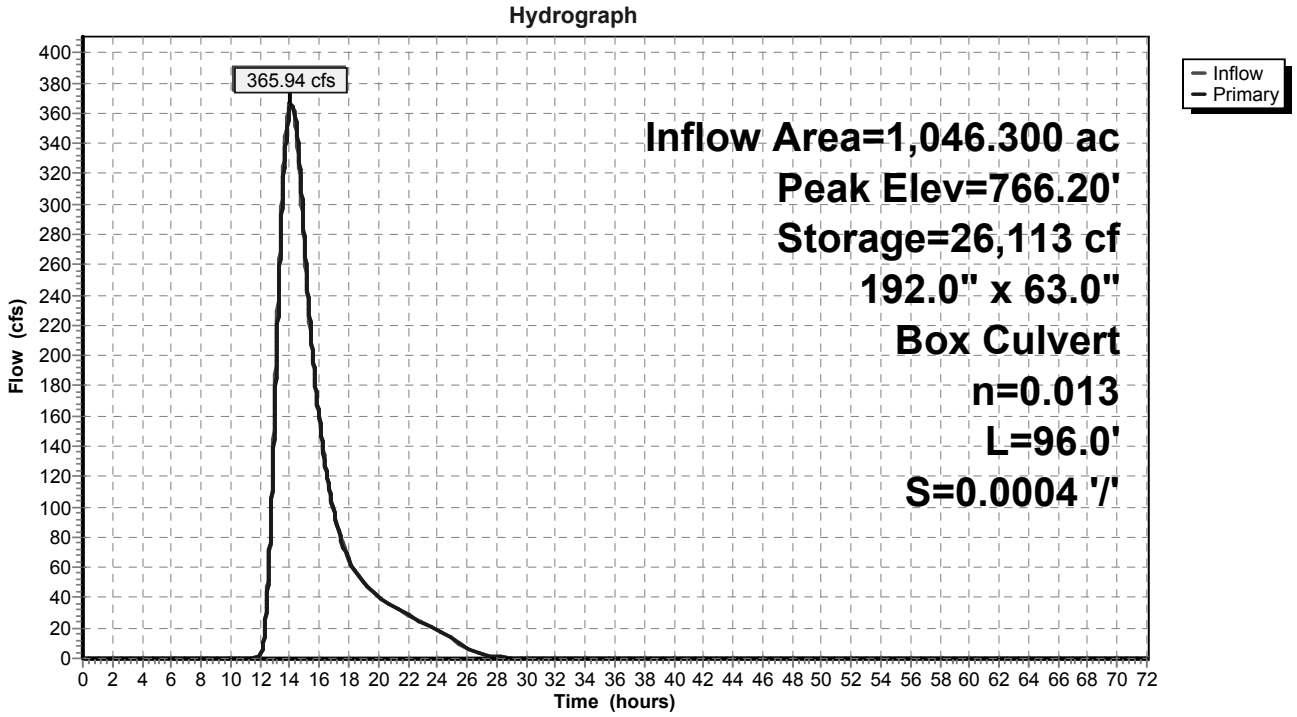
Volume	Invert	Avail.Storage	Storage Description
#1	762.30'	1,077,353 cf	**UPSTREAM STORAGE AREA (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
762.30	0	0.0	0	0	0
763.00	932	603.0	217	217	28,936
764.00	2,759	918.0	1,765	1,982	67,070
765.00	8,694	1,672.0	5,450	7,433	222,479
766.00	20,259	1,787.0	14,075	21,507	254,181
767.00	47,027	1,911.0	32,717	54,225	290,718
768.00	88,000	2,285.0	66,452	120,677	415,617
769.00	163,208	1,973.0	123,684	244,361	521,357
770.00	227,240	2,760.0	194,343	438,704	817,782
772.00	421,316	3,460.0	638,650	1,077,353	1,164,318

Device	Routing	Invert	Outlet Devices
#1	Primary	761.69'	**192.0" W x 63.0" H Box Culvert** L= 96.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 761.69' / 761.65' S= 0.0004 '/' Cc= 0.900 n= 0.013, Flow Area= 84.00 sf

Primary OutFlow Max=365.94 cfs @ 14.13 hrs HW=766.20' TW=758.83' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 365.94 cfs @ 6.75 fps)

Pond NC-1: NORTH CREEK @ YORK



Summary for Pond NC-2: NORTH CREEK @ 45

Inflow Area = 1,237.100 ac, 3.22% Impervious, Inflow Depth > 1.33" for 10-YEAR event
Inflow = 402.62 cfs @ 14.06 hrs, Volume= 137.479 af
Outflow = 402.11 cfs @ 14.13 hrs, Volume= 137.479 af, Atten= 0%, Lag= 4.1 min
Primary = 402.11 cfs @ 14.13 hrs, Volume= 137.479 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 758.83' @ 14.13 hrs Surf.Area= 25,397 sf Storage= 32,331 cf

Plug-Flow detention time= 0.7 min calculated for 137.460 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (967.9 - 967.2)

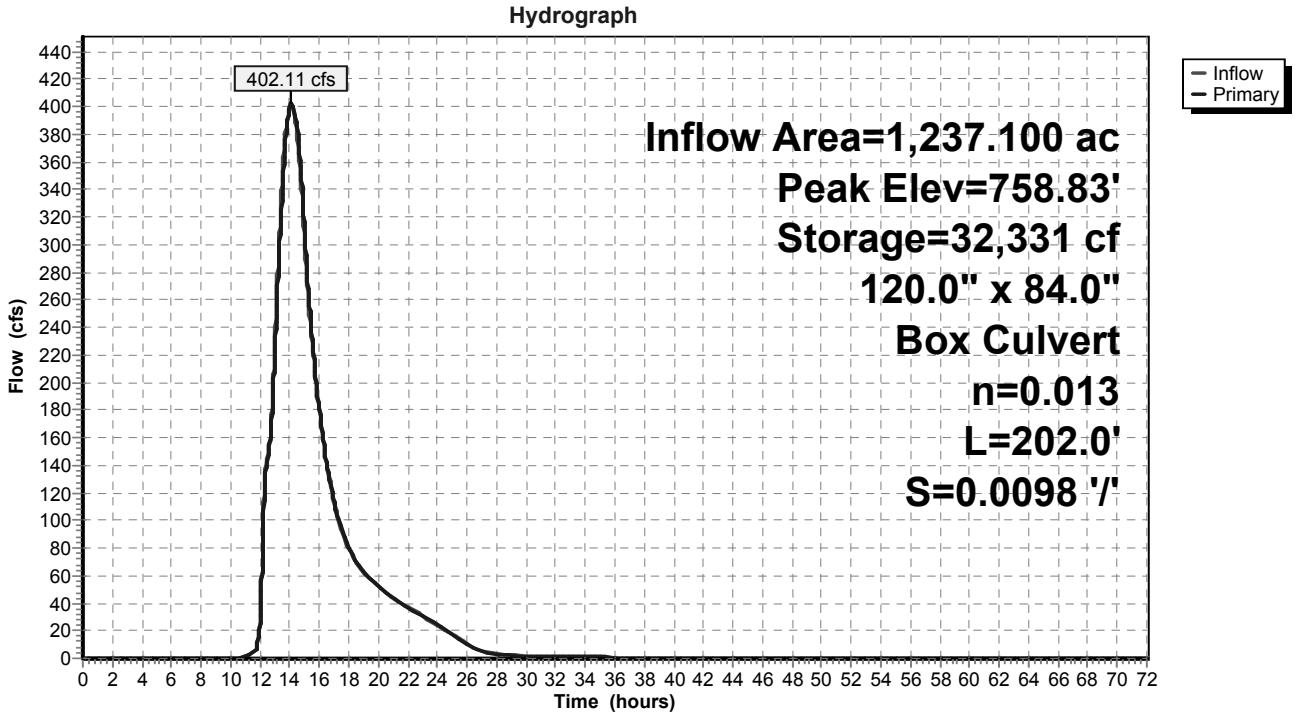
Volume	Invert	Avail.Storage	Storage Description
#1	753.44'	1,242,057 cf	**ACTIVE STORAGE VOLUME (Irregular)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
753.44	0	0.0	0	0	0
754.00	581	145.0	108	108	1,674
755.00	1,370	268.0	948	1,056	5,721
756.00	2,048	730.0	1,698	2,754	42,416
757.00	5,733	1,393.0	3,736	6,490	154,430
758.00	13,083	1,825.0	9,159	15,649	265,069
759.00	27,851	1,986.0	20,008	35,656	313,932
760.00	47,111	1,975.0	37,062	72,718	317,925
761.00	74,209	3,753.0	60,149	132,867	1,128,378
762.00	117,171	4,712.0	94,876	227,743	1,774,396
763.00	188,304	5,439.0	151,338	379,081	2,361,682
764.00	280,708	6,208.0	232,974	612,055	3,074,445
765.00	314,048	4,703.0	297,222	909,277	4,381,203
766.00	351,870	4,619.0	332,780	1,242,057	4,443,690

Device	Routing	Invert	Outlet Devices
#1	Primary	753.44'	**120.0" W x 84.0" H Box BOX CULVERT** L= 202.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 753.44' / 751.47' S= 0.0098 '/' Cc= 0.900 n= 0.013 Concrete, trowel finish, Flow Area= 70.00 sf

Primary OutFlow Max=402.11 cfs @ 14.13 hrs HW=758.83' (Free Discharge)
1=BOX CULVERT (Inlet Controls 402.11 cfs @ 7.46 fps)

Pond NC-2: NORTH CREEK @ 45



Summary for Pond P-1: POND 1

Inflow Area = 46.700 ac, 9.80% Impervious, Inflow Depth = 1.65" for 10-YEAR event
Inflow = 105.14 cfs @ 12.19 hrs, Volume= 6.424 af
Outflow = 7.36 cfs @ 13.60 hrs, Volume= 6.325 af, Atten= 93%, Lag= 84.7 min
Primary = 7.36 cfs @ 13.60 hrs, Volume= 6.325 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 765.52' @ 13.60 hrs Surf.Area= 73,176 sf Storage= 167,020 cf

Plug-Flow detention time= 353.1 min calculated for 6.325 af (98% of inflow)
Center-of-Mass det. time= 344.3 min (1,162.4 - 818.2)

Volume	Invert	Avail.Storage	Storage Description
#1	763.00'	551,935 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

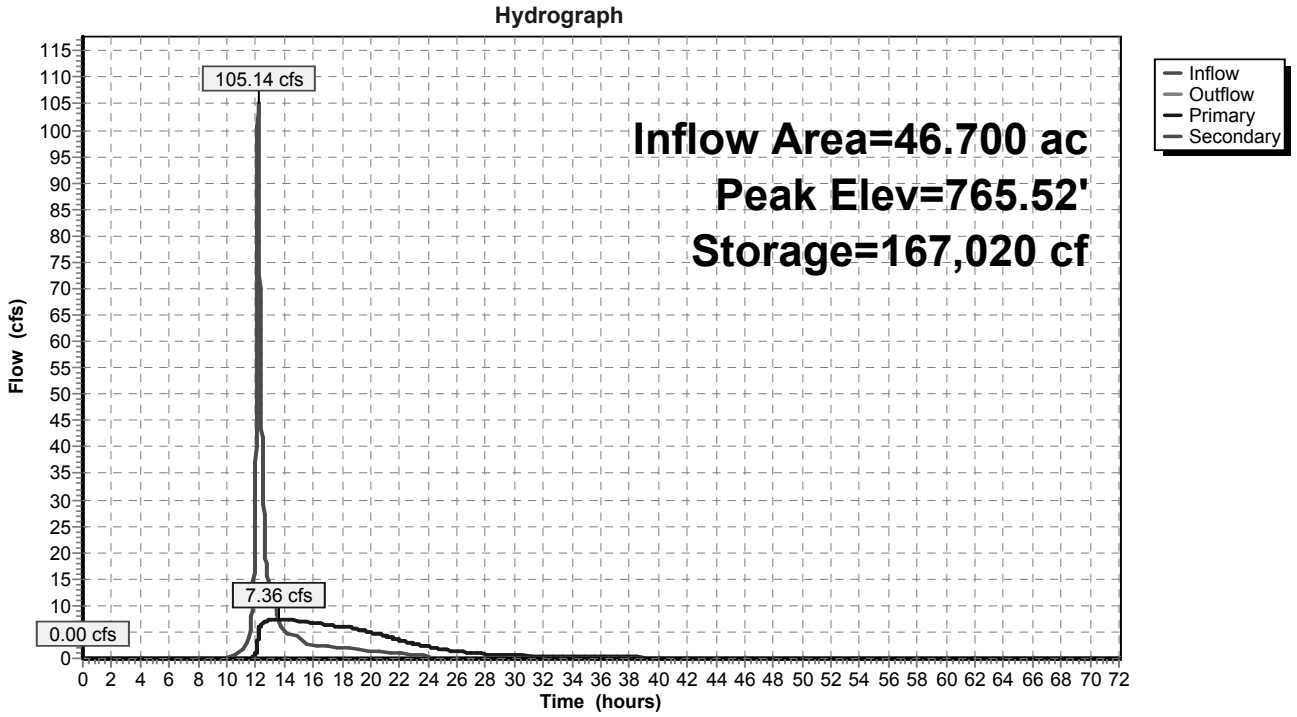
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
763.00	59,577	0	0
764.00	64,896	62,237	62,237
765.00	70,316	67,606	129,843
766.00	75,836	73,076	202,919
767.00	81,457	78,647	281,565
768.00	87,179	84,318	365,883
769.00	93,001	90,090	455,973
770.00	98,923	95,962	551,935

Device	Routing	Invert	Outlet Devices
#1	Primary	763.00'	**15.0" Round CULVERT** L= 110.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 763.00' / 762.00' S= 0.0091 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Secondary	769.00'	**50.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=7.36 cfs @ 13.60 hrs HW=765.52' TW=0.00' (Dynamic Tailwater)
↑—**1=CULVERT** (Barrel Controls 7.36 cfs @ 5.99 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=763.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P-1: POND 1



Summary for Pond P-2: POND 2

Inflow Area = 88.100 ac, 20.15% Impervious, Inflow Depth = 1.65" for 10-YEAR event
Inflow = 163.10 cfs @ 12.18 hrs, Volume= 12.100 af
Outflow = 33.13 cfs @ 12.73 hrs, Volume= 11.985 af, Atten= 80%, Lag= 32.9 min
Primary = 33.13 cfs @ 12.73 hrs, Volume= 11.985 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 763.18' @ 12.73 hrs Surf.Area= 76,491 sf Storage= 213,121 cf

Plug-Flow detention time= 226.4 min calculated for 11.985 af (99% of inflow)
Center-of-Mass det. time= 220.6 min (1,054.1 - 833.5)

Volume	Invert	Avail.Storage	Storage Description
#1	760.00'	613,278 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

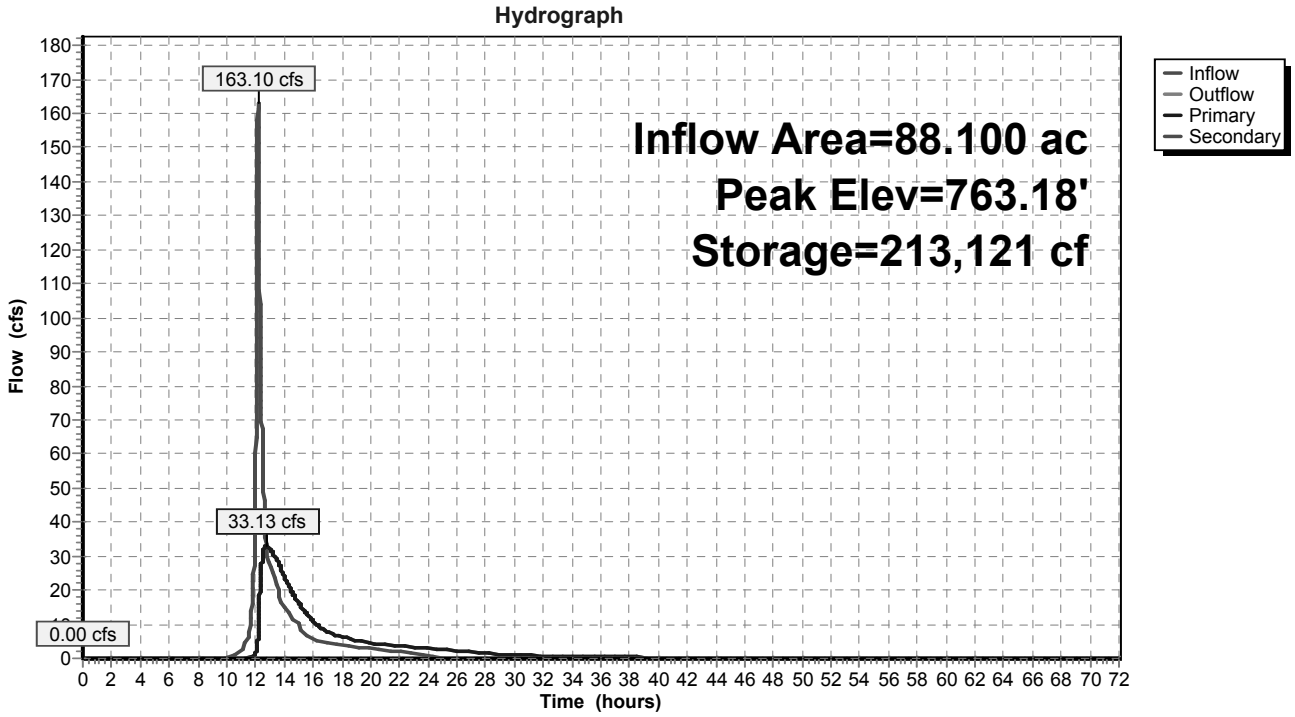
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
760.00	54,486	0	0
761.00	64,778	59,632	59,632
762.00	69,845	67,312	126,944
763.00	75,397	72,621	199,565
764.00	81,523	78,460	278,025
765.00	92,446	86,985	365,009
766.00	121,411	106,929	471,938
767.00	161,270	141,341	613,278

Device	Routing	Invert	Outlet Devices
#1	Primary	760.00'	**12.0" Round Culvert** L= 146.2' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 760.00' / 759.00' S= 0.0068 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Primary	761.10'	**48.0" Round Culvert** L= 141.4' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 761.10' / 759.00' S= 0.0149 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 12.57 sf
#3	Secondary	766.00'	**50.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=33.13 cfs @ 12.73 hrs HW=763.18' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 4.55 cfs @ 5.80 fps)
└─**2=Culvert** (Inlet Controls 28.57 cfs @ 4.33 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=760.00' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P-2: POND 2

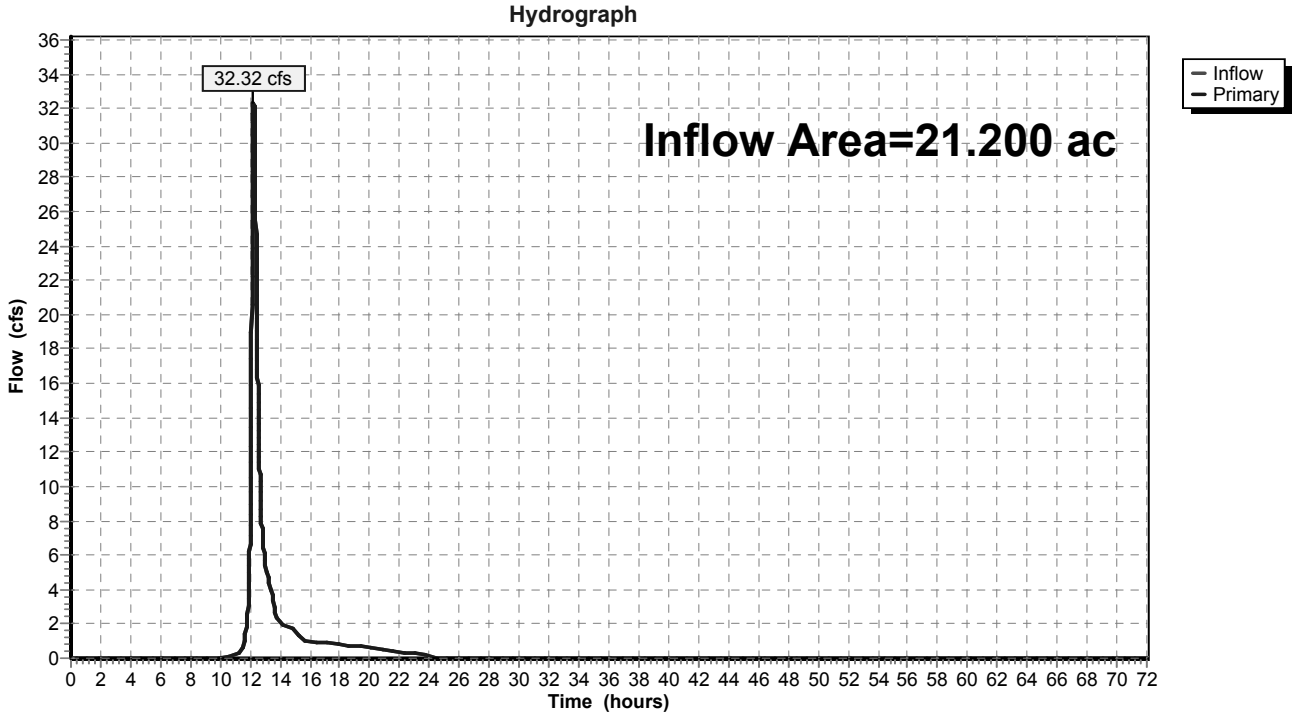


Summary for Link 2L: OFFSITE (3,4,6)

Inflow Area = 21.200 ac, 6.60% Impervious, Inflow Depth = 1.36" for 10-YEAR event
Inflow = 32.32 cfs @ 12.24 hrs, Volume= 2.394 af
Primary = 32.32 cfs @ 12.24 hrs, Volume= 2.394 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 2L: OFFSITE (3,4,6)

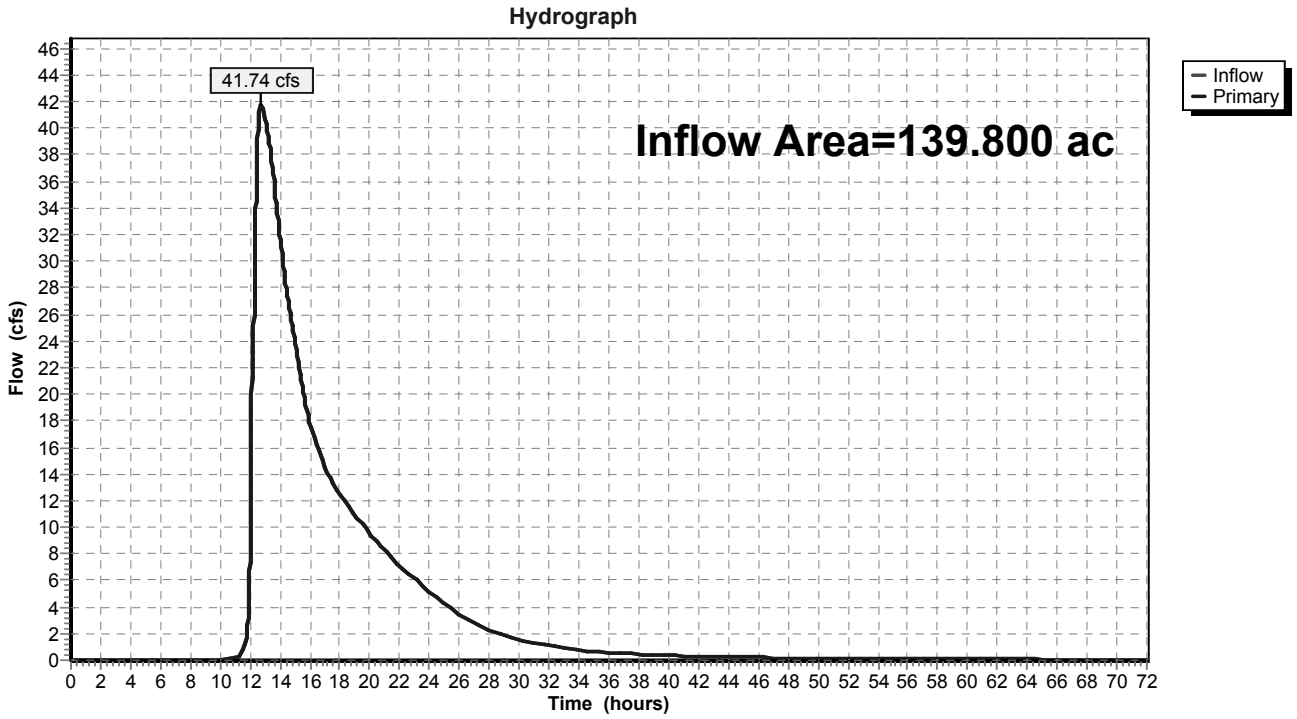


Summary for Link PR-N: PROPOSED DISCHARGE TO NORTH CREEK

Inflow Area = 139.800 ac, 16.63% Impervious, Inflow Depth > 1.63" for 10-YEAR event
Inflow = 41.74 cfs @ 12.73 hrs, Volume= 19.022 af
Primary = 41.74 cfs @ 12.73 hrs, Volume= 19.022 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link PR-N: PROPOSED DISCHARGE TO NORTH CREEK



Summary for Subcatchment EX-3: UNDEVELOPED AREA

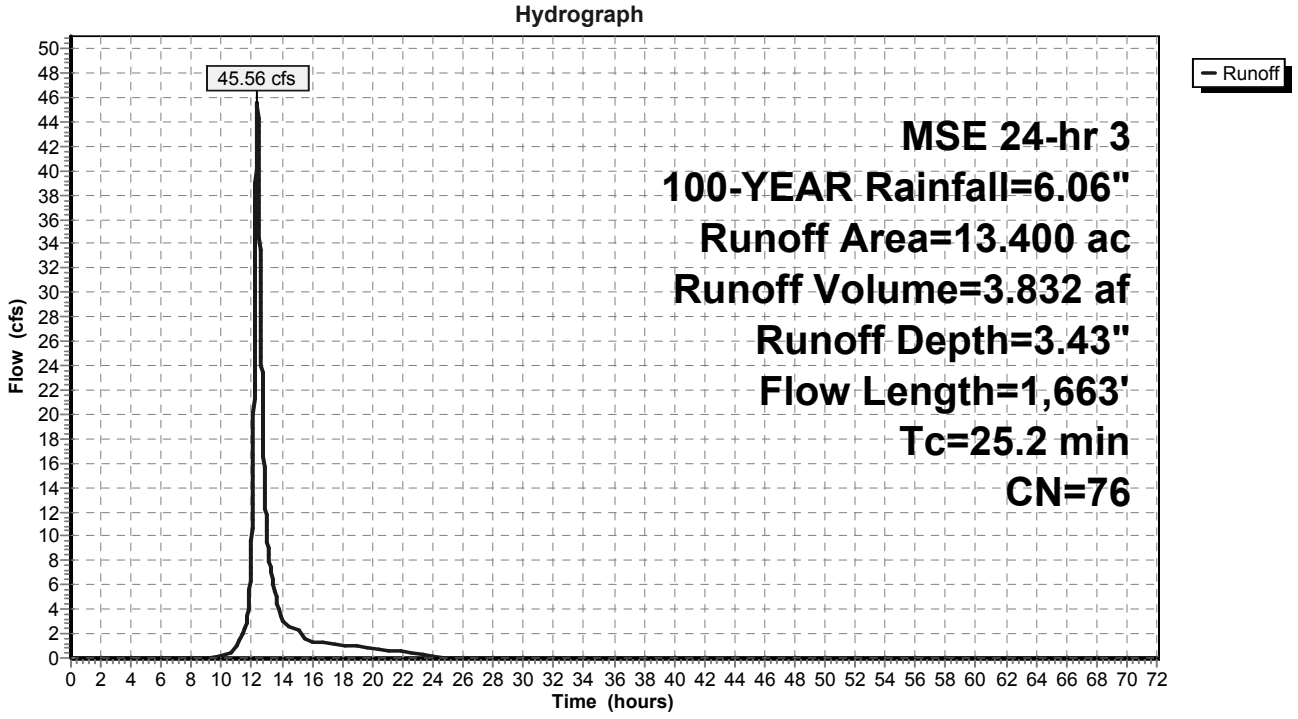
Runoff = 45.56 cfs @ 12.35 hrs, Volume= 3.832 af, Depth= 3.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.06"

Area (ac)	CN	Description
0.800	79	1 acre lots, 20% imp, HSG C
1.100	98	Paved parking, HSG C
11.500	74	>75% Grass cover, Good, HSG C
13.400	76	Weighted Average
12.140		90.60% Pervious Area
1.260		9.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	100	0.0480	0.22		**Sheet Flow, SEGMENT AB** Grass: Short n= 0.150 P2= 2.57"
3.5	600	0.0320	2.88		**Shallow Concentrated Flow, SEGMENT BC** Unpaved Kv= 16.1 fps
14.0	963	0.0058	1.14		**Shallow Concentrated Flow, SEGMENT CD** Grassed Waterway Kv= 15.0 fps
25.2	1,663	Total			

Subcatchment EX-3: UNDEVELOPED AREA



Summary for Subcatchment OFF-1: AREA OFF-1

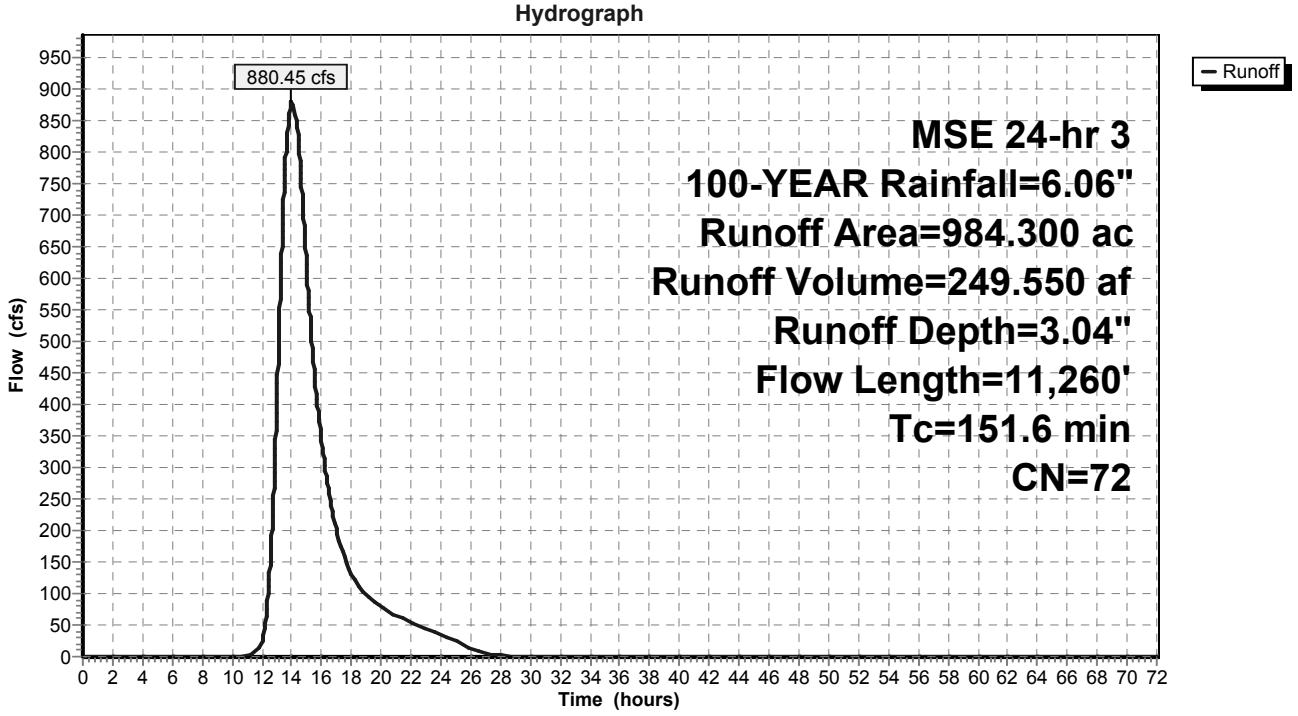
Runoff = 880.45 cfs @ 13.98 hrs, Volume= 249.550 af, Depth= 3.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.06"

Area (ac)	CN	Description
4.300	98	Paved parking & roofs
60.000	86	INSTITUTIONAL - 50% OPEN SPACE
830.000	71	Meadow, non-grazed, HSG C
90.000	70	Woods, Good, HSG C
984.300	72	Weighted Average
980.000		99.56% Pervious Area
4.300		0.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6	300	0.0200	0.40		**Sheet Flow, SHEET** Cultivated: Residue<=20% n= 0.060 P2= 2.57"
114.0	6,000	0.0077	0.88		**Shallow Concentrated Flow, SC FLOW** Nearly Bare & Untilled Kv= 10.0 fps
25.0	4,960	0.0055	3.31	22.05	**Parabolic Channel, DITCH FLOW** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.025
151.6	11,260	Total			

Subcatchment OFF-1: AREA OFF-1



Summary for Subcatchment OFF-2: AREA OFF-2

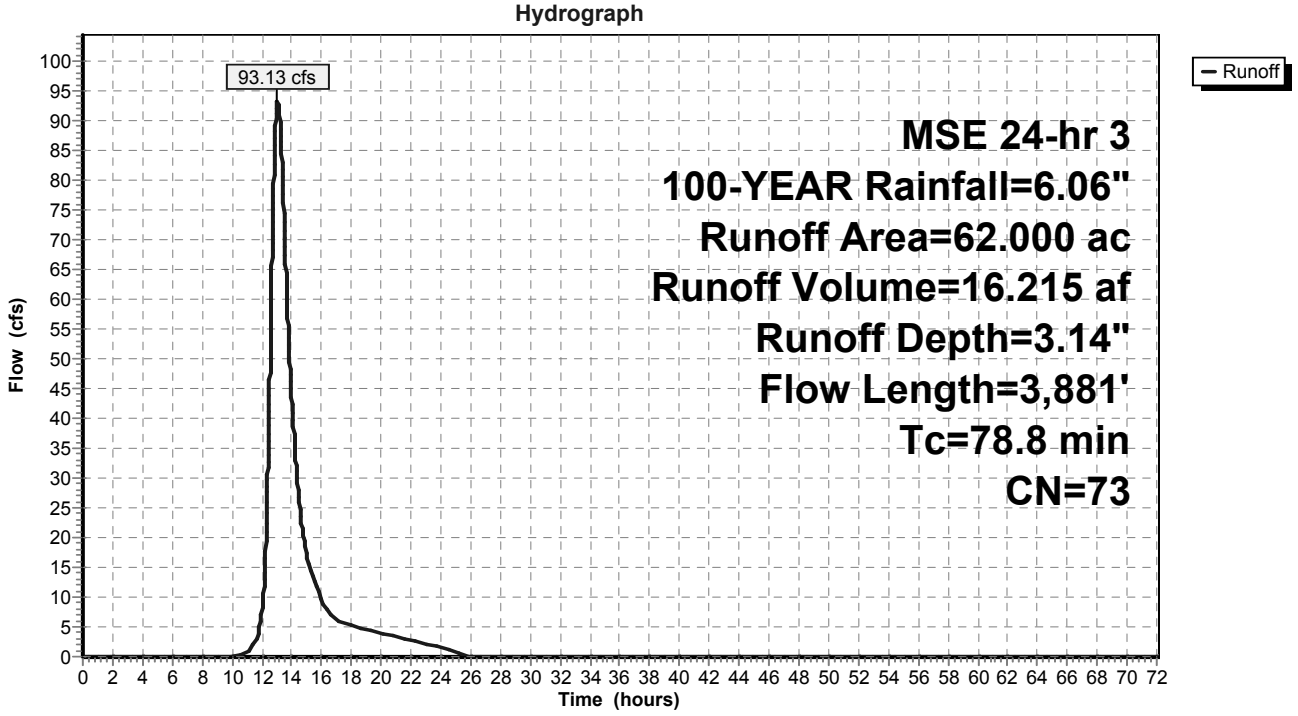
Runoff = 93.13 cfs @ 13.05 hrs, Volume= 16.215 af, Depth= 3.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.06"

Area (ac)	CN	Description
1.600	98	Paved parking & roofs
12.800	77	2 acre lots, 12% imp, HSG C
47.600	71	Meadow, non-grazed, HSG C
62.000	73	Weighted Average
58.864		94.94% Pervious Area
3.136		5.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	300	0.0150	0.35		**Sheet Flow, SHEET** Cultivated: Residue<=20% n= 0.060 P2= 2.57"
61.3	2,600	0.0050	0.71		**Shallow Concentrated Flow, SC FLOW** Nearly Bare & Untilled Kv= 10.0 fps
3.3	981	0.0130	4.99	139.93	**Trap/Vee/Rect Channel Flow,** Bot.W=3.00' D=2.30' Z= 4.0 '/' Top.W=21.40' n= 0.040
78.8	3,881	Total			

Subcatchment OFF-2: AREA OFF-2



Summary for Subcatchment OFF-3: AREA OFF-3

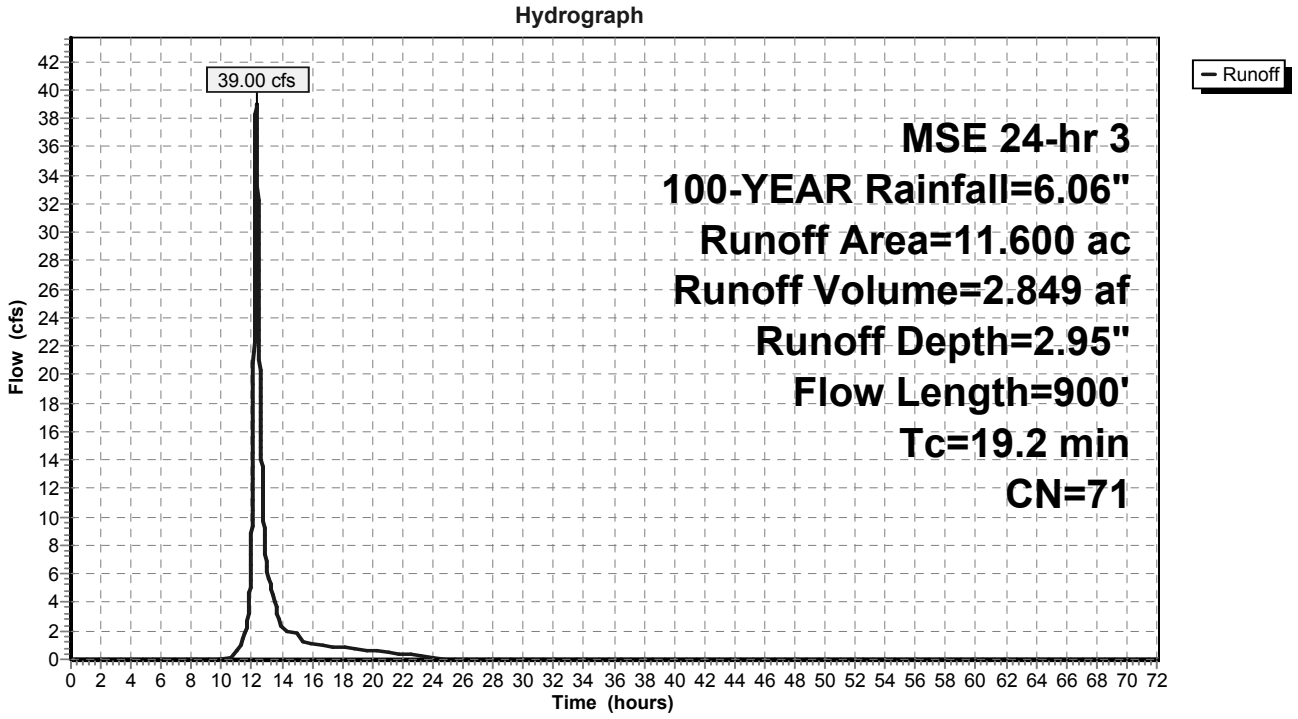
Runoff = 39.00 cfs @ 12.29 hrs, Volume= 2.849 af, Depth= 2.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.06"

Area (ac)	CN	Description
11.600	71	Meadow, non-grazed, HSG C
11.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	200	0.0150	0.32		**Sheet Flow, SHEET** Cultivated: Residue<=20% n= 0.060 P2= 2.57"
8.9	700	0.0170	1.30		**Shallow Concentrated Flow, SC FLOW** Nearly Bare & Untilled Kv= 10.0 fps
19.2	900	Total			

Subcatchment OFF-3: AREA OFF-3



Summary for Subcatchment OFF-4: AREA OFF-4

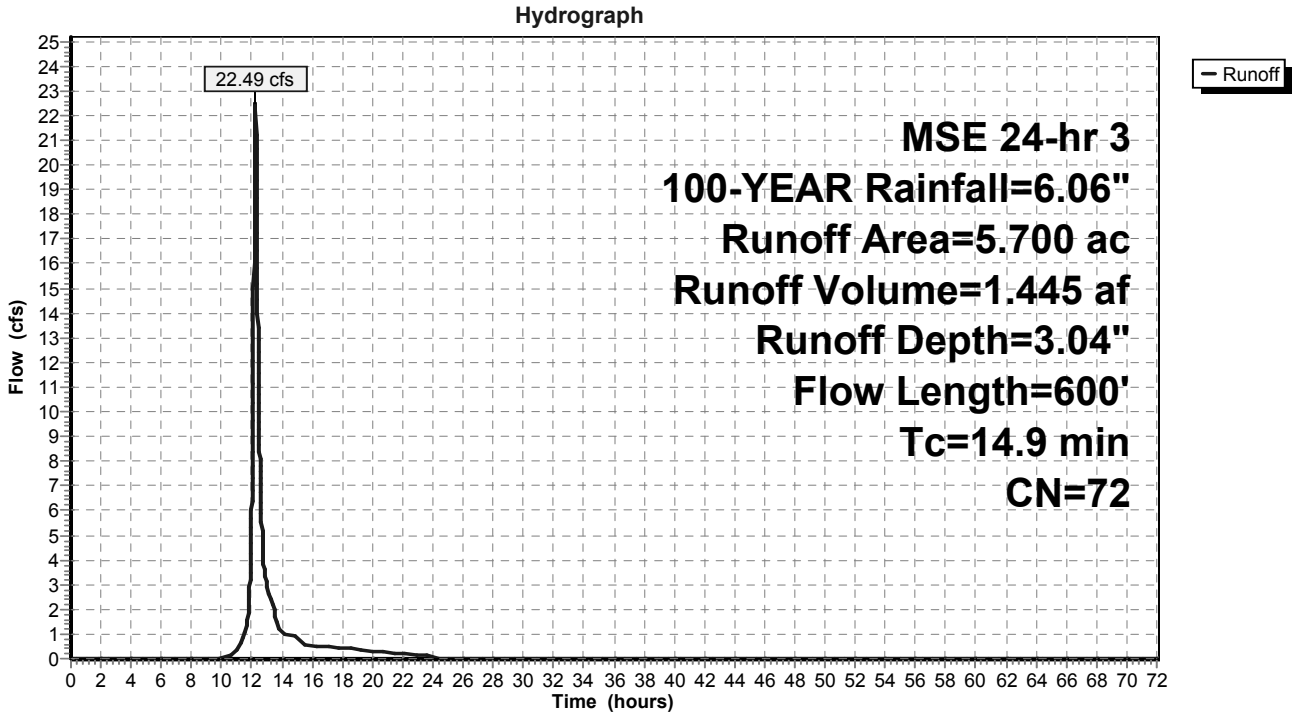
Runoff = 22.49 cfs @ 12.24 hrs, Volume= 1.445 af, Depth= 3.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.06"

Area (ac)	CN	Description
0.300	98	Paved parking & roofs
5.400	71	Meadow, non-grazed, HSG C
5.700	72	Weighted Average
5.400		94.74% Pervious Area
0.300		5.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	300	0.0280	0.45		**Sheet Flow, SHEET** Cultivated: Residue<=20% n= 0.060 P2= 2.57"
3.8	300	0.0170	1.30		**Shallow Concentrated Flow, SC FLOW** Nearly Bare & Untilled Kv= 10.0 fps
14.9	600	Total			

Subcatchment OFF-4: AREA OFF-4



Summary for Subcatchment OFF-5: AREA OFF-5

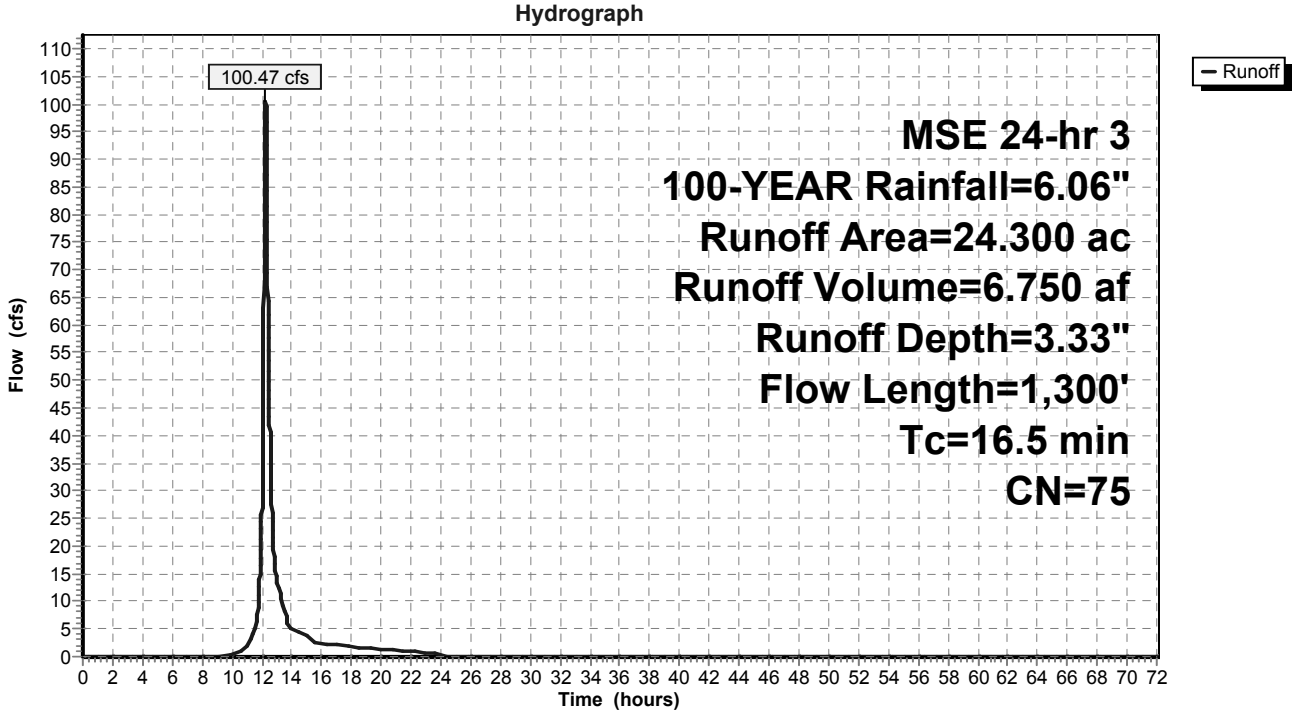
Runoff = 100.47 cfs @ 12.25 hrs, Volume= 6.750 af, Depth= 3.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.06"

Area (ac)	CN	Description
2.200	98	Paved parking & roofs
2.000	82	Farmsteads, HSG C
17.400	71	Meadow, non-grazed, HSG C
2.700	74	>75% Grass cover, Good, HSG C
24.300	75	Weighted Average
22.100		90.95% Pervious Area
2.200		9.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.9	200	0.0130	0.31		**Sheet Flow, SHEET** Cultivated: Residue<=20% n= 0.060 P2= 2.57"
2.8	400	0.0250	2.37		**Shallow Concentrated Flow, SC FLOW** Grassed Waterway Kv= 15.0 fps
2.8	700	0.0040	4.15	44.31	**Parabolic Channel, DITCH FLOW** W=8.00' D=2.00' Area=10.7 sf Perim=9.2' n= 0.025
16.5	1,300	Total			

Subcatchment OFF-5: AREA OFF-5



Summary for Subcatchment OFF-6: AREA OFF-6

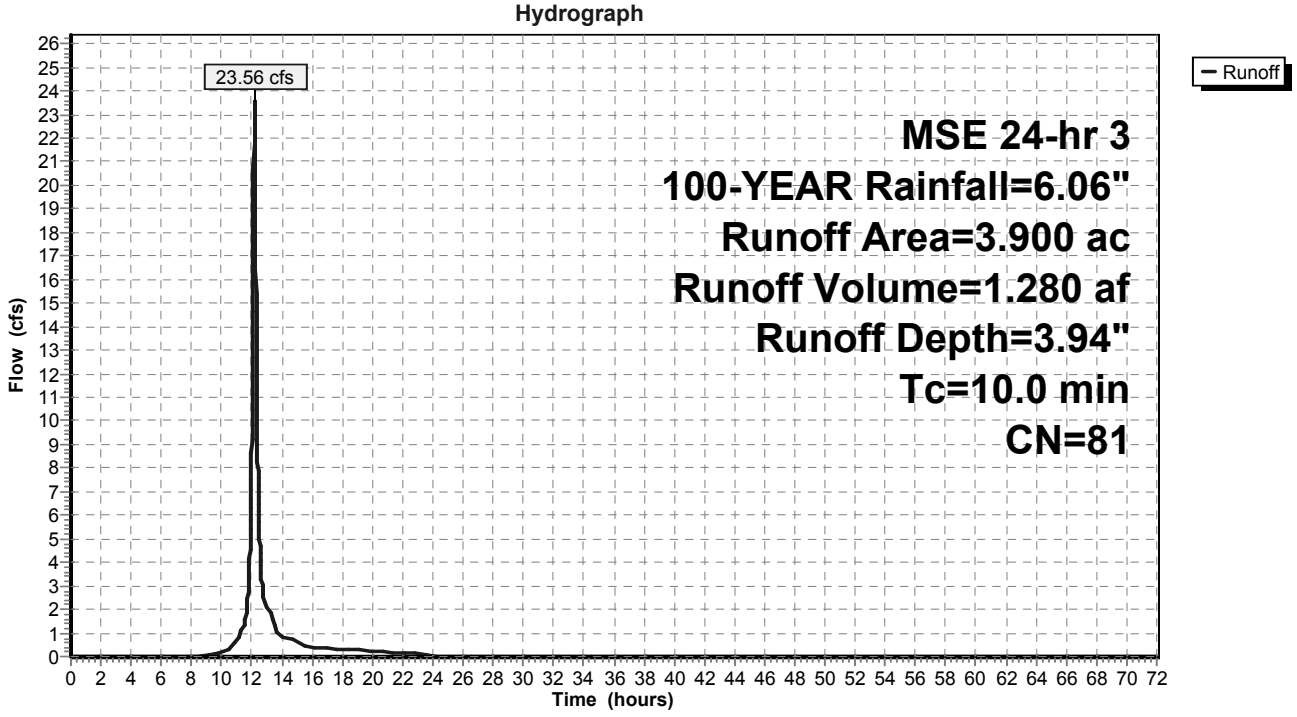
Runoff = 23.56 cfs @ 12.17 hrs, Volume= 1.280 af, Depth= 3.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.06"

	Area (ac)	CN	Description
*	1.100	98	IMPERVIOUS AREA
*	2.800	74	GREENSPACE
	3.900	81	Weighted Average
	2.800		71.79% Pervious Area
	1.100		28.21% Impervious Area

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

Subcatchment OFF-6: AREA OFF-6



Summary for Subcatchment OFF-7: AREA OFF-7

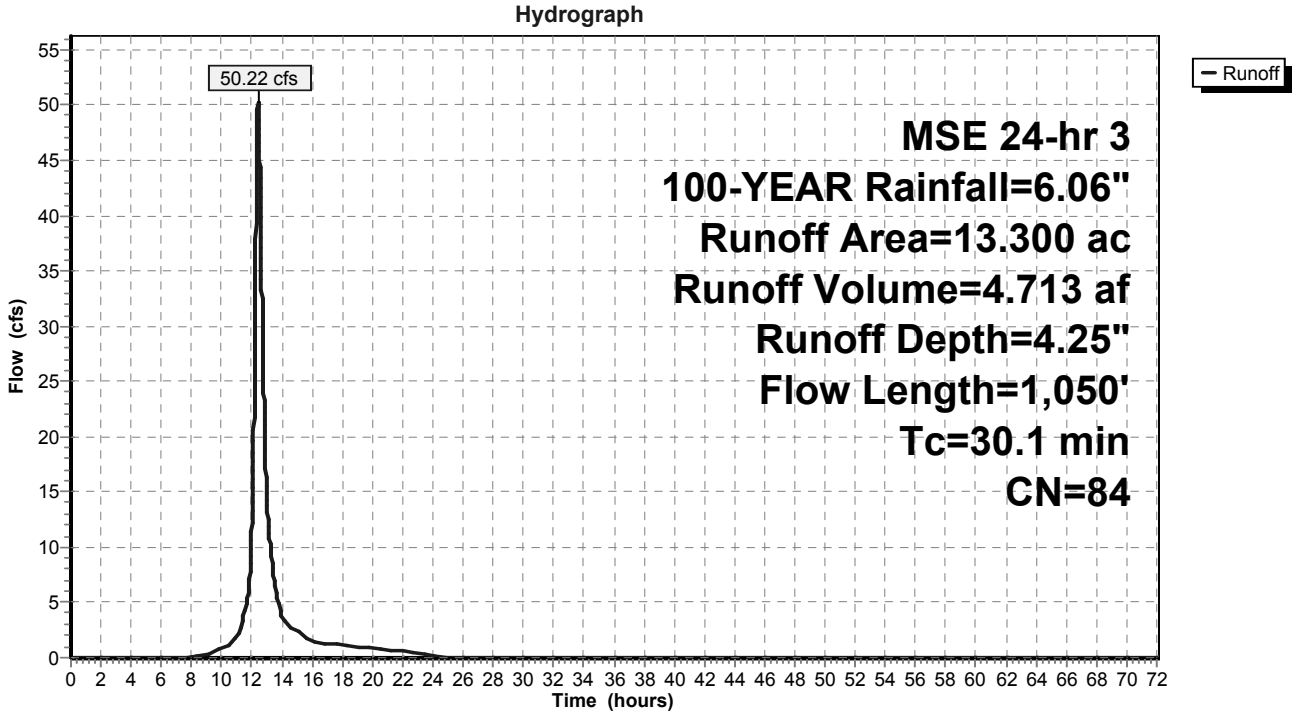
Runoff = 50.22 cfs @ 12.41 hrs, Volume= 4.713 af, Depth= 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.06"

Area (ac)	CN	Description
0.400	98	Paved roads w/curbs & sewers
1.000	79	1 acre lots, 20% imp, HSG C
6.000	94	Urban commercial, 85% imp, HSG C
5.900	74	>75% Grass cover, Good, HSG C
13.300	84	Weighted Average
7.600		57.14% Pervious Area
5.700		42.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.1	150	0.0250	0.12		**Sheet Flow, SHEET** Grass: Dense n= 0.240 P2= 2.57"
10.0	900	0.0100	1.50		**Shallow Concentrated Flow, SC FLOW** Grassed Waterway Kv= 15.0 fps
30.1	1,050	Total			

Subcatchment OFF-7: AREA OFF-7



Summary for Subcatchment OFF-9: AREA OFF-9

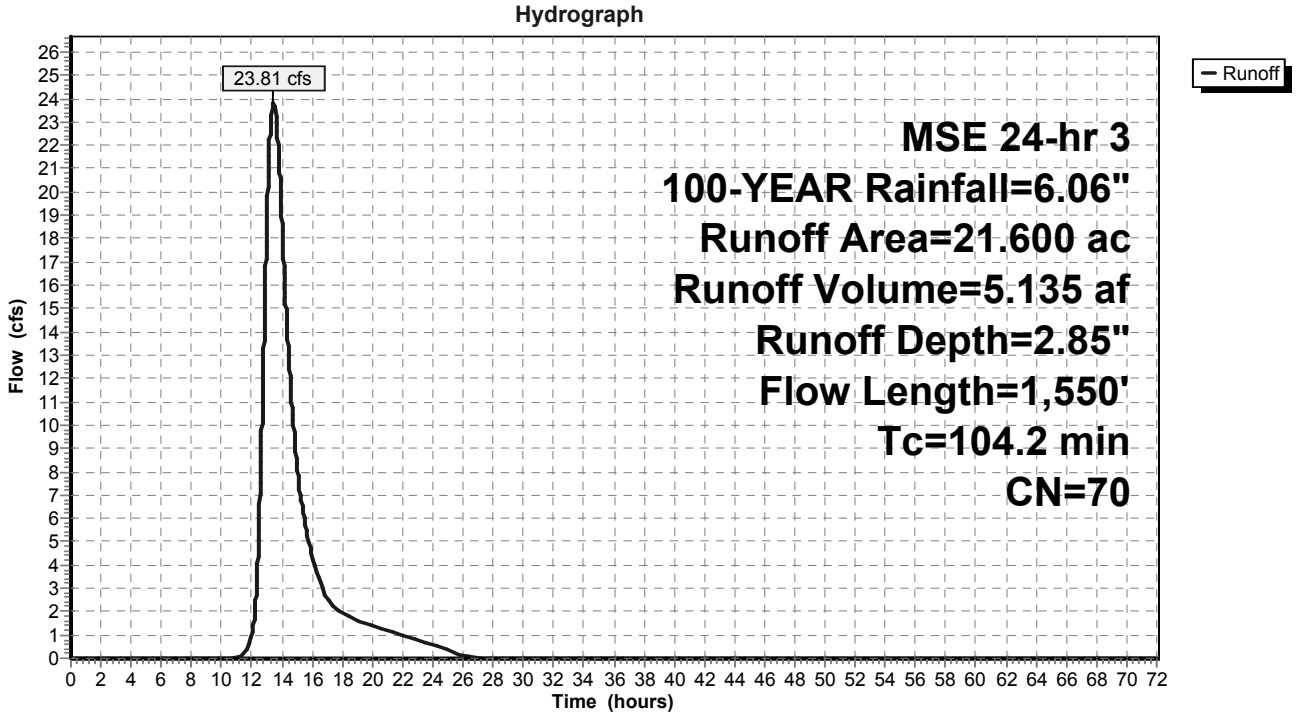
Runoff = 23.81 cfs @ 13.43 hrs, Volume= 5.135 af, Depth= 2.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.06"

Area (ac)	CN	Description
2.000	71	Meadow, non-grazed, HSG C
19.600	70	Woods, Good, HSG C
21.600	70	Weighted Average
21.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
76.1	300	0.0100	0.07		**Sheet Flow, SHEET** Woods: Light underbrush n= 0.400 P2= 2.57"
28.1	1,250	0.0220	0.74		**Shallow Concentrated Flow, SC FLOW** Woodland Kv= 5.0 fps
104.2	1,550	Total			

Subcatchment OFF-9: AREA OFF-9



Summary for Subcatchment PR-1: AREA PR-1

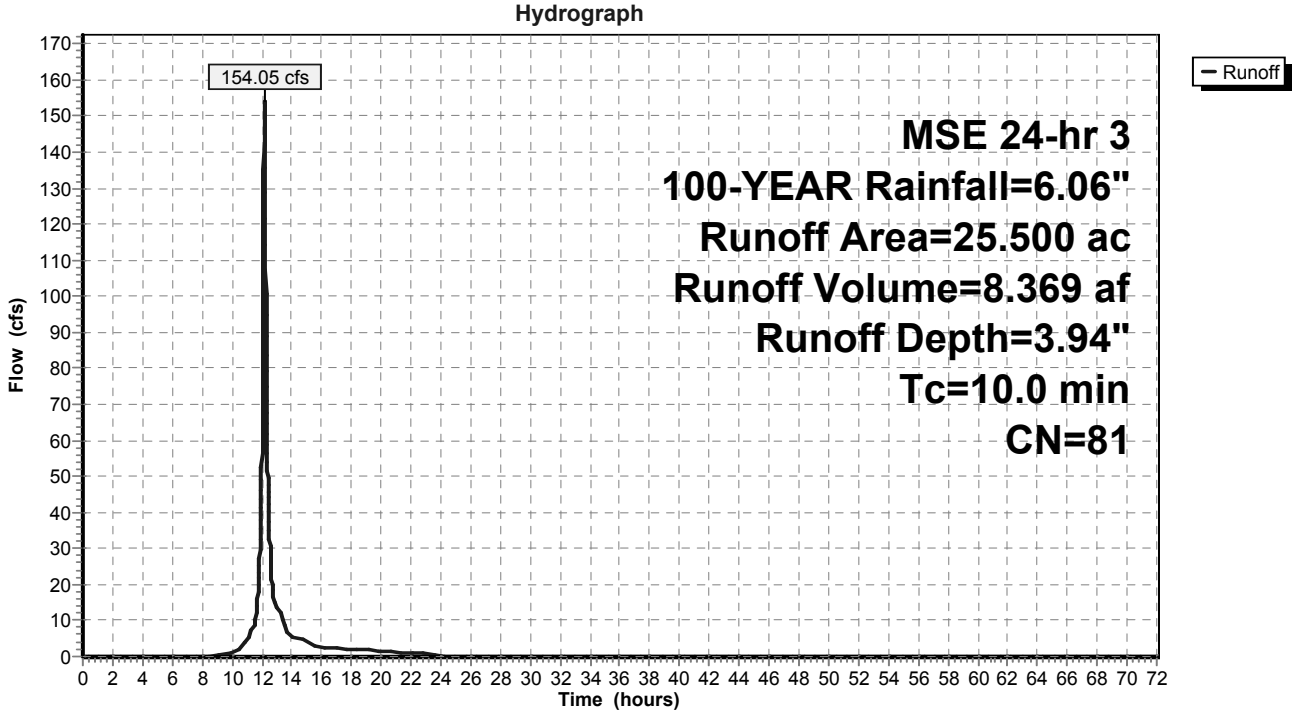
Runoff = 154.05 cfs @ 12.17 hrs, Volume= 8.369 af, Depth= 3.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.06"

	Area (ac)	CN	Description
*	12.800	80	SF
*	12.700	82	1/2 acre lots, 25% imp, HSG C
	25.500	81	Weighted Average
	22.325		87.55% Pervious Area
	3.175		12.45% Impervious Area

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

Subcatchment PR-1: AREA PR-1



Summary for Subcatchment PR-2: AREA PR-2

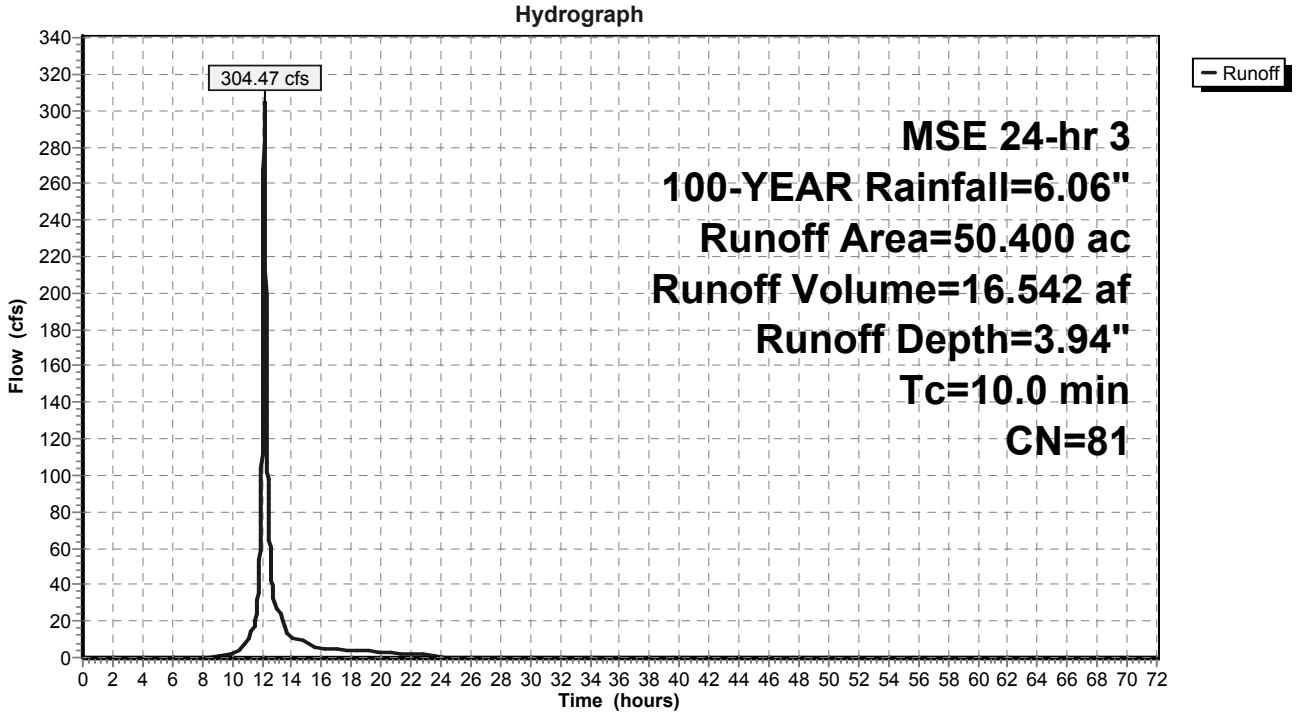
Runoff = 304.47 cfs @ 12.17 hrs, Volume= 16.542 af, Depth= 3.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.06"

	Area (ac)	CN	Description
	46.100	81	1/3 acre lots, 30% imp, HSG C
*	1.500	74	Outlot 1
*	1.400	74	Pond Outlot
*	1.400	98	Pond Water Surface
	50.400	81	Weighted Average
	35.170		69.78% Pervious Area
	15.230		30.22% Impervious Area

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

Subcatchment PR-2: AREA PR-2



Summary for Subcatchment PR-3: AREA PR-3

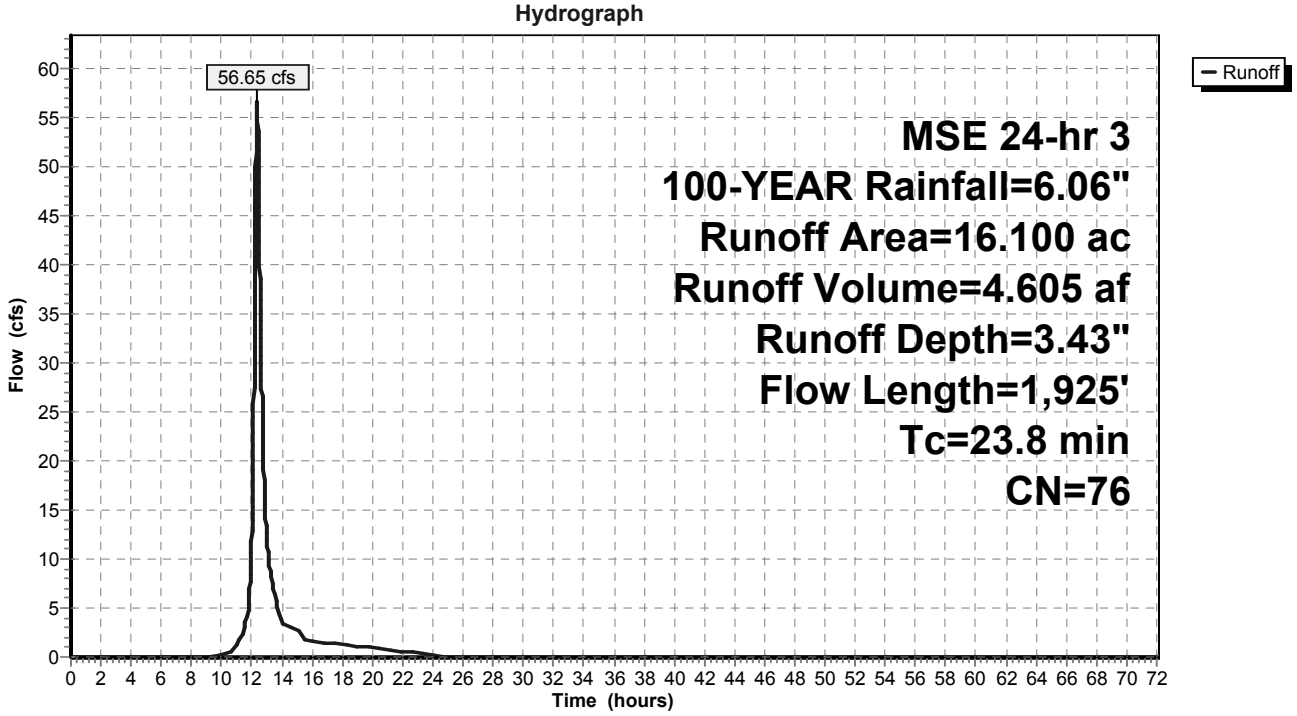
Runoff = 56.65 cfs @ 12.35 hrs, Volume= 4.605 af, Depth= 3.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.06"

Area (ac)	CN	Description
7.700	70	Woods, Good, HSG C
8.400	81	1/3 acre lots, 30% imp, HSG C
16.100	76	Weighted Average
13.580		84.35% Pervious Area
2.520		15.65% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	100	0.0400	0.14		**Sheet Flow, SHEET FLOW** Grass: Dense n= 0.240 P2= 2.57"
0.7	209	0.0861	4.72		**Shallow Concentrated Flow, SHALLOW CONCENTRATED** Unpaved Kv= 16.1 fps
9.3	963	0.0114	1.72		**Shallow Concentrated Flow, SHALLOW CONCENTRATED** Unpaved Kv= 16.1 fps
1.7	653	0.0077	6.32	19.85	**Pipe Channel, STORM SEWER** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.013
23.8	1,925	Total			

Subcatchment PR-3: AREA PR-3



Summary for Subcatchment UN-1: DEVELOPED AREA NOT DETAINED

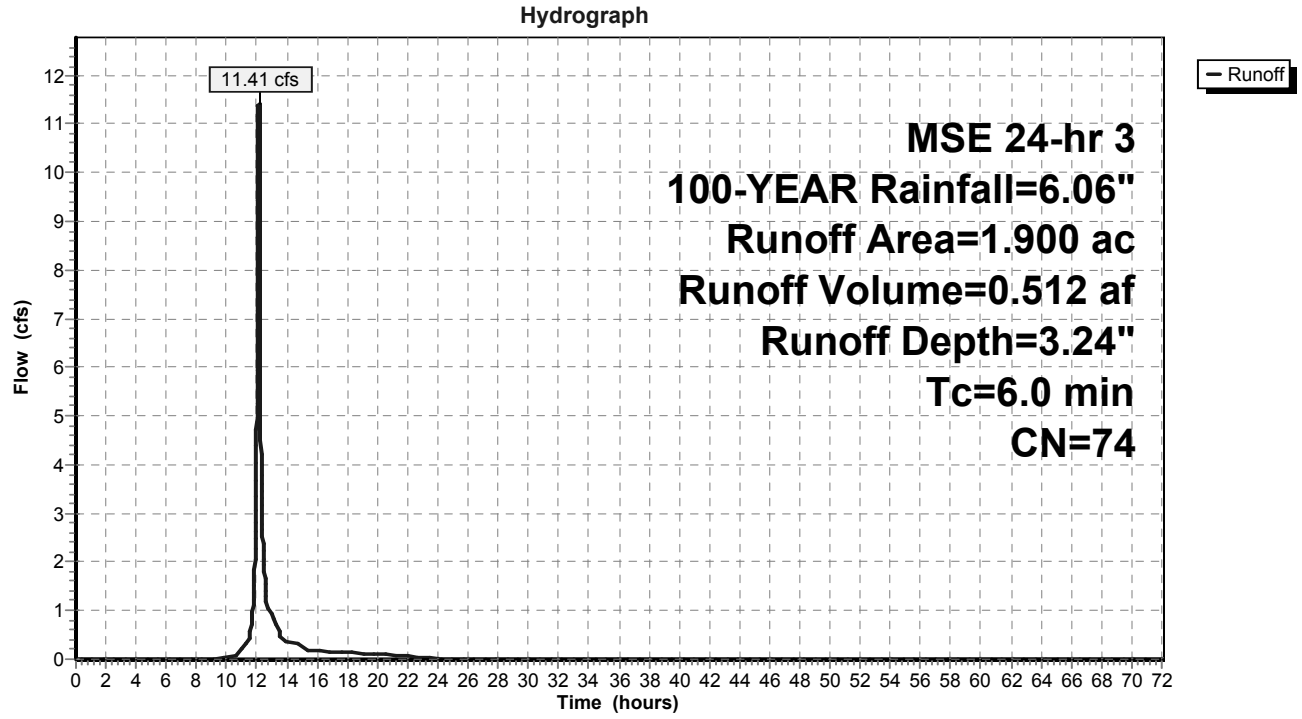
Runoff = 11.41 cfs @ 12.13 hrs, Volume= 0.512 af, Depth= 3.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.06"

Area (ac)	CN	Description
1.900	74	>75% Grass cover, Good, HSG C
1.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Subcatchment UN-1: DEVELOPED AREA NOT DETAINED



Summary for Subcatchment UN-2: DEVELOPED AREA NOT DETAINED

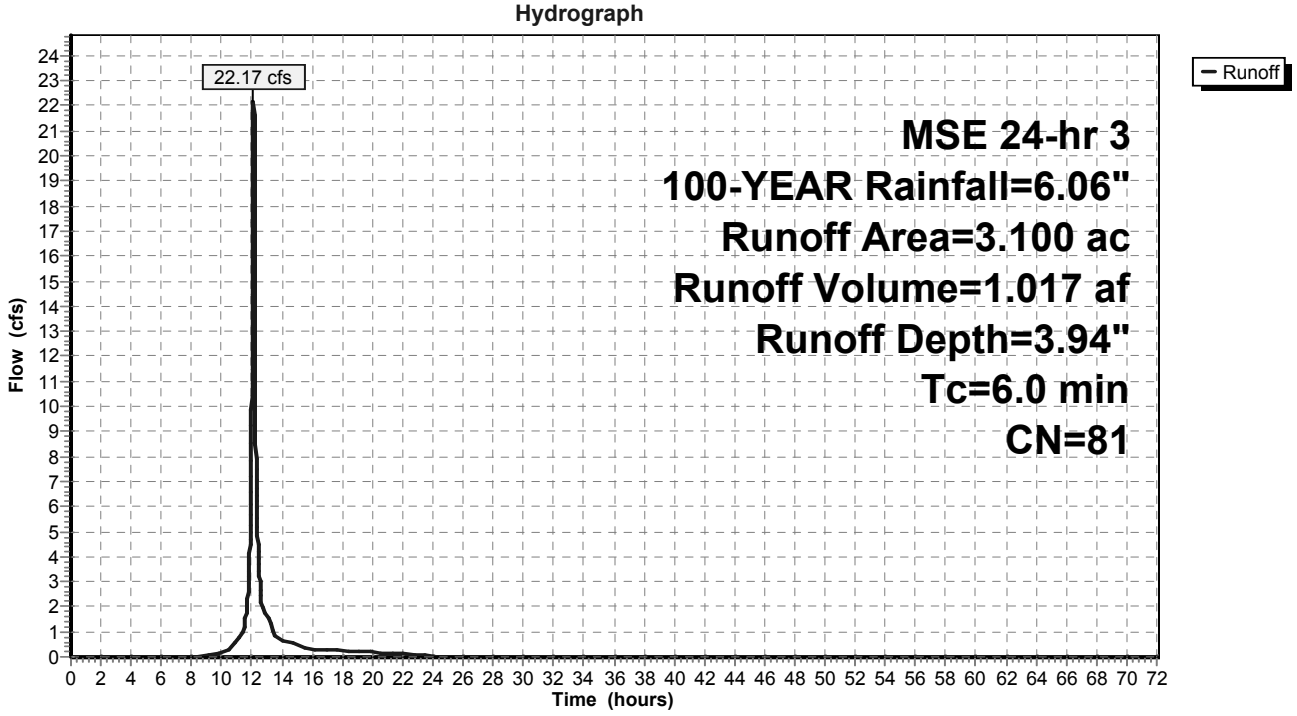
Runoff = 22.17 cfs @ 12.13 hrs, Volume= 1.017 af, Depth= 3.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.06"

Area (ac)	CN	Description
3.100	81	1/3 acre lots, 30% imp, HSG C
2.170		70.00% Pervious Area
0.930		30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, DIRECT ENTRY**

Subcatchment UN-2: DEVELOPED AREA NOT DETAINED



Summary for Pond NC-1: NORTH CREEK @ YORK

[44] Hint: Outlet device #1 is below defined storage

Inflow Area = 1,046.300 ac, 0.71% Impervious, Inflow Depth = 3.05" for 100-YEAR event
Inflow = 924.72 cfs @ 13.98 hrs, Volume= 265.765 af
Outflow = 884.39 cfs @ 14.31 hrs, Volume= 265.765 af, Atten= 4%, Lag= 19.6 min
Primary = 884.39 cfs @ 14.31 hrs, Volume= 265.765 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 769.81' @ 14.31 hrs Surf.Area= 214,362 sf Storage= 397,090 cf

Plug-Flow detention time= 3.5 min calculated for 265.765 af (100% of inflow)
Center-of-Mass det. time= 3.5 min (941.0 - 937.5)

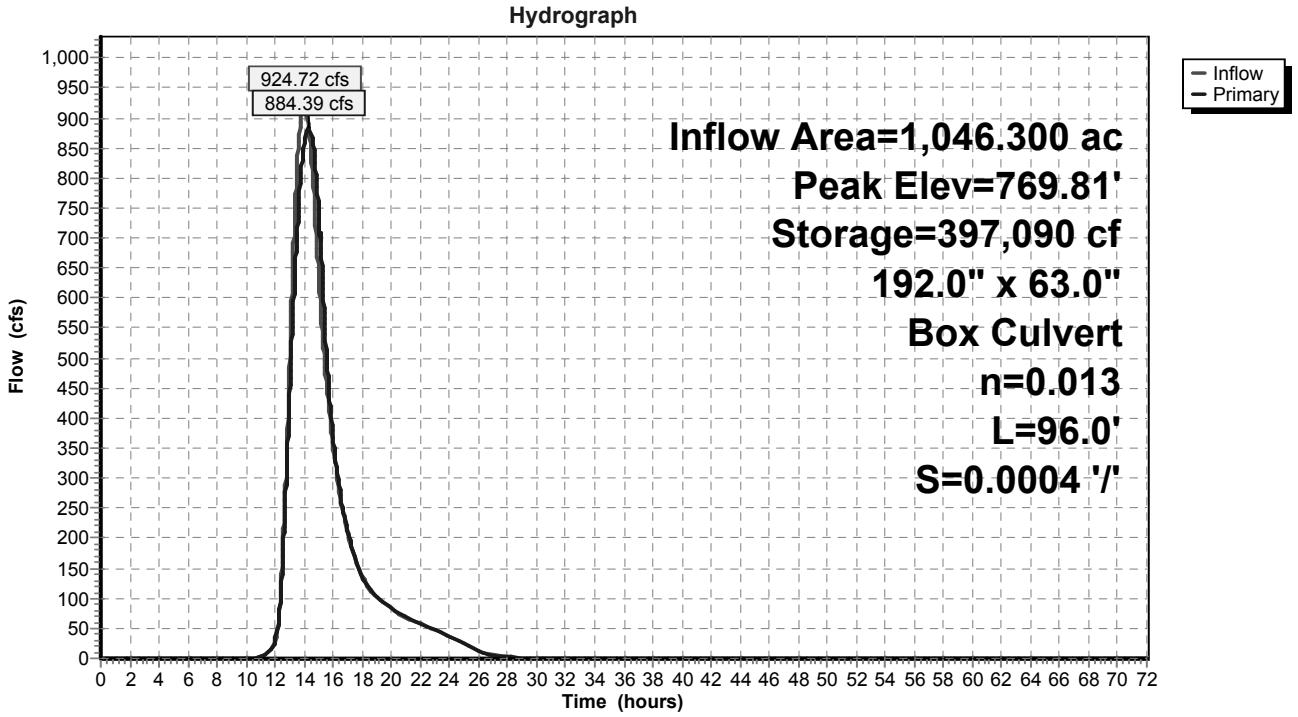
Volume	Invert	Avail.Storage	Storage Description
#1	762.30'	1,077,353 cf	**UPSTREAM STORAGE AREA (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
762.30	0	0.0	0	0	0
763.00	932	603.0	217	217	28,936
764.00	2,759	918.0	1,765	1,982	67,070
765.00	8,694	1,672.0	5,450	7,433	222,479
766.00	20,259	1,787.0	14,075	21,507	254,181
767.00	47,027	1,911.0	32,717	54,225	290,718
768.00	88,000	2,285.0	66,452	120,677	415,617
769.00	163,208	1,973.0	123,684	244,361	521,357
770.00	227,240	2,760.0	194,343	438,704	817,782
772.00	421,316	3,460.0	638,650	1,077,353	1,164,318

Device	Routing	Invert	Outlet Devices
#1	Primary	761.69'	**192.0" W x 63.0" H Box Culvert** L= 96.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 761.69' / 761.65' S= 0.0004 '/' Cc= 0.900 n= 0.013, Flow Area= 84.00 sf

Primary OutFlow Max=884.39 cfs @ 14.31 hrs HW=769.81' TW=763.63' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 884.39 cfs @ 10.53 fps)

Pond NC-1: NORTH CREEK @ YORK



Summary for Pond NC-2: NORTH CREEK @ 45

Inflow Area = 1,237.100 ac, 3.22% Impervious, Inflow Depth = 3.13" for 100-YEAR event
Inflow = 958.34 cfs @ 14.23 hrs, Volume= 322.583 af
Outflow = 886.19 cfs @ 14.75 hrs, Volume= 322.583 af, Atten= 8%, Lag= 31.3 min
Primary = 886.19 cfs @ 14.75 hrs, Volume= 322.583 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 764.00' @ 14.75 hrs Surf.Area= 280,846 sf Storage= 613,287 cf

Plug-Flow detention time= 4.8 min calculated for 322.538 af (100% of inflow)
Center-of-Mass det. time= 4.8 min (955.0 - 950.2)

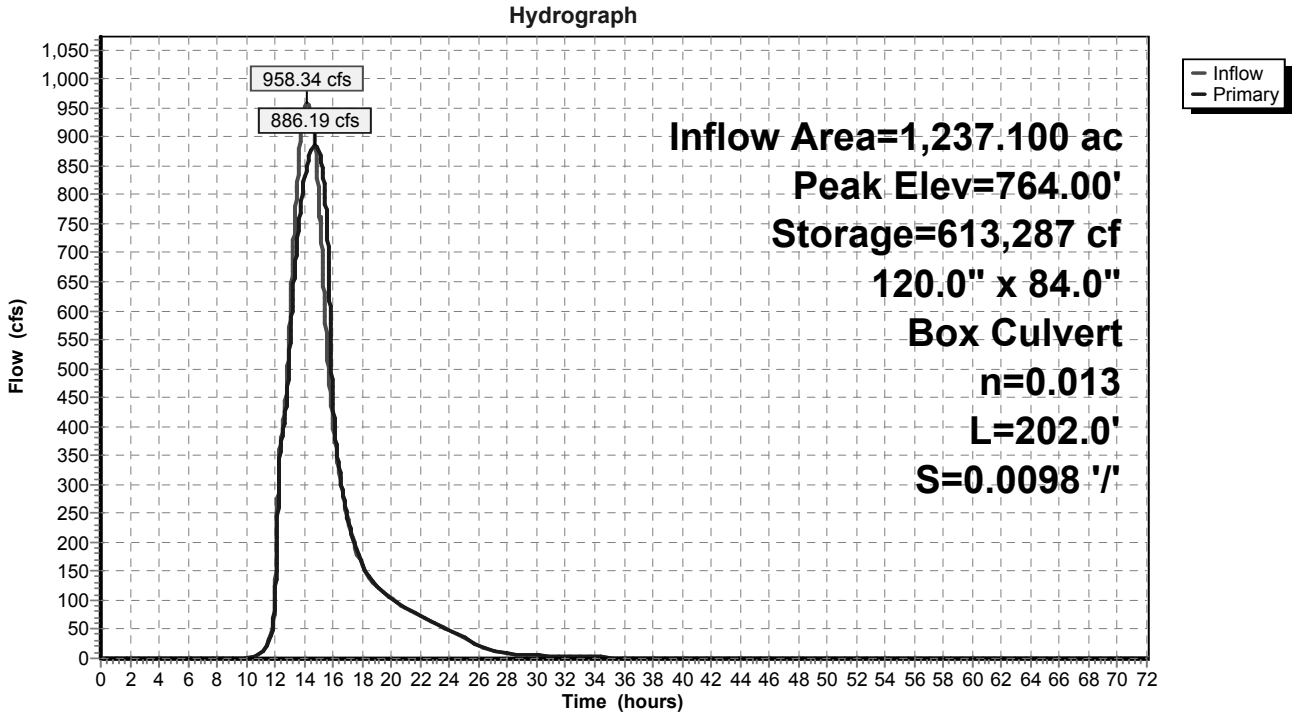
Volume	Invert	Avail.Storage	Storage Description
#1	753.44'	1,242,057 cf	**ACTIVE STORAGE VOLUME (Irregular)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
753.44	0	0.0	0	0	0
754.00	581	145.0	108	108	1,674
755.00	1,370	268.0	948	1,056	5,721
756.00	2,048	730.0	1,698	2,754	42,416
757.00	5,733	1,393.0	3,736	6,490	154,430
758.00	13,083	1,825.0	9,159	15,649	265,069
759.00	27,851	1,986.0	20,008	35,656	313,932
760.00	47,111	1,975.0	37,062	72,718	317,925
761.00	74,209	3,753.0	60,149	132,867	1,128,378
762.00	117,171	4,712.0	94,876	227,743	1,774,396
763.00	188,304	5,439.0	151,338	379,081	2,361,682
764.00	280,708	6,208.0	232,974	612,055	3,074,445
765.00	314,048	4,703.0	297,222	909,277	4,381,203
766.00	351,870	4,619.0	332,780	1,242,057	4,443,690

Device	Routing	Invert	Outlet Devices
#1	Primary	753.44'	**120.0" W x 84.0" H Box BOX CULVERT** L= 202.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 753.44' / 751.47' S= 0.0098 '/' Cc= 0.900 n= 0.013 Concrete, trowel finish, Flow Area= 70.00 sf

Primary OutFlow Max=886.19 cfs @ 14.75 hrs HW=764.00' (Free Discharge)
1=BOX CULVERT (Inlet Controls 886.19 cfs @ 12.66 fps)

Pond NC-2: NORTH CREEK @ 45



Summary for Pond P-1: POND 1

Inflow Area = 46.700 ac, 9.80% Impervious, Inflow Depth = 3.58" for 100-YEAR event
Inflow = 226.22 cfs @ 12.19 hrs, Volume= 13.943 af
Outflow = 11.09 cfs @ 13.72 hrs, Volume= 13.829 af, Atten= 95%, Lag= 92.0 min
Primary = 11.09 cfs @ 13.72 hrs, Volume= 13.829 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 768.40' @ 13.72 hrs Surf.Area= 89,521 sf Storage= 401,423 cf

Plug-Flow detention time= 470.8 min calculated for 13.829 af (99% of inflow)
Center-of-Mass det. time= 465.8 min (1,268.9 - 803.1)

Volume	Invert	Avail.Storage	Storage Description
#1	763.00'	551,935 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

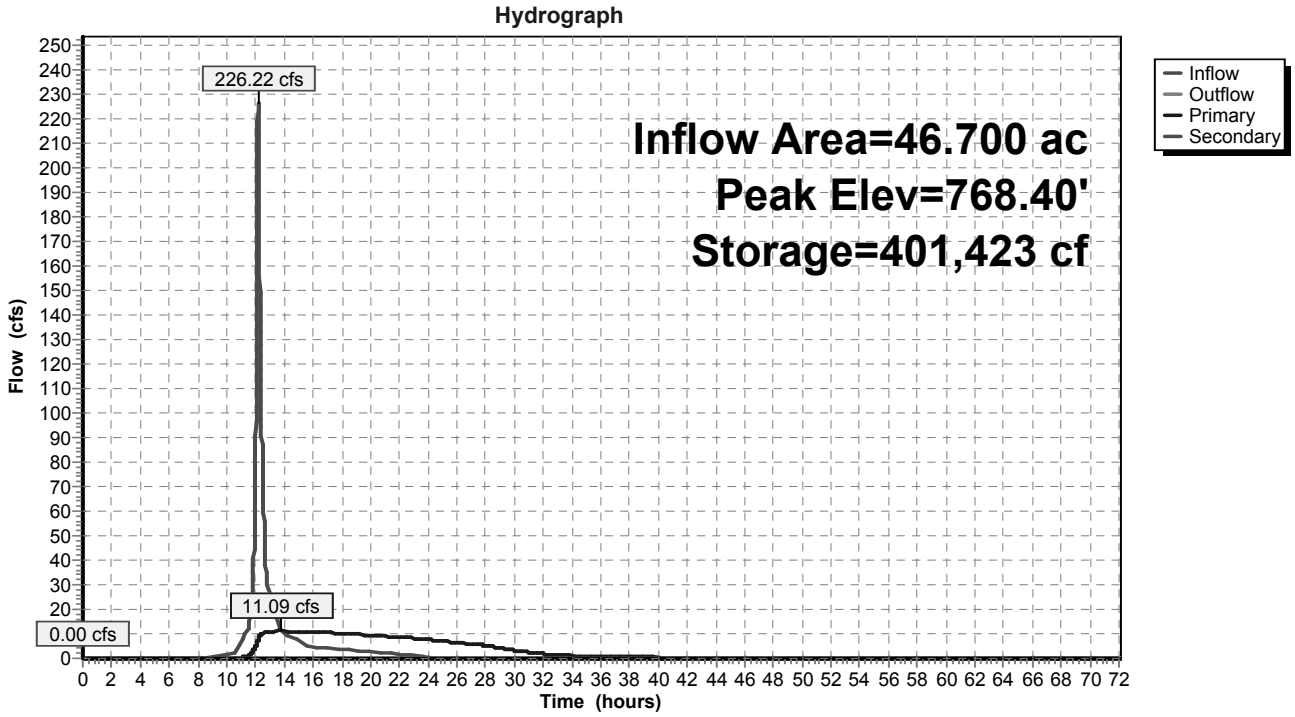
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
763.00	59,577	0	0
764.00	64,896	62,237	62,237
765.00	70,316	67,606	129,843
766.00	75,836	73,076	202,919
767.00	81,457	78,647	281,565
768.00	87,179	84,318	365,883
769.00	93,001	90,090	455,973
770.00	98,923	95,962	551,935

Device	Routing	Invert	Outlet Devices
#1	Primary	763.00'	**15.0" Round CULVERT** L= 110.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 763.00' / 762.00' S= 0.0091 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Secondary	769.00'	**50.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=11.09 cfs @ 13.72 hrs HW=768.40' TW=0.00' (Dynamic Tailwater)
↑—**1=CULVERT** (Barrel Controls 11.09 cfs @ 9.03 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=763.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P-1: POND 1



Summary for Pond P-2: POND 2

Inflow Area = 88.100 ac, 20.15% Impervious, Inflow Depth = 3.58" for 100-YEAR event
Inflow = 340.63 cfs @ 12.18 hrs, Volume= 26.281 af
Outflow = 90.18 cfs @ 12.60 hrs, Volume= 26.163 af, Atten= 74%, Lag= 25.5 min
Primary = 90.18 cfs @ 12.60 hrs, Volume= 26.163 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 765.58' @ 12.60 hrs Surf.Area= 109,367 sf Storage= 423,959 cf

Plug-Flow detention time= 146.4 min calculated for 26.159 af (100% of inflow)
Center-of-Mass det. time= 143.9 min (964.1 - 820.3)

Volume	Invert	Avail.Storage	Storage Description
#1	760.00'	613,278 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

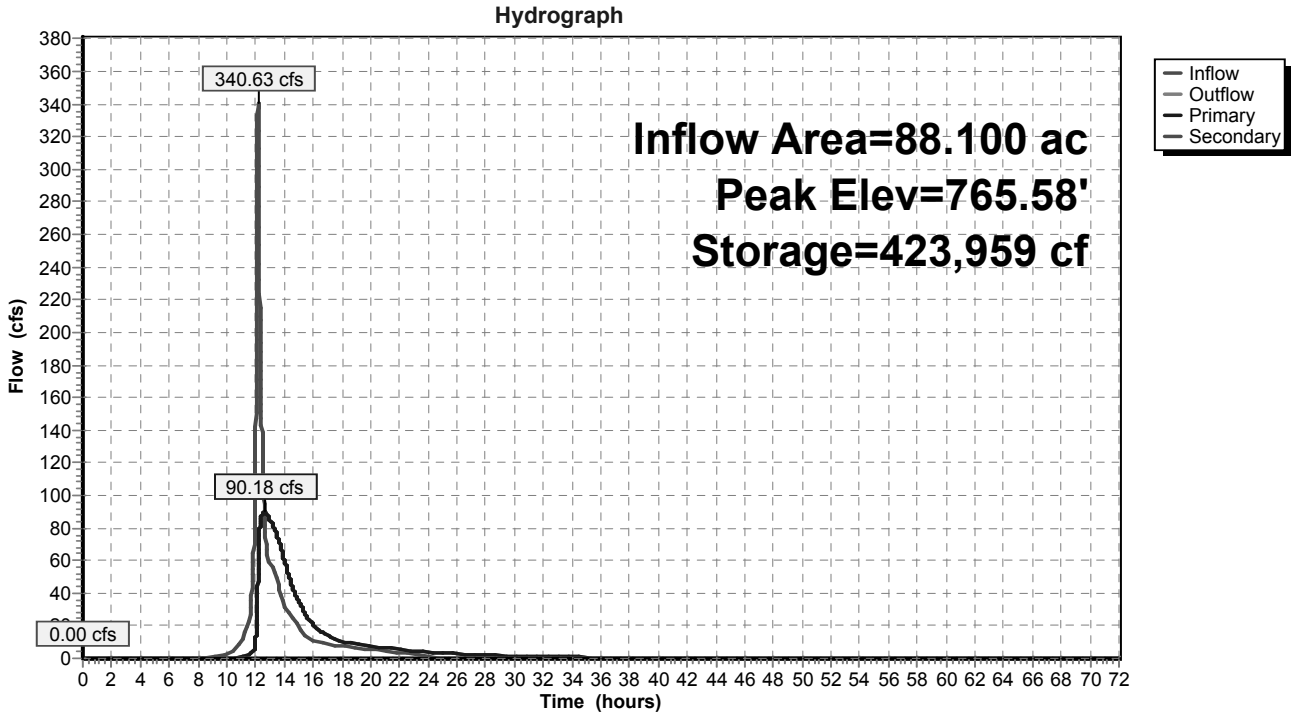
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
760.00	54,486	0	0
761.00	64,778	59,632	59,632
762.00	69,845	67,312	126,944
763.00	75,397	72,621	199,565
764.00	81,523	78,460	278,025
765.00	92,446	86,985	365,009
766.00	121,411	106,929	471,938
767.00	161,270	141,341	613,278

Device	Routing	Invert	Outlet Devices
#1	Primary	760.00'	**12.0" Round Culvert** L= 146.2' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 760.00' / 759.00' S= 0.0068 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf
#2	Primary	761.10'	**48.0" Round Culvert** L= 141.4' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 761.10' / 759.00' S= 0.0149 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 12.57 sf
#3	Secondary	766.00'	**50.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=90.18 cfs @ 12.60 hrs HW=765.58' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 6.04 cfs @ 7.68 fps)
└─**2=Culvert** (Inlet Controls 84.15 cfs @ 6.70 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=760.00' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P-2: POND 2

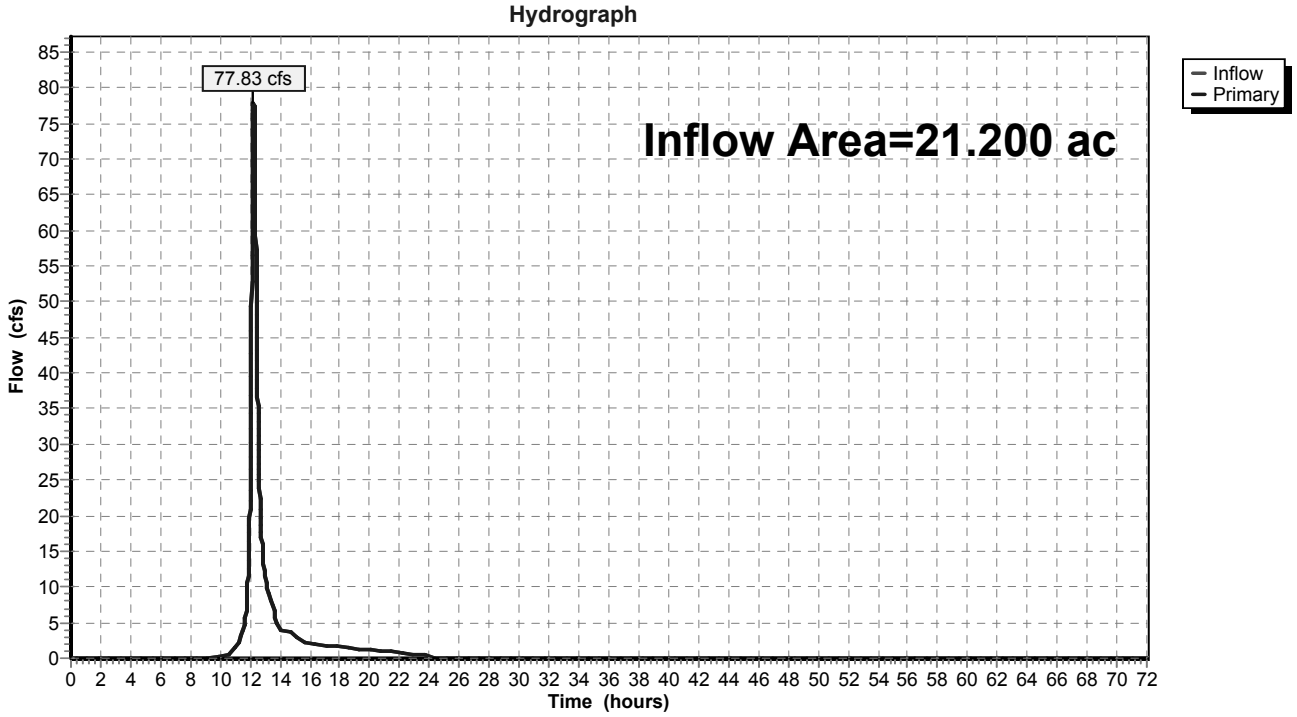


Summary for Link 2L: OFFSITE (3,4,6)

Inflow Area = 21.200 ac, 6.60% Impervious, Inflow Depth = 3.16" for 100-YEAR event
Inflow = 77.83 cfs @ 12.23 hrs, Volume= 5.574 af
Primary = 77.83 cfs @ 12.23 hrs, Volume= 5.574 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 2L: OFFSITE (3,4,6)

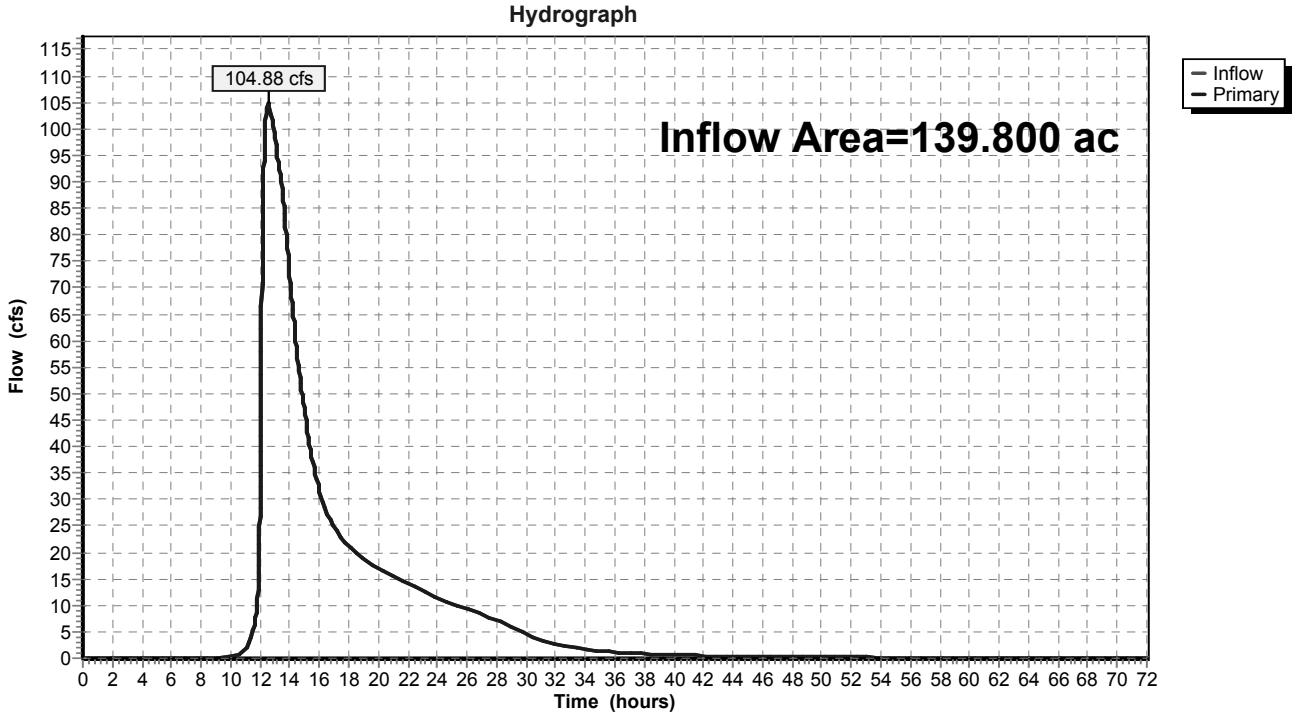


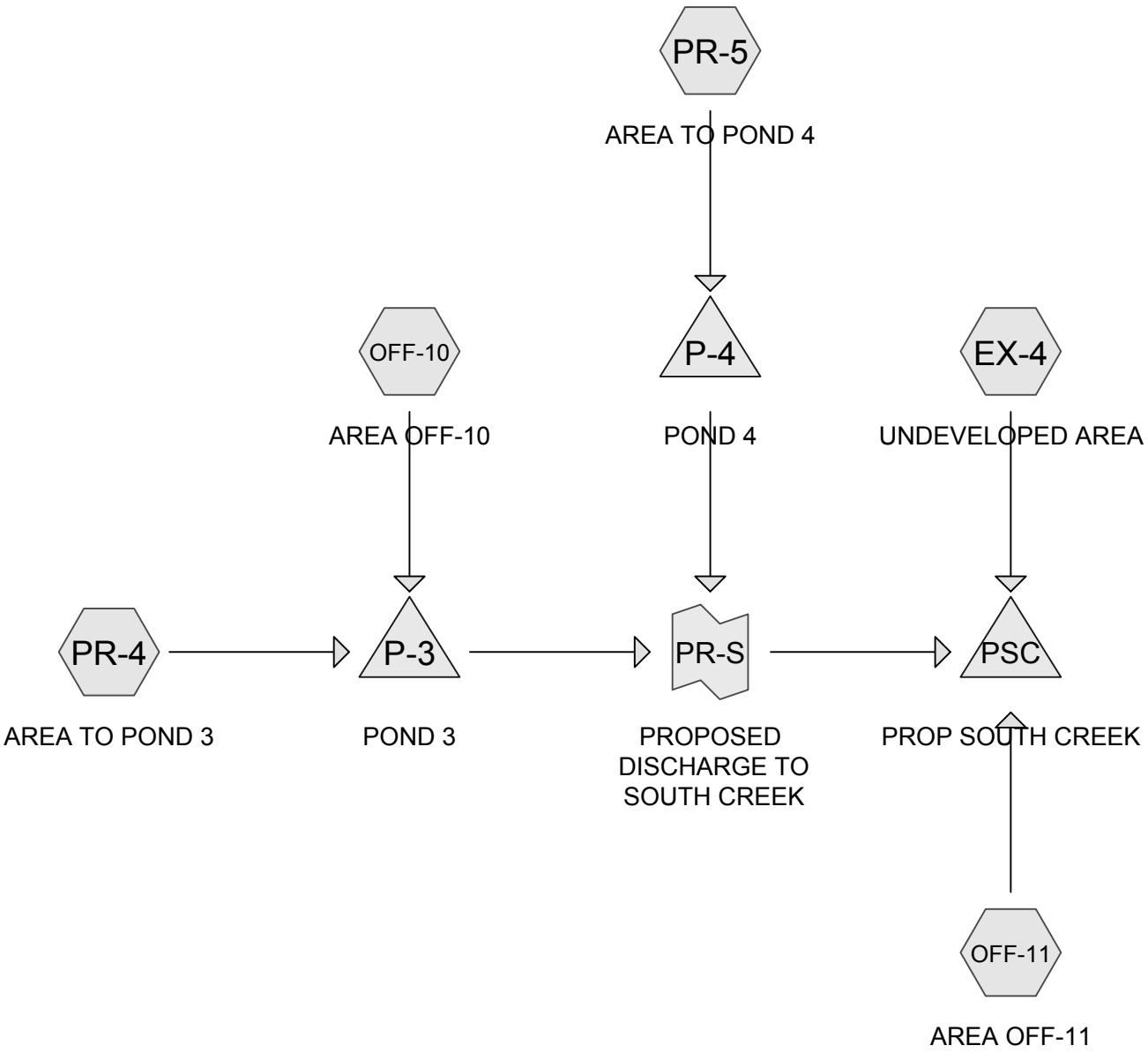
Summary for Link PR-N: PROPOSED DISCHARGE TO NORTH CREEK

Inflow Area = 139.800 ac, 16.63% Impervious, Inflow Depth > 3.56" for 100-YEAR event
Inflow = 104.88 cfs @ 12.54 hrs, Volume= 41.522 af
Primary = 104.88 cfs @ 12.54 hrs, Volume= 41.522 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link PR-N: PROPOSED DISCHARGE TO NORTH CREEK





Subcat Reach Pond Link

Routing Diagram for 959.00-WI_HCAD_CANOPY HILL SOUTH
Prepared by Pinnacle Engineering Group, Printed 5/3/2021

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
26.300	81	1/3 ACRE RESIDENTIAL LOTS (PR-4, PR-5)
17.000	83	1/4 acre lots, 38% imp, HSG C (OFF-11)
2.000	86	FUTURE ASSISTED SENIOR LIVING (PR-5)
121.000	86	INSTITUTIONAL - 50% OPEN SPACE (OFF-11)
348.600	71	Meadow, non-grazed, HSG C (OFF-11)
1.300	74	OUTLOT GREENSPACE (PR-4)
1.700	74	POND OUTLOT (PR-5)
2.700	98	POND WATER SURFACE (PR-4, PR-5)
31.500	91	Urban industrial, 72% imp, HSG C (OFF-11)
0.400	70	WOODS (PR-5)
62.500	70	Woods, Good, HSG C (EX-4, OFF-10, OFF-11, PR-4)

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatc Number
0.000	0.000	0.000	0.000	26.300	26.300	1/3 ACRE RESIDENTIAL LOTS	
0.000	0.000	17.000	0.000	0.000	17.000	1/4 acre lots, 38% imp	
0.000	0.000	0.000	0.000	2.000	2.000	FUTURE ASSISTED SENIOR LIVING	
0.000	0.000	0.000	0.000	121.000	121.000	INSTITUTIONAL - 50% OPEN SPACE	
0.000	0.000	348.600	0.000	0.000	348.600	Meadow, non-grazed	
0.000	0.000	0.000	0.000	1.300	1.300	OUTLOT GREENSPACE	
0.000	0.000	0.000	0.000	1.700	1.700	POND OUTLOT	
0.000	0.000	0.000	0.000	2.700	2.700	POND WATER SURFACE	
0.000	0.000	31.500	0.000	0.000	31.500	Urban industrial, 72% imp	
0.000	0.000	0.000	0.000	0.400	0.400	WOODS	
0.000	0.000	62.500	0.000	0.000	62.500	Woods, Good	

Summary for Subcatchment EX-4: UNDEVELOPED AREA

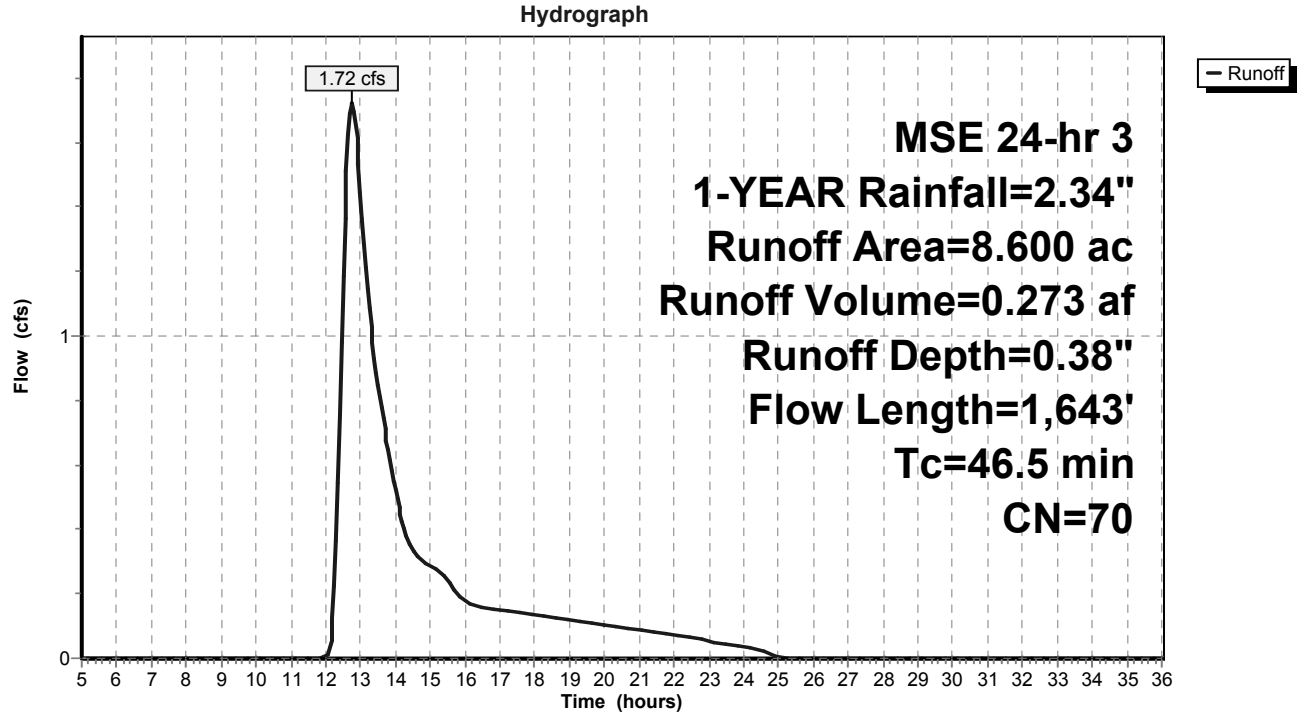
Runoff = 1.72 cfs @ 12.77 hrs, Volume= 0.273 af, Depth= 0.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-YEAR Rainfall=2.34"

Area (ac)	CN	Description
8.600	70	Woods, Good, HSG C
8.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.0	300	0.0500	0.13		**Sheet Flow, SEGMENT 1** Woods: Light underbrush n= 0.400 P2= 2.57"
1.1	131	0.1700	2.06		**Shallow Concentrated Flow, SEGMENT 2** Woodland Kv= 5.0 fps
5.4	1,212	0.0070	3.73	24.87	**Parabolic Channel, SEGMENT 3** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.025
46.5	1,643	Total			

Subcatchment EX-4: UNDEVELOPED AREA



Summary for Subcatchment OFF-10: AREA OFF-10

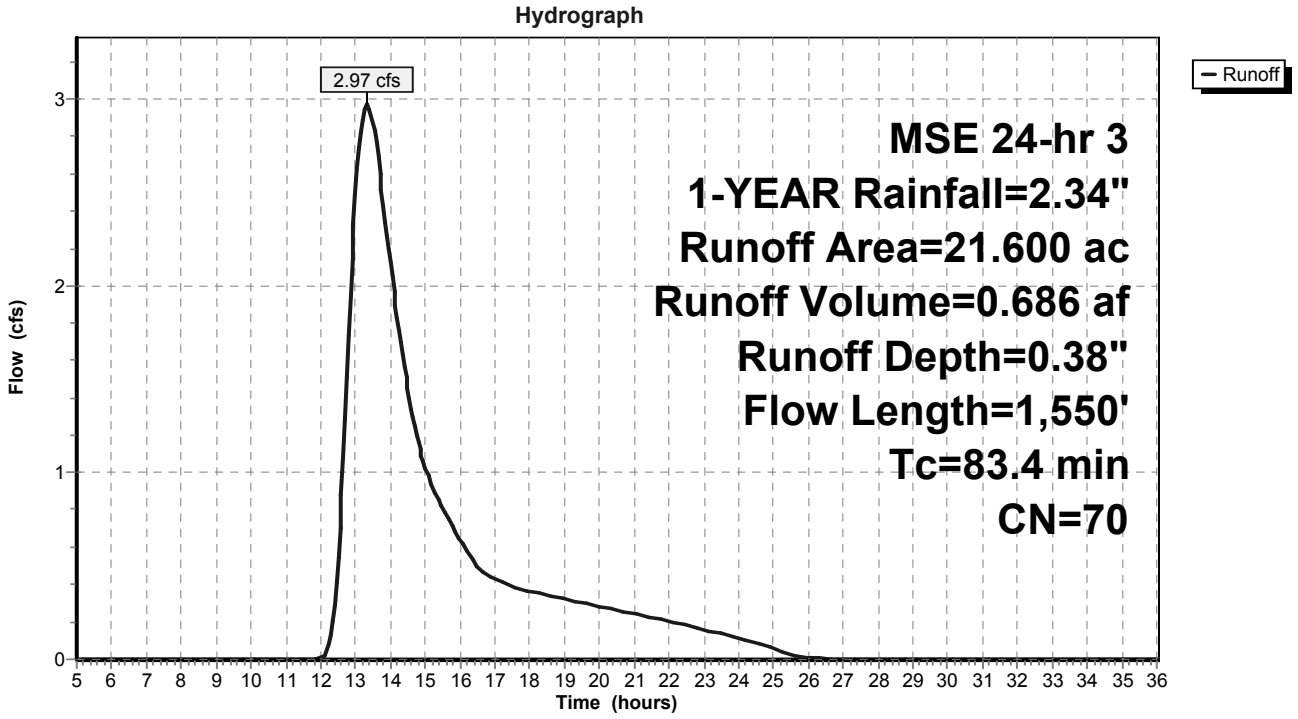
Runoff = 2.97 cfs @ 13.34 hrs, Volume= 0.686 af, Depth= 0.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-YEAR Rainfall=2.34"

Area (ac)	CN	Description
21.600	70	Woods, Good, HSG C
21.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
56.0	250	0.0150	0.07		**Sheet Flow, SHEET** Woods: Light underbrush n= 0.400 P2= 2.57"
27.4	1,300	0.0250	0.79		**Shallow Concentrated Flow, SC FLOW** Woodland Kv= 5.0 fps
83.4	1,550	Total			

Subcatchment OFF-10: AREA OFF-10



Summary for Subcatchment OFF-11: AREA OFF-11

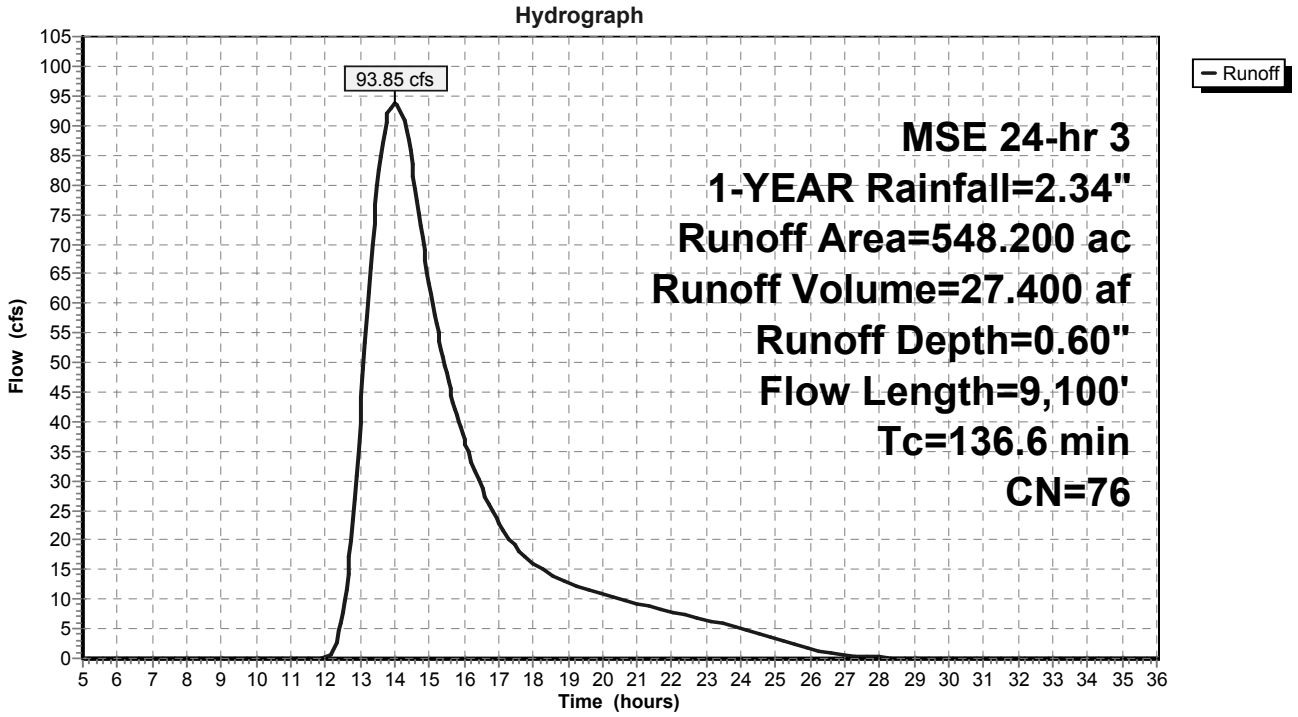
Runoff = 93.85 cfs @ 14.01 hrs, Volume= 27.400 af, Depth= 0.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-YEAR Rainfall=2.34"

	Area (ac)	CN	Description
*	121.000	86	INSTITUTIONAL - 50% OPEN SPACE
	17.000	83	1/4 acre lots, 38% imp, HSG C
	31.500	91	Urban industrial, 72% imp, HSG C
	348.600	71	Meadow, non-grazed, HSG C
	30.100	70	Woods, Good, HSG C
	548.200	76	Weighted Average
	519.060		94.68% Pervious Area
	29.140		5.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.3	250	0.0300	0.22		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 2.57"
21.9	1,650	0.0070	1.25		**Shallow Concentrated Flow, SC FLOW** Grassed Waterway Kv= 15.0 fps
88.3	5,300	0.0100	1.00		**Shallow Concentrated Flow, SC FLOW - FIELD** Nearly Bare & Untilled Kv= 10.0 fps
7.1	1,900	0.0100	4.46	29.73	**Parabolic Channel, DITCH FLOW** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.025
136.6	9,100	Total			

Subcatchment OFF-11: AREA OFF-11



Summary for Subcatchment PR-4: AREA TO POND 3

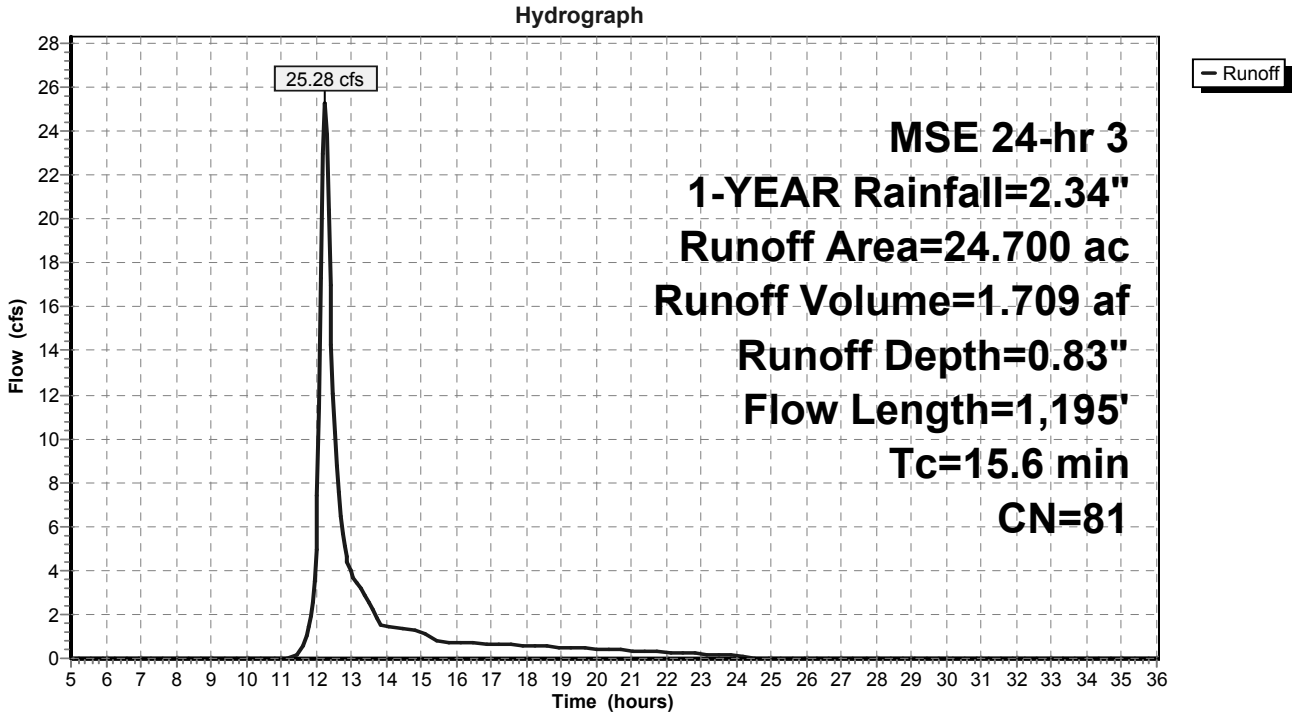
Runoff = 25.28 cfs @ 12.26 hrs, Volume= 1.709 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-YEAR Rainfall=2.34"

	Area (ac)	CN	Description
*	19.400	81	1/3 ACRE RESIDENTIAL LOTS
*	1.800	98	POND WATER SURFACE
*	1.300	74	OUTLOT GREENSPACE
	2.200	70	Woods, Good, HSG C
	24.700	81	Weighted Average
	22.900		92.71% Pervious Area
	1.800		7.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0250	0.17		**Sheet Flow, SEGMENT 1** Grass: Short n= 0.150 P2= 2.57"
1.2	203	0.0310	2.83		**Shallow Concentrated Flow, SEGMENT 2** Unpaved Kv= 16.1 fps
1.6	198	0.0100	2.03		**Shallow Concentrated Flow, SEGMENT 3** Paved Kv= 20.3 fps
2.8	694	0.0050	4.20	7.43	**Pipe Channel, SEGMENT 4** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
15.6	1,195	Total			

Subcatchment PR-4: AREA TO POND 3



Summary for Subcatchment PR-5: AREA TO POND 4

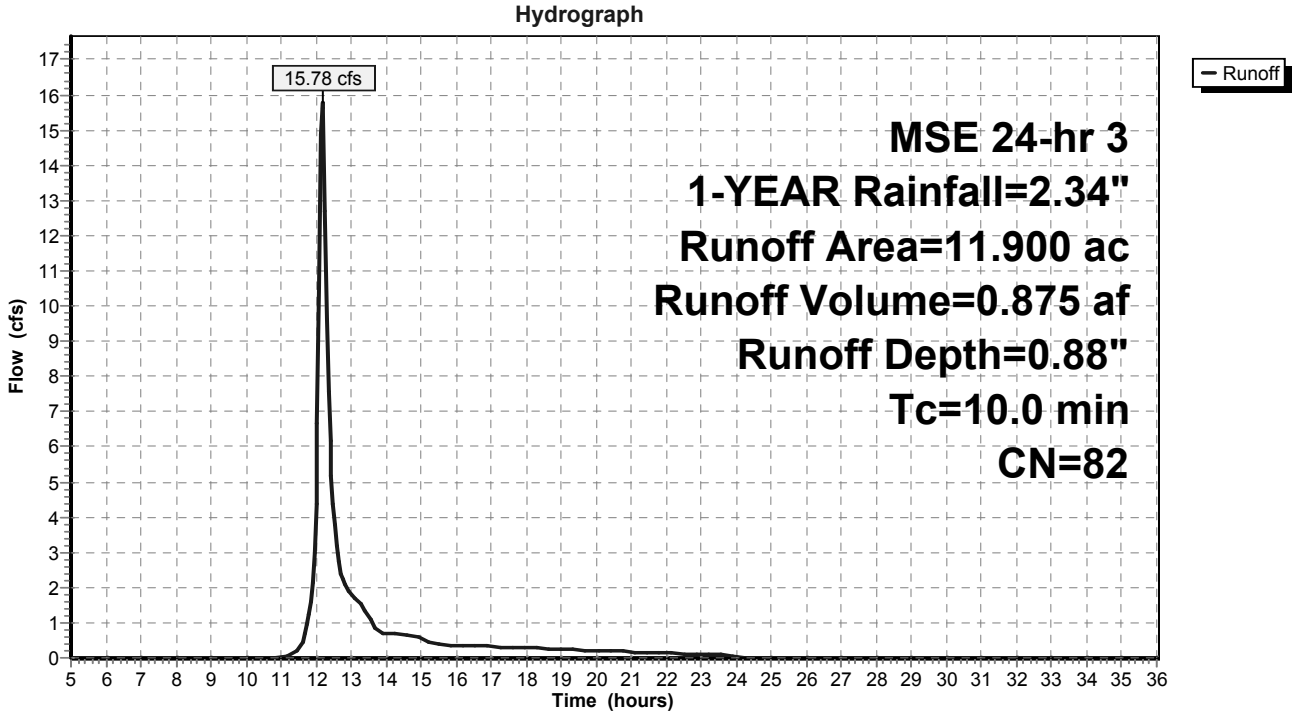
Runoff = 15.78 cfs @ 12.19 hrs, Volume= 0.875 af, Depth= 0.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-YEAR Rainfall=2.34"

	Area (ac)	CN	Description
*	2.000	86	FUTURE ASSISTED SENIOR LIVING
*	1.700	74	POND OUTLOT
*	0.900	98	POND WATER SURFACE
*	6.900	81	1/3 ACRE RESIDENTIAL LOTS
*	0.400	70	WOODS
	11.900	82	Weighted Average
	11.000		92.44% Pervious Area
	0.900		7.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, DIRECT ENTRY**

Subcatchment PR-5: AREA TO POND 4



Summary for Pond P-3: POND 3

Inflow Area = 46.300 ac, 3.89% Impervious, Inflow Depth = 0.62" for 1-YEAR event
Inflow = 25.37 cfs @ 12.26 hrs, Volume= 2.395 af
Outflow = 2.52 cfs @ 14.73 hrs, Volume= 2.018 af, Atten= 90%, Lag= 148.5 min
Primary = 2.52 cfs @ 14.73 hrs, Volume= 2.018 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 767.66' @ 14.73 hrs Surf.Area= 81,508 sf Storage= 57,913 cf

Plug-Flow detention time= 380.9 min calculated for 2.015 af (84% of inflow)
Center-of-Mass det. time= 318.5 min (1,180.2 - 861.6)

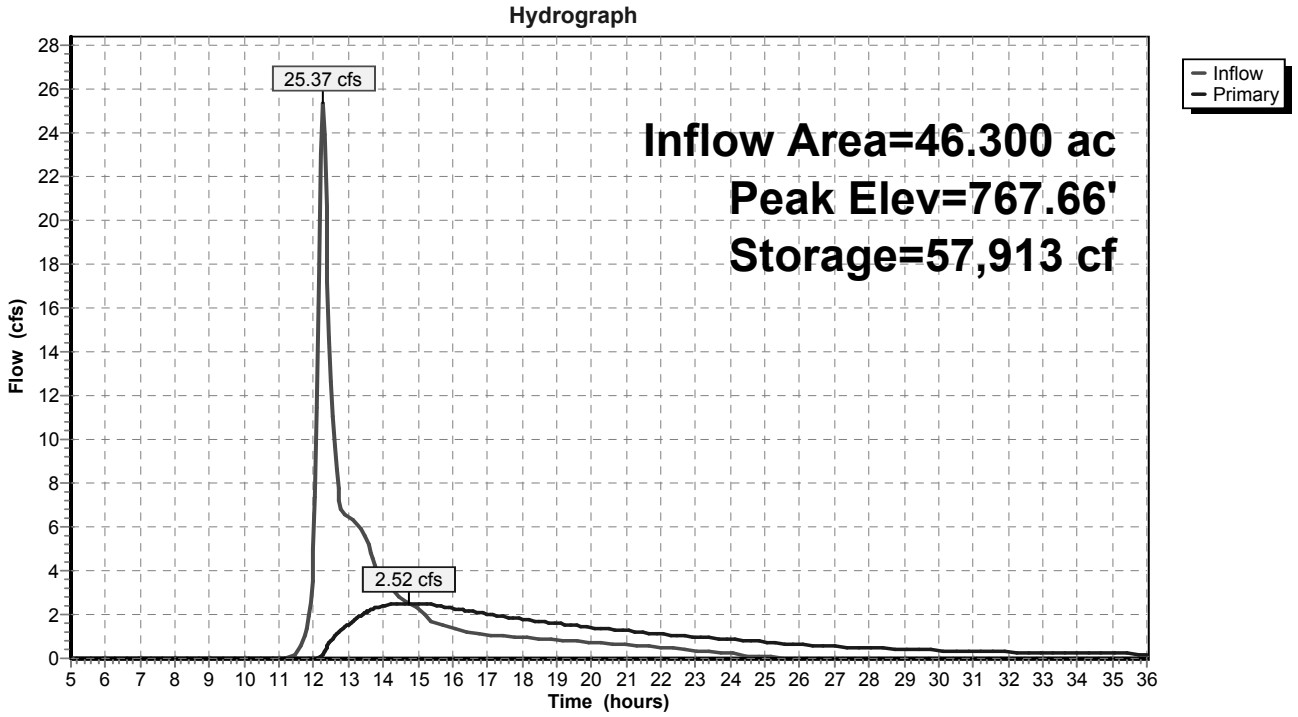
Volume	Invert	Avail.Storage	Storage Description
#1	767.00'	351,650 cf	**ACTIVE STORAGE VOLUME (Conic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
767.00	78,273	0	0	78,273
771.00	97,918	351,650	351,650	98,362

Device	Routing	Invert	Outlet Devices
#1	Primary	767.00'	**36.0" Round Culvert** L= 95.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 767.00' / 766.52' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#2	Primary	770.00'	**50.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=2.51 cfs @ 14.73 hrs HW=767.66' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 2.51 cfs @ 3.30 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond P-3: POND 3



Summary for Pond P-4: POND 4

Inflow Area = 11.900 ac, 7.56% Impervious, Inflow Depth = 0.88" for 1-YEAR event
Inflow = 15.78 cfs @ 12.19 hrs, Volume= 0.875 af
Outflow = 0.84 cfs @ 13.68 hrs, Volume= 0.716 af, Atten= 95%, Lag= 89.5 min
Primary = 0.84 cfs @ 13.68 hrs, Volume= 0.716 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 757.47' @ 13.68 hrs Surf.Area= 43,520 sf Storage= 23,674 cf

Plug-Flow detention time= 425.6 min calculated for 0.716 af (82% of inflow)
Center-of-Mass det. time= 360.1 min (1,185.2 - 825.2)

Volume	Invert	Avail.Storage	Storage Description
#1	757.00'	253,403 cf	**ACTIVE STORAGE VOLUME (Prismatic)** Listed below

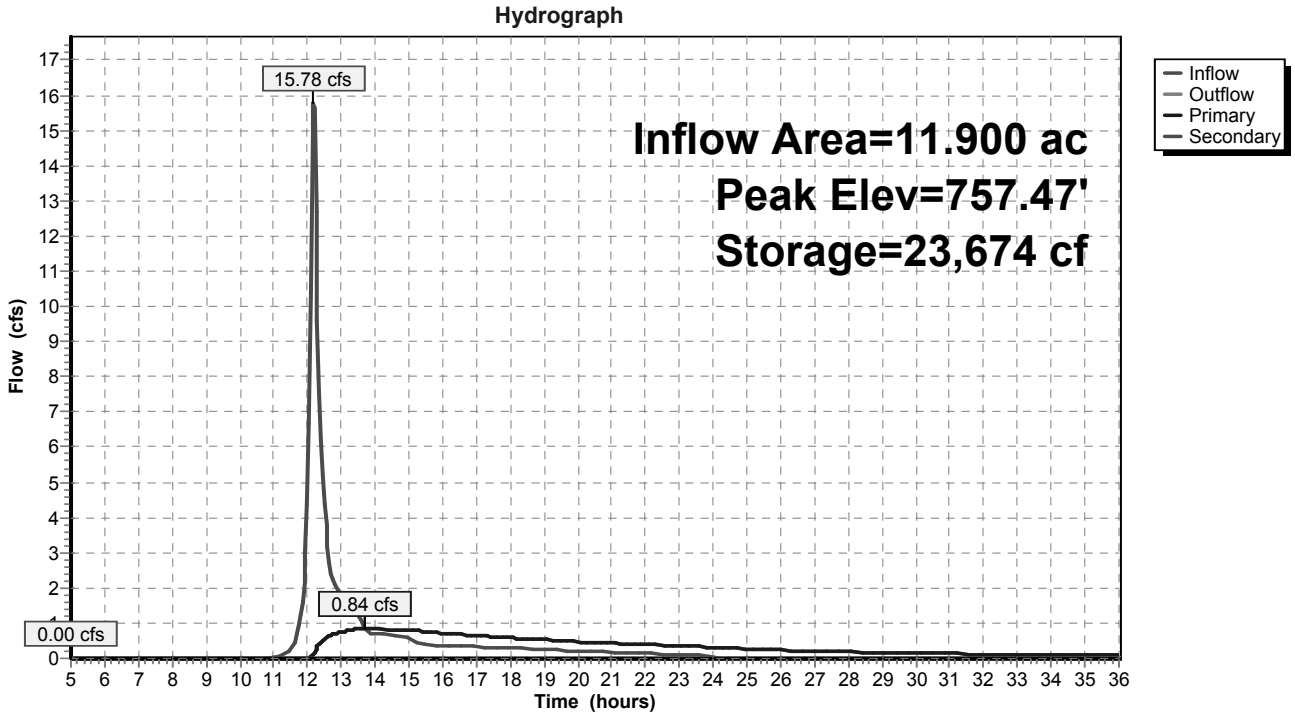
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
757.00	41,875	0	0
762.00	59,486	253,403	253,403

Device	Routing	Invert	Outlet Devices
#1	Primary	757.00'	**12.0" Round Culvert** L= 86.3' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 757.00' / 755.00' S= 0.0232 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	761.00'	**50.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.84 cfs @ 13.68 hrs HW=757.47' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.84 cfs @ 2.33 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=757.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P-4: POND 4



Summary for Pond PSC: PROP SOUTH CREEK

Inflow Area = 615.000 ac, 5.18% Impervious, Inflow Depth > 0.59" for 1-YEAR event
Inflow = 97.61 cfs @ 14.01 hrs, Volume= 30.407 af
Outflow = 97.57 cfs @ 14.05 hrs, Volume= 30.407 af, Atten= 0%, Lag= 2.6 min
Primary = 97.57 cfs @ 14.05 hrs, Volume= 30.407 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 753.55' @ 14.05 hrs Surf.Area= 5,833 sf Storage= 5,644 cf

Plug-Flow detention time= 0.5 min calculated for 30.358 af (100% of inflow)
Center-of-Mass det. time= 0.5 min (979.6 - 979.1)

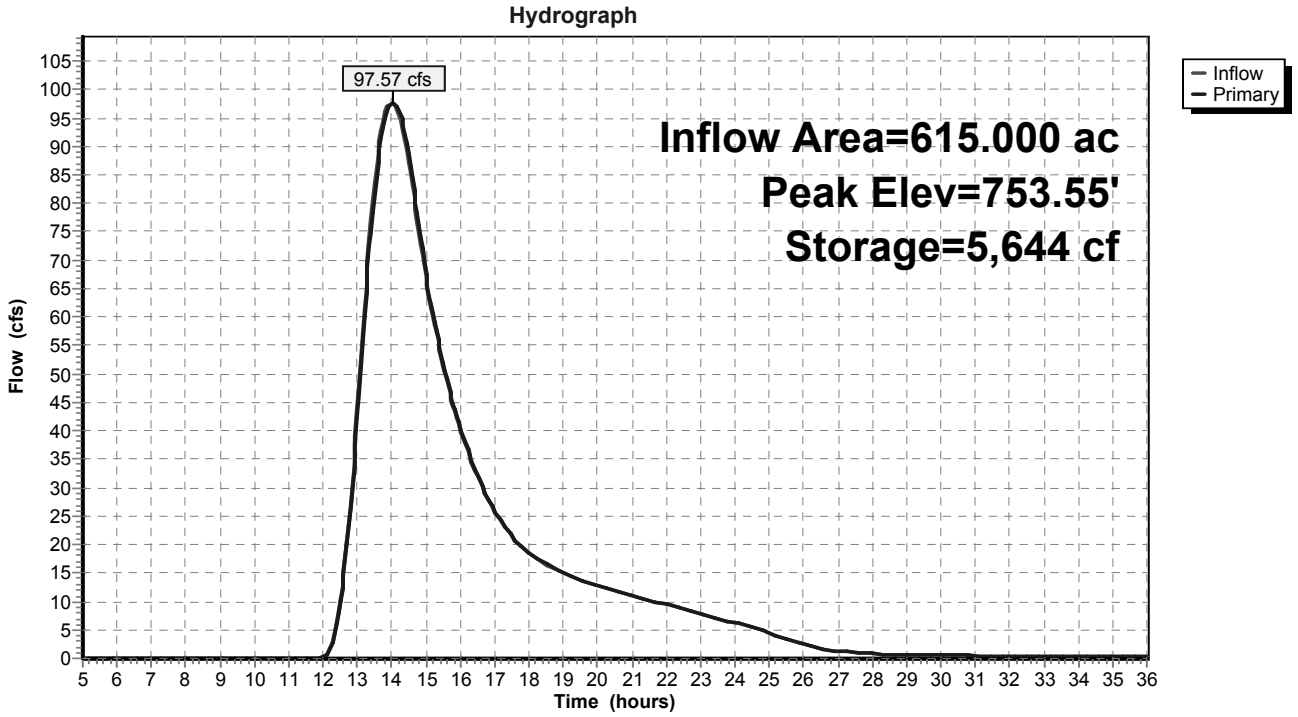
Volume	Invert	Avail.Storage	Storage Description
#1	750.60'	392,668 cf	**CULVERT STORAGE AREA (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
750.60	0	0	0
751.00	130	26	26
752.00	726	428	454
753.00	3,475	2,101	2,554
754.00	7,764	5,620	8,174
755.00	14,527	11,146	19,320
756.00	25,036	19,782	39,101
757.00	39,647	32,342	71,443
758.00	56,031	47,839	119,282
759.00	82,788	69,410	188,691
760.00	102,889	92,839	281,530
761.00	119,388	111,139	392,668

Device	Routing	Invert	Outlet Devices
#1	Primary	750.60'	**72.0" W x 72.0" H Box Culvert** L= 500.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 750.60' / 748.10' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 36.00 sf
#2	Primary	758.50'	**160.0 deg x 15.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.47 (C= 3.09)
#3	Primary	758.60'	**170.0 deg Sharp-Crested Vee/Trap Weir** Cv= 2.46 (C= 3.08)

Primary OutFlow Max=97.57 cfs @ 14.05 hrs HW=753.55' (Free Discharge)
- **1=Culvert** (Inlet Controls 97.57 cfs @ 5.51 fps)
- **2=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)
- **3=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Pond PSC: PROP SOUTH CREEK

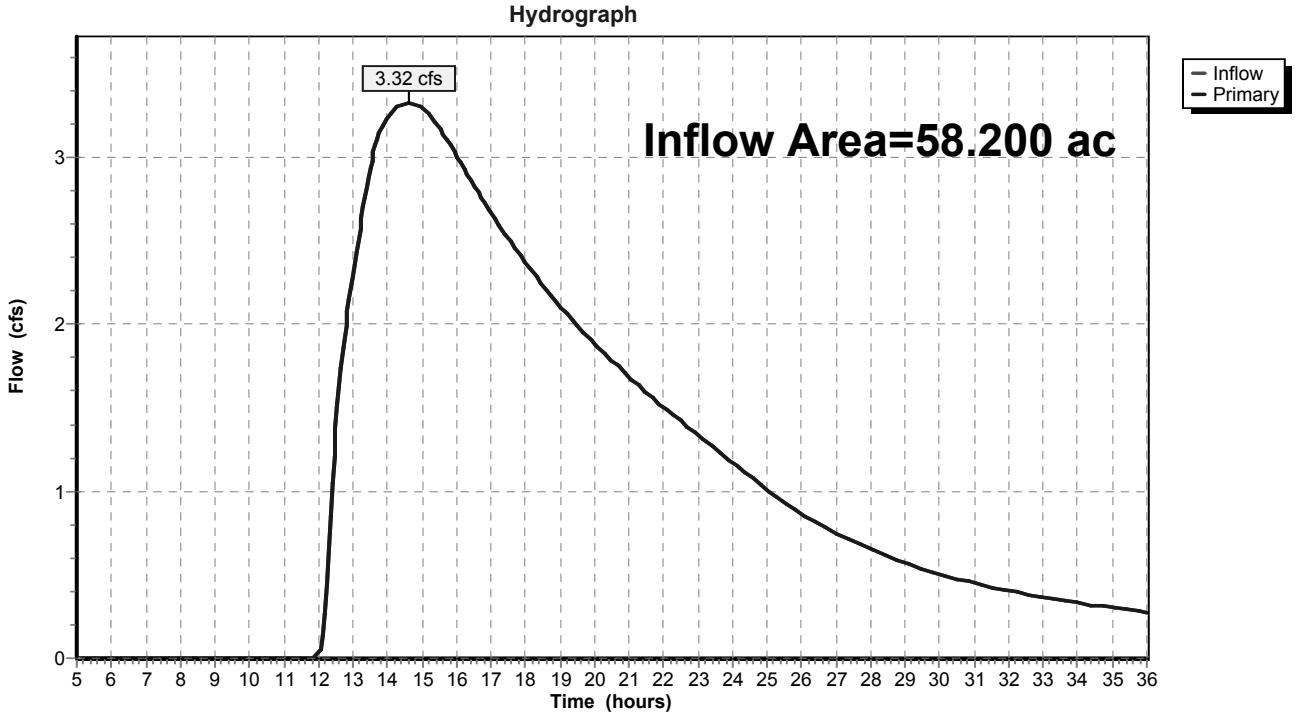


Summary for Link PR-S: PROPOSED DISCHARGE TO SOUTH CREEK

Inflow Area = 58.200 ac, 4.64% Impervious, Inflow Depth > 0.56" for 1-YEAR event
Inflow = 3.32 cfs @ 14.62 hrs, Volume= 2.734 af
Primary = 3.32 cfs @ 14.62 hrs, Volume= 2.734 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs

Link PR-S: PROPOSED DISCHARGE TO SOUTH CREEK



Summary for Subcatchment EX-4: UNDEVELOPED AREA

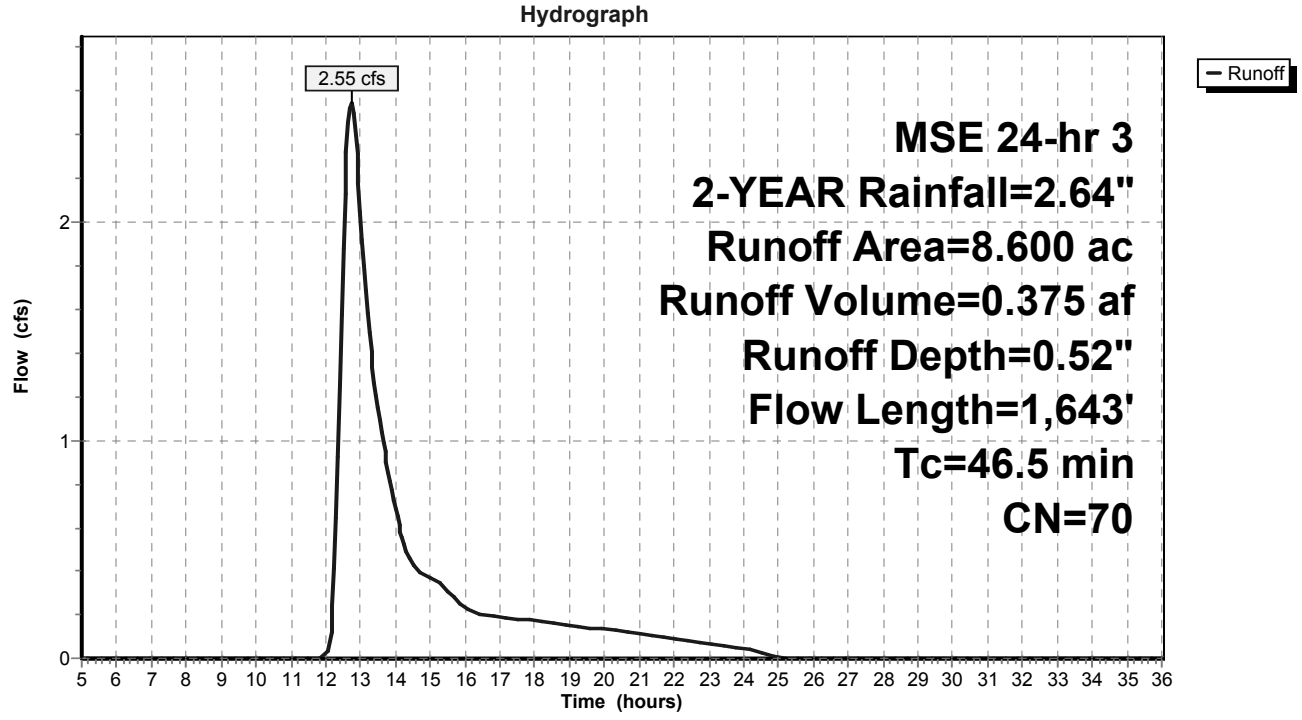
Runoff = 2.55 cfs @ 12.74 hrs, Volume= 0.375 af, Depth= 0.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-YEAR Rainfall=2.64"

Area (ac)	CN	Description
8.600	70	Woods, Good, HSG C
8.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.0	300	0.0500	0.13		**Sheet Flow, SEGMENT 1** Woods: Light underbrush n= 0.400 P2= 2.57"
1.1	131	0.1700	2.06		**Shallow Concentrated Flow, SEGMENT 2** Woodland Kv= 5.0 fps
5.4	1,212	0.0070	3.73	24.87	**Parabolic Channel, SEGMENT 3** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.025
46.5	1,643	Total			

Subcatchment EX-4: UNDEVELOPED AREA



Summary for Subcatchment OFF-10: AREA OFF-10

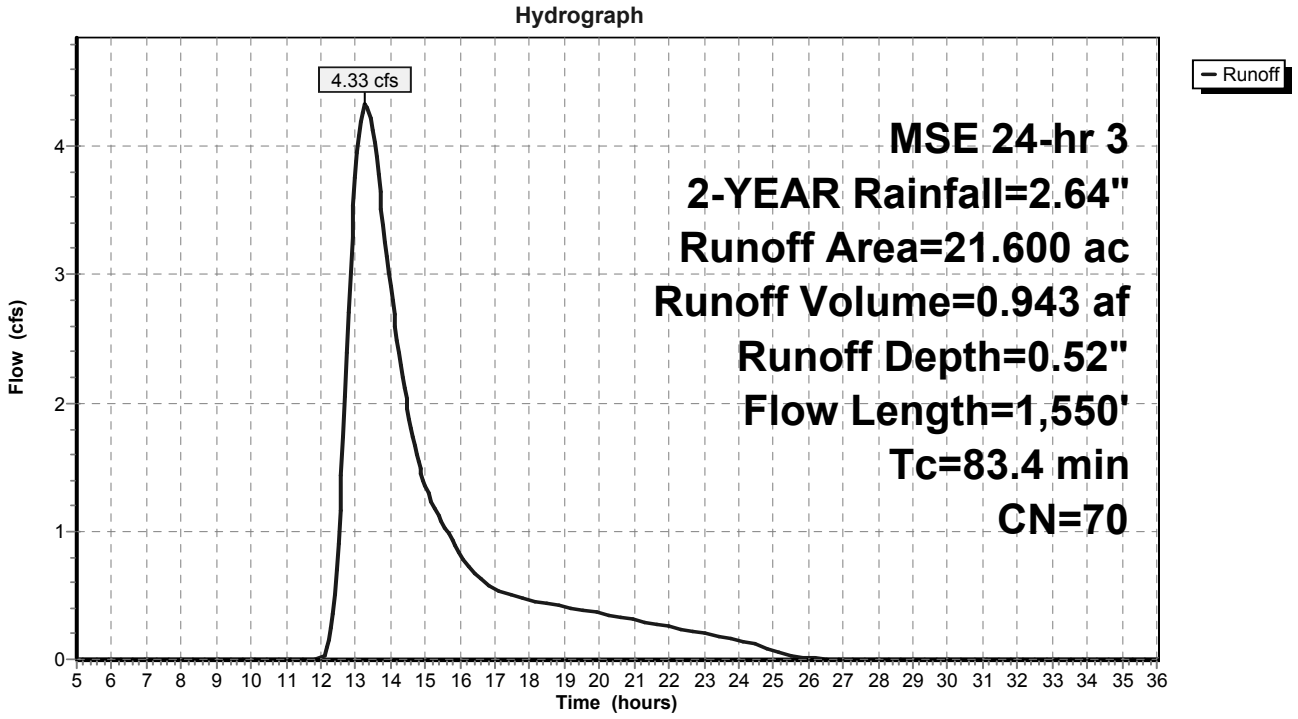
Runoff = 4.33 cfs @ 13.29 hrs, Volume= 0.943 af, Depth= 0.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-YEAR Rainfall=2.64"

Area (ac)	CN	Description
21.600	70	Woods, Good, HSG C
21.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
56.0	250	0.0150	0.07		**Sheet Flow, SHEET** Woods: Light underbrush n= 0.400 P2= 2.57"
27.4	1,300	0.0250	0.79		**Shallow Concentrated Flow, SC FLOW** Woodland Kv= 5.0 fps
83.4	1,550	Total			

Subcatchment OFF-10: AREA OFF-10



Summary for Subcatchment OFF-11: AREA OFF-11

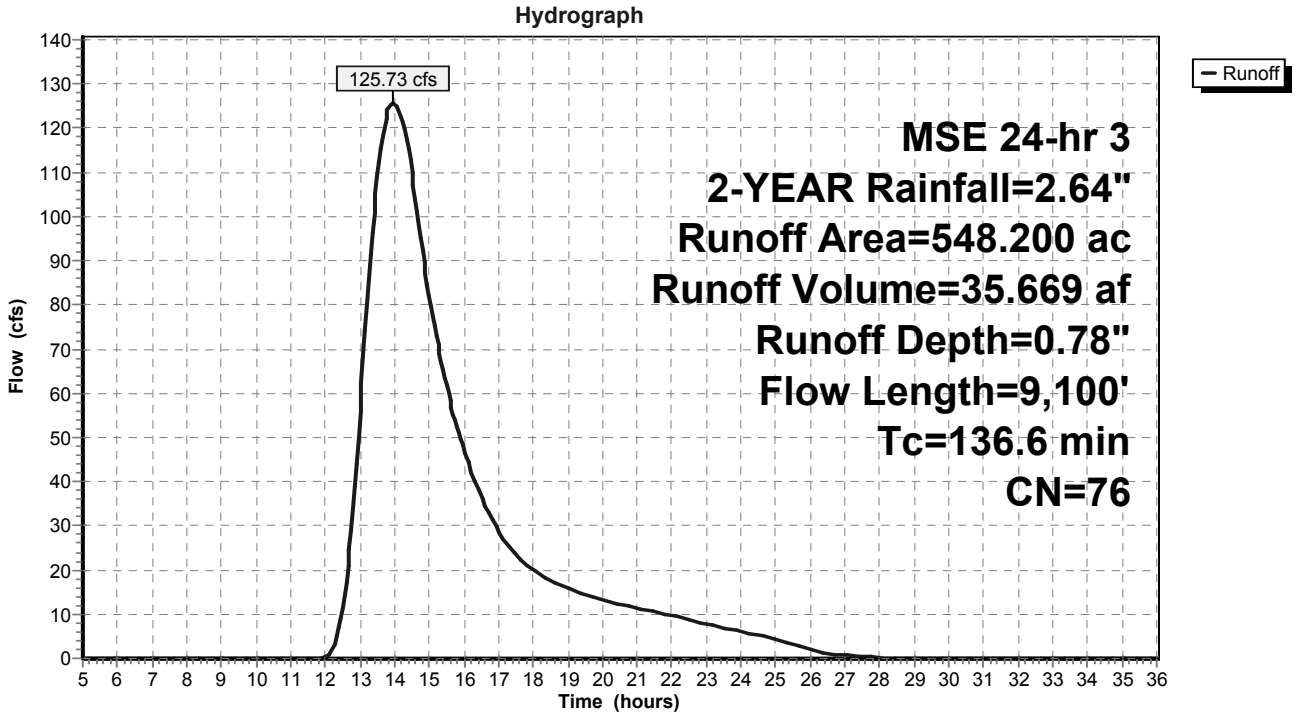
Runoff = 125.73 cfs @ 13.96 hrs, Volume= 35.669 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-YEAR Rainfall=2.64"

	Area (ac)	CN	Description
*	121.000	86	INSTITUTIONAL - 50% OPEN SPACE
	17.000	83	1/4 acre lots, 38% imp, HSG C
	31.500	91	Urban industrial, 72% imp, HSG C
	348.600	71	Meadow, non-grazed, HSG C
	30.100	70	Woods, Good, HSG C
	548.200	76	Weighted Average
	519.060		94.68% Pervious Area
	29.140		5.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.3	250	0.0300	0.22		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 2.57"
21.9	1,650	0.0070	1.25		**Shallow Concentrated Flow, SC FLOW** Grassed Waterway Kv= 15.0 fps
88.3	5,300	0.0100	1.00		**Shallow Concentrated Flow, SC FLOW - FIELD** Nearly Bare & Untilled Kv= 10.0 fps
7.1	1,900	0.0100	4.46	29.73	**Parabolic Channel, DITCH FLOW** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.025
136.6	9,100	Total			

Subcatchment OFF-11: AREA OFF-11



Summary for Subcatchment PR-4: AREA TO POND 3

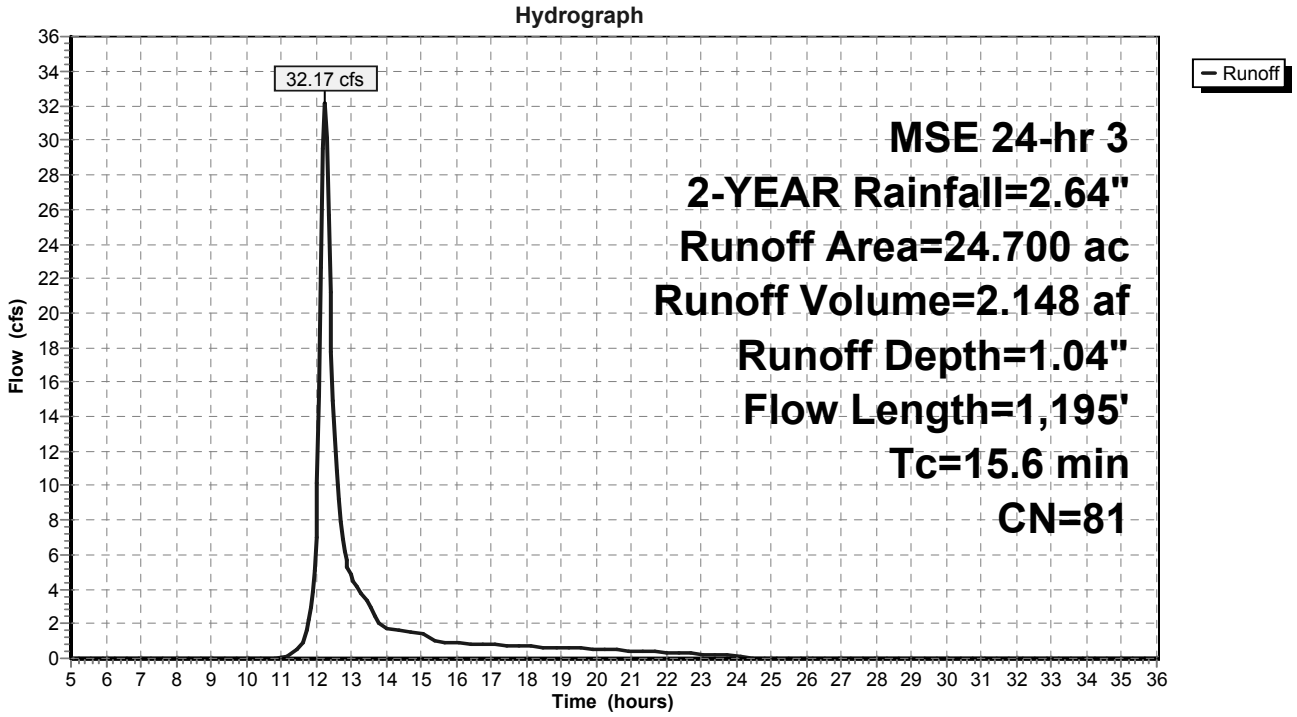
Runoff = 32.17 cfs @ 12.25 hrs, Volume= 2.148 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-YEAR Rainfall=2.64"

	Area (ac)	CN	Description
*	19.400	81	1/3 ACRE RESIDENTIAL LOTS
*	1.800	98	POND WATER SURFACE
*	1.300	74	OUTLOT GREENSPACE
	2.200	70	Woods, Good, HSG C
	24.700	81	Weighted Average
	22.900		92.71% Pervious Area
	1.800		7.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0250	0.17		**Sheet Flow, SEGMENT 1** Grass: Short n= 0.150 P2= 2.57"
1.2	203	0.0310	2.83		**Shallow Concentrated Flow, SEGMENT 2** Unpaved Kv= 16.1 fps
1.6	198	0.0100	2.03		**Shallow Concentrated Flow, SEGMENT 3** Paved Kv= 20.3 fps
2.8	694	0.0050	4.20	7.43	**Pipe Channel, SEGMENT 4** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
15.6	1,195	Total			

Subcatchment PR-4: AREA TO POND 3



Summary for Subcatchment PR-5: AREA TO POND 4

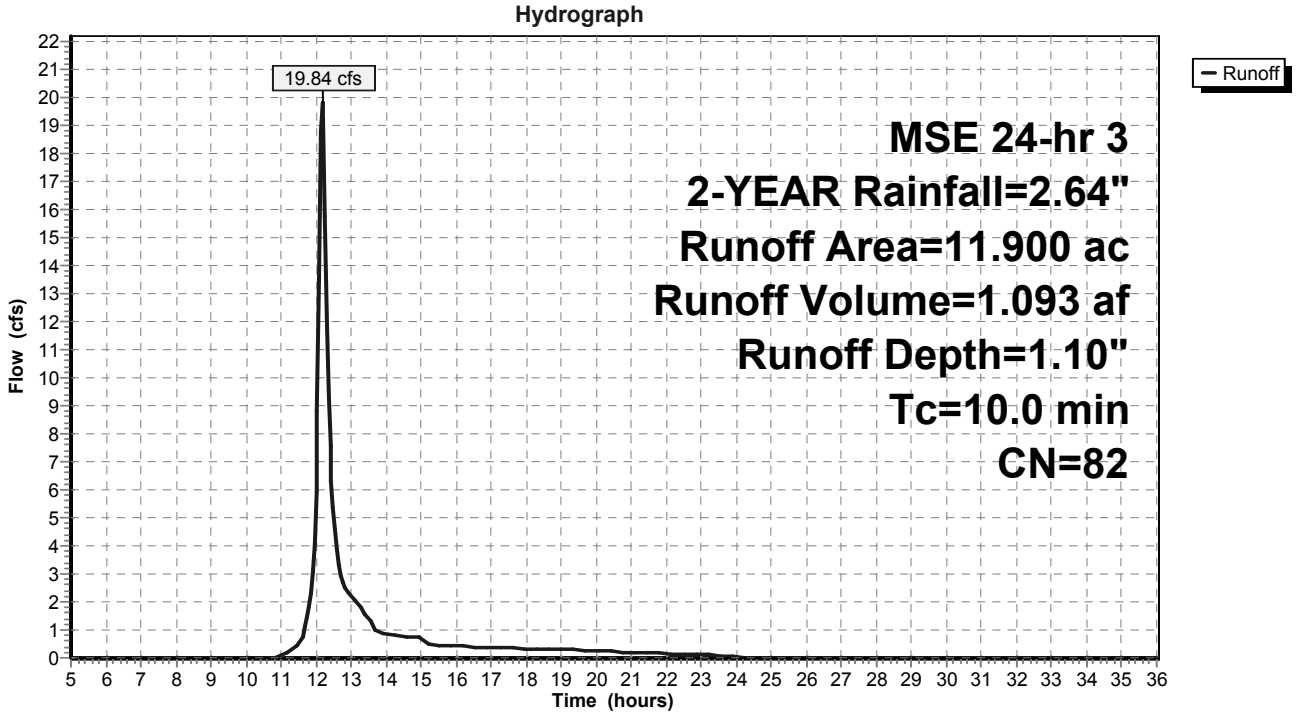
Runoff = 19.84 cfs @ 12.18 hrs, Volume= 1.093 af, Depth= 1.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-YEAR Rainfall=2.64"

	Area (ac)	CN	Description
*	2.000	86	FUTURE ASSISTED SENIOR LIVING
*	1.700	74	POND OUTLOT
*	0.900	98	POND WATER SURFACE
*	6.900	81	1/3 ACRE RESIDENTIAL LOTS
*	0.400	70	WOODS
	11.900	82	Weighted Average
	11.000		92.44% Pervious Area
	0.900		7.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, DIRECT ENTRY**

Subcatchment PR-5: AREA TO POND 4



Summary for Pond P-3: POND 3

Inflow Area = 46.300 ac, 3.89% Impervious, Inflow Depth = 0.80" for 2-YEAR event
Inflow = 32.33 cfs @ 12.25 hrs, Volume= 3.091 af
Outflow = 3.80 cfs @ 14.36 hrs, Volume= 2.698 af, Atten= 88%, Lag= 126.6 min
Primary = 3.80 cfs @ 14.36 hrs, Volume= 2.698 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 767.82' @ 14.36 hrs Surf.Area= 82,286 sf Storage= 71,840 cf

Plug-Flow detention time= 341.3 min calculated for 2.694 af (87% of inflow)
Center-of-Mass det. time= 288.4 min (1,145.5 - 857.0)

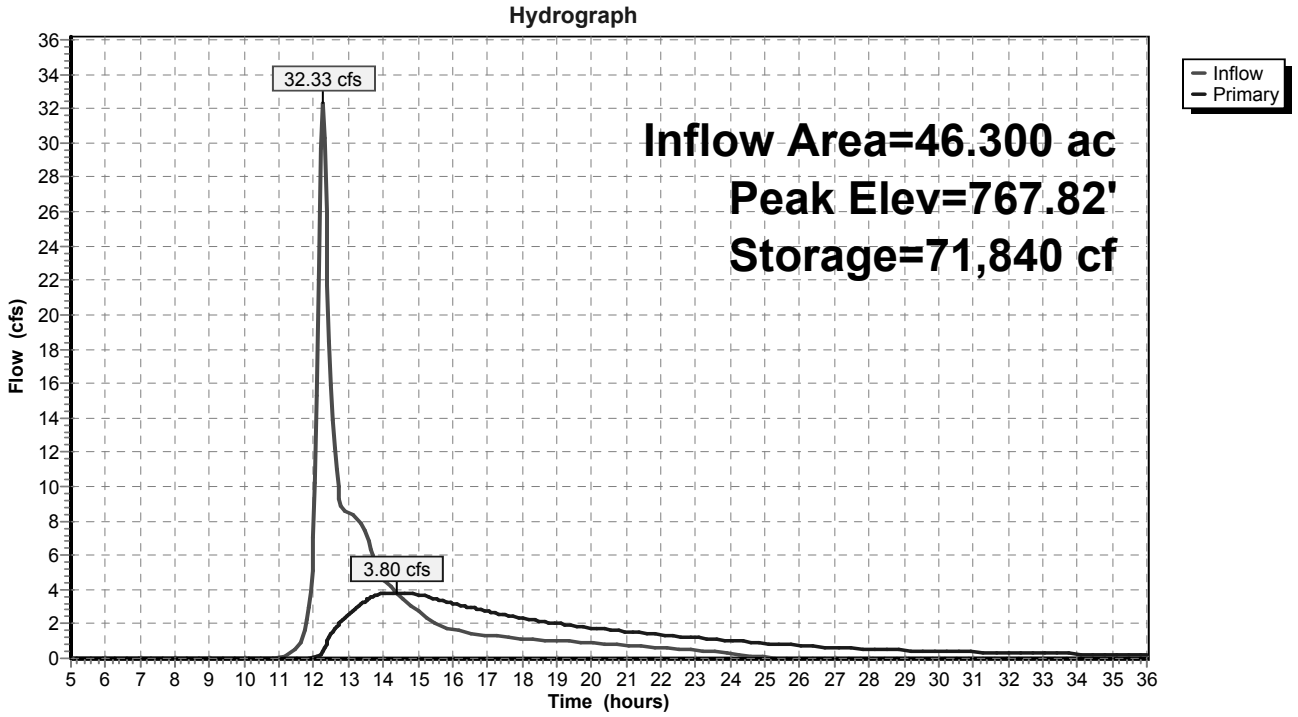
Volume	Invert	Avail.Storage	Storage Description
#1	767.00'	351,650 cf	**ACTIVE STORAGE VOLUME (Conic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
767.00	78,273	0	0	78,273
771.00	97,918	351,650	351,650	98,362

Device	Routing	Invert	Outlet Devices
#1	Primary	767.00'	**36.0" Round Culvert** L= 95.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 767.00' / 766.52' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#2	Primary	770.00'	**50.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=3.80 cfs @ 14.36 hrs HW=767.82' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 3.80 cfs @ 3.67 fps)
└—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P-3: POND 3



Summary for Pond P-4: POND 4

Inflow Area = 11.900 ac, 7.56% Impervious, Inflow Depth = 1.10" for 2-YEAR event
Inflow = 19.84 cfs @ 12.18 hrs, Volume= 1.093 af
Outflow = 1.21 cfs @ 13.60 hrs, Volume= 0.926 af, Atten= 94%, Lag= 85.0 min
Primary = 1.21 cfs @ 13.60 hrs, Volume= 0.926 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 757.58' @ 13.60 hrs Surf.Area= 43,905 sf Storage= 29,212 cf

Plug-Flow detention time= 392.5 min calculated for 0.925 af (85% of inflow)
Center-of-Mass det. time= 335.5 min (1,155.8 - 820.4)

Volume	Invert	Avail.Storage	Storage Description
#1	757.00'	253,403 cf	**ACTIVE STORAGE VOLUME (Prismatic)** Listed below

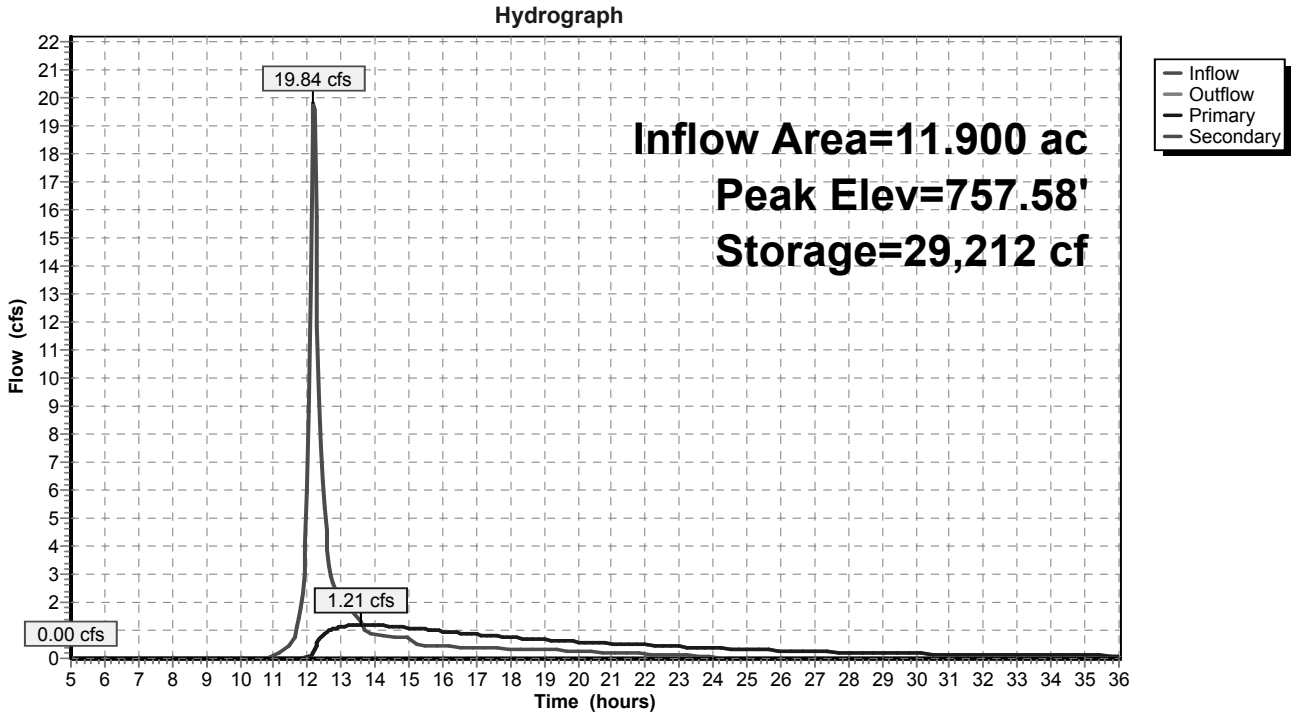
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
757.00	41,875	0	0
762.00	59,486	253,403	253,403

Device	Routing	Invert	Outlet Devices
#1	Primary	757.00'	**12.0" Round Culvert** L= 86.3' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 757.00' / 755.00' S= 0.0232 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	761.00'	**50.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=1.21 cfs @ 13.60 hrs HW=757.58' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 1.21 cfs @ 2.58 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=757.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P-4: POND 4



Summary for Pond PSC: PROP SOUTH CREEK

Inflow Area = 615.000 ac, 5.18% Impervious, Inflow Depth > 0.77" for 2-YEAR event
Inflow = 131.37 cfs @ 13.96 hrs, Volume= 39.668 af
Outflow = 131.16 cfs @ 14.02 hrs, Volume= 39.668 af, Atten= 0%, Lag= 3.6 min
Primary = 131.16 cfs @ 14.02 hrs, Volume= 39.668 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 754.19' @ 14.02 hrs Surf.Area= 9,067 sf Storage= 10,322 cf

Plug-Flow detention time= 0.7 min calculated for 39.604 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (971.1 - 970.4)

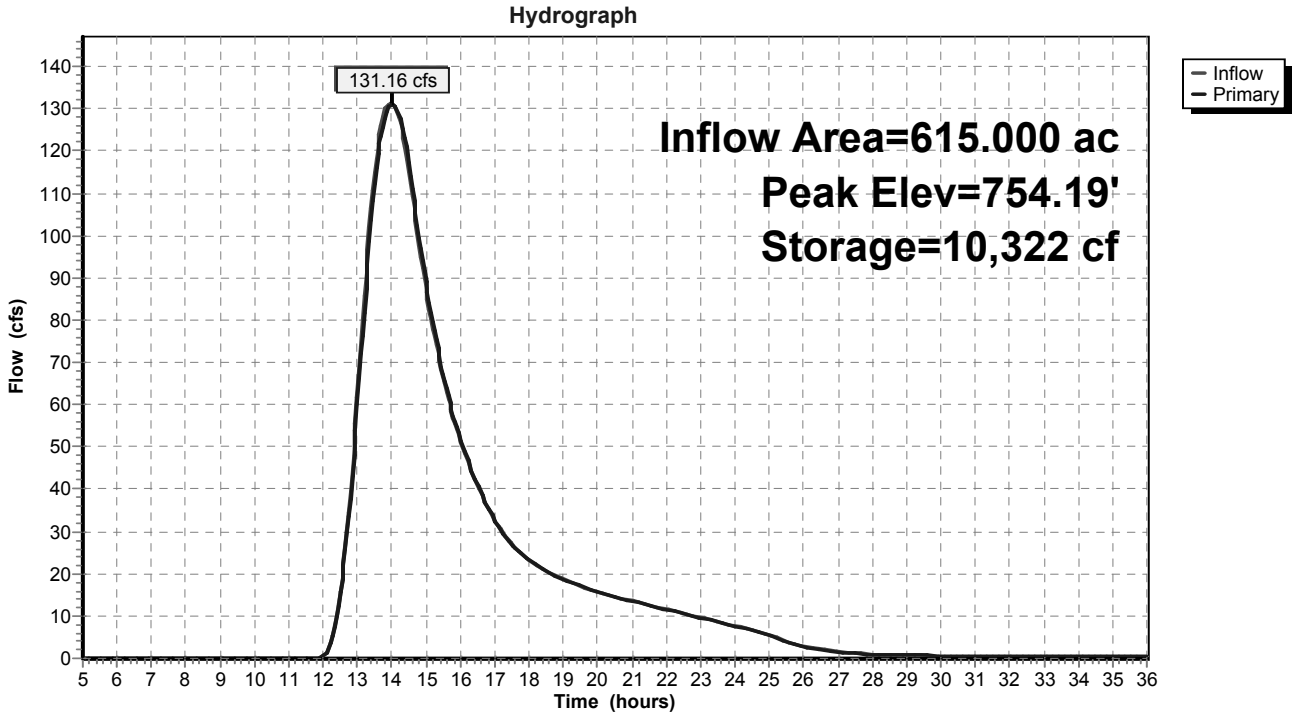
Volume	Invert	Avail.Storage	Storage Description
#1	750.60'	392,668 cf	**CULVERT STORAGE AREA (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
750.60	0	0	0
751.00	130	26	26
752.00	726	428	454
753.00	3,475	2,101	2,554
754.00	7,764	5,620	8,174
755.00	14,527	11,146	19,320
756.00	25,036	19,782	39,101
757.00	39,647	32,342	71,443
758.00	56,031	47,839	119,282
759.00	82,788	69,410	188,691
760.00	102,889	92,839	281,530
761.00	119,388	111,139	392,668

Device	Routing	Invert	Outlet Devices
#1	Primary	750.60'	**72.0" W x 72.0" H Box Culvert** L= 500.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 750.60' / 748.10' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 36.00 sf
#2	Primary	758.50'	**160.0 deg x 15.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.47 (C= 3.09)
#3	Primary	758.60'	**170.0 deg Sharp-Crested Vee/Trap Weir** Cv= 2.46 (C= 3.08)

Primary OutFlow Max=131.12 cfs @ 14.02 hrs HW=754.19' (Free Discharge)
- **1=Culvert** (Inlet Controls 131.12 cfs @ 6.08 fps)
- **2=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)
- **3=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Pond PSC: PROP SOUTH CREEK

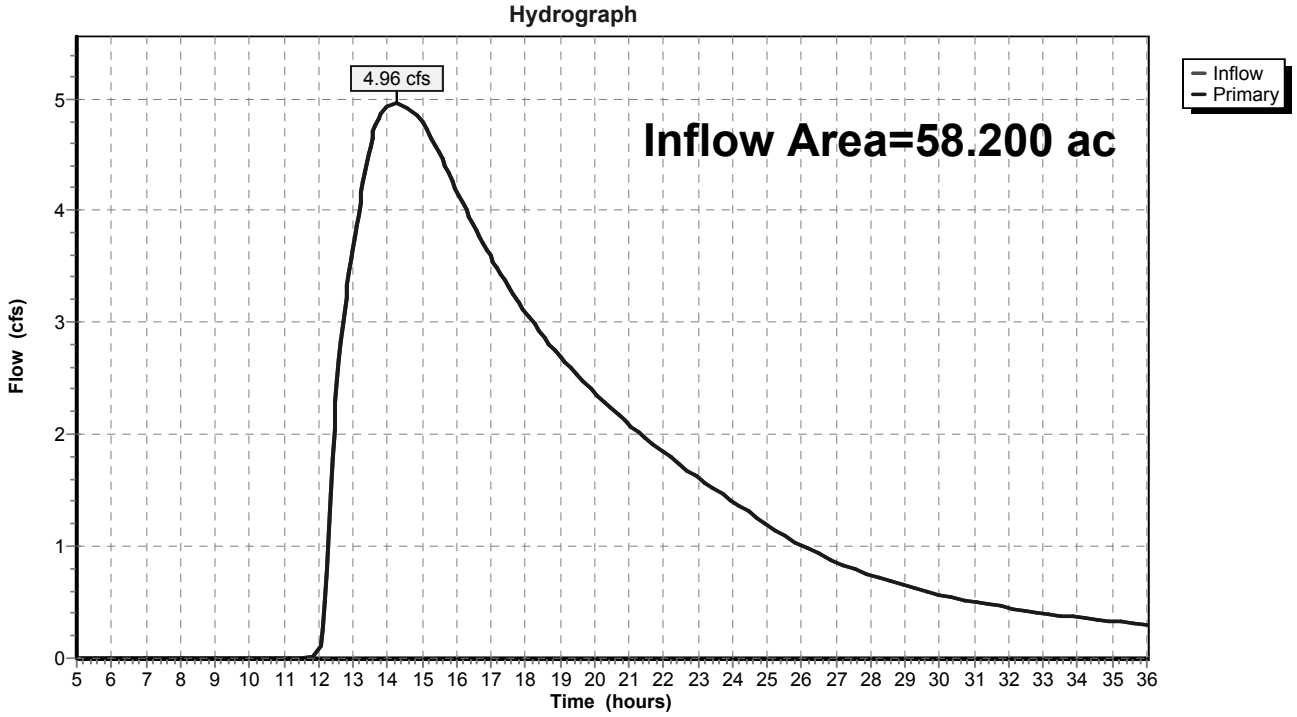


Summary for Link PR-S: PROPOSED DISCHARGE TO SOUTH CREEK

Inflow Area = 58.200 ac, 4.64% Impervious, Inflow Depth > 0.75" for 2-YEAR event
Inflow = 4.96 cfs @ 14.25 hrs, Volume= 3.624 af
Primary = 4.96 cfs @ 14.25 hrs, Volume= 3.624 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs

Link PR-S: PROPOSED DISCHARGE TO SOUTH CREEK



Summary for Subcatchment EX-4: UNDEVELOPED AREA

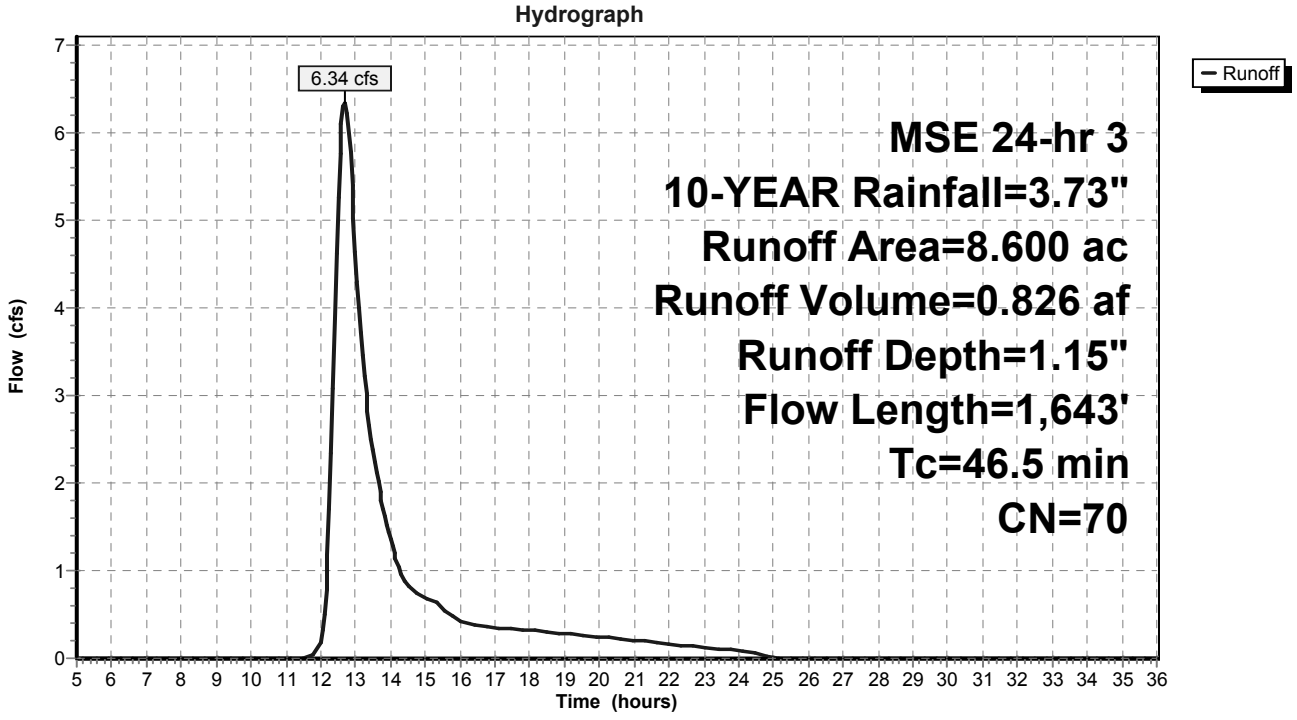
Runoff = 6.34 cfs @ 12.69 hrs, Volume= 0.826 af, Depth= 1.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-YEAR Rainfall=3.73"

Area (ac)	CN	Description
8.600	70	Woods, Good, HSG C
8.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.0	300	0.0500	0.13		**Sheet Flow, SEGMENT 1** Woods: Light underbrush n= 0.400 P2= 2.57"
1.1	131	0.1700	2.06		**Shallow Concentrated Flow, SEGMENT 2** Woodland Kv= 5.0 fps
5.4	1,212	0.0070	3.73	24.87	**Parabolic Channel, SEGMENT 3** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.025
46.5	1,643	Total			

Subcatchment EX-4: UNDEVELOPED AREA



Summary for Subcatchment OFF-10: AREA OFF-10

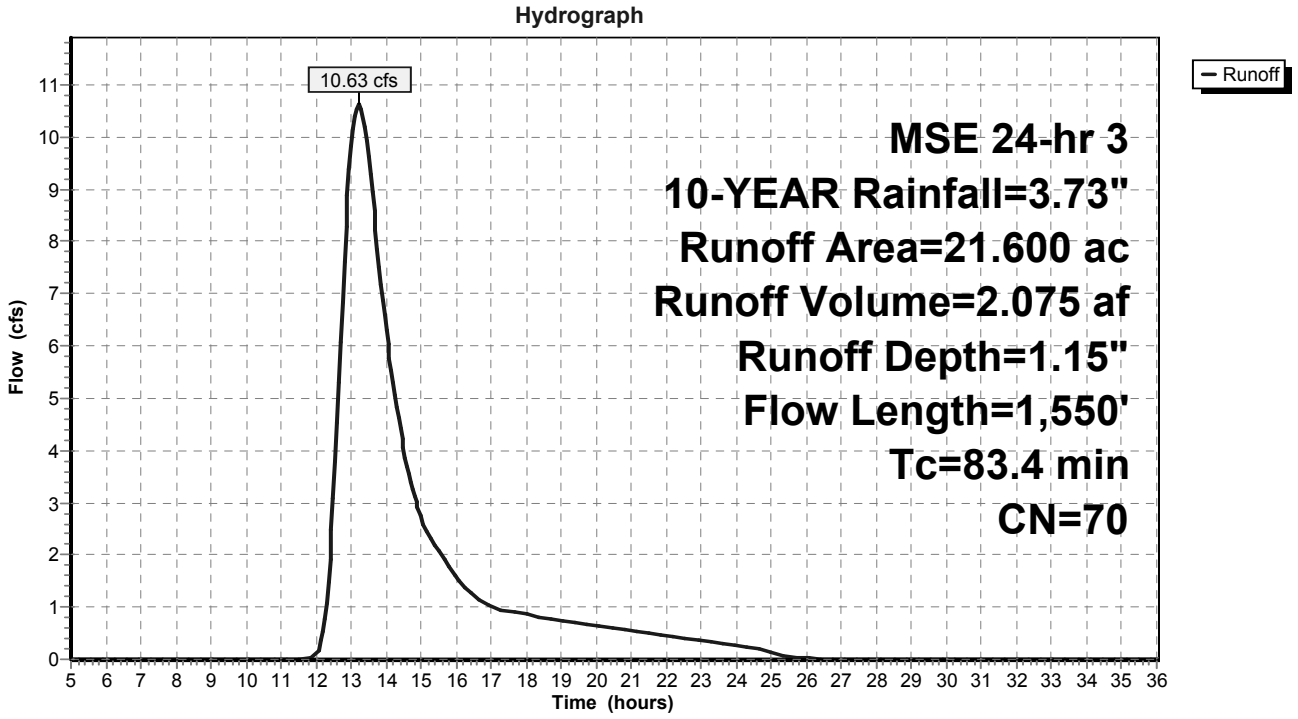
Runoff = 10.63 cfs @ 13.24 hrs, Volume= 2.075 af, Depth= 1.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-YEAR Rainfall=3.73"

Area (ac)	CN	Description
21.600	70	Woods, Good, HSG C
21.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
56.0	250	0.0150	0.07		**Sheet Flow, SHEET** Woods: Light underbrush n= 0.400 P2= 2.57"
27.4	1,300	0.0250	0.79		**Shallow Concentrated Flow, SC FLOW** Woodland Kv= 5.0 fps
83.4	1,550	Total			

Subcatchment OFF-10: AREA OFF-10



Summary for Subcatchment OFF-11: AREA OFF-11

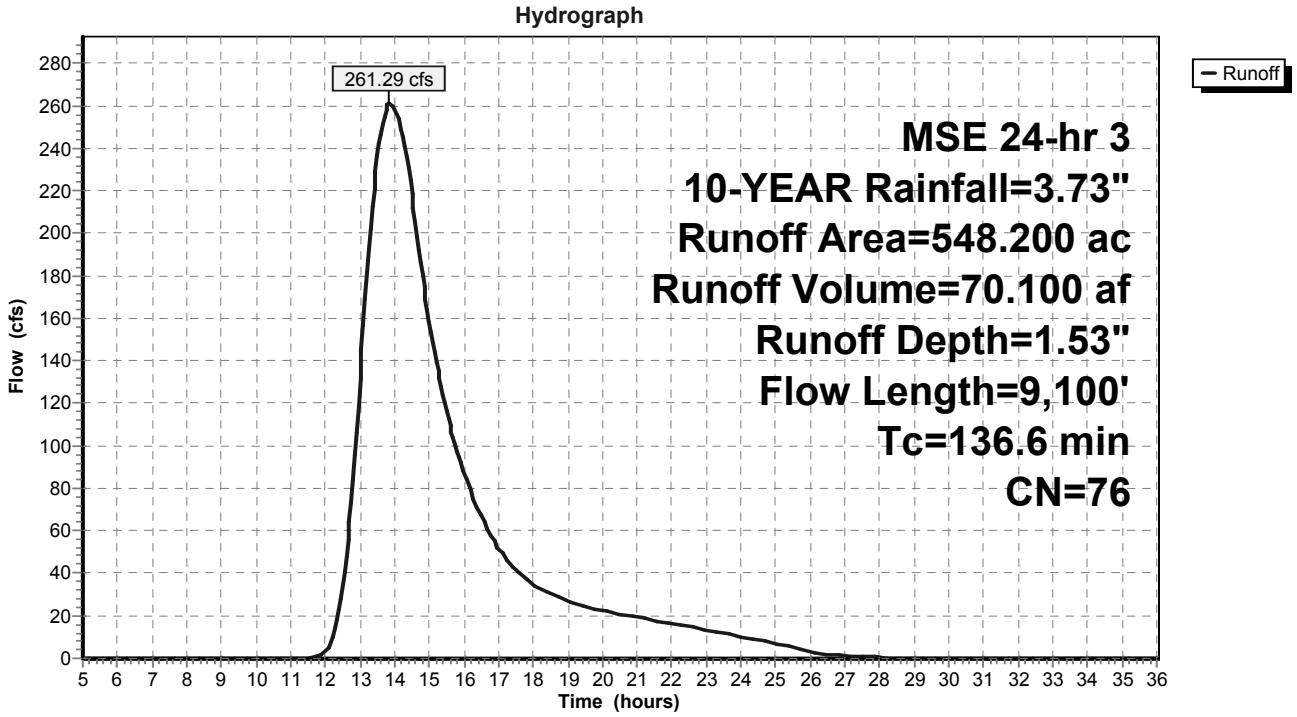
Runoff = 261.29 cfs @ 13.85 hrs, Volume= 70.100 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-YEAR Rainfall=3.73"

	Area (ac)	CN	Description
*	121.000	86	INSTITUTIONAL - 50% OPEN SPACE
	17.000	83	1/4 acre lots, 38% imp, HSG C
	31.500	91	Urban industrial, 72% imp, HSG C
	348.600	71	Meadow, non-grazed, HSG C
	30.100	70	Woods, Good, HSG C
	548.200	76	Weighted Average
	519.060		94.68% Pervious Area
	29.140		5.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.3	250	0.0300	0.22		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 2.57"
21.9	1,650	0.0070	1.25		**Shallow Concentrated Flow, SC FLOW** Grassed Waterway Kv= 15.0 fps
88.3	5,300	0.0100	1.00		**Shallow Concentrated Flow, SC FLOW - FIELD** Nearly Bare & Untilled Kv= 10.0 fps
7.1	1,900	0.0100	4.46	29.73	**Parabolic Channel, DITCH FLOW** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.025
136.6	9,100	Total			

Subcatchment OFF-11: AREA OFF-11



Summary for Subcatchment PR-4: AREA TO POND 3

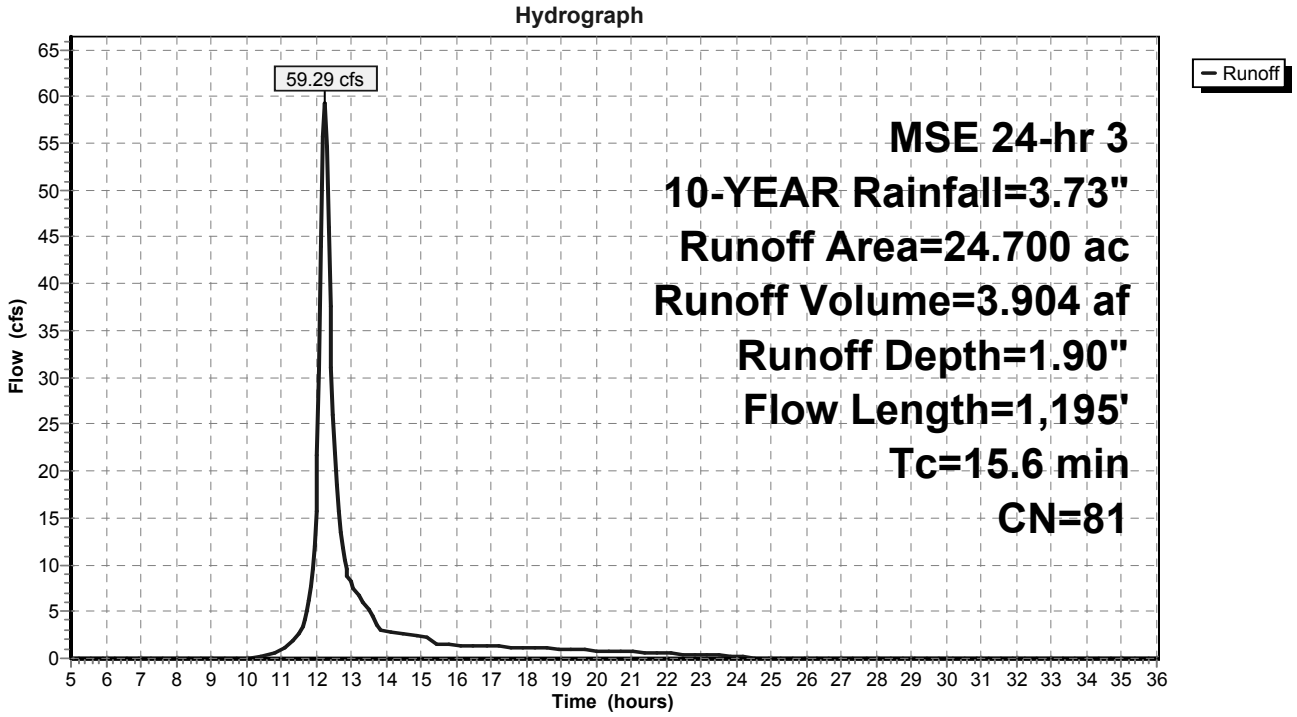
Runoff = 59.29 cfs @ 12.25 hrs, Volume= 3.904 af, Depth= 1.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-YEAR Rainfall=3.73"

	Area (ac)	CN	Description
*	19.400	81	1/3 ACRE RESIDENTIAL LOTS
*	1.800	98	POND WATER SURFACE
*	1.300	74	OUTLOT GREENSPACE
	2.200	70	Woods, Good, HSG C
	24.700	81	Weighted Average
	22.900		92.71% Pervious Area
	1.800		7.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0250	0.17		**Sheet Flow, SEGMENT 1** Grass: Short n= 0.150 P2= 2.57"
1.2	203	0.0310	2.83		**Shallow Concentrated Flow, SEGMENT 2** Unpaved Kv= 16.1 fps
1.6	198	0.0100	2.03		**Shallow Concentrated Flow, SEGMENT 3** Paved Kv= 20.3 fps
2.8	694	0.0050	4.20	7.43	**Pipe Channel, SEGMENT 4** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
15.6	1,195	Total			

Subcatchment PR-4: AREA TO POND 3



Summary for Subcatchment PR-5: AREA TO POND 4

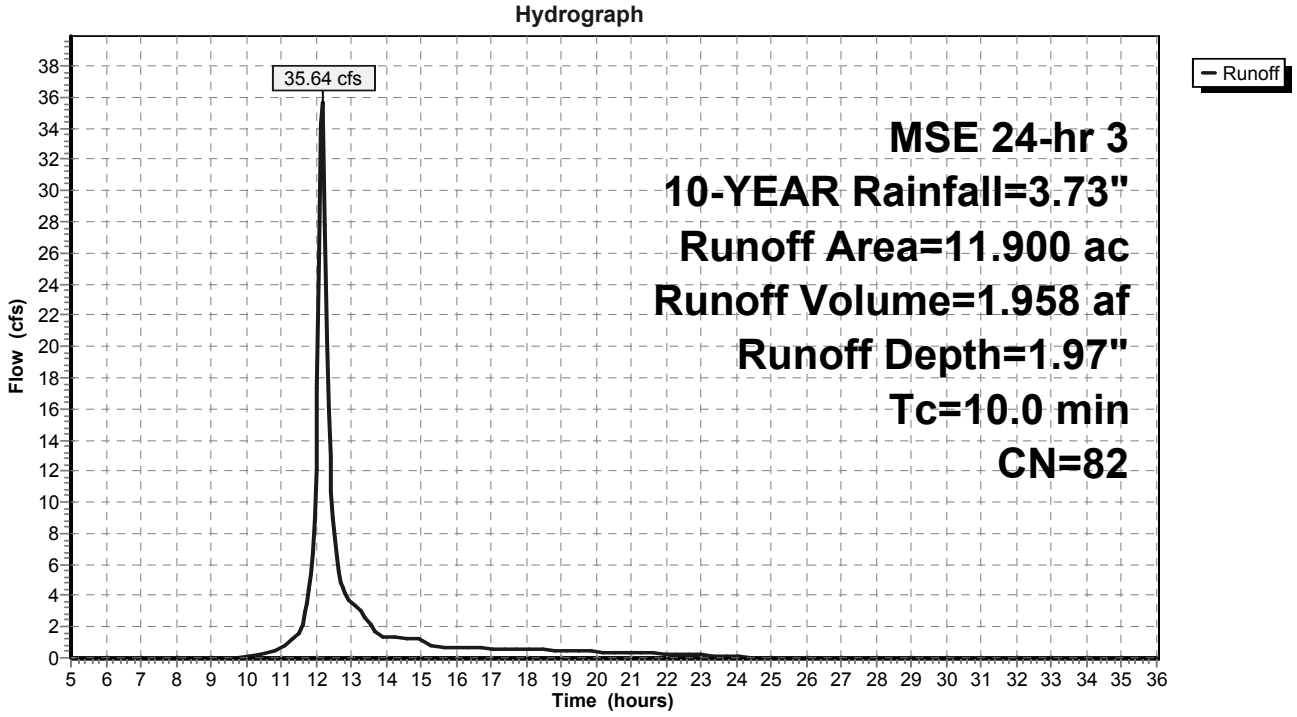
Runoff = 35.64 cfs @ 12.18 hrs, Volume= 1.958 af, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-YEAR Rainfall=3.73"

	Area (ac)	CN	Description
*	2.000	86	FUTURE ASSISTED SENIOR LIVING
*	1.700	74	POND OUTLOT
*	0.900	98	POND WATER SURFACE
*	6.900	81	1/3 ACRE RESIDENTIAL LOTS
*	0.400	70	WOODS
	11.900	82	Weighted Average
	11.000		92.44% Pervious Area
	0.900		7.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, DIRECT ENTRY**

Subcatchment PR-5: AREA TO POND 4



Summary for Pond P-3: POND 3

Inflow Area = 46.300 ac, 3.89% Impervious, Inflow Depth = 1.55" for 10-YEAR event
Inflow = 60.05 cfs @ 12.25 hrs, Volume= 5.979 af
Outflow = 10.61 cfs @ 13.81 hrs, Volume= 5.550 af, Atten= 82%, Lag= 93.9 min
Primary = 10.61 cfs @ 13.81 hrs, Volume= 5.550 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 768.43' @ 13.81 hrs Surf.Area= 85,280 sf Storage= 125,431 cf

Plug-Flow detention time= 255.2 min calculated for 5.550 af (93% of inflow)
Center-of-Mass det. time= 220.8 min (1,066.6 - 845.8)

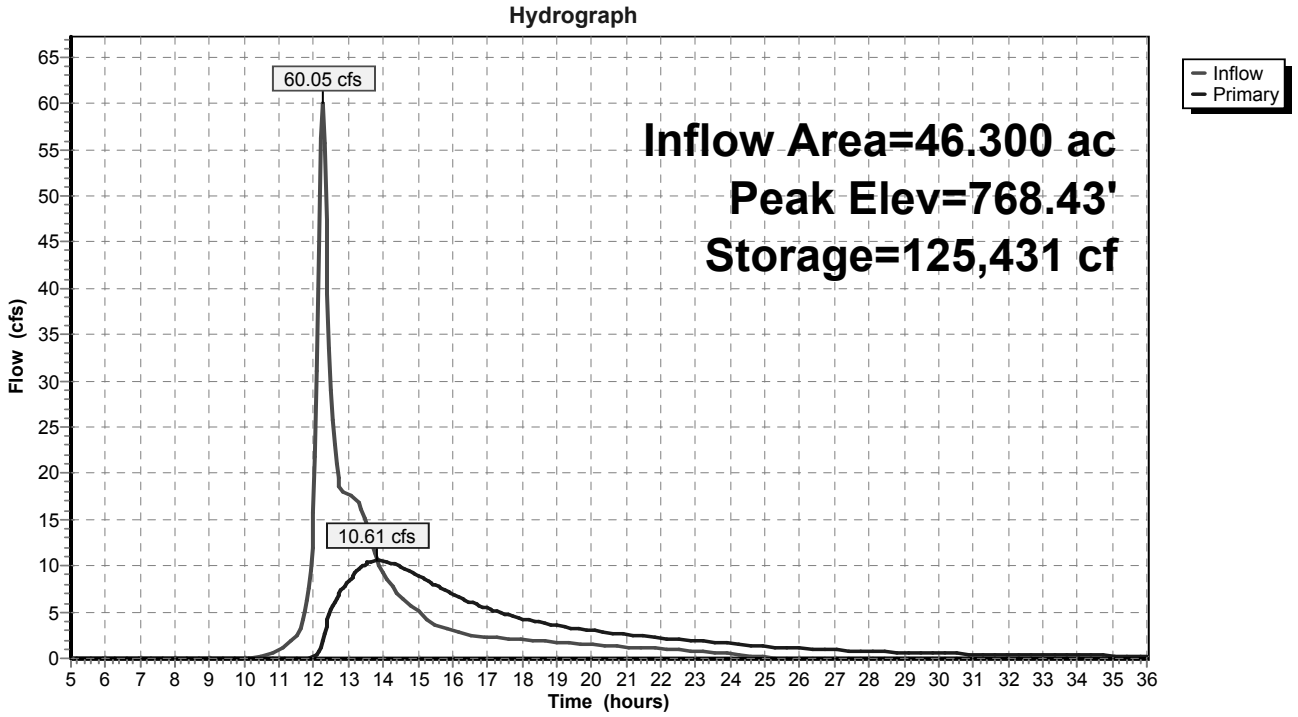
Volume	Invert	Avail.Storage	Storage Description
#1	767.00'	351,650 cf	**ACTIVE STORAGE VOLUME (Conic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
767.00	78,273	0	0	78,273
771.00	97,918	351,650	351,650	98,362

Device	Routing	Invert	Outlet Devices
#1	Primary	767.00'	**36.0" Round Culvert** L= 95.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 767.00' / 766.52' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#2	Primary	770.00'	**50.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=10.61 cfs @ 13.81 hrs HW=768.43' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 10.61 cfs @ 4.69 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond P-3: POND 3



Summary for Pond P-4: POND 4

Inflow Area = 11.900 ac, 7.56% Impervious, Inflow Depth = 1.97" for 10-YEAR event
Inflow = 35.64 cfs @ 12.18 hrs, Volume= 1.958 af
Outflow = 2.71 cfs @ 13.36 hrs, Volume= 1.771 af, Atten= 92%, Lag= 70.8 min
Primary = 2.71 cfs @ 13.36 hrs, Volume= 1.771 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 758.01' @ 13.36 hrs Surf.Area= 45,438 sf Storage= 51,274 cf

Plug-Flow detention time= 326.9 min calculated for 1.768 af (90% of inflow)
Center-of-Mass det. time= 286.5 min (1,094.8 - 808.3)

Volume	Invert	Avail.Storage	Storage Description
#1	757.00'	253,403 cf	**ACTIVE STORAGE VOLUME (Prismatic)** Listed below

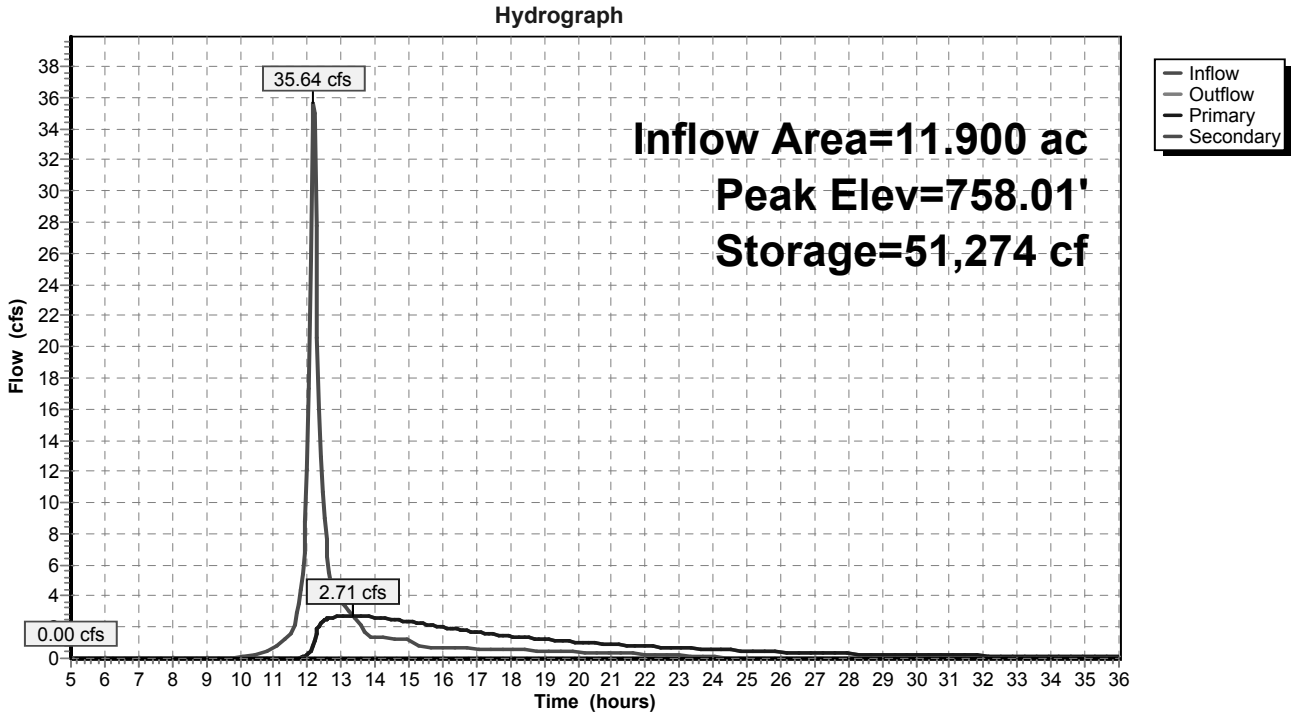
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
757.00	41,875	0	0
762.00	59,486	253,403	253,403

Device	Routing	Invert	Outlet Devices
#1	Primary	757.00'	**12.0" Round Culvert** L= 86.3' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 757.00' / 755.00' S= 0.0232 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	761.00'	**50.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=2.71 cfs @ 13.36 hrs HW=758.01' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 2.71 cfs @ 3.44 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=757.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P-4: POND 4



Summary for Pond PSC: PROP SOUTH CREEK

Inflow Area = 615.000 ac, 5.18% Impervious, Inflow Depth > 1.53" for 10-YEAR event
Inflow = 276.16 cfs @ 13.85 hrs, Volume= 78.247 af
Outflow = 272.28 cfs @ 14.04 hrs, Volume= 78.247 af, Atten= 1%, Lag= 11.6 min
Primary = 272.28 cfs @ 14.04 hrs, Volume= 78.247 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 756.69' @ 14.04 hrs Surf.Area= 35,075 sf Storage= 61,323 cf

Plug-Flow detention time= 1.8 min calculated for 78.247 af (100% of inflow)
Center-of-Mass det. time= 1.8 min (951.8 - 949.9)

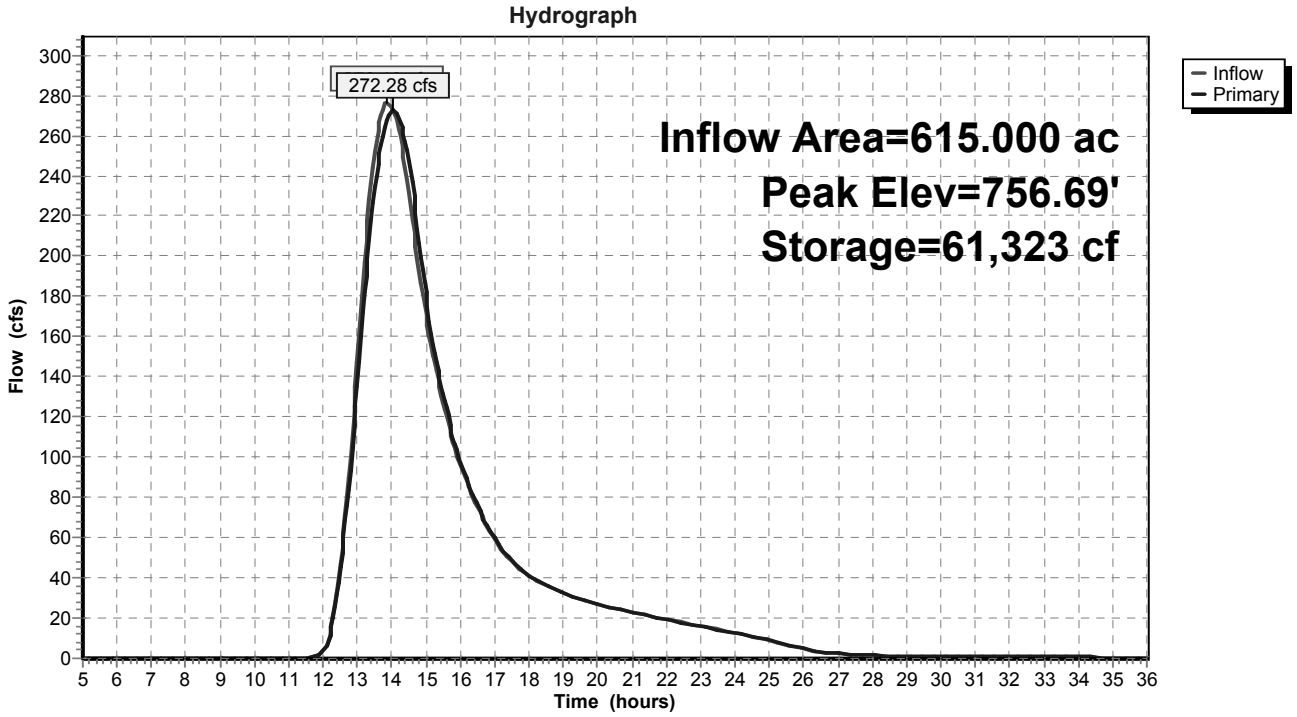
Volume	Invert	Avail.Storage	Storage Description
#1	750.60'	392,668 cf	**CULVERT STORAGE AREA (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
750.60	0	0	0
751.00	130	26	26
752.00	726	428	454
753.00	3,475	2,101	2,554
754.00	7,764	5,620	8,174
755.00	14,527	11,146	19,320
756.00	25,036	19,782	39,101
757.00	39,647	32,342	71,443
758.00	56,031	47,839	119,282
759.00	82,788	69,410	188,691
760.00	102,889	92,839	281,530
761.00	119,388	111,139	392,668

Device	Routing	Invert	Outlet Devices
#1	Primary	750.60'	**72.0" W x 72.0" H Box Culvert** L= 500.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 750.60' / 748.10' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 36.00 sf
#2	Primary	758.50'	**160.0 deg x 15.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.47 (C= 3.09)
#3	Primary	758.60'	**170.0 deg Sharp-Crested Vee/Trap Weir** Cv= 2.46 (C= 3.08)

Primary OutFlow Max=272.24 cfs @ 14.04 hrs HW=756.69' (Free Discharge)
- **1=Culvert** (Barrel Controls 272.24 cfs @ 9.94 fps)
- **2=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)
- **3=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Pond PSC: PROP SOUTH CREEK

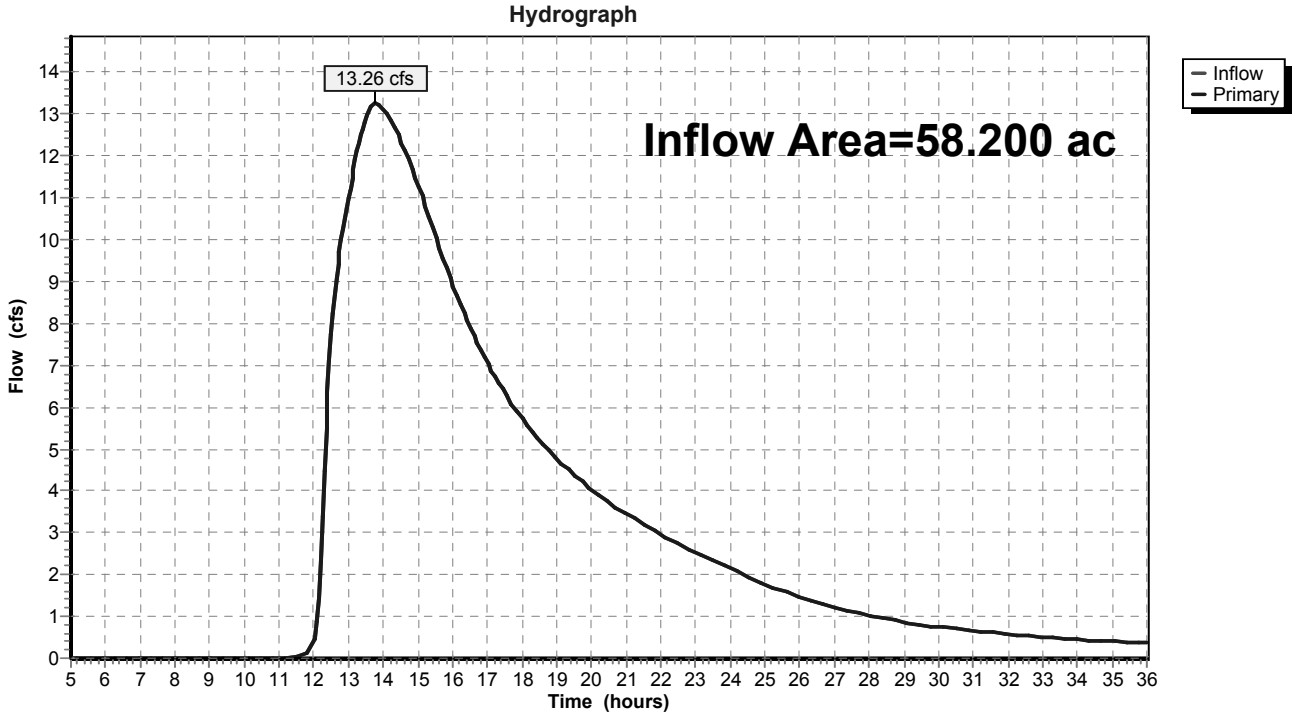


Summary for Link PR-S: PROPOSED DISCHARGE TO SOUTH CREEK

Inflow Area = 58.200 ac, 4.64% Impervious, Inflow Depth > 1.51" for 10-YEAR event
Inflow = 13.26 cfs @ 13.79 hrs, Volume= 7.320 af
Primary = 13.26 cfs @ 13.79 hrs, Volume= 7.320 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs

Link PR-S: PROPOSED DISCHARGE TO SOUTH CREEK



Summary for Subcatchment EX-4: UNDEVELOPED AREA

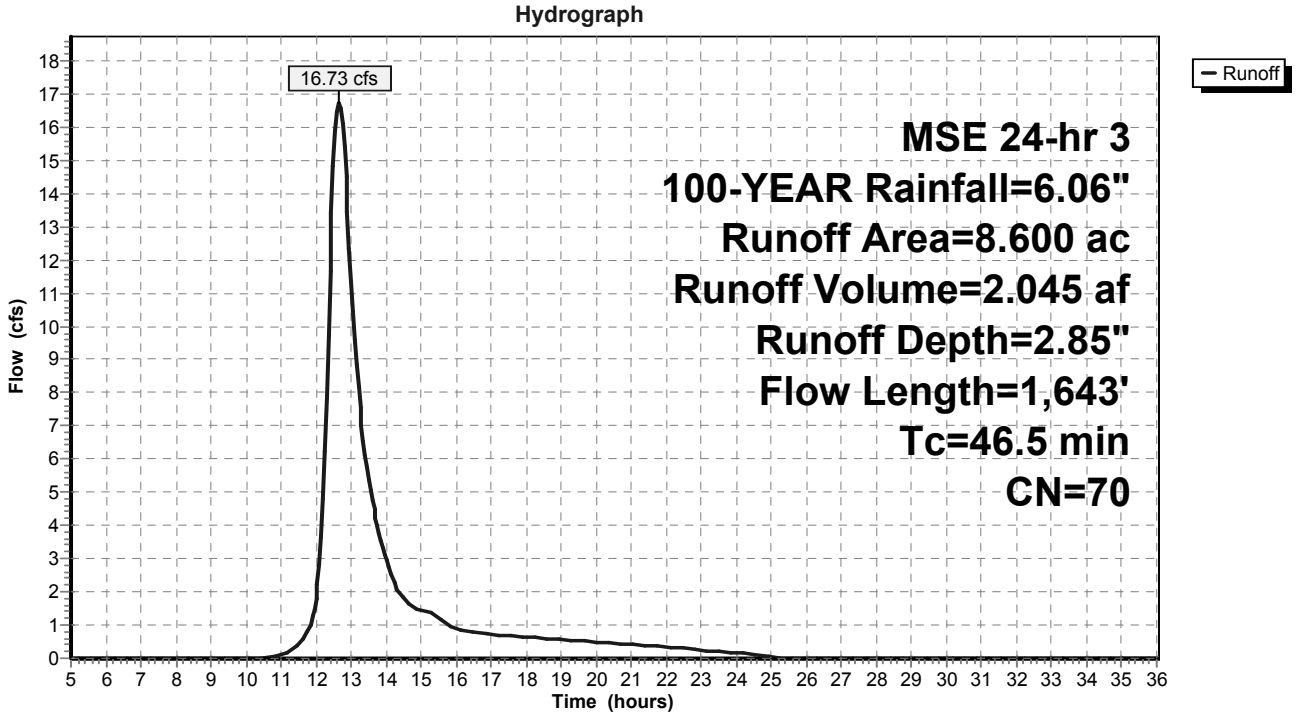
Runoff = 16.73 cfs @ 12.65 hrs, Volume= 2.045 af, Depth= 2.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.06"

Area (ac)	CN	Description
8.600	70	Woods, Good, HSG C
8.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.0	300	0.0500	0.13		**Sheet Flow, SEGMENT 1** Woods: Light underbrush n= 0.400 P2= 2.57"
1.1	131	0.1700	2.06		**Shallow Concentrated Flow, SEGMENT 2** Woodland Kv= 5.0 fps
5.4	1,212	0.0070	3.73	24.87	**Parabolic Channel, SEGMENT 3** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.025
46.5	1,643	Total			

Subcatchment EX-4: UNDEVELOPED AREA



Summary for Subcatchment OFF-10: AREA OFF-10

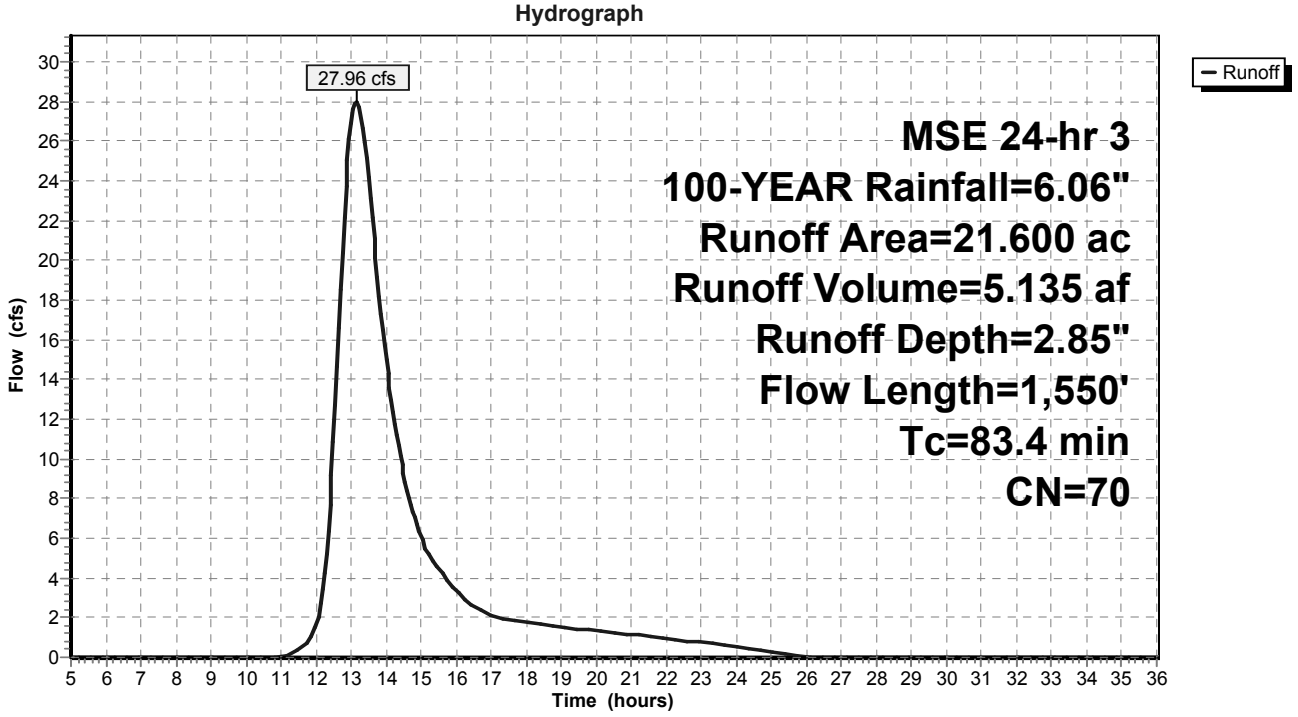
Runoff = 27.96 cfs @ 13.15 hrs, Volume= 5.135 af, Depth= 2.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.06"

Area (ac)	CN	Description
21.600	70	Woods, Good, HSG C
21.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
56.0	250	0.0150	0.07		**Sheet Flow, SHEET** Woods: Light underbrush n= 0.400 P2= 2.57"
27.4	1,300	0.0250	0.79		**Shallow Concentrated Flow, SC FLOW** Woodland Kv= 5.0 fps
83.4	1,550	Total			

Subcatchment OFF-10: AREA OFF-10



Summary for Subcatchment OFF-11: AREA OFF-11

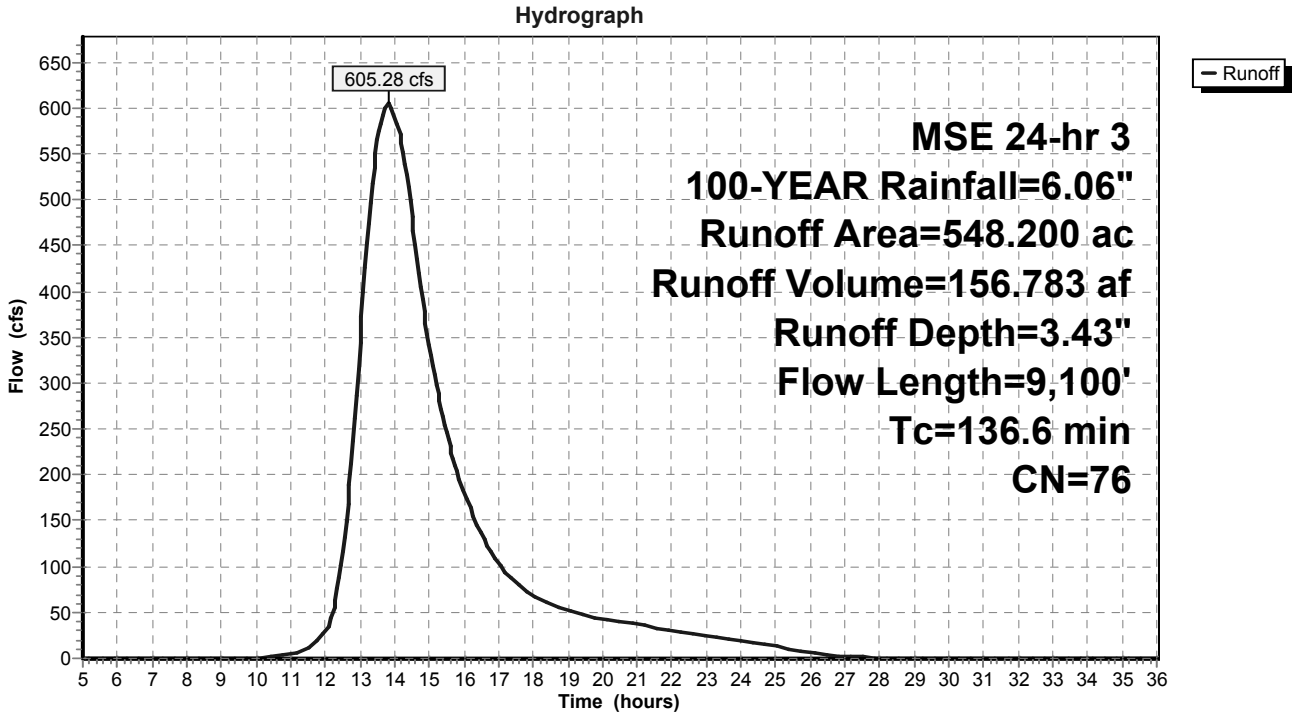
Runoff = 605.28 cfs @ 13.81 hrs, Volume= 156.783 af, Depth= 3.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.06"

	Area (ac)	CN	Description
*	121.000	86	INSTITUTIONAL - 50% OPEN SPACE
	17.000	83	1/4 acre lots, 38% imp, HSG C
	31.500	91	Urban industrial, 72% imp, HSG C
	348.600	71	Meadow, non-grazed, HSG C
	30.100	70	Woods, Good, HSG C
	548.200	76	Weighted Average
	519.060		94.68% Pervious Area
	29.140		5.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.3	250	0.0300	0.22		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 2.57"
21.9	1,650	0.0070	1.25		**Shallow Concentrated Flow, SC FLOW** Grassed Waterway Kv= 15.0 fps
88.3	5,300	0.0100	1.00		**Shallow Concentrated Flow, SC FLOW - FIELD** Nearly Bare & Untilled Kv= 10.0 fps
7.1	1,900	0.0100	4.46	29.73	**Parabolic Channel, DITCH FLOW** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.025
136.6	9,100	Total			

Subcatchment OFF-11: AREA OFF-11



Summary for Subcatchment PR-4: AREA TO POND 3

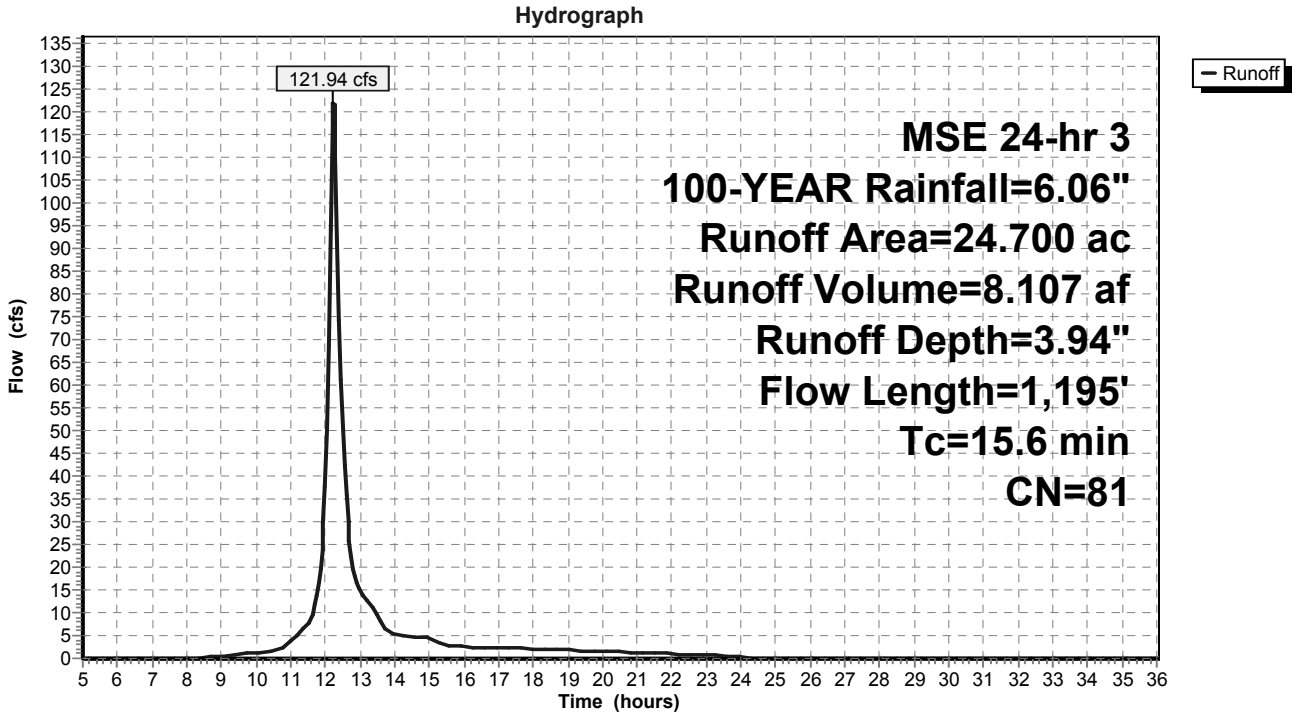
Runoff = 121.94 cfs @ 12.24 hrs, Volume= 8.107 af, Depth= 3.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.06"

	Area (ac)	CN	Description
*	19.400	81	1/3 ACRE RESIDENTIAL LOTS
*	1.800	98	POND WATER SURFACE
*	1.300	74	OUTLOT GREENSPACE
	2.200	70	Woods, Good, HSG C
	24.700	81	Weighted Average
	22.900		92.71% Pervious Area
	1.800		7.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0250	0.17		**Sheet Flow, SEGMENT 1** Grass: Short n= 0.150 P2= 2.57"
1.2	203	0.0310	2.83		**Shallow Concentrated Flow, SEGMENT 2** Unpaved Kv= 16.1 fps
1.6	198	0.0100	2.03		**Shallow Concentrated Flow, SEGMENT 3** Paved Kv= 20.3 fps
2.8	694	0.0050	4.20	7.43	**Pipe Channel, SEGMENT 4** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
15.6	1,195	Total			

Subcatchment PR-4: AREA TO POND 3



Summary for Subcatchment PR-5: AREA TO POND 4

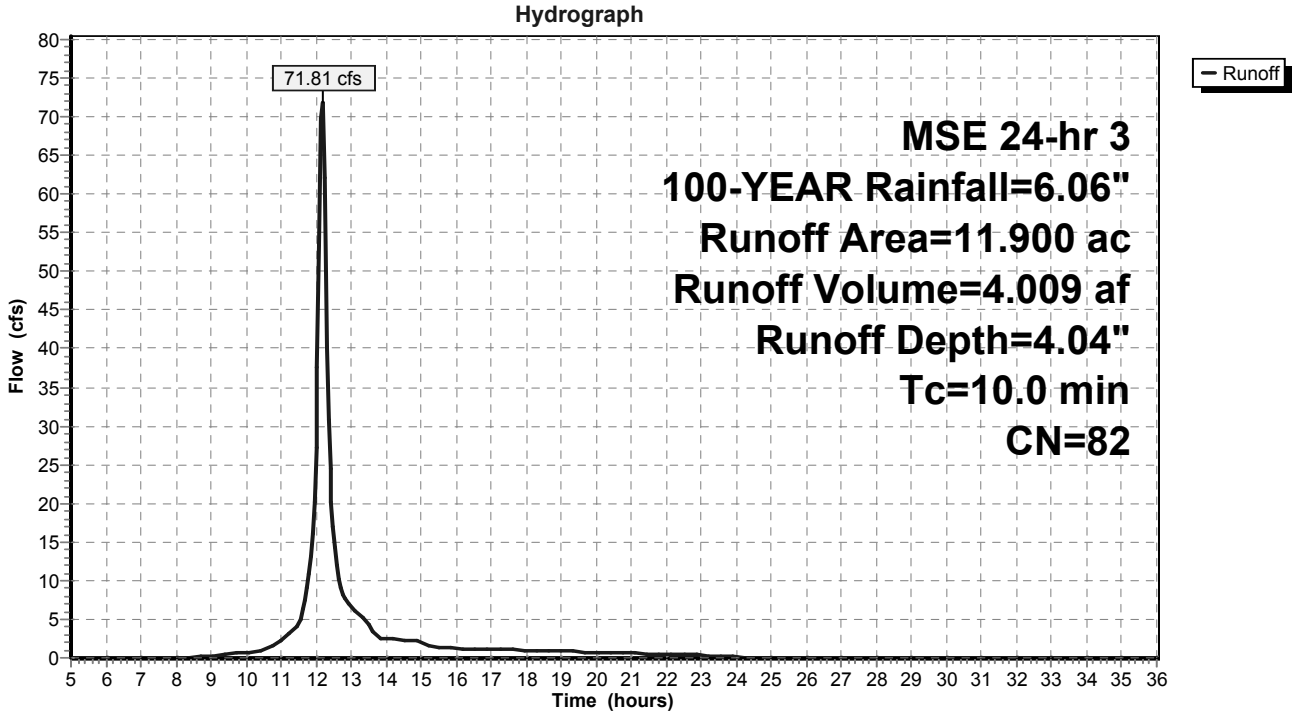
Runoff = 71.81 cfs @ 12.17 hrs, Volume= 4.009 af, Depth= 4.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-YEAR Rainfall=6.06"

	Area (ac)	CN	Description
*	2.000	86	FUTURE ASSISTED SENIOR LIVING
*	1.700	74	POND OUTLOT
*	0.900	98	POND WATER SURFACE
*	6.900	81	1/3 ACRE RESIDENTIAL LOTS
*	0.400	70	WOODS
	11.900	82	Weighted Average
	11.000		92.44% Pervious Area
	0.900		7.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, DIRECT ENTRY**

Subcatchment PR-5: AREA TO POND 4



Summary for Pond P-3: POND 3

Inflow Area = 46.300 ac, 3.89% Impervious, Inflow Depth = 3.43" for 100-YEAR event
Inflow = 126.02 cfs @ 12.24 hrs, Volume= 13.242 af
Outflow = 31.49 cfs @ 13.57 hrs, Volume= 12.771 af, Atten= 75%, Lag= 79.8 min
Primary = 31.49 cfs @ 13.57 hrs, Volume= 12.771 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 769.76' @ 13.57 hrs Surf.Area= 91,822 sf Storage= 242,531 cf

Plug-Flow detention time= 179.5 min calculated for 12.750 af (96% of inflow)
Center-of-Mass det. time= 161.6 min (994.2 - 832.6)

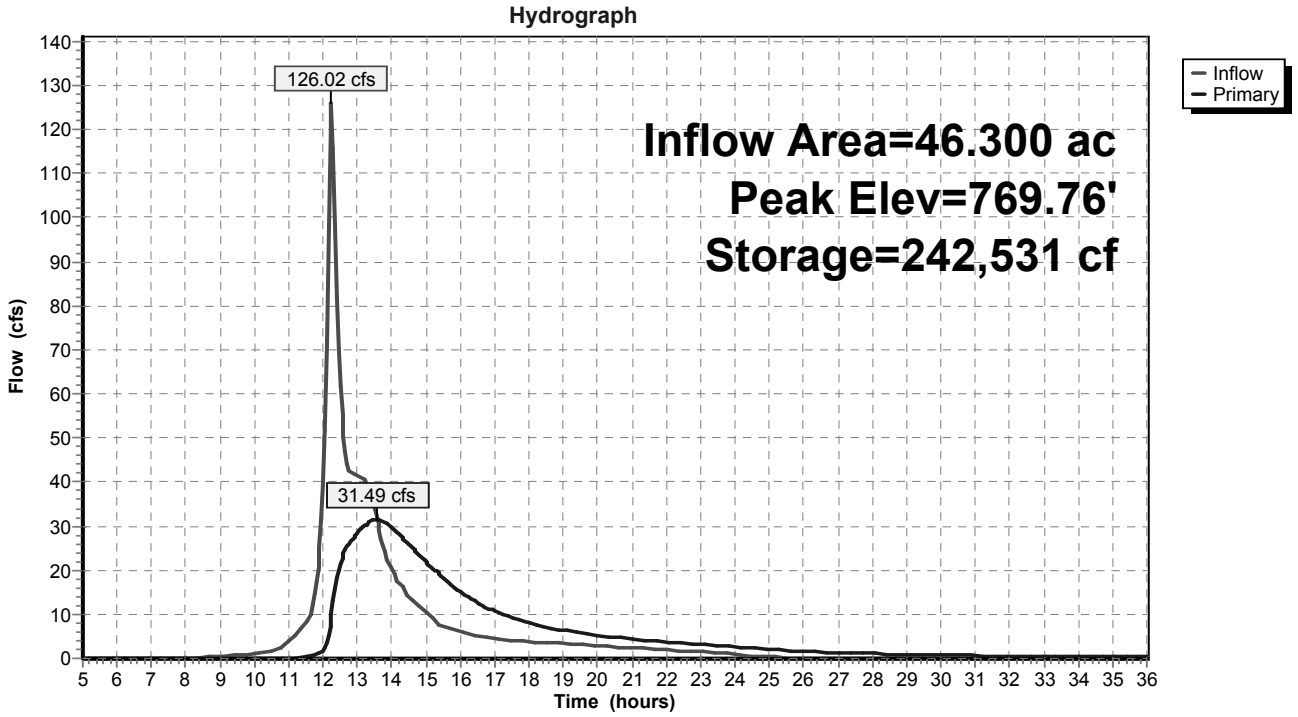
Volume	Invert	Avail.Storage	Storage Description
#1	767.00'	351,650 cf	**ACTIVE STORAGE VOLUME (Conic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
767.00	78,273	0	0	78,273
771.00	97,918	351,650	351,650	98,362

Device	Routing	Invert	Outlet Devices
#1	Primary	767.00'	**36.0" Round Culvert** L= 95.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 767.00' / 766.52' S= 0.0051 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#2	Primary	770.00'	**50.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=31.48 cfs @ 13.57 hrs HW=769.76' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 31.48 cfs @ 6.06 fps)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond P-3: POND 3



Summary for Pond P-4: POND 4

Inflow Area = 11.900 ac, 7.56% Impervious, Inflow Depth = 4.04" for 100-YEAR event
Inflow = 71.81 cfs @ 12.17 hrs, Volume= 4.009 af
Outflow = 4.90 cfs @ 13.37 hrs, Volume= 3.783 af, Atten= 93%, Lag= 71.8 min
Primary = 4.90 cfs @ 13.37 hrs, Volume= 3.783 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 759.18' @ 13.37 hrs Surf.Area= 49,541 sf Storage= 110,300 cf

Plug-Flow detention time= 326.4 min calculated for 3.783 af (94% of inflow)
Center-of-Mass det. time= 298.9 min (1,092.8 - 793.9)

Volume	Invert	Avail.Storage	Storage Description
#1	757.00'	253,403 cf	**ACTIVE STORAGE VOLUME (Prismatic)** Listed below

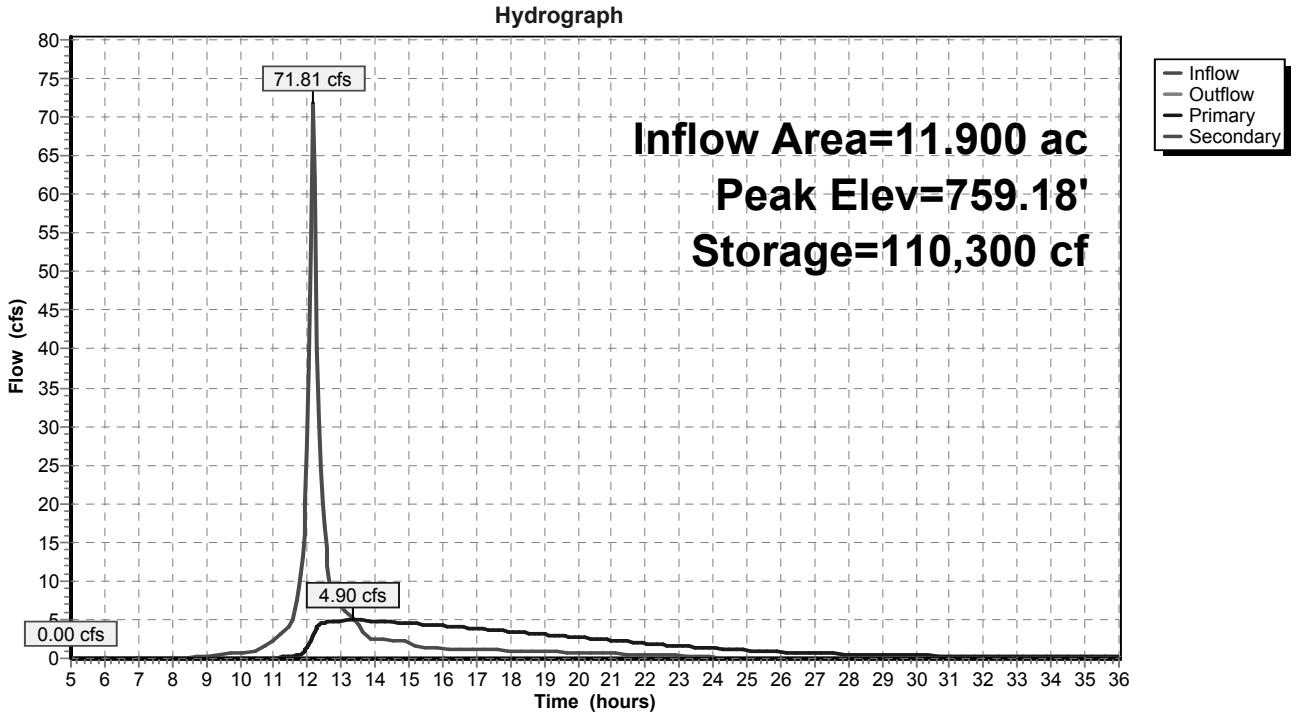
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
757.00	41,875	0	0
762.00	59,486	253,403	253,403

Device	Routing	Invert	Outlet Devices
#1	Primary	757.00'	**12.0" Round Culvert** L= 86.3' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 757.00' / 755.00' S= 0.0232 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 0.79 sf
#2	Secondary	761.00'	**50.0' long x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=4.90 cfs @ 13.37 hrs HW=759.18' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 4.90 cfs @ 6.23 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=757.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P-4: POND 4



Summary for Pond PSC: PROP SOUTH CREEK

Inflow Area = 615.000 ac, 5.18% Impervious, Inflow Depth > 3.42" for 100-YEAR event
Inflow = 644.72 cfs @ 13.81 hrs, Volume= 175.381 af
Outflow = 639.30 cfs @ 13.90 hrs, Volume= 175.380 af, Atten= 1%, Lag= 5.7 min
Primary = 639.30 cfs @ 13.90 hrs, Volume= 175.380 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 760.13' @ 13.90 hrs Surf.Area= 105,049 sf Storage= 296,078 cf

Plug-Flow detention time= 5.1 min calculated for 175.380 af (100% of inflow)
Center-of-Mass det. time= 5.1 min (934.8 - 929.6)

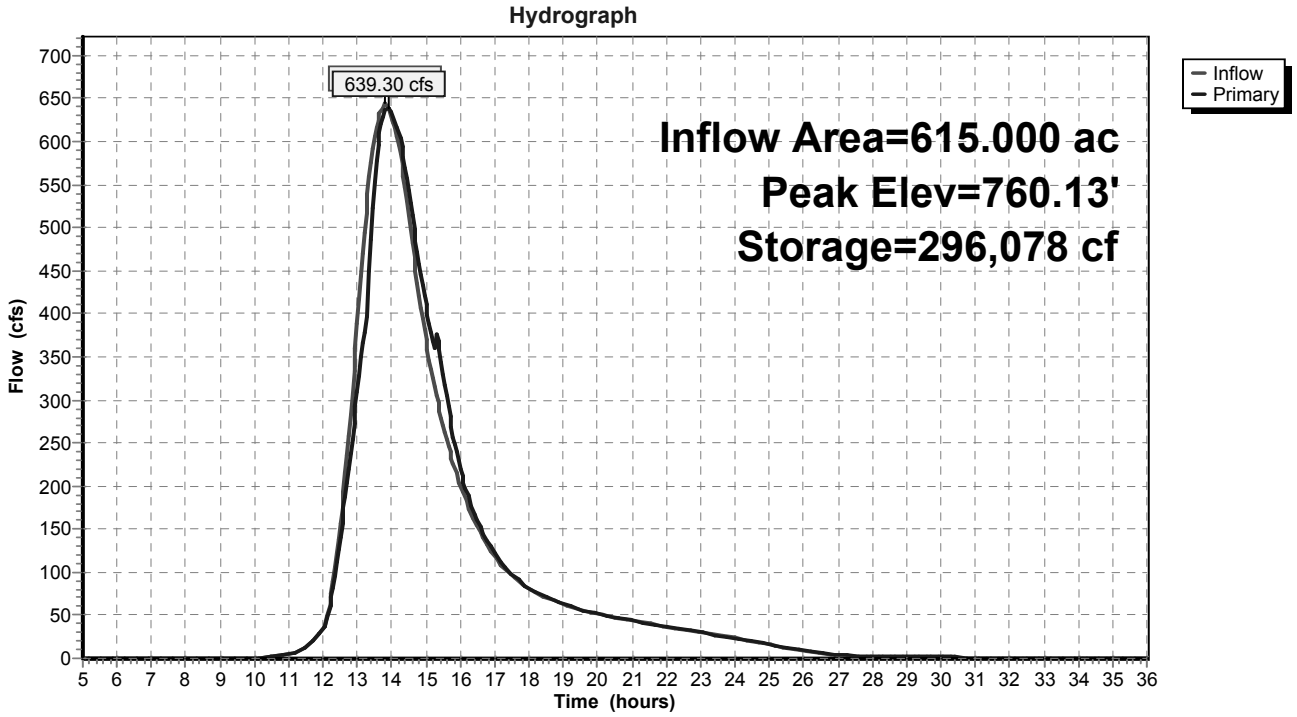
Volume	Invert	Avail.Storage	Storage Description
#1	750.60'	392,668 cf	**CULVERT STORAGE AREA (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
750.60	0	0	0
751.00	130	26	26
752.00	726	428	454
753.00	3,475	2,101	2,554
754.00	7,764	5,620	8,174
755.00	14,527	11,146	19,320
756.00	25,036	19,782	39,101
757.00	39,647	32,342	71,443
758.00	56,031	47,839	119,282
759.00	82,788	69,410	188,691
760.00	102,889	92,839	281,530
761.00	119,388	111,139	392,668

Device	Routing	Invert	Outlet Devices
#1	Primary	750.60'	**72.0" W x 72.0" H Box Culvert** L= 500.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 750.60' / 748.10' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 36.00 sf
#2	Primary	758.50'	**160.0 deg x 15.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.47 (C= 3.09)
#3	Primary	758.60'	**170.0 deg Sharp-Crested Vee/Trap Weir** Cv= 2.46 (C= 3.08)

Primary OutFlow Max=639.22 cfs @ 13.90 hrs HW=760.13' (Free Discharge)
- **1=Culvert** (Barrel Controls 413.71 cfs @ 11.49 fps)
- **2=Sharp-Crested Vee/Trap Weir** (Weir Controls 144.00 cfs @ 3.64 fps)
- **3=Sharp-Crested Vee/Trap Weir** (Weir Controls 81.51 cfs @ 3.04 fps)

Pond PSC: PROP SOUTH CREEK

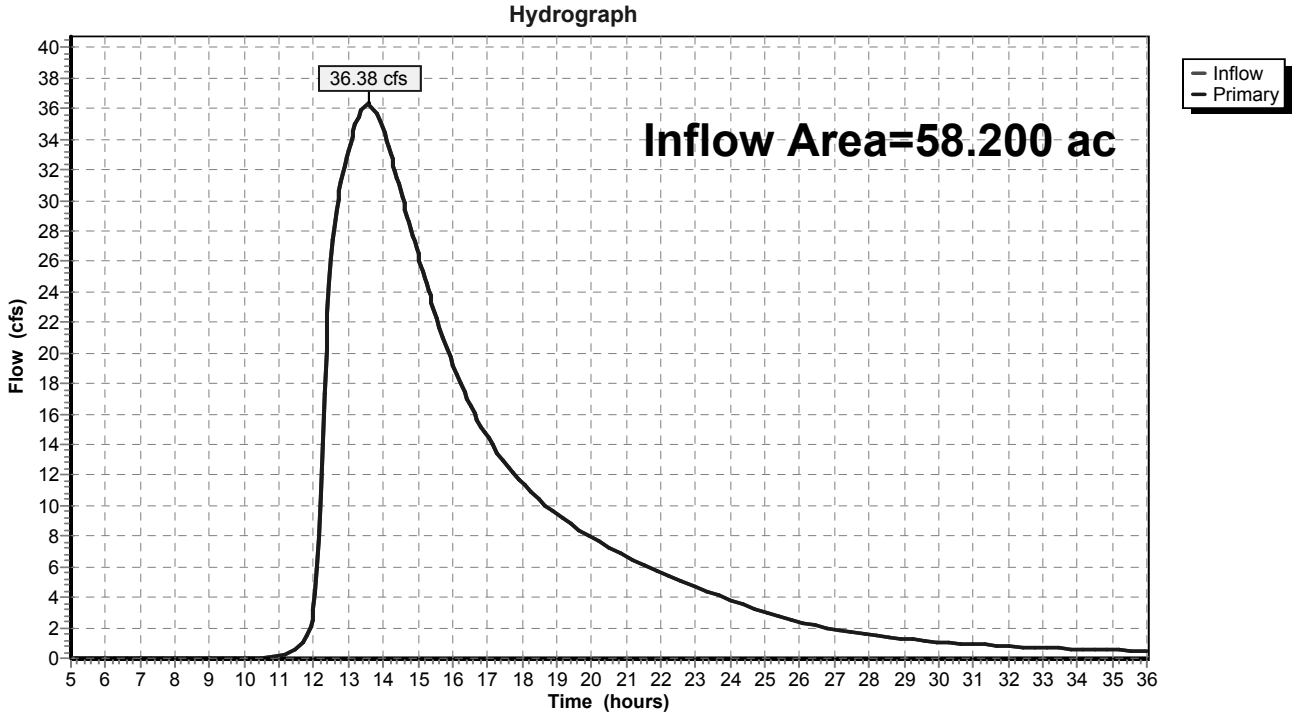


Summary for Link PR-S: PROPOSED DISCHARGE TO SOUTH CREEK

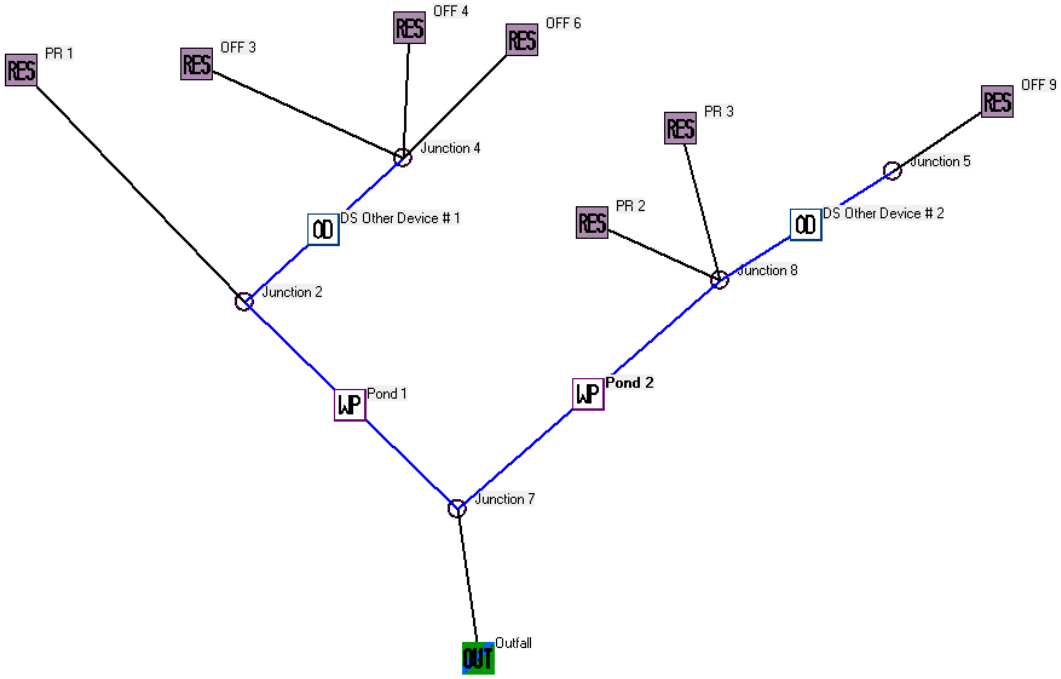
Inflow Area = 58.200 ac, 4.64% Impervious, Inflow Depth > 3.41" for 100-YEAR event
Inflow = 36.38 cfs @ 13.57 hrs, Volume= 16.553 af
Primary = 36.38 cfs @ 13.57 hrs, Volume= 16.553 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-36.00 hrs, dt= 0.05 hrs

Link PR-S: PROPOSED DISCHARGE TO SOUTH CREEK



APPENDIX 4


PR 1
OFF 3
OFF 4
OFF 6
Junction 4
DS Other Device # 1
Junction 2
Pond 1
PR 3
OFF 9
Junction 5
PR 2
DS Other Device # 2
Junction 8
Pond 2
Junction 7
Outfall

Canopy Hill North - InputData

Data file name: Z:\Projects\2017\959.00-WI\DESIGN\SWMP\SLAMM\Canopy Hill North.mdb
WinSLAMM Version 10.4.0
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Milwaukee WI 1969.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
If Other Device Pollutant Load Reduction Values = 1, Off-site Pollutant Loads are Removed from Pollutant Load % Reduction calculations
Seed for random number generator: -42
Study period starting date: 01/05/69 Study period ending date: 12/31/69
Start of Winter Season: 12/06 End of Winter Season: 03/28
Date: 05-03-2021 Time: 09:33:37
Site information:

LU# 1 - Residential: PR 1 Total area (ac): 25.500
  1 - Roofs 1: 0.500 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  2 - Roofs 2: 2.100 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  3 - Roofs 3: 1.400 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  4 - Roofs 4: 1.300 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  13 - Paved Parking 1: 0.700 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  14 - Paved Parking 2: 1.900 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  25 - Driveways 1: 0.010 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  37 - Streets 1: 1.060 ac. Smooth Street Length = 0.625 curb-mi Street Width (assuming two curb-mi per street mile) = 27.984 ft
    Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area

PSD File: C:\WinSLAMM Files\NURP.cpz
38 - Streets 2: 0.760 ac. Smooth Street Length = 0.448 curb-mi Street Width (assuming two curb-mi per street mile) = 27.99107 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 6.340 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
46 - Large Landscaped Areas 2: 5.300 ac. Normal Clayey Low Density Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
47 - Large Landscaped Areas 3: 4.130 ac. Normal Clayey Low Density Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 2 - Residential: PR 3 Total area (ac): 16.100
1 - Roofs 1: 1.250 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 1.250 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 7.700 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
46 - Large Landscaped Areas 2: 5.900 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 3 - Residential: PR 2 Total area (ac): 50.450
1 - Roofs 1: 8.150 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 0.400 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
37 - Streets 1: 4.800 ac. Smooth Street Length = 2.805 curb-mi Street Width (assuming two curb-mi per street mile) = 28.23529 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 37.100 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 4 - Residential: OFF 3 Total area (ac): 11.600
45 - Large Landscaped Areas 1: 11.600 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 5 - Residential: OFF 4 Total area (ac): 5.700
13 - Paved Parking 1: 0.300 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
57 - Undeveloped Areas 1: 5.400 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 6 - Residential: OFF 6   Total area (ac): 3.900
     13 - Paved Parking 1: 0.550 ac.   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     25 - Driveways 1: 0.550 ac.   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     45 - Large Landscaped Areas 1: 2.800 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 7 - Residential: OFF 9   Total area (ac): 21.600
     57 - Undeveloped Areas 1: 21.600 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

Control Practice 1: Wet Detention Pond CP# 1 (DS) - Pond 1
   Particle Size Distribution file name: Not needed - calculated by program
   Initial stage elevation (ft):   5
   Peak to Average Flow Ratio: 3.8
   Maximum flow allowed into pond (cfs): No maximum value entered
   Outlet Characteristics:
        Outlet type: Orifice 1
              1. Orifice diameter (ft):   1.25
              2. Number of orifices: 1
              3. Invert elevation above datum (ft):   5
        Outlet type: Broad Crested Weir
              1. Weir crest length (ft):   20
              2. Weir crest width (ft):   50
              3. Height from datum to bottom of weir opening: 11
   Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.8467	0.00	0.00
2	1.00	0.9023	0.00	0.00
3	4.00	1.0725	0.00	0.00
4	5.00	1.3677	0.00	0.00
5	12.00	2.2600	0.00	0.00

Control Practice 2: Wet Detention Pond CP# 2 (DS) - Pond 2
Particle Size Distribution file name: Not needed - calculated by program
Initial stage elevation (ft): 11
Peak to Average Flow Ratio: 3.8
Maximum flow allowed into pond (cfs): No maximum value entered
Outlet Characteristics:
Outlet type: Orifice 1
1. Orifice diameter (ft): 1
2. Number of orifices: 1
3. Invert elevation above datum (ft): 13
Outlet type: Orifice 2
1. Orifice diameter (ft): 4
2. Number of orifices: 1
3. Invert elevation above datum (ft): 14.2
Outlet type: Broad Crested Weir
1. Weir crest length (ft): 20
2. Weir crest width (ft): 50
3. Height from datum to bottom of weir opening: 19
Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.6420	0.00	0.00
2	1.00	0.6788	0.00	0.00
3	10.00	1.0788	0.00	0.00
4	11.00	1.3004	0.00	0.00
5	20.00	1.9500	0.00	0.00

Control Practice 3: Other Device CP# 1 (DS) - DS Other Device # 1
Fraction of drainage area served by device (ac) = 1.00
Particulate Concentration reduction fraction = 1.00
Filterable Concentration reduction fraction = 0.00
Runoff volume reduction fraction = 0

Control Practice 4: Other Device CP# 2 (DS) - DS Other Device # 2
Fraction of drainage area served by device (ac) = 1.00
Particulate Concentration reduction fraction = 1.00
Filterable Concentration reduction fraction = 0.00

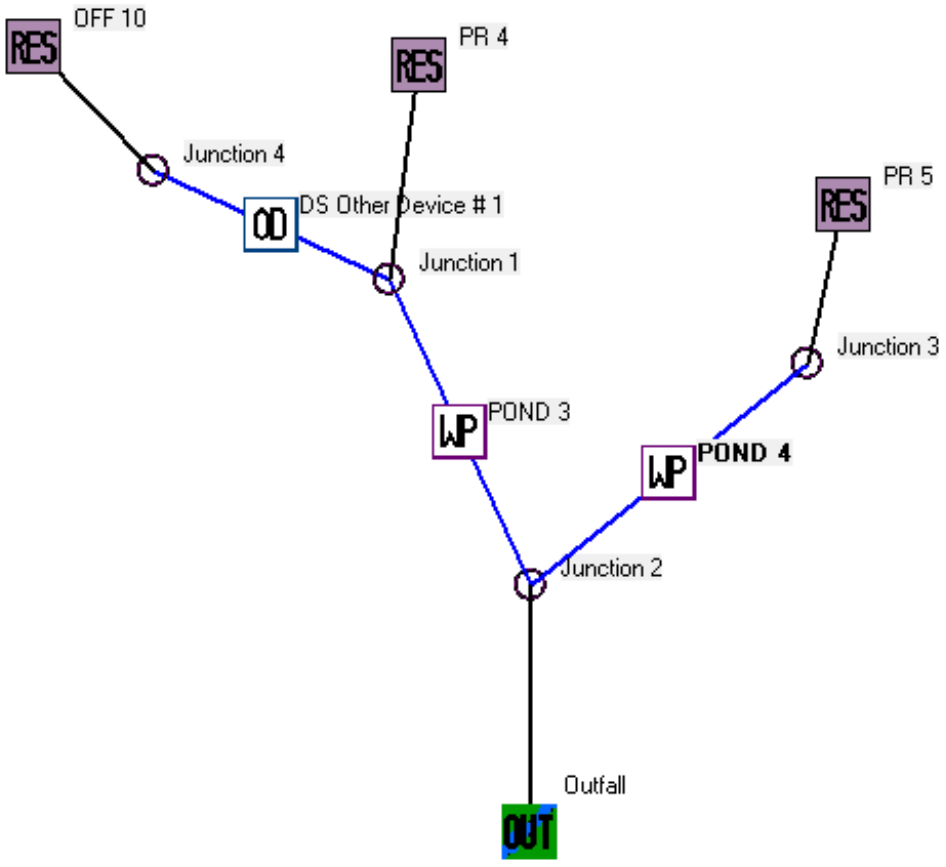
Runoff volume reduction fraction = 0

Canopy Hill North - Output Summary

SLAMM for Windows Version 10.4.0

Data file name: Z:\Projects\2017\959.00-WI\DESIGN\SWMP\SLAMM\Canopy Hill North.mdb
Data file description:
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Milwaukee WI 1969.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Start of Winter Season: 12/06 End of Winter Season: 03/28
Model Run Start Date: 01/05/69 Model Run End Date: 12/31/69
Date of run: 05-03-2021 Time of run: 09:34:05
Total Area Modeled (acres): 134.850
Years in Model Run: 0.99

	Runoff Volume (cu ft)	Percent Runoff Volume Reduction	Particulate Solids Conc. (mg/L)	Particulate Solids Yield (lbs)	Percent Particulate Solids Reduction
Total of all Land Uses without Controls:	3.252E+06	-	101.9	20686	-
Outfall Total with Controls:	3.139E+06	3.47%	21.70	4252	79.45%
Annualized Total After Outfall Controls:	3.183E+06			4311	


OFF 10
RES
PR 4
RES
Junction 4
OD
DS Other Device # 1
Junction 1
PR 5
RES
Junction 3
WP
POND 3
WP
POND 4
Junction 2
Outfall
OUT

Data file name: Z:\Projects\2017\959.00-WI\DESIGN\SWMP\SLAMM\Canopy Hill South.mdb
WinSLAMM Version 10.4.0
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Milwaukee WI 1969.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
If Other Device Pollutant Load Reduction Values = 1, Off-site Pollutant Loads are Removed from Pollutant Load % Reduction calculations
Seed for random number generator: -42
Study period starting date: 01/05/69 Study period ending date: 12/31/69
Start of Winter Season: 12/06 End of Winter Season: 03/28
Date: 05-03-2021 Time: 09:42:01
Site information:

LU# 1 - Residential: PR 4 Total area (ac): 24.700
  1 - Roofs 1: 3.300 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  25 - Driveways 1: 0.200 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  37 - Streets 1: 1.000 ac. Smooth Street Length = 0.439 curb-mi Street Width (assuming two curb-mi per street mile) = 37.58542 ft
    Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  38 - Streets 2: 1.000 ac. Smooth Street Length = 0.578 curb-mi Street Width (assuming two curb-mi per street mile) = 28.54671 ft
    Default St. Dirt Accum. Annual Winter Load = 2500 lbs Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  45 - Large Landscaped Areas 1: 17.000 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
  57 - Undeveloped Areas 1: 2.200 ac. Normal Clayey Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 2 - Residential: PR 5   Total area (ac): 11.900
     1 - Roofs 1: 1.400 ac.   Pitched   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     13 - Paved Parking 1: 0.900 ac.   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     25 - Driveways 1: 0.300 ac.   Connected   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     37 - Streets 1: 0.400 ac.   Smooth   Street Length = 0.206 curb-mi Street Width (assuming two curb-mi per street mile) = 32.03883 ft
          Default St. Dirt Accum.   Annual Winter Load = 2500 lbs   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     45 - Large Landscaped Areas 1: 8.500 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
     57 - Undeveloped Areas 1: 0.400 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 3 - Residential: OFF 10   Total area (ac): 21.600
     57 - Undeveloped Areas 1: 21.600 ac.   Normal Clayey   Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

Control Practice 1: Wet Detention Pond CP# 1 (DS) - POND 3
Particle Size Distribution file name: Not needed - calculated by program
Initial stage elevation (ft):   12
Peak to Average Flow Ratio: 3.8
Maximum flow allowed into pond (cfs): No maximum value entered
Outlet Characteristics:
Outlet type: Orifice 1
1. Orifice diameter (ft):   1
2. Number of orifices: 1
3. Invert elevation above datum (ft):   12
Outlet type: Broad Crested Weir
1. Weir crest length (ft):   20
2. Weir crest width (ft):   50
3. Height from datum to bottom of weir opening: 15
Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.8000	0.00	0.00
2	1.00	0.8570	0.00	0.00

3	11.00	1.5290	0.00	0.00
4	12.00	1.7920	0.00	0.00
5	16.00	2.4790	0.00	0.00

Control Practice 2: Wet Detention Pond CP# 2 (DS) - POND 4

Particle Size Distribution file name: Not needed - calculated by program

Initial stage elevation (ft): 12

Peak to Average Flow Ratio: 3.8

Maximum flow allowed into pond (cfs): No maximum value entered

Outlet Characteristics:

Outlet type: Orifice 1

1. Orifice diameter (ft): 3
2. Number of orifices: 1
3. Invert elevation above datum (ft): 12

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 20
2. Weir crest width (ft): 50
3. Height from datum to bottom of weir opening: 16

Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.4363	0.00	0.00
2	1.00	0.4651	0.00	0.00
3	11.00	0.7844	0.00	0.00
4	12.00	0.9657	0.00	0.00
5	17.00	1.3716	0.00	0.00

Control Practice 3: Other Device CP# 1 (DS) - DS Other Device # 1

Fraction of drainage area served by device (ac) = 1.00

Particulate Concentration reduction fraction = 1.00

Filterable Concentration reduction fraction = 0.00

Runoff volume reduction fraction = 0

Canopy Hill South - Output Summary

SLAMM for Windows Version 10.4.0

Data file name: Z:\Projects\2017\959.00-WI\DESIGN\SWMP\SLAMM\Canopy Hill South.mdb
Data file description:
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Milwaukee WI 1969.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Start of Winter Season: 12/06 End of Winter Season: 03/28
Model Run Start Date: 01/05/69 Model Run End Date: 12/31/69
Date of run: 05-03-2021 Time of run: 09:41:40
Total Area Modeled (acres): 58.200
Years in Model Run: 0.99

	Runoff Volume (cu ft)	Percent Runoff Volume Reduction	Particulate Solids Conc. (mg/L)	Particulate Solids Yield (lbs)	Percent Particulate Solids Reduction
Total of all Land Uses without Controls:	1.148E+06	-	98.73	7074	-
Outfall Total with Controls:	1.152E+06	-0.35%	13.63	980.0	86.15%
Annualized Total After Outfall Controls:	1.168E+06			993.6	

APPENDIX 5

PINNACLE ENGINEERING GROUP
Plan | Design | Deliver
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STORM SEWER COMPUTATIONS
FOR
CANOPY HILL

UNION GROVE, WISCONSIN

SHEET 1 OF 1
DESIGN BY: BDP
PROJECT NUMBER: 959.00
DATE: 1/19/2021

DESIGN DATA

County: Racine | **Design Storm:** 10 yr | **Storm Duration:** 10 min | **DESIGN INTENSITY (I):** 5.04 in/hr | Intensity calculated using SEWRPC IDF equations.

STRUCTURE DATA			DRAINAGE AREA AND FLOW DATA (Flow is determined by Rational Method Q = CIA)				PIPE DATA				PIPE CAPACITY INFORMATION (Pipe capacity is determined by Manning's Equation $Q = 1.486/n\ AR^{2/3} S^{1/2}$)					ELEVATIONS		
Notes	Upstream Structure	Downstream Structure	Individual Acres A	Individual Coefficient C	Individual Flow Q (cfs)	Cumulative Flow (cfs)	Length (ft)	Diameter (in)	Slope (%)	Manning Coefficient	Required Drop (ft)	Actual Drop (ft)	Percent Full (%)	Actual Velocity (fps)	Max. Capacity (cfs)	Rim/Toc Up	Invert Up	Invert Down
	CB 3	CB 2	0.59	0.46	1.37	1.37	26.2	12	1.00	0.013	0.04	0.26	41%	4.24	3.83	769.41	765.26	765.00
	CB 2	FES 1	0.74	0.46	1.72	3.08	245.6	12	2.00	0.013	1.84	4.91	58%	6.74	5.42	769.41	761.91	757.00
	CB 7	CB 6	0.47	0.46	1.09	1.09	26.2	12	1.00	0.013	0.02	0.26	35%	3.99	3.83	769.41	765.54	765.28
	CB 6	CB 5	0.84	0.46	1.95	3.04	198.0	12	3.00	0.013	1.44	5.94	49%	7.83	6.64	769.41	765.28	759.34
	CB 5	FES 4	1.15	0.46	2.67	5.70	69.6	15	3.00	0.013	0.54	2.09	51%	9.16	12.04	762.60	759.09	757.00
	CB 9	FES 8	0.81	0.46	1.89	3.78	206.9	12	2.50	0.013	2.33	5.17	63%	7.69	6.06	769.35	762.17	757.00
	CB 9.1	CB 9	0.81	0.46	1.89	1.89	7.9	12	1.00	0.013	0.02	0.08	52%	4.60	3.83	769.25	765.08	765.00

Typical lot

Based on 0.95 for impervious and 0.25 for pervious.
(including to centerline of roadway) = 17,000 s.f.
1,500 s.f. roadway 320 s.f. sidewalk 2,500 s.f. home 500 s.f. driveway 500 s.f. patio
Total impervious = 5.920 s.f.
Total pervious = 11,080 s.f.
Average weighted runoff coefficient = 0.46

PINNACLE ENGINEERING GROUP
Plan | Design | Deliver
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STORM SEWER COMPUTATIONS
FOR
CANOPY HILL

UNION GROVE, WISCONSIN

SHEET 1 OF 1
DESIGN BY: BDP
PROJECT NUMBER: 959.00
DATE: 1/19/2021

DESIGN DATA

County: Racine | **Design Storm:** 10 yr | **Storm Duration:** 10 min | **DESIGN INTENSITY (I):** 5.04 in/hr | Intensity calculated using SEWRPC IDF equations.

STRUCTURE DATA			DRAINAGE AREA AND FLOW DATA (Flow is determined by Rational Method Q = CIA)				PIPE DATA				PIPE CAPACITY INFORMATION (Pipe capacity is determined by Manning's Equation $Q = 1.486/n\ AR^{2/3}\ S^{1/2}$)					ELEVATIONS		
Notes	Upstream Structure	Downstream Structure	Individual Acres A	Individual Coefficient C	Individual Flow Q (cfs)	Cumulative Flow (cfs)	Length (ft)	Diameter (in)	Slope (%)	Manning Coefficient	Required Drop (ft)	Actual Drop (ft)	Percent Full (%)	Actual Velocity (fps)	Max. Capacity (cfs)	Rim/Toc Up	Invert Up	Invert Down
	MH 19	MH 18	0.00	0.46	0.00	1.97	154.9	12	0.80	0.013	0.47	1.24	59%	4.27	3.43	776.08	771.65	770.41
	MH 18	MH 17	0.00	0.46	0.00	1.97	118.0	12	0.80	0.013	0.36	0.94	59%	4.27	3.43	774.85	770.41	769.46
	MH 17	MH 16	0.00	0.46	0.00	4.23	273.2	15	1.00	0.013	1.17	2.73	61%	5.61	6.95	774.05	769.21	766.48
	MH 16	CB 15	0.00	0.46	0.00	5.68	9.6	15	1.00	0.013	0.07	0.10	78%	5.94	6.95	771.66	766.48	766.38
	CB 15	MH 14	0.58	0.46	1.36	7.03	105.7	15	1.50	0.013	1.25	1.59	79%	7.28	8.51	771.47	766.38	764.80
	MH 14	MH 13	0.00	0.46	0.00	10.79	131.0	18	1.00	0.013	1.38	1.31	90%	6.76	11.30	773.70	762.50	761.19
	MH 13	FES 12	0.00	0.46	0.00	10.79	119.0	18	1.00	0.013	1.26	1.19	90%	6.76	11.30	772.60	761.19	760.00
	CB 19.1	MH 19	0.41	0.46	0.94	0.94	10.3	12	0.50	0.013	0.01	0.05	40%	2.98	2.71	775.88	771.70	771.65
	CB 19.2	MH 19	0.44	0.46	1.02	1.02	19.3	12	0.50	0.013	0.02	0.10	43%	3.04	2.71	775.97	771.74	771.65
	CB 17.1	MH 17	0.44	0.46	1.03	1.03	8.8	12	0.50	0.013	0.01	0.04	43%	3.04	2.71	773.69	769.51	769.46
	CB 17.2	MH 17	0.54	0.46	1.24	1.24	17.4	12	0.50	0.013	0.02	0.09	49%	3.19	2.71	773.69	769.55	769.46
	CB 16.1	MH 16	0.62	0.46	1.45	1.45	24.6	12	0.50	0.013	0.04	0.12	55%	3.32	2.71	771.61	767.10	766.98
	CB 14.1	MH 14	1.62	0.46	3.76	3.76	255.1	12	1.00	0.013	2.84	2.55	93%	5.13	3.83	767.20	765.05	762.50

Based on 0.95 for impervious and 0.25 for pervious. Typical lot
(including to centerline of roadway) = 17,000 s.f.
1,500 s.f. roadway 320 s.f. sidewalk 2,500 s.f. home 500 s.f. driveway 500 s.f. patio
Total impervious = 5.920 s.f.
Total pervious = 11,080 s.f.
Average weighted runoff coefficient = 0.46

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STORM SEWER COMPUTATIONS
FOR
CANOPY HILL

UNION GROVE, WISCONSIN

SHEET 1 OF 1
DESIGN BY: BDP
PROJECT NUMBER: 959.00
DATE: 1/19/2021

DESIGN DATA

County: Racine | **Design Storm:** 10 yr | **Storm Duration:** 10 min | **DESIGN INTENSITY (I):** 5.04 in/hr | Intensity calculated using SEWRPC IDF equations.

STRUCTURE DATA			DRAINAGE AREA AND FLOW DATA (Flow is determined by Rational Method Q = CIA)				PIPE DATA				PIPE CAPACITY INFORMATION (Pipe capacity is determined by Manning's Equation $Q = 1.486/n\ AR^{2/3}\ S^{1/2}$)					ELEVATIONS		
Notes	Upstream Structure	Downstream Structure	Individual Acres A	Individual Coefficient C	Individual Flow Q (cfs)	Cumulative Flow (cfs)	Length (ft)	Diameter (in)	Slope (%)	Manning Coefficient	Required Drop (ft)	Actual Drop (ft)	Percent Full (%)	Actual Velocity (fps)	Max. Capacity (cfs)	Rim/Toc Up	Invert Up	Invert Down
	STUB	MH 28	9.18	0.46	21.28	26.52	65.9	30	0.60	0.013	0.28	0.40	75%	7.24	34.18	769.35	763.49	763.09
	MH 28	MH 27	0.00	0.46	0.00	26.52	200.5	30	0.60	0.013	0.84	1.20	75%	7.24	34.18	768.76	763.09	761.89
	MH 27	MH 26	0.00	0.46	0.00	30.06	112.5	30	0.60	0.013	0.60	0.67	83%	7.36	34.18	766.97	761.89	761.22
	MH 26	MH 25	0.00	0.46	0.00	30.06	74.2	30	0.60	0.013	0.40	0.44	83%	7.36	34.18	767.86	761.22	760.77
	MH 25	MH 24	0.00	0.46	0.00	30.06	109.2	30	0.60	0.013	0.59	0.65	83%	7.36	34.18	768.65	760.77	760.12
	MH 24	MH 23	0.00	0.46	0.00	30.06	60.8	30	0.60	0.013	0.33	0.36	83%	7.36	34.18	767.98	760.12	759.75
	MH 23	CB 22	0.00	0.46	0.00	30.06	9.0	36	0.30	0.013	0.02	0.03	74%	5.77	39.30	767.60	759.75	759.72
	CB 22	MH 21	1.18	0.46	2.75	32.81	197.1	36	0.30	0.013	0.48	0.59	79%	5.85	39.30	767.42	759.72	759.13
	MH 21	FES 20	0.00	0.46	0.00	32.81	44.2	36	0.30	0.013	0.11	0.13	79%	5.85	39.30	765.30	759.13	759.00
	CB 28.3	CB 28.2	0.58	0.46	1.34	1.34	45.1	12	0.60	0.013	0.06	0.27	49%	3.49	2.97	768.57	765.33	765.06
	CB 28.2	CB 28.1	0.34	0.46	0.79	2.13	33.2	12	0.60	0.013	0.12	0.20	70%	3.88	2.97	769.06	765.06	764.86
	CB 28.1	MH 28	0.21	0.46	0.49	2.62	44.7	12	0.60	0.013	0.24	0.27	83%	4.00	2.97	769.06	764.86	764.59
	CB 28.6	CB 28.5	0.58	0.46	1.34	1.34	45.1	12	0.60	0.013	0.06	0.27	49%	3.49	2.97	768.57	765.37	765.10
	CB 28.5	CB 28.4	0.39	0.46	0.90	2.25	33.2	12	0.60	0.013	0.13	0.20	73%	3.92	2.97	768.94	765.10	764.90
	CB 28.4	MH 28	0.16	0.46	0.37	2.62	51.1	12	0.60	0.013	0.28	0.31	83%	4.00	2.97	768.94	764.90	764.59
	CB 27.1	MH 27	0.82	0.46	1.89	1.89	9.8	12	0.50	0.013	0.03	0.05	68%	3.52	2.71	766.78	762.94	762.89
	CB 27.2	MH 27	0.71	0.46	1.65	1.65	16.4	12	0.50	0.013	0.04	0.08	61%	3.42	2.71	766.78	762.97	762.89
	CB 23.1	MH 23	1.05	0.46	2.43	2.43	17.2	12	1.00	0.013	0.08	0.17	63%	4.88	3.83	767.42	763.35	763.18
	CB 29.3	MH 29.2	60.00	0.30	90.72	90.72	285.7	48	0.40	0.013	1.14	1.14	88%	8.24	97.72	764.60	761.30	760.16
	MH 29.2	MH 29.1	0.00	0.46	0.00	90.72	38.8	48	0.40	0.013	0.15	0.16	88%	8.24	97.72	770.77	760.16	760.01
	MH 29.1	FES 29	0.00	0.46	0.00	90.72	251.7	48	0.40	0.013	1.00	1.01	88%	8.24	97.72	769.87	760.01	759.00

Typical lot

Based on 0.95 for impervious and 0.25 for pervious.
(including to centerline of roadway) = 17,000 s.f.
1,500 s.f. roadway 320 s.f. sidewalk 2,500 s.f. home 500 s.f. driveway 500 s.f. patio
Total impervious = 5.920 s.f.
Total pervious = 11,080 s.f.
Average weighted runoff coefficient = 0.46

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STORM SEWER COMPUTATIONS
FOR
CANOPY HILL

UNION GROVE, WISCONSIN

SHEET 1 OF 1
DESIGN BY: BDP
PROJECT NUMBER: 959.00
DATE: 1/19/2021

DESIGN DATA

County: Kenosha | **Design Storm:** 10 yr | **Storm Duration:** 10 min | **DESIGN INTENSITY (I):** 5.03 in/hr | Intensity calculated using SEWRPC IDF equations.

STRUCTURE DATA			DRAINAGE AREA AND FLOW DATA (Flow is determined by Rational Method Q = CIA)				PIPE DATA				PIPE CAPACITY INFORMATION (Pipe capacity is determined by Manning's Equation $Q = 1.486/n\ AR^{2/3}\ S^{1/2}$)					ELEVATIONS		
Notes	Upstream Structure	Downstream Structure	Individual Acres A	Individual Coefficient C	Individual Flow Q (cfs)	Cumulative Flow (cfs)	Length (ft)	Diameter (in)	Slope (%)	Manning Coefficient	Required Drop (ft)	Actual Drop (ft)	Percent Full (%)	Actual Velocity (fps)	Max. Capacity (cfs)	Rim/Toc Up	Invert Up	Invert Down
	MH 39	MH 38	0.00	0.46	0.00	0.57	262.0	12	1.80	0.013	0.07	4.72	18%	4.10	5.14	779.43	774.89	770.18
	MH 38	MH 37	0.00	0.46	0.00	7.68	331.1	15	1.80	0.013	4.67	5.96	78%	7.98	9.32	775.47	770.18	764.22
	MH 37	MH 36	0.00	0.46	0.00	13.01	45.3	30	0.25	0.013	0.05	0.11	60%	4.42	22.06	770.42	764.22	764.11
	MH 36	MH 35	0.00	0.46	0.00	14.74	170.4	30	0.25	0.013	0.22	0.43	66%	4.55	22.06	769.35	764.11	763.68
	MH 35	CB 34	0.00	0.46	0.00	18.23	26.6	30	0.25	0.013	0.05	0.07	79%	4.72	22.06	767.58	763.68	763.61
	CB 34	MH 33	0.58	0.46	1.34	19.57	152.2	30	0.25	0.013	0.35	0.38	84%	4.76	22.06	767.98	763.61	763.23
	MH 33	FES 32	0.00	0.46	0.00	19.57	93.2	30	0.25	0.013	0.21	0.23	84%	4.76	22.06	767.00	763.23	763.00
	CB 39.1	MH 39	0.12	0.46	0.29	0.29	6.6	12	1.00	0.013	0.00	0.07	13%	2.72	3.83	779.30	774.96	774.89
	CB 39.2	MH 39	0.12	0.46	0.29	0.29	26.6	12	1.00	0.013	0.00	0.27	13%	2.72	3.83	779.30	775.16	774.89
	CB 38.2	CB 38.1	1.11	0.46	2.58	2.58	164.4	15	0.20	0.013	0.26	0.33	79%	2.66	3.11	772.70	770.53	770.21
	CB 38.1	MH 38	0.56	0.46	1.29	3.87	6.6	15	0.40	0.013	0.02	0.03	83%	3.79	4.39	775.23	770.21	770.18
	CB 38.4	CB 38.3	0.84	0.46	1.94	1.94	155.6	12	1.00	0.013	0.46	1.56	53%	4.63	3.83	776.10	772.25	770.69
	CB 38.3	MH 38	0.56	0.46	1.29	3.23	26.6	12	1.00	0.013	0.22	0.27	80%	5.14	3.83	775.23	770.69	770.43
	CB 37.3	CB 37.2	0.87	0.46	2.01	2.01	154.0	12	1.00	0.013	0.49	1.54	55%	4.67	3.83	771.00	767.71	766.17
	CB 37.2	MH 37	0.71	0.46	1.65	3.66	25.7	15	0.80	0.013	0.08	0.21	60%	4.98	6.22	770.25	765.92	765.72
	CB 37.1	MH 37	0.73	0.46	1.68	1.68	7.5	12	0.50	0.013	0.02	0.04	62%	3.43	2.71	770.25	765.76	765.72
	CB 36.2	CB 36.1	0.54	0.46	1.24	1.24	33.2	12	0.50	0.013	0.04	0.17	49%	3.19	2.71	769.55	766.03	765.87
	CB 36.1	MH 36	0.21	0.46	0.49	1.73	52.0	12	0.50	0.013	0.12	0.26	64%	3.45	2.71	769.55	765.87	765.61
	CB 35.2	CB 35.1	0.87	0.46	2.01	2.01	41.6	12	0.50	0.013	0.13	0.21	72%	3.56	2.71	767.20	763.92	763.71
	CB 35.1	MH 35	0.64	0.46	1.49	3.50	6.6	15	0.50	0.013	0.02	0.03	69%	4.10	4.91	767.98	763.71	763.68
	MH 41	FES 40	24.27	0.46	56.16	56.16	212.3	42	0.30	0.013	0.66	0.64	89%	6.52	59.28	769.62	763.64	763.00
	CB 45	MH 44	4.45	0.46	10.30	10.30	81.9	18	1.00	0.013	0.79	0.82	86%	6.78	11.30	769.30	765.05	764.23
	MH 44	MH 43	0.00	0.46	0.00	15.54	176.6	24	0.50	0.013	0.83	0.88	85%	5.80	17.21	769.70	764.23	763.35
	MH 43	FES 42	0.00	0.46	0.00	15.54	70.2	24	0.50	0.013	0.33	0.35	85%	5.80	17.21	769.50	763.35	763.00
	CB 44.2	CB 44.1	1.27	0.46	2.94	2.94	41.0	12	0.70	0.013	0.28	0.29	86%	4.33	3.21	767.75	765.03	764.75
	CB 44.1	MH 44	1.00	0.46	2.31	5.25	73.5	15	0.70	0.013	0.48	0.51	85%	5.02	5.81	767.75	764.75	764.23

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STORM SEWER COMPUTATIONS
FOR
CANOPY HILL- DUPLEX TOWNHOMES

UNION GROVE, WI

SHEET 1 OF 1
DESIGN BY: BDP
PROJECT NUMBER: 959.00
DATE: 5/3/2021

DESIGN DATA

County: Racine | **Design Storm:** 10 yr | **Storm Duration:** 10 min | **DESIGN INTENSITY (I):** 5.04 in/hr | Intensity calculated using SEWRPC IDF equations.

STRUCTURE DATA			DRAINAGE AREA AND FLOW DATA (Flow is determined by Rational Method Q = CIA)				PIPE DATA				PIPE CAPACITY INFORMATION (Pipe capacity is determined by Manning's Equation $Q = 1.486/n\ AR^{2/3}\ S^{1/2}$)					ELEVATIONS		
Notes	Upstream Structure	Downstream Structure	Individual Acres A	Individual Coefficient C	Individual Flow Q (cfs)	Cumulative Flow (cfs)	Length (ft)	Diameter (in)	Slope (%)	Manning Coefficient	Required Drop (ft)	Actual Drop (ft)	Percent Full (%)	Actual Velocity (fps)	Max. Capacity (cfs)	Rim/Toc Up	Invert Up	Invert Down
	MH 11.0	CB 10.0	0.00	0.00	0.00	9.18	92.3	24	0.50	0.012	0.13	0.46	52%	5.60	18.64	777.90	771.87	771.41
	CB 10.0	MH 9.0	0.41	0.79	1.63	10.82	86.6	24	0.50	0.012	0.17	0.43	59%	5.82	18.64	776.90	771.41	770.98
	MH 9.0	CB 8.0	0.00	0.00	0.00	12.31	86.7	24	0.50	0.012	0.22	0.43	65%	5.99	18.64	777.70	770.98	770.55
	CB 8.0	MH 7.0	0.51	0.70	1.80	14.12	155.8	24	0.50	0.012	0.52	0.78	73%	6.15	18.64	776.90	770.55	769.77
	MH 7.0	MH 6.0	0.00	0.00	0.00	27.41	84.8	30	0.50	0.012	0.32	0.42	77%	7.21	33.80	778.50	769.77	769.34
	MH 6.0	MH 5.0	0.00	0.00	0.00	29.68	130.8	30	0.80	0.012	0.58	1.05	68%	8.88	42.75	779.00	769.34	768.30
	MH 5.0	MH 4.0	0.00	0.00	0.00	30.87	57.3	30	0.80	0.012	0.28	0.46	70%	8.95	42.75	777.10	768.30	767.84
	MH 4.0	CB 3.0	0.00	0.00	0.00	33.19	179.8	30	0.80	0.012	1.00	1.44	75%	9.06	42.75	775.60	767.84	766.40
	CB 3.0	MH 2.0	0.74	0.63	2.33	39.00	54.6	30	0.80	0.012	0.42	0.44	86%	9.23	42.75	772.50	766.40	765.96
	MH 2.0	CB 1.0	0.00	0.00	0.00	41.68	104.6	30	1.00	0.012	0.92	1.05	82%	10.29	47.80	771.50	765.96	764.92
	CB 1.0	STUB	0.25	0.64	0.81	42.49	21.8	42	0.30	0.013	0.04	0.07	70%	6.32	59.28	769.90	763.92	763.85
	STUB	MH 41	0.00	0.00	0.00	42.49	53.5	42	0.30	0.013	0.10	0.16	70%	6.32	59.28	771.23	763.85	763.69
	CB 11.1	MH 11.0	6.02	0.28	8.50	8.50	128.74	18	0.70	0.012	0.72	0.90	79%	6.09	10.24	776.00	772.77	771.87
	AD 11.3	BC 11.2	0.09	0.20	0.09	0.09	78.83	8	0.50	0.012	0.00	0.39	15%	1.69	1.00	776.80	773.66	773.26
	BC 11.2	MH 11.0	0.13	0.90	0.60	0.69	11.99	8	0.50	0.012	0.03	0.06	68%	2.91	1.00	777.70	773.26	773.20
	AD 9.2	BC 9.1	0.05	0.20	0.05	0.05	73.91	8	0.50	0.012	0.00	0.37	10%	1.42	1.00	777.60	774.10	773.73
	BC 9.1	MH 9.0	0.25	0.64	0.81	0.86	36.00	8	0.50	0.012	0.15	0.18	82%	3.01	1.00	777.90	773.73	773.55
	AD 9.4	BC 9.3	0.05	0.20	0.05	0.05	80.09	8	0.50	0.012	0.00	0.40	10%	1.42	1.00	776.80	773.81	773.41
	BC 9.3	MH 9.0	0.13	0.90	0.59	0.64	11.99	8	0.50	0.012	0.03	0.06	64%	2.86	1.00	777.60	773.41	773.35
	CB 7.3	AD 7.2	12.00	0.20	12.10	12.10	21.65	18	1.40	0.012	0.24	0.30	79%	8.62	14.48	775.80	772.18	771.88
	AD 7.2	BC 7.1	0.05	0.20	0.05	12.15	73.75	18	1.40	0.012	0.84	1.03	80%	8.63	14.48	777.86	771.88	770.85
	BC 7.1	MH 7.0	0.25	0.90	1.15	13.29	36.02	18	1.40	0.012	0.49	0.50	87%	8.69	14.48	778.60	770.85	770.34
	AD 7.5	BC 7.4	0.05	0.20	0.05	0.05	78.35	8	1.00	0.012	0.00	0.78	8%	1.81	1.41	777.50	774.25	773.46
	BC 7.4	MH 6	0.25	0.90	1.13	1.18	11.98	8	1.00	0.012	0.10	0.12	80%	4.25	1.41	778.30	773.46	773.34
	BC 6.2	CB 6.1	0.17	0.90	0.77	0.77	36.01	8	0.50	0.012	0.12	0.18	74%	2.96	1.00	780.00	774.15	773.97
	CB 6.1	MH 6.0	0.18	0.81	0.73	2.27	67.22	12	1.00	0.012	0.23	0.67	57%	5.11	4.15	778.80	773.97	773.30
	BC 6.3	CB 6.1	0.17	0.90	0.77	0.77	12.00	8	0.50	0.012	0.04	0.06	74%	2.97	1.00	779.50	774.36	774.30
	BC 5.2	CB 5.1	0.19	0.90	0.84	0.84	12.00	8	0.50	0.012	0.05	0.06	80%	3.01	1.00	776.00	771.51	771.45
	CB 5.1	MH 5.0	0.18	0.38	0.34	1.18	81.04	8	1.00	0.012	0.66	0.81	80%	4.25	1.41	775.50	771.45	770.64
	BC 4.2	CB 4.1	0.21	0.90	0.95	0.95	12.14	8	1.00	0.012	0.06	0.12	67%	4.09	1.41	775.80	771.40	771.28
	CB 4.1	MH 4.0	0.44	0.62	1.37	2.32	62.69	12	0.50	0.012	0.23	0.31	76%	3.90	2.94	775.10	770.95	770.64
	BC 3.2	CB 3.1	0.27	0.90	1.22	1.22	36.00	8	1.00	0.012	0.32	0.36	82%	4.26	1.41	774.20	769.32	768.96
	CB 3.1	CB 3.0	0.18	0.79	0.72	2.71	82.93	12	0.80	0.012	0.41	0.66	71%	4.87	3.71	773.20	768.63	767.96
	BC 3.3	CB 3.0	0.17	0.90	0.76	0.76	12.00	8	0.50	0.012	0.04	0.06	74%	2.96	1.00	773.80	768.69	768.63
	BC 2.2	CB 2.1	0.29	0.45	0.65	0.65	33.42	8	1.00	0.012	0.08	0.33	61%	3.99	1.41	773.00	768.71	768.37
	CB 2.1	MH 2.0	0.29	0.74	1.07	2.69	41.24	8	1.00	0.012	1.74	0.41	45%	2.61	1.02	772.30	768.37	767.96
	BC 2.3	CB 2.1	0.27	0.71	0.97	0.97	11.11	8	1.00	0.012	0.06	0.11	45%	2.61	1.02	773.60	768.49	768.37

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STORM SEWER COMPUTATIONS
FOR
CANOPY HILL

UNION GROVE, WISCONSIN

SHEET 1 OF 1
DESIGN BY: BDP
PROJECT NUMBER: 959.00
DATE: 2/22/2021

DESIGN DATA

County: Kenosha | **Design Storm:** 10 yr | **Storm Duration:** 10 min | **DESIGN INTENSITY (I):** 5.03 in/hr | Intensity calculated using SEWRPC IDF equations.

STRUCTURE DATA			DRAINAGE AREA AND FLOW DATA (Flow is determined by Rational Method Q = CIA)				PIPE DATA				PIPE CAPACITY INFORMATION (Pipe capacity is determined by Manning's Equation $Q = 1.486/n\ AR^{2/3}\ S^{1/2}$)					ELEVATIONS		
Notes	Upstream Structure	Downstream Structure	Individual Acres A	Individual Coefficient C	Individual Flow Q (cfs)	Cumulative Flow (cfs)	Length (ft)	Diameter (in)	Slope (%)	Manning Coefficient	Required Drop (ft)	Actual Drop (ft)	Percent Full (%)	Actual Velocity (fps)	Max. Capacity (cfs)	Rim/Toc Up	Invert Up	Invert Down
	AD 53.1	END 53.0	0.07	0.37	0.13	0.13	7.7	8	0.85	0.012	0.00	0.07	17%	2.26	1.30	771.25	769.01	768.94
	END 53.0	WYE 52.0	0.13	0.95	0.62	0.75	295.5	8	0.85	0.012	0.97	2.51	59%	3.65	1.30	772.30	768.94	766.43
	WYE 52.0	CB 51.0	0.00	0.00	0.00	1.54	125.0	12	1.00	0.012	0.20	1.25	42%	4.64	4.15	771.45	766.10	764.85
	CB 51.0	FES 50.0	0.27	0.90	1.22	5.12	61.5	12	3.00	0.012	1.08	1.85	69%	9.38	7.19	769.80	764.85	763.00
	AD 52.2	END 52.1	0.05	0.49	0.12	0.12	8.1	8	2.00	0.012	0.00	0.16	12%	3.01	1.99	771.60	768.69	768.53
	END 52.1	WYE 52.0	0.14	0.95	0.67	0.79	210.4	8	1.00	0.012	0.77	2.10	58%	3.93	1.41	772.30	768.53	766.43
	CB 51.2	CB 51.1	0.29	0.82	1.20	1.20	11.3	8	1.50	0.012	0.09	0.17	68%	5.04	1.72	771.90	767.78	767.61
	CB 51.1	CB 51.0	0.25	0.92	1.16	2.35	162.2	12	1.50	0.012	0.60	2.43	50%	6.01	5.08	771.30	767.28	764.85
	MH 58.0	MH 57.0	0.00	0.00	17.00	17.00	35.1	24	0.90	0.013	0.20	0.32	71%	7.58	23.09	775.00	770.91	770.59
	MH 57.0	MH 56.0	0.00	0.00	17.00	34.00	200.6	30	0.90	0.013	1.38	1.81	78%	8.94	41.86	775.00	770.09	768.29
	MH 56.0	MH 55.0	0.00	0.00	17.00	51.00	177.7	36	0.90	0.013	1.04	1.60	72%	9.96	68.06	773.50	767.79	766.19
	MH 55.0	FES 54.0	0.00	0.00	17.00	68.00	78.6	36	1.00	0.013	0.82	0.79	90%	10.75	71.75	773.25	766.19	765.40
	END 64.0	WYE 63.0	0.13	0.95	0.62	0.62	292.4	12	0.70	0.012	0.08	2.05	25%	3.17	3.47	774.80	769.75	767.70
	WYE 63.0	MH 62.0	0.00	0.00	0.00	2.49	62.3	12	0.70	0.012	0.26	0.44	70%	4.54	3.47	773.40	767.70	767.26
	MH 62.0	WYE 61.0	0.00	0.00	0.00	5.32	54.3	15	1.80	0.012	0.31	0.98	55%	7.89	10.10	772.60	767.01	766.04
	WYE 61.0	WYE 60.0	0.00	0.00	0.00	5.99	83.1	15	1.80	0.012	0.61	1.50	60%	8.11	10.10	772.20	766.04	764.54
	WYE 60.0	FES 59.0	0.00	0.00	0.00	6.61	85.6	15	1.80	0.012	0.76	1.54	65%	8.29	10.099512	772.20	764.54	763.00
	AD 63.2	END 63.1	0.22	0.28	1.20	1.20	12.0	8	2.00	0.012	0.10	0.24	61%	5.64	1.99	773.55	770.22	769.98
	END 63.1	WYE 63.0	0.14	0.95	0.67	1.87	277.4	12	0.70	0.012	0.65	1.94	56%	4.26	3.47	774.80	769.64	767.70
	CB 62.2	CB 62.1	0.24	0.87	1.05	1.05	8.0	12	1.00	0.012	0.01	0.08	32%	4.18	4.15	772.55	767.99	767.91
	CB 62.1	MH 62.0	0.48	0.74	1.79	2.84	92.5	12	0.70	0.012	0.50	0.65	78%	4.64	3.47	771.15	767.91	767.26
	END 61.1	WYE 61.0	0.14	0.95	0.67	0.67	277.5	8	1.00	0.012	0.72	2.78	51%	3.77	1.41	772.80	769.39	766.62
	END 60.1	WYE 60.0	0.13	0.95	0.62	0.62	208.8	8	1.00	0.012	0.47	2.09	48%	3.70	1.41	772.80	767.21	765.12
	CB 66.0	FES 40.0	0.28	0.89	1.25	1.25	114.8	8	4.00	0.013	1.24	4.59	51%	6.99	2.60	771.62	767.72	763.13
	CB 65.0	FES 32.0	0.28	0.89	1.25	1.25	97.1	8	5.00	0.013	1.04	4.86	47%	7.60	2.91	771.20	767.91	763.05