

STORMWATER MANAGEMENT REPORT

BRYAN ROAD COMMERCIAL DEVELOPMENT

Site Address:
TBD Bryan Road
O'Fallon, MO 63366

Property Owner:
Noles Properties
660 Office Parkway
Creve Coeur, MO 63141

Prepared By:



Steve Marion P.E.
Submittal Date: 6/26/2023

CITY OF O'FALLON
ENGINEERING DEPARTMENT
ACCEPTED FOR CONSTRUCTION
BY: Karl Ebert DATE: 8-15-2023
PROFESSIONAL ENGINEER'S SEAL
INDICATES RESPONSIBILITY FOR DESIGN

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Introduction

Premier Design Group was contracted to prepare construction documents for the project referred to as the Noles Bryan Road Commercial Development which is located south of the Starbucks on the eastern side of Bryan Road. The project is proposing to create four lots, two common ground areas and easement areas for cross access roadways that connect to Bryan Road, Magnolia Drive and the existing Starbucks Cross Access Drive. The proposed improvements that are depicted on the Stormwater Management Plans provide the design for the proposed development. The development will increase the impervious area of the site therefore changing the characteristics of the stormwater runoff. The information supplied in this report will provide evidence that the Post Developed Stormwater Runoff has been mitigated appropriately with Best Management Practices proposed for this development. The design intent of the plans is to provide pad ready sites for the lots. Therefore, the stormwater facilities have been designed to accommodate 80% impervious area for the entire property.

Project Narrative

Noles Properties is developing the subject property for pad ready sites. The property size is ± 8.67 acres. After ROW dedication the property area is ± 8.19 acres. The project is proposing 2 above ground detention basins. The upstream basin has a forebay and both have extended detention for water quality volume. This project will discharge to the existing creek that is tributary of Dardenne.

Site Area Calculations

Property Size	2.49 Acres
<u>Pre-Development Condition</u>	
0.00 Acres of Impervious Area	CN=98
8.19 Acres of Pervious Area	CN=73
"CN" Value Weighted Average	CN=73
<u>Post-Development Condition</u>	
6.55 Acres of Impervious Area	CN=98
1.64 Acres of Pervious Area	CN=80
"CN" Value Weighted Average	CN=94

Existing Condition Analysis

The property is a wooded lot with an elevation differential of approximately 28 feet. The northern side of the property is Starbucks, and the southern side of the property is White Magnolia Drive. There is an existing federally regulated creek that runs through the property and discharges at the dual 48-inch culverts.

Proposed Development Analysis

The proposed development will change the existing stormwater flows due to the increase in impervious area. Impervious areas bypassing the property has been mitigated to the maximum extent practical. The proposed runoff conditions are referenced in the Differential Runoff Table. The table was derived from the HydroCAD analysis. The proposed project will increase the impervious surface however it will reduce the runoff for the overall disturbed area. The existing conditions were based on a lower CN number to help mitigate the soils based on the new development to provide a factor of safety relating to the differential calculations. The differential table has been derived for both basins.

Differential Runoff Table

	A	B	C	D	E	F	G	H	I	I	J
	Storm Event (24 Hour Period)	Existing Conditions	Post Developed Condition (c.f.s.)	Required Stormwater Detention (c.f.s.) (Column D - B)	Post Developed Routing (c.f.s.)	Bypass Areas (c.f.s.)	Final Routing (c.f.s.)	Differential Runoff (c.f.s.) (Column G - B)	% of Improvement	HW ELEV BASIN #1	HW ELEV BASIN #2
1	WQv	0.05	10.25	10.20	0.29	0.55	0.77	0.72	N/A	592.06	582.31
2	1 Year	6.42	25.82	19.40	3.32	2.20	5.64	-0.78	87.85%	594.18	583.90
3	2 Year	10.98	32.88	21.90	7.12	3.05	10.53	-0.45	95.90%	594.64	584.37
4	15 Year	28.57	55.90	27.33	18.28	5.94	22.33	-6.24	78.16%	595.94	586.56
5	25 Year	34.25	62.74	28.49	20.96	6.82	25.71	-8.54	75.07%	596.32	587.43
6	100 Year	50.76	81.94	31.18	29.60	9.29	34.23	-16.53	67.43%	597.14	589.20
7	100 Year LFB	50.76	81.94	31.18	29.60	9.29	34.23	-16.53	N/A	597.22	589.26

Water Quality Volume Required

Project Name: Bryan Road Commercial Development

COMPUTATIONS FOR WQ_v

<u>Drainage Area</u>	<u>Impervious Area</u>	<u>Percent Impervious</u>
8.17 Ac.	6.18 Ac.	75.6 %

The following computational procedure follows the methodology detailed in Appendix D.10 of the Maryland Stormwater Design Manual.

1. Determine R_v (Volumetric Runoff Coefficient)

$$Q_a = (P)(R_v)$$

Where:

$$P = \text{Water quality storm event depth} = 1.14 \text{ "}$$

$$R_v = 0.05 + (0.009)(\% \text{ impervious area})$$

$$R_v = 0.05 + (0.009) (75.6)$$

$$R_v = 0.73$$

2. Determine WQ_v (Water Quality Volume)

$$P = 1.14 \text{ " (Rainfall)}$$

$$WQ_v = \frac{(P)(R_v)(\text{Ac.})}{12 \text{ "}}$$

$$WQ_v = \frac{(1.14 \text{ "})(0.73)(8.17 \text{ Ac.})}{12 \text{ "}} = 0.5672 \text{ Ac. Ft.} = 24,707.1 \text{ Cu. Ft.}$$

$$WQ_v \text{ Required} = 24,707 \text{ Cu. Ft.}$$

Water Quality Volume Provided

Water Quality Volume Required per the 1 year 24-hour storm event for the forebay, and both basins = 29,331 cu. Ft. of storage.

FEMA Classification

This property is classified as Zone "X" area of minimal flood hazard.

National Flood Hazard Layer FIRMette



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) <i>Zone A, V, A99</i>
	With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i>
	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile. <i>Zone X</i>
	Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i>
	Area with Reduced Flood Risk due to Levee. See Notes, <i>Zone X</i>
	Area with Flood Risk due to Levee <i>Zone D</i>
OTHER AREAS	NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i>
	Effective LOMRs
	Area of Undetermined Flood Hazard <i>Zone D</i>
GENERAL STRUCTURES	- - - Channel, Culvert, or Storm Sewer
	Levee, Dike, or Floodwall
OTHER FEATURES	20.2 Cross Sections with 1% Annual Chance
	17.5 Water Surface Elevation
	Coastal Tract
	Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary
	Coastal Tract Baseline
	Profile Baseline
	Hydrographic Feature
MAP PANELS	Digital Data Available
	No Digital Data Available
	Unmapped

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 5/1/2023 at 12:27 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Soils Classification



Hydrologic Soil Group—St. Charles County, Missouri
 (Noles - Bryan Road)

MAP LEGEND

	Area of Interest (AOI)
	Soils
	Soil Rating Polygons
	Soil Rating Lines
	Soil Rating Points
	Water Features
	Transportation
	Background

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.sc.egov.usda.gov>
 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: St. Charles County, Missouri
 Survey Area Data: Version 23, Sep 7, 2022

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

Date(s) aerial images were photographed: Jul 22, 2022—Aug 25, 2022

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
50054	Armster silt loam, 2 to 7 percent slopes	D	8.4	94.7%
60124	Harvester-Urban land complex, 2 to 9 percent slopes	C	0.5	5.3%
Totals for Area of Interest			8.9	100.0%

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Methodology

The methodology used for the project is Hydro CAD 10.2-2 for determination of SCS TR-55 hydrographs. The hydraulics for the project will be determined using Autodesk Civil 3D 2022 Storm Sewer Analysis. To determine the Storm Intensity and Frequency the overall project pre-development condition and post development condition was determined by the SCS method.

Conclusions and Recommendations

Impacts to downstream sewers and streams have been mitigated to the maximum extent practical. However, this project is proposing one large above ground detention basin with water quality features via an infiltration basin with a forebay.

Appendix A Pre Developed Drainage Area Map

THIS SHEET IS FOR DRAINAGE AREA PURPOSES ONLY.
DO NOT USE THIS PLAN FOR CONSTRUCTION.

DISCHARGE POINT #1
 9.45 ACRES @ CN=77 (A)
 0.58 ACRES @ CN=98 (B)
 4.87 ACRES @ CN=85 (C)
 2.48 ACRES @ CN=93 (D)
 0.74 ACRES @ CN=89 (E)
 8.75 ACRES @ CN=84 (F)
 0.16 ACRES @ CN=98 (G)
 TC=14.86 MIN
 2 YEAR EVENT = 62.52 CFS
 25 YEAR EVENT = 143.33 CFS
 100 YEAR EVENT = 197.30 CFS

EXISTING DRAINAGE AREAS
 A SHEET FLOW TO THE EXISTING DRAINAGE
 B PIPE FLOWS TO THE SITE
 C PIPE FLOWS OFF-SITE TO DRAINAGE
 D PIPE FLOWS OFF-SITE TO DRAINAGE
 E PIPE FLOWS OFF-SITE TO DRAINAGE
 F PIPE FLOWS FROM EXISTING OFF-SITE BASIN TO ON-SITE

DRAINAGE AREA MAP LEGEND
 --- DRAINAGE AREA LIMIT
 --- DRAINAGE AREA LIMIT

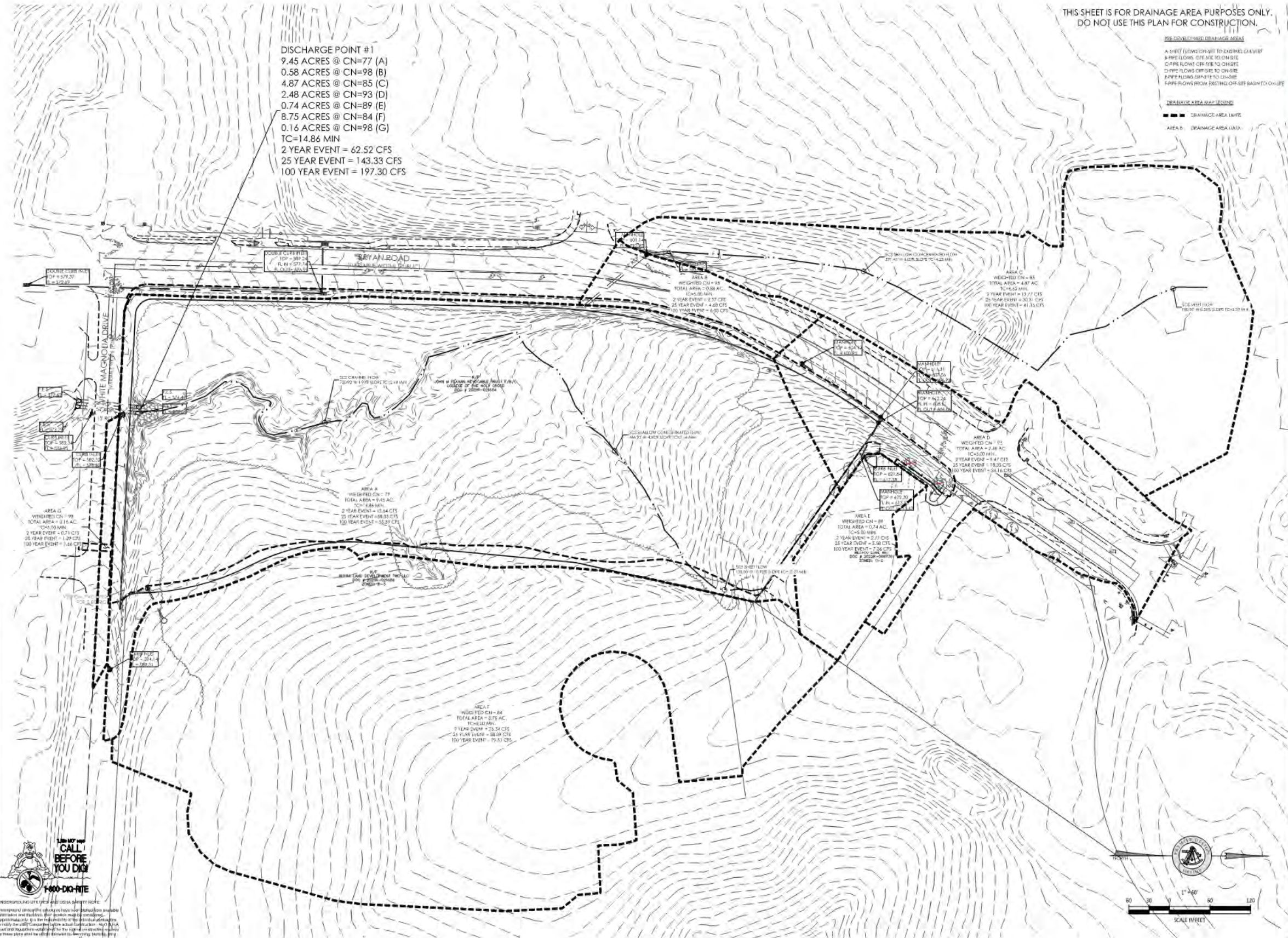


PREPARED BY: [Redacted]
 CHECKED BY: [Redacted]
 DATE: [Redacted]

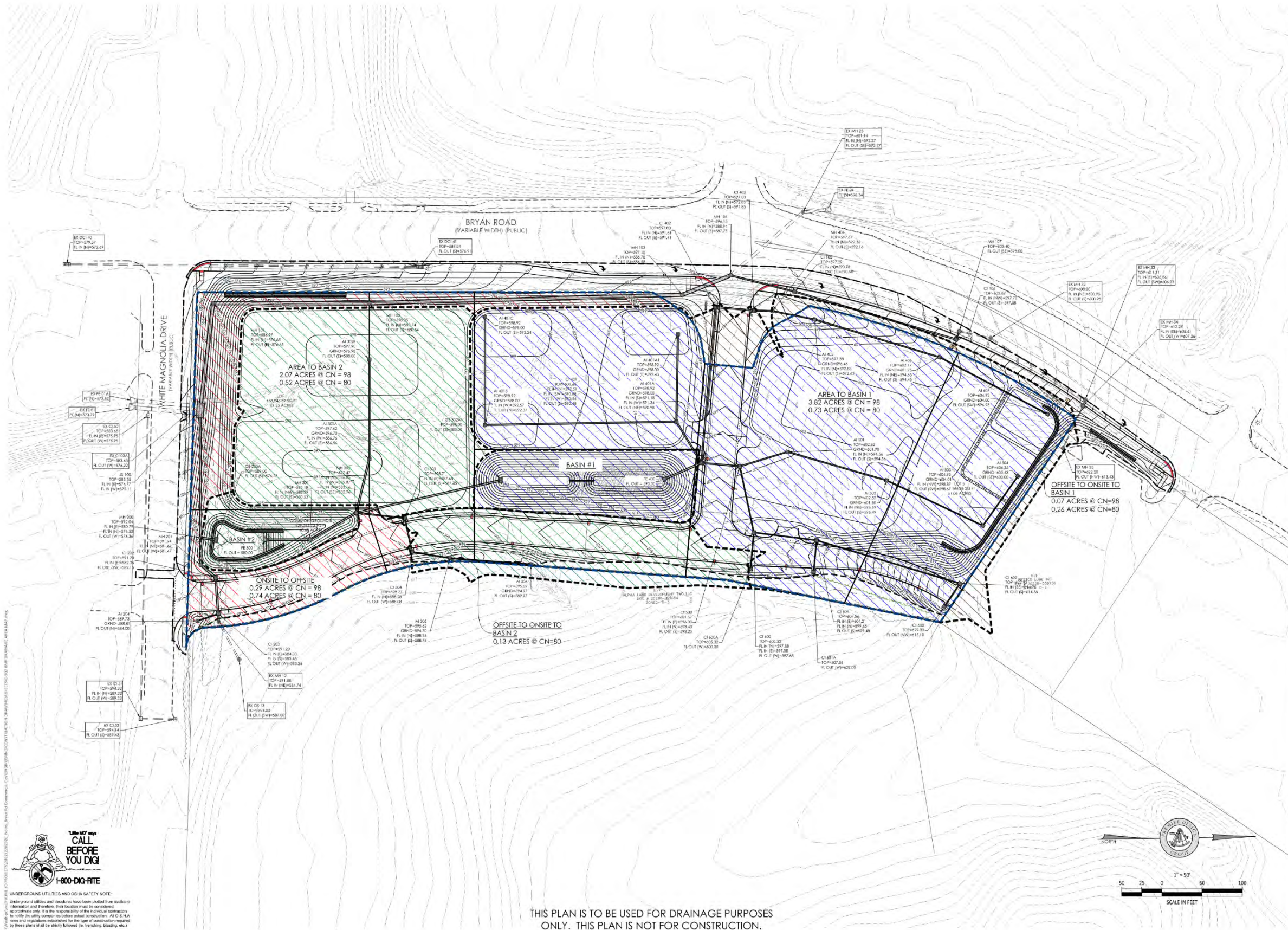
NOLES PROPERTIES LLC
 BRYAN ROAD COMMERCIAL DEVELOPMENT
 100 BRYAN ROAD
 SUITE 100
 NOLES PROPERTIES LLC
 11381 OLIVE BLVD
 CREVE COEUR, MD 21114

DATE	5/3/2023
PROJECT	BRYAN ROAD COMMERCIAL DEVELOPMENT
SCALE	1" = 40'
PROJECT NO.	C-900

Project No. 2202020
 Drawn by P. HEITZ
 Checked by M. FOSBURY
 NOT APPROVED FOR CONSTRUCTION



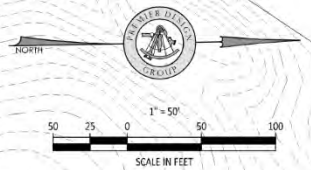
Appendix B Post Developed BMP Drainage Area Map



1-800-DIG-4112
CALL BEFORE YOU DIG
 1-800-DIG-4112

UNDERGROUND UTILITIES AND OSHA SAFETY NOTE:
 Underground utilities and structures have been plotted from available information and therefore, their location must be confirmed independently. It is the responsibility of the individual contractors to verify the utility companies before actual construction. All OSHA rules and regulations established for the type of construction required by these plans shall be strictly followed (i.e. trenching, shoring, etc.)

THIS PLAN IS TO BE USED FOR DRAINAGE PURPOSES ONLY. THIS PLAN IS NOT FOR CONSTRUCTION.



ENGINEER AUTHORIZATION
 I, the undersigned, being a duly licensed Professional Engineer in the State of Maryland, do hereby certify that I am the author of the above design and that I am a duly licensed Professional Engineer in the State of Maryland.
STEVEN D. MONTGOMERY
 PROFESSIONAL ENGINEER
 PE 20000001

NOLES PROPERTIES LLC
 BRYAN ROAD COMMERCIAL DEVELOPMENT
 100 BRYAN ROAD
 WINTZVILLE, MD 21087
NOLES PROPERTIES LLC
 11961 OLIVE BLVD
 CREVE COEUR, MO 63141

Project No.	2202920
Drawn By	P. HEITZ
Checked By	M. FOGARTY
Sheet Name	BMP DRAINAGE AREA MAP
Sheet No.	C-902
Date	5/2/2023
Revision	
Description of Changes	
Retrieved By	CITY OF FALLON AND OTTALON FIRE COMMENTS

Appendix C Existing Conditions Hydrograph Report

EXISTING CONDITIONS

Prepared by Premier Design Group

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EXISTING CONDITIONS

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59 Pond 9P: EX CULVERT

61 Link 6L: EX SITE

100-Year Event

62 Subcat 1S: AREA A

63 Subcat 2S: AREA B

64 Subcat 3S: AREA C

65 Subcat 4S: AREA D

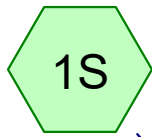
66 Subcat 5S: AREA E

67 Subcat 7S: AREA G

68 Subcat 9S: AREA F

69 Pond 9P: EX CULVERT

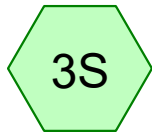
71 Link 6L: EX SITE



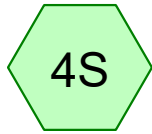
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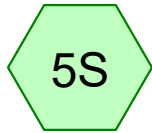
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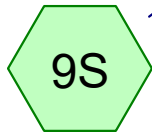
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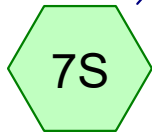
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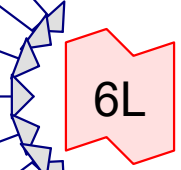
AREA E



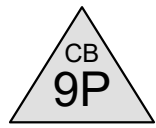
AREA F



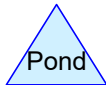
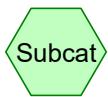
AREA G



EX SITE



EX CULVERT



Routing Diagram for EXISTING CONDITIONS
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EXISTING CONDITIONS

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Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	WQv	Type II 24-hr		Default	24.00	1	1.14	2
2	2-Year	Type II 24-hr		Default	24.00	1	3.10	2
3	15-Year	Type II 24-hr		Default	24.00	1	5.03	2
4	25-Year	Type II 24-hr		Default	24.00	1	5.60	2
5	100-Year	Type II 24-hr		Default	24.00	1	7.21	2

EXISTING CONDITIONS

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.740	91	(5S)
7.970	83	1/4 acre lots, 38% imp, HSG C (9S)
0.530	73	Brush, Good, HSG D (4S)
2.940	77	Brush, Poor, HSG C (3S)
2.090	98	Paved parking, HSG C (3S, 7S)
2.530	98	Paved roads w/curbs & sewers, HSG D (2S, 4S)
0.780	98	Water Surface, HSG C (9S)
9.500	77	Woods, Good, HSG D (1S)

EXISTING CONDITIONS

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Type II 24-hr WQv Rainfall=1.14"

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Summary for Subcatchment 1S: AREA A

Runoff = 0.36 cfs @ 12.15 hrs, Volume= 0.066 af, Depth= 0.08"
 Routed to Link 6L : EX SITE

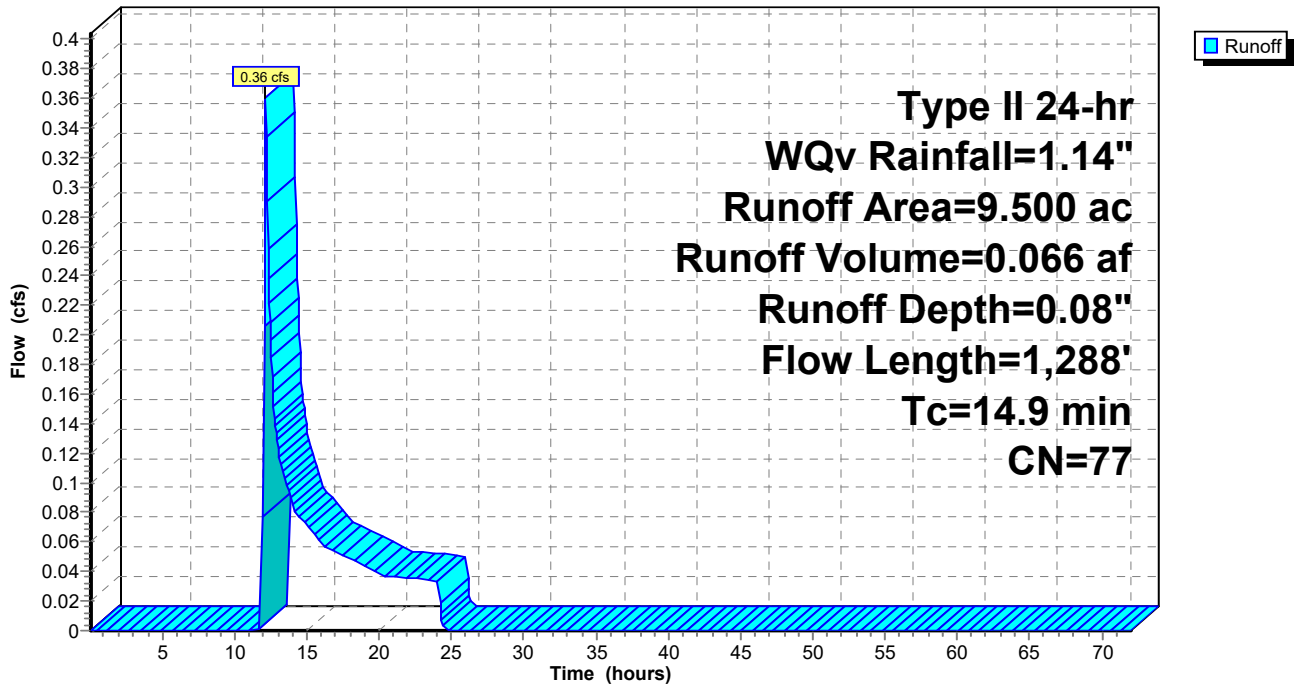
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr WQv Rainfall=1.14"

Area (ac)	CN	Description
9.500	77	Woods, Good, HSG D
9.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.1092	0.16		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.60"
2.2	467	0.0498	3.59		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
2.4	721	0.0193	4.92	49.21	Channel Flow, Area= 10.0 sf Perim= 9.0' r= 1.11' n= 0.045
14.9	1,288	Total			

Subcatchment 1S: AREA A

Hydrograph



EXISTING CONDITIONS

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Type II 24-hr WQv Rainfall=1.14"

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Summary for Subcatchment 2S: AREA B

Runoff = 0.89 cfs @ 11.95 hrs, Volume= 0.045 af, Depth= 0.93"
 Routed to Link 6L : EX SITE

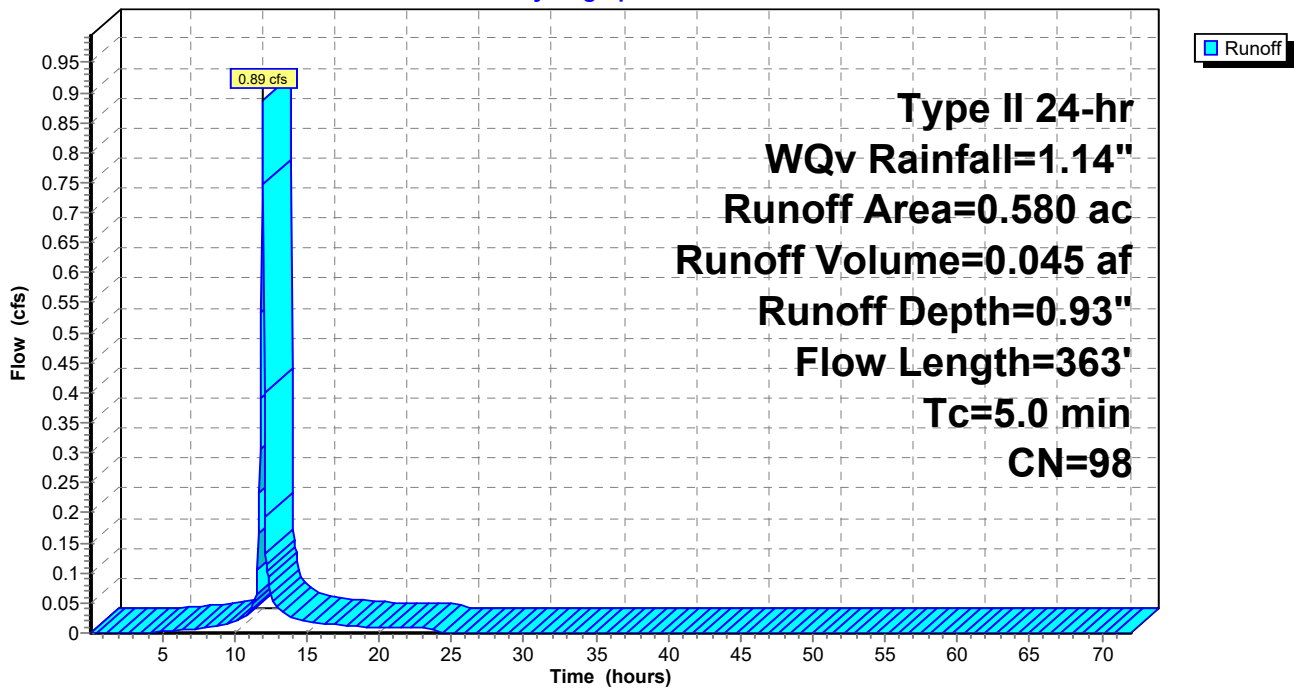
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr WQv Rainfall=1.14"

Area (ac)	CN	Description
0.580	98	Paved roads w/curbs & sewers, HSG D
0.580		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0657	2.35		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.60"
1.5	263	0.0210	2.94		Shallow Concentrated Flow, Paved Kv= 20.3 fps
2.2	363	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 2S: AREA B

Hydrograph



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Type II 24-hr WQv Rainfall=1.14"

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Summary for Subcatchment 3S: AREA C

Runoff = 2.91 cfs @ 11.98 hrs, Volume= 0.170 af, Depth= 0.42"
 Routed to Link 6L : EX SITE

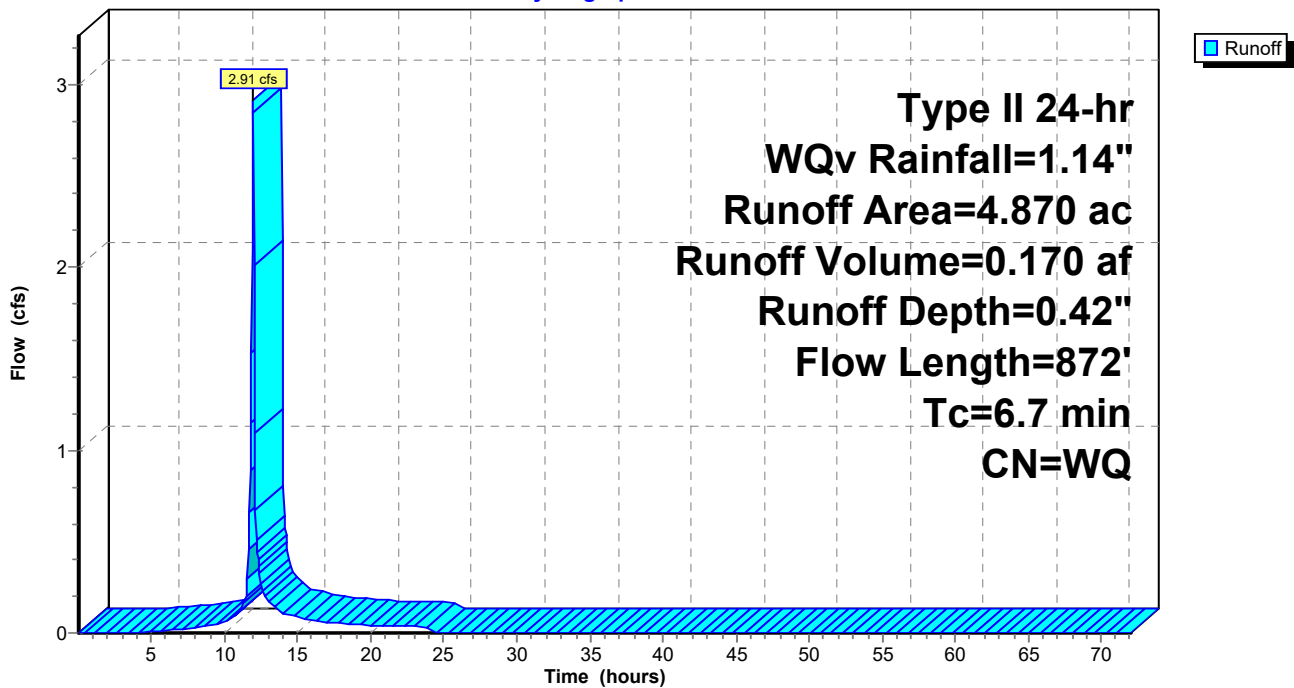
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr WQv Rainfall=1.14"

Area (ac)	CN	Description
2.940	77	Brush, Poor, HSG C
1.930	98	Paved parking, HSG C
4.870		Weighted Average
2.940		60.37% Pervious Area
1.930		39.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	100	0.0038	0.70		Sheet Flow, n= 0.012 P2= 3.60"
1.3	201	0.0166	2.62		Shallow Concentrated Flow, Paved Kv= 20.3 fps
3.0	571	0.0400	3.22		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
6.7	872	Total			

Subcatchment 3S: AREA C

Hydrograph



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Type II 24-hr WQv Rainfall=1.14"

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Summary for Subcatchment 4S: AREA D

Runoff = 2.99 cfs @ 11.95 hrs, Volume= 0.152 af, Depth= 0.74"
 Routed to Link 6L : EX SITE

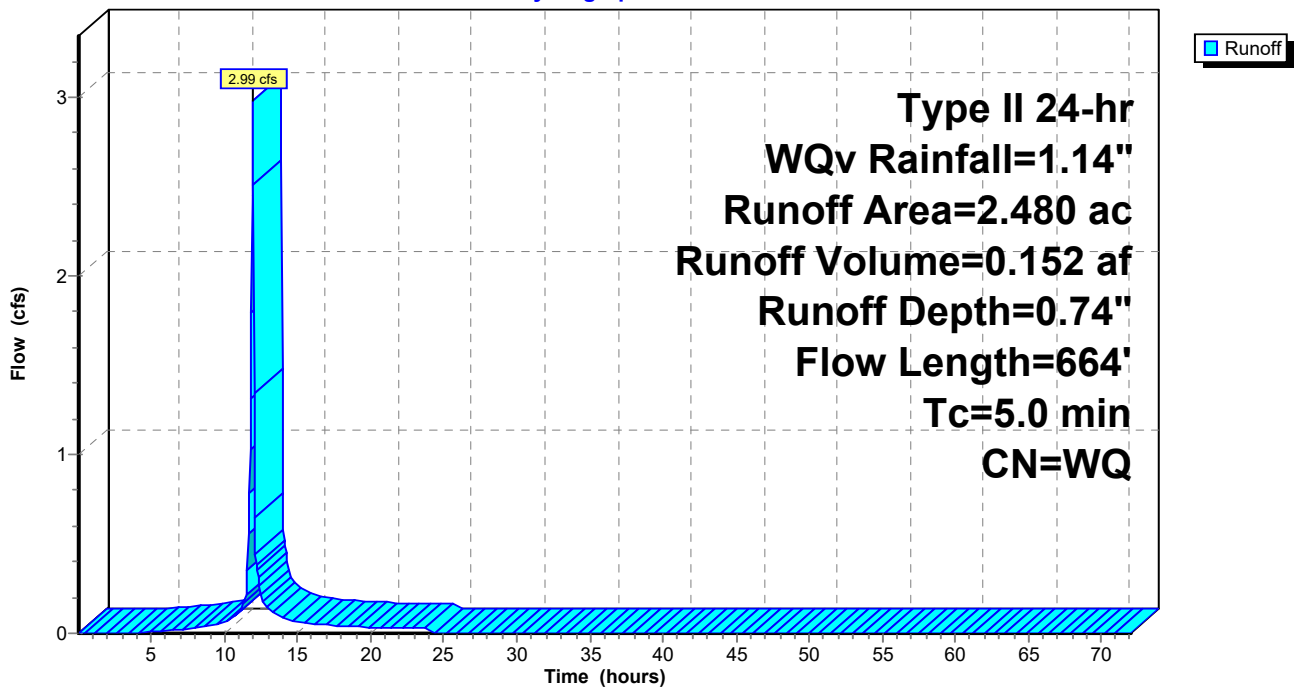
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr WQv Rainfall=1.14"

Area (ac)	CN	Description
1.950	98	Paved roads w/curbs & sewers, HSG D
0.530	73	Brush, Good, HSG D
2.480		Weighted Average
0.530		21.37% Pervious Area
1.950		78.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0153	1.31		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.60"
2.4	564	0.0374	3.93		Shallow Concentrated Flow, Paved Kv= 20.3 fps
3.7	664	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 4S: AREA D

Hydrograph



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Type II 24-hr WQv Rainfall=1.14"

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Summary for Subcatchment 5S: AREA E

Runoff = 0.61 cfs @ 11.96 hrs, Volume= 0.028 af, Depth= 0.46"
Routed to Link 6L : EX SITE

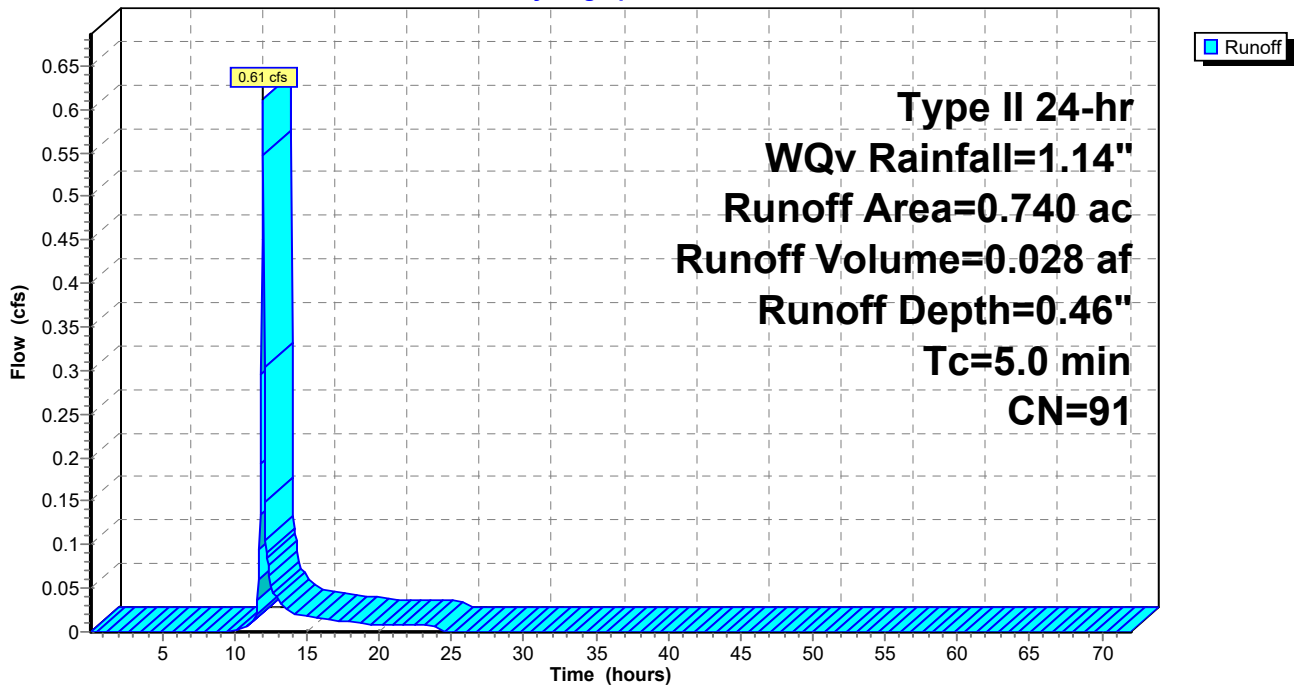
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
Type II 24-hr WQv Rainfall=1.14"

Area (ac)	CN	Description
* 0.740	91	
0.740		100.00% Pervious Area

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

Subcatchment 5S: AREA E

Hydrograph



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Type II 24-hr WQv Rainfall=1.14"

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Summary for Subcatchment 7S: AREA G

Runoff = 0.25 cfs @ 11.95 hrs, Volume= 0.012 af, Depth= 0.93"
Routed to Link 6L : EX SITE

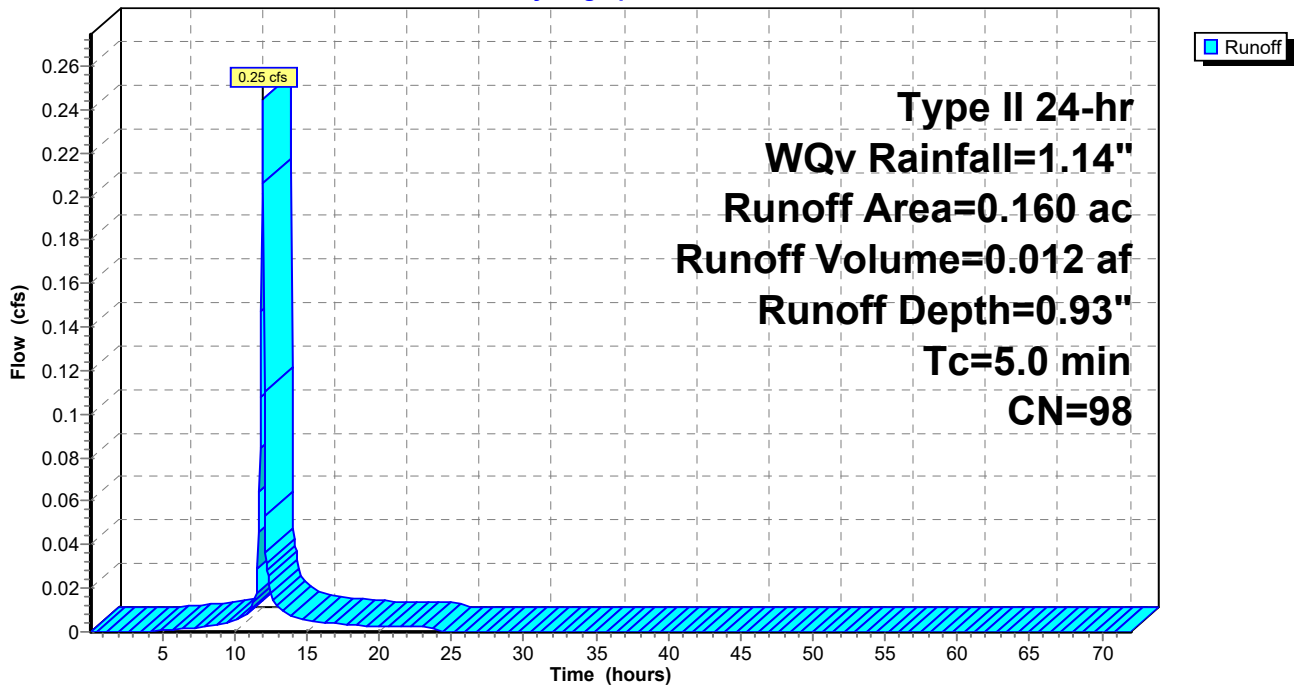
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
Type II 24-hr WQv Rainfall=1.14"

Area (ac)	CN	Description
0.160	98	Paved parking, HSG C
0.160		100.00% Impervious Area

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

Subcatchment 7S: AREA G

Hydrograph



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Type II 24-hr WQv Rainfall=1.14"

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Summary for Subcatchment 9S: AREA F

Runoff = 3.51 cfs @ 11.97 hrs, Volume= 0.188 af, Depth= 0.26"
 Routed to Link 6L : EX SITE

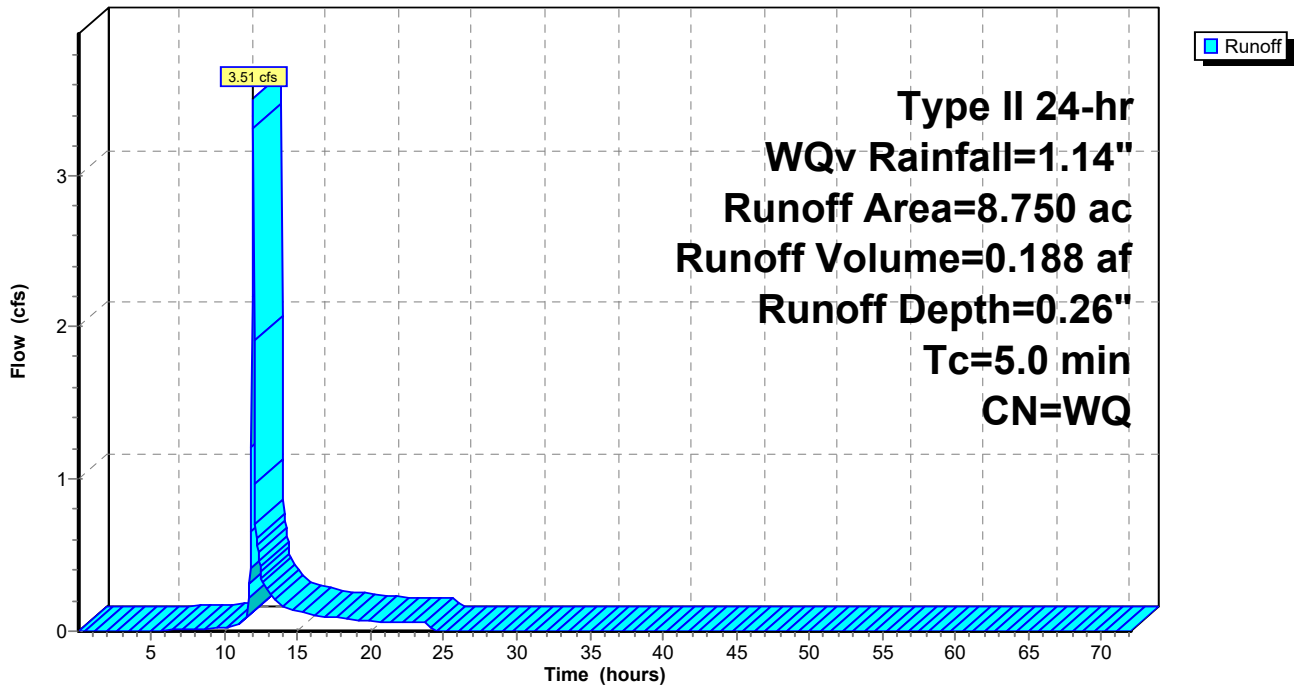
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr WQv Rainfall=1.14"

Area (ac)	CN	Description
7.970	83	1/4 acre lots, 38% imp, HSG C
0.780	98	Water Surface, HSG C
8.750		Weighted Average
4.941		56.47% Pervious Area
3.809		43.53% Impervious Area

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

Subcatchment 9S: AREA F

Hydrograph



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Type II 24-hr WQv Rainfall=1.14"

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Summary for Pond 9P: EX CULVERT

Inflow Area = 27.080 ac, 31.12% Impervious, Inflow Depth = 0.29" for WQv event
 Inflow = 11.03 cfs @ 11.97 hrs, Volume= 0.661 af
 Outflow = 11.03 cfs @ 11.97 hrs, Volume= 0.661 af, Atten= 0%, Lag= 0.0 min
 Primary = 11.03 cfs @ 11.97 hrs, Volume= 0.661 af

Routing by Dyn-Stor-Ind method, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 575.33' @ 11.97 hrs
 Flood Elev= 582.00'

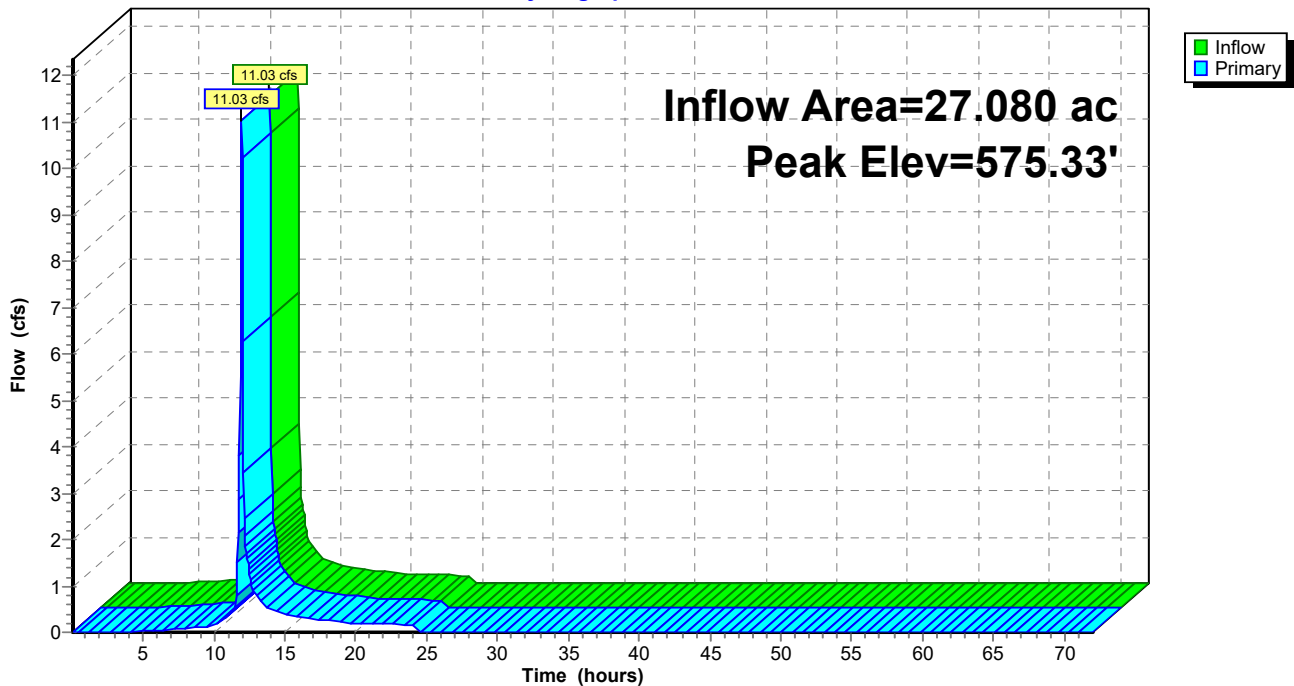
Device	Routing	Invert	Outlet Devices
#1	Primary	574.47'	54.0" Round Culvert L= 83.6' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 574.47' / 573.62' S= 0.0102 ' / Cc= 0.900 n= 0.013, Flow Area= 15.90 sf
#2	Primary	574.64'	54.0" Round Culvert L= 83.6' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 574.64' / 573.79' S= 0.0102 ' / Cc= 0.900 n= 0.013, Flow Area= 15.90 sf

Primary OutFlow Max=10.67 cfs @ 11.97 hrs HW=575.32' (Free Discharge)

- 1=Culvert (Inlet Controls 6.48 cfs @ 3.13 fps)
- 2=Culvert (Inlet Controls 4.19 cfs @ 2.80 fps)

Pond 9P: EX CULVERT

Hydrograph



EXISTING CONDITIONS

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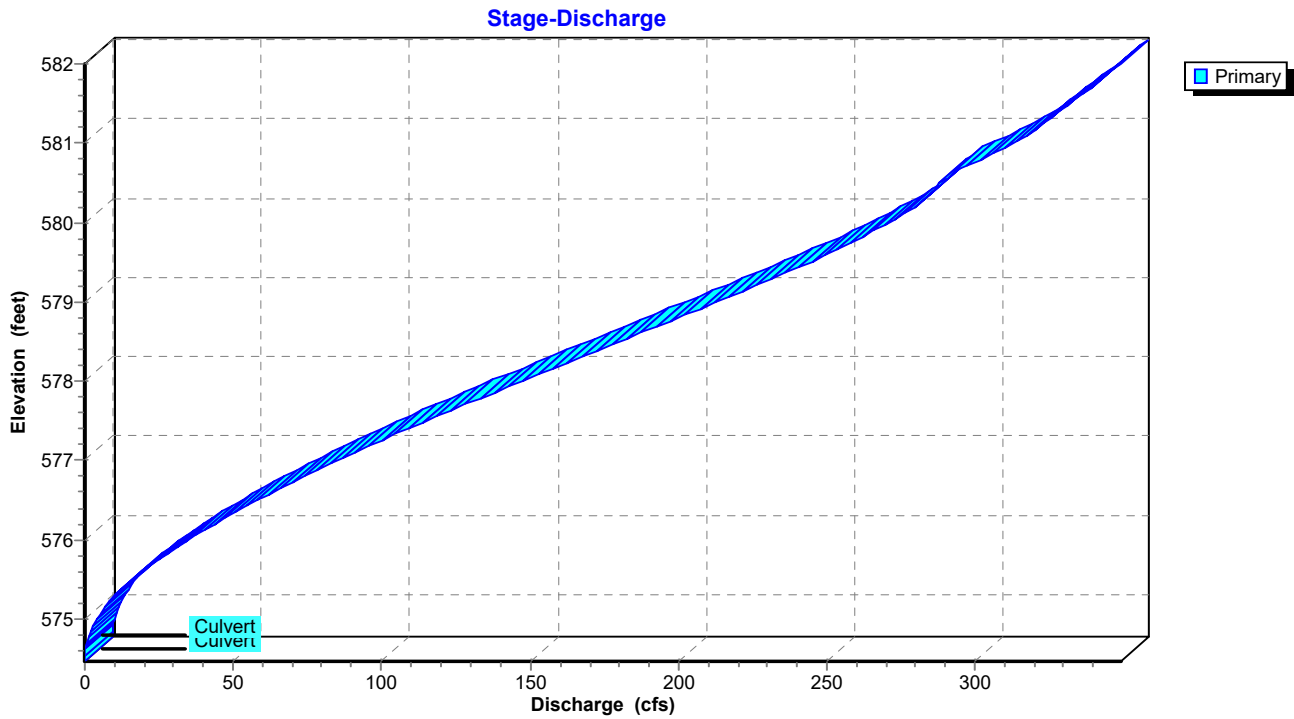
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Type II 24-hr WQv Rainfall=1.14"

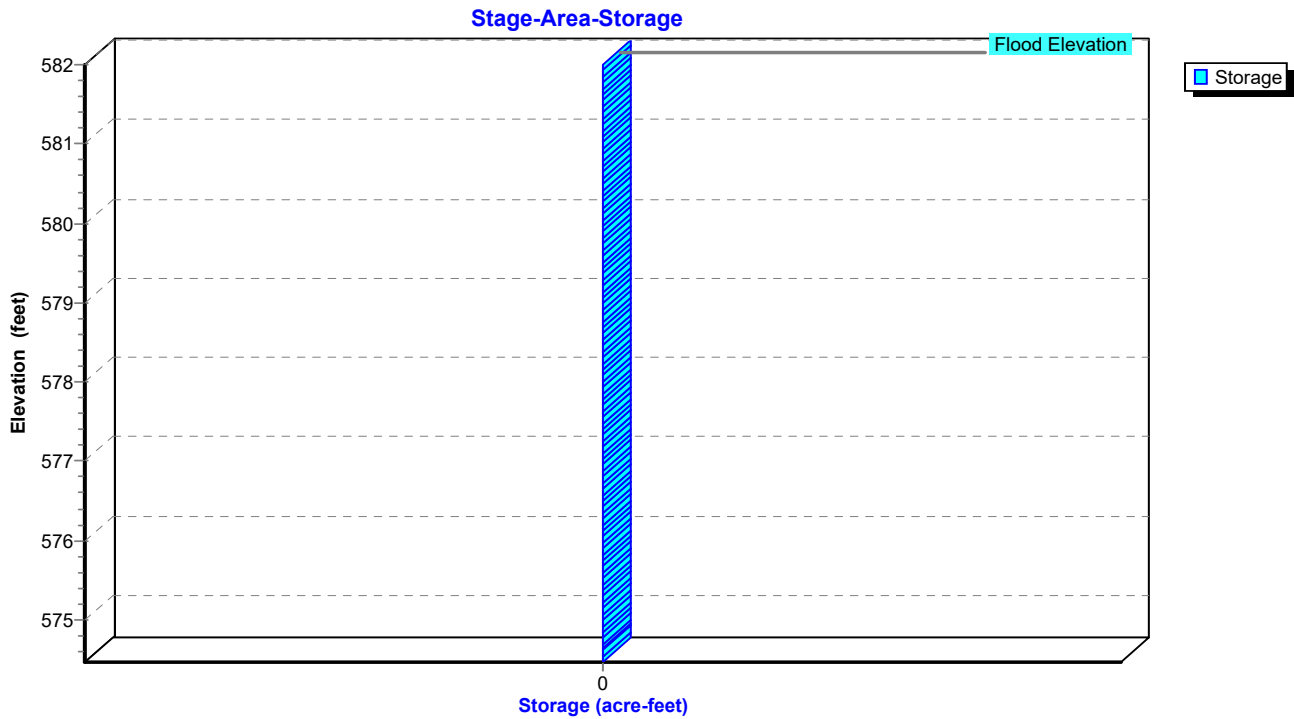
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Pond 9P: EX CULVERT



Pond 9P: EX CULVERT



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Type II 24-hr WQv Rainfall=1.14"

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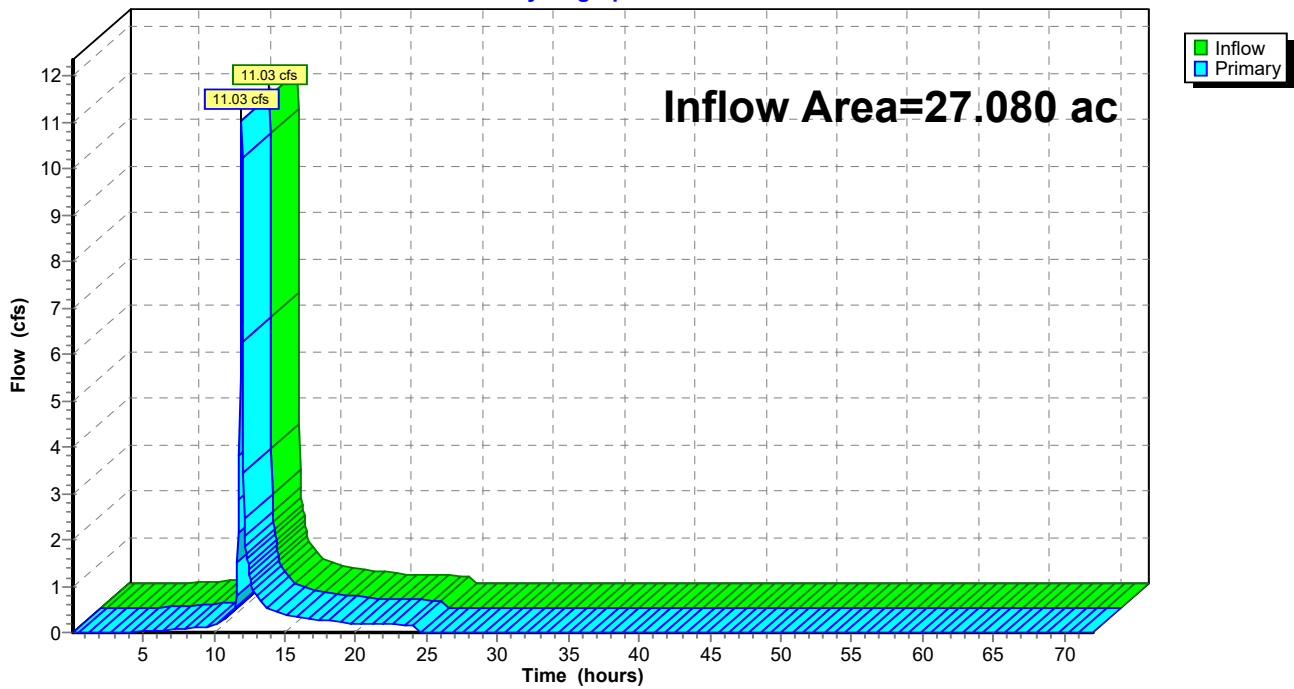
Summary for Link 6L: EX SITE

Inflow Area = 27.080 ac, 31.12% Impervious, Inflow Depth = 0.29" for WQv event
Inflow = 11.03 cfs @ 11.97 hrs, Volume= 0.661 af
Primary = 11.03 cfs @ 11.97 hrs, Volume= 0.661 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 9P : EX CULVERT

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

Link 6L: EX SITE

Hydrograph



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Type II 24-hr 2-Year Rainfall=3.10"

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Summary for Subcatchment 1S: AREA A

Runoff = 13.64 cfs @ 12.08 hrs, Volume= 0.903 af, Depth= 1.14"
 Routed to Link 6L : EX SITE

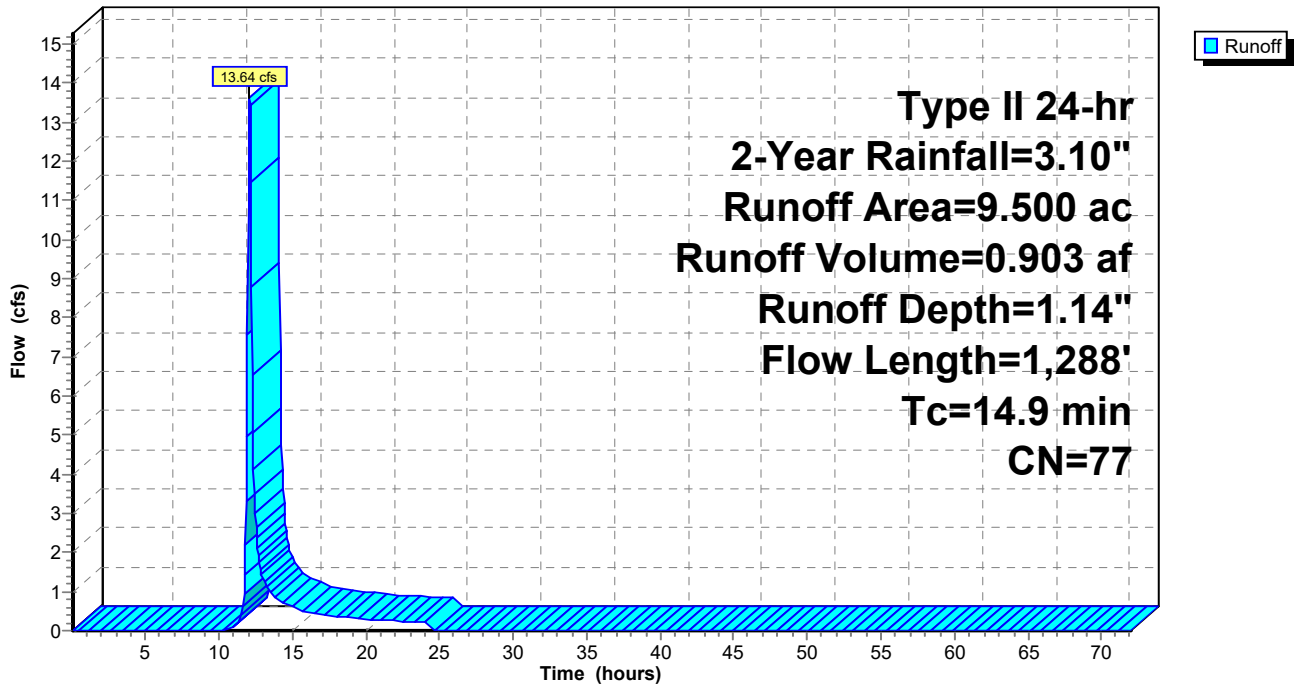
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 2-Year Rainfall=3.10"

Area (ac)	CN	Description
9.500	77	Woods, Good, HSG D
9.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.1092	0.16		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.60"
2.2	467	0.0498	3.59		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
2.4	721	0.0193	4.92	49.21	Channel Flow, Area= 10.0 sf Perim= 9.0' r= 1.11' n= 0.045
14.9	1,288	Total			

Subcatchment 1S: AREA A

Hydrograph



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Type II 24-hr 2-Year Rainfall=3.10"

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Summary for Subcatchment 2S: AREA B

Runoff = 2.57 cfs @ 11.95 hrs, Volume= 0.139 af, Depth= 2.87"
 Routed to Link 6L : EX SITE

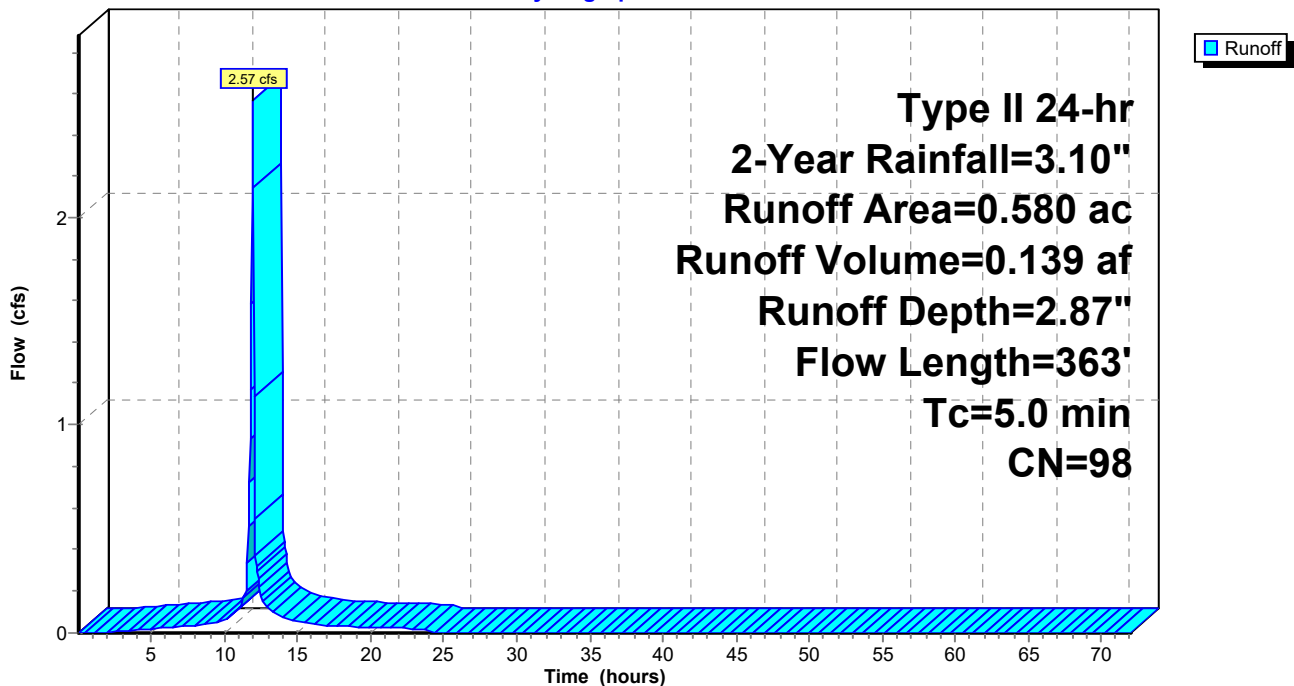
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 2-Year Rainfall=3.10"

Area (ac)	CN	Description
0.580	98	Paved roads w/curbs & sewers, HSG D
0.580		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0657	2.35		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.60"
1.5	263	0.0210	2.94		Shallow Concentrated Flow, Paved Kv= 20.3 fps
2.2	363	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 2S: AREA B

Hydrograph



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Type II 24-hr 2-Year Rainfall=3.10"

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Summary for Subcatchment 3S: AREA C

Runoff = 13.77 cfs @ 11.98 hrs, Volume= 0.741 af, Depth= 1.83"
 Routed to Link 6L : EX SITE

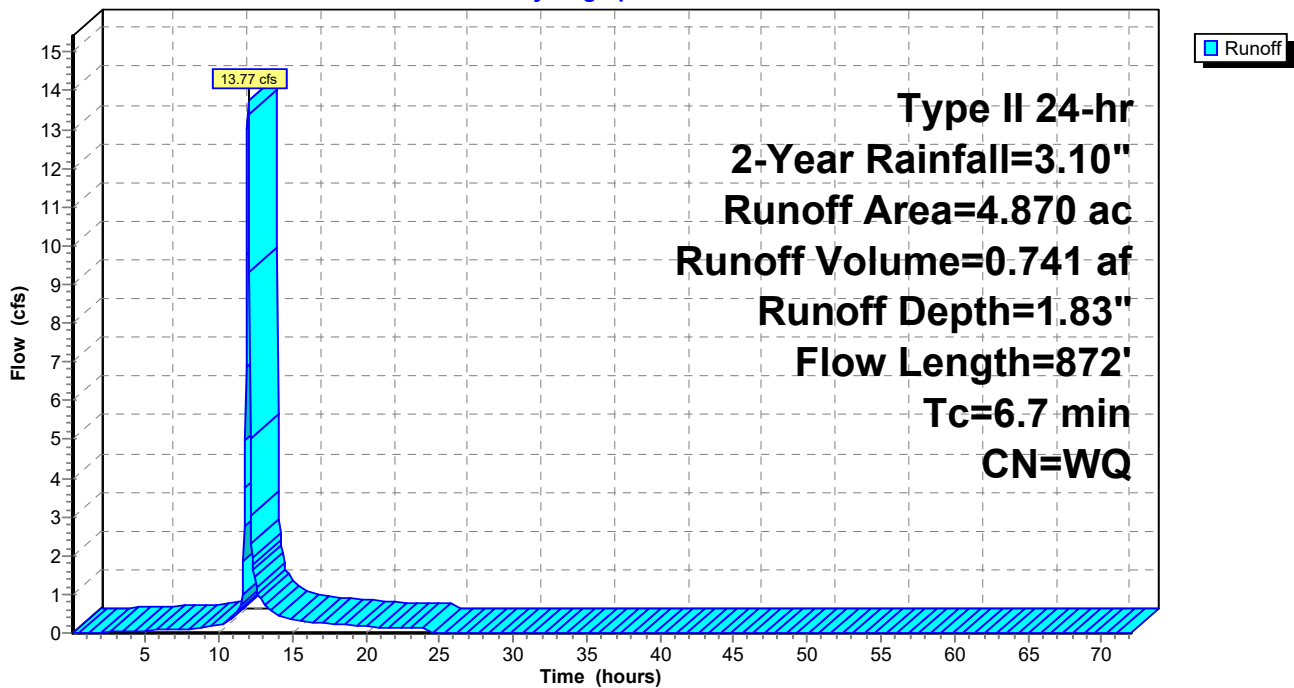
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 2-Year Rainfall=3.10"

Area (ac)	CN	Description
2.940	77	Brush, Poor, HSG C
1.930	98	Paved parking, HSG C
4.870		Weighted Average
2.940		60.37% Pervious Area
1.930		39.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	100	0.0038	0.70		Sheet Flow, n= 0.012 P2= 3.60"
1.3	201	0.0166	2.62		Shallow Concentrated Flow, Paved Kv= 20.3 fps
3.0	571	0.0400	3.22		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
6.7	872	Total			

Subcatchment 3S: AREA C

Hydrograph



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Type II 24-hr 2-Year Rainfall=3.10"

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Summary for Subcatchment 4S: AREA D

Runoff = 9.47 cfs @ 11.95 hrs, Volume= 0.507 af, Depth= 2.45"
 Routed to Link 6L : EX SITE

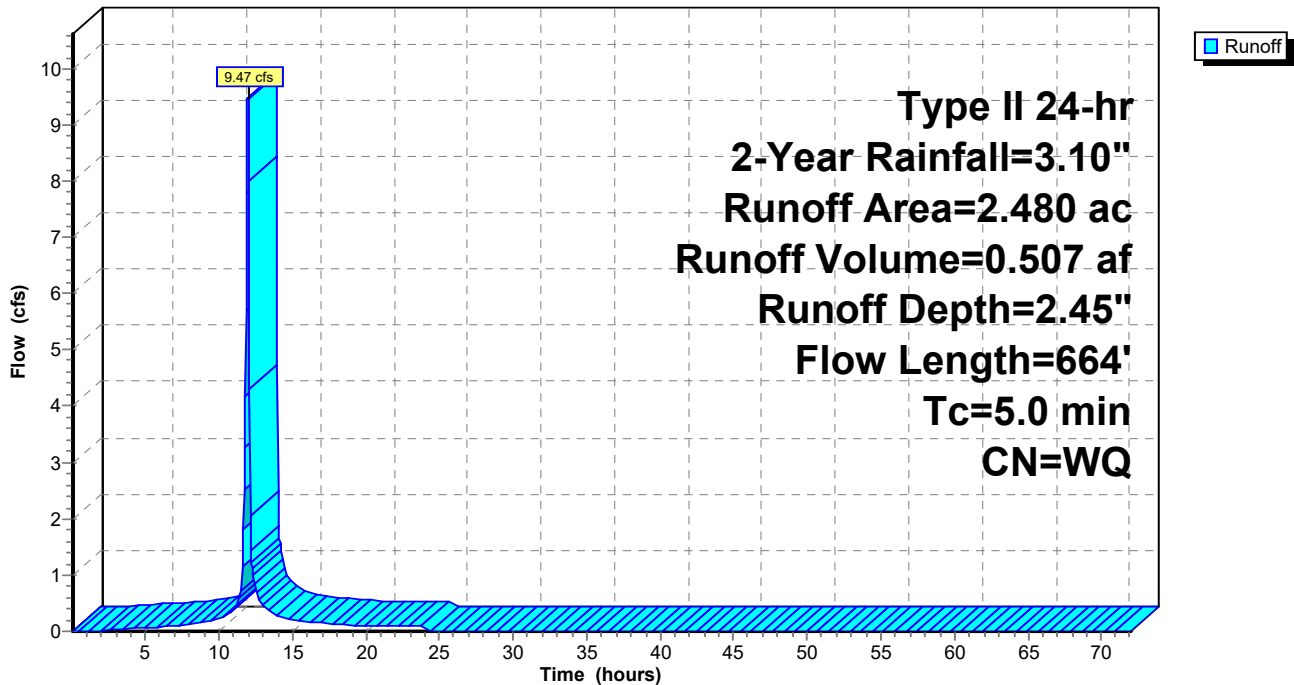
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 2-Year Rainfall=3.10"

Area (ac)	CN	Description
1.950	98	Paved roads w/curbs & sewers, HSG D
0.530	73	Brush, Good, HSG D
2.480		Weighted Average
0.530		21.37% Pervious Area
1.950		78.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0153	1.31		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.60"
2.4	564	0.0374	3.93		Shallow Concentrated Flow, Paved Kv= 20.3 fps
3.7	664	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 4S: AREA D

Hydrograph



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Type II 24-hr 2-Year Rainfall=3.10"

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Summary for Subcatchment 5S: AREA E

Runoff = 2.77 cfs @ 11.95 hrs, Volume= 0.133 af, Depth= 2.16"
Routed to Link 6L : EX SITE

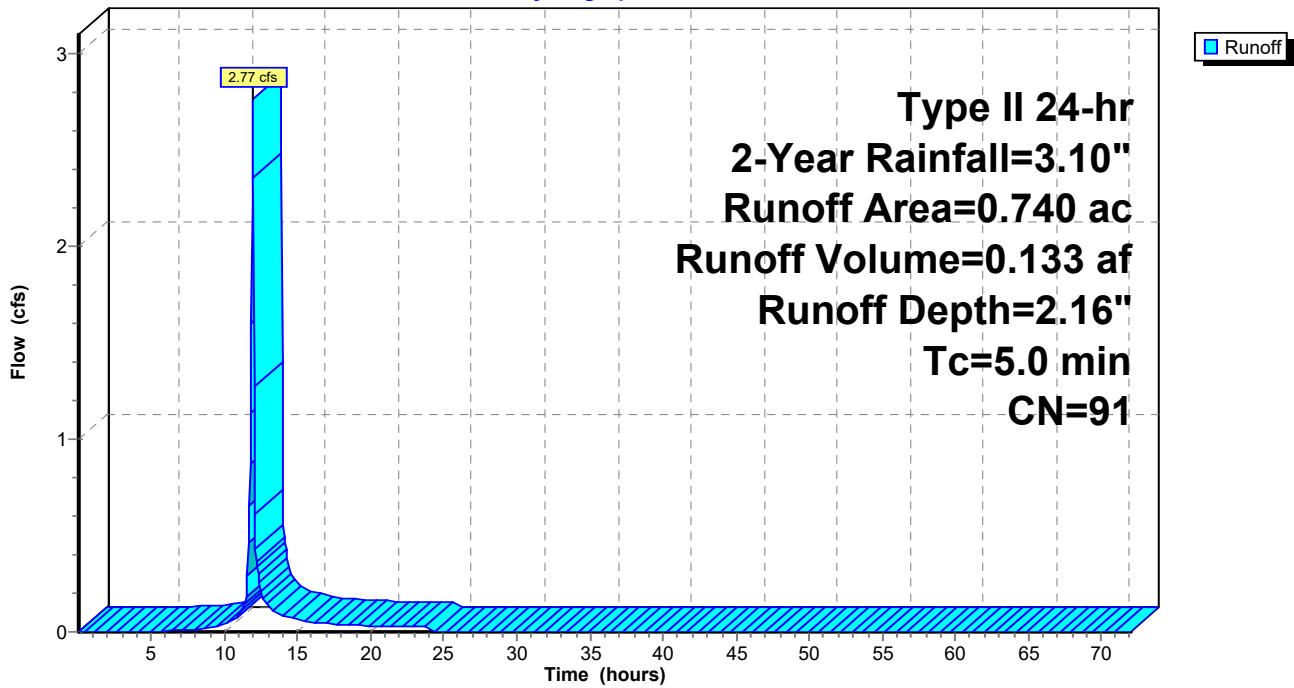
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=3.10"

Area (ac)	CN	Description
* 0.740	91	
0.740		100.00% Pervious Area

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

Subcatchment 5S: AREA E

Hydrograph



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Type II 24-hr 2-Year Rainfall=3.10"

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Summary for Subcatchment 7S: AREA G

Runoff = 0.71 cfs @ 11.95 hrs, Volume= 0.038 af, Depth= 2.87"
Routed to Link 6L : EX SITE

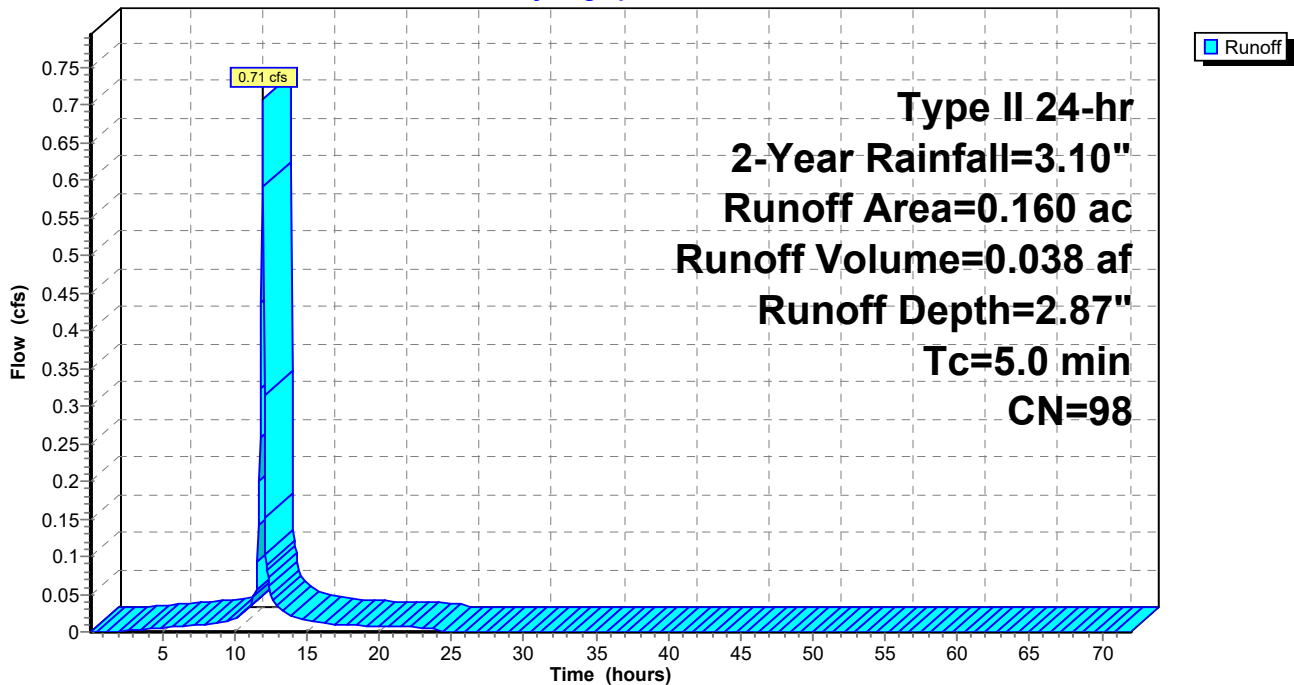
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=3.10"

Area (ac)	CN	Description
0.160	98	Paved parking, HSG C
0.160		100.00% Impervious Area

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

Subcatchment 7S: AREA G

Hydrograph



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Type II 24-hr 2-Year Rainfall=3.10"

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Summary for Subcatchment 9S: AREA F

Runoff = 25.34 cfs @ 11.96 hrs, Volume= 1.201 af, Depth= 1.65"
 Routed to Link 6L : EX SITE

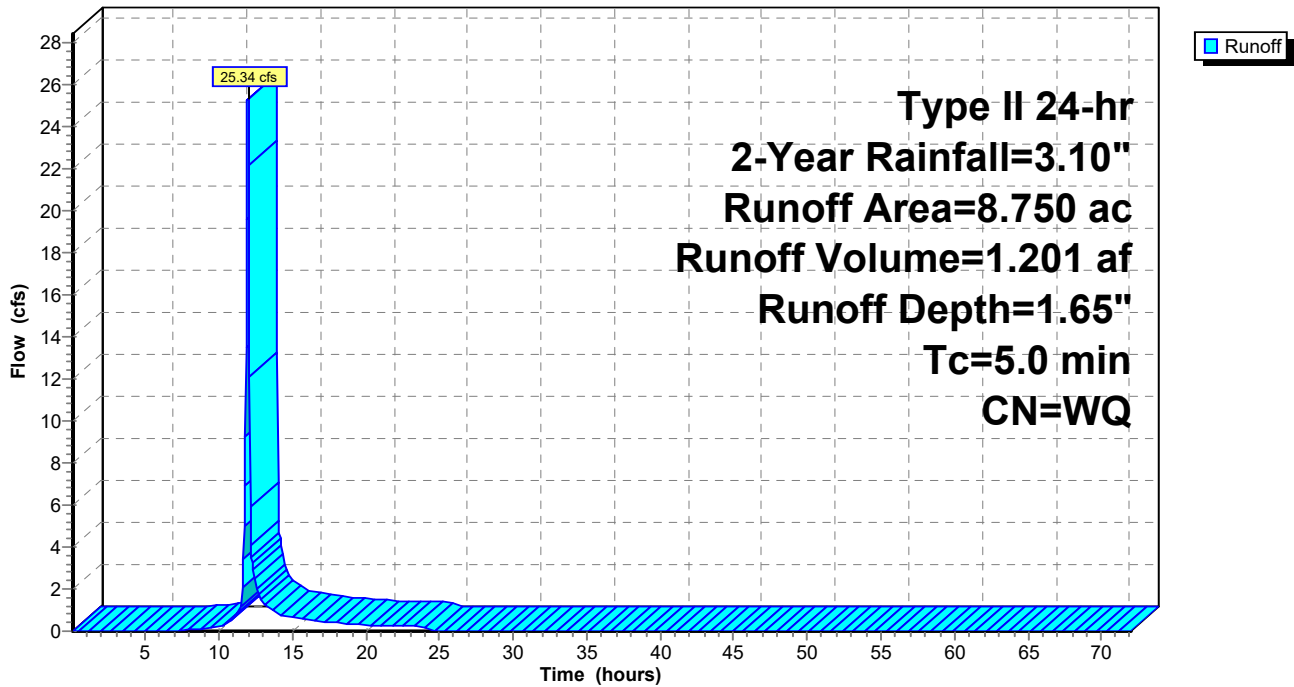
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 2-Year Rainfall=3.10"

Area (ac)	CN	Description
7.970	83	1/4 acre lots, 38% imp, HSG C
0.780	98	Water Surface, HSG C
8.750		Weighted Average
4.941		56.47% Pervious Area
3.809		43.53% Impervious Area

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

Subcatchment 9S: AREA F

Hydrograph



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Type II 24-hr 2-Year Rainfall=3.10"

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Summary for Pond 9P: EX CULVERT

Inflow Area = 27.080 ac, 31.12% Impervious, Inflow Depth = 1.62" for 2-Year event
 Inflow = 62.52 cfs @ 11.97 hrs, Volume= 3.662 af
 Outflow = 62.52 cfs @ 11.97 hrs, Volume= 3.662 af, Atten= 0%, Lag= 0.0 min
 Primary = 62.52 cfs @ 11.97 hrs, Volume= 3.662 af

Routing by Dyn-Stor-Ind method, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 576.59' @ 11.97 hrs
 Flood Elev= 582.00'

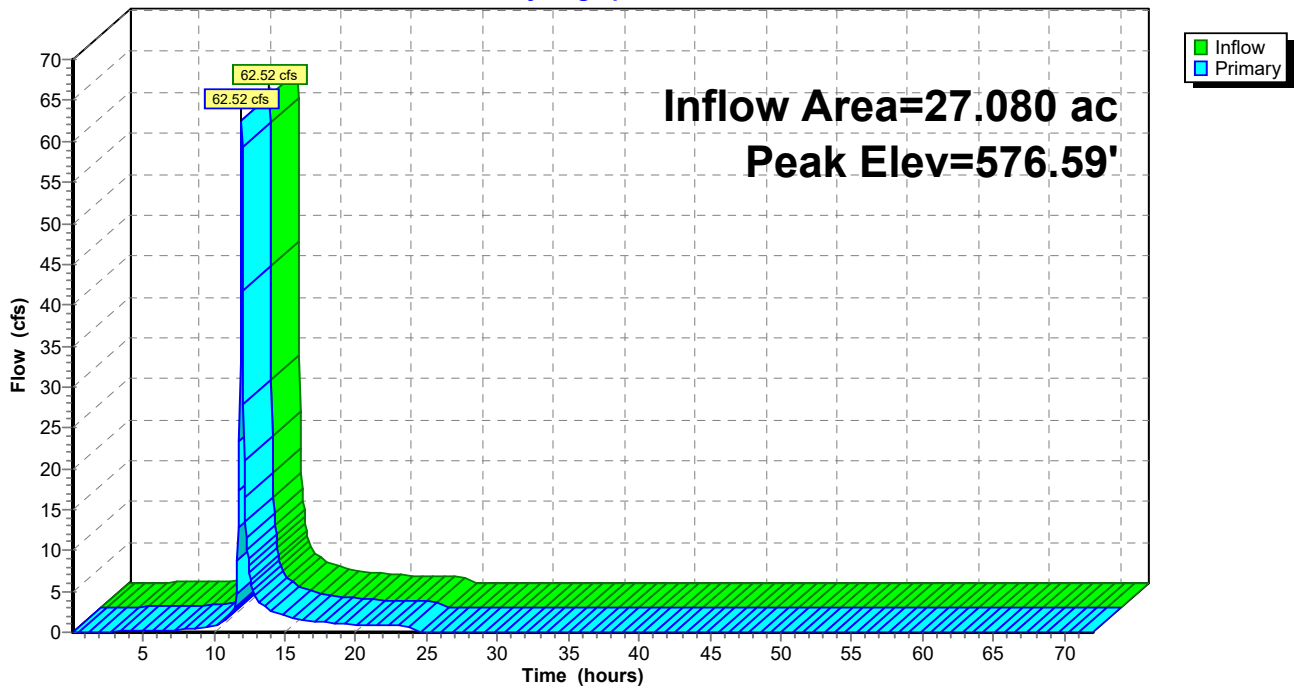
Device	Routing	Invert	Outlet Devices
#1	Primary	574.47'	54.0" Round Culvert L= 83.6' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 574.47' / 573.62' S= 0.0102'/' Cc= 0.900 n= 0.013, Flow Area= 15.90 sf
#2	Primary	574.64'	54.0" Round Culvert L= 83.6' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 574.64' / 573.79' S= 0.0102'/' Cc= 0.900 n= 0.013, Flow Area= 15.90 sf

Primary OutFlow Max=60.61 cfs @ 11.97 hrs HW=576.55' (Free Discharge)

- 1=Culvert (Barrel Controls 32.49 cfs @ 6.64 fps)
- 2=Culvert (Barrel Controls 28.12 cfs @ 6.46 fps)

Pond 9P: EX CULVERT

Hydrograph



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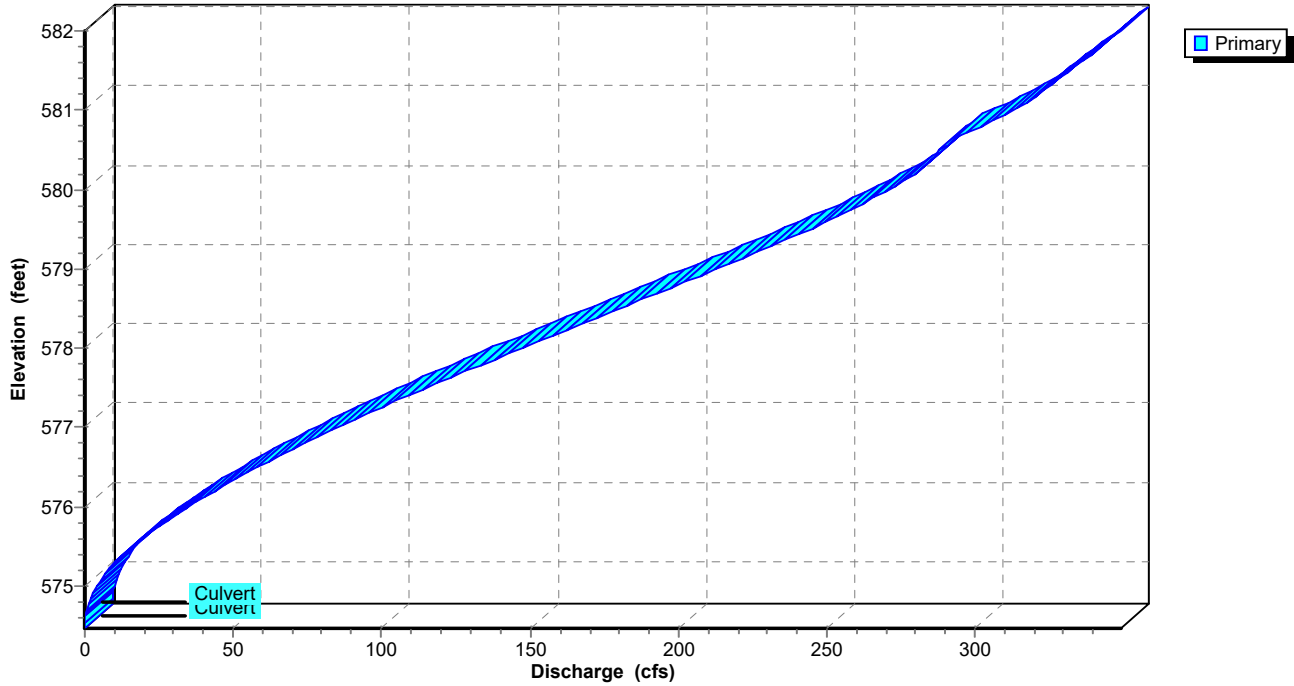
Type II 24-hr 2-Year Rainfall=3.10"

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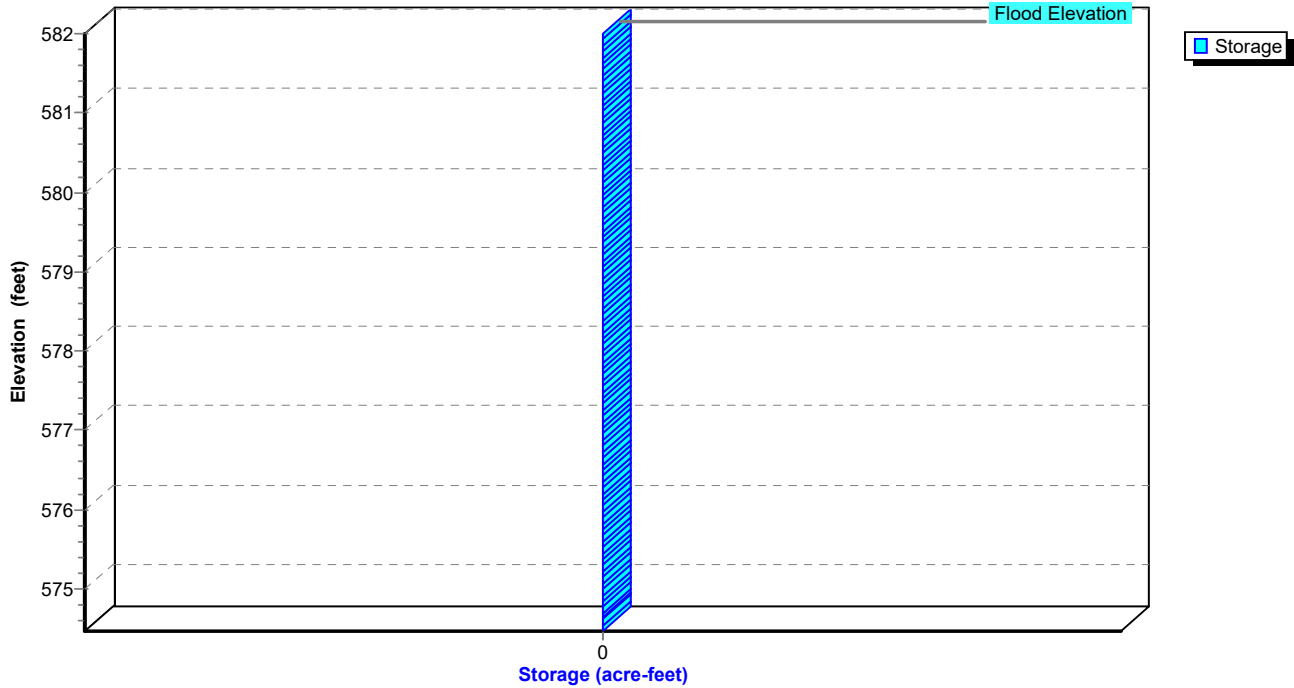
Pond 9P: EX CULVERT

Stage-Discharge



Pond 9P: EX CULVERT

Stage-Area-Storage



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Type II 24-hr 2-Year Rainfall=3.10"

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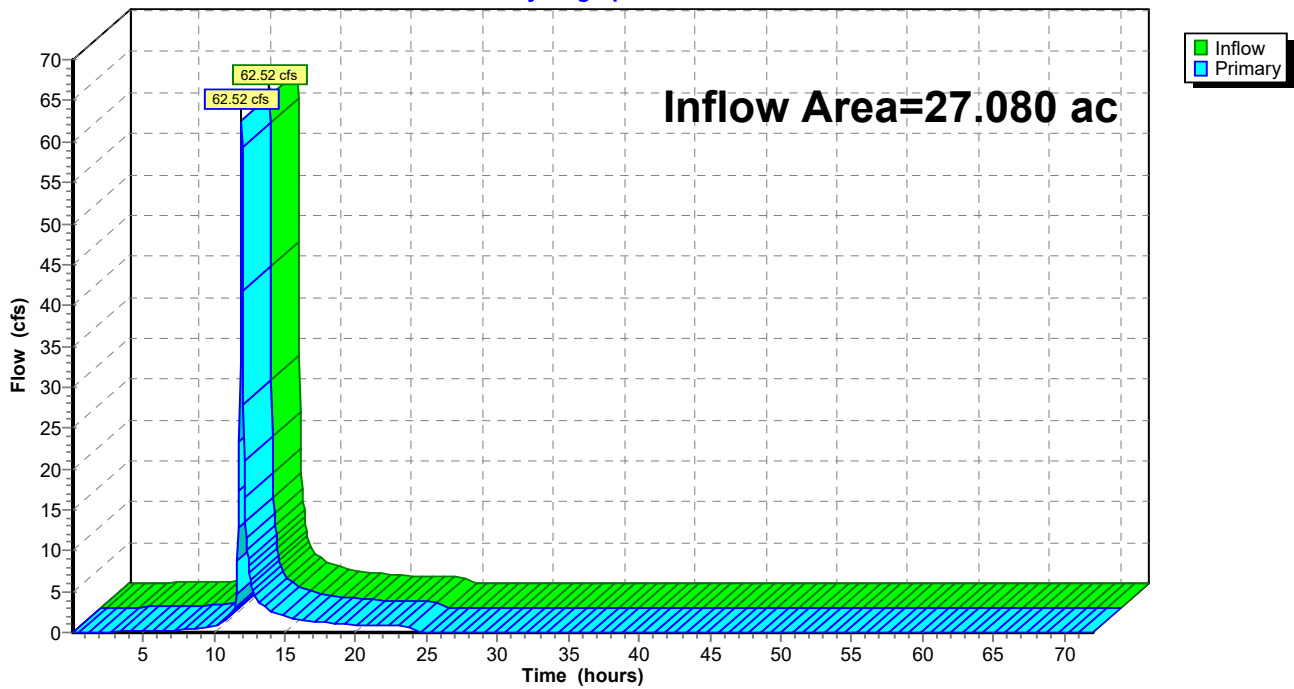
Summary for Link 6L: EX SITE

Inflow Area = 27.080 ac, 31.12% Impervious, Inflow Depth = 1.62" for 2-Year event
Inflow = 62.52 cfs @ 11.97 hrs, Volume= 3.662 af
Primary = 62.52 cfs @ 11.97 hrs, Volume= 3.662 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 9P : EX CULVERT

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

Link 6L: EX SITE

Hydrograph



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Type II 24-hr 15-Year Rainfall=5.03"

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Summary for Subcatchment 1S: AREA A

Runoff = 32.43 cfs @ 12.07 hrs, Volume= 2.096 af, Depth= 2.65"
 Routed to Link 6L : EX SITE

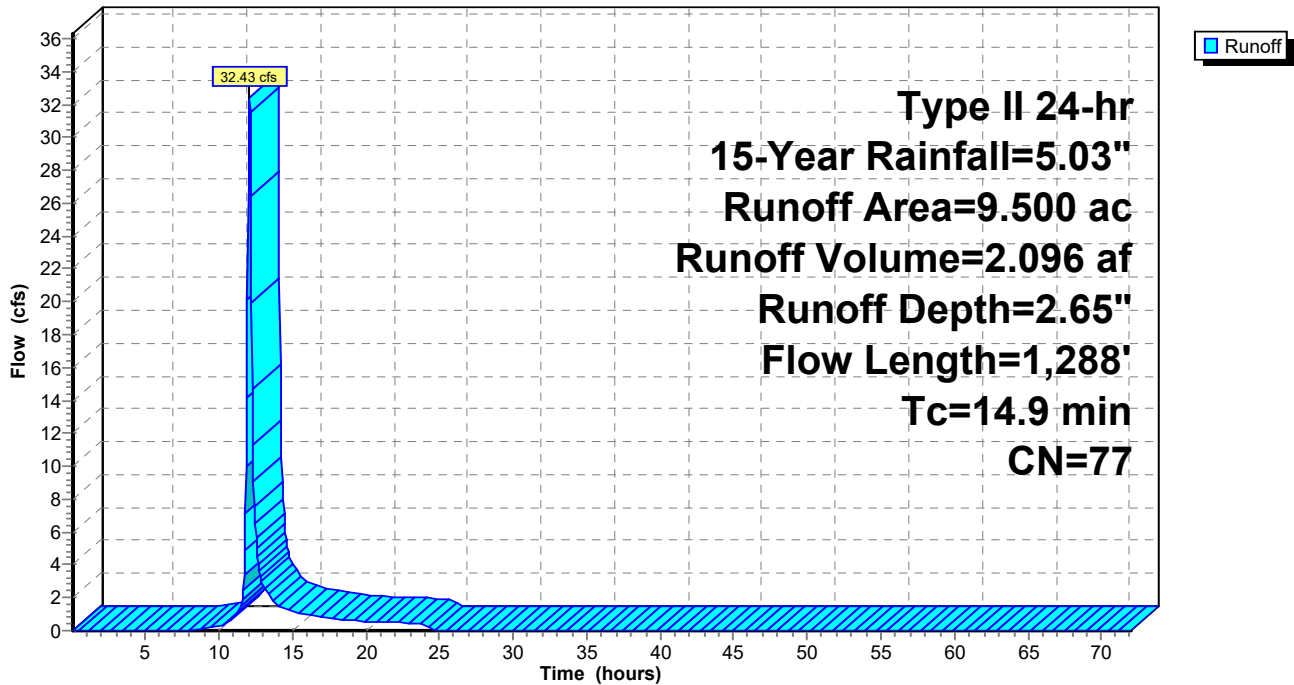
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 15-Year Rainfall=5.03"

Area (ac)	CN	Description
9.500	77	Woods, Good, HSG D
9.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.1092	0.16		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.60"
2.2	467	0.0498	3.59		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
2.4	721	0.0193	4.92	49.21	Channel Flow, Area= 10.0 sf Perim= 9.0' r= 1.11' n= 0.045
14.9	1,288	Total			

Subcatchment 1S: AREA A

Hydrograph



EXISTING CONDITIONS

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Type II 24-hr 15-Year Rainfall=5.03"

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Summary for Subcatchment 2S: AREA B

Runoff = 4.20 cfs @ 11.95 hrs, Volume= 0.232 af, Depth= 4.79"
 Routed to Link 6L : EX SITE

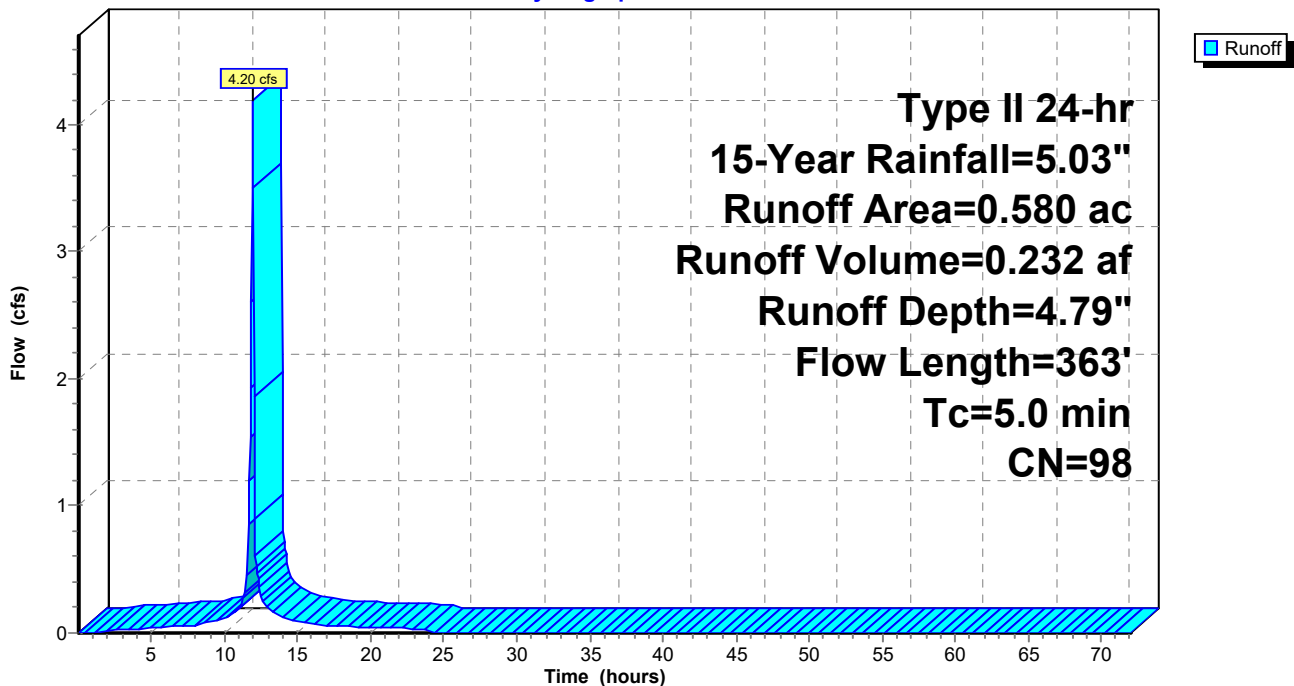
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 15-Year Rainfall=5.03"

Area (ac)	CN	Description
0.580	98	Paved roads w/curbs & sewers, HSG D
0.580		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0657	2.35		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.60"
1.5	263	0.0210	2.94		Shallow Concentrated Flow, Paved Kv= 20.3 fps
2.2	363	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 2S: AREA B

Hydrograph



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Type II 24-hr 15-Year Rainfall=5.03"

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Summary for Subcatchment 3S: AREA C

Runoff = 26.44 cfs @ 11.98 hrs, Volume= 1.420 af, Depth= 3.50"
 Routed to Link 6L : EX SITE

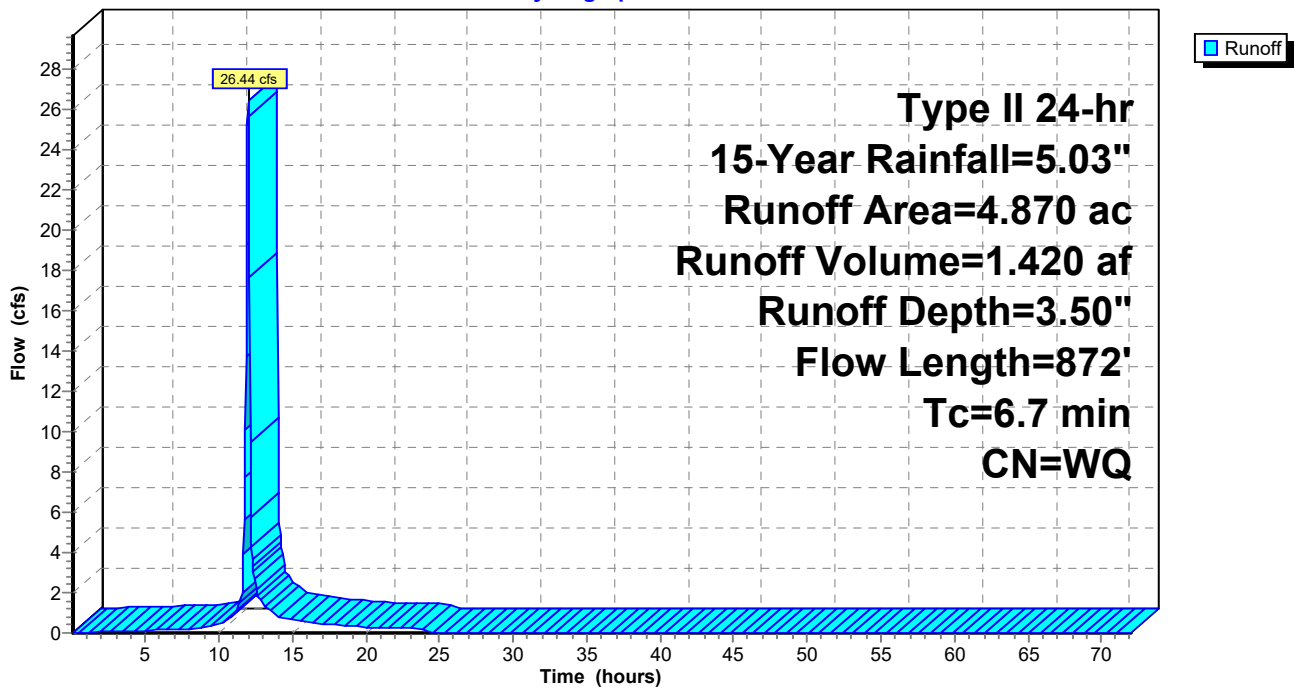
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 15-Year Rainfall=5.03"

Area (ac)	CN	Description
2.940	77	Brush, Poor, HSG C
1.930	98	Paved parking, HSG C
4.870		Weighted Average
2.940		60.37% Pervious Area
1.930		39.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	100	0.0038	0.70		Sheet Flow, n= 0.012 P2= 3.60"
1.3	201	0.0166	2.62		Shallow Concentrated Flow, Paved Kv= 20.3 fps
3.0	571	0.0400	3.22		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
6.7	872	Total			

Subcatchment 3S: AREA C

Hydrograph



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Type II 24-hr 15-Year Rainfall=5.03"

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Summary for Subcatchment 4S: AREA D

Runoff = 16.30 cfs @ 11.95 hrs, Volume= 0.881 af, Depth= 4.26"
 Routed to Link 6L : EX SITE

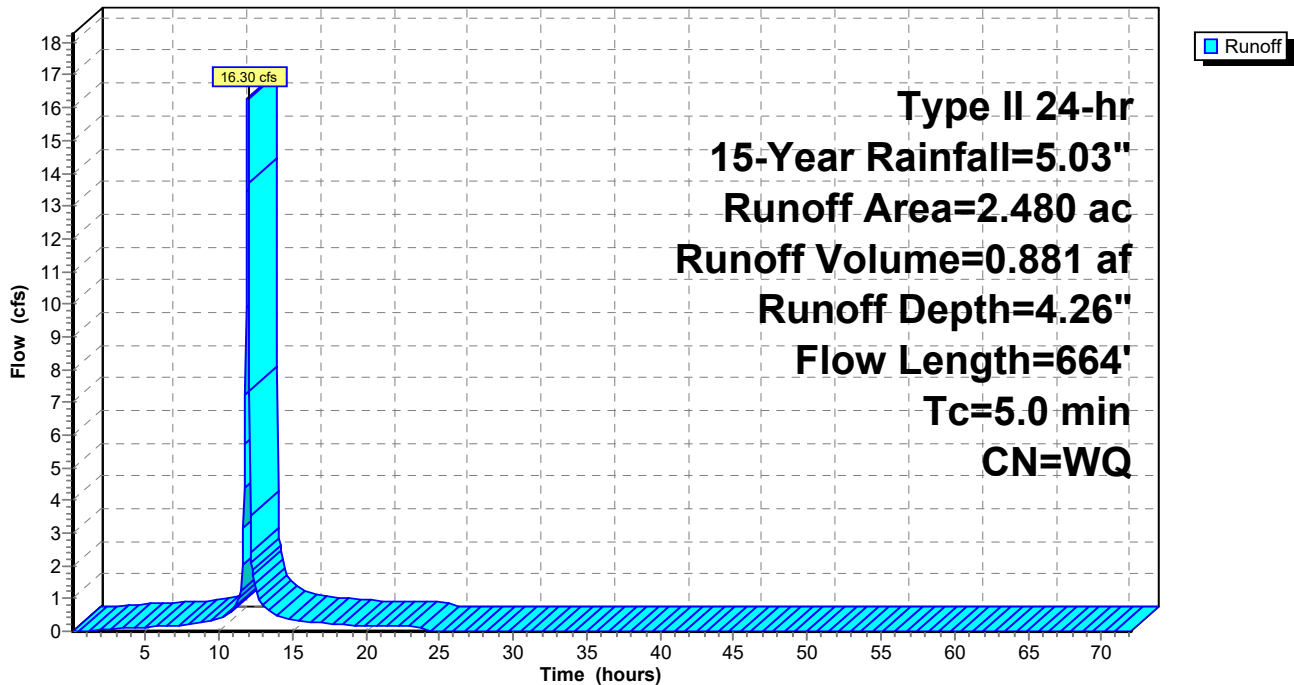
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 15-Year Rainfall=5.03"

Area (ac)	CN	Description
1.950	98	Paved roads w/curbs & sewers, HSG D
0.530	73	Brush, Good, HSG D
2.480		Weighted Average
0.530		21.37% Pervious Area
1.950		78.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0153	1.31		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.60"
2.4	564	0.0374	3.93		Shallow Concentrated Flow, Paved Kv= 20.3 fps
3.7	664	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 4S: AREA D

Hydrograph



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Type II 24-hr 15-Year Rainfall=5.03"

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Summary for Subcatchment 5S: AREA E

Runoff = 4.94 cfs @ 11.95 hrs, Volume= 0.247 af, Depth= 4.01"
Routed to Link 6L : EX SITE

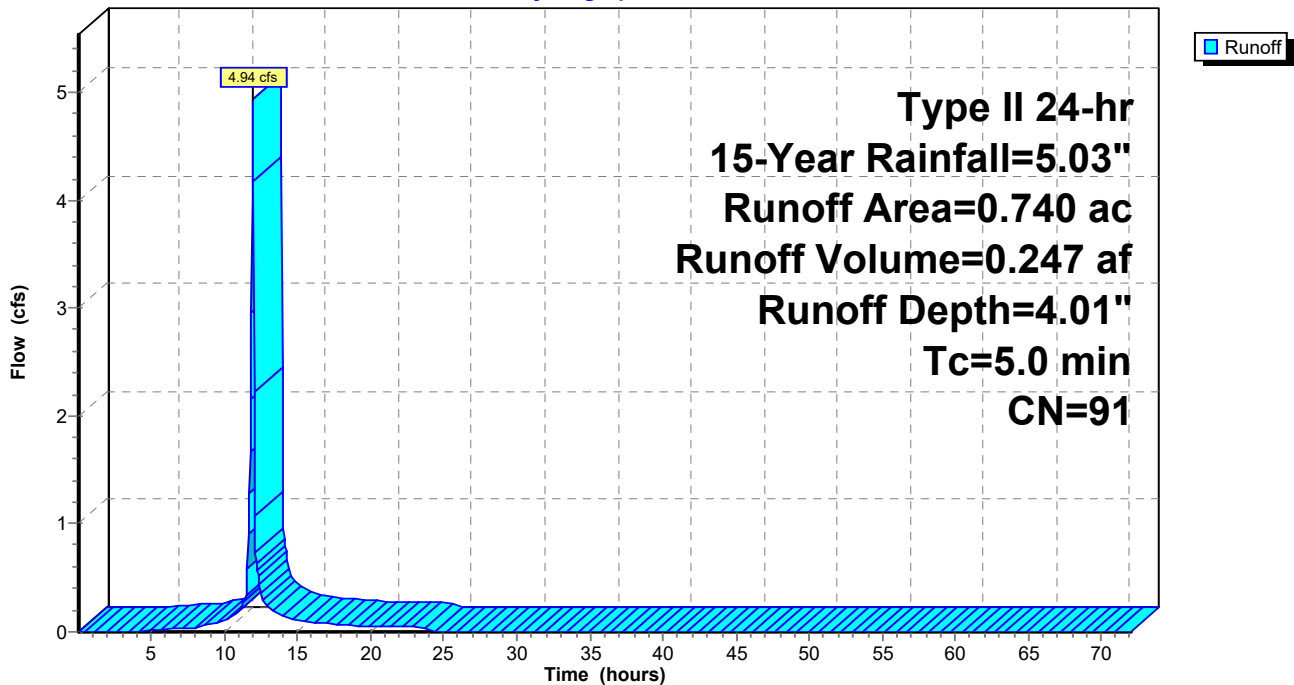
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 15-Year Rainfall=5.03"

Area (ac)	CN	Description
* 0.740	91	
0.740		100.00% Pervious Area

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

Subcatchment 5S: AREA E

Hydrograph



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Type II 24-hr 15-Year Rainfall=5.03"

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Summary for Subcatchment 7S: AREA G

Runoff = 1.16 cfs @ 11.95 hrs, Volume= 0.064 af, Depth= 4.79"
Routed to Link 6L : EX SITE

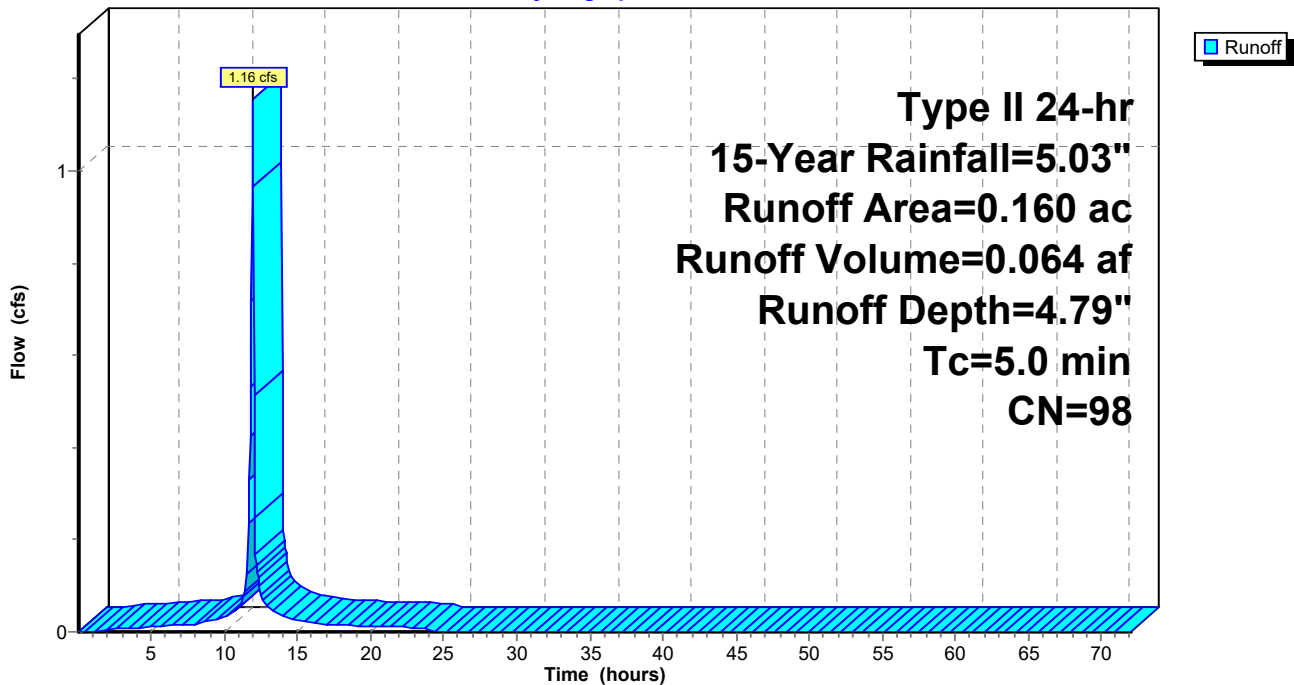
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 15-Year Rainfall=5.03"

Area (ac)	CN	Description
0.160	98	Paved parking, HSG C
0.160		100.00% Impervious Area

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

Subcatchment 7S: AREA G

Hydrograph



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Type II 24-hr 15-Year Rainfall=5.03"

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Summary for Subcatchment 9S: AREA F

Runoff = 50.52 cfs @ 11.95 hrs, Volume= 2.438 af, Depth= 3.34"
 Routed to Link 6L : EX SITE

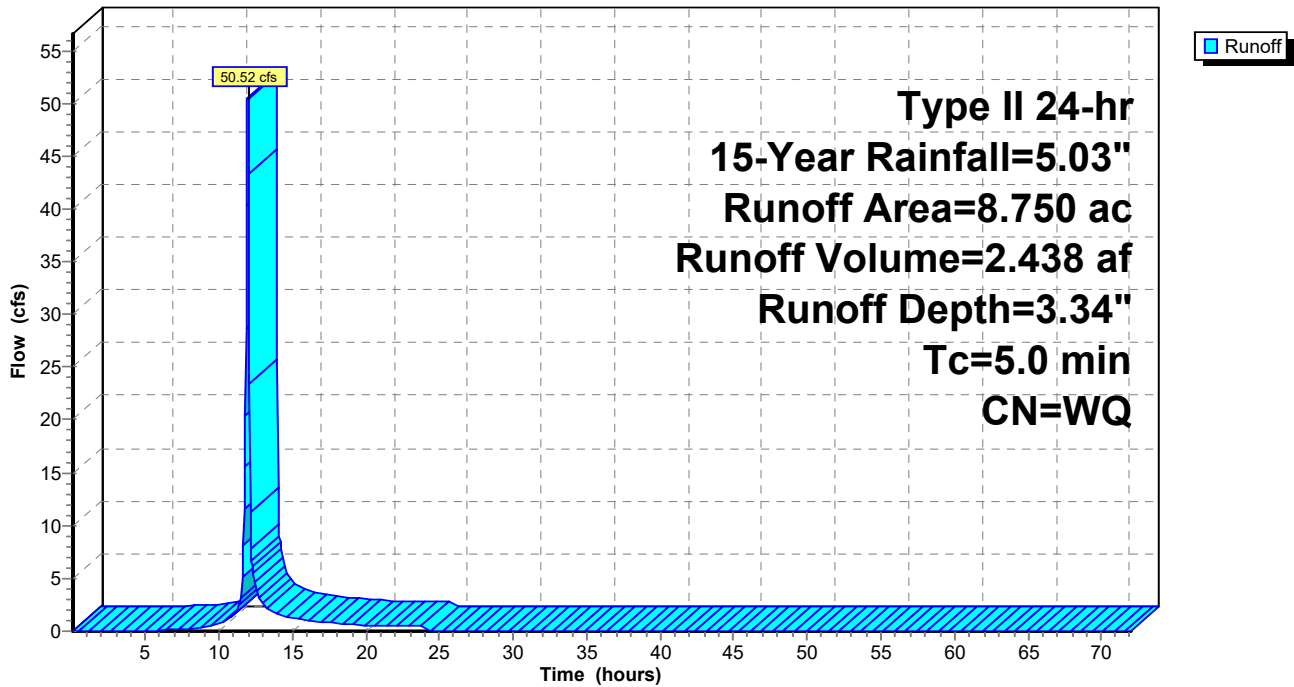
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 15-Year Rainfall=5.03"

Area (ac)	CN	Description
7.970	83	1/4 acre lots, 38% imp, HSG C
0.780	98	Water Surface, HSG C
<hr/>		
8.750		Weighted Average
4.941		56.47% Pervious Area
3.809		43.53% Impervious Area

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

Subcatchment 9S: AREA F

Hydrograph



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Type II 24-hr 15-Year Rainfall=5.03"

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Summary for Pond 9P: EX CULVERT

Inflow Area = 27.080 ac, 31.12% Impervious, Inflow Depth = 3.27" for 15-Year event
 Inflow = 124.43 cfs @ 11.97 hrs, Volume= 7.377 af
 Outflow = 124.43 cfs @ 11.97 hrs, Volume= 7.377 af, Atten= 0%, Lag= 0.0 min
 Primary = 124.43 cfs @ 11.97 hrs, Volume= 7.377 af

Routing by Dyn-Stor-Ind method, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 577.65' @ 11.97 hrs
 Flood Elev= 582.00'

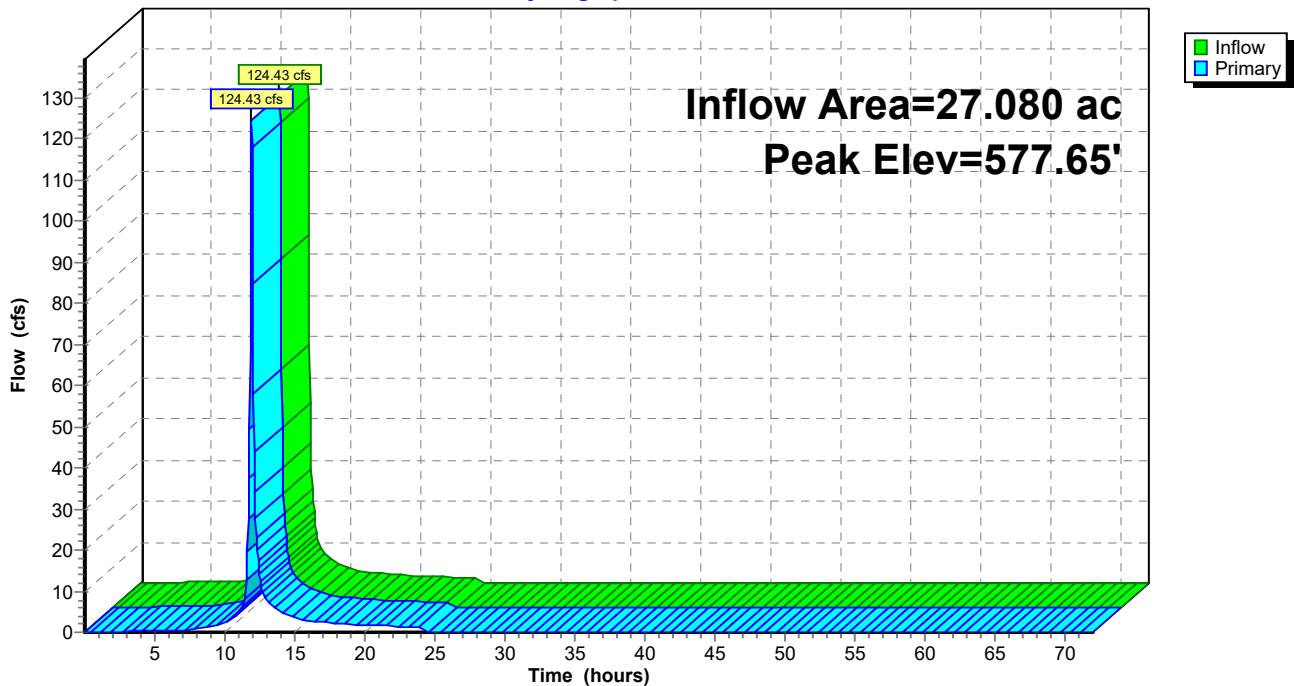
Device	Routing	Invert	Outlet Devices
#1	Primary	574.47'	54.0" Round Culvert L= 83.6' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 574.47' / 573.62' S= 0.0102 '/' Cc= 0.900 n= 0.013, Flow Area= 15.90 sf
#2	Primary	574.64'	54.0" Round Culvert L= 83.6' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 574.64' / 573.79' S= 0.0102 '/' Cc= 0.900 n= 0.013, Flow Area= 15.90 sf

Primary OutFlow Max=120.85 cfs @ 11.97 hrs HW=577.59' (Free Discharge)

- 1=Culvert (Barrel Controls 63.11 cfs @ 7.55 fps)
- 2=Culvert (Barrel Controls 57.75 cfs @ 7.42 fps)

Pond 9P: EX CULVERT

Hydrograph



EXISTING CONDITIONS

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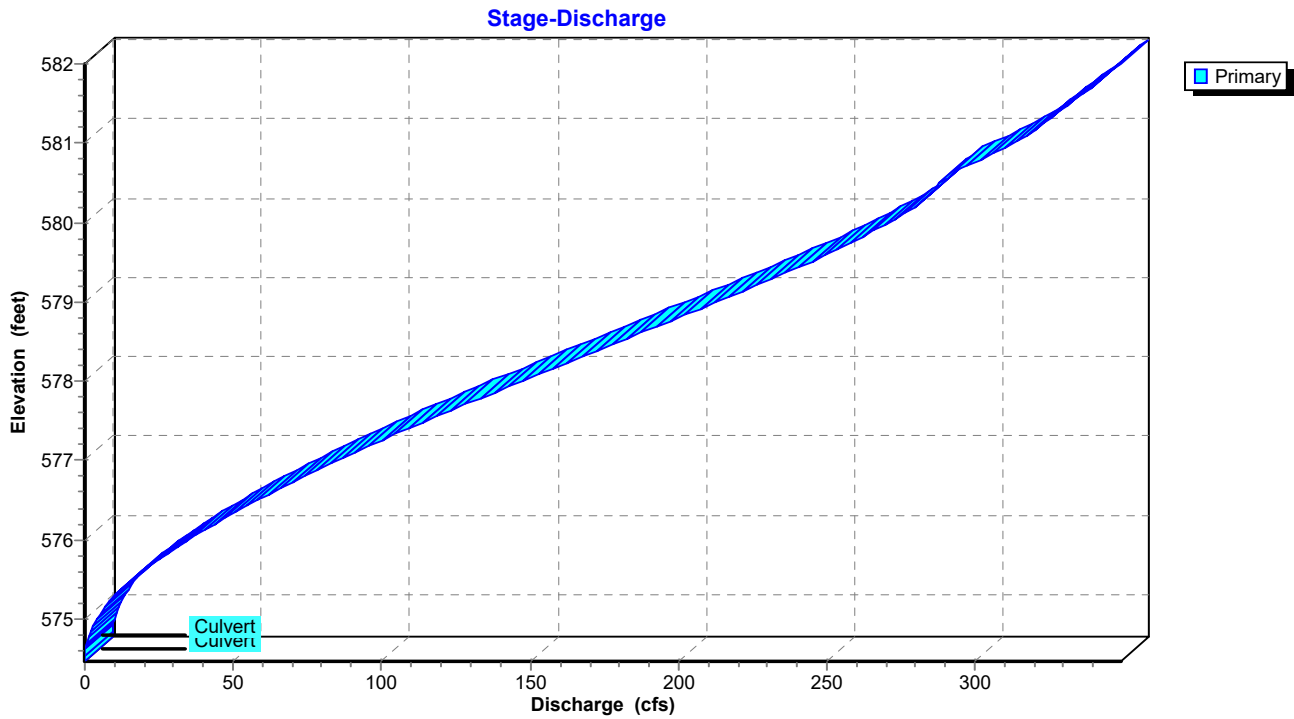
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Type II 24-hr 15-Year Rainfall=5.03"

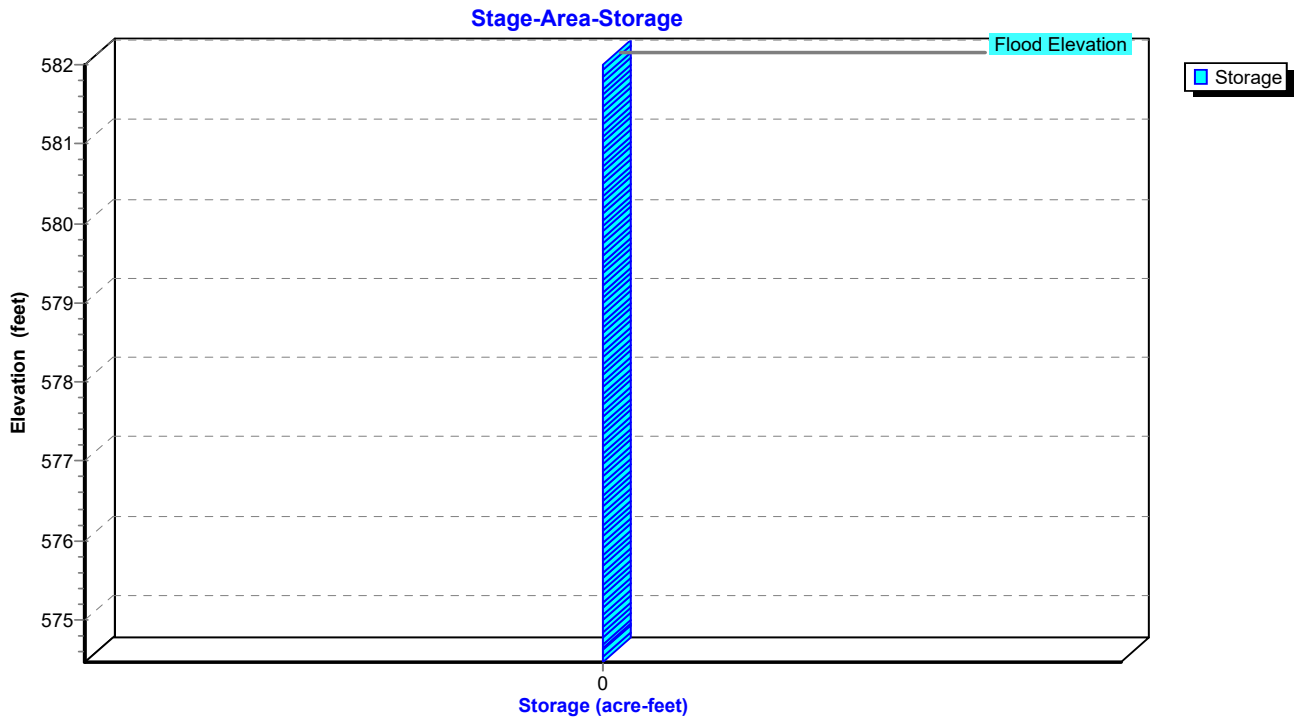
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Pond 9P: EX CULVERT



Pond 9P: EX CULVERT



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Type II 24-hr 15-Year Rainfall=5.03"

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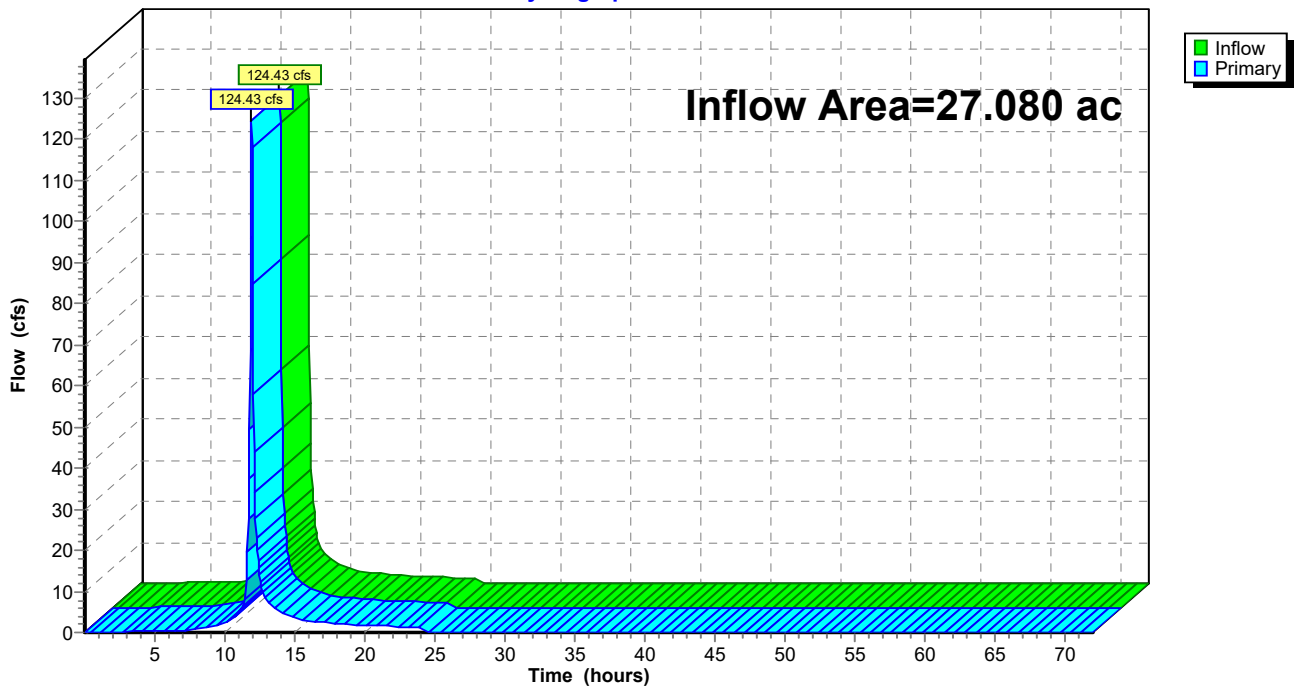
Summary for Link 6L: EX SITE

Inflow Area = 27.080 ac, 31.12% Impervious, Inflow Depth = 3.27" for 15-Year event
Inflow = 124.43 cfs @ 11.97 hrs, Volume= 7.377 af
Primary = 124.43 cfs @ 11.97 hrs, Volume= 7.377 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 9P : EX CULVERT

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

Link 6L: EX SITE

Hydrograph



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Type II 24-hr 25-Year Rainfall=5.60"

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Summary for Subcatchment 1S: AREA A

Runoff = 38.33 cfs @ 12.07 hrs, Volume= 2.480 af, Depth= 3.13"
 Routed to Link 6L : EX SITE

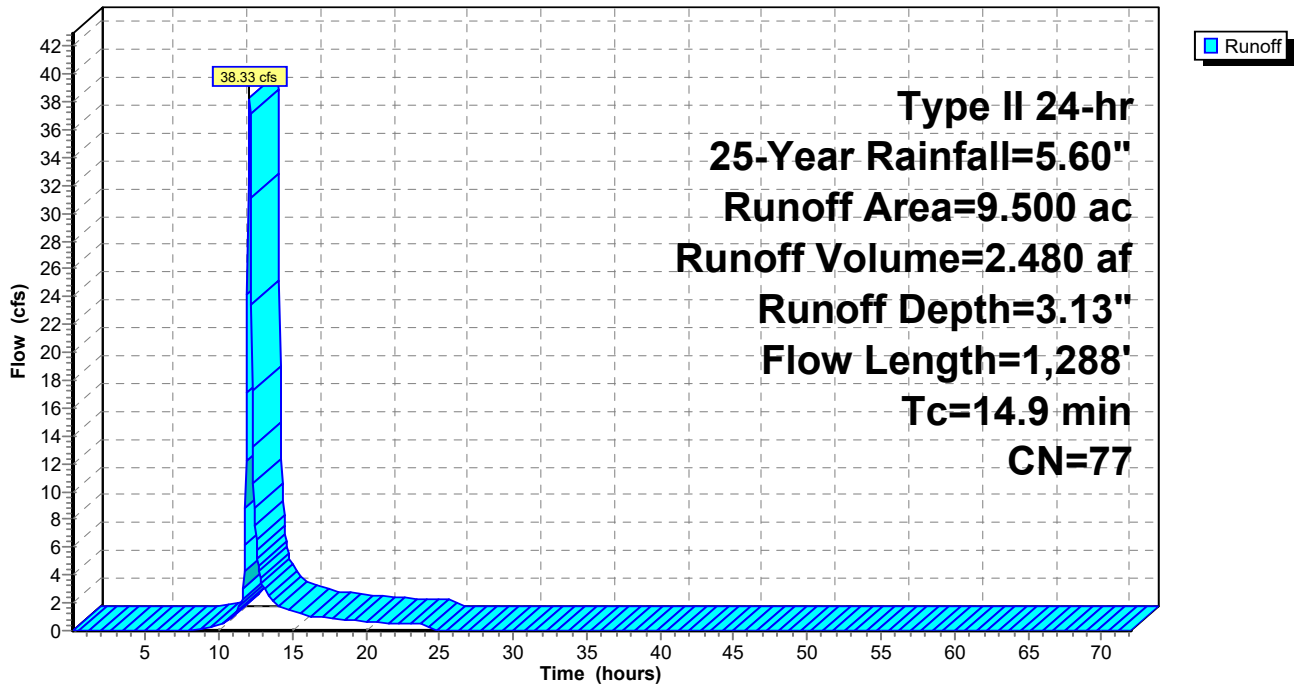
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-Year Rainfall=5.60"

Area (ac)	CN	Description
9.500	77	Woods, Good, HSG D
9.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.1092	0.16		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.60"
2.2	467	0.0498	3.59		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
2.4	721	0.0193	4.92	49.21	Channel Flow, Area= 10.0 sf Perim= 9.0' r= 1.11' n= 0.045
14.9	1,288	Total			

Subcatchment 1S: AREA A

Hydrograph



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Type II 24-hr 25-Year Rainfall=5.60"

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Summary for Subcatchment 2S: AREA B

Runoff = 4.68 cfs @ 11.95 hrs, Volume= 0.259 af, Depth= 5.36"
 Routed to Link 6L : EX SITE

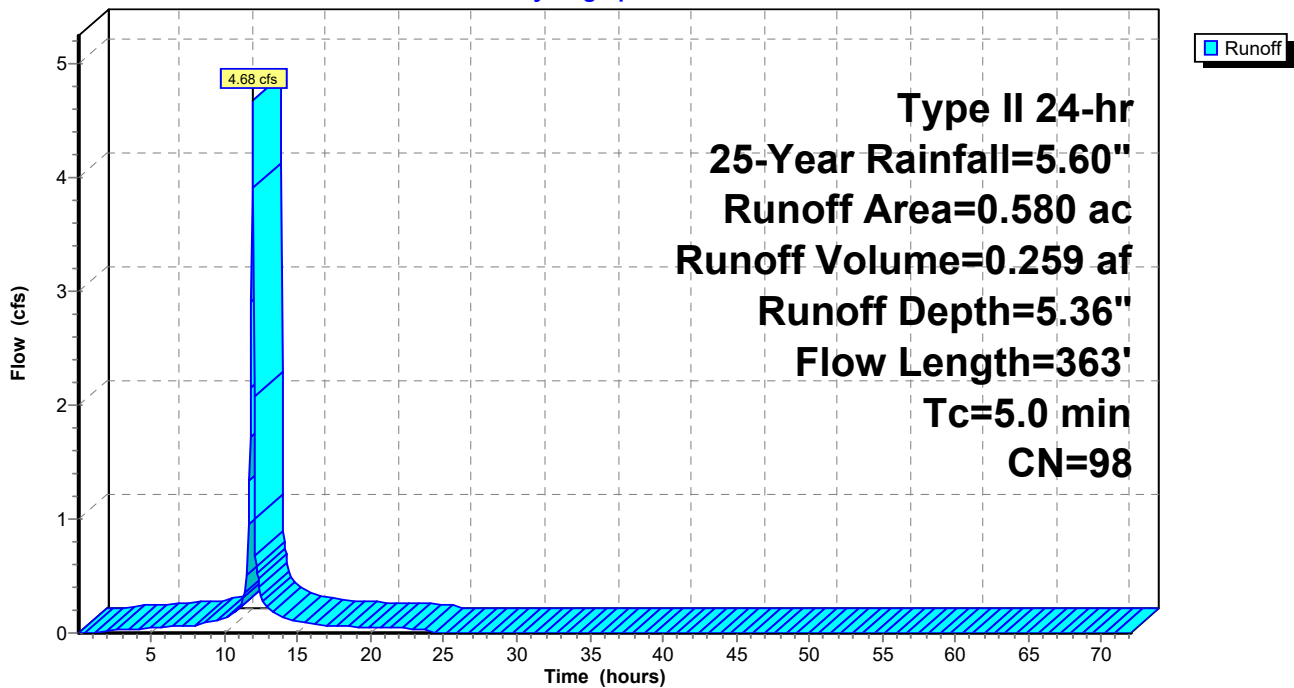
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-Year Rainfall=5.60"

Area (ac)	CN	Description
0.580	98	Paved roads w/curbs & sewers, HSG D
0.580		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0657	2.35		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.60"
1.5	263	0.0210	2.94		Shallow Concentrated Flow, Paved Kv= 20.3 fps
2.2	363	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 2S: AREA B

Hydrograph



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Type II 24-hr 25-Year Rainfall=5.60"

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Summary for Subcatchment 3S: AREA C

Runoff = 30.31 cfs @ 11.98 hrs, Volume= 1.630 af, Depth= 4.02"
 Routed to Link 6L : EX SITE

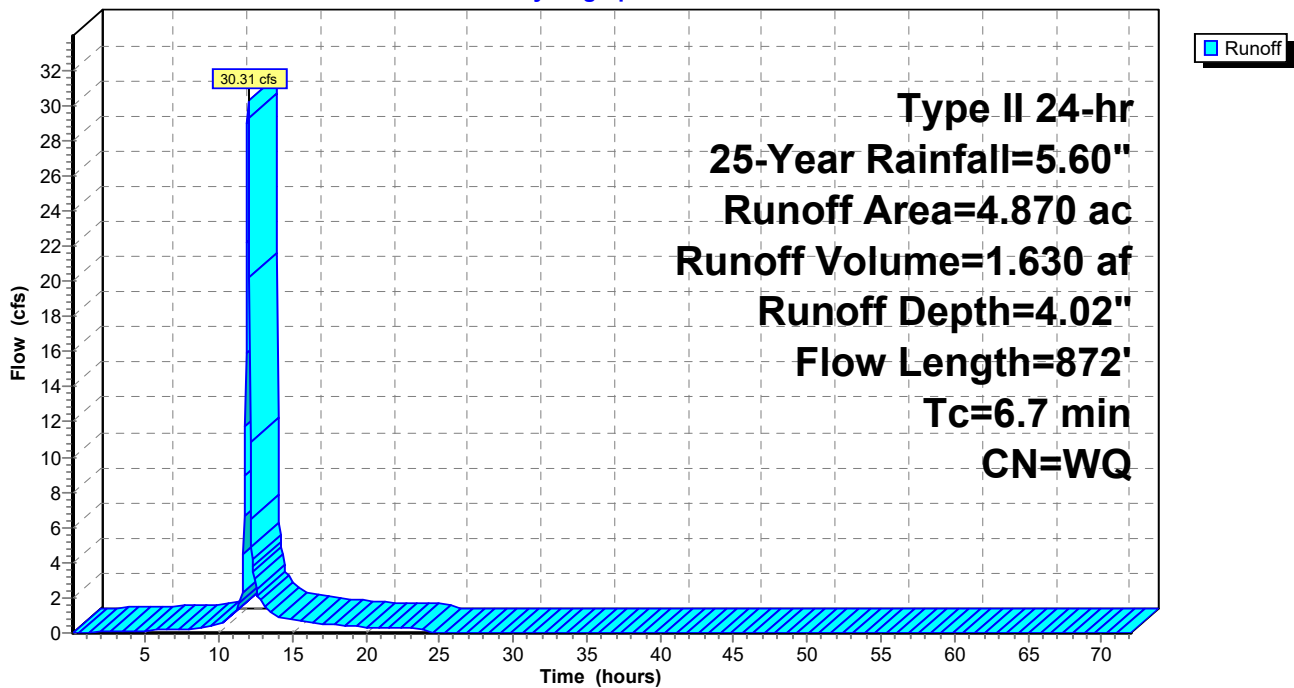
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-Year Rainfall=5.60"

Area (ac)	CN	Description
2.940	77	Brush, Poor, HSG C
1.930	98	Paved parking, HSG C
4.870		Weighted Average
2.940		60.37% Pervious Area
1.930		39.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	100	0.0038	0.70		Sheet Flow, n= 0.012 P2= 3.60"
1.3	201	0.0166	2.62		Shallow Concentrated Flow, Paved Kv= 20.3 fps
3.0	571	0.0400	3.22		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
6.7	872	Total			

Subcatchment 3S: AREA C

Hydrograph



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Type II 24-hr 25-Year Rainfall=5.60"

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Summary for Subcatchment 4S: AREA D

Runoff = 18.35 cfs @ 11.95 hrs, Volume= 0.993 af, Depth= 4.81"
 Routed to Link 6L : EX SITE

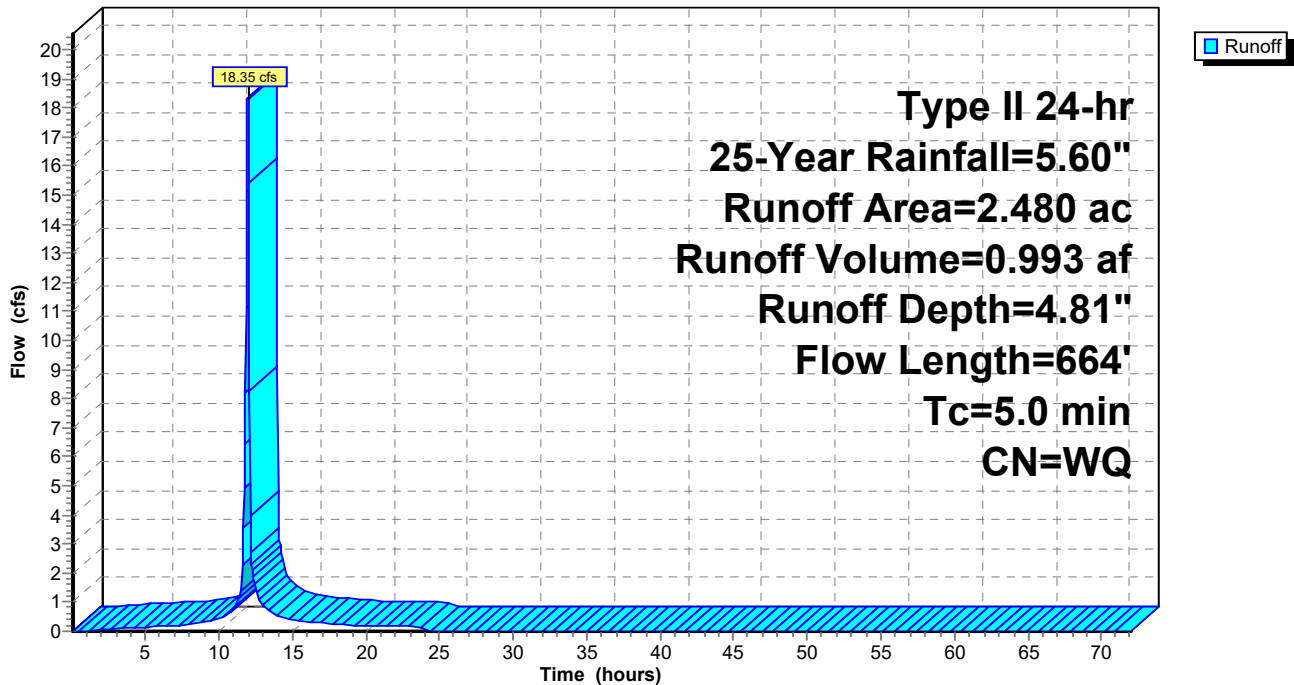
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-Year Rainfall=5.60"

Area (ac)	CN	Description
1.950	98	Paved roads w/curbs & sewers, HSG D
0.530	73	Brush, Good, HSG D
2.480		Weighted Average
0.530		21.37% Pervious Area
1.950		78.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0153	1.31		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.60"
2.4	564	0.0374	3.93		Shallow Concentrated Flow, Paved Kv= 20.3 fps
3.7	664	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 4S: AREA D

Hydrograph



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Type II 24-hr 25-Year Rainfall=5.60"

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Summary for Subcatchment 5S: AREA E

Runoff = 5.58 cfs @ 11.95 hrs, Volume= 0.282 af, Depth= 4.57"
Routed to Link 6L : EX SITE

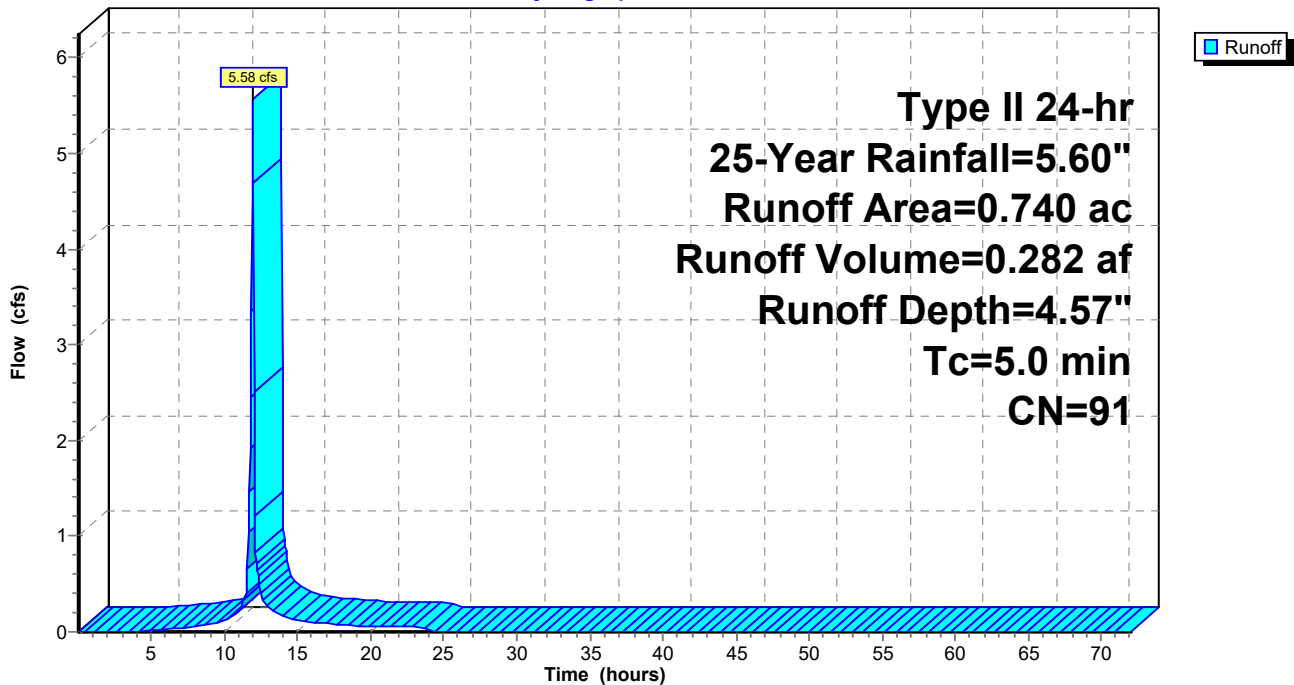
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=5.60"

Area (ac)	CN	Description
* 0.740	91	
0.740		100.00% Pervious Area

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

Subcatchment 5S: AREA E

Hydrograph



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Type II 24-hr 25-Year Rainfall=5.60"

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Summary for Subcatchment 7S: AREA G

Runoff = 1.29 cfs @ 11.95 hrs, Volume= 0.071 af, Depth= 5.36"
Routed to Link 6L : EX SITE

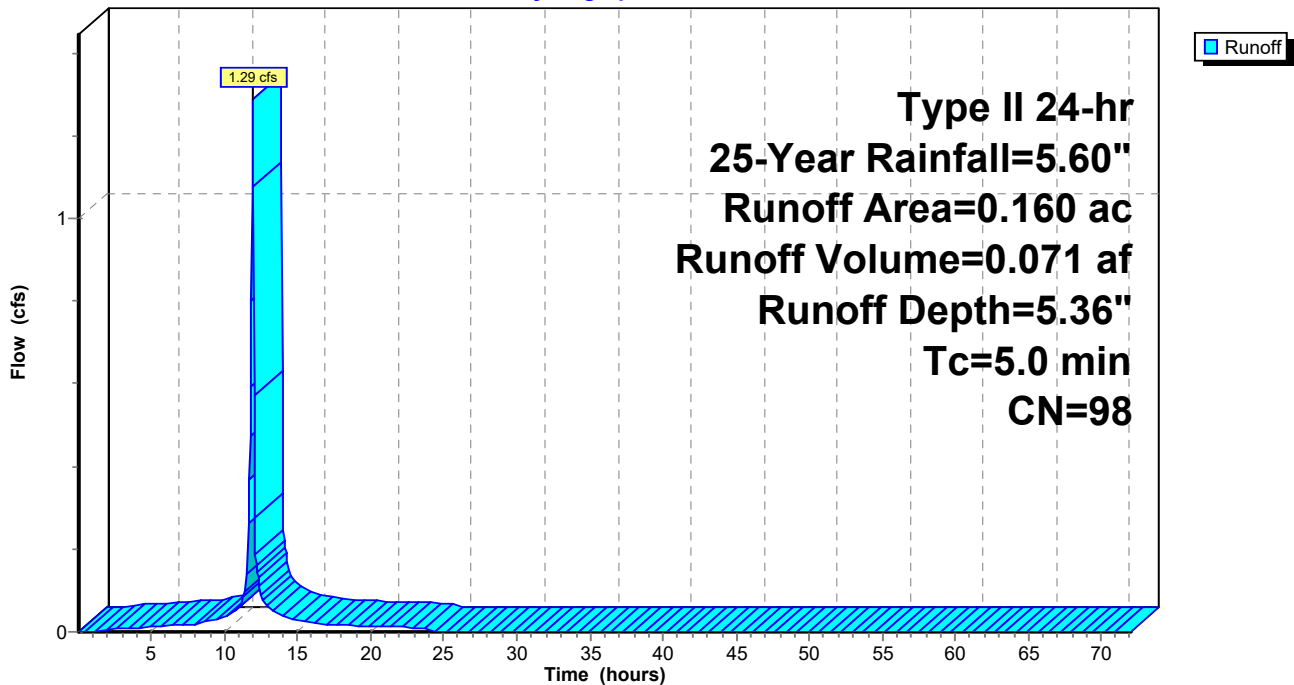
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=5.60"

Area (ac)	CN	Description
0.160	98	Paved parking, HSG C
0.160		100.00% Impervious Area

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

Subcatchment 7S: AREA G

Hydrograph



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Type II 24-hr 25-Year Rainfall=5.60"

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Summary for Subcatchment 9S: AREA F

Runoff = 58.09 cfs @ 11.95 hrs, Volume= 2.820 af, Depth= 3.87"
 Routed to Link 6L : EX SITE

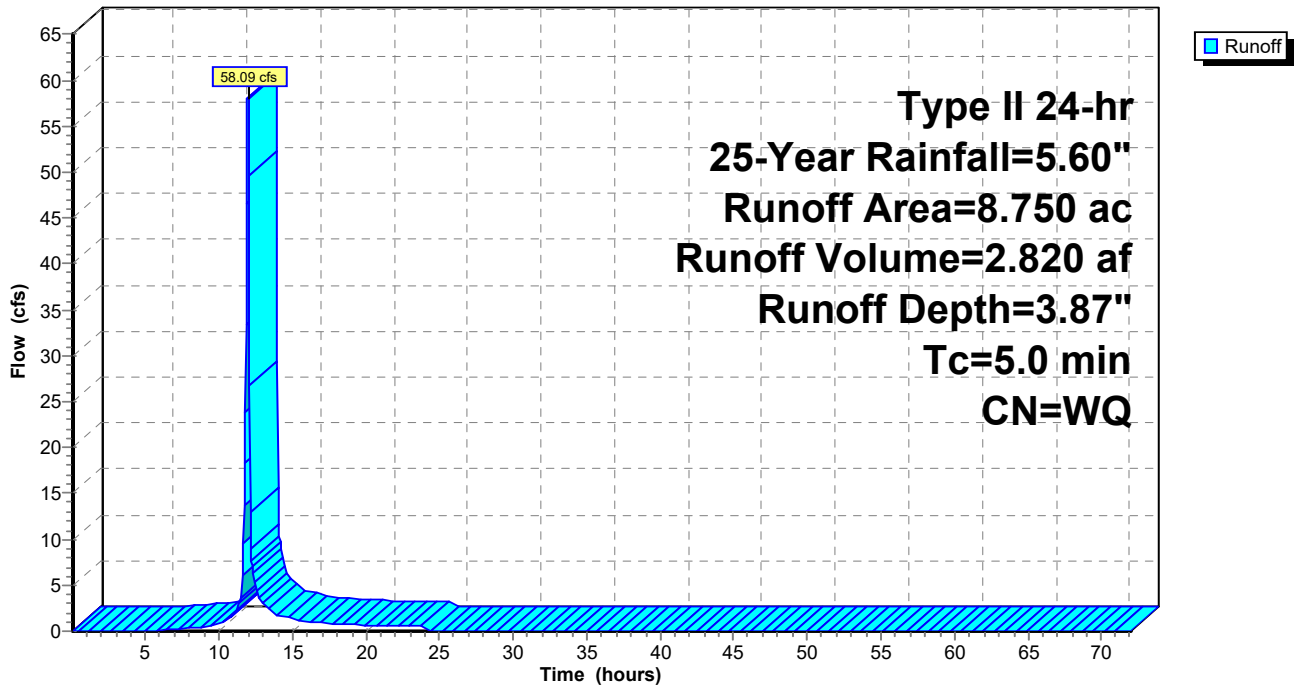
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-Year Rainfall=5.60"

Area (ac)	CN	Description
7.970	83	1/4 acre lots, 38% imp, HSG C
0.780	98	Water Surface, HSG C
<hr/>		
8.750		Weighted Average
4.941		56.47% Pervious Area
3.809		43.53% Impervious Area

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

Subcatchment 9S: AREA F

Hydrograph



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Type II 24-hr 25-Year Rainfall=5.60"

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Summary for Pond 9P: EX CULVERT

Inflow Area = 27.080 ac, 31.12% Impervious, Inflow Depth = 3.78" for 25-Year event
 Inflow = 143.33 cfs @ 11.97 hrs, Volume= 8.536 af
 Outflow = 143.33 cfs @ 11.97 hrs, Volume= 8.536 af, Atten= 0%, Lag= 0.0 min
 Primary = 143.33 cfs @ 11.97 hrs, Volume= 8.536 af

Routing by Dyn-Stor-Ind method, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 577.94' @ 11.97 hrs
 Flood Elev= 582.00'

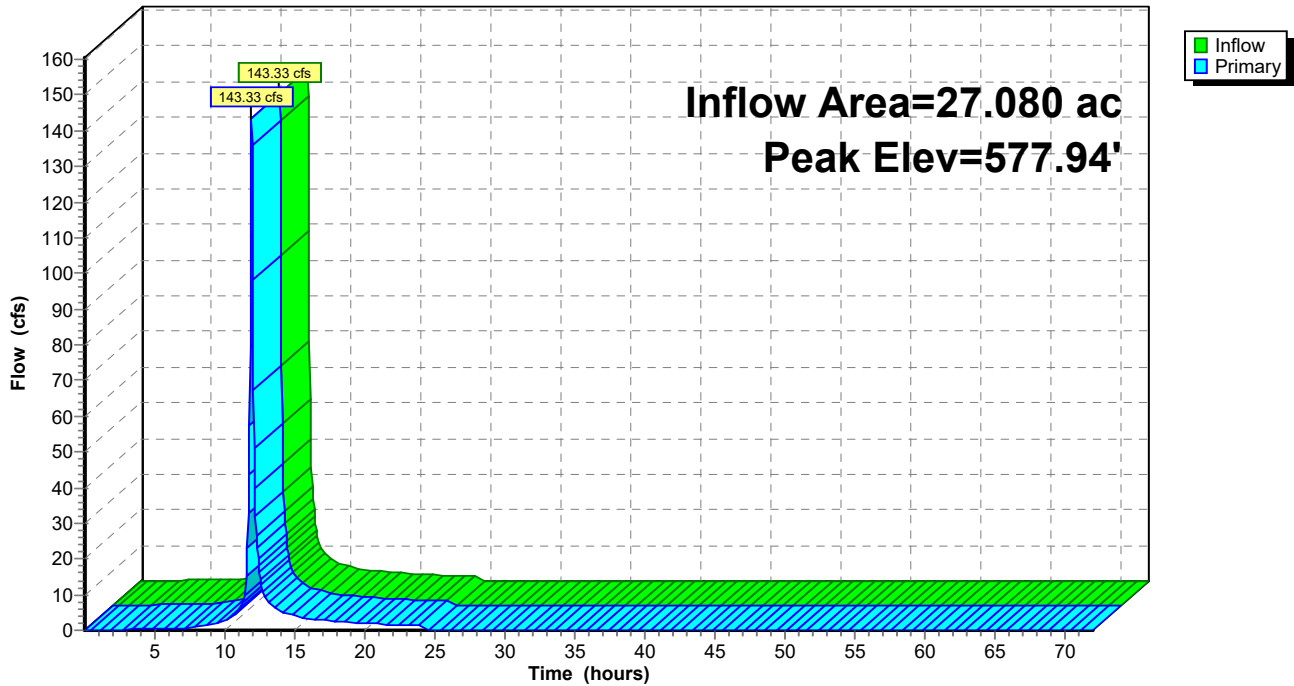
Device	Routing	Invert	Outlet Devices
#1	Primary	574.47'	54.0" Round Culvert L= 83.6' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 574.47' / 573.62' S= 0.0102 '/' Cc= 0.900 n= 0.013, Flow Area= 15.90 sf
#2	Primary	574.64'	54.0" Round Culvert L= 83.6' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 574.64' / 573.79' S= 0.0102 '/' Cc= 0.900 n= 0.013, Flow Area= 15.90 sf

Primary OutFlow Max=139.26 cfs @ 11.97 hrs HW=577.88' (Free Discharge)

- 1=Culvert (Barrel Controls 72.39 cfs @ 7.76 fps)
- 2=Culvert (Barrel Controls 66.88 cfs @ 7.64 fps)

Pond 9P: EX CULVERT

Hydrograph



EXISTING CONDITIONS

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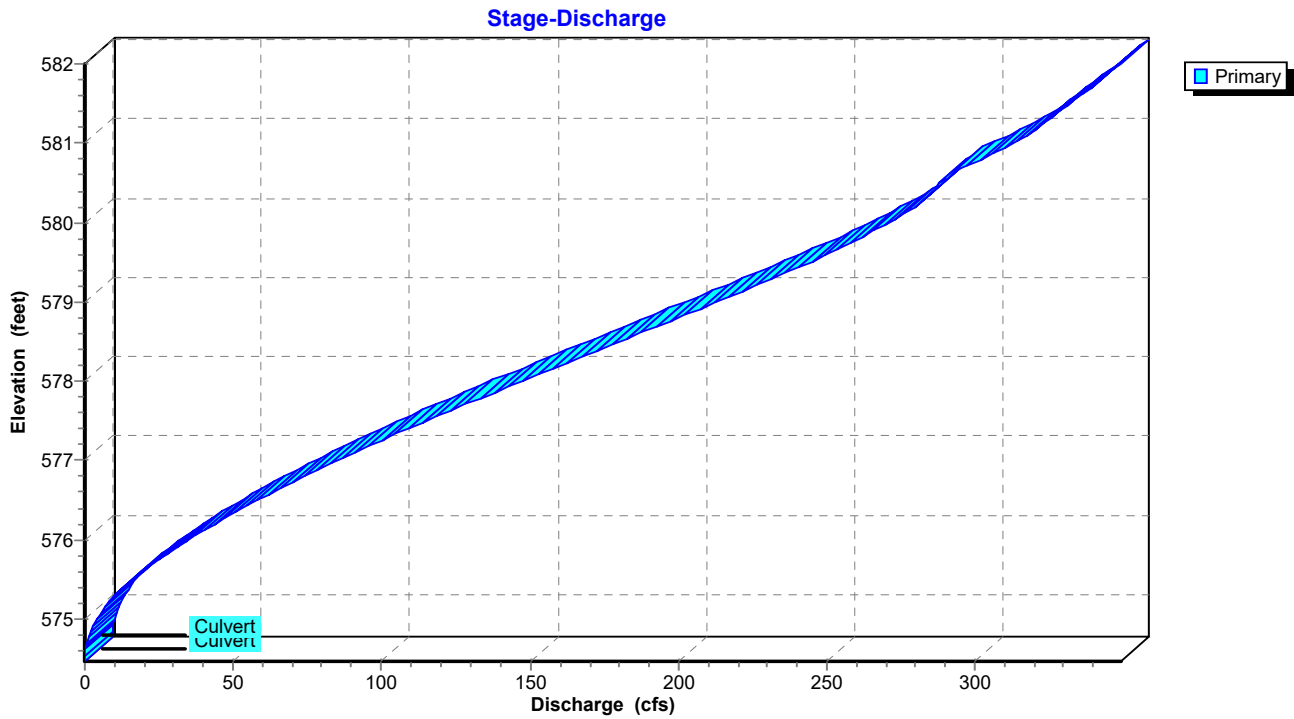
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Type II 24-hr 25-Year Rainfall=5.60"

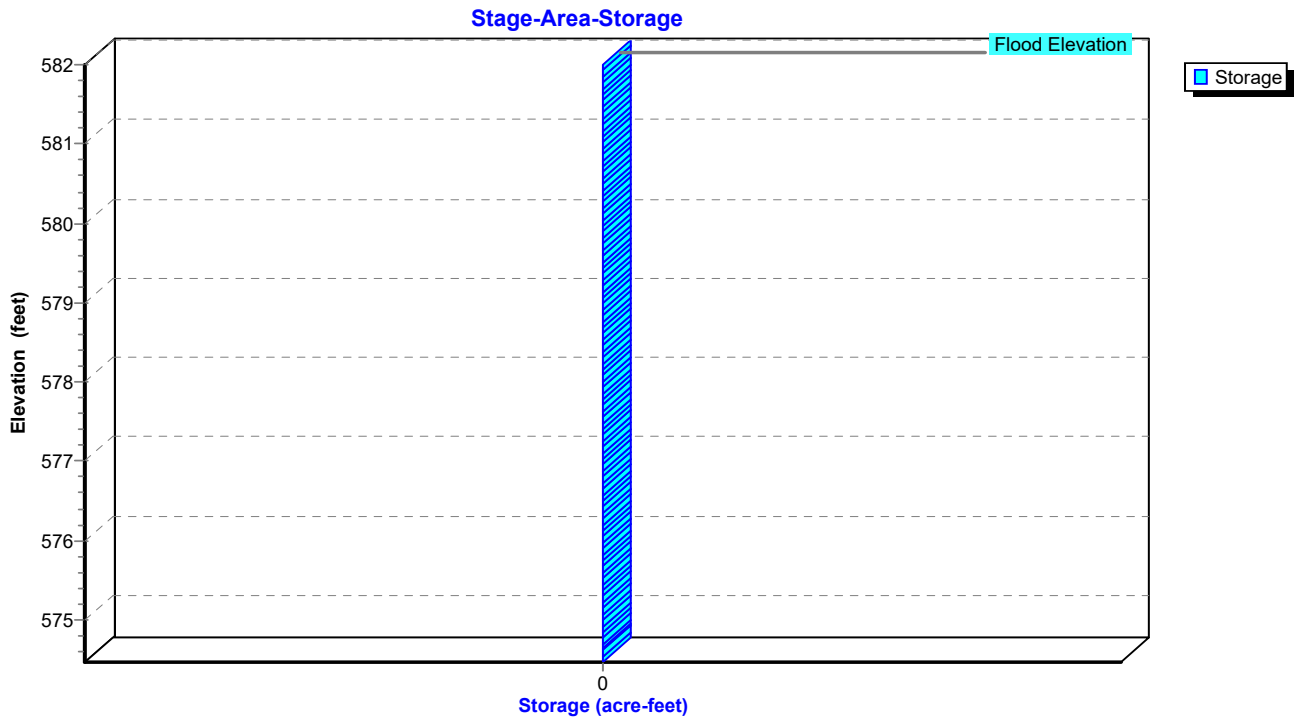
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Pond 9P: EX CULVERT



Pond 9P: EX CULVERT



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Type II 24-hr 25-Year Rainfall=5.60"

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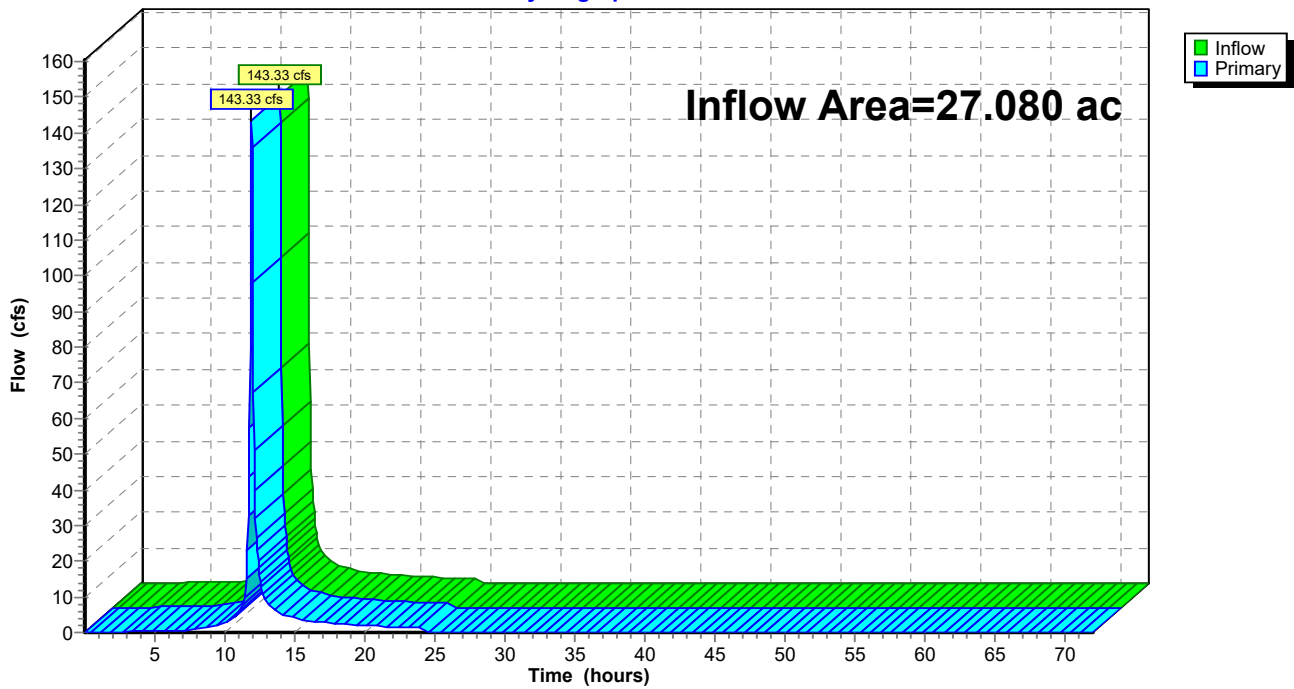
Summary for Link 6L: EX SITE

Inflow Area = 27.080 ac, 31.12% Impervious, Inflow Depth = 3.78" for 25-Year event
Inflow = 143.33 cfs @ 11.97 hrs, Volume= 8.536 af
Primary = 143.33 cfs @ 11.97 hrs, Volume= 8.536 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 9P : EX CULVERT

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

Link 6L: EX SITE

Hydrograph



EXISTING CONDITIONS

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Type II 24-hr 100-Year Rainfall=7.21"

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Summary for Subcatchment 1S: AREA A

Runoff = 55.39 cfs @ 12.07 hrs, Volume= 3.606 af, Depth= 4.56"
 Routed to Link 6L : EX SITE

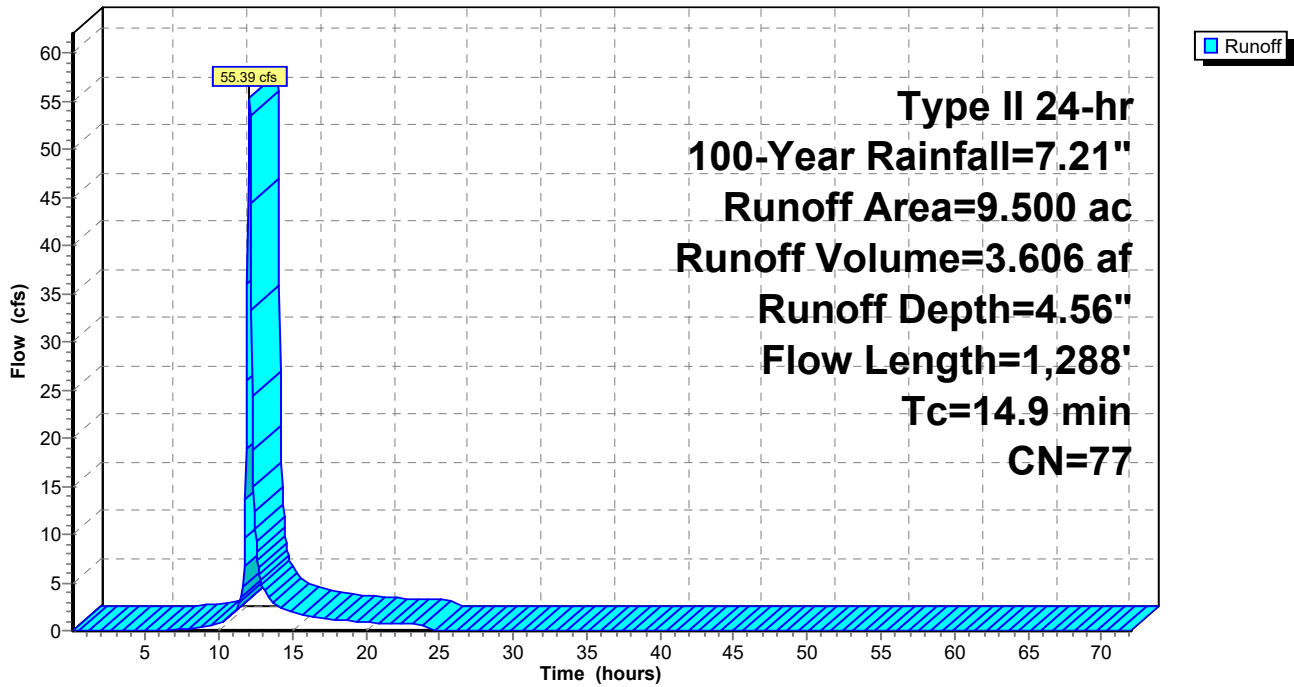
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 100-Year Rainfall=7.21"

Area (ac)	CN	Description
9.500	77	Woods, Good, HSG D
9.500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.1092	0.16		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.60"
2.2	467	0.0498	3.59		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
2.4	721	0.0193	4.92	49.21	Channel Flow, Area= 10.0 sf Perim= 9.0' r= 1.11' n= 0.045
14.9	1,288	Total			

Subcatchment 1S: AREA A

Hydrograph



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Type II 24-hr 100-Year Rainfall=7.21"

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Summary for Subcatchment 2S: AREA B

Runoff = 6.03 cfs @ 11.95 hrs, Volume= 0.337 af, Depth= 6.97"
 Routed to Link 6L : EX SITE

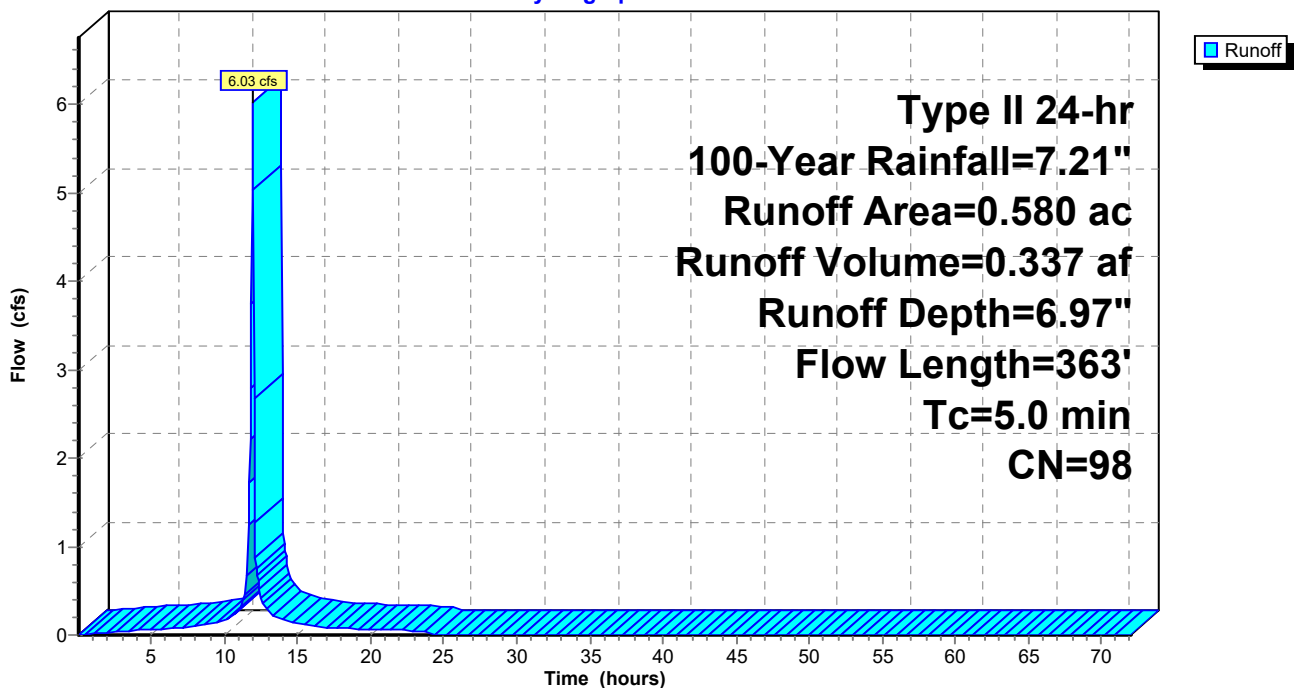
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 100-Year Rainfall=7.21"

Area (ac)	CN	Description
0.580	98	Paved roads w/curbs & sewers, HSG D
0.580		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.0657	2.35		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.60"
1.5	263	0.0210	2.94		Shallow Concentrated Flow, Paved Kv= 20.3 fps
2.2	363	Total, Increased to minimum Tc = 5.0 min			

Subcatchment 2S: AREA B

Hydrograph



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Type II 24-hr 100-Year Rainfall=7.21"

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Summary for Subcatchment 3S: AREA C

Runoff = 41.35 cfs @ 11.98 hrs, Volume= 2.237 af, Depth= 5.51"
 Routed to Link 6L : EX SITE

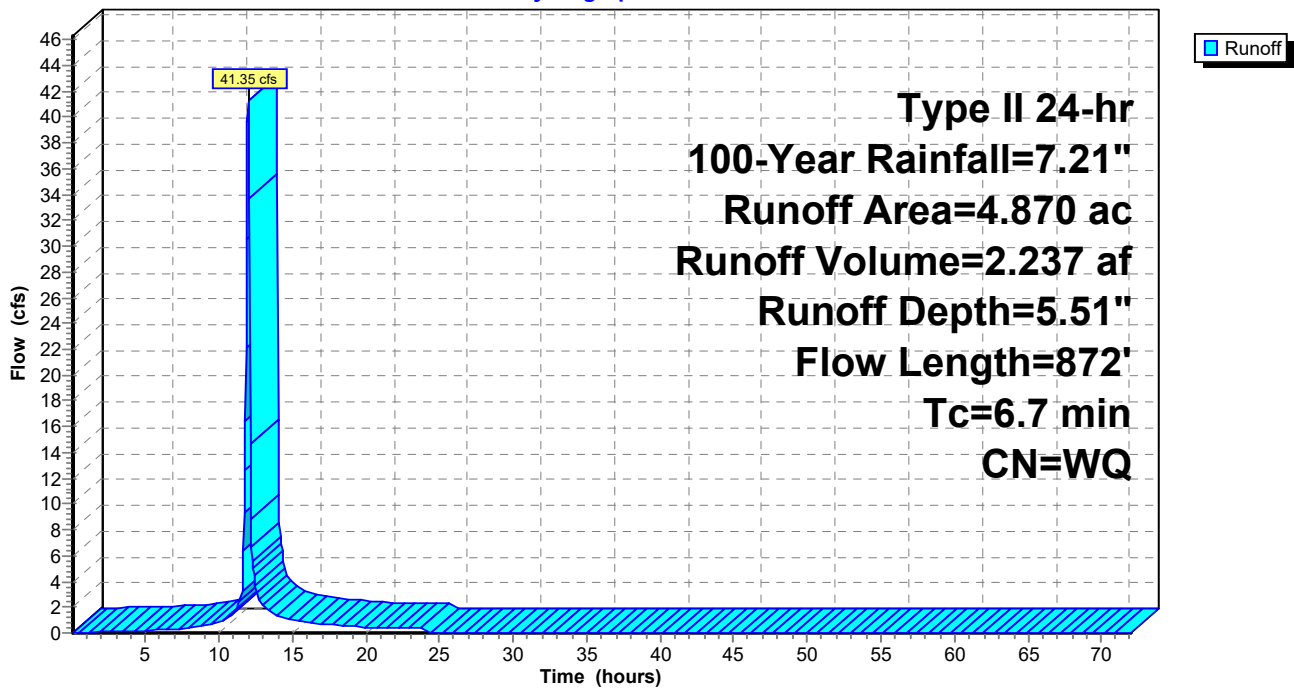
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 100-Year Rainfall=7.21"

Area (ac)	CN	Description
2.940	77	Brush, Poor, HSG C
1.930	98	Paved parking, HSG C
4.870		Weighted Average
2.940		60.37% Pervious Area
1.930		39.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	100	0.0038	0.70		Sheet Flow, n= 0.012 P2= 3.60"
1.3	201	0.0166	2.62		Shallow Concentrated Flow, Paved Kv= 20.3 fps
3.0	571	0.0400	3.22		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
6.7	872	Total			

Subcatchment 3S: AREA C

Hydrograph



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Type II 24-hr 100-Year Rainfall=7.21"

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Summary for Subcatchment 4S: AREA D

Runoff = 24.16 cfs @ 11.95 hrs, Volume= 1.315 af, Depth= 6.36"
 Routed to Link 6L : EX SITE

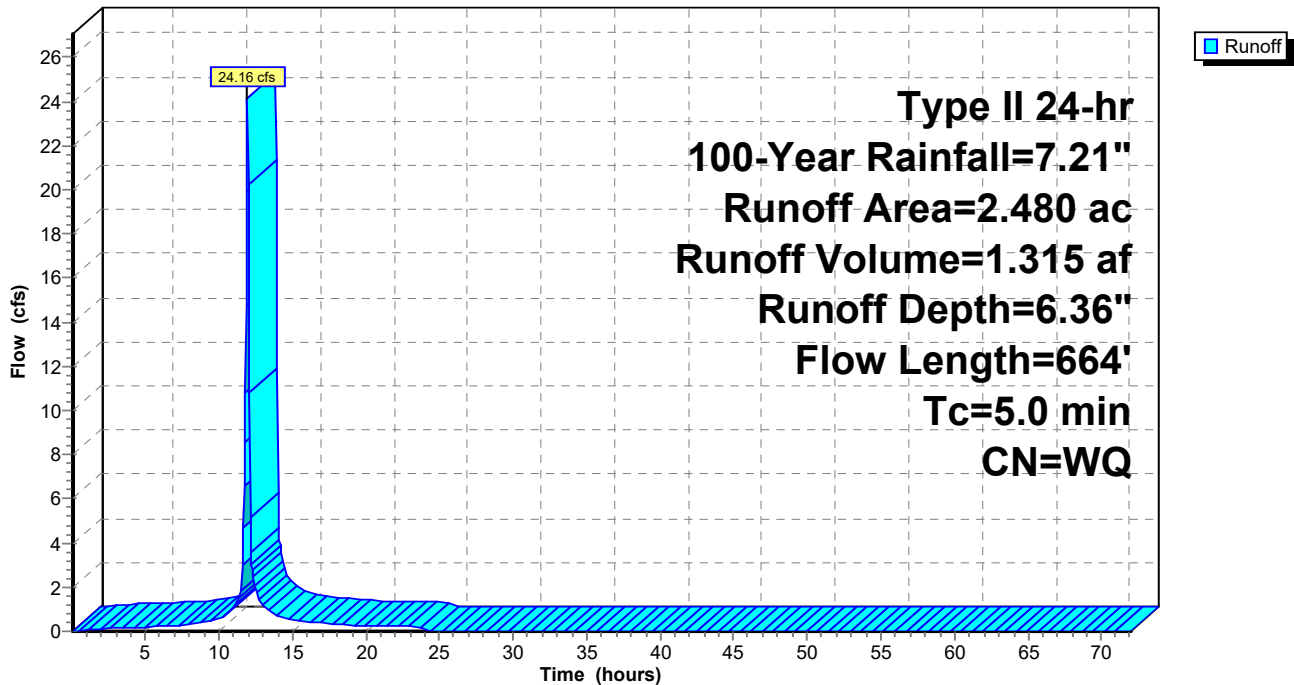
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 100-Year Rainfall=7.21"

Area (ac)	CN	Description
1.950	98	Paved roads w/curbs & sewers, HSG D
0.530	73	Brush, Good, HSG D
2.480		Weighted Average
0.530		21.37% Pervious Area
1.950		78.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0153	1.31		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.60"
2.4	564	0.0374	3.93		Shallow Concentrated Flow, Paved Kv= 20.3 fps
3.7	664				Total, Increased to minimum Tc = 5.0 min

Subcatchment 4S: AREA D

Hydrograph



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Summary for Subcatchment 5S: AREA E

Runoff = 7.36 cfs @ 11.95 hrs, Volume= 0.379 af, Depth= 6.15"
Routed to Link 6L : EX SITE

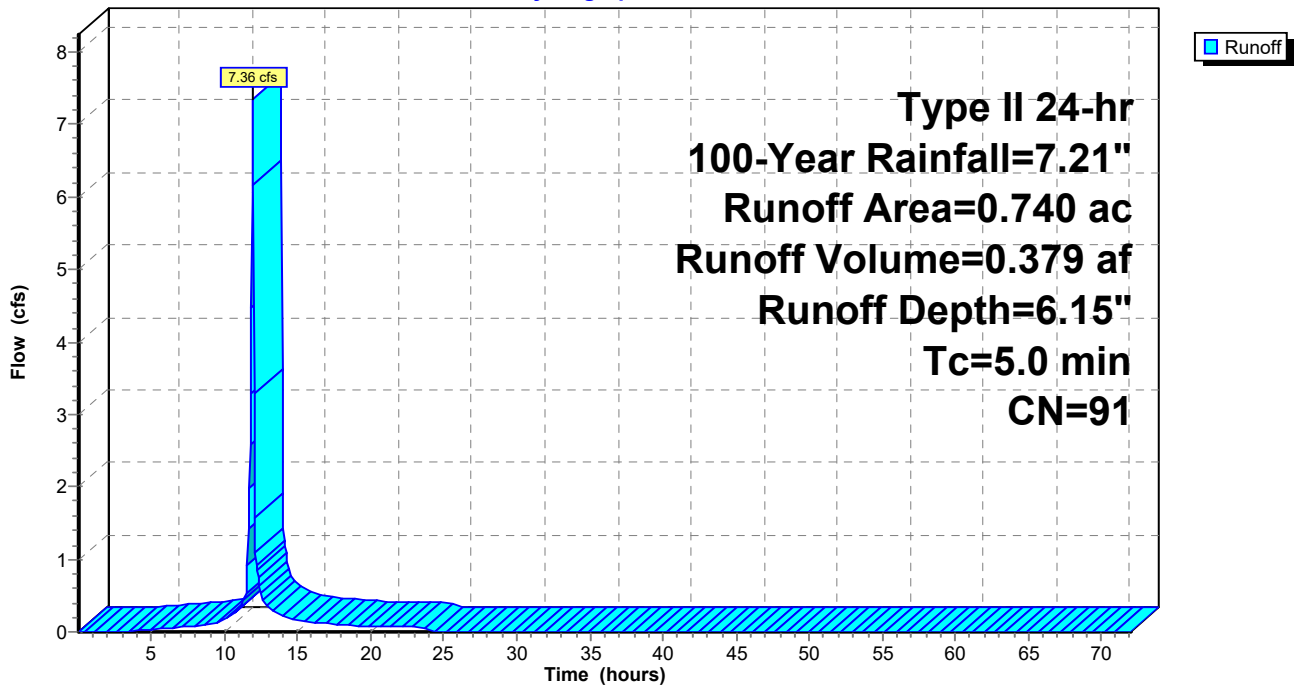
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=7.21"

Area (ac)	CN	Description
* 0.740	91	
0.740		100.00% Pervious Area

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

Subcatchment 5S: AREA E

Hydrograph



EXISTING CONDITIONS

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Type II 24-hr 100-Year Rainfall=7.21"

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Summary for Subcatchment 7S: AREA G

Runoff = 1.66 cfs @ 11.95 hrs, Volume= 0.093 af, Depth= 6.97"
Routed to Link 6L : EX SITE

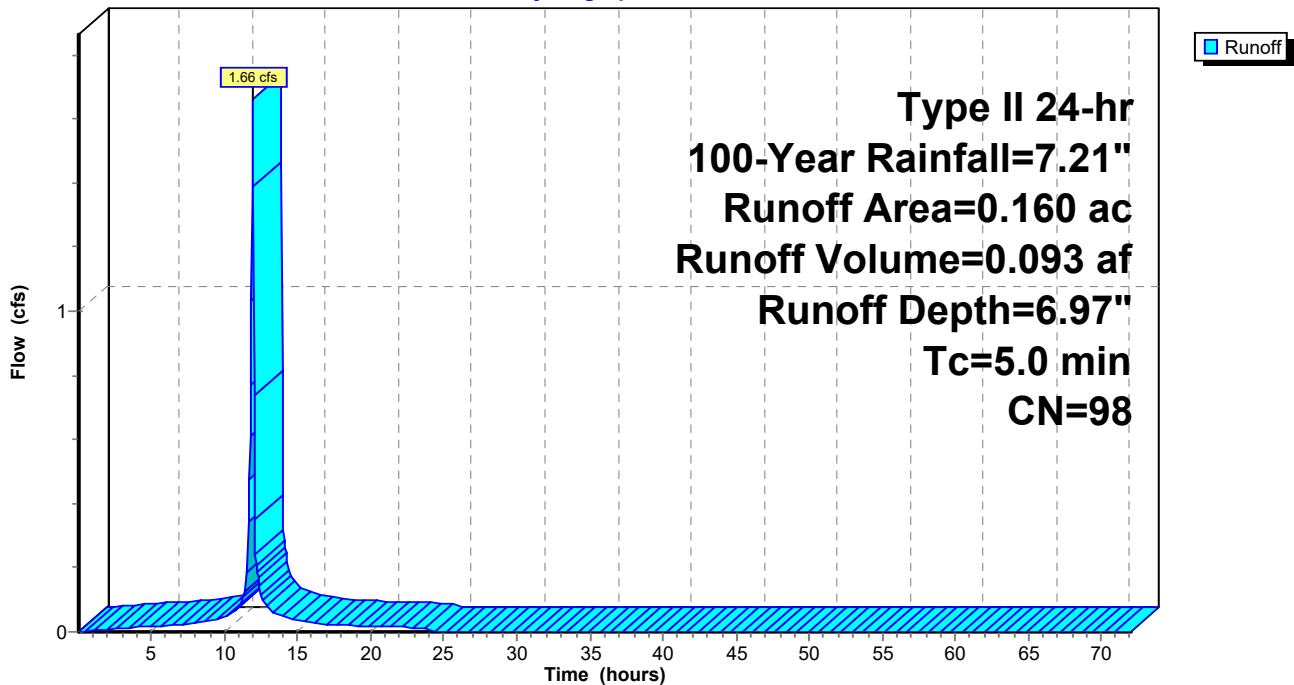
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=7.21"

Area (ac)	CN	Description
0.160	98	Paved parking, HSG C
0.160		100.00% Impervious Area

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

Subcatchment 7S: AREA G

Hydrograph



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Type II 24-hr 100-Year Rainfall=7.21"

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Summary for Subcatchment 9S: AREA F

Runoff = 79.51 cfs @ 11.95 hrs, Volume= 3.924 af, Depth= 5.38"
 Routed to Link 6L : EX SITE

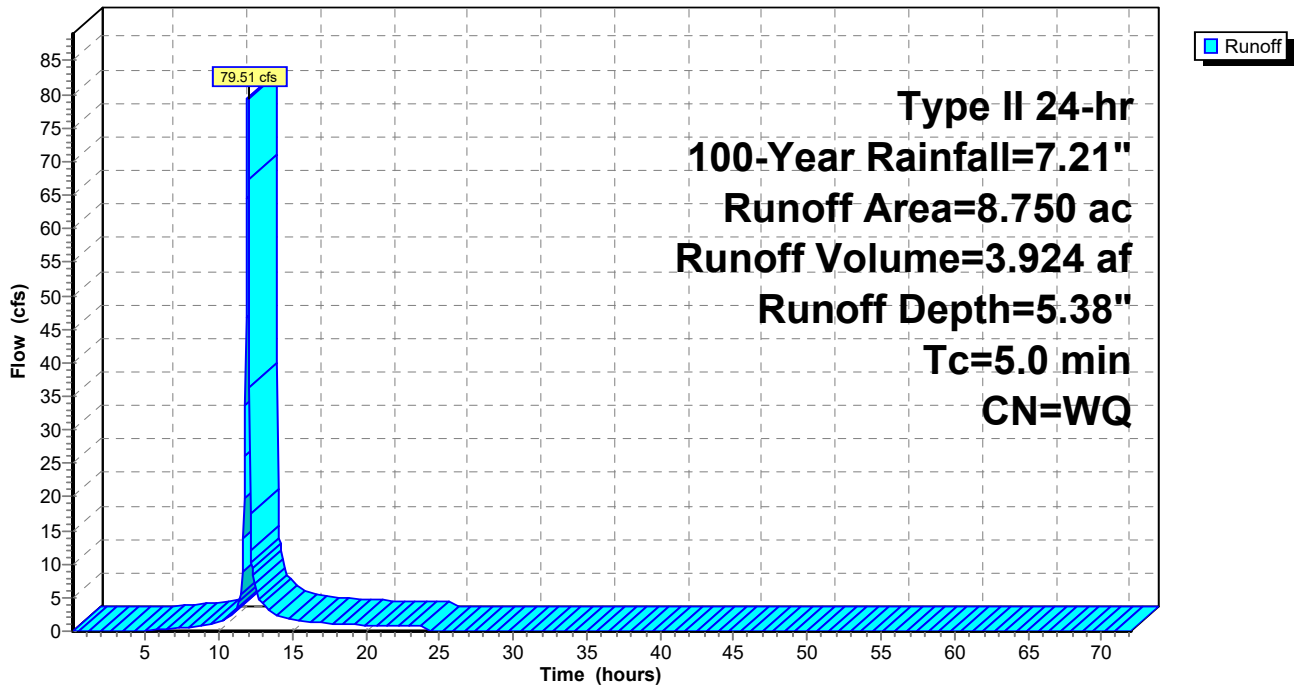
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 100-Year Rainfall=7.21"

Area (ac)	CN	Description
7.970	83	1/4 acre lots, 38% imp, HSG C
0.780	98	Water Surface, HSG C
<hr/>		
8.750		Weighted Average
4.941		56.47% Pervious Area
3.809		43.53% Impervious Area

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

Subcatchment 9S: AREA F

Hydrograph



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Summary for Pond 9P: EX CULVERT

Inflow Area = 27.080 ac, 31.12% Impervious, Inflow Depth = 5.27" for 100-Year event
 Inflow = 197.30 cfs @ 11.97 hrs, Volume= 11.891 af
 Outflow = 197.30 cfs @ 11.97 hrs, Volume= 11.891 af, Atten= 0%, Lag= 0.0 min
 Primary = 197.30 cfs @ 11.97 hrs, Volume= 11.891 af

Routing by Dyn-Stor-Ind method, Time Span= 0.05-72.00 hrs, dt= 0.05 hrs
 Peak Elev= 578.76' @ 11.97 hrs
 Flood Elev= 582.00'

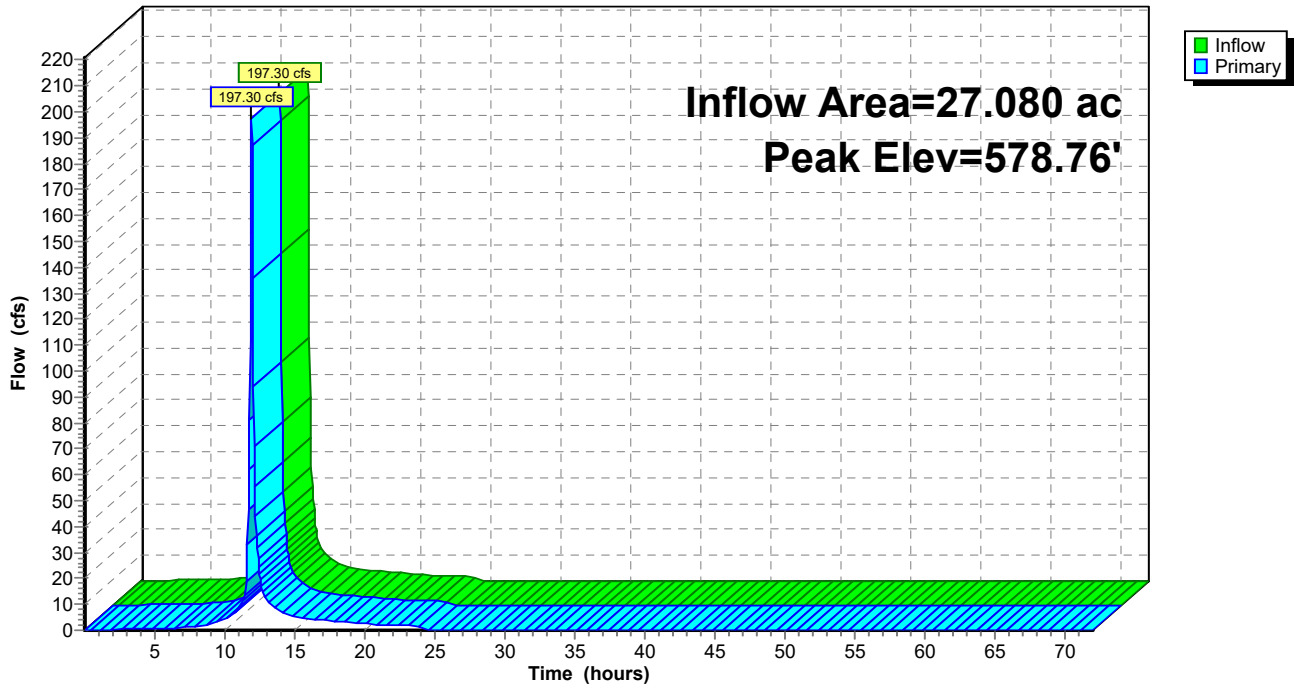
Device	Routing	Invert	Outlet Devices
#1	Primary	574.47'	54.0" Round Culvert L= 83.6' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 574.47' / 573.62' S= 0.0102 '/' Cc= 0.900 n= 0.013, Flow Area= 15.90 sf
#2	Primary	574.64'	54.0" Round Culvert L= 83.6' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 574.64' / 573.79' S= 0.0102 '/' Cc= 0.900 n= 0.013, Flow Area= 15.90 sf

Primary OutFlow Max=191.85 cfs @ 11.97 hrs HW=578.68' (Free Discharge)

- 1=Culvert (Barrel Controls 98.73 cfs @ 8.29 fps)
- 2=Culvert (Barrel Controls 93.12 cfs @ 8.18 fps)

Pond 9P: EX CULVERT

Hydrograph



EXISTING CONDITIONS

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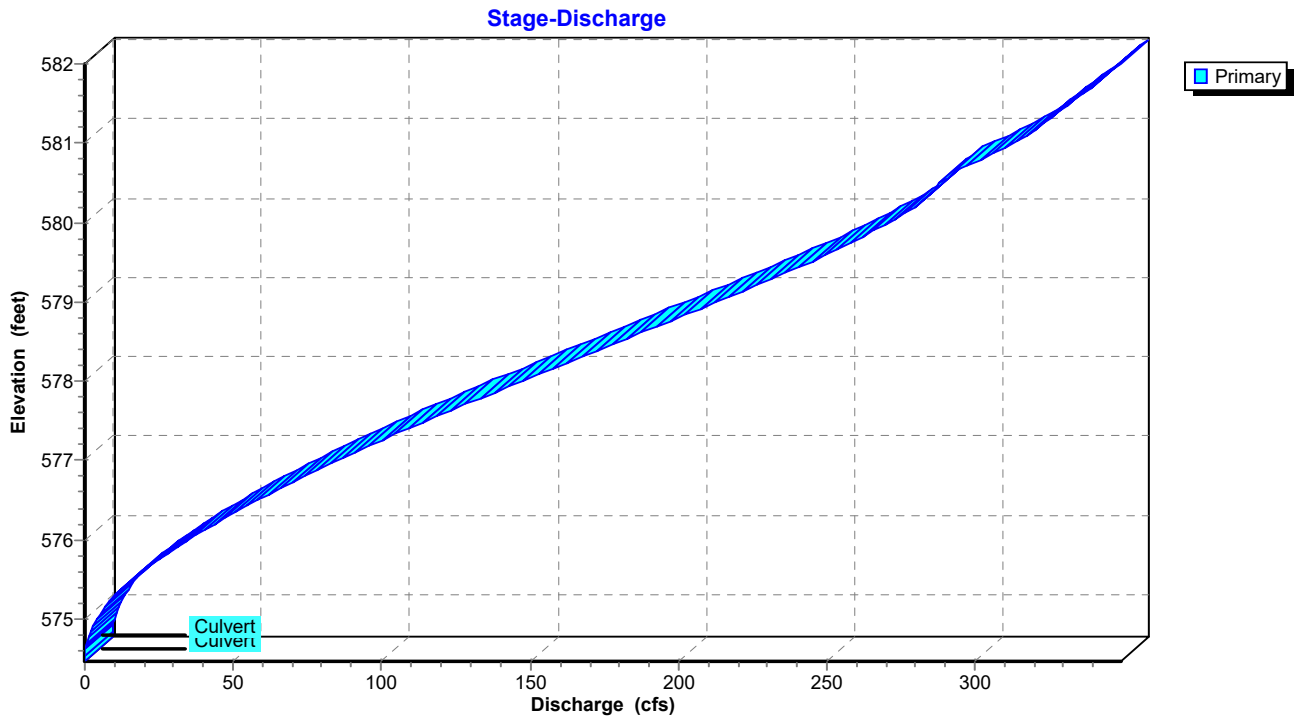
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Type II 24-hr 100-Year Rainfall=7.21"

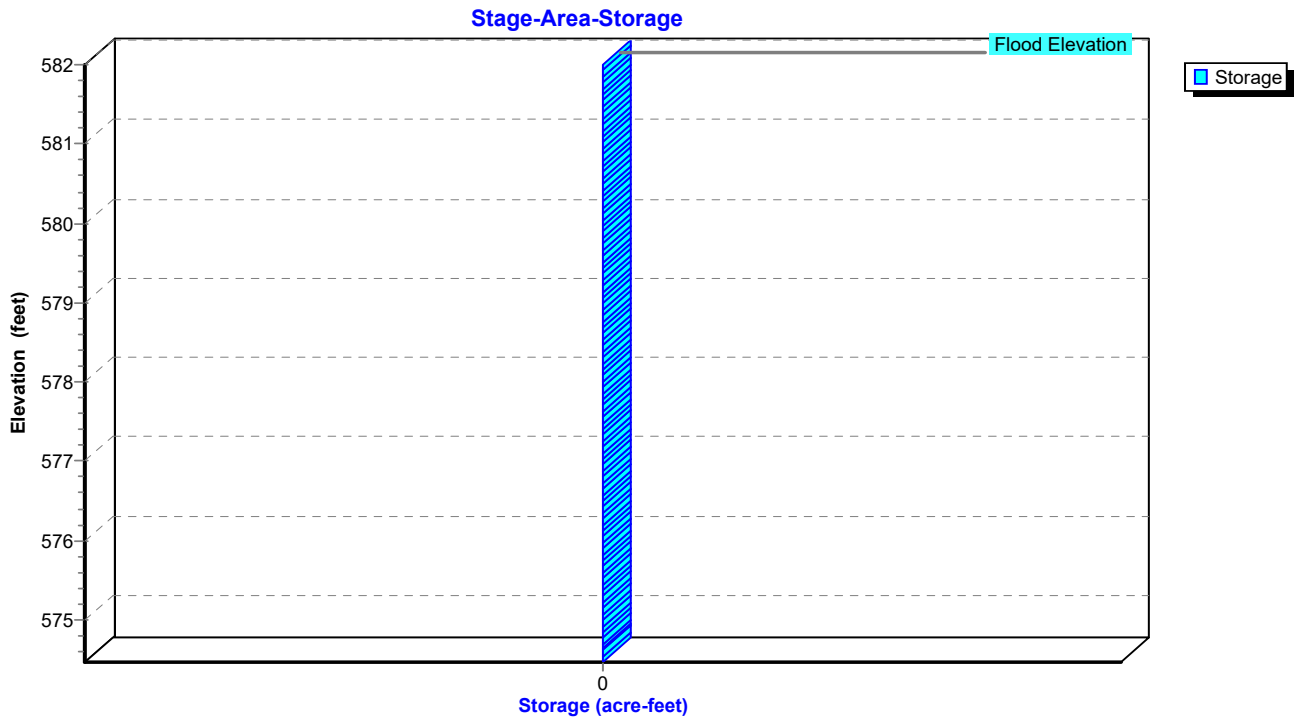
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Pond 9P: EX CULVERT



Pond 9P: EX CULVERT



EXISTING CONDITIONS

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Type II 24-hr 100-Year Rainfall=7.21"

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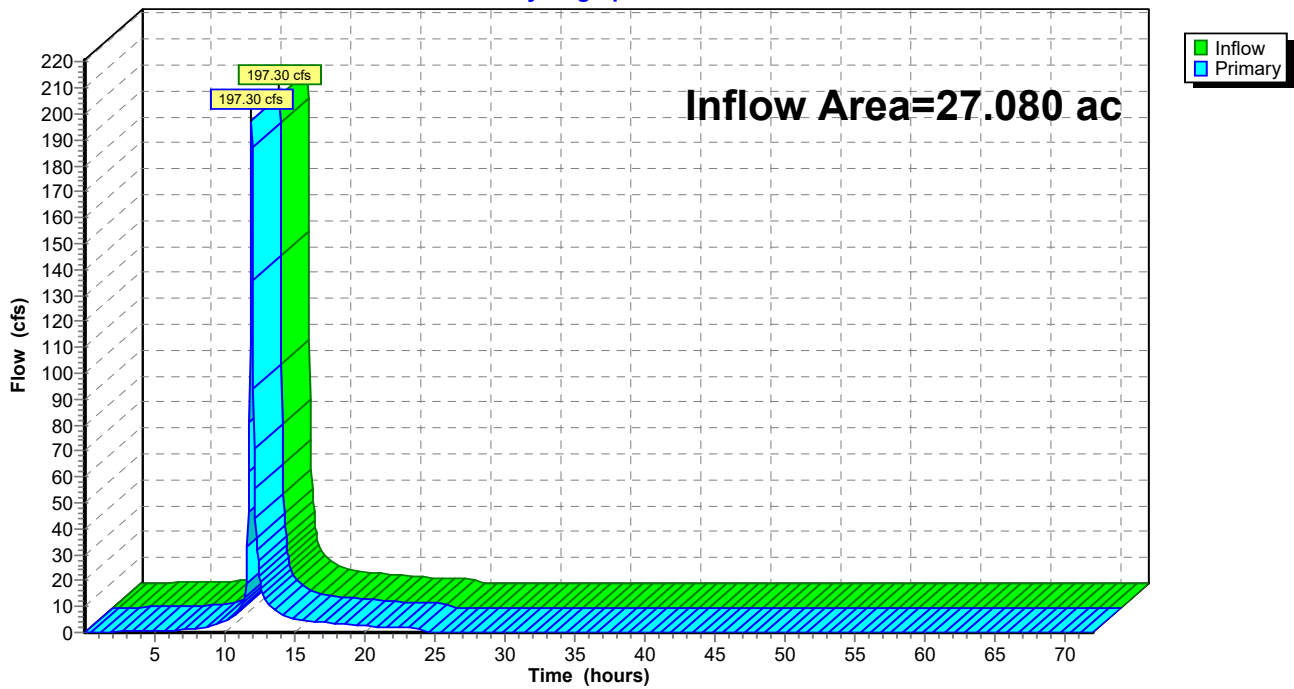
Summary for Link 6L: EX SITE

Inflow Area = 27.080 ac, 31.12% Impervious, Inflow Depth = 5.27" for 100-Year event
Inflow = 197.30 cfs @ 11.97 hrs, Volume= 11.891 af
Primary = 197.30 cfs @ 11.97 hrs, Volume= 11.891 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 9P : EX CULVERT

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

Link 6L: EX SITE

Hydrograph



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- 276 Subcat 6S: ONSITE TO BASIN 2
- 277 Subcat 7S: ONSITE TO OFFSITE BYPASS
- 278 Subcat 11S: AREA TO BRYAN RD CULVERT
- 279 Subcat 12S: AREAS 30 & 38
- 280 Subcat 15S: OFFSITE TO ONSITE TO BASIN 1

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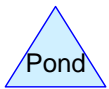
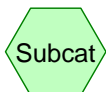
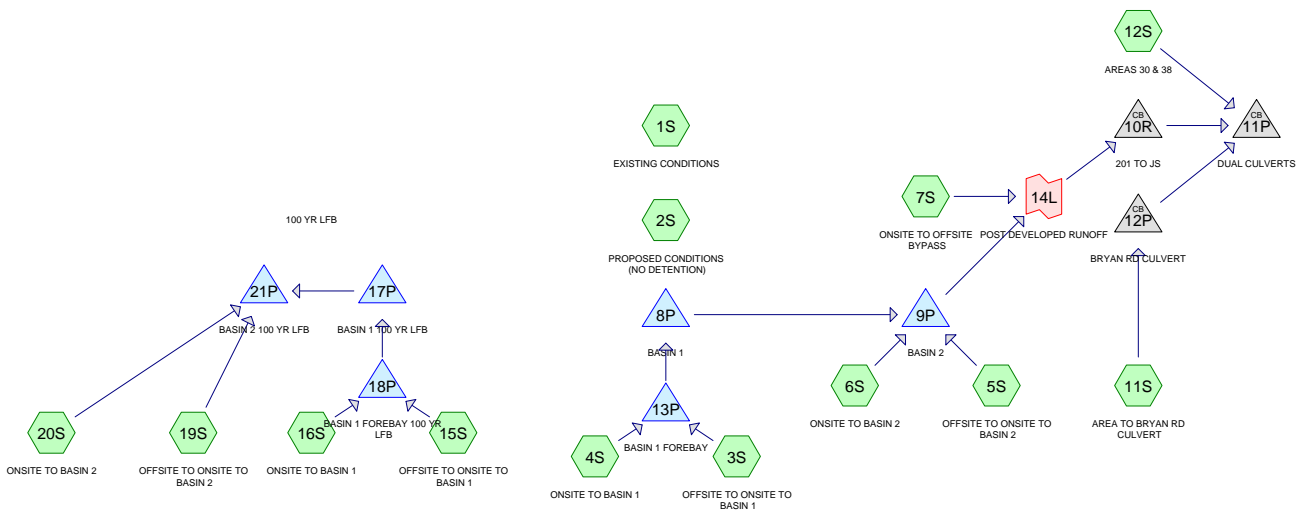
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Routing Diagram for 2023-06-19 PROPOSED
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Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	WqV	Type II 24-hr		Default	24.00	1	1.14	2
2	1-yr	Type II 24-hr		Default	24.00	1	2.50	2
3	2-yr	Type II 24-hr		Default	24.00	1	3.10	2
4	15-yr	Type II 24-hr		Default	24.00	1	5.03	2
5	25-yr	Type II 24-hr		Default	24.00	1	5.60	2
6	100-yr	Type II 24-hr		Default	24.00	1	7.20	2

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
8.540	80	>75% Grass cover, Good, HSG D (2S, 3S, 4S, 5S, 6S, 7S, 11S, 12S, 15S, 16S, 19S, 20S)
9.540	98	Paved parking, HSG C (2S, 7S, 11S)
12.800	98	Paved parking, HSG D (3S, 4S, 6S, 12S, 15S, 16S, 20S)
8.190	73	Woods, Good, HSG C (1S)

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
1	8P	585.00	583.16	184.2	0.0100	0.012	0.0	24.0	0.0
2	9P	576.73	576.58	15.0	0.0100	0.012	0.0	30.0	0.0
3	10R	576.36	574.77	158.8	0.0100	0.012	0.0	30.0	0.0
4	11P	574.44	573.62	84.0	0.0098	0.013	0.0	54.0	0.0
5	11P	574.47	573.79	84.0	0.0081	0.013	0.0	54.0	0.0
6	12P	595.34	575.00	926.7	0.0219	0.013	0.0	42.0	0.0
7	17P	585.00	583.16	184.2	0.0100	0.012	0.0	24.0	0.0
8	21P	576.73	576.58	15.0	0.0100	0.012	0.0	24.0	0.0

Summary for Subcatchment 1S: EXISTING CONDITIONS

Runoff = 0.05 cfs @ 12.49 hrs, Volume= 0.027 af, Depth= 0.04"

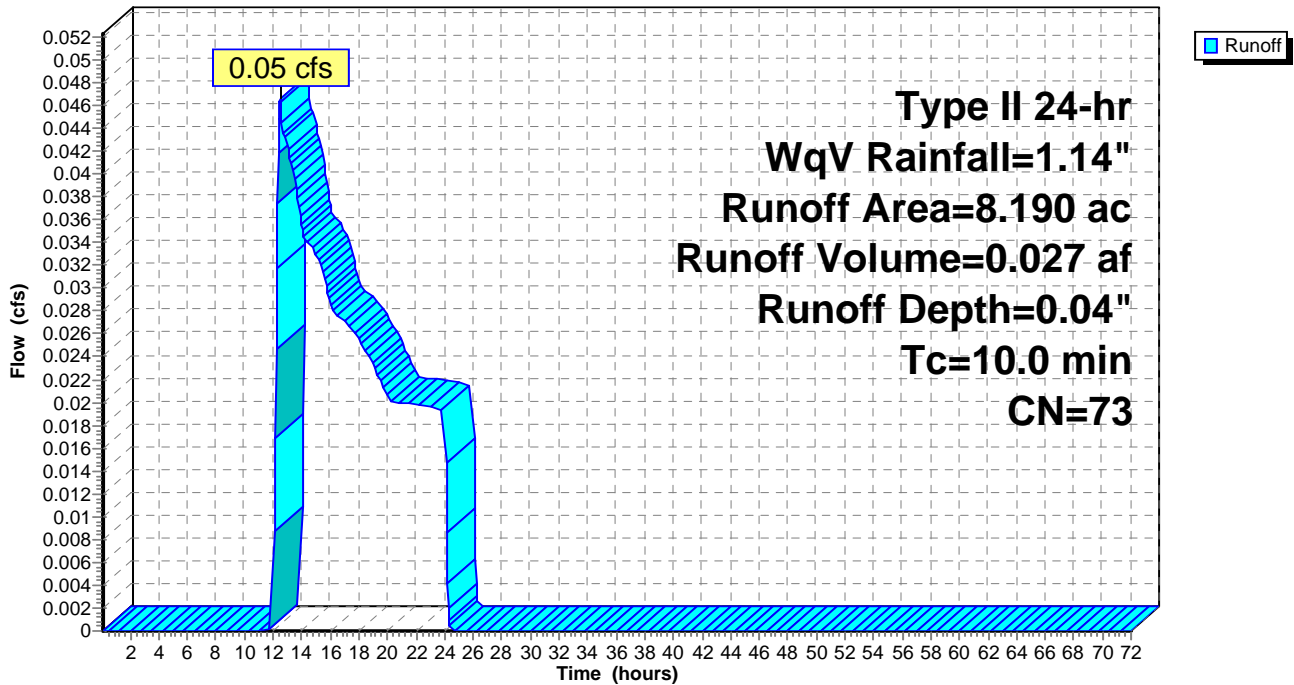
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr WqV Rainfall=1.14"

Area (ac)	CN	Description
* 8.190	73	Woods, Good, HSG C
8.190		100.00% Pervious Area

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

Subcatchment 1S: EXISTING CONDITIONS

Hydrograph



Summary for Subcatchment 2S: PROPOSED CONDITIONS (NO DETENTION)

Runoff = 10.25 cfs @ 11.95 hrs, Volume= 0.524 af, Depth= 0.77"

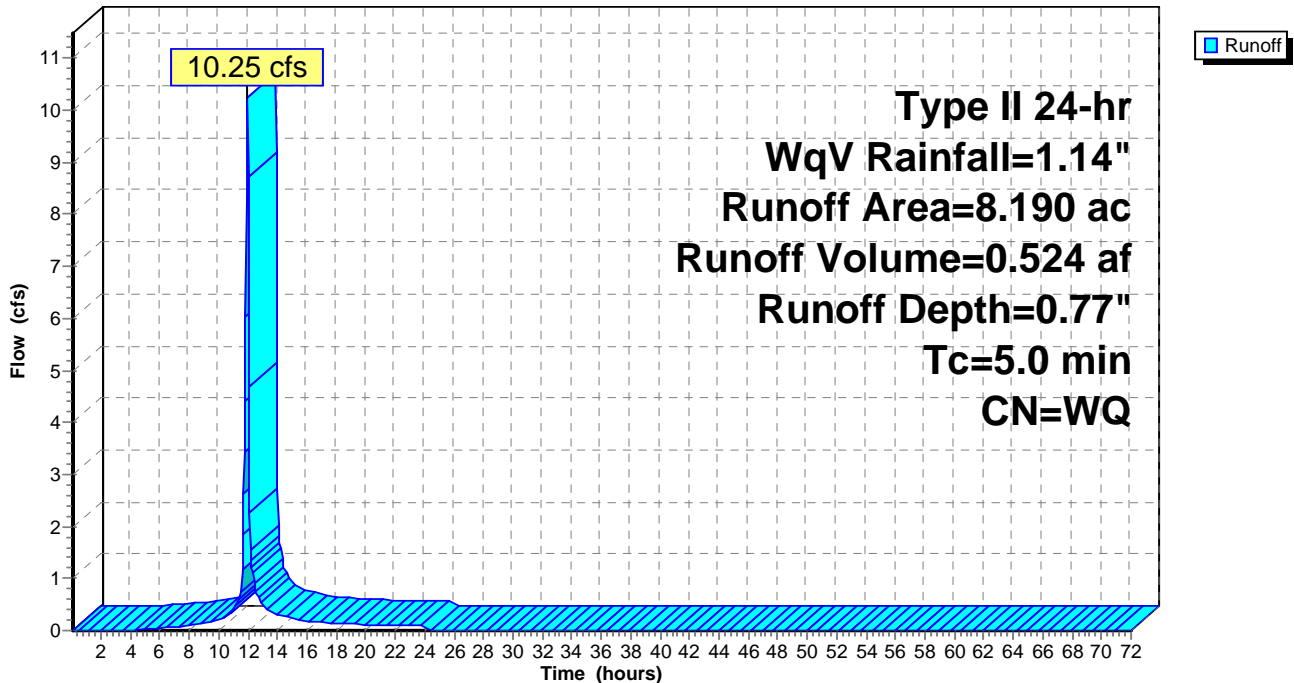
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr WqV Rainfall=1.14"

Area (ac)	CN	Description
6.550	98	Paved parking, HSG C
1.640	80	>75% Grass cover, Good, HSG D
8.190		Weighted Average
1.640		20.02% Pervious Area
6.550		79.98% Impervious Area

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

Subcatchment 2S: PROPOSED CONDITIONS (NO DETENTION)

Hydrograph



Summary for Subcatchment 3S: OFFSITE TO ONSITE TO BASIN 1

Runoff = 0.14 cfs @ 11.97 hrs, Volume= 0.008 af, Depth= 0.30"
 Routed to Pond 13P : BASIN 1 FOREBAY

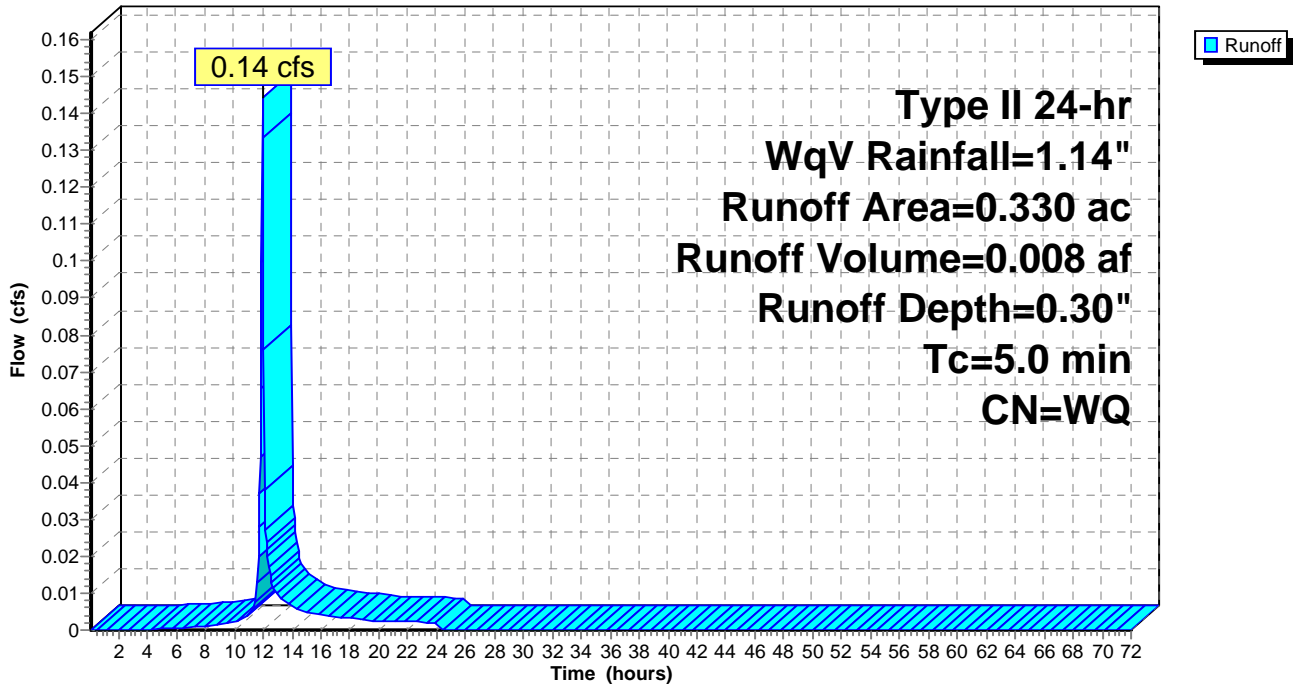
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr WqV Rainfall=1.14"

Area (ac)	CN	Description
0.070	98	Paved parking, HSG D
0.260	80	>75% Grass cover, Good, HSG D
0.330		Weighted Average
0.260		78.79% Pervious Area
0.070		21.21% Impervious Area

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

Subcatchment 3S: OFFSITE TO ONSITE TO BASIN 1

Hydrograph



Summary for Subcatchment 4S: ONSITE TO BASIN 1

Runoff = 5.95 cfs @ 11.95 hrs, Volume= 0.303 af, Depth= 0.80"
 Routed to Pond 13P : BASIN 1 FOREBAY

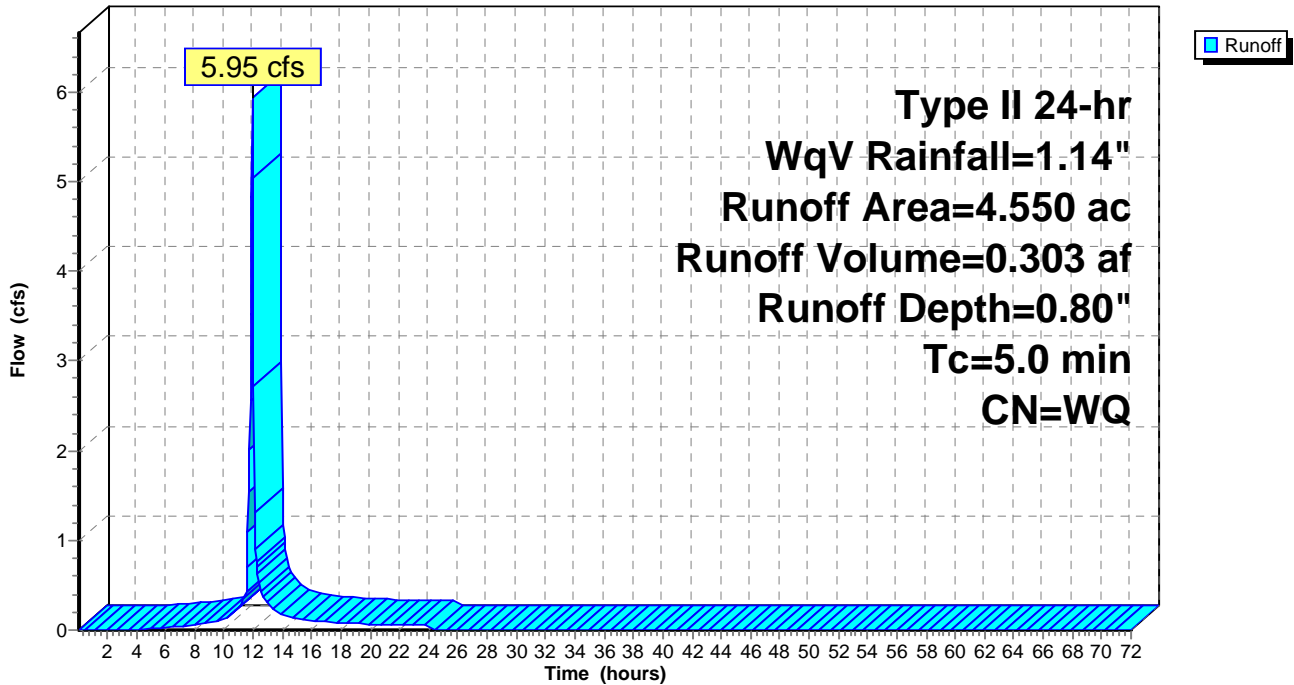
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr WqV Rainfall=1.14"

Area (ac)	CN	Description
3.820	98	Paved parking, HSG D
0.730	80	>75% Grass cover, Good, HSG D
4.550		Weighted Average
0.730		16.04% Pervious Area
3.820		83.96% Impervious Area

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

Subcatchment 4S: ONSITE TO BASIN 1

Hydrograph



Summary for Subcatchment 5S: OFFSITE TO ONSITE TO BASIN 2

Runoff = 0.02 cfs @ 11.99 hrs, Volume= 0.001 af, Depth= 0.13"
 Routed to Pond 9P : BASIN 2

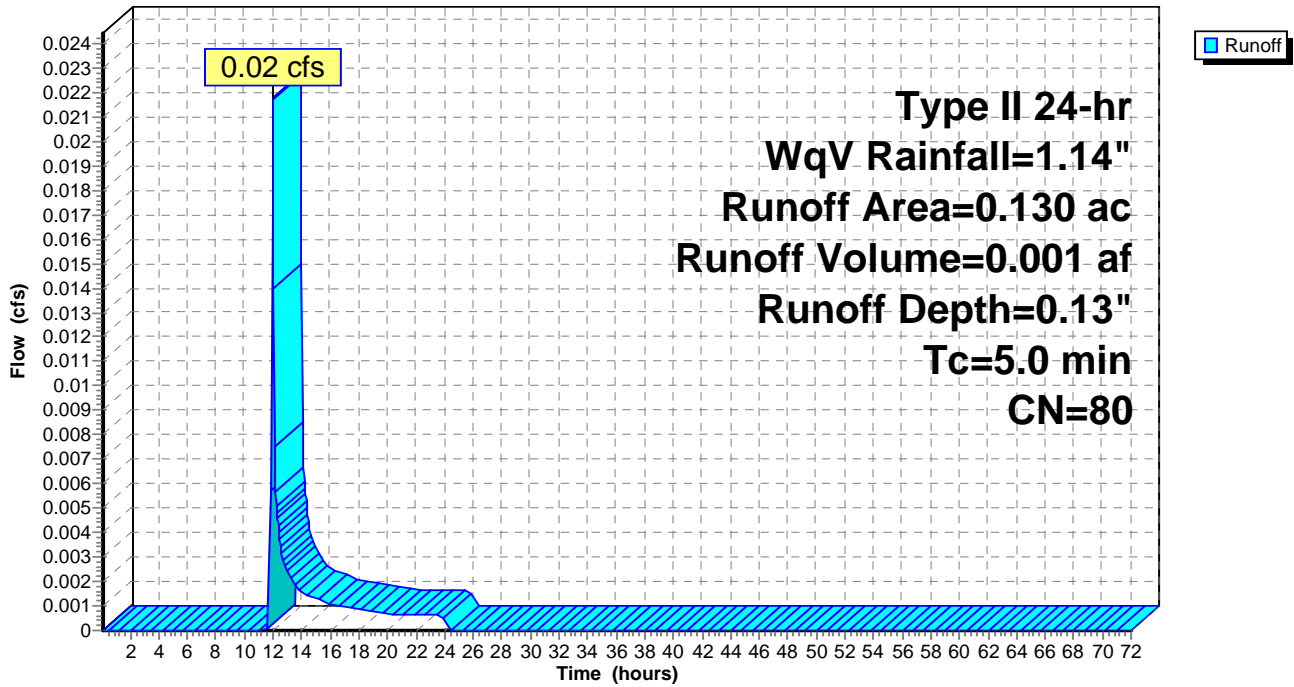
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr WqV Rainfall=1.14"

Area (ac)	CN	Description
0.130	80	>75% Grass cover, Good, HSG D
0.130		100.00% Pervious Area

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

Subcatchment 5S: OFFSITE TO ONSITE TO BASIN 2

Hydrograph



Summary for Subcatchment 6S: ONSITE TO BASIN 2

Runoff = 3.24 cfs @ 11.95 hrs, Volume= 0.166 af, Depth= 0.77"
 Routed to Pond 9P : BASIN 2

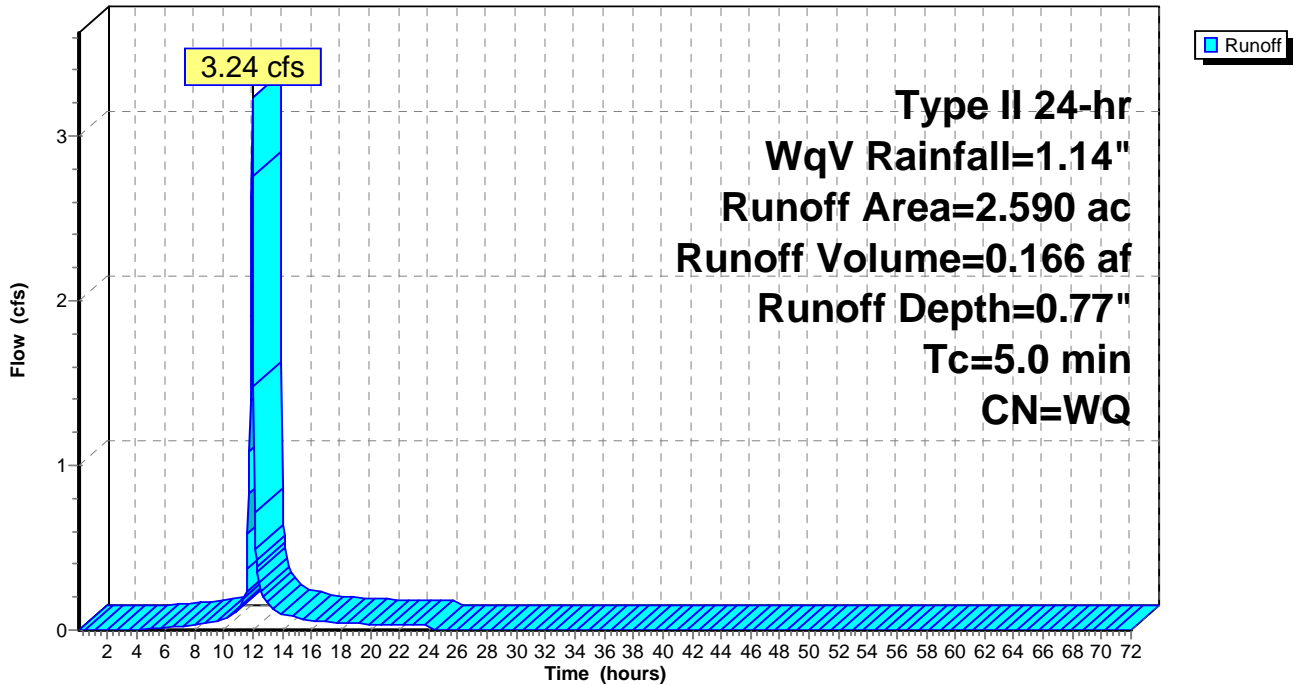
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr WqV Rainfall=1.14"

Area (ac)	CN	Description
2.070	98	Paved parking, HSG D
0.520	80	>75% Grass cover, Good, HSG D
2.590		Weighted Average
0.520		20.08% Pervious Area
2.070		79.92% Impervious Area

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

Subcatchment 6S: ONSITE TO BASIN 2

Hydrograph



Summary for Subcatchment 7S: ONSITE TO OFFSITE BYPASS

Runoff = 0.55 cfs @ 11.96 hrs, Volume= 0.030 af, Depth= 0.35"

Routed to Link 14L : POST DEVELOPED RUNOFF

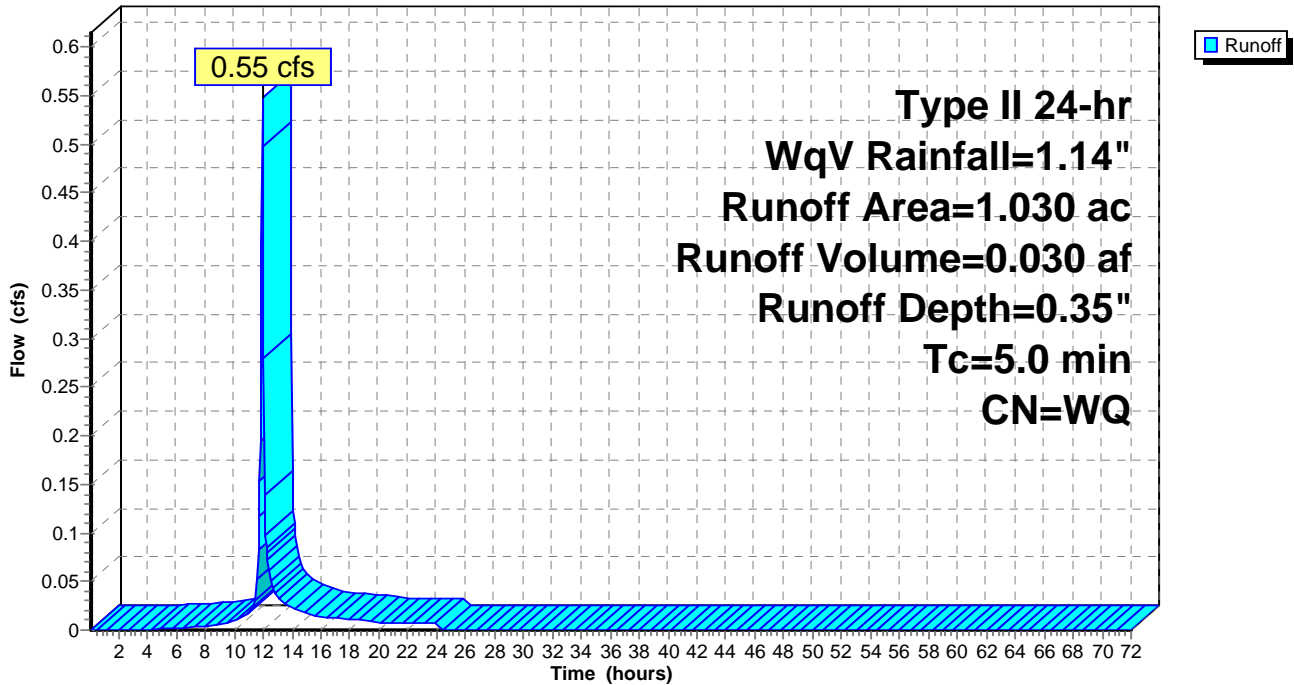
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr WqV Rainfall=1.14"

Area (ac)	CN	Description
0.290	98	Paved parking, HSG C
0.740	80	>75% Grass cover, Good, HSG D
1.030		Weighted Average
0.740		71.84% Pervious Area
0.290		28.16% Impervious Area

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

Subcatchment 7S: ONSITE TO OFFSITE BYPASS

Hydrograph



Summary for Subcatchment 11S: AREA TO BRYAN RD CULVERT

Runoff = 3.96 cfs @ 12.00 hrs, Volume= 0.232 af, Depth= 0.57"
 Routed to Pond 12P : BRYAN RD CULVERT

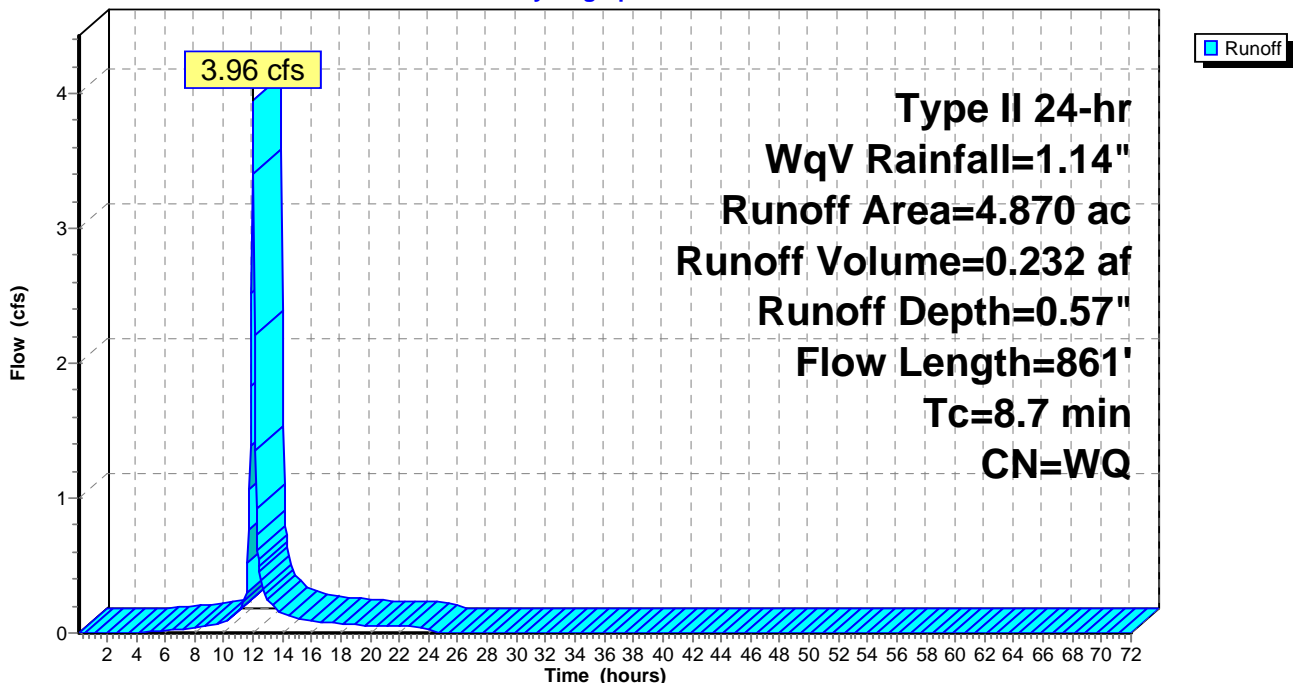
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr WqV Rainfall=1.14"

Area (ac)	CN	Description
2.700	98	Paved parking, HSG C
2.170	80	>75% Grass cover, Good, HSG D
4.870		Weighted Average
2.170		44.56% Pervious Area
2.700		55.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0200	1.26		Sheet Flow, n= 0.013 P2= 3.50"
2.5	493	0.0430	3.34		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
4.9	268	0.0215	0.91	54.47	Channel Flow, Area= 60.0 sf Perim= 60.0' r= 1.00' n= 0.240 Sheet flow over Dense Grass
8.7	861	Total			

Subcatchment 11S: AREA TO BRYAN RD CULVERT

Hydrograph



Summary for Subcatchment 12S: AREAS 30 & 38

Runoff = 1.45 cfs @ 11.96 hrs, Volume= 0.076 af, Depth= 0.57"
 Routed to Pond 11P : DUAL CULVERTS

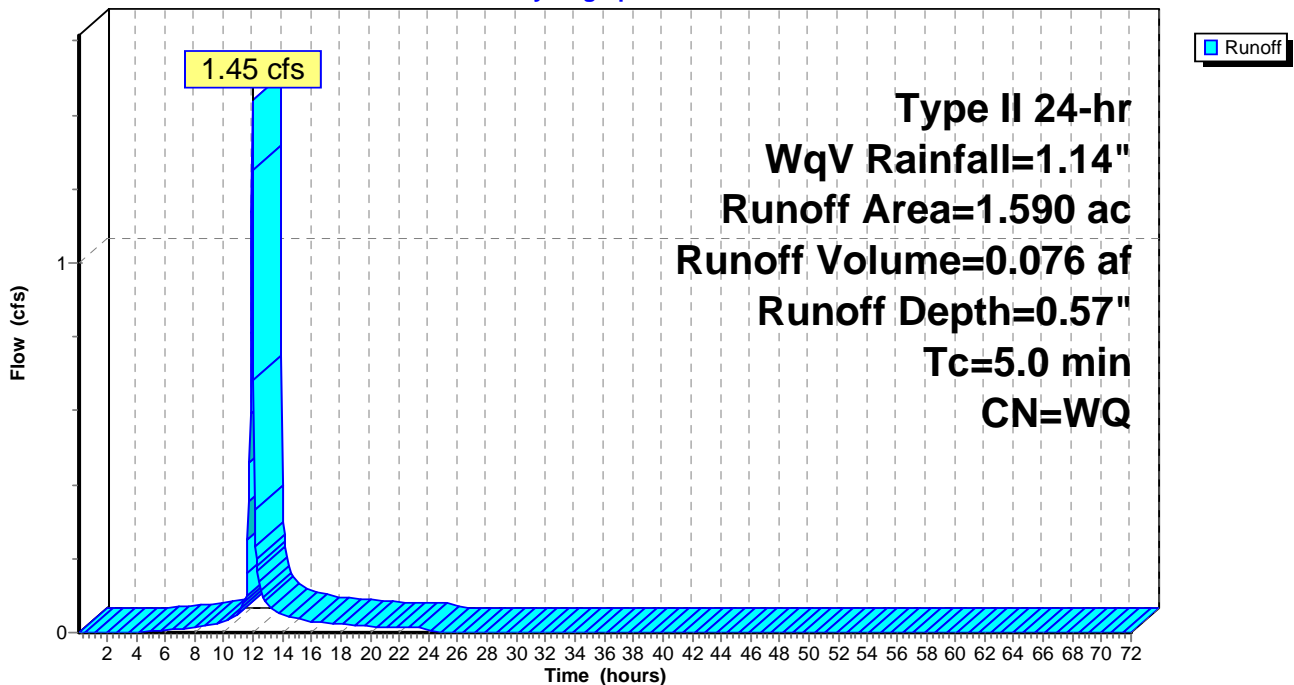
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr WqV Rainfall=1.14"

Area (ac)	CN	Description
0.200	80	>75% Grass cover, Good, HSG D
0.880	98	Paved parking, HSG D
0.510	80	>75% Grass cover, Good, HSG D
1.590		Weighted Average
0.710		44.65% Pervious Area
0.880		55.35% Impervious Area

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

Subcatchment 12S: AREAS 30 & 38

Hydrograph



Summary for Subcatchment 15S: OFFSITE TO ONSITE TO BASIN 1

Runoff = 0.14 cfs @ 11.97 hrs, Volume= 0.008 af, Depth= 0.30"

Routed to Pond 18P : BASIN 1 FOREBAY 100 YR LFB

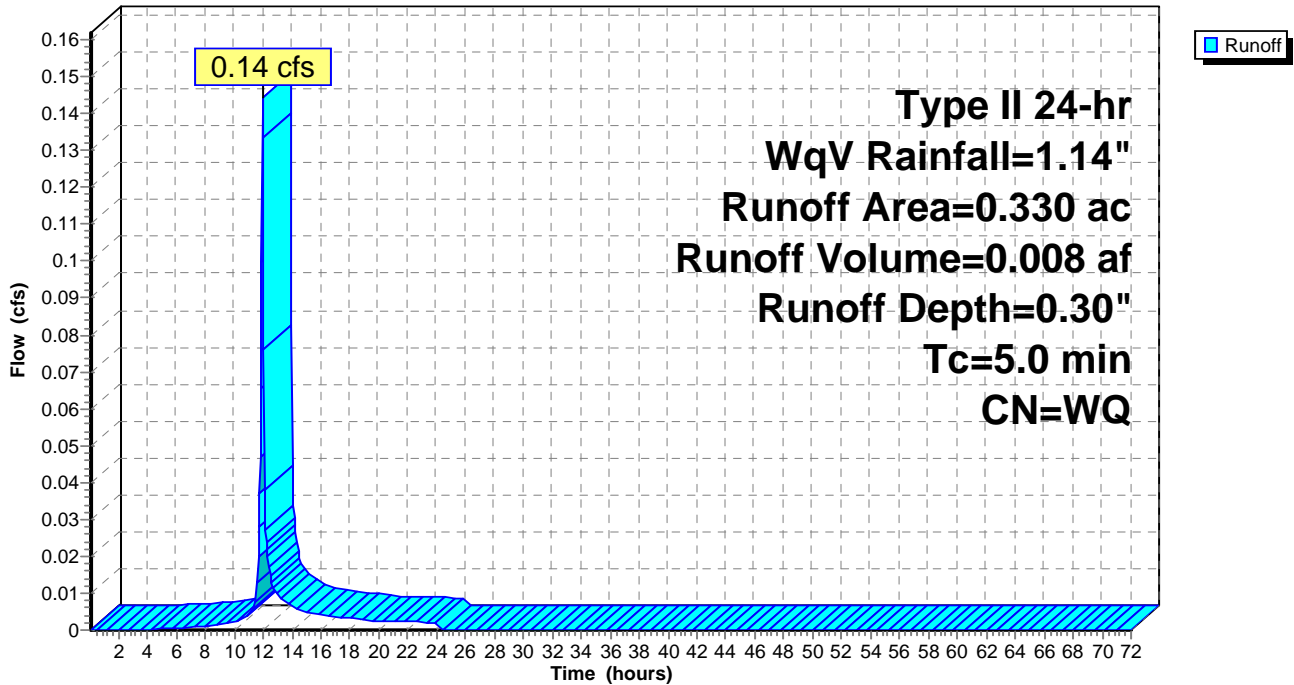
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr WqV Rainfall=1.14"

Area (ac)	CN	Description
0.070	98	Paved parking, HSG D
0.260	80	>75% Grass cover, Good, HSG D
0.330		Weighted Average
0.260		78.79% Pervious Area
0.070		21.21% Impervious Area

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

Subcatchment 15S: OFFSITE TO ONSITE TO BASIN 1

Hydrograph



Summary for Subcatchment 16S: ONSITE TO BASIN 1

Runoff = 5.95 cfs @ 11.95 hrs, Volume= 0.303 af, Depth= 0.80"

Routed to Pond 18P : BASIN 1 FOREBAY 100 YR LFB

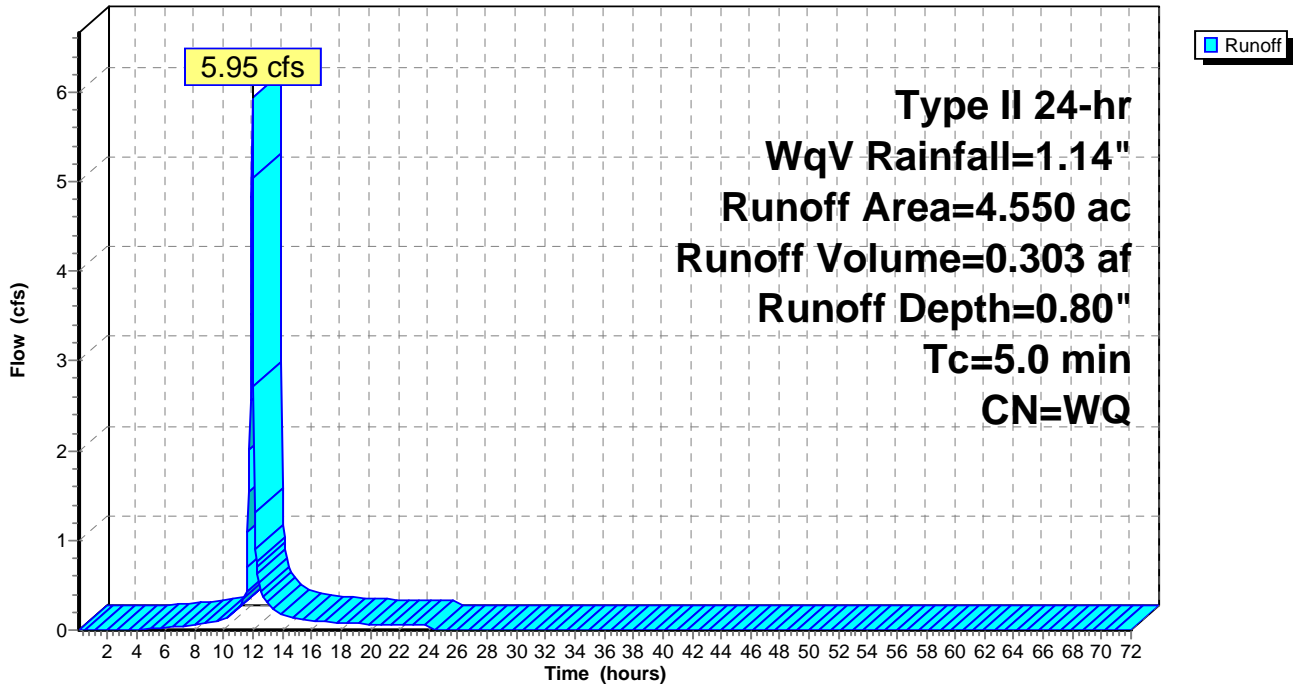
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr WqV Rainfall=1.14"

Area (ac)	CN	Description
3.820	98	Paved parking, HSG D
0.730	80	>75% Grass cover, Good, HSG D
4.550		Weighted Average
0.730		16.04% Pervious Area
3.820		83.96% Impervious Area

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

Subcatchment 16S: ONSITE TO BASIN 1

Hydrograph



Summary for Subcatchment 19S: OFFSITE TO ONSITE TO BASIN 2

Runoff = 0.02 cfs @ 11.99 hrs, Volume= 0.001 af, Depth= 0.13"
 Routed to Pond 21P : BASIN 2 100 YR LFB

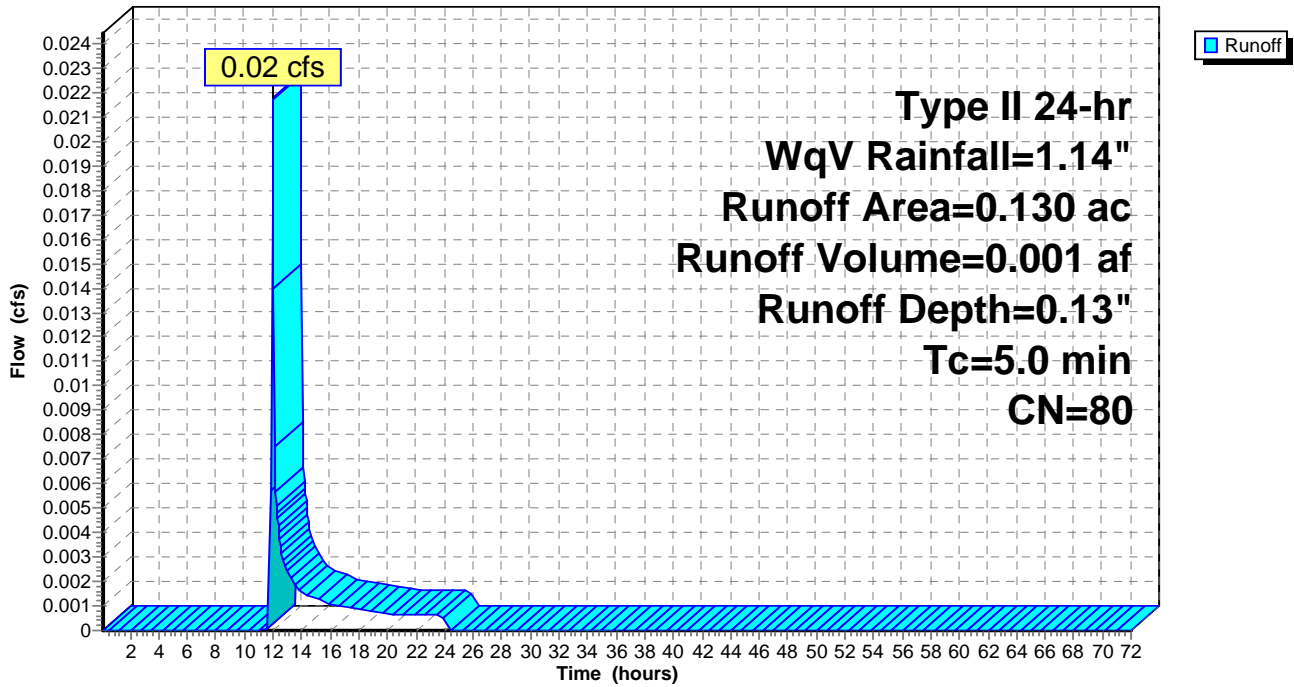
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr WqV Rainfall=1.14"

Area (ac)	CN	Description
0.130	80	>75% Grass cover, Good, HSG D
0.130		100.00% Pervious Area

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

Subcatchment 19S: OFFSITE TO ONSITE TO BASIN 2

Hydrograph



Summary for Subcatchment 20S: ONSITE TO BASIN 2

Runoff = 3.24 cfs @ 11.95 hrs, Volume= 0.166 af, Depth= 0.77"
 Routed to Pond 21P : BASIN 2 100 YR LFB

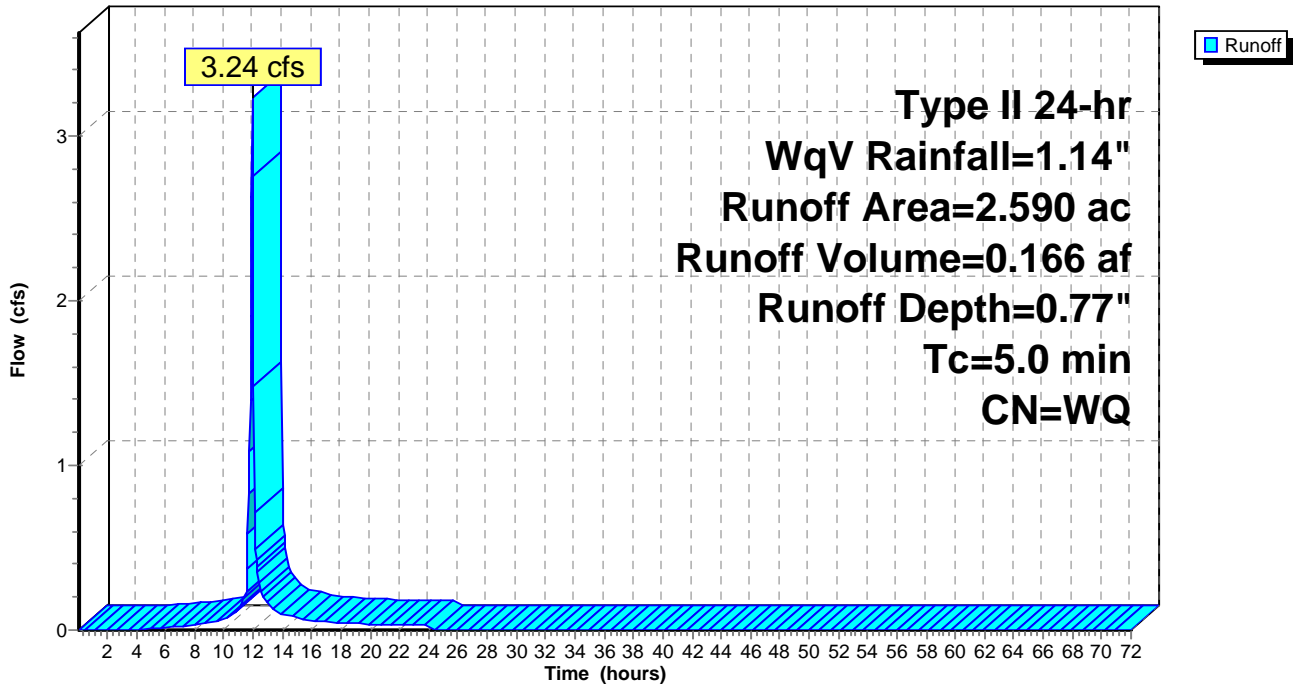
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr WqV Rainfall=1.14"

Area (ac)	CN	Description
2.070	98	Paved parking, HSG D
0.520	80	>75% Grass cover, Good, HSG D
2.590		Weighted Average
0.520		20.08% Pervious Area
2.070		79.92% Impervious Area

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

Subcatchment 20S: ONSITE TO BASIN 2

Hydrograph



2023-06-19 PROPOSED

Prepared by Premier Design Group

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Type II 24-hr WqV Rainfall=1.14"

Printed 6/23/2023

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Summary for Pond 8P: BASIN 1

Inflow Area = 4.880 ac, 79.71% Impervious, Inflow Depth = 0.78" for WqV event
 Inflow = 2.70 cfs @ 11.96 hrs, Volume= 0.319 af
 Outflow = 0.28 cfs @ 13.58 hrs, Volume= 0.319 af, Atten= 90%, Lag= 97.3 min
 Primary = 0.28 cfs @ 13.58 hrs, Volume= 0.319 af
 Routed to Pond 9P : BASIN 2

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 592.06' @ 13.58 hrs Surf.Area= 2,176 sf Storage= 3,585 cf
 Flood Elev= 600.00' Surf.Area= 17,840 sf Storage= 83,183 cf

Plug-Flow detention time= 133.7 min calculated for 0.319 af (100% of inflow)
 Center-of-Mass det. time= 133.6 min (1,037.1 - 903.5)

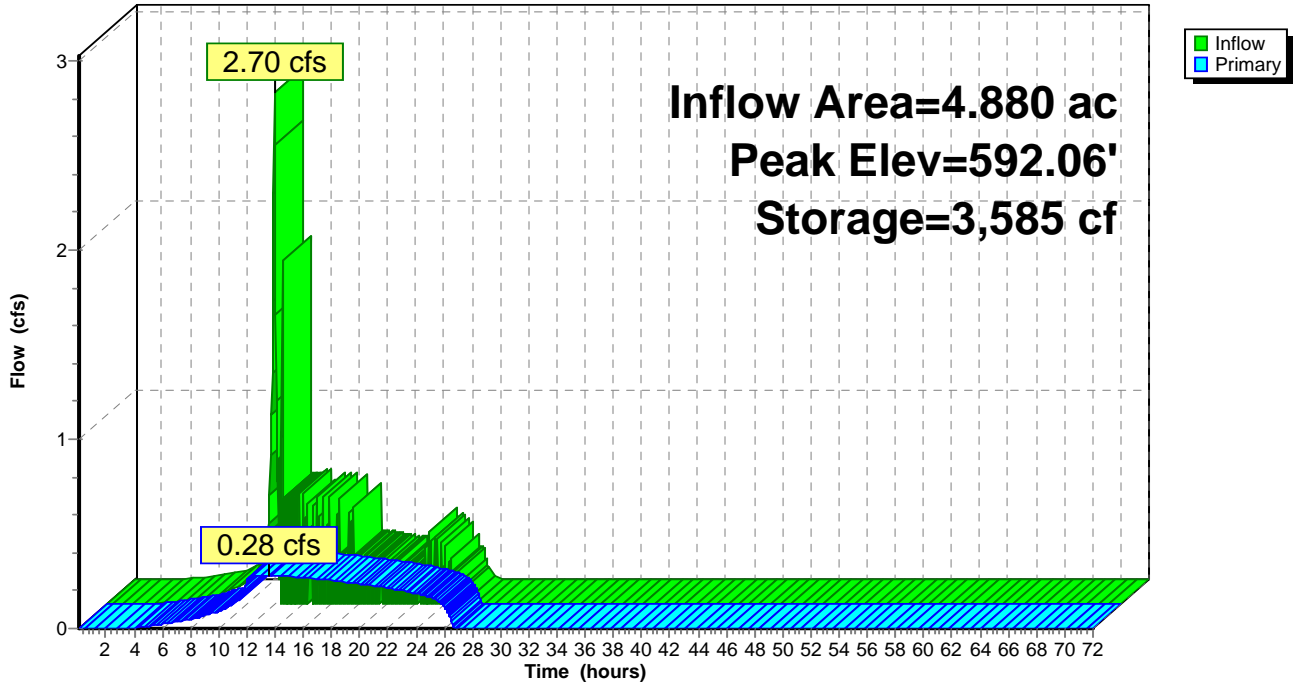
Volume	Invert	Avail.Storage	Storage Description
#1	589.00'	83,183 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
589.00	2	0	0
590.00	897	450	450
591.00	1,487	1,192	1,642
592.00	2,133	1,810	3,452
593.00	2,836	2,485	5,936
594.00	3,695	3,266	9,202
595.00	9,367	6,531	15,733
596.00	10,948	10,158	25,890
597.00	12,586	11,767	37,657
598.00	14,281	13,434	51,091
599.00	16,032	15,157	66,247
600.00	17,840	16,936	83,183

Device	Routing	Invert	Outlet Devices
#1	Primary	585.00'	24.0" Round RCP_Round 24" L= 184.2' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 585.00' / 583.16' S= 0.0100 1/ Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	589.00'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	594.00'	18.0" W x 18.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	598.00'	30.0" x 60.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.28 cfs @ 13.58 hrs HW=592.06' TW=581.95' (Dynamic Tailwater)
 1=RCP_Round 24" (Passes 0.28 cfs of 37.28 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.28 cfs @ 8.28 fps)
 3=Orifice/Grate (Controls 0.00 cfs)
 4=Orifice/Grate (Controls 0.00 cfs)

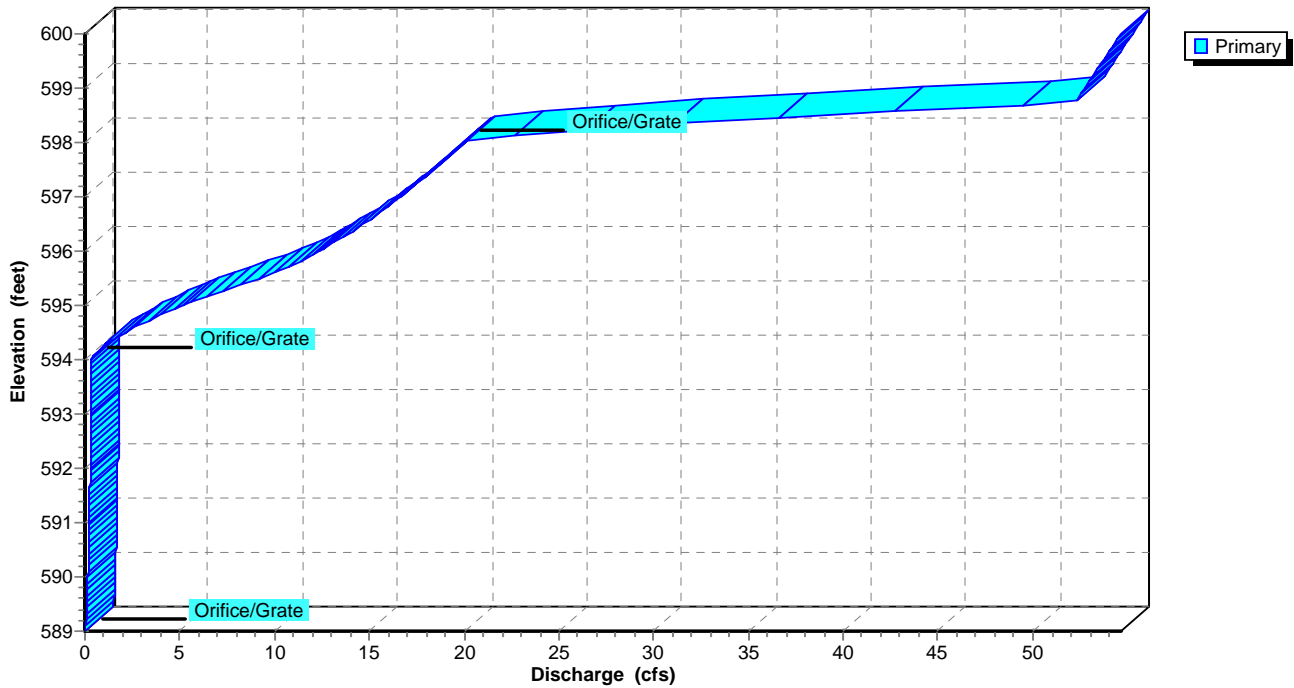
Pond 8P: BASIN 1

Hydrograph

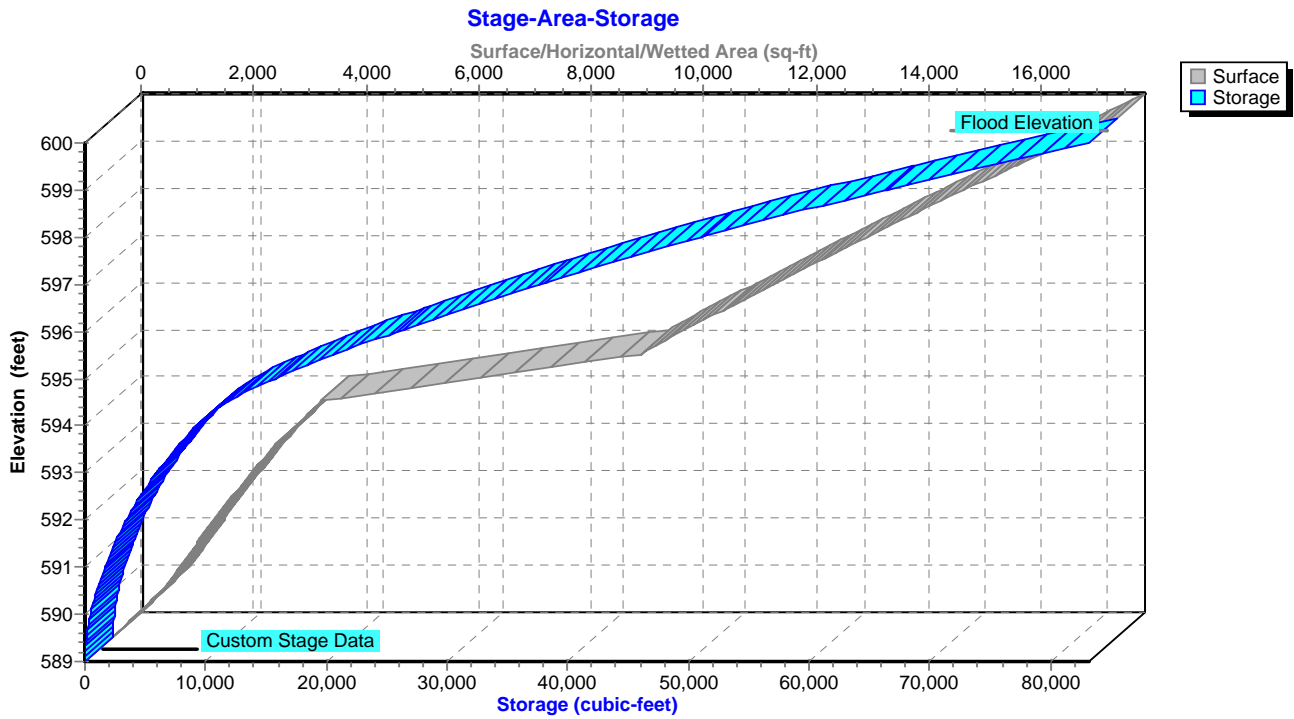


Pond 8P: BASIN 1

Stage-Discharge



Pond 8P: BASIN 1



2023-06-19 PROPOSED

Prepared by Premier Design Group

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Type II 24-hr WqV Rainfall=1.14"

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Summary for Pond 9P: BASIN 2

Inflow Area = 7.600 ac, 78.42% Impervious, Inflow Depth = 0.77" for WqV event
 Inflow = 3.50 cfs @ 11.95 hrs, Volume= 0.486 af
 Outflow = 0.29 cfs @ 18.50 hrs, Volume= 0.485 af, Atten= 92%, Lag= 392.6 min
 Primary = 0.29 cfs @ 18.50 hrs, Volume= 0.485 af
 Routed to Link 14L : POST DEVELOPED RUNOFF

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 582.31' @ 18.50 hrs Surf.Area= 2,242 sf Storage= 6,169 cf

Plug-Flow detention time= 276.8 min calculated for 0.485 af (100% of inflow)
 Center-of-Mass det. time= 275.3 min (1,225.9 - 950.6)

Volume	Invert	Avail.Storage	Storage Description
#1	578.75'	38,298 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
578.75	1	0	0
579.00	205	26	26
580.00	2,080	1,143	1,168
581.00	2,152	2,116	3,284
582.00	2,222	2,187	5,471
583.00	2,287	2,255	7,726
584.00	2,348	2,318	10,043
585.00	2,404	2,376	12,419
586.00	2,456	2,430	14,849
587.00	2,504	2,480	17,329
588.00	2,547	2,526	19,855
589.00	2,998	2,773	22,627
590.00	4,800	3,899	26,526
591.00	5,862	5,331	31,857
592.00	7,020	6,441	38,298

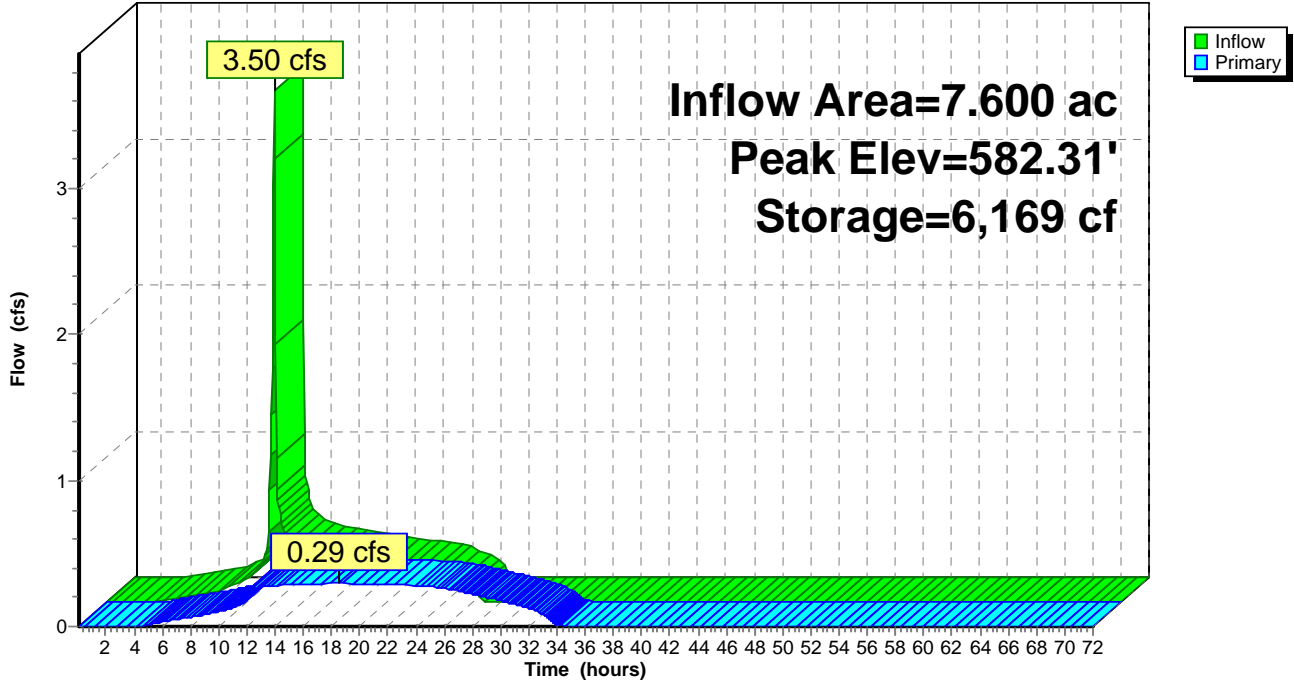
Device	Routing	Invert	Outlet Devices
#1	Primary	576.73'	30.0" Round RCP_Round 30" L= 15.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 576.73' / 576.58' S= 0.0100 1/ S= 0.0100 1/ Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	579.00'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	583.00'	18.0" W x 18.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	589.00'	30.0" x 60.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.29 cfs @ 18.50 hrs HW=582.31' TW=0.00' (Dynamic Tailwater)

- 1=RCP_Round 30" (Passes 0.29 cfs of 61.49 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.29 cfs @ 8.62 fps)
- 3=Orifice/Grate (Controls 0.00 cfs)
- 4=Orifice/Grate (Controls 0.00 cfs)

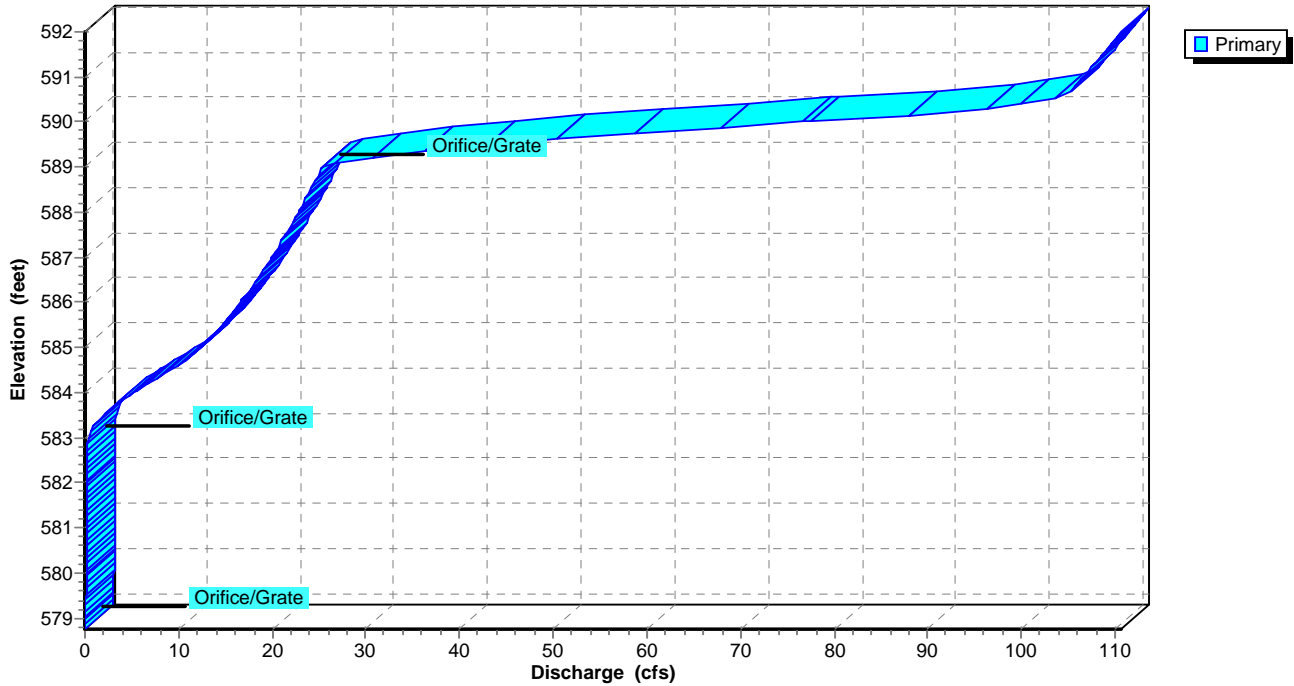
Pond 9P: BASIN 2

Hydrograph

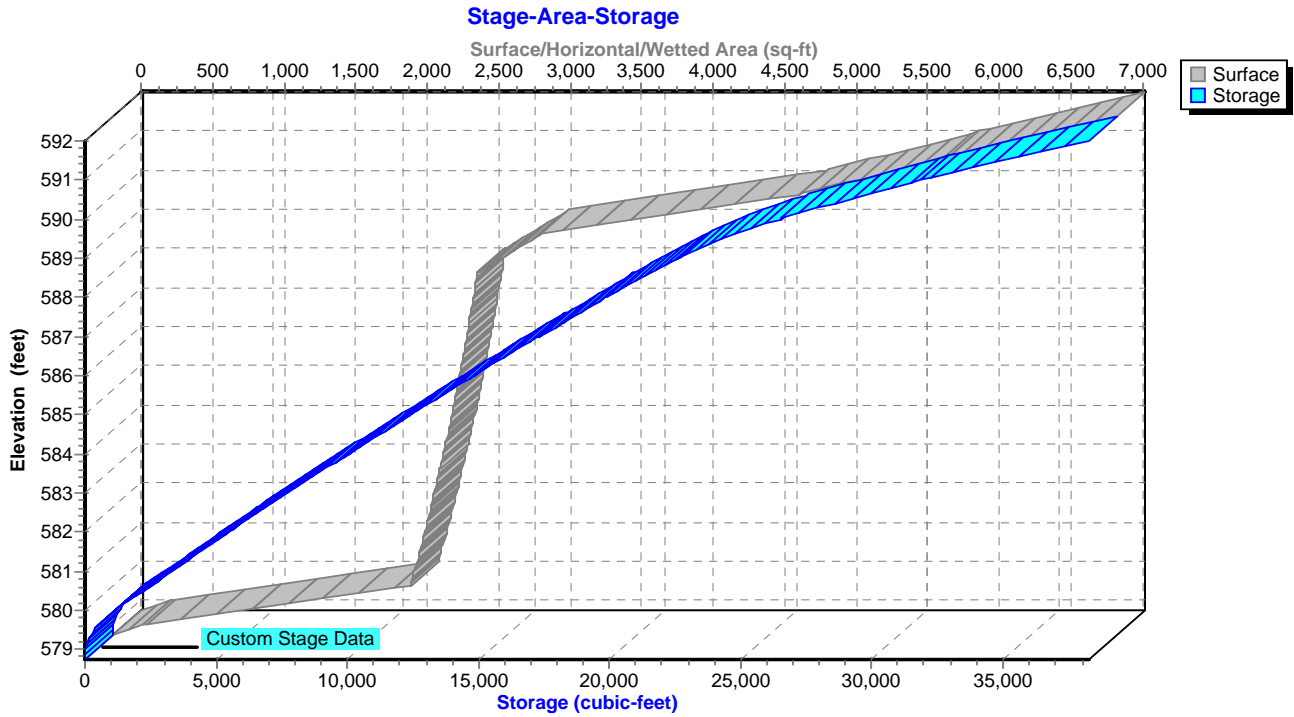


Pond 9P: BASIN 2

Stage-Discharge



Pond 9P: BASIN 2



Summary for Pond 10R: 201 TO JS

Inflow Area = 8.630 ac, 72.42% Impervious, Inflow Depth = 0.72" for WqV event
 Inflow = 0.77 cfs @ 11.97 hrs, Volume= 0.516 af
 Outflow = 0.77 cfs @ 11.97 hrs, Volume= 0.516 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.77 cfs @ 11.97 hrs, Volume= 0.516 af
 Routed to Pond 11P : DUAL CULVERTS

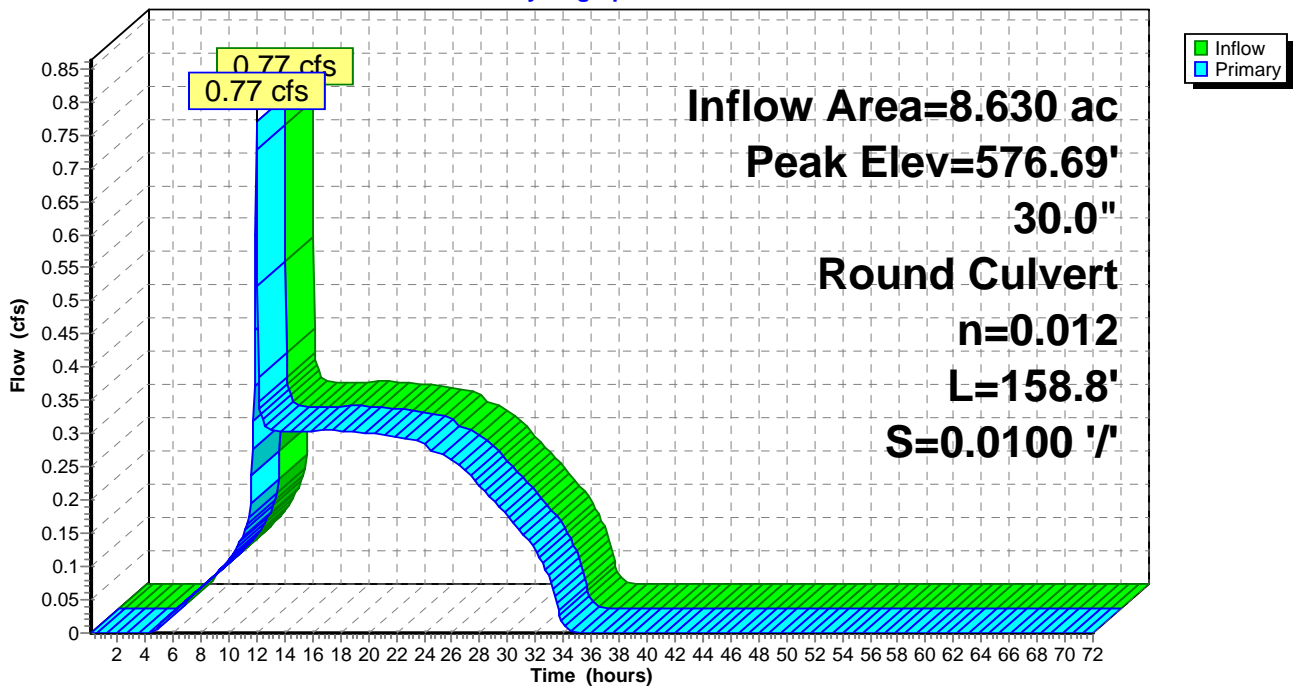
Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 576.69' @ 11.97 hrs
 Flood Elev= 583.00'

Device #	Routing	Invert	Outlet Devices
#1	Primary	576.36'	30.0" Round Culvert L= 158.8' Ke= 0.500 Inlet / Outlet Invert= 576.36' / 574.77' S= 0.0100 '/ Cc= 0.900 n= 0.012, Flow Area= 4.91 sf

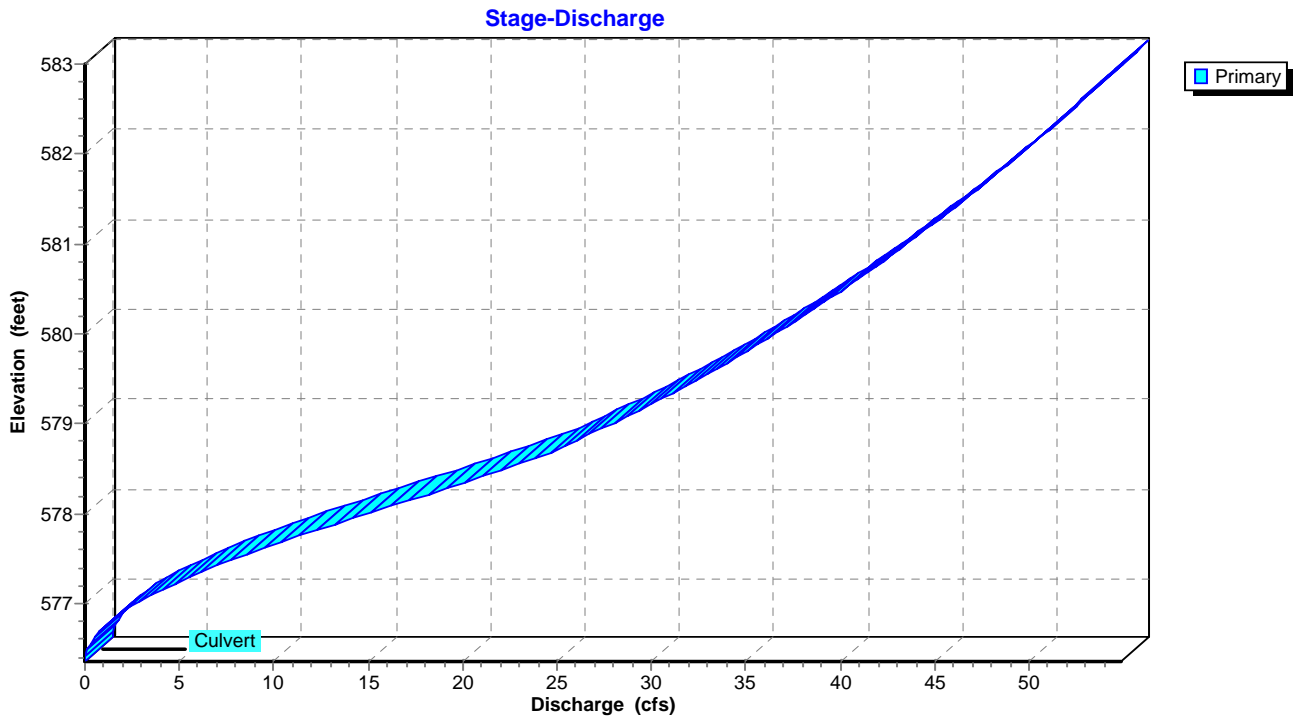
Primary OutFlow Max=0.75 cfs @ 11.97 hrs HW=576.69' TW=575.02' (Dynamic Tailwater)
 ↑=Culvert (Inlet Controls 0.75 cfs @ 1.95 fps)

Pond 10R: 201 TO JS

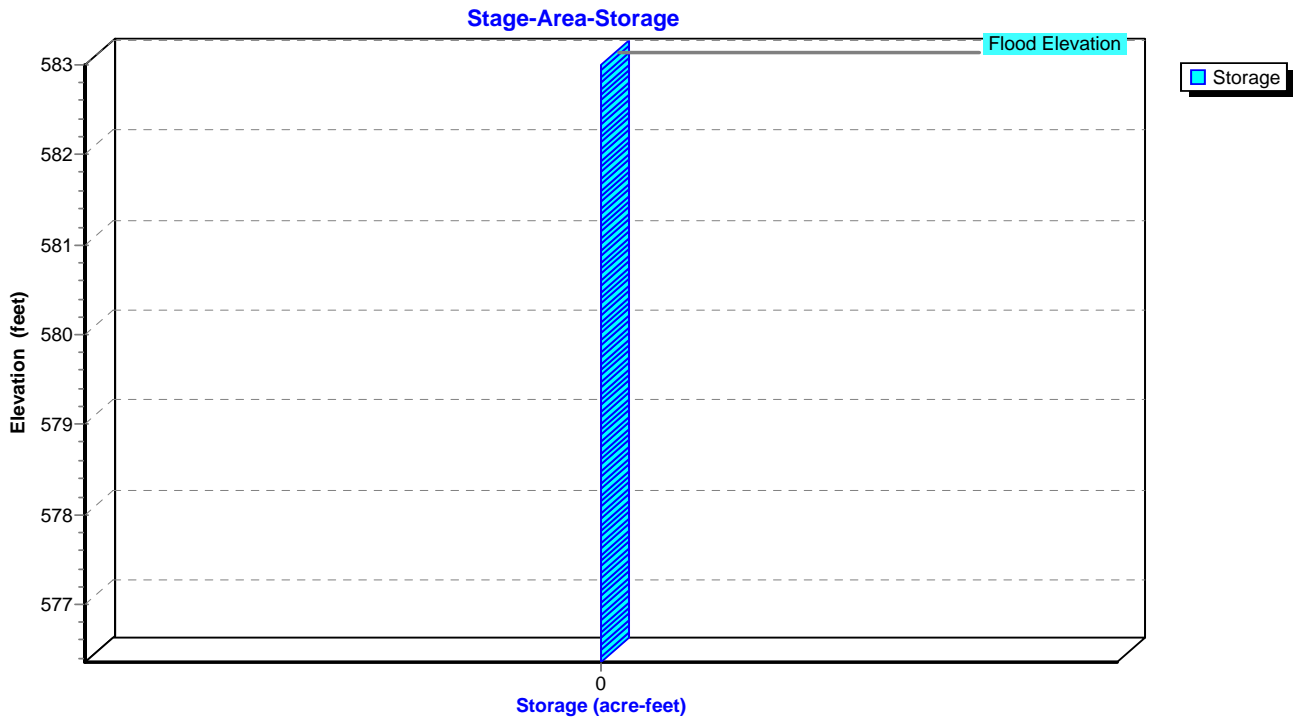
Hydrograph



Pond 10R: 201 TO JS



Pond 10R: 201 TO JS



Summary for Pond 11P: DUAL CULVERTS

Inflow Area = 15.090 ac, 65.14% Impervious, Inflow Depth = 0.65" for WqV event
 Inflow = 6.02 cfs @ 11.98 hrs, Volume= 0.823 af
 Outflow = 6.02 cfs @ 11.98 hrs, Volume= 0.823 af, Atten= 0%, Lag= 0.0 min
 Primary = 6.02 cfs @ 11.98 hrs, Volume= 0.823 af

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 575.03' @ 11.98 hrs
 Flood Elev= 582.00'

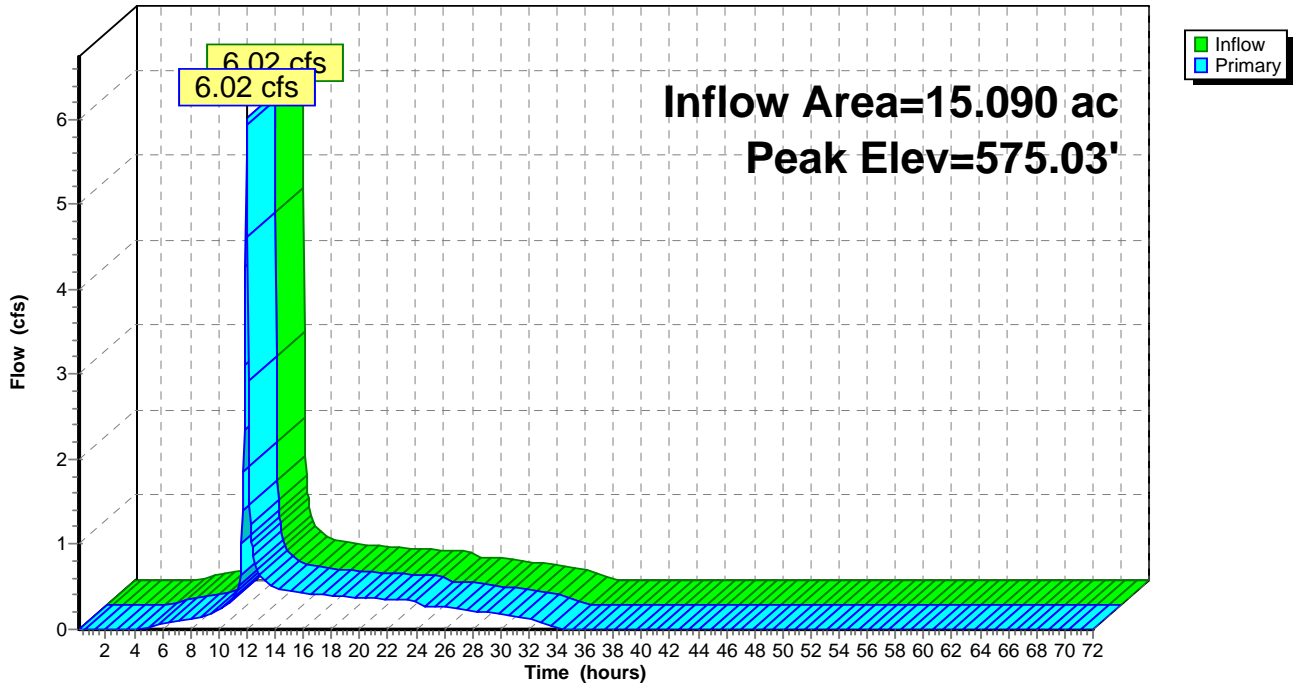
Device	Routing	Invert	Outlet Devices
#1	Primary	574.44'	54.0" Round RCP_Round 54" L= 84.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 574.44' / 573.62' S= 0.0098 1' Cc= 0.900 n= 0.013, Flow Area= 15.90 sf
#2	Primary	574.47'	54.0" Round RCP_Round 54" L= 84.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 574.47' / 573.79' S= 0.0081 1' Cc= 0.900 n= 0.013, Flow Area= 15.90 sf

Primary OutFlow Max=5.84 cfs @ 11.98 hrs HW=575.02' (Free Discharge)

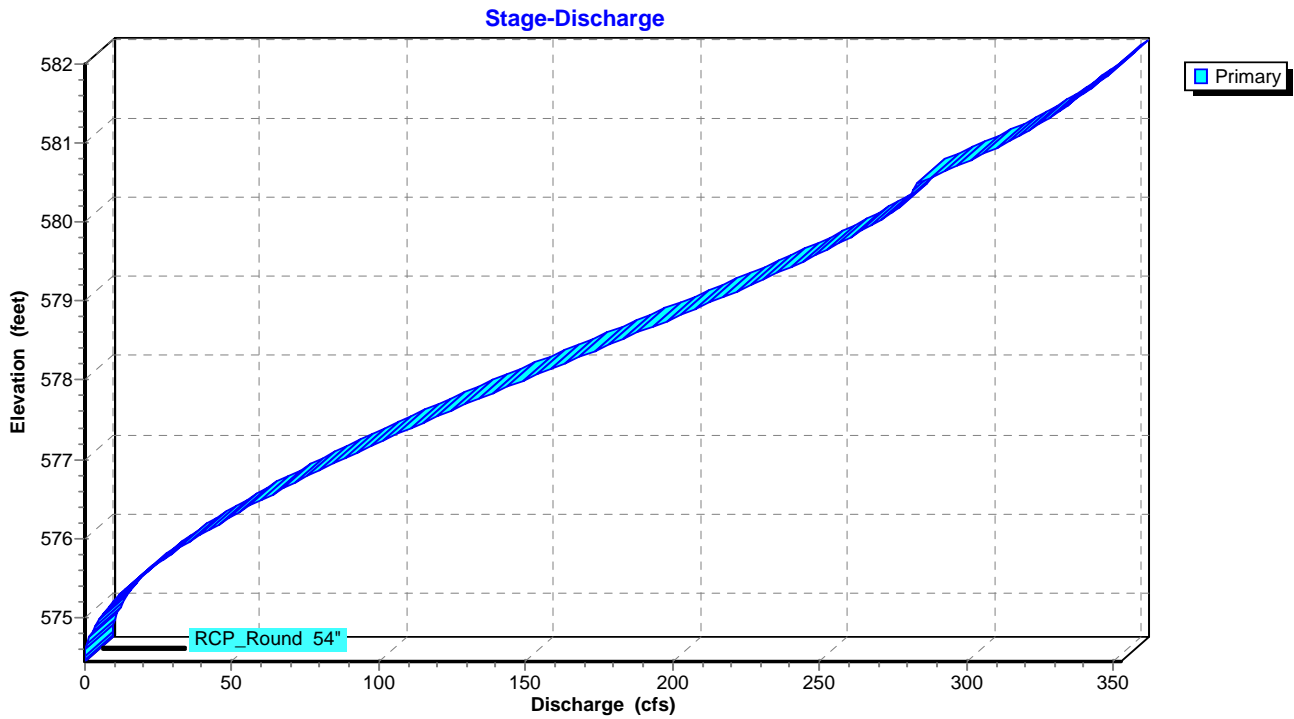
- 1=RCP_Round 54" (Inlet Controls 3.15 cfs @ 2.60 fps)
- 2=RCP_Round 54" (Barrel Controls 2.69 cfs @ 3.66 fps)

Pond 11P: DUAL CULVERTS

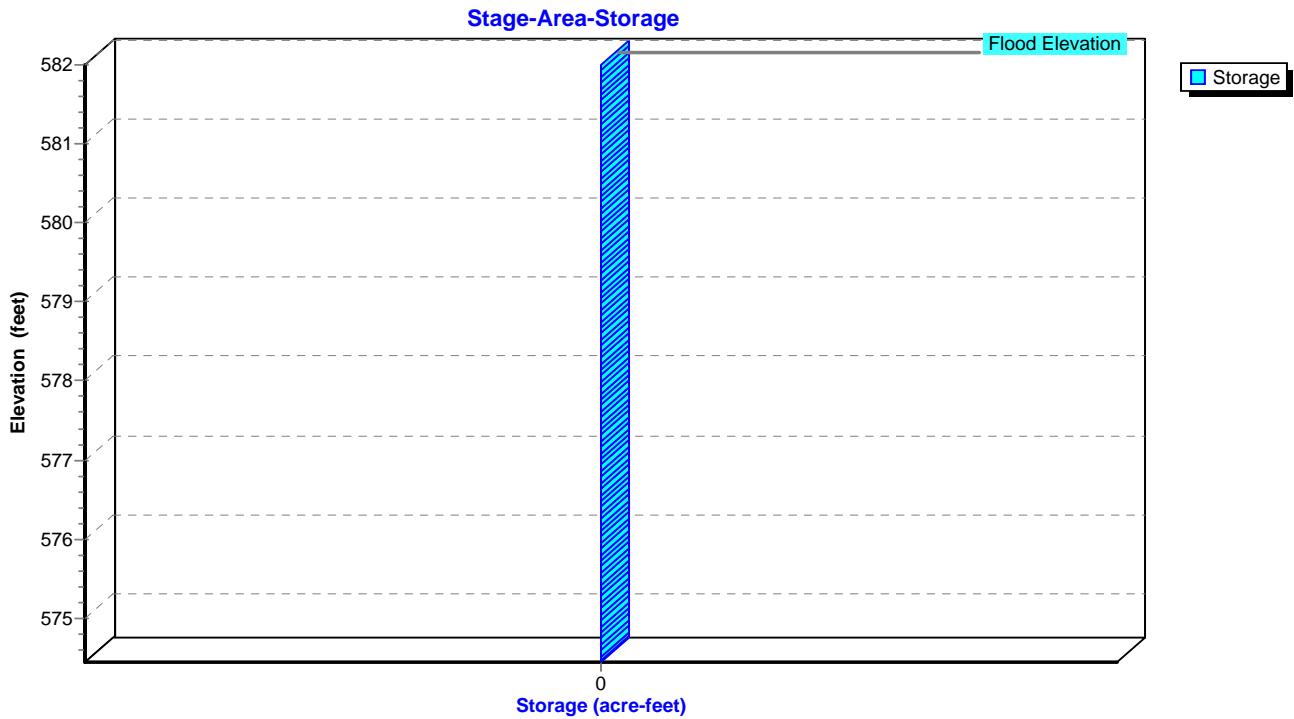
Hydrograph



Pond 11P: DUAL CULVERTS



Pond 11P: DUAL CULVERTS



Summary for Pond 12P: BRYAN RD CULVERT

Inflow Area = 4.870 ac, 55.44% Impervious, Inflow Depth = 0.57" for WqV event
 Inflow = 3.96 cfs @ 12.00 hrs, Volume= 0.232 af
 Outflow = 3.96 cfs @ 12.00 hrs, Volume= 0.232 af, Atten= 0%, Lag= 0.0 min
 Primary = 3.96 cfs @ 12.00 hrs, Volume= 0.232 af
 Routed to Pond 11P : DUAL CULVERTS

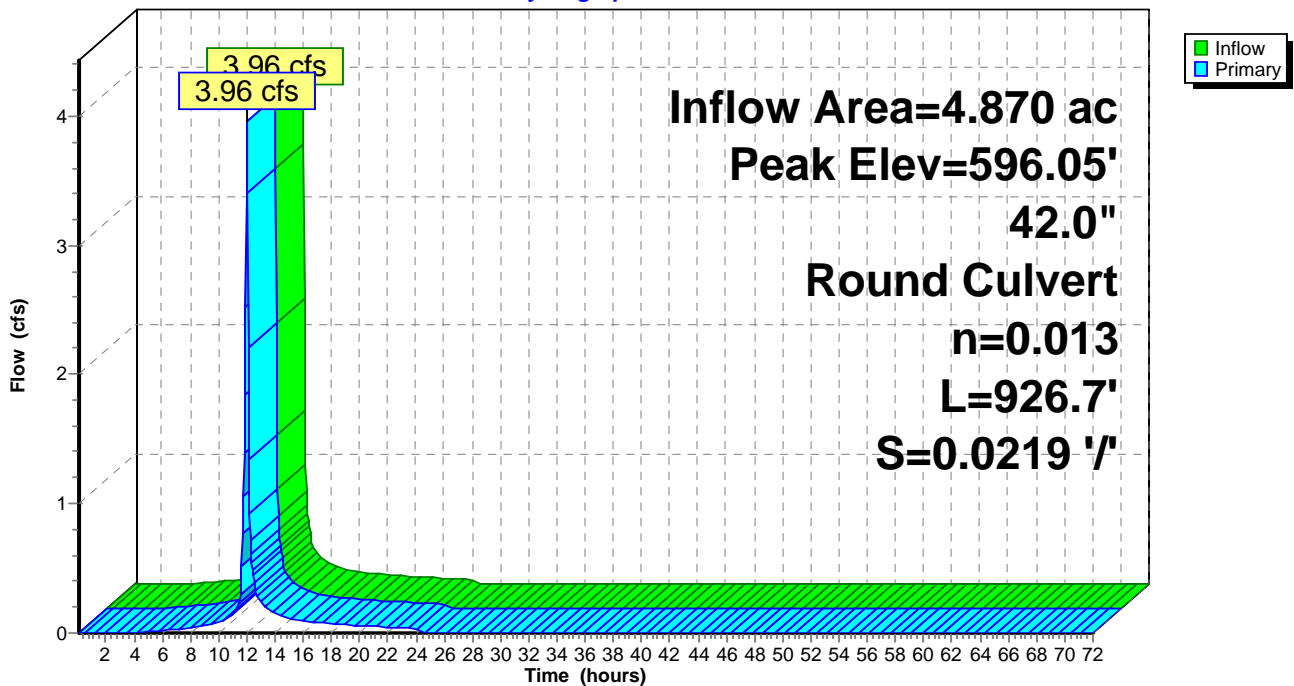
Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 596.05' @ 12.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	595.34'	42.0" Round Culvert L= 926.7' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 595.34' / 575.00' S= 0.0219 '/ Cc= 0.900 n= 0.013, Flow Area= 9.62 sf

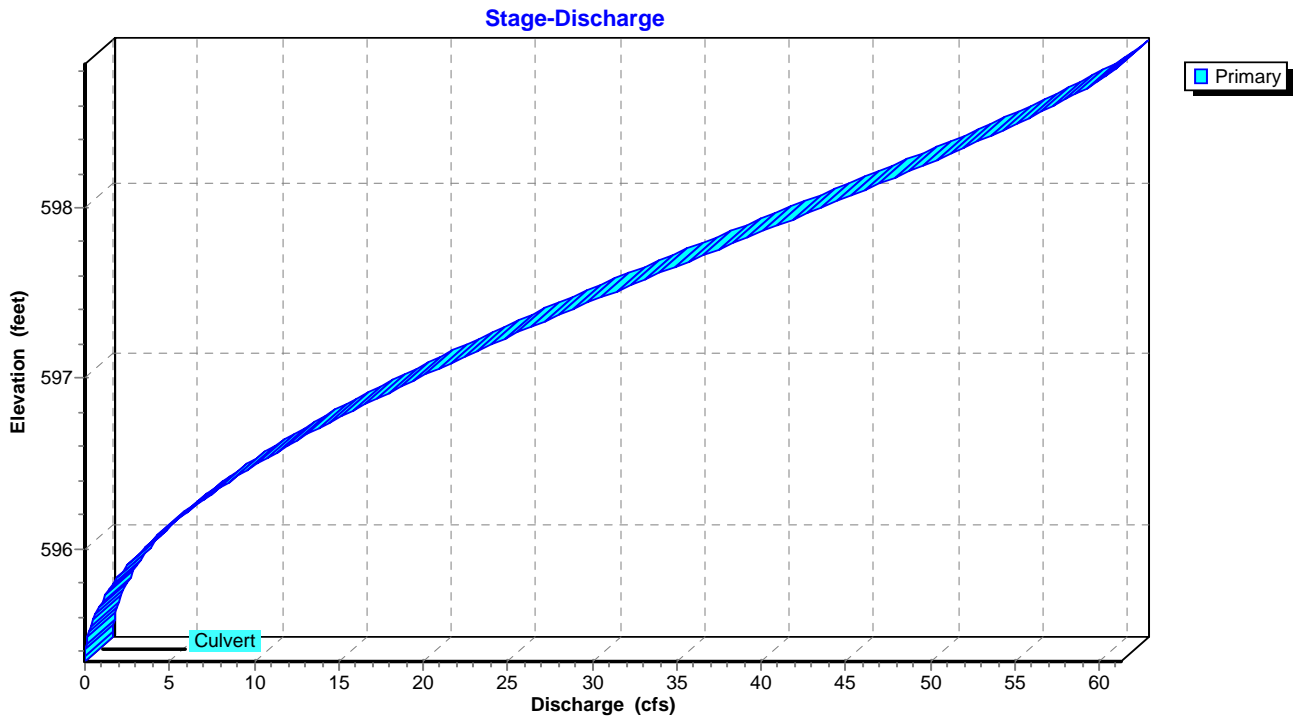
Primary OutFlow Max=3.95 cfs @ 12.00 hrs HW=596.04' TW=575.03' (Dynamic Tailwater)
 ←1=Culvert (Inlet Controls 3.95 cfs @ 2.86 fps)

Pond 12P: BRYAN RD CULVERT

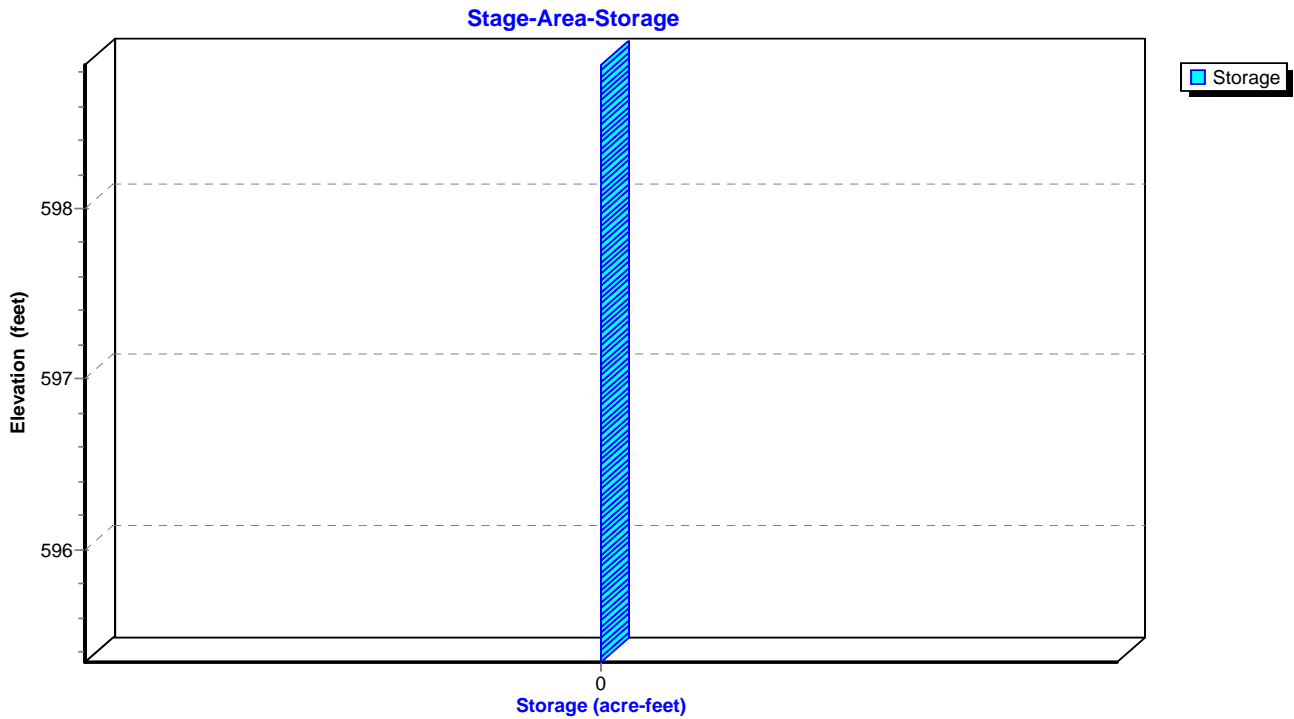
Hydrograph



Pond 12P: BRYAN RD CULVERT



Pond 12P: BRYAN RD CULVERT



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Type II 24-hr WqV Rainfall=1.14"

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Summary for Pond 13P: BASIN 1 FOREBAY

Inflow Area = 4.880 ac, 79.71% Impervious, Inflow Depth = 0.77" for WqV event
 Inflow = 6.09 cfs @ 11.95 hrs, Volume= 0.311 af
 Outflow = 2.70 cfs @ 11.96 hrs, Volume= 0.311 af, Atten= 56%, Lag= 0.3 min
 Primary = 2.70 cfs @ 11.96 hrs, Volume= 0.319 af
 Routed to Pond 8P : BASIN 1

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 592.07' @ 13.07 hrs Surf.Area= 2,393 sf Storage= 3,546 cf
 Flood Elev= 600.00' Surf.Area= 3,845 sf Storage= 9,545 cf

Plug-Flow detention time= 122.6 min calculated for 0.311 af (100% of inflow)
 Center-of-Mass det. time= 122.6 min (907.1 - 784.4)

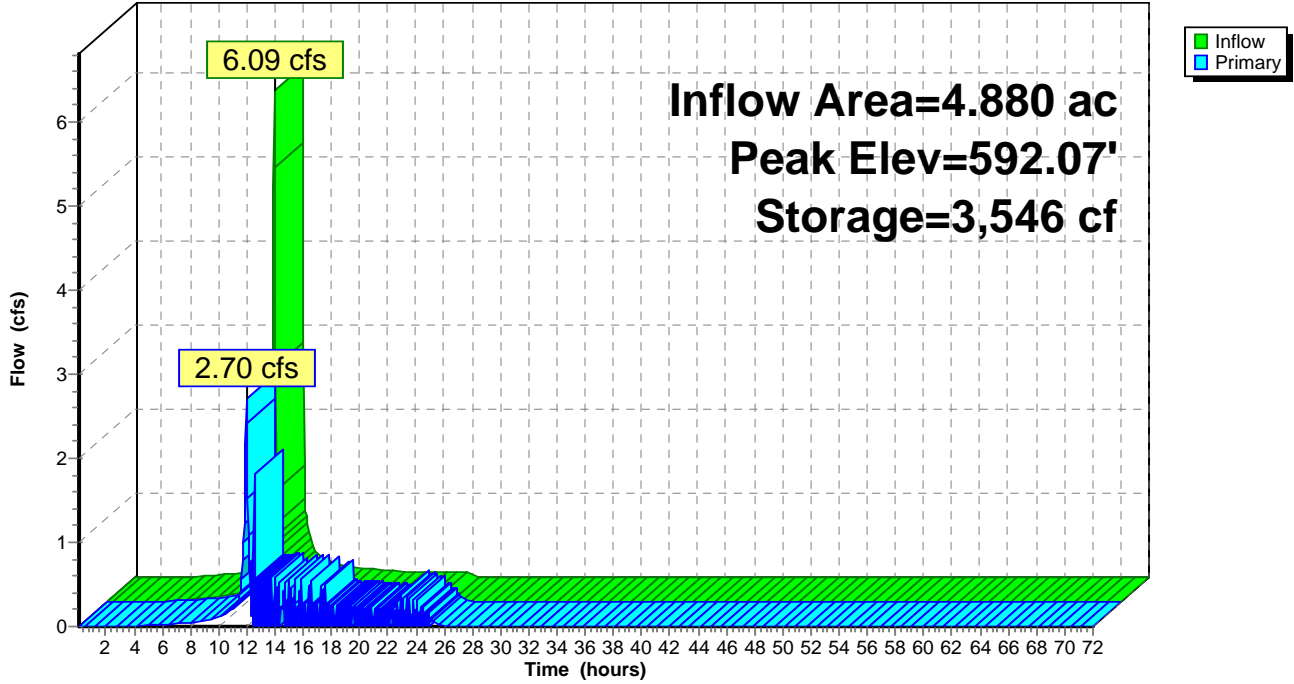
Volume	Invert	Avail.Storage	Storage Description
#1	590.00'	9,545 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
590.00	1,069	0	0
591.00	1,678	1,374	1,374
592.00	2,344	2,011	3,385
593.00	3,066	2,705	6,090
594.00	3,845	3,456	9,545

Device	Routing	Invert	Outlet Devices
#0	Primary	594.00'	Automatic Storage Overflow (Discharged without head)
#1	Primary	590.00'	36.00' long x 30.00' breadth x 4.06' high Rock Fill Rock Diam.= 18.000", S.D.= 4.000", Voids= 40.0%

Primary OutFlow Max=5.77 cfs @ 11.96 hrs HW=591.45' TW=591.23' (Dynamic Tailwater)
 ↗ **1=Rock Fill** (Rockfill Controls 5.77 cfs @ 0.12 fps)

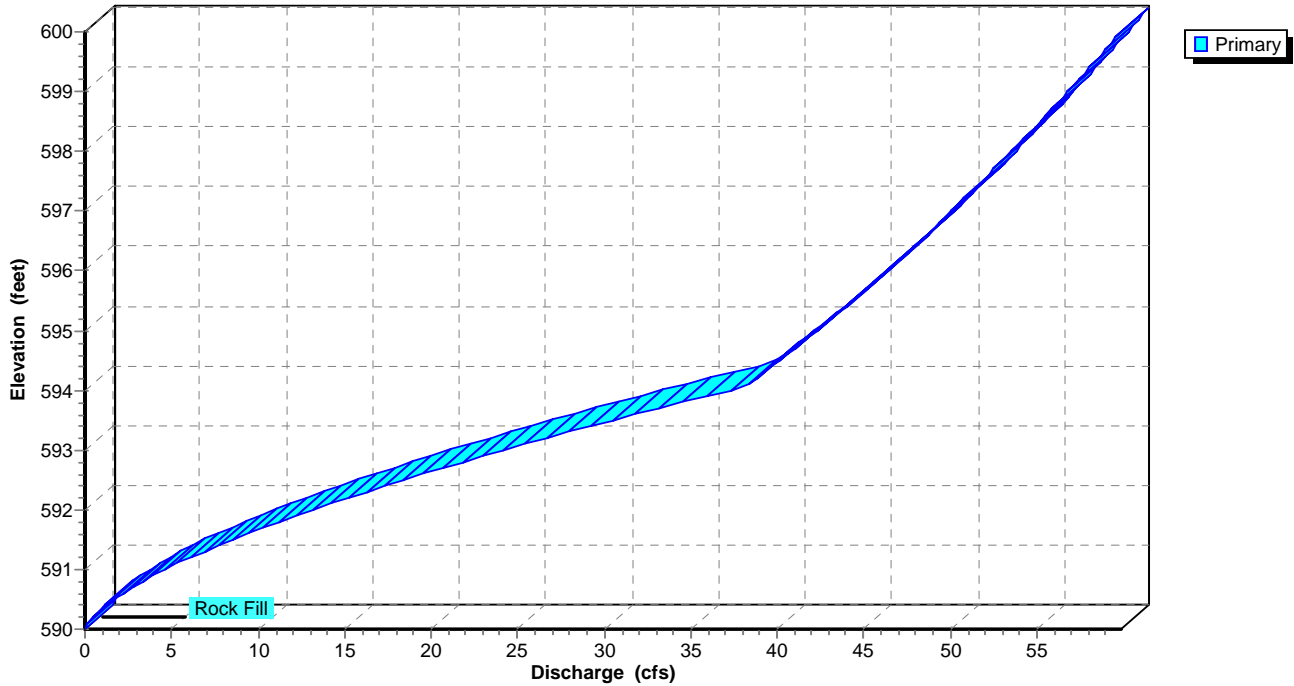
Pond 13P: BASIN 1 FOREBAY

Hydrograph



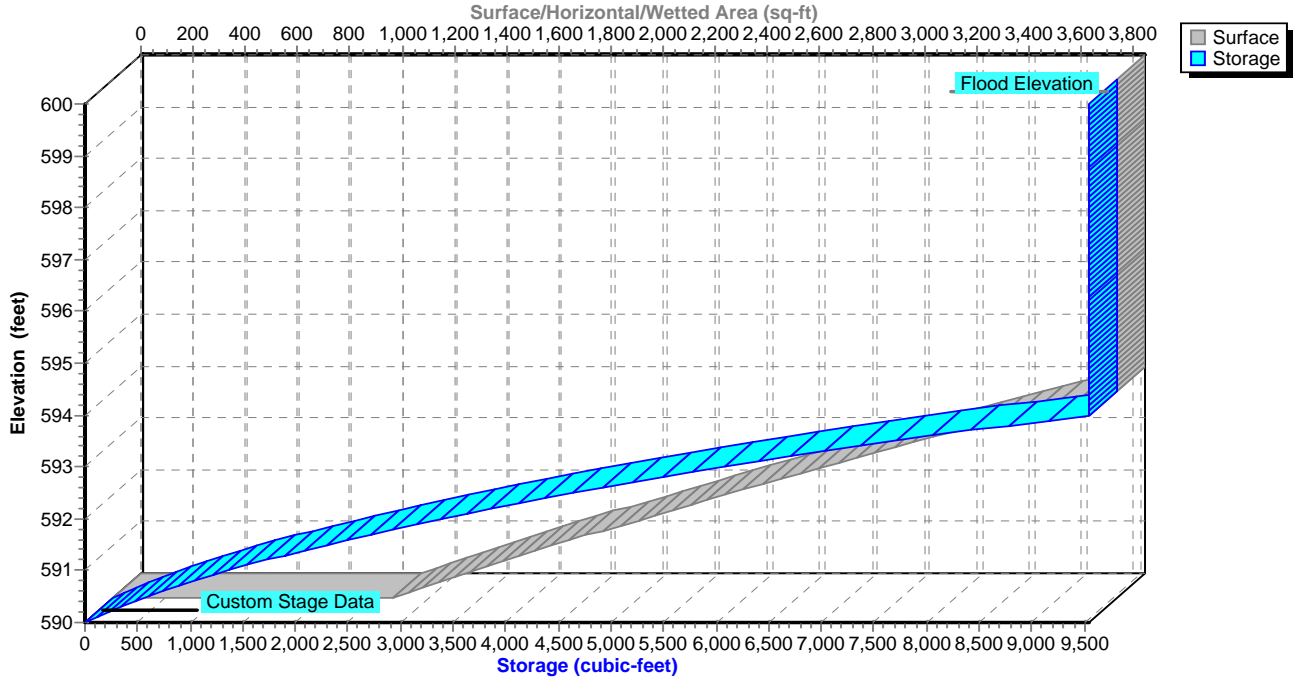
Pond 13P: BASIN 1 FOREBAY

Stage-Discharge



Pond 13P: BASIN 1 FOREBAY

Stage-Area-Storage



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Type II 24-hr WqV Rainfall=1.14"

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Summary for Pond 17P: BASIN 1 100 YR LFB

Inflow Area = 4.880 ac, 79.71% Impervious, Inflow Depth = 0.44" for WqV event
 Inflow = 6.77 cfs @ 12.04 hrs, Volume= 0.178 af
 Outflow = 0.00 cfs @ 0.10 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 0.10 hrs, Volume= 0.000 af
 Routed to Pond 21P : BASIN 2 100 YR LFB

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 593.59' @ 72.00 hrs Surf.Area= 3,341 sf Storage= 7,752 cf
 Flood Elev= 600.00' Surf.Area= 17,840 sf Storage= 83,183 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	589.00'	83,183 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
589.00	2	0	0
590.00	897	450	450
591.00	1,487	1,192	1,642
592.00	2,133	1,810	3,452
593.00	2,836	2,485	5,936
594.00	3,695	3,266	9,202
595.00	9,367	6,531	15,733
596.00	10,948	10,158	25,890
597.00	12,586	11,767	37,657
598.00	14,281	13,434	51,091
599.00	16,032	15,157	66,247
600.00	17,840	16,936	83,183

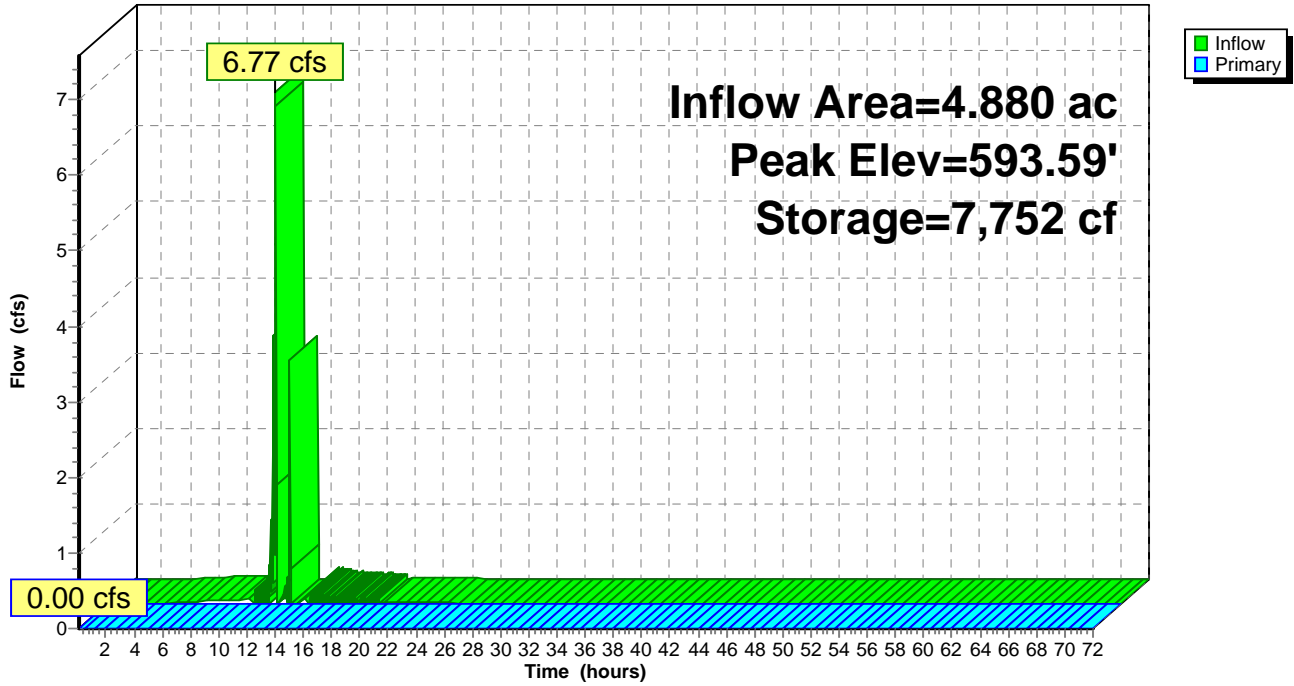
Device	Routing	Invert	Outlet Devices
#1	Primary	585.00'	24.0" Round RCP_Round 24" L= 184.2' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 585.00' / 583.16' S= 0.0100 1/ Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	594.00'	18.0" W x 18.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	598.00'	30.0" x 60.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.10 hrs HW=589.00' TW=578.75' (Dynamic Tailwater)

- 1=RCP_Round 24" (Passes 0.00 cfs of 27.81 cfs potential flow)
- 2=Orifice/Grate (Controls 0.00 cfs)
- 3=Orifice/Grate (Controls 0.00 cfs)

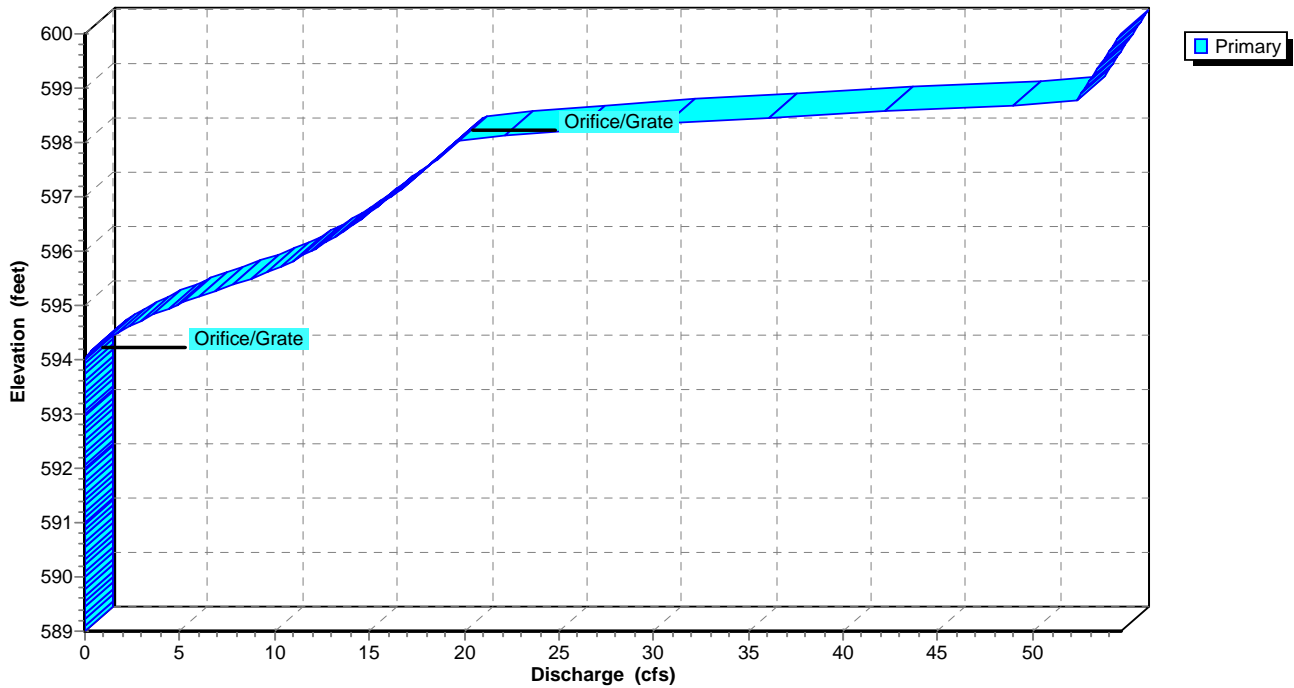
Pond 17P: BASIN 1 100 YR LFB

Hydrograph

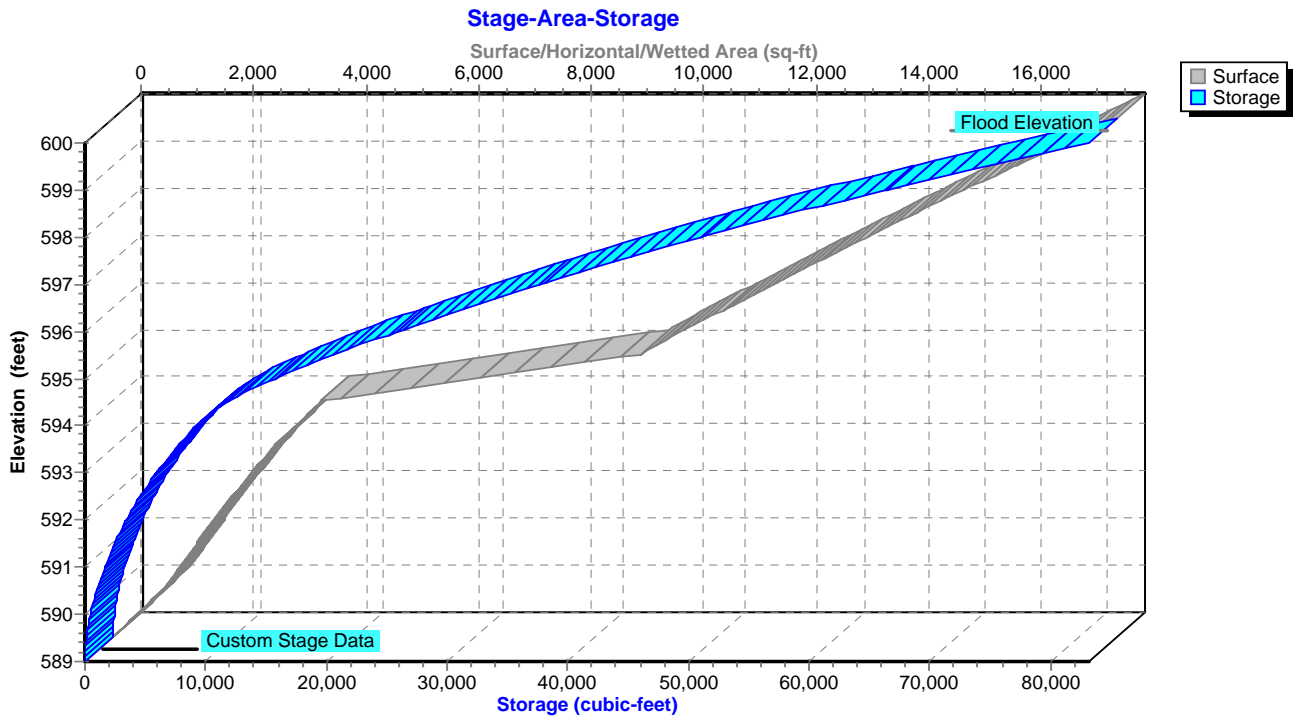


Pond 17P: BASIN 1 100 YR LFB

Stage-Discharge



Pond 17P: BASIN 1 100 YR LFB



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Type II 24-hr WqV Rainfall=1.14"

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Summary for Pond 18P: BASIN 1 FOREBAY 100 YR LFB

Inflow Area = 4.880 ac, 79.71% Impervious, Inflow Depth = 0.77" for WqV event
 Inflow = 6.09 cfs @ 11.95 hrs, Volume= 0.311 af
 Outflow = 4.77 cfs @ 12.00 hrs, Volume= 0.129 af, Atten= 22%, Lag= 2.7 min
 Primary = 6.77 cfs @ 12.04 hrs, Volume= 0.178 af
 Routed to Pond 17P : BASIN 1 100 YR LFB

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 593.60' @ 24.09 hrs Surf.Area= 3,535 sf Storage= 8,075 cf
 Flood Elev= 600.00' Surf.Area= 3,845 sf Storage= 9,545 cf

Plug-Flow detention time= 147.0 min calculated for 0.129 af (41% of inflow)
 Center-of-Mass det. time= 20.7 min (805.1 - 784.4)

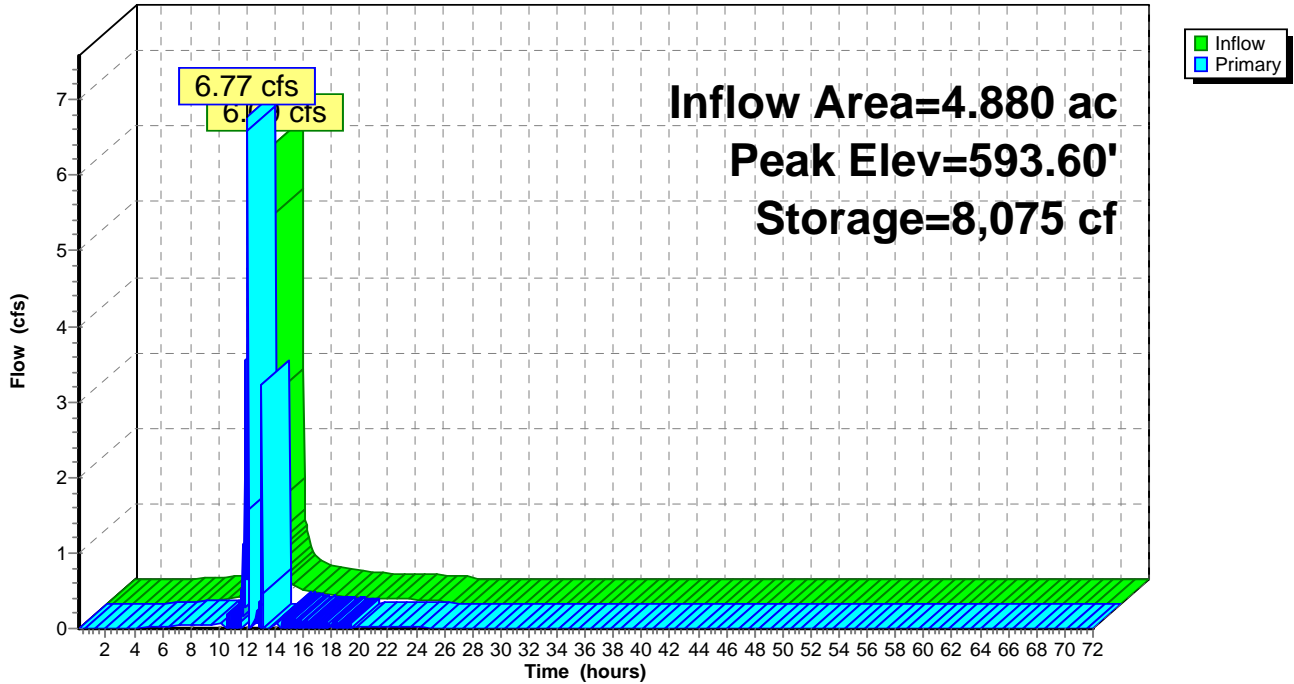
Volume	Invert	Avail.Storage	Storage Description
#1	590.00'	9,545 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
590.00	1,069	0	0
591.00	1,678	1,374	1,374
592.00	2,344	2,011	3,385
593.00	3,066	2,705	6,090
594.00	3,845	3,456	9,545

Device	Routing	Invert	Outlet Devices
#0	Primary	594.00'	Automatic Storage Overflow (Discharged without head)
#1	Primary	590.00'	36.00' long x 30.00' breadth x 4.06' high Rock Fill Rock Diam.= 18.000", S.D.= 4.000", Voids= 40.0%

Primary OutFlow Max=0.00 cfs @ 12.04 hrs HW=592.22' TW=592.22' (Dynamic Tailwater)
 ↗1=Rock Fill (Controls 0.00 cfs)

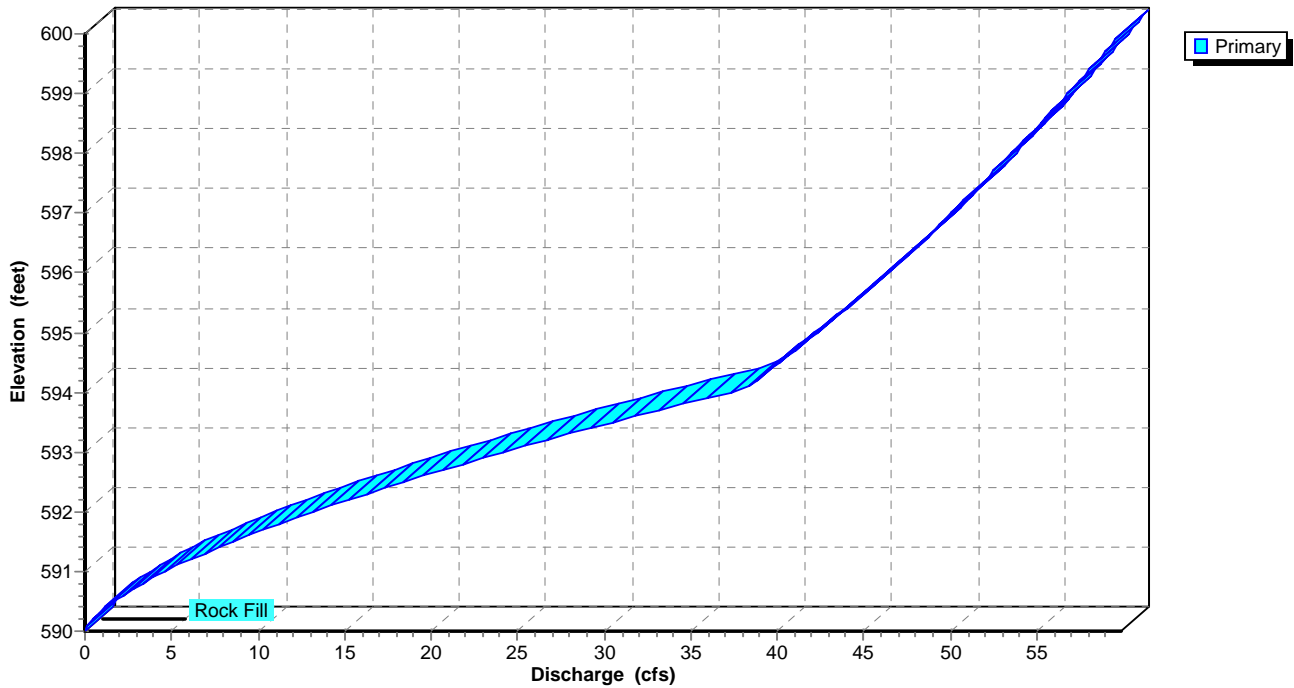
Pond 18P: BASIN 1 FOREBAY 100 YR LFB

Hydrograph

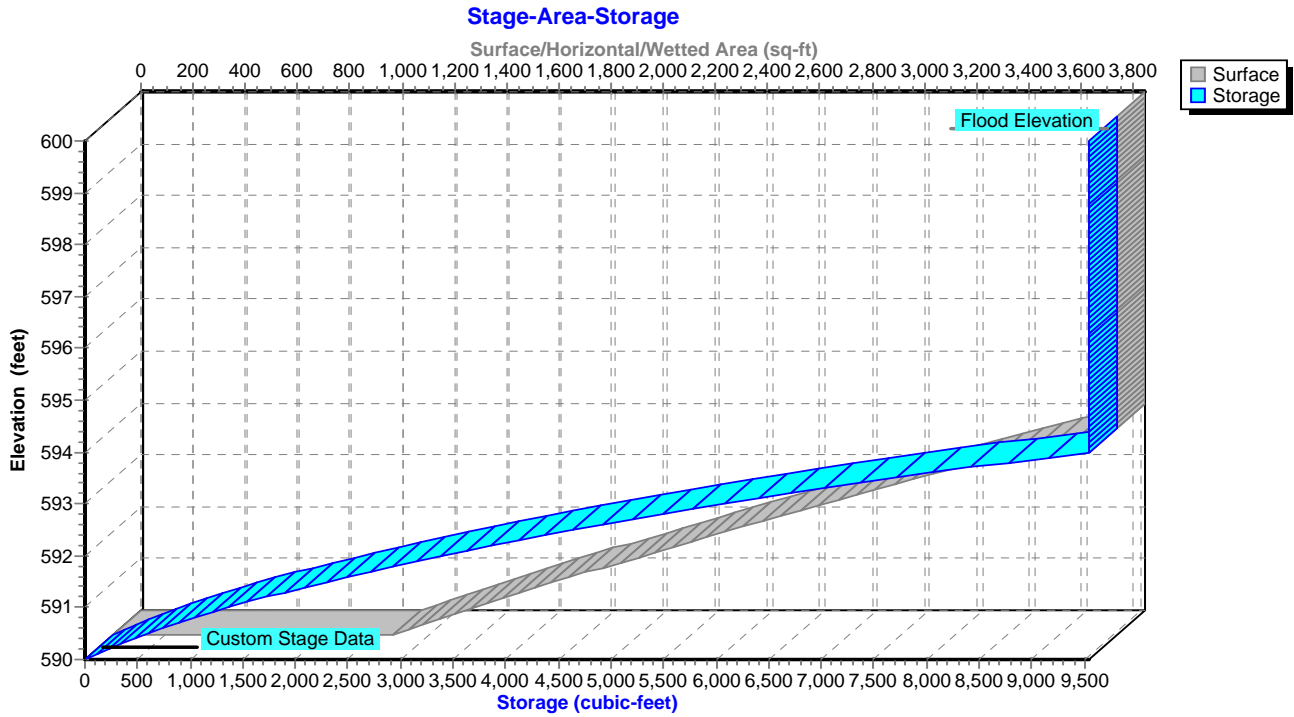


Pond 18P: BASIN 1 FOREBAY 100 YR LFB

Stage-Discharge



Pond 18P: BASIN 1 FOREBAY 100 YR LFB



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Type II 24-hr WqV Rainfall=1.14"

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Summary for Pond 21P: BASIN 2 100 YR LFB

Inflow Area = 7.600 ac, 78.42% Impervious, Inflow Depth = 0.26" for WqV event
 Inflow = 3.26 cfs @ 11.95 hrs, Volume= 0.167 af
 Outflow = 0.00 cfs @ 0.10 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 0.10 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 582.80' @ 24.35 hrs Surf.Area= 2,274 sf Storage= 7,274 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	578.75'	38,301 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
578.75	1	0	0
579.00	205	26	26
580.00	2,080	1,143	1,168
581.00	2,153	2,117	3,285
582.00	2,222	2,188	5,472
583.00	2,287	2,255	7,727
584.00	2,348	2,318	10,044
585.00	2,404	2,376	12,420
586.00	2,456	2,430	14,850
587.00	2,504	2,480	17,330
588.00	2,547	2,526	19,856
589.00	3,000	2,774	22,629
590.00	4,800	3,900	26,529
591.00	5,862	5,331	31,860
592.00	7,020	6,441	38,301

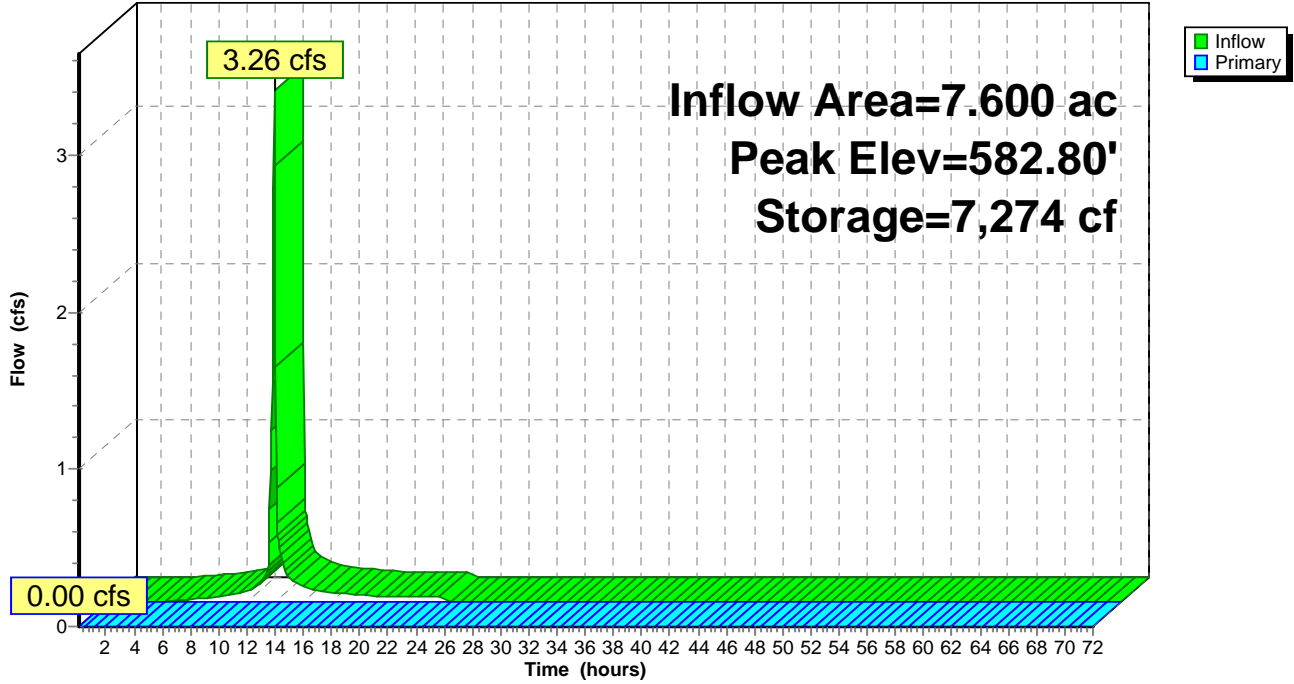
Device	Routing	Invert	Outlet Devices
#1	Primary	576.73'	24.0" Round Culvert L= 15.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 576.73' / 576.58' S= 0.0100 1' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	583.00'	18.0" W x 18.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	589.00'	30.0" x 60.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.00 cfs @ 0.10 hrs HW=578.75' (Free Discharge)

- 1=Culvert (Passes 0.00 cfs of 14.41 cfs potential flow)
- 2=Orifice/Grate (Controls 0.00 cfs)
- 3=Orifice/Grate (Controls 0.00 cfs)

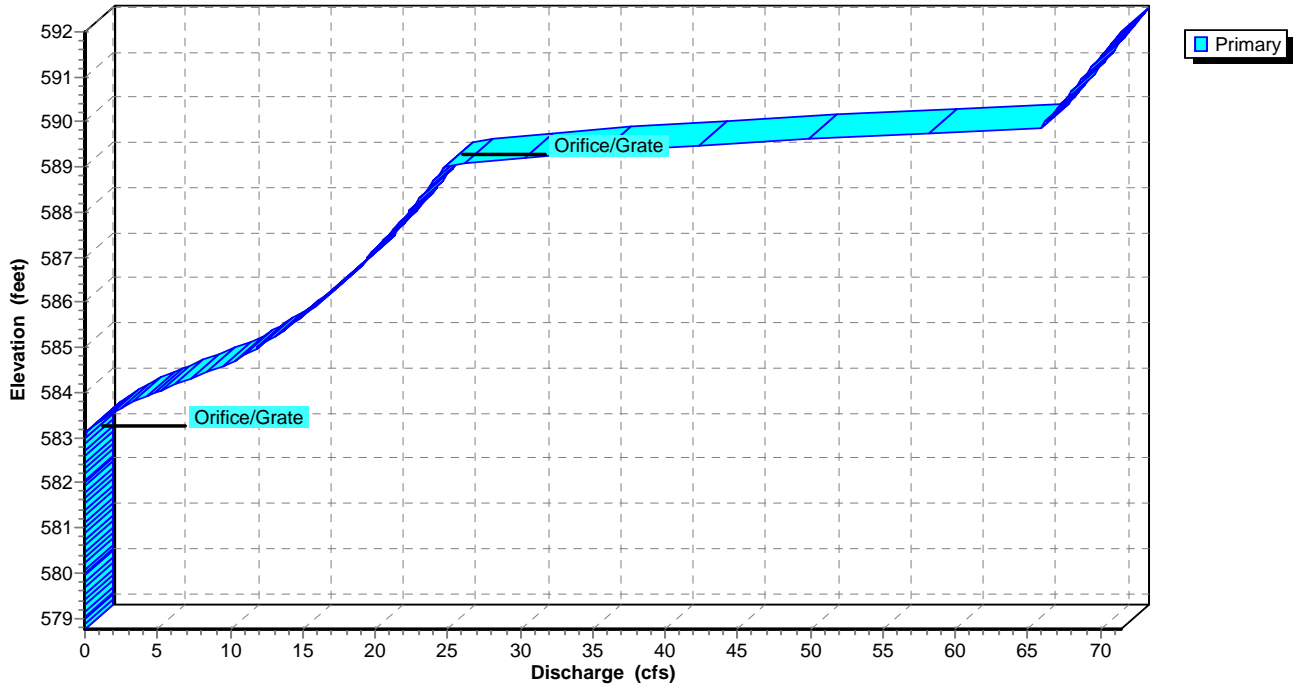
Pond 21P: BASIN 2 100 YR LFB

Hydrograph

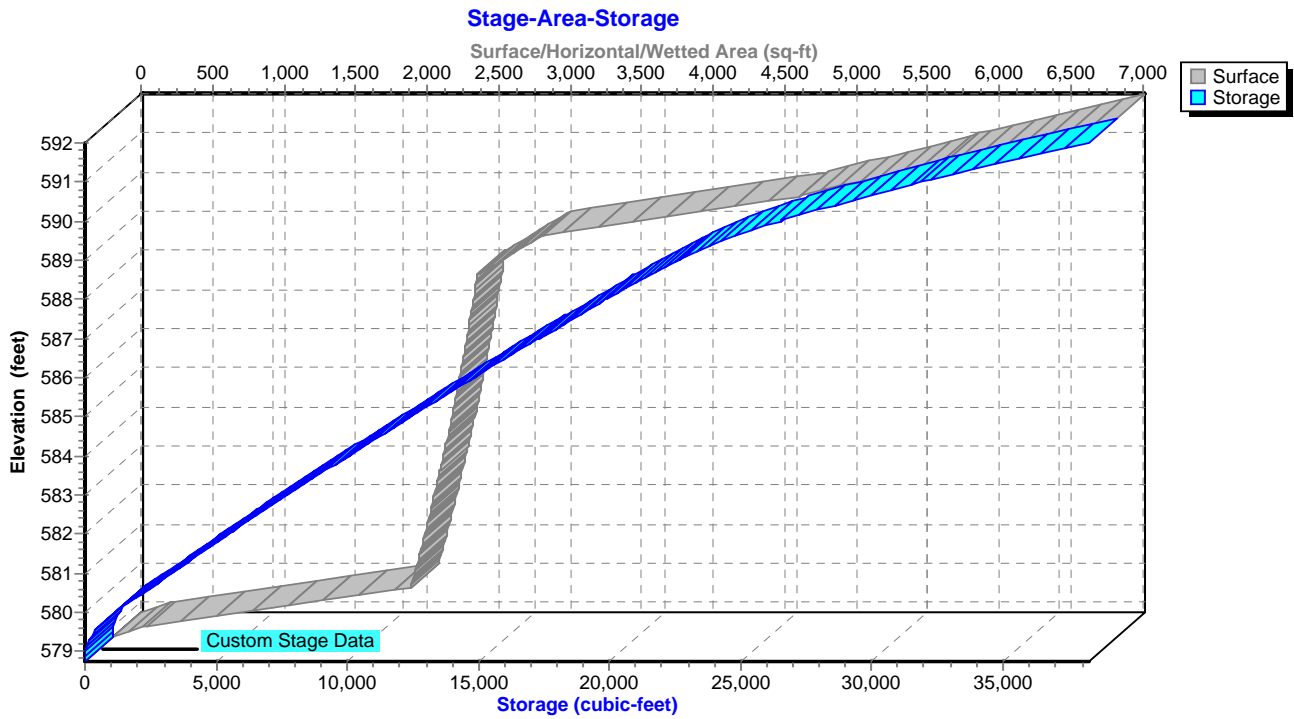


Pond 21P: BASIN 2 100 YR LFB

Stage-Discharge



Pond 21P: BASIN 2 100 YR LFB



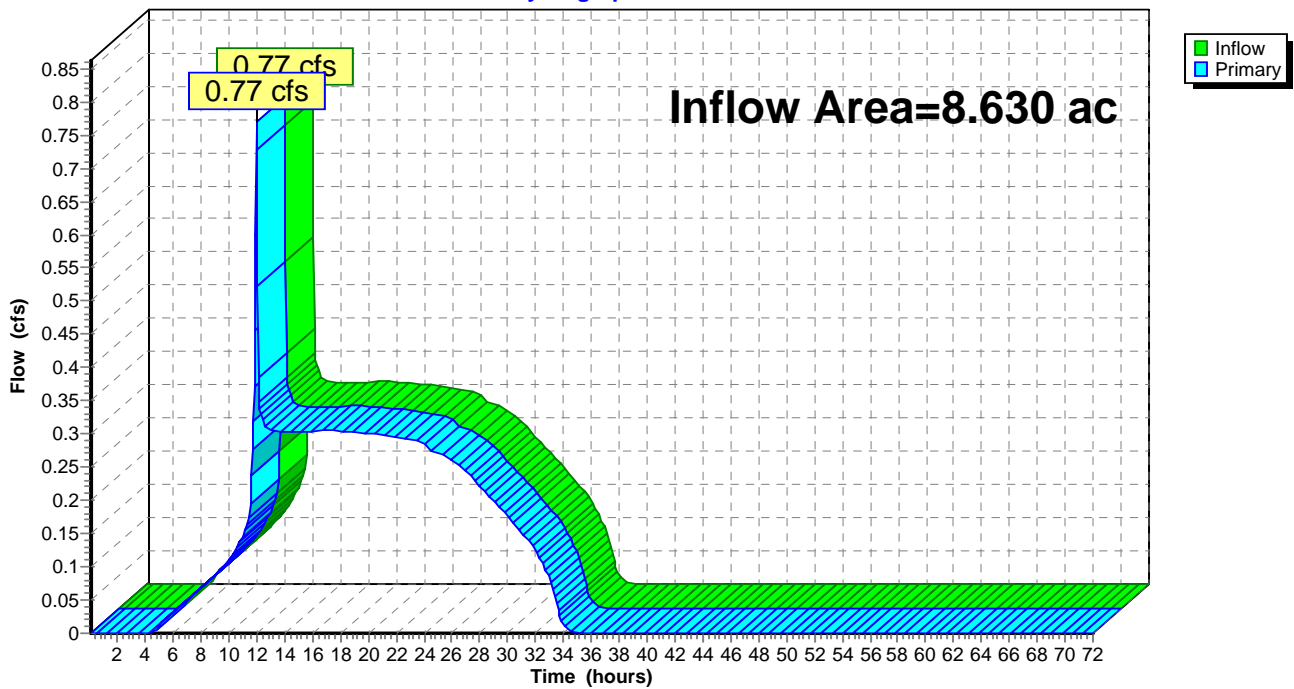
Summary for Link 14L: POST DEVELOPED RUNOFF

Inflow Area = 8.630 ac, 72.42% Impervious, Inflow Depth = 0.72" for WqV event
Inflow = 0.77 cfs @ 11.97 hrs, Volume= 0.516 af
Primary = 0.77 cfs @ 11.97 hrs, Volume= 0.516 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 10R : 201 TO JS

Primary outflow = Inflow, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs

Link 14L: POST DEVELOPED RUNOFF

Hydrograph



Summary for Subcatchment 1S: EXISTING CONDITIONS

Runoff = 6.42 cfs @ 12.03 hrs, Volume= 0.387 af, Depth= 0.57"

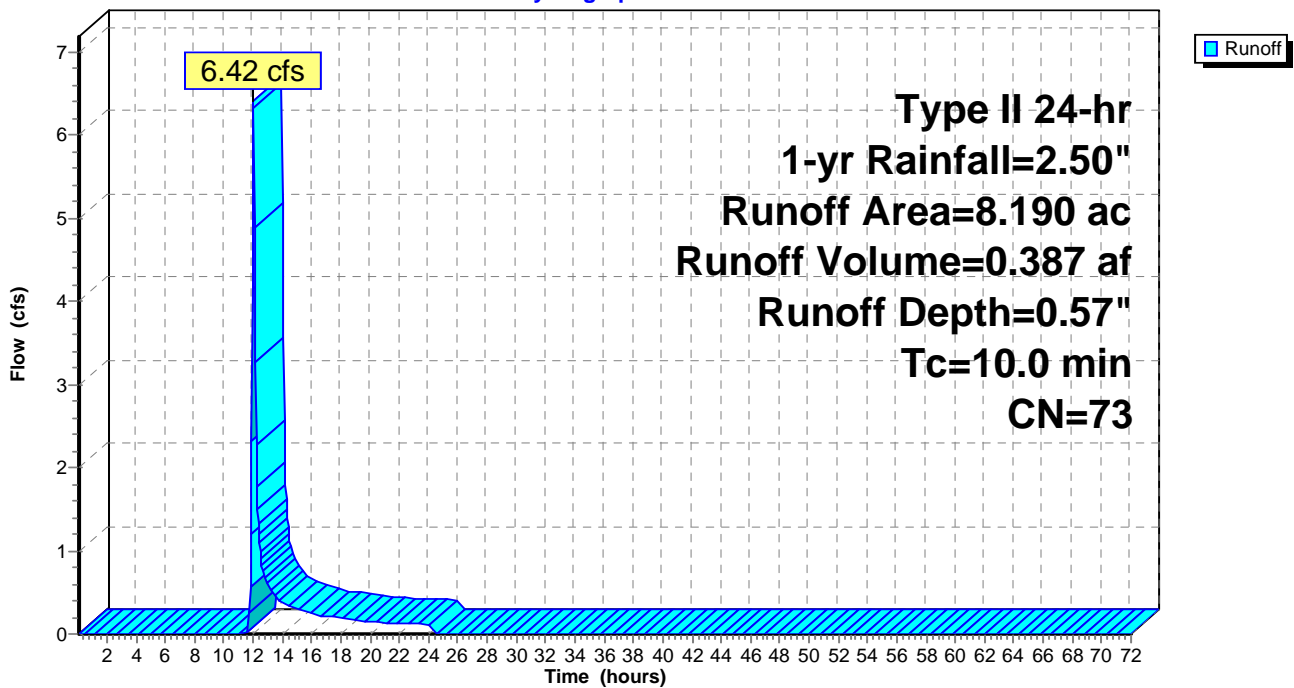
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 1-yr Rainfall=2.50"

Area (ac)	CN	Description
* 8.190	73	Woods, Good, HSG C
8.190		100.00% Pervious Area

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

Subcatchment 1S: EXISTING CONDITIONS

Hydrograph



Summary for Subcatchment 2S: PROPOSED CONDITIONS (NO DETENTION)

Runoff = 25.82 cfs @ 11.95 hrs, Volume= 1.361 af, Depth= 1.99"

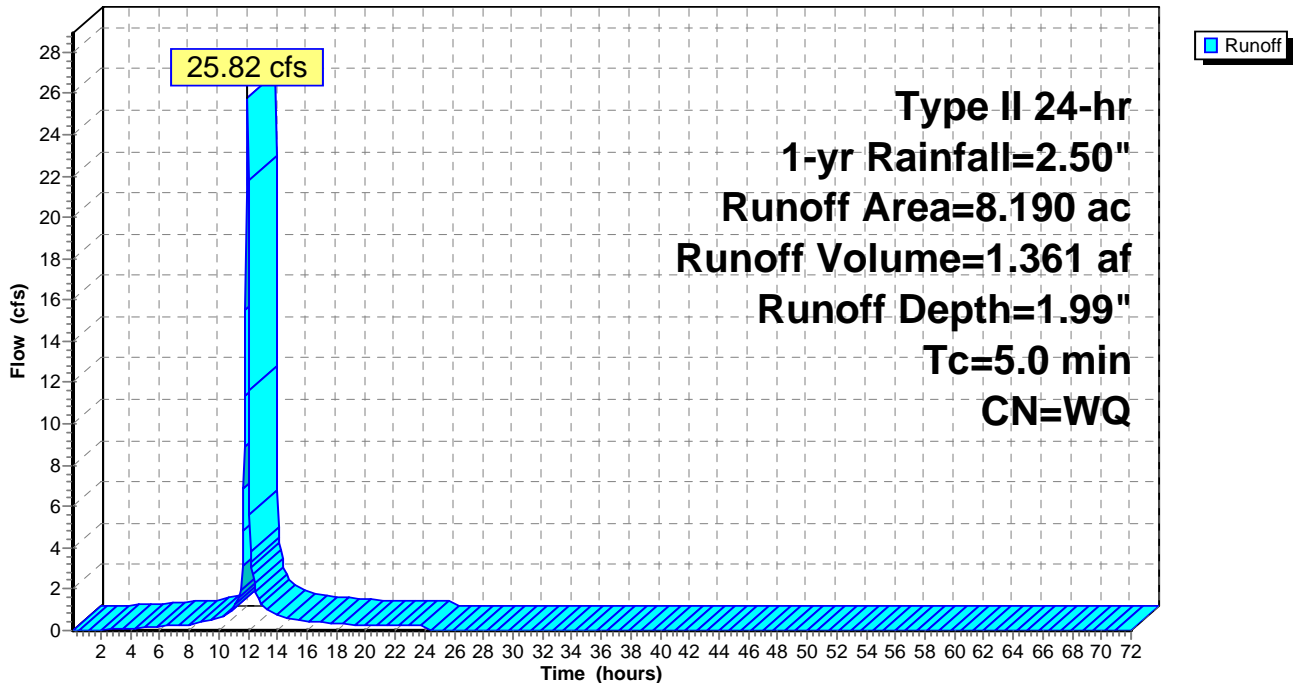
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 1-yr Rainfall=2.50"

Area (ac)	CN	Description
6.550	98	Paved parking, HSG C
1.640	80	>75% Grass cover, Good, HSG D
8.190		Weighted Average
1.640		20.02% Pervious Area
6.550		79.98% Impervious Area

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

Subcatchment 2S: PROPOSED CONDITIONS (NO DETENTION)

Hydrograph



Summary for Subcatchment 3S: OFFSITE TO ONSITE TO BASIN 1

Runoff = 0.66 cfs @ 11.96 hrs, Volume= 0.033 af, Depth= 1.18"
 Routed to Pond 13P : BASIN 1 FOREBAY

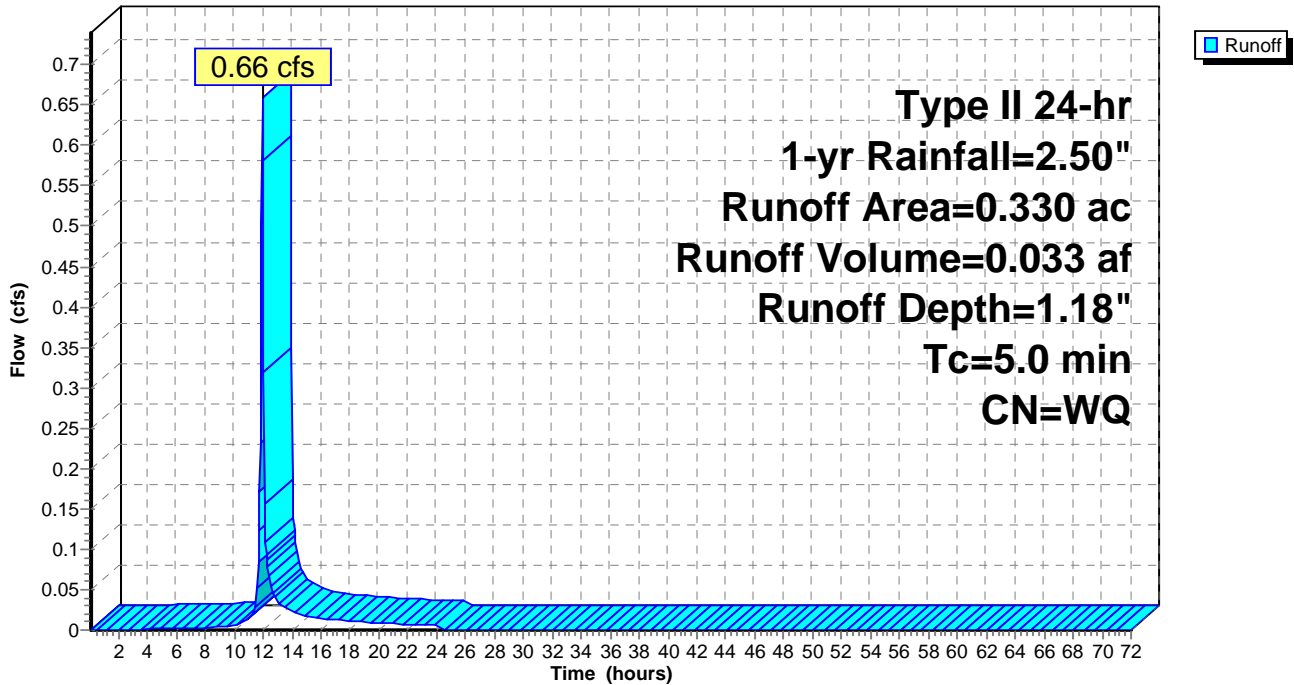
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 1-yr Rainfall=2.50"

Area (ac)	CN	Description
0.070	98	Paved parking, HSG D
0.260	80	>75% Grass cover, Good, HSG D
<hr/>		
0.330		Weighted Average
0.260		78.79% Pervious Area
0.070		21.21% Impervious Area

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

Subcatchment 3S: OFFSITE TO ONSITE TO BASIN 1

Hydrograph



Summary for Subcatchment 4S: ONSITE TO BASIN 1

Runoff = 14.70 cfs @ 11.95 hrs, Volume= 0.777 af, Depth= 2.05"
 Routed to Pond 13P : BASIN 1 FOREBAY

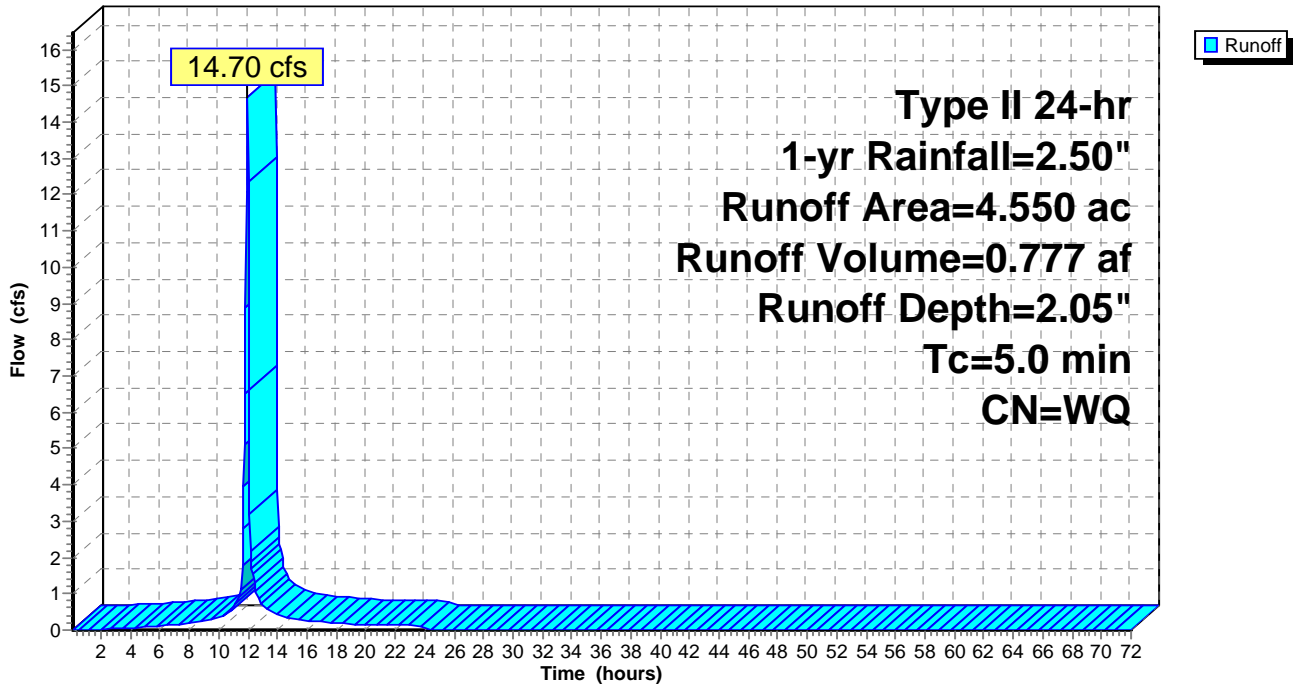
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 1-yr Rainfall=2.50"

Area (ac)	CN	Description
3.820	98	Paved parking, HSG D
0.730	80	>75% Grass cover, Good, HSG D
4.550		Weighted Average
0.730		16.04% Pervious Area
3.820		83.96% Impervious Area

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

Subcatchment 4S: ONSITE TO BASIN 1

Hydrograph



Summary for Subcatchment 5S: OFFSITE TO ONSITE TO BASIN 2

Runoff = 0.21 cfs @ 11.96 hrs, Volume= 0.010 af, Depth= 0.89"
 Routed to Pond 9P : BASIN 2

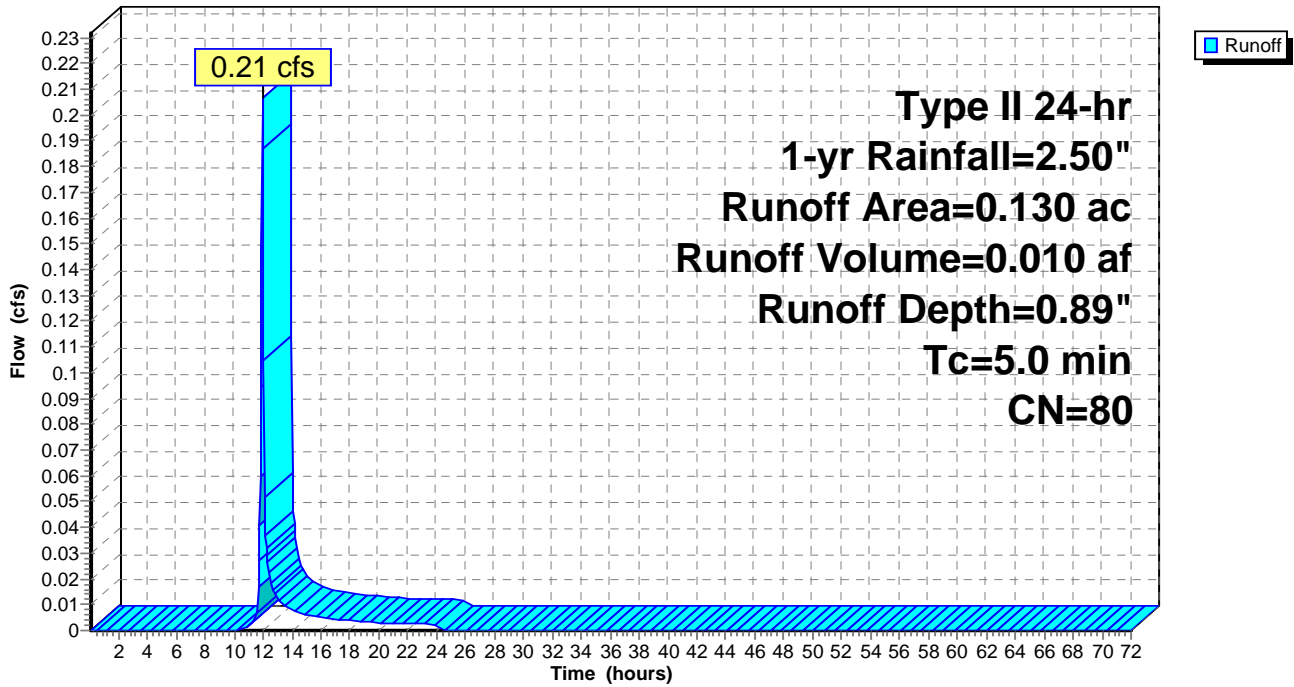
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 1-yr Rainfall=2.50"

Area (ac)	CN	Description
0.130	80	>75% Grass cover, Good, HSG D
0.130		100.00% Pervious Area

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

Subcatchment 5S: OFFSITE TO ONSITE TO BASIN 2

Hydrograph



Summary for Subcatchment 6S: ONSITE TO BASIN 2

Runoff = 8.16 cfs @ 11.95 hrs, Volume= 0.430 af, Depth= 1.99"
 Routed to Pond 9P : BASIN 2

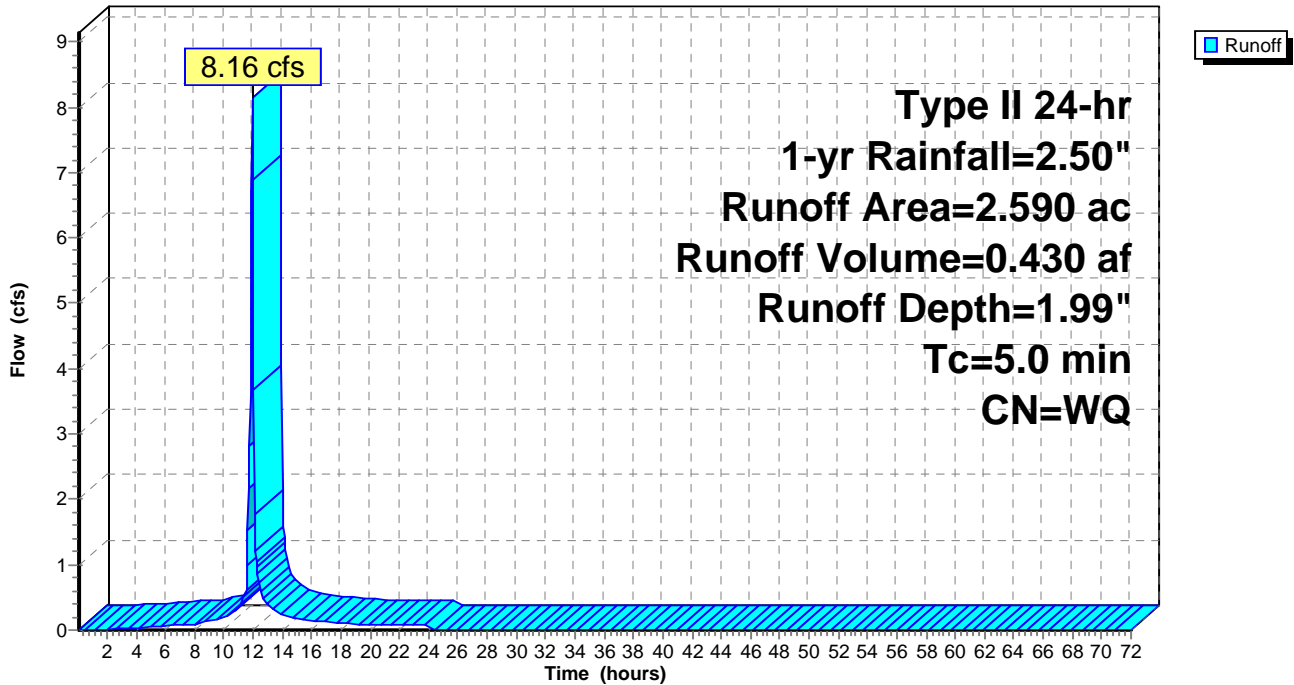
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 1-yr Rainfall=2.50"

Area (ac)	CN	Description
2.070	98	Paved parking, HSG D
0.520	80	>75% Grass cover, Good, HSG D
2.590		Weighted Average
0.520		20.08% Pervious Area
2.070		79.92% Impervious Area

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

Subcatchment 6S: ONSITE TO BASIN 2

Hydrograph



Summary for Subcatchment 7S: ONSITE TO OFFSITE BYPASS

Runoff = 2.20 cfs @ 11.96 hrs, Volume= 0.110 af, Depth= 1.28"

Routed to Link 14L : POST DEVELOPED RUNOFF

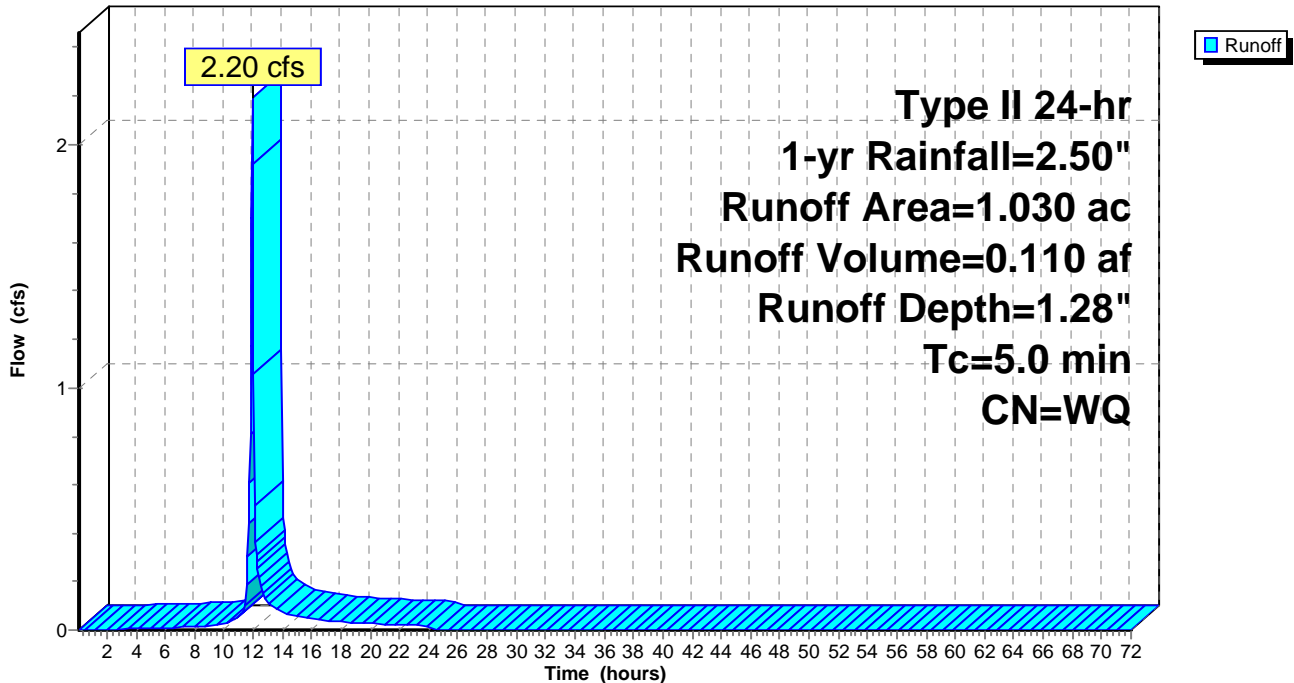
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 1-yr Rainfall=2.50"

Area (ac)	CN	Description
0.290	98	Paved parking, HSG C
0.740	80	>75% Grass cover, Good, HSG D
1.030		Weighted Average
0.740		71.84% Pervious Area
0.290		28.16% Impervious Area

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

Subcatchment 7S: ONSITE TO OFFSITE BYPASS

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.50"

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Summary for Subcatchment 11S: AREA TO BRYAN RD CULVERT

Runoff = 11.61 cfs @ 12.00 hrs, Volume= 0.672 af, Depth= 1.66"
 Routed to Pond 12P : BRYAN RD CULVERT

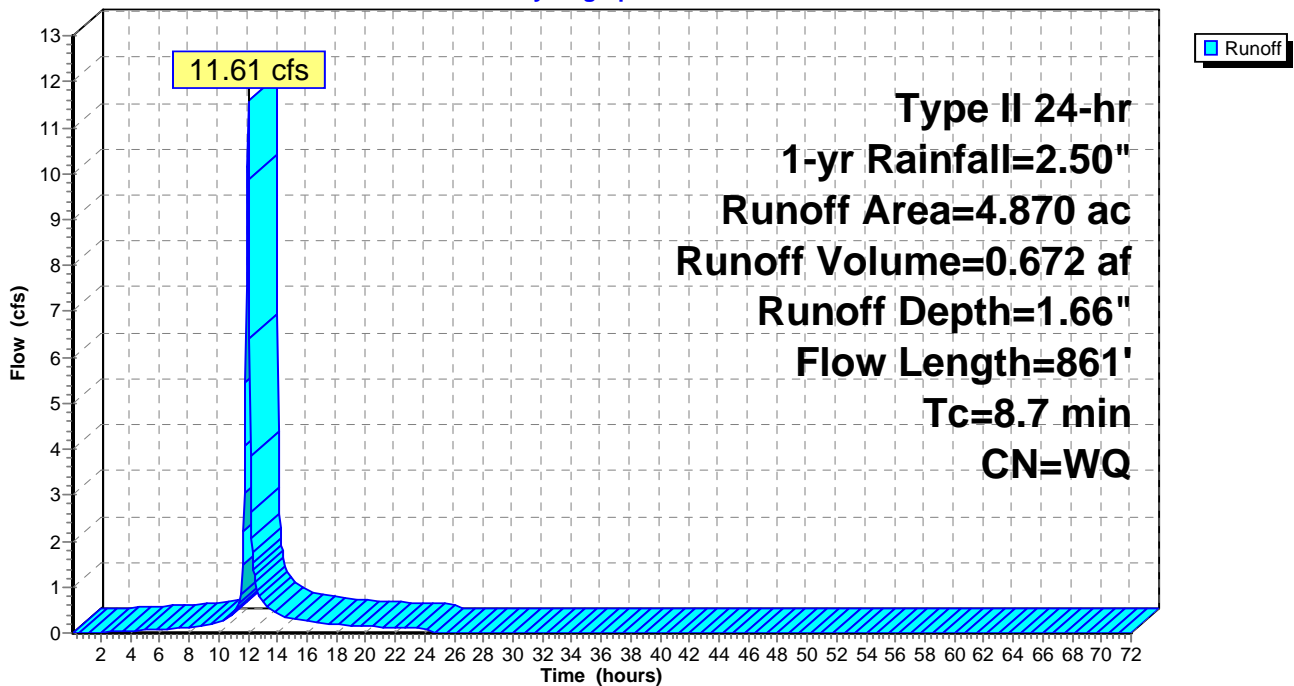
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 1-yr Rainfall=2.50"

Area (ac)	CN	Description
2.700	98	Paved parking, HSG C
2.170	80	>75% Grass cover, Good, HSG D
4.870		Weighted Average
2.170		44.56% Pervious Area
2.700		55.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0200	1.26		Sheet Flow, n= 0.013 P2= 3.50"
2.5	493	0.0430	3.34		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
4.9	268	0.0215	0.91	54.47	Channel Flow, Area= 60.0 sf Perim= 60.0' r= 1.00' n= 0.240 Sheet flow over Dense Grass
8.7	861	Total			

Subcatchment 11S: AREA TO BRYAN RD CULVERT

Hydrograph



Summary for Subcatchment 12S: AREAS 30 & 38

Runoff = 4.24 cfs @ 11.95 hrs, Volume= 0.219 af, Depth= 1.65"
 Routed to Pond 11P : DUAL CULVERTS

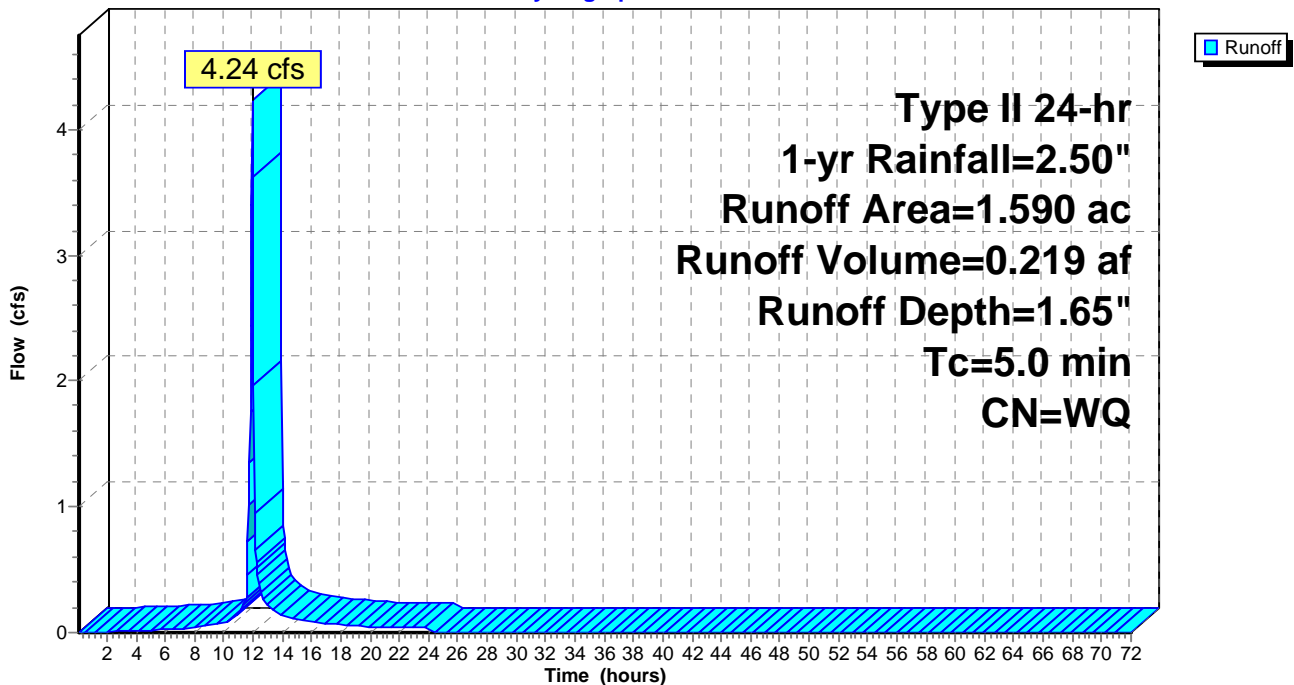
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 1-yr Rainfall=2.50"

Area (ac)	CN	Description
0.200	80	>75% Grass cover, Good, HSG D
0.880	98	Paved parking, HSG D
0.510	80	>75% Grass cover, Good, HSG D
1.590		Weighted Average
0.710		44.65% Pervious Area
0.880		55.35% Impervious Area

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

Subcatchment 12S: AREAS 30 & 38

Hydrograph



Summary for Subcatchment 15S: OFFSITE TO ONSITE TO BASIN 1

Runoff = 0.66 cfs @ 11.96 hrs, Volume= 0.033 af, Depth= 1.18"

Routed to Pond 18P : BASIN 1 FOREBAY 100 YR LFB

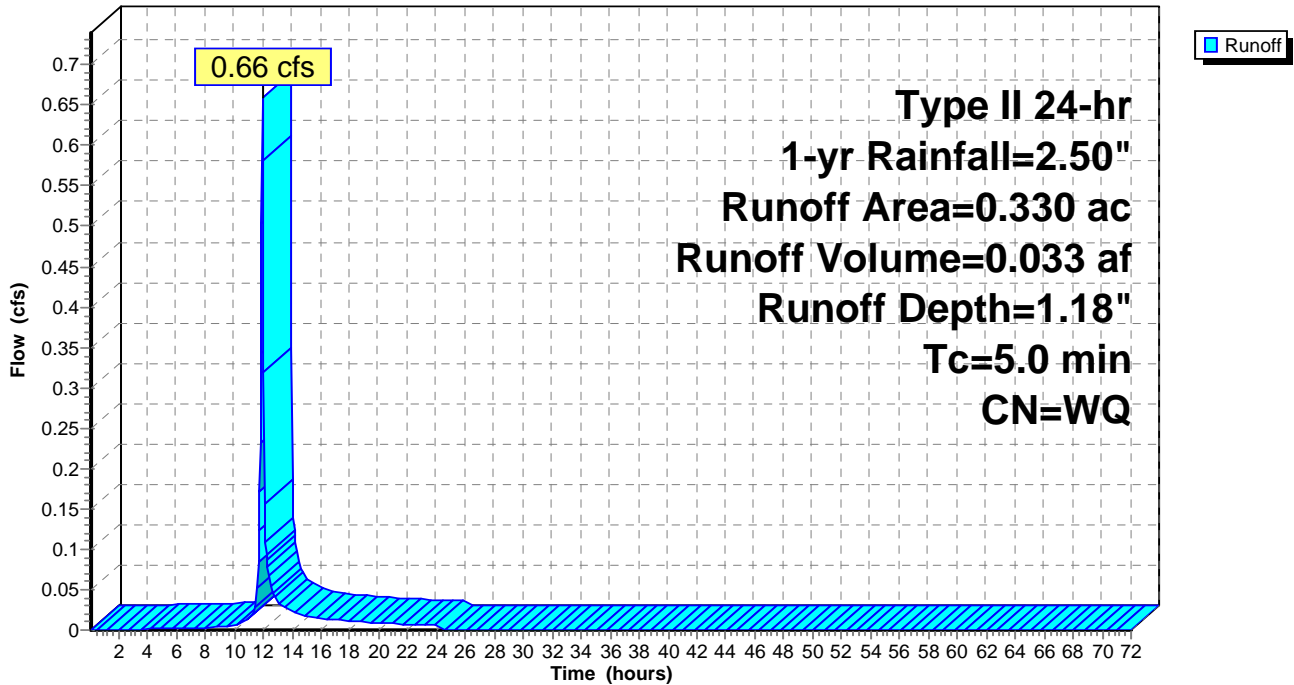
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 1-yr Rainfall=2.50"

Area (ac)	CN	Description
0.070	98	Paved parking, HSG D
0.260	80	>75% Grass cover, Good, HSG D
0.330		Weighted Average
0.260		78.79% Pervious Area
0.070		21.21% Impervious Area

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

Subcatchment 15S: OFFSITE TO ONSITE TO BASIN 1

Hydrograph



Summary for Subcatchment 16S: ONSITE TO BASIN 1

Runoff = 14.70 cfs @ 11.95 hrs, Volume= 0.777 af, Depth= 2.05"

Routed to Pond 18P : BASIN 1 FOREBAY 100 YR LFB

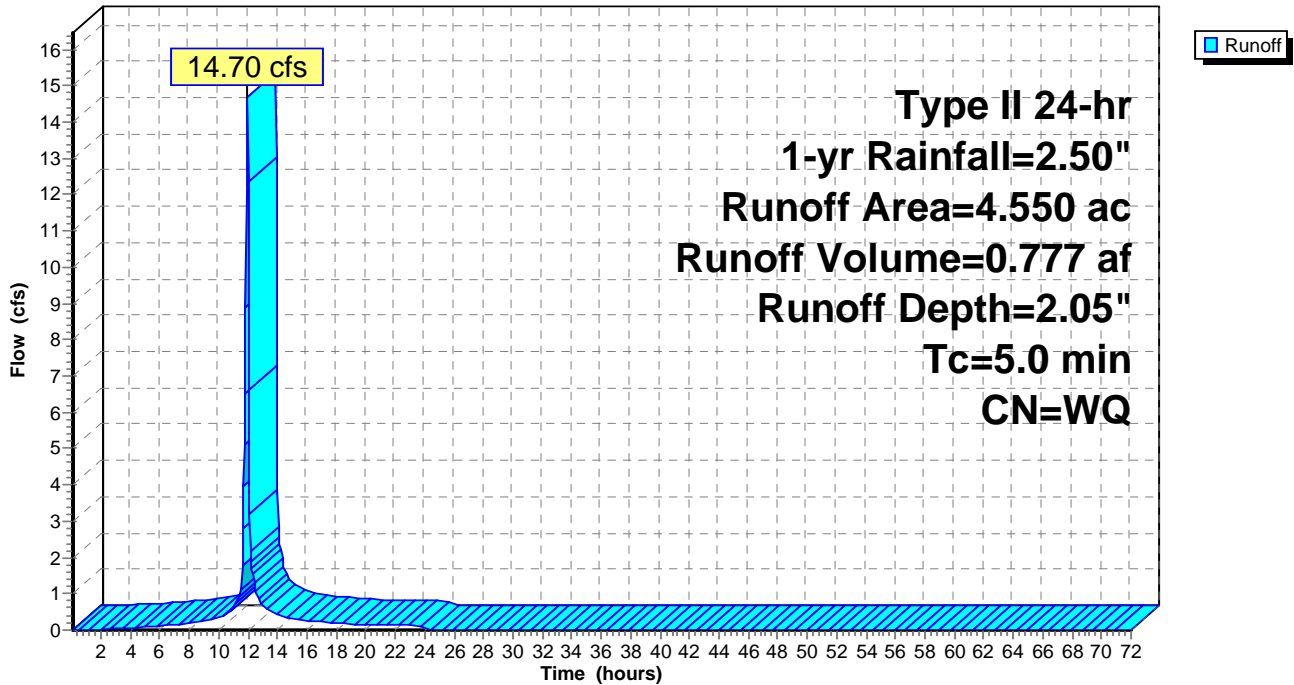
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 1-yr Rainfall=2.50"

Area (ac)	CN	Description
3.820	98	Paved parking, HSG D
0.730	80	>75% Grass cover, Good, HSG D
4.550		Weighted Average
0.730		16.04% Pervious Area
3.820		83.96% Impervious Area

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

Subcatchment 16S: ONSITE TO BASIN 1

Hydrograph



Summary for Subcatchment 19S: OFFSITE TO ONSITE TO BASIN 2

Runoff = 0.21 cfs @ 11.96 hrs, Volume= 0.010 af, Depth= 0.89"
 Routed to Pond 21P : BASIN 2 100 YR LFB

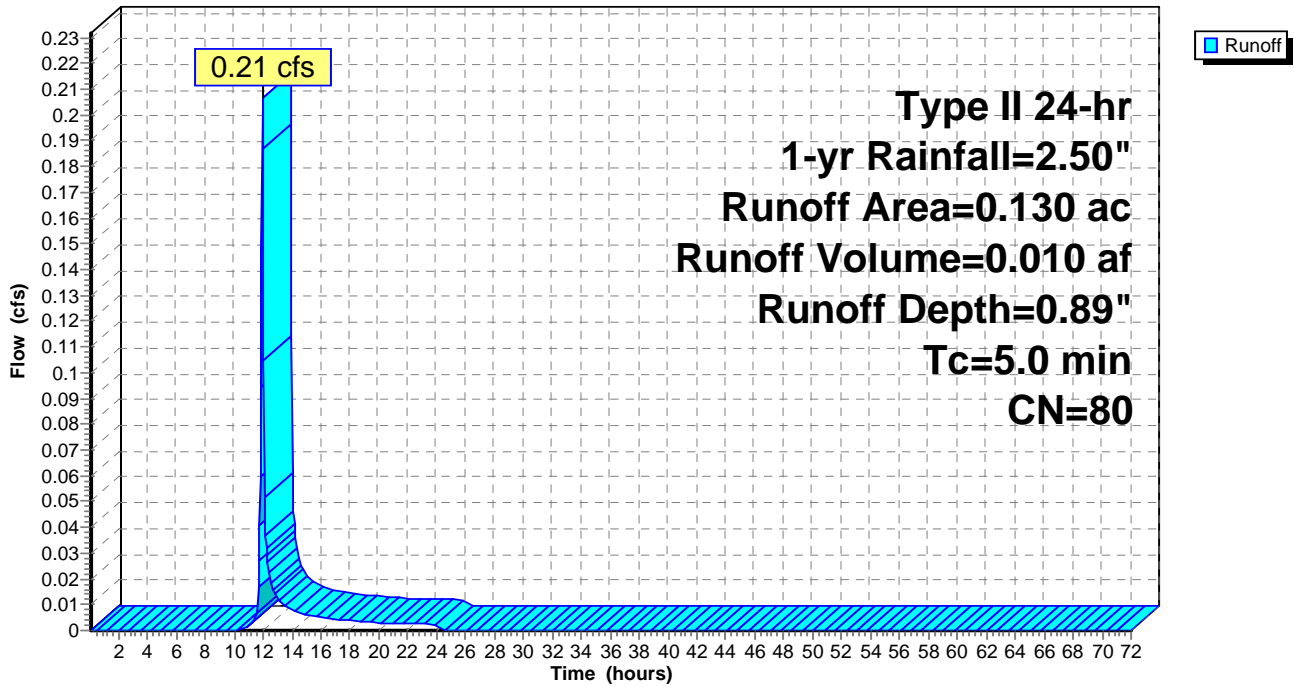
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 1-yr Rainfall=2.50"

Area (ac)	CN	Description
0.130	80	>75% Grass cover, Good, HSG D
0.130		100.00% Pervious Area

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

Subcatchment 19S: OFFSITE TO ONSITE TO BASIN 2

Hydrograph



Summary for Subcatchment 20S: ONSITE TO BASIN 2

Runoff = 8.16 cfs @ 11.95 hrs, Volume= 0.430 af, Depth= 1.99"

Routed to Pond 21P : BASIN 2 100 YR LFB

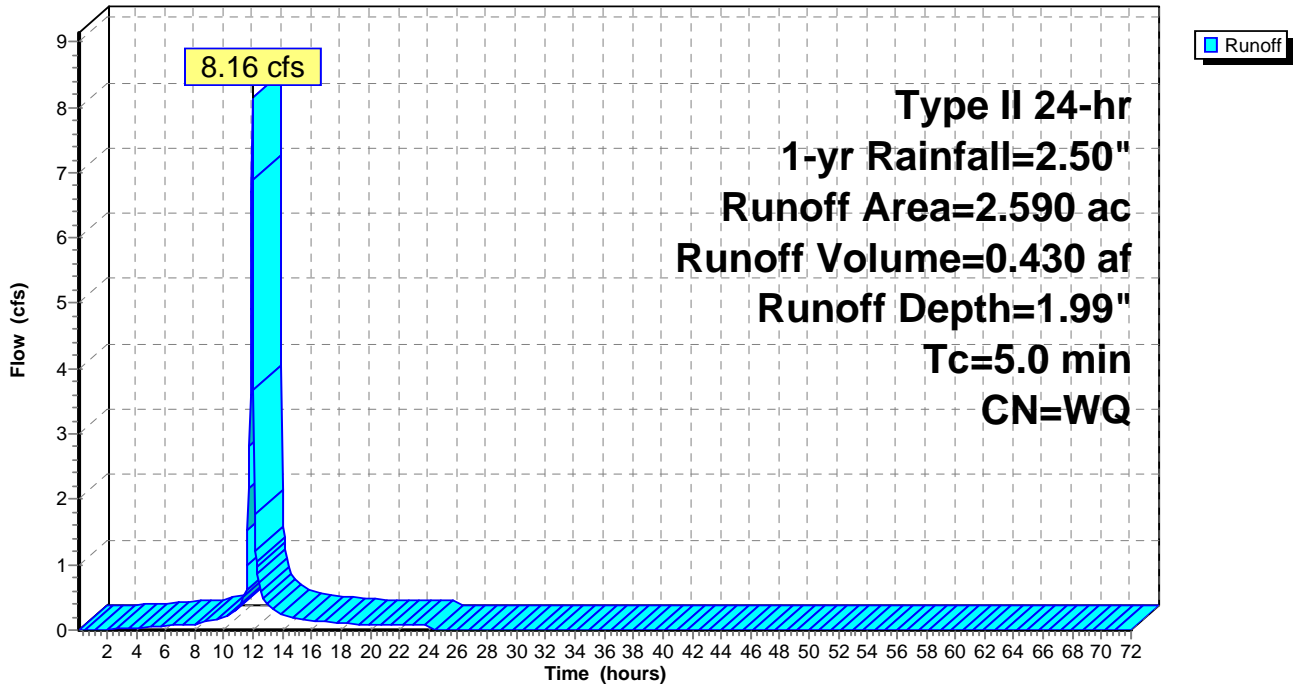
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 1-yr Rainfall=2.50"

Area (ac)	CN	Description
2.070	98	Paved parking, HSG D
0.520	80	>75% Grass cover, Good, HSG D
2.590		Weighted Average
0.520		20.08% Pervious Area
2.070		79.92% Impervious Area

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

Subcatchment 20S: ONSITE TO BASIN 2

Hydrograph



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Type II 24-hr 1-yr Rainfall=2.50"

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Summary for Pond 8P: BASIN 1

Inflow Area = 4.880 ac, 79.71% Impervious, Inflow Depth = 1.99" for 1-yr event
 Inflow = 6.88 cfs @ 11.96 hrs, Volume= 0.809 af
 Outflow = 0.75 cfs @ 12.99 hrs, Volume= 0.809 af, Atten= 89%, Lag= 61.7 min
 Primary = 0.75 cfs @ 12.99 hrs, Volume= 0.809 af
 Routed to Pond 9P : BASIN 2

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 594.18' @ 12.99 hrs Surf.Area= 4,738 sf Storage= 9,977 cf
 Flood Elev= 600.00' Surf.Area= 17,840 sf Storage= 83,183 cf

Plug-Flow detention time= 258.7 min calculated for 0.809 af (100% of inflow)
 Center-of-Mass det. time= 258.5 min (1,281.9 - 1,023.4)

Volume	Invert	Avail.Storage	Storage Description
#1	589.00'	83,183 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
589.00	2	0	0
590.00	897	450	450
591.00	1,487	1,192	1,642
592.00	2,133	1,810	3,452
593.00	2,836	2,485	5,936
594.00	3,695	3,266	9,202
595.00	9,367	6,531	15,733
596.00	10,948	10,158	25,890
597.00	12,586	11,767	37,657
598.00	14,281	13,434	51,091
599.00	16,032	15,157	66,247
600.00	17,840	16,936	83,183

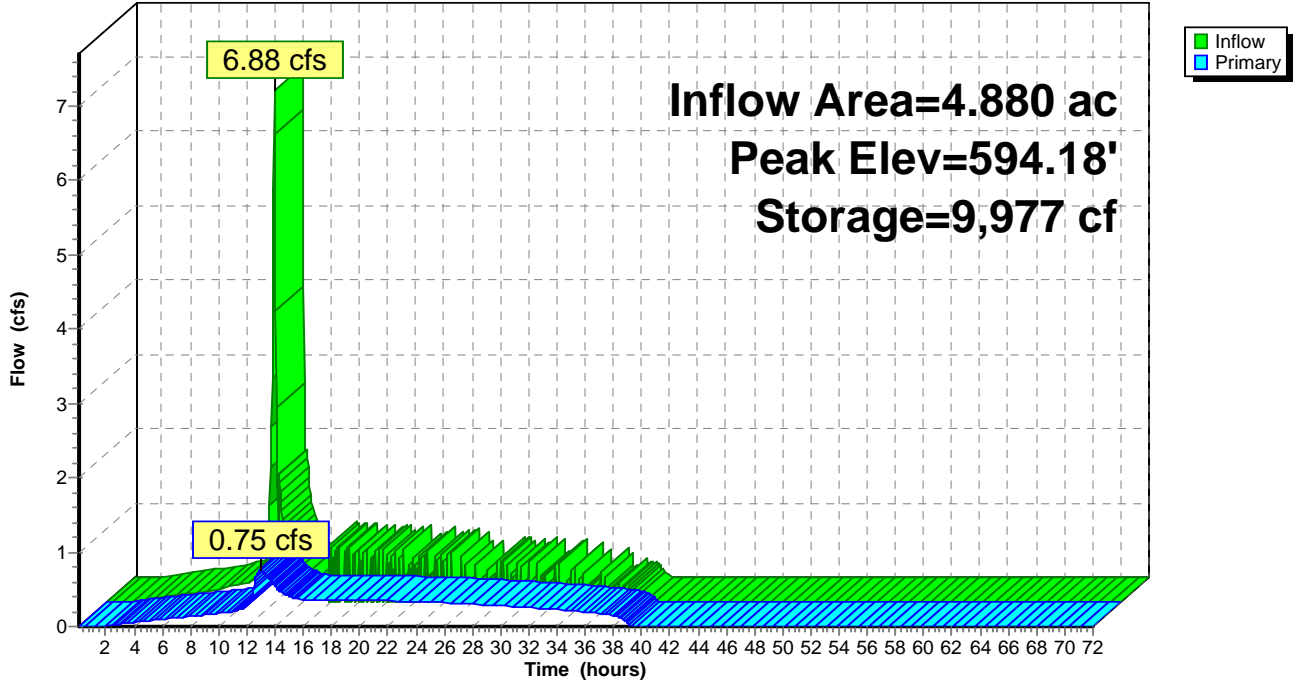
Device	Routing	Invert	Outlet Devices
#1	Primary	585.00'	24.0" Round RCP_Round 24" L= 184.2' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 585.00' / 583.16' S= 0.0100 1/ Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	589.00'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	594.00'	18.0" W x 18.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	598.00'	30.0" x 60.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.75 cfs @ 12.99 hrs HW=594.18' TW=583.31' (Dynamic Tailwater)

- 1=RCP_Round 24" (Passes 0.75 cfs of 42.63 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.37 cfs @ 10.85 fps)
- 3=Orifice/Grate (Orifice Controls 0.38 cfs @ 1.38 fps)
- 4=Orifice/Grate (Controls 0.00 cfs)

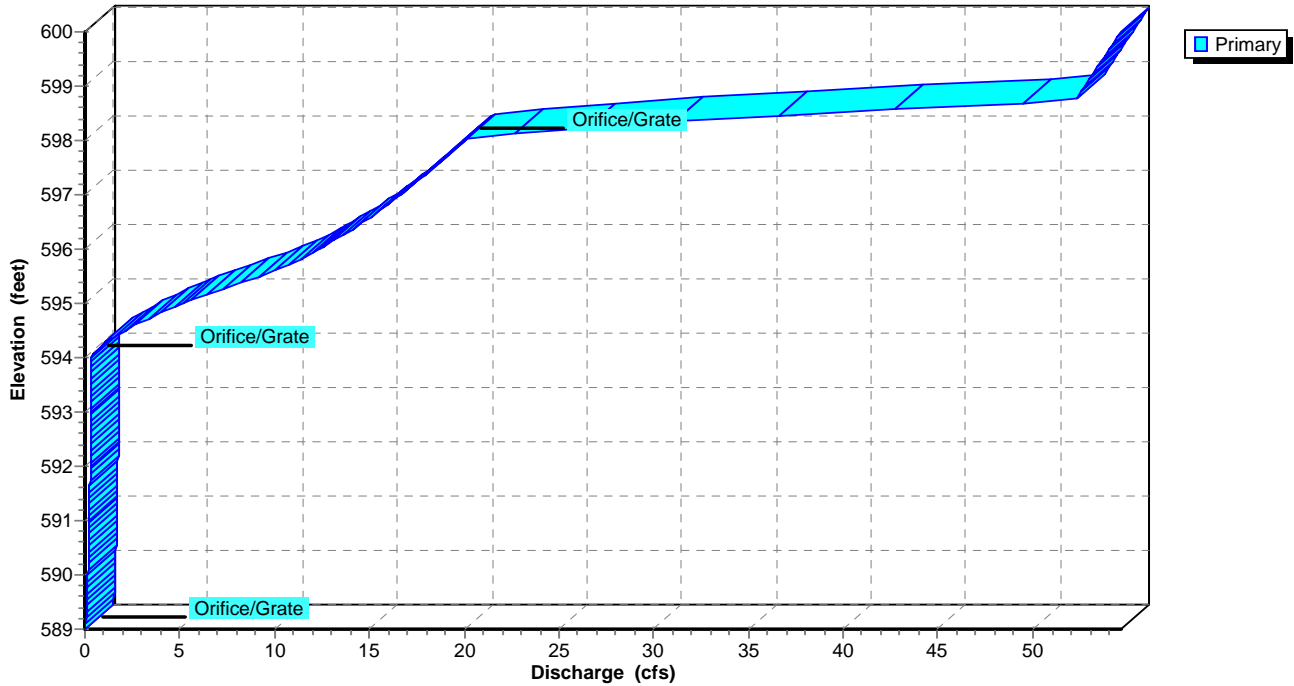
Pond 8P: BASIN 1

Hydrograph

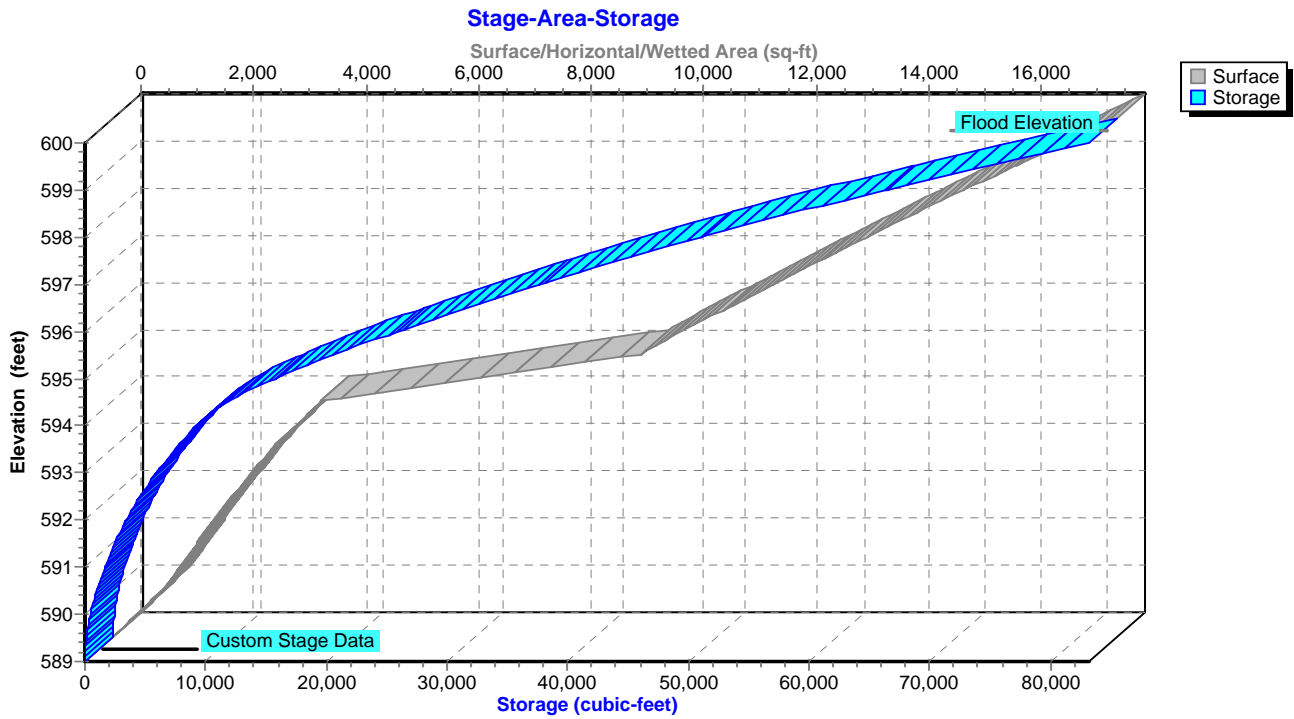


Pond 8P: BASIN 1

Stage-Discharge



Pond 8P: BASIN 1



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Type II 24-hr 1-yr Rainfall=2.50"

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Summary for Pond 9P: BASIN 2

Inflow Area = 7.600 ac, 78.42% Impervious, Inflow Depth = 1.97" for 1-yr event
 Inflow = 8.68 cfs @ 11.95 hrs, Volume= 1.249 af
 Outflow = 4.47 cfs @ 12.06 hrs, Volume= 1.249 af, Atten= 49%, Lag= 6.2 min
 Primary = 4.47 cfs @ 12.06 hrs, Volume= 1.249 af
 Routed to Link 14L : POST DEVELOPED RUNOFF

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 583.90' @ 12.06 hrs Surf.Area= 2,342 sf Storage= 9,809 cf

Plug-Flow detention time= 249.1 min calculated for 1.249 af (100% of inflow)
 Center-of-Mass det. time= 248.0 min (1,348.9 - 1,100.8)

Volume	Invert	Avail.Storage	Storage Description
#1	578.75'	38,298 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
578.75	1	0	0
579.00	205	26	26
580.00	2,080	1,143	1,168
581.00	2,152	2,116	3,284
582.00	2,222	2,187	5,471
583.00	2,287	2,255	7,726
584.00	2,348	2,318	10,043
585.00	2,404	2,376	12,419
586.00	2,456	2,430	14,849
587.00	2,504	2,480	17,329
588.00	2,547	2,526	19,855
589.00	2,998	2,773	22,627
590.00	4,800	3,899	26,526
591.00	5,862	5,331	31,857
592.00	7,020	6,441	38,298

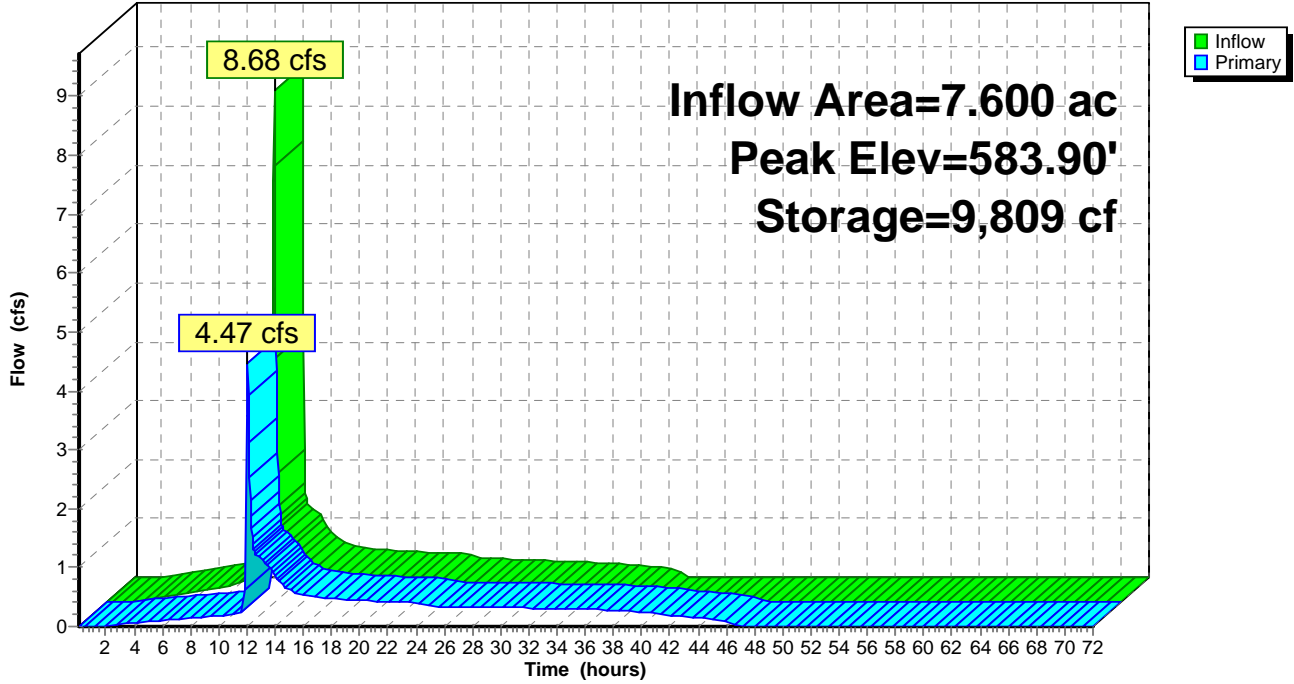
Device	Routing	Invert	Outlet Devices
#1	Primary	576.73'	30.0" Round RCP_Round 30" L= 15.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 576.73' / 576.58' S= 0.0100 1/ S= 0.0100 1/ Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	579.00'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	583.00'	18.0" W x 18.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	589.00'	30.0" x 60.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.39 cfs @ 12.06 hrs HW=583.89' TW=0.00' (Dynamic Tailwater)

- 1=RCP_Round 30" (Passes 4.39 cfs of 71.81 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.36 cfs @ 10.53 fps)
- 3=Orifice/Grate (Orifice Controls 4.03 cfs @ 3.03 fps)
- 4=Orifice/Grate (Controls 0.00 cfs)

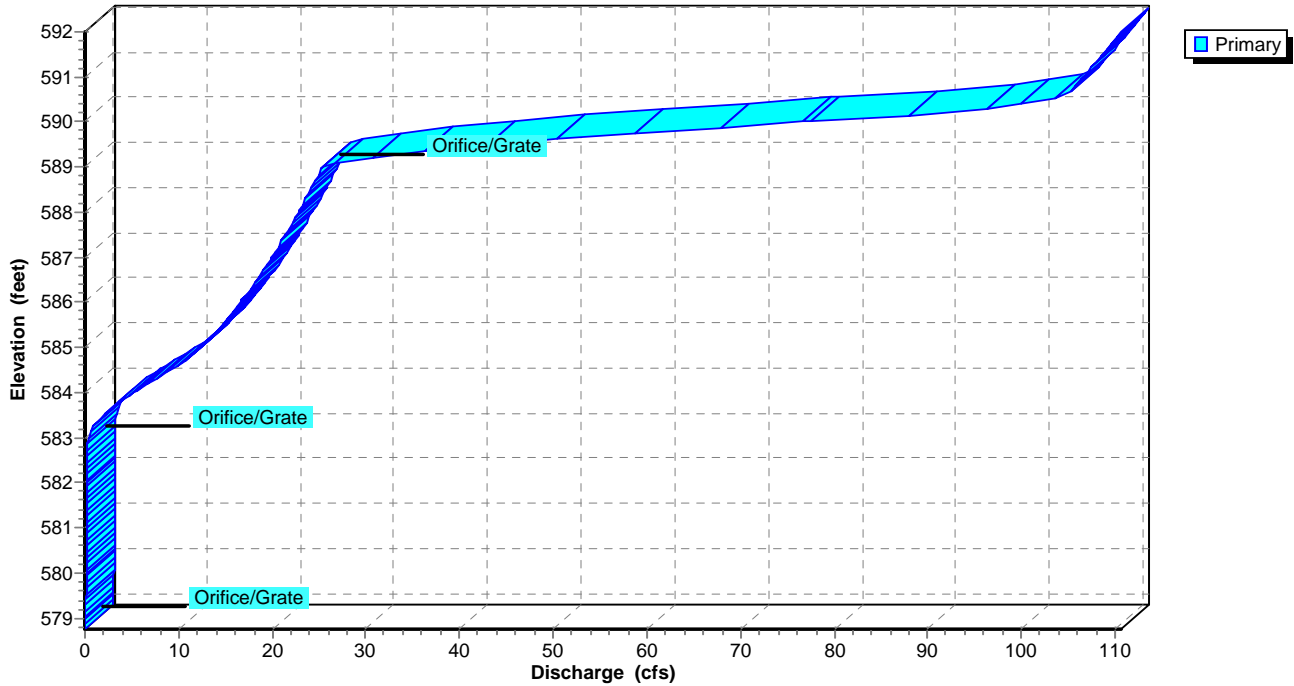
Pond 9P: BASIN 2

Hydrograph

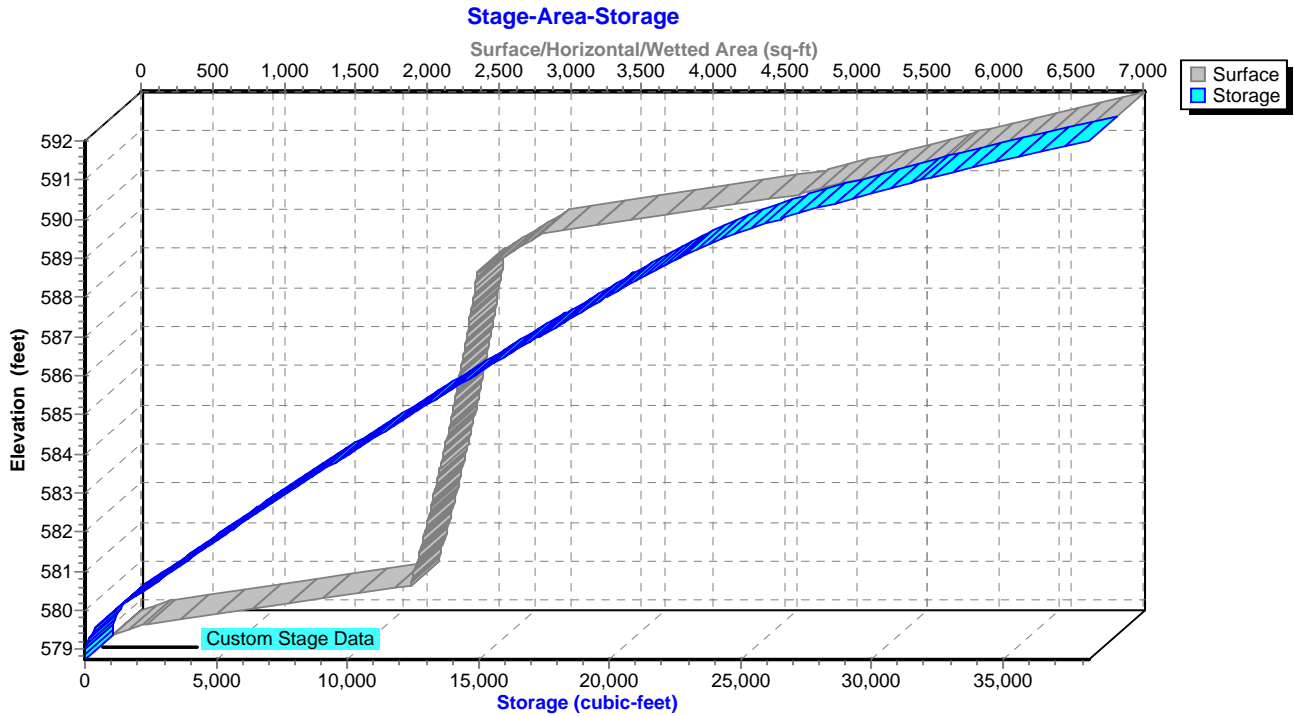


Pond 9P: BASIN 2

Stage-Discharge



Pond 9P: BASIN 2



Summary for Pond 10R: 201 TO JS

Inflow Area = 8.630 ac, 72.42% Impervious, Inflow Depth = 1.89" for 1-yr event
 Inflow = 5.64 cfs @ 12.03 hrs, Volume= 1.358 af
 Outflow = 5.64 cfs @ 12.03 hrs, Volume= 1.358 af, Atten= 0%, Lag= 0.0 min
 Primary = 5.64 cfs @ 12.03 hrs, Volume= 1.358 af
 Routed to Pond 11P : DUAL CULVERTS

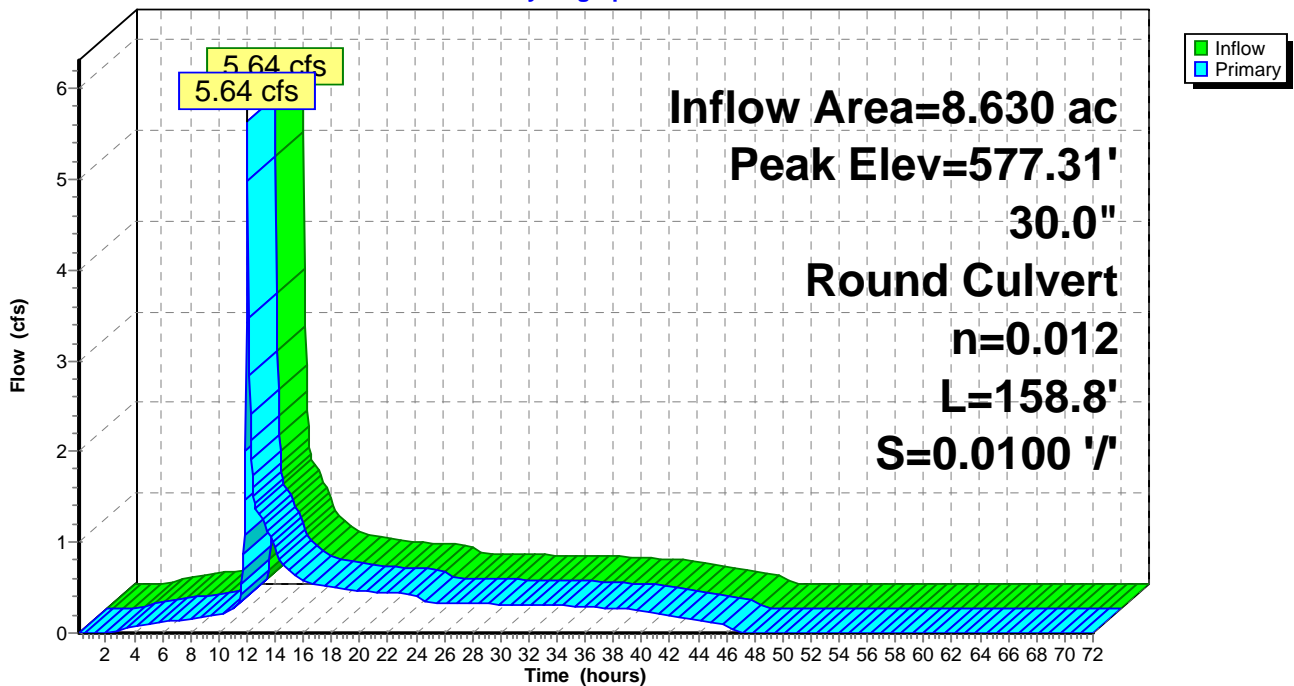
Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 577.31' @ 12.03 hrs
 Flood Elev= 583.00'

Device #	Routing	Invert	Outlet Devices
#1	Primary	576.36'	30.0" Round Culvert L= 158.8' Ke= 0.500 Inlet / Outlet Invert= 576.36' / 574.77' S= 0.0100 '/ Cc= 0.900 n= 0.012, Flow Area= 4.91 sf

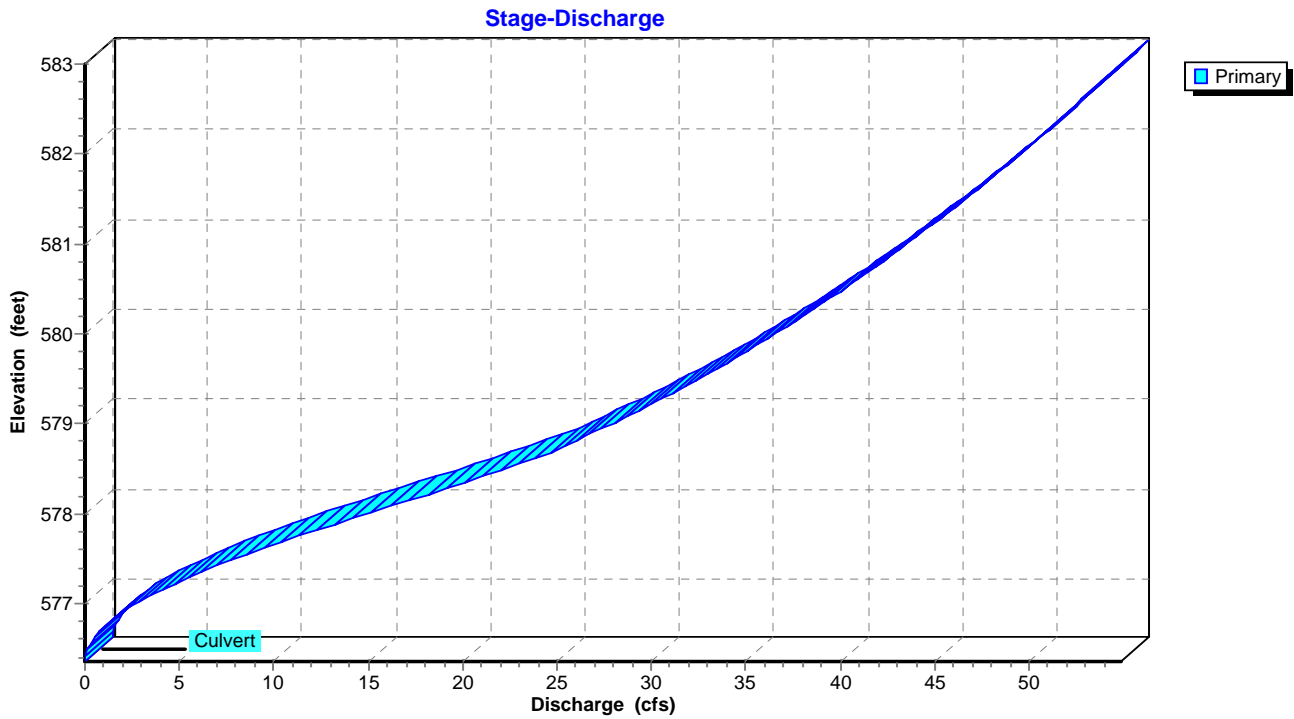
Primary OutFlow Max=5.50 cfs @ 12.03 hrs HW=577.29' TW=575.51' (Dynamic Tailwater)
 ←1=Culvert (Inlet Controls 5.50 cfs @ 3.29 fps)

Pond 10R: 201 TO JS

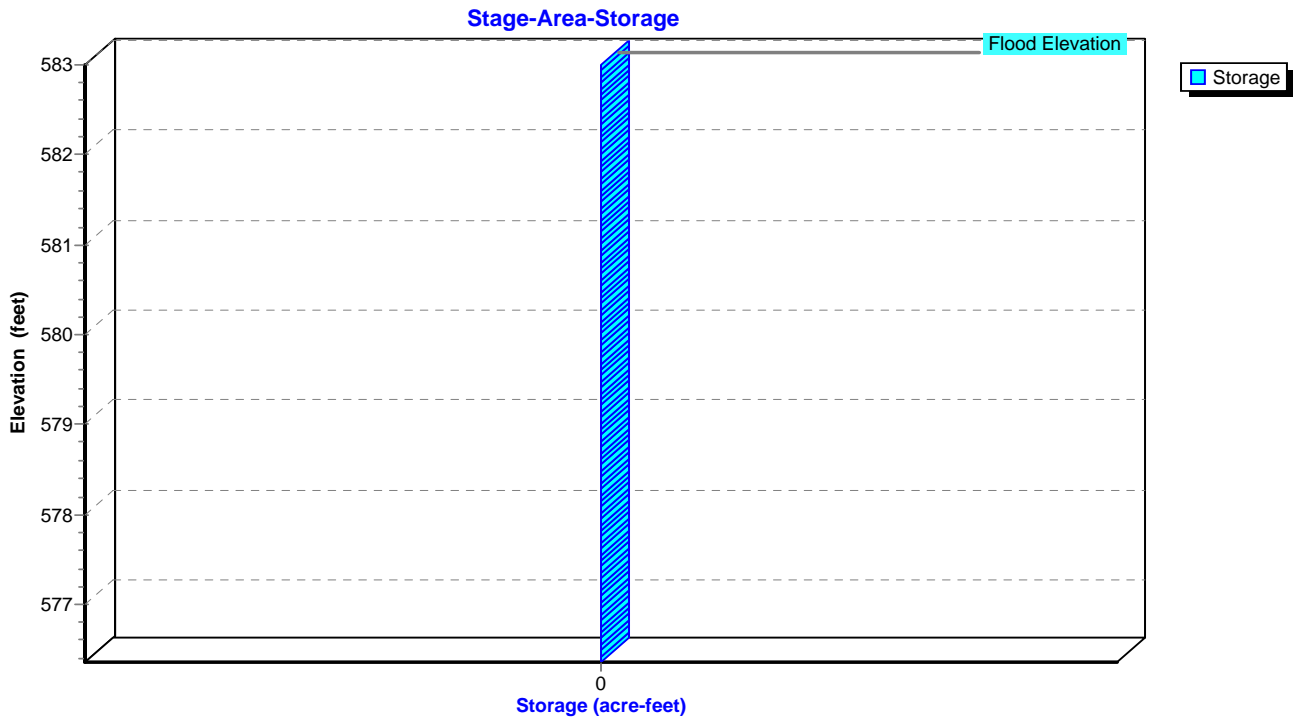
Hydrograph



Pond 10R: 201 TO JS



Pond 10R: 201 TO JS



Summary for Pond 11P: DUAL CULVERTS

Inflow Area = 15.090 ac, 65.14% Impervious, Inflow Depth = 1.79" for 1-yr event
 Inflow = 20.73 cfs @ 12.00 hrs, Volume= 2.249 af
 Outflow = 20.73 cfs @ 12.00 hrs, Volume= 2.249 af, Atten= 0%, Lag= 0.0 min
 Primary = 20.73 cfs @ 12.00 hrs, Volume= 2.249 af

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 575.57' @ 12.00 hrs
 Flood Elev= 582.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	574.44'	54.0" Round RCP_Round 54" L= 84.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 574.44' / 573.62' S= 0.0098 '/ Cc= 0.900 n= 0.013, Flow Area= 15.90 sf
#2	Primary	574.47'	54.0" Round RCP_Round 54" L= 84.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 574.47' / 573.79' S= 0.0081 '/ Cc= 0.900 n= 0.013, Flow Area= 15.90 sf

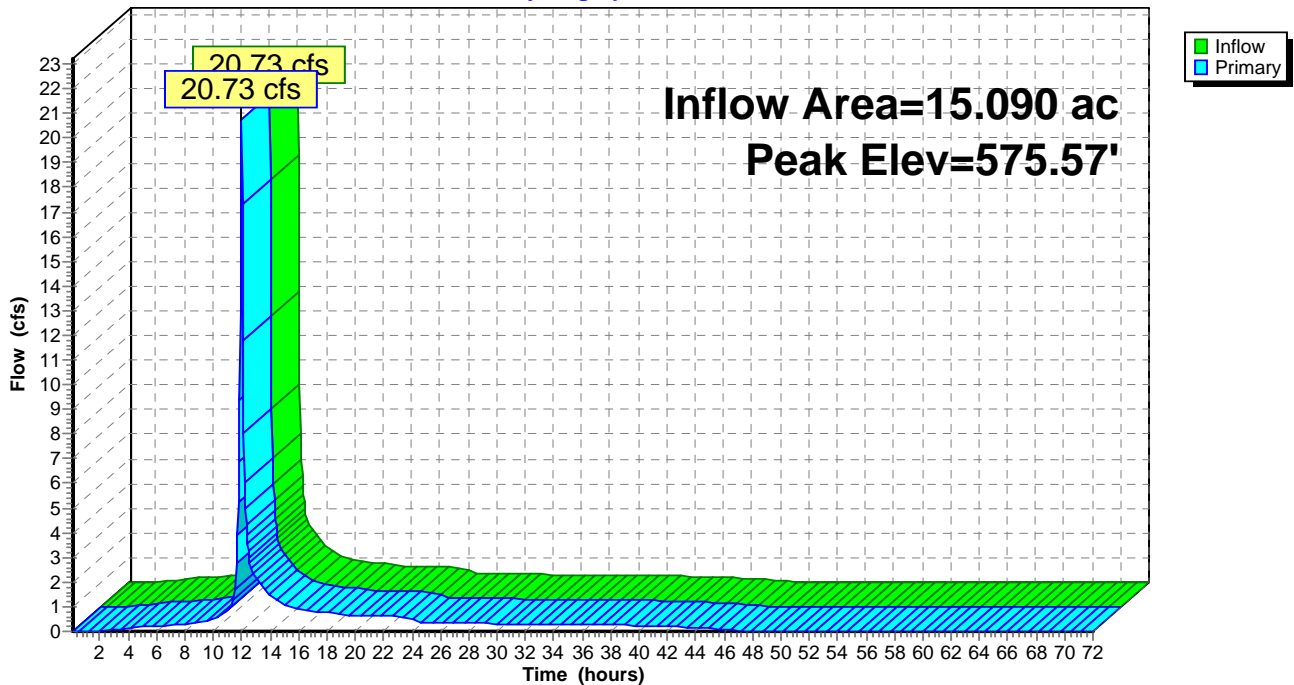
Primary OutFlow Max=20.61 cfs @ 12.00 hrs HW=575.56' (Free Discharge)

1=RCP_Round 54" (Barrel Controls 10.91 cfs @ 5.31 fps)

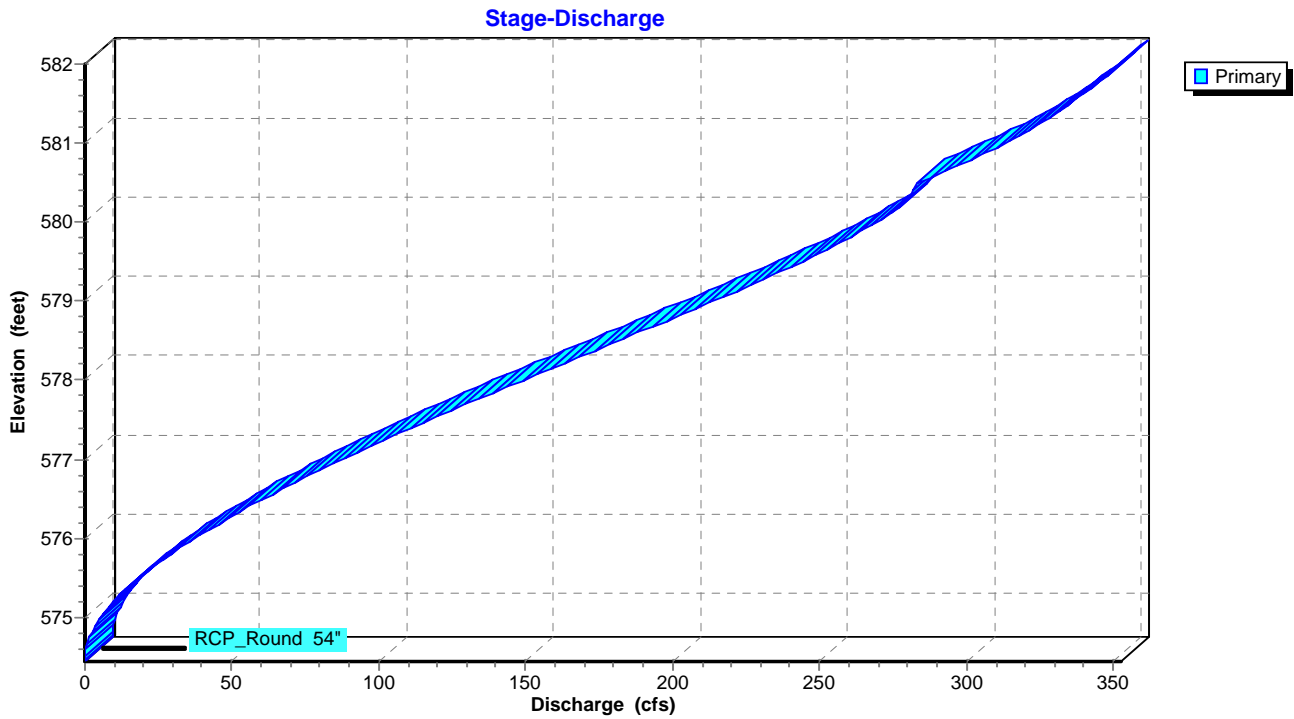
2=RCP_Round 54" (Barrel Controls 9.70 cfs @ 4.91 fps)

Pond 11P: DUAL CULVERTS

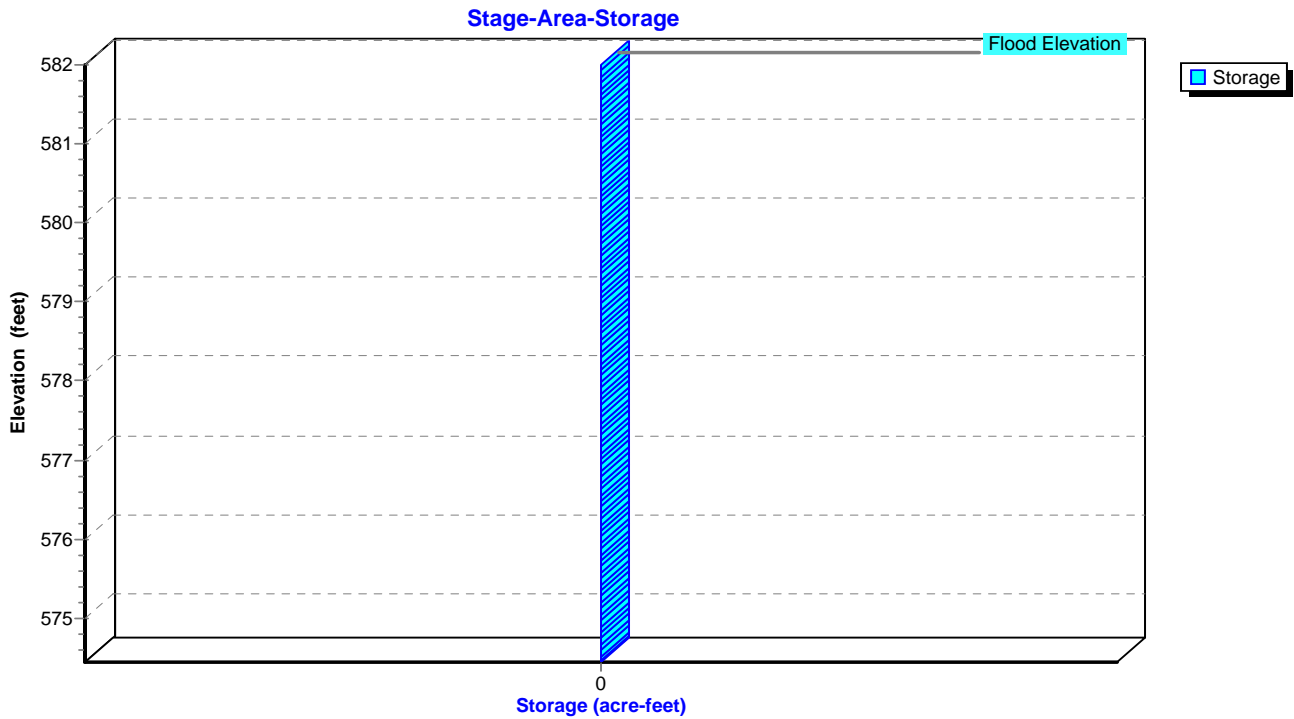
Hydrograph



Pond 11P: DUAL CULVERTS



Pond 11P: DUAL CULVERTS



Summary for Pond 12P: BRYAN RD CULVERT

Inflow Area = 4.870 ac, 55.44% Impervious, Inflow Depth = 1.66" for 1-yr event
 Inflow = 11.61 cfs @ 12.00 hrs, Volume= 0.672 af
 Outflow = 11.61 cfs @ 12.00 hrs, Volume= 0.672 af, Atten= 0%, Lag= 0.0 min
 Primary = 11.61 cfs @ 12.00 hrs, Volume= 0.672 af
 Routed to Pond 11P : DUAL CULVERTS

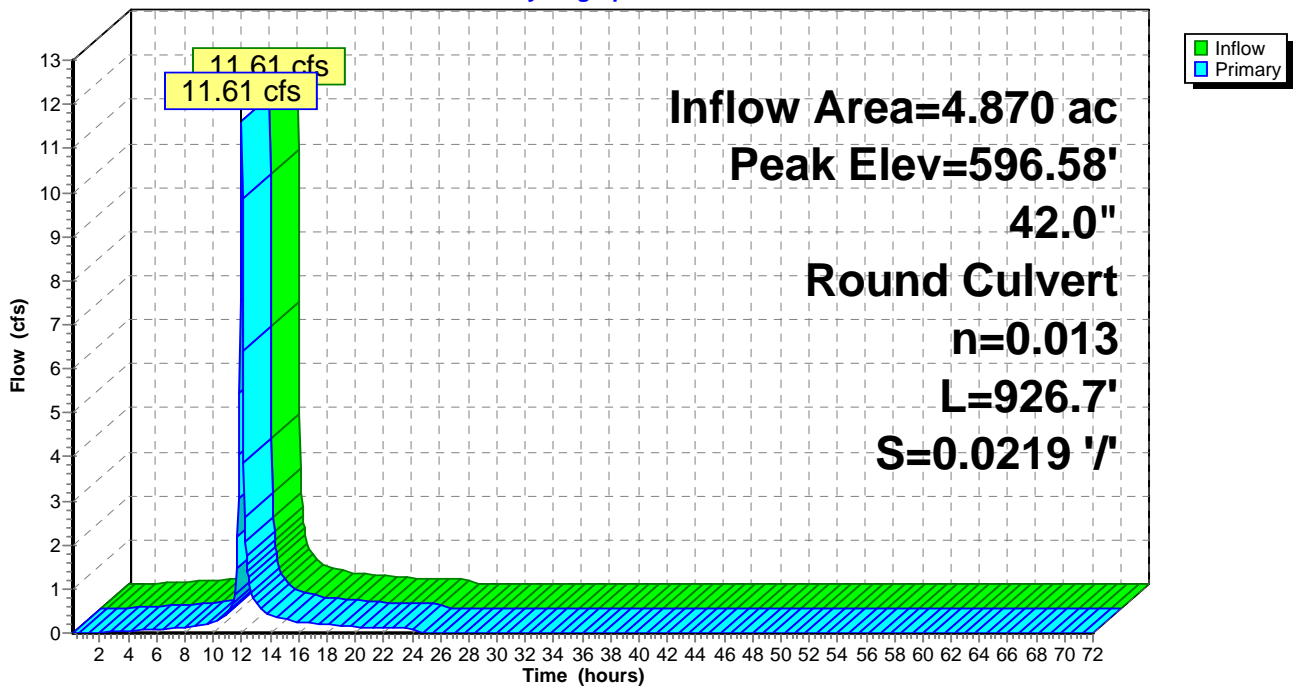
Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 596.58' @ 12.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	595.34'	42.0" Round Culvert L= 926.7' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 595.34' / 575.00' S= 0.0219 '/ Cc= 0.900 n= 0.013, Flow Area= 9.62 sf

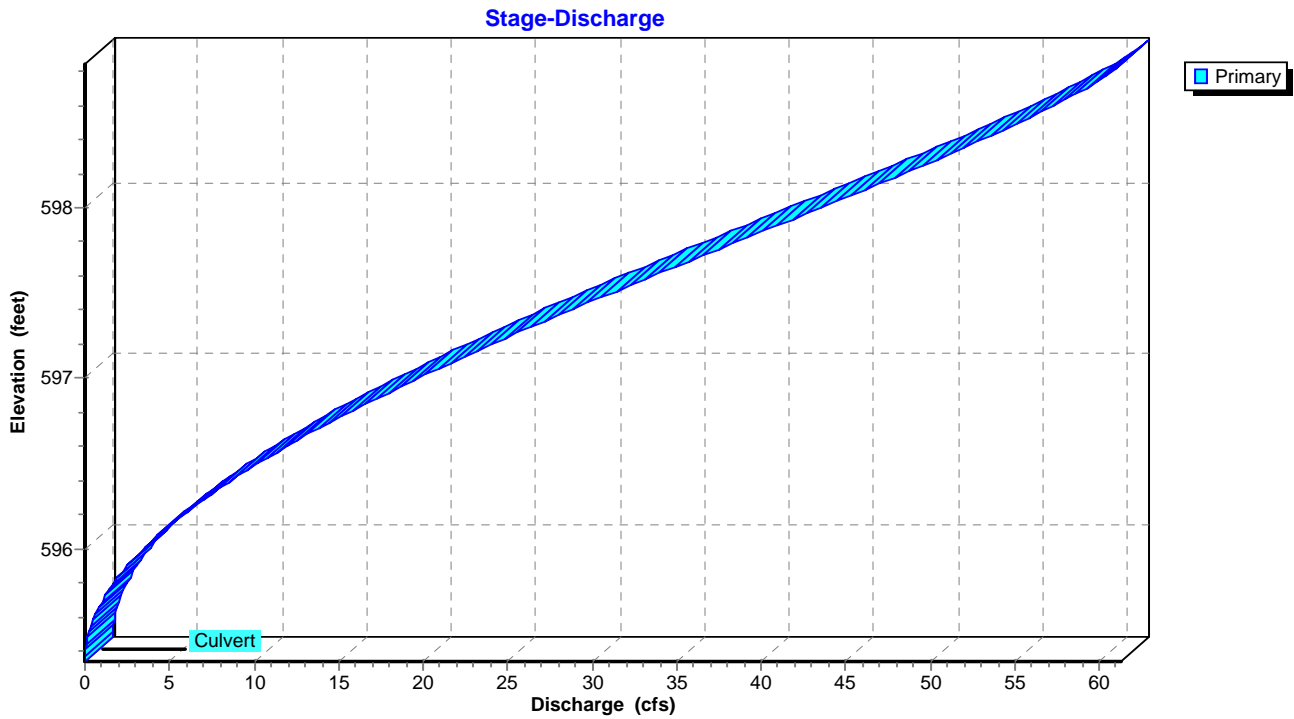
Primary OutFlow Max=11.54 cfs @ 12.00 hrs HW=596.58' TW=575.56' (Dynamic Tailwater)
 ←1=Culvert (Inlet Controls 11.54 cfs @ 3.79 fps)

Pond 12P: BRYAN RD CULVERT

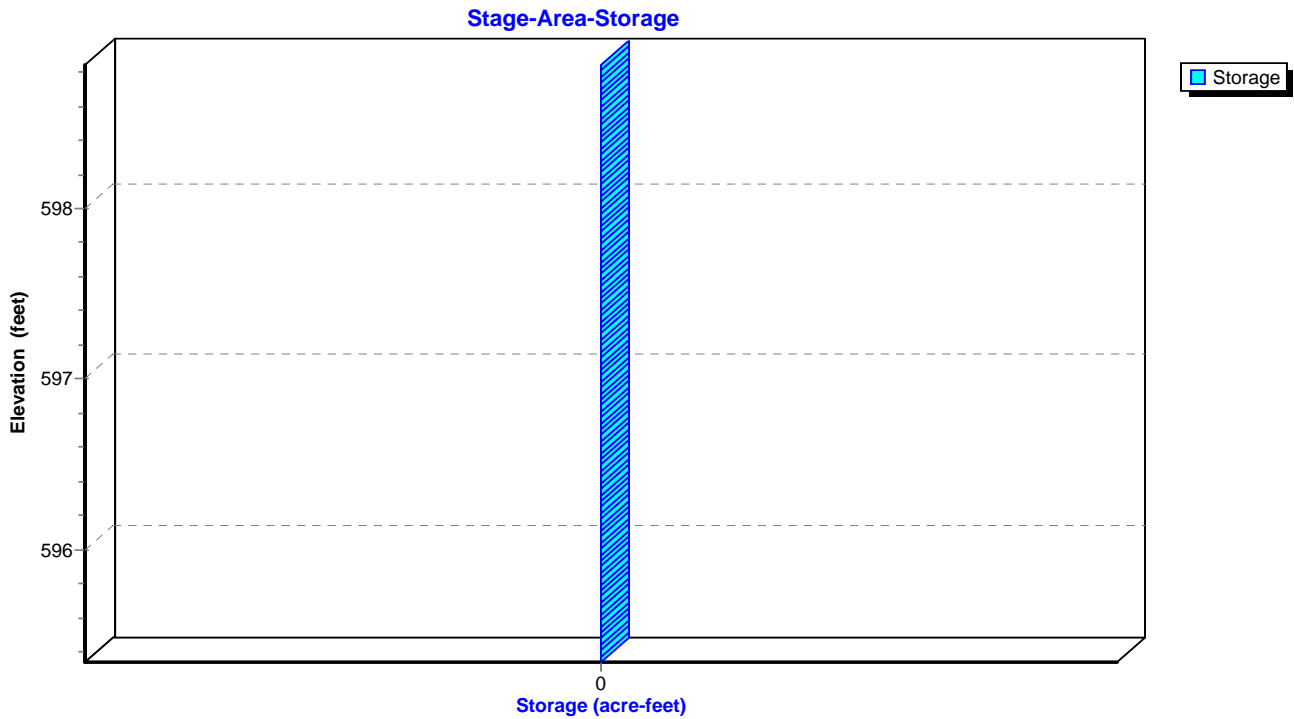
Hydrograph



Pond 12P: BRYAN RD CULVERT



Pond 12P: BRYAN RD CULVERT



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Type II 24-hr 1-yr Rainfall=2.50"

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Summary for Pond 13P: BASIN 1 FOREBAY

Inflow Area = 4.880 ac, 79.71% Impervious, Inflow Depth = 1.99" for 1-yr event
 Inflow = 15.36 cfs @ 11.95 hrs, Volume= 0.809 af
 Outflow = 6.88 cfs @ 11.96 hrs, Volume= 0.809 af, Atten= 55%, Lag= 0.5 min
 Primary = 6.88 cfs @ 11.96 hrs, Volume= 0.809 af
 Routed to Pond 8P : BASIN 1

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 594.00' @ 12.25 hrs Surf.Area= 3,845 sf Storage= 9,545 cf
 Flood Elev= 600.00' Surf.Area= 3,845 sf Storage= 9,545 cf

Plug-Flow detention time= 257.2 min calculated for 0.809 af (100% of inflow)
 Center-of-Mass det. time= 257.6 min (1,023.4 - 765.8)

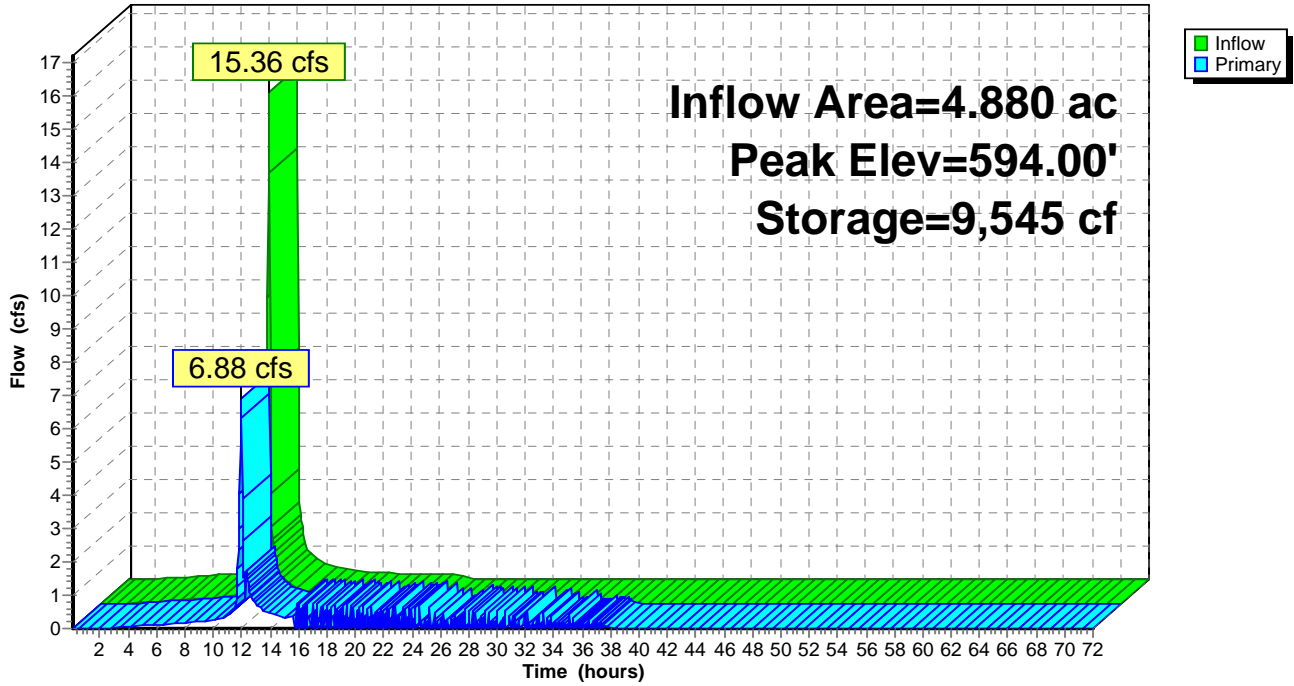
Volume	Invert	Avail.Storage	Storage Description
#1	590.00'	9,545 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
590.00	1,069	0	0
591.00	1,678	1,374	1,374
592.00	2,344	2,011	3,385
593.00	3,066	2,705	6,090
594.00	3,845	3,456	9,545

Device	Routing	Invert	Outlet Devices
#0	Primary	594.00'	Automatic Storage Overflow (Discharged without head)
#1	Primary	590.00'	36.00' long x 30.00' breadth x 4.06' high Rock Fill Rock Diam.= 18.000", S.D.= 4.000", Voids= 40.0%

Primary OutFlow Max=17.93 cfs @ 11.96 hrs HW=593.28' TW=592.89' (Dynamic Tailwater)
 ↑1=Rock Fill (Rockfill Controls 17.93 cfs @ 0.16 fps)

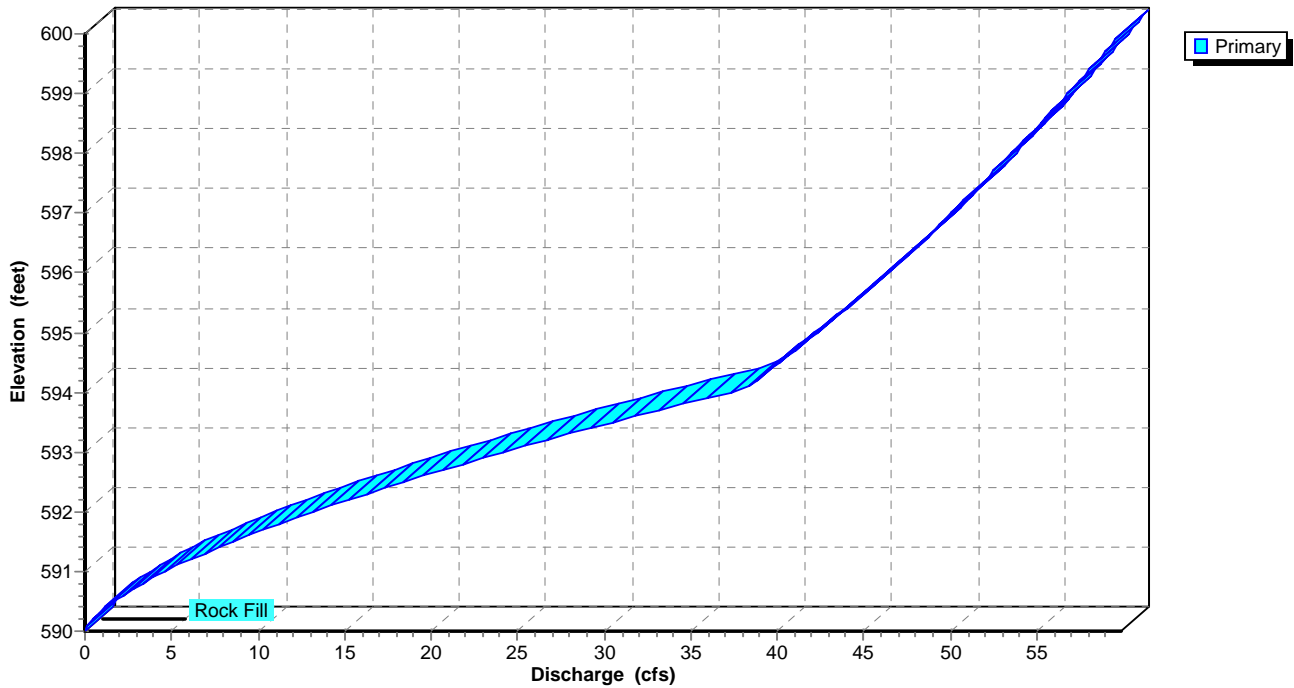
Pond 13P: BASIN 1 FOREBAY

Hydrograph



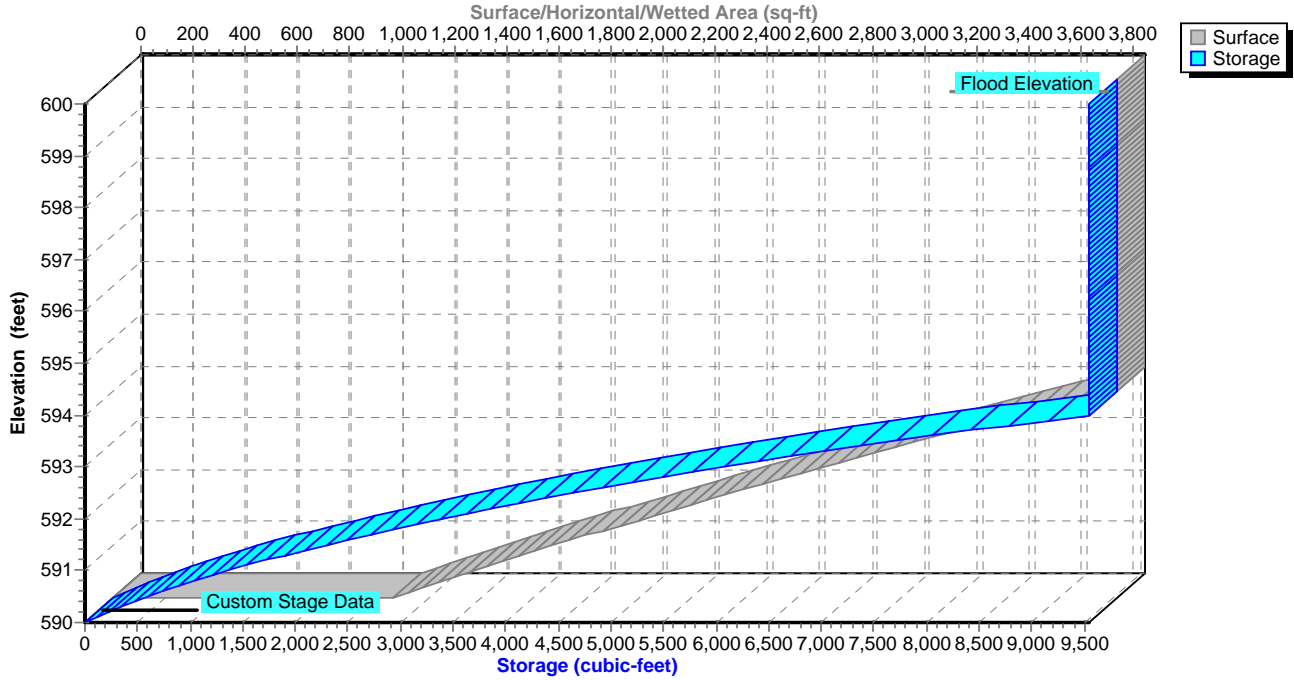
Pond 13P: BASIN 1 FOREBAY

Stage-Discharge



Pond 13P: BASIN 1 FOREBAY

Stage-Area-Storage



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Type II 24-hr 1-yr Rainfall=2.50"

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Summary for Pond 17P: BASIN 1 100 YR LFB

Inflow Area = 4.880 ac, 79.71% Impervious, Inflow Depth = 1.51" for 1-yr event
 Inflow = 11.59 cfs @ 12.02 hrs, Volume= 0.613 af
 Outflow = 2.31 cfs @ 12.19 hrs, Volume= 0.402 af, Atten= 80%, Lag= 10.7 min
 Primary = 2.31 cfs @ 12.19 hrs, Volume= 0.402 af
 Routed to Pond 21P : BASIN 2 100 YR LFB

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 594.61' @ 12.19 hrs Surf.Area= 7,169 sf Storage= 12,529 cf
 Flood Elev= 600.00' Surf.Area= 17,840 sf Storage= 83,183 cf

Plug-Flow detention time= 239.3 min calculated for 0.402 af (66% of inflow)
 Center-of-Mass det. time= 120.1 min (925.1 - 805.0)

Volume	Invert	Avail.Storage	Storage Description
#1	589.00'	83,183 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
589.00	2	0	0
590.00	897	450	450
591.00	1,487	1,192	1,642
592.00	2,133	1,810	3,452
593.00	2,836	2,485	5,936
594.00	3,695	3,266	9,202
595.00	9,367	6,531	15,733
596.00	10,948	10,158	25,890
597.00	12,586	11,767	37,657
598.00	14,281	13,434	51,091
599.00	16,032	15,157	66,247
600.00	17,840	16,936	83,183

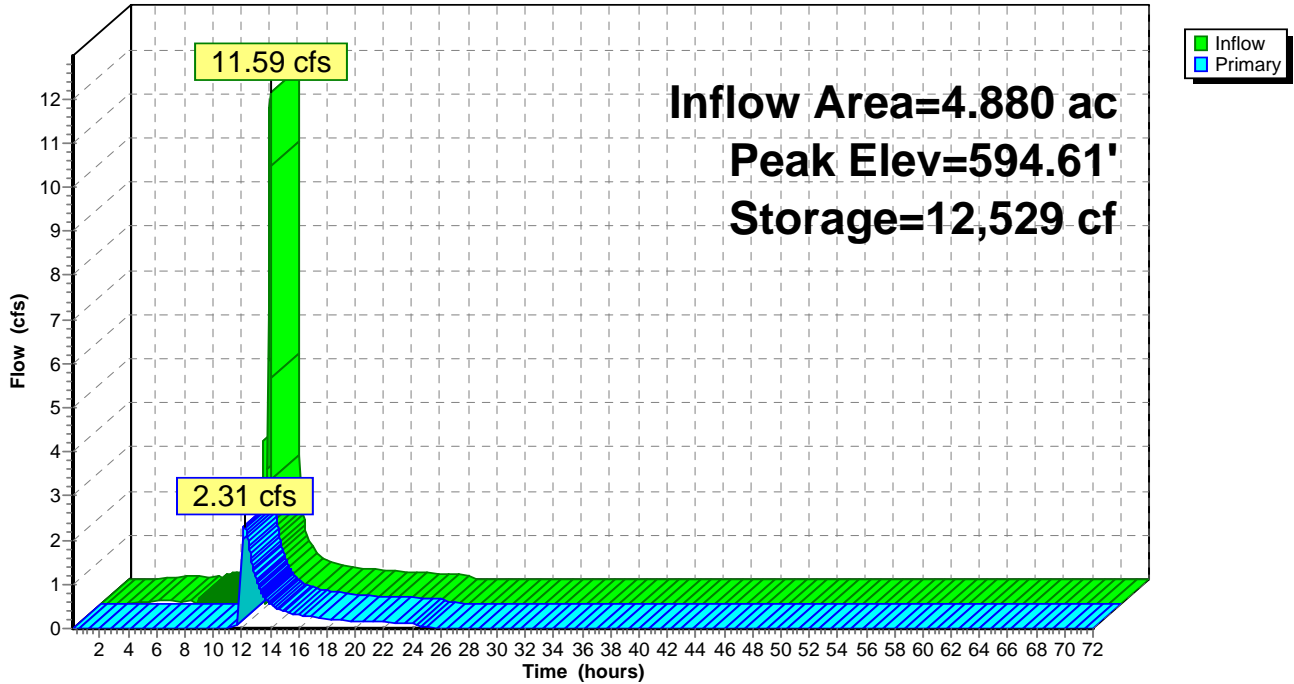
Device	Routing	Invert	Outlet Devices
#1	Primary	585.00'	24.0" Round RCP_Round 24" L= 184.2' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 585.00' / 583.16' S= 0.0100 '/ Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	594.00'	18.0" W x 18.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	598.00'	30.0" x 60.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.30 cfs @ 12.19 hrs HW=594.61' TW=583.87' (Dynamic Tailwater)

- 1=RCP_Round 24" (Passes 2.30 cfs of 43.63 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 2.30 cfs @ 2.51 fps)
- 3=Orifice/Grate (Controls 0.00 cfs)

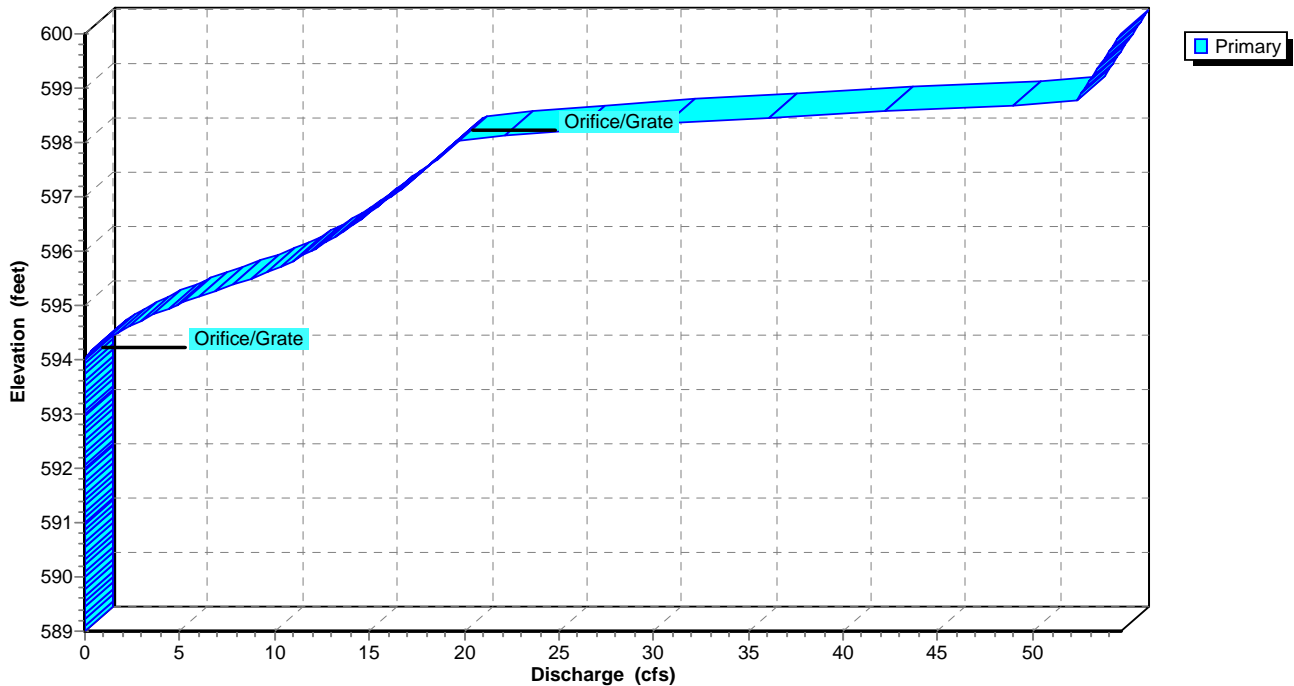
Pond 17P: BASIN 1 100 YR LFB

Hydrograph

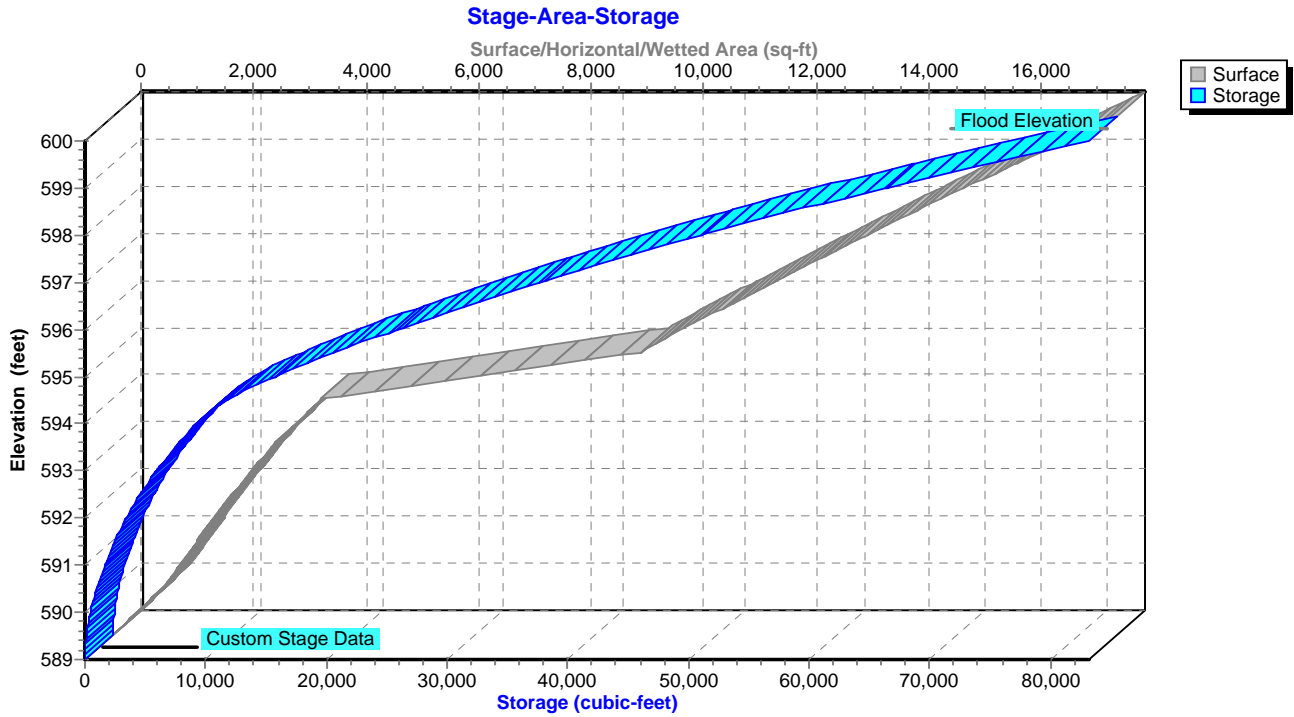


Pond 17P: BASIN 1 100 YR LFB

Stage-Discharge



Pond 17P: BASIN 1 100 YR LFB



2023-06-19 PROPOSED

Type II 24-hr 1-yr Rainfall=2.50"

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Summary for Pond 18P: BASIN 1 FOREBAY 100 YR LFB

Inflow Area = 4.880 ac, 79.71% Impervious, Inflow Depth = 1.99" for 1-yr event
 Inflow = 15.36 cfs @ 11.95 hrs, Volume= 0.809 af
 Outflow = 11.59 cfs @ 12.02 hrs, Volume= 0.590 af, Atten= 25%, Lag= 3.8 min
 Primary = 11.59 cfs @ 12.02 hrs, Volume= 0.613 af
 Routed to Pond 17P : BASIN 1 100 YR LFB

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 594.00' @ 12.00 hrs Surf.Area= 3,845 sf Storage= 9,545 cf
 Flood Elev= 600.00' Surf.Area= 3,845 sf Storage= 9,545 cf

Plug-Flow detention time= 138.0 min calculated for 0.590 af (73% of inflow)
 Center-of-Mass det. time= 43.5 min (809.3 - 765.8)

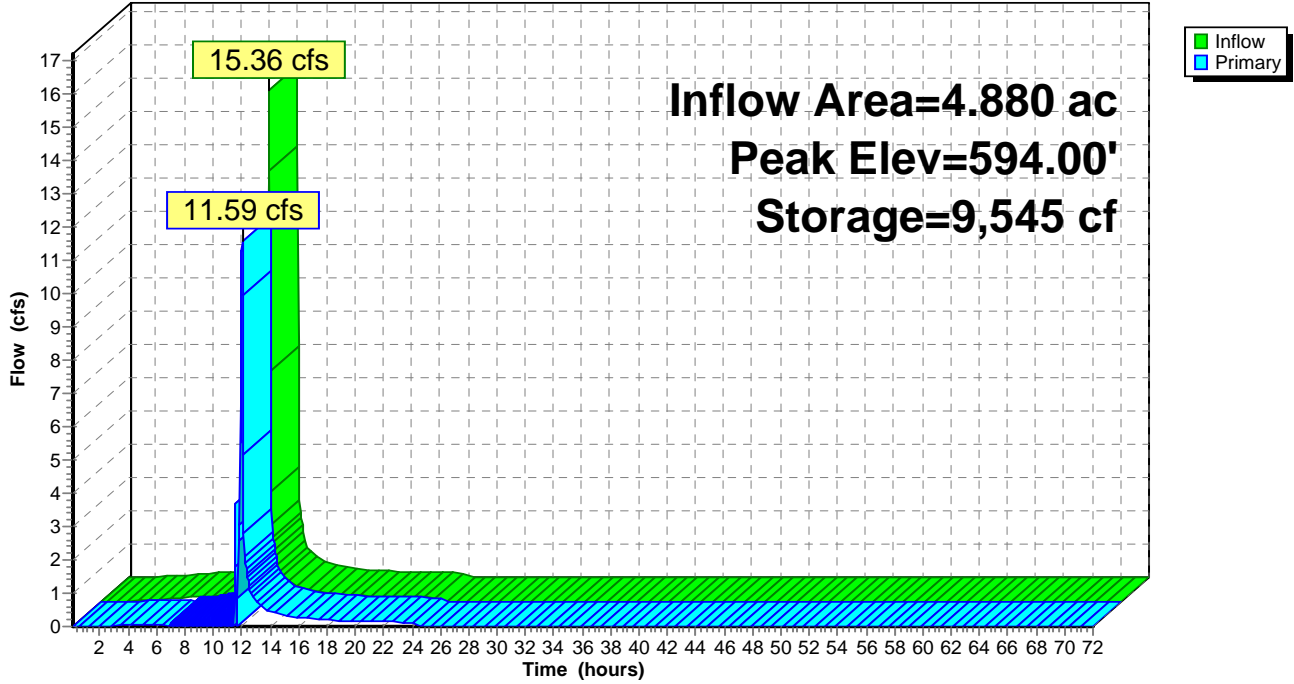
Volume	Invert	Avail.Storage	Storage Description
#1	590.00'	9,545 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
590.00	1,069	0	0
591.00	1,678	1,374	1,374
592.00	2,344	2,011	3,385
593.00	3,066	2,705	6,090
594.00	3,845	3,456	9,545

Device	Routing	Invert	Outlet Devices
#0	Primary	594.00'	Automatic Storage Overflow (Discharged without head)
#1	Primary	590.00'	36.00' long x 30.00' breadth x 4.06' high Rock Fill Rock Diam.= 18.000", S.D.= 4.000", Voids= 40.0%

Primary OutFlow Max=0.00 cfs @ 12.02 hrs HW=594.00' TW=594.14' (Dynamic Tailwater)
 ↗1=Rock Fill (Controls 0.00 cfs)

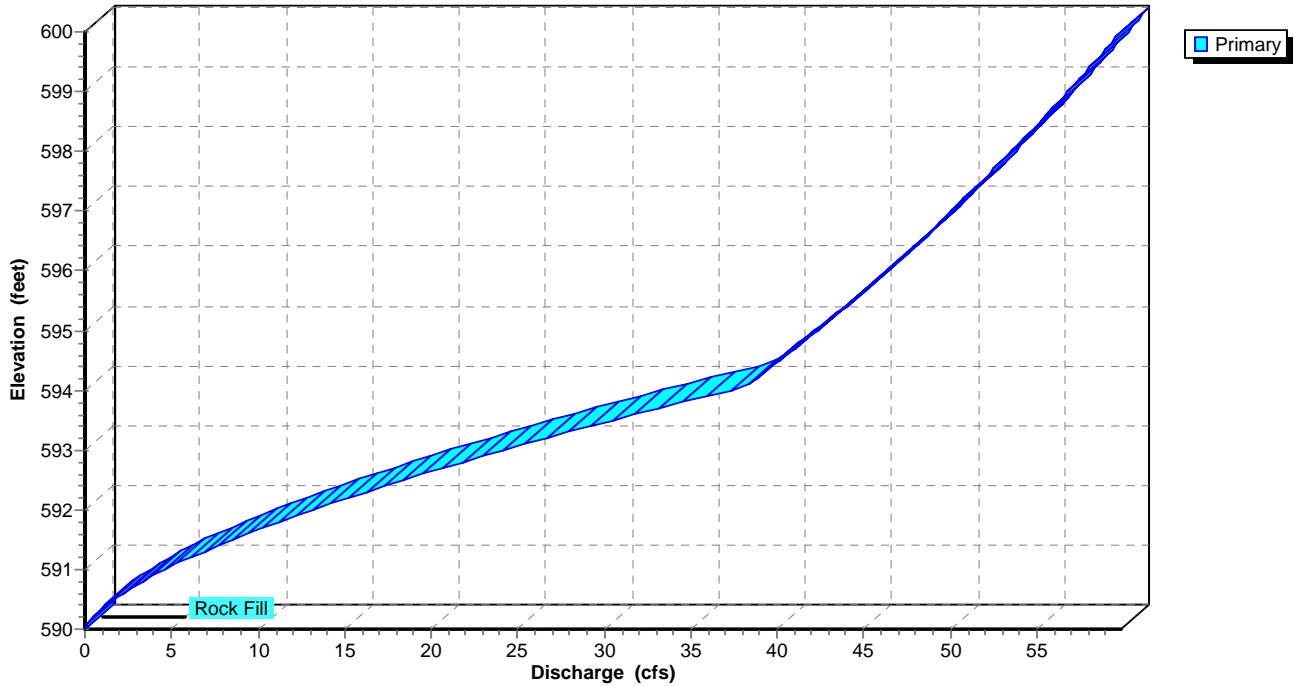
Pond 18P: BASIN 1 FOREBAY 100 YR LFB

Hydrograph

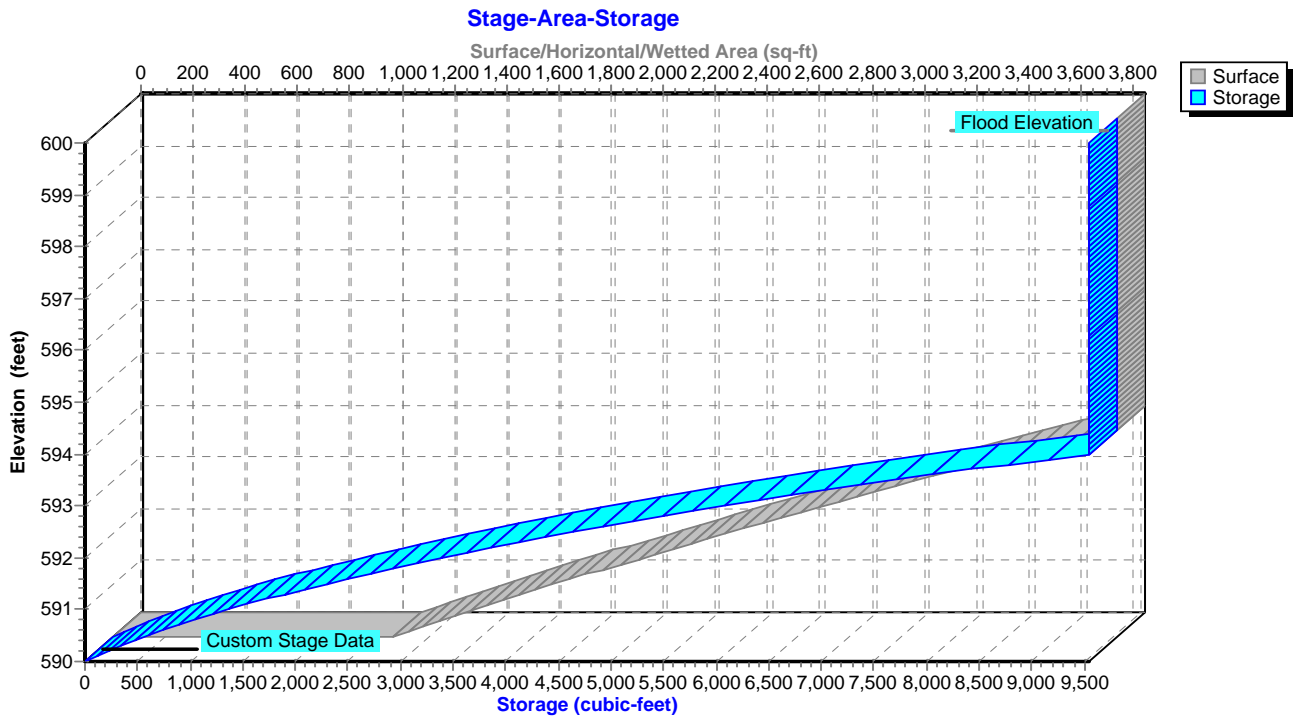


Pond 18P: BASIN 1 FOREBAY 100 YR LFB

Stage-Discharge



Pond 18P: BASIN 1 FOREBAY 100 YR LFB



2023-06-19 PROPOSED

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Type II 24-hr 1-yr Rainfall=2.50"

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Summary for Pond 21P: BASIN 2 100 YR LFB

Inflow Area = 7.600 ac, 78.42% Impervious, Inflow Depth = 1.33" for 1-yr event
 Inflow = 8.37 cfs @ 11.95 hrs, Volume= 0.841 af
 Outflow = 4.70 cfs @ 12.07 hrs, Volume= 0.664 af, Atten= 44%, Lag= 7.1 min
 Primary = 4.70 cfs @ 12.07 hrs, Volume= 0.664 af

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 583.99' @ 12.07 hrs Surf.Area= 2,347 sf Storage= 10,010 cf

Plug-Flow detention time= 169.0 min calculated for 0.664 af (79% of inflow)
 Center-of-Mass det. time= 72.4 min (915.2 - 842.7)

Volume	Invert	Avail.Storage	Storage Description
#1	578.75'	38,301 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
578.75	1	0	0
579.00	205	26	26
580.00	2,080	1,143	1,168
581.00	2,153	2,117	3,285
582.00	2,222	2,188	5,472
583.00	2,287	2,255	7,727
584.00	2,348	2,318	10,044
585.00	2,404	2,376	12,420
586.00	2,456	2,430	14,850
587.00	2,504	2,480	17,330
588.00	2,547	2,526	19,856
589.00	3,000	2,774	22,629
590.00	4,800	3,900	26,529
591.00	5,862	5,331	31,860
592.00	7,020	6,441	38,301

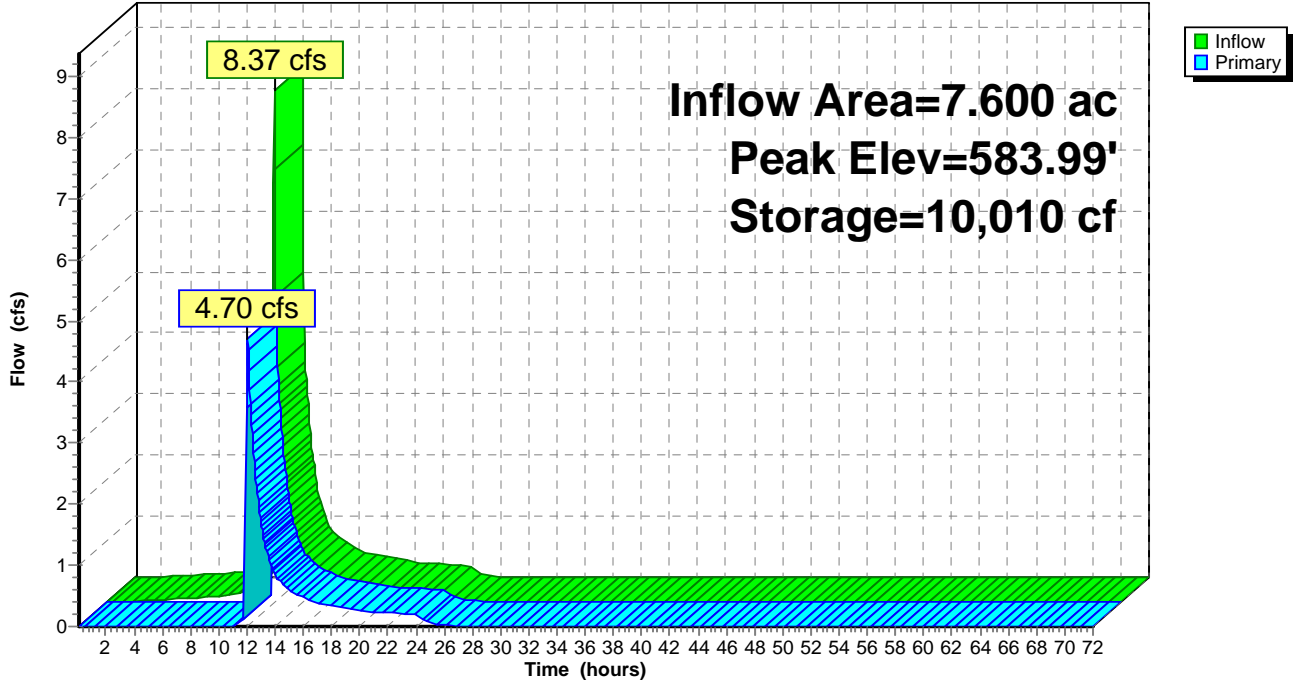
Device	Routing	Invert	Outlet Devices
#1	Primary	576.73'	24.0" Round Culvert L= 15.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 576.73' / 576.58' S= 0.0100 1' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	583.00'	18.0" W x 18.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	589.00'	30.0" x 60.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.57 cfs @ 12.07 hrs HW=583.97' (Free Discharge)

- 1=Culvert (Passes 4.57 cfs of 47.22 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 4.57 cfs @ 3.15 fps)
- 3=Orifice/Grate (Controls 0.00 cfs)

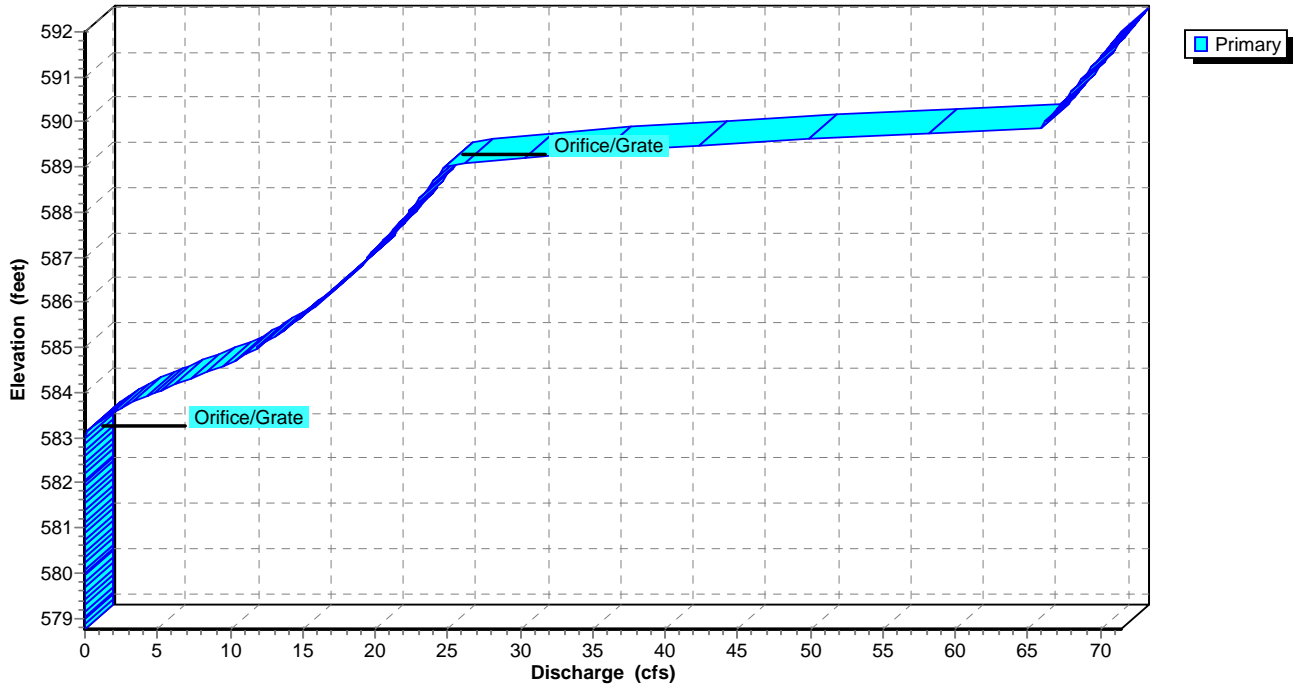
Pond 21P: BASIN 2 100 YR LFB

Hydrograph

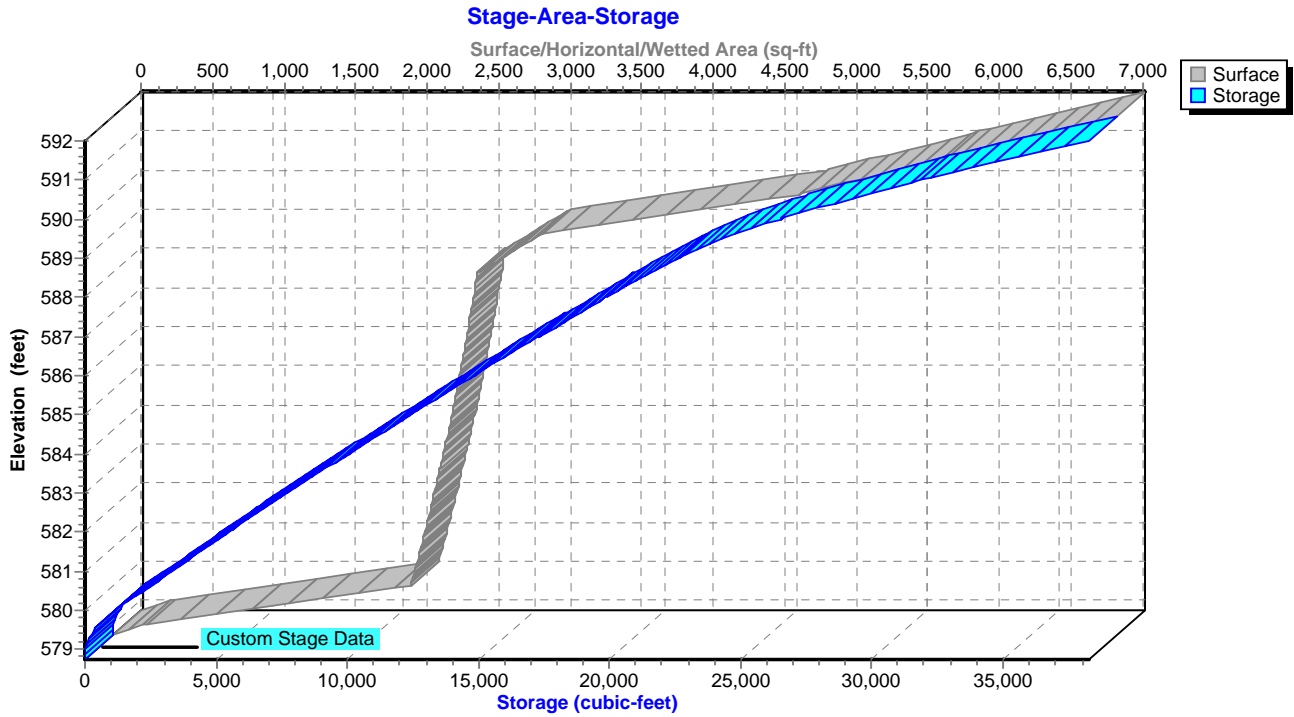


Pond 21P: BASIN 2 100 YR LFB

Stage-Discharge



Pond 21P: BASIN 2 100 YR LFB



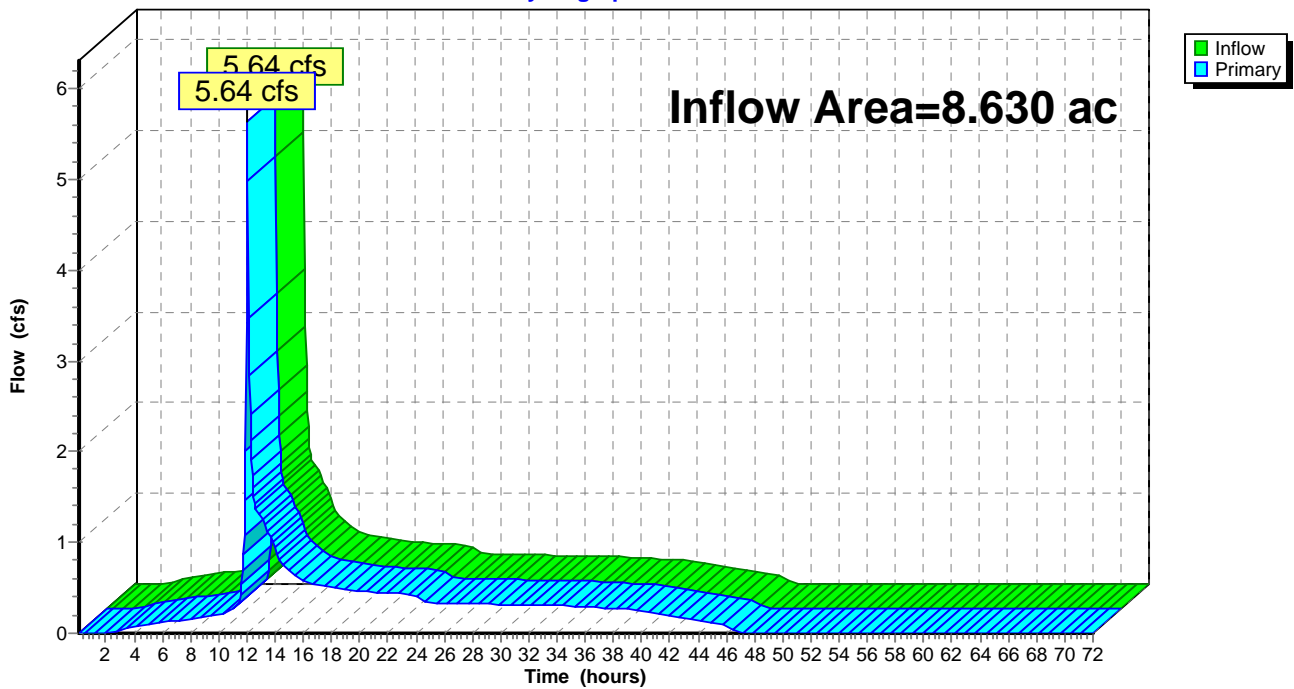
Summary for Link 14L: POST DEVELOPED RUNOFF

Inflow Area = 8.630 ac, 72.42% Impervious, Inflow Depth = 1.89" for 1-yr event
Inflow = 5.64 cfs @ 12.03 hrs, Volume= 1.358 af
Primary = 5.64 cfs @ 12.03 hrs, Volume= 1.358 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 10R : 201 TO JS

Primary outflow = Inflow, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs

Link 14L: POST DEVELOPED RUNOFF

Hydrograph



Summary for Subcatchment 1S: EXISTING CONDITIONS

Runoff = 10.98 cfs @ 12.03 hrs, Volume= 0.628 af, Depth= 0.92"

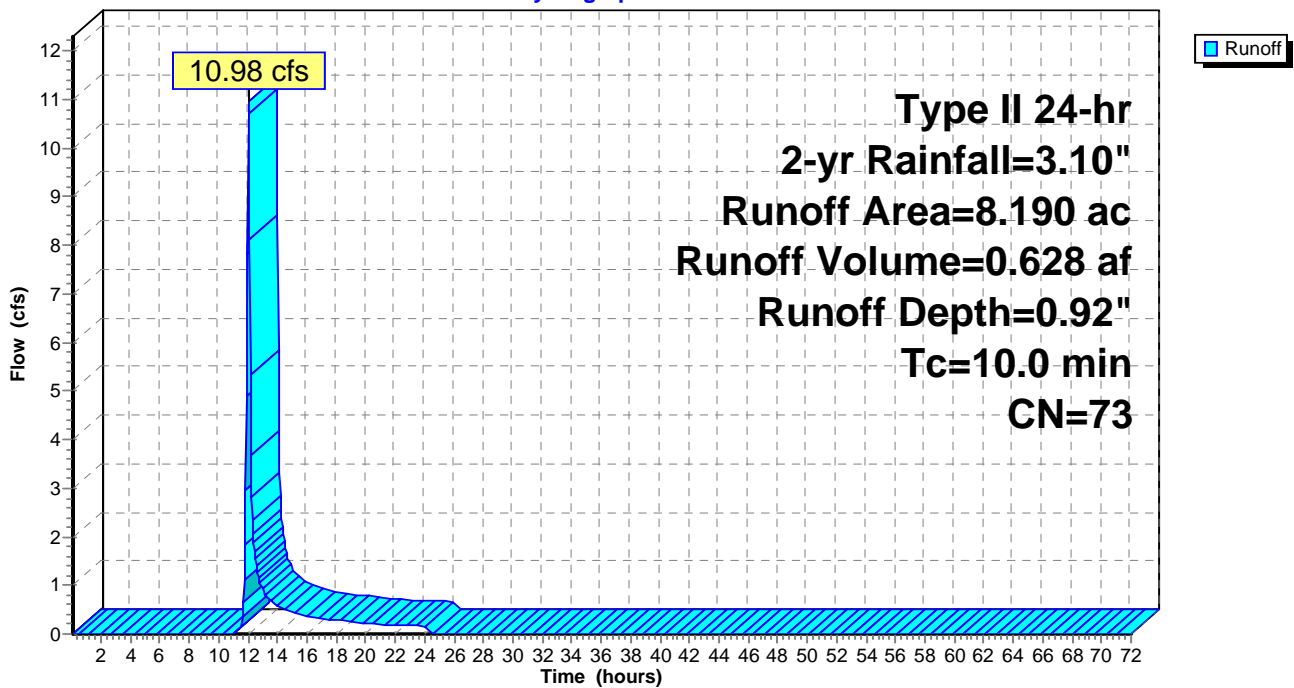
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 2-yr Rainfall=3.10"

Area (ac)	CN	Description
* 8.190	73	Woods, Good, HSG C
8.190		100.00% Pervious Area

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

Subcatchment 1S: EXISTING CONDITIONS

Hydrograph



Summary for Subcatchment 2S: PROPOSED CONDITIONS (NO DETENTION)

Runoff = 32.88 cfs @ 11.95 hrs, Volume= 1.747 af, Depth= 2.56"

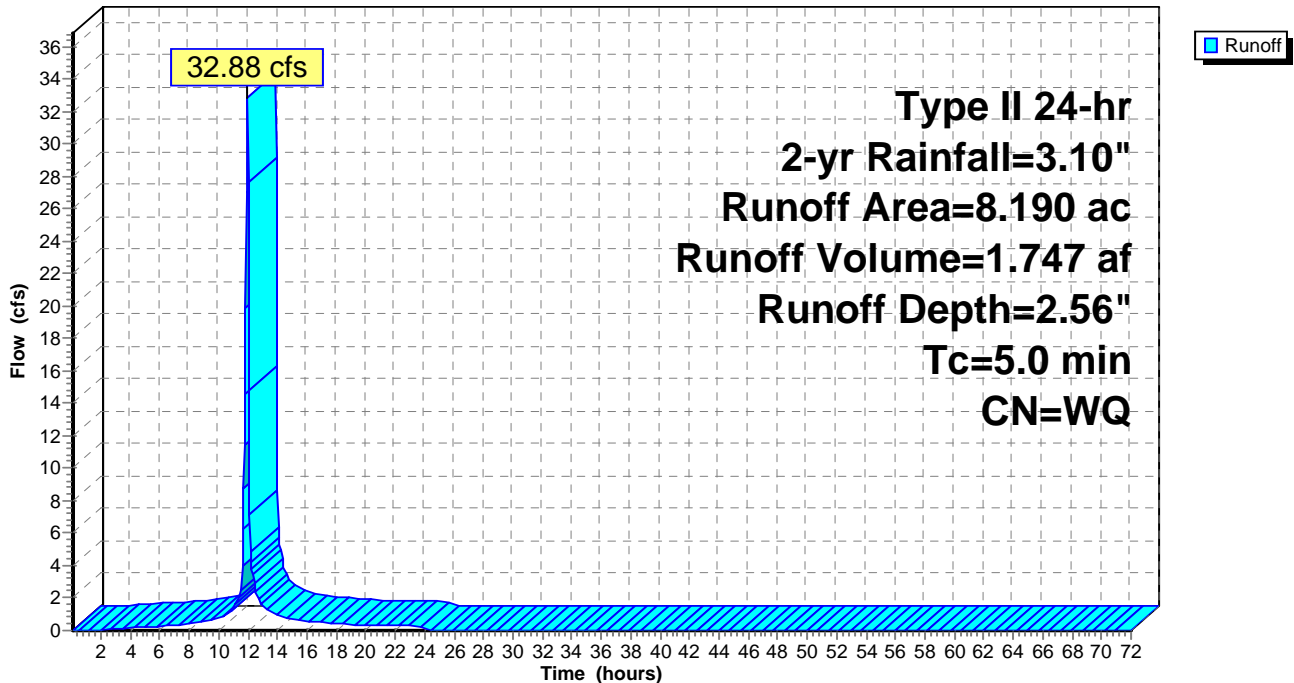
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 2-yr Rainfall=3.10"

Area (ac)	CN	Description
6.550	98	Paved parking, HSG C
1.640	80	>75% Grass cover, Good, HSG D
8.190		Weighted Average
1.640		20.02% Pervious Area
6.550		79.98% Impervious Area

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

Subcatchment 2S: PROPOSED CONDITIONS (NO DETENTION)

Hydrograph



Summary for Subcatchment 3S: OFFSITE TO ONSITE TO BASIN 1

Runoff = 0.93 cfs @ 11.96 hrs, Volume= 0.045 af, Depth= 1.65"
 Routed to Pond 13P : BASIN 1 FOREBAY

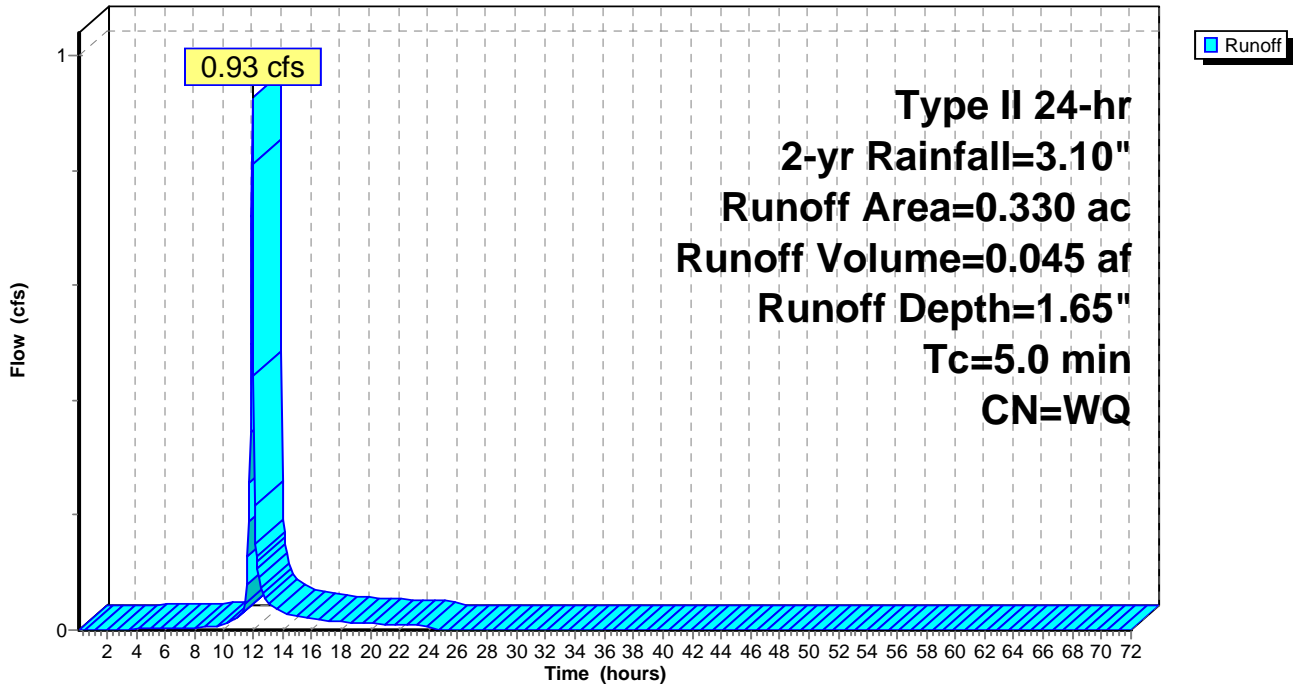
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 2-yr Rainfall=3.10"

Area (ac)	CN	Description
0.070	98	Paved parking, HSG D
0.260	80	>75% Grass cover, Good, HSG D
0.330		Weighted Average
0.260		78.79% Pervious Area
0.070		21.21% Impervious Area

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

Subcatchment 3S: OFFSITE TO ONSITE TO BASIN 1

Hydrograph



Summary for Subcatchment 4S: ONSITE TO BASIN 1

Runoff = 18.64 cfs @ 11.95 hrs, Volume= 0.994 af, Depth= 2.62"
 Routed to Pond 13P : BASIN 1 FOREBAY

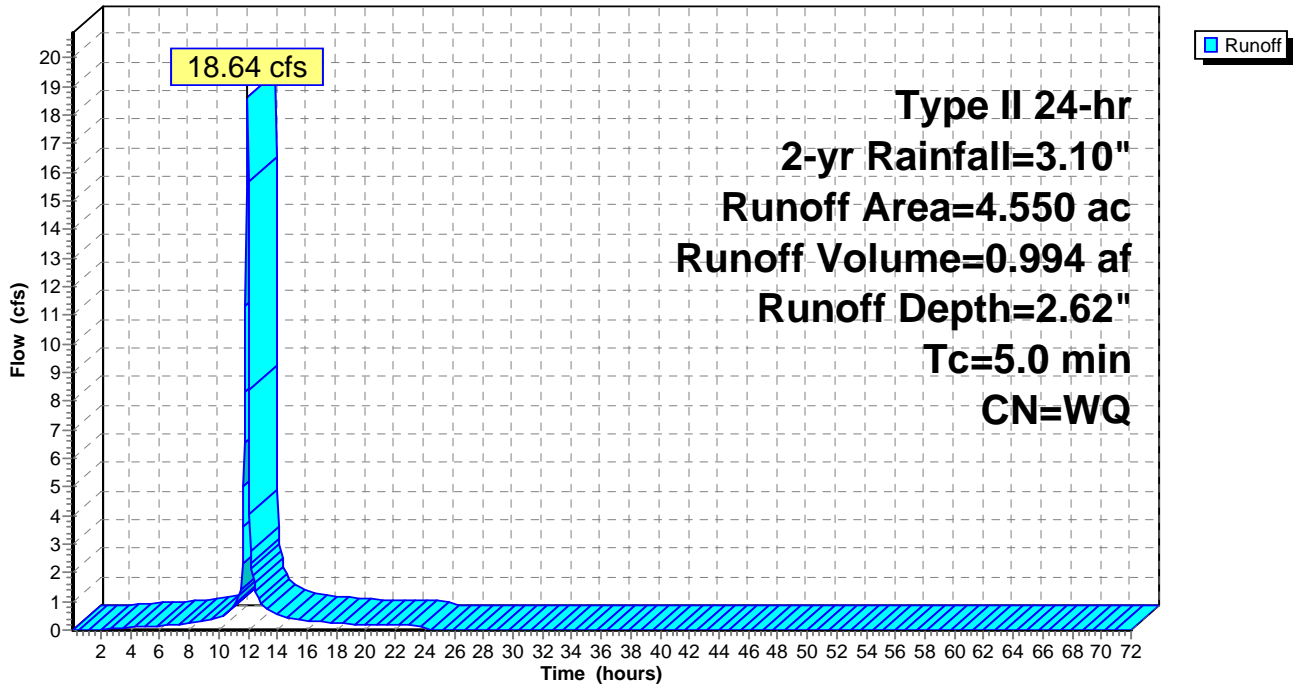
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 2-yr Rainfall=3.10"

Area (ac)	CN	Description
3.820	98	Paved parking, HSG D
0.730	80	>75% Grass cover, Good, HSG D
4.550		Weighted Average
0.730		16.04% Pervious Area
3.820		83.96% Impervious Area

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

Subcatchment 4S: ONSITE TO BASIN 1

Hydrograph



Summary for Subcatchment 5S: OFFSITE TO ONSITE TO BASIN 2

Runoff = 0.31 cfs @ 11.96 hrs, Volume= 0.014 af, Depth= 1.33"
 Routed to Pond 9P : BASIN 2

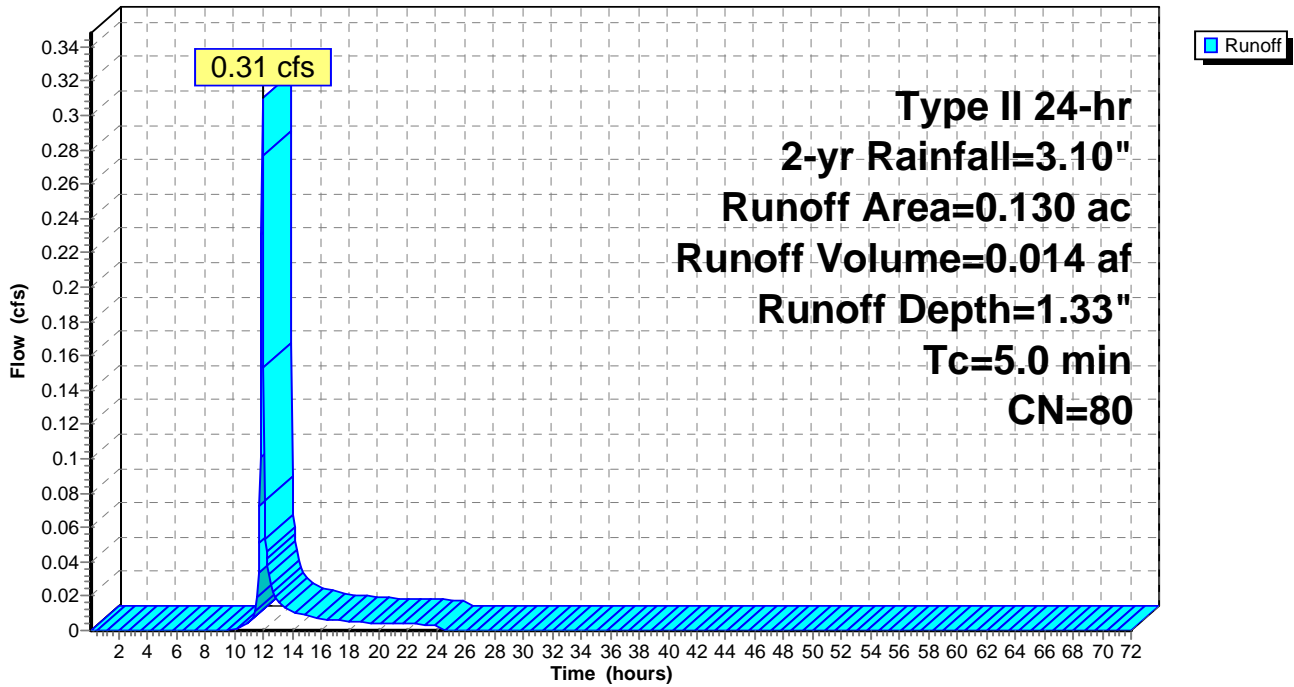
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 2-yr Rainfall=3.10"

Area (ac)	CN	Description
0.130	80	>75% Grass cover, Good, HSG D
0.130		100.00% Pervious Area

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

Subcatchment 5S: OFFSITE TO ONSITE TO BASIN 2

Hydrograph



Summary for Subcatchment 6S: ONSITE TO BASIN 2

Runoff = 10.40 cfs @ 11.95 hrs, Volume= 0.552 af, Depth= 2.56"
 Routed to Pond 9P : BASIN 2

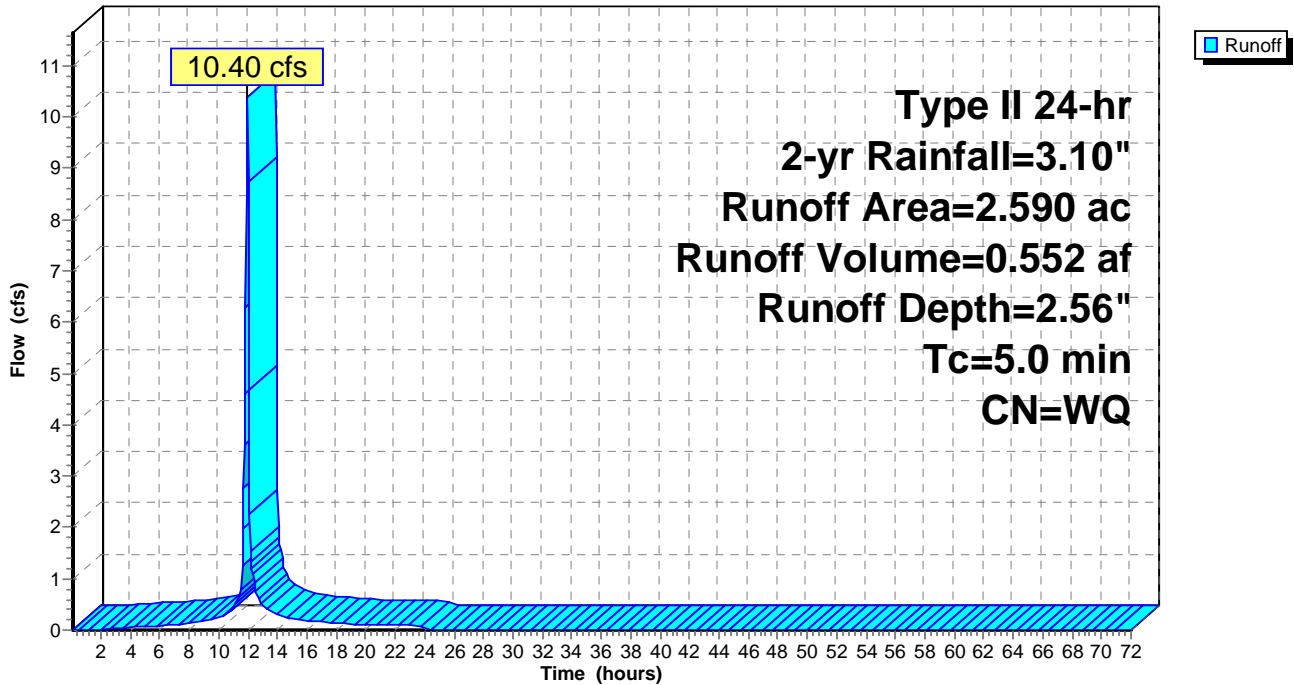
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 2-yr Rainfall=3.10"

Area (ac)	CN	Description
2.070	98	Paved parking, HSG D
0.520	80	>75% Grass cover, Good, HSG D
2.590		Weighted Average
0.520		20.08% Pervious Area
2.070		79.92% Impervious Area

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

Subcatchment 6S: ONSITE TO BASIN 2

Hydrograph



Summary for Subcatchment 7S: ONSITE TO OFFSITE BYPASS

Runoff = 3.05 cfs @ 11.96 hrs, Volume= 0.151 af, Depth= 1.76"

Routed to Link 14L : POST DEVELOPED RUNOFF

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs

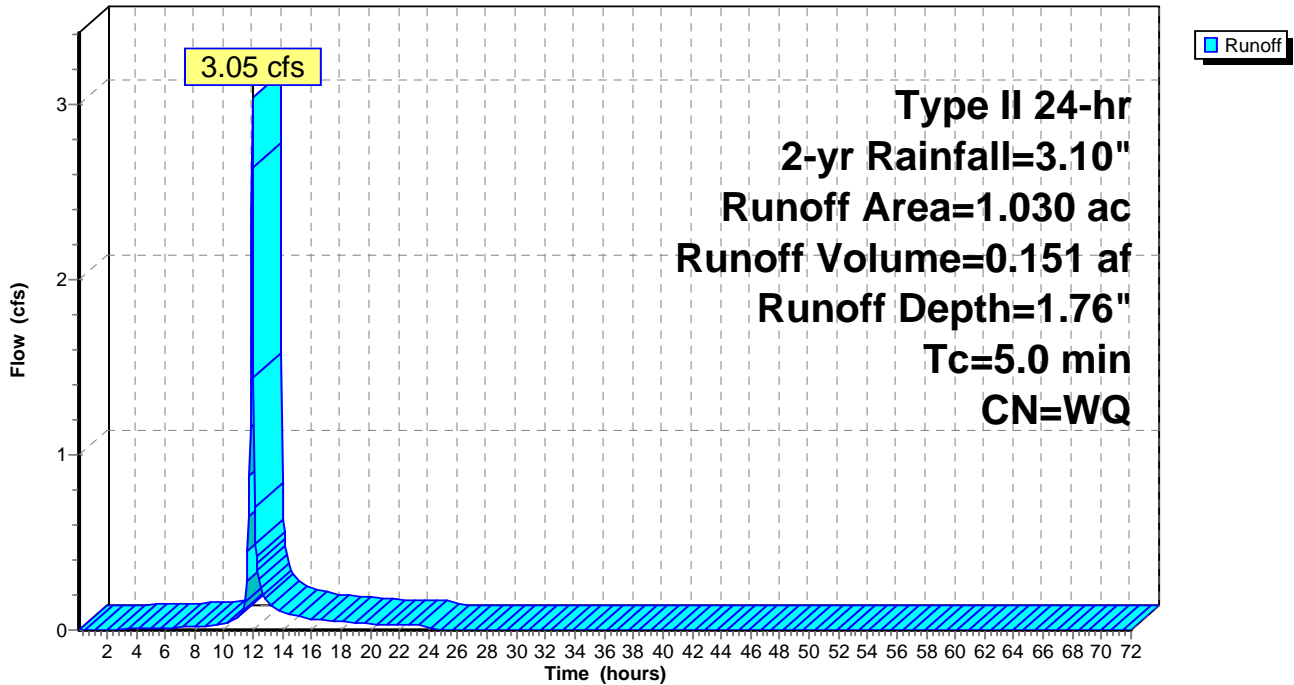
Type II 24-hr 2-yr Rainfall=3.10"

Area (ac)	CN	Description
0.290	98	Paved parking, HSG C
0.740	80	>75% Grass cover, Good, HSG D
1.030		Weighted Average
0.740		71.84% Pervious Area
0.290		28.16% Impervious Area

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

Subcatchment 7S: ONSITE TO OFFSITE BYPASS

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.10"

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Summary for Subcatchment 11S: AREA TO BRYAN RD CULVERT

Runoff = 15.29 cfs @ 12.00 hrs, Volume= 0.885 af, Depth= 2.18"
 Routed to Pond 12P : BRYAN RD CULVERT

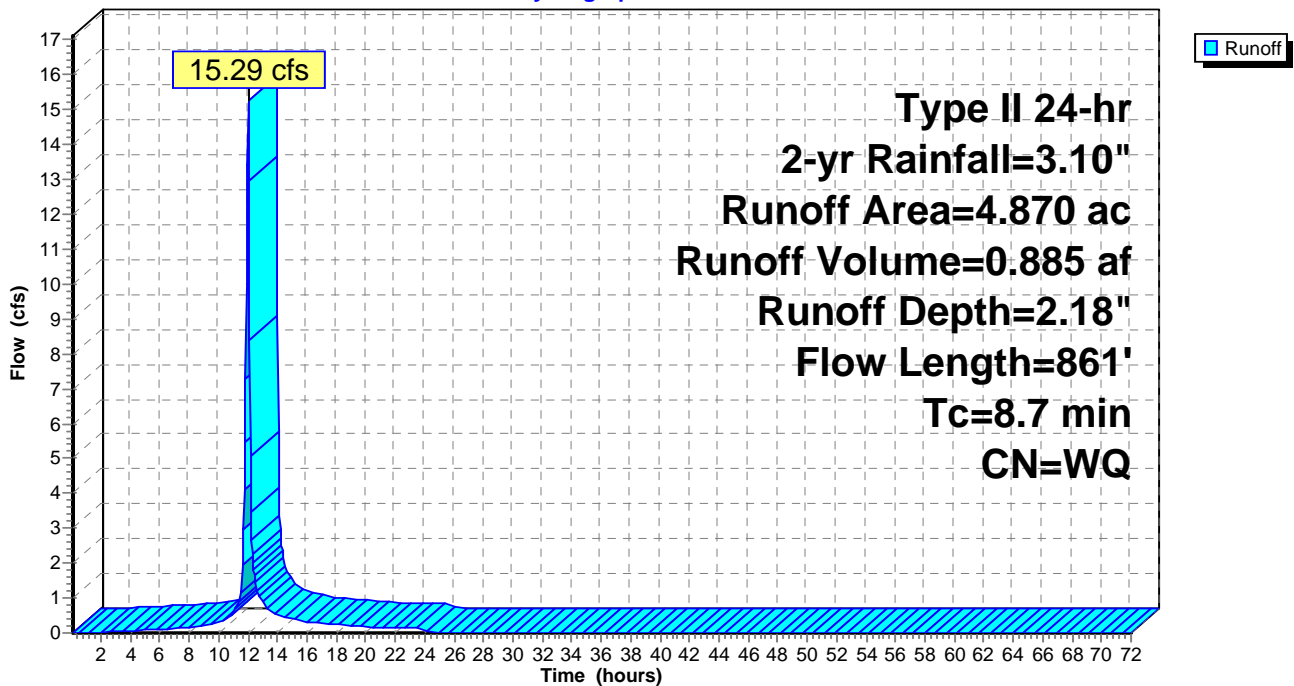
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 2-yr Rainfall=3.10"

Area (ac)	CN	Description
2.700	98	Paved parking, HSG C
2.170	80	>75% Grass cover, Good, HSG D
4.870		Weighted Average
2.170		44.56% Pervious Area
2.700		55.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0200	1.26		Sheet Flow, n= 0.013 P2= 3.50"
2.5	493	0.0430	3.34		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
4.9	268	0.0215	0.91	54.47	Channel Flow, Area= 60.0 sf Perim= 60.0' r= 1.00' n= 0.240 Sheet flow over Dense Grass
8.7	861	Total			

Subcatchment 11S: AREA TO BRYAN RD CULVERT

Hydrograph



Summary for Subcatchment 12S: AREAS 30 & 38

Runoff = 5.58 cfs @ 11.95 hrs, Volume= 0.289 af, Depth= 2.18"
 Routed to Pond 11P : DUAL CULVERTS

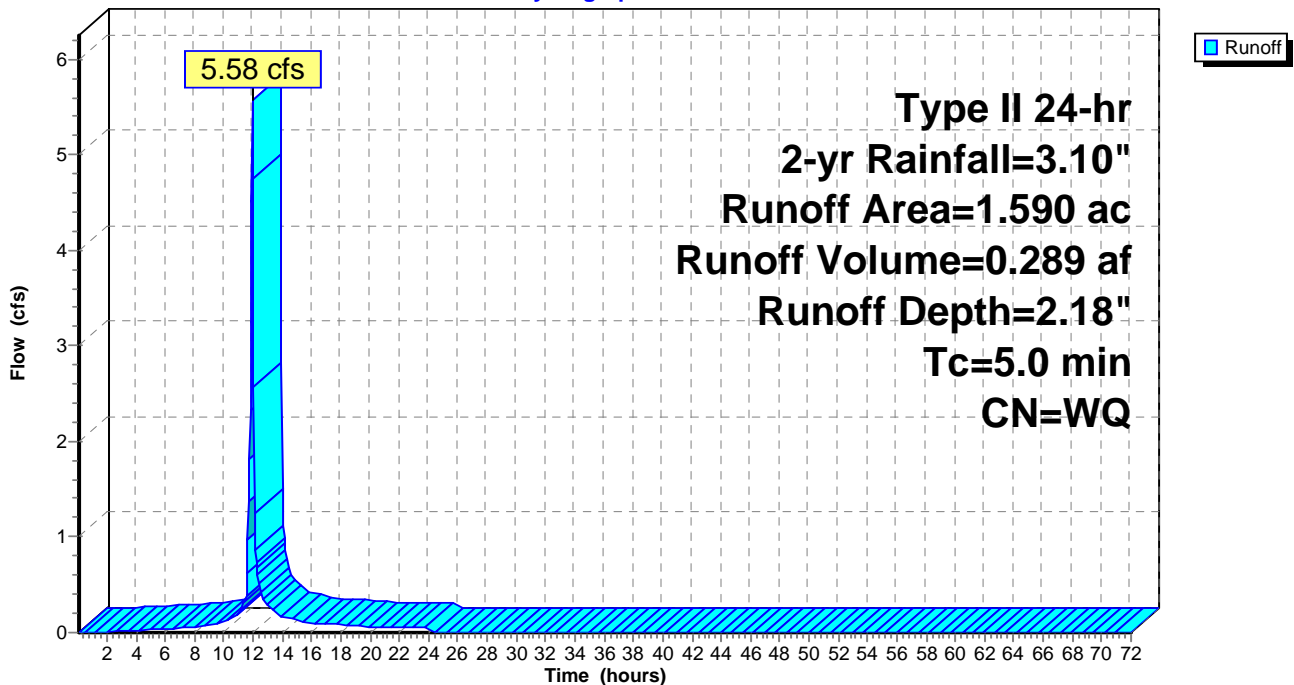
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 2-yr Rainfall=3.10"

Area (ac)	CN	Description
0.200	80	>75% Grass cover, Good, HSG D
0.880	98	Paved parking, HSG D
0.510	80	>75% Grass cover, Good, HSG D
1.590		Weighted Average
0.710		44.65% Pervious Area
0.880		55.35% Impervious Area

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

Subcatchment 12S: AREAS 30 & 38

Hydrograph



Summary for Subcatchment 15S: OFFSITE TO ONSITE TO BASIN 1

Runoff = 0.93 cfs @ 11.96 hrs, Volume= 0.045 af, Depth= 1.65"

Routed to Pond 18P : BASIN 1 FOREBAY 100 YR LFB

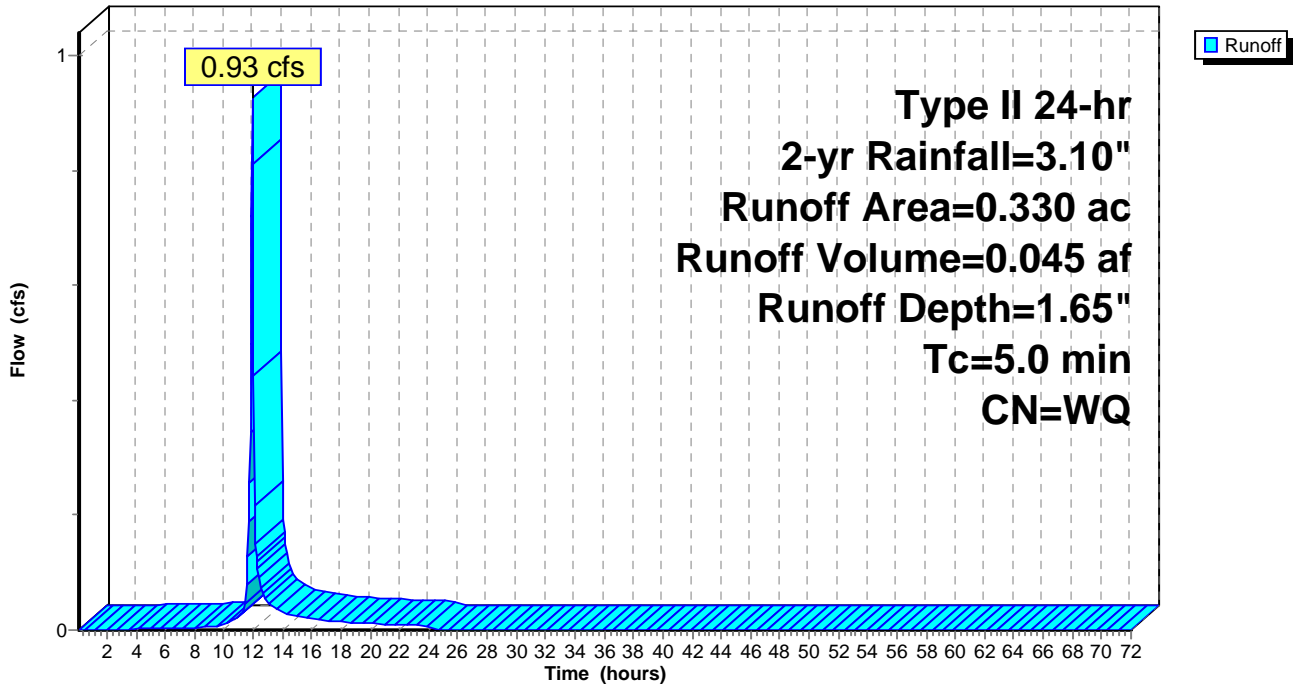
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 2-yr Rainfall=3.10"

Area (ac)	CN	Description
0.070	98	Paved parking, HSG D
0.260	80	>75% Grass cover, Good, HSG D
0.330		Weighted Average
0.260		78.79% Pervious Area
0.070		21.21% Impervious Area

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

Subcatchment 15S: OFFSITE TO ONSITE TO BASIN 1

Hydrograph



Summary for Subcatchment 16S: ONSITE TO BASIN 1

Runoff = 18.64 cfs @ 11.95 hrs, Volume= 0.994 af, Depth= 2.62"

Routed to Pond 18P : BASIN 1 FOREBAY 100 YR LFB

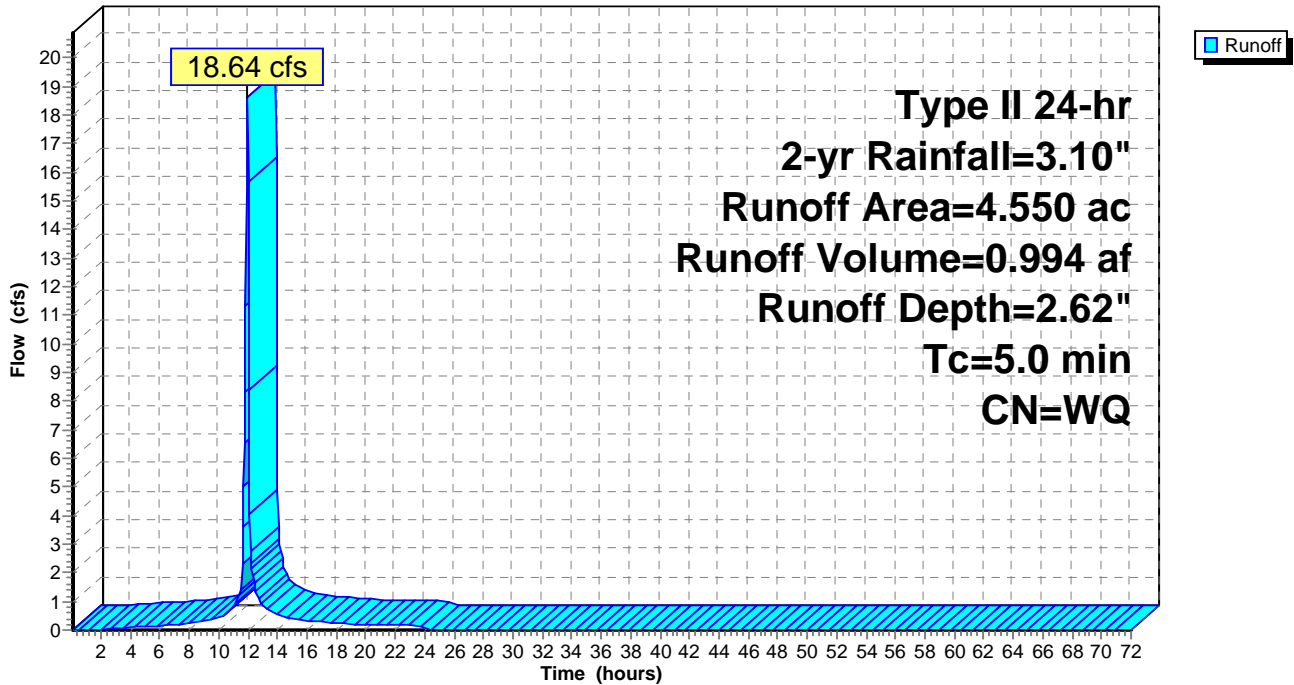
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 2-yr Rainfall=3.10"

Area (ac)	CN	Description
3.820	98	Paved parking, HSG D
0.730	80	>75% Grass cover, Good, HSG D
4.550		Weighted Average
0.730		16.04% Pervious Area
3.820		83.96% Impervious Area

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

Subcatchment 16S: ONSITE TO BASIN 1

Hydrograph



Summary for Subcatchment 19S: OFFSITE TO ONSITE TO BASIN 2

Runoff = 0.31 cfs @ 11.96 hrs, Volume= 0.014 af, Depth= 1.33"
 Routed to Pond 21P : BASIN 2 100 YR LFB

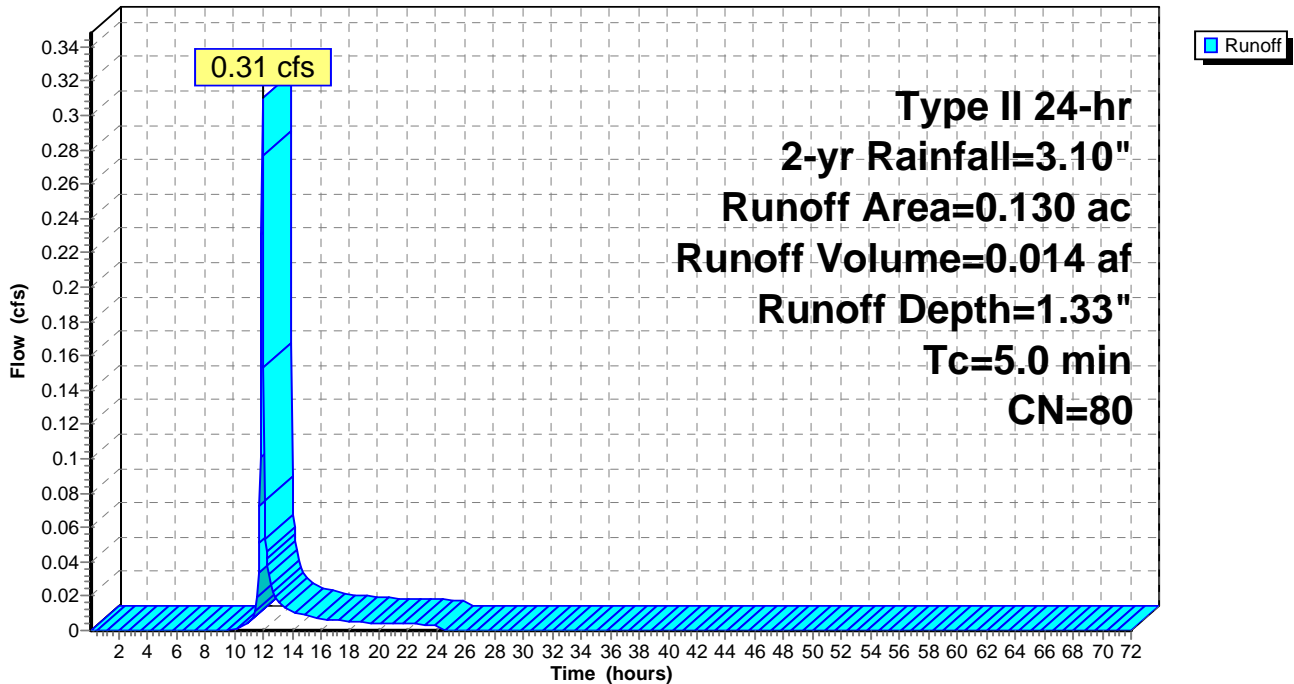
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 2-yr Rainfall=3.10"

Area (ac)	CN	Description
0.130	80	>75% Grass cover, Good, HSG D
0.130		100.00% Pervious Area

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

Subcatchment 19S: OFFSITE TO ONSITE TO BASIN 2

Hydrograph



Summary for Subcatchment 20S: ONSITE TO BASIN 2

Runoff = 10.40 cfs @ 11.95 hrs, Volume= 0.552 af, Depth= 2.56"
 Routed to Pond 21P : BASIN 2 100 YR LFB

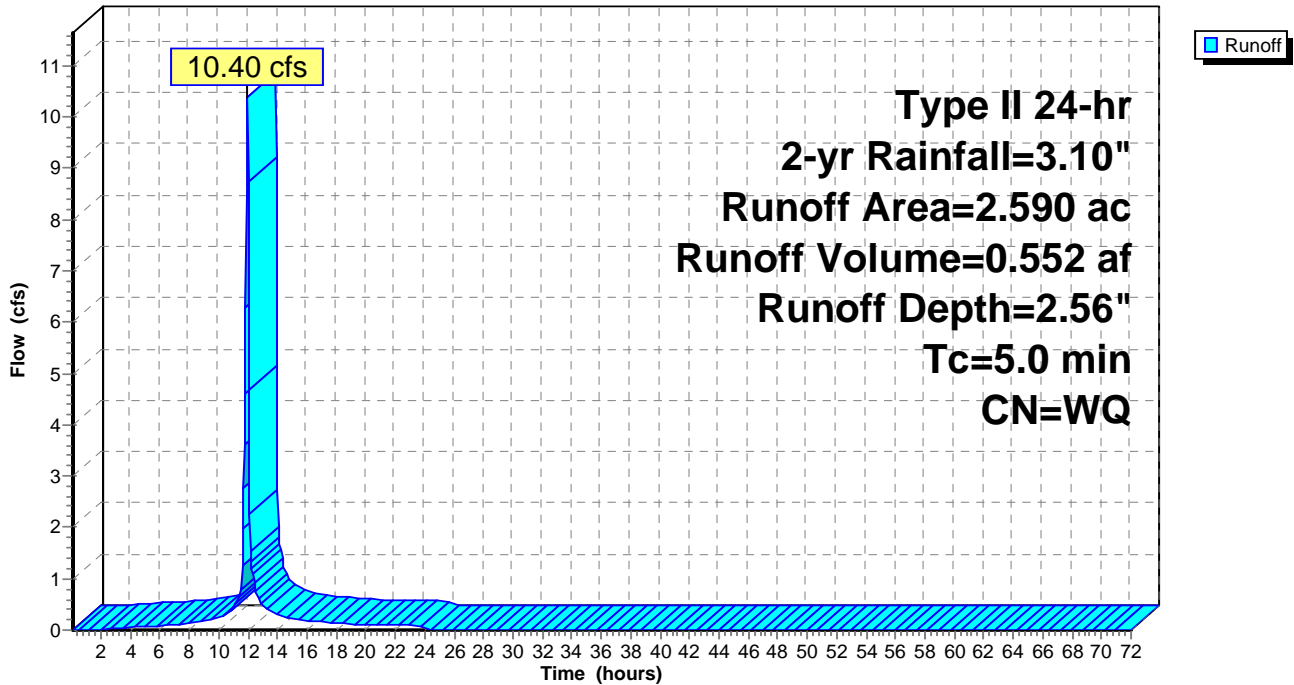
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 2-yr Rainfall=3.10"

Area (ac)	CN	Description
2.070	98	Paved parking, HSG D
0.520	80	>75% Grass cover, Good, HSG D
2.590		Weighted Average
0.520		20.08% Pervious Area
2.070		79.92% Impervious Area

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

Subcatchment 20S: ONSITE TO BASIN 2

Hydrograph



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Type II 24-hr 2-yr Rainfall=3.10"

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Summary for Pond 8P: BASIN 1

Inflow Area = 4.880 ac, 79.71% Impervious, Inflow Depth = 2.56" for 2-yr event
 Inflow = 12.95 cfs @ 12.04 hrs, Volume= 1.039 af
 Outflow = 2.84 cfs @ 12.20 hrs, Volume= 1.039 af, Atten= 78%, Lag= 9.9 min
 Primary = 2.84 cfs @ 12.20 hrs, Volume= 1.039 af
 Routed to Pond 9P : BASIN 2

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 594.64' @ 12.20 hrs Surf.Area= 7,315 sf Storage= 12,714 cf
 Flood Elev= 600.00' Surf.Area= 17,840 sf Storage= 83,183 cf

Plug-Flow detention time= 224.2 min calculated for 1.038 af (100% of inflow)
 Center-of-Mass det. time= 224.1 min (1,205.0 - 980.9)

Volume	Invert	Avail.Storage	Storage Description
#1	589.00'	83,183 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
589.00	2	0	0
590.00	897	450	450
591.00	1,487	1,192	1,642
592.00	2,133	1,810	3,452
593.00	2,836	2,485	5,936
594.00	3,695	3,266	9,202
595.00	9,367	6,531	15,733
596.00	10,948	10,158	25,890
597.00	12,586	11,767	37,657
598.00	14,281	13,434	51,091
599.00	16,032	15,157	66,247
600.00	17,840	16,936	83,183

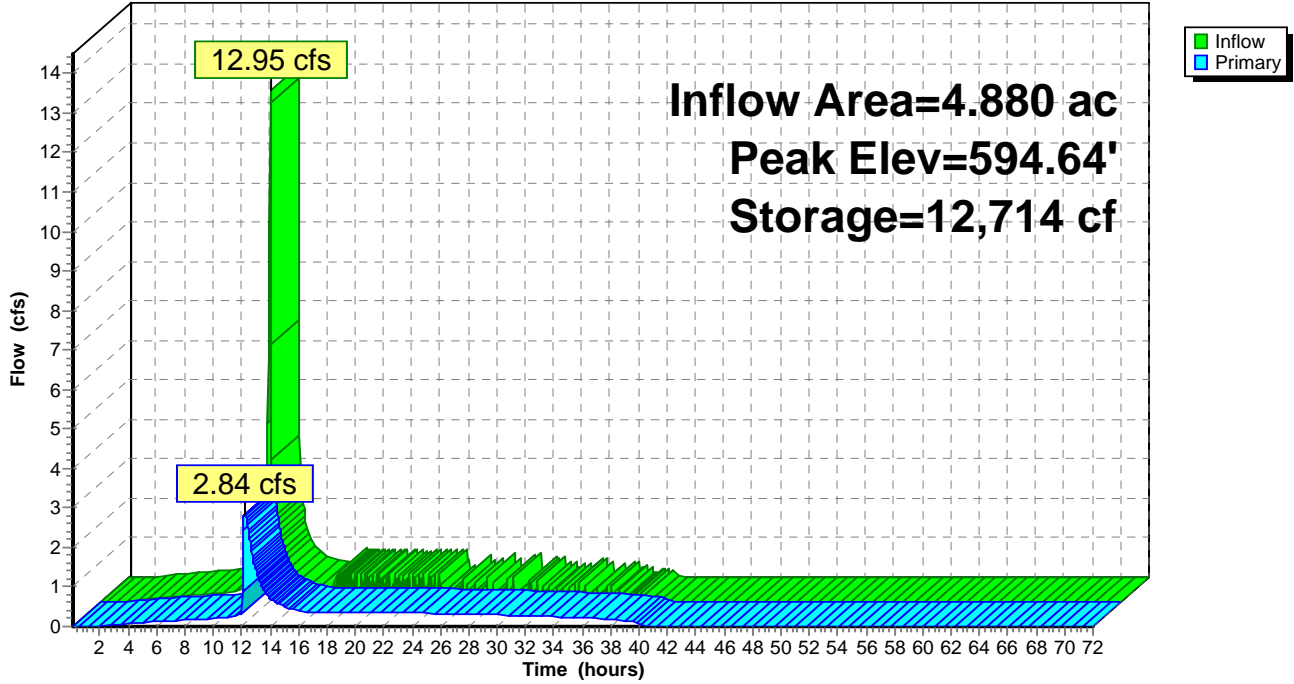
Device	Routing	Invert	Outlet Devices
#1	Primary	585.00'	24.0" Round RCP_Round 24" L= 184.2' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 585.00' / 583.16' S= 0.0100 '/ Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	589.00'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	594.00'	18.0" W x 18.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	598.00'	30.0" x 60.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.84 cfs @ 12.20 hrs HW=594.64' TW=583.99' (Dynamic Tailwater)

- 1=RCP_Round 24" (Passes 2.84 cfs of 43.69 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.39 cfs @ 11.33 fps)
- 3=Orifice/Grate (Orifice Controls 2.45 cfs @ 2.56 fps)
- 4=Orifice/Grate (Controls 0.00 cfs)

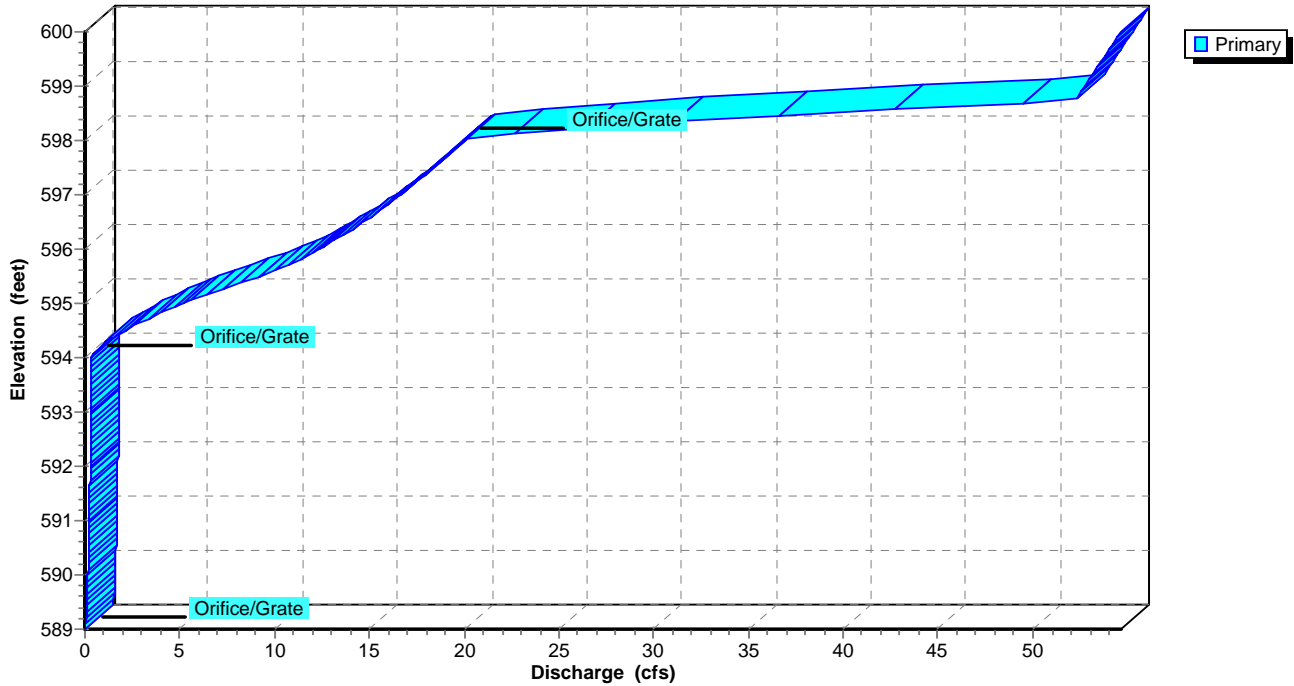
Pond 8P: BASIN 1

Hydrograph

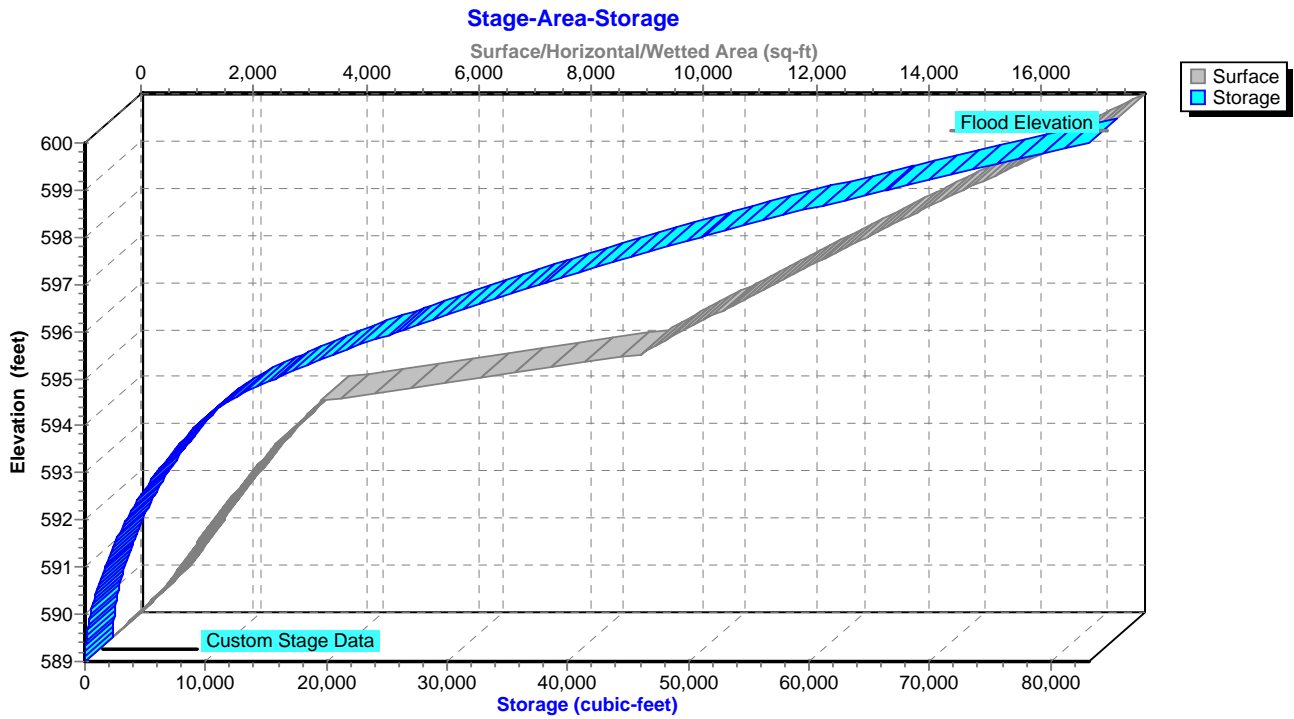


Pond 8P: BASIN 1

Stage-Discharge



Pond 8P: BASIN 1



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Type II 24-hr 2-yr Rainfall=3.10"

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Summary for Pond 9P: BASIN 2

Inflow Area = 7.600 ac, 78.42% Impervious, Inflow Depth = 2.54" for 2-yr event
 Inflow = 11.05 cfs @ 11.95 hrs, Volume= 1.606 af
 Outflow = 8.12 cfs @ 12.02 hrs, Volume= 1.605 af, Atten= 26%, Lag= 4.3 min
 Primary = 8.12 cfs @ 12.02 hrs, Volume= 1.605 af
 Routed to Link 14L : POST DEVELOPED RUNOFF

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 584.37' @ 12.02 hrs Surf.Area= 2,369 sf Storage= 10,926 cf

Plug-Flow detention time= 206.2 min calculated for 1.604 af (100% of inflow)
 Center-of-Mass det. time= 205.9 min (1,255.1 - 1,049.2)

Volume	Invert	Avail.Storage	Storage Description
#1	578.75'	38,298 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
578.75	1	0	0
579.00	205	26	26
580.00	2,080	1,143	1,168
581.00	2,152	2,116	3,284
582.00	2,222	2,187	5,471
583.00	2,287	2,255	7,726
584.00	2,348	2,318	10,043
585.00	2,404	2,376	12,419
586.00	2,456	2,430	14,849
587.00	2,504	2,480	17,329
588.00	2,547	2,526	19,855
589.00	2,998	2,773	22,627
590.00	4,800	3,899	26,526
591.00	5,862	5,331	31,857
592.00	7,020	6,441	38,298

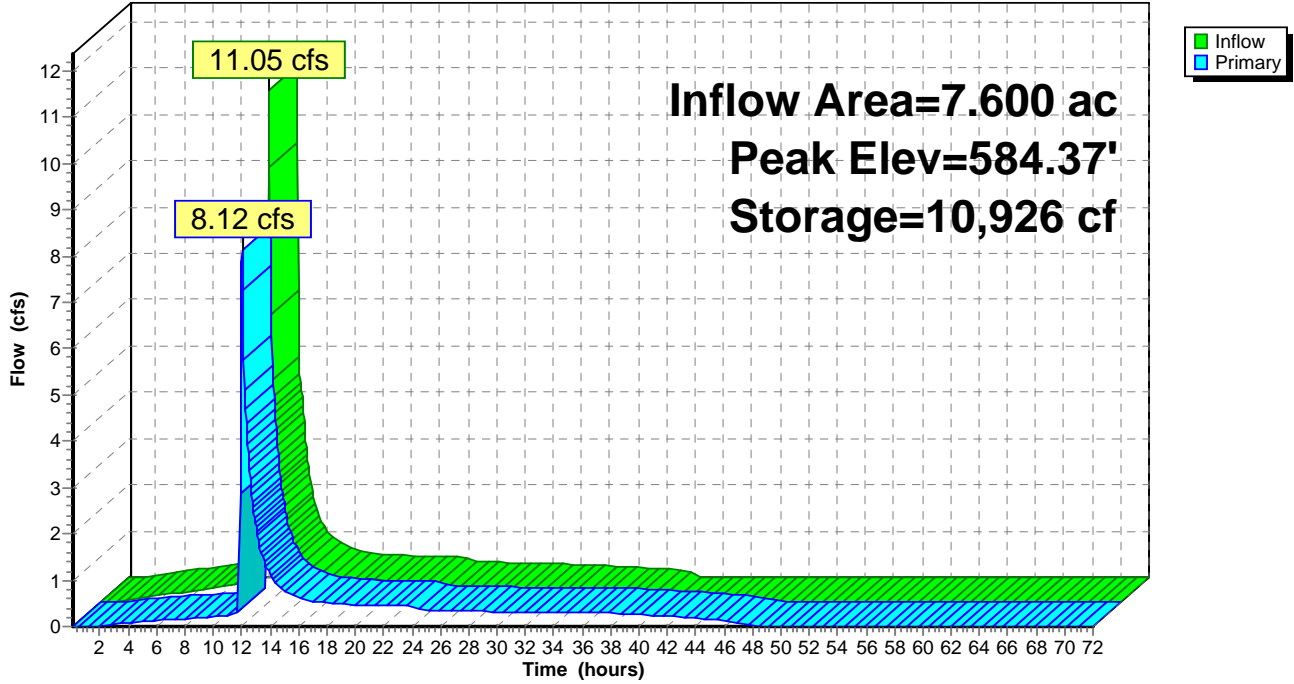
Device	Routing	Invert	Outlet Devices
#1	Primary	576.73'	30.0" Round RCP_Round 30" L= 15.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 576.73' / 576.58' S= 0.0100 1/ S= 0.0100 1/ Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	579.00'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	583.00'	18.0" W x 18.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	589.00'	30.0" x 60.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.86 cfs @ 12.02 hrs HW=584.34' TW=0.00' (Dynamic Tailwater)

- 1=RCP_Round 30" (Passes 7.86 cfs of 74.52 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.38 cfs @ 11.02 fps)
- 3=Orifice/Grate (Orifice Controls 7.48 cfs @ 3.72 fps)
- 4=Orifice/Grate (Controls 0.00 cfs)

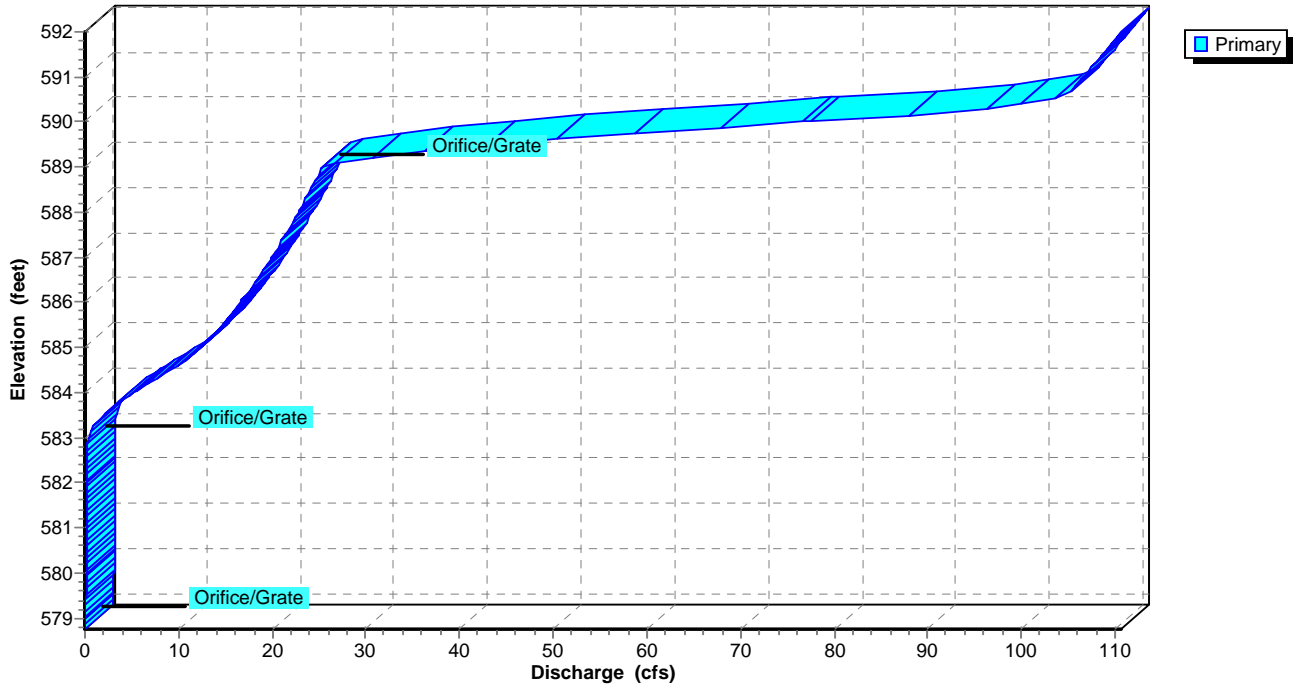
Pond 9P: BASIN 2

Hydrograph

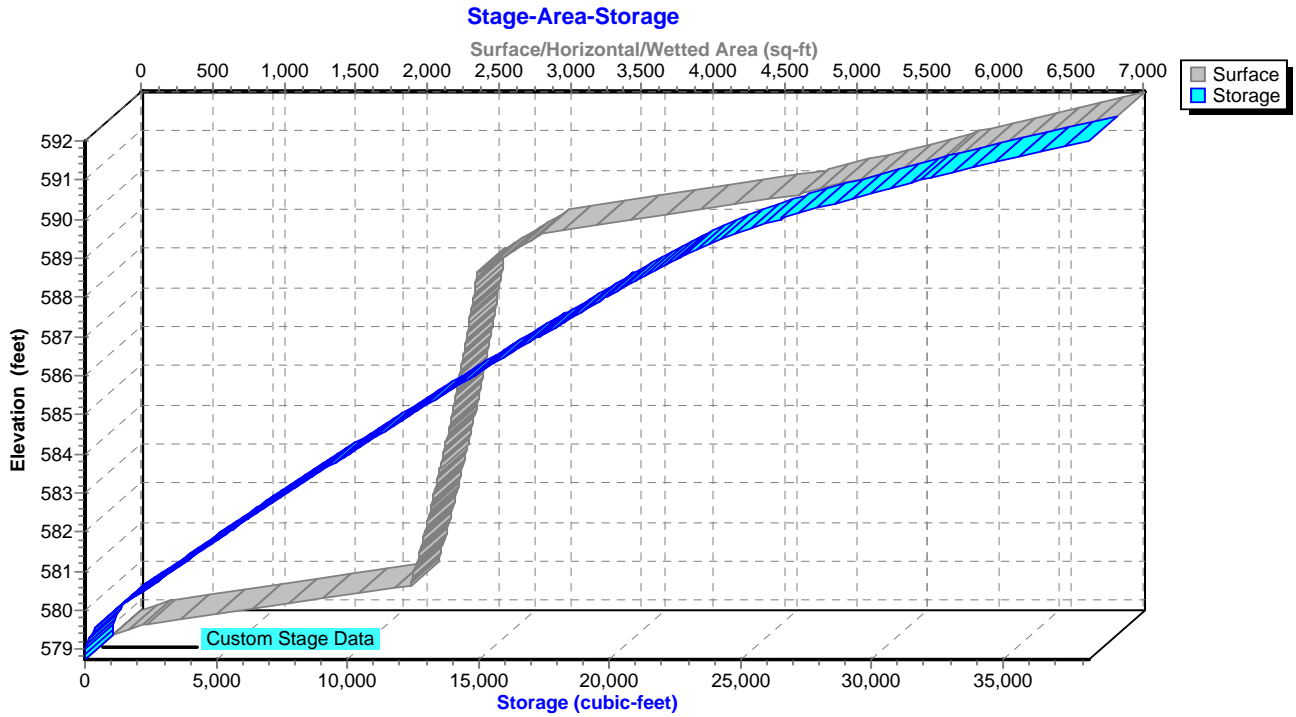


Pond 9P: BASIN 2

Stage-Discharge



Pond 9P: BASIN 2



Summary for Pond 10R: 201 TO JS

Inflow Area = 8.630 ac, 72.42% Impervious, Inflow Depth = 2.44" for 2-yr event
 Inflow = 10.53 cfs @ 12.00 hrs, Volume= 1.756 af
 Outflow = 10.53 cfs @ 12.00 hrs, Volume= 1.756 af, Atten= 0%, Lag= 0.0 min
 Primary = 10.53 cfs @ 12.00 hrs, Volume= 1.756 af
 Routed to Pond 11P : DUAL CULVERTS

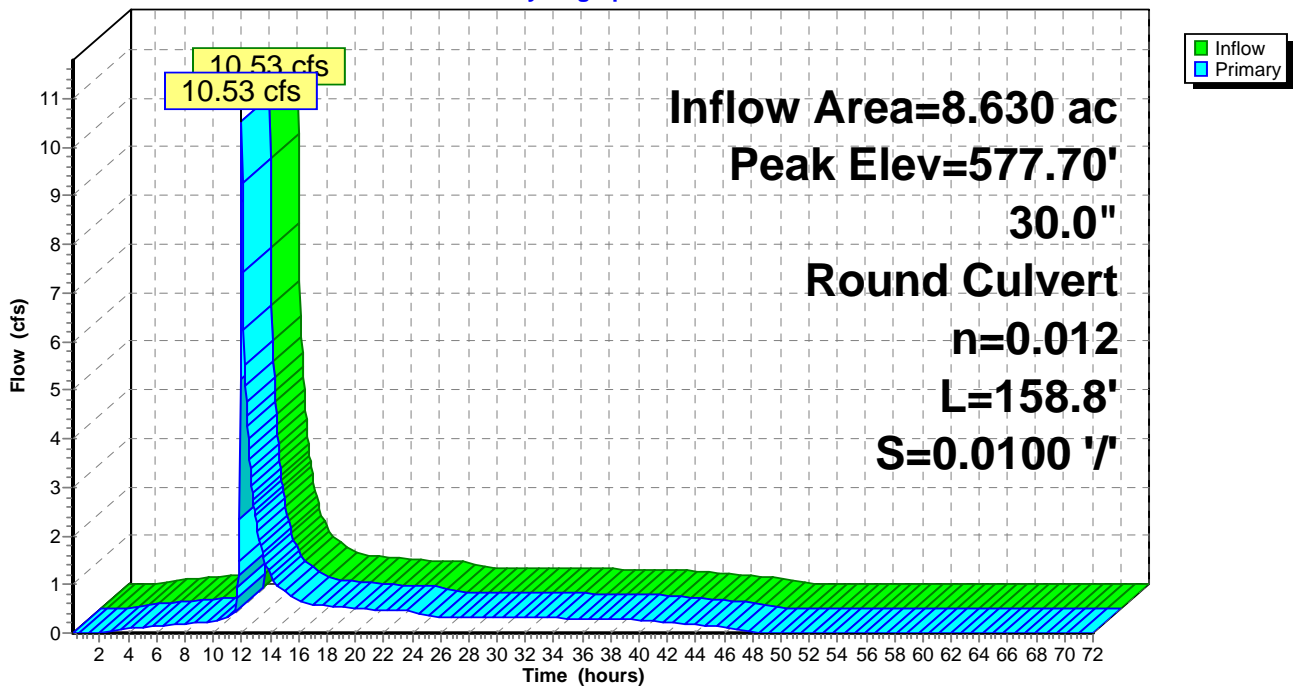
Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 577.70' @ 12.00 hrs
 Flood Elev= 583.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	576.36'	30.0" Round Culvert L= 158.8' Ke= 0.500 Inlet / Outlet Invert= 576.36' / 574.77' S= 0.0100 '/ Cc= 0.900 n= 0.012, Flow Area= 4.91 sf

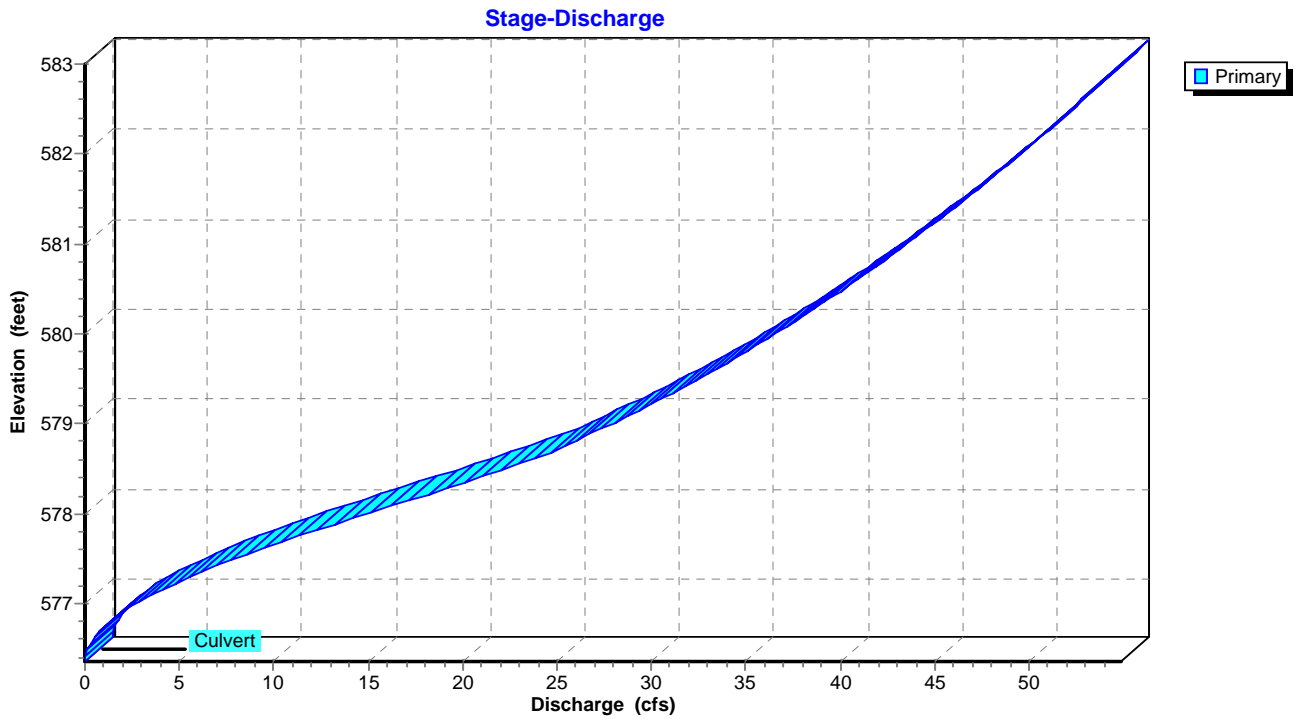
Primary OutFlow Max=10.43 cfs @ 12.00 hrs HW=577.69' TW=575.82' (Dynamic Tailwater)
 ←1=Culvert (Inlet Controls 10.43 cfs @ 3.93 fps)

Pond 10R: 201 TO JS

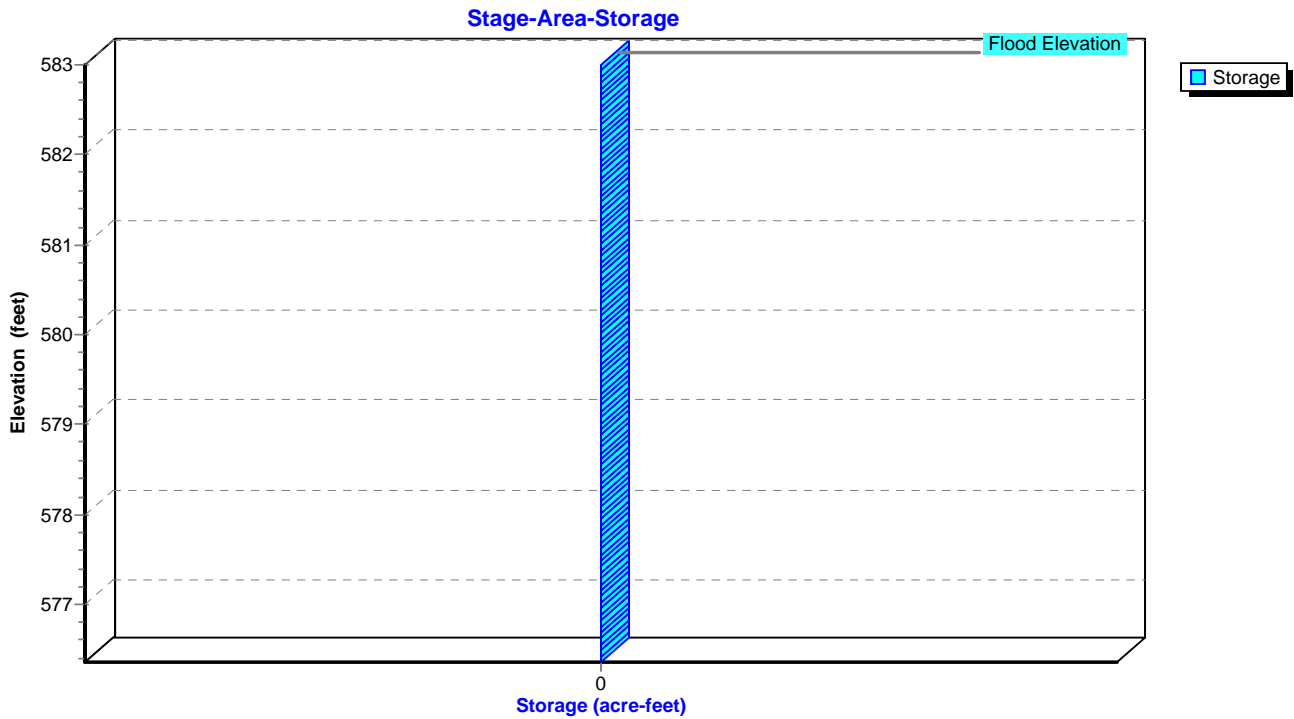
Hydrograph



Pond 10R: 201 TO JS



Pond 10R: 201 TO JS



Summary for Pond 11P: DUAL CULVERTS

Inflow Area = 15.090 ac, 65.14% Impervious, Inflow Depth = 2.33" for 2-yr event
 Inflow = 30.70 cfs @ 11.99 hrs, Volume= 2.930 af
 Outflow = 30.70 cfs @ 11.99 hrs, Volume= 2.930 af, Atten= 0%, Lag= 0.0 min
 Primary = 30.70 cfs @ 11.99 hrs, Volume= 2.930 af

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 575.84' @ 11.99 hrs
 Flood Elev= 582.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	574.44'	54.0" Round RCP_Round 54" L= 84.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 574.44' / 573.62' S= 0.0098 ' / Cc= 0.900 n= 0.013, Flow Area= 15.90 sf
#2	Primary	574.47'	54.0" Round RCP_Round 54" L= 84.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 574.47' / 573.79' S= 0.0081 ' / Cc= 0.900 n= 0.013, Flow Area= 15.90 sf

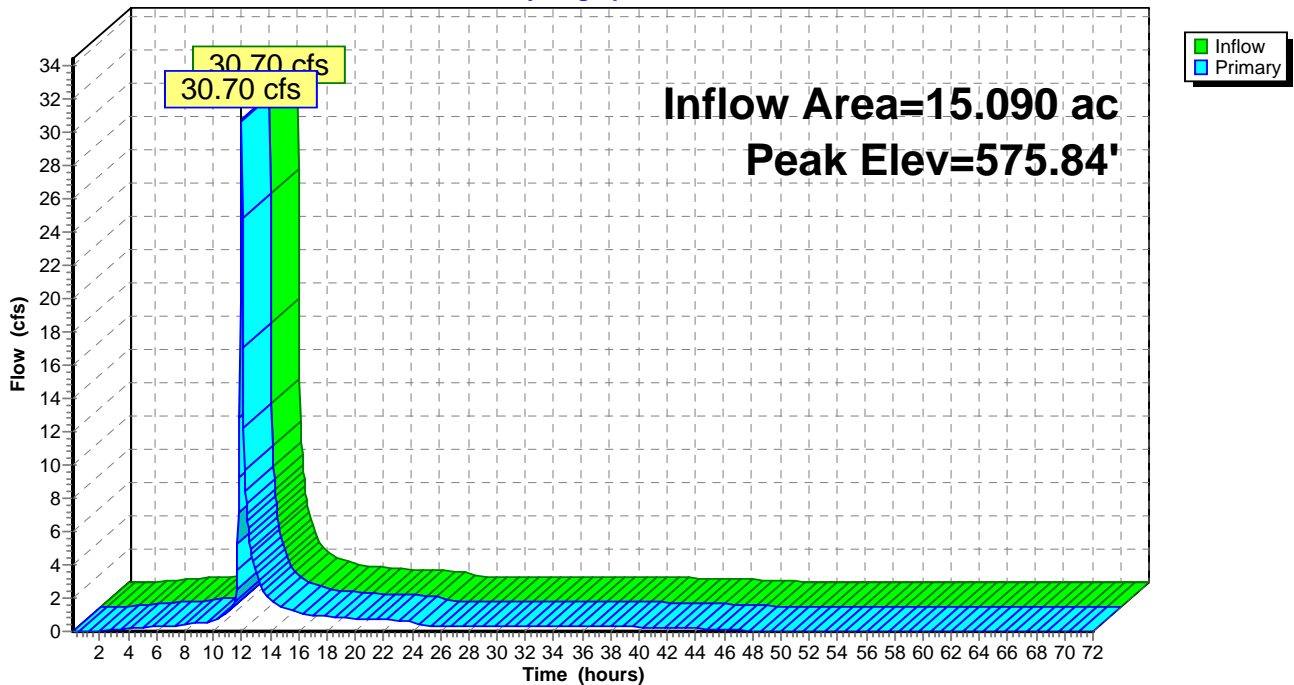
Primary OutFlow Max=30.07 cfs @ 11.99 hrs HW=575.82' (Free Discharge)

1=RCP_Round 54" (Barrel Controls 15.81 cfs @ 5.72 fps)

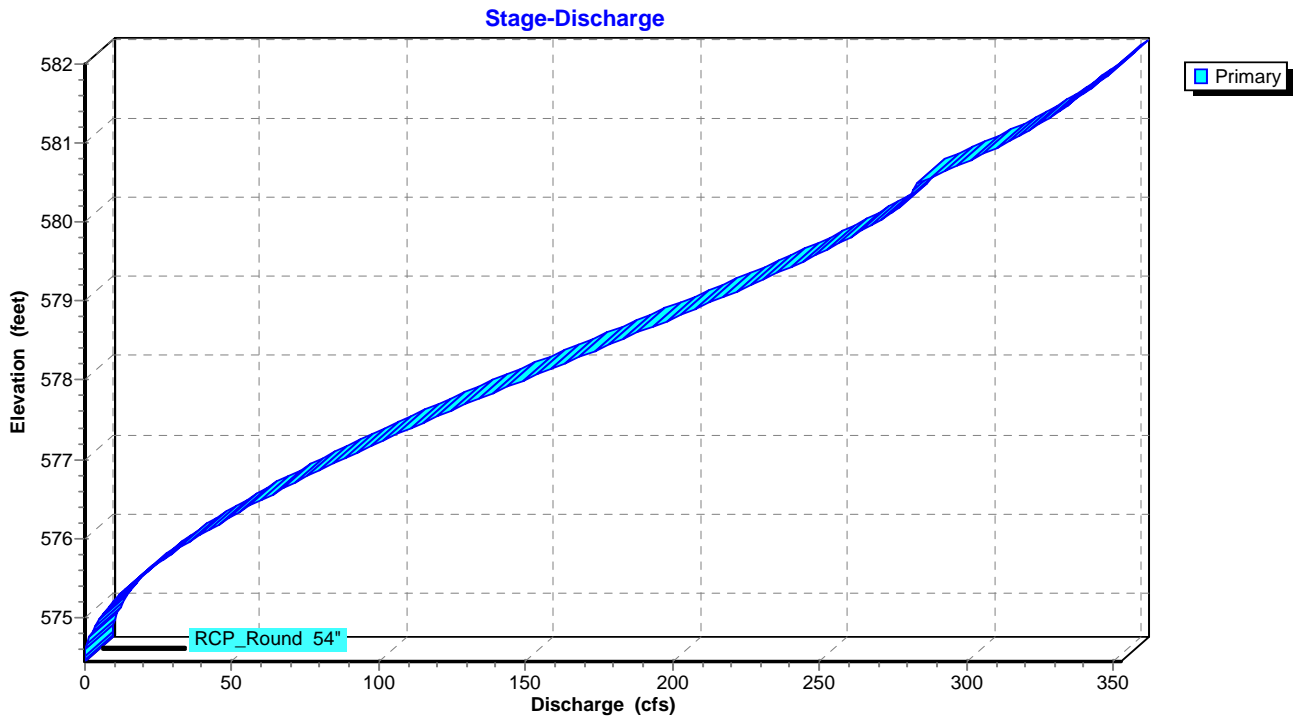
2=RCP_Round 54" (Barrel Controls 14.26 cfs @ 5.32 fps)

Pond 11P: DUAL CULVERTS

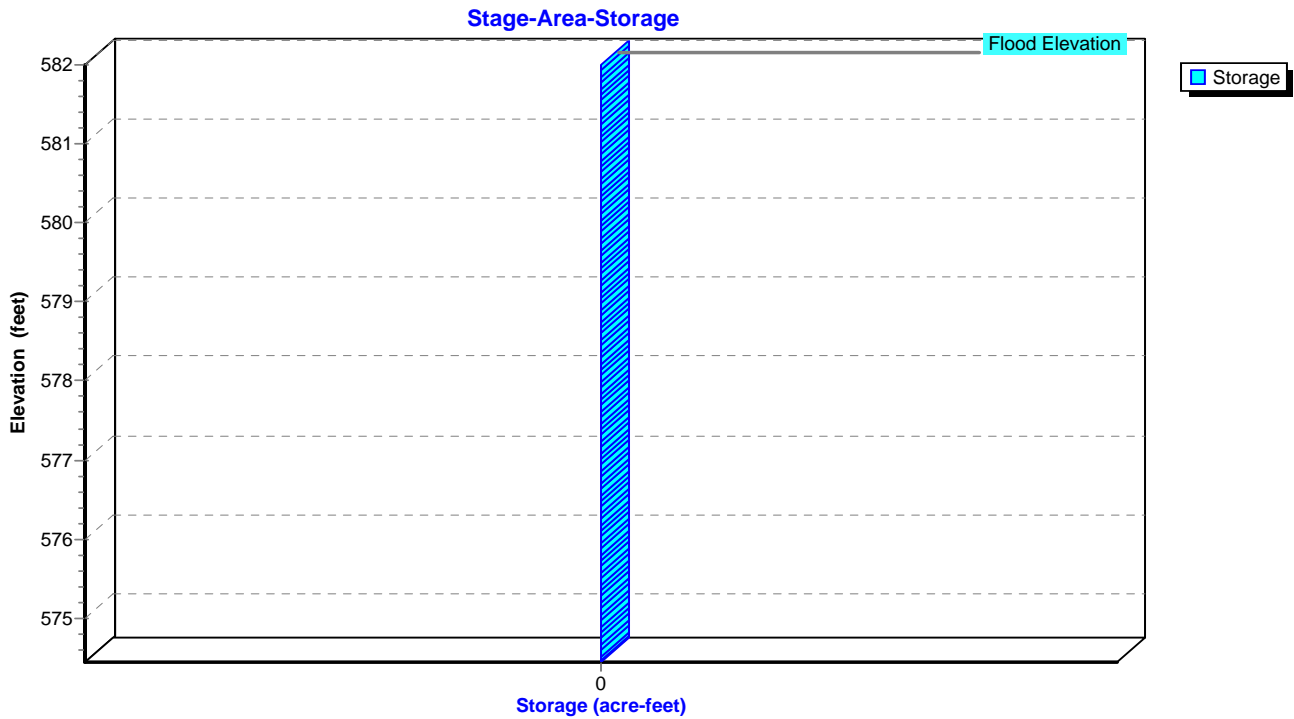
Hydrograph



Pond 11P: DUAL CULVERTS



Pond 11P: DUAL CULVERTS



Summary for Pond 12P: BRYAN RD CULVERT

Inflow Area = 4.870 ac, 55.44% Impervious, Inflow Depth = 2.18" for 2-yr event
 Inflow = 15.29 cfs @ 12.00 hrs, Volume= 0.885 af
 Outflow = 15.29 cfs @ 12.00 hrs, Volume= 0.885 af, Atten= 0%, Lag= 0.0 min
 Primary = 15.29 cfs @ 12.00 hrs, Volume= 0.885 af
 Routed to Pond 11P : DUAL CULVERTS

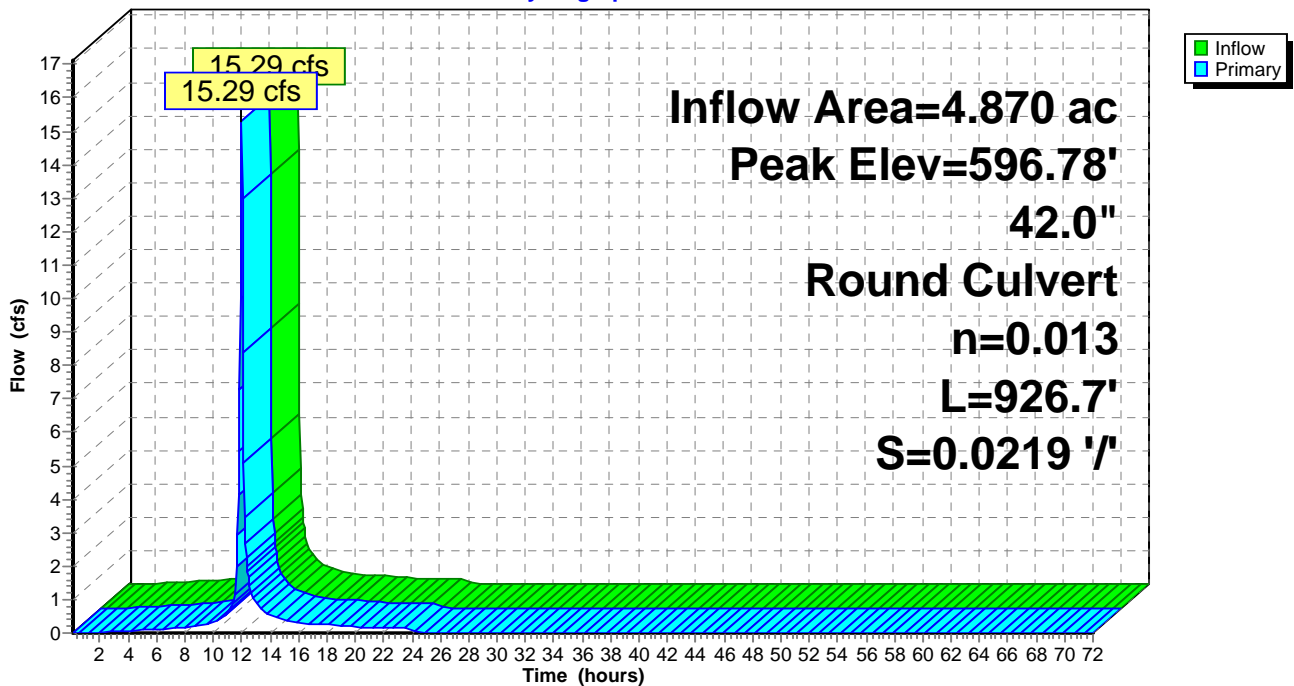
Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 596.78' @ 12.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	595.34'	42.0" Round Culvert L= 926.7' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 595.34' / 575.00' S= 0.0219 '/ Cc= 0.900 n= 0.013, Flow Area= 9.62 sf

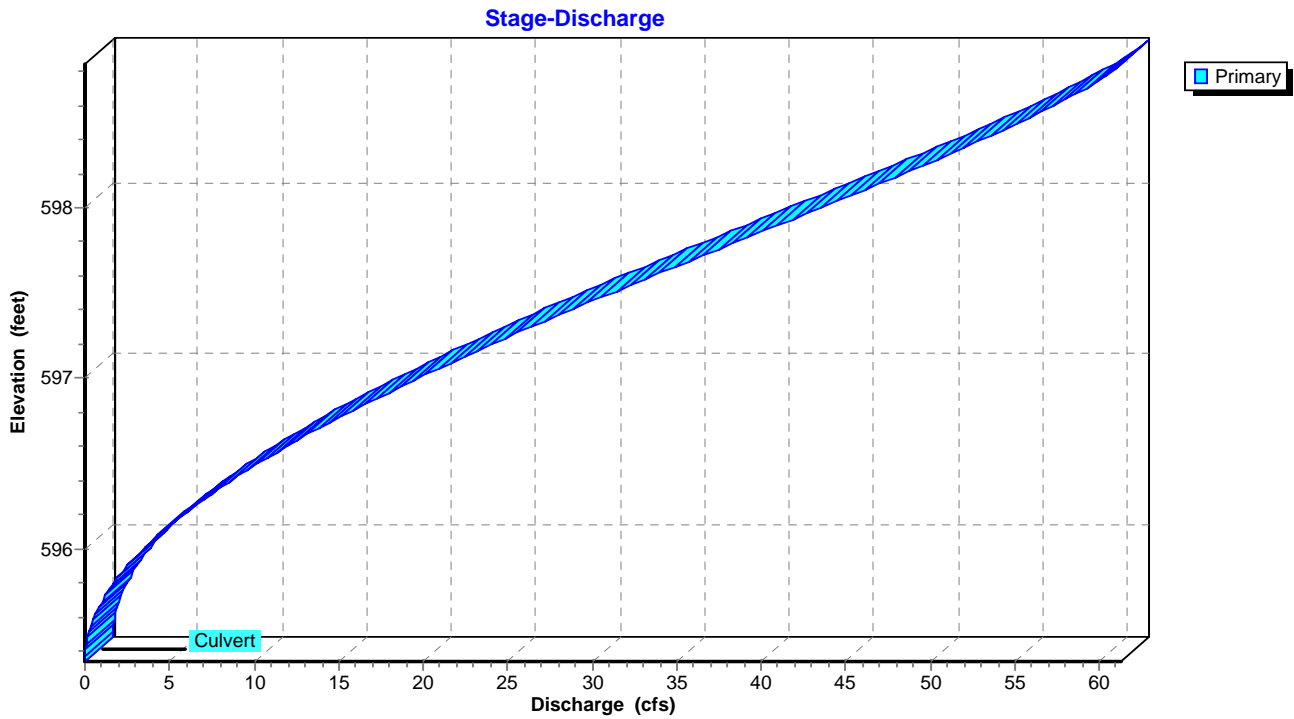
Primary OutFlow Max=15.18 cfs @ 12.00 hrs HW=596.78' TW=575.83' (Dynamic Tailwater)
 ←1=Culvert (Inlet Controls 15.18 cfs @ 4.08 fps)

Pond 12P: BRYAN RD CULVERT

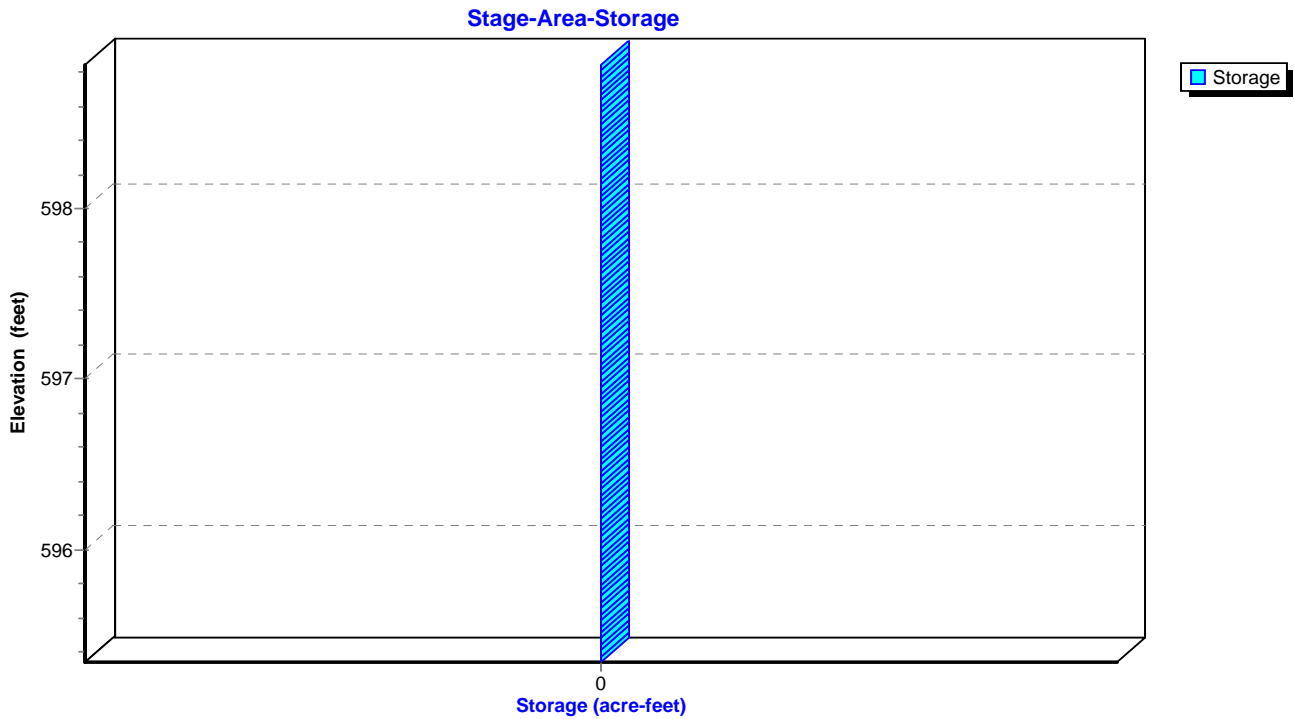
Hydrograph



Pond 12P: BRYAN RD CULVERT



Pond 12P: BRYAN RD CULVERT



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Type II 24-hr 2-yr Rainfall=3.10"

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Summary for Pond 13P: BASIN 1 FOREBAY

Inflow Area = 4.880 ac, 79.71% Impervious, Inflow Depth = 2.55" for 2-yr event
 Inflow = 19.57 cfs @ 11.95 hrs, Volume= 1.039 af
 Outflow = 12.95 cfs @ 12.04 hrs, Volume= 1.039 af, Atten= 34%, Lag= 5.1 min
 Primary = 12.95 cfs @ 12.04 hrs, Volume= 1.039 af
 Routed to Pond 8P : BASIN 1

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 594.00' @ 12.00 hrs Surf.Area= 3,845 sf Storage= 9,545 cf
 Flood Elev= 600.00' Surf.Area= 3,845 sf Storage= 9,545 cf

Plug-Flow detention time= 218.9 min calculated for 1.038 af (100% of inflow)
 Center-of-Mass det. time= 219.4 min (980.9 - 761.5)

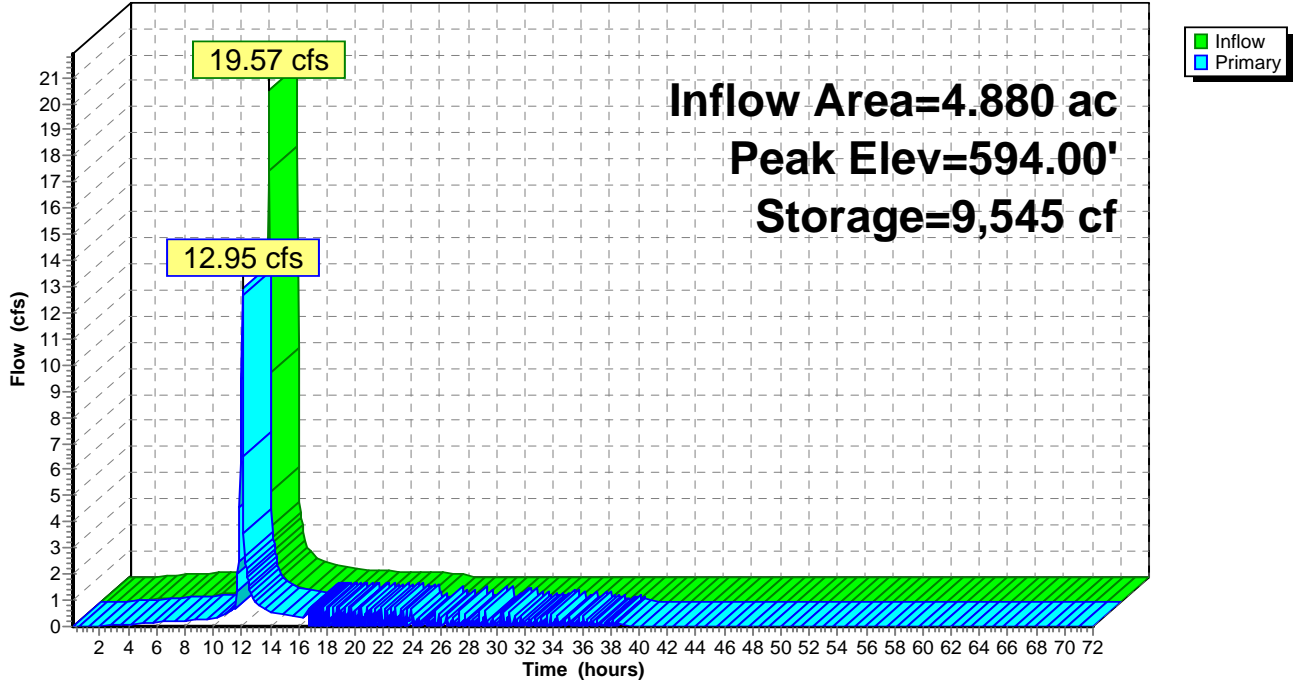
Volume	Invert	Avail.Storage	Storage Description
#1	590.00'	9,545 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
590.00	1,069	0	0
591.00	1,678	1,374	1,374
592.00	2,344	2,011	3,385
593.00	3,066	2,705	6,090
594.00	3,845	3,456	9,545

Device	Routing	Invert	Outlet Devices
#0	Primary	594.00'	Automatic Storage Overflow (Discharged without head)
#1	Primary	590.00'	36.00' long x 30.00' breadth x 4.06' high Rock Fill Rock Diam.= 18.000", S.D.= 4.000", Voids= 40.0%

Primary OutFlow Max=0.00 cfs @ 12.04 hrs HW=594.00' TW=594.23' (Dynamic Tailwater)
 ↑1=Rock Fill (Controls 0.00 cfs)

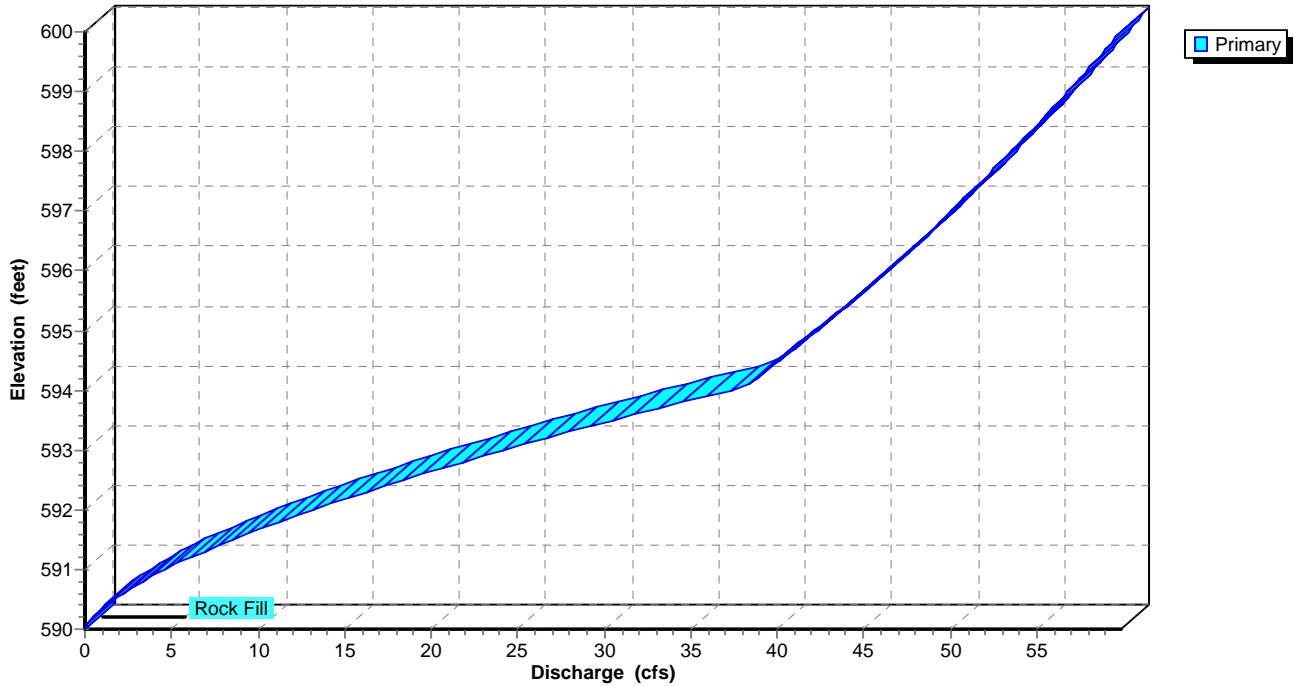
Pond 13P: BASIN 1 FOREBAY

Hydrograph



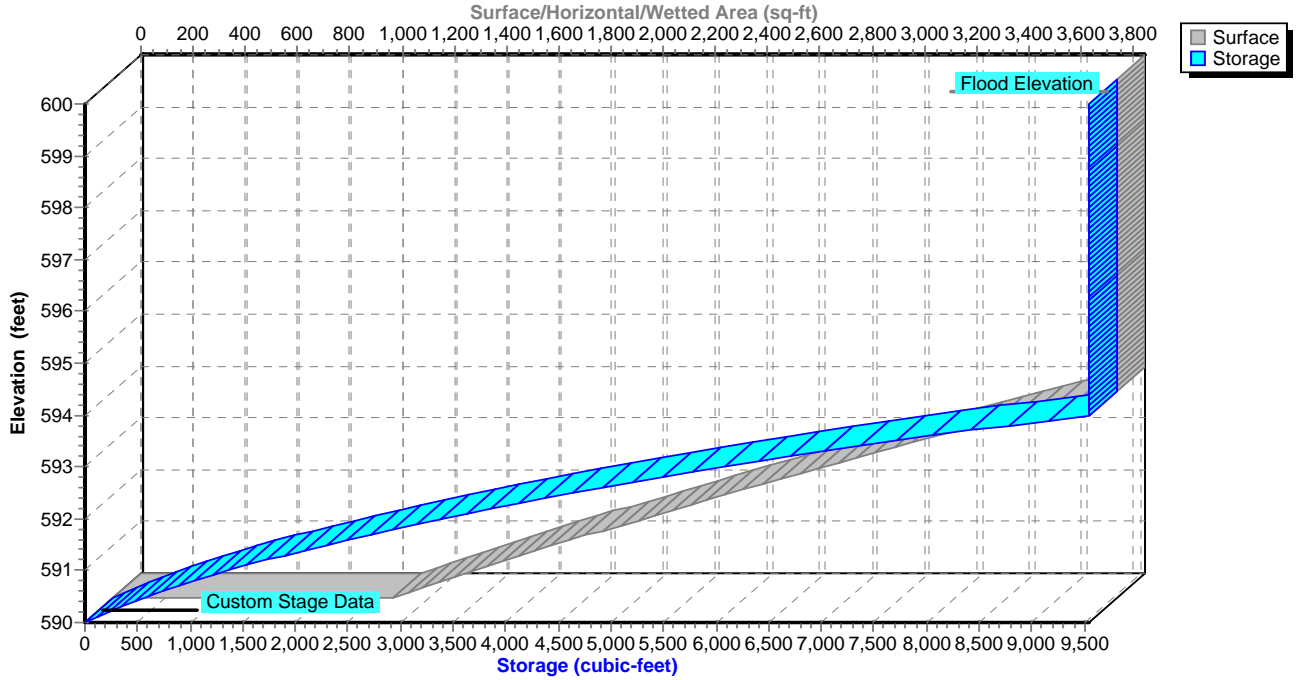
Pond 13P: BASIN 1 FOREBAY

Stage-Discharge



Pond 13P: BASIN 1 FOREBAY

Stage-Area-Storage



Summary for Pond 17P: BASIN 1 100 YR LFB

Inflow Area = 4.880 ac, 79.71% Impervious, Inflow Depth = 2.10" for 2-yr event
 Inflow = 18.62 cfs @ 11.98 hrs, Volume= 0.855 af
 Outflow = 5.85 cfs @ 12.12 hrs, Volume= 0.644 af, Atten= 69%, Lag= 8.5 min
 Primary = 5.85 cfs @ 12.12 hrs, Volume= 0.646 af
 Routed to Pond 21P : BASIN 2 100 YR LFB

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 595.14' @ 12.12 hrs Surf.Area= 9,585 sf Storage= 17,042 cf
 Flood Elev= 600.00' Surf.Area= 17,840 sf Storage= 83,183 cf

Plug-Flow detention time= 186.2 min calculated for 0.644 af (75% of inflow)
 Center-of-Mass det. time= 89.8 min (884.1 - 794.3)

Volume	Invert	Avail.Storage	Storage Description
#1	589.00'	83,183 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
589.00	2	0	0
590.00	897	450	450
591.00	1,487	1,192	1,642
592.00	2,133	1,810	3,452
593.00	2,836	2,485	5,936
594.00	3,695	3,266	9,202
595.00	9,367	6,531	15,733
596.00	10,948	10,158	25,890
597.00	12,586	11,767	37,657
598.00	14,281	13,434	51,091
599.00	16,032	15,157	66,247
600.00	17,840	16,936	83,183

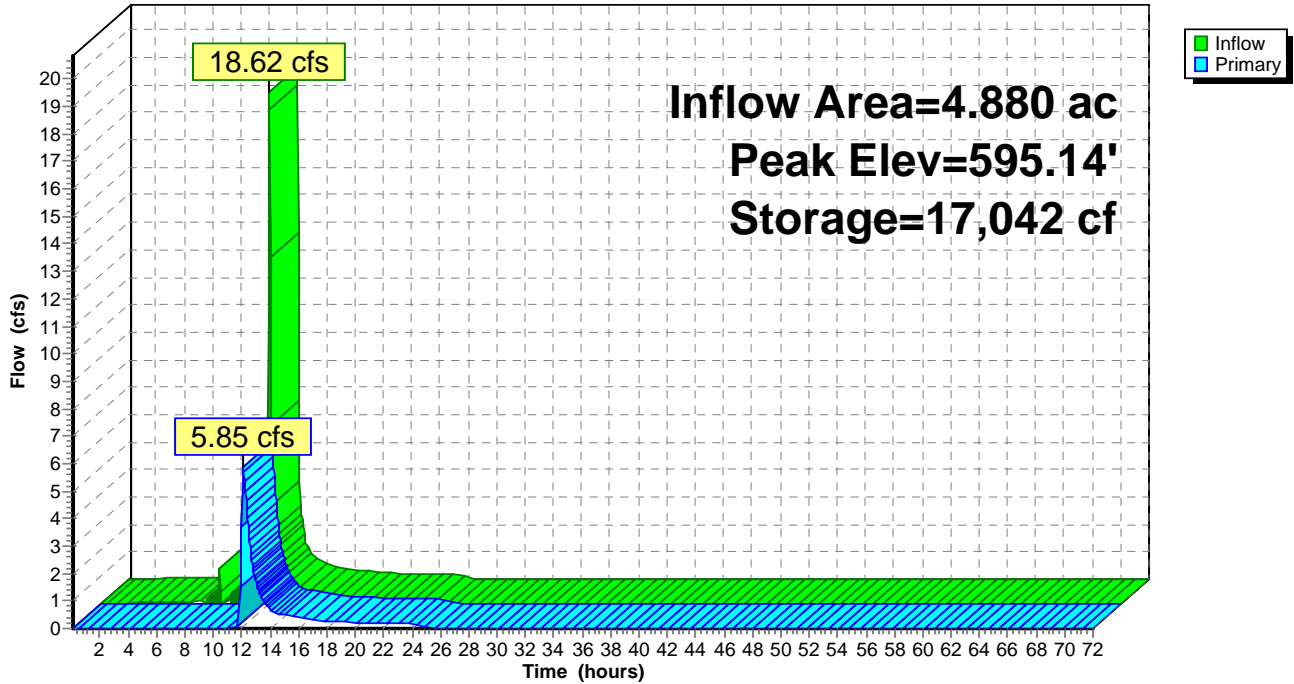
Device	Routing	Invert	Outlet Devices
#1	Primary	585.00'	24.0" Round RCP_Round 24" L= 184.2' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 585.00' / 583.16' S= 0.0100 1/ Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	594.00'	18.0" W x 18.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	598.00'	30.0" x 60.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.77 cfs @ 12.12 hrs HW=595.13' TW=584.58' (Dynamic Tailwater)

- 1=RCP_Round 24" (Passes 5.77 cfs of 44.80 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 5.77 cfs @ 3.41 fps)
- 3=Orifice/Grate (Controls 0.00 cfs)

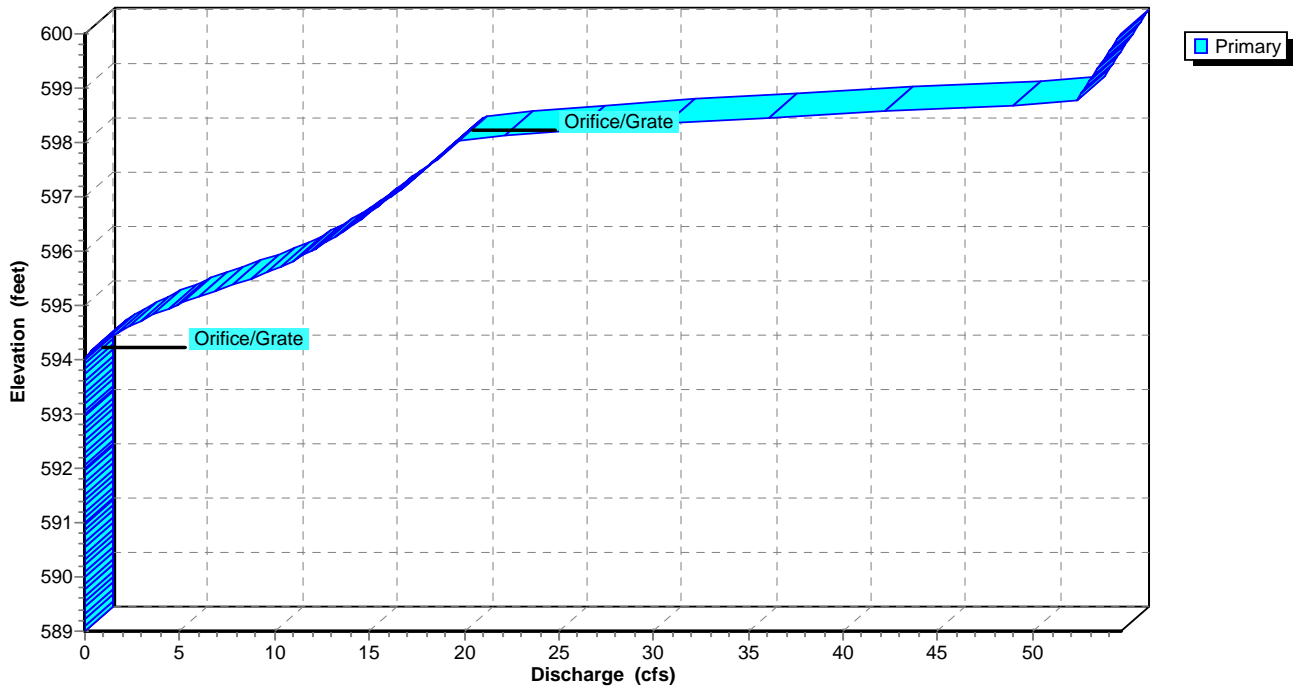
Pond 17P: BASIN 1 100 YR LFB

Hydrograph

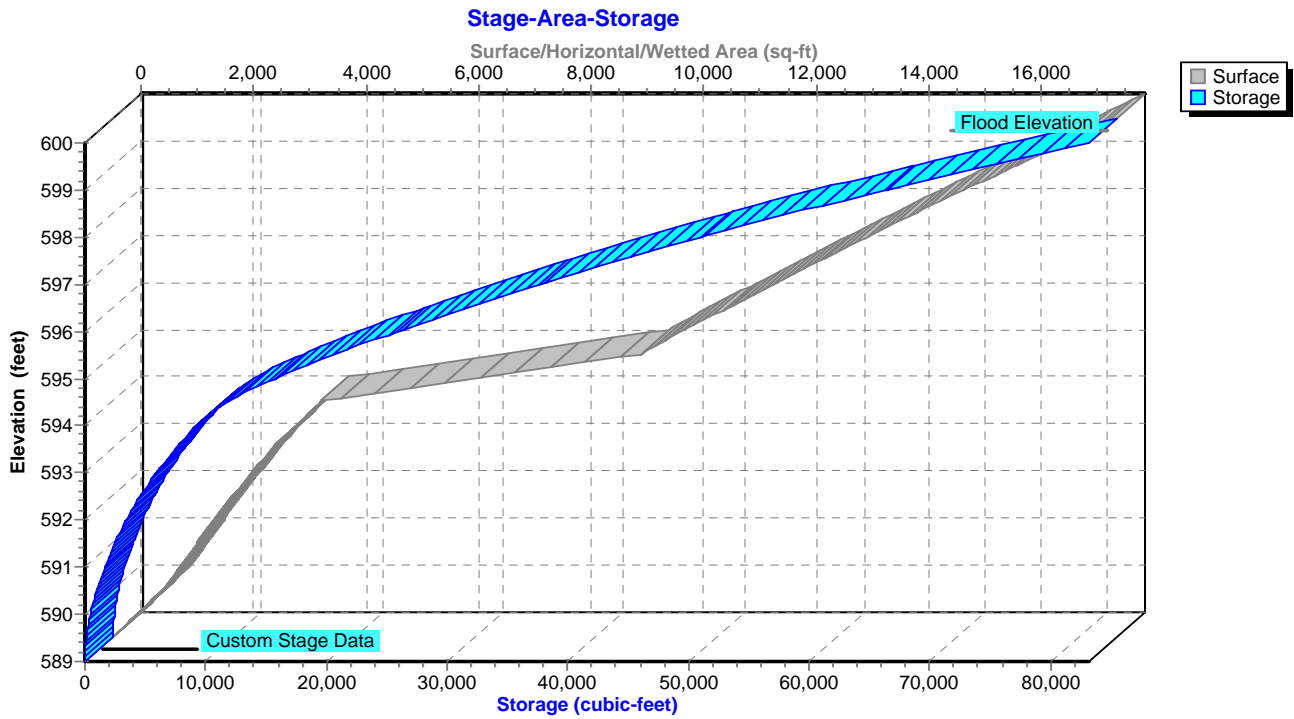


Pond 17P: BASIN 1 100 YR LFB

Stage-Discharge



Pond 17P: BASIN 1 100 YR LFB



2023-06-19 PROPOSED

Type II 24-hr 2-yr Rainfall=3.10"

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Summary for Pond 18P: BASIN 1 FOREBAY 100 YR LFB

Inflow Area = 4.880 ac, 79.71% Impervious, Inflow Depth = 2.55" for 2-yr event
 Inflow = 19.57 cfs @ 11.95 hrs, Volume= 1.039 af
 Outflow = 18.62 cfs @ 11.98 hrs, Volume= 0.820 af, Atten= 5%, Lag= 1.5 min
 Primary = 18.62 cfs @ 11.98 hrs, Volume= 0.855 af
 Routed to Pond 17P : BASIN 1 100 YR LFB

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 594.00' @ 11.90 hrs Surf.Area= 3,845 sf Storage= 9,545 cf
 Flood Elev= 600.00' Surf.Area= 3,845 sf Storage= 9,545 cf

Plug-Flow detention time= 122.8 min calculated for 0.819 af (79% of inflow)
 Center-of-Mass det. time= 38.9 min (800.4 - 761.5)

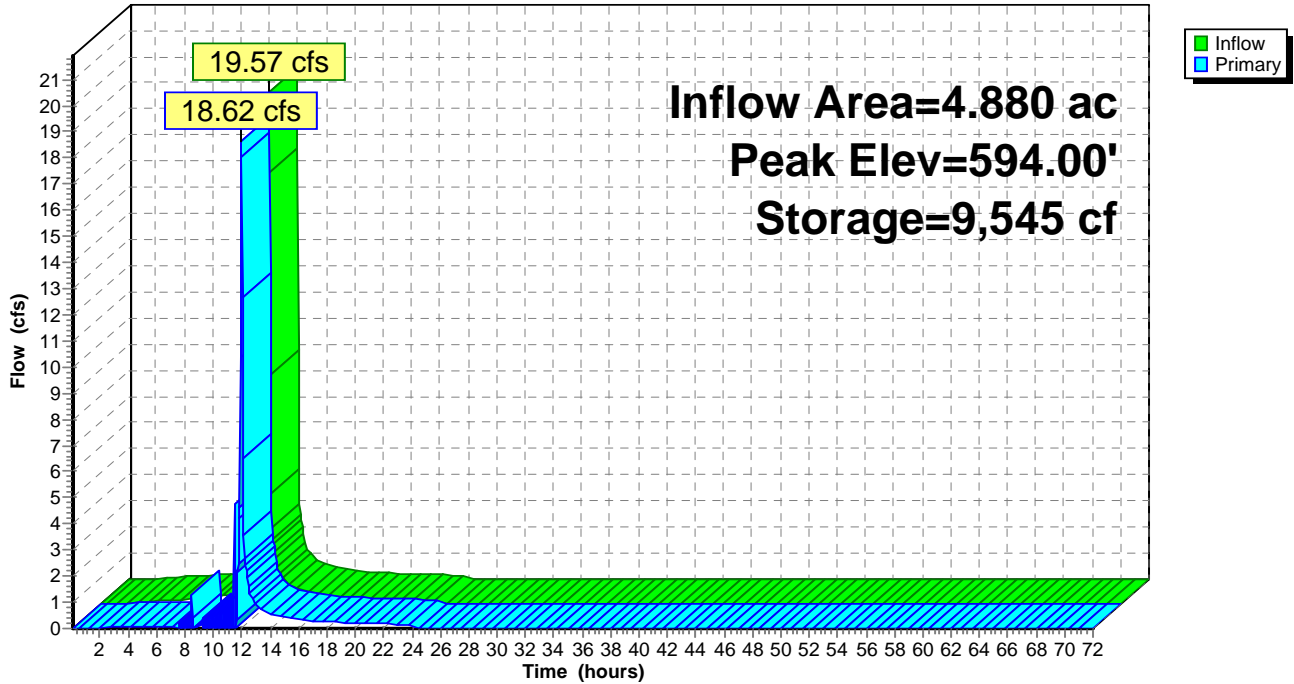
Volume	Invert	Avail.Storage	Storage Description
#1	590.00'	9,545 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
590.00	1,069	0	0
591.00	1,678	1,374	1,374
592.00	2,344	2,011	3,385
593.00	3,066	2,705	6,090
594.00	3,845	3,456	9,545

Device	Routing	Invert	Outlet Devices
#0	Primary	594.00'	Automatic Storage Overflow (Discharged without head)
#1	Primary	590.00'	36.00' long x 30.00' breadth x 4.06' high Rock Fill Rock Diam.= 18.000", S.D.= 4.000", Voids= 40.0%

Primary OutFlow Max=0.00 cfs @ 11.98 hrs HW=594.00' TW=594.67' (Dynamic Tailwater)
 ↗1=Rock Fill (Controls 0.00 cfs)

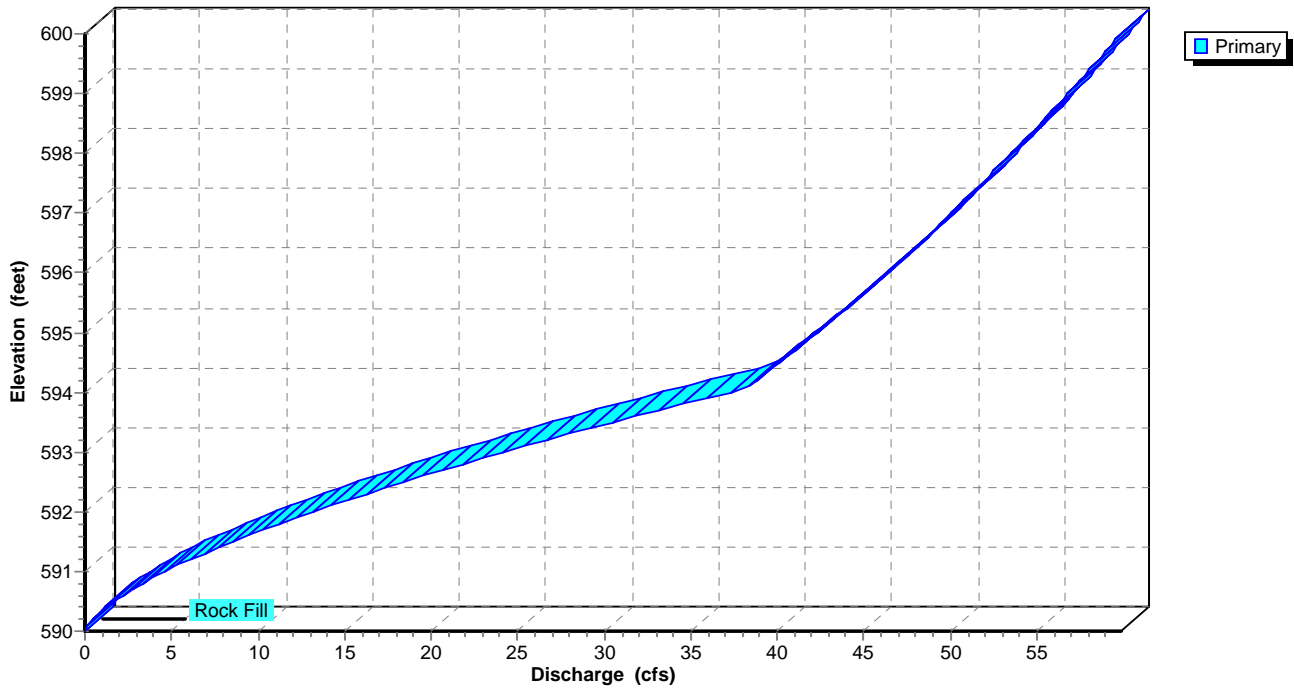
Pond 18P: BASIN 1 FOREBAY 100 YR LFB

Hydrograph

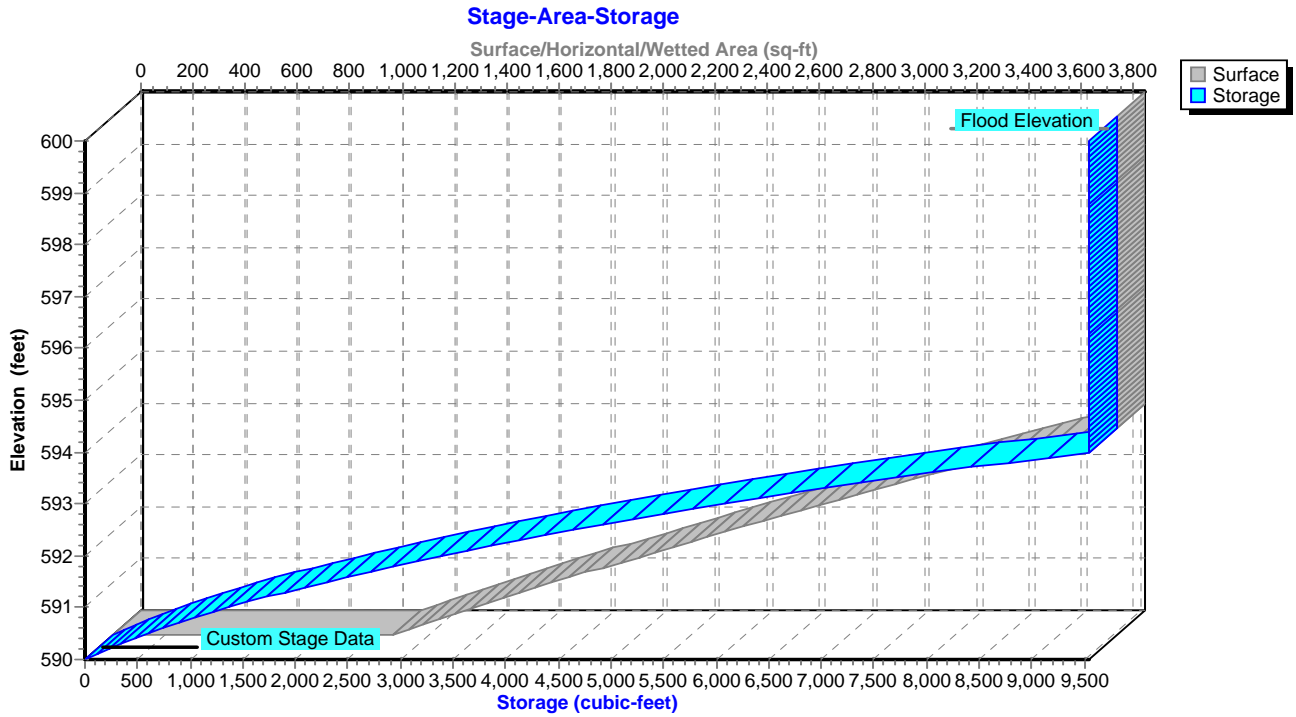


Pond 18P: BASIN 1 FOREBAY 100 YR LFB

Stage-Discharge



Pond 18P: BASIN 1 FOREBAY 100 YR LFB



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Type II 24-hr 2-yr Rainfall=3.10"

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Summary for Pond 21P: BASIN 2 100 YR LFB

Inflow Area = 7.600 ac, 78.42% Impervious, Inflow Depth = 1.91" for 2-yr event
 Inflow = 12.91 cfs @ 11.98 hrs, Volume= 1.213 af
 Outflow = 10.14 cfs @ 12.06 hrs, Volume= 1.035 af, Atten= 21%, Lag= 4.6 min
 Primary = 10.14 cfs @ 12.06 hrs, Volume= 1.035 af

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 584.68' @ 12.06 hrs Surf.Area= 2,386 sf Storage= 11,663 cf

Plug-Flow detention time= 124.7 min calculated for 1.035 af (85% of inflow)
 Center-of-Mass det. time= 52.2 min (879.6 - 827.4)

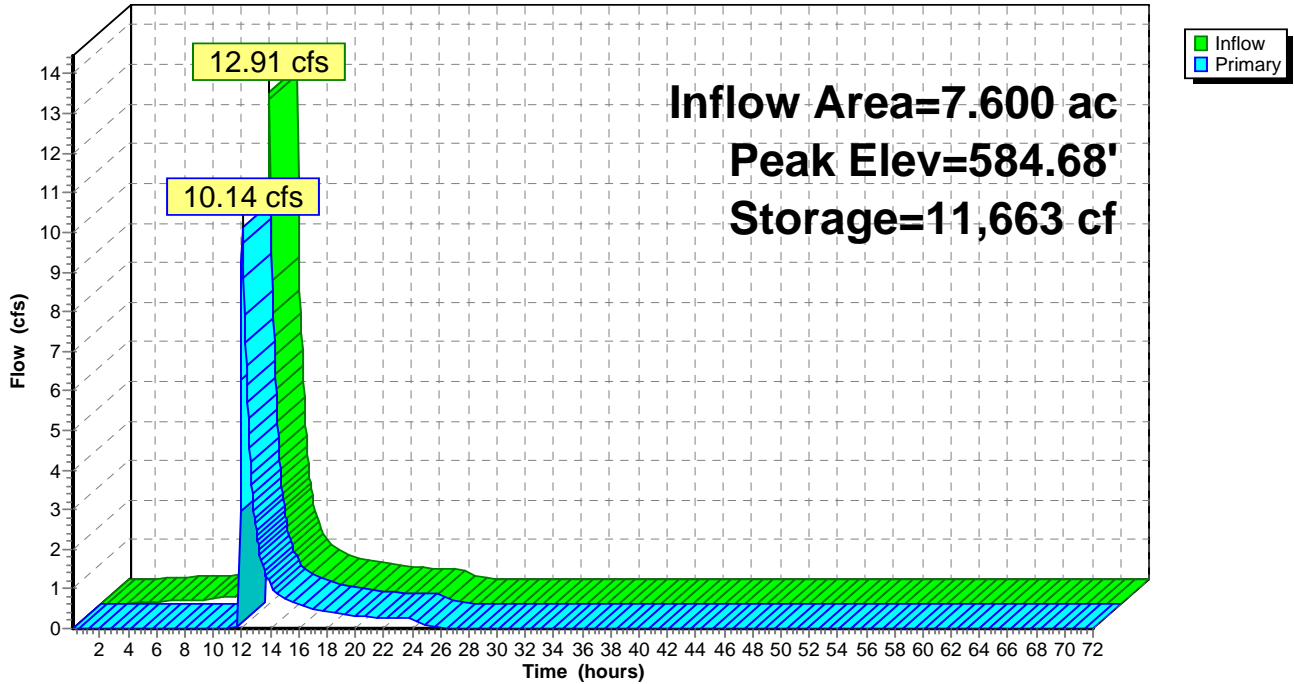
Volume	Invert	Avail.Storage	Storage Description
#1	578.75'	38,301 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
578.75	1	0	0
579.00	205	26	26
580.00	2,080	1,143	1,168
581.00	2,153	2,117	3,285
582.00	2,222	2,188	5,472
583.00	2,287	2,255	7,727
584.00	2,348	2,318	10,044
585.00	2,404	2,376	12,420
586.00	2,456	2,430	14,850
587.00	2,504	2,480	17,330
588.00	2,547	2,526	19,856
589.00	3,000	2,774	22,629
590.00	4,800	3,900	26,529
591.00	5,862	5,331	31,860
592.00	7,020	6,441	38,301

Device	Routing	Invert	Outlet Devices
#1	Primary	576.73'	24.0" Round Culvert L= 15.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 576.73' / 576.58' S= 0.0100 1' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	583.00'	18.0" W x 18.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	589.00'	30.0" x 60.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=10.05 cfs @ 12.06 hrs HW=584.67' (Free Discharge)
 1=Culvert (Passes 10.05 cfs of 49.81 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 10.05 cfs @ 4.47 fps)
 3=Orifice/Grate (Controls 0.00 cfs)

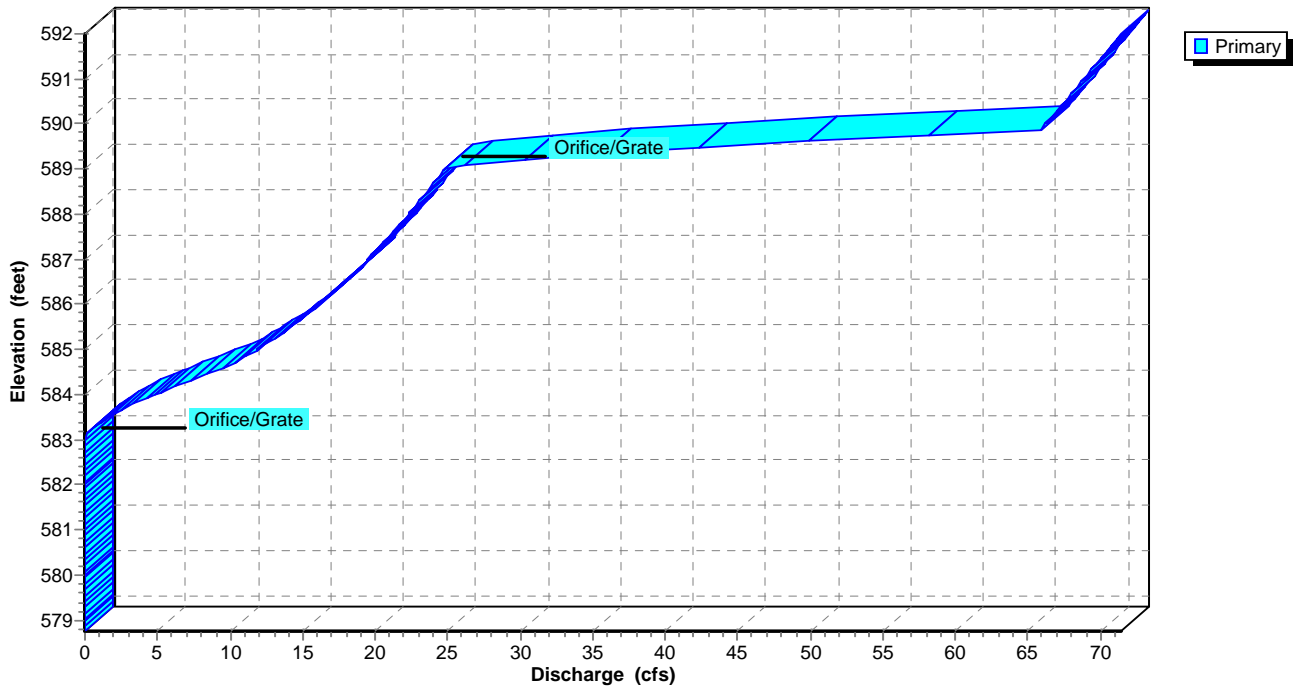
Pond 21P: BASIN 2 100 YR LFB

Hydrograph

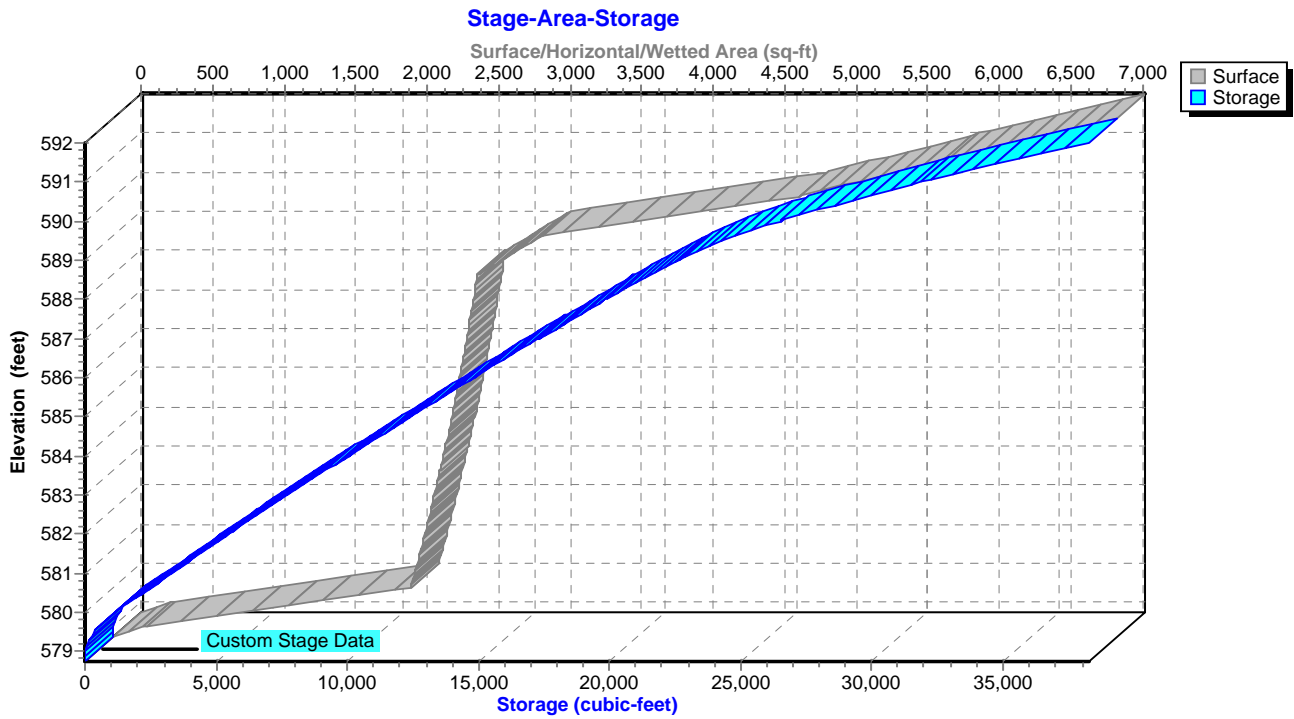


Pond 21P: BASIN 2 100 YR LFB

Stage-Discharge



Pond 21P: BASIN 2 100 YR LFB



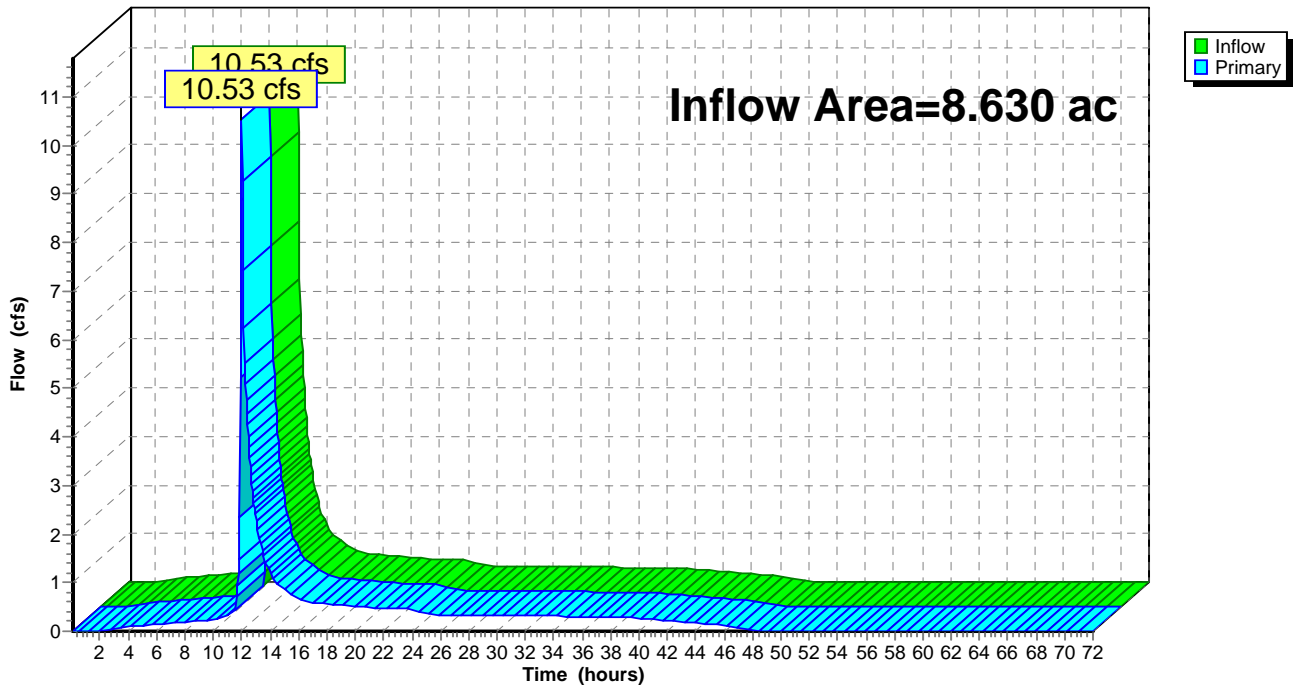
Summary for Link 14L: POST DEVELOPED RUNOFF

Inflow Area = 8.630 ac, 72.42% Impervious, Inflow Depth = 2.44" for 2-yr event
Inflow = 10.53 cfs @ 12.00 hrs, Volume= 1.756 af
Primary = 10.53 cfs @ 12.00 hrs, Volume= 1.756 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 10R : 201 TO JS

Primary outflow = Inflow, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs

Link 14L: POST DEVELOPED RUNOFF

Hydrograph



Summary for Subcatchment 1S: EXISTING CONDITIONS

Runoff = 28.57 cfs @ 12.02 hrs, Volume= 1.572 af, Depth= 2.30"

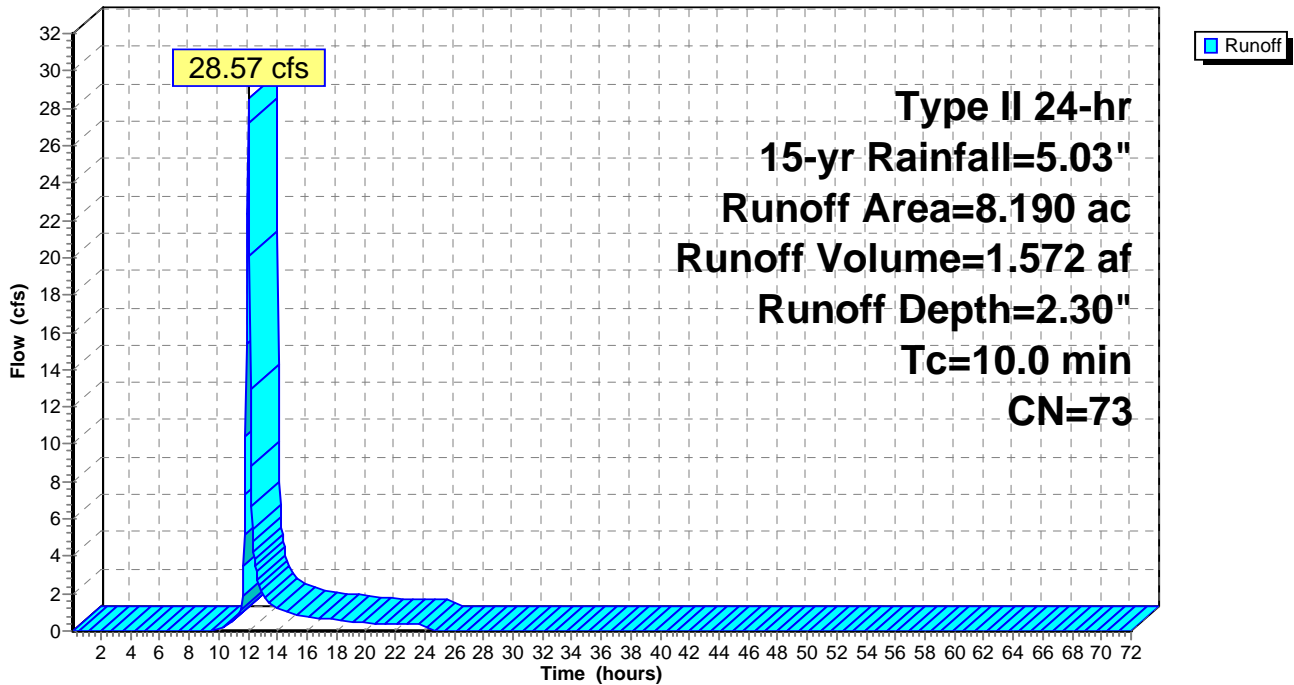
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 15-yr Rainfall=5.03"

Area (ac)	CN	Description
* 8.190	73	Woods, Good, HSG C
8.190		100.00% Pervious Area

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

Subcatchment 1S: EXISTING CONDITIONS

Hydrograph



Summary for Subcatchment 2S: PROPOSED CONDITIONS (NO DETENTION)

Runoff = 55.90 cfs @ 11.95 hrs, Volume= 3.015 af, Depth= 4.42"

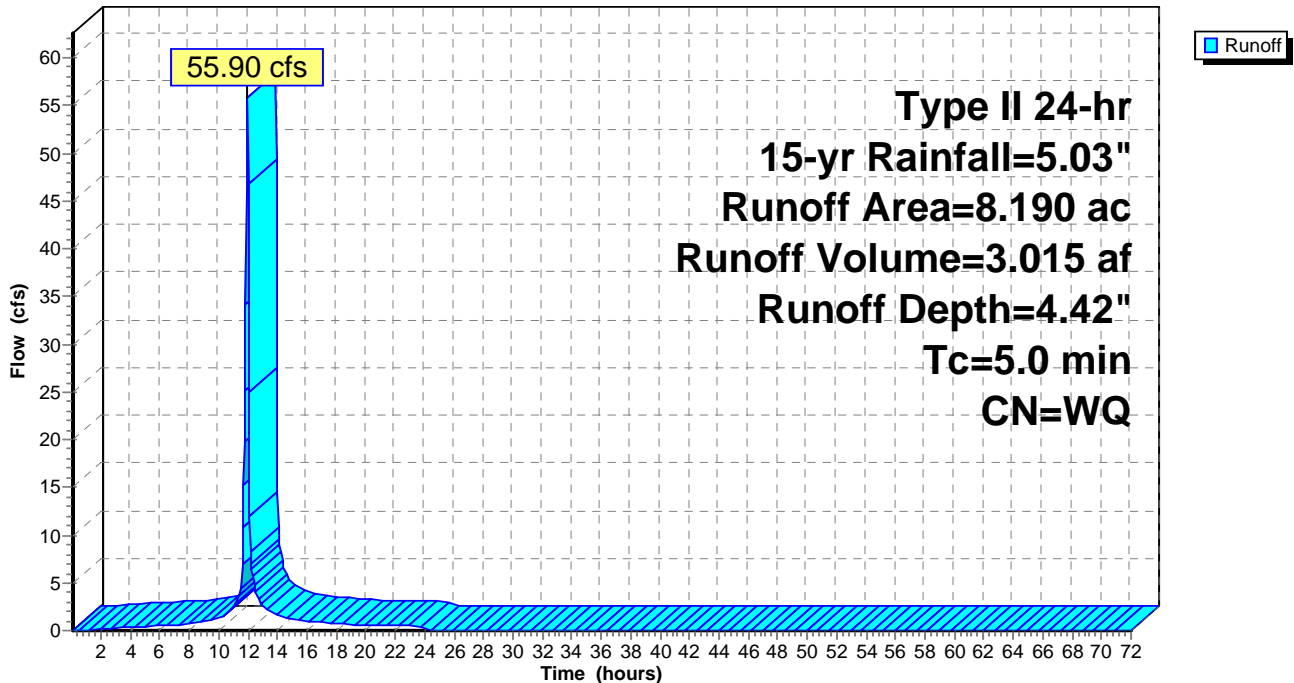
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 15-yr Rainfall=5.03"

Area (ac)	CN	Description
6.550	98	Paved parking, HSG C
1.640	80	>75% Grass cover, Good, HSG D
8.190		Weighted Average
1.640		20.02% Pervious Area
6.550		79.98% Impervious Area

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

Subcatchment 2S: PROPOSED CONDITIONS (NO DETENTION)

Hydrograph



Summary for Subcatchment 3S: OFFSITE TO ONSITE TO BASIN 1

Runoff = 1.86 cfs @ 11.95 hrs, Volume= 0.091 af, Depth= 3.32"
 Routed to Pond 13P : BASIN 1 FOREBAY

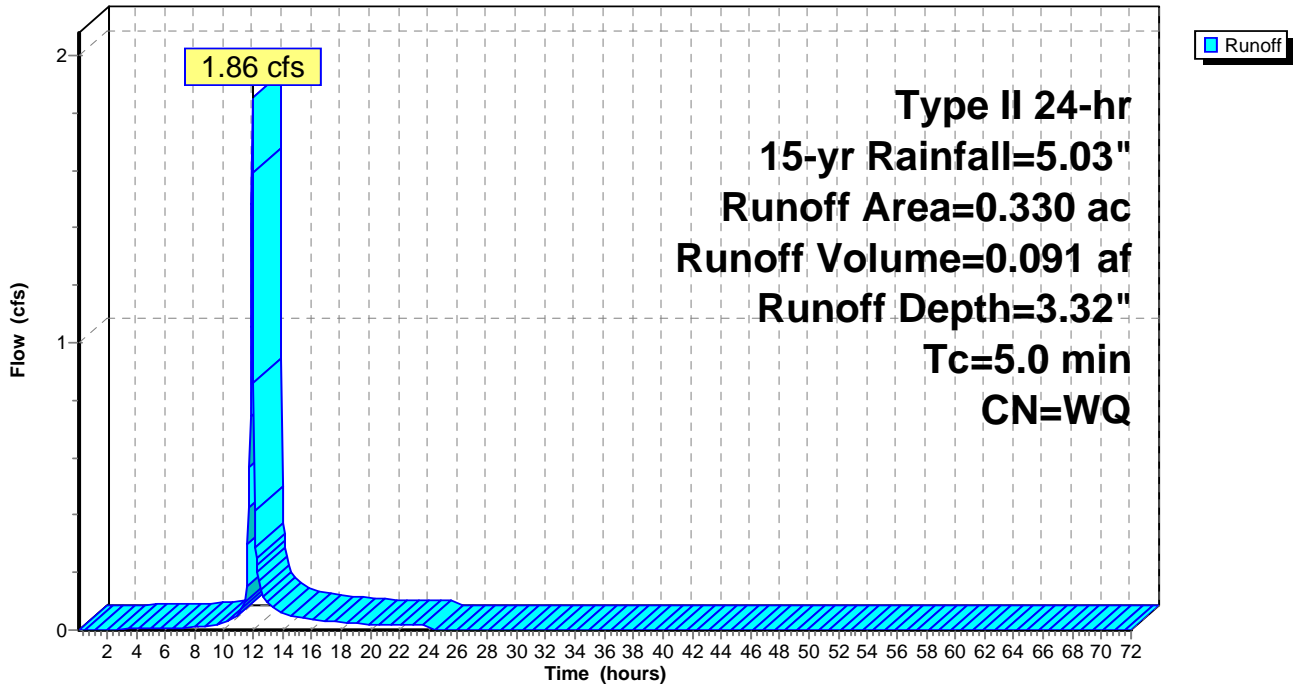
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 15-yr Rainfall=5.03"

Area (ac)	CN	Description
0.070	98	Paved parking, HSG D
0.260	80	>75% Grass cover, Good, HSG D
0.330		Weighted Average
0.260		78.79% Pervious Area
0.070		21.21% Impervious Area

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

Subcatchment 3S: OFFSITE TO ONSITE TO BASIN 1

Hydrograph



Summary for Subcatchment 4S: ONSITE TO BASIN 1

Runoff = 31.43 cfs @ 11.95 hrs, Volume= 1.703 af, Depth= 4.49"
 Routed to Pond 13P : BASIN 1 FOREBAY

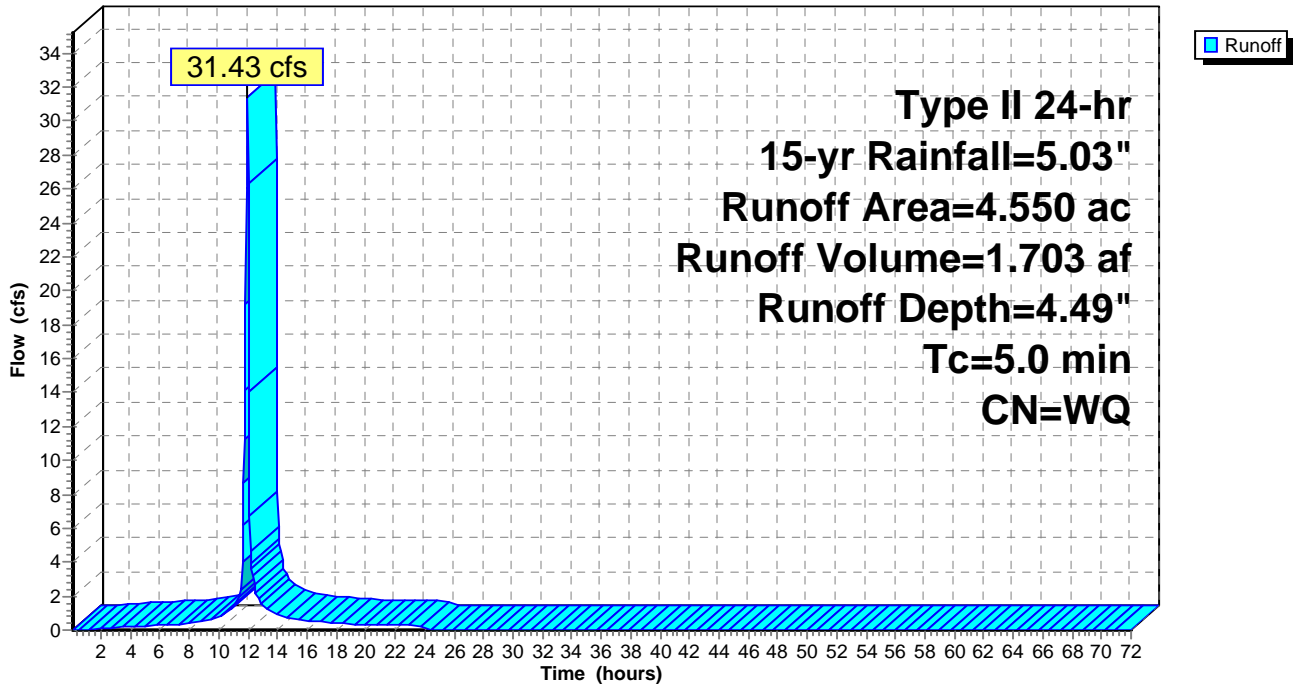
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 15-yr Rainfall=5.03"

Area (ac)	CN	Description
3.820	98	Paved parking, HSG D
0.730	80	>75% Grass cover, Good, HSG D
4.550		Weighted Average
0.730		16.04% Pervious Area
3.820		83.96% Impervious Area

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

Subcatchment 4S: ONSITE TO BASIN 1

Hydrograph



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Type II 24-hr 15-yr Rainfall=5.03"

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Summary for Subcatchment 5S: OFFSITE TO ONSITE TO BASIN 2

Runoff = 0.68 cfs @ 11.96 hrs, Volume= 0.032 af, Depth= 2.92"
 Routed to Pond 9P : BASIN 2

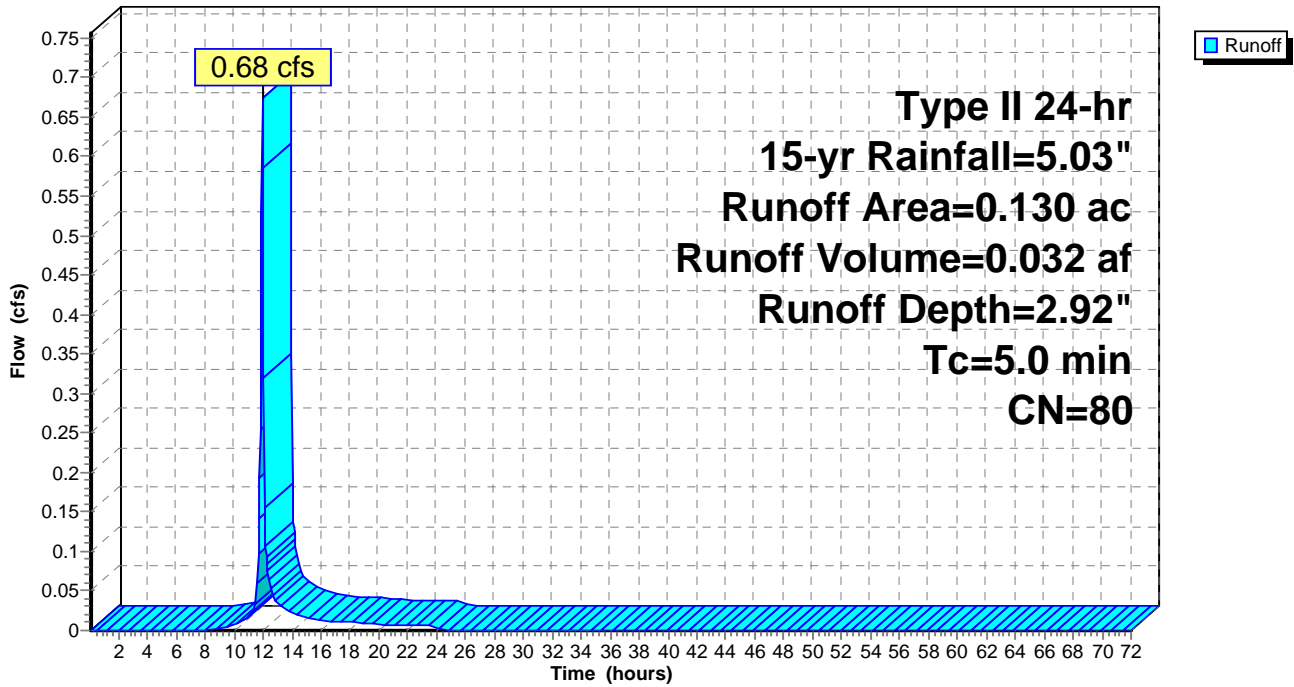
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 15-yr Rainfall=5.03"

Area (ac)	CN	Description
0.130	80	>75% Grass cover, Good, HSG D
0.130		100.00% Pervious Area

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

Subcatchment 5S: OFFSITE TO ONSITE TO BASIN 2

Hydrograph



Summary for Subcatchment 6S: ONSITE TO BASIN 2

Runoff = 17.68 cfs @ 11.95 hrs, Volume= 0.953 af, Depth= 4.42"
 Routed to Pond 9P : BASIN 2

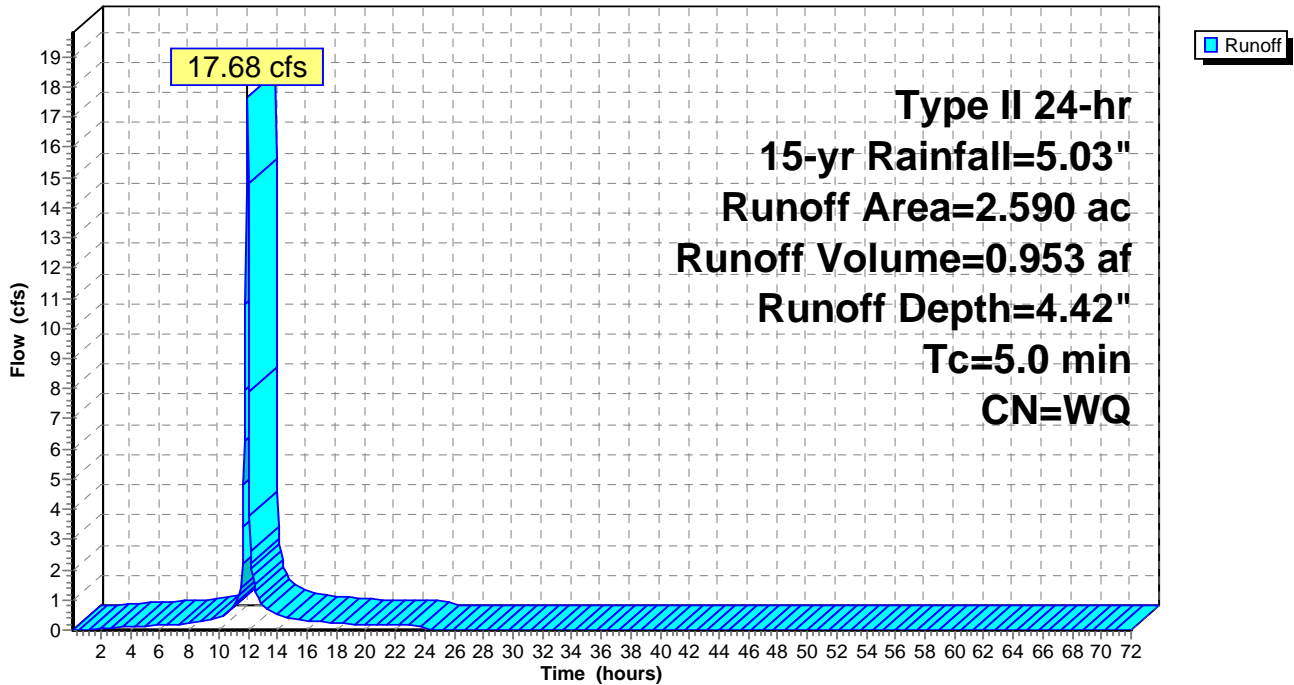
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 15-yr Rainfall=5.03"

Area (ac)	CN	Description
2.070	98	Paved parking, HSG D
0.520	80	>75% Grass cover, Good, HSG D
2.590		Weighted Average
0.520		20.08% Pervious Area
2.070		79.92% Impervious Area

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

Subcatchment 6S: ONSITE TO BASIN 2

Hydrograph



Summary for Subcatchment 7S: ONSITE TO OFFSITE BYPASS

Runoff = 5.94 cfs @ 11.95 hrs, Volume= 0.296 af, Depth= 3.45"

Routed to Link 14L : POST DEVELOPED RUNOFF

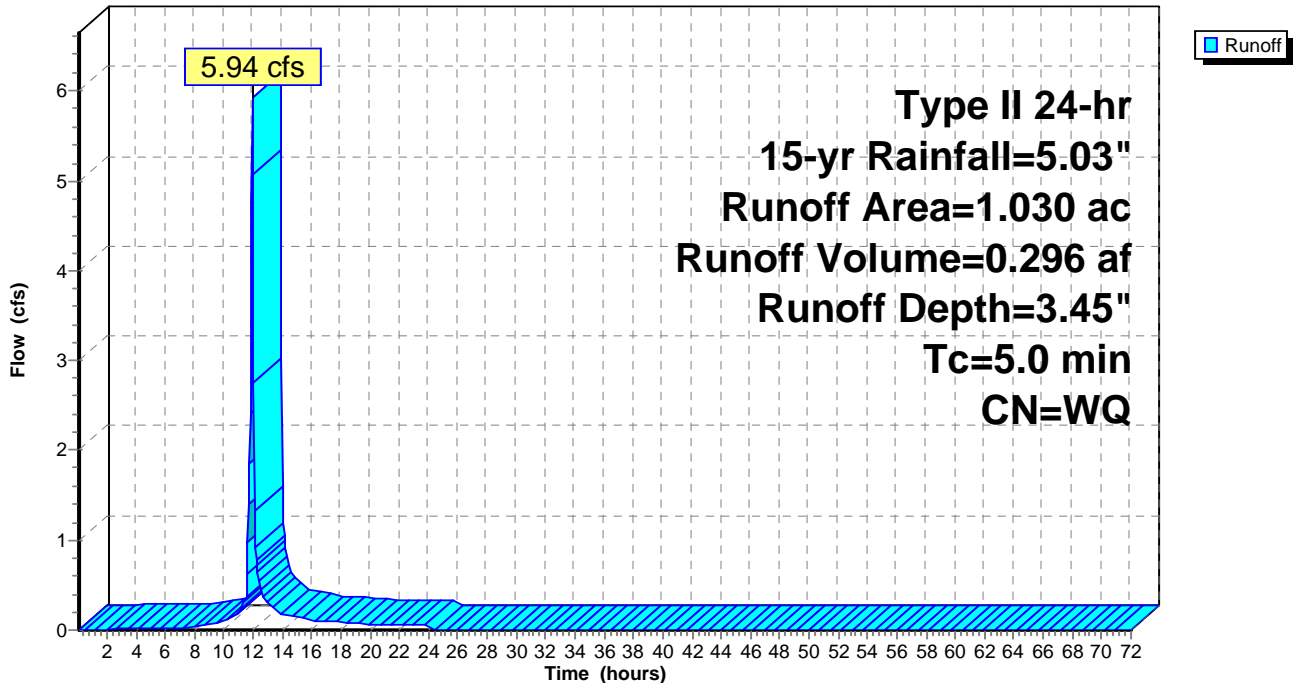
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 15-yr Rainfall=5.03"

Area (ac)	CN	Description
0.290	98	Paved parking, HSG C
0.740	80	>75% Grass cover, Good, HSG D
1.030		Weighted Average
0.740		71.84% Pervious Area
0.290		28.16% Impervious Area

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

Subcatchment 7S: ONSITE TO OFFSITE BYPASS

Hydrograph



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Type II 24-hr 15-yr Rainfall=5.03"

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Summary for Subcatchment 11S: AREA TO BRYAN RD CULVERT

Runoff = 27.56 cfs @ 12.00 hrs, Volume= 1.606 af, Depth= 3.96"
 Routed to Pond 12P : BRYAN RD CULVERT

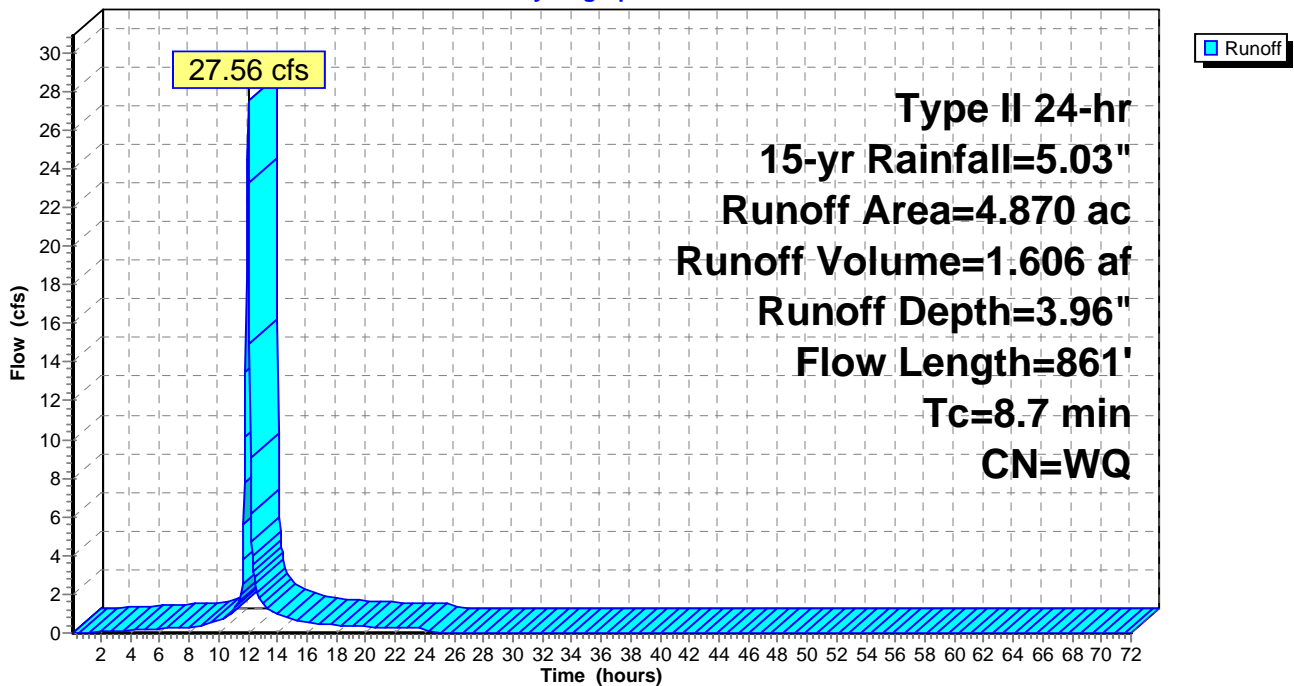
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 15-yr Rainfall=5.03"

Area (ac)	CN	Description
2.700	98	Paved parking, HSG C
2.170	80	>75% Grass cover, Good, HSG D
4.870		Weighted Average
2.170		44.56% Pervious Area
2.700		55.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0200	1.26		Sheet Flow, n= 0.013 P2= 3.50"
2.5	493	0.0430	3.34		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
4.9	268	0.0215	0.91	54.47	Channel Flow, Area= 60.0 sf Perim= 60.0' r= 1.00' n= 0.240 Sheet flow over Dense Grass
8.7	861	Total			

Subcatchment 11S: AREA TO BRYAN RD CULVERT

Hydrograph



Summary for Subcatchment 12S: AREAS 30 & 38

Runoff = 10.05 cfs @ 11.95 hrs, Volume= 0.524 af, Depth= 3.96"
 Routed to Pond 11P : DUAL CULVERTS

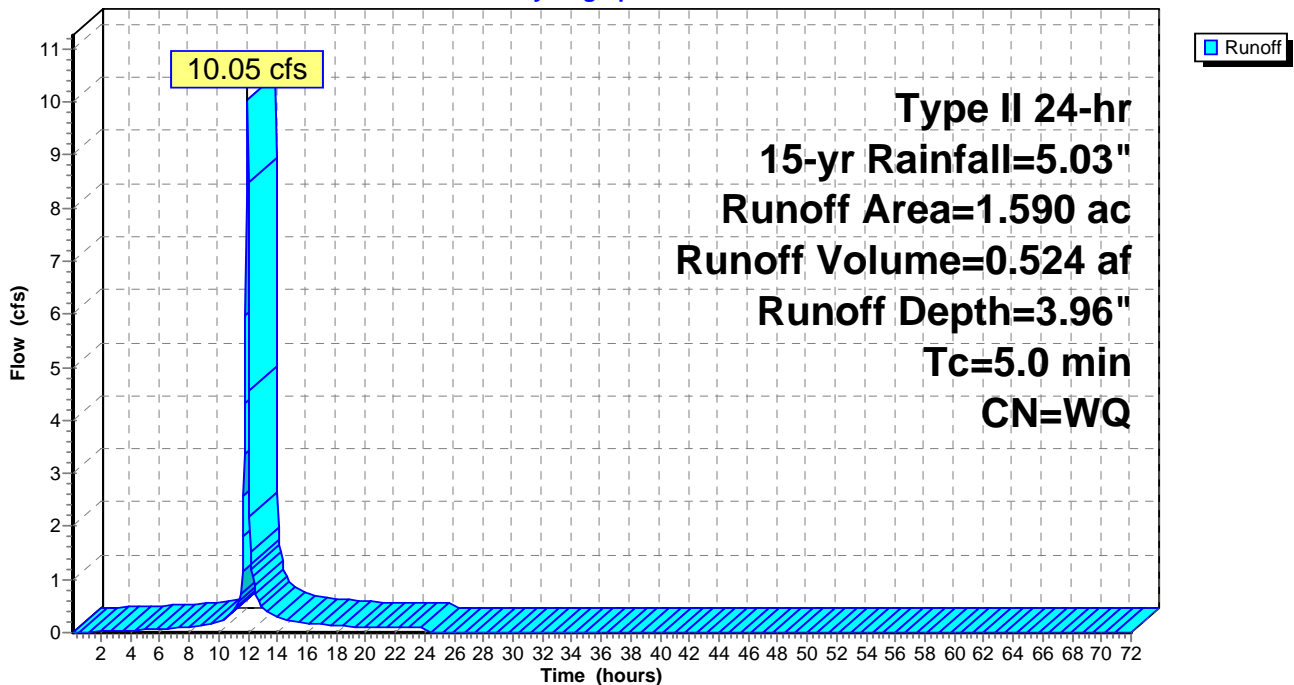
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 15-yr Rainfall=5.03"

Area (ac)	CN	Description
0.200	80	>75% Grass cover, Good, HSG D
0.880	98	Paved parking, HSG D
0.510	80	>75% Grass cover, Good, HSG D
1.590		Weighted Average
0.710		44.65% Pervious Area
0.880		55.35% Impervious Area

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

Subcatchment 12S: AREAS 30 & 38

Hydrograph



Summary for Subcatchment 15S: OFFSITE TO ONSITE TO BASIN 1

Runoff = 1.86 cfs @ 11.95 hrs, Volume= 0.091 af, Depth= 3.32"

Routed to Pond 18P : BASIN 1 FOREBAY 100 YR LFB

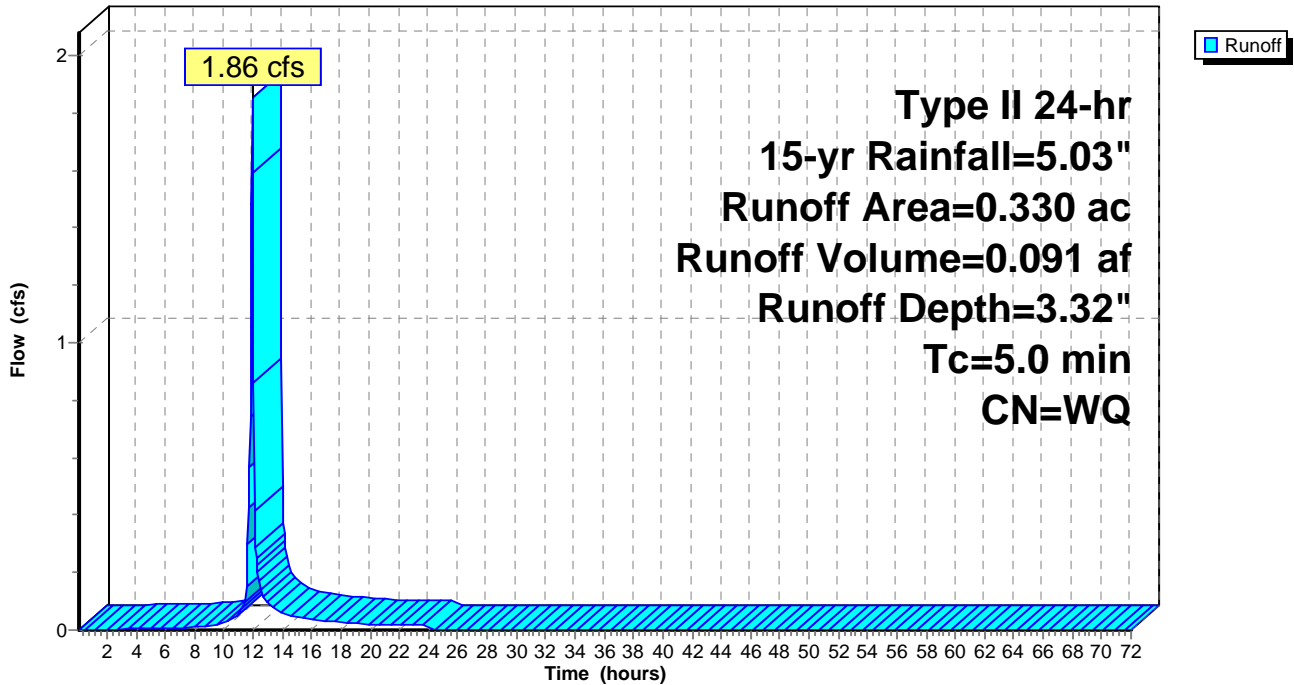
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 15-yr Rainfall=5.03"

Area (ac)	CN	Description
0.070	98	Paved parking, HSG D
0.260	80	>75% Grass cover, Good, HSG D
0.330		Weighted Average
0.260		78.79% Pervious Area
0.070		21.21% Impervious Area

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

Subcatchment 15S: OFFSITE TO ONSITE TO BASIN 1

Hydrograph



Summary for Subcatchment 16S: ONSITE TO BASIN 1

Runoff = 31.43 cfs @ 11.95 hrs, Volume= 1.703 af, Depth= 4.49"

Routed to Pond 18P : BASIN 1 FOREBAY 100 YR LFB

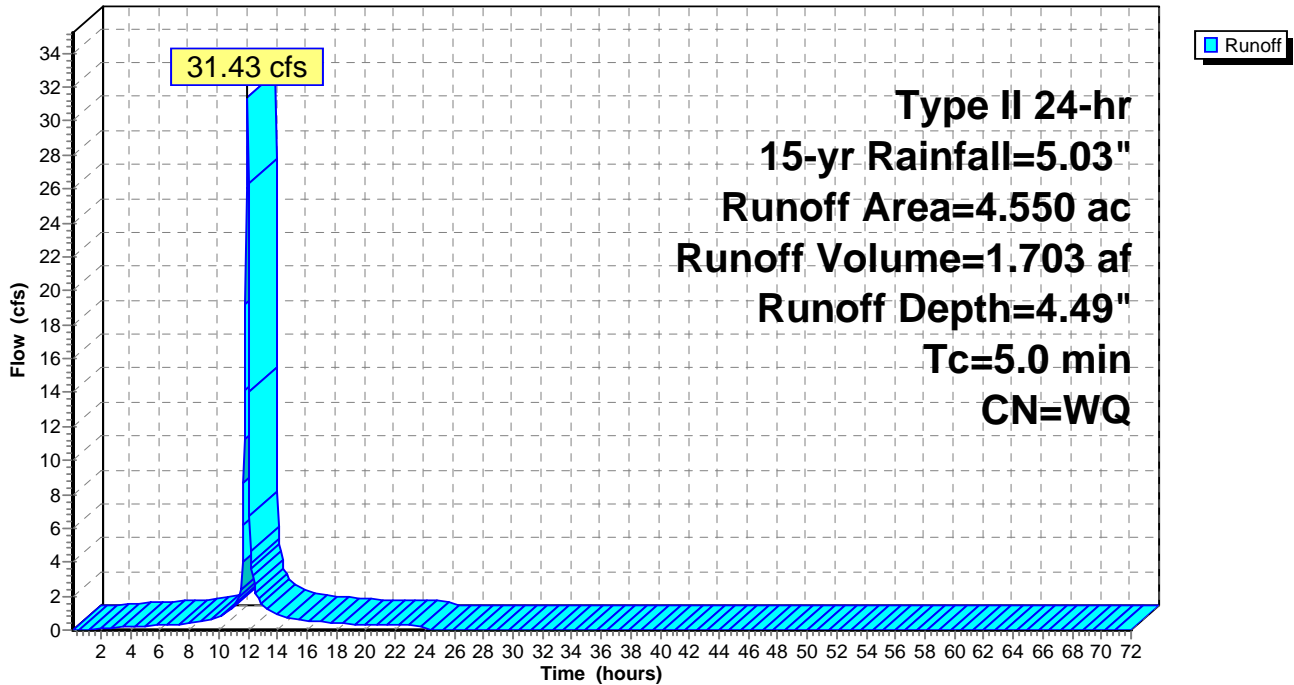
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 15-yr Rainfall=5.03"

Area (ac)	CN	Description
3.820	98	Paved parking, HSG D
0.730	80	>75% Grass cover, Good, HSG D
4.550		Weighted Average
0.730		16.04% Pervious Area
3.820		83.96% Impervious Area

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

Subcatchment 16S: ONSITE TO BASIN 1

Hydrograph



Summary for Subcatchment 19S: OFFSITE TO ONSITE TO BASIN 2

Runoff = 0.68 cfs @ 11.96 hrs, Volume= 0.032 af, Depth= 2.92"
 Routed to Pond 21P : BASIN 2 100 YR LFB

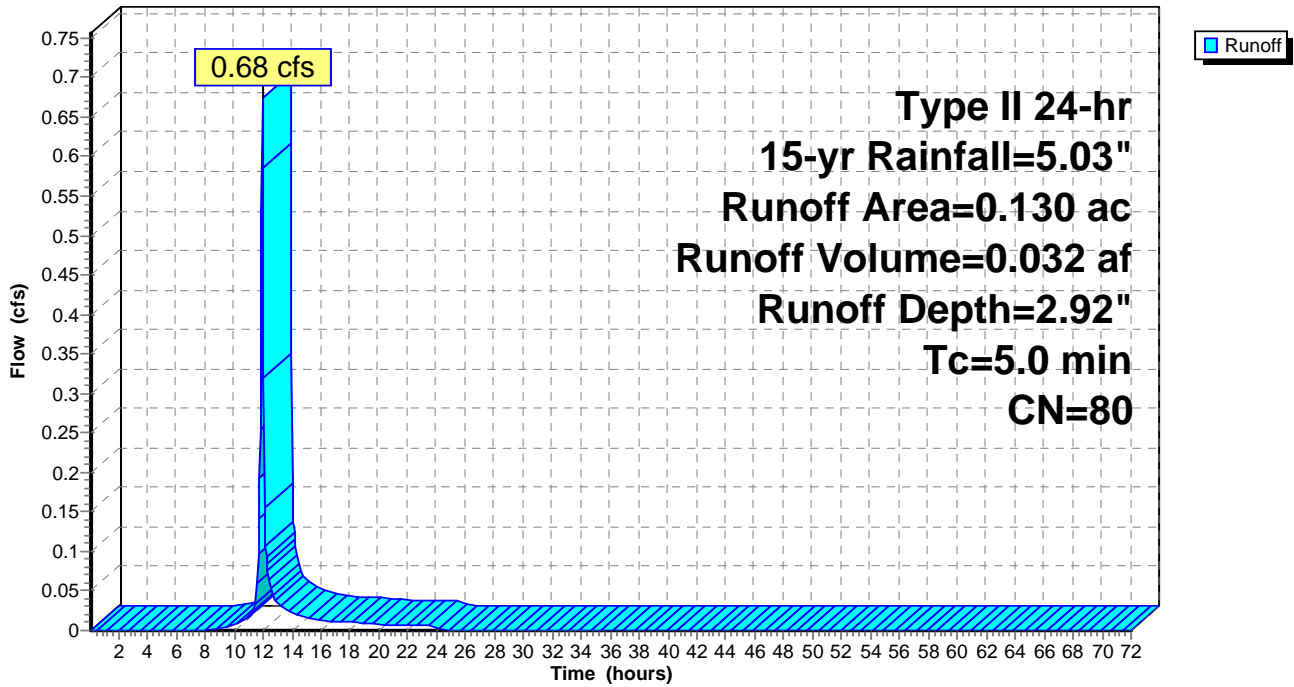
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 15-yr Rainfall=5.03"

Area (ac)	CN	Description
0.130	80	>75% Grass cover, Good, HSG D
0.130		100.00% Pervious Area

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

Subcatchment 19S: OFFSITE TO ONSITE TO BASIN 2

Hydrograph



Summary for Subcatchment 20S: ONSITE TO BASIN 2

Runoff = 17.68 cfs @ 11.95 hrs, Volume= 0.953 af, Depth= 4.42"
 Routed to Pond 21P : BASIN 2 100 YR LFB

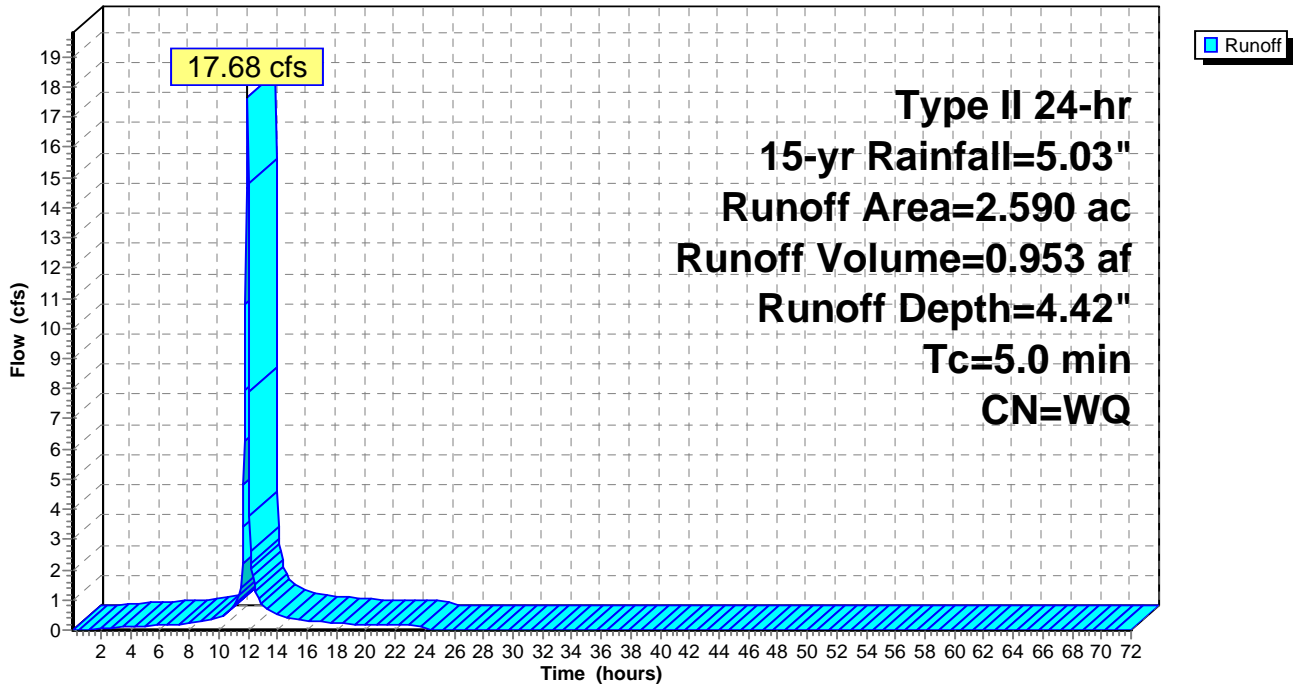
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 15-yr Rainfall=5.03"

Area (ac)	CN	Description
2.070	98	Paved parking, HSG D
0.520	80	>75% Grass cover, Good, HSG D
2.590		Weighted Average
0.520		20.08% Pervious Area
2.070		79.92% Impervious Area

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

Subcatchment 20S: ONSITE TO BASIN 2

Hydrograph



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Type II 24-hr 15-yr Rainfall=5.03"

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Summary for Pond 8P: BASIN 1

Inflow Area = 4.880 ac, 79.71% Impervious, Inflow Depth = 4.45" for 15-yr event
 Inflow = 31.67 cfs @ 11.98 hrs, Volume= 1.810 af
 Outflow = 12.03 cfs @ 12.10 hrs, Volume= 1.810 af, Atten= 62%, Lag= 7.6 min
 Primary = 12.03 cfs @ 12.10 hrs, Volume= 1.810 af
 Routed to Pond 9P : BASIN 2

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 595.94' @ 12.10 hrs Surf.Area= 10,853 sf Storage= 25,236 cf
 Flood Elev= 600.00' Surf.Area= 17,840 sf Storage= 83,183 cf

Plug-Flow detention time= 162.0 min calculated for 1.808 af (100% of inflow)
 Center-of-Mass det. time= 161.9 min (1,066.0 - 904.1)

Volume	Invert	Avail.Storage	Storage Description
#1	589.00'	83,183 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
589.00	2	0	0
590.00	897	450	450
591.00	1,487	1,192	1,642
592.00	2,133	1,810	3,452
593.00	2,836	2,485	5,936
594.00	3,695	3,266	9,202
595.00	9,367	6,531	15,733
596.00	10,948	10,158	25,890
597.00	12,586	11,767	37,657
598.00	14,281	13,434	51,091
599.00	16,032	15,157	66,247
600.00	17,840	16,936	83,183

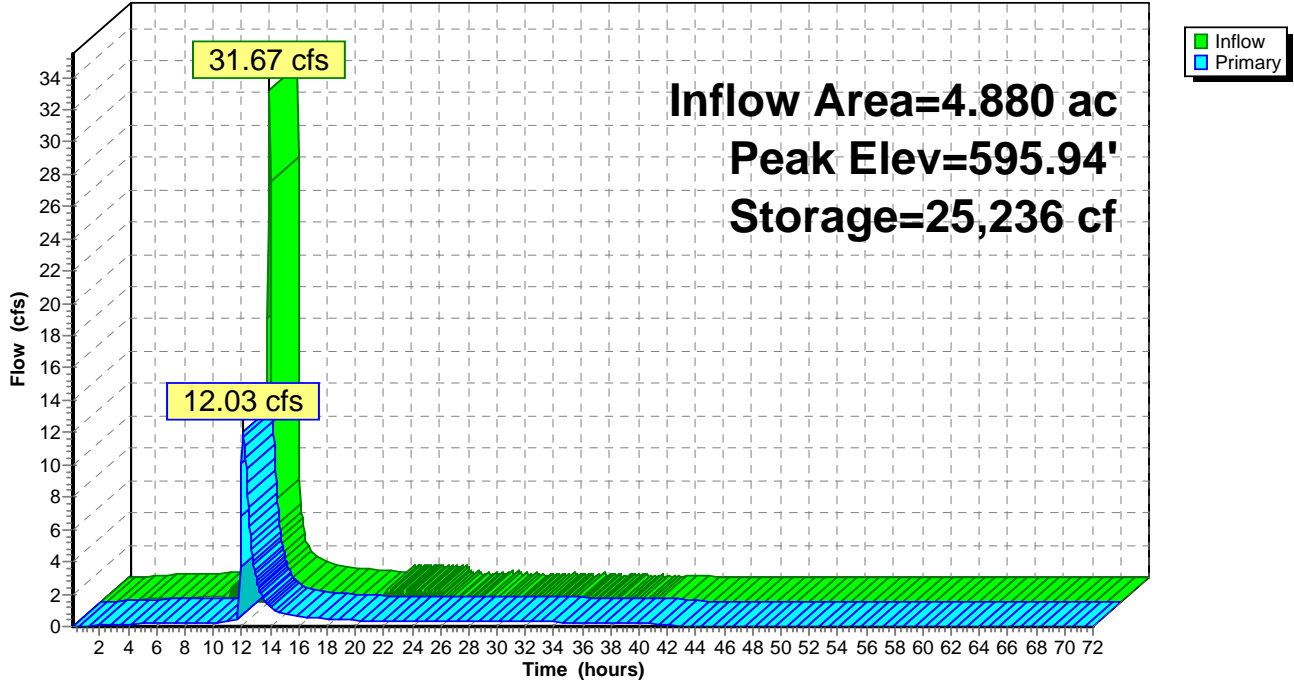
Device	Routing	Invert	Outlet Devices
#1	Primary	585.00'	24.0" Round RCP_Round 24" L= 184.2' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 585.00' / 583.16' S= 0.0100 1/ Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	589.00'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	594.00'	18.0" W x 18.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	598.00'	30.0" x 60.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=12.01 cfs @ 12.10 hrs HW=595.94' TW=586.48' (Dynamic Tailwater)

- 1=RCP_Round 24" (Passes 12.01 cfs of 43.64 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.43 cfs @ 12.59 fps)
- 3=Orifice/Grate (Orifice Controls 11.58 cfs @ 5.15 fps)
- 4=Orifice/Grate (Controls 0.00 cfs)

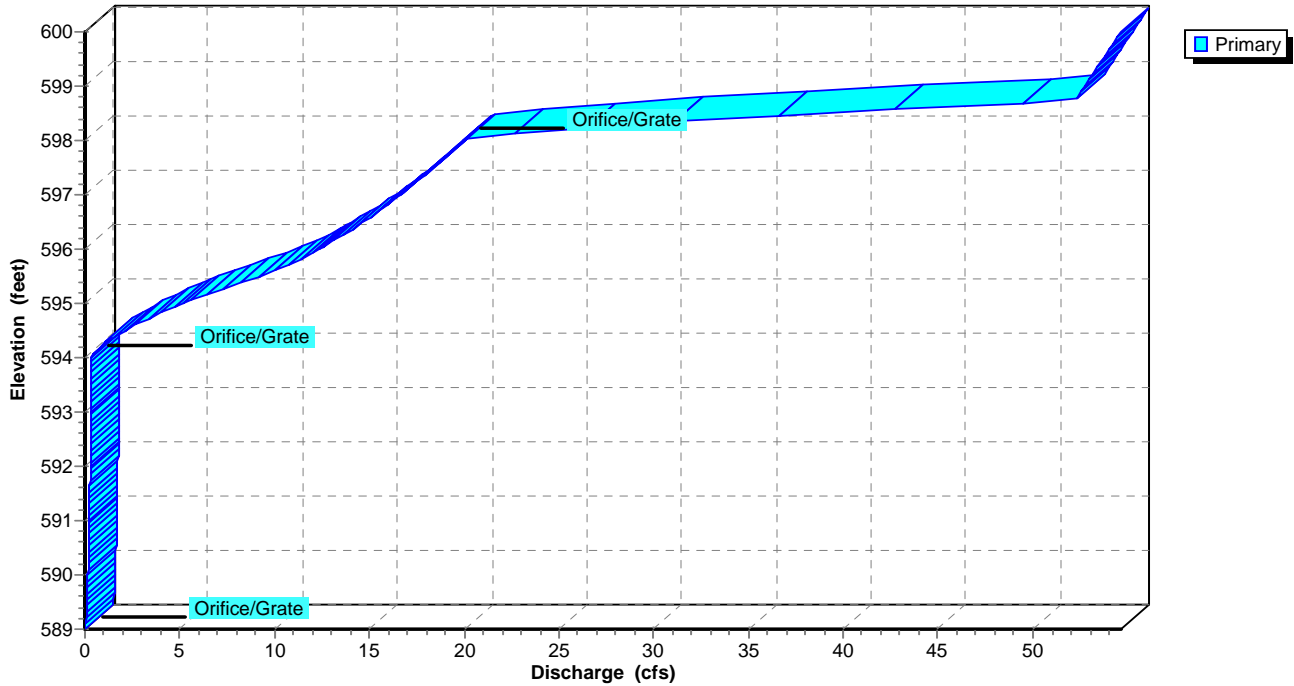
Pond 8P: BASIN 1

Hydrograph

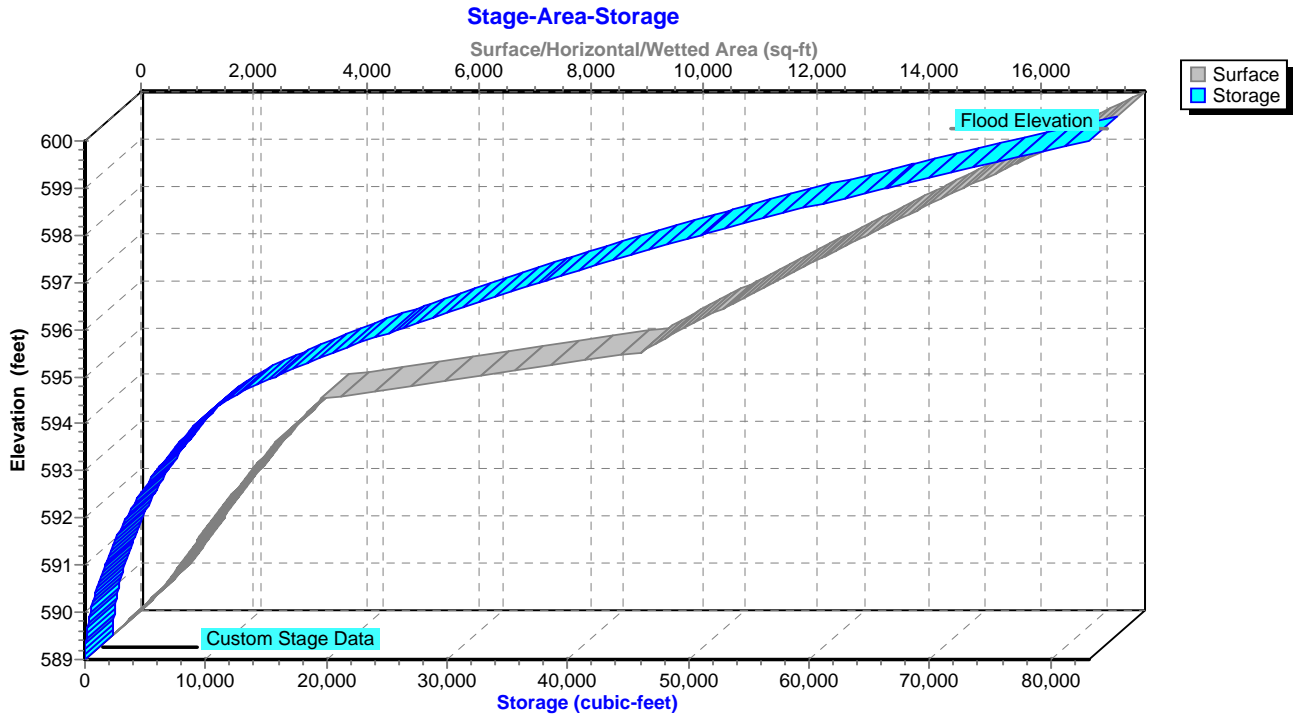


Pond 8P: BASIN 1

Stage-Discharge



Pond 8P: BASIN 1



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Type II 24-hr 15-yr Rainfall=5.03"

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Summary for Pond 9P: BASIN 2

Inflow Area = 7.600 ac, 78.42% Impervious, Inflow Depth = 4.41" for 15-yr event
 Inflow = 26.07 cfs @ 11.98 hrs, Volume= 2.795 af
 Outflow = 18.55 cfs @ 12.07 hrs, Volume= 2.794 af, Atten= 29%, Lag= 5.6 min
 Primary = 18.55 cfs @ 12.07 hrs, Volume= 2.794 af
 Routed to Link 14L : POST DEVELOPED RUNOFF

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 586.56' @ 12.07 hrs Surf.Area= 2,483 sf Storage= 16,229 cf

Plug-Flow detention time= 138.0 min calculated for 2.794 af (100% of inflow)
 Center-of-Mass det. time= 137.2 min (1,093.6 - 956.4)

Volume	Invert	Avail.Storage	Storage Description
#1	578.75'	38,298 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
578.75	1	0	0
579.00	205	26	26
580.00	2,080	1,143	1,168
581.00	2,152	2,116	3,284
582.00	2,222	2,187	5,471
583.00	2,287	2,255	7,726
584.00	2,348	2,318	10,043
585.00	2,404	2,376	12,419
586.00	2,456	2,430	14,849
587.00	2,504	2,480	17,329
588.00	2,547	2,526	19,855
589.00	2,998	2,773	22,627
590.00	4,800	3,899	26,526
591.00	5,862	5,331	31,857
592.00	7,020	6,441	38,298

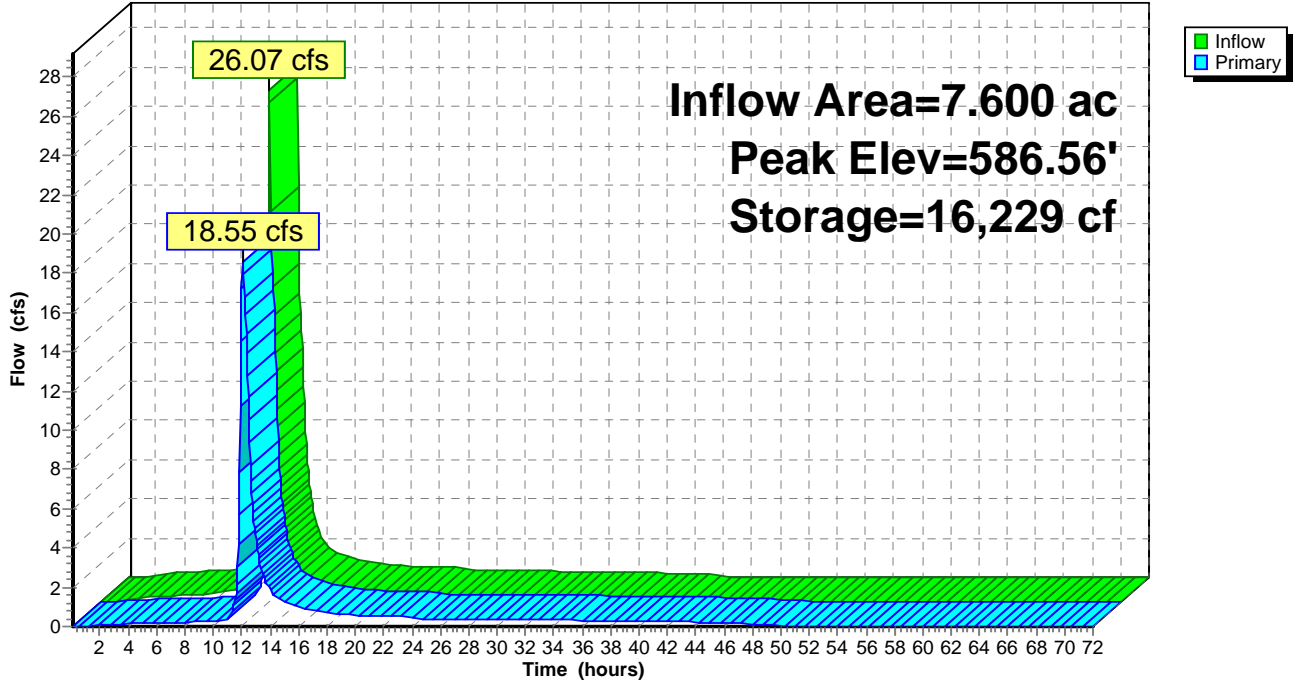
Device	Routing	Invert	Outlet Devices
#1	Primary	576.73'	30.0" Round RCP_Round 30" L= 15.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 576.73' / 576.58' S= 0.0100 1/ S= 0.0100 1/ Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	579.00'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	583.00'	18.0" W x 18.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	589.00'	30.0" x 60.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=18.40 cfs @ 12.07 hrs HW=586.51' TW=0.00' (Dynamic Tailwater)

- 1=RCP_Round 30" (Passes 18.40 cfs of 86.30 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.45 cfs @ 13.11 fps)
- 3=Orifice/Grate (Orifice Controls 17.95 cfs @ 7.98 fps)
- 4=Orifice/Grate (Controls 0.00 cfs)

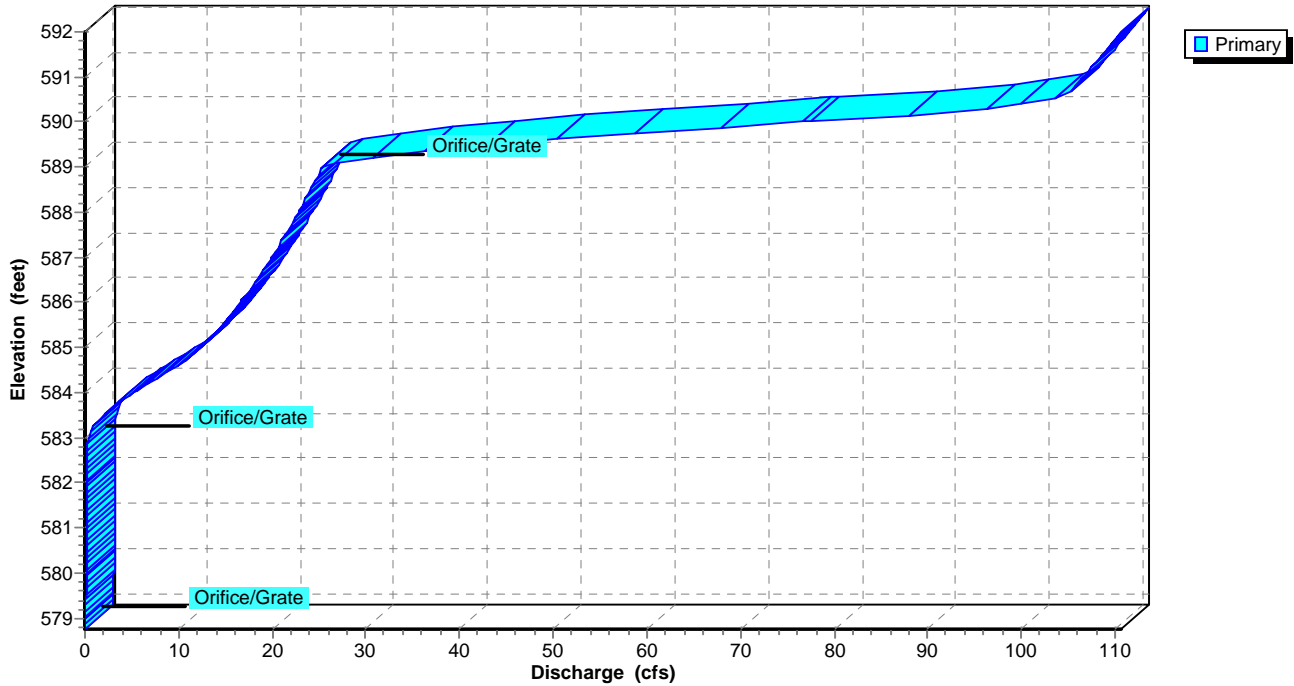
Pond 9P: BASIN 2

Hydrograph

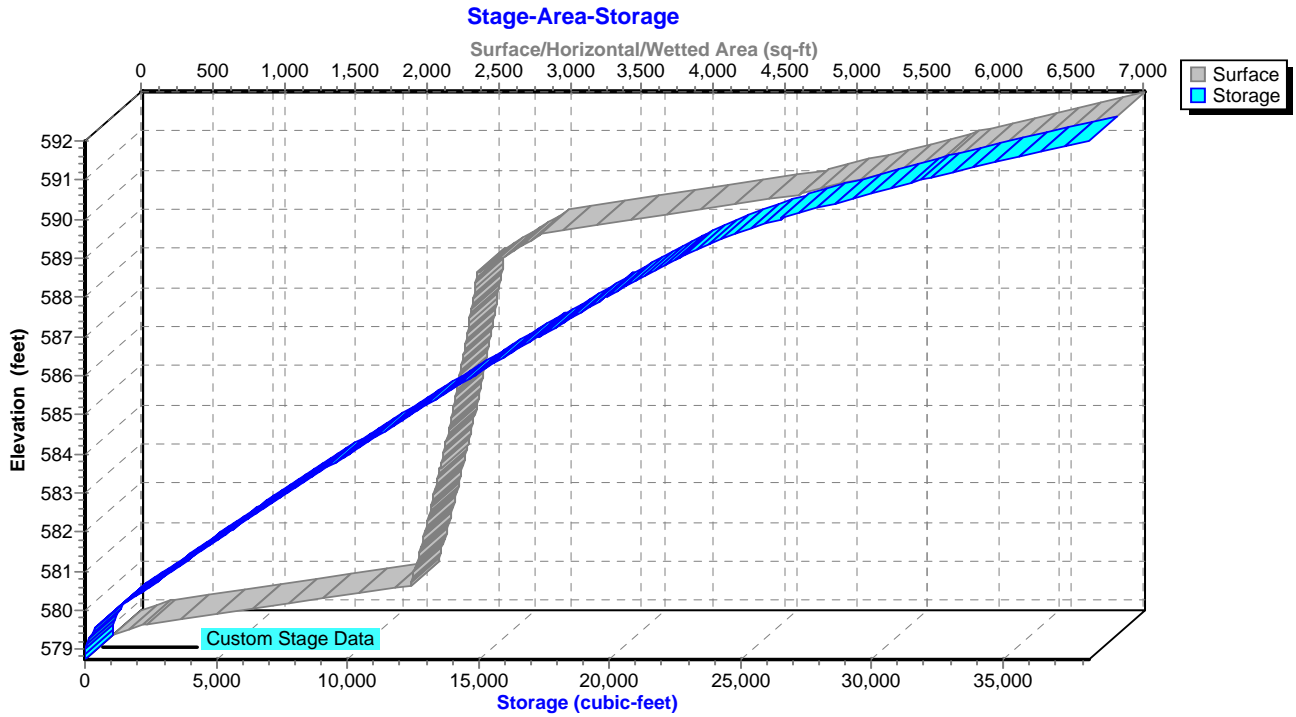


Pond 9P: BASIN 2

Stage-Discharge



Pond 9P: BASIN 2



Summary for Pond 10R: 201 TO JS

Inflow Area = 8.630 ac, 72.42% Impervious, Inflow Depth = 4.30" for 15-yr event
 Inflow = 22.33 cfs @ 12.01 hrs, Volume= 3.090 af
 Outflow = 22.33 cfs @ 12.01 hrs, Volume= 3.090 af, Atten= 0%, Lag= 0.0 min
 Primary = 22.33 cfs @ 12.01 hrs, Volume= 3.090 af
 Routed to Pond 11P : DUAL CULVERTS

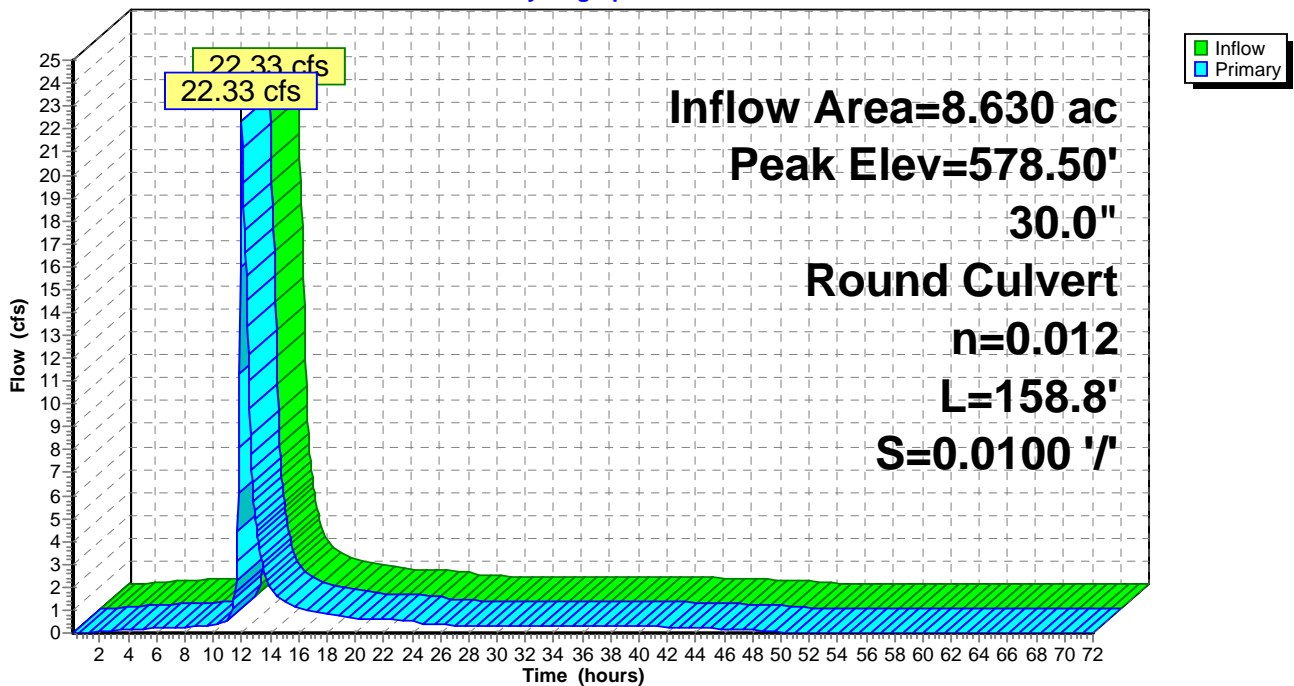
Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 578.50' @ 12.01 hrs
 Flood Elev= 583.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	576.36'	30.0" Round Culvert L= 158.8' Ke= 0.500 Inlet / Outlet Invert= 576.36' / 574.77' S= 0.0100 '/ Cc= 0.900 n= 0.012, Flow Area= 4.91 sf

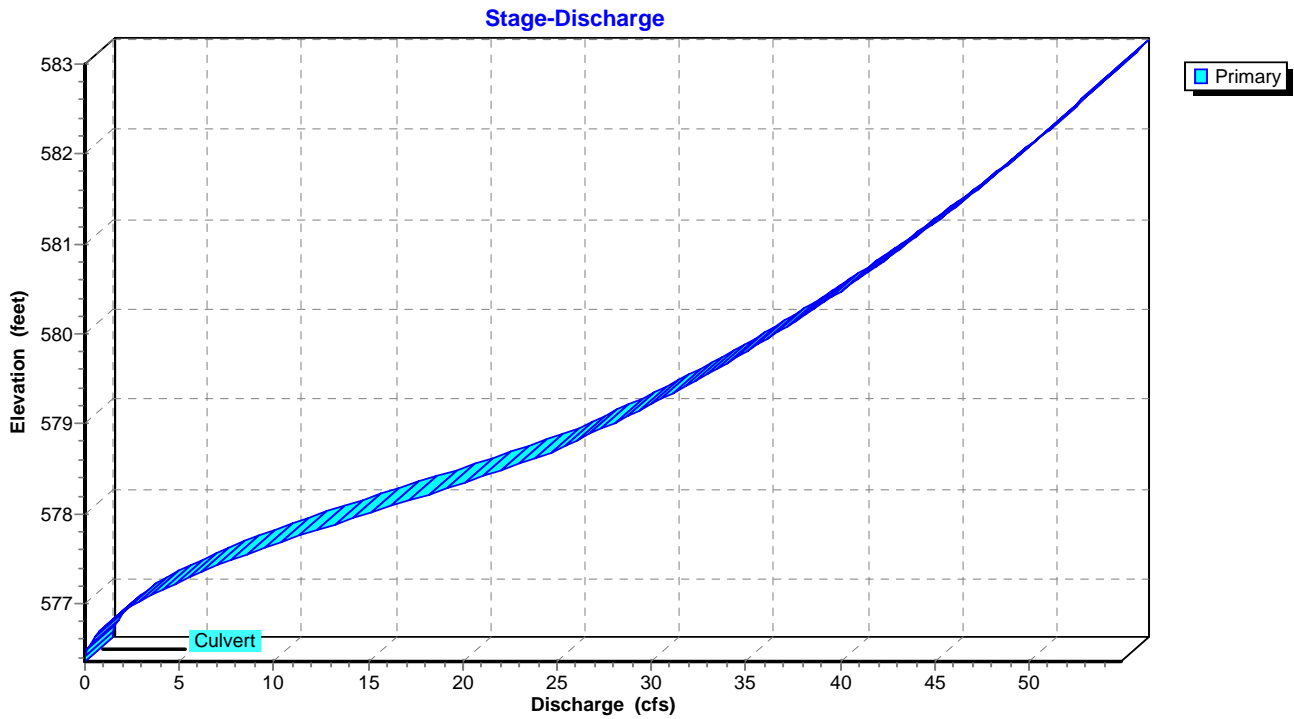
Primary OutFlow Max=22.18 cfs @ 12.01 hrs HW=578.49' TW=576.43' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 22.18 cfs @ 4.97 fps)

Pond 10R: 201 TO JS

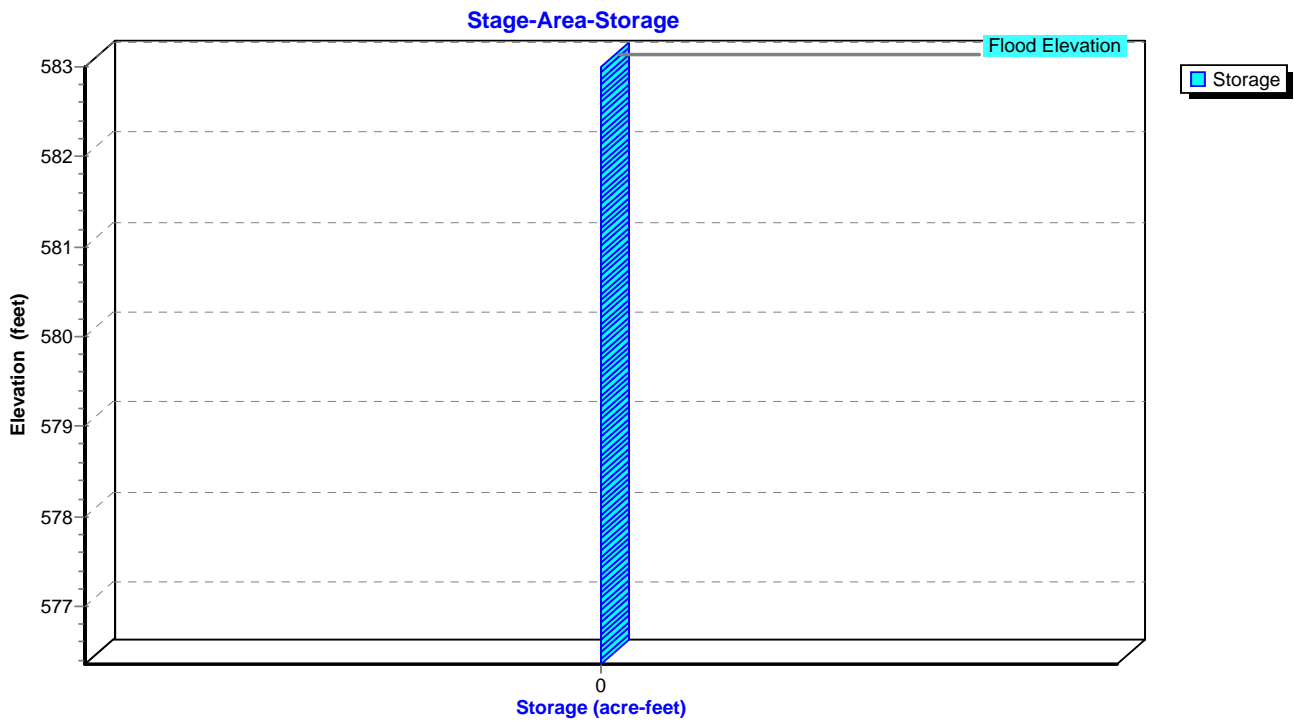
Hydrograph



Pond 10R: 201 TO JS



Pond 10R: 201 TO JS



Summary for Pond 11P: DUAL CULVERTS

Inflow Area = 15.090 ac, 65.14% Impervious, Inflow Depth = 4.15" for 15-yr event
 Inflow = 58.70 cfs @ 11.99 hrs, Volume= 5.220 af
 Outflow = 58.70 cfs @ 11.99 hrs, Volume= 5.220 af, Atten= 0%, Lag= 0.0 min
 Primary = 58.70 cfs @ 11.99 hrs, Volume= 5.220 af

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 576.46' @ 11.99 hrs
 Flood Elev= 582.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	574.44'	54.0" Round RCP_Round 54" L= 84.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 574.44' / 573.62' S= 0.0098 '/ Cc= 0.900 n= 0.013, Flow Area= 15.90 sf
#2	Primary	574.47'	54.0" Round RCP_Round 54" L= 84.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 574.47' / 573.79' S= 0.0081 '/ Cc= 0.900 n= 0.013, Flow Area= 15.90 sf

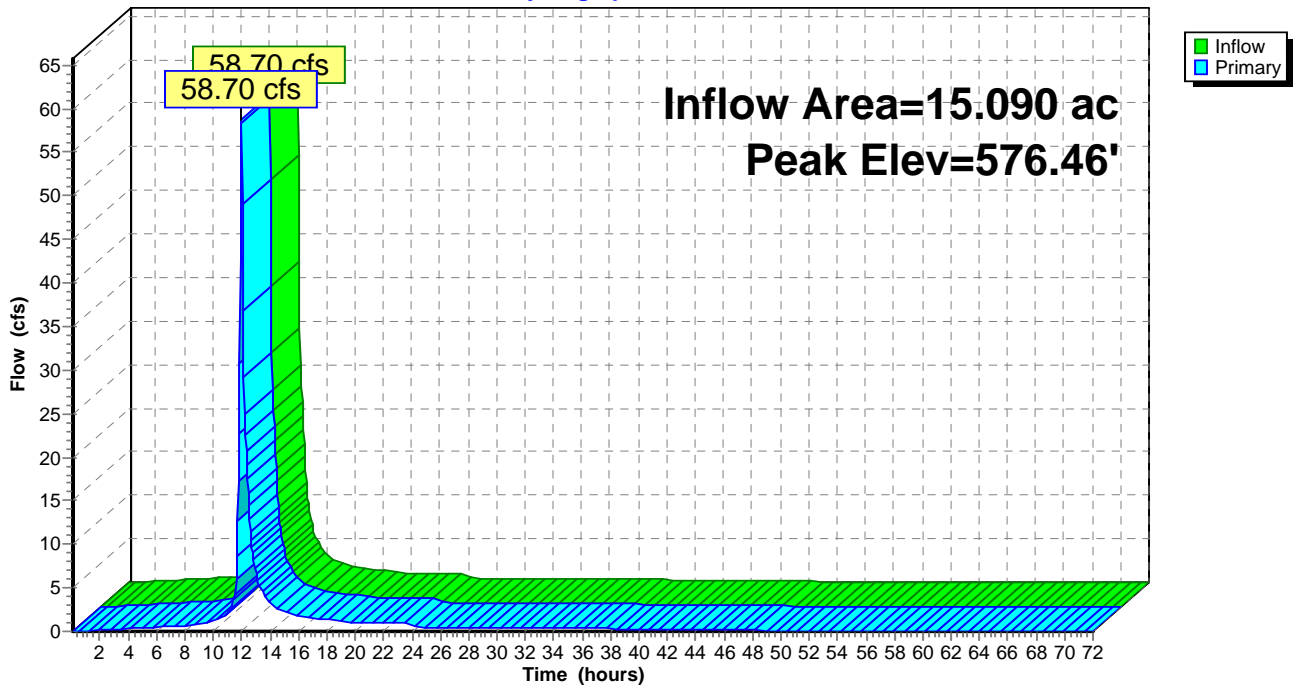
Primary OutFlow Max=57.55 cfs @ 11.99 hrs HW=576.44' (Free Discharge)

1=RCP_Round 54" (Barrel Controls 29.96 cfs @ 6.47 fps)

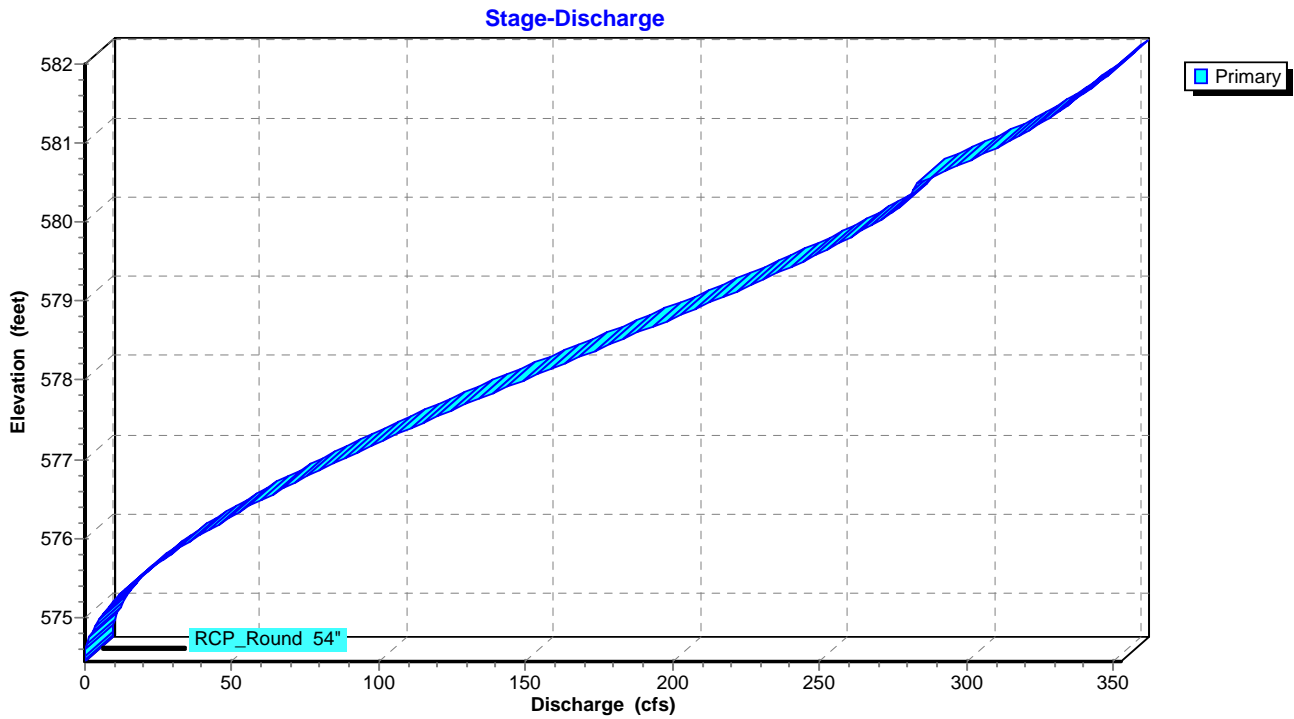
2=RCP_Round 54" (Barrel Controls 27.59 cfs @ 6.09 fps)

Pond 11P: DUAL CULVERTS

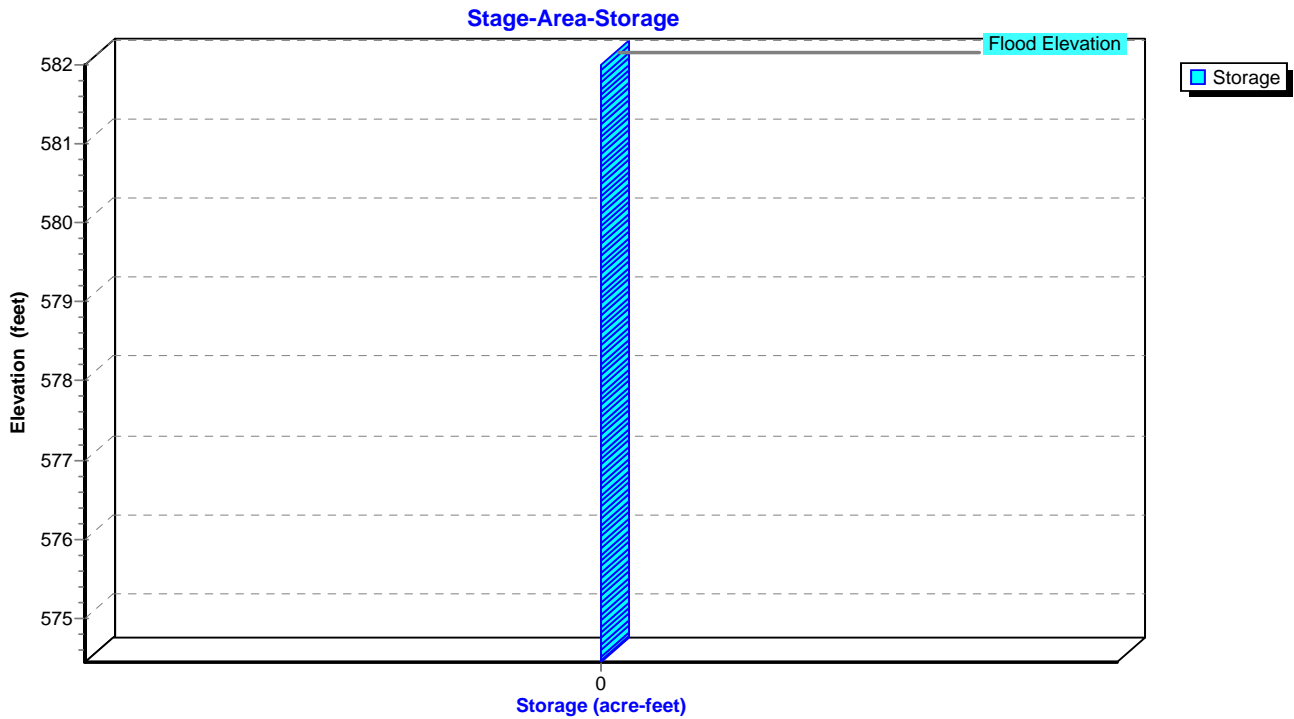
Hydrograph



Pond 11P: DUAL CULVERTS



Pond 11P: DUAL CULVERTS



Summary for Pond 12P: BRYAN RD CULVERT

Inflow Area = 4.870 ac, 55.44% Impervious, Inflow Depth = 3.96" for 15-yr event
 Inflow = 27.56 cfs @ 12.00 hrs, Volume= 1.606 af
 Outflow = 27.56 cfs @ 12.00 hrs, Volume= 1.606 af, Atten= 0%, Lag= 0.0 min
 Primary = 27.56 cfs @ 12.00 hrs, Volume= 1.606 af
 Routed to Pond 11P : DUAL CULVERTS

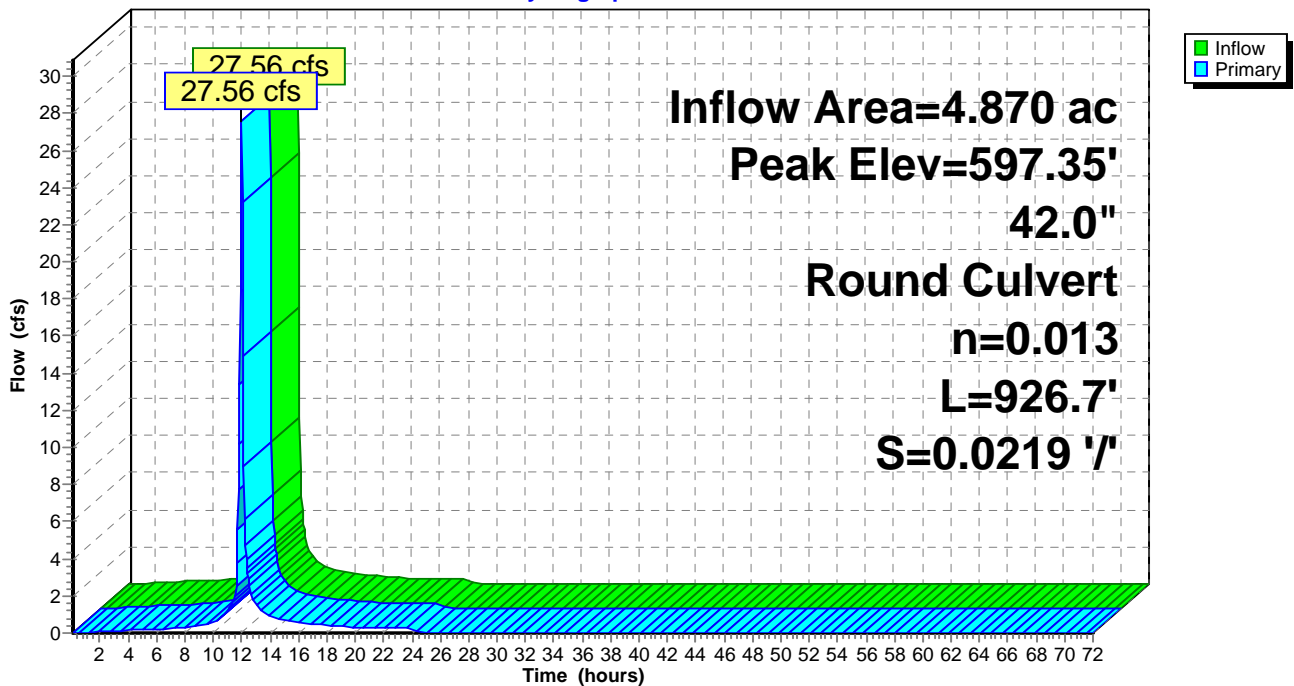
Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 597.35' @ 12.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	595.34'	42.0" Round Culvert L= 926.7' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 595.34' / 575.00' S= 0.0219 '/ Cc= 0.900 n= 0.013, Flow Area= 9.62 sf

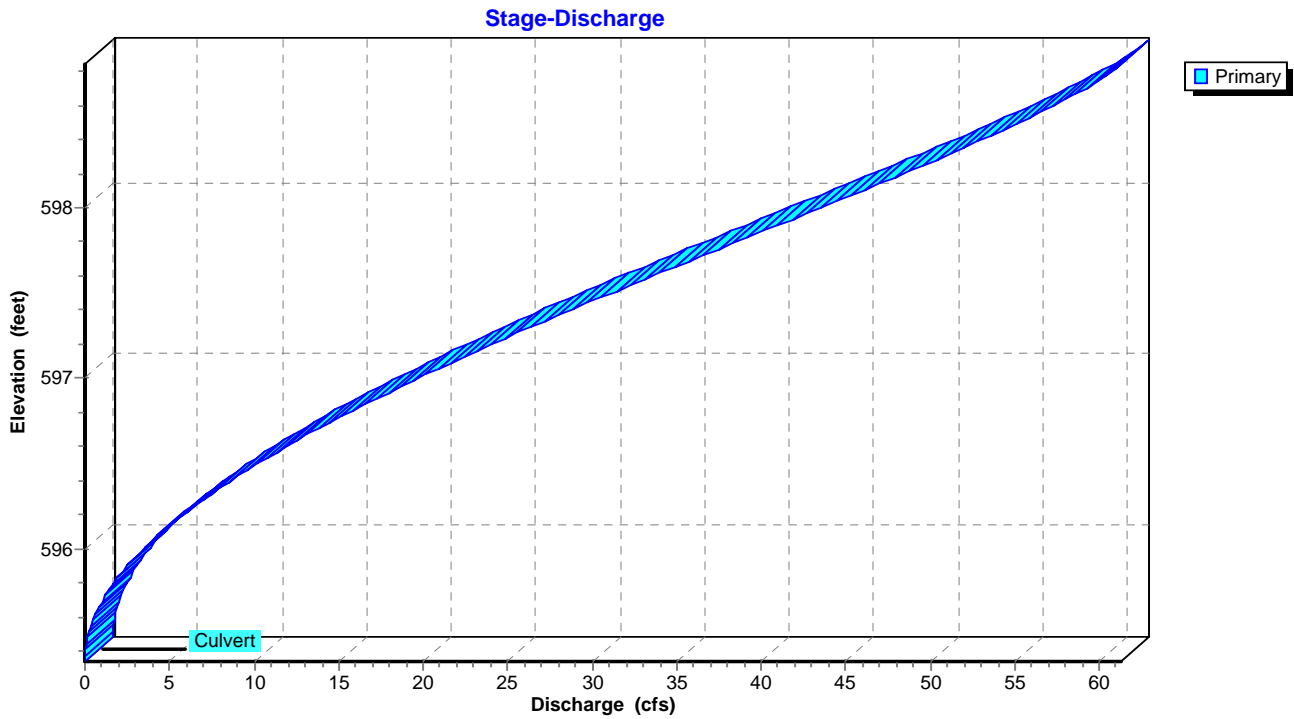
Primary OutFlow Max=27.29 cfs @ 12.00 hrs HW=597.34' TW=576.45' (Dynamic Tailwater)
 ←1=Culvert (Inlet Controls 27.29 cfs @ 4.81 fps)

Pond 12P: BRYAN RD CULVERT

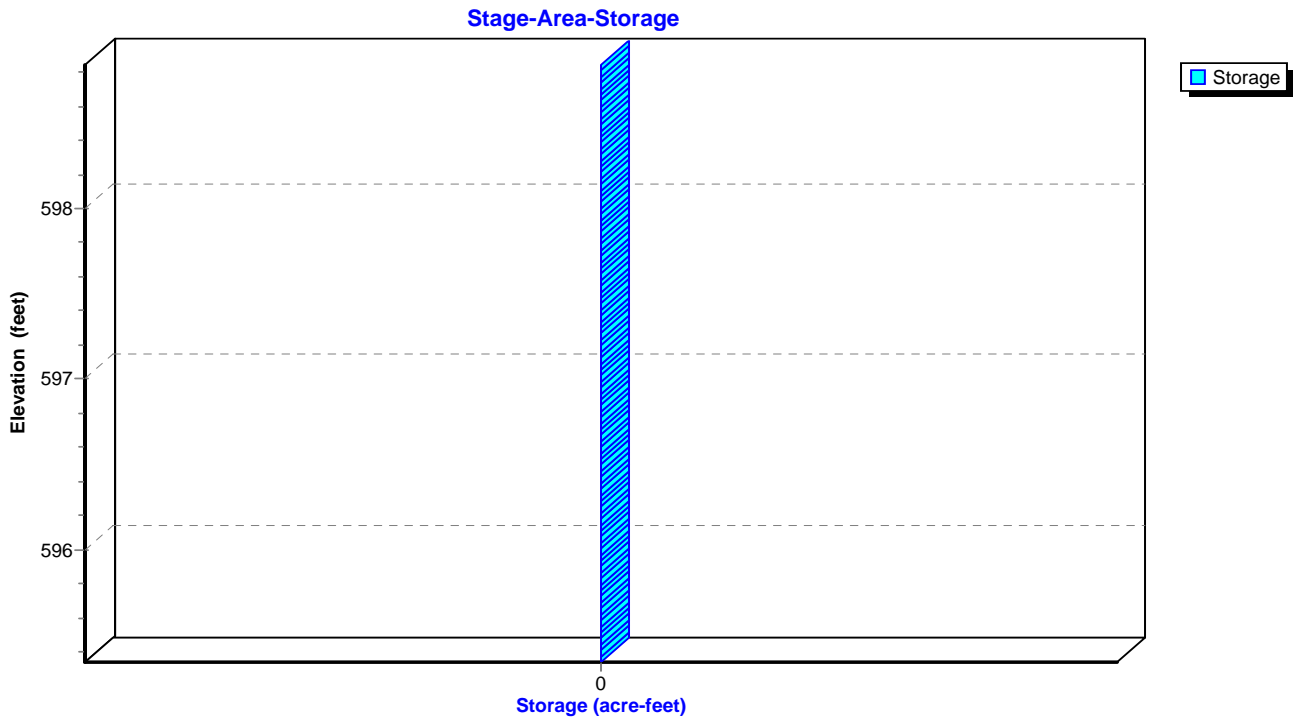
Hydrograph



Pond 12P: BRYAN RD CULVERT



Pond 12P: BRYAN RD CULVERT



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Type II 24-hr 15-yr Rainfall=5.03"

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Summary for Pond 13P: BASIN 1 FOREBAY

Inflow Area = 4.880 ac, 79.71% Impervious, Inflow Depth = 4.41" for 15-yr event
 Inflow = 33.28 cfs @ 11.95 hrs, Volume= 1.795 af
 Outflow = 31.67 cfs @ 11.98 hrs, Volume= 1.795 af, Atten= 5%, Lag= 1.5 min
 Primary = 31.67 cfs @ 11.98 hrs, Volume= 1.810 af
 Routed to Pond 8P : BASIN 1

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 594.00' @ 11.80 hrs Surf.Area= 3,845 sf Storage= 9,545 cf
 Flood Elev= 600.00' Surf.Area= 3,845 sf Storage= 9,545 cf

Plug-Flow detention time= 153.0 min calculated for 1.793 af (100% of inflow)
 Center-of-Mass det. time= 153.6 min (906.5 - 752.9)

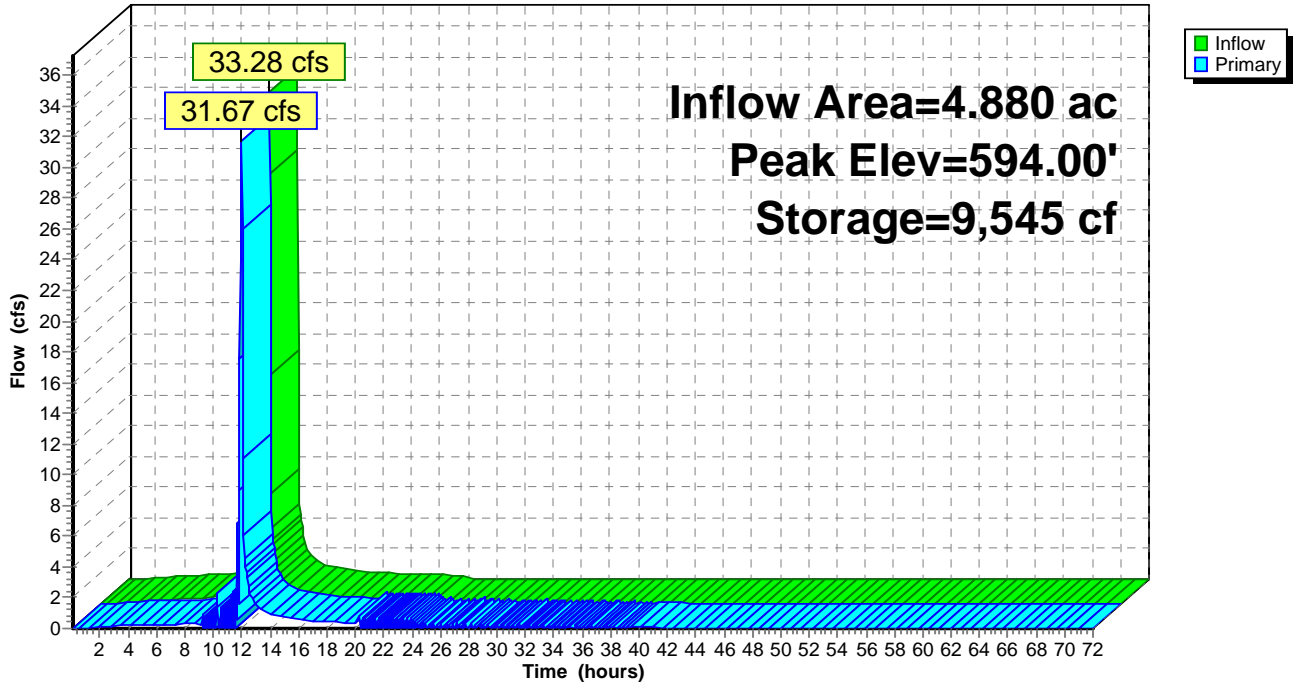
Volume	Invert	Avail.Storage	Storage Description
#1	590.00'	9,545 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
590.00	1,069	0	0
591.00	1,678	1,374	1,374
592.00	2,344	2,011	3,385
593.00	3,066	2,705	6,090
594.00	3,845	3,456	9,545

Device	Routing	Invert	Outlet Devices
#0	Primary	594.00'	Automatic Storage Overflow (Discharged without head)
#1	Primary	590.00'	36.00' long x 30.00' breadth x 4.06' high Rock Fill Rock Diam.= 18.000", S.D.= 4.000", Voids= 40.0%

Primary OutFlow Max=0.00 cfs @ 11.98 hrs HW=594.00' TW=595.42' (Dynamic Tailwater)
 ↗1=Rock Fill (Controls 0.00 cfs)

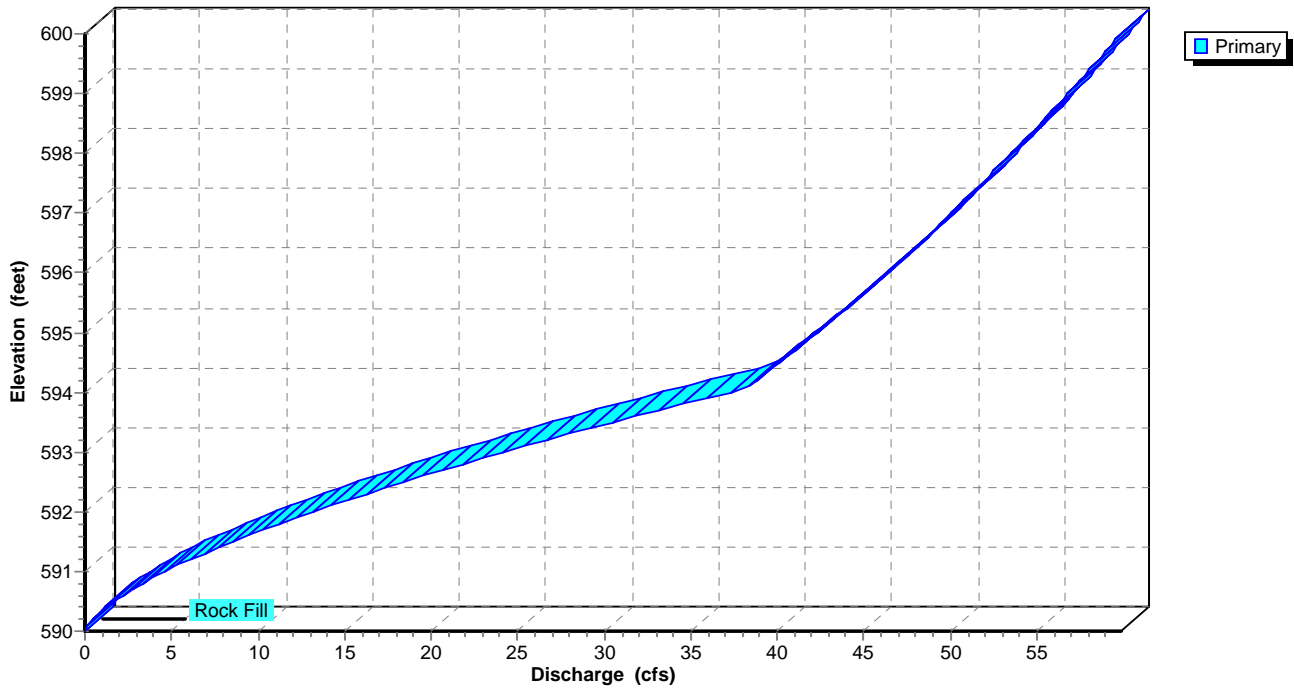
Pond 13P: BASIN 1 FOREBAY

Hydrograph



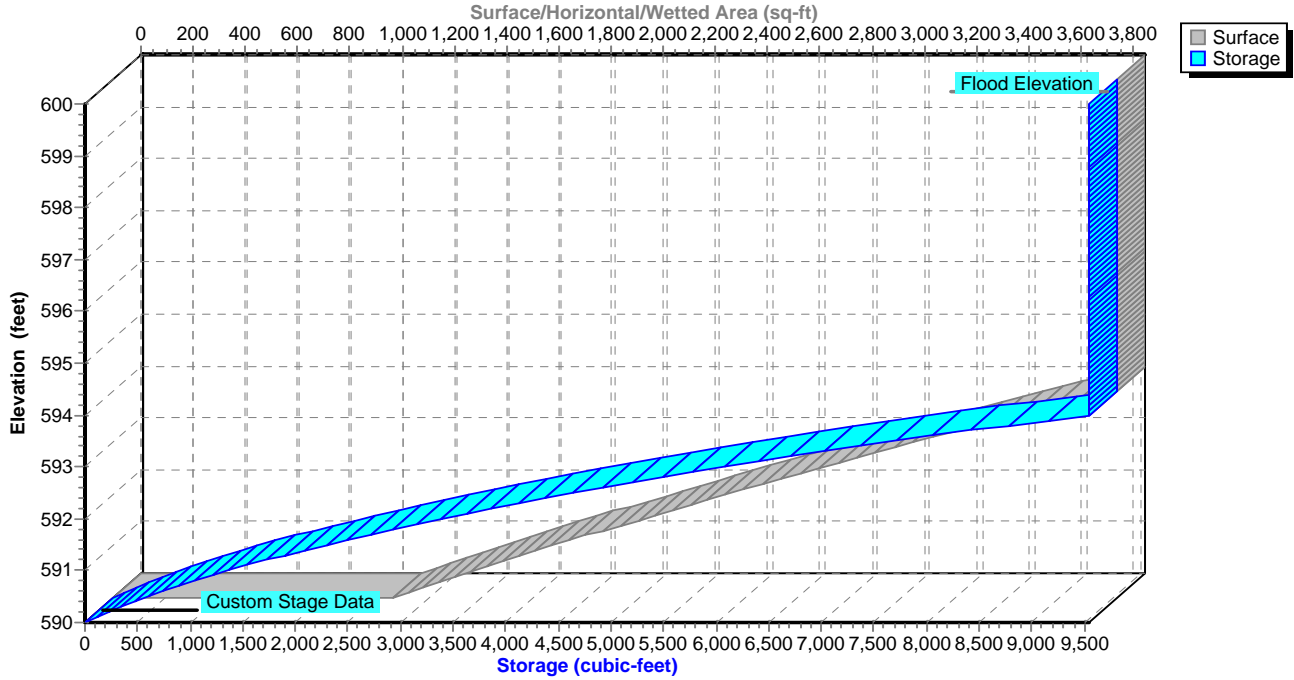
Pond 13P: BASIN 1 FOREBAY

Stage-Discharge



Pond 13P: BASIN 1 FOREBAY

Stage-Area-Storage



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Type II 24-hr 15-yr Rainfall=5.03"

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Summary for Pond 17P: BASIN 1 100 YR LFB

Inflow Area = 4.880 ac, 79.71% Impervious, Inflow Depth = 4.10" for 15-yr event
 Inflow = 31.67 cfs @ 11.98 hrs, Volume= 1.668 af
 Outflow = 13.36 cfs @ 12.09 hrs, Volume= 1.457 af, Atten= 58%, Lag= 7.1 min
 Primary = 13.36 cfs @ 12.09 hrs, Volume= 1.457 af
 Routed to Pond 21P : BASIN 2 100 YR LFB

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 596.30' @ 12.09 hrs Surf.Area= 11,444 sf Storage= 29,278 cf
 Flood Elev= 600.00' Surf.Area= 17,840 sf Storage= 83,183 cf

Plug-Flow detention time= 126.5 min calculated for 1.456 af (87% of inflow)
 Center-of-Mass det. time= 65.8 min (841.3 - 775.5)

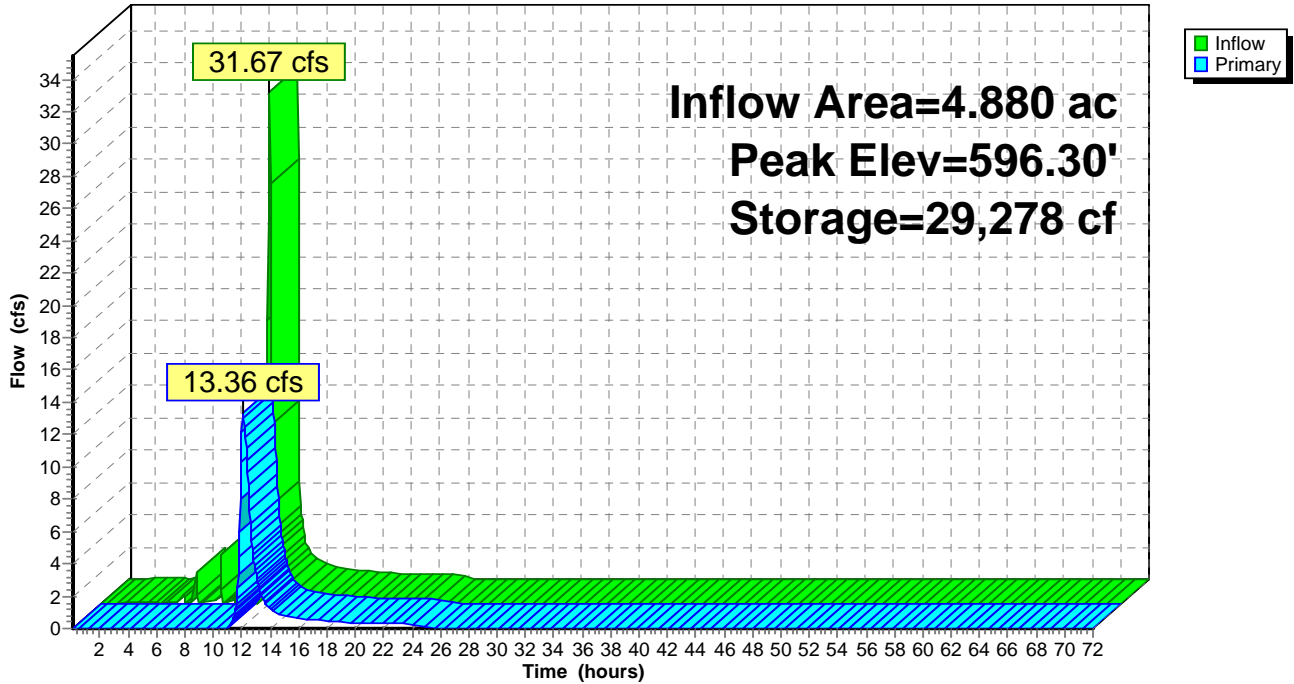
Volume	Invert	Avail.Storage	Storage Description
#1	589.00'	83,183 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
589.00	2	0	0
590.00	897	450	450
591.00	1,487	1,192	1,642
592.00	2,133	1,810	3,452
593.00	2,836	2,485	5,936
594.00	3,695	3,266	9,202
595.00	9,367	6,531	15,733
596.00	10,948	10,158	25,890
597.00	12,586	11,767	37,657
598.00	14,281	13,434	51,091
599.00	16,032	15,157	66,247
600.00	17,840	16,936	83,183

Device	Routing	Invert	Outlet Devices
#1	Primary	585.00'	24.0" Round RCP_Round 24" L= 184.2' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 585.00' / 583.16' S= 0.0100 1/ Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	594.00'	18.0" W x 18.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	598.00'	30.0" x 60.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=13.33 cfs @ 12.09 hrs HW=596.30' TW=587.21' (Dynamic Tailwater)
 1=RCP_Round 24" (Passes 13.33 cfs of 42.78 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 13.33 cfs @ 5.93 fps)
 3=Orifice/Grate (Controls 0.00 cfs)

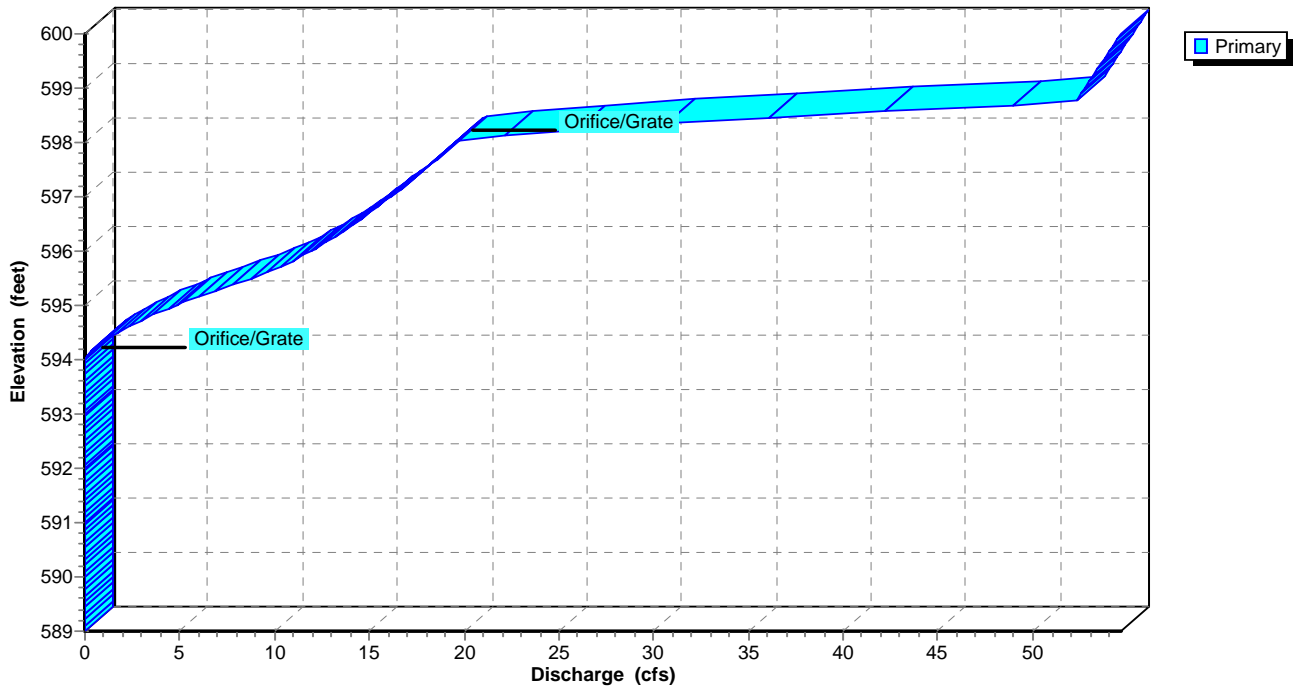
Pond 17P: BASIN 1 100 YR LFB

Hydrograph

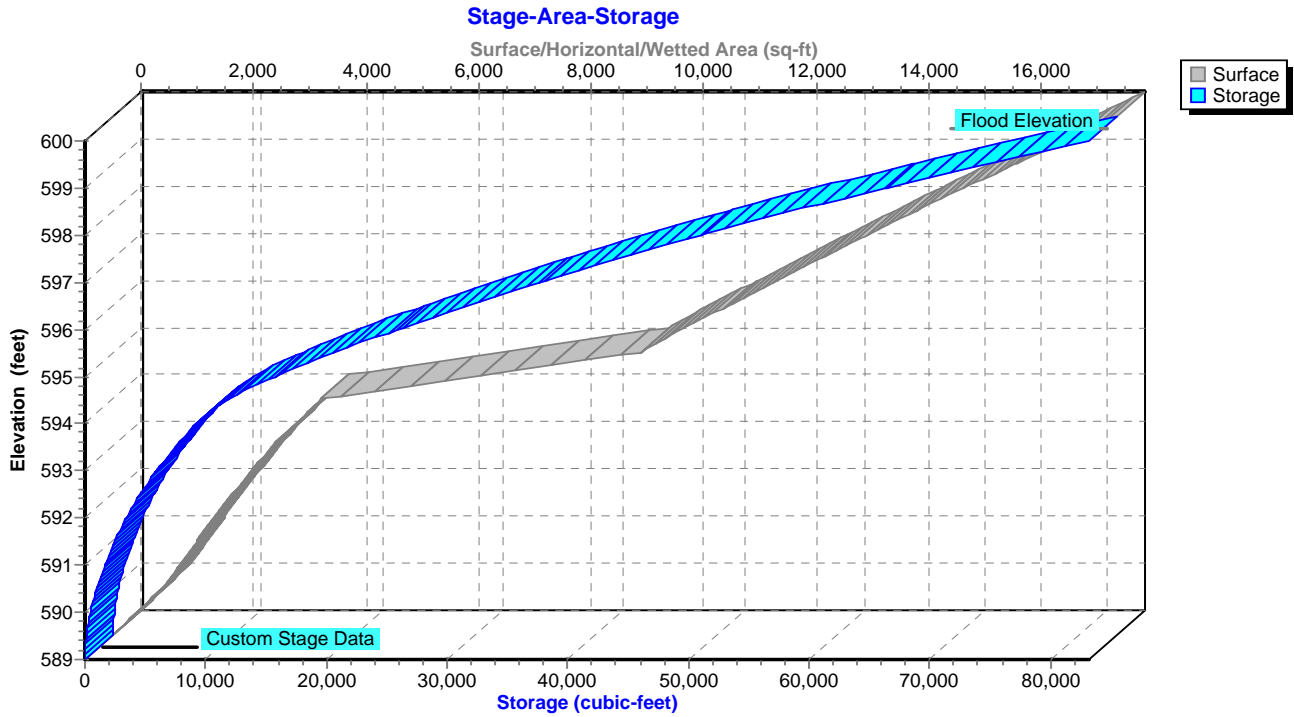


Pond 17P: BASIN 1 100 YR LFB

Stage-Discharge



Pond 17P: BASIN 1 100 YR LFB



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Type II 24-hr 15-yr Rainfall=5.03"

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Summary for Pond 18P: BASIN 1 FOREBAY 100 YR LFB

Inflow Area = 4.880 ac, 79.71% Impervious, Inflow Depth = 4.41" for 15-yr event
 Inflow = 33.28 cfs @ 11.95 hrs, Volume= 1.795 af
 Outflow = 31.67 cfs @ 11.98 hrs, Volume= 1.575 af, Atten= 5%, Lag= 1.5 min
 Primary = 31.67 cfs @ 11.98 hrs, Volume= 1.668 af
 Routed to Pond 17P : BASIN 1 100 YR LFB

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 594.00' @ 11.20 hrs Surf.Area= 3,845 sf Storage= 9,545 cf
 Flood Elev= 600.00' Surf.Area= 3,845 sf Storage= 9,545 cf

Plug-Flow detention time= 96.2 min calculated for 1.575 af (88% of inflow)
 Center-of-Mass det. time= 35.4 min (788.3 - 752.9)

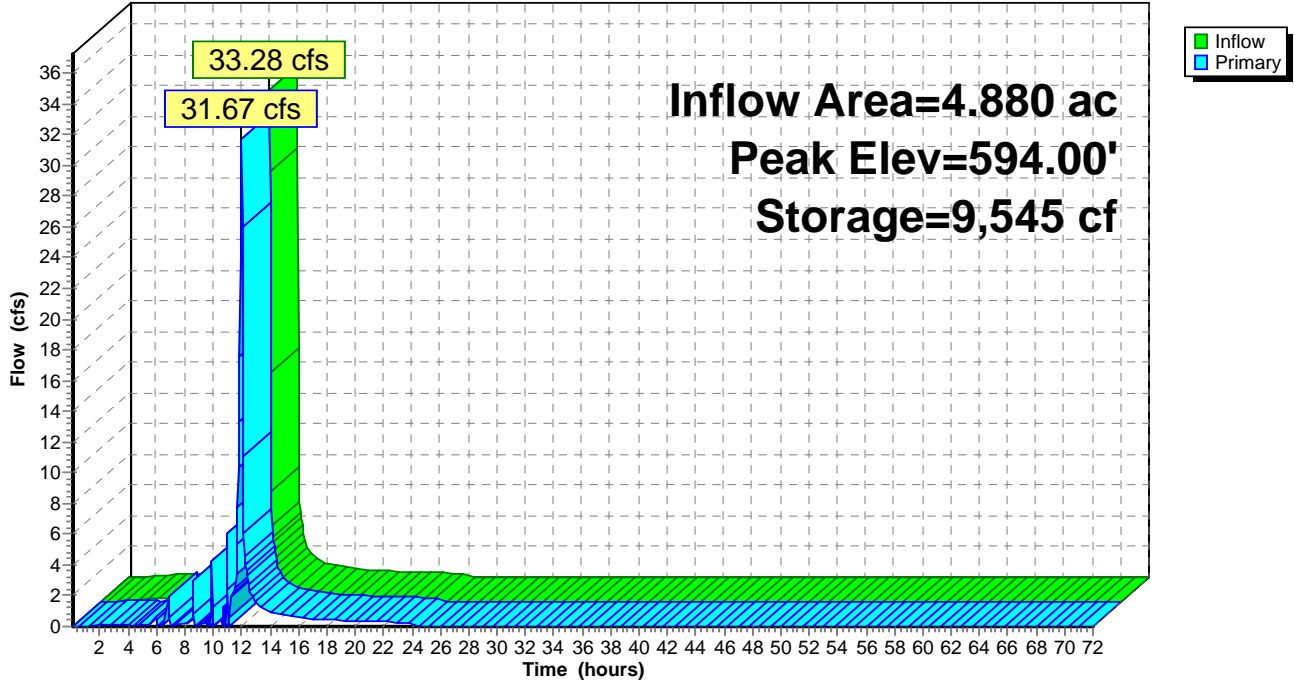
Volume	Invert	Avail.Storage	Storage Description
#1	590.00'	9,545 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
590.00	1,069	0	0
591.00	1,678	1,374	1,374
592.00	2,344	2,011	3,385
593.00	3,066	2,705	6,090
594.00	3,845	3,456	9,545

Device	Routing	Invert	Outlet Devices
#0	Primary	594.00'	Automatic Storage Overflow (Discharged without head)
#1	Primary	590.00'	36.00' long x 30.00' breadth x 4.06' high Rock Fill Rock Diam.= 18.000", S.D.= 4.000", Voids= 40.0%

Primary OutFlow Max=0.00 cfs @ 11.98 hrs HW=594.00' TW=595.89' (Dynamic Tailwater)
 ↗1=Rock Fill (Controls 0.00 cfs)

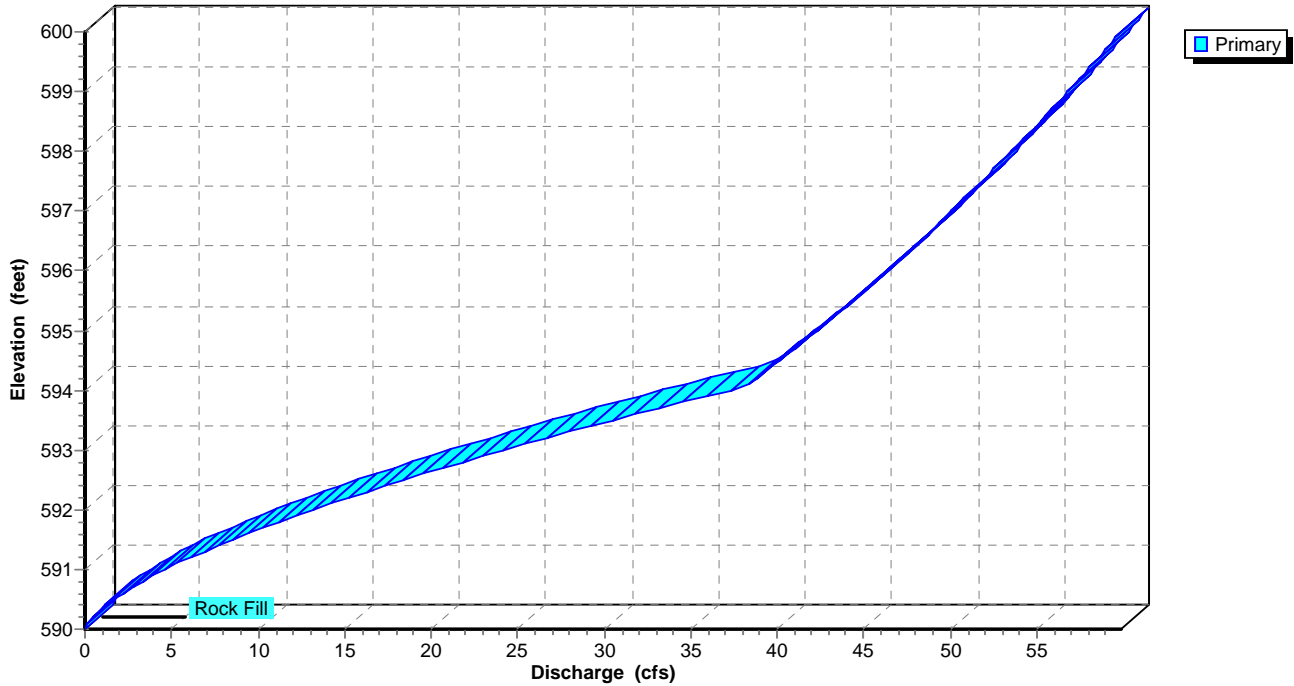
Pond 18P: BASIN 1 FOREBAY 100 YR LFB

Hydrograph

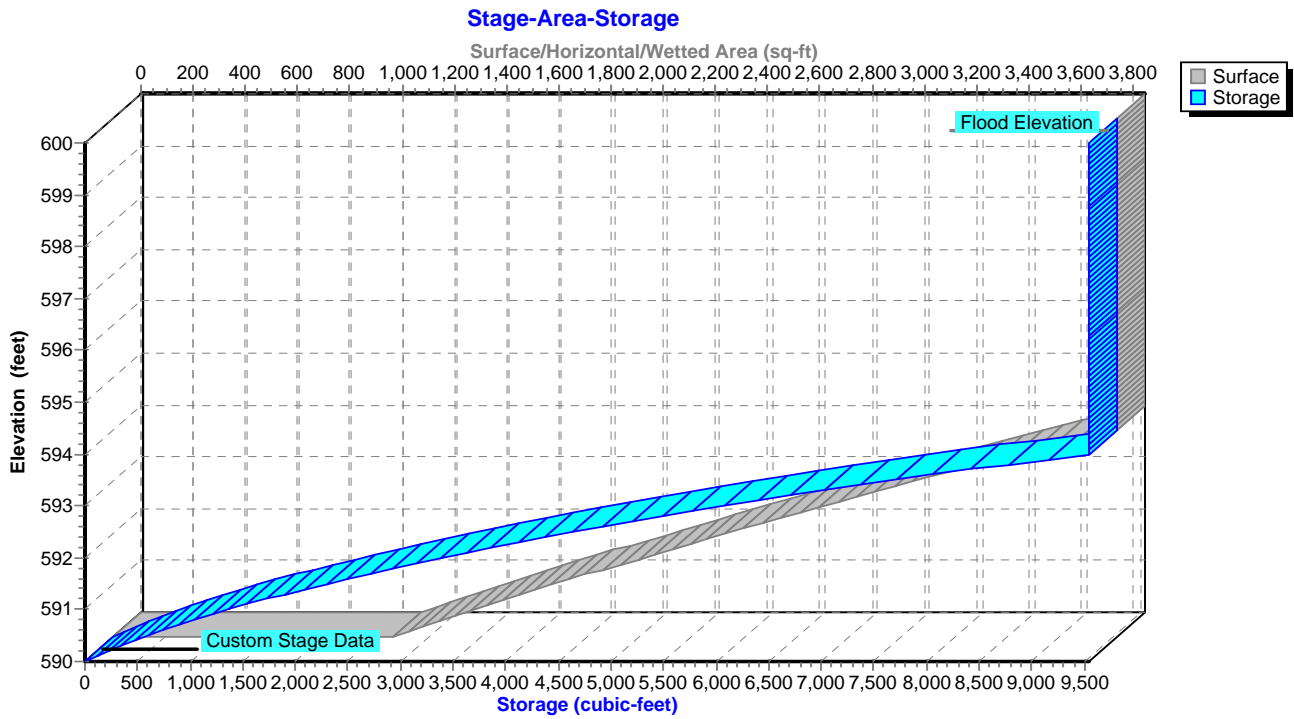


Pond 18P: BASIN 1 FOREBAY 100 YR LFB

Stage-Discharge



Pond 18P: BASIN 1 FOREBAY 100 YR LFB



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Type II 24-hr 15-yr Rainfall=5.03"

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Summary for Pond 21P: BASIN 2 100 YR LFB

Inflow Area = 7.600 ac, 78.42% Impervious, Inflow Depth = 3.86" for 15-yr event
 Inflow = 29.06 cfs @ 11.97 hrs, Volume= 2.442 af
 Outflow = 20.34 cfs @ 12.07 hrs, Volume= 2.264 af, Atten= 30%, Lag= 6.1 min
 Primary = 20.34 cfs @ 12.07 hrs, Volume= 2.264 af

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 587.29' @ 12.07 hrs Surf.Area= 2,516 sf Storage= 18,049 cf

Plug-Flow detention time= 75.1 min calculated for 2.263 af (93% of inflow)
 Center-of-Mass det. time= 34.9 min (841.4 - 806.5)

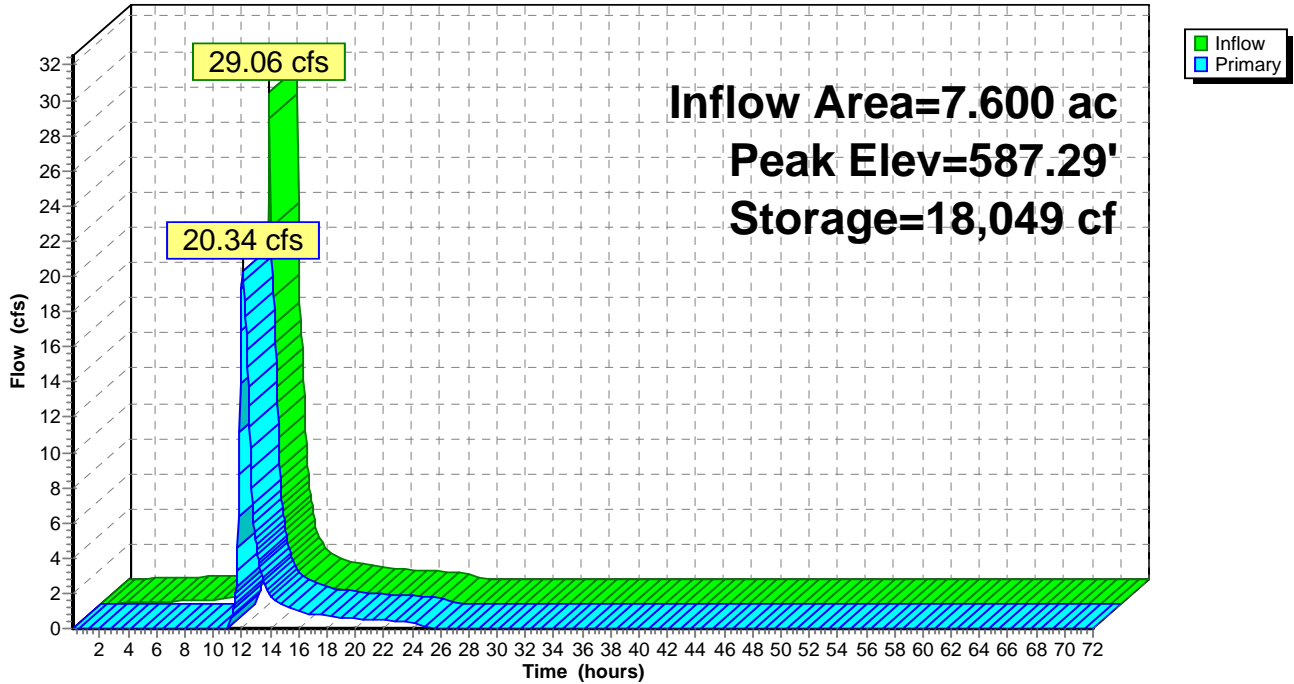
Volume	Invert	Avail.Storage	Storage Description
#1	578.75'	38,301 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
578.75	1	0	0
579.00	205	26	26
580.00	2,080	1,143	1,168
581.00	2,153	2,117	3,285
582.00	2,222	2,188	5,472
583.00	2,287	2,255	7,727
584.00	2,348	2,318	10,044
585.00	2,404	2,376	12,420
586.00	2,456	2,430	14,850
587.00	2,504	2,480	17,330
588.00	2,547	2,526	19,856
589.00	3,000	2,774	22,629
590.00	4,800	3,900	26,529
591.00	5,862	5,331	31,860
592.00	7,020	6,441	38,301

Device	Routing	Invert	Outlet Devices
#1	Primary	576.73'	24.0" Round Culvert L= 15.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 576.73' / 576.58' S= 0.0100 1' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	583.00'	18.0" W x 18.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	589.00'	30.0" x 60.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=20.20 cfs @ 12.07 hrs HW=587.24' (Free Discharge)
 1=Culvert (Passes 20.20 cfs of 58.31 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 20.20 cfs @ 8.98 fps)
 3=Orifice/Grate (Controls 0.00 cfs)

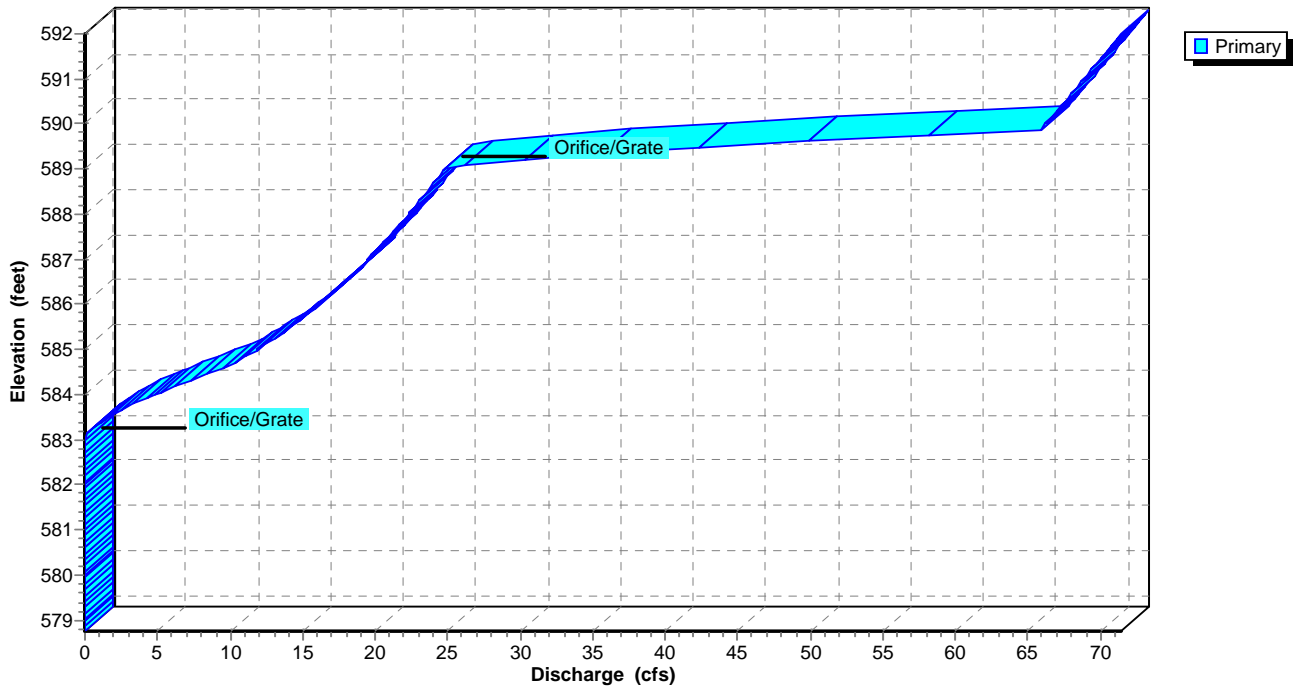
Pond 21P: BASIN 2 100 YR LFB

Hydrograph

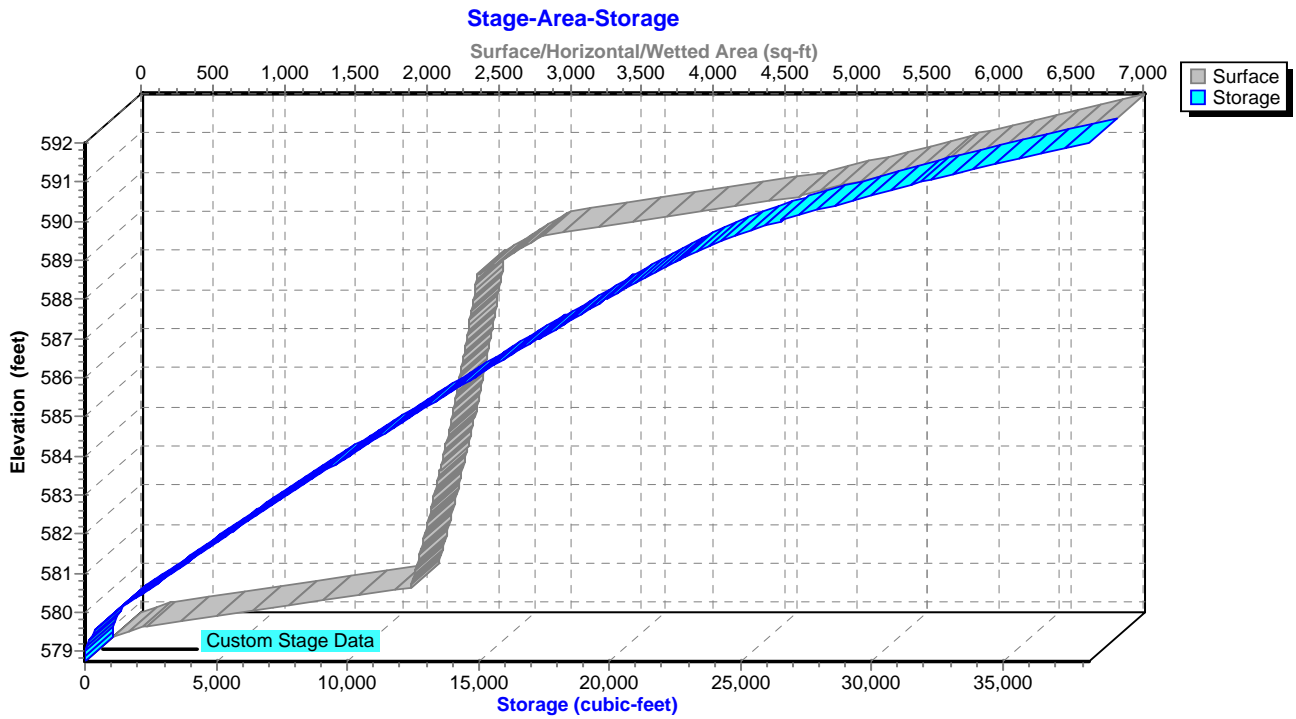


Pond 21P: BASIN 2 100 YR LFB

Stage-Discharge



Pond 21P: BASIN 2 100 YR LFB



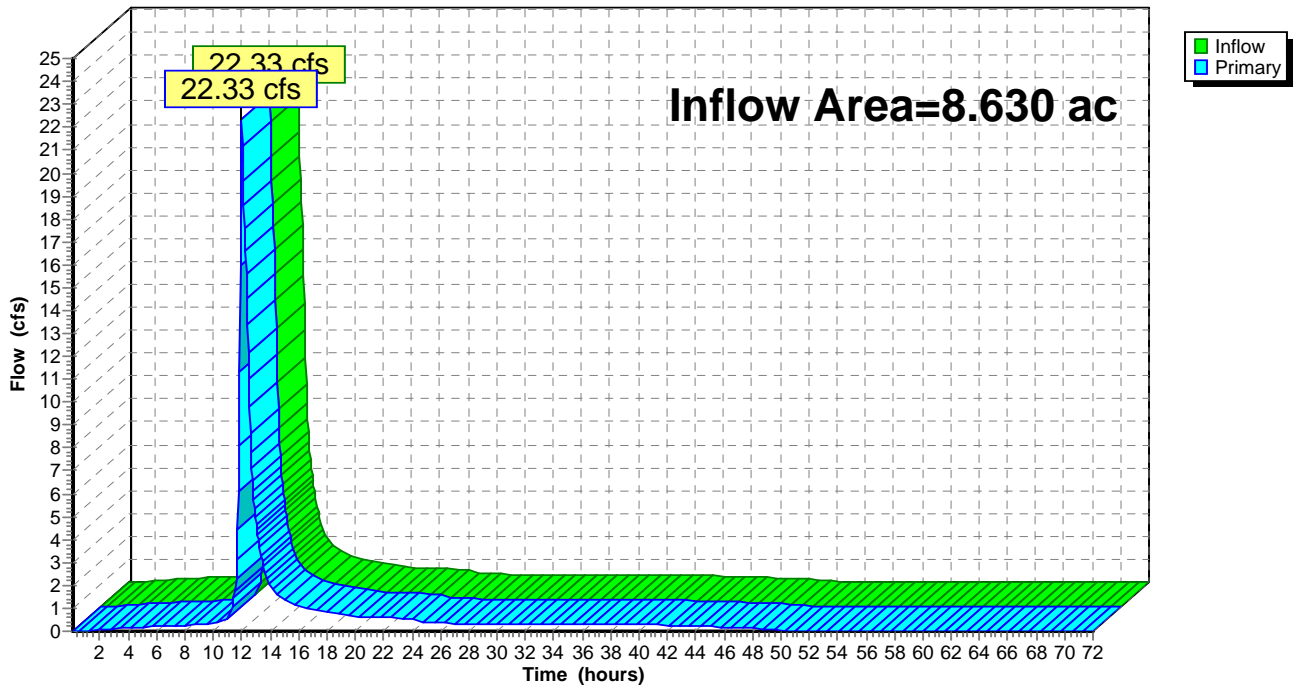
Summary for Link 14L: POST DEVELOPED RUNOFF

Inflow Area = 8.630 ac, 72.42% Impervious, Inflow Depth = 4.30" for 15-yr event
Inflow = 22.33 cfs @ 12.01 hrs, Volume= 3.090 af
Primary = 22.33 cfs @ 12.01 hrs, Volume= 3.090 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 10R : 201 TO JS

Primary outflow = Inflow, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs

Link 14L: POST DEVELOPED RUNOFF

Hydrograph



Summary for Subcatchment 1S: EXISTING CONDITIONS

Runoff = 34.25 cfs @ 12.02 hrs, Volume= 1.884 af, Depth= 2.76"

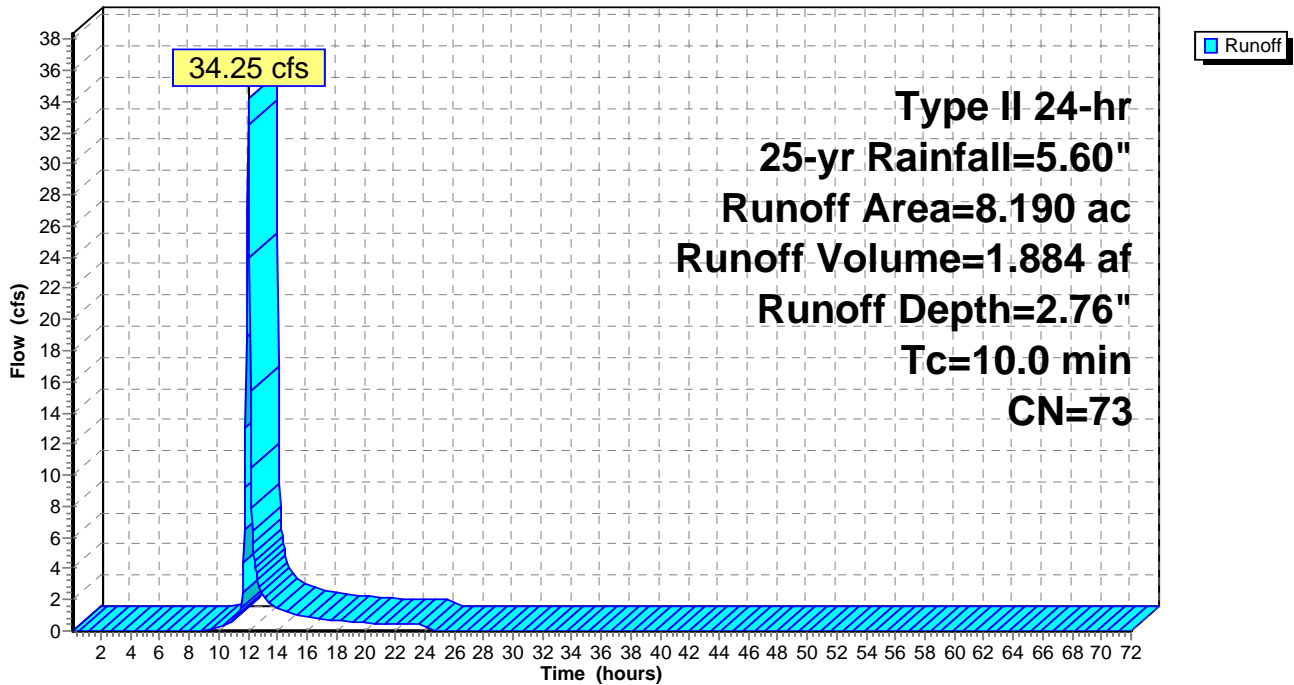
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-yr Rainfall=5.60"

Area (ac)	CN	Description
* 8.190	73	Woods, Good, HSG C
8.190		100.00% Pervious Area

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

Subcatchment 1S: EXISTING CONDITIONS

Hydrograph



Summary for Subcatchment 2S: PROPOSED CONDITIONS (NO DETENTION)

Runoff = 62.74 cfs @ 11.95 hrs, Volume= 3.395 af, Depth= 4.97"

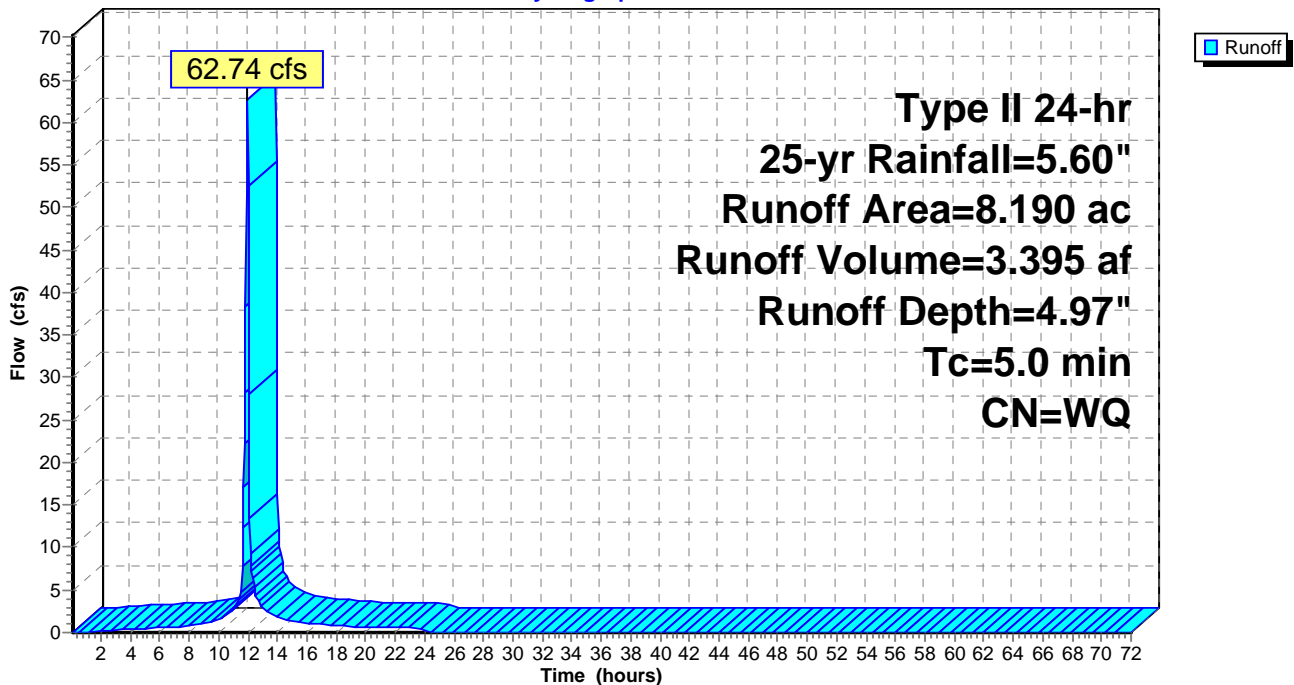
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-yr Rainfall=5.60"

Area (ac)	CN	Description
6.550	98	Paved parking, HSG C
1.640	80	>75% Grass cover, Good, HSG D
8.190		Weighted Average
1.640		20.02% Pervious Area
6.550		79.98% Impervious Area

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

Subcatchment 2S: PROPOSED CONDITIONS (NO DETENTION)

Hydrograph



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Type II 24-hr 25-yr Rainfall=5.60"

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Summary for Subcatchment 3S: OFFSITE TO ONSITE TO BASIN 1

Runoff = 2.14 cfs @ 11.95 hrs, Volume= 0.105 af, Depth= 3.83"
 Routed to Pond 13P : BASIN 1 FOREBAY

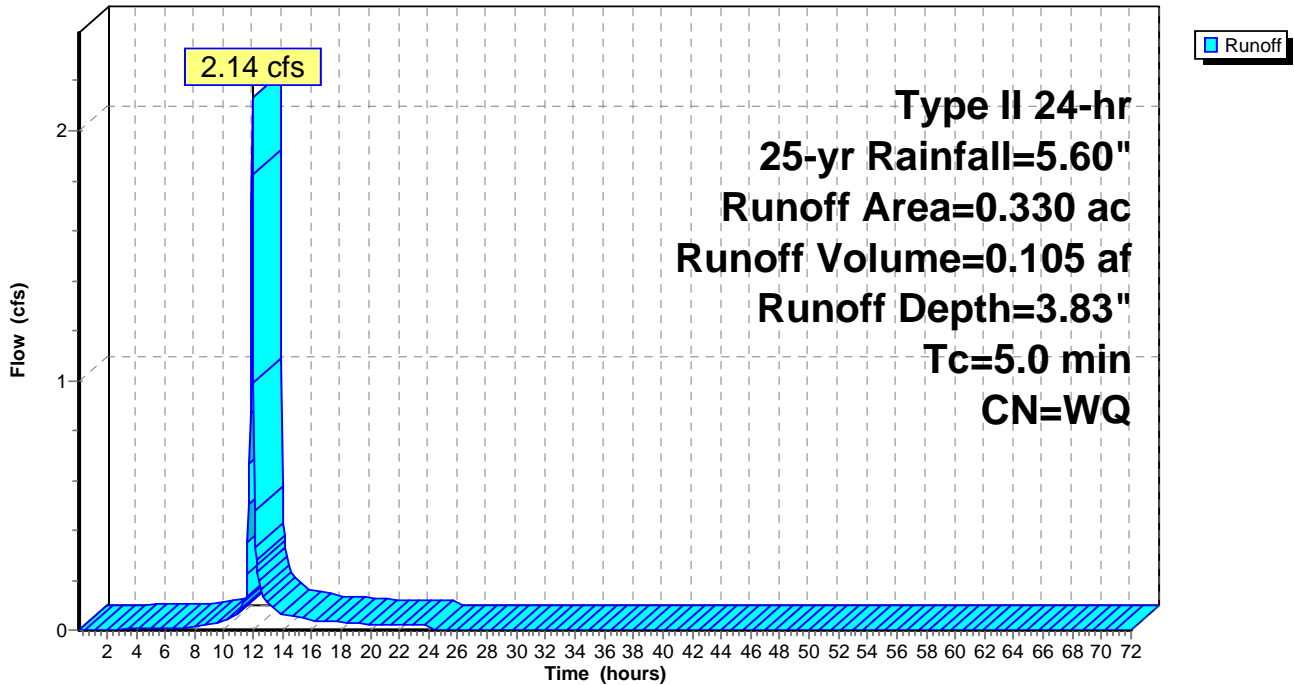
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-yr Rainfall=5.60"

Area (ac)	CN	Description
0.070	98	Paved parking, HSG D
0.260	80	>75% Grass cover, Good, HSG D
0.330		Weighted Average
0.260		78.79% Pervious Area
0.070		21.21% Impervious Area

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

Subcatchment 3S: OFFSITE TO ONSITE TO BASIN 1

Hydrograph



Summary for Subcatchment 4S: ONSITE TO BASIN 1

Runoff = 35.22 cfs @ 11.95 hrs, Volume= 1.915 af, Depth= 5.05"
 Routed to Pond 13P : BASIN 1 FOREBAY

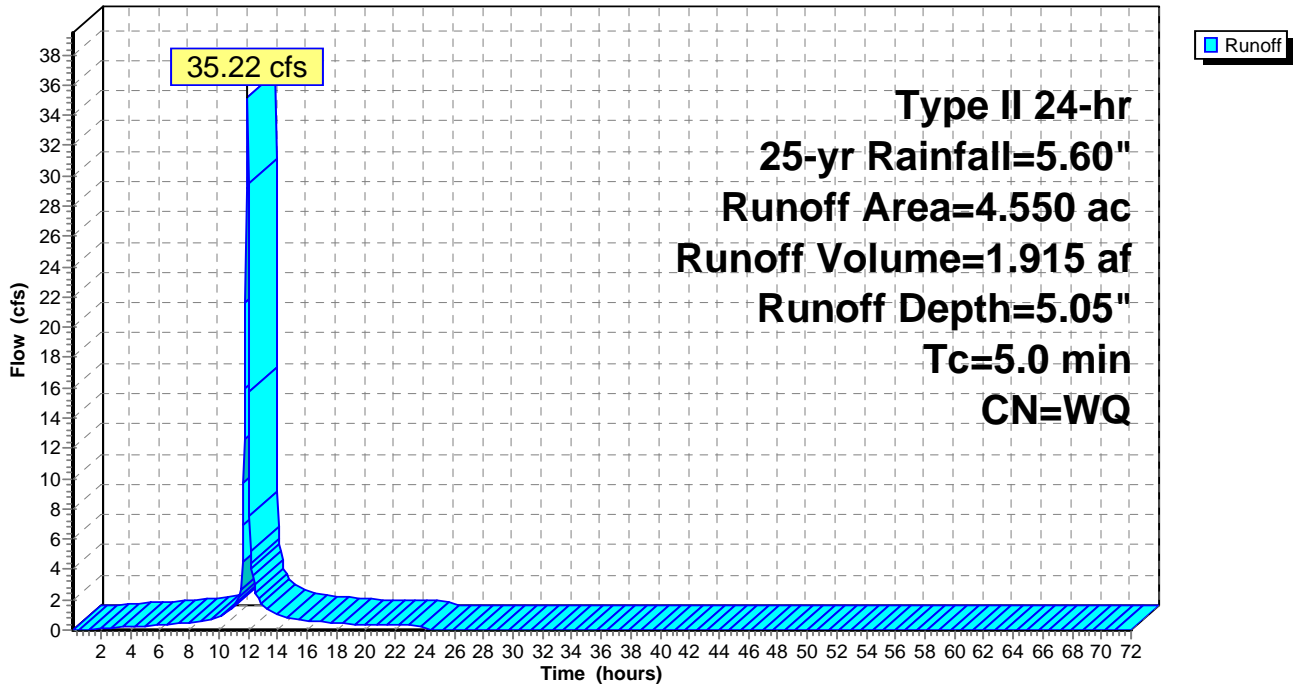
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-yr Rainfall=5.60"

Area (ac)	CN	Description
3.820	98	Paved parking, HSG D
0.730	80	>75% Grass cover, Good, HSG D
4.550		Weighted Average
0.730		16.04% Pervious Area
3.820		83.96% Impervious Area

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

Subcatchment 4S: ONSITE TO BASIN 1

Hydrograph



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Type II 24-hr 25-yr Rainfall=5.60"

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Summary for Subcatchment 5S: OFFSITE TO ONSITE TO BASIN 2

Runoff = 0.79 cfs @ 11.96 hrs, Volume= 0.037 af, Depth= 3.42"
 Routed to Pond 9P : BASIN 2

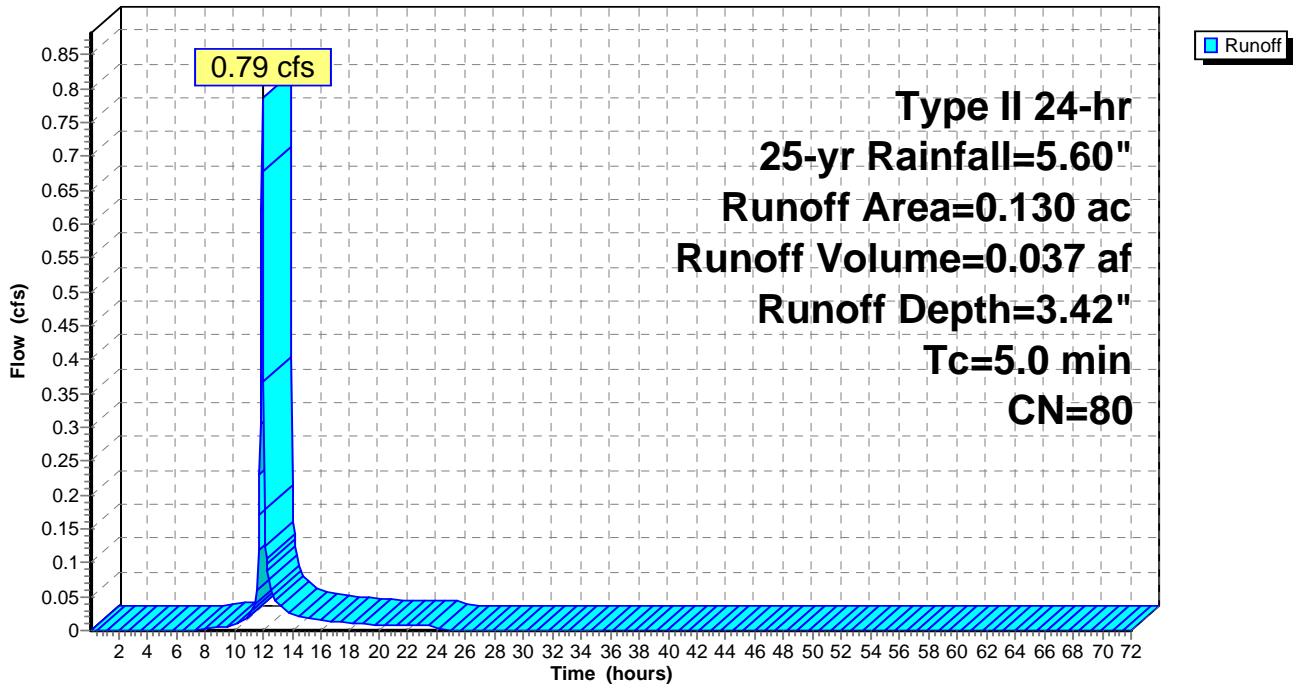
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-yr Rainfall=5.60"

Area (ac)	CN	Description
0.130	80	>75% Grass cover, Good, HSG D
0.130		100.00% Pervious Area

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

Subcatchment 5S: OFFSITE TO ONSITE TO BASIN 2

Hydrograph



Summary for Subcatchment 6S: ONSITE TO BASIN 2

Runoff = 19.84 cfs @ 11.95 hrs, Volume= 1.073 af, Depth= 4.97"
 Routed to Pond 9P : BASIN 2

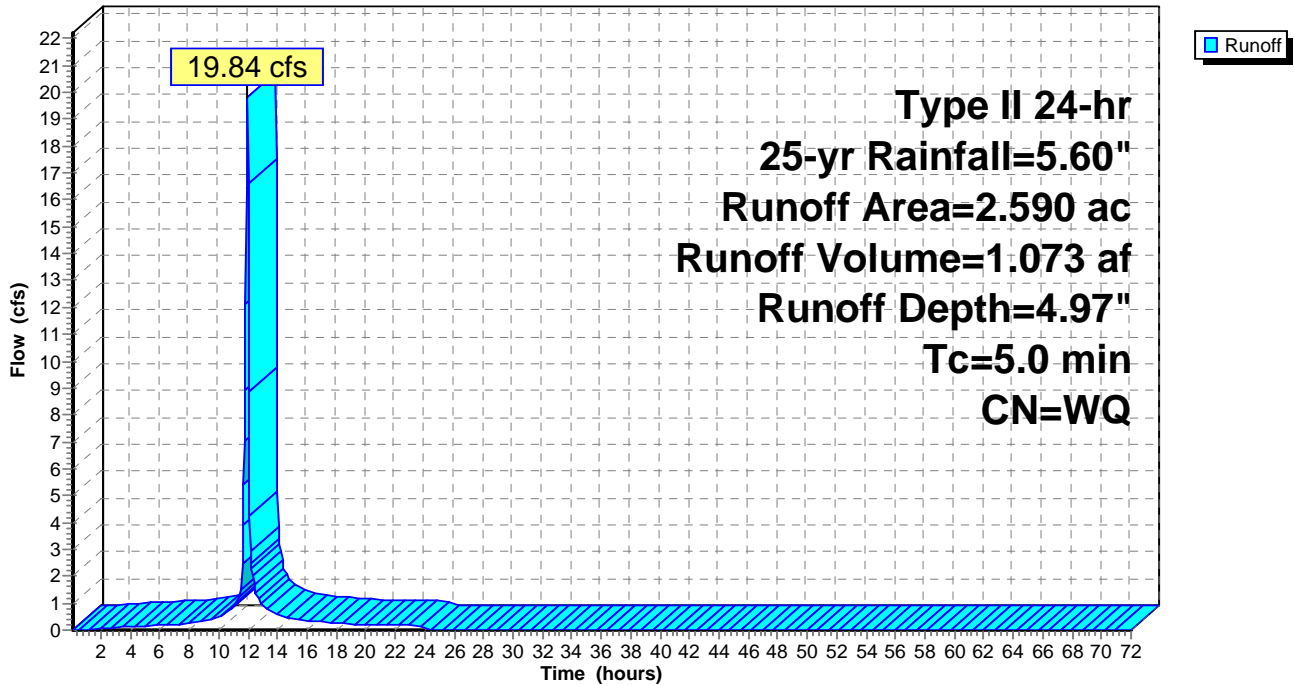
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-yr Rainfall=5.60"

Area (ac)	CN	Description
2.070	98	Paved parking, HSG D
0.520	80	>75% Grass cover, Good, HSG D
2.590		Weighted Average
0.520		20.08% Pervious Area
2.070		79.92% Impervious Area

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

Subcatchment 6S: ONSITE TO BASIN 2

Hydrograph



Summary for Subcatchment 7S: ONSITE TO OFFSITE BYPASS

Runoff = 6.82 cfs @ 11.95 hrs, Volume= 0.341 af, Depth= 3.97"

Routed to Link 14L : POST DEVELOPED RUNOFF

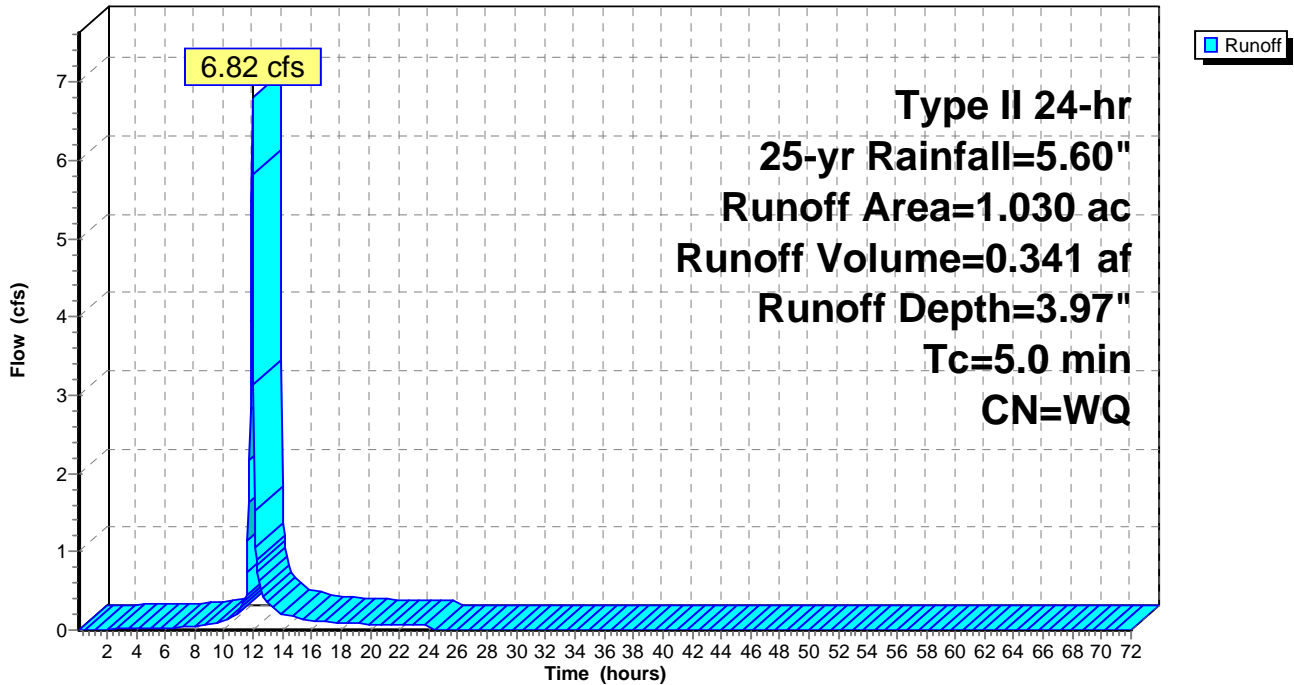
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-yr Rainfall=5.60"

Area (ac)	CN	Description
0.290	98	Paved parking, HSG C
0.740	80	>75% Grass cover, Good, HSG D
1.030		Weighted Average
0.740		71.84% Pervious Area
0.290		28.16% Impervious Area

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

Subcatchment 7S: ONSITE TO OFFSITE BYPASS

Hydrograph



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Type II 24-hr 25-yr Rainfall=5.60"

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Summary for Subcatchment 11S: AREA TO BRYAN RD CULVERT

Runoff = 31.24 cfs @ 12.00 hrs, Volume= 1.825 af, Depth= 4.50"
 Routed to Pond 12P : BRYAN RD CULVERT

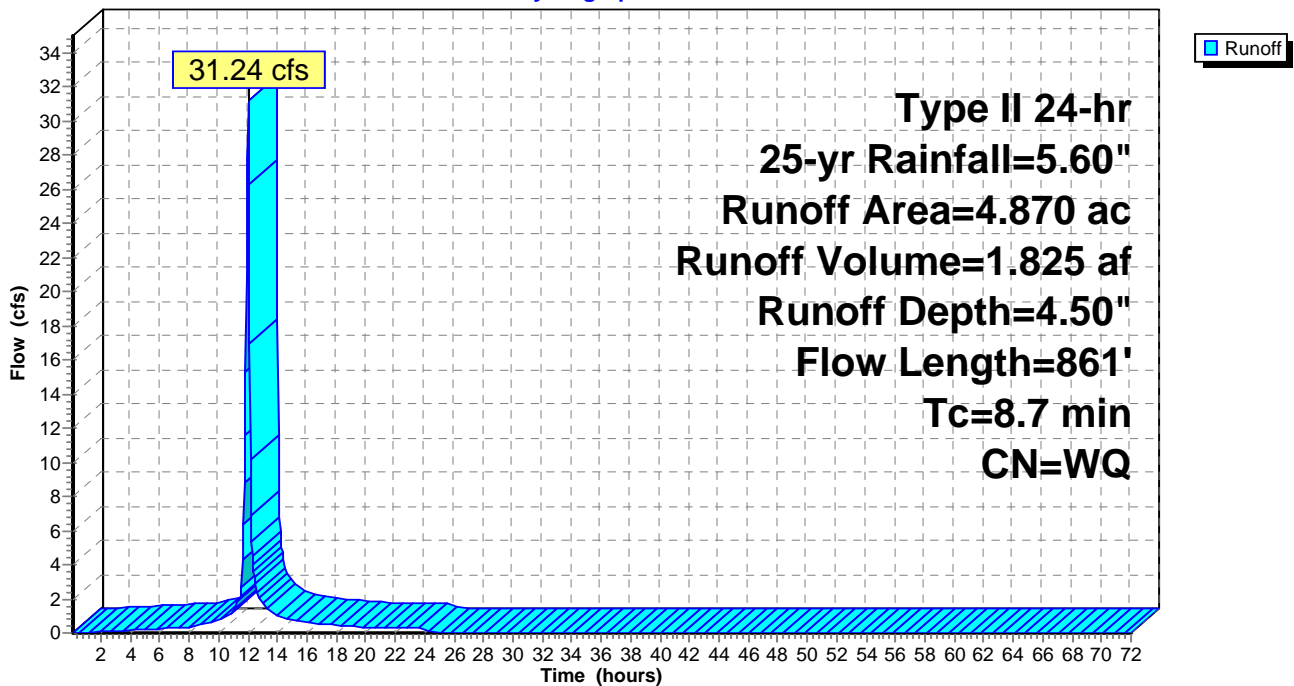
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-yr Rainfall=5.60"

Area (ac)	CN	Description
2.700	98	Paved parking, HSG C
2.170	80	>75% Grass cover, Good, HSG D
4.870		Weighted Average
2.170		44.56% Pervious Area
2.700		55.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0200	1.26		Sheet Flow, n= 0.013 P2= 3.50"
2.5	493	0.0430	3.34		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
4.9	268	0.0215	0.91	54.47	Channel Flow, Area= 60.0 sf Perim= 60.0' r= 1.00' n= 0.240 Sheet flow over Dense Grass
8.7	861	Total			

Subcatchment 11S: AREA TO BRYAN RD CULVERT

Hydrograph



Summary for Subcatchment 12S: AREAS 30 & 38

Runoff = 11.39 cfs @ 11.95 hrs, Volume= 0.596 af, Depth= 4.50"
 Routed to Pond 11P : DUAL CULVERTS

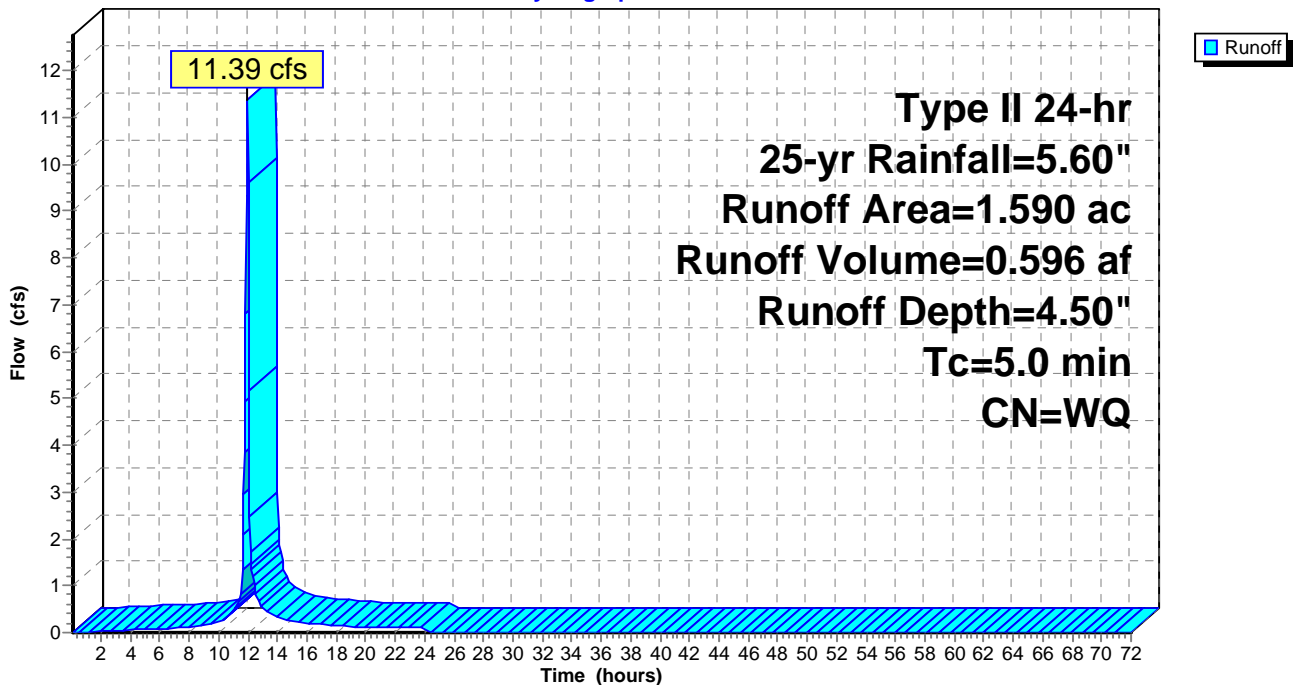
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-yr Rainfall=5.60"

Area (ac)	CN	Description
0.200	80	>75% Grass cover, Good, HSG D
0.880	98	Paved parking, HSG D
0.510	80	>75% Grass cover, Good, HSG D
1.590		Weighted Average
0.710		44.65% Pervious Area
0.880		55.35% Impervious Area

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

Subcatchment 12S: AREAS 30 & 38

Hydrograph



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Type II 24-hr 25-yr Rainfall=5.60"

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Summary for Subcatchment 15S: OFFSITE TO ONSITE TO BASIN 1

Runoff = 2.14 cfs @ 11.95 hrs, Volume= 0.105 af, Depth= 3.83"

Routed to Pond 18P : BASIN 1 FOREBAY 100 YR LFB

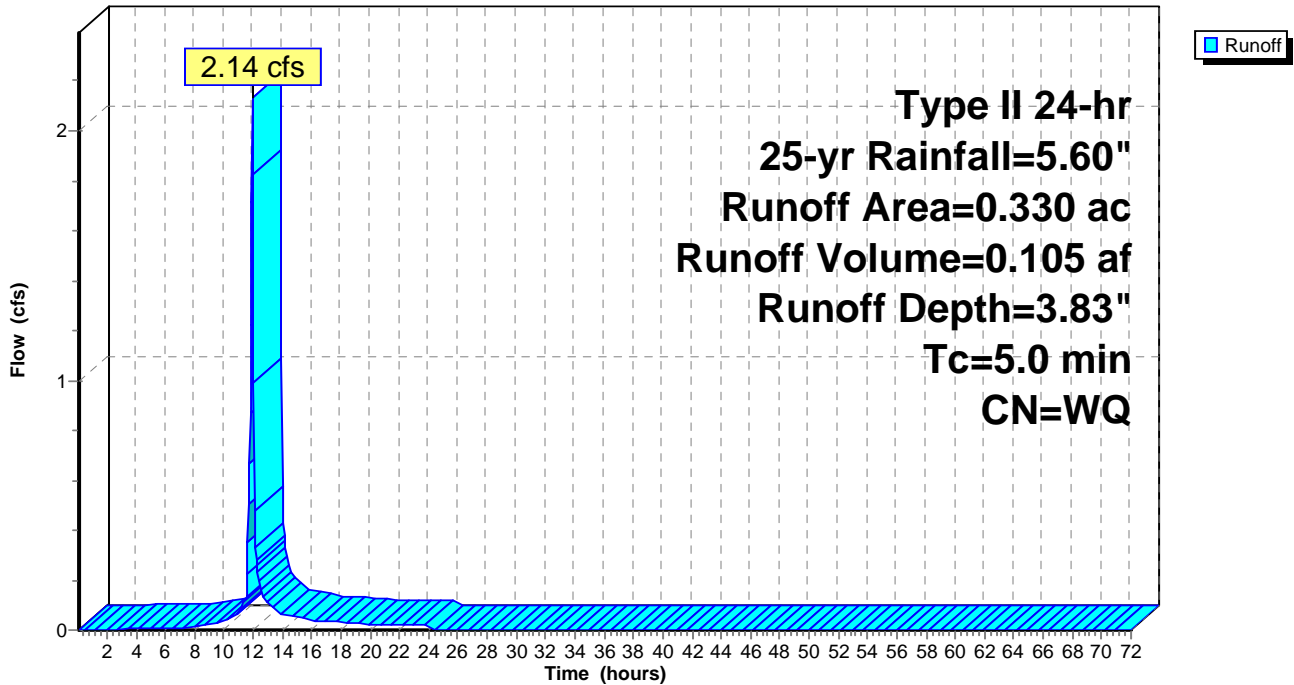
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-yr Rainfall=5.60"

Area (ac)	CN	Description
0.070	98	Paved parking, HSG D
0.260	80	>75% Grass cover, Good, HSG D
0.330		Weighted Average
0.260		78.79% Pervious Area
0.070		21.21% Impervious Area

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

Subcatchment 15S: OFFSITE TO ONSITE TO BASIN 1

Hydrograph



Summary for Subcatchment 16S: ONSITE TO BASIN 1

Runoff = 35.22 cfs @ 11.95 hrs, Volume= 1.915 af, Depth= 5.05"

Routed to Pond 18P : BASIN 1 FOREBAY 100 YR LFB

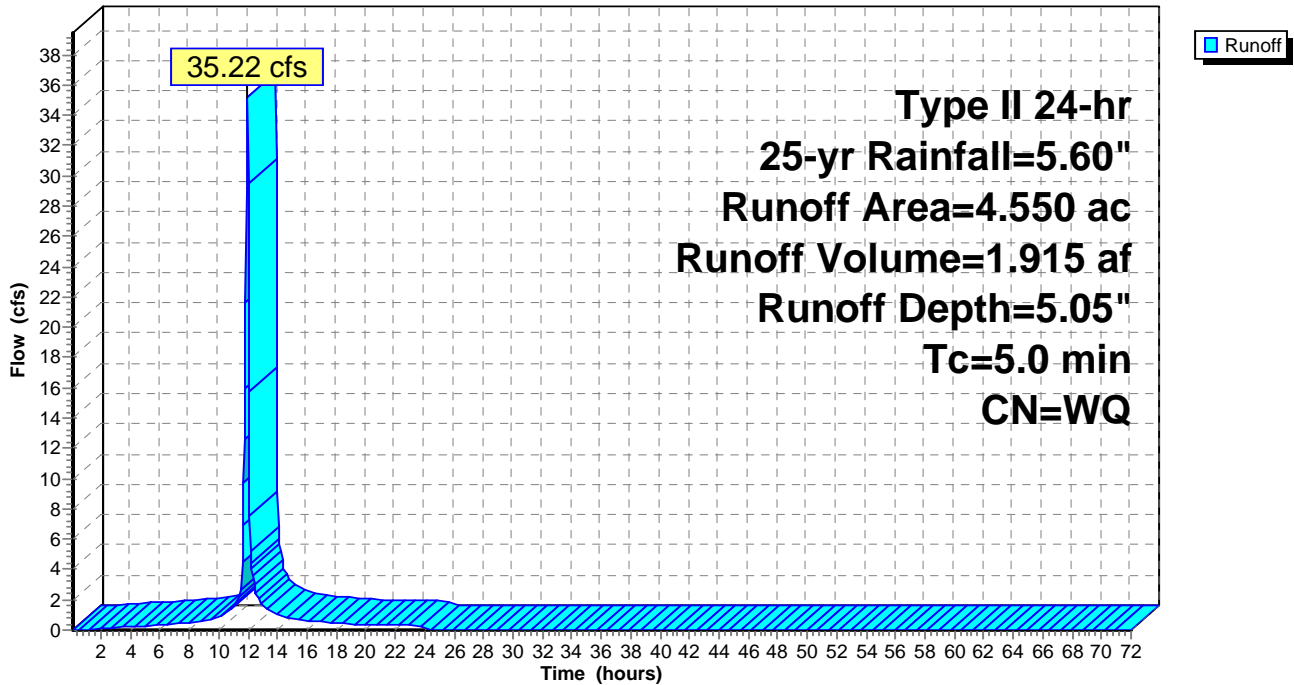
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-yr Rainfall=5.60"

Area (ac)	CN	Description
3.820	98	Paved parking, HSG D
0.730	80	>75% Grass cover, Good, HSG D
4.550		Weighted Average
0.730		16.04% Pervious Area
3.820		83.96% Impervious Area

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

Subcatchment 16S: ONSITE TO BASIN 1

Hydrograph



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Type II 24-hr 25-yr Rainfall=5.60"

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Summary for Subcatchment 19S: OFFSITE TO ONSITE TO BASIN 2

Runoff = 0.79 cfs @ 11.96 hrs, Volume= 0.037 af, Depth= 3.42"

Routed to Pond 21P : BASIN 2 100 YR LFB

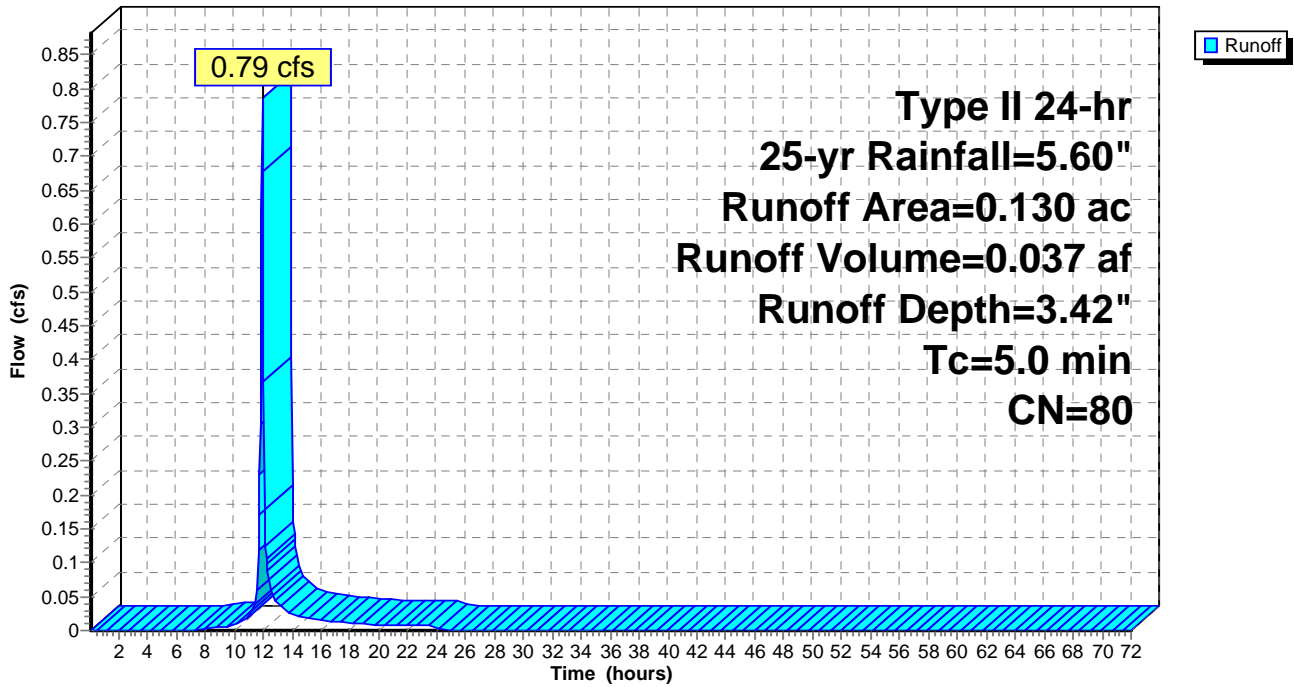
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-yr Rainfall=5.60"

Area (ac)	CN	Description
0.130	80	>75% Grass cover, Good, HSG D
0.130		100.00% Pervious Area

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

Subcatchment 19S: OFFSITE TO ONSITE TO BASIN 2

Hydrograph



Summary for Subcatchment 20S: ONSITE TO BASIN 2

Runoff = 19.84 cfs @ 11.95 hrs, Volume= 1.073 af, Depth= 4.97"
 Routed to Pond 21P : BASIN 2 100 YR LFB

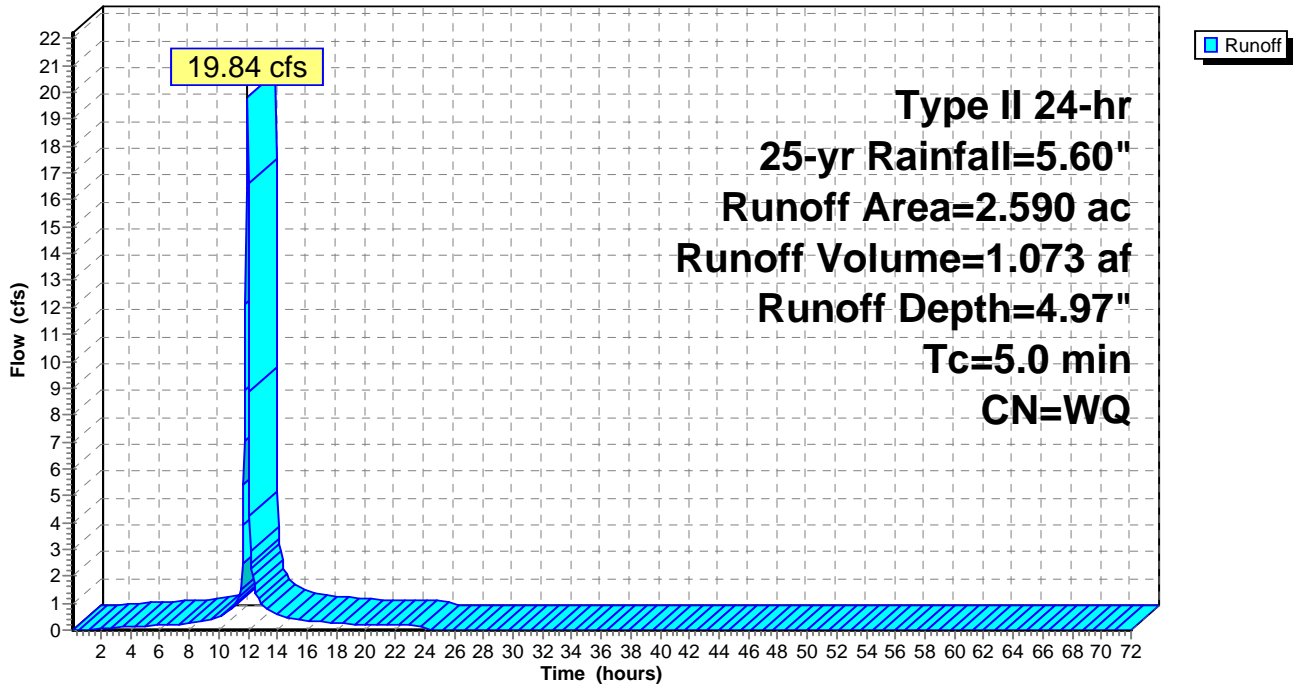
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 25-yr Rainfall=5.60"

Area (ac)	CN	Description
2.070	98	Paved parking, HSG D
0.520	80	>75% Grass cover, Good, HSG D
2.590		Weighted Average
0.520		20.08% Pervious Area
2.070		79.92% Impervious Area

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

Subcatchment 20S: ONSITE TO BASIN 2

Hydrograph



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Type II 24-hr 25-yr Rainfall=5.60"

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Summary for Pond 8P: BASIN 1

Inflow Area = 4.880 ac, 79.71% Impervious, Inflow Depth = 5.09" for 25-yr event
 Inflow = 35.54 cfs @ 11.98 hrs, Volume= 2.070 af
 Outflow = 13.89 cfs @ 12.10 hrs, Volume= 2.070 af, Atten= 61%, Lag= 7.5 min
 Primary = 13.89 cfs @ 12.10 hrs, Volume= 2.070 af
 Routed to Pond 9P : BASIN 2

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 596.32' @ 12.10 hrs Surf.Area= 11,475 sf Storage= 29,494 cf
 Flood Elev= 600.00' Surf.Area= 17,840 sf Storage= 83,183 cf

Plug-Flow detention time= 150.2 min calculated for 2.069 af (100% of inflow)
 Center-of-Mass det. time= 150.1 min (1,036.9 - 886.8)

Volume	Invert	Avail.Storage	Storage Description
#1	589.00'	83,183 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
589.00	2	0	0
590.00	897	450	450
591.00	1,487	1,192	1,642
592.00	2,133	1,810	3,452
593.00	2,836	2,485	5,936
594.00	3,695	3,266	9,202
595.00	9,367	6,531	15,733
596.00	10,948	10,158	25,890
597.00	12,586	11,767	37,657
598.00	14,281	13,434	51,091
599.00	16,032	15,157	66,247
600.00	17,840	16,936	83,183

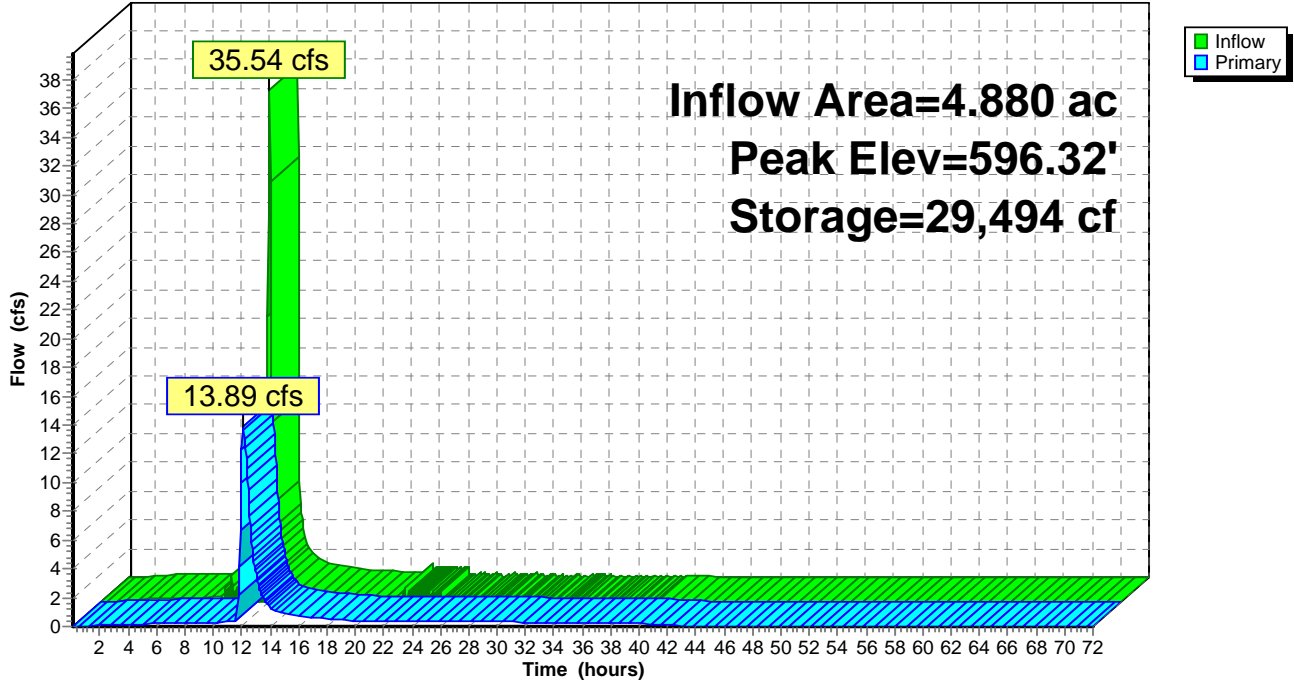
Device	Routing	Invert	Outlet Devices
#1	Primary	585.00'	24.0" Round RCP_Round 24" L= 184.2' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 585.00' / 583.16' S= 0.0100 1/ Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	589.00'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	594.00'	18.0" W x 18.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	598.00'	30.0" x 60.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=13.88 cfs @ 12.10 hrs HW=596.32' TW=587.35' (Dynamic Tailwater)

- 1=RCP_Round 24" (Passes 13.88 cfs of 42.50 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.44 cfs @ 12.93 fps)
- 3=Orifice/Grate (Orifice Controls 13.44 cfs @ 5.97 fps)
- 4=Orifice/Grate (Controls 0.00 cfs)

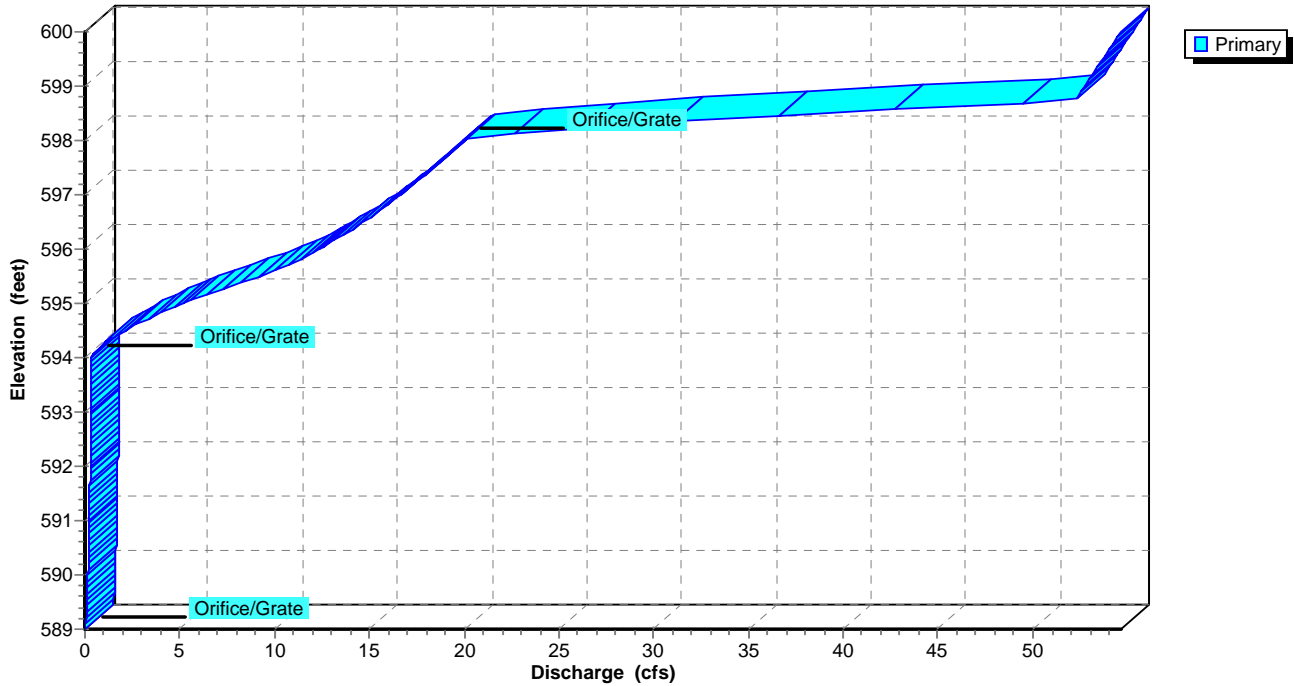
Pond 8P: BASIN 1

Hydrograph

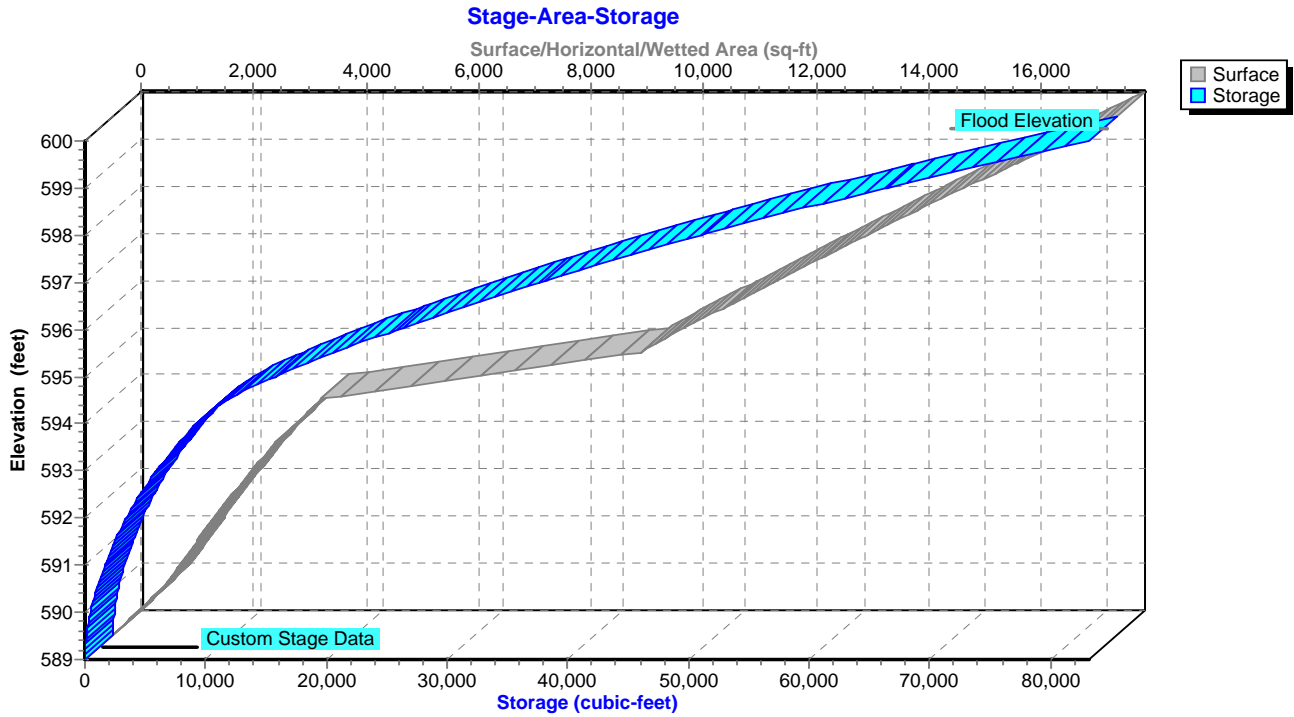


Pond 8P: BASIN 1

Stage-Discharge



Pond 8P: BASIN 1



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Type II 24-hr 25-yr Rainfall=5.60"

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Summary for Pond 9P: BASIN 2

Inflow Area = 7.600 ac, 78.42% Impervious, Inflow Depth = 5.02" for 25-yr event
 Inflow = 31.16 cfs @ 11.97 hrs, Volume= 3.180 af
 Outflow = 21.22 cfs @ 12.07 hrs, Volume= 3.180 af, Atten= 32%, Lag= 6.2 min
 Primary = 21.22 cfs @ 12.07 hrs, Volume= 3.180 af
 Routed to Link 14L : POST DEVELOPED RUNOFF

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 587.43' @ 12.07 hrs Surf.Area= 2,522 sf Storage= 18,410 cf

Plug-Flow detention time= 125.4 min calculated for 3.180 af (100% of inflow)
 Center-of-Mass det. time= 124.7 min (1,062.6 - 937.8)

Volume	Invert	Avail.Storage	Storage Description
#1	578.75'	38,298 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
578.75	1	0	0
579.00	205	26	26
580.00	2,080	1,143	1,168
581.00	2,152	2,116	3,284
582.00	2,222	2,187	5,471
583.00	2,287	2,255	7,726
584.00	2,348	2,318	10,043
585.00	2,404	2,376	12,419
586.00	2,456	2,430	14,849
587.00	2,504	2,480	17,329
588.00	2,547	2,526	19,855
589.00	2,998	2,773	22,627
590.00	4,800	3,899	26,526
591.00	5,862	5,331	31,857
592.00	7,020	6,441	38,298

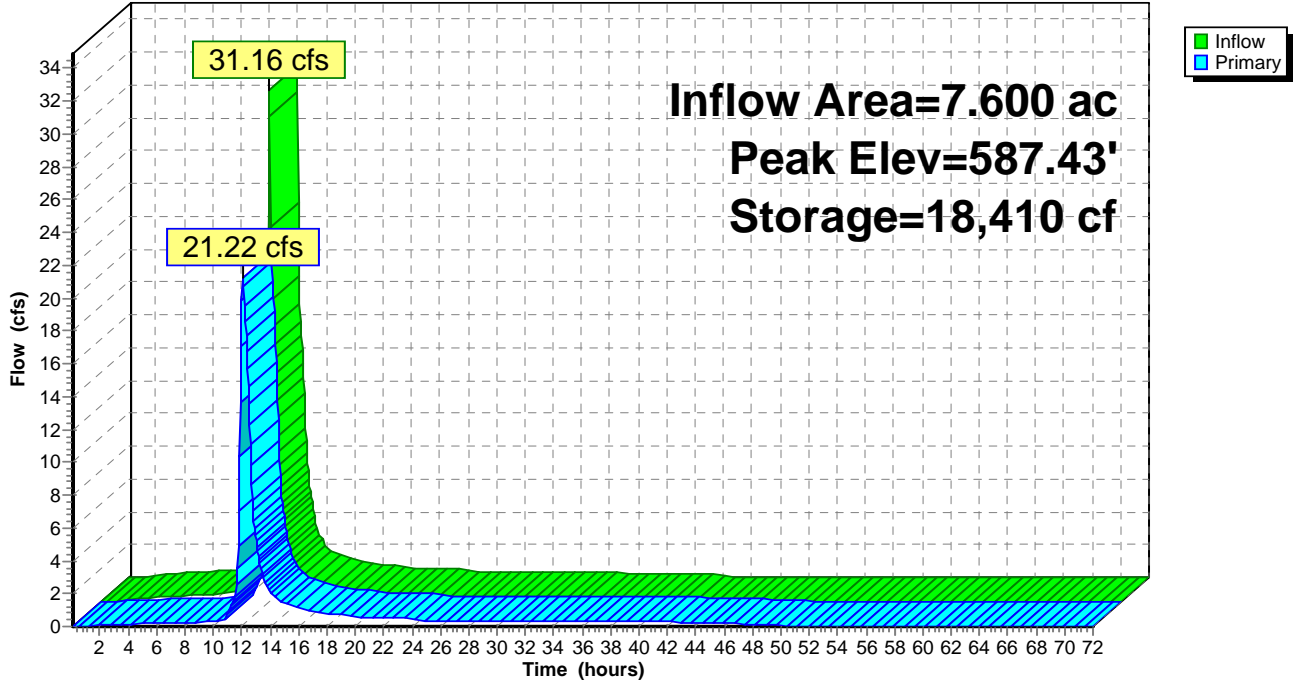
Device	Routing	Invert	Outlet Devices
#1	Primary	576.73'	30.0" Round RCP_Round 30" L= 15.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 576.73' / 576.58' S= 0.0100 1/ S= 0.0100 1/ Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	579.00'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	583.00'	18.0" W x 18.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	589.00'	30.0" x 60.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=21.06 cfs @ 12.07 hrs HW=587.38' TW=0.00' (Dynamic Tailwater)

- 1=RCP_Round 30" (Passes 21.06 cfs of 90.56 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.47 cfs @ 13.85 fps)
- 3=Orifice/Grate (Orifice Controls 20.59 cfs @ 9.15 fps)
- 4=Orifice/Grate (Controls 0.00 cfs)

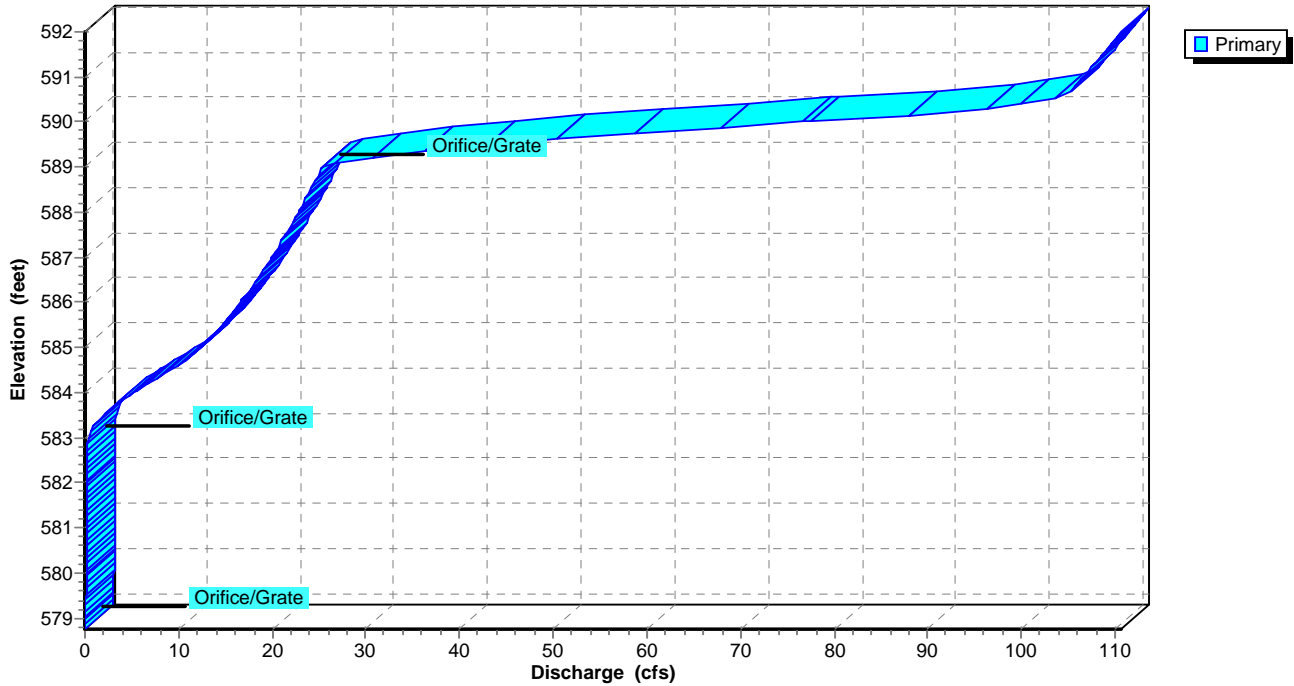
Pond 9P: BASIN 2

Hydrograph

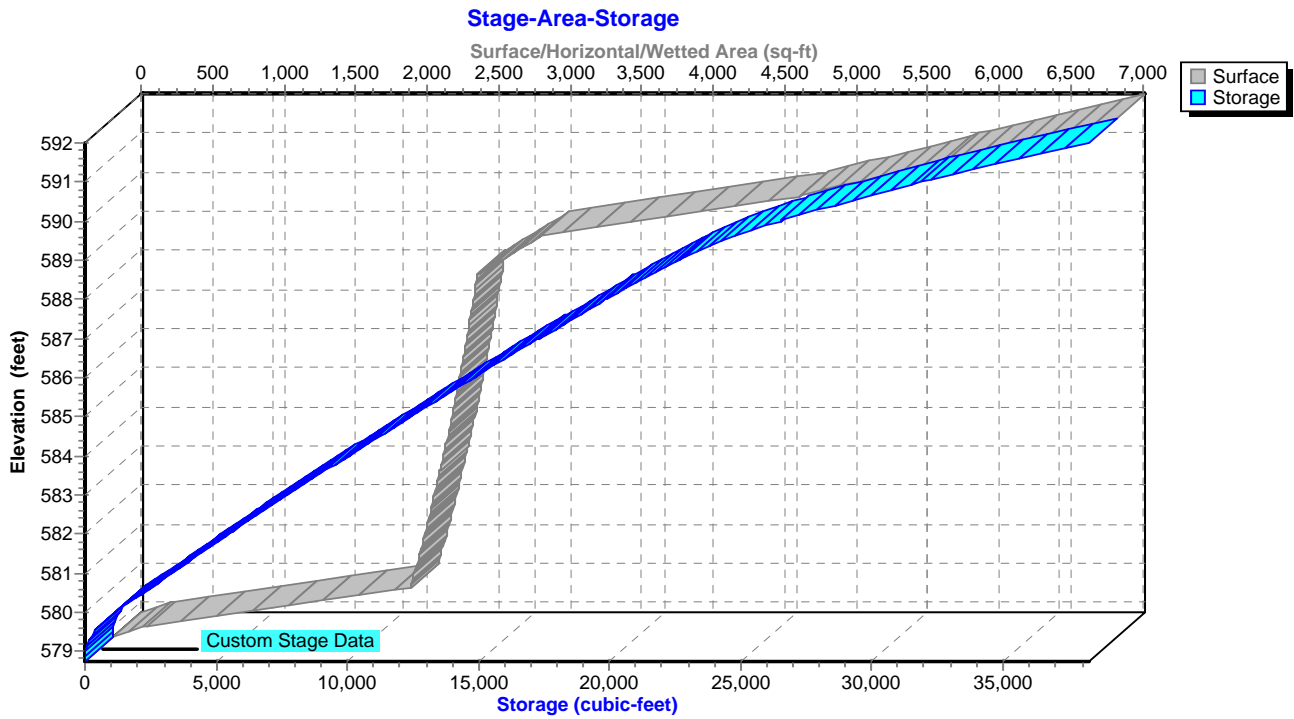


Pond 9P: BASIN 2

Stage-Discharge



Pond 9P: BASIN 2



Summary for Pond 10R: 201 TO JS

Inflow Area = 8.630 ac, 72.42% Impervious, Inflow Depth = 4.90" for 25-yr event
 Inflow = 25.71 cfs @ 12.00 hrs, Volume= 3.520 af
 Outflow = 25.71 cfs @ 12.00 hrs, Volume= 3.520 af, Atten= 0%, Lag= 0.0 min
 Primary = 25.71 cfs @ 12.00 hrs, Volume= 3.520 af
 Routed to Pond 11P : DUAL CULVERTS

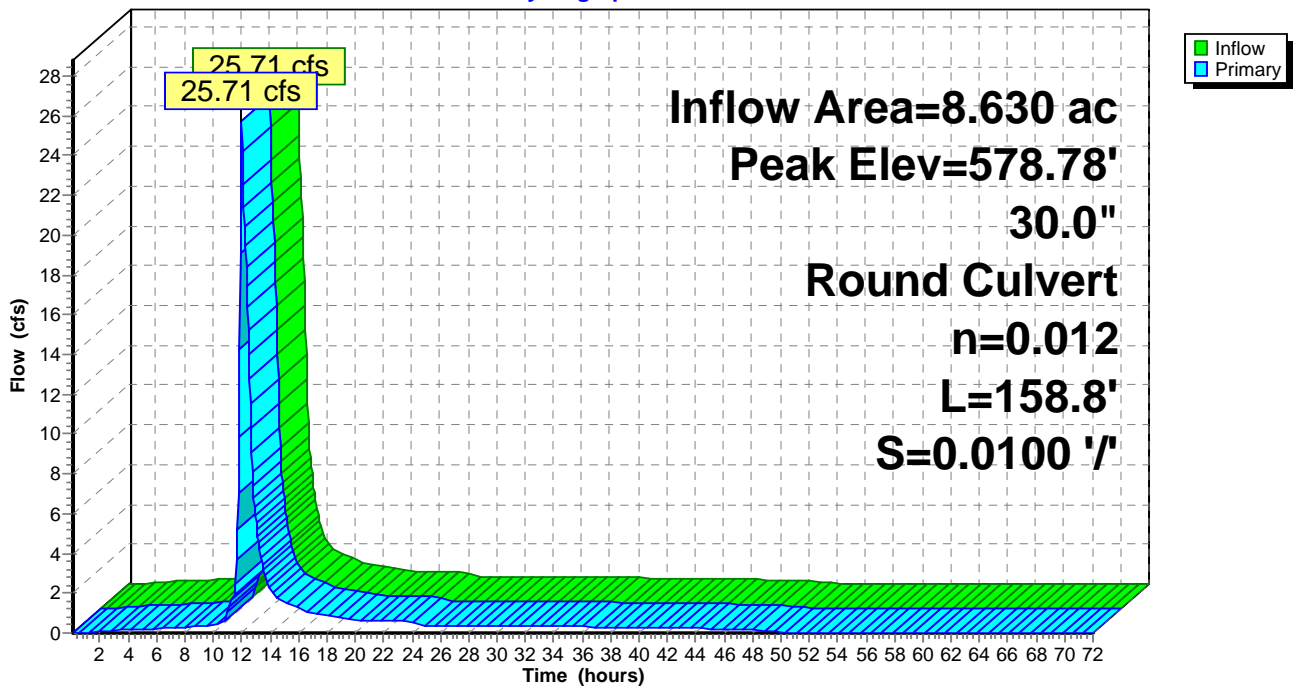
Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 578.78' @ 12.00 hrs
 Flood Elev= 583.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	576.36'	30.0" Round Culvert L= 158.8' Ke= 0.500 Inlet / Outlet Invert= 576.36' / 574.77' S= 0.0100 '/ Cc= 0.900 n= 0.012, Flow Area= 4.91 sf

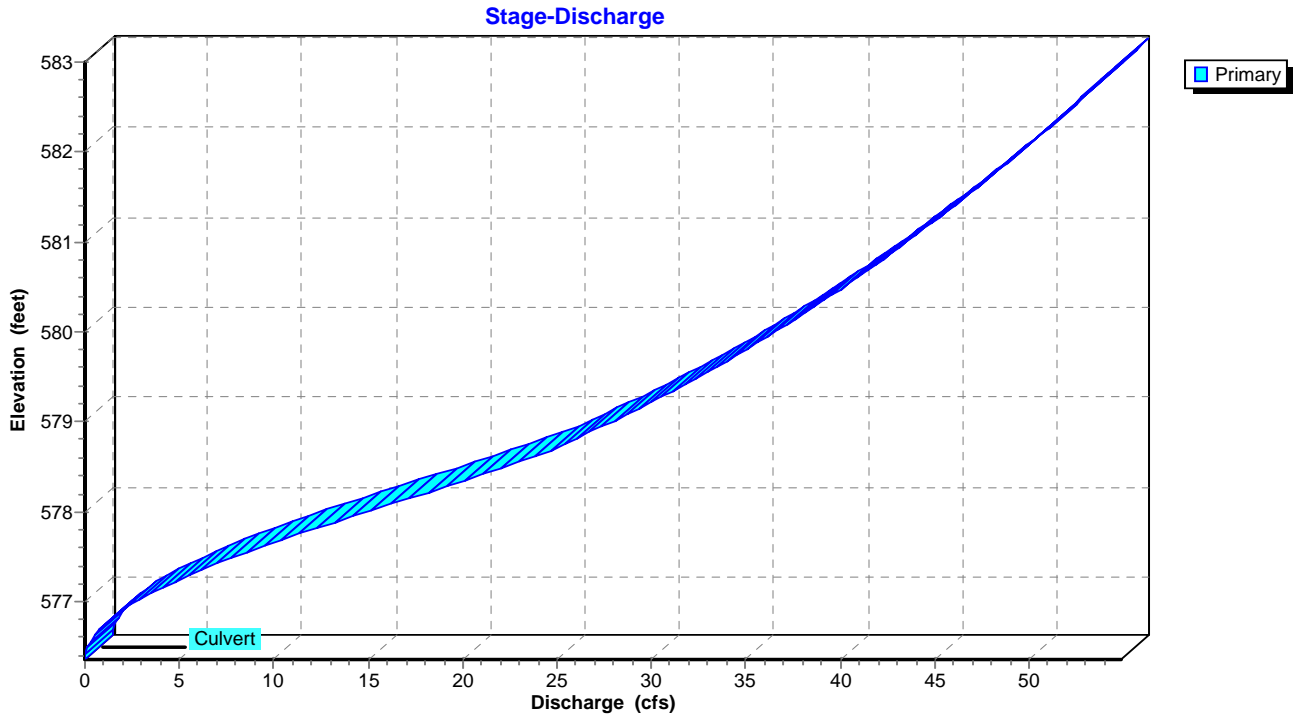
Primary OutFlow Max=25.64 cfs @ 12.00 hrs HW=578.77' TW=576.60' (Dynamic Tailwater)
 ↑1=Culvert (Inlet Controls 25.64 cfs @ 5.29 fps)

Pond 10R: 201 TO JS

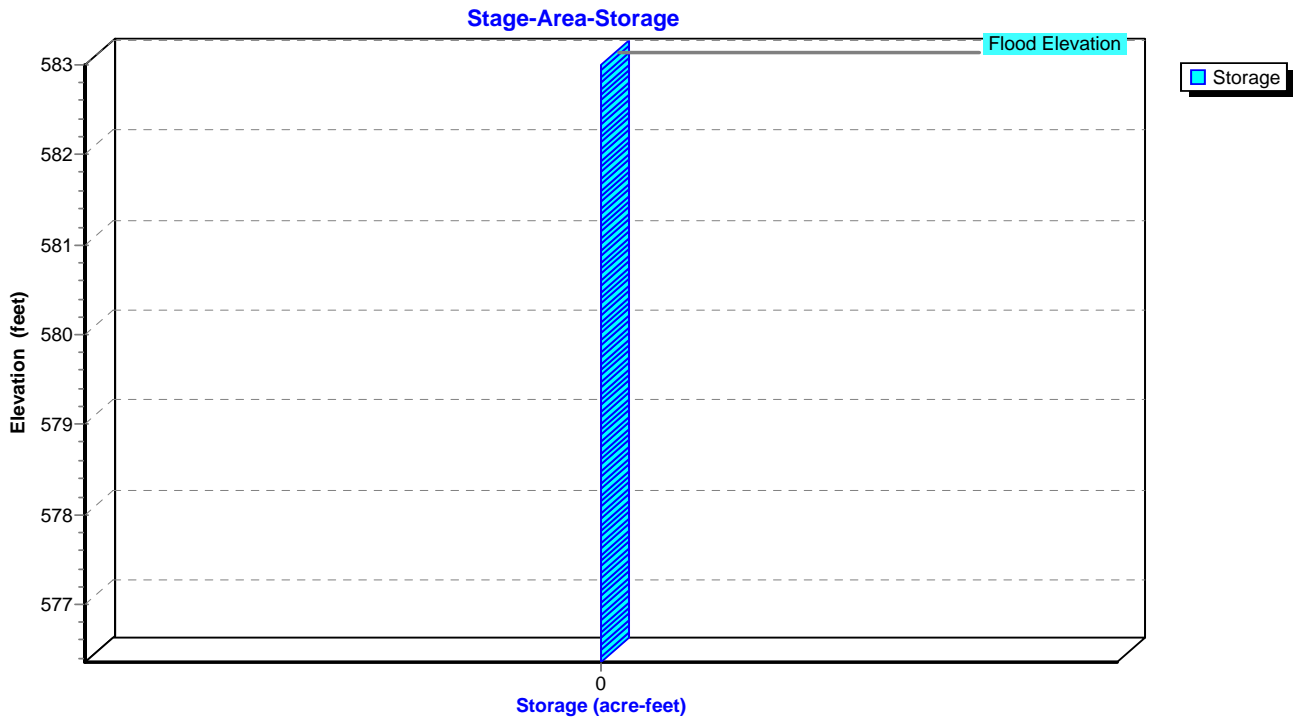
Hydrograph



Pond 10R: 201 TO JS



Pond 10R: 201 TO JS



Summary for Pond 11P: DUAL CULVERTS

Inflow Area = 15.090 ac, 65.14% Impervious, Inflow Depth = 4.72" for 25-yr event
 Inflow = 67.00 cfs @ 11.99 hrs, Volume= 5.942 af
 Outflow = 67.00 cfs @ 11.99 hrs, Volume= 5.942 af, Atten= 0%, Lag= 0.0 min
 Primary = 67.00 cfs @ 11.99 hrs, Volume= 5.942 af

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 576.62' @ 11.99 hrs
 Flood Elev= 582.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	574.44'	54.0" Round RCP_Round 54" L= 84.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 574.44' / 573.62' S= 0.0098 '/ Cc= 0.900 n= 0.013, Flow Area= 15.90 sf
#2	Primary	574.47'	54.0" Round RCP_Round 54" L= 84.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 574.47' / 573.79' S= 0.0081 '/ Cc= 0.900 n= 0.013, Flow Area= 15.90 sf

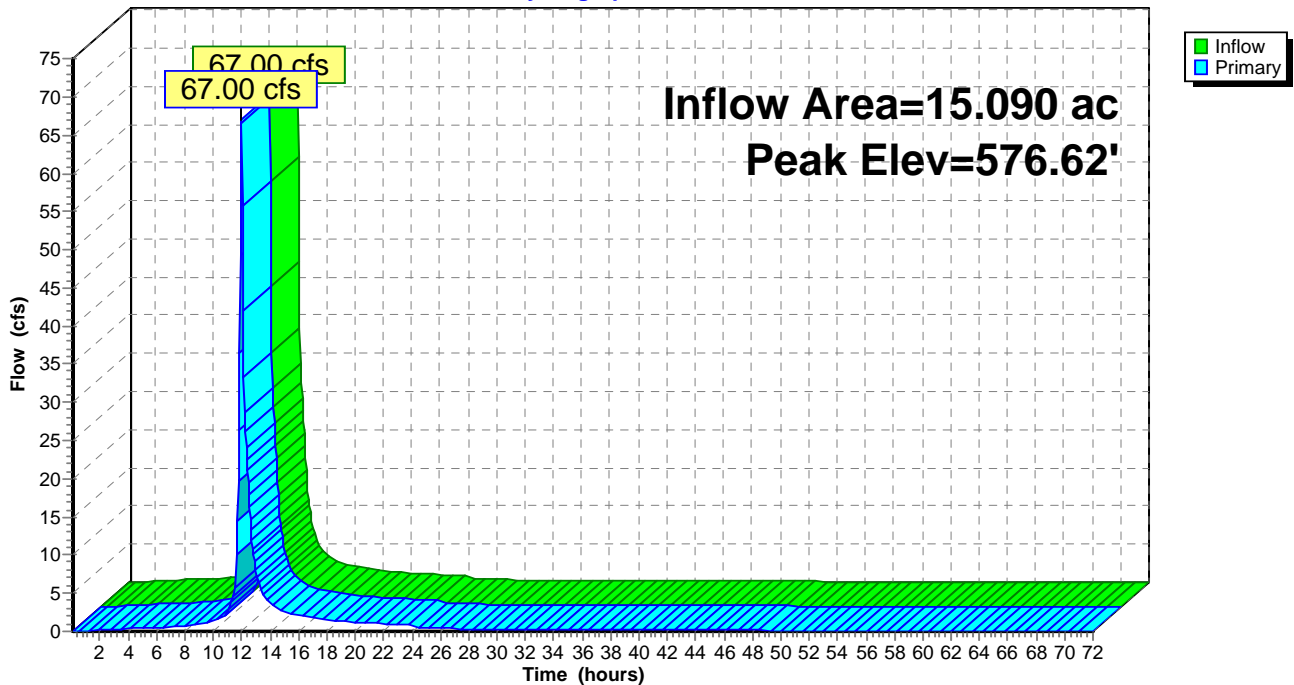
Primary OutFlow Max=65.63 cfs @ 11.99 hrs HW=576.59' (Free Discharge)

1=RCP_Round 54" (Barrel Controls 34.10 cfs @ 6.64 fps)

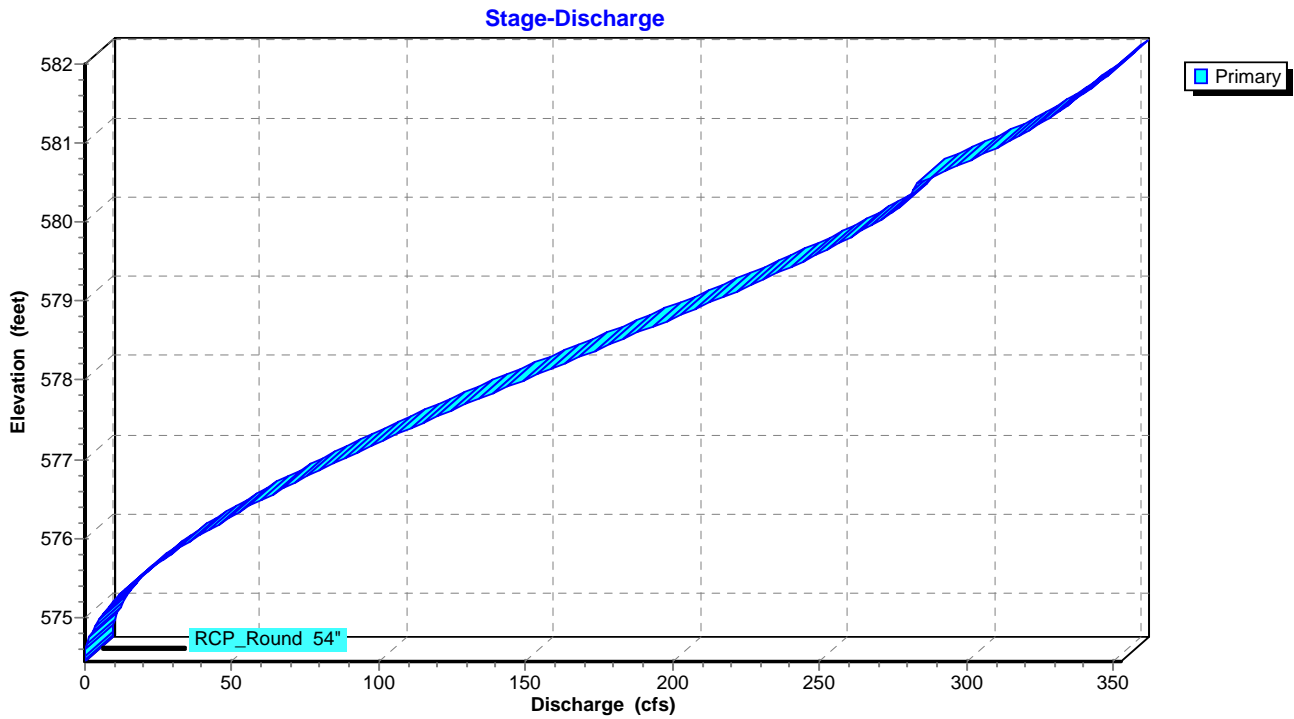
2=RCP_Round 54" (Barrel Controls 31.53 cfs @ 6.26 fps)

Pond 11P: DUAL CULVERTS

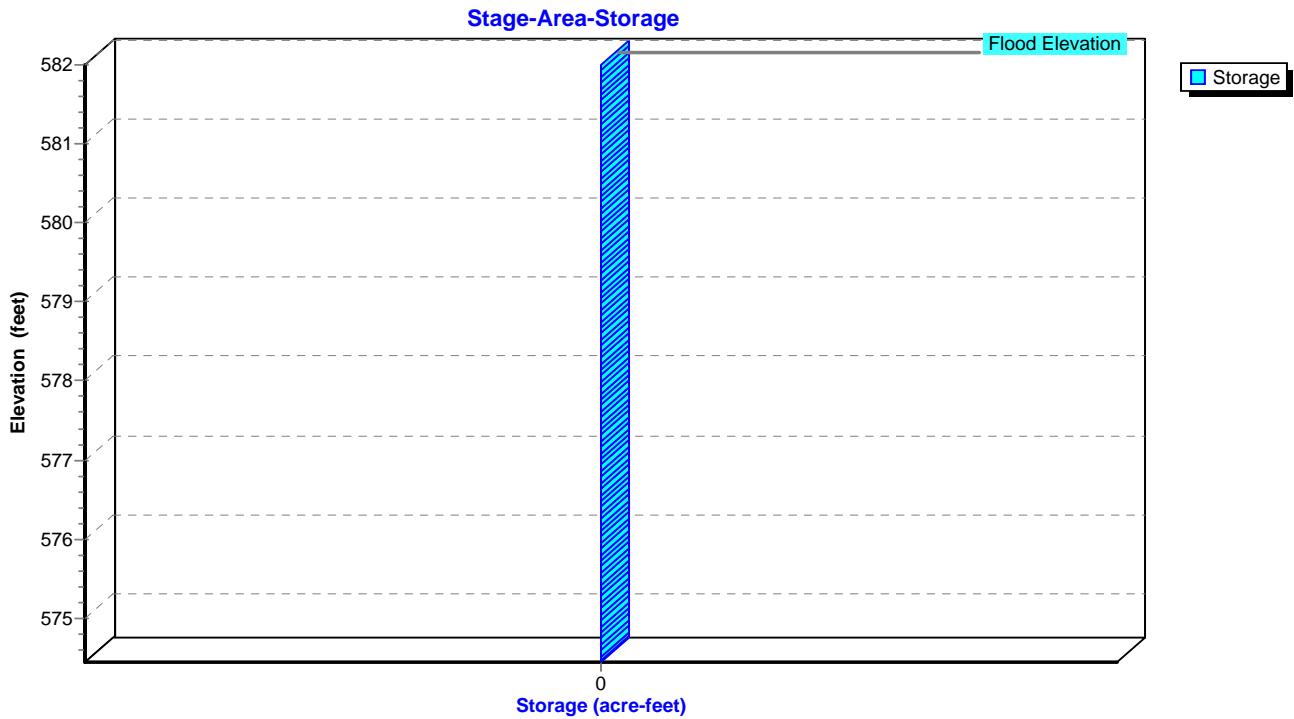
Hydrograph



Pond 11P: DUAL CULVERTS



Pond 11P: DUAL CULVERTS



Summary for Pond 12P: BRYAN RD CULVERT

Inflow Area = 4.870 ac, 55.44% Impervious, Inflow Depth = 4.50" for 25-yr event
 Inflow = 31.24 cfs @ 12.00 hrs, Volume= 1.825 af
 Outflow = 31.24 cfs @ 12.00 hrs, Volume= 1.825 af, Atten= 0%, Lag= 0.0 min
 Primary = 31.24 cfs @ 12.00 hrs, Volume= 1.825 af
 Routed to Pond 11P : DUAL CULVERTS

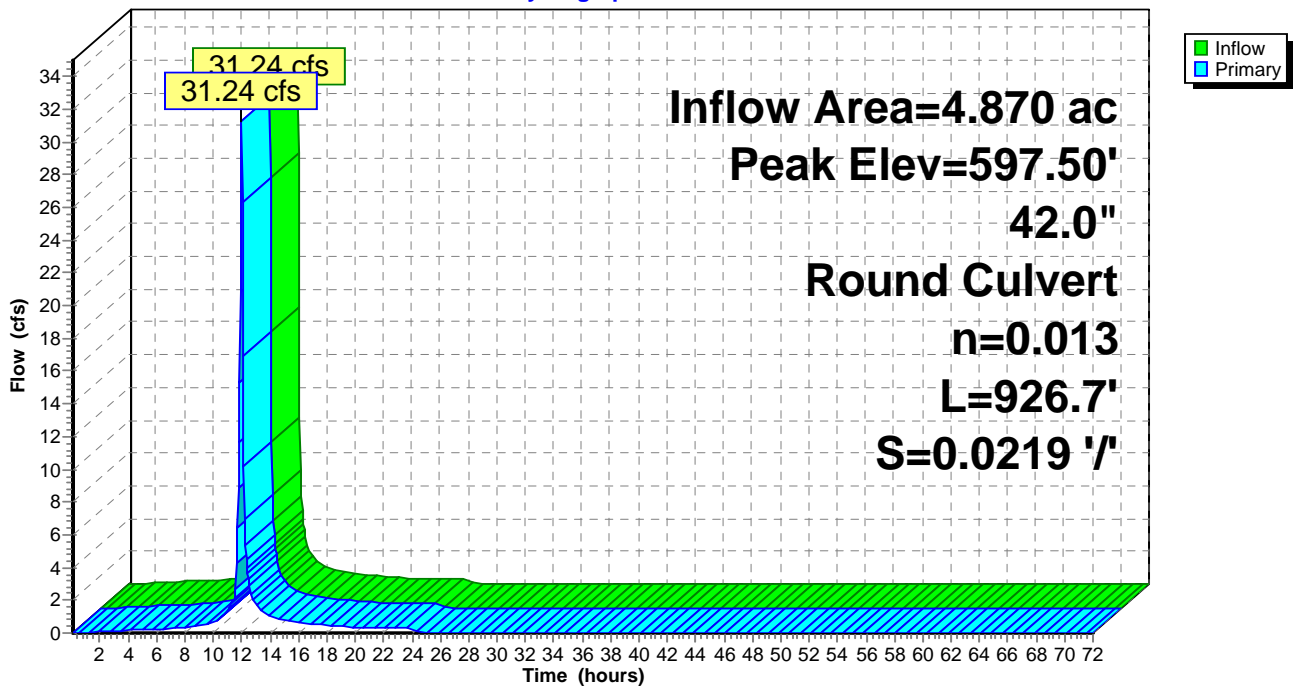
Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 597.50' @ 12.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	595.34'	42.0" Round Culvert L= 926.7' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 595.34' / 575.00' S= 0.0219 '/ Cc= 0.900 n= 0.013, Flow Area= 9.62 sf

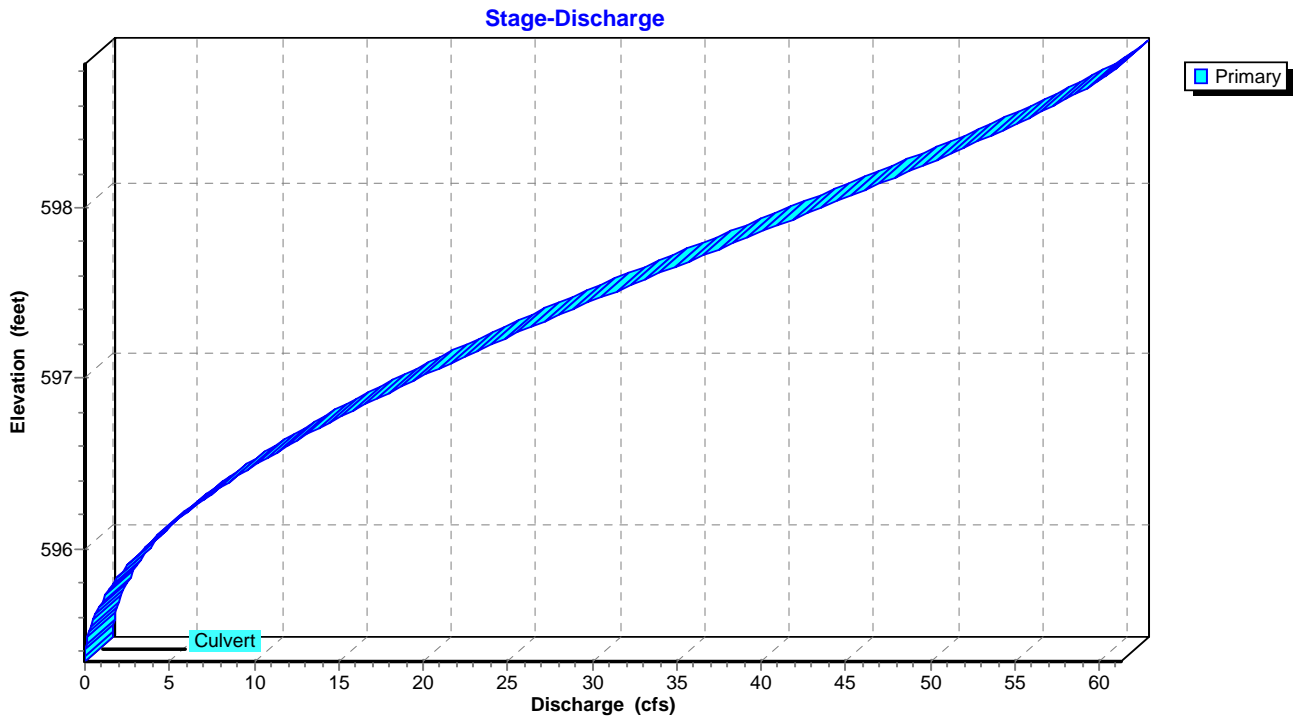
Primary OutFlow Max=30.92 cfs @ 12.00 hrs HW=597.49' TW=576.61' (Dynamic Tailwater)
 ←1=Culvert (Inlet Controls 30.92 cfs @ 4.99 fps)

Pond 12P: BRYAN RD CULVERT

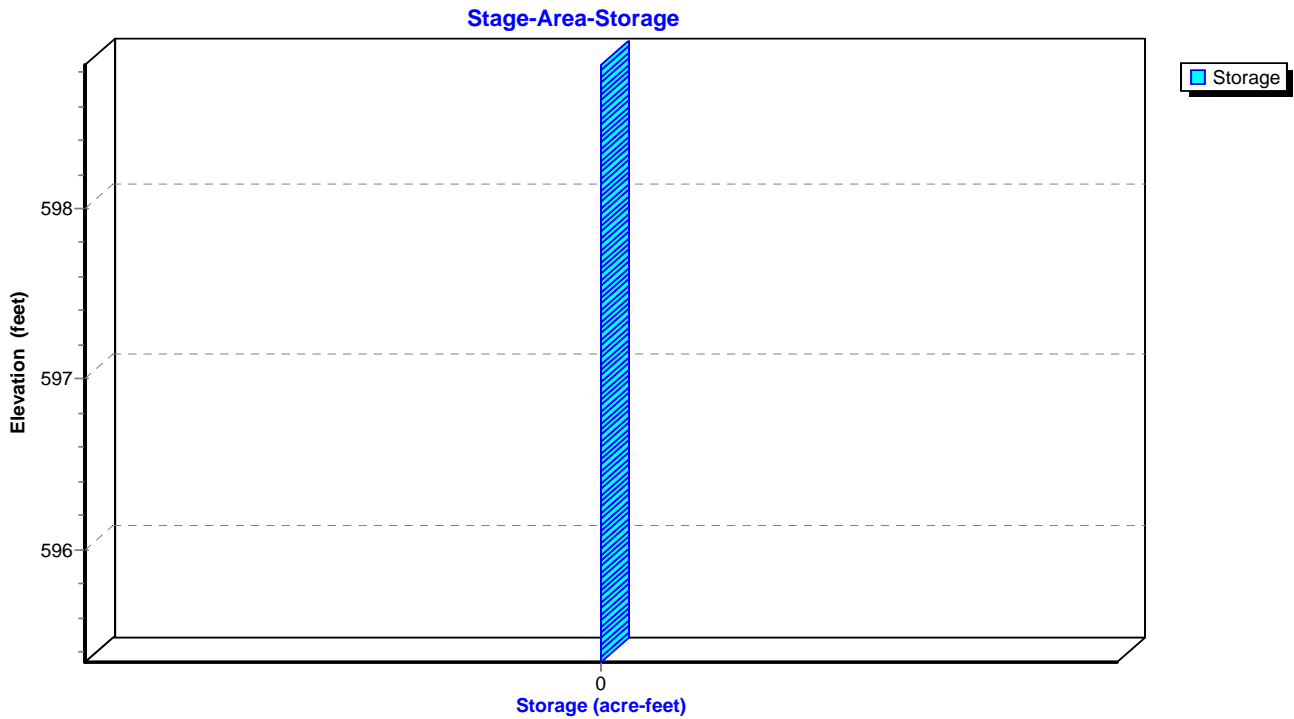
Hydrograph



Pond 12P: BRYAN RD CULVERT



Pond 12P: BRYAN RD CULVERT



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Type II 24-hr 25-yr Rainfall=5.60"

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Summary for Pond 13P: BASIN 1 FOREBAY

Inflow Area = 4.880 ac, 79.71% Impervious, Inflow Depth = 4.97" for 25-yr event
 Inflow = 37.36 cfs @ 11.95 hrs, Volume= 2.021 af
 Outflow = 35.54 cfs @ 11.98 hrs, Volume= 2.021 af, Atten= 5%, Lag= 1.5 min
 Primary = 35.54 cfs @ 11.98 hrs, Volume= 2.070 af
 Routed to Pond 8P : BASIN 1

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 594.00' @ 11.70 hrs Surf.Area= 3,845 sf Storage= 9,545 cf
 Flood Elev= 600.00' Surf.Area= 3,845 sf Storage= 9,545 cf

Plug-Flow detention time= 141.9 min calculated for 2.019 af (100% of inflow)
 Center-of-Mass det. time= 142.6 min (893.8 - 751.2)

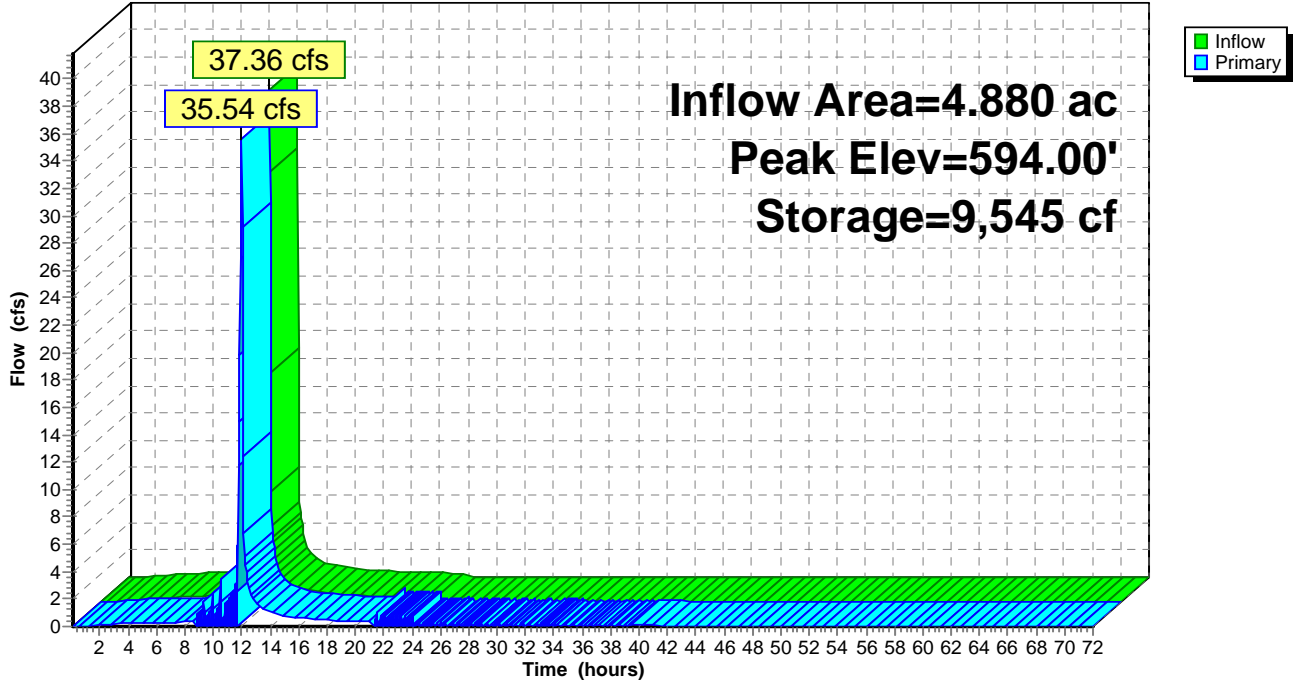
Volume	Invert	Avail.Storage	Storage Description
#1	590.00'	9,545 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
590.00	1,069	0	0
591.00	1,678	1,374	1,374
592.00	2,344	2,011	3,385
593.00	3,066	2,705	6,090
594.00	3,845	3,456	9,545

Device	Routing	Invert	Outlet Devices
#0	Primary	594.00'	Automatic Storage Overflow (Discharged without head)
#1	Primary	590.00'	36.00' long x 30.00' breadth x 4.06' high Rock Fill Rock Diam.= 18.000", S.D.= 4.000", Voids= 40.0%

Primary OutFlow Max=0.00 cfs @ 11.98 hrs HW=594.00' TW=595.80' (Dynamic Tailwater)
 ↗1=Rock Fill (Controls 0.00 cfs)

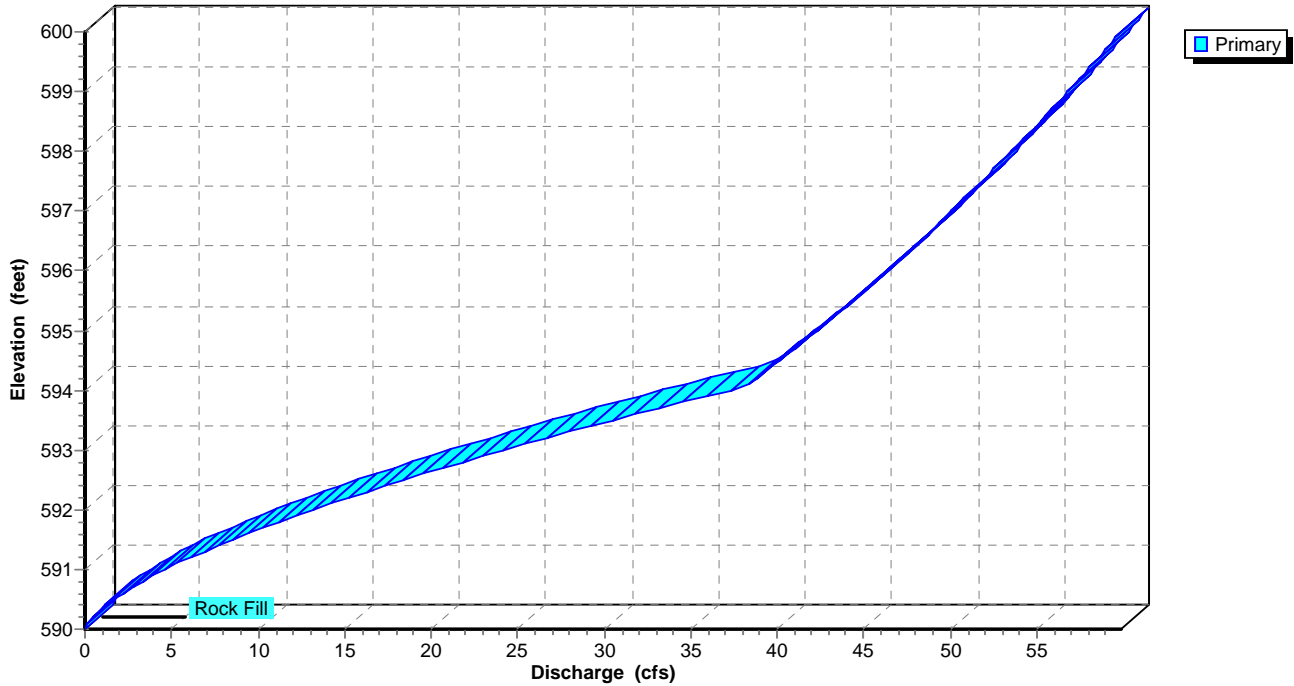
Pond 13P: BASIN 1 FOREBAY

Hydrograph



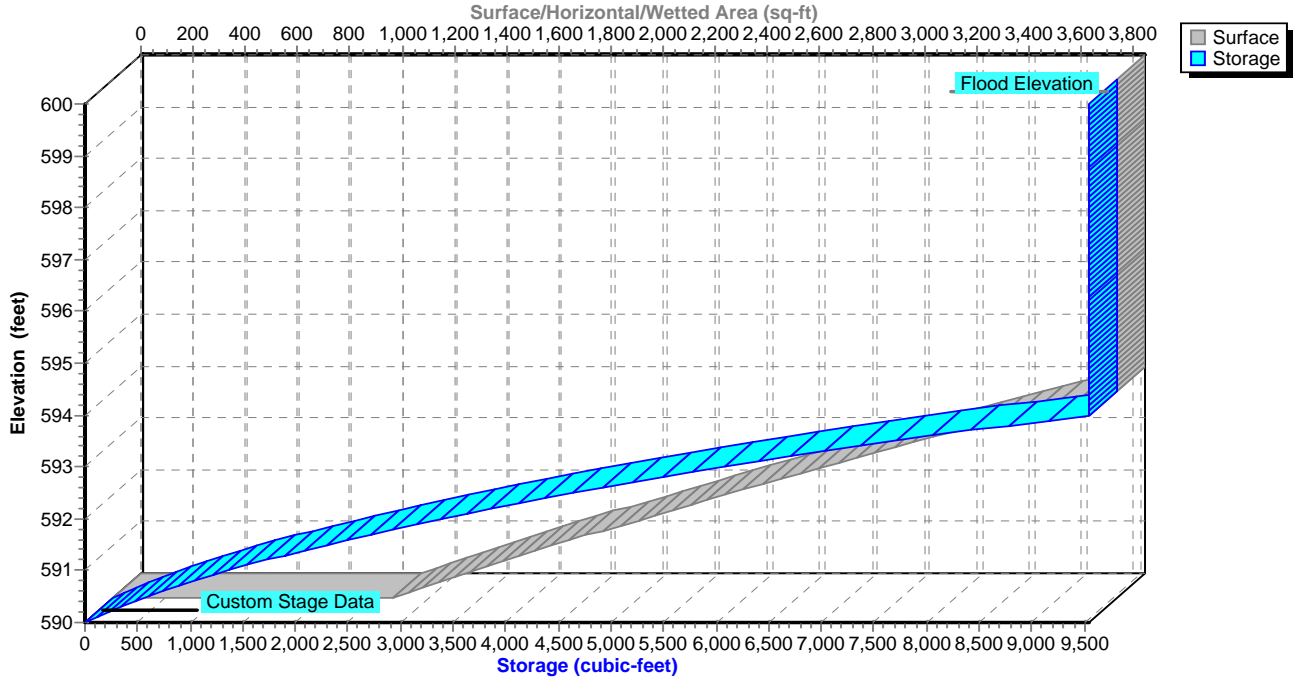
Pond 13P: BASIN 1 FOREBAY

Stage-Discharge



Pond 13P: BASIN 1 FOREBAY

Stage-Area-Storage



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Type II 24-hr 25-yr Rainfall=5.60"

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Summary for Pond 17P: BASIN 1 100 YR LFB

Inflow Area = 4.880 ac, 79.71% Impervious, Inflow Depth = 4.59" for 25-yr event
 Inflow = 35.54 cfs @ 11.98 hrs, Volume= 1.865 af
 Outflow = 14.41 cfs @ 12.10 hrs, Volume= 1.654 af, Atten= 59%, Lag= 7.3 min
 Primary = 14.41 cfs @ 12.10 hrs, Volume= 1.655 af
 Routed to Pond 21P : BASIN 2 100 YR LFB

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 596.55' @ 12.10 hrs Surf.Area= 11,843 sf Storage= 32,118 cf
 Flood Elev= 600.00' Surf.Area= 17,840 sf Storage= 83,183 cf

Plug-Flow detention time= 120.5 min calculated for 1.654 af (89% of inflow)
 Center-of-Mass det. time= 63.3 min (839.2 - 776.0)

Volume	Invert	Avail.Storage	Storage Description
#1	589.00'	83,183 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
589.00	2	0	0
590.00	897	450	450
591.00	1,487	1,192	1,642
592.00	2,133	1,810	3,452
593.00	2,836	2,485	5,936
594.00	3,695	3,266	9,202
595.00	9,367	6,531	15,733
596.00	10,948	10,158	25,890
597.00	12,586	11,767	37,657
598.00	14,281	13,434	51,091
599.00	16,032	15,157	66,247
600.00	17,840	16,936	83,183

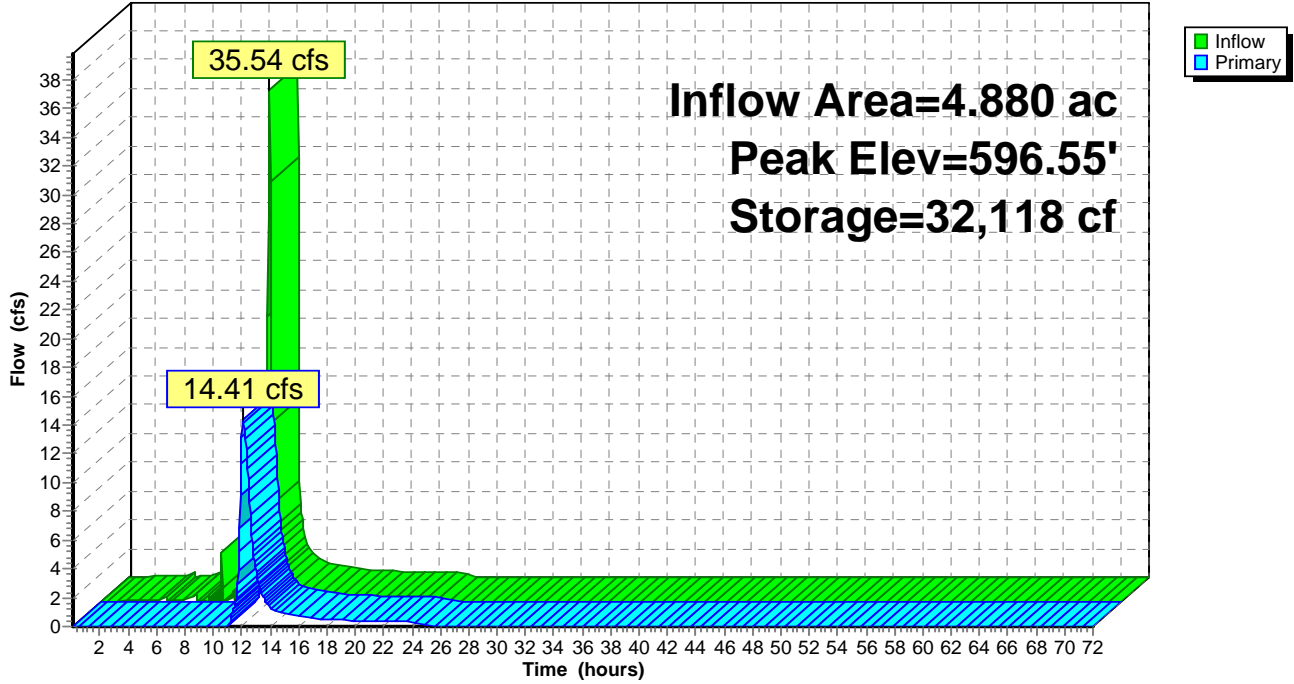
Device	Routing	Invert	Outlet Devices
#1	Primary	585.00'	24.0" Round RCP_Round 24" L= 184.2' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 585.00' / 583.16' S= 0.0100 1/ Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	594.00'	18.0" W x 18.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	598.00'	30.0" x 60.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=14.40 cfs @ 12.10 hrs HW=596.54' TW=587.82' (Dynamic Tailwater)

- 1=RCP_Round 24" (Passes 14.40 cfs of 41.92 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 14.40 cfs @ 6.40 fps)
- 3=Orifice/Grate (Controls 0.00 cfs)

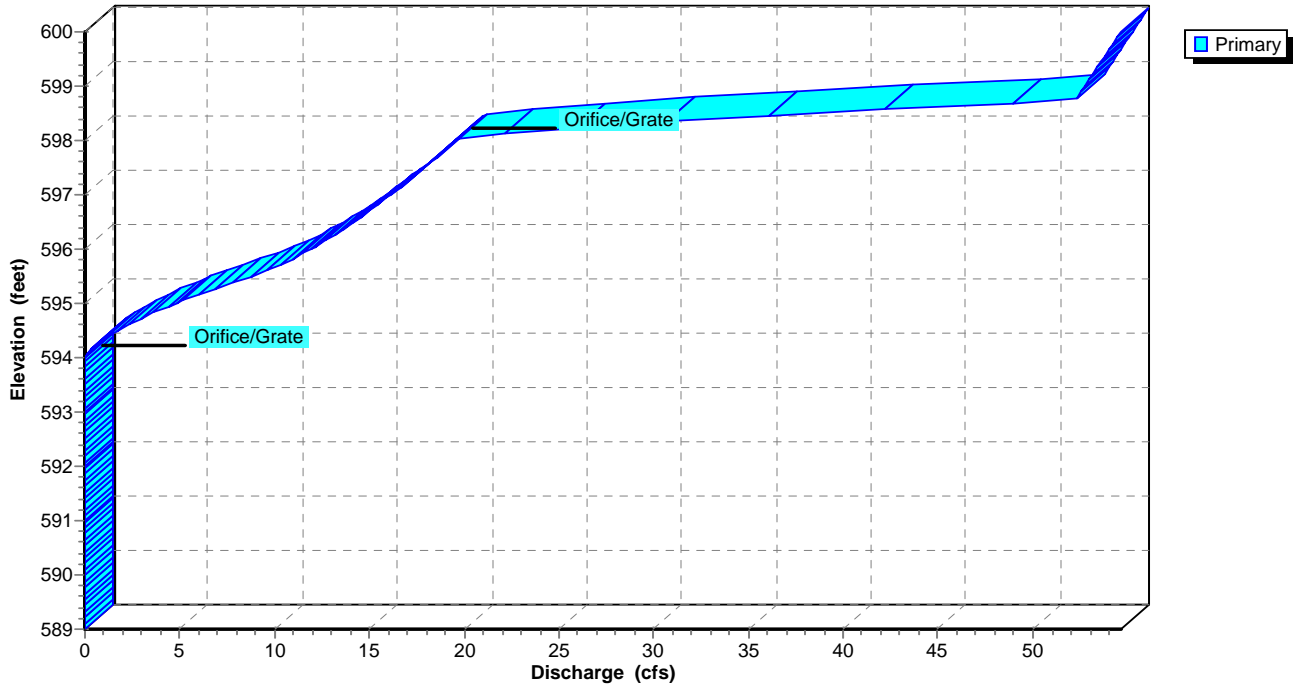
Pond 17P: BASIN 1 100 YR LFB

Hydrograph

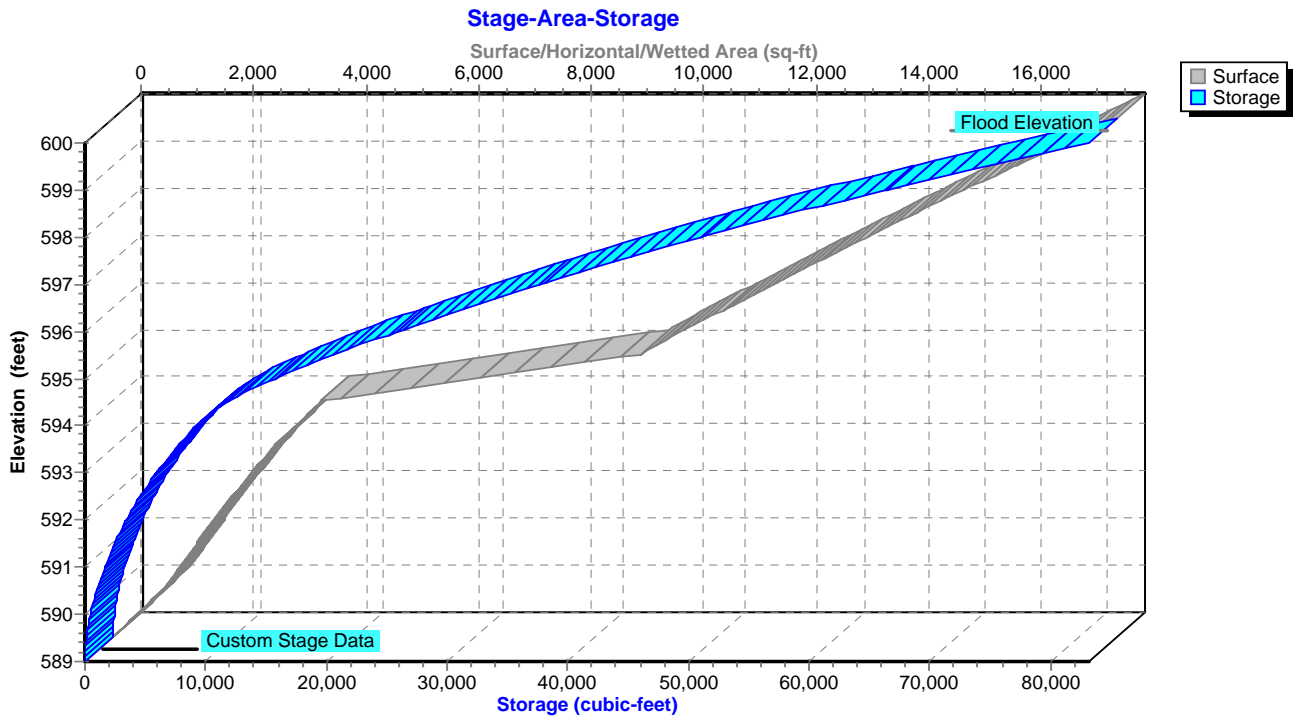


Pond 17P: BASIN 1 100 YR LFB

Stage-Discharge



Pond 17P: BASIN 1 100 YR LFB



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Type II 24-hr 25-yr Rainfall=5.60"

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Summary for Pond 18P: BASIN 1 FOREBAY 100 YR LFB

Inflow Area = 4.880 ac, 79.71% Impervious, Inflow Depth = 4.97" for 25-yr event
 Inflow = 37.36 cfs @ 11.95 hrs, Volume= 2.021 af
 Outflow = 35.54 cfs @ 11.98 hrs, Volume= 1.802 af, Atten= 5%, Lag= 1.5 min
 Primary = 35.54 cfs @ 11.98 hrs, Volume= 1.865 af
 Routed to Pond 17P : BASIN 1 100 YR LFB

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 594.00' @ 10.95 hrs Surf.Area= 3,845 sf Storage= 9,545 cf
 Flood Elev= 600.00' Surf.Area= 3,845 sf Storage= 9,545 cf

Plug-Flow detention time= 88.9 min calculated for 1.800 af (89% of inflow)
 Center-of-Mass det. time= 33.2 min (784.3 - 751.2)

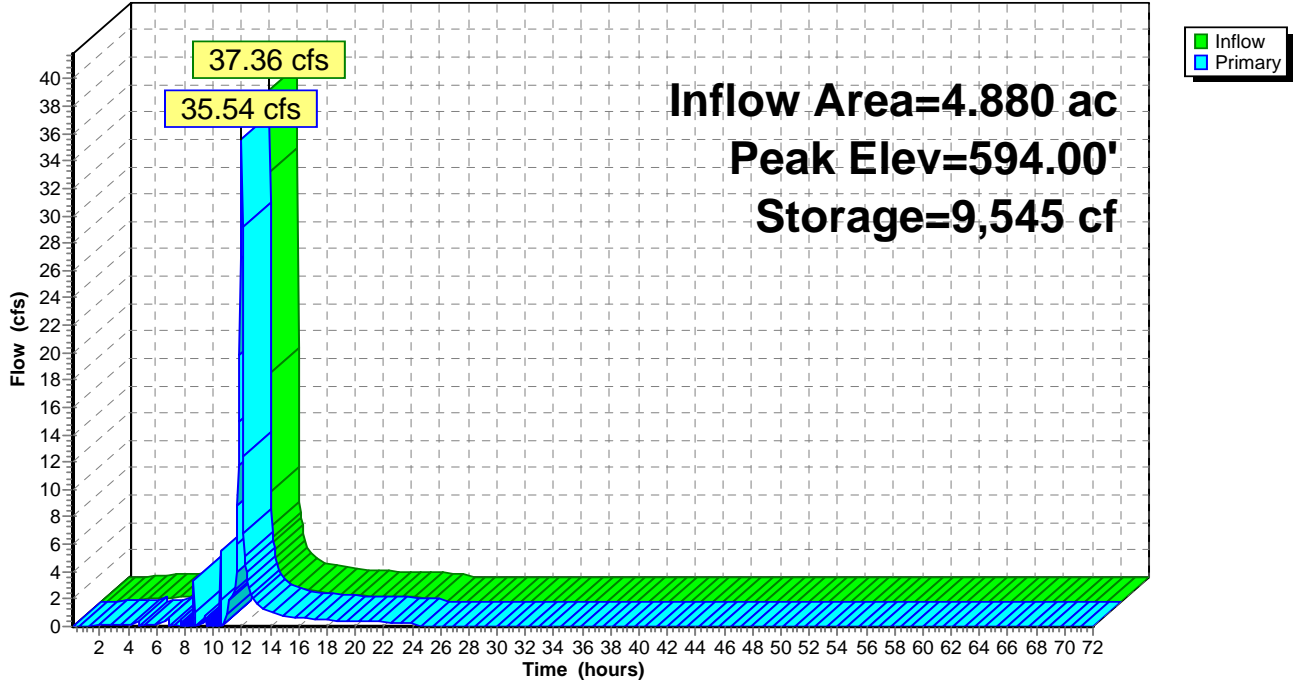
Volume	Invert	Avail.Storage	Storage Description
#1	590.00'	9,545 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
590.00	1,069	0	0
591.00	1,678	1,374	1,374
592.00	2,344	2,011	3,385
593.00	3,066	2,705	6,090
594.00	3,845	3,456	9,545

Device	Routing	Invert	Outlet Devices
#0	Primary	594.00'	Automatic Storage Overflow (Discharged without head)
#1	Primary	590.00'	36.00' long x 30.00' breadth x 4.06' high Rock Fill Rock Diam.= 18.000", S.D.= 4.000", Voids= 40.0%

Primary OutFlow Max=0.00 cfs @ 11.98 hrs HW=594.00' TW=596.07' (Dynamic Tailwater)
 ↗1=Rock Fill (Controls 0.00 cfs)

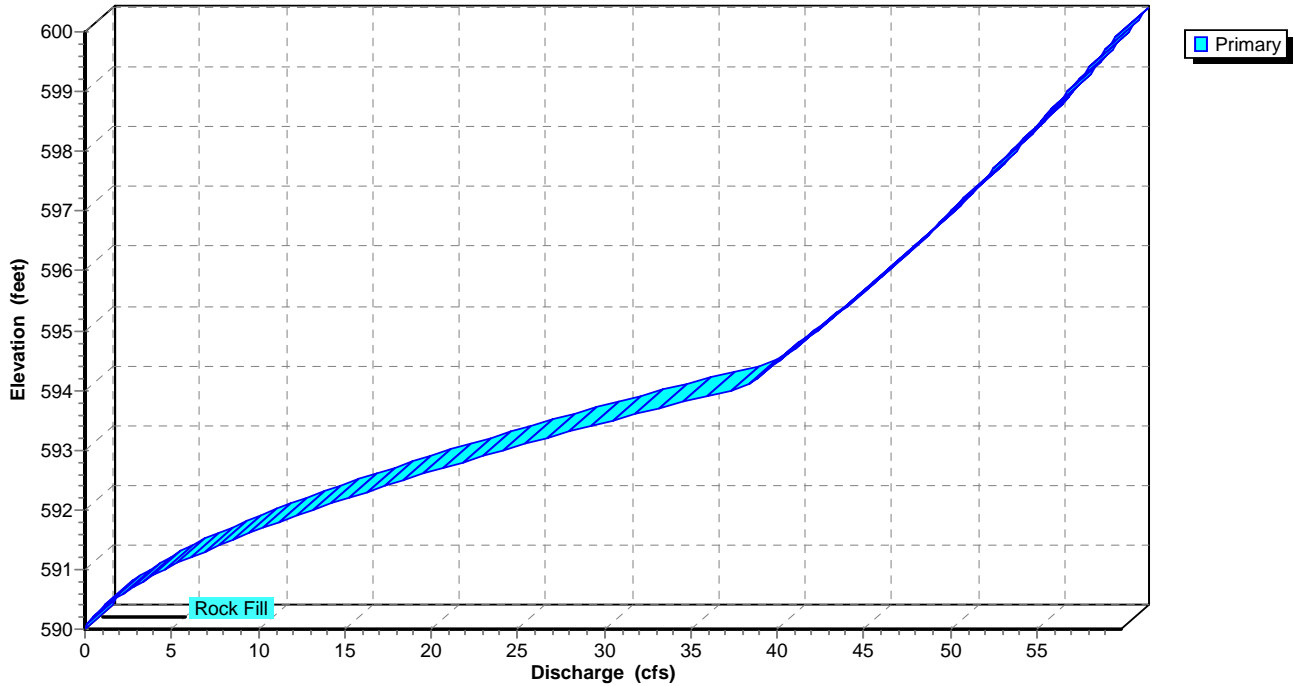
Pond 18P: BASIN 1 FOREBAY 100 YR LFB

Hydrograph

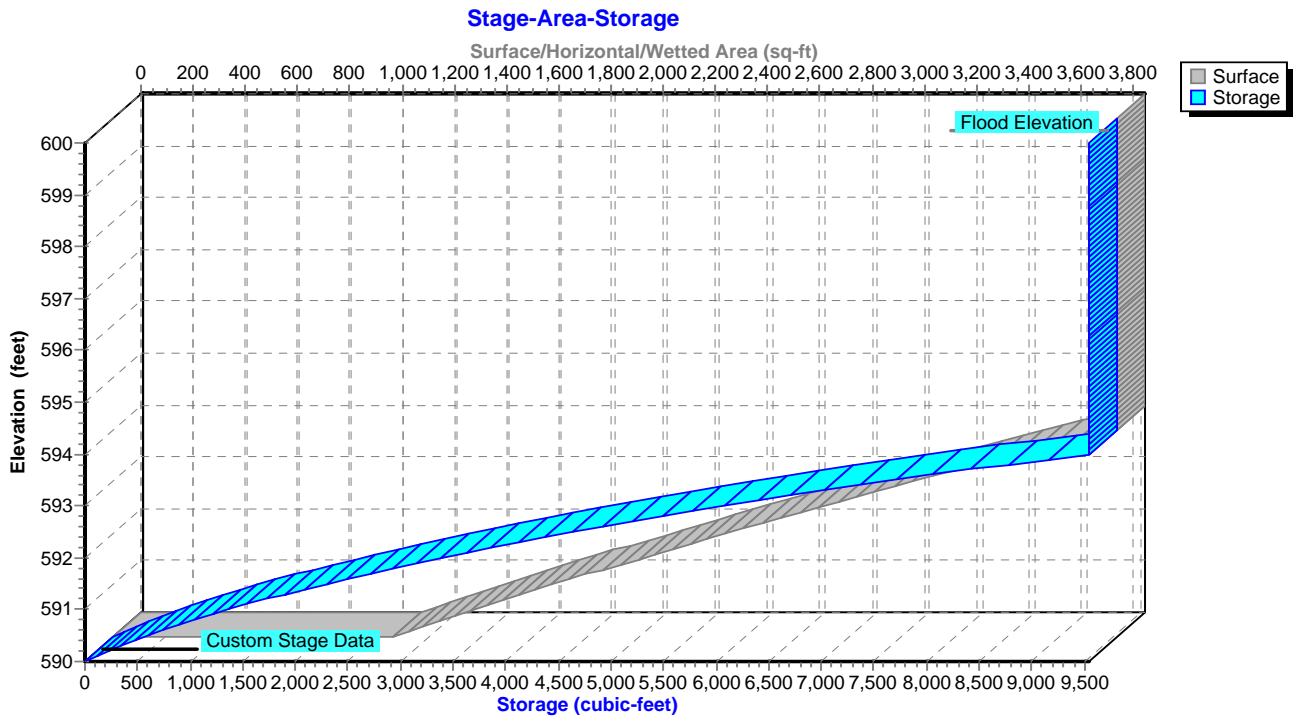


Pond 18P: BASIN 1 FOREBAY 100 YR LFB

Stage-Discharge



Pond 18P: BASIN 1 FOREBAY 100 YR LFB



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Type II 24-hr 25-yr Rainfall=5.60"

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Summary for Pond 21P: BASIN 2 100 YR LFB

Inflow Area = 7.600 ac, 78.42% Impervious, Inflow Depth = 4.37" for 25-yr event
 Inflow = 32.25 cfs @ 11.96 hrs, Volume= 2.765 af
 Outflow = 22.04 cfs @ 12.07 hrs, Volume= 2.588 af, Atten= 32%, Lag= 6.3 min
 Primary = 22.04 cfs @ 12.07 hrs, Volume= 2.588 af

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 587.90' @ 12.07 hrs Surf.Area= 2,543 sf Storage= 19,598 cf

Plug-Flow detention time= 70.9 min calculated for 2.588 af (94% of inflow)
 Center-of-Mass det. time= 33.5 min (838.1 - 804.6)

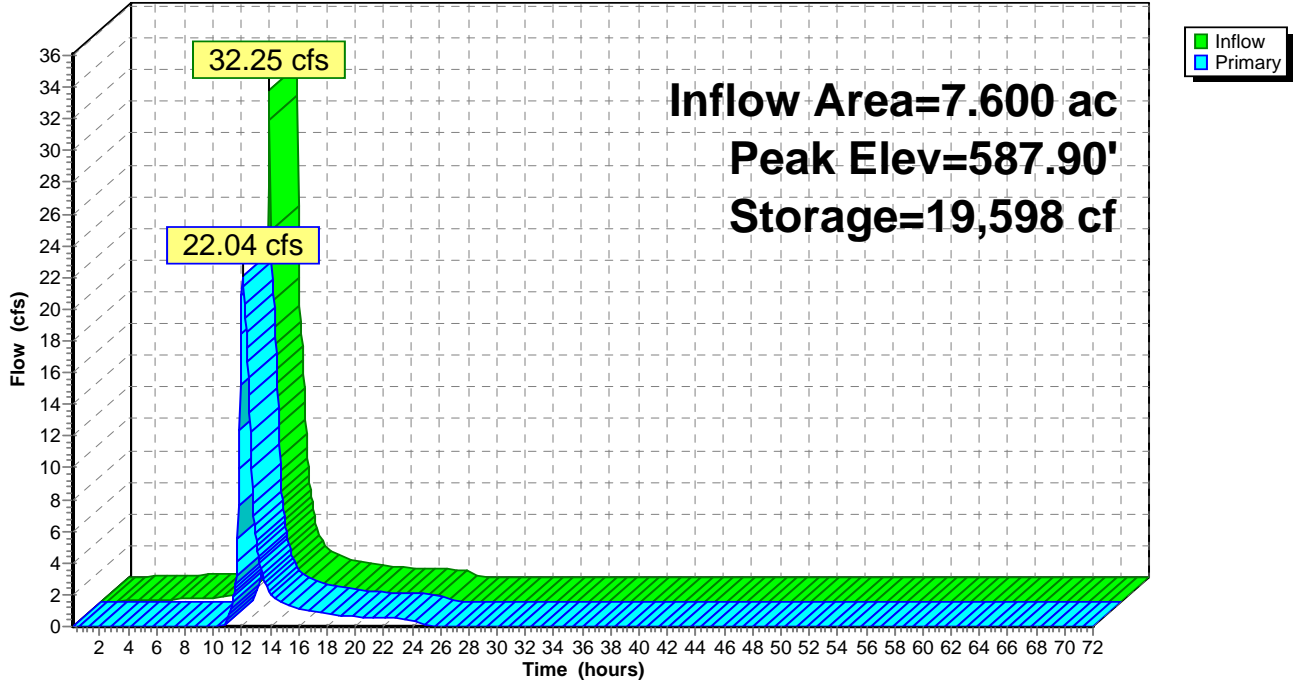
Volume	Invert	Avail.Storage	Storage Description
#1	578.75'	38,301 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
578.75	1	0	0
579.00	205	26	26
580.00	2,080	1,143	1,168
581.00	2,153	2,117	3,285
582.00	2,222	2,188	5,472
583.00	2,287	2,255	7,727
584.00	2,348	2,318	10,044
585.00	2,404	2,376	12,420
586.00	2,456	2,430	14,850
587.00	2,504	2,480	17,330
588.00	2,547	2,526	19,856
589.00	3,000	2,774	22,629
590.00	4,800	3,900	26,529
591.00	5,862	5,331	31,860
592.00	7,020	6,441	38,301

Device	Routing	Invert	Outlet Devices
#1	Primary	576.73'	24.0" Round Culvert L= 15.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 576.73' / 576.58' S= 0.0100 1' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	583.00'	18.0" W x 18.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	589.00'	30.0" x 60.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=21.90 cfs @ 12.07 hrs HW=587.85' (Free Discharge)
 1=Culvert (Passes 21.90 cfs of 60.14 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 21.90 cfs @ 9.73 fps)
 3=Orifice/Grate (Controls 0.00 cfs)

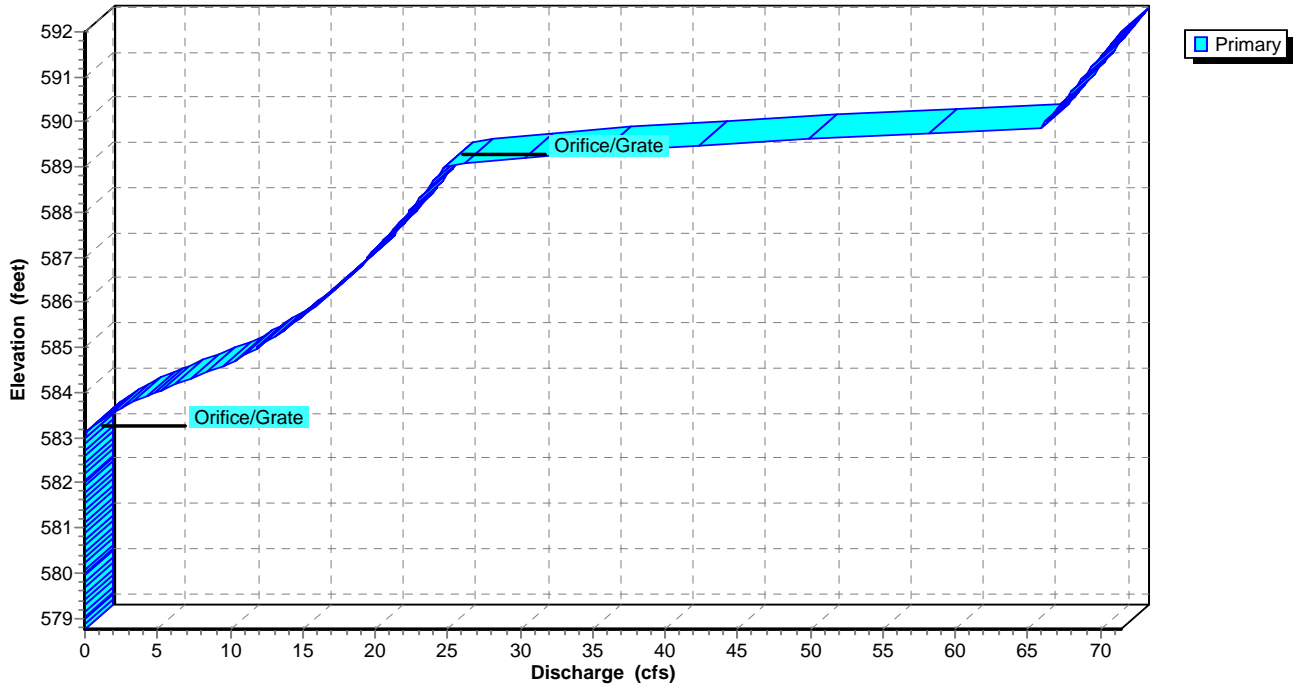
Pond 21P: BASIN 2 100 YR LFB

Hydrograph

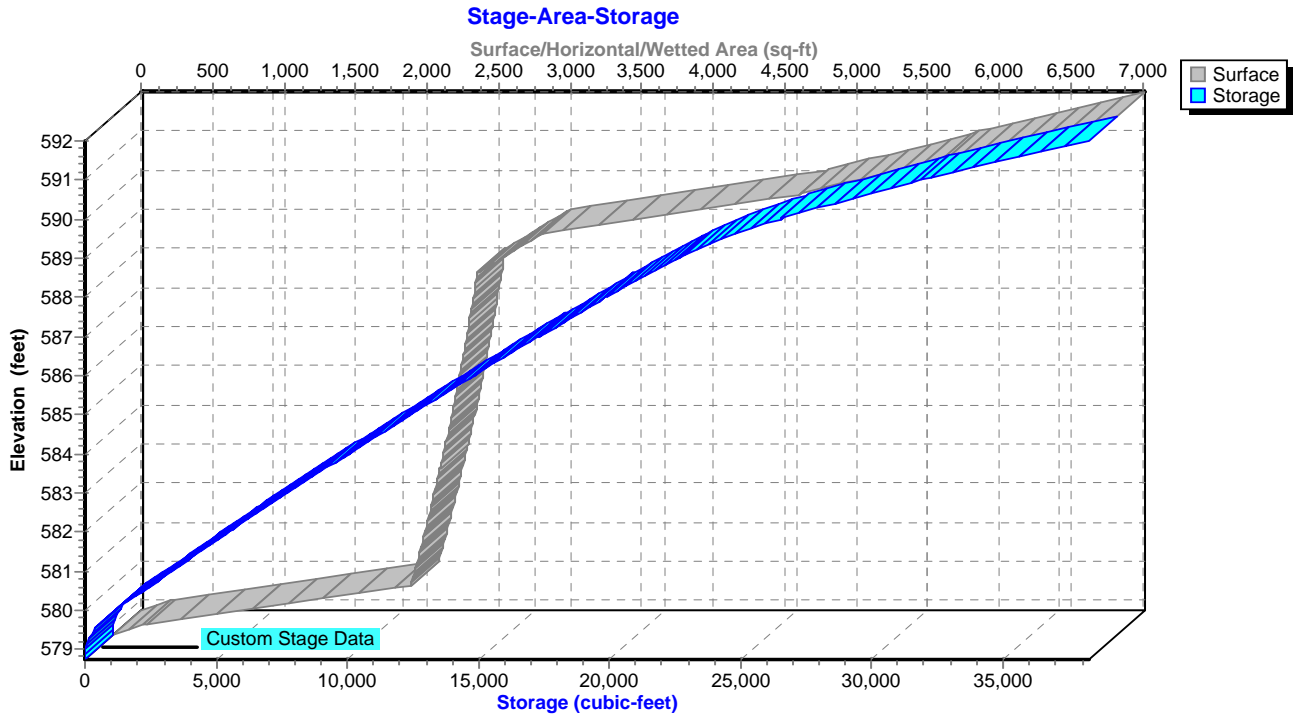


Pond 21P: BASIN 2 100 YR LFB

Stage-Discharge



Pond 21P: BASIN 2 100 YR LFB



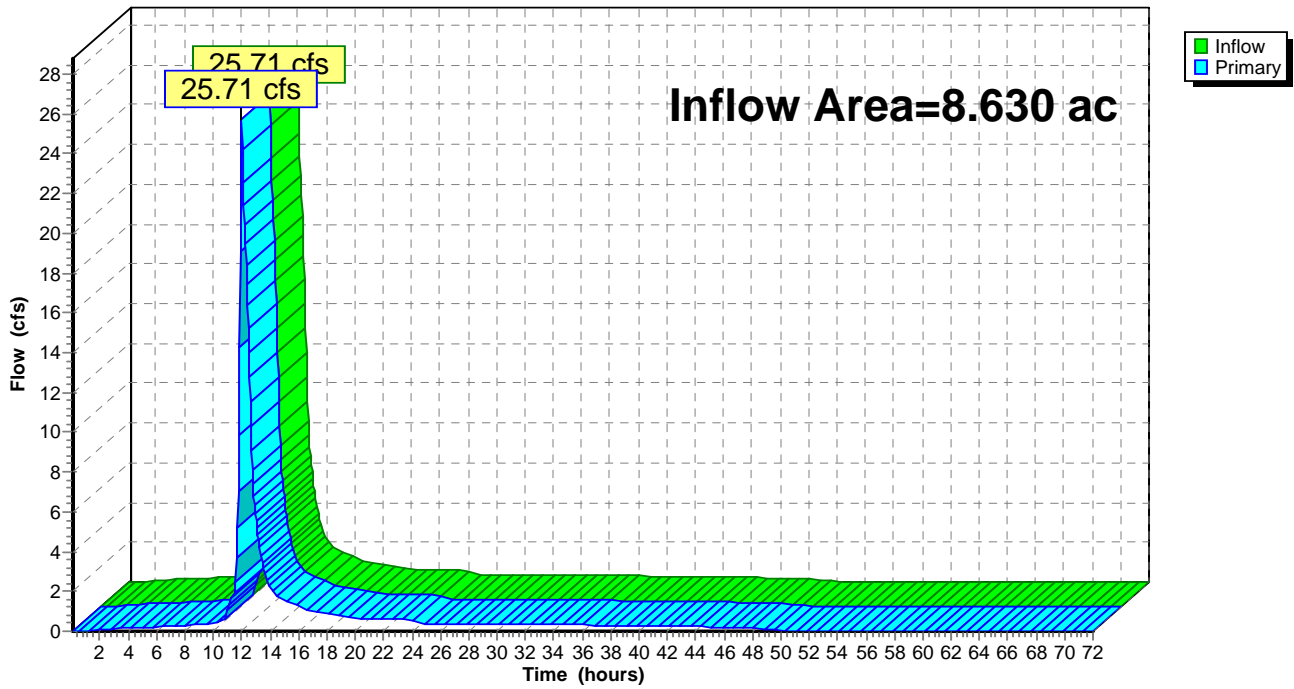
Summary for Link 14L: POST DEVELOPED RUNOFF

Inflow Area = 8.630 ac, 72.42% Impervious, Inflow Depth = 4.90" for 25-yr event
Inflow = 25.71 cfs @ 12.00 hrs, Volume= 3.520 af
Primary = 25.71 cfs @ 12.00 hrs, Volume= 3.520 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 10R : 201 TO JS

Primary outflow = Inflow, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs

Link 14L: POST DEVELOPED RUNOFF

Hydrograph



Summary for Subcatchment 1S: EXISTING CONDITIONS

Runoff = 50.76 cfs @ 12.01 hrs, Volume= 2.804 af, Depth= 4.11"

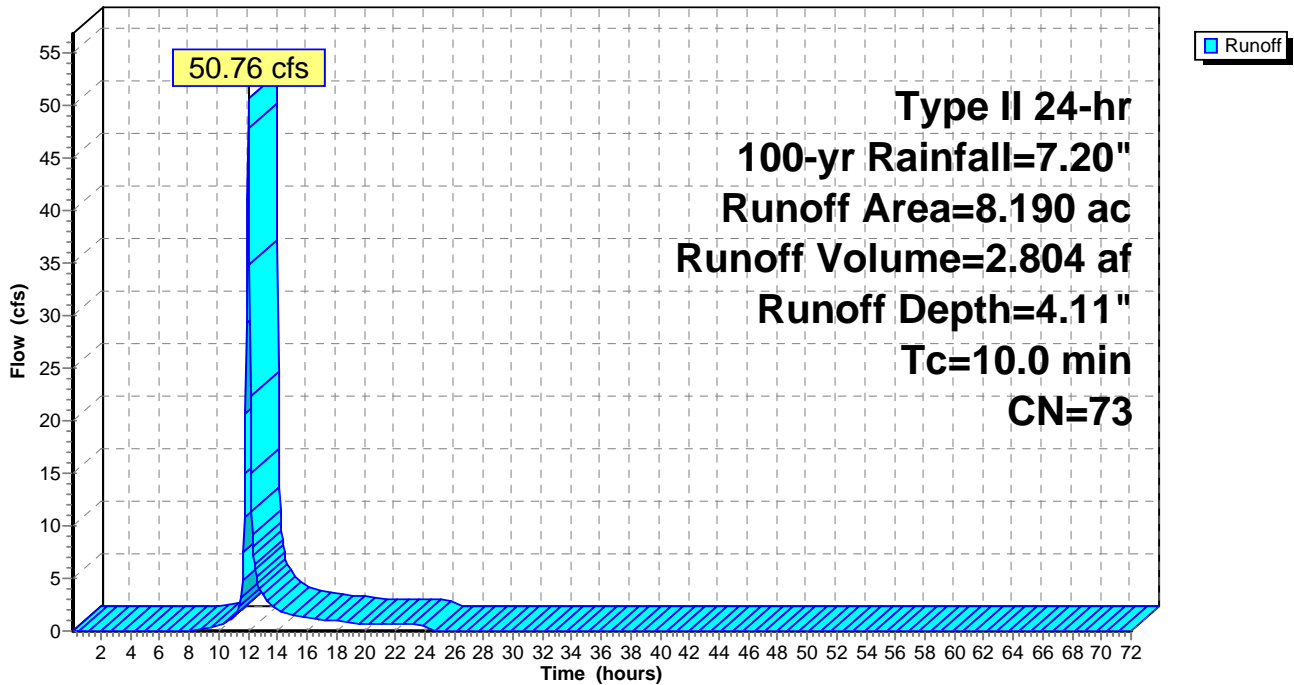
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 100-yr Rainfall=7.20"

Area (ac)	CN	Description
* 8.190	73	Woods, Good, HSG C
8.190		100.00% Pervious Area

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

Subcatchment 1S: EXISTING CONDITIONS

Hydrograph



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Type II 24-hr 100-yr Rainfall=7.20"

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Summary for Subcatchment 2S: PROPOSED CONDITIONS (NO DETENTION)

Runoff = 81.94 cfs @ 11.95 hrs, Volume= 4.466 af, Depth= 6.54"

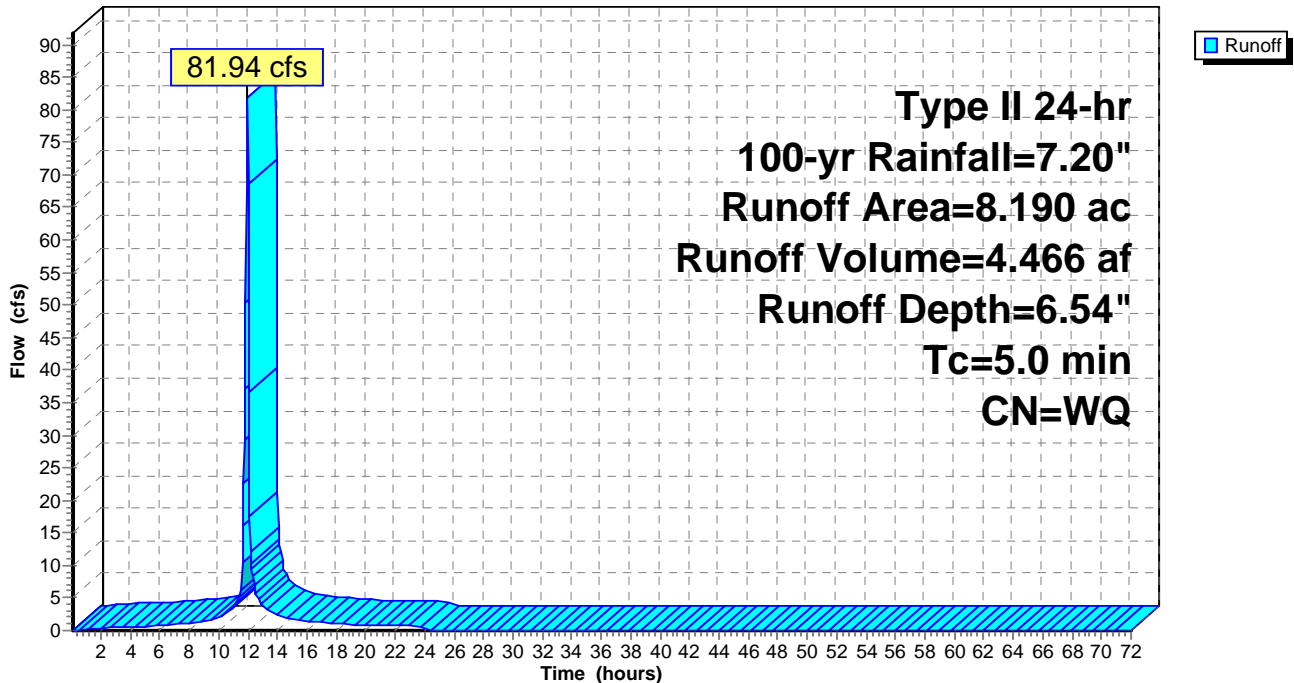
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.20"

Area (ac)	CN	Description
6.550	98	Paved parking, HSG C
1.640	80	>75% Grass cover, Good, HSG D
8.190		Weighted Average
1.640		20.02% Pervious Area
6.550		79.98% Impervious Area

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

Subcatchment 2S: PROPOSED CONDITIONS (NO DETENTION)

Hydrograph



Summary for Subcatchment 3S: OFFSITE TO ONSITE TO BASIN 1

Runoff = 2.93 cfs @ 11.95 hrs, Volume= 0.146 af, Depth= 5.32"
 Routed to Pond 13P : BASIN 1 FOREBAY

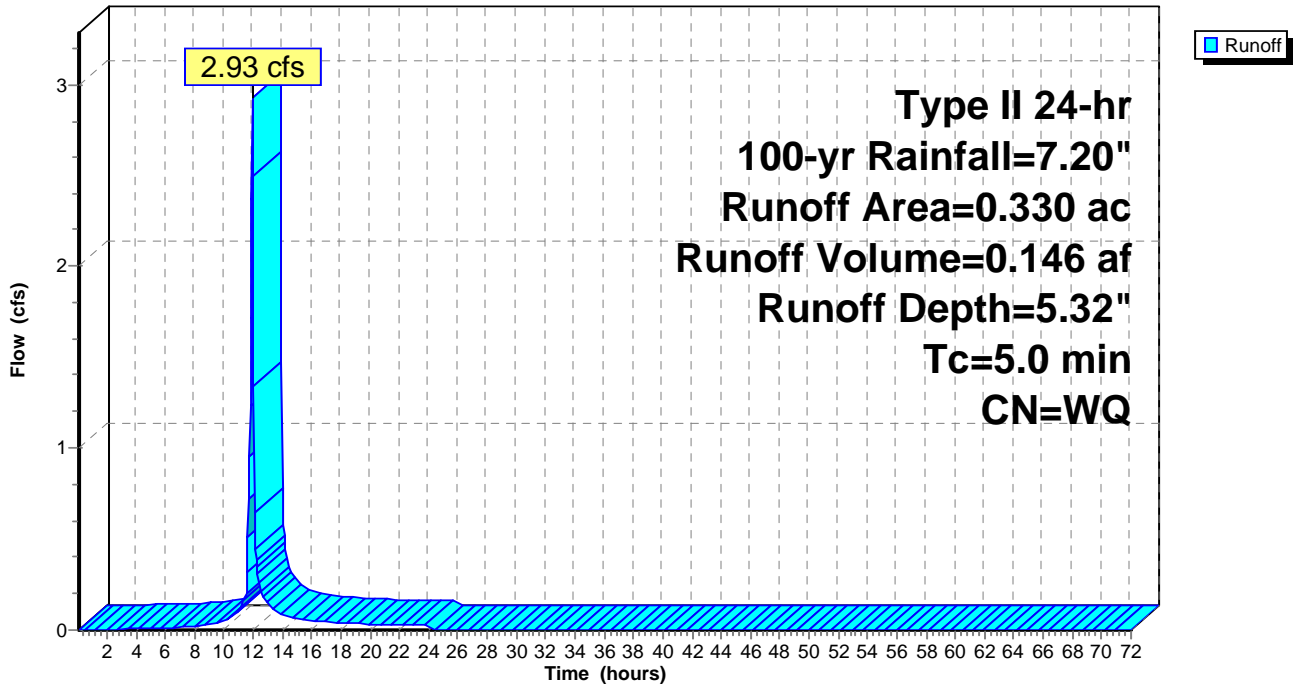
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 100-yr Rainfall=7.20"

Area (ac)	CN	Description
0.070	98	Paved parking, HSG D
0.260	80	>75% Grass cover, Good, HSG D
0.330		Weighted Average
0.260		78.79% Pervious Area
0.070		21.21% Impervious Area

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

Subcatchment 3S: OFFSITE TO ONSITE TO BASIN 1

Hydrograph



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Type II 24-hr 100-yr Rainfall=7.20"

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Summary for Subcatchment 4S: ONSITE TO BASIN 1

Runoff = 45.87 cfs @ 11.95 hrs, Volume= 2.513 af, Depth= 6.63"
Routed to Pond 13P : BASIN 1 FOREBAY

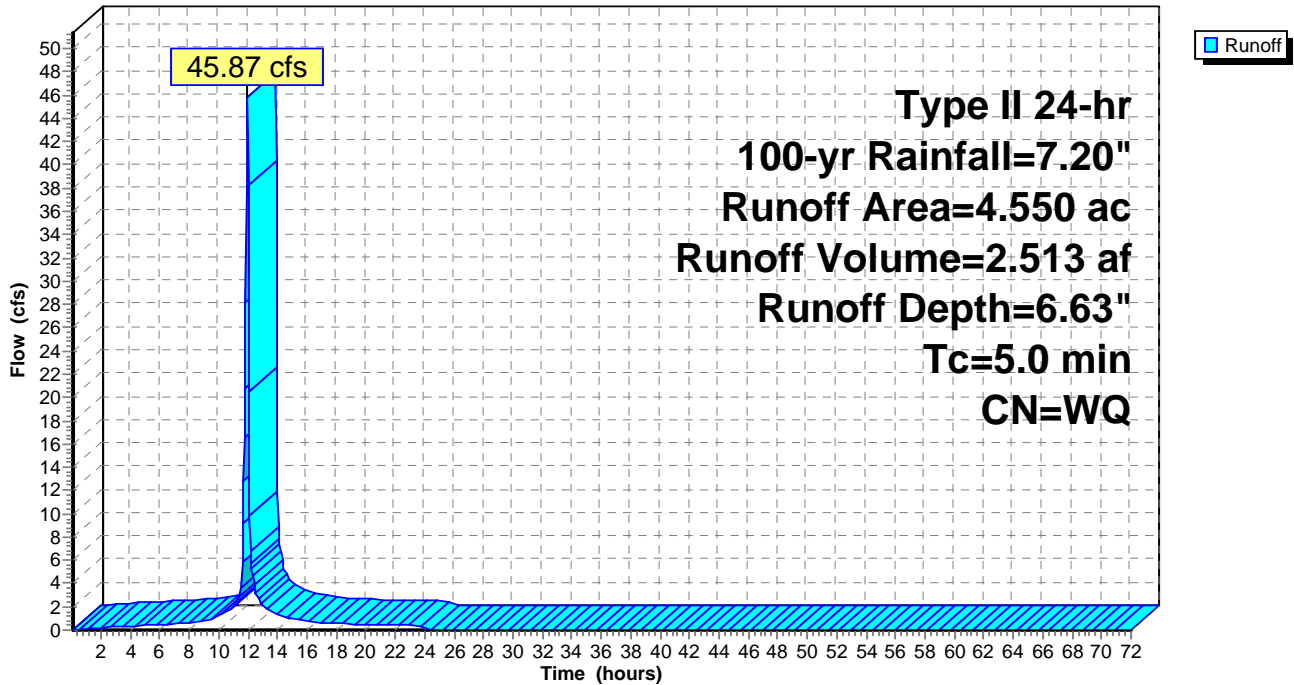
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.20"

Area (ac)	CN	Description
3.820	98	Paved parking, HSG D
0.730	80	>75% Grass cover, Good, HSG D
4.550		Weighted Average
0.730		16.04% Pervious Area
3.820		83.96% Impervious Area

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

Subcatchment 4S: ONSITE TO BASIN 1

Hydrograph



Summary for Subcatchment 5S: OFFSITE TO ONSITE TO BASIN 2

Runoff = 1.10 cfs @ 11.95 hrs, Volume= 0.053 af, Depth= 4.88"
 Routed to Pond 9P : BASIN 2

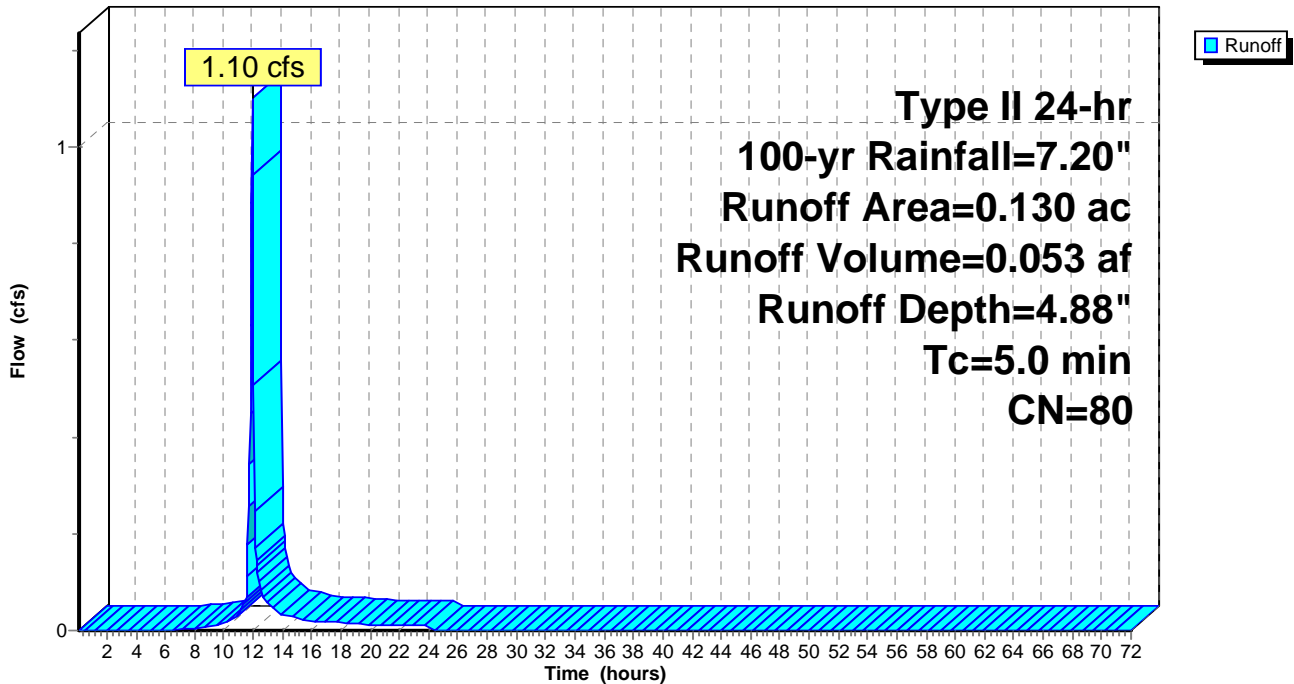
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 100-yr Rainfall=7.20"

Area (ac)	CN	Description
0.130	80	>75% Grass cover, Good, HSG D
0.130		100.00% Pervious Area

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

Subcatchment 5S: OFFSITE TO ONSITE TO BASIN 2

Hydrograph



Summary for Subcatchment 6S: ONSITE TO BASIN 2

Runoff = 25.91 cfs @ 11.95 hrs, Volume= 1.412 af, Depth= 6.54"
 Routed to Pond 9P : BASIN 2

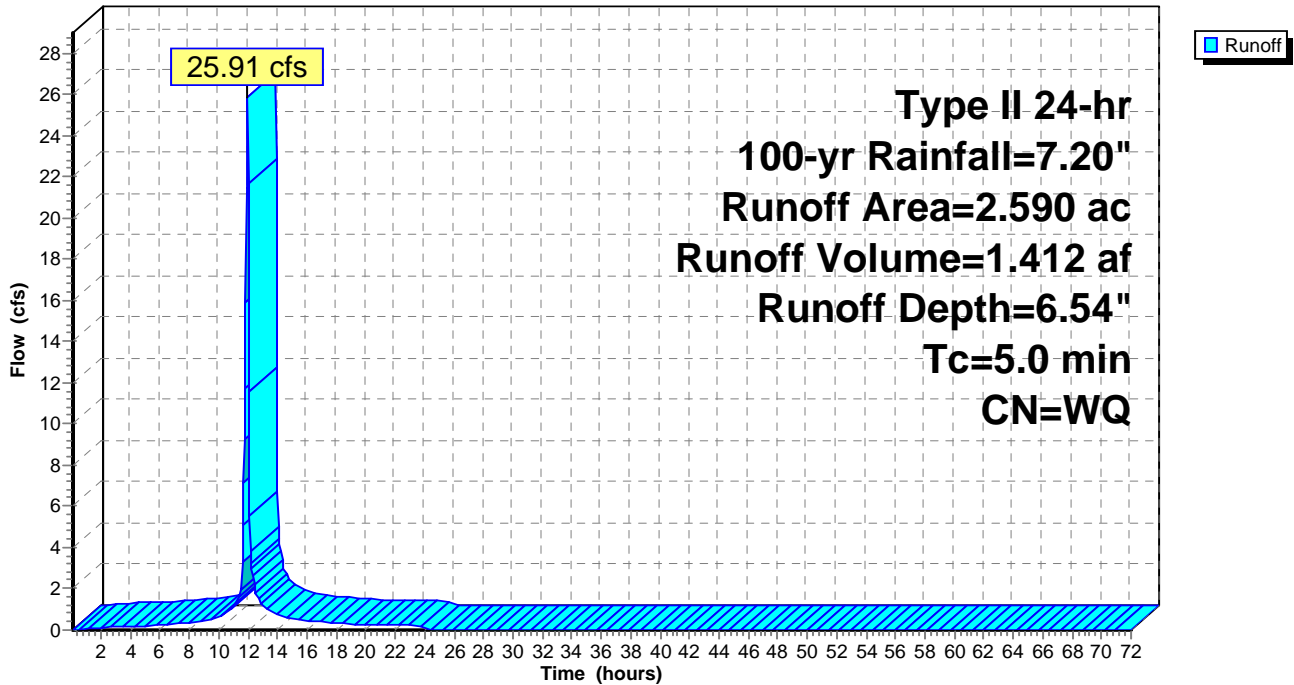
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 100-yr Rainfall=7.20"

Area (ac)	CN	Description
2.070	98	Paved parking, HSG D
0.520	80	>75% Grass cover, Good, HSG D
2.590		Weighted Average
0.520		20.08% Pervious Area
2.070		79.92% Impervious Area

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

Subcatchment 6S: ONSITE TO BASIN 2

Hydrograph



Summary for Subcatchment 7S: ONSITE TO OFFSITE BYPASS

Runoff = 9.29 cfs @ 11.95 hrs, Volume= 0.469 af, Depth= 5.47"

Routed to Link 14L : POST DEVELOPED RUNOFF

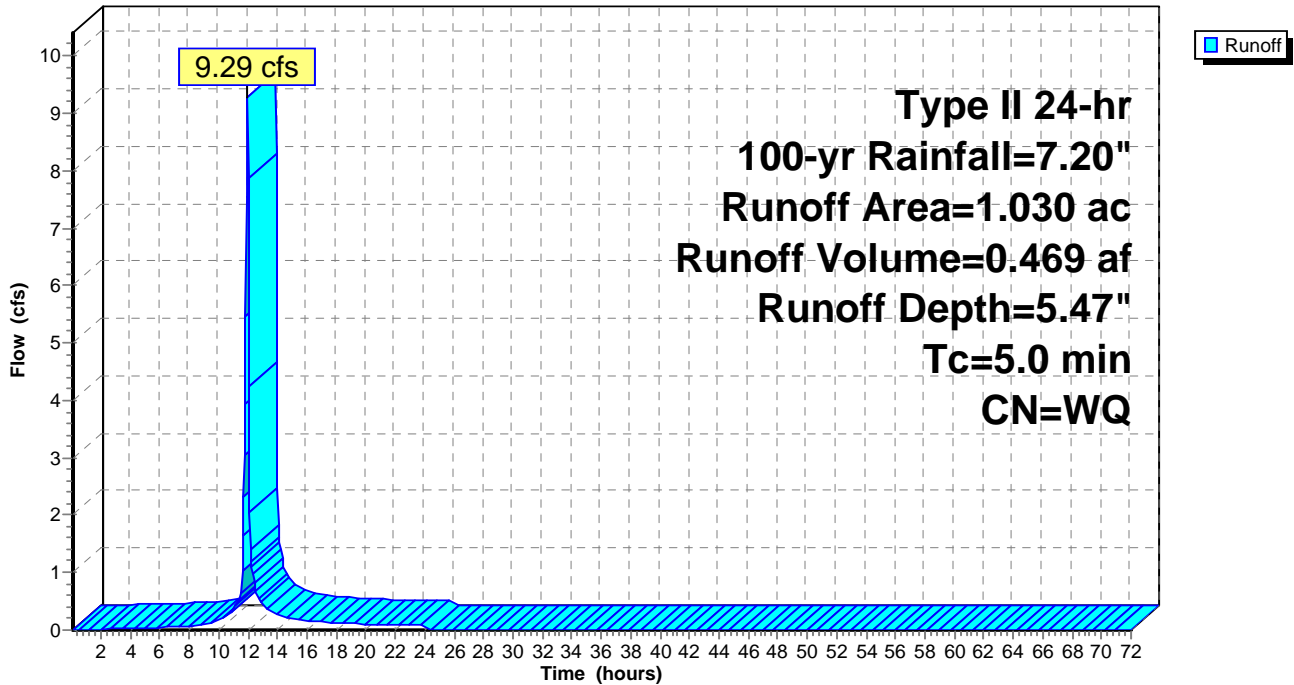
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 100-yr Rainfall=7.20"

Area (ac)	CN	Description
0.290	98	Paved parking, HSG C
0.740	80	>75% Grass cover, Good, HSG D
1.030		Weighted Average
0.740		71.84% Pervious Area
0.290		28.16% Impervious Area

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

Subcatchment 7S: ONSITE TO OFFSITE BYPASS

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Type II 24-hr 100-yr Rainfall=7.20"

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Summary for Subcatchment 11S: AREA TO BRYAN RD CULVERT

Runoff = 41.62 cfs @ 12.00 hrs, Volume= 2.449 af, Depth= 6.03"
 Routed to Pond 12P : BRYAN RD CULVERT

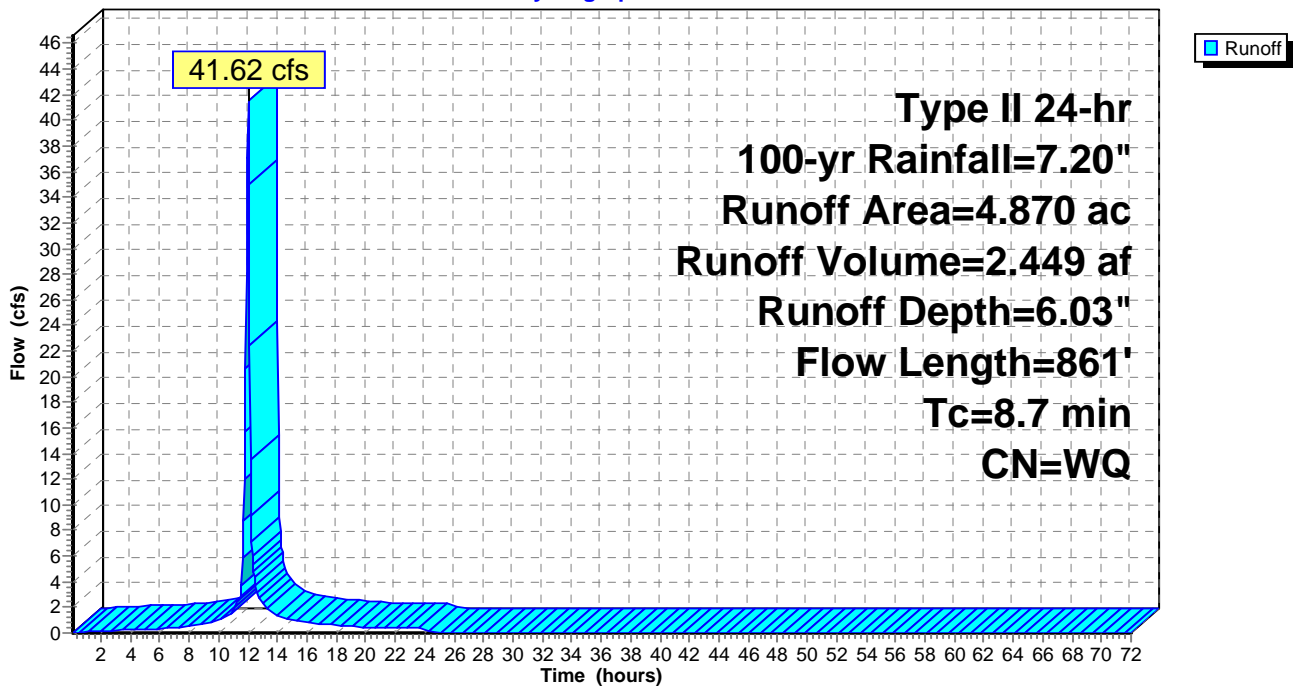
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 100-yr Rainfall=7.20"

Area (ac)	CN	Description
2.700	98	Paved parking, HSG C
2.170	80	>75% Grass cover, Good, HSG D
4.870		Weighted Average
2.170		44.56% Pervious Area
2.700		55.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0200	1.26		Sheet Flow, n= 0.013 P2= 3.50"
2.5	493	0.0430	3.34		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
4.9	268	0.0215	0.91	54.47	Channel Flow, Area= 60.0 sf Perim= 60.0' r= 1.00' n= 0.240 Sheet flow over Dense Grass
8.7	861	Total			

Subcatchment 11S: AREA TO BRYAN RD CULVERT

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Type II 24-hr 100-yr Rainfall=7.20"

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Summary for Subcatchment 12S: AREAS 30 & 38

Runoff = 15.16 cfs @ 11.95 hrs, Volume= 0.799 af, Depth= 6.03"
Routed to Pond 11P : DUAL CULVERTS

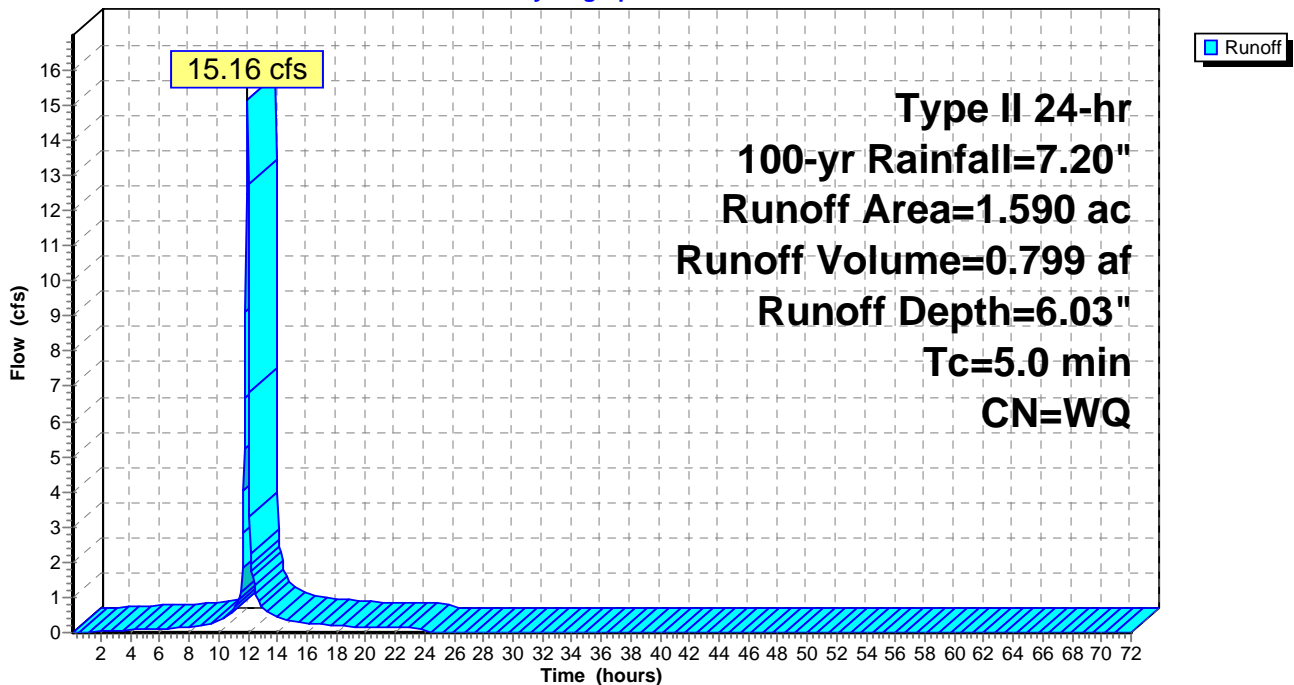
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.20"

Area (ac)	CN	Description
0.200	80	>75% Grass cover, Good, HSG D
0.880	98	Paved parking, HSG D
0.510	80	>75% Grass cover, Good, HSG D
1.590		Weighted Average
0.710		44.65% Pervious Area
0.880		55.35% Impervious Area

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

Subcatchment 12S: AREAS 30 & 38

Hydrograph



Summary for Subcatchment 15S: OFFSITE TO ONSITE TO BASIN 1

Runoff = 2.93 cfs @ 11.95 hrs, Volume= 0.146 af, Depth= 5.32"

Routed to Pond 18P : BASIN 1 FOREBAY 100 YR LFB

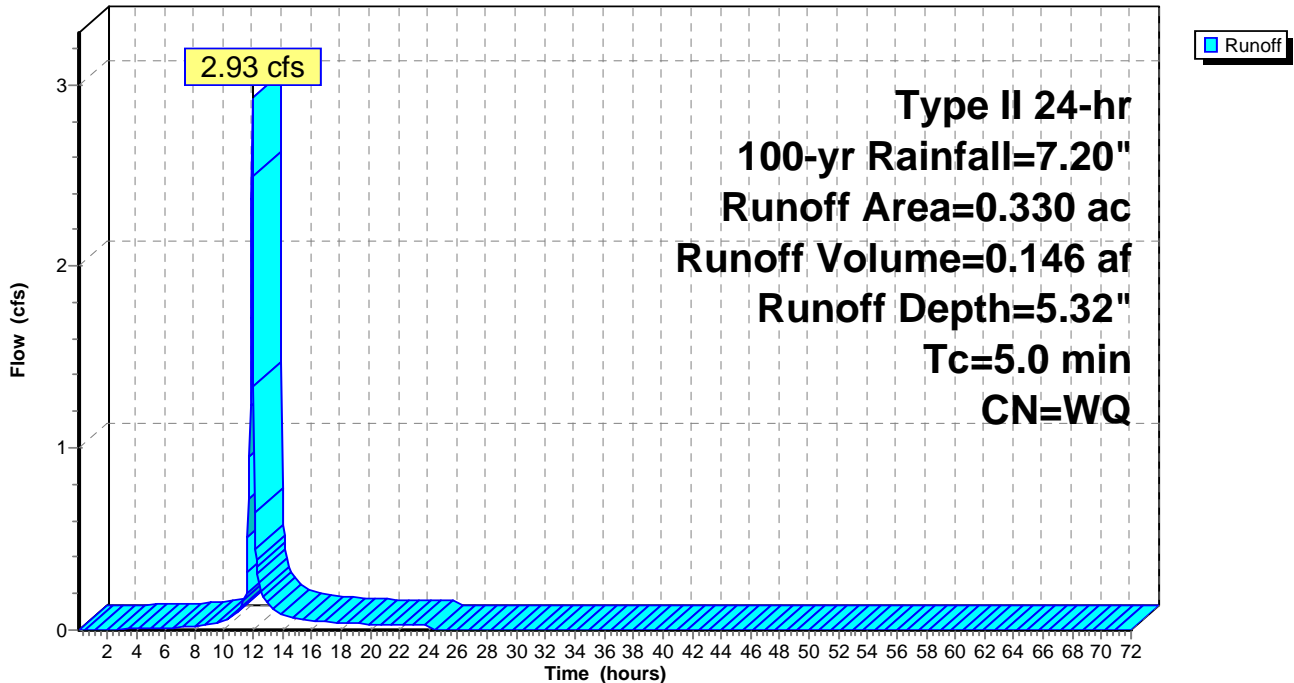
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 100-yr Rainfall=7.20"

Area (ac)	CN	Description
0.070	98	Paved parking, HSG D
0.260	80	>75% Grass cover, Good, HSG D
<hr/>		
0.330		Weighted Average
0.260		78.79% Pervious Area
0.070		21.21% Impervious Area

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

Subcatchment 15S: OFFSITE TO ONSITE TO BASIN 1

Hydrograph



Summary for Subcatchment 16S: ONSITE TO BASIN 1

Runoff = 45.87 cfs @ 11.95 hrs, Volume= 2.513 af, Depth= 6.63"

Routed to Pond 18P : BASIN 1 FOREBAY 100 YR LFB

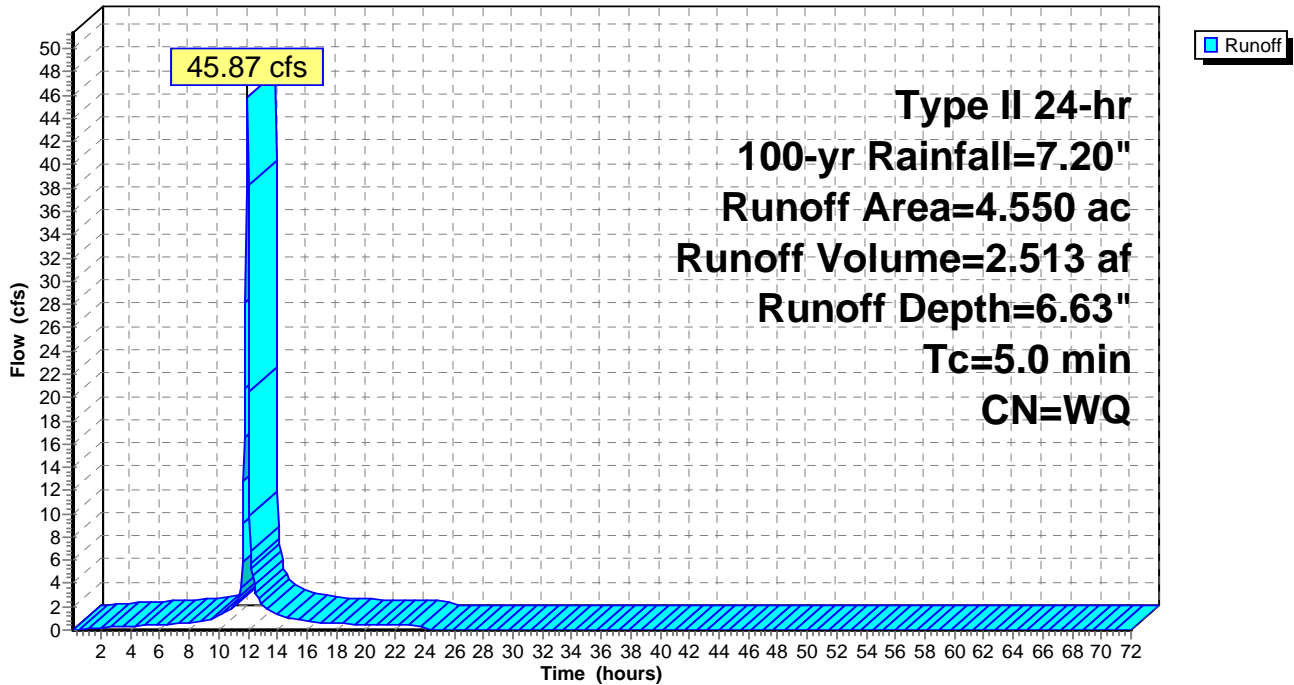
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 100-yr Rainfall=7.20"

Area (ac)	CN	Description
3.820	98	Paved parking, HSG D
0.730	80	>75% Grass cover, Good, HSG D
4.550		Weighted Average
0.730		16.04% Pervious Area
3.820		83.96% Impervious Area

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

Subcatchment 16S: ONSITE TO BASIN 1

Hydrograph



Summary for Subcatchment 19S: OFFSITE TO ONSITE TO BASIN 2

Runoff = 1.10 cfs @ 11.95 hrs, Volume= 0.053 af, Depth= 4.88"
 Routed to Pond 21P : BASIN 2 100 YR LFB

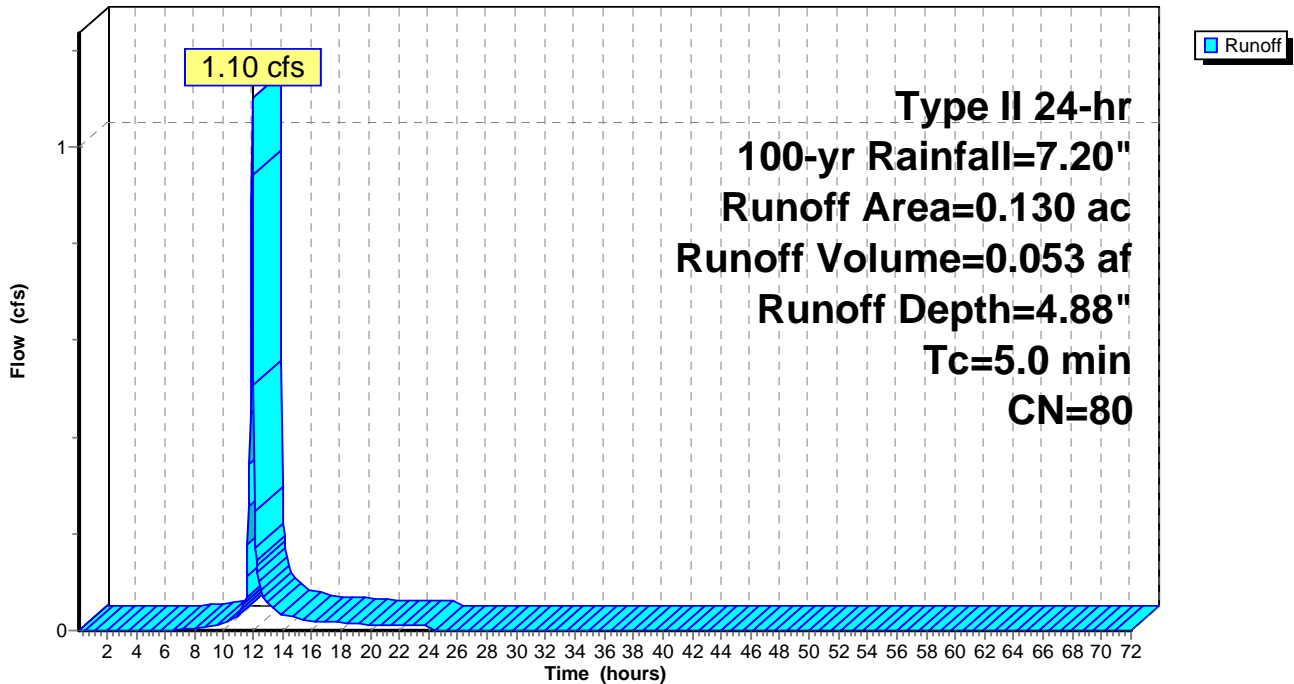
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 100-yr Rainfall=7.20"

Area (ac)	CN	Description
0.130	80	>75% Grass cover, Good, HSG D
0.130		100.00% Pervious Area

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

Subcatchment 19S: OFFSITE TO ONSITE TO BASIN 2

Hydrograph



Summary for Subcatchment 20S: ONSITE TO BASIN 2

Runoff = 25.91 cfs @ 11.95 hrs, Volume= 1.412 af, Depth= 6.54"
 Routed to Pond 21P : BASIN 2 100 YR LFB

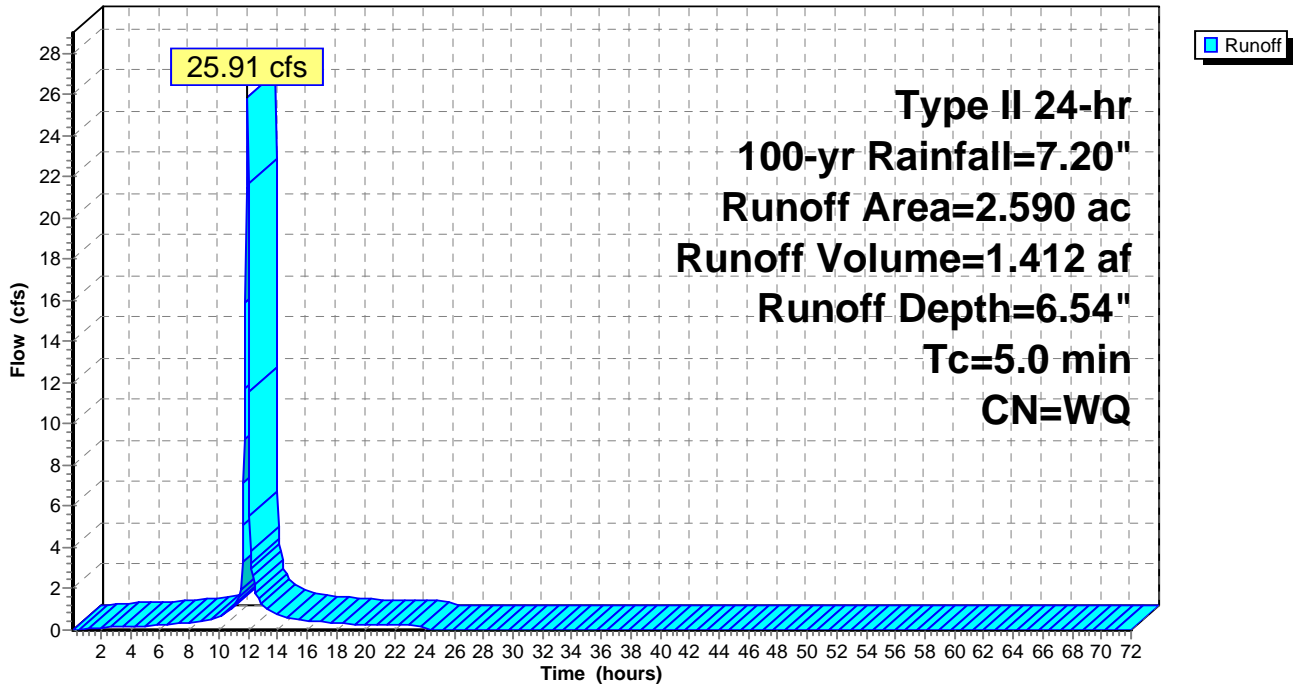
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs
 Type II 24-hr 100-yr Rainfall=7.20"

Area (ac)	CN	Description
2.070	98	Paved parking, HSG D
0.520	80	>75% Grass cover, Good, HSG D
2.590		Weighted Average
0.520		20.08% Pervious Area
2.070		79.92% Impervious Area

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

Subcatchment 20S: ONSITE TO BASIN 2

Hydrograph



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Type II 24-hr 100-yr Rainfall=7.20"

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Summary for Pond 8P: BASIN 1

Inflow Area = 4.880 ac, 79.71% Impervious, Inflow Depth = 6.68" for 100-yr event
 Inflow = 46.43 cfs @ 11.98 hrs, Volume= 2.716 af
 Outflow = 17.13 cfs @ 12.10 hrs, Volume= 2.716 af, Atten= 63%, Lag= 7.8 min
 Primary = 17.13 cfs @ 12.10 hrs, Volume= 2.716 af
 Routed to Pond 9P : BASIN 2

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 597.14' @ 12.10 hrs Surf.Area= 12,815 sf Storage= 39,372 cf
 Flood Elev= 600.00' Surf.Area= 17,840 sf Storage= 83,183 cf

Plug-Flow detention time= 127.0 min calculated for 2.714 af (100% of inflow)
 Center-of-Mass det. time= 127.0 min (985.5 - 858.5)

Volume	Invert	Avail.Storage	Storage Description
#1	589.00'	83,183 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
589.00	2	0	0
590.00	897	450	450
591.00	1,487	1,192	1,642
592.00	2,133	1,810	3,452
593.00	2,836	2,485	5,936
594.00	3,695	3,266	9,202
595.00	9,367	6,531	15,733
596.00	10,948	10,158	25,890
597.00	12,586	11,767	37,657
598.00	14,281	13,434	51,091
599.00	16,032	15,157	66,247
600.00	17,840	16,936	83,183

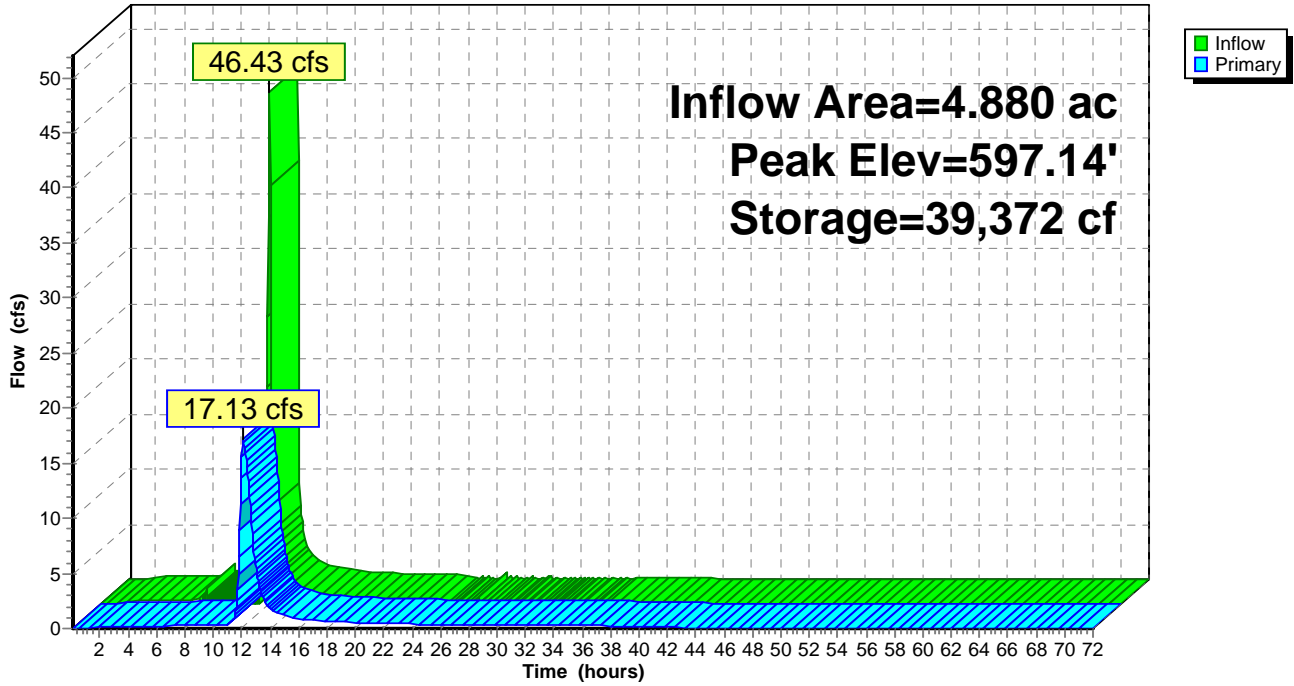
Device	Routing	Invert	Outlet Devices
#1	Primary	585.00'	24.0" Round RCP_Round 24" L= 184.2' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 585.00' / 583.16' S= 0.0100 1/ Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	589.00'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	594.00'	18.0" W x 18.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	598.00'	30.0" x 60.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=17.10 cfs @ 12.10 hrs HW=597.13' TW=589.04' (Dynamic Tailwater)

- 1=RCP_Round 24" (Passes 17.10 cfs of 40.35 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.46 cfs @ 13.64 fps)
- 3=Orifice/Grate (Orifice Controls 16.64 cfs @ 7.39 fps)
- 4=Orifice/Grate (Controls 0.00 cfs)

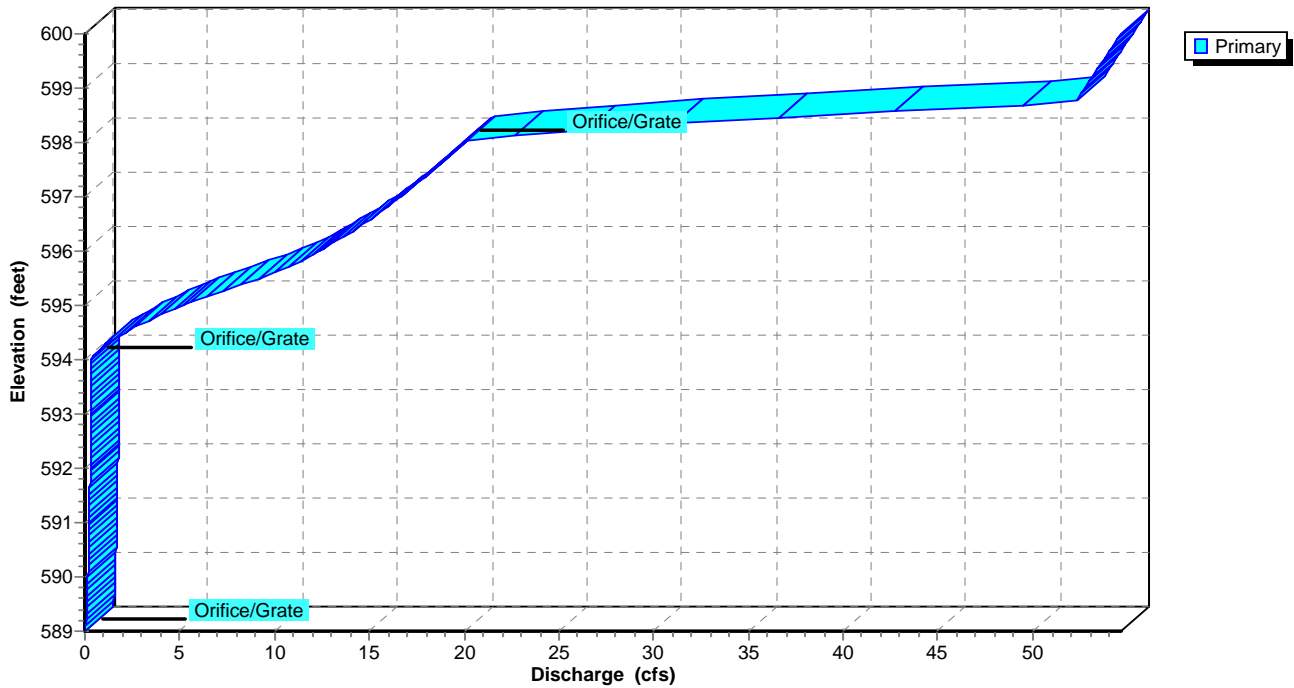
Pond 8P: BASIN 1

Hydrograph

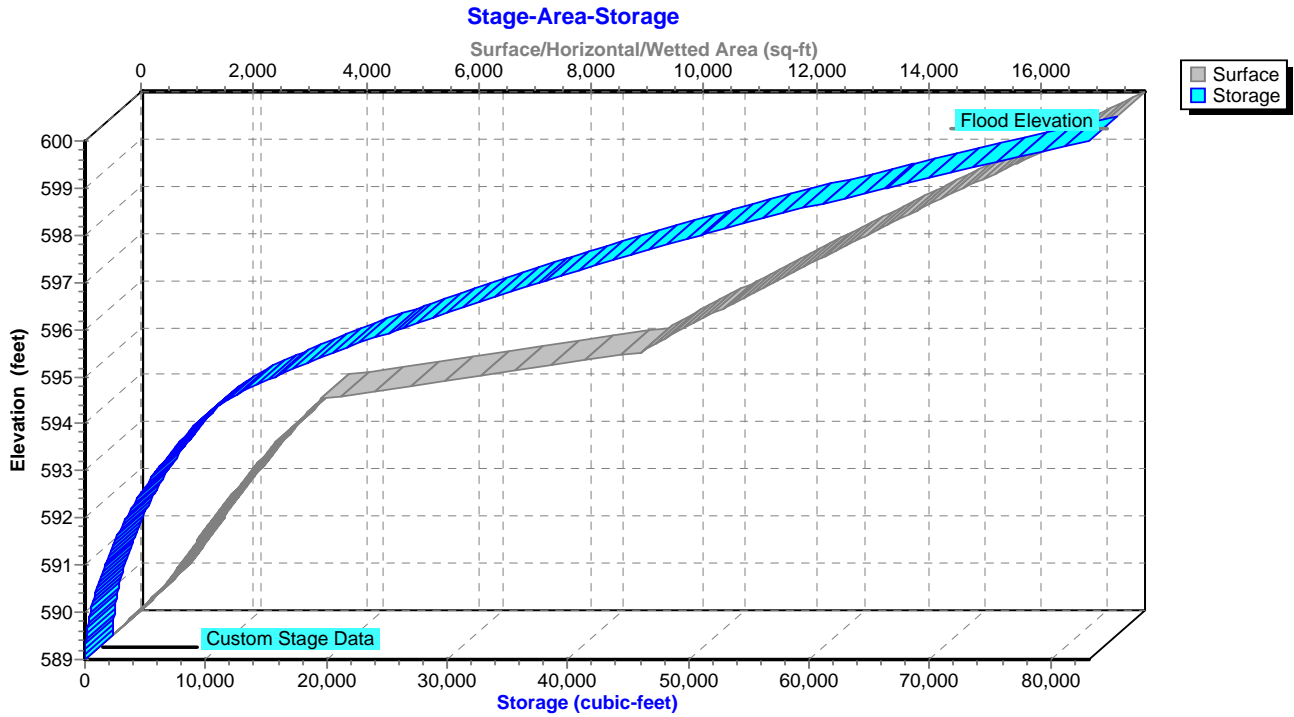


Pond 8P: BASIN 1

Stage-Discharge



Pond 8P: BASIN 1



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Type II 24-hr 100-yr Rainfall=7.20"

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Summary for Pond 9P: BASIN 2

Inflow Area = 7.600 ac, 78.42% Impervious, Inflow Depth = 6.60" for 100-yr event
 Inflow = 40.89 cfs @ 11.96 hrs, Volume= 4.181 af
 Outflow = 29.67 cfs @ 12.05 hrs, Volume= 4.180 af, Atten= 27%, Lag= 5.5 min
 Primary = 29.67 cfs @ 12.05 hrs, Volume= 4.180 af
 Routed to Link 14L : POST DEVELOPED RUNOFF

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 589.20' @ 12.06 hrs Surf.Area= 3,359 sf Storage= 23,264 cf

Plug-Flow detention time= 101.9 min calculated for 4.180 af (100% of inflow)
 Center-of-Mass det. time= 101.3 min (1,004.0 - 902.7)

Volume	Invert	Avail.Storage	Storage Description
#1	578.75'	38,298 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
578.75	1	0	0
579.00	205	26	26
580.00	2,080	1,143	1,168
581.00	2,152	2,116	3,284
582.00	2,222	2,187	5,471
583.00	2,287	2,255	7,726
584.00	2,348	2,318	10,043
585.00	2,404	2,376	12,419
586.00	2,456	2,430	14,849
587.00	2,504	2,480	17,329
588.00	2,547	2,526	19,855
589.00	2,998	2,773	22,627
590.00	4,800	3,899	26,526
591.00	5,862	5,331	31,857
592.00	7,020	6,441	38,298

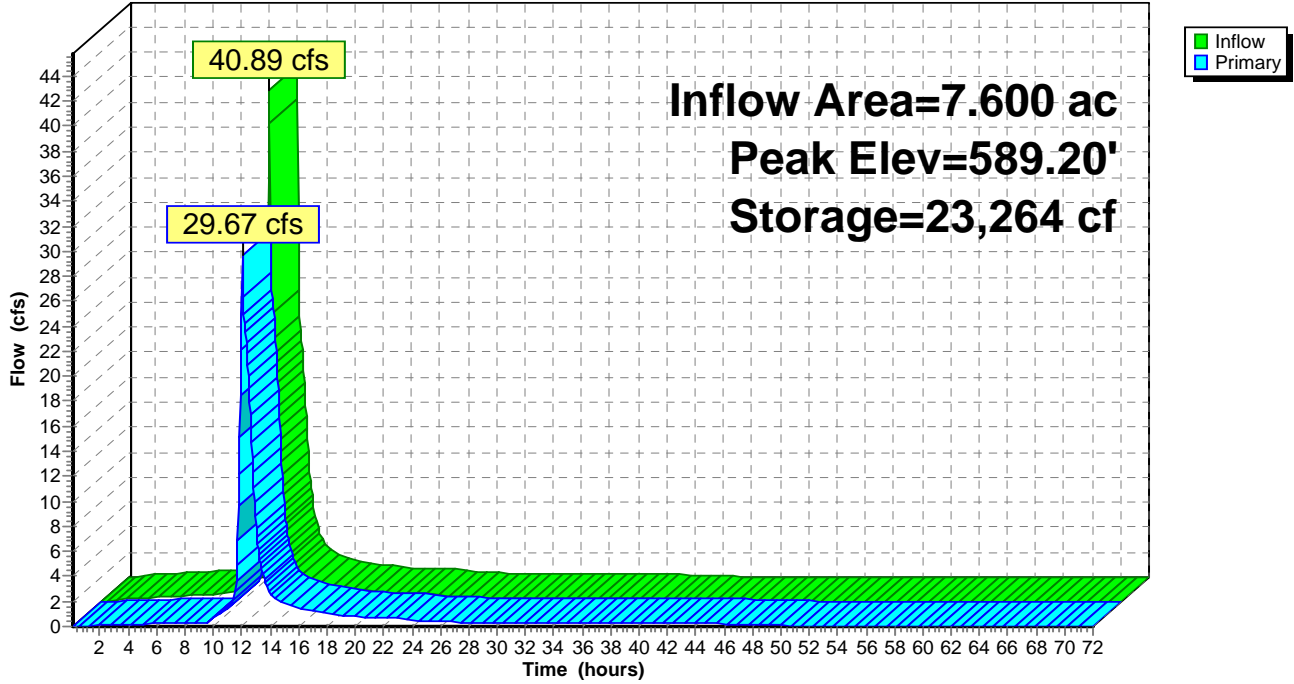
Device	Routing	Invert	Outlet Devices
#1	Primary	576.73'	30.0" Round RCP_Round 30" L= 15.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 576.73' / 576.58' S= 0.0100 1/ S Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	579.00'	2.5" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	583.00'	18.0" W x 18.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#4	Device 1	589.00'	30.0" x 60.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=29.28 cfs @ 12.05 hrs HW=589.17' TW=0.00' (Dynamic Tailwater)

- 1=RCP_Round 30" (Passes 29.28 cfs of 98.85 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.52 cfs @ 15.28 fps)
- 3=Orifice/Grate (Orifice Controls 25.21 cfs @ 11.20 fps)
- 4=Orifice/Grate (Weir Controls 3.55 cfs @ 1.36 fps)

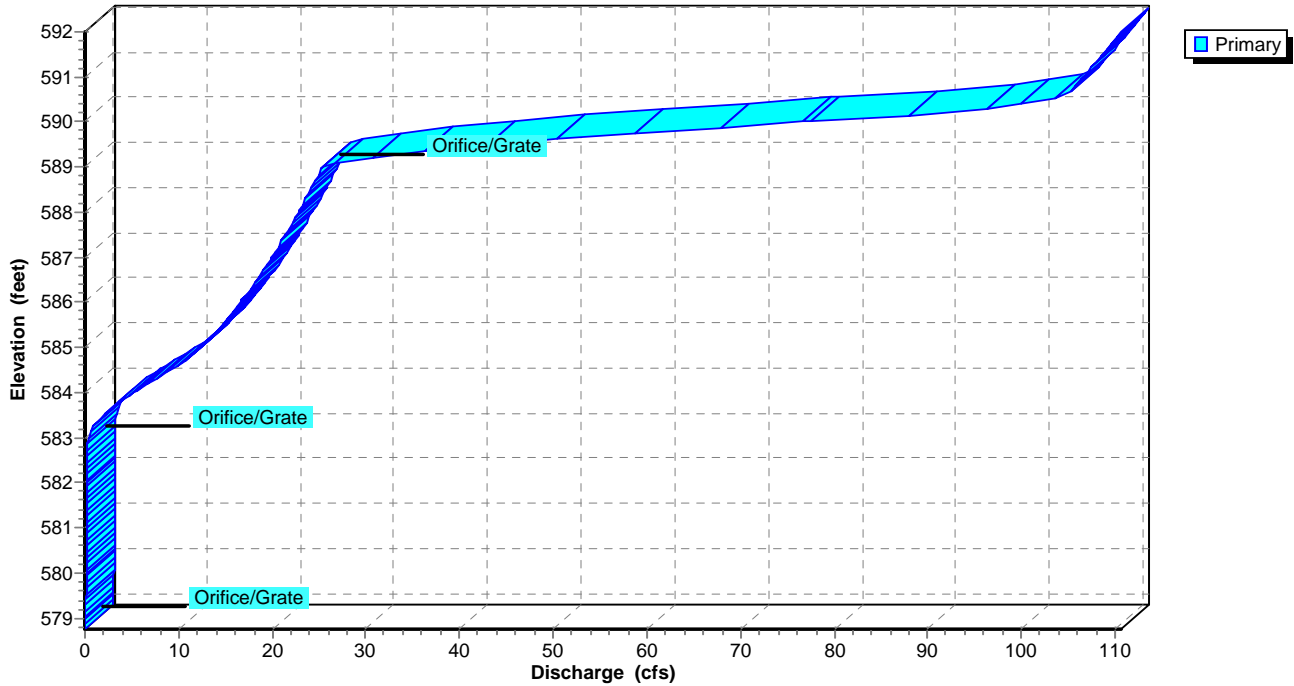
Pond 9P: BASIN 2

Hydrograph

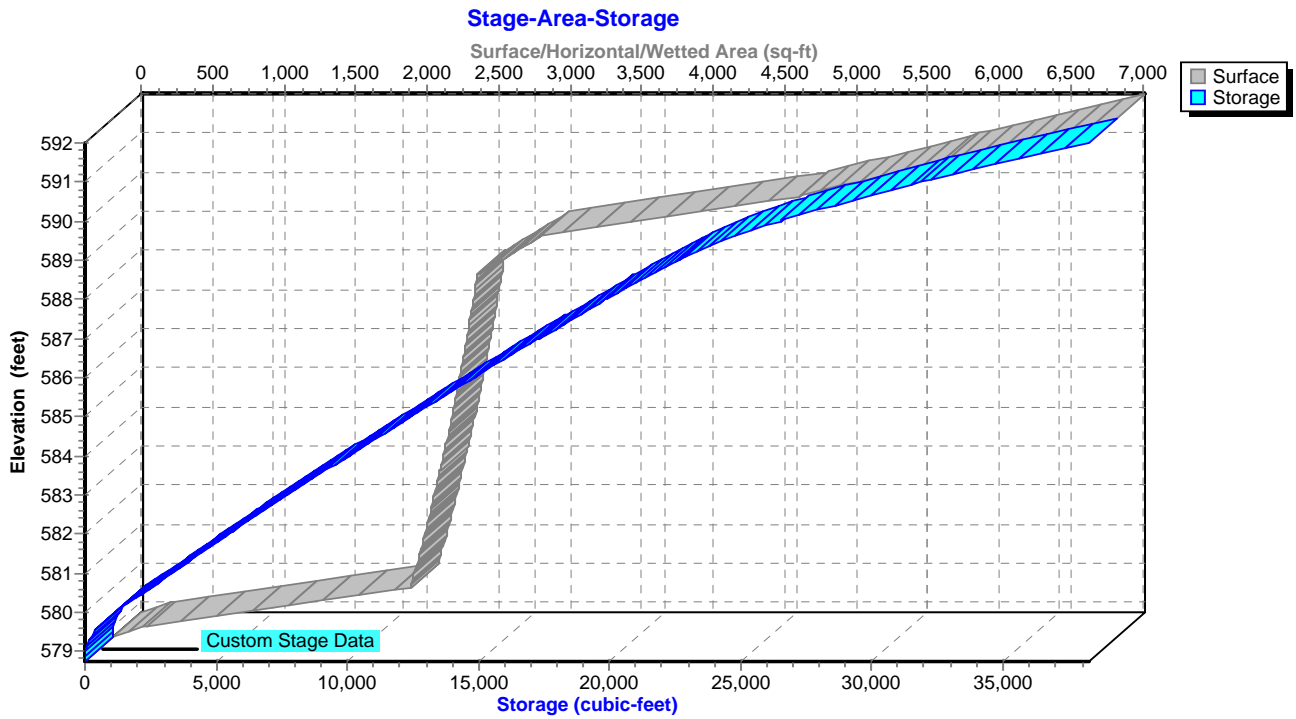


Pond 9P: BASIN 2

Stage-Discharge



Pond 9P: BASIN 2



Summary for Pond 10R: 201 TO JS

Inflow Area = 8.630 ac, 72.42% Impervious, Inflow Depth = 6.46" for 100-yr event
 Inflow = 34.23 cfs @ 12.03 hrs, Volume= 4.649 af
 Outflow = 34.23 cfs @ 12.03 hrs, Volume= 4.649 af, Atten= 0%, Lag= 0.0 min
 Primary = 34.23 cfs @ 12.03 hrs, Volume= 4.649 af
 Routed to Pond 11P : DUAL CULVERTS

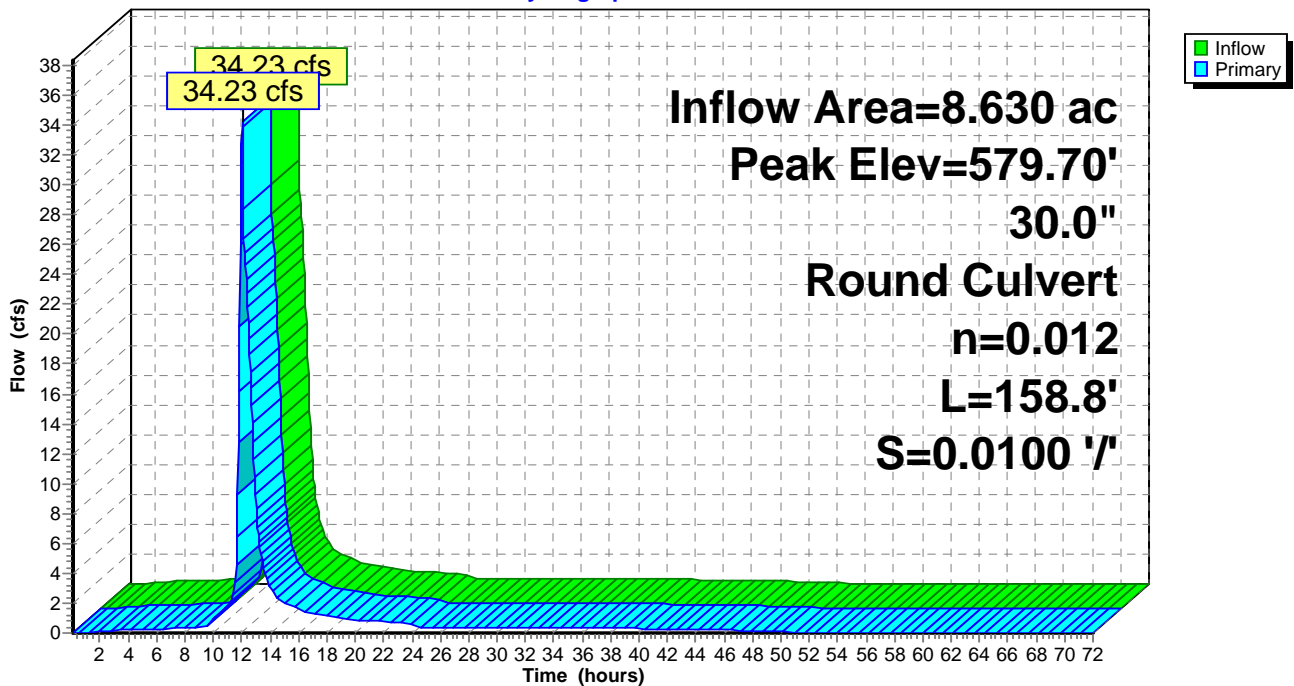
Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 579.70' @ 12.03 hrs
 Flood Elev= 583.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	576.36'	30.0" Round Culvert L= 158.8' Ke= 0.500 Inlet / Outlet Invert= 576.36' / 574.77' S= 0.0100 '/ Cc= 0.900 n= 0.012, Flow Area= 4.91 sf

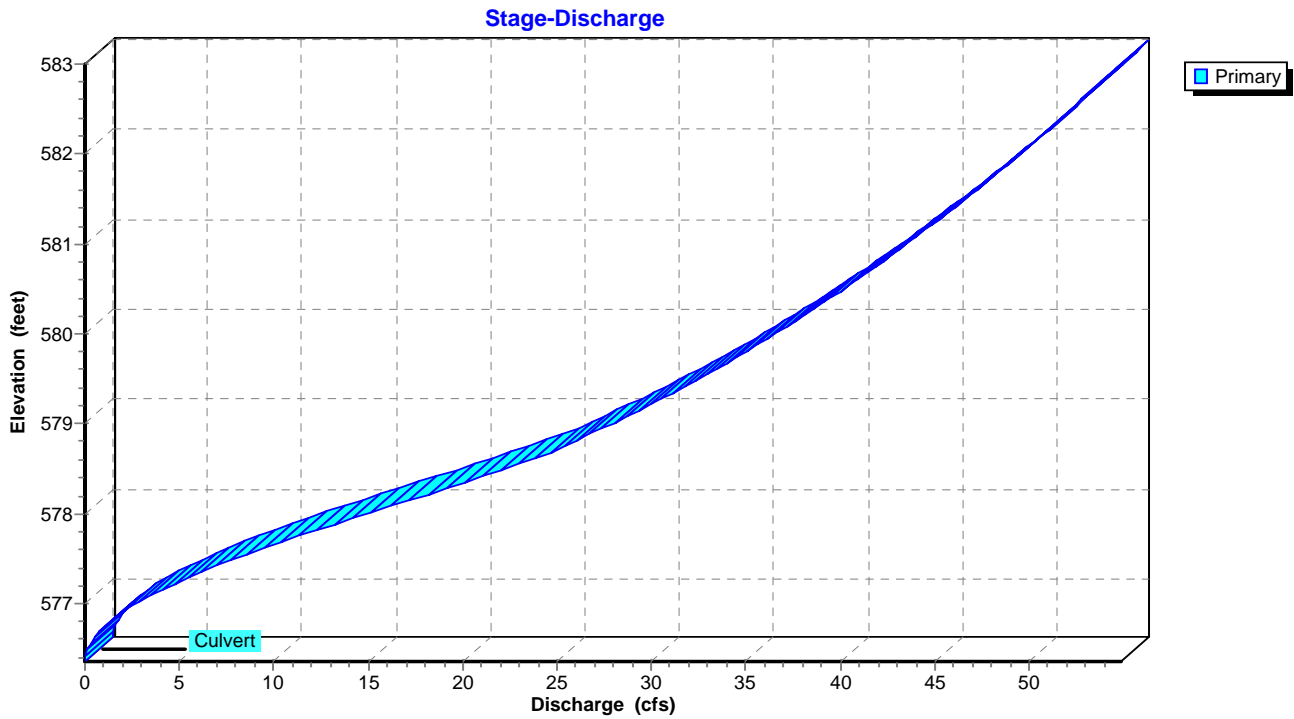
Primary OutFlow Max=33.50 cfs @ 12.03 hrs HW=579.62' TW=576.85' (Dynamic Tailwater)
 ←1=Culvert (Inlet Controls 33.50 cfs @ 6.82 fps)

Pond 10R: 201 TO JS

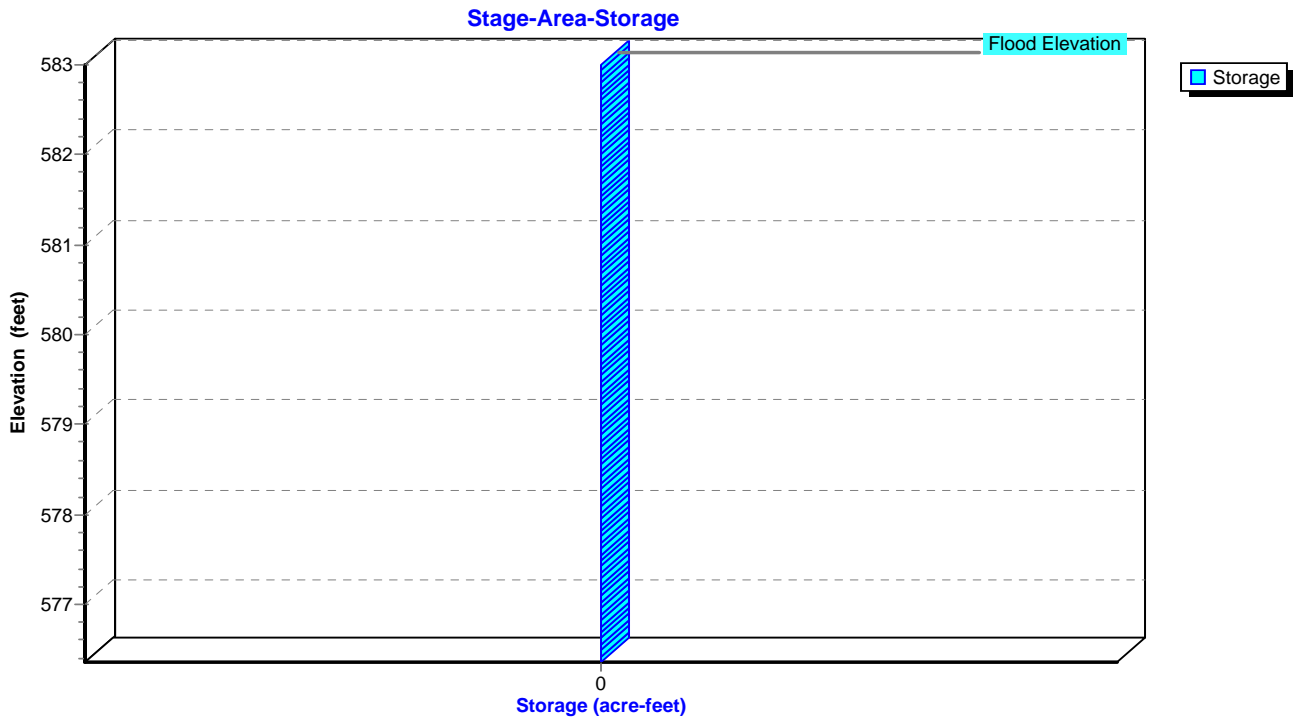
Hydrograph



Pond 10R: 201 TO JS



Pond 10R: 201 TO JS



Summary for Pond 11P: DUAL CULVERTS

Inflow Area = 15.090 ac, 65.14% Impervious, Inflow Depth = 6.28" for 100-yr event
 Inflow = 87.61 cfs @ 11.99 hrs, Volume= 7.897 af
 Outflow = 87.61 cfs @ 11.99 hrs, Volume= 7.897 af, Atten= 0%, Lag= 0.0 min
 Primary = 87.61 cfs @ 11.99 hrs, Volume= 7.897 af

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 577.00' @ 11.99 hrs
 Flood Elev= 582.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	574.44'	54.0" Round RCP_Round 54" L= 84.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 574.44' / 573.62' S= 0.0098 '/ Cc= 0.900 n= 0.013, Flow Area= 15.90 sf
#2	Primary	574.47'	54.0" Round RCP_Round 54" L= 84.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 574.47' / 573.79' S= 0.0081 '/ Cc= 0.900 n= 0.013, Flow Area= 15.90 sf

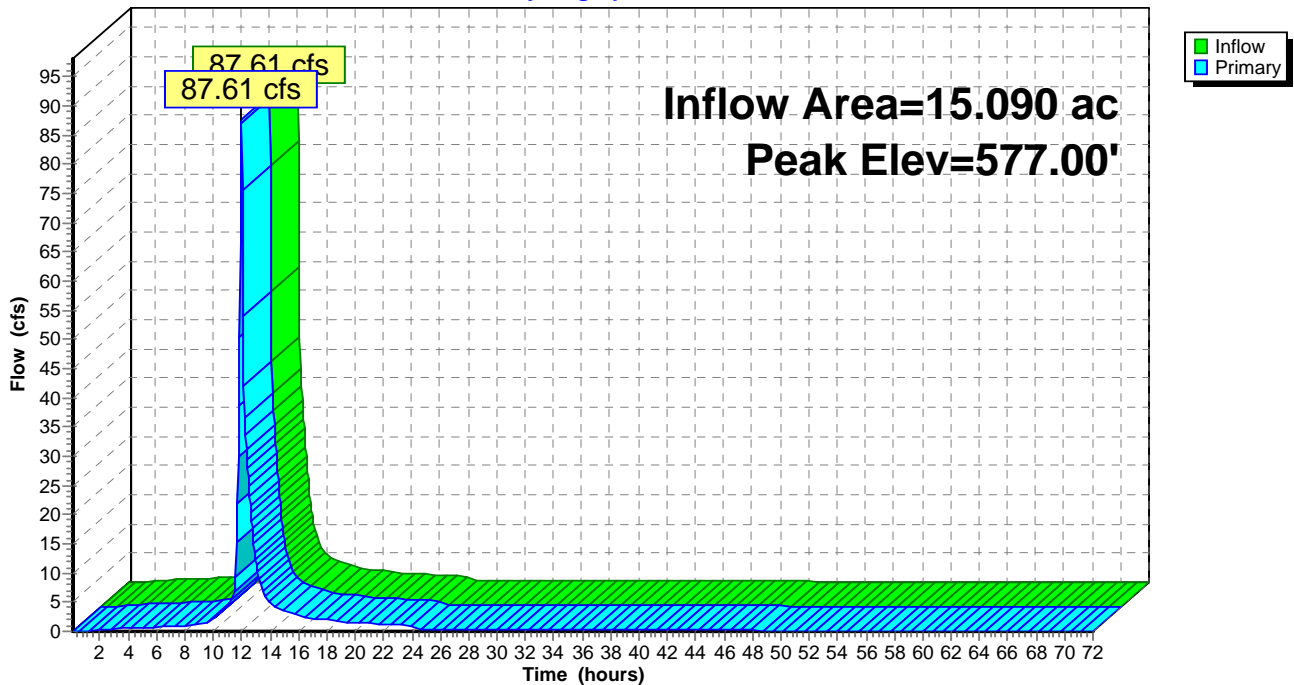
Primary OutFlow Max=86.15 cfs @ 11.99 hrs HW=576.97' (Free Discharge)

1=RCP_Round 54" (Barrel Controls 44.59 cfs @ 6.99 fps)

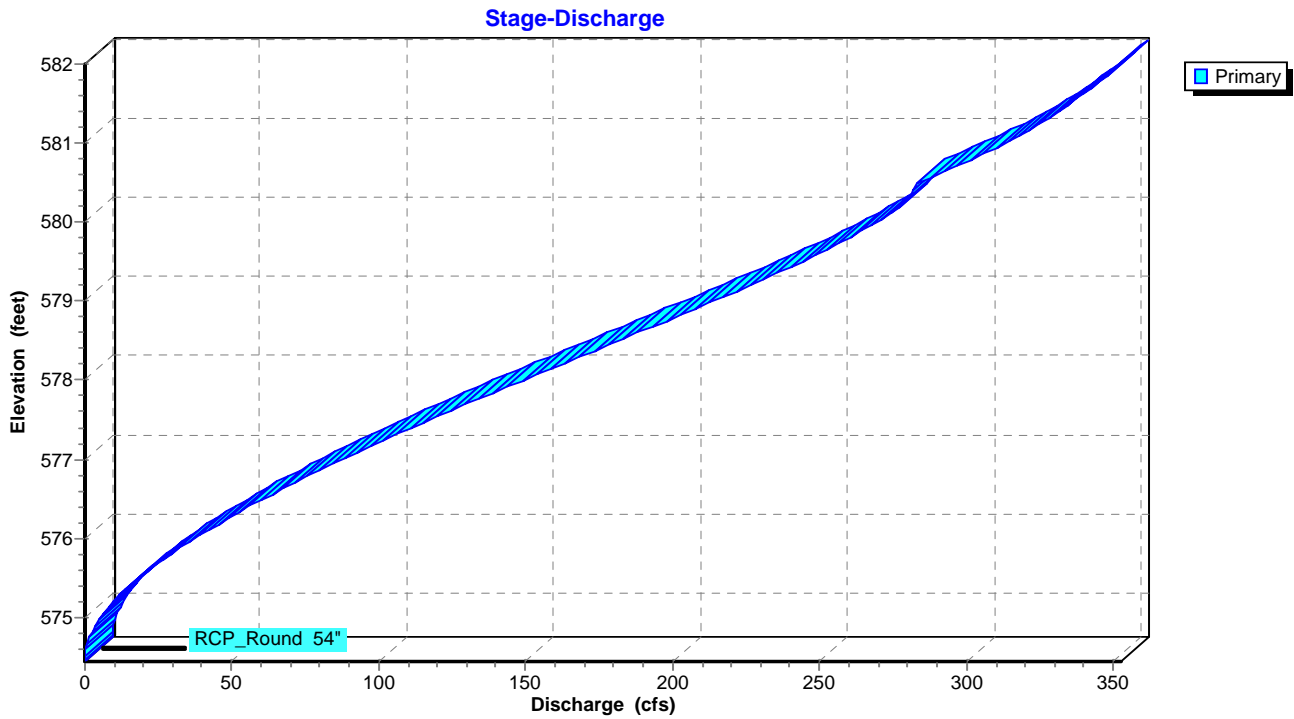
2=RCP_Round 54" (Barrel Controls 41.55 cfs @ 6.62 fps)

Pond 11P: DUAL CULVERTS

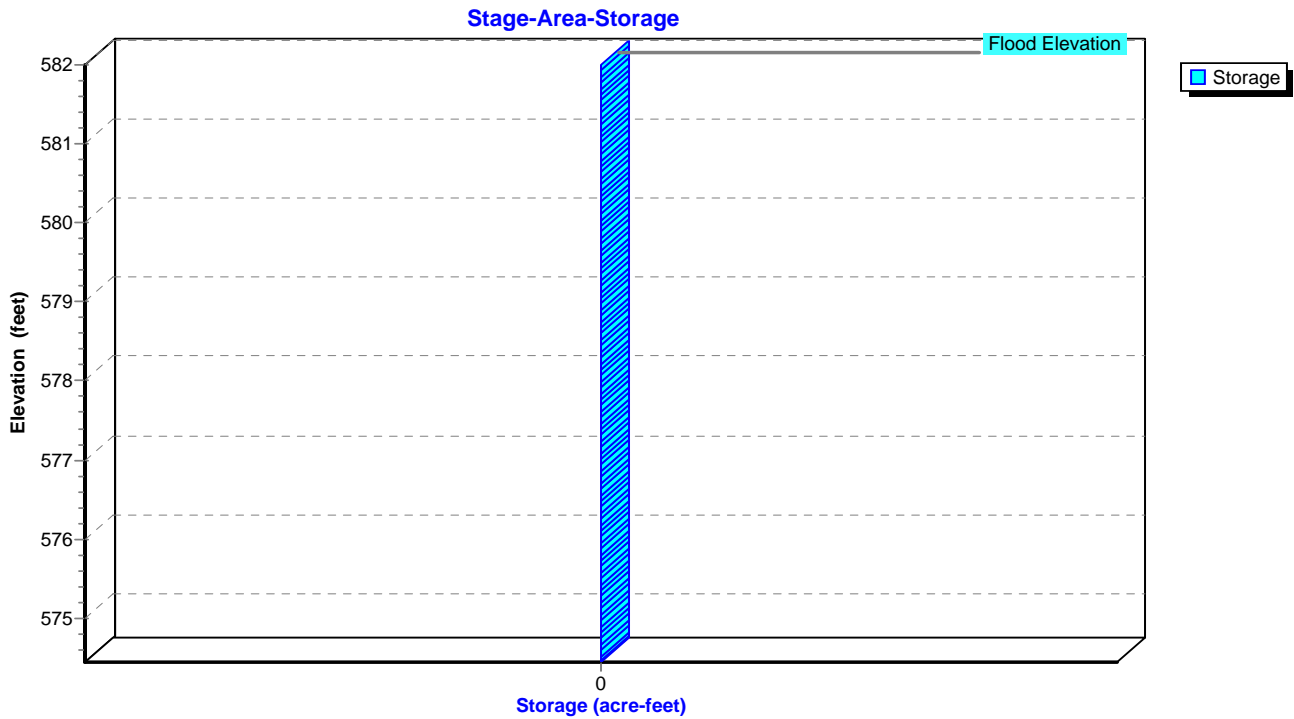
Hydrograph



Pond 11P: DUAL CULVERTS



Pond 11P: DUAL CULVERTS



Summary for Pond 12P: BRYAN RD CULVERT

Inflow Area = 4.870 ac, 55.44% Impervious, Inflow Depth = 6.03" for 100-yr event
 Inflow = 41.62 cfs @ 12.00 hrs, Volume= 2.449 af
 Outflow = 41.62 cfs @ 12.00 hrs, Volume= 2.449 af, Atten= 0%, Lag= 0.0 min
 Primary = 41.62 cfs @ 12.00 hrs, Volume= 2.449 af
 Routed to Pond 11P : DUAL CULVERTS

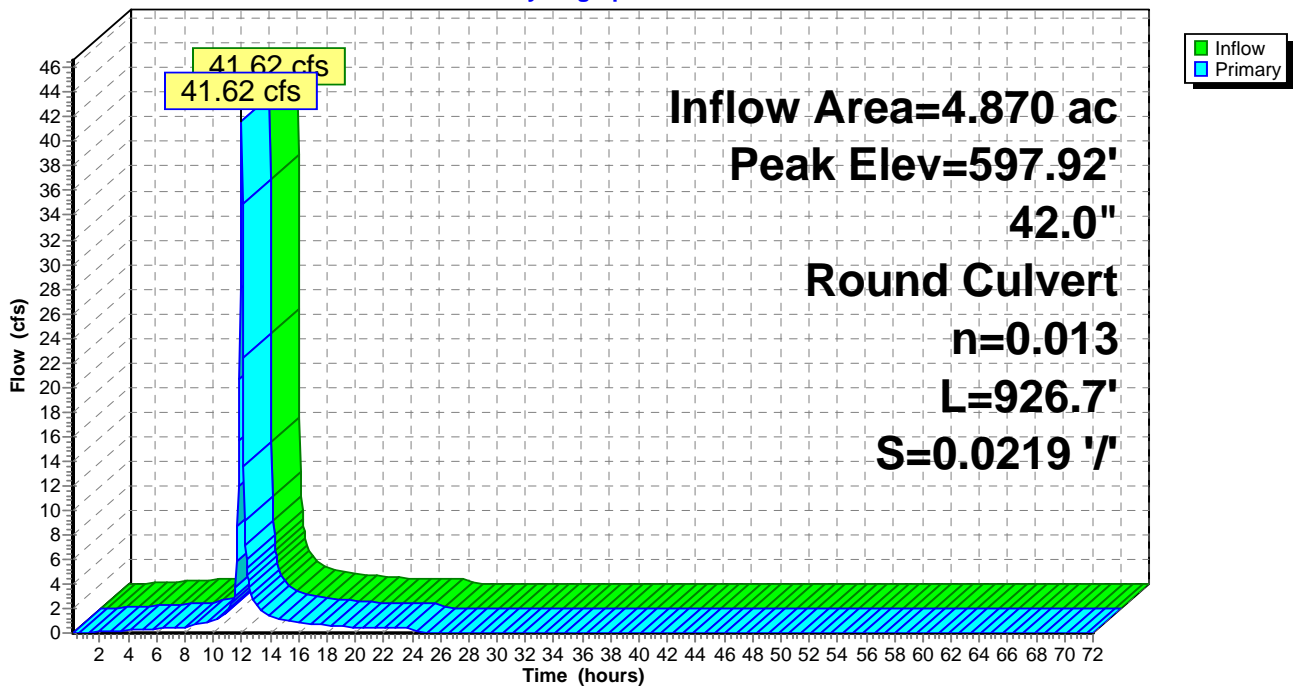
Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 597.92' @ 12.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	595.34'	42.0" Round Culvert L= 926.7' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 595.34' / 575.00' S= 0.0219 '/ Cc= 0.900 n= 0.013, Flow Area= 9.62 sf

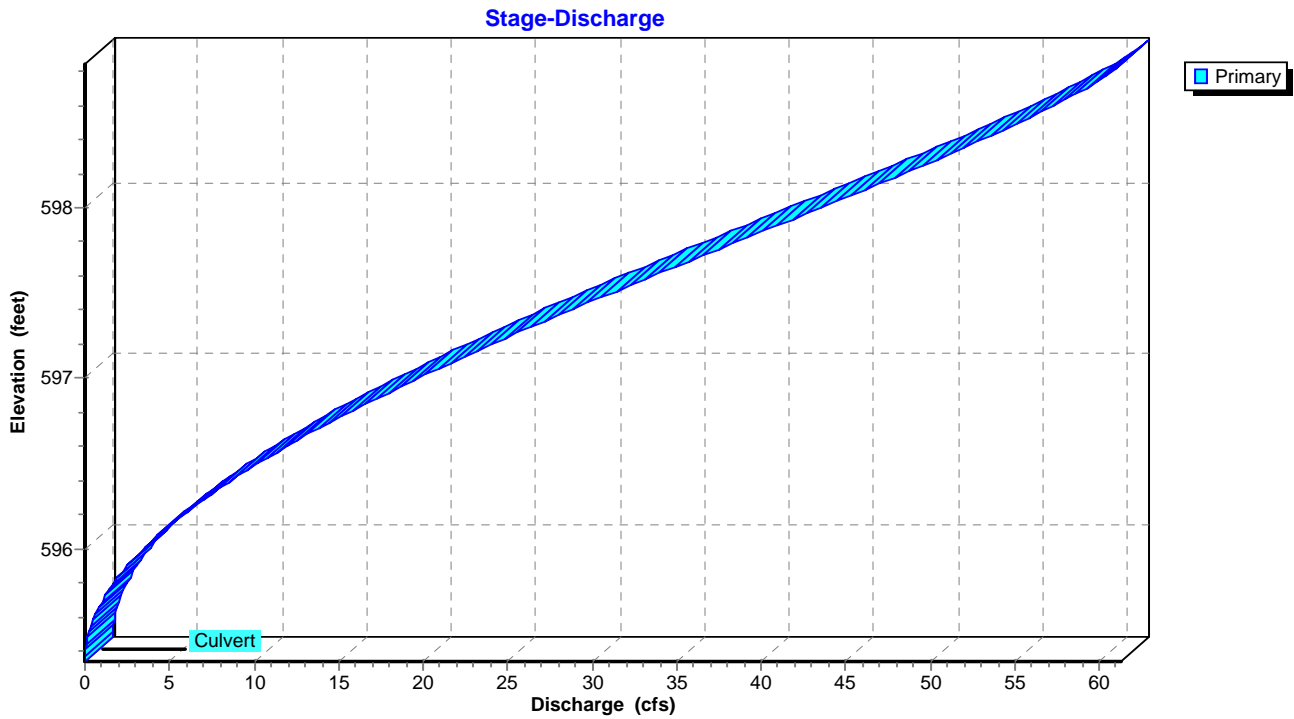
Primary OutFlow Max=41.14 cfs @ 12.00 hrs HW=597.90' TW=576.98' (Dynamic Tailwater)
 ←1=Culvert (Inlet Controls 41.14 cfs @ 5.45 fps)

Pond 12P: BRYAN RD CULVERT

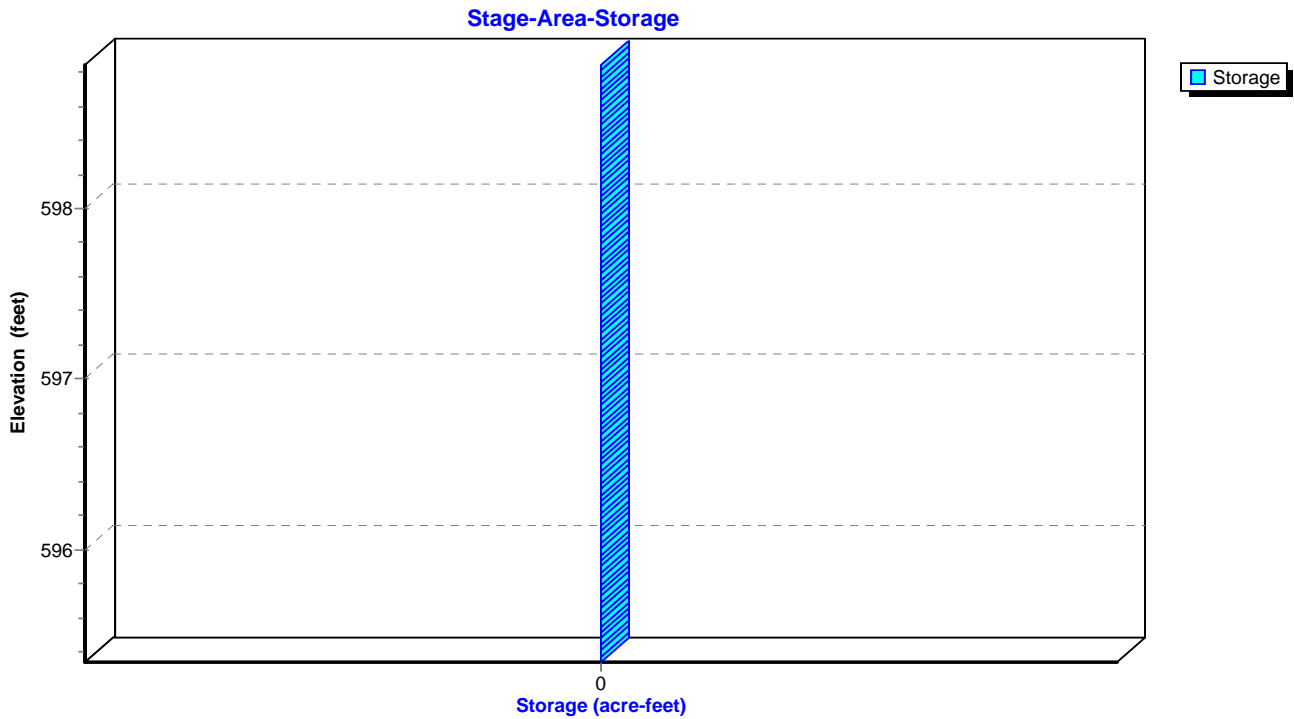
Hydrograph



Pond 12P: BRYAN RD CULVERT



Pond 12P: BRYAN RD CULVERT



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Type II 24-hr 100-yr Rainfall=7.20"

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Summary for Pond 13P: BASIN 1 FOREBAY

Inflow Area = 4.880 ac, 79.71% Impervious, Inflow Depth = 6.54" for 100-yr event
 Inflow = 48.80 cfs @ 11.95 hrs, Volume= 2.659 af
 Outflow = 46.43 cfs @ 11.98 hrs, Volume= 2.659 af, Atten= 5%, Lag= 1.5 min
 Primary = 46.43 cfs @ 11.98 hrs, Volume= 2.716 af
 Routed to Pond 8P : BASIN 1

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 594.00' @ 11.40 hrs Surf.Area= 3,845 sf Storage= 9,545 cf
 Flood Elev= 600.00' Surf.Area= 3,845 sf Storage= 9,545 cf

Plug-Flow detention time= 114.8 min calculated for 2.657 af (100% of inflow)
 Center-of-Mass det. time= 115.5 min (862.9 - 747.3)

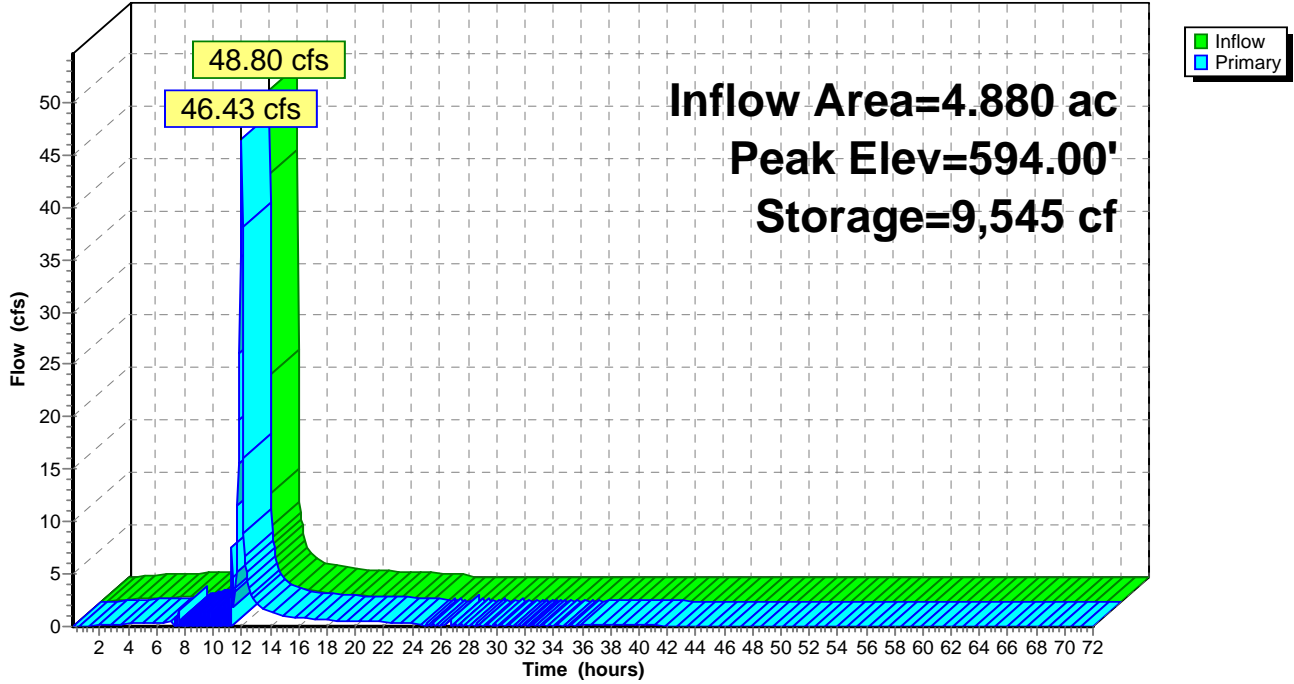
Volume	Invert	Avail.Storage	Storage Description
#1	590.00'	9,545 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
590.00	1,069	0	0
591.00	1,678	1,374	1,374
592.00	2,344	2,011	3,385
593.00	3,066	2,705	6,090
594.00	3,845	3,456	9,545

Device	Routing	Invert	Outlet Devices
#0	Primary	594.00'	Automatic Storage Overflow (Discharged without head)
#1	Primary	590.00'	36.00' long x 30.00' breadth x 4.06' high Rock Fill Rock Diam.= 18.000", S.D.= 4.000", Voids= 40.0%

Primary OutFlow Max=0.00 cfs @ 11.98 hrs HW=594.00' TW=596.50' (Dynamic Tailwater)
 ↗1=Rock Fill (Controls 0.00 cfs)

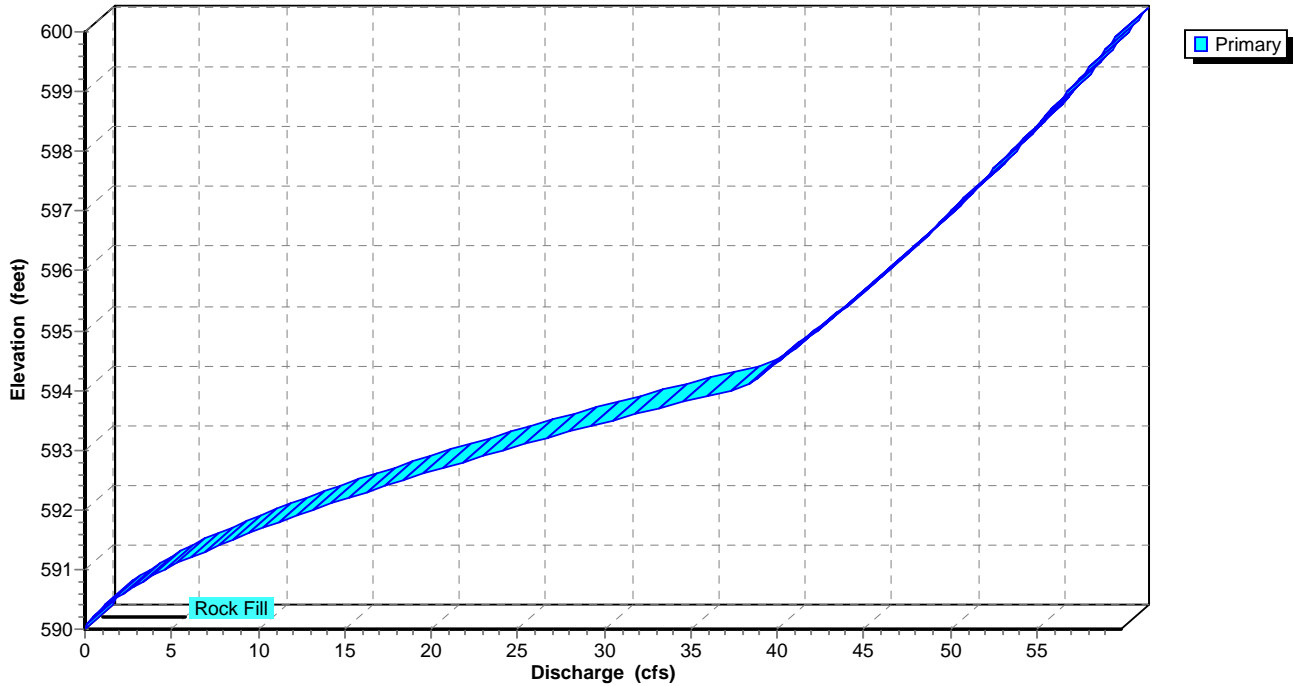
Pond 13P: BASIN 1 FOREBAY

Hydrograph



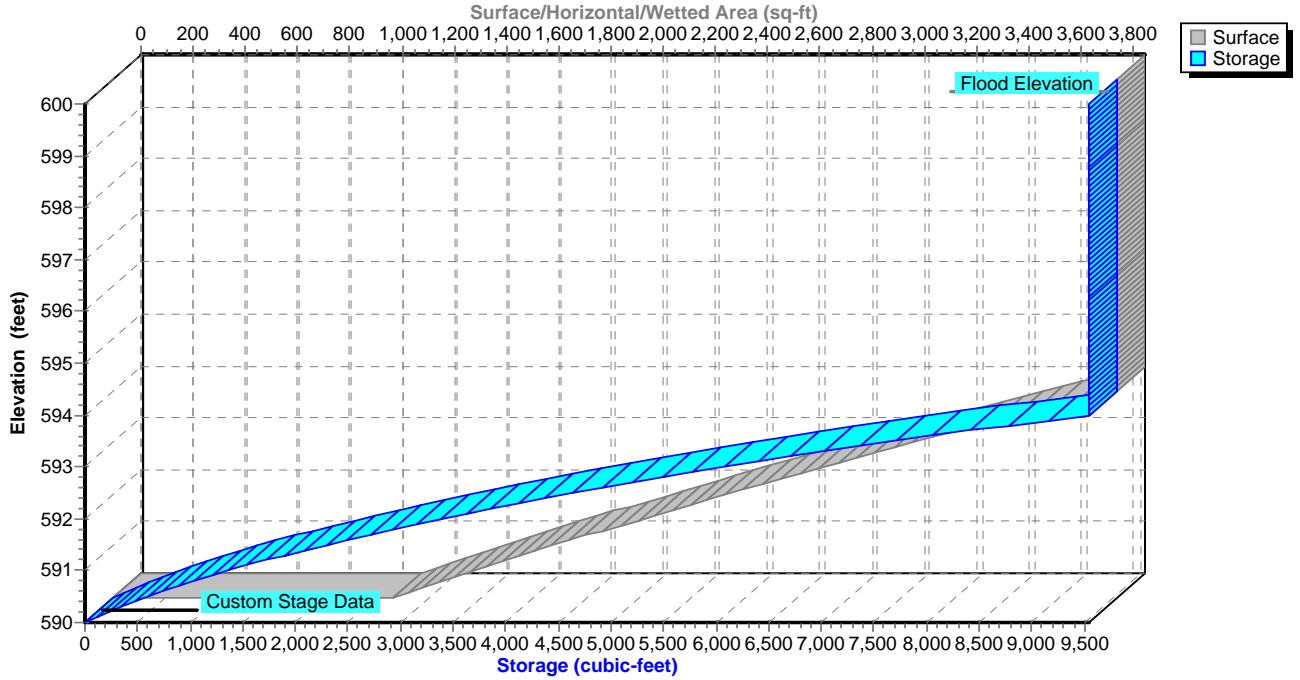
Pond 13P: BASIN 1 FOREBAY

Stage-Discharge



Pond 13P: BASIN 1 FOREBAY

Stage-Area-Storage



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Type II 24-hr 100-yr Rainfall=7.20"

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Summary for Pond 17P: BASIN 1 100 YR LFB

Inflow Area = 4.880 ac, 79.71% Impervious, Inflow Depth = 6.18" for 100-yr event
 Inflow = 46.43 cfs @ 11.98 hrs, Volume= 2.513 af
 Outflow = 16.97 cfs @ 12.11 hrs, Volume= 2.301 af, Atten= 63%, Lag= 7.8 min
 Primary = 16.97 cfs @ 12.11 hrs, Volume= 2.302 af
 Routed to Pond 21P : BASIN 2 100 YR LFB

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 597.22' @ 12.11 hrs Surf.Area= 12,964 sf Storage= 40,505 cf
 Flood Elev= 600.00' Surf.Area= 17,840 sf Storage= 83,183 cf

Plug-Flow detention time= 105.3 min calculated for 2.301 af (92% of inflow)
 Center-of-Mass det. time= 59.2 min (828.0 - 768.9)

Volume	Invert	Avail.Storage	Storage Description
#1	589.00'	83,183 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
589.00	2	0	0
590.00	897	450	450
591.00	1,487	1,192	1,642
592.00	2,133	1,810	3,452
593.00	2,836	2,485	5,936
594.00	3,695	3,266	9,202
595.00	9,367	6,531	15,733
596.00	10,948	10,158	25,890
597.00	12,586	11,767	37,657
598.00	14,281	13,434	51,091
599.00	16,032	15,157	66,247
600.00	17,840	16,936	83,183

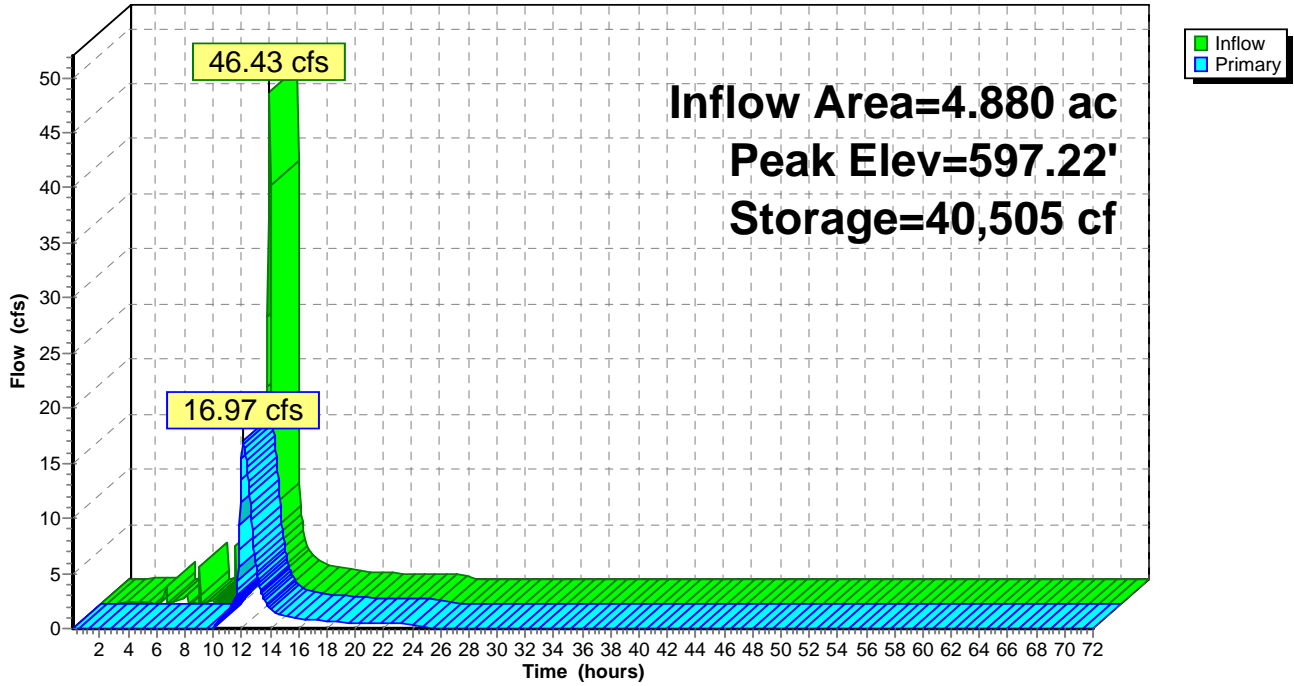
Device	Routing	Invert	Outlet Devices
#1	Primary	585.00'	24.0" Round RCP_Round 24" L= 184.2' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 585.00' / 583.16' S= 0.0100 1/ Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	594.00'	18.0" W x 18.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	598.00'	30.0" x 60.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=16.94 cfs @ 12.11 hrs HW=597.22' TW=589.06' (Dynamic Tailwater)

- 1=RCP_Round 24" (Passes 16.94 cfs of 40.53 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 16.94 cfs @ 7.53 fps)
- 3=Orifice/Grate (Controls 0.00 cfs)

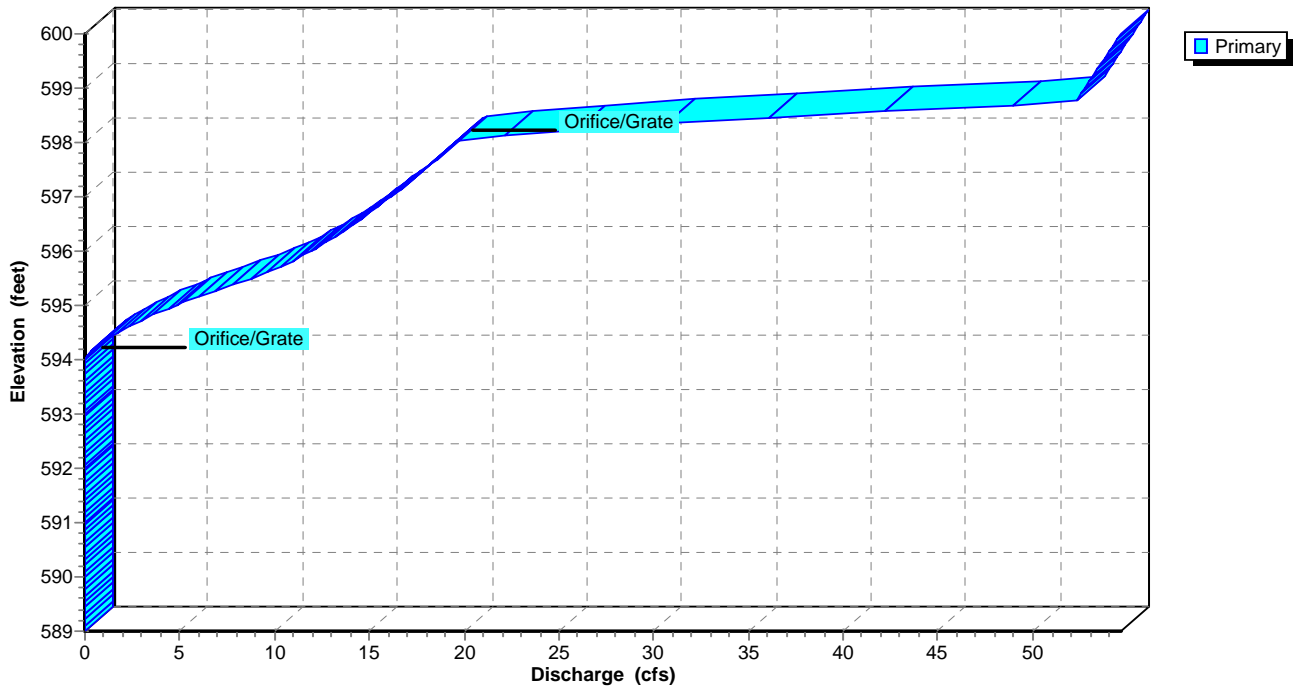
Pond 17P: BASIN 1 100 YR LFB

Hydrograph

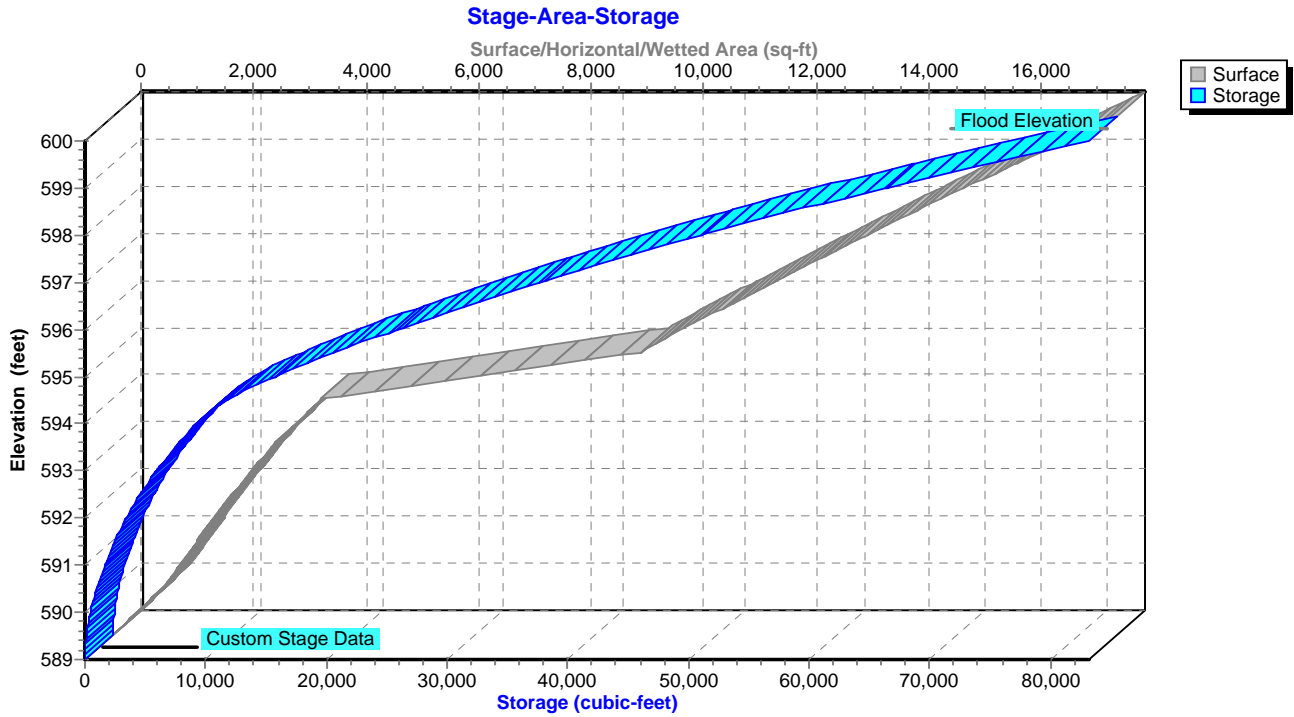


Pond 17P: BASIN 1 100 YR LFB

Stage-Discharge



Pond 17P: BASIN 1 100 YR LFB



2023-06-19 PROPOSED

Type II 24-hr 100-yr Rainfall=7.20"

Prepared by Premier Design Group

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Summary for Pond 18P: BASIN 1 FOREBAY 100 YR LFB

Inflow Area = 4.880 ac, 79.71% Impervious, Inflow Depth = 6.54" for 100-yr event
 Inflow = 48.80 cfs @ 11.95 hrs, Volume= 2.659 af
 Outflow = 46.43 cfs @ 11.98 hrs, Volume= 2.440 af, Atten= 5%, Lag= 1.5 min
 Primary = 46.43 cfs @ 11.98 hrs, Volume= 2.513 af
 Routed to Pond 17P : BASIN 1 100 YR LFB

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 594.00' @ 9.95 hrs Surf.Area= 3,845 sf Storage= 9,545 cf
 Flood Elev= 600.00' Surf.Area= 3,845 sf Storage= 9,545 cf

Plug-Flow detention time= 76.7 min calculated for 2.438 af (92% of inflow)
 Center-of-Mass det. time= 31.1 min (778.5 - 747.3)

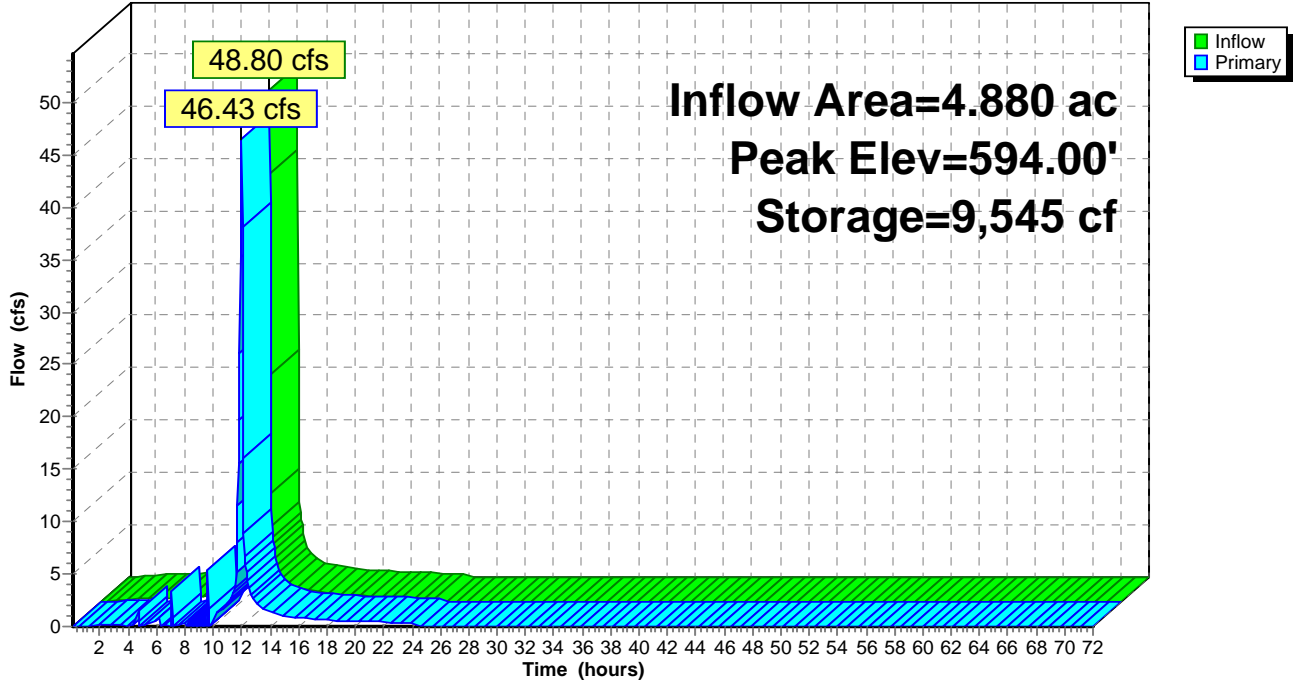
Volume	Invert	Avail.Storage	Storage Description
#1	590.00'	9,545 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
590.00	1,069	0	0
591.00	1,678	1,374	1,374
592.00	2,344	2,011	3,385
593.00	3,066	2,705	6,090
594.00	3,845	3,456	9,545

Device	Routing	Invert	Outlet Devices
#0	Primary	594.00'	Automatic Storage Overflow (Discharged without head)
#1	Primary	590.00'	36.00' long x 30.00' breadth x 4.06' high Rock Fill Rock Diam.= 18.000", S.D.= 4.000", Voids= 40.0%

Primary OutFlow Max=0.00 cfs @ 11.98 hrs HW=594.00' TW=596.59' (Dynamic Tailwater)
 ↗1=Rock Fill (Controls 0.00 cfs)

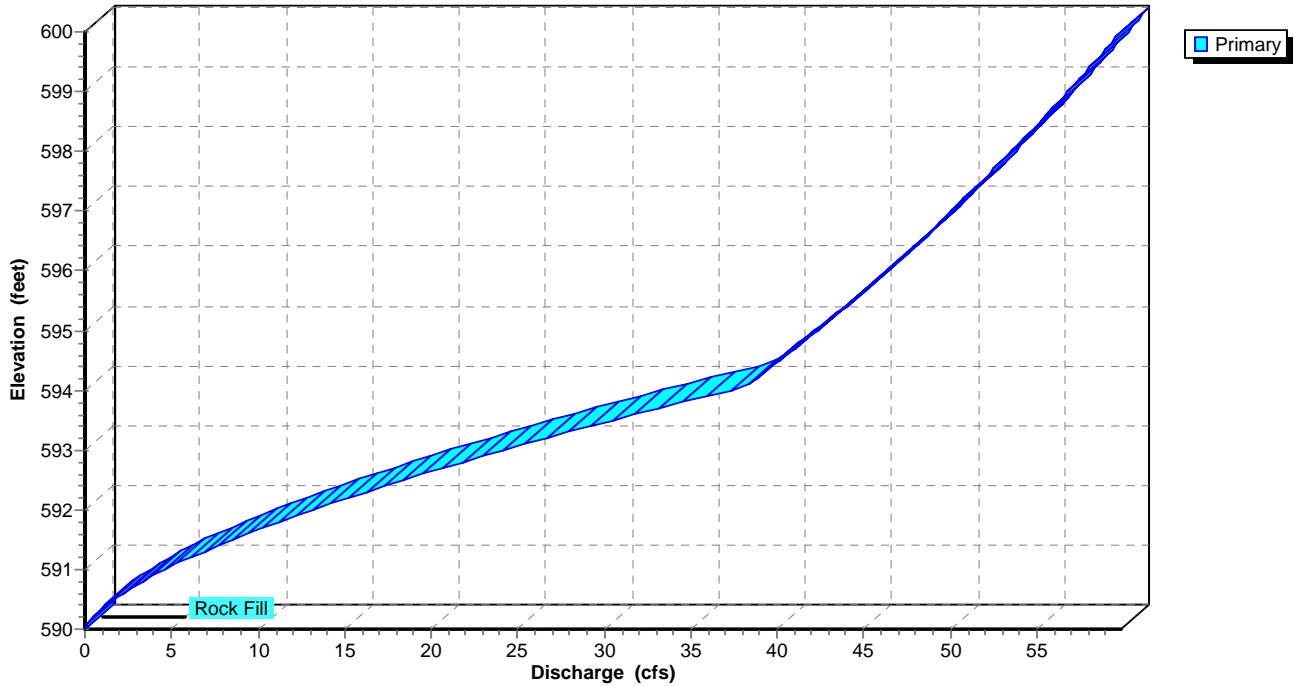
Pond 18P: BASIN 1 FOREBAY 100 YR LFB

Hydrograph

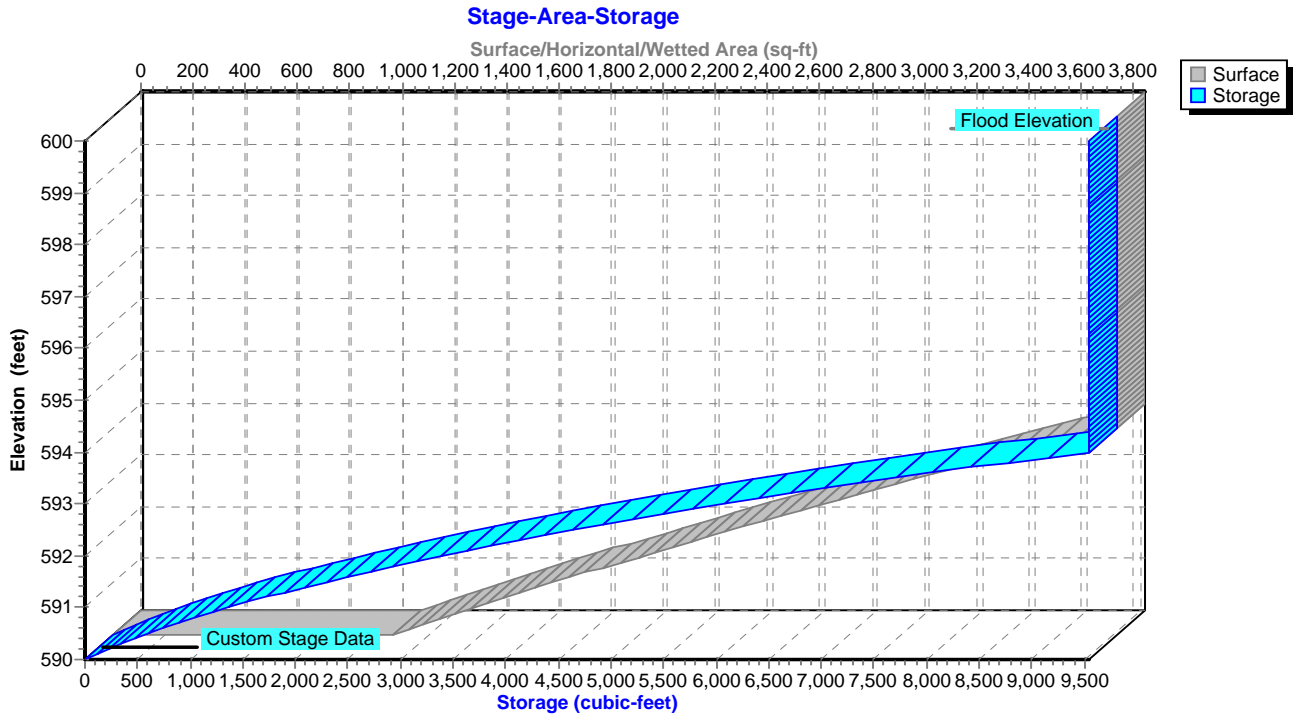


Pond 18P: BASIN 1 FOREBAY 100 YR LFB

Stage-Discharge



Pond 18P: BASIN 1 FOREBAY 100 YR LFB



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Type II 24-hr 100-yr Rainfall=7.20"

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Summary for Pond 21P: BASIN 2 100 YR LFB

Inflow Area = 7.600 ac, 78.42% Impervious, Inflow Depth = 5.95" for 100-yr event
 Inflow = 40.84 cfs @ 11.96 hrs, Volume= 3.767 af
 Outflow = 31.84 cfs @ 12.05 hrs, Volume= 3.589 af, Atten= 22%, Lag= 5.5 min
 Primary = 31.84 cfs @ 12.05 hrs, Volume= 3.589 af

Routing by Dyn-Stor-Ind method, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 589.26' @ 12.06 hrs Surf.Area= 3,470 sf Storage= 23,473 cf

Plug-Flow detention time= 57.4 min calculated for 3.587 af (95% of inflow)
 Center-of-Mass det. time= 29.6 min (827.0 - 797.4)

Volume	Invert	Avail.Storage	Storage Description
#1	578.75'	38,301 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
578.75	1	0	0
579.00	205	26	26
580.00	2,080	1,143	1,168
581.00	2,153	2,117	3,285
582.00	2,222	2,188	5,472
583.00	2,287	2,255	7,727
584.00	2,348	2,318	10,044
585.00	2,404	2,376	12,420
586.00	2,456	2,430	14,850
587.00	2,504	2,480	17,330
588.00	2,547	2,526	19,856
589.00	3,000	2,774	22,629
590.00	4,800	3,900	26,529
591.00	5,862	5,331	31,860
592.00	7,020	6,441	38,301

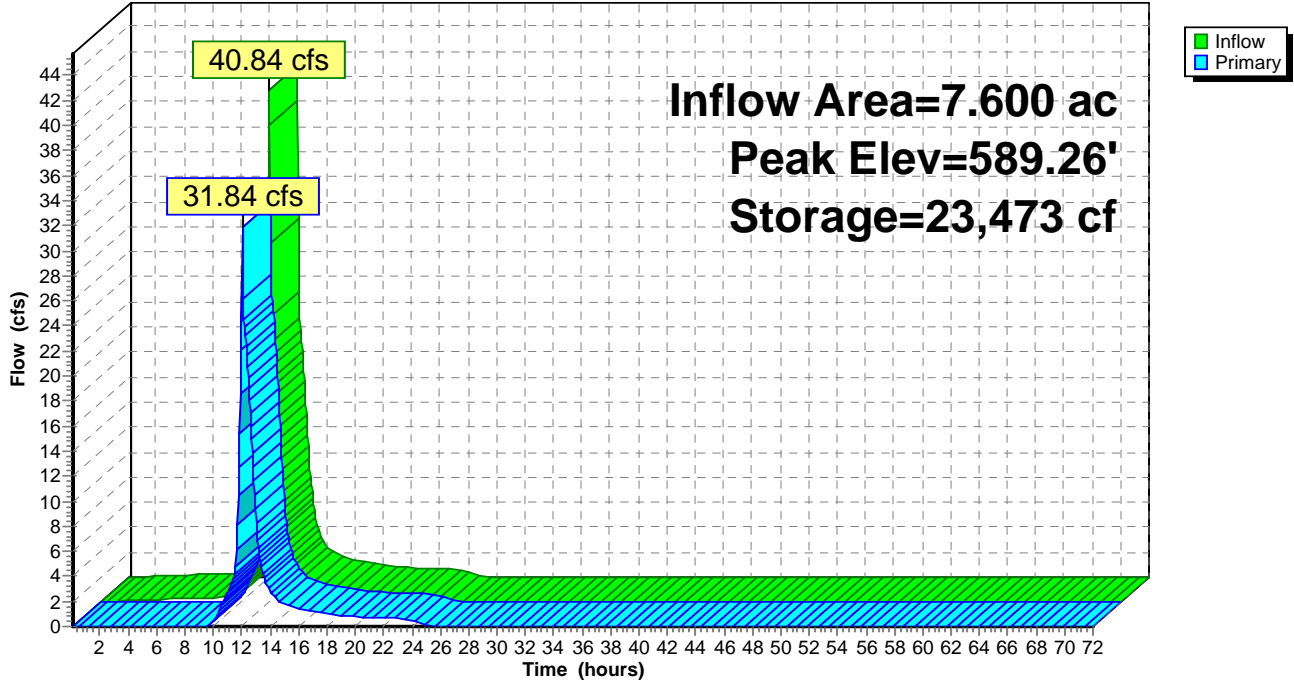
Device	Routing	Invert	Outlet Devices
#1	Primary	576.73'	24.0" Round Culvert L= 15.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 576.73' / 576.58' S= 0.0100 1' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	583.00'	18.0" W x 18.0" H Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	589.00'	30.0" x 60.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=31.45 cfs @ 12.05 hrs HW=589.25' (Free Discharge)

- 1=Culvert (Passes 31.45 cfs of 64.17 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 25.38 cfs @ 11.28 fps)
- 3=Orifice/Grate (Weir Controls 6.06 cfs @ 1.63 fps)

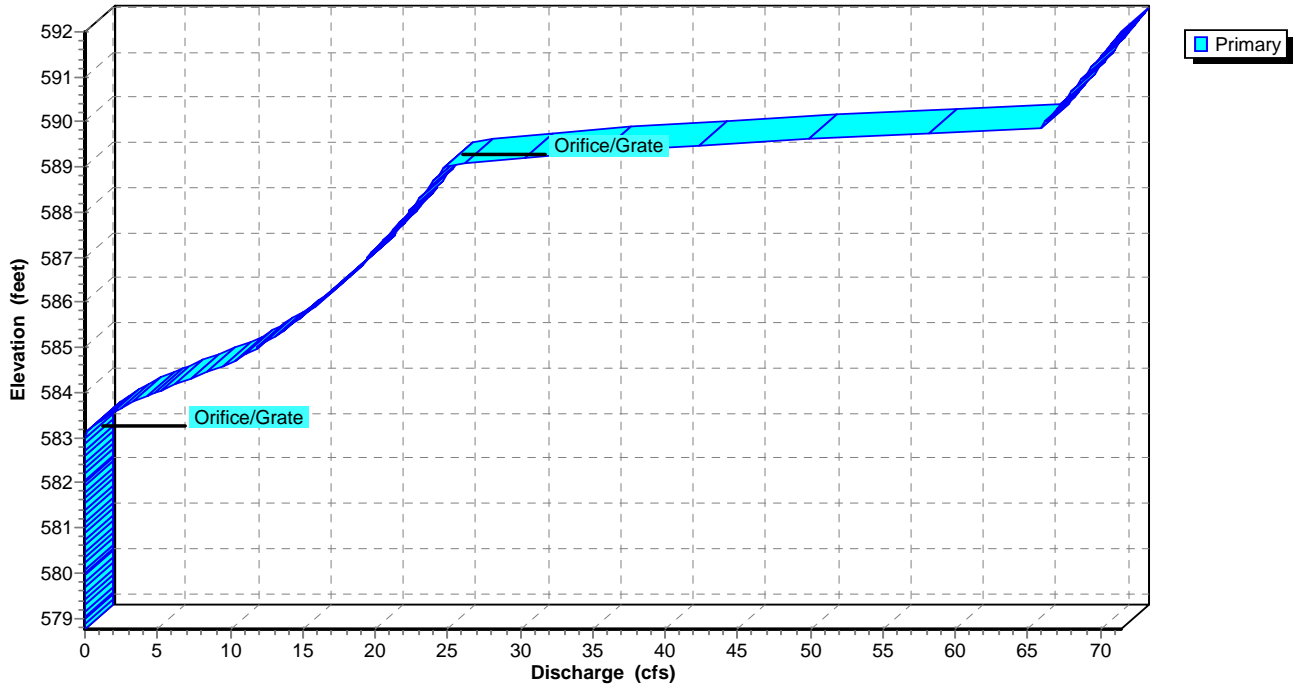
Pond 21P: BASIN 2 100 YR LFB

Hydrograph

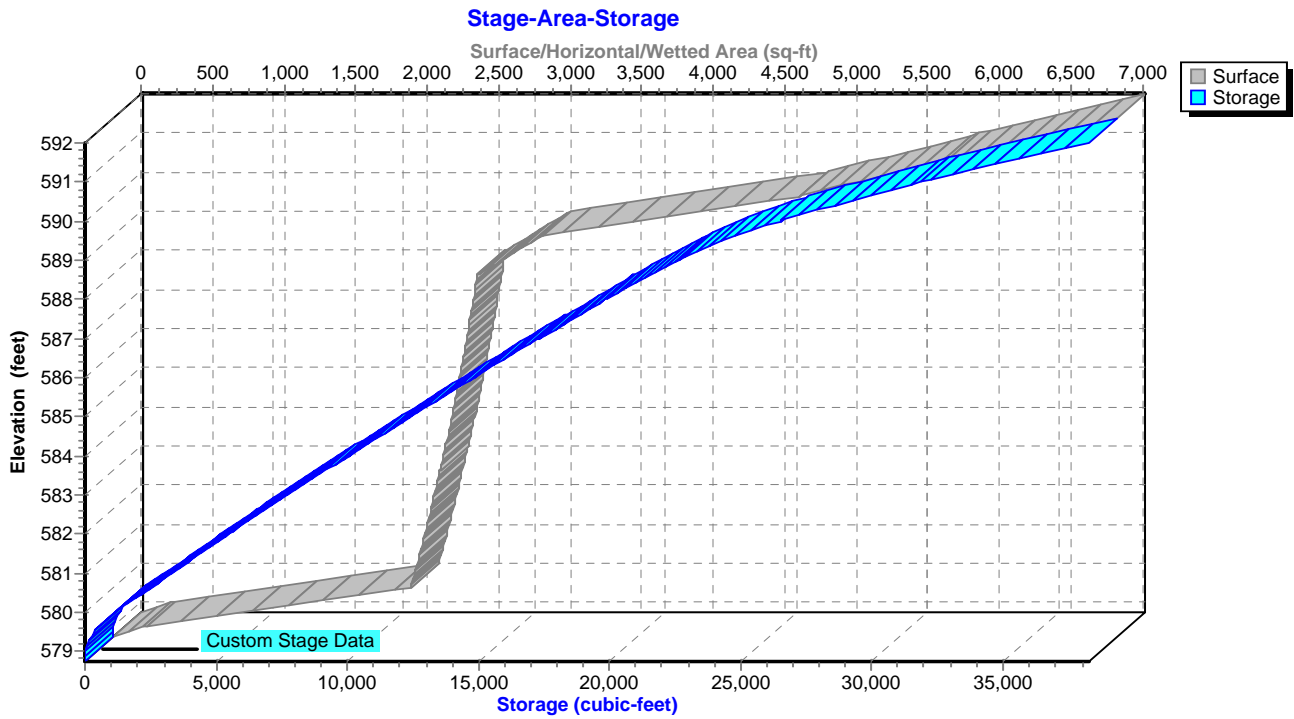


Pond 21P: BASIN 2 100 YR LFB

Stage-Discharge



Pond 21P: BASIN 2 100 YR LFB



Summary for Link 14L: POST DEVELOPED RUNOFF

Inflow Area = 8.630 ac, 72.42% Impervious, Inflow Depth = 6.46" for 100-yr event
Inflow = 34.23 cfs @ 12.03 hrs, Volume= 4.649 af
Primary = 34.23 cfs @ 12.03 hrs, Volume= 4.649 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 10R : 201 TO JS

Primary outflow = Inflow, Time Span= 0.10-72.00 hrs, dt= 0.05 hrs

Link 14L: POST DEVELOPED RUNOFF

Hydrograph

