STORMWATER MANAGEMENT REPORT

PROPOSED

EAST WINDSOR SOLAR TWO

SOLAR PROJECT

31 THRALL ROAD
BROAD BROOK, CONNECTICUT
HARTFORD COUNTY

Prepared for:

East Windsor Solar Two, LLC
124 LaSalle Road, 2nd Floor
West Hartford, CT 06107

Prepared by:

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April 2023

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Introduction

At the request of East Windsor Solar Two, LLC, All-Points Technology Corporation, P.C. ("APT") has prepared this Stormwater Management Report to outline the potential impacts resulting from the development of a solar electric generating facility with an output of approximately 4.00 megawatts (MW) alternating current (AC), herein referred to as East Windsor Solar Two (the "Project") located off of Thrall Road, in Broad Brook, Connecticut (the "Site").

The design is intended to be in full compliance with all applicable State and Town regulations while taking prevailing site conditions and practical factors into account. In addition, this report will describe how the proposed Project adheres to the updated Connecticut Department of Energy & Environmental Projection ("CT DEEP") Appendix I, Stormwater Management at Solar Array Construction Projects.

Existing Site Conditions

The Site is located on one (1) privately-owned 35.68 acre parcel identified as 31 Thrall Road. The Project will be entirely located within a farm field located at the center of the property. The Project limit of disturbance is approximately 24.70± acres of the overall Site area. See Appendix A for an Overall Site Plan.

The Project area's topography gradually slopes between 2%-5% from the center of the site down to the north, west and east, with ground elevations ranging from approximately 219 feet above mean sea level ("AMSL") in the middle of the site to approximately 211 feet AMSL on the north and west sides of the Site and 206 feet AMSL in the southwest corner of the site.

Developed Site Conditions

The Project will be constructed in the central portion of the Site, within an existing farm field with crop rows, and will encompass the majority of the fields. Access to the Project will be provided at the southwestern edge of the Site via one (1) new 15-foot-wide gravel drive off of Thrall Road. The Project includes the installation of (9,932) 545W tracking modules and associated fencing, access drive and utilities, within 24.70± acres of the Site. Due to the nature of the existing plowed fields, no clearing or grubbing is required for the development of the Project.

The proposed modules will be installed on a post driven ground mounted tracking system, with no anticipated changes to the existing grades. As a result, the post-development site conditions will mimic the pre-developed site conditions. All plowed fields and ground cover that are disturbed during construction will be reseeded with a Fuzz & Buzz Mix – ERNMX-147, or approved equal.

Stormwater Management

Analysis Methodology

The hydrologic analysis was performed using the HydroCAD stormwater modeling system computer program developed by HydroCAD Software Solutions, LLC.

Hydrographs for each watershed were developed using the SCS Synthetic Unit Hydrograph Method with a Type III rainfall distribution. Hydrographs were developed for the NOAA Atlas 14, Volume 10, Version 2 Precipitation 2-, 25-, 50-, and 100-year storm event with rainfall depths of 3.16, 6.17, 7.01, and 7.95 inches respectively.

The drainage areas used in the calculations are illustrated on the Existing and Proposed Drainage Area Maps (EDA-1 & PDA-1). These maps and the corresponding HydroCAD output are attached in Appendices C & D.

Utilizing CT DEEP Appendix I, this hydrologic analysis will reflect a reduction of the Hydrologic Soil Group ("HSG") present on-site by a half (1/2) step (e.g., half the difference between the runoff curve number for HSG A versus HSG B). This reduction, as indicated by CT DEEP, is intended to account for the compaction of soils that results from extensive machinery traffic during construction of the array. The Water Quality Volume ("WQV") for the site will be calculated assuming that the gravel surfaces and concrete equipment pads are effectively impervious cover. Additional Appendix I regulations and proposed compliance are presented in Appendix F.

Existing Drainage Patterns

The proposed Project area drains generally from the center of the site to the north, west and east. The area that drains to the north, Analysis Point One ("AP-1"), drains to an existing stormwater management basin and infiltrates back into the ground. The area that drains to the west, Analysis Point Two ("AP-2"), drains to an existing underground stormwater system in Thrall Road. The area that drains to the east, Analysis Point Three ("AP-3"), flows to the adjoining properties. Peak discharges have been computed at the points of study for the 2-, 25-, 50-, and 100-year storm events as shown in table 1.

The Project area soils identified by the United States Department of Agriculture (USDA) Natural Resources Conservation Service consists of map unit symbols 37C, 38E, 704A and 704B. 37C is classified as "Manchester gravelly sandy loam, 3 to 15 percent slopes" and has a HSG rating of "A". 38E is classified as "Hinckley loamy sand, 15 to 45 percent slopes" and has a HSG rating of "A". 704A is classified as "Enfield silt loam, 0 to 3 percent slopes" and has a HSG rating of "B". 704A is classified as "Enfield silt loam, 3 to 8 percent slopes" and has a HSG rating of "B". Specific details for each soil Map Unit Symbol are provided in Appendix B.

The pre-developed discharges at AP-1 are tabulated in Table 1.

Table 1

Analysis Point	**Pre-developed Peak Storm Runoff (Q), cubic feet per second (cfs)**			
	2-year	**25-year**	**50-year**	**100-year**
AP-1	0.00	0.00	0.00	0.00
AP-2	11.77	38.48	46.48	55.53
AP-3	1.37	5.90	7.34	9.05

Proposed Drainage Patterns

The Project will require no clearing and grubbing for the installation of the solar facility. All disturbed areas associated with the proposed solar installation, including necessary utilities, access road, and all existing plowed fields will be reseeded utilizing a Fuzz & Buzz Mix – ERNMX-147, or approved equal.

Hydrologically, the post-developed condition is designed to mimic the pre-developed condition. With the CT DEEP Appendix I requirement of a change in cover type associated with converting plowed

fields to meadow with a (1/2) increase in HSG across the limit of disturbance area, the post-development runoff associated with the project will be reduced at each analysis point. At AP-1 the existing topography will be utilized to direct water to the existing stormwater basin. The existing basin provides the required Water Quality Volume (WQV) needed for the proposed impervious surfaces associated with the gravel access drive and concrete equipment pads. The existing stormwater basin provides enough volume to allow all of the runoff directed to it to infiltrate as it does in existing conditions.

The existing stormwater management basin has been modeled with an assumed infiltration rate. The assumed infiltration rate was determined from the USDA Natural Resources Conservation Service Saturated Hydraulic Conductivity (Ksat) website for the soils in the area of the existing stormwater management basin. The existing 38E soils in that basin area have a Ksat of 12.2 inches/hour (86.5 millimeters/second). With that Ksat rate being very high, a more conservative infiltration rate of 3.00 inches/hour was utilized for this analysis.

Since the proposed development mimics the existing conditions, the post-development condition was modeled using the same Analysis Points. Peak discharges have been computed at AP-1, AP-2 and AP-3 for the 2-year, 25-year, 50-year, and 100-year storm events. The post-development discharges at AP-1 are tabulated in Table 2.

Table 2

Analysis Point	**Post-developed Peak Storm Runoff (Q), cubic feet per second (cfs)**			
	2-year	**25-year**	**50-year**	**100-year**
AP-1	0.00	0.00	0.00	0.00
AP-2	5.29	25.27	31.78	39.30
AP-3	0.49	4.02	5.27	6.76

The reduction in runoff achieved by the post-development discharges in comparison with the pre-development discharges are tabulated in Table 3.

Table 3

Analysis Point	**Pre vs. Post Peak Storm Runoff (Q) Reduction**			
	2-year	**25-year**	**50-year**	**100-year**
AP-1	0.00%	0.00%	0.00%	0.00%
AP-2	55.06%	34.33%	31.63%	29.23%
AP-3	64.23%	31.86%	28.20%	25.30%

CT DEEP Appendix I Design Regulations/Compliance

The following identifies and details the regulations and proposed compliance measures within CT DEEP Appendix I that pertain specifically to civil, stormwater, and erosion control designs. Additionally, a checklist of the same is available herein in Appendix F.

(I) Design and construction requirements:

1. Roadways, gravel surfaces, transformer pads are considered effective impervious cover for the purposes of calculating the WQV. The proposed solar panels in the array that are within existing and post-construction slopes that are greater than 15% are considered impervious for the purposes of calculating the WQV. The remainder of the proposed solar panels that are proposed within existing and post-construction slopes that are less than 15% are not considered impervious cover for the purposes of calculating the WQV because the following have been met:
    a. Vegetative areas between the rows of solar panels have a width of 8.7 feet which is greater than the solar panel width of 7.5 feet.
    b. The post-development stormwater runoff will be less than that of the pre-development stormwater runoff due to the change in cover type from crop rows to meadow and the existing stormwater management basin.
    c. The Project meets (iv) of this requirement as the plan includes specific engineered phased construction plans and detailed erosion control measures.
    d. The panels are spaced and provide a minimum height of 3 feet from the ground to provide growth of native vegetation.
2. Setback and buffer requirements have been met following the below:
    a. See subsection requirements below:
        i. No wetlands or waters are located within 100 feet of the proposed solar facility area. No solar panels are located within the 50-foot setback of any property boundary that is located downgradient of the construction activity.
        ii. No wetlands or waters are located within 100 feet of the proposed solar facility area.
        iii. A 10-foot buffer is maintained between the proposed access road and electrical interconnection path.
    b. The existing wetlands and waters were delineated by All-Points Technology Corporation in May of 2021. The location of delineated resources, as well as buffers, are present on the development plans.
3. The lowest vertical clearance of the solar panels above the ground is proposed to be 3 feet.

II. Design requirements for post-construction stormwater management measures.

1. Post-construction stormwater control measures have been designed and will be constructed to provide permanent stabilization and non-erosive conveyance of runoff from the site.
2. The orientation of the panels follows the existing slopes on the site to the extent practicable.
3. The hydrologic analysis has been completed, as described above, with the following details:
    a. The Project evaluates and controls the 2, 25, 50, and 100-year 24-hour rainfall events in accordance with the CT Stormwater Quality Manual. Maximum sheet flow was kept to 100 feet and shallow concentrated flows are calculated using values for grassed waterways within HydroCAD.
    b. NRCS soil mapping was used for the stormwater/erosion control design.
    c. With the modeled half-drop (1/2) in HSG for the facility area and the change in curve number associated with the ground cover change from crop rows to meadow results in a decrease in post-development runoff in comparison to pre-development runoff.
    d. Pre-and post-development drainage area maps & computations are provided in Appendices B and C.
    e. The analysis above demonstrates that the Project will have no net increase in peak flows, erosive velocities or volumes, or adverse impacts to downstream properties.

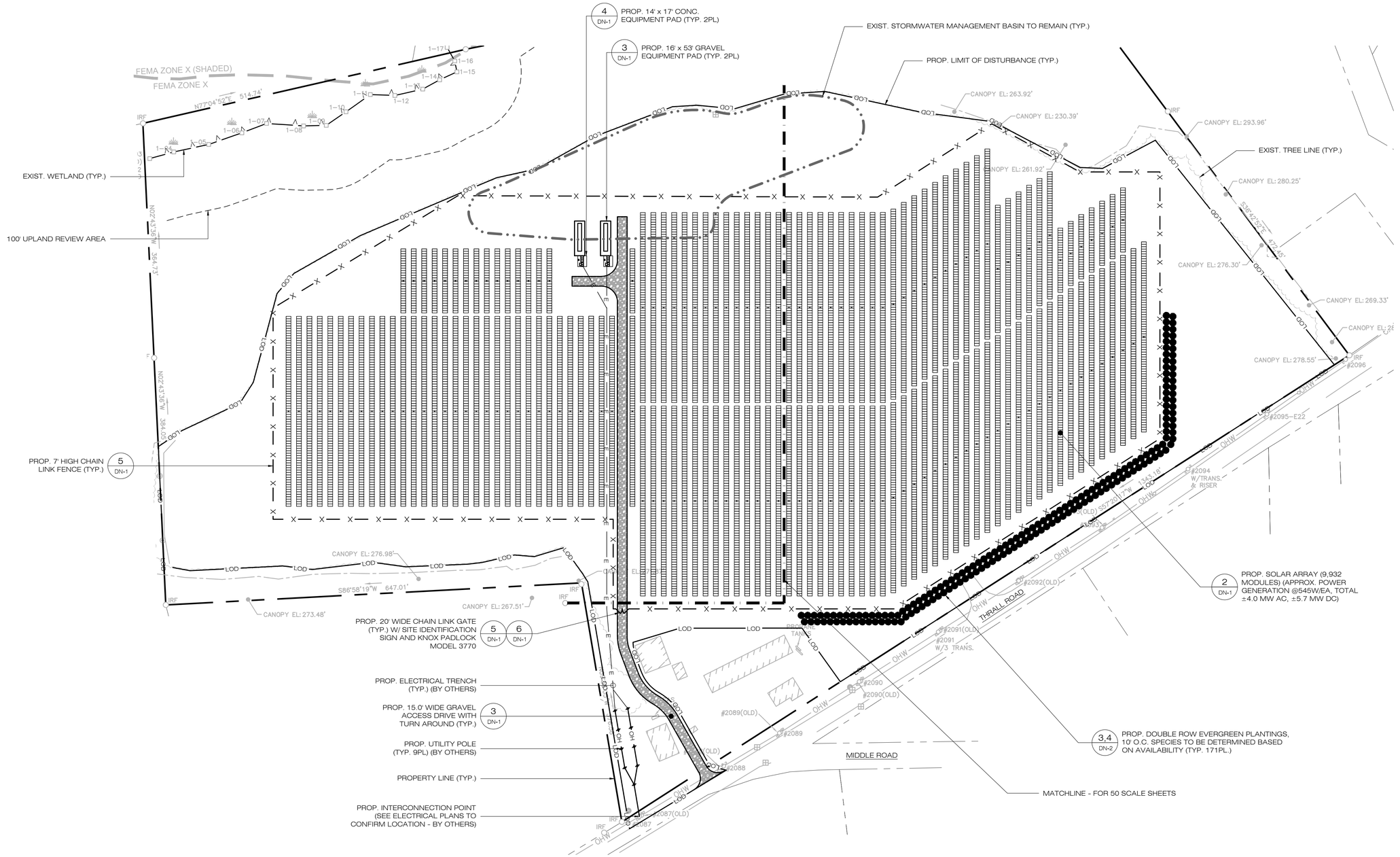
Sediment and Erosion Control During Construction

For drainage areas that are under 1.0-acre, sediment and erosion control will be provided by perimeter silt fence with wings, as needed. For drainage areas that are larger than 5.0 acres, sediment and erosion control will be provided by the existing stormwater management basin which provides the requisite sediment treatment volumes, based on 134 cubic yards per acre of disturbance.

Conclusion

The stormwater management for the proposed site has been designed such that the post-development peak discharges to the waters of the State of Connecticut for the 2-, 25-, 50-, and 100- year storm events are less than the pre-development peak discharges. In addition, the Project adheres to the regulations and guidelines presented by CT DEEP's Appendix I as described above. As a result, the proposed solar array will not result in any adverse conditions to the surrounding areas and properties.

APPENDIX A: OVERALL SITE PLAN



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CSC PERMIT SET

NO	DATE	REVISION
0	04/03/23	DRAFT SET FOR REVIEW: RCB
1		
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DESIGN PROFESSIONAL OF RECORD

PROF: ROBERT C. BURNS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
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OWNER: CATHOLIC CEMETERIES ASSOCIATION OF THE ARCHDIOCESE OF HARTFORD, INC.
ADDRESS: 700 MIDDLETOWN AVE. NORTH HAVEN, CT 06473

EAST WINDSOR SOLAR TWO

SITE ADDRESS: 31 THRALL ROAD BROAD BROOK, CT 06016

APT FILING NUMBER: CT590340

DRAWN BY: CSH
DATE: 04/03/23 CHECKED BY: RCB

SHEET TITLE:

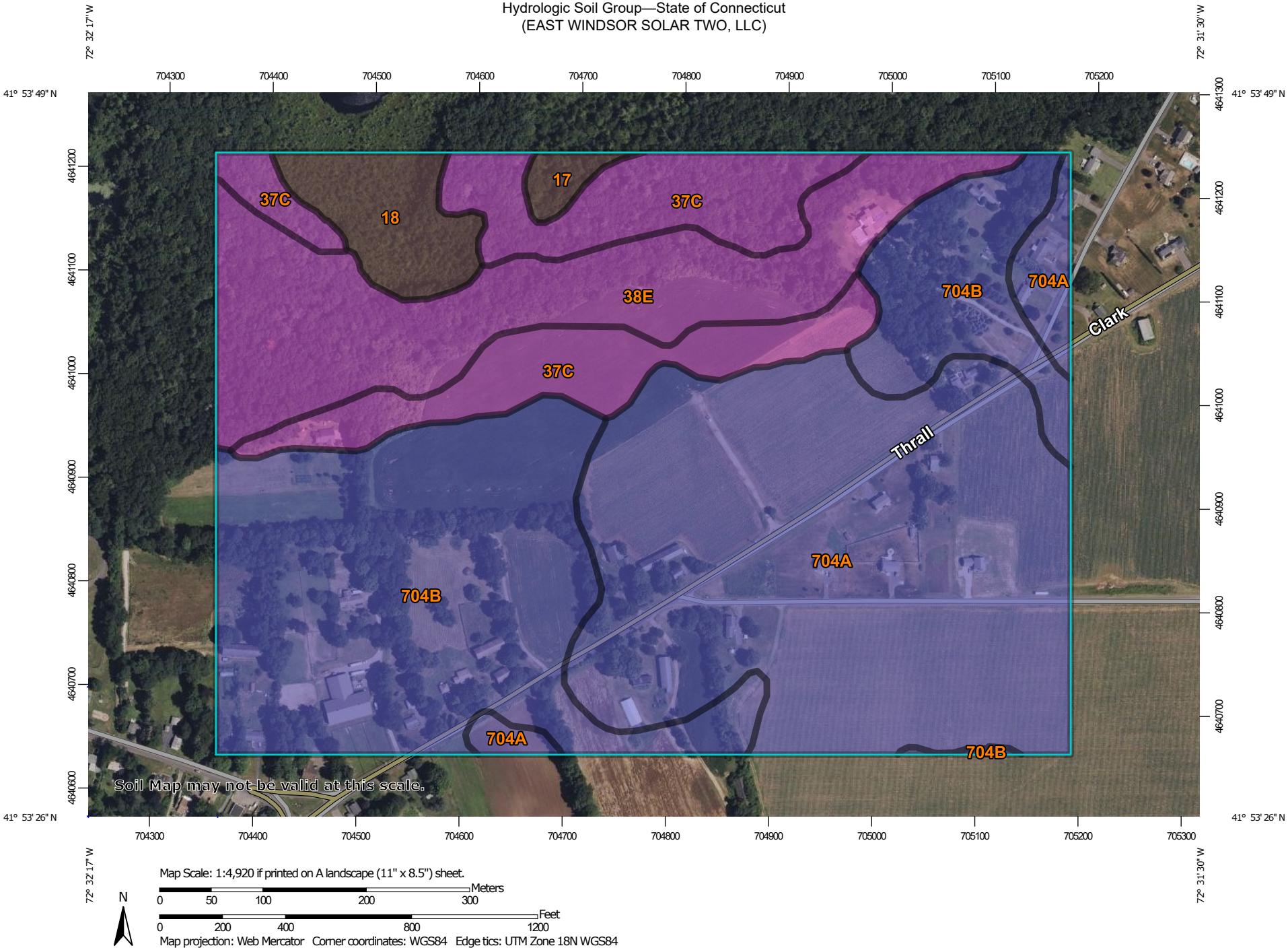
PARTIAL SITE PLAN

SHEET NUMBER:

OP-2

APPENDIX B: NRCS SOIL SURVEY

Hydrologic Soil Group—State of Connecticut
(EAST WINDSOR SOLAR TWO, LLC)



Map Scale: 1:4,920 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

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

Soil Rating Lines

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

Soil Rating Points

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

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: State of Connecticut
Survey Area Data: Version 22, Sep 12, 2022

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

Date(s) aerial images were photographed: Jun 14, 2022—Oct 6, 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
17	Timakwa and Natchaug soils, 0 to 2 percent slopes	B/D	0.9	0.8%
18	Catden and Freetown soils, 0 to 2 percent slopes	B/D	4.6	3.8%
37C	Manchester gravelly sandy loam, 3 to 15 percent slopes	A	15.8	13.2%
38E	Hinckley loamy sand, 15 to 45 percent slopes	A	18.6	15.5%
704A	Enfield silt loam, 0 to 3 percent slopes	B	42.8	35.9%
704B	Enfield silt loam, 3 to 8 percent slopes	B	36.8	30.8%
Totals for Area of Interest			**119.5**	**100.0%**

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

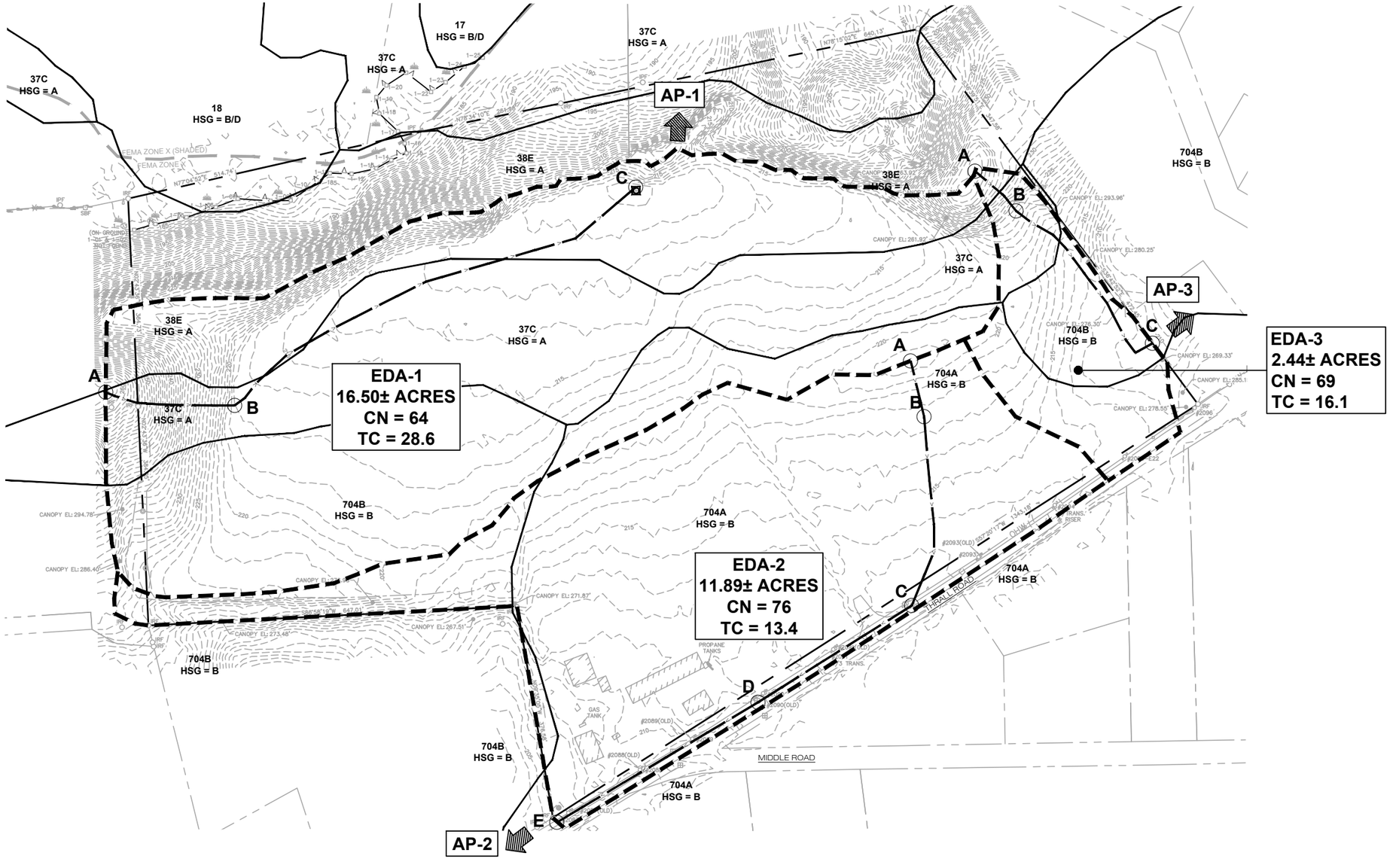
APPENDIX C: EXISTING DRAINAGE AREA MAP (EDA-1) & HYDROLOGIC COMPUTATION (HYDROCAD)

EXISTING DRAINAGE AREAS

	TOTAL AREA (ACRES)	COMPOSITE CN	TC (MINS.)
EDA-1	16.50	64	28.6
EDA-2	11.89	76	13.4
EDA-3	2.44	69	16.1

EXISTING CONDITION PEAK FLOWS

ANALYSIS POINT	2-YEAR (CFS)	25-YEAR (CFS)	50-YEAR (CFS)	100-YEAR (CFS)
AP-1	0.00	0.00	0.00	0.00
AP-2	11.77	38.48	46.48	55.53
AP-3	1.37	5.90	7.34	9.05



1 EDA-1 **EXISTING DRAINAGE AREA MAP**
SCALE : 1" = 100'-0"

100 0 50 100 200
(IN FEET) 1 inch = 100 ft.

EAST WINDSOR SOLAR TWO, LLC
150 TRUMBULL STREET
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DESIGN PROFESSIONAL OF RECORD

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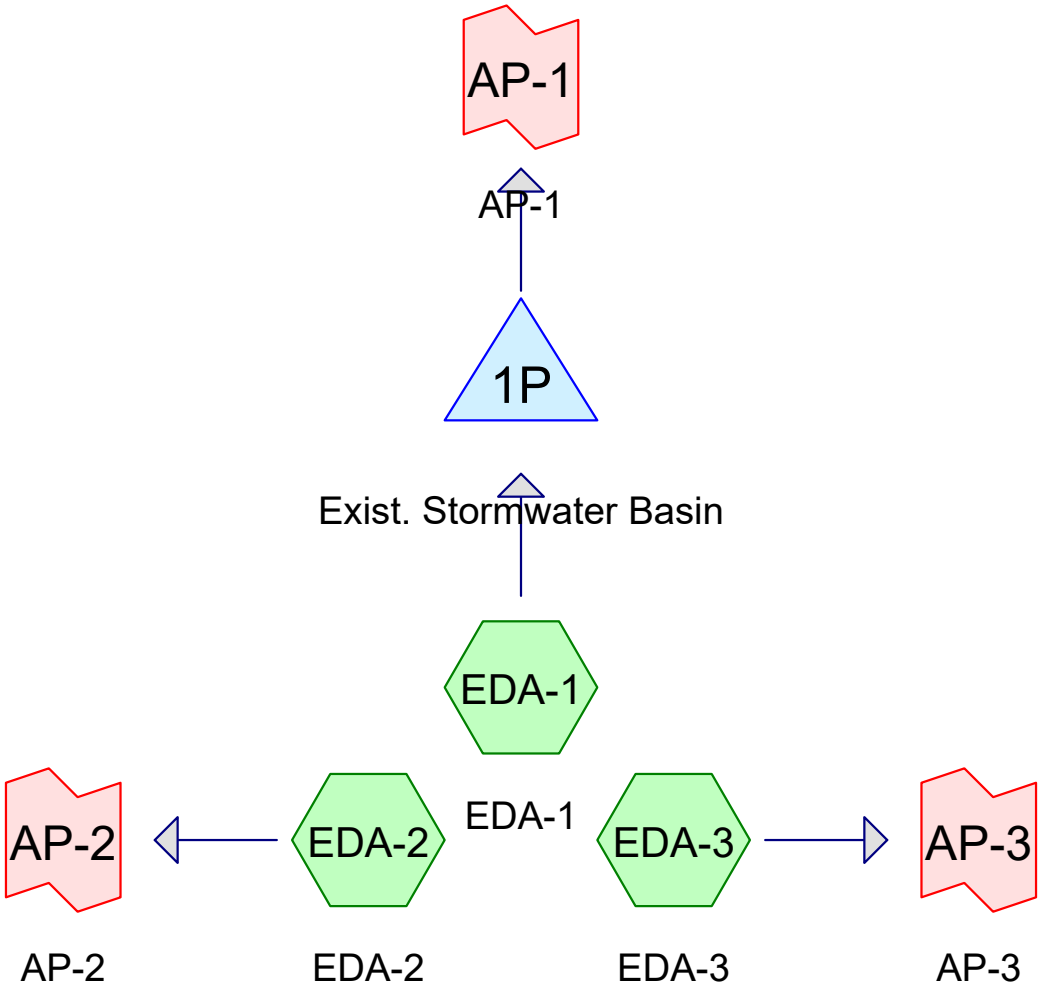
DRAWN BY: CSH
DATE: 04/2023
CHECKED BY: RCB

SHEET TITLE:
EXISTING DRAINAGE AREA MAP

SHEET NUMBER:
EDA-1



Subcat Reach Pond Link

Routing Diagram for CT590340_EastWindsorSolarTwo - EX - Rev0
Prepared by All-Points Technology Corporation, Printed 3/31/2023

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.278	69	50-75% Grass cover, Fair, HSG B (EDA-2)
0.377	98	Paved roads w/curbs & sewers, HSG B (EDA-2, EDA-3)
0.178	98	Roofs, HSG B (EDA-2)
8.150	67	Row crops, straight row, Good, HSG A (EDA-1, EDA-3)
14.770	78	Row crops, straight row, Good, HSG B (EDA-1, EDA-2)
1.751	75	Small grain, straight row, Good, HSG B (EDA-3)
2.983	30	Woods, Good, HSG A (EDA-1, EDA-3)
1.345	55	Woods, Good, HSG B (EDA-1, EDA-2, EDA-3)
30.834	**69**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
11.134	HSG A	EDA-1, EDA-3
19.701	HSG B	EDA-1, EDA-2, EDA-3
0.000	HSG C	
0.000	HSG D	
0.000	Other	
30.834		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	1.278	0.000	0.000	0.000	1.278	50-75% Grass cover, Fair	EDA-2
0.000	0.377	0.000	0.000	0.000	0.377	Paved roads w/curbs & sewers	EDA-2, EDA-3
0.000	0.178	0.000	0.000	0.000	0.178	Roofs	EDA-2
8.150	14.770	0.000	0.000	0.000	22.920	Row crops, straight row, Good	EDA-1, EDA-2, EDA-3
0.000	1.751	0.000	0.000	0.000	1.751	Small grain, straight row, Good	EDA-3
2.983	1.345	0.000	0.000	0.000	4.329	Woods, Good	EDA-1, EDA-2, EDA-3
11.134	**19.701**	**0.000**	**0.000**	**0.000**	**30.834**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	EDA-2	0.00	0.00	410.0	0.0050	0.011	15.0	0.0	0.0

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment EDA-1: EDA-1 Runoff Area=718,886 sf 0.00% Impervious Runoff Depth=0.54"
Flow Length=1,045' Tc=28.6 min CN=64 Runoff=4.59 cfs 0.744 af

Subcatchment EDA-2: EDA-2 Runoff Area=517,855 sf 4.27% Impervious Runoff Depth=1.12"
Flow Length=1,165' Tc=13.4 min CN=76 Runoff=11.77 cfs 1.114 af

Subcatchment EDA-3: EDA-3 Runoff Area=106,393 sf 1.94% Impervious Runoff Depth=0.76"
Flow Length=465' Tc=16.1 min CN=69 Runoff=1.37 cfs 0.154 af

Pond 1P: Exist. Stormwater Basin Peak Elev=211.73' Storage=7,770 cf Inflow=4.59 cfs 0.744 af
Discarded=1.54 cfs 0.744 af Primary=0.00 cfs 0.000 af Outflow=1.54 cfs 0.744 af

Link AP-1: AP-1 Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Link AP-2: AP-2 Inflow=11.77 cfs 1.114 af
Primary=11.77 cfs 1.114 af

Link AP-3: AP-3 Inflow=1.37 cfs 0.154 af
Primary=1.37 cfs 0.154 af

Total Runoff Area = 30.834 ac Runoff Volume = 2.011 af Average Runoff Depth = 0.78"
98.20% Pervious = 30.279 ac 1.80% Impervious = 0.556 ac

Summary for Subcatchment EDA-1: EDA-1

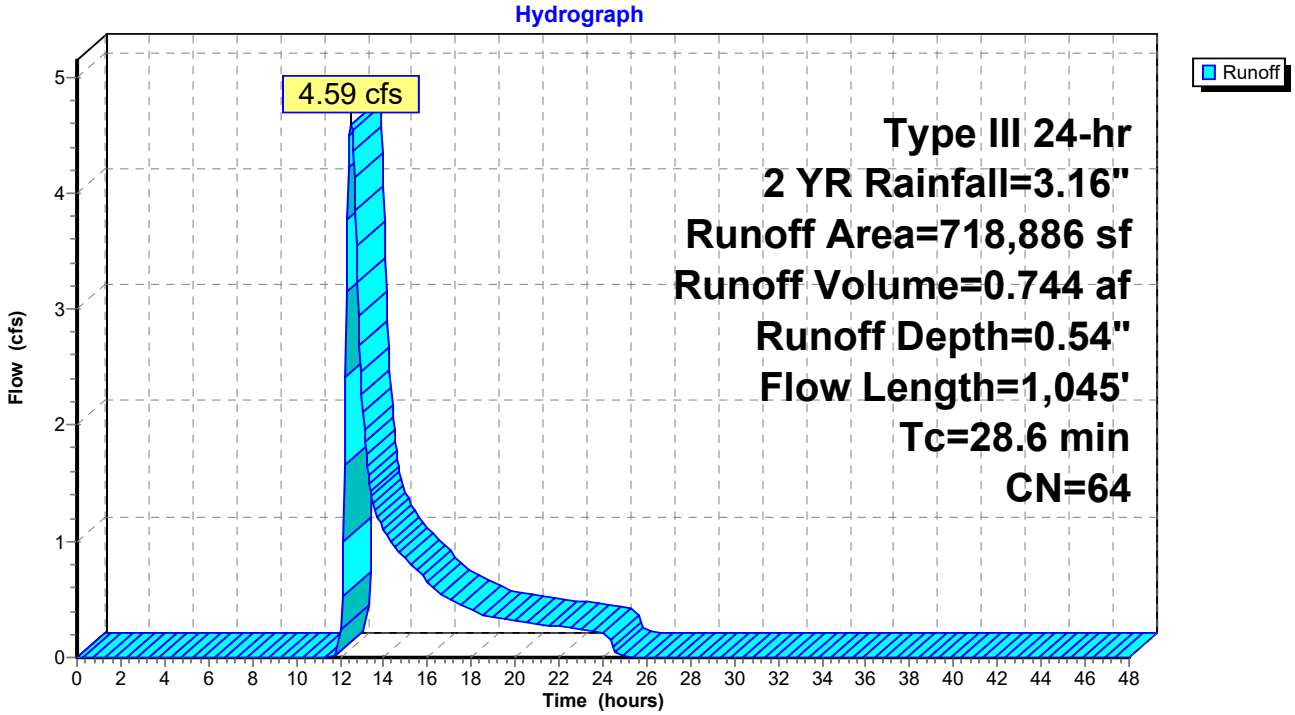
Runoff = 4.59 cfs @ 12.51 hrs, Volume= 0.744 af, Depth= 0.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.16"

Area (sf)	CN	Description
120,761	30	Woods, Good, HSG A
343,788	67	Row crops, straight row, Good, HSG A
11,440	55	Woods, Good, HSG B
242,897	78	Row crops, straight row, Good, HSG B
718,886	64	Weighted Average
718,886		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	100	0.1700	0.18		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.18"
1.9	130	0.2154	1.16		**Shallow Concentrated Flow, B-C** Forest w/Heavy Litter Kv= 2.5 fps
17.5	815	0.0074	0.77		**Shallow Concentrated Flow, C-D** Cultivated Straight Rows Kv= 9.0 fps
28.6	1,045	Total			

Subcatchment EDA-1: EDA-1



Summary for Subcatchment EDA-2: EDA-2

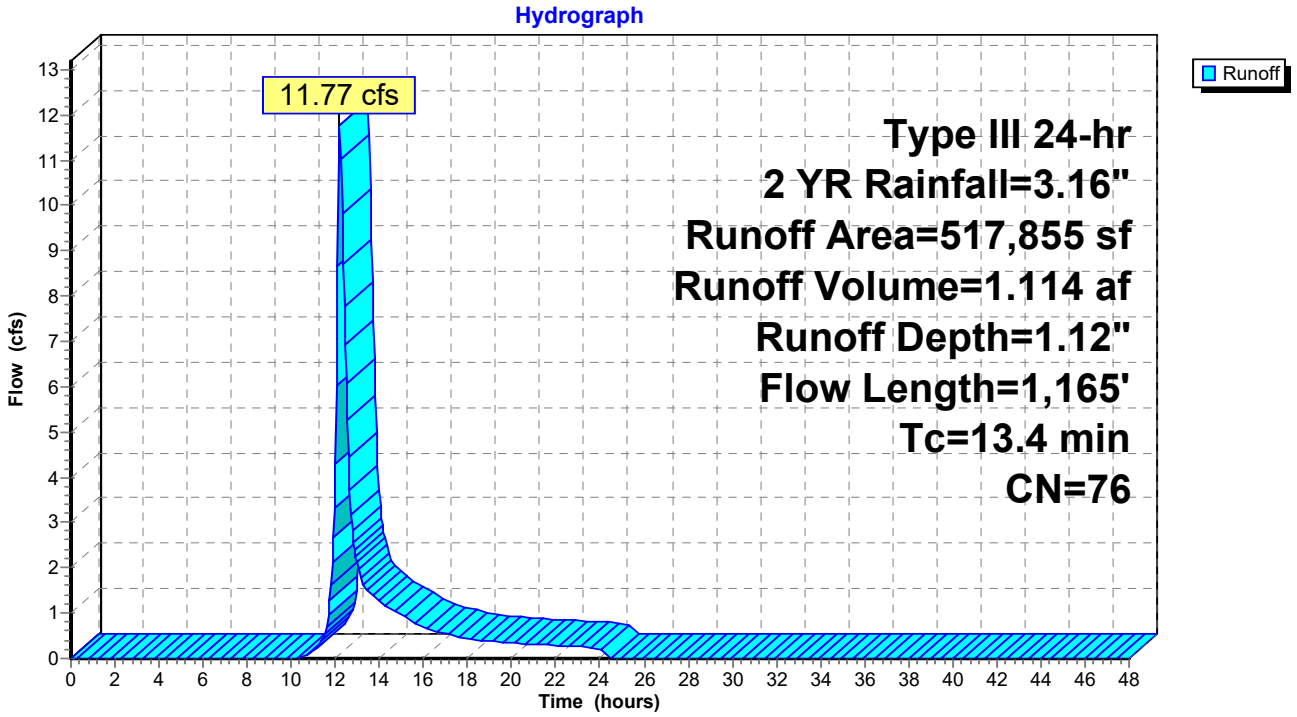
Runoff = 11.77 cfs @ 12.20 hrs, Volume= 1.114 af, Depth= 1.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.16"

Area (sf)	CN	Description
400,480	78	Row crops, straight row, Good, HSG B
39,553	55	Woods, Good, HSG B
55,690	69	50-75% Grass cover, Fair, HSG B
7,769	98	Roofs, HSG B
14,363	98	Paved roads w/curbs & sewers, HSG B
517,855	76	Weighted Average
495,723		95.73% Pervious Area
22,132		4.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	100	0.0400	0.47		**Sheet Flow, A-B** Cultivated: Residue<=20% n= 0.060 P2= 3.18"
4.9	337	0.0163	1.15		**Shallow Concentrated Flow, B-C** Cultivated Straight Rows Kv= 9.0 fps
3.3	318	0.0063	1.61		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
1.6	410	0.0050	4.40	5.40	**Pipe Channel, D-E** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
13.4	1,165	Total			

Subcatchment EDA-2: EDA-2



Summary for Subcatchment EDA-3: EDA-3

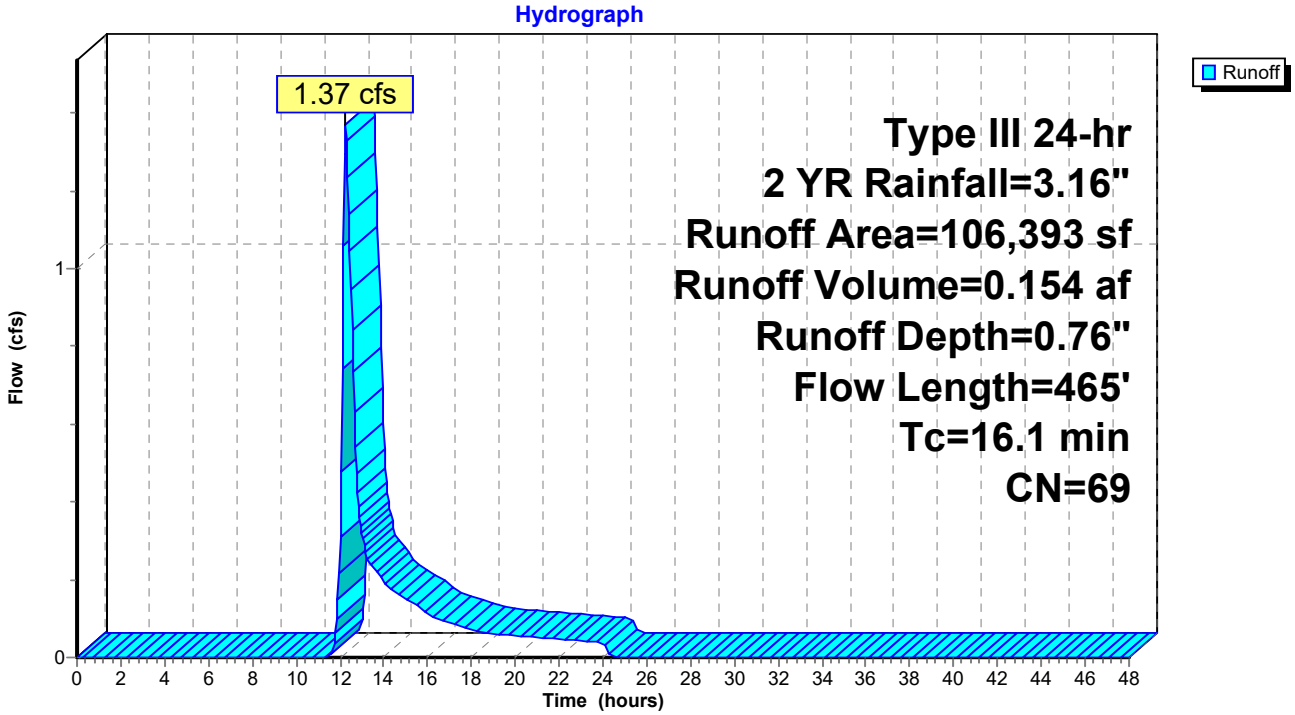
Runoff = 1.37 cfs @ 12.26 hrs, Volume= 0.154 af, Depth= 0.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.16"

Area (sf)	CN	Description
9,200	30	Woods, Good, HSG A
11,227	67	Row crops, straight row, Good, HSG A
7,614	55	Woods, Good, HSG B
76,285	75	Small grain, straight row, Good, HSG B
2,067	98	Paved roads w/curbs & sewers, HSG B
106,393	69	Weighted Average
104,326		98.06% Pervious Area
2,067		1.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.1400	0.17		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.18"
6.2	365	0.0384	0.98		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
16.1	465	Total			

Subcatchment EDA-3: EDA-3



Summary for Pond 1P: Exist. Stormwater Basin

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=3)

Inflow Area = 16.503 ac, 0.00% Impervious, Inflow Depth = 0.54" for 2 YR event
Inflow = 4.59 cfs @ 12.51 hrs, Volume= 0.744 af
Outflow = 1.54 cfs @ 13.32 hrs, Volume= 0.744 af, Atten= 66%, Lag= 48.8 min
Discarded = 1.54 cfs @ 13.32 hrs, Volume= 0.744 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 211.73' @ 13.32 hrs Surf.Area= 18,753 sf Storage= 7,770 cf

Plug-Flow detention time= 56.6 min calculated for 0.743 af (100% of inflow)
Center-of-Mass det. time= 56.6 min (978.7 - 922.1)

Volume	Invert	Avail.Storage	Storage Description
#1	211.00'	176,542 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

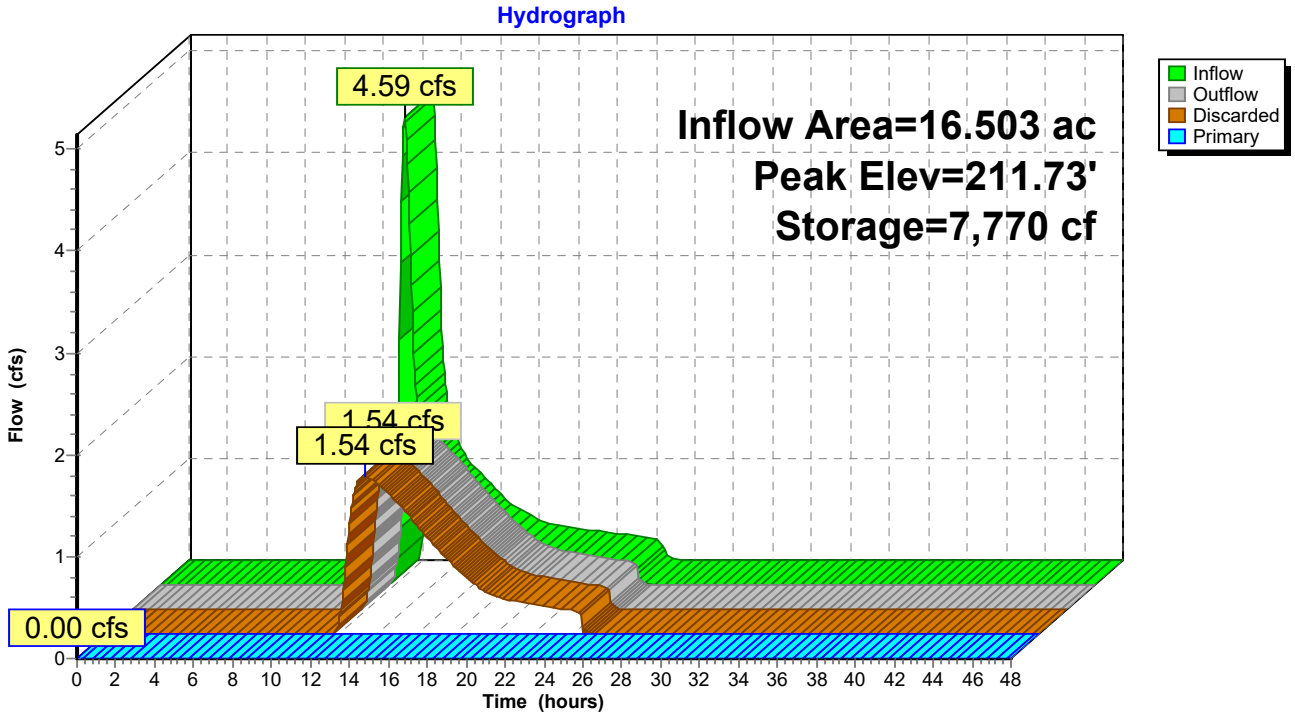
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
211.00	2,506	0	0
212.00	24,732	13,619	13,619
213.00	74,923	49,828	63,447
214.00	151,267	113,095	176,542

Device	Routing	Invert	Outlet Devices
#1	Primary	213.50'	**30.0' long x 14.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.64 2.67 2.70 2.65 2.64 2.65 2.65 2.63
#2	Discarded	211.00'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 209.00'

Discarded OutFlow Max=1.54 cfs @ 13.32 hrs HW=211.73' (Free Discharge)
↑—**2=Exfiltration** (Controls 1.54 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=211.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Exist. Stormwater Basin

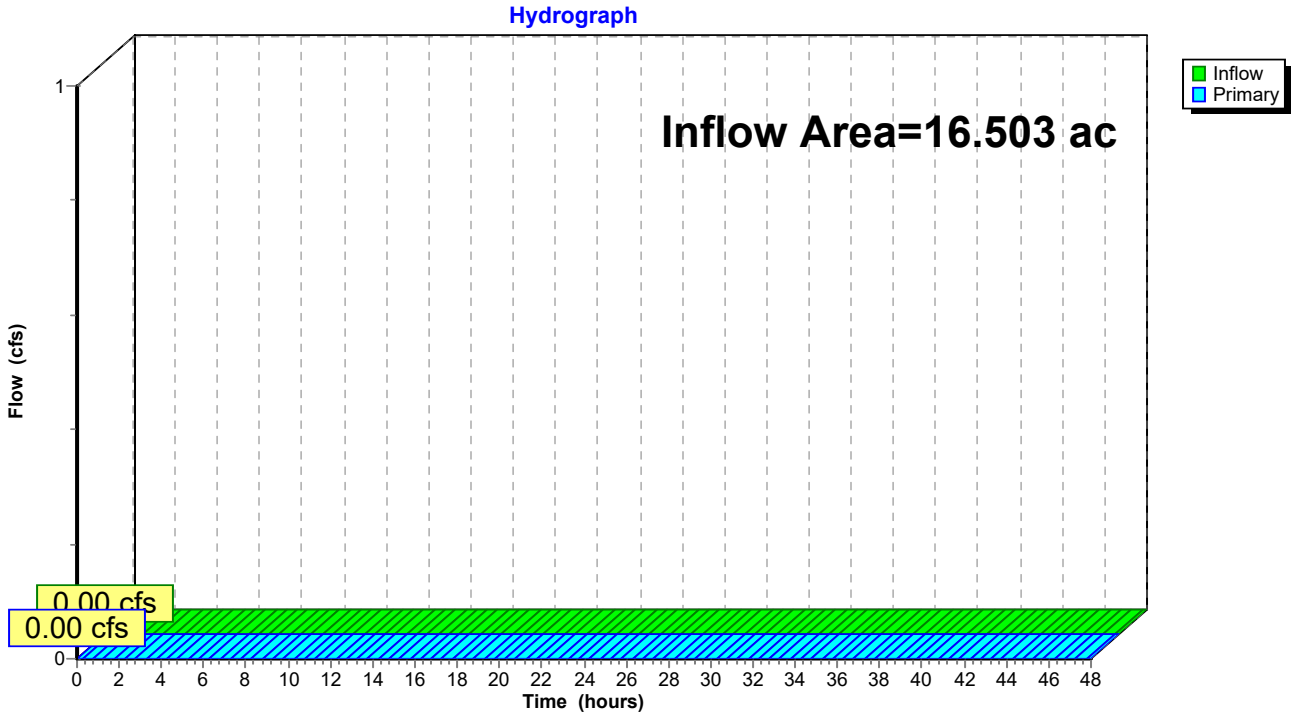


Summary for Link AP-1: AP-1

Inflow Area = 16.503 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2 YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP-1: AP-1

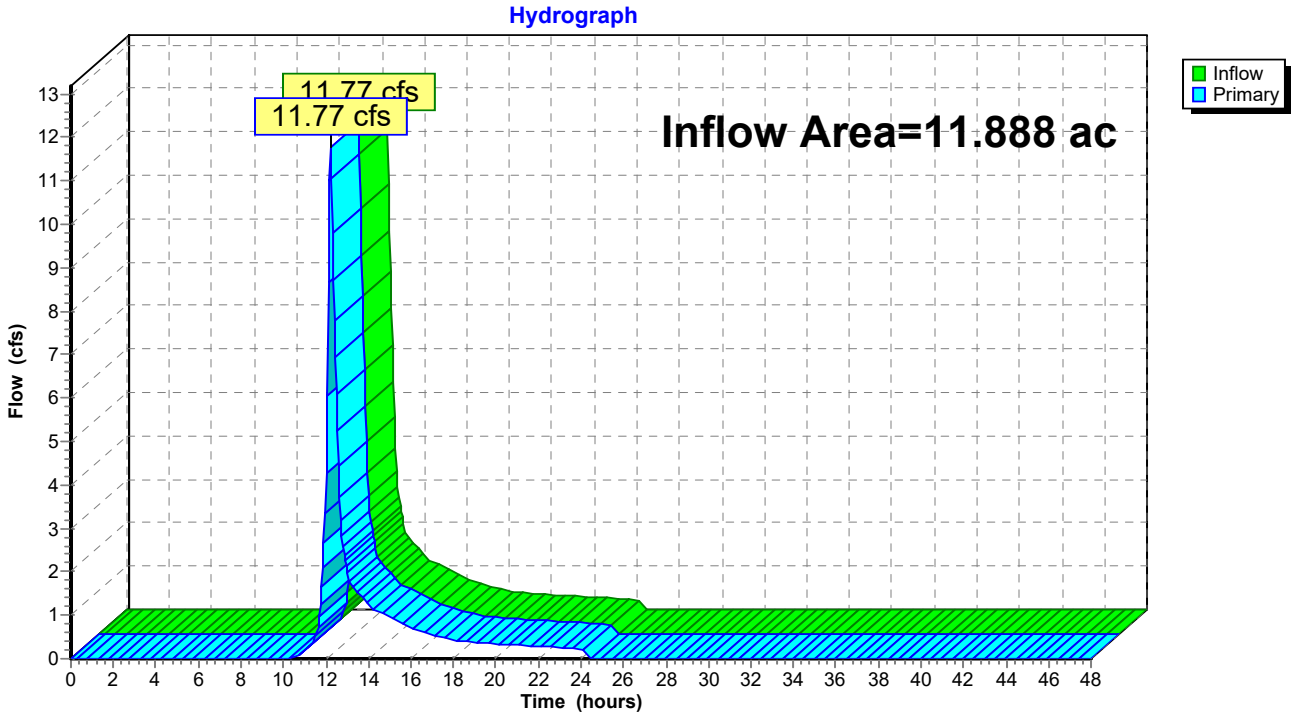


Summary for Link AP-2: AP-2

Inflow Area = 11.888 ac, 4.27% Impervious, Inflow Depth = 1.12" for 2 YR event
Inflow = 11.77 cfs @ 12.20 hrs, Volume= 1.114 af
Primary = 11.77 cfs @ 12.20 hrs, Volume= 1.114 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP-2: AP-2

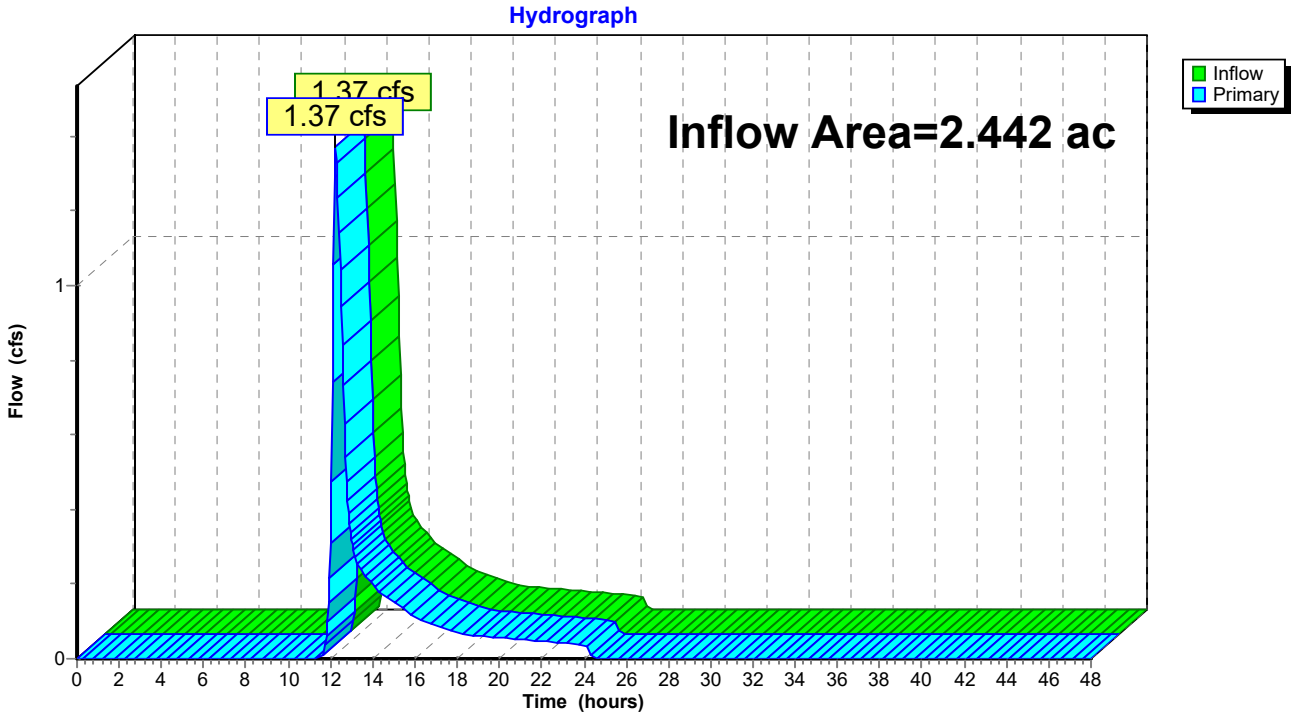


Summary for Link AP-3: AP-3

Inflow Area = 2.442 ac, 1.94% Impervious, Inflow Depth = 0.76" for 2 YR event
Inflow = 1.37 cfs @ 12.26 hrs, Volume= 0.154 af
Primary = 1.37 cfs @ 12.26 hrs, Volume= 0.154 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP-3: AP-3



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment EDA-1: EDA-1 Runoff Area=718,886 sf 0.00% Impervious Runoff Depth=2.39"
Flow Length=1,045' Tc=28.6 min CN=64 Runoff=25.88 cfs 3.281 af

Subcatchment EDA-2: EDA-2 Runoff Area=517,855 sf 4.27% Impervious Runoff Depth=3.53"
Flow Length=1,165' Tc=13.4 min CN=76 Runoff=38.48 cfs 3.494 af

Subcatchment EDA-3: EDA-3 Runoff Area=106,393 sf 1.94% Impervious Runoff Depth=2.85"
Flow Length=465' Tc=16.1 min CN=69 Runoff=5.90 cfs 0.579 af

Pond 1P: Exist. Stormwater Basin Peak Elev=212.87' Storage=53,882 cf Inflow=25.88 cfs 3.281 af
Discarded=6.15 cfs 3.281 af Primary=0.00 cfs 0.000 af Outflow=6.15 cfs 3.281 af

Link AP-1: AP-1 Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Link AP-2: AP-2 Inflow=38.48 cfs 3.494 af
Primary=38.48 cfs 3.494 af

Link AP-3: AP-3 Inflow=5.90 cfs 0.579 af
Primary=5.90 cfs 0.579 af

Total Runoff Area = 30.834 ac Runoff Volume = 7.354 af Average Runoff Depth = 2.86"
98.20% Pervious = 30.279 ac 1.80% Impervious = 0.556 ac

Summary for Subcatchment EDA-1: EDA-1

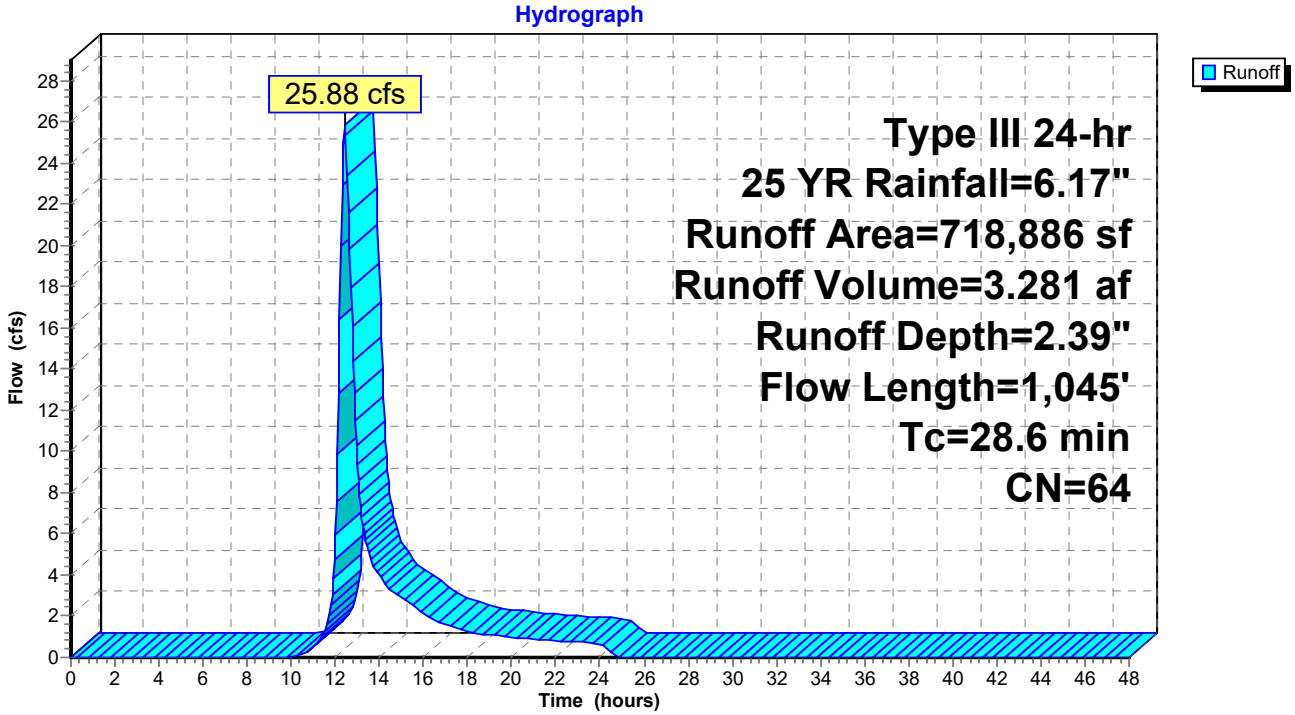
Runoff = 25.88 cfs @ 12.42 hrs, Volume= 3.281 af, Depth= 2.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.17"

Area (sf)	CN	Description
120,761	30	Woods, Good, HSG A
343,788	67	Row crops, straight row, Good, HSG A
11,440	55	Woods, Good, HSG B
242,897	78	Row crops, straight row, Good, HSG B
718,886	64	Weighted Average
718,886		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	100	0.1700	0.18		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.18"
1.9	130	0.2154	1.16		**Shallow Concentrated Flow, B-C** Forest w/Heavy Litter Kv= 2.5 fps
17.5	815	0.0074	0.77		**Shallow Concentrated Flow, C-D** Cultivated Straight Rows Kv= 9.0 fps
28.6	1,045	Total			

Subcatchment EDA-1: EDA-1



Summary for Subcatchment EDA-2: EDA-2

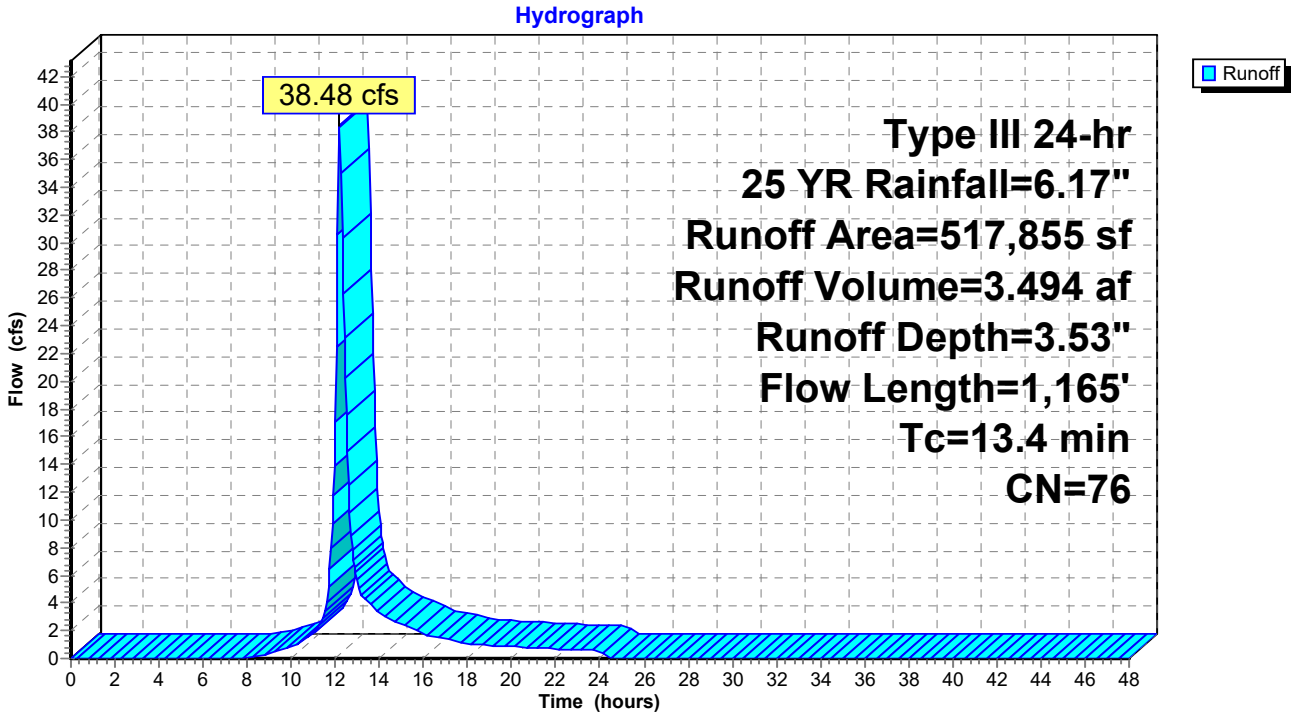
Runoff = 38.48 cfs @ 12.19 hrs, Volume= 3.494 af, Depth= 3.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.17"

Area (sf)	CN	Description
400,480	78	Row crops, straight row, Good, HSG B
39,553	55	Woods, Good, HSG B
55,690	69	50-75% Grass cover, Fair, HSG B
7,769	98	Roofs, HSG B
14,363	98	Paved roads w/curbs & sewers, HSG B
517,855	76	Weighted Average
495,723		95.73% Pervious Area
22,132		4.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	100	0.0400	0.47		**Sheet Flow, A-B** Cultivated: Residue<=20% n= 0.060 P2= 3.18"
4.9	337	0.0163	1.15		**Shallow Concentrated Flow, B-C** Cultivated Straight Rows Kv= 9.0 fps
3.3	318	0.0063	1.61		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
1.6	410	0.0050	4.40	5.40	**Pipe Channel, D-E** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
13.4	1,165	Total			

Subcatchment EDA-2: EDA-2



Summary for Subcatchment EDA-3: EDA-3

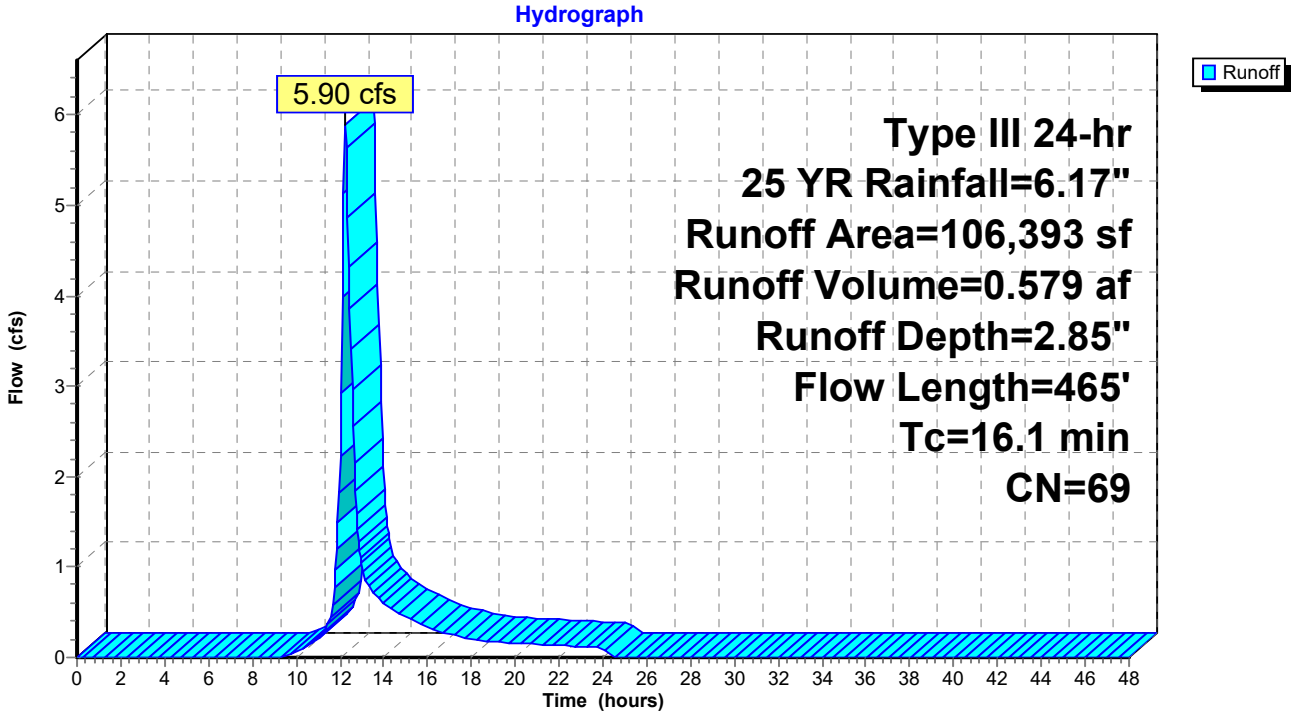
Runoff = 5.90 cfs @ 12.23 hrs, Volume= 0.579 af, Depth= 2.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.17"

Area (sf)	CN	Description
9,200	30	Woods, Good, HSG A
11,227	67	Row crops, straight row, Good, HSG A
7,614	55	Woods, Good, HSG B
76,285	75	Small grain, straight row, Good, HSG B
2,067	98	Paved roads w/curbs & sewers, HSG B
106,393	69	Weighted Average
104,326		98.06% Pervious Area
2,067		1.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.1400	0.17		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.18"
6.2	365	0.0384	0.98		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
16.1	465	Total			

Subcatchment EDA-3: EDA-3



Summary for Pond 1P: Exist. Stormwater Basin

Inflow Area = 16.503 ac, 0.00% Impervious, Inflow Depth = 2.39" for 25 YR event
Inflow = 25.88 cfs @ 12.42 hrs, Volume= 3.281 af
Outflow = 6.15 cfs @ 13.28 hrs, Volume= 3.281 af, Atten= 76%, Lag= 51.6 min
Discarded = 6.15 cfs @ 13.28 hrs, Volume= 3.281 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 212.87' @ 13.28 hrs Surf.Area= 68,216 sf Storage= 53,882 cf

Plug-Flow detention time= 116.6 min calculated for 3.277 af (100% of inflow)
Center-of-Mass det. time= 116.6 min (988.6 - 872.0)

Volume	Invert	Avail.Storage	Storage Description
#1	211.00'	176,542 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

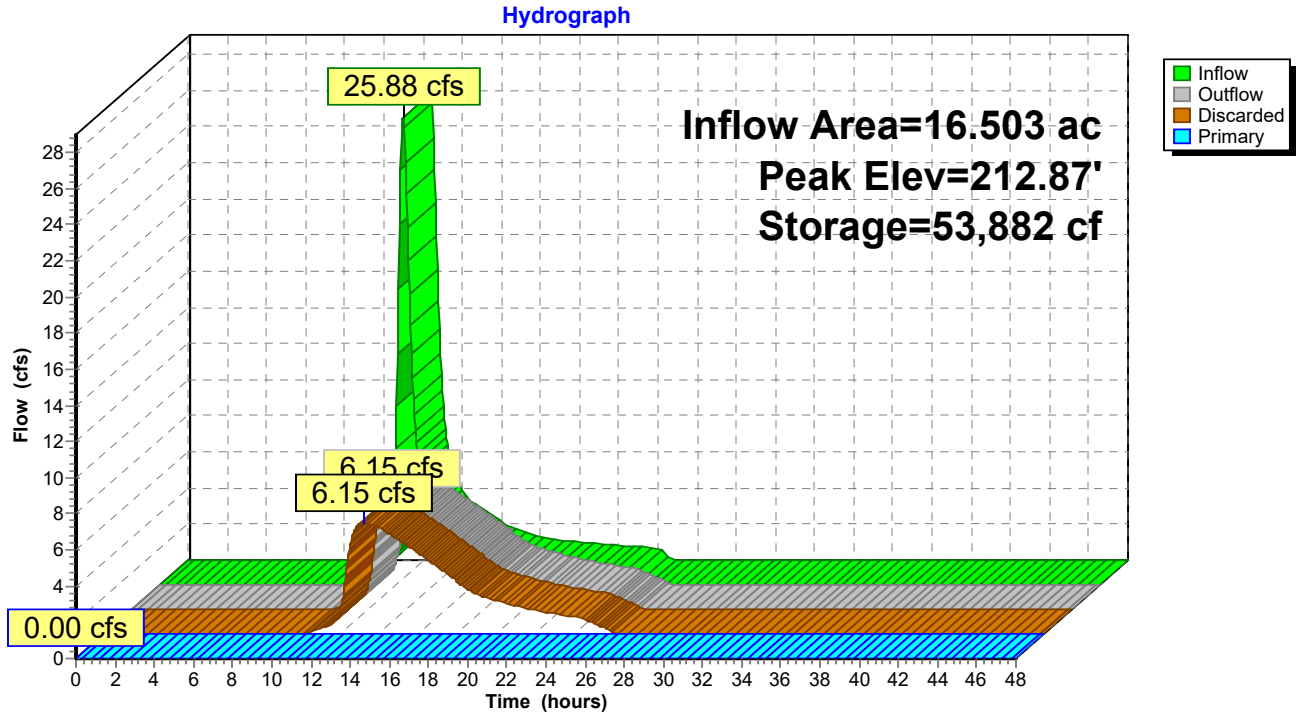
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
211.00	2,506	0	0
212.00	24,732	13,619	13,619
213.00	74,923	49,828	63,447
214.00	151,267	113,095	176,542

Device	Routing	Invert	Outlet Devices
#1	Primary	213.50'	**30.0' long x 14.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.64 2.67 2.70 2.65 2.64 2.65 2.65 2.63
#2	Discarded	211.00'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 209.00'

Discarded OutFlow Max=6.14 cfs @ 13.28 hrs HW=212.87' (Free Discharge)
↑—**2=Exfiltration** (Controls 6.14 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=211.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Exist. Stormwater Basin

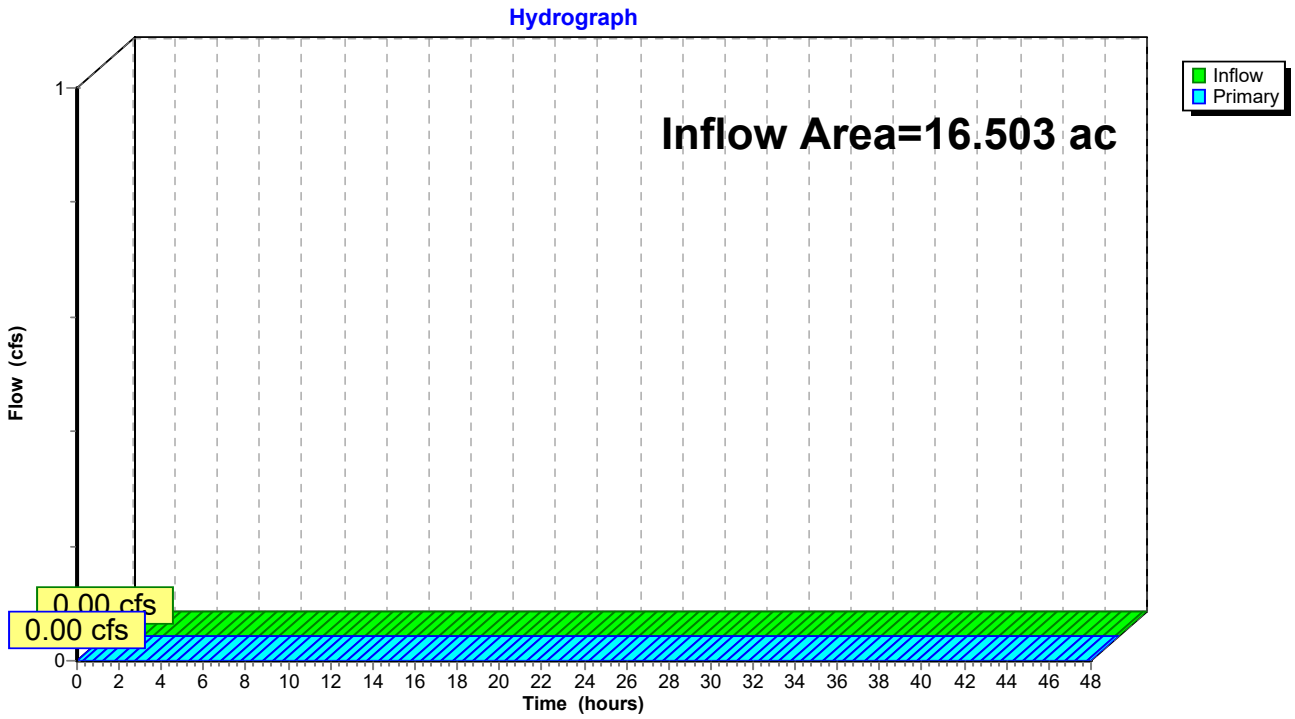


Summary for Link AP-1: AP-1

Inflow Area = 16.503 ac, 0.00% Impervious, Inflow Depth = 0.00" for 25 YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP-1: AP-1

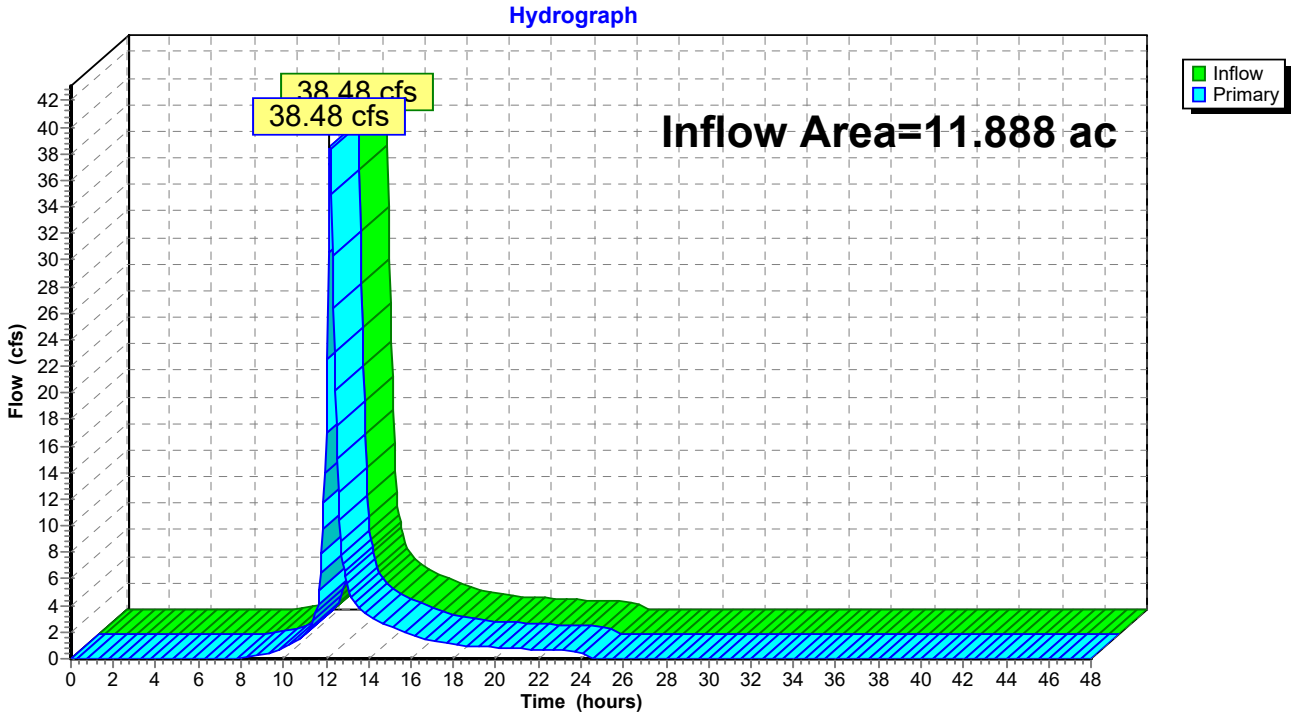


Summary for Link AP-2: AP-2

Inflow Area = 11.888 ac, 4.27% Impervious, Inflow Depth = 3.53" for 25 YR event
Inflow = 38.48 cfs @ 12.19 hrs, Volume= 3.494 af
Primary = 38.48 cfs @ 12.19 hrs, Volume= 3.494 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP-2: AP-2

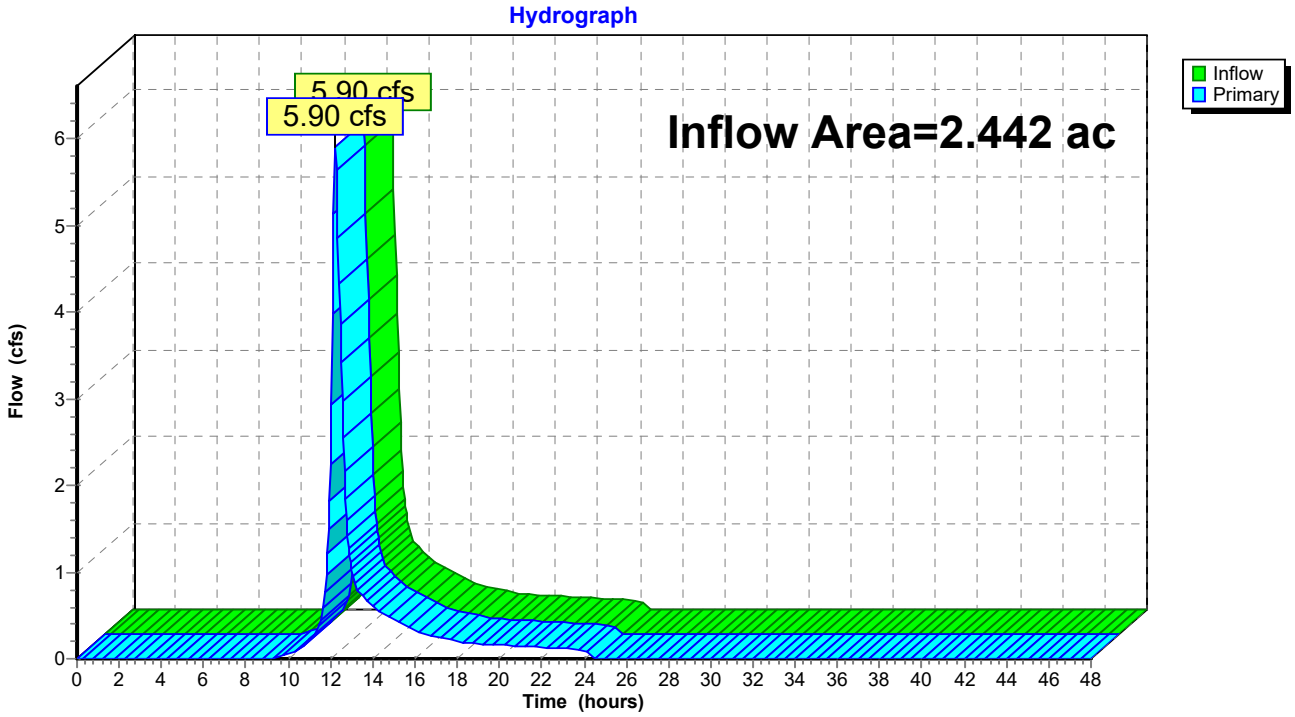


Summary for Link AP-3: AP-3

Inflow Area = 2.442 ac, 1.94% Impervious, Inflow Depth = 2.85" for 25 YR event
Inflow = 5.90 cfs @ 12.23 hrs, Volume= 0.579 af
Primary = 5.90 cfs @ 12.23 hrs, Volume= 0.579 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP-3: AP-3



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment EDA-1: EDA-1 Runoff Area=718,886 sf 0.00% Impervious Runoff Depth=3.01"
Flow Length=1,045' Tc=28.6 min CN=64 Runoff=33.05 cfs 4.138 af

Subcatchment EDA-2: EDA-2 Runoff Area=517,855 sf 4.27% Impervious Runoff Depth=4.27"
Flow Length=1,165' Tc=13.4 min CN=76 Runoff=46.48 cfs 4.227 af

Subcatchment EDA-3: EDA-3 Runoff Area=106,393 sf 1.94% Impervious Runoff Depth=3.52"
Flow Length=465' Tc=16.1 min CN=69 Runoff=7.34 cfs 0.717 af

Pond 1P: Exist. Stormwater Basin Peak Elev=213.10' Storage=71,108 cf Inflow=33.05 cfs 4.138 af
Discarded=7.52 cfs 4.139 af Primary=0.00 cfs 0.000 af Outflow=7.52 cfs 4.139 af

Link AP-1: AP-1 Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Link AP-2: AP-2 Inflow=46.48 cfs 4.227 af
Primary=46.48 cfs 4.227 af

Link AP-3: AP-3 Inflow=7.34 cfs 0.717 af
Primary=7.34 cfs 0.717 af

Total Runoff Area = 30.834 ac Runoff Volume = 9.082 af Average Runoff Depth = 3.53"
98.20% Pervious = 30.279 ac 1.80% Impervious = 0.556 ac

Summary for Subcatchment EDA-1: EDA-1

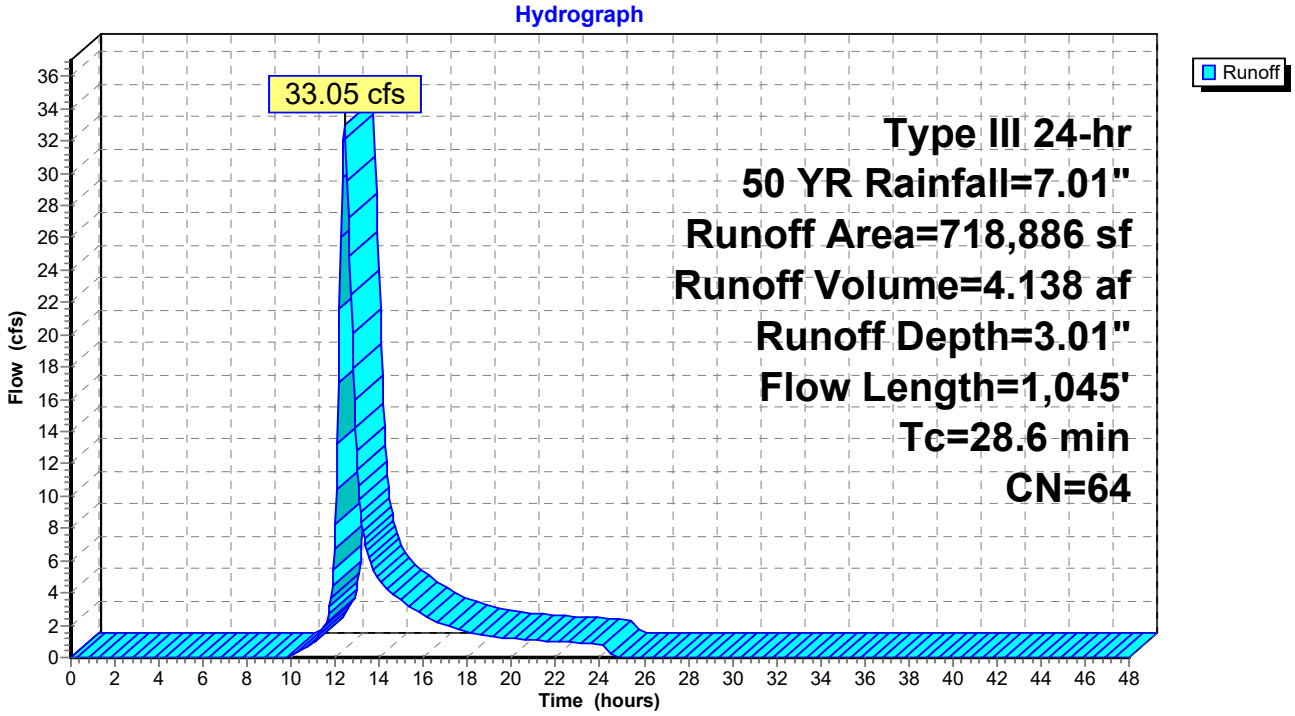
Runoff = 33.05 cfs @ 12.41 hrs, Volume= 4.138 af, Depth= 3.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 YR Rainfall=7.01"

Area (sf)	CN	Description
120,761	30	Woods, Good, HSG A
343,788	67	Row crops, straight row, Good, HSG A
11,440	55	Woods, Good, HSG B
242,897	78	Row crops, straight row, Good, HSG B
718,886	64	Weighted Average
718,886		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	100	0.1700	0.18		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.18"
1.9	130	0.2154	1.16		**Shallow Concentrated Flow, B-C** Forest w/Heavy Litter Kv= 2.5 fps
17.5	815	0.0074	0.77		**Shallow Concentrated Flow, C-D** Cultivated Straight Rows Kv= 9.0 fps
28.6	1,045	Total			

Subcatchment EDA-1: EDA-1



Summary for Subcatchment EDA-2: EDA-2

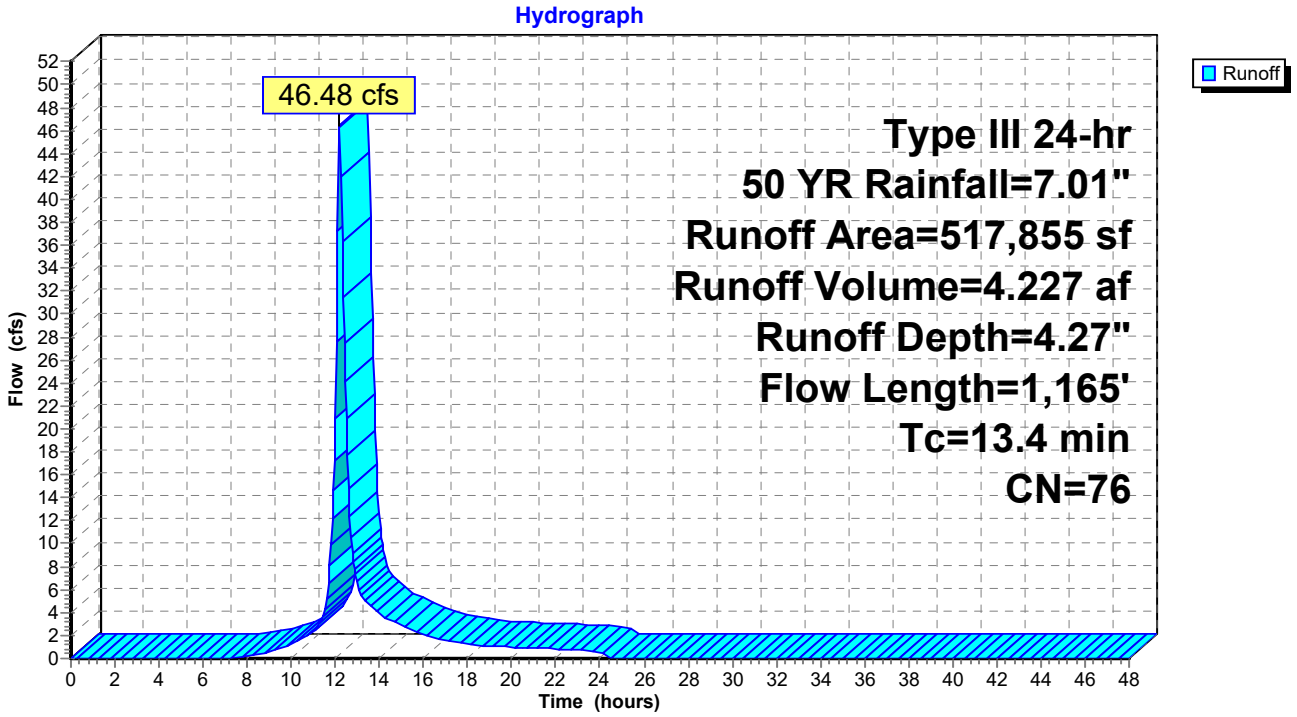
Runoff = 46.48 cfs @ 12.19 hrs, Volume= 4.227 af, Depth= 4.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 YR Rainfall=7.01"

Area (sf)	CN	Description
400,480	78	Row crops, straight row, Good, HSG B
39,553	55	Woods, Good, HSG B
55,690	69	50-75% Grass cover, Fair, HSG B
7,769	98	Roofs, HSG B
14,363	98	Paved roads w/curbs & sewers, HSG B
517,855	76	Weighted Average
495,723		95.73% Pervious Area
22,132		4.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	100	0.0400	0.47		**Sheet Flow, A-B** Cultivated: Residue<=20% n= 0.060 P2= 3.18"
4.9	337	0.0163	1.15		**Shallow Concentrated Flow, B-C** Cultivated Straight Rows Kv= 9.0 fps
3.3	318	0.0063	1.61		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
1.6	410	0.0050	4.40	5.40	**Pipe Channel, D-E** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
13.4	1,165	Total			

Subcatchment EDA-2: EDA-2



Summary for Subcatchment EDA-3: EDA-3

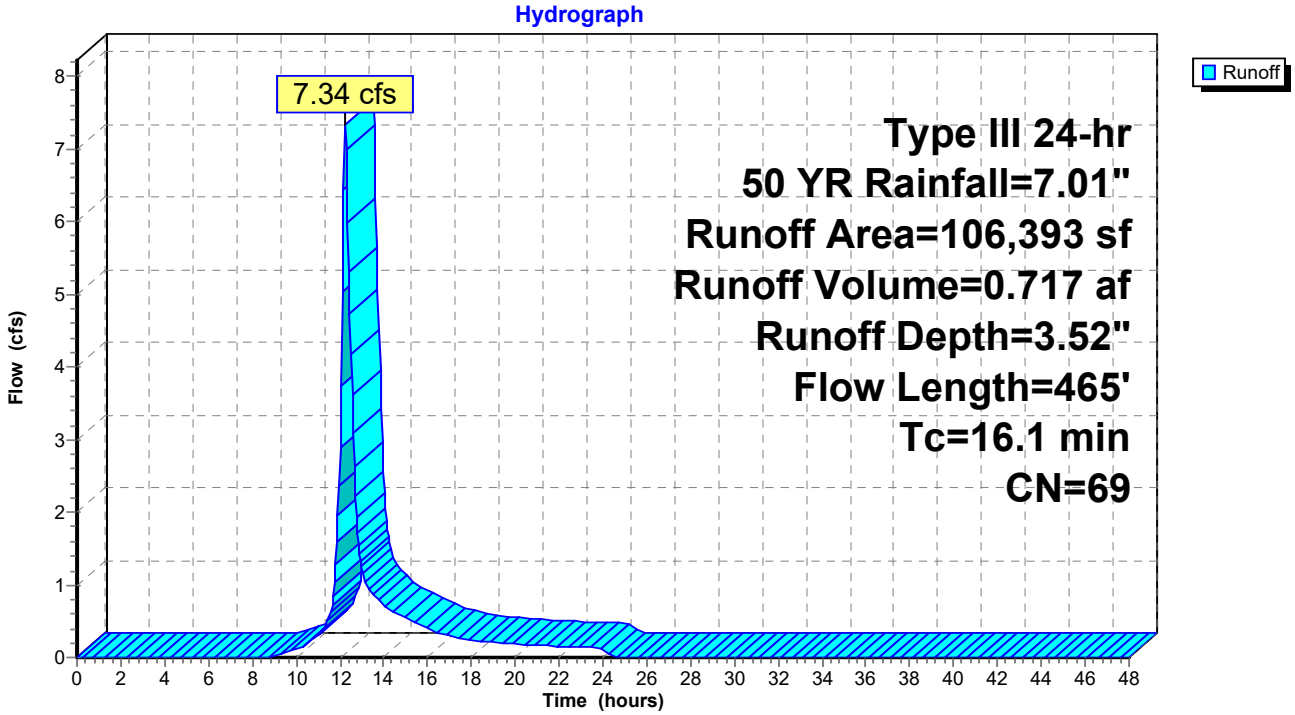
Runoff = 7.34 cfs @ 12.23 hrs, Volume= 0.717 af, Depth= 3.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 YR Rainfall=7.01"

Area (sf)	CN	Description
9,200	30	Woods, Good, HSG A
11,227	67	Row crops, straight row, Good, HSG A
7,614	55	Woods, Good, HSG B
76,285	75	Small grain, straight row, Good, HSG B
2,067	98	Paved roads w/curbs & sewers, HSG B
106,393	69	Weighted Average
104,326		98.06% Pervious Area
2,067		1.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.1400	0.17		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.18"
6.2	365	0.0384	0.98		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
16.1	465	Total			

Subcatchment EDA-3: EDA-3



Summary for Pond 1P: Exist. Stormwater Basin

Inflow Area = 16.503 ac, 0.00% Impervious, Inflow Depth = 3.01" for 50 YR event
Inflow = 33.05 cfs @ 12.41 hrs, Volume= 4.138 af
Outflow = 7.52 cfs @ 13.29 hrs, Volume= 4.139 af, Atten= 77%, Lag= 52.3 min
Discarded = 7.52 cfs @ 13.29 hrs, Volume= 4.139 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 213.10' @ 13.29 hrs Surf.Area= 82,361 sf Storage= 71,108 cf

Plug-Flow detention time= 127.4 min calculated for 4.134 af (100% of inflow)
Center-of-Mass det. time= 127.4 min (992.5 - 865.1)

Volume	Invert	Avail.Storage	Storage Description
#1	211.00'	176,542 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

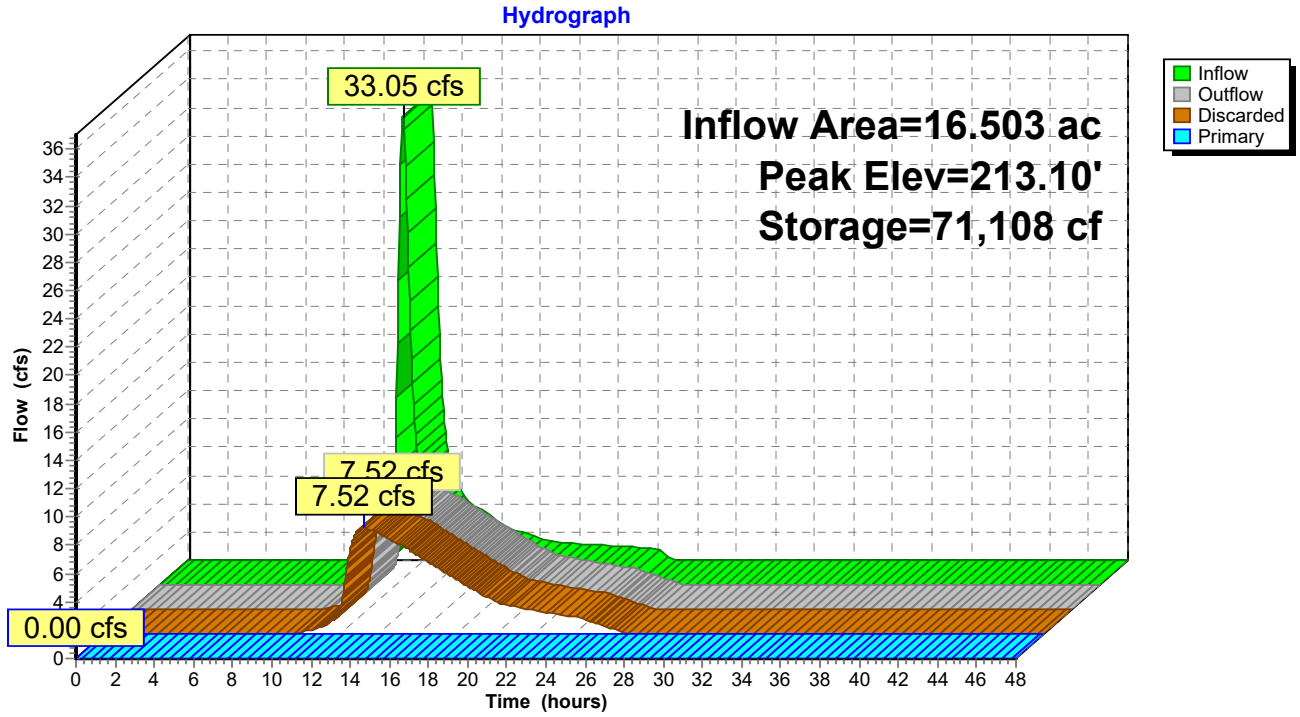
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
211.00	2,506	0	0
212.00	24,732	13,619	13,619
213.00	74,923	49,828	63,447
214.00	151,267	113,095	176,542

Device	Routing	Invert	Outlet Devices
#1	Primary	213.50'	**30.0' long x 14.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.64 2.67 2.70 2.65 2.64 2.65 2.65 2.63
#2	Discarded	211.00'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 209.00'

Discarded OutFlow Max=7.52 cfs @ 13.29 hrs HW=213.10' (Free Discharge)
↑—**2=Exfiltration** (Controls 7.52 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=211.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Exist. Stormwater Basin

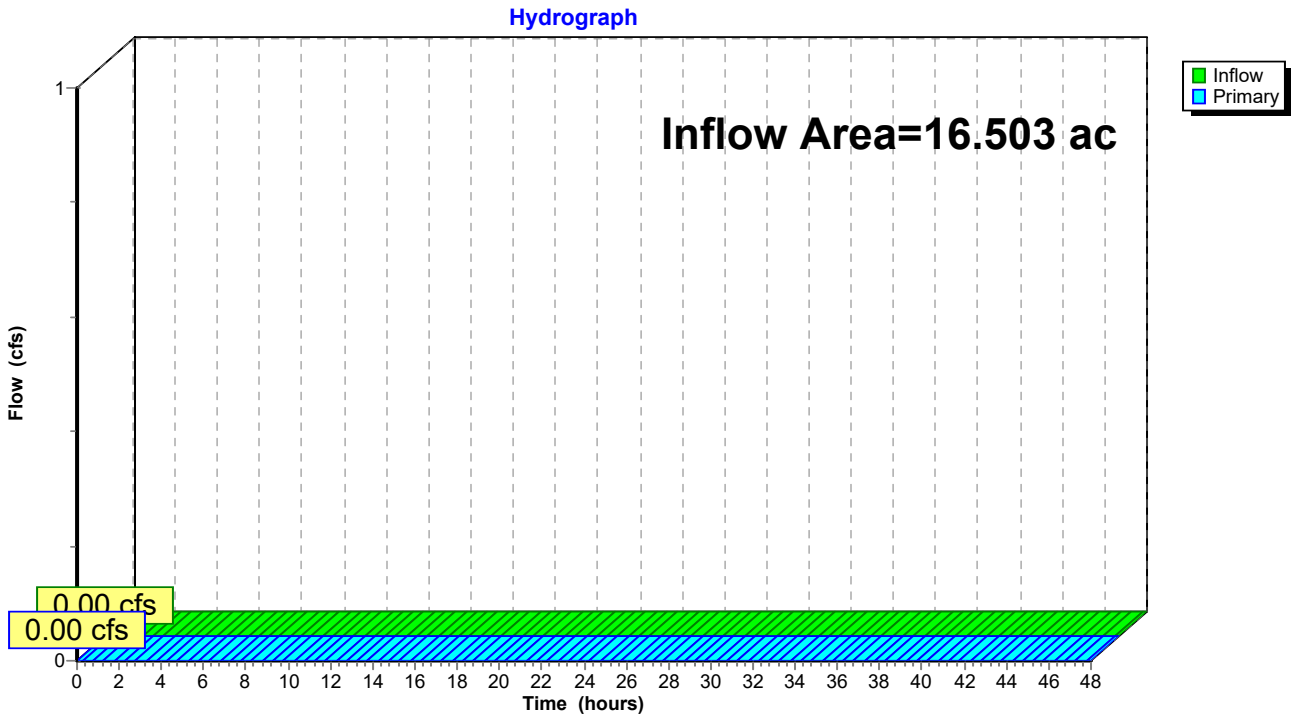


Summary for Link AP-1: AP-1

Inflow Area = 16.503 ac, 0.00% Impervious, Inflow Depth = 0.00" for 50 YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP-1: AP-1

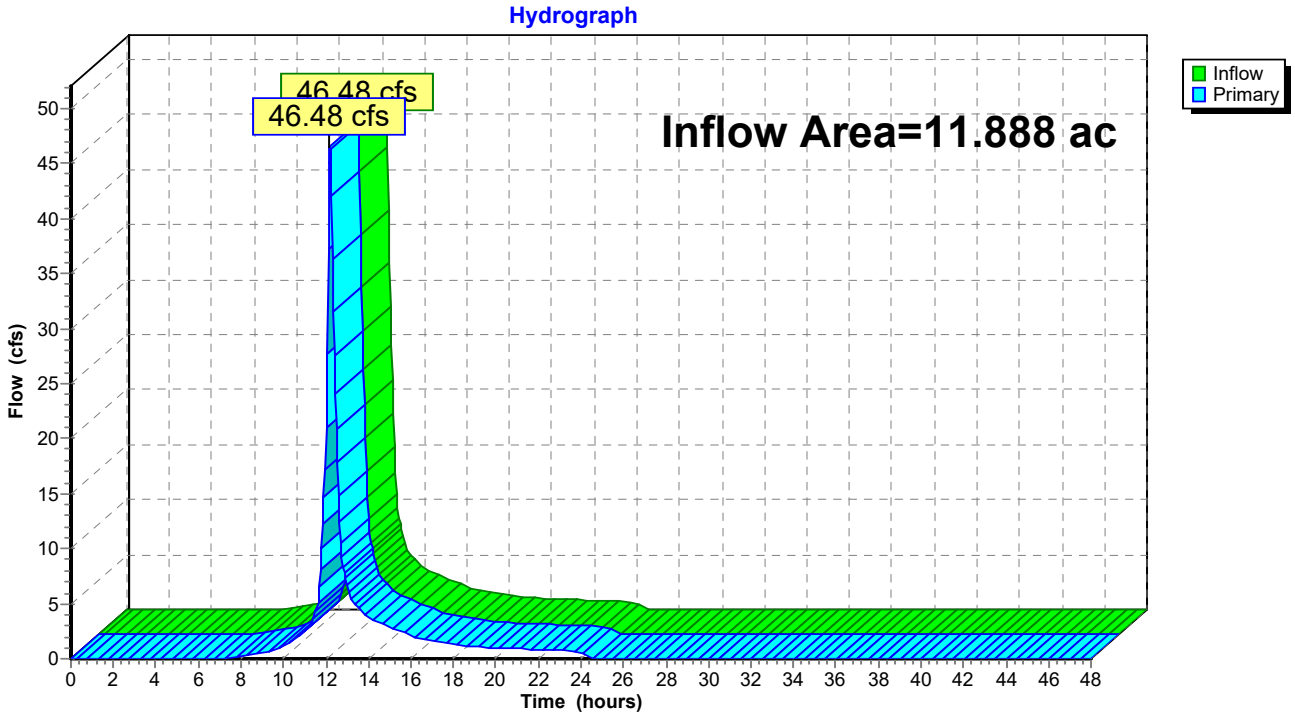


Summary for Link AP-2: AP-2

Inflow Area = 11.888 ac, 4.27% Impervious, Inflow Depth = 4.27" for 50 YR event
Inflow = 46.48 cfs @ 12.19 hrs, Volume= 4.227 af
Primary = 46.48 cfs @ 12.19 hrs, Volume= 4.227 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP-2: AP-2

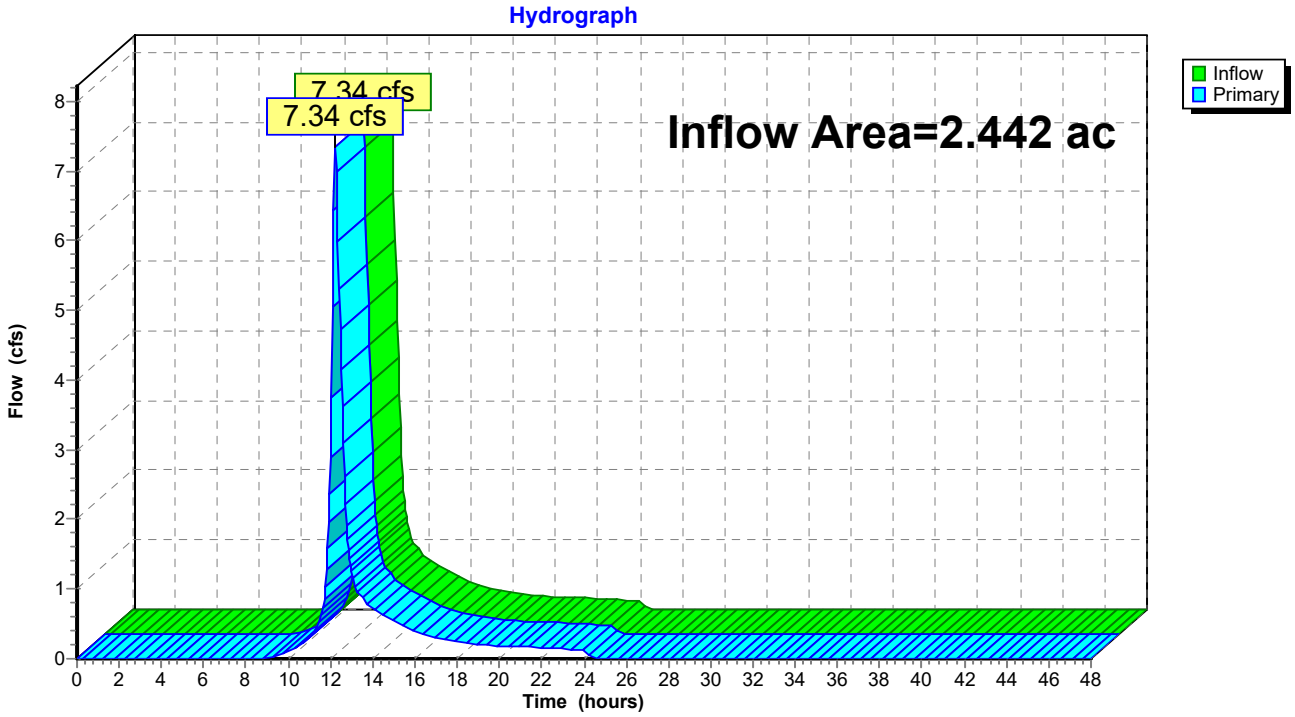


Summary for Link AP-3: AP-3

Inflow Area = 2.442 ac, 1.94% Impervious, Inflow Depth = 3.52" for 50 YR event
Inflow = 7.34 cfs @ 12.23 hrs, Volume= 0.717 af
Primary = 7.34 cfs @ 12.23 hrs, Volume= 0.717 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP-3: AP-3



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment EDA-1: EDA-1 Runoff Area=718,886 sf 0.00% Impervious Runoff Depth=3.74"
Flow Length=1,045' Tc=28.6 min CN=64 Runoff=41.43 cfs 5.145 af

Subcatchment EDA-2: EDA-2 Runoff Area=517,855 sf 4.27% Impervious Runoff Depth=5.11"
Flow Length=1,165' Tc=13.4 min CN=76 Runoff=55.53 cfs 5.065 af

Subcatchment EDA-3: EDA-3 Runoff Area=106,393 sf 1.94% Impervious Runoff Depth=4.31"
Flow Length=465' Tc=16.1 min CN=69 Runoff=9.05 cfs 0.877 af

Pond 1P: Exist. Stormwater Basin Peak Elev=213.32' Storage=91,483 cf Inflow=41.43 cfs 5.145 af
Discarded=9.14 cfs 5.146 af Primary=0.00 cfs 0.000 af Outflow=9.14 cfs 5.146 af

Link AP-1: AP-1 Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Link AP-2: AP-2 Inflow=55.53 cfs 5.065 af
Primary=55.53 cfs 5.065 af

Link AP-3: AP-3 Inflow=9.05 cfs 0.877 af
Primary=9.05 cfs 0.877 af

Total Runoff Area = 30.834 ac Runoff Volume = 11.087 af Average Runoff Depth = 4.31"
98.20% Pervious = 30.279 ac 1.80% Impervious = 0.556 ac

Summary for Subcatchment EDA-1: EDA-1

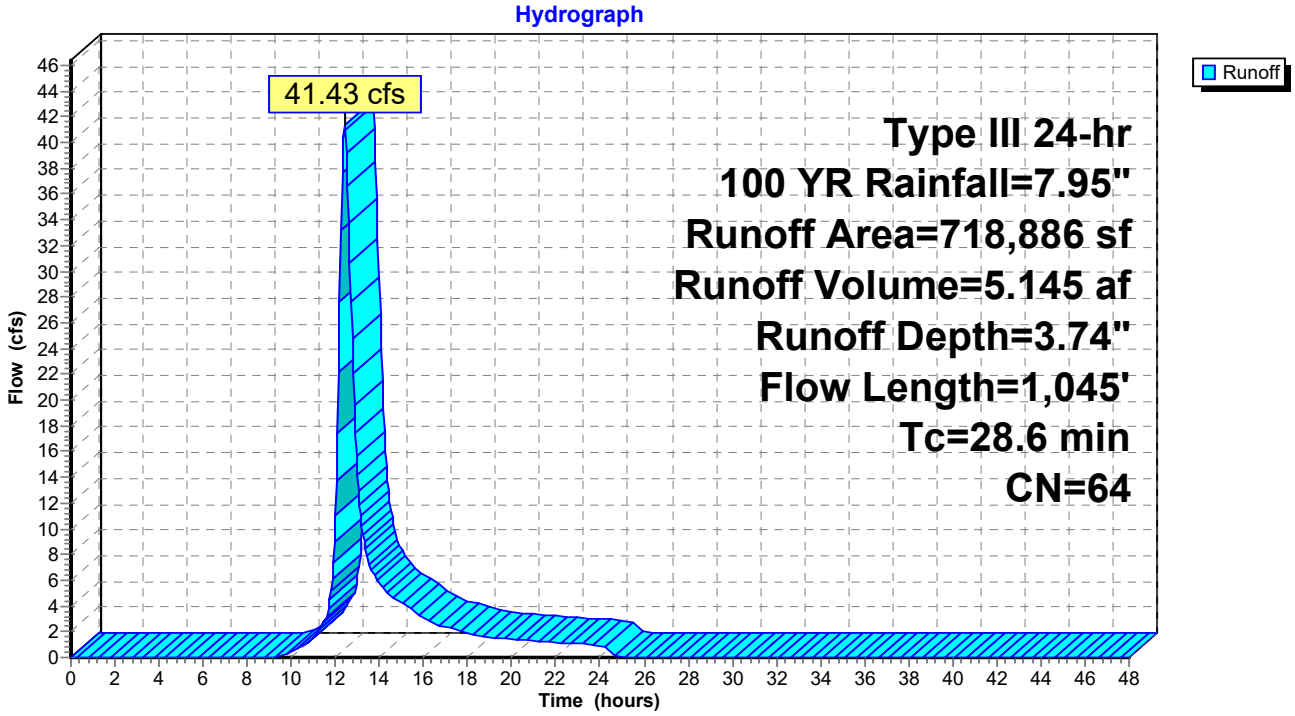
Runoff = 41.43 cfs @ 12.41 hrs, Volume= 5.145 af, Depth= 3.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.95"

Area (sf)	CN	Description
120,761	30	Woods, Good, HSG A
343,788	67	Row crops, straight row, Good, HSG A
11,440	55	Woods, Good, HSG B
242,897	78	Row crops, straight row, Good, HSG B
718,886	64	Weighted Average
718,886		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	100	0.1700	0.18		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.18"
1.9	130	0.2154	1.16		**Shallow Concentrated Flow, B-C** Forest w/Heavy Litter Kv= 2.5 fps
17.5	815	0.0074	0.77		**Shallow Concentrated Flow, C-D** Cultivated Straight Rows Kv= 9.0 fps
28.6	1,045	Total			

Subcatchment EDA-1: EDA-1



Summary for Subcatchment EDA-2: EDA-2

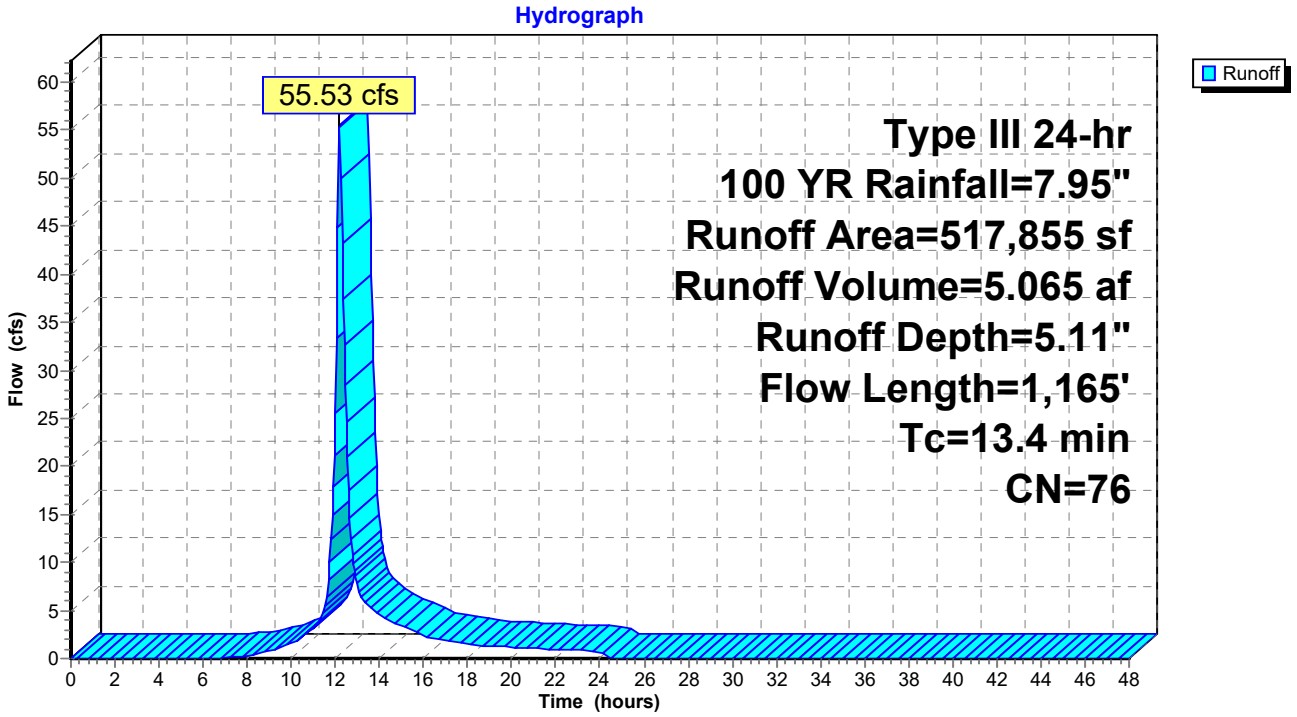
Runoff = 55.53 cfs @ 12.19 hrs, Volume= 5.065 af, Depth= 5.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.95"

Area (sf)	CN	Description
400,480	78	Row crops, straight row, Good, HSG B
39,553	55	Woods, Good, HSG B
55,690	69	50-75% Grass cover, Fair, HSG B
7,769	98	Roofs, HSG B
14,363	98	Paved roads w/curbs & sewers, HSG B
517,855	76	Weighted Average
495,723		95.73% Pervious Area
22,132		4.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	100	0.0400	0.47		**Sheet Flow, A-B** Cultivated: Residue<=20% n= 0.060 P2= 3.18"
4.9	337	0.0163	1.15		**Shallow Concentrated Flow, B-C** Cultivated Straight Rows Kv= 9.0 fps
3.3	318	0.0063	1.61		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
1.6	410	0.0050	4.40	5.40	**Pipe Channel, D-E** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
13.4	1,165	Total			

Subcatchment EDA-2: EDA-2



Summary for Subcatchment EDA-3: EDA-3

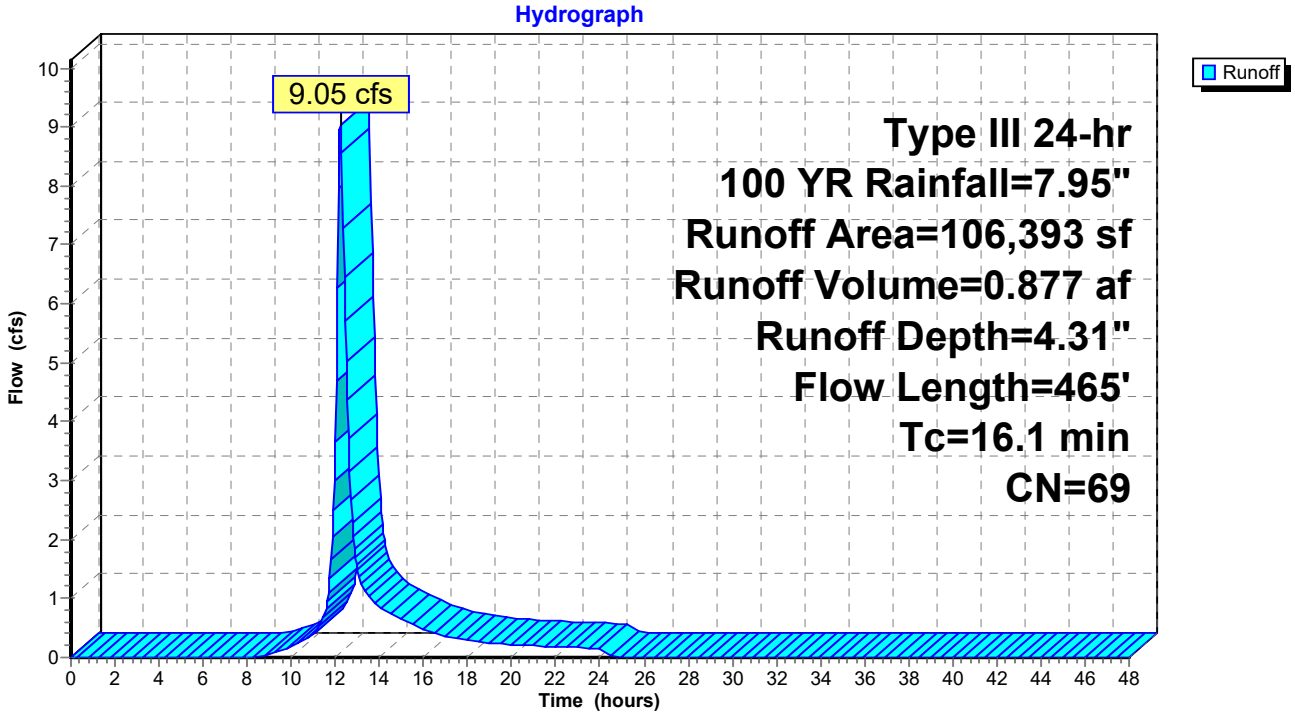
Runoff = 9.05 cfs @ 12.22 hrs, Volume= 0.877 af, Depth= 4.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.95"

Area (sf)	CN	Description
9,200	30	Woods, Good, HSG A
11,227	67	Row crops, straight row, Good, HSG A
7,614	55	Woods, Good, HSG B
76,285	75	Small grain, straight row, Good, HSG B
2,067	98	Paved roads w/curbs & sewers, HSG B
106,393	69	Weighted Average
104,326		98.06% Pervious Area
2,067		1.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.1400	0.17		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.18"
6.2	365	0.0384	0.98		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
16.1	465	Total			

Subcatchment EDA-3: EDA-3



Summary for Pond 1P: Exist. Stormwater Basin

Inflow Area = 16.503 ac, 0.00% Impervious, Inflow Depth = 3.74" for 100 YR event
Inflow = 41.43 cfs @ 12.41 hrs, Volume= 5.145 af
Outflow = 9.14 cfs @ 13.28 hrs, Volume= 5.146 af, Atten= 78%, Lag= 52.5 min
Discarded = 9.14 cfs @ 13.28 hrs, Volume= 5.146 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 213.32' @ 13.28 hrs Surf.Area= 99,470 sf Storage= 91,483 cf

Plug-Flow detention time= 136.4 min calculated for 5.140 af (100% of inflow)
Center-of-Mass det. time= 136.4 min (995.1 - 858.7)

Volume	Invert	Avail.Storage	Storage Description
#1	211.00'	176,542 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

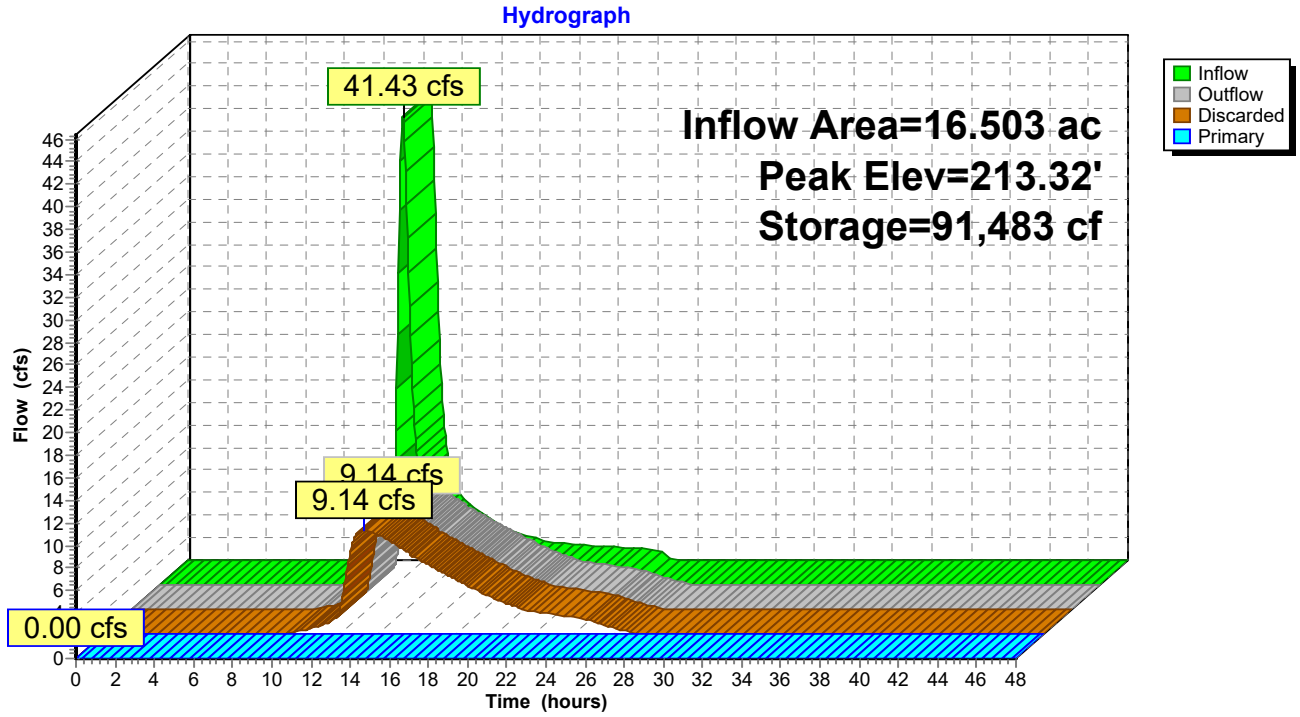
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
211.00	2,506	0	0
212.00	24,732	13,619	13,619
213.00	74,923	49,828	63,447
214.00	151,267	113,095	176,542

Device	Routing	Invert	Outlet Devices
#1	Primary	213.50'	**30.0' long x 14.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.64 2.67 2.70 2.65 2.64 2.65 2.65 2.63
#2	Discarded	211.00'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 209.00'

Discarded OutFlow Max=9.14 cfs @ 13.28 hrs HW=213.32' (Free Discharge)
↑—**2=Exfiltration** (Controls 9.14 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=211.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Exist. Stormwater Basin

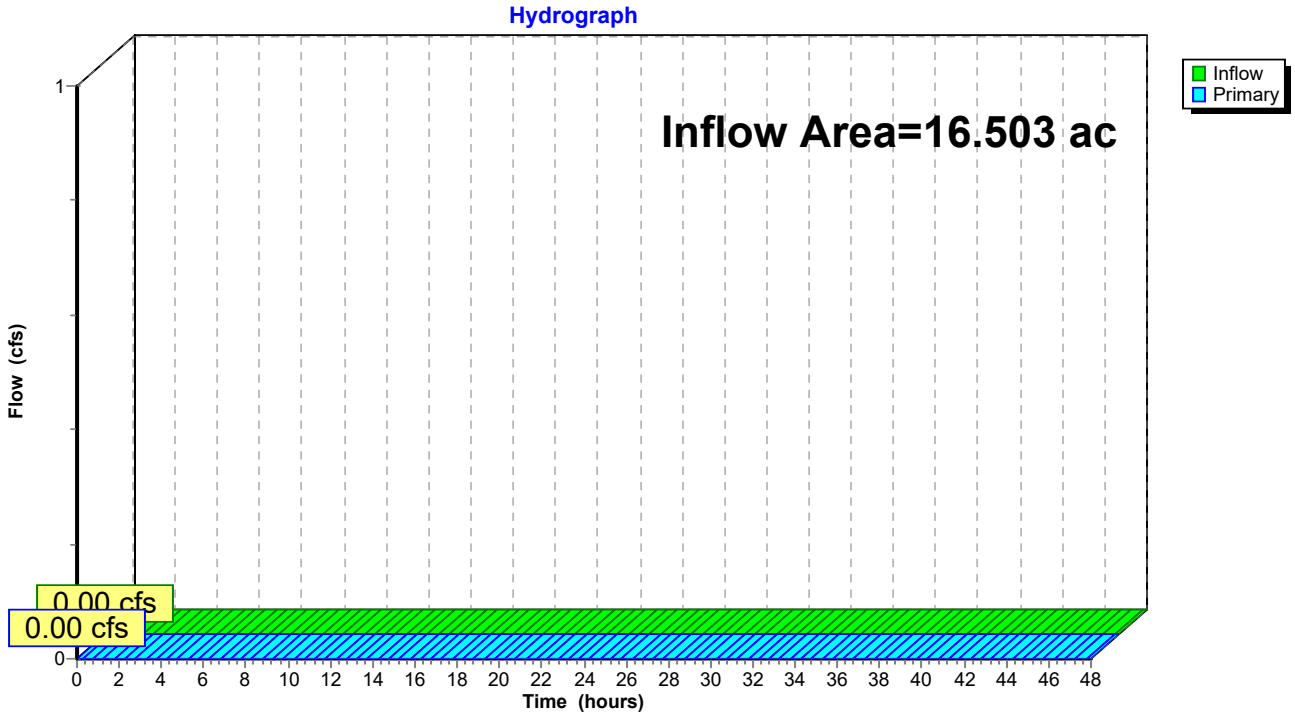


Summary for Link AP-1: AP-1

Inflow Area = 16.503 ac, 0.00% Impervious, Inflow Depth = 0.00" for 100 YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP-1: AP-1

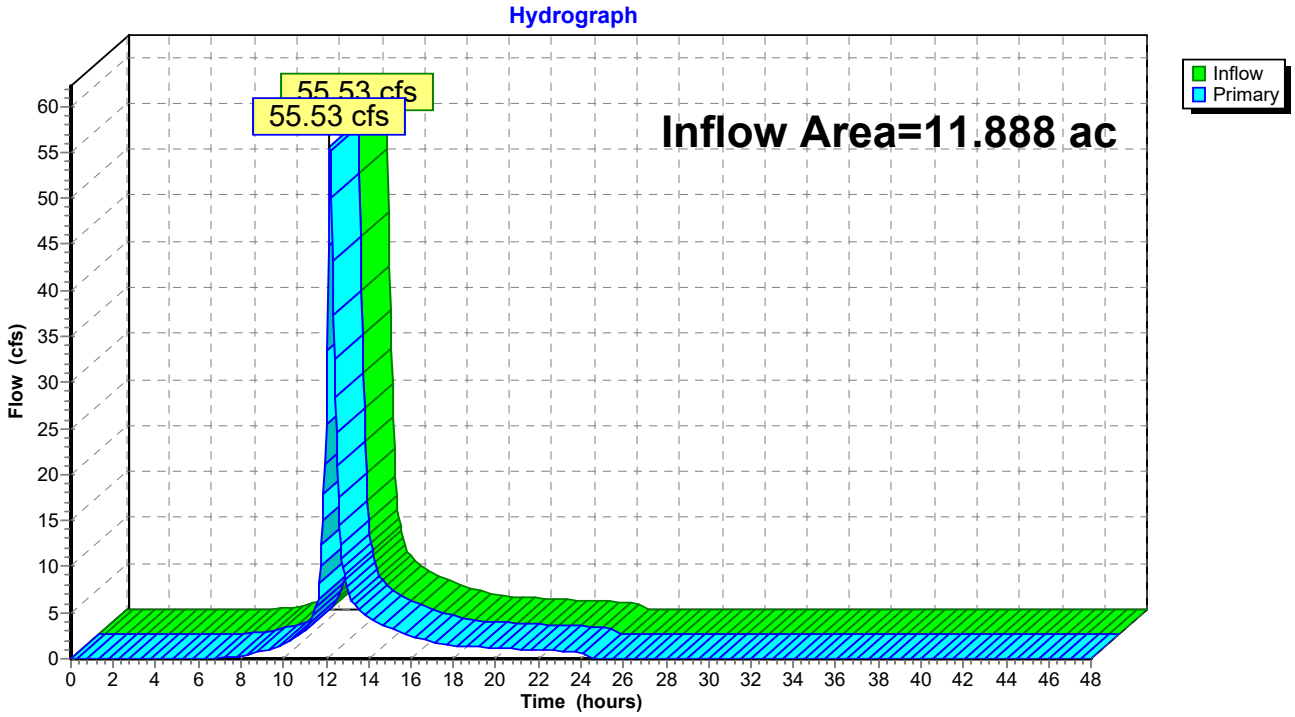


Summary for Link AP-2: AP-2

Inflow Area = 11.888 ac, 4.27% Impervious, Inflow Depth = 5.11" for 100 YR event
Inflow = 55.53 cfs @ 12.19 hrs, Volume= 5.065 af
Primary = 55.53 cfs @ 12.19 hrs, Volume= 5.065 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP-2: AP-2

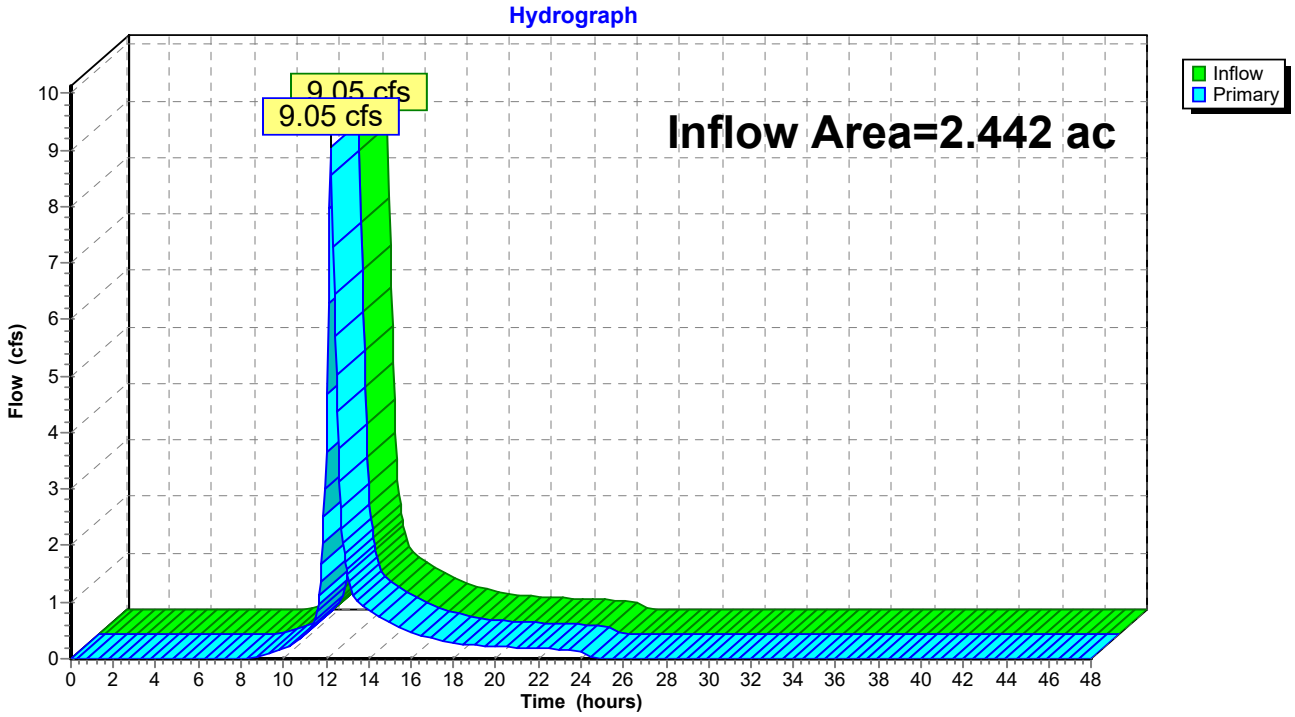


Summary for Link AP-3: AP-3

Inflow Area = 2.442 ac, 1.94% Impervious, Inflow Depth = 4.31" for 100 YR event
Inflow = 9.05 cfs @ 12.22 hrs, Volume= 0.877 af
Primary = 9.05 cfs @ 12.22 hrs, Volume= 0.877 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP-3: AP-3



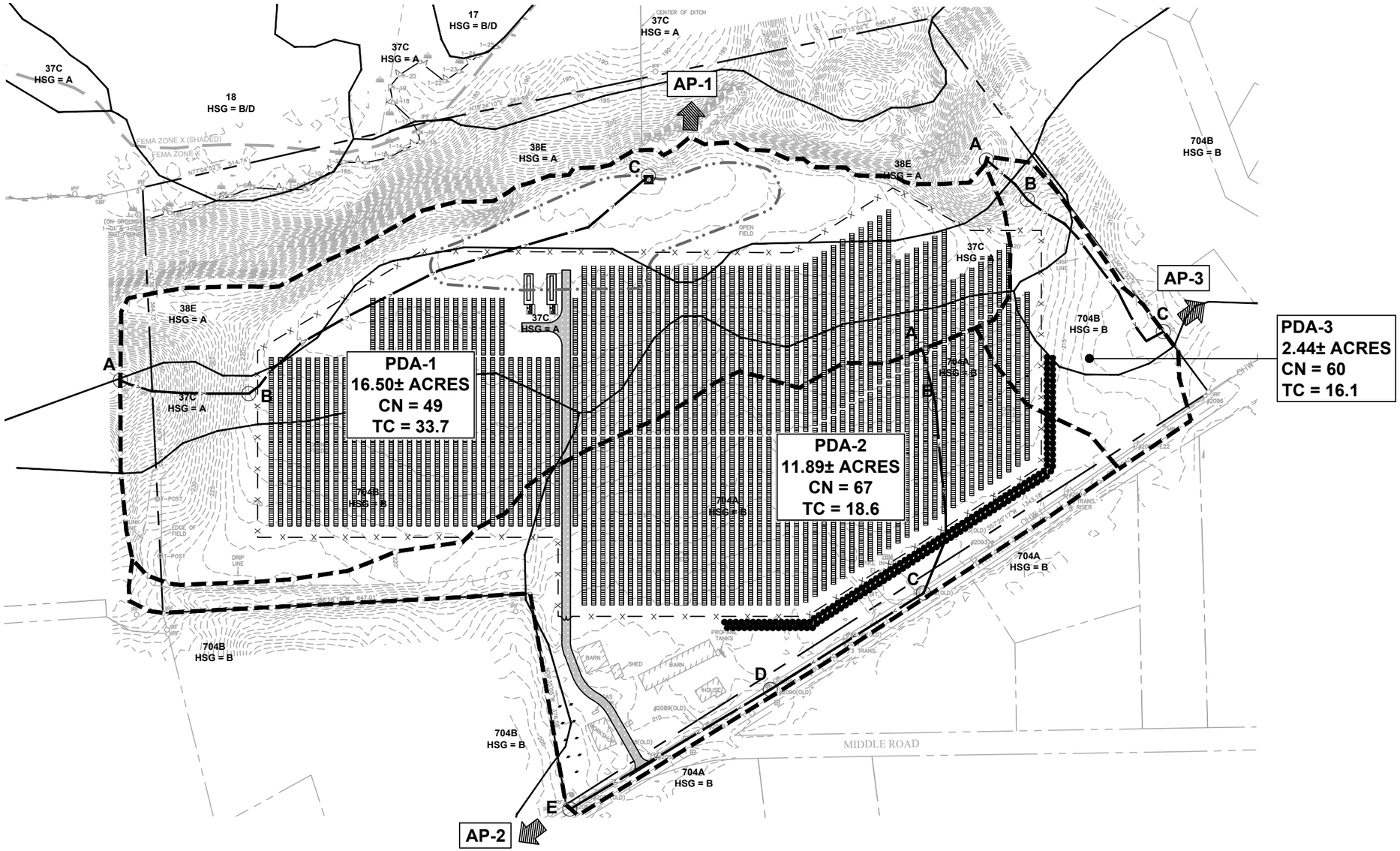
APPENDIX D: PROPOSED DRAINAGE AREA MAP (PDA-1) & HYDROLOGIC COMPUTATION (HYDROCAD)

PROPOSED DRAINAGE AREAS

	TOTAL AREA (ACRES)	COMPOSITE CN	TC (MINS.)
PDA-1	16.50	49	33.7
PDA-2	11.89	66	18.6
PDA-3	2.44	60	16.1

PROPOSED CONDITION PEAK FLOWS

ANALYSIS POINT	2-YEAR (CFS)	25-YEAR (CFS)	50-YEAR (CFS)	100-YEAR (CFS)
AP-1	0.00	0.00	0.00	0.00
AP-2	5.29	25.27	31.78	39.30
AP-3	0.49	4.02	5.27	6.76



1 PDA-1 **PROPOSED DRAINAGE AREA MAP**
SCALE : 1" = 100'-0"

100 0 50 100 200
(IN FEET) 1 inch = 100 ft.

EAST WINDSOR SOLAR TWO, LLC
150 TRUMBULL STREET
4TH FLOOR
HARTFORD, CT, 06103

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHAUL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PHONE: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CSC PERMIT SET

NO	DATE	REVISION
0	04/2023	FOR REVIEW: RCB
1		
2		
3		
4		
5		
6		

DESIGN PROFESSIONAL OF RECORD

PROF: ROBERT C. BURNS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 567 VAUXHAUL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385

OWNER: CATHOLIC CEMETERIES ASSOCIATION OF THE ARCHDIOCESE OF HARTFORD, INC.
ADDRESS: 700 MIDDLETOWN AVE. NORTH HAVEN, CT 06473

EAST WINDSOR SOLAR TWO

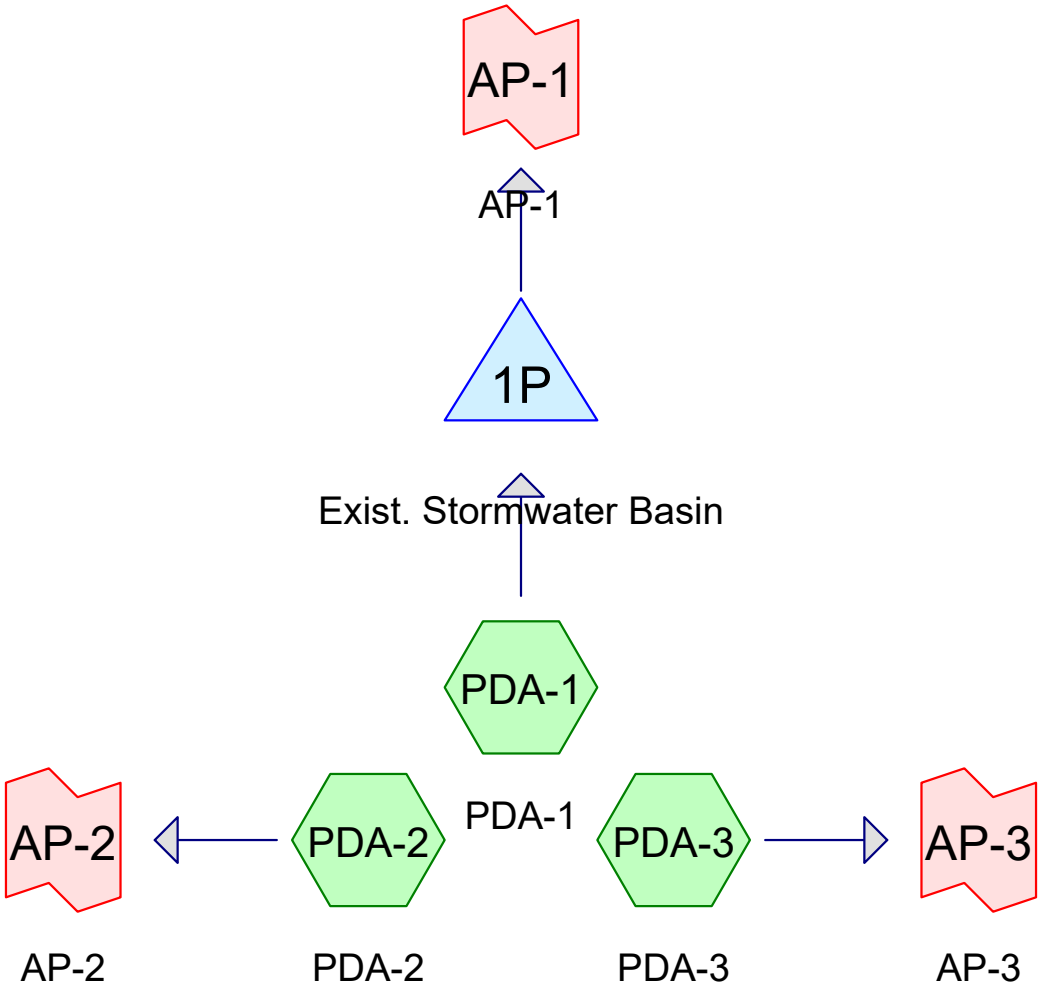
SITE ADDRESS: 31 THRALL ROAD BROAD BROOK, CT 06016

APT FILING NUMBER: CT590340

DRAWN BY: CSH
DATE: 04/2023 CHECKED BY: RCB

SHEET TITLE:
PROPOSED DRAINAGE AREA MAP

SHEET NUMBER:
PDA-1



Subcat Reach Pond Link

Routing Diagram for CT590340_EastWindsorSolarTwo - PR - Rev0
Prepared by All-Points Technology Corporation, Printed 3/31/2023
HydroCAD® 10.00-26 s/n 07402 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.278	69	50-75% Grass cover, Fair, HSG B (PDA-2)
0.152	96	Gravel surface, HSG A/B (PDA-1)
0.238	96	Gravel surface, HSG B/C (PDA-1, PDA-2)
7.987	44	Meadow, non-grazed, HSG A/B (PDA-1, PDA-3)
16.283	65	Meadow, non-grazed, HSG B/C (PDA-1, PDA-2, PDA-3)
0.377	98	Paved roads w/curbs & sewers, HSG B (PDA-2, PDA-3)
0.178	98	Roofs, HSG B (PDA-2)
0.011	98	Water Surface, HSG A/B (PDA-1)
2.983	30	Woods, Good, HSG A (PDA-1, PDA-3)
1.345	55	Woods, Good, HSG B (PDA-1, PDA-2, PDA-3)
30.834	**57**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
11.134	HSG A	PDA-1, PDA-3
19.701	HSG B	PDA-1, PDA-2, PDA-3
0.000	HSG C	
0.000	HSG D	
0.000	Other	
30.834		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	1.278	0.000	0.000	0.000	1.278	50-75% Grass cover, Fair	PDA-2
0.152	0.238	0.000	0.000	0.000	0.390	Gravel surface	PDA-1, PDA-2
7.987	16.283	0.000	0.000	0.000	24.270	Meadow, non-grazed	PDA-1, PDA-2, PDA-3
0.000	0.377	0.000	0.000	0.000	0.377	Paved roads w/curbs & sewers	PDA-2, PDA-3
0.000	0.178	0.000	0.000	0.000	0.178	Roofs	PDA-2
0.011	0.000	0.000	0.000	0.000	0.011	Water Surface	PDA-1
2.983	1.345	0.000	0.000	0.000	4.329	Woods, Good	PDA-1, PDA-2, PDA-3
11.134	**19.701**	**0.000**	**0.000**	**0.000**	**30.834**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	PDA-2	0.00	0.00	410.0	0.0050	0.011	15.0	0.0	0.0

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PDA-1: PDA-1 Runoff Area=718,886 sf 0.07% Impervious Runoff Depth=0.10"
Flow Length=1,045' Tc=33.7 min CN=49 Runoff=0.23 cfs 0.139 af

Subcatchment PDA-2: PDA-2 Runoff Area=517,855 sf 4.27% Impervious Runoff Depth=0.67"
Flow Length=1,165' Tc=18.6 min CN=67 Runoff=5.29 cfs 0.660 af

Subcatchment PDA-3: PDA-3 Runoff Area=106,393 sf 1.94% Impervious Runoff Depth=0.39"
Flow Length=465' Tc=16.1 min CN=60 Runoff=0.49 cfs 0.080 af

Pond 1P: Exist. Stormwater Basin Peak Elev=211.03' Storage=84 cf Inflow=0.23 cfs 0.139 af
Discarded=0.22 cfs 0.139 af Primary=0.00 cfs 0.000 af Outflow=0.22 cfs 0.139 af

Link AP-1: AP-1 Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Link AP-2: AP-2 Inflow=5.29 cfs 0.660 af
Primary=5.29 cfs 0.660 af

Link AP-3: AP-3 Inflow=0.49 cfs 0.080 af
Primary=0.49 cfs 0.080 af

Total Runoff Area = 30.834 ac Runoff Volume = 0.879 af Average Runoff Depth = 0.34"
98.16% Pervious = 30.268 ac 1.84% Impervious = 0.566 ac

Summary for Subcatchment PDA-1: PDA-1

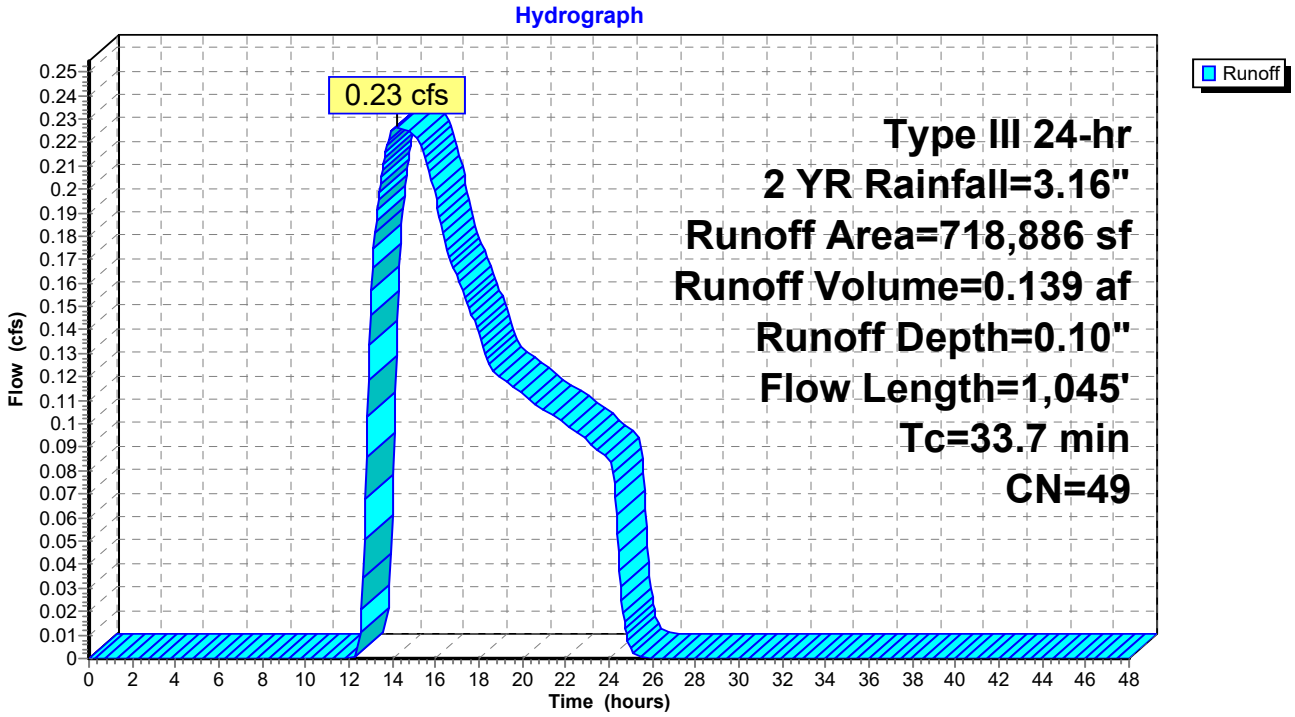
Runoff = 0.23 cfs @ 14.18 hrs, Volume= 0.139 af, Depth= 0.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.16"

	Area (sf)	CN	Description
	120,761	30	Woods, Good, HSG A
*	336,676	44	Meadow, non-grazed, HSG A/B
*	6,642	96	Gravel surface, HSG A/B
*	470	98	Water Surface, HSG A/B
	11,440	55	Woods, Good, HSG B
*	241,456	65	Meadow, non-grazed, HSG B/C
*	1,441	96	Gravel surface, HSG B/C
	718,886	49	Weighted Average
	718,416		99.93% Pervious Area
	470		0.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	100	0.1700	0.18		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.18"
1.9	130	0.2154	1.16		**Shallow Concentrated Flow, B-C** Forest w/Heavy Litter Kv= 2.5 fps
22.6	815	0.0074	0.60		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
33.7	1,045	Total			

Subcatchment PDA-1: PDA-1



Summary for Subcatchment PDA-2: PDA-2

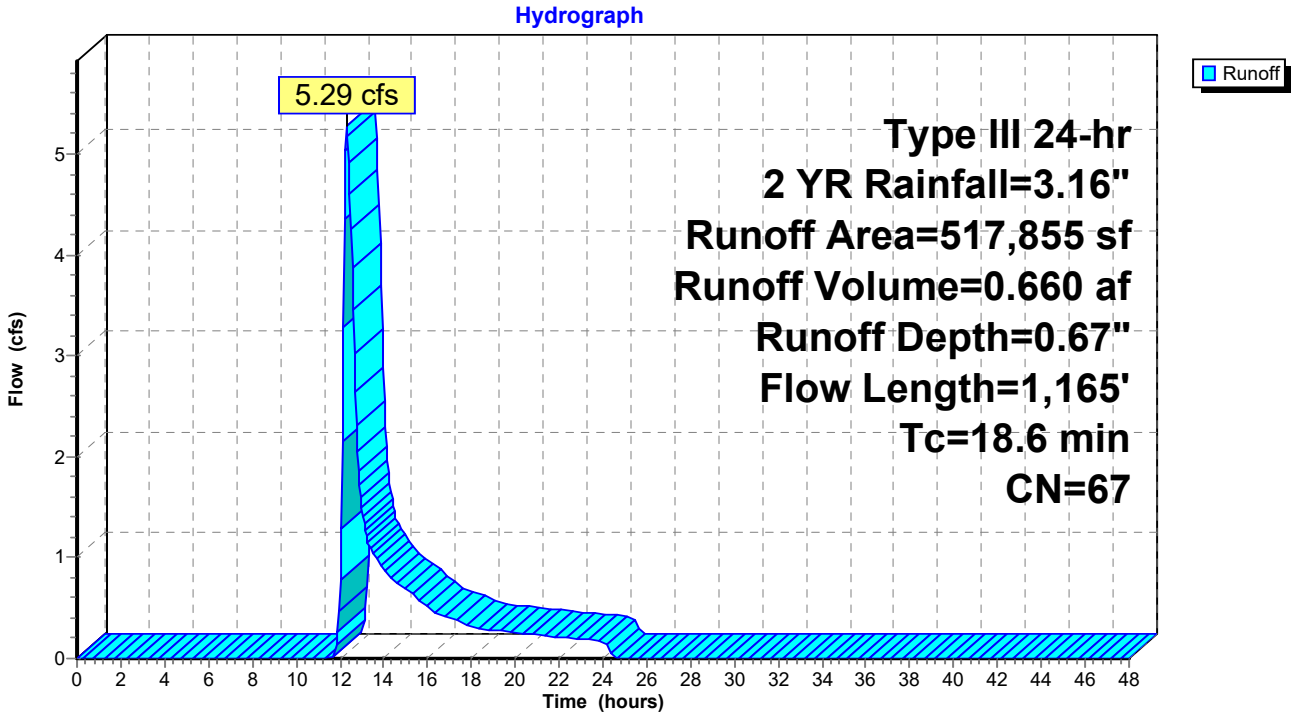
Runoff = 5.29 cfs @ 12.31 hrs, Volume= 0.660 af, Depth= 0.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.16"

	Area (sf)	CN	Description
*	391,566	65	Meadow, non-grazed, HSG B/C
	39,553	55	Woods, Good, HSG B
	55,690	69	50-75% Grass cover, Fair, HSG B
*	8,914	96	Gravel surface, HSG B/C
	7,769	98	Roofs, HSG B
	14,363	98	Paved roads w/curbs & sewers, HSG B
	517,855	67	Weighted Average
	495,723		95.73% Pervious Area
	22,132		4.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.0400	0.22		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.18"
6.3	337	0.0163	0.89		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
3.3	318	0.0063	1.61		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
1.6	410	0.0050	4.40	5.40	**Pipe Channel, D-E** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
18.6	1,165	Total			

Subcatchment PDA-2: PDA-2



Summary for Subcatchment PDA-3: PDA-3

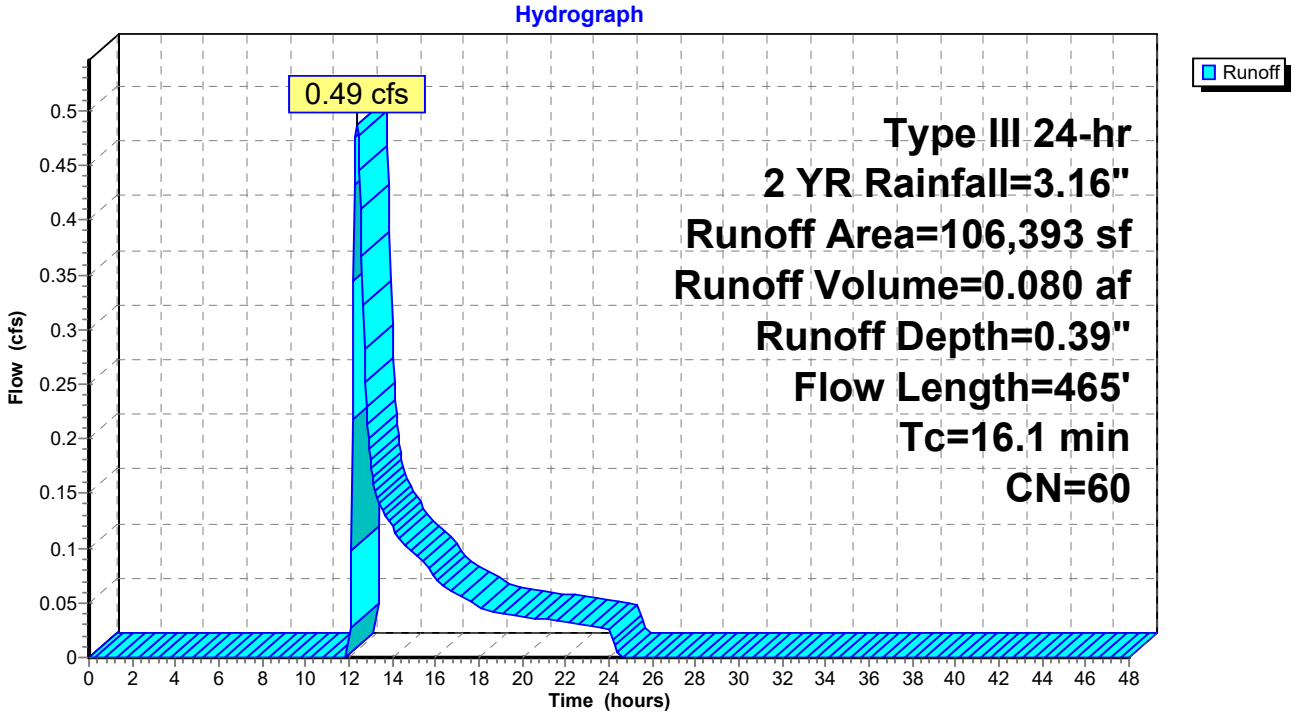
Runoff = 0.49 cfs @ 12.36 hrs, Volume= 0.080 af, Depth= 0.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YR Rainfall=3.16"

	Area (sf)	CN	Description
	9,200	30	Woods, Good, HSG A
*	11,227	44	Meadow, non-grazed, HSG A/B
	7,614	55	Woods, Good, HSG B
*	76,285	65	Meadow, non-grazed, HSG B/C
	2,067	98	Paved roads w/curbs & sewers, HSG B
	106,393	60	Weighted Average
	104,326		98.06% Pervious Area
	2,067		1.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.1400	0.17		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.18"
6.2	365	0.0384	0.98		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
16.1	465	Total			

Subcatchment PDA-3: PDA-3



Summary for Pond 1P: Exist. Stormwater Basin

Inflow Area = 16.503 ac, 0.07% Impervious, Inflow Depth = 0.10" for 2 YR event
Inflow = 0.23 cfs @ 14.18 hrs, Volume= 0.139 af
Outflow = 0.22 cfs @ 15.08 hrs, Volume= 0.139 af, Atten= 2%, Lag= 54.4 min
Discarded = 0.22 cfs @ 15.08 hrs, Volume= 0.139 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 211.03' @ 15.08 hrs Surf.Area= 3,166 sf Storage= 84 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 2.0 min (1,057.6 - 1,055.6)

Volume	Invert	Avail.Storage	Storage Description
#1	211.00'	176,542 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

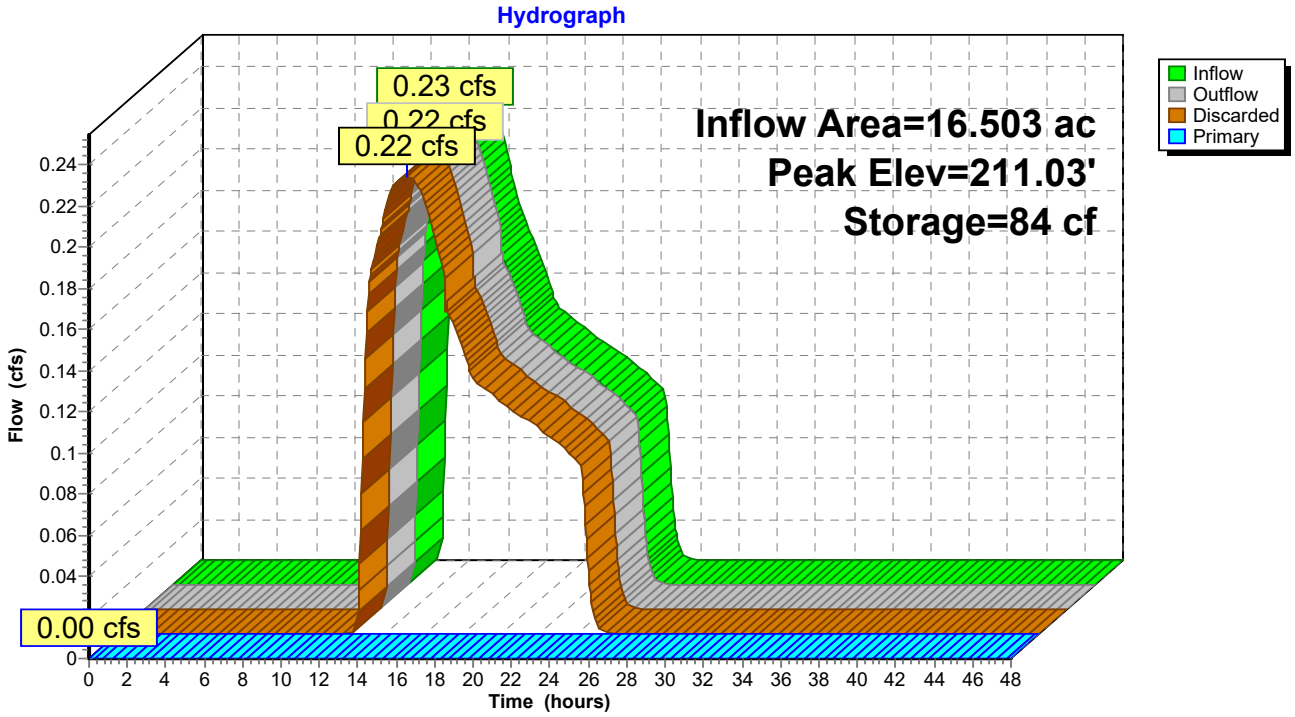
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
211.00	2,506	0	0
212.00	24,732	13,619	13,619
213.00	74,923	49,828	63,447
214.00	151,267	113,095	176,542

Device	Routing	Invert	Outlet Devices
#1	Primary	213.50'	**30.0' long x 14.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.64 2.67 2.70 2.65 2.64 2.65 2.65 2.63
#2	Discarded	211.00'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 209.00'

Discarded OutFlow Max=0.22 cfs @ 15.08 hrs HW=211.03' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.22 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=211.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Exist. Stormwater Basin

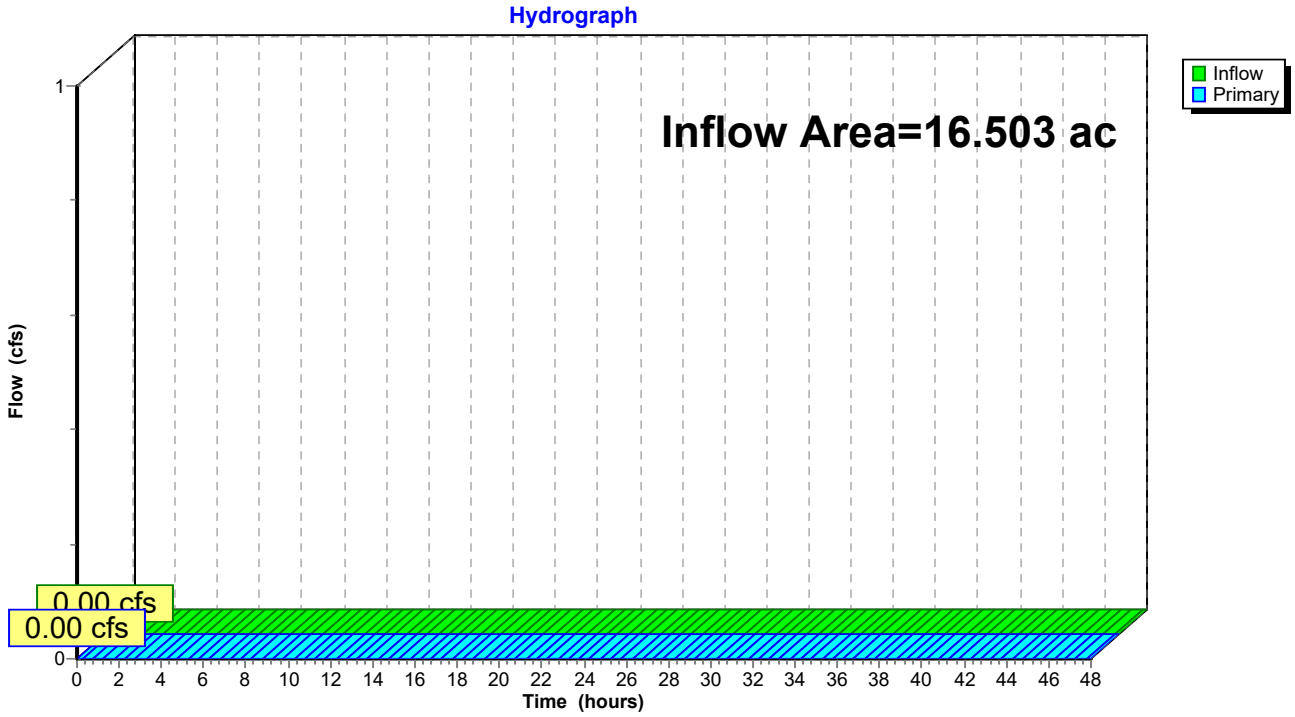


Summary for Link AP-1: AP-1

Inflow Area = 16.503 ac, 0.07% Impervious, Inflow Depth = 0.00" for 2 YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP-1: AP-1

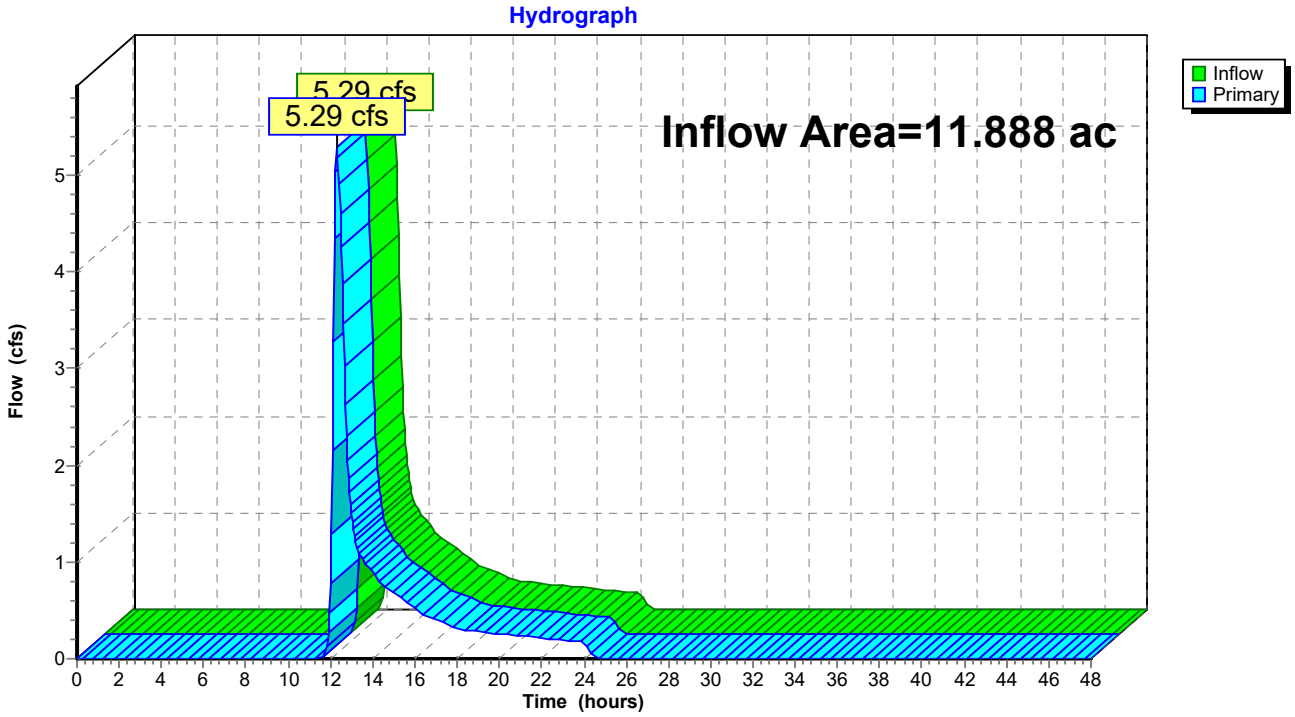


Summary for Link AP-2: AP-2

Inflow Area = 11.888 ac, 4.27% Impervious, Inflow Depth = 0.67" for 2 YR event
Inflow = 5.29 cfs @ 12.31 hrs, Volume= 0.660 af
Primary = 5.29 cfs @ 12.31 hrs, Volume= 0.660 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP-2: AP-2

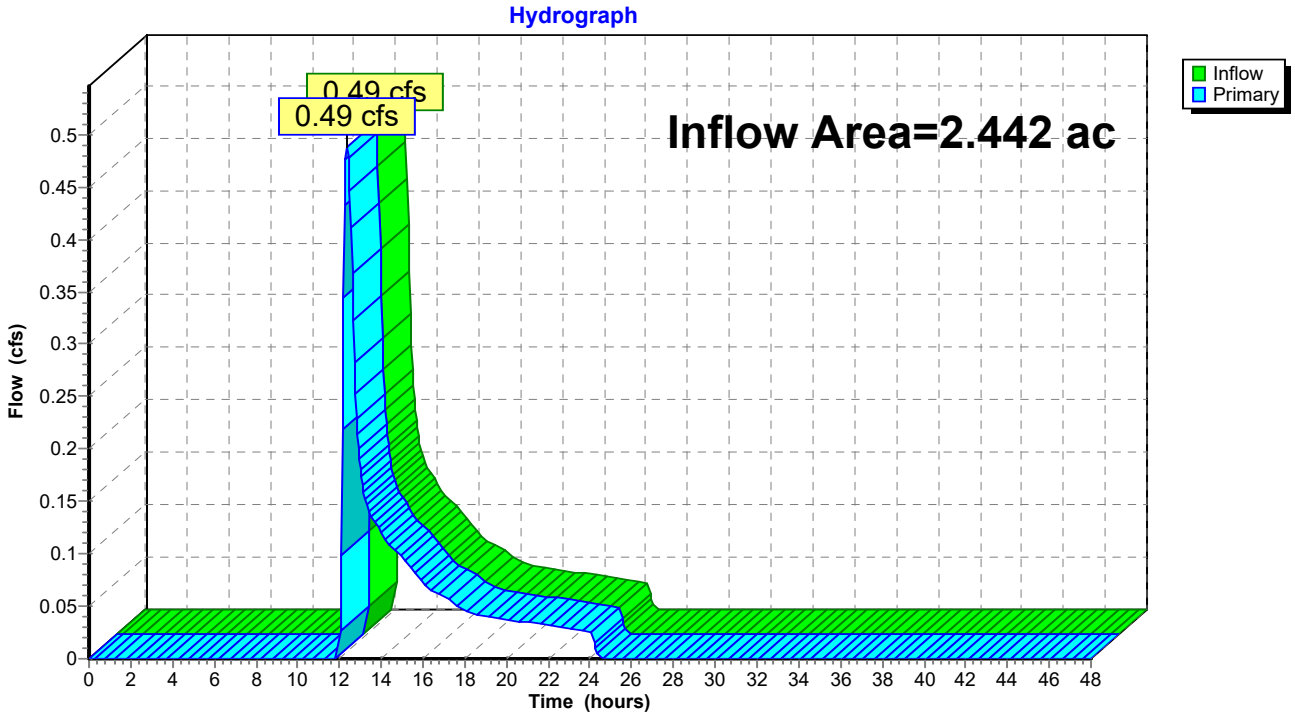


Summary for Link AP-3: AP-3

Inflow Area = 2.442 ac, 1.94% Impervious, Inflow Depth = 0.39" for 2 YR event
Inflow = 0.49 cfs @ 12.36 hrs, Volume= 0.080 af
Primary = 0.49 cfs @ 12.36 hrs, Volume= 0.080 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP-3: AP-3



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PDA-1: PDA-1 Runoff Area=718,886 sf 0.07% Impervious Runoff Depth=1.15"
Flow Length=1,045' Tc=33.7 min CN=49 Runoff=9.51 cfs 1.586 af

Subcatchment PDA-2: PDA-2 Runoff Area=517,855 sf 4.27% Impervious Runoff Depth=2.66"
Flow Length=1,165' Tc=18.6 min CN=67 Runoff=25.27 cfs 2.634 af

Subcatchment PDA-3: PDA-3 Runoff Area=106,393 sf 1.94% Impervious Runoff Depth=2.03"
Flow Length=465' Tc=16.1 min CN=60 Runoff=4.02 cfs 0.414 af

Pond 1P: Exist. Stormwater Basin Peak Elev=212.19' Storage=19,291 cf Inflow=9.51 cfs 1.586 af
Discarded=2.95 cfs 1.586 af Primary=0.00 cfs 0.000 af Outflow=2.95 cfs 1.586 af

Link AP-1: AP-1 Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Link AP-2: AP-2 Inflow=25.27 cfs 2.634 af
Primary=25.27 cfs 2.634 af

Link AP-3: AP-3 Inflow=4.02 cfs 0.414 af
Primary=4.02 cfs 0.414 af

Total Runoff Area = 30.834 ac Runoff Volume = 4.634 af Average Runoff Depth = 1.80"
98.16% Pervious = 30.268 ac 1.84% Impervious = 0.566 ac

Summary for Subcatchment PDA-1: PDA-1

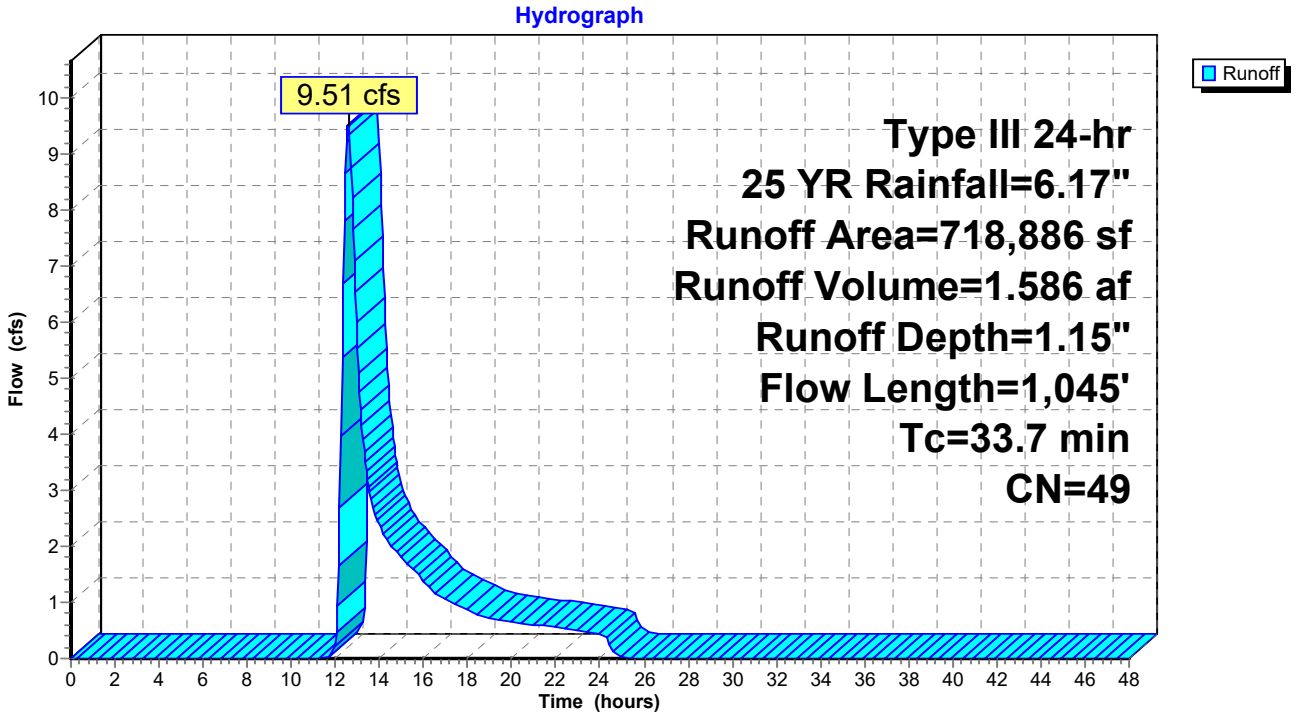
Runoff = 9.51 cfs @ 12.57 hrs, Volume= 1.586 af, Depth= 1.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.17"

	Area (sf)	CN	Description
	120,761	30	Woods, Good, HSG A
*	336,676	44	Meadow, non-grazed, HSG A/B
*	6,642	96	Gravel surface, HSG A/B
*	470	98	Water Surface, HSG A/B
	11,440	55	Woods, Good, HSG B
*	241,456	65	Meadow, non-grazed, HSG B/C
*	1,441	96	Gravel surface, HSG B/C
	718,886	49	Weighted Average
	718,416		99.93% Pervious Area
	470		0.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	100	0.1700	0.18		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.18"
1.9	130	0.2154	1.16		**Shallow Concentrated Flow, B-C** Forest w/Heavy Litter Kv= 2.5 fps
22.6	815	0.0074	0.60		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
33.7	1,045	Total			

Subcatchment PDA-1: PDA-1



Summary for Subcatchment PDA-2: PDA-2

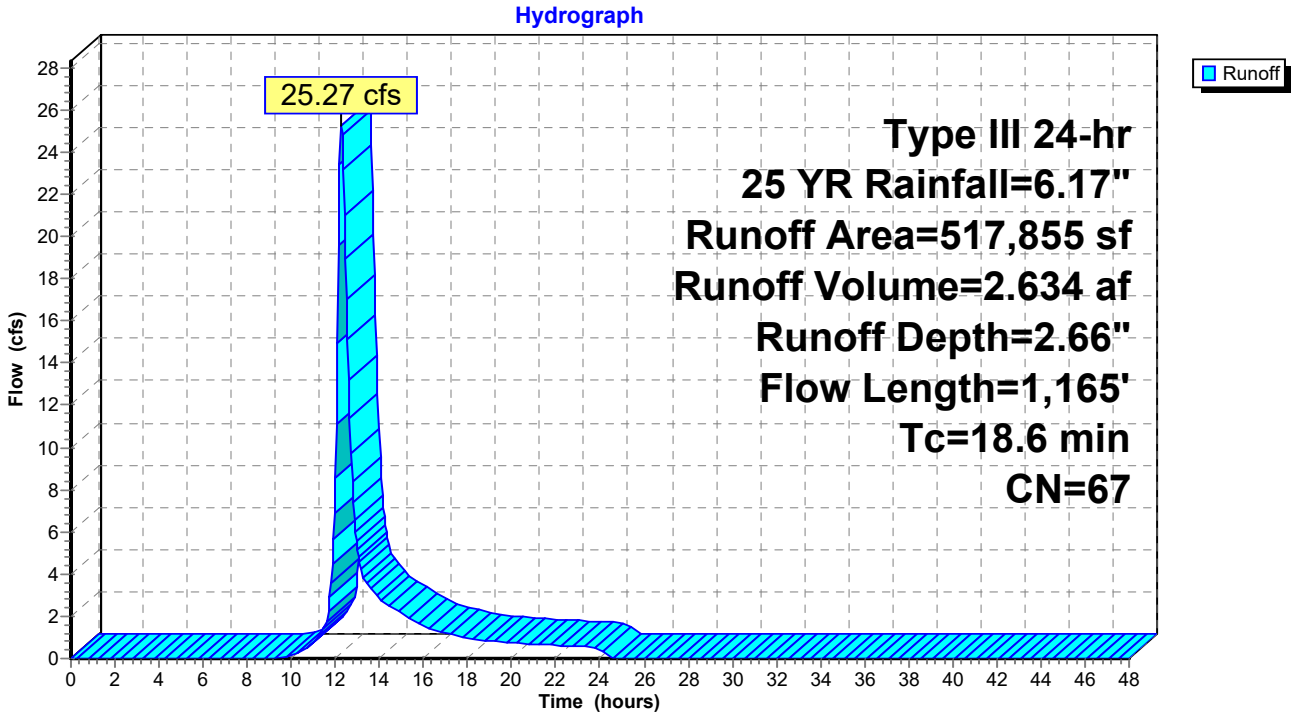
Runoff = 25.27 cfs @ 12.27 hrs, Volume= 2.634 af, Depth= 2.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.17"

	Area (sf)	CN	Description
*	391,566	65	Meadow, non-grazed, HSG B/C
	39,553	55	Woods, Good, HSG B
	55,690	69	50-75% Grass cover, Fair, HSG B
*	8,914	96	Gravel surface, HSG B/C
	7,769	98	Roofs, HSG B
	14,363	98	Paved roads w/curbs & sewers, HSG B
	517,855	67	Weighted Average
	495,723		95.73% Pervious Area
	22,132		4.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.0400	0.22		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.18"
6.3	337	0.0163	0.89		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
3.3	318	0.0063	1.61		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
1.6	410	0.0050	4.40	5.40	**Pipe Channel, D-E** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
18.6	1,165	Total			

Subcatchment PDA-2: PDA-2



Summary for Subcatchment PDA-3: PDA-3

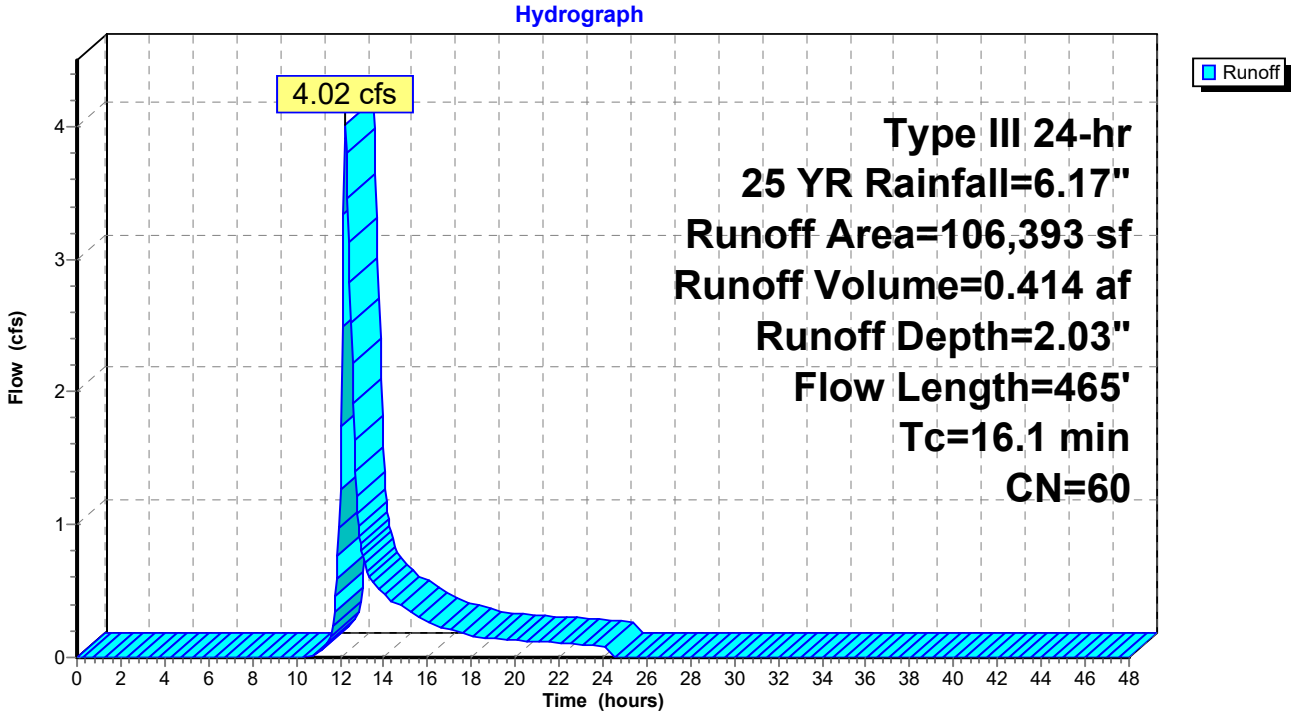
Runoff = 4.02 cfs @ 12.24 hrs, Volume= 0.414 af, Depth= 2.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YR Rainfall=6.17"

	Area (sf)	CN	Description
	9,200	30	Woods, Good, HSG A
*	11,227	44	Meadow, non-grazed, HSG A/B
	7,614	55	Woods, Good, HSG B
*	76,285	65	Meadow, non-grazed, HSG B/C
	2,067	98	Paved roads w/curbs & sewers, HSG B
	106,393	60	Weighted Average
	104,326		98.06% Pervious Area
	2,067		1.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.1400	0.17		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.18"
6.2	365	0.0384	0.98		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
16.1	465	Total			

Subcatchment PDA-3: PDA-3



Summary for Pond 1P: Exist. Stormwater Basin

Inflow Area = 16.503 ac, 0.07% Impervious, Inflow Depth = 1.15" for 25 YR event
Inflow = 9.51 cfs @ 12.57 hrs, Volume= 1.586 af
Outflow = 2.95 cfs @ 13.56 hrs, Volume= 1.586 af, Atten= 69%, Lag= 59.2 min
Discarded = 2.95 cfs @ 13.56 hrs, Volume= 1.586 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 212.19' @ 13.56 hrs Surf.Area= 34,366 sf Storage= 19,291 cf

Plug-Flow detention time= 88.0 min calculated for 1.584 af (100% of inflow)
Center-of-Mass det. time= 88.0 min (1,009.3 - 921.3)

Volume	Invert	Avail.Storage	Storage Description
#1	211.00'	176,542 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

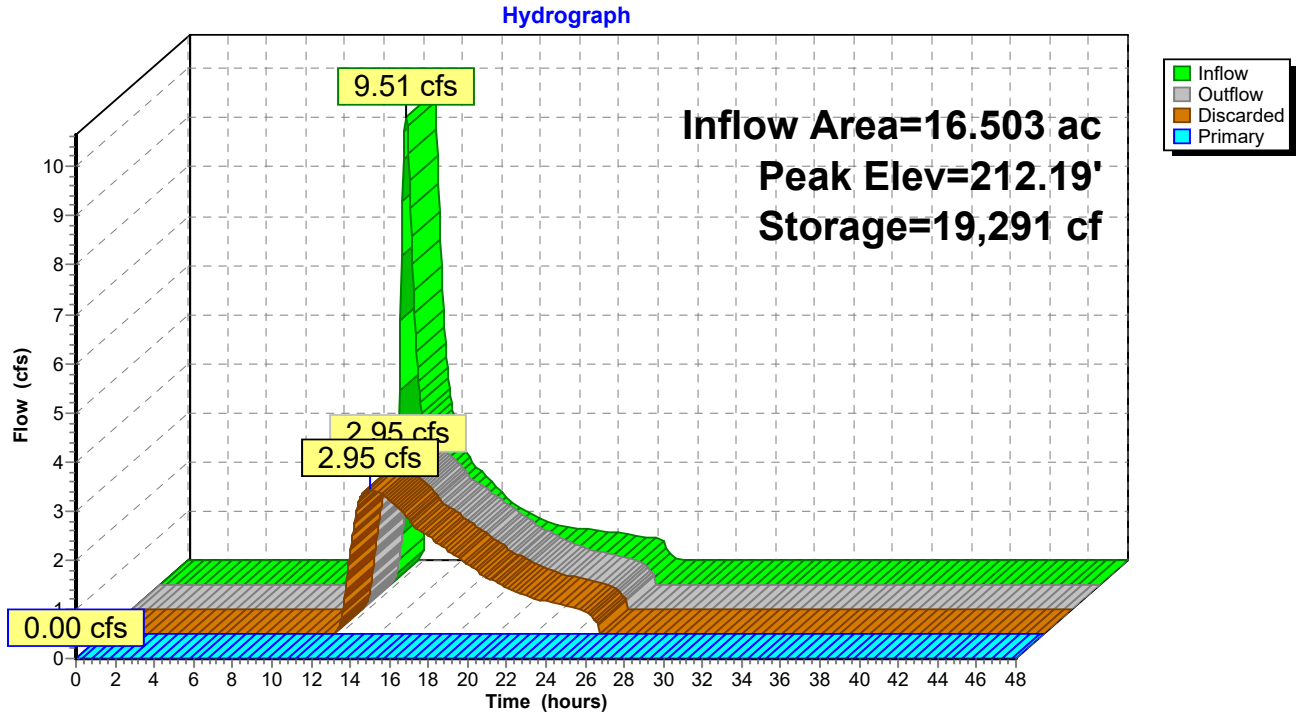
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
211.00	2,506	0	0
212.00	24,732	13,619	13,619
213.00	74,923	49,828	63,447
214.00	151,267	113,095	176,542

Device	Routing	Invert	Outlet Devices
#1	Primary	213.50'	**30.0' long x 14.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.64 2.67 2.70 2.65 2.64 2.65 2.65 2.63
#2	Discarded	211.00'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 209.00'

Discarded OutFlow Max=2.95 cfs @ 13.56 hrs HW=212.19' (Free Discharge)
↑—**2=Exfiltration** (Controls 2.95 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=211.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Exist. Stormwater Basin

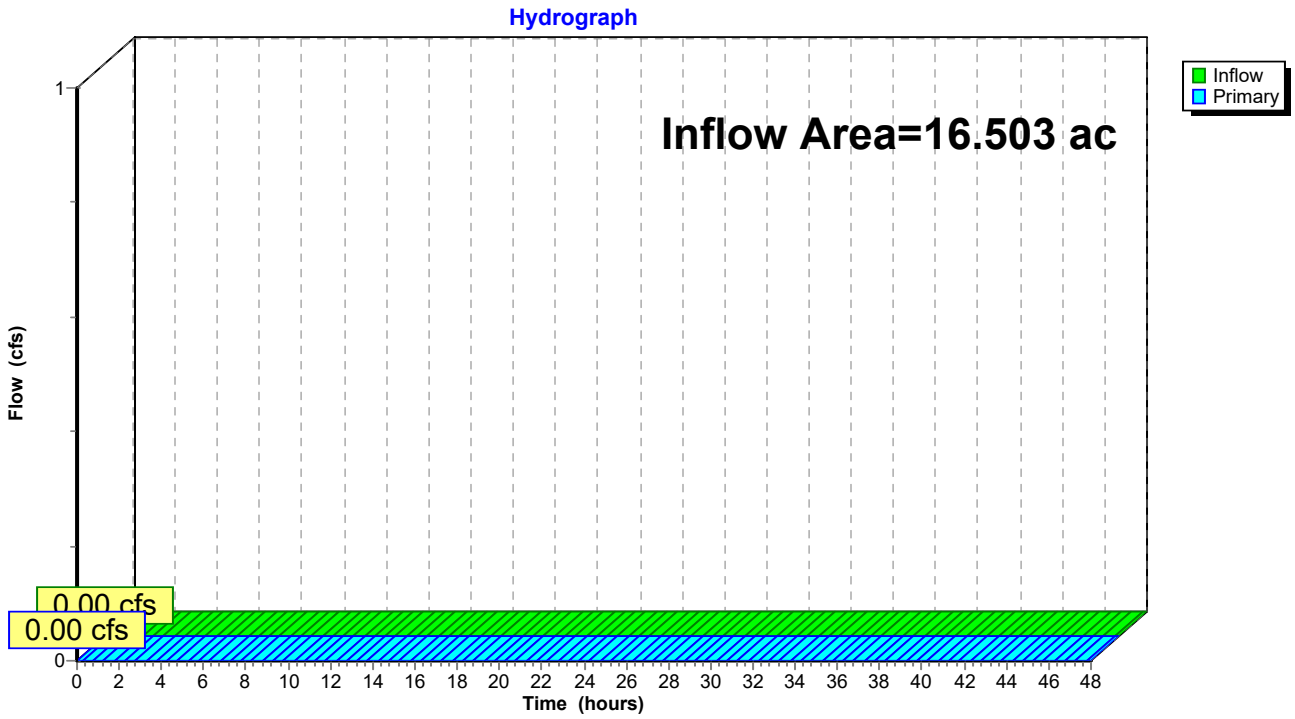


Summary for Link AP-1: AP-1

Inflow Area = 16.503 ac, 0.07% Impervious, Inflow Depth = 0.00" for 25 YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP-1: AP-1

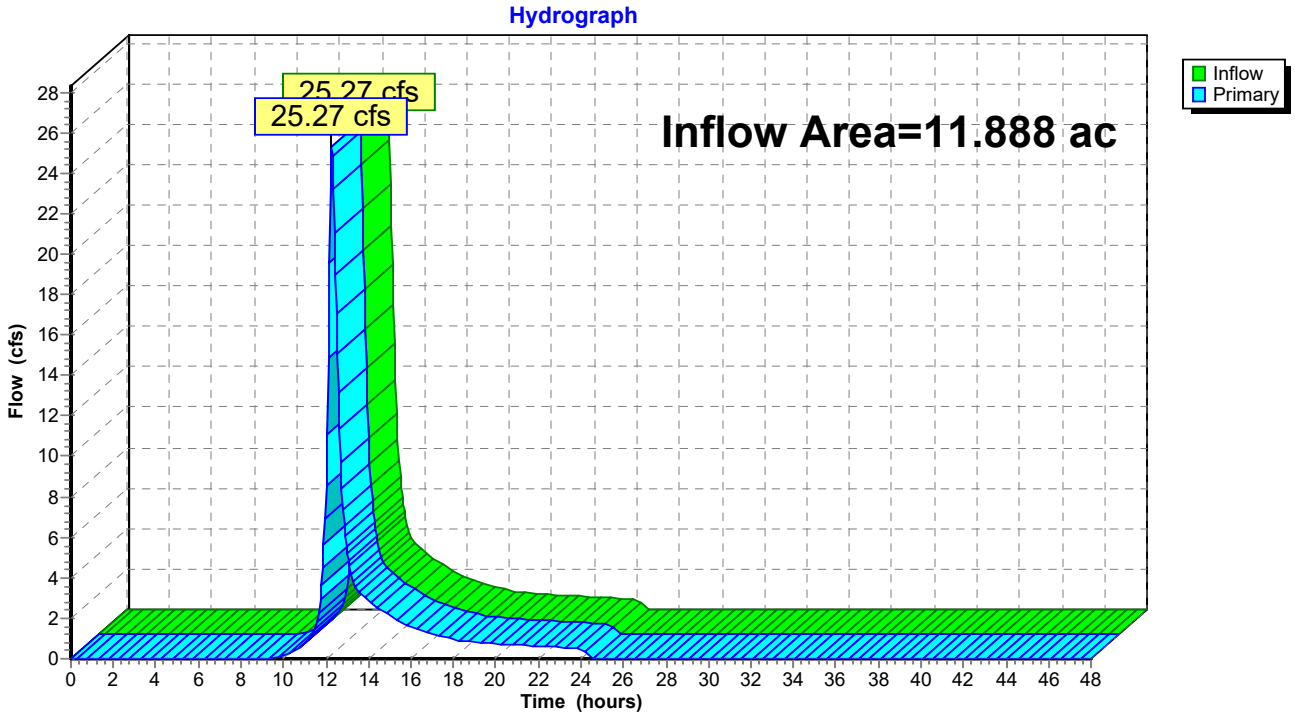


Summary for Link AP-2: AP-2

Inflow Area = 11.888 ac, 4.27% Impervious, Inflow Depth = 2.66" for 25 YR event
Inflow = 25.27 cfs @ 12.27 hrs, Volume= 2.634 af
Primary = 25.27 cfs @ 12.27 hrs, Volume= 2.634 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP-2: AP-2

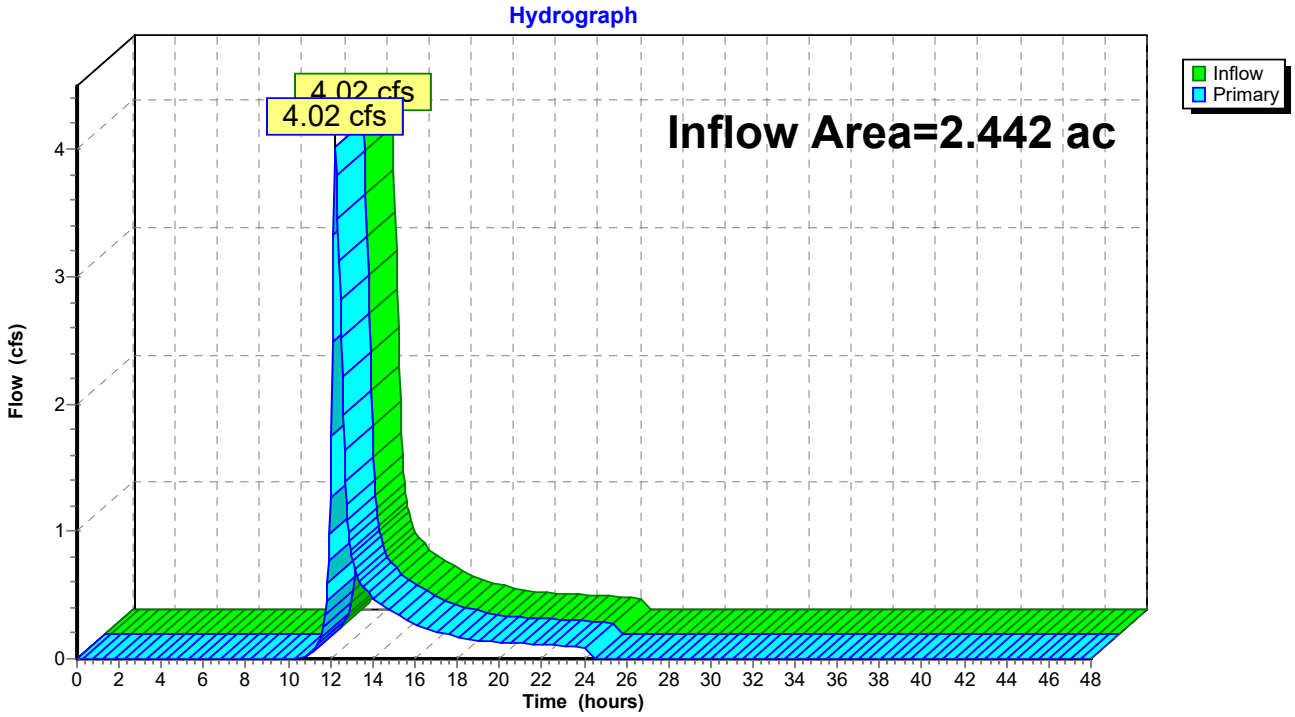


Summary for Link AP-3: AP-3

Inflow Area = 2.442 ac, 1.94% Impervious, Inflow Depth = 2.03" for 25 YR event
Inflow = 4.02 cfs @ 12.24 hrs, Volume= 0.414 af
Primary = 4.02 cfs @ 12.24 hrs, Volume= 0.414 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP-3: AP-3



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PDA-1: PDA-1 Runoff Area=718,886 sf 0.07% Impervious Runoff Depth=1.58"
Flow Length=1,045' Tc=33.7 min CN=49 Runoff=14.07 cfs 2.178 af

Subcatchment PDA-2: PDA-2 Runoff Area=517,855 sf 4.27% Impervious Runoff Depth=3.31"
Flow Length=1,165' Tc=18.6 min CN=67 Runoff=31.78 cfs 3.284 af

Subcatchment PDA-3: PDA-3 Runoff Area=106,393 sf 1.94% Impervious Runoff Depth=2.61"
Flow Length=465' Tc=16.1 min CN=60 Runoff=5.27 cfs 0.531 af

Pond 1P: Exist. Stormwater Basin Peak Elev=212.44' Storage=29,221 cf Inflow=14.07 cfs 2.178 af
Discarded=4.06 cfs 2.178 af Primary=0.00 cfs 0.000 af Outflow=4.06 cfs 2.178 af

Link AP-1: AP-1 Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Link AP-2: AP-2 Inflow=31.78 cfs 3.284 af
Primary=31.78 cfs 3.284 af

Link AP-3: AP-3 Inflow=5.27 cfs 0.531 af
Primary=5.27 cfs 0.531 af

Total Runoff Area = 30.834 ac Runoff Volume = 5.994 af Average Runoff Depth = 2.33"
98.16% Pervious = 30.268 ac 1.84% Impervious = 0.566 ac

Summary for Subcatchment PDA-1: PDA-1

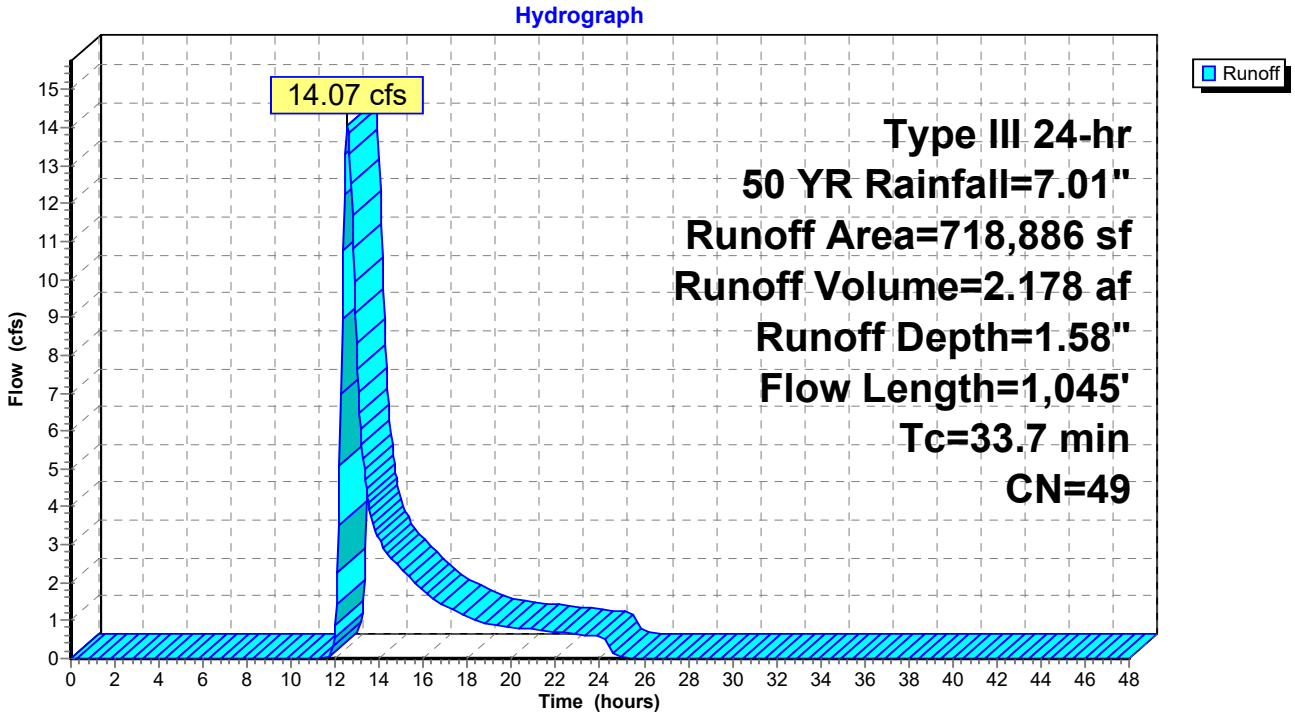
Runoff = 14.07 cfs @ 12.55 hrs, Volume= 2.178 af, Depth= 1.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 YR Rainfall=7.01"

	Area (sf)	CN	Description
	120,761	30	Woods, Good, HSG A
*	336,676	44	Meadow, non-grazed, HSG A/B
*	6,642	96	Gravel surface, HSG A/B
*	470	98	Water Surface, HSG A/B
	11,440	55	Woods, Good, HSG B
*	241,456	65	Meadow, non-grazed, HSG B/C
*	1,441	96	Gravel surface, HSG B/C
	718,886	49	Weighted Average
	718,416		99.93% Pervious Area
	470		0.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	100	0.1700	0.18		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.18"
1.9	130	0.2154	1.16		**Shallow Concentrated Flow, B-C** Forest w/Heavy Litter Kv= 2.5 fps
22.6	815	0.0074	0.60		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
33.7	1,045	Total			

Subcatchment PDA-1: PDA-1



Summary for Subcatchment PDA-2: PDA-2

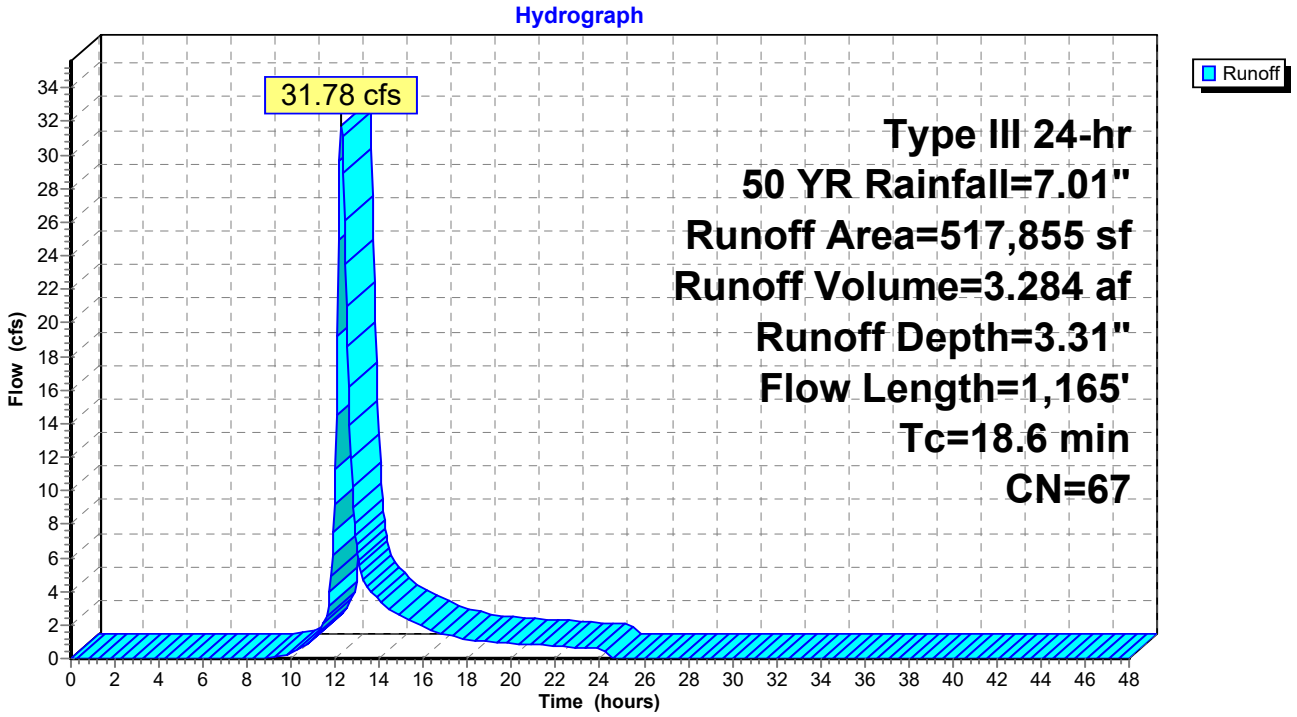
Runoff = 31.78 cfs @ 12.26 hrs, Volume= 3.284 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 YR Rainfall=7.01"

	Area (sf)	CN	Description
*	391,566	65	Meadow, non-grazed, HSG B/C
	39,553	55	Woods, Good, HSG B
	55,690	69	50-75% Grass cover, Fair, HSG B
*	8,914	96	Gravel surface, HSG B/C
	7,769	98	Roofs, HSG B
	14,363	98	Paved roads w/curbs & sewers, HSG B
	517,855	67	Weighted Average
	495,723		95.73% Pervious Area
	22,132		4.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.0400	0.22		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.18"
6.3	337	0.0163	0.89		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
3.3	318	0.0063	1.61		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
1.6	410	0.0050	4.40	5.40	**Pipe Channel, D-E** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
18.6	1,165	Total			

Subcatchment PDA-2: PDA-2



Summary for Subcatchment PDA-3: PDA-3

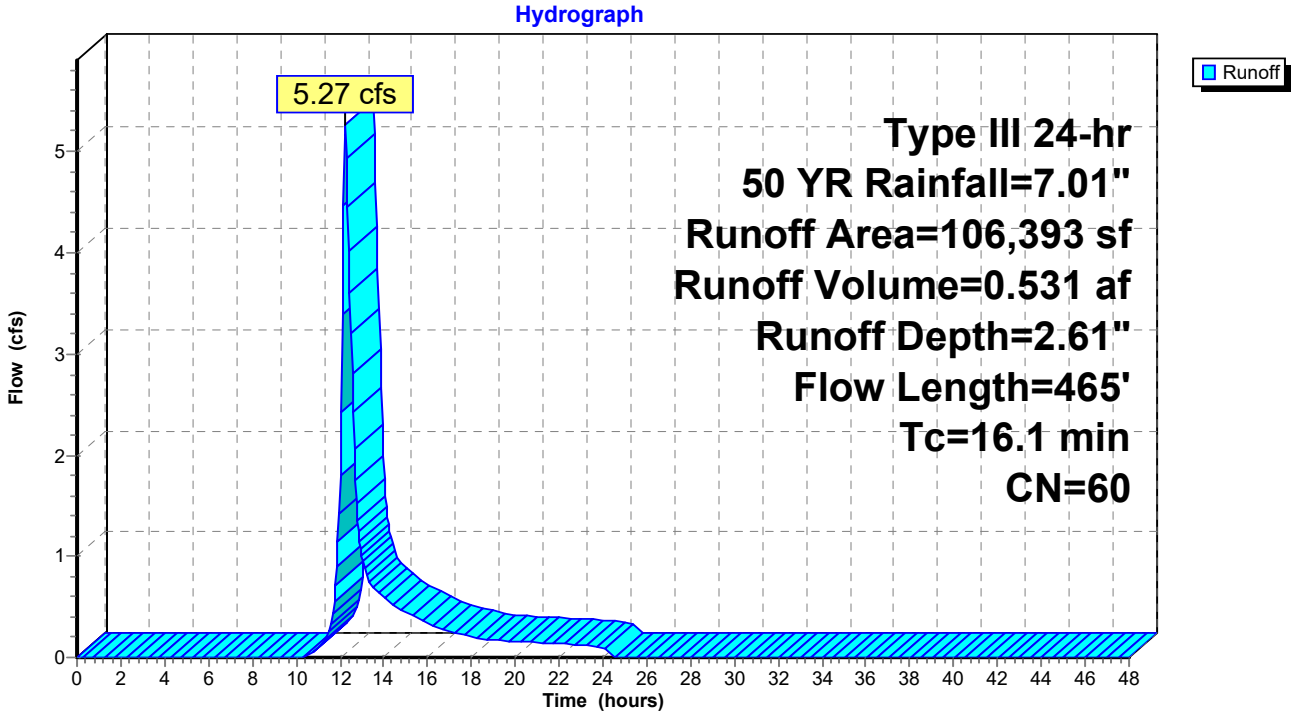
Runoff = 5.27 cfs @ 12.24 hrs, Volume= 0.531 af, Depth= 2.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 YR Rainfall=7.01"

	Area (sf)	CN	Description
	9,200	30	Woods, Good, HSG A
*	11,227	44	Meadow, non-grazed, HSG A/B
	7,614	55	Woods, Good, HSG B
*	76,285	65	Meadow, non-grazed, HSG B/C
	2,067	98	Paved roads w/curbs & sewers, HSG B
	106,393	60	Weighted Average
	104,326		98.06% Pervious Area
	2,067		1.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.1400	0.17		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.18"
6.2	365	0.0384	0.98		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
16.1	465	Total			

Subcatchment PDA-3: PDA-3



Summary for Pond 1P: Exist. Stormwater Basin

Inflow Area = 16.503 ac, 0.07% Impervious, Inflow Depth = 1.58" for 50 YR event
Inflow = 14.07 cfs @ 12.55 hrs, Volume= 2.178 af
Outflow = 4.06 cfs @ 13.51 hrs, Volume= 2.178 af, Atten= 71%, Lag= 57.9 min
Discarded = 4.06 cfs @ 13.51 hrs, Volume= 2.178 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 212.44' @ 13.51 hrs Surf.Area= 46,667 sf Storage= 29,221 cf

Plug-Flow detention time= 98.9 min calculated for 2.176 af (100% of inflow)
Center-of-Mass det. time= 98.9 min (1,008.5 - 909.6)

Volume	Invert	Avail.Storage	Storage Description
#1	211.00'	176,542 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

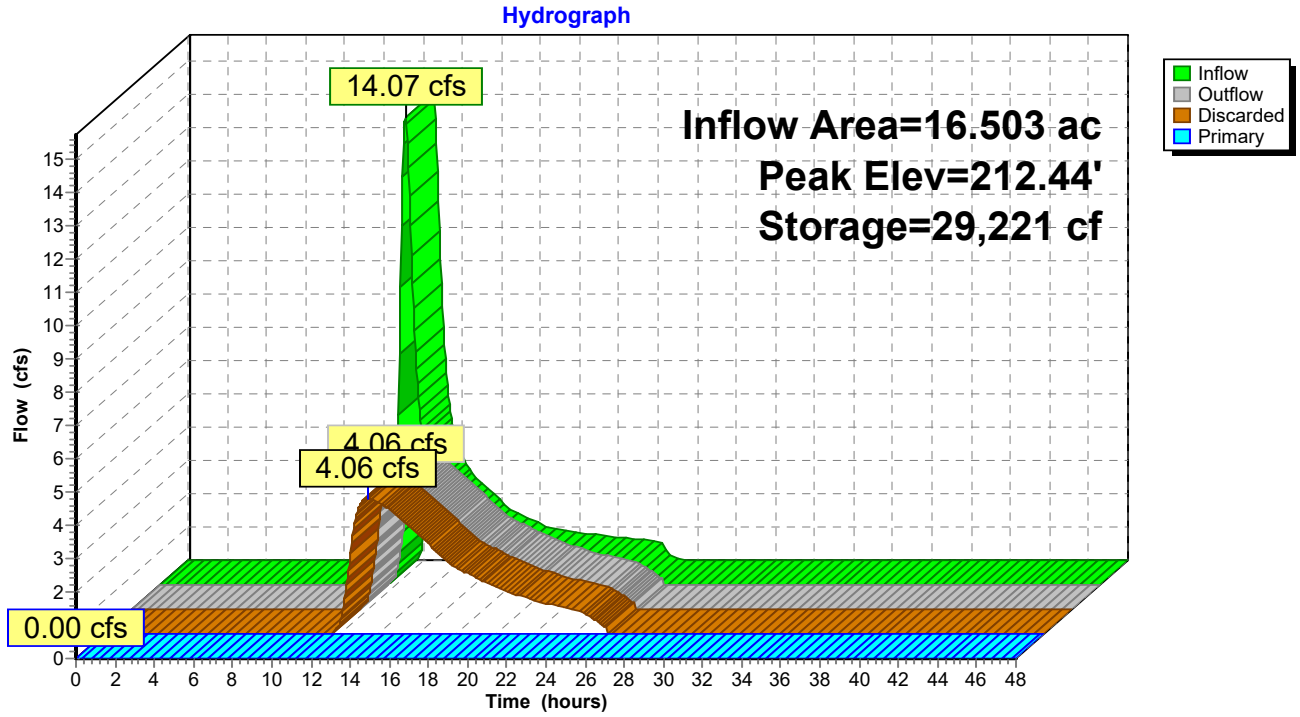
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
211.00	2,506	0	0
212.00	24,732	13,619	13,619
213.00	74,923	49,828	63,447
214.00	151,267	113,095	176,542

Device	Routing	Invert	Outlet Devices
#1	Primary	213.50'	**30.0' long x 14.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.64 2.67 2.70 2.65 2.64 2.65 2.65 2.63
#2	Discarded	211.00'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 209.00'

Discarded OutFlow Max=4.06 cfs @ 13.51 hrs HW=212.44' (Free Discharge)
↑—**2=Exfiltration** (Controls 4.06 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=211.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Exist. Stormwater Basin

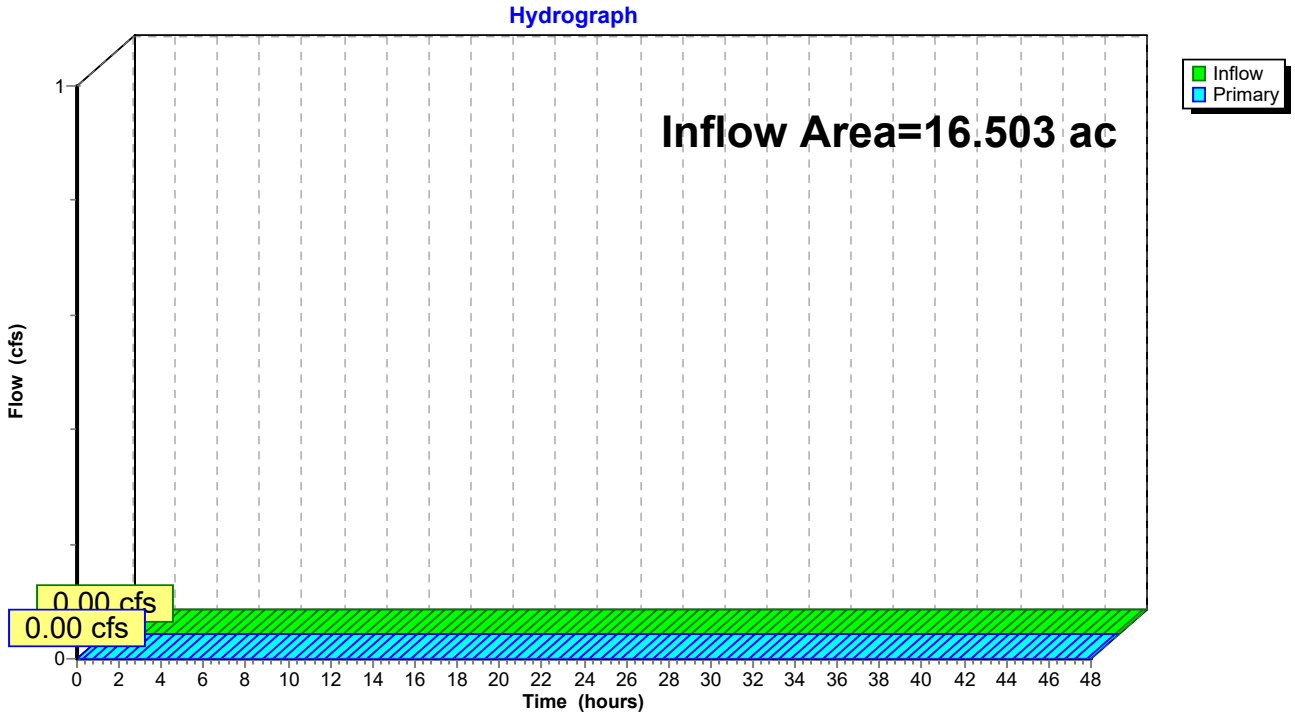


Summary for Link AP-1: AP-1

Inflow Area = 16.503 ac, 0.07% Impervious, Inflow Depth = 0.00" for 50 YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP-1: AP-1

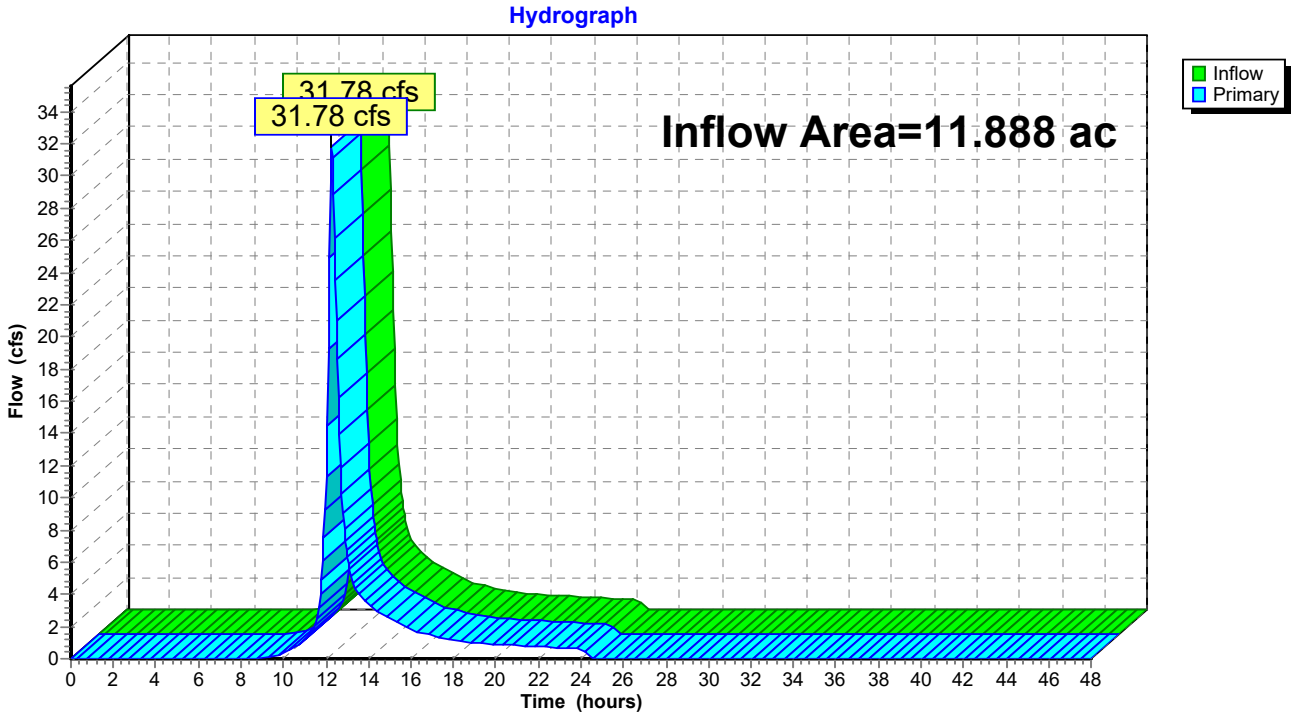


Summary for Link AP-2: AP-2

Inflow Area = 11.888 ac, 4.27% Impervious, Inflow Depth = 3.31" for 50 YR event
Inflow = 31.78 cfs @ 12.26 hrs, Volume= 3.284 af
Primary = 31.78 cfs @ 12.26 hrs, Volume= 3.284 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP-2: AP-2

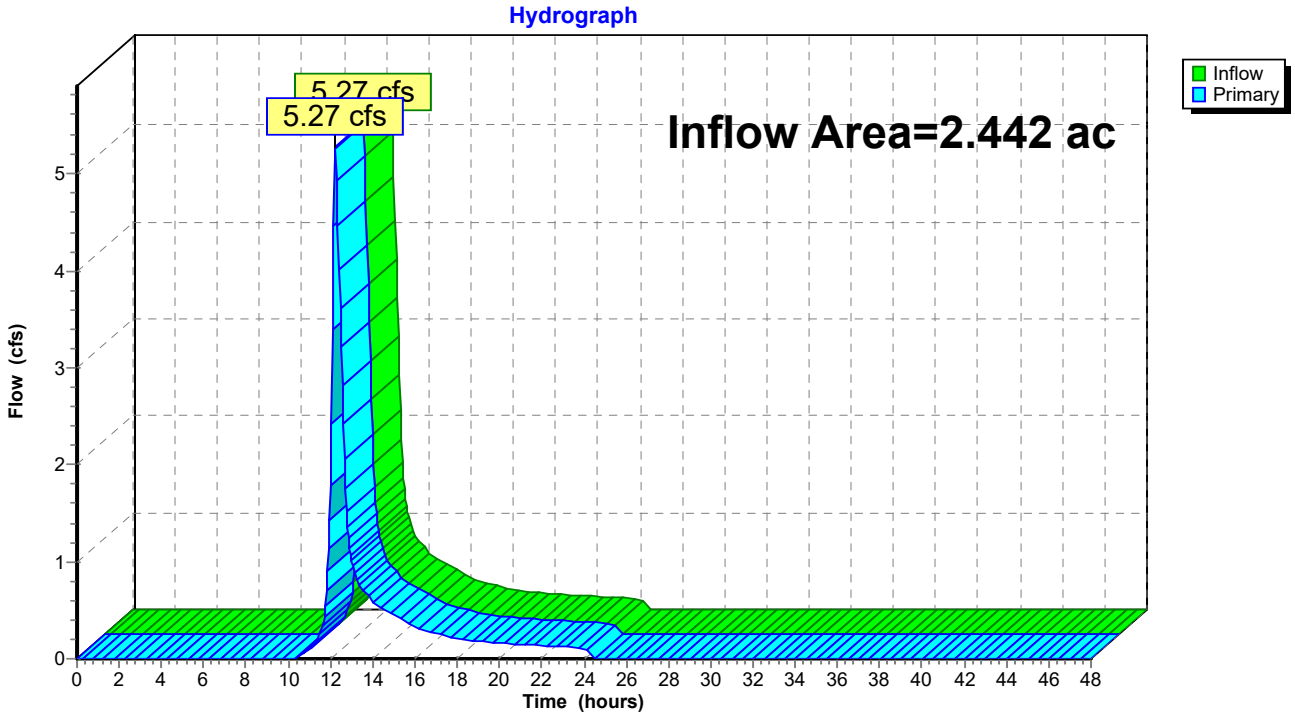


Summary for Link AP-3: AP-3

Inflow Area = 2.442 ac, 1.94% Impervious, Inflow Depth = 2.61" for 50 YR event
Inflow = 5.27 cfs @ 12.24 hrs, Volume= 0.531 af
Primary = 5.27 cfs @ 12.24 hrs, Volume= 0.531 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP-3: AP-3



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PDA-1: PDA-1 Runoff Area=718,886 sf 0.07% Impervious Runoff Depth=2.12"
Flow Length=1,045' Tc=33.7 min CN=49 Runoff=19.78 cfs 2.910 af

Subcatchment PDA-2: PDA-2 Runoff Area=517,855 sf 4.27% Impervious Runoff Depth=4.08"
Flow Length=1,165' Tc=18.6 min CN=67 Runoff=39.30 cfs 4.042 af

Subcatchment PDA-3: PDA-3 Runoff Area=106,393 sf 1.94% Impervious Runoff Depth=3.30"
Flow Length=465' Tc=16.1 min CN=60 Runoff=6.76 cfs 0.671 af

Pond 1P: Exist. Stormwater Basin Peak Elev=212.69' Storage=42,530 cf Inflow=19.78 cfs 2.910 af
Discarded=5.26 cfs 2.910 af Primary=0.00 cfs 0.000 af Outflow=5.26 cfs 2.910 af

Link AP-1: AP-1 Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Link AP-2: AP-2 Inflow=39.30 cfs 4.042 af
Primary=39.30 cfs 4.042 af

Link AP-3: AP-3 Inflow=6.76 cfs 0.671 af
Primary=6.76 cfs 0.671 af

Total Runoff Area = 30.834 ac Runoff Volume = 7.622 af Average Runoff Depth = 2.97"
98.16% Pervious = 30.268 ac 1.84% Impervious = 0.566 ac

Summary for Subcatchment PDA-1: PDA-1

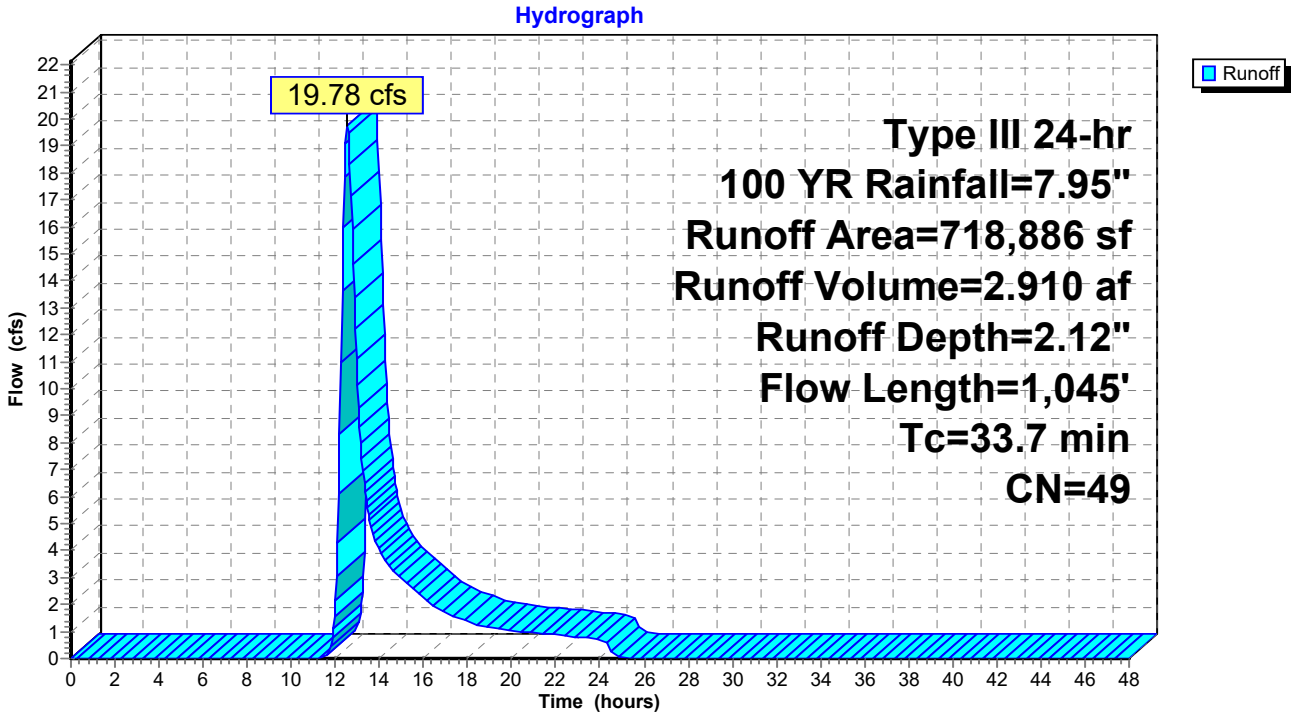
Runoff = 19.78 cfs @ 12.53 hrs, Volume= 2.910 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.95"

	Area (sf)	CN	Description
	120,761	30	Woods, Good, HSG A
*	336,676	44	Meadow, non-grazed, HSG A/B
*	6,642	96	Gravel surface, HSG A/B
*	470	98	Water Surface, HSG A/B
	11,440	55	Woods, Good, HSG B
*	241,456	65	Meadow, non-grazed, HSG B/C
*	1,441	96	Gravel surface, HSG B/C
	718,886	49	Weighted Average
	718,416		99.93% Pervious Area
	470		0.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	100	0.1700	0.18		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.18"
1.9	130	0.2154	1.16		**Shallow Concentrated Flow, B-C** Forest w/Heavy Litter Kv= 2.5 fps
22.6	815	0.0074	0.60		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
33.7	1,045	Total			

Subcatchment PDA-1: PDA-1



Summary for Subcatchment PDA-2: PDA-2

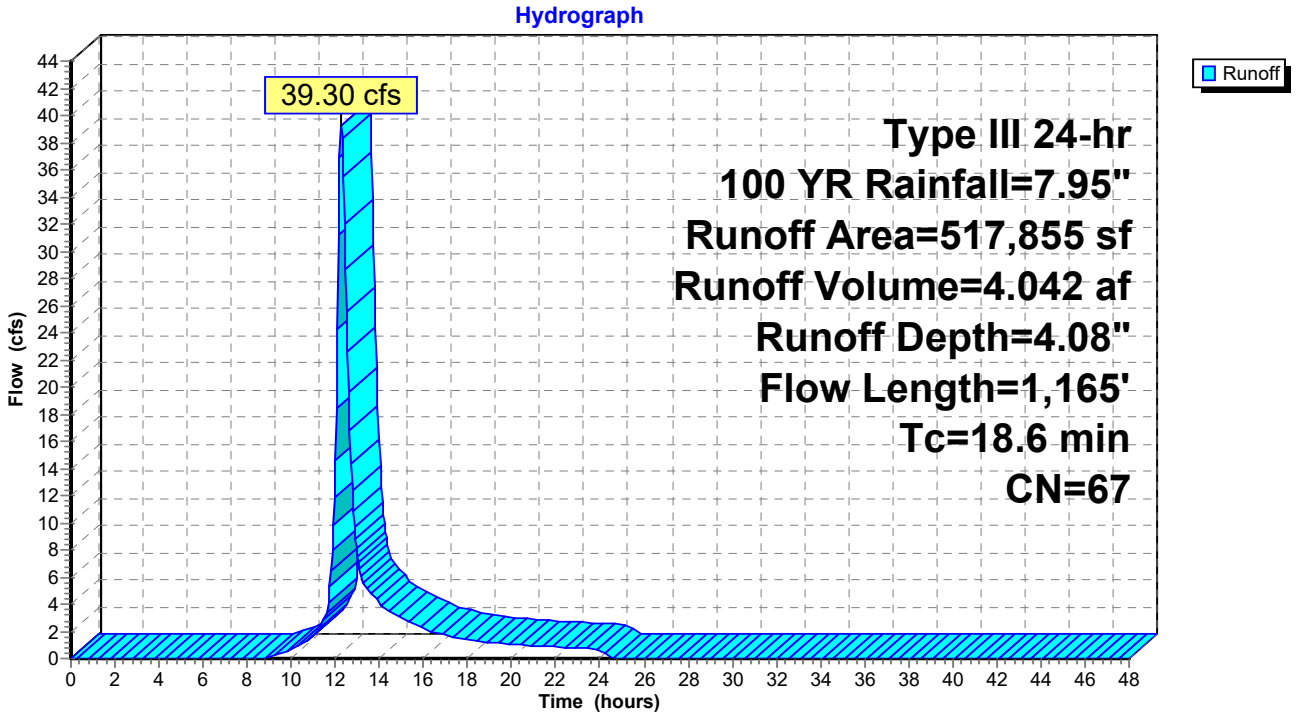
Runoff = 39.30 cfs @ 12.26 hrs, Volume= 4.042 af, Depth= 4.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.95"

	Area (sf)	CN	Description
*	391,566	65	Meadow, non-grazed, HSG B/C
	39,553	55	Woods, Good, HSG B
	55,690	69	50-75% Grass cover, Fair, HSG B
*	8,914	96	Gravel surface, HSG B/C
	7,769	98	Roofs, HSG B
	14,363	98	Paved roads w/curbs & sewers, HSG B
	517,855	67	Weighted Average
	495,723		95.73% Pervious Area
	22,132		4.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.0400	0.22		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.18"
6.3	337	0.0163	0.89		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
3.3	318	0.0063	1.61		**Shallow Concentrated Flow, C-D** Paved Kv= 20.3 fps
1.6	410	0.0050	4.40	5.40	**Pipe Channel, D-E** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.011 Concrete pipe, straight & clean
18.6	1,165	Total			

Subcatchment PDA-2: PDA-2



Summary for Subcatchment PDA-3: PDA-3

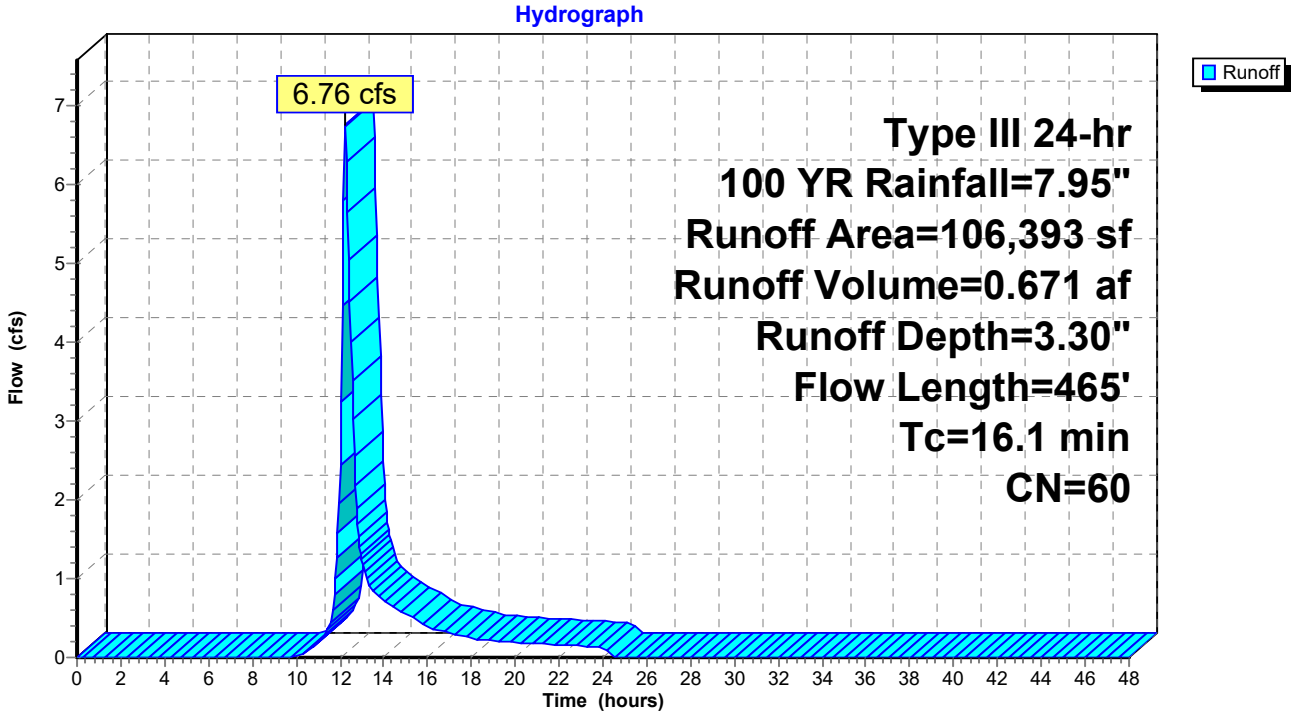
Runoff = 6.76 cfs @ 12.23 hrs, Volume= 0.671 af, Depth= 3.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=7.95"

	Area (sf)	CN	Description
	9,200	30	Woods, Good, HSG A
*	11,227	44	Meadow, non-grazed, HSG A/B
	7,614	55	Woods, Good, HSG B
*	76,285	65	Meadow, non-grazed, HSG B/C
	2,067	98	Paved roads w/curbs & sewers, HSG B
	106,393	60	Weighted Average
	104,326		98.06% Pervious Area
	2,067		1.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.1400	0.17		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.18"
6.2	365	0.0384	0.98		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
16.1	465	Total			

Subcatchment PDA-3: PDA-3



Summary for Pond 1P: Exist. Stormwater Basin

Inflow Area = 16.503 ac, 0.07% Impervious, Inflow Depth = 2.12" for 100 YR event
Inflow = 19.78 cfs @ 12.53 hrs, Volume= 2.910 af
Outflow = 5.26 cfs @ 13.52 hrs, Volume= 2.910 af, Atten= 73%, Lag= 59.1 min
Discarded = 5.26 cfs @ 13.52 hrs, Volume= 2.910 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 212.69' @ 13.52 hrs Surf.Area= 59,277 sf Storage= 42,530 cf

Plug-Flow detention time= 110.6 min calculated for 2.907 af (100% of inflow)
Center-of-Mass det. time= 110.6 min (1,010.3 - 899.7)

Volume	Invert	Avail.Storage	Storage Description
#1	211.00'	176,542 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

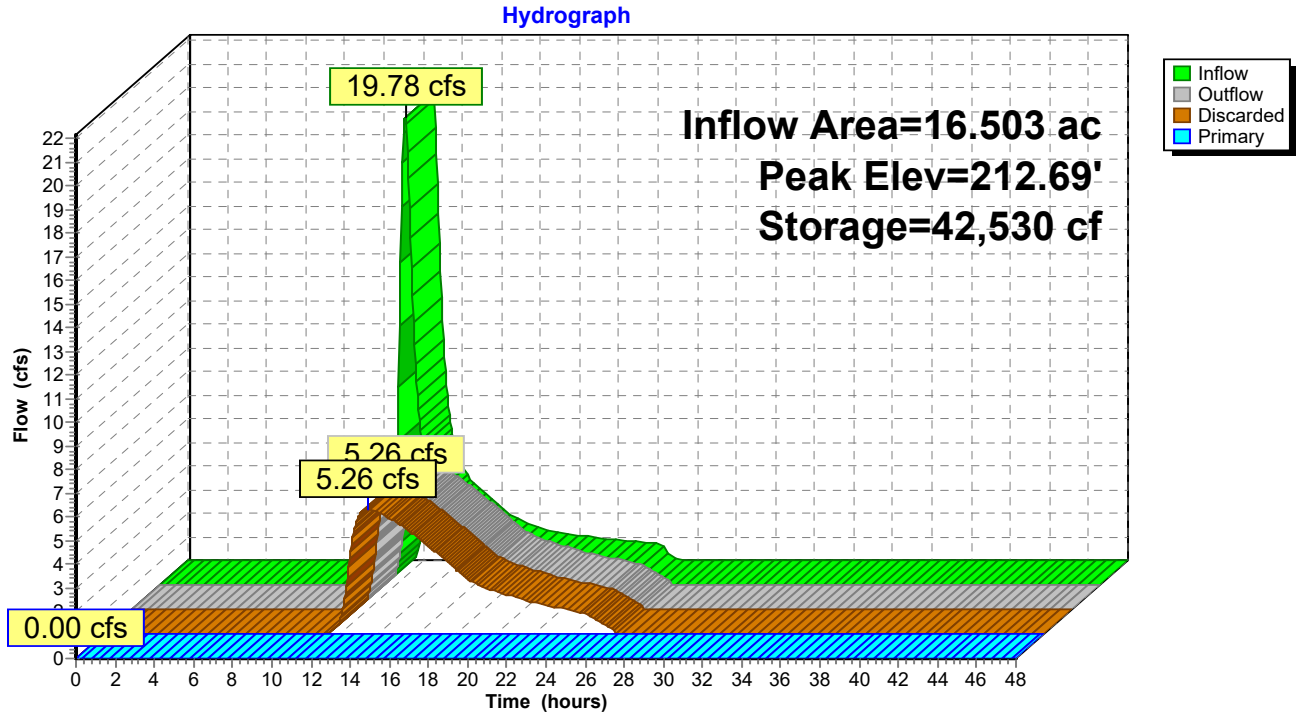
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
211.00	2,506	0	0
212.00	24,732	13,619	13,619
213.00	74,923	49,828	63,447
214.00	151,267	113,095	176,542

Device	Routing	Invert	Outlet Devices
#1	Primary	213.50'	**30.0' long x 14.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.64 2.67 2.70 2.65 2.64 2.65 2.65 2.63
#2	Discarded	211.00'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 209.00'

Discarded OutFlow Max=5.26 cfs @ 13.52 hrs HW=212.69' (Free Discharge)
↑—**2=Exfiltration** (Controls 5.26 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=211.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1P: Exist. Stormwater Basin

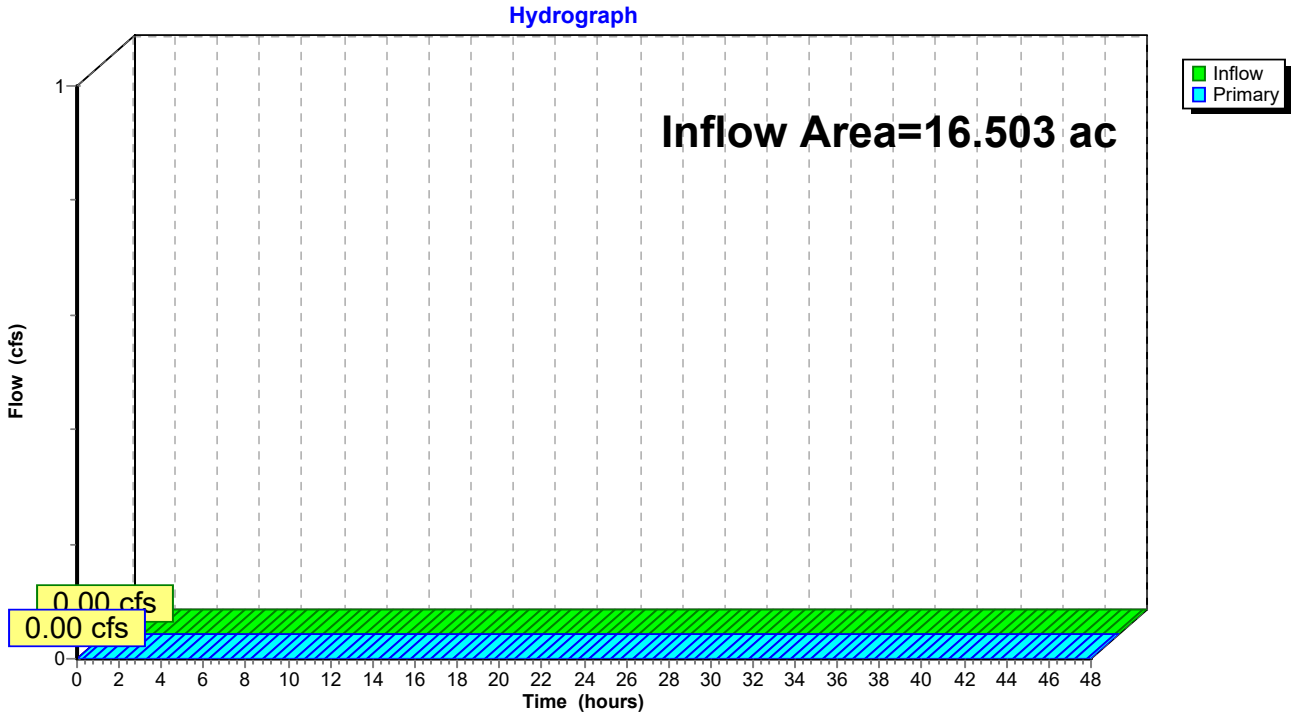


Summary for Link AP-1: AP-1

Inflow Area = 16.503 ac, 0.07% Impervious, Inflow Depth = 0.00" for 100 YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP-1: AP-1

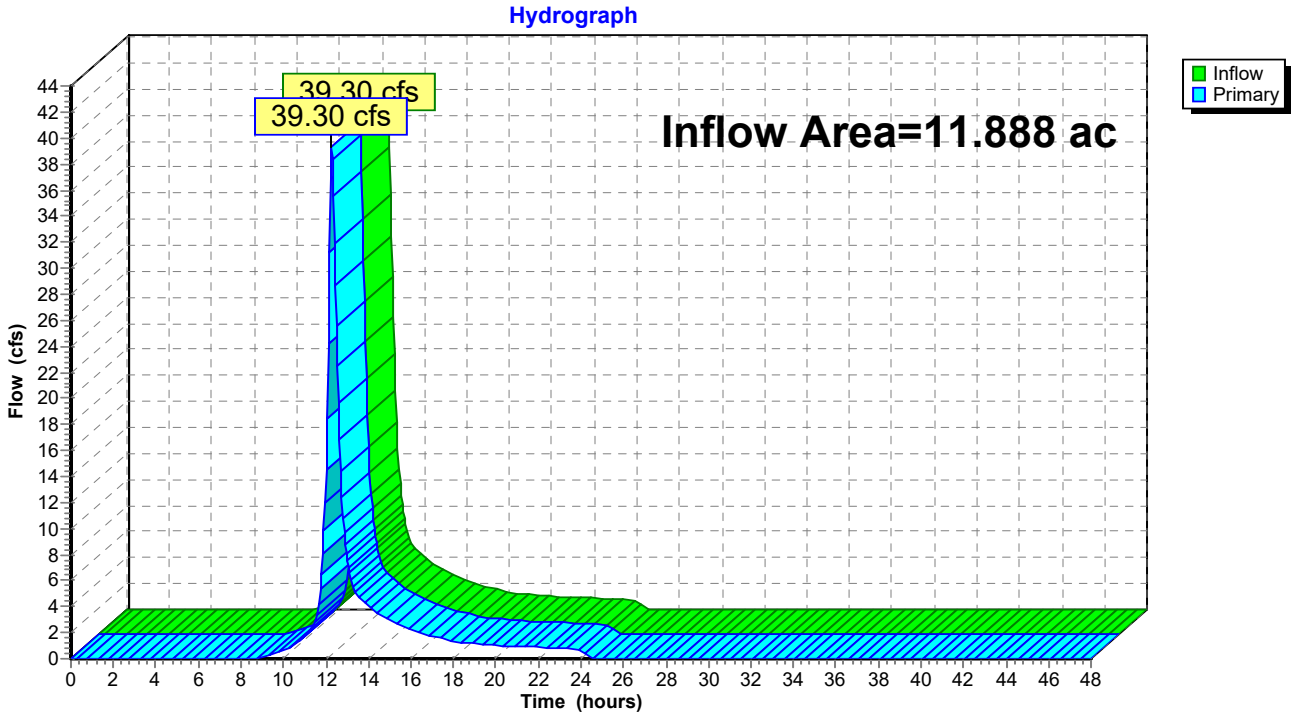


Summary for Link AP-2: AP-2

Inflow Area = 11.888 ac, 4.27% Impervious, Inflow Depth = 4.08" for 100 YR event
Inflow = 39.30 cfs @ 12.26 hrs, Volume= 4.042 af
Primary = 39.30 cfs @ 12.26 hrs, Volume= 4.042 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP-2: AP-2

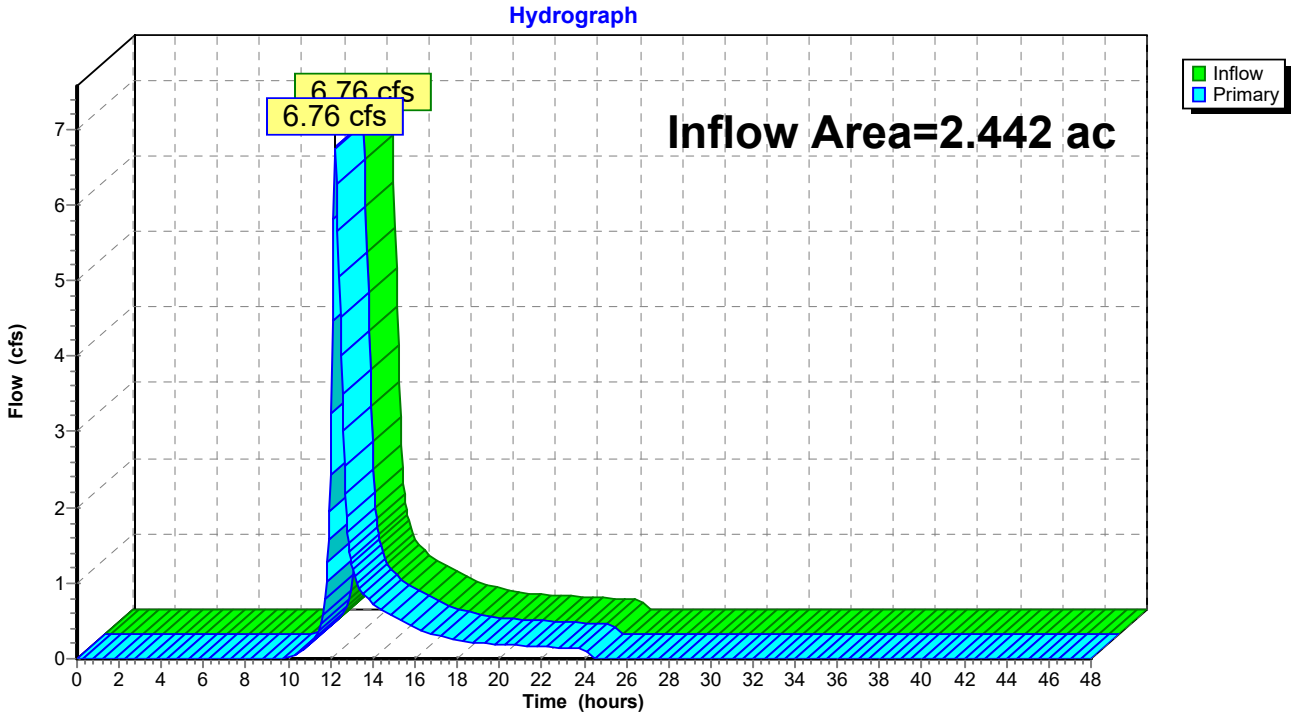


Summary for Link AP-3: AP-3

Inflow Area = 2.442 ac, 1.94% Impervious, Inflow Depth = 3.30" for 100 YR event
Inflow = 6.76 cfs @ 12.23 hrs, Volume= 0.671 af
Primary = 6.76 cfs @ 12.23 hrs, Volume= 0.671 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP-3: AP-3



APPENDIX E: NOAA ATLAS 14 PRECIPITATION FREQUENCY TABLE

NOAA Atlas 14, Volume 10, Version 3
Location name: Broad Brook, Connecticut, USA*
Latitude: 41.8944°, Longitude: -72.5321°
Elevation: 231.89 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.336** (0.257-0.439)	**0.407** (0.311-0.532)	**0.523** (0.398-0.686)	**0.618** (0.468-0.815)	**0.750** (0.552-1.03)	**0.849** (0.615-1.20)	**0.953** (0.672-1.39)	**1.07** (0.717-1.60)	**1.24** (0.801-1.91)	**1.38** (0.871-2.17)
10-min	**0.476** (0.364-0.622)	**0.576** (0.440-0.753)	**0.740** (0.564-0.969)	**0.875** (0.663-1.16)	**1.06** (0.782-1.46)	**1.20** (0.870-1.69)	**1.35** (0.951-1.97)	**1.52** (1.02-2.26)	**1.75** (1.13-2.71)	**1.95** (1.23-3.07)
15-min	**0.560** (0.429-0.732)	**0.678** (0.518-0.886)	**0.871** (0.664-1.14)	**1.03** (0.781-1.36)	**1.25** (0.920-1.72)	**1.42** (1.02-1.99)	**1.59** (1.12-2.32)	**1.78** (1.19-2.66)	**2.06** (1.33-3.19)	**2.29** (1.45-3.62)
30-min	**0.755** (0.578-0.986)	**0.916** (0.700-1.20)	**1.18** (0.898-1.55)	**1.40** (1.06-1.84)	**1.70** (1.25-2.34)	**1.92** (1.39-2.71)	**2.16** (1.52-3.16)	**2.43** (1.63-3.62)	**2.81** (1.82-4.34)	**3.12** (1.98-4.92)
60-min	**0.951** (0.727-1.24)	**1.16** (0.882-1.51)	**1.49** (1.14-1.95)	**1.77** (1.34-2.33)	**2.15** (1.58-2.96)	**2.43** (1.76-3.43)	**2.73** (1.93-3.99)	**3.07** (2.06-4.59)	**3.56** (2.30-5.50)	**3.95** (2.50-6.23)
2-hr	**1.22** (0.940-1.59)	**1.48** (1.13-1.92)	**1.89** (1.45-2.47)	**2.24** (1.70-2.93)	**2.71** (2.01-3.72)	**3.06** (2.23-4.31)	**3.44** (2.45-5.03)	**3.89** (2.61-5.77)	**4.56** (2.96-7.01)	**5.13** (3.26-8.04)
3-hr	**1.41** (1.09-1.82)	**1.70** (1.31-2.20)	**2.17** (1.67-2.83)	**2.57** (1.96-3.36)	**3.11** (2.32-4.27)	**3.51** (2.57-4.93)	**3.95** (2.83-5.78)	**4.48** (3.01-6.63)	**5.29** (3.44-8.10)	**5.99** (3.81-9.35)
6-hr	**1.77** (1.37-2.28)	**2.15** (1.66-2.77)	**2.76** (2.13-3.57)	**3.27** (2.51-4.25)	**3.97** (2.97-5.43)	**4.49** (3.30-6.28)	**5.05** (3.65-7.39)	**5.76** (3.89-8.47)	**6.86** (4.47-10.4)	**7.82** (4.99-12.1)
12-hr	**2.17** (1.70-2.79)	**2.67** (2.08-3.42)	**3.47** (2.69-4.47)	**4.14** (3.19-5.35)	**5.05** (3.80-6.88)	**5.73** (4.24-7.99)	**6.47** (4.69-9.42)	**7.40** (5.01-10.8)	**8.86** (5.79-13.4)	**10.1** (6.49-15.6)
24-hr	**2.55** (1.99-3.24)	**3.16** (2.48-4.04)	**4.18** (3.26-5.35)	**5.01** (3.89-6.46)	**6.17** (4.67-8.37)	**7.01** (5.23-9.75)	**7.95** (5.81-11.6)	**9.15** (6.22-13.3)	**11.1** (7.24-16.6)	**12.7** (8.17-19.5)
2-day	**2.86** (2.25-3.63)	**3.60** (2.83-4.57)	**4.81** (3.77-6.12)	**5.81** (4.53-7.44)	**7.19** (5.48-9.73)	**8.19** (6.15-11.4)	**9.32** (6.88-13.6)	**10.8** (7.36-15.6)	**13.2** (8.68-19.8)	**15.4** (9.89-23.4)
3-day	**3.12** (2.46-3.94)	**3.93** (3.10-4.97)	**5.25** (4.13-6.66)	**6.35** (4.96-8.10)	**7.86** (6.01-10.6)	**8.96** (6.74-12.4)	**10.2** (7.54-14.8)	**11.8** (8.07-17.0)	**14.5** (9.55-21.6)	**16.9** (10.9-25.6)
4-day	**3.35** (2.65-4.23)	**4.22** (3.33-5.32)	**5.63** (4.43-7.13)	**6.80** (5.33-8.65)	**8.41** (6.44-11.3)	**9.58** (7.22-13.2)	**10.9** (8.08-15.8)	**12.6** (8.64-18.2)	**15.5** (10.2-23.0)	**18.0** (11.6-27.3)
7-day	**4.00** (3.18-5.03)	**4.98** (3.95-6.26)	**6.58** (5.20-8.29)	**7.90** (6.21-10.0)	**9.72** (7.46-13.0)	**11.0** (8.35-15.1)	**12.5** (9.30-18.0)	**14.5** (9.93-20.7)	**17.6** (11.6-26.0)	**20.4** (13.2-30.7)
10-day	**4.66** (3.71-5.83)	**5.69** (4.53-7.13)	**7.38** (5.86-9.29)	**8.79** (6.93-11.1)	**10.7** (8.25-14.3)	**12.1** (9.18-16.5)	**13.7** (10.2-19.5)	**15.7** (10.8-22.4)	**18.9** (12.5-27.9)	**21.7** (14.1-32.6)
20-day	**6.70** (5.37-8.34)	**7.80** (6.24-9.73)	**9.60** (7.66-12.0)	**11.1** (8.80-14.0)	**13.2** (10.1-17.3)	**14.7** (11.1-19.7)	**16.3** (12.0-22.8)	**18.3** (12.7-25.8)	**21.2** (14.1-31.0)	**23.7** (15.4-35.3)
30-day	**8.44** (6.78-10.5)	**9.57** (7.68-11.9)	**11.4** (9.13-14.2)	**12.9** (10.3-16.2)	**15.0** (11.6-19.6)	**16.6** (12.5-22.1)	**18.3** (13.4-25.1)	**20.1** (14.0-28.3)	**22.7** (15.2-33.1)	**24.9** (16.2-36.9)
45-day	**10.6** (8.56-13.1)	**11.8** (9.48-14.6)	**13.7** (11.0-17.0)	**15.2** (12.2-19.0)	**17.4** (13.4-22.5)	**19.1** (14.4-25.1)	**20.7** (15.1-28.1)	**22.4** (15.6-31.4)	**24.7** (16.5-35.7)	**26.4** (17.2-38.9)
60-day	**12.4** (10.1-15.4)	**13.6** (11.0-16.9)	**15.6** (12.5-19.3)	**17.2** (13.8-21.4)	**19.4** (15.0-25.0)	**21.2** (16.0-27.7)	**22.9** (16.6-30.7)	**24.4** (17.1-34.1)	**26.4** (17.7-38.1)	**27.8** (18.2-40.9)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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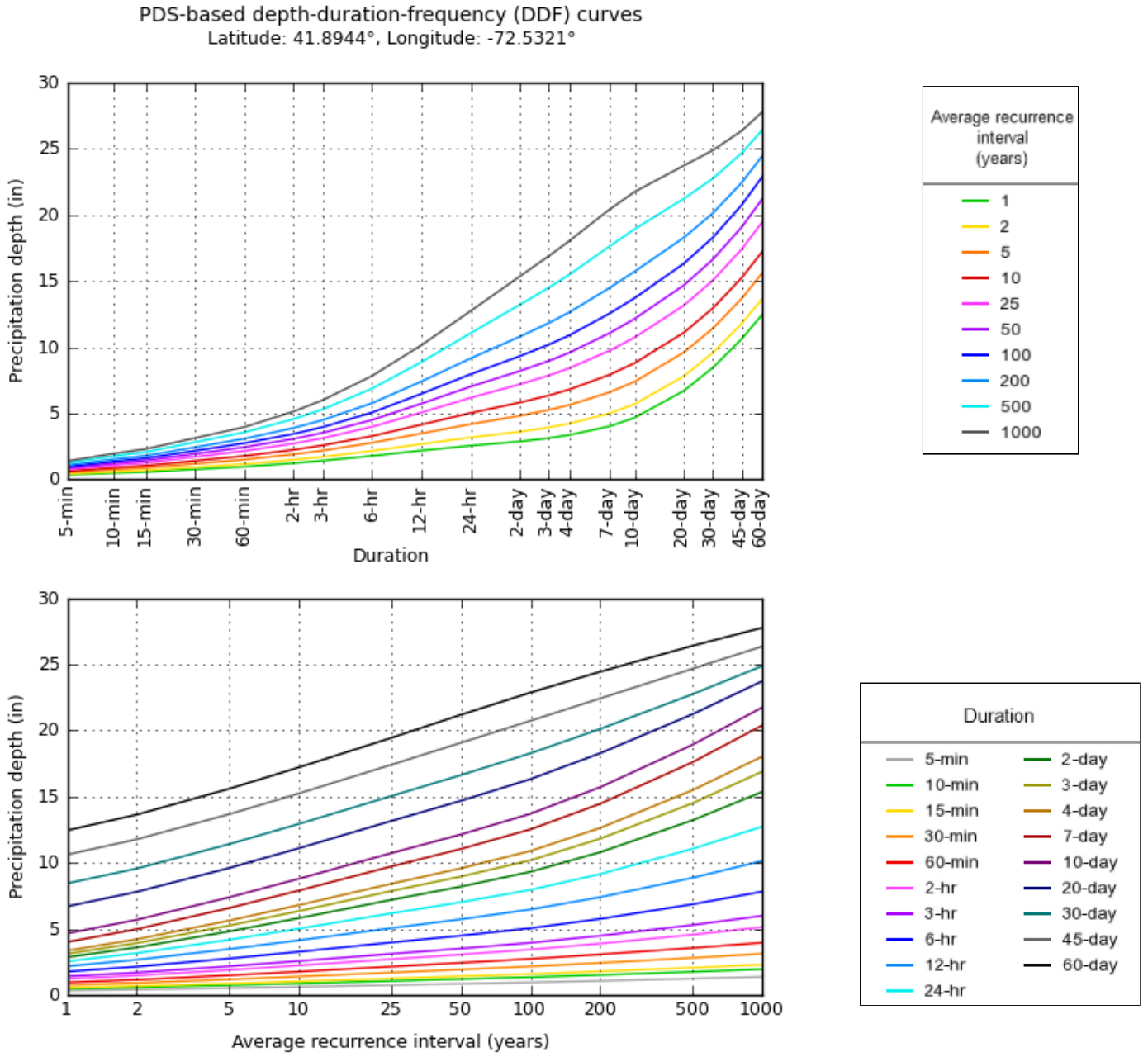
PF graphical



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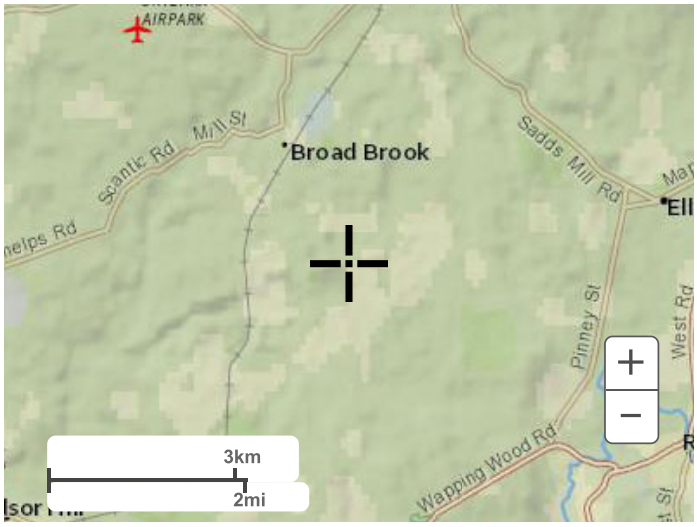
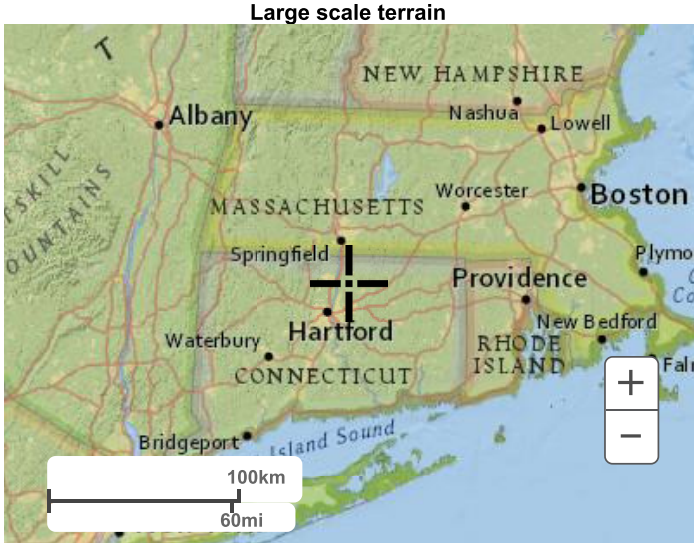
Maps & aerials

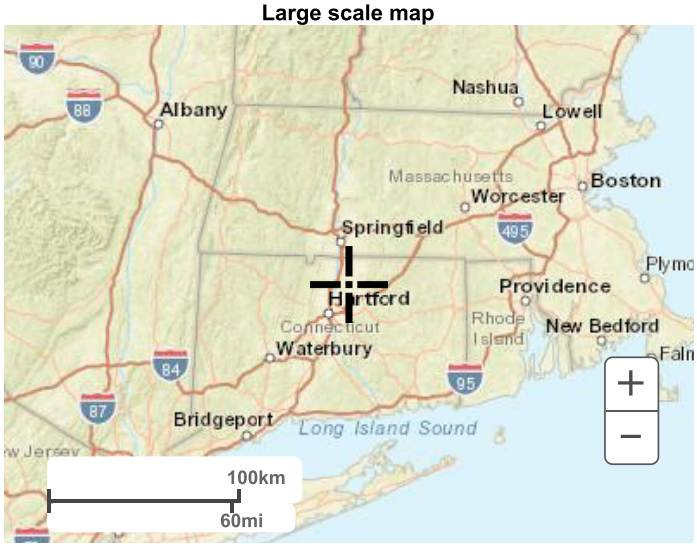
Small scale terrain



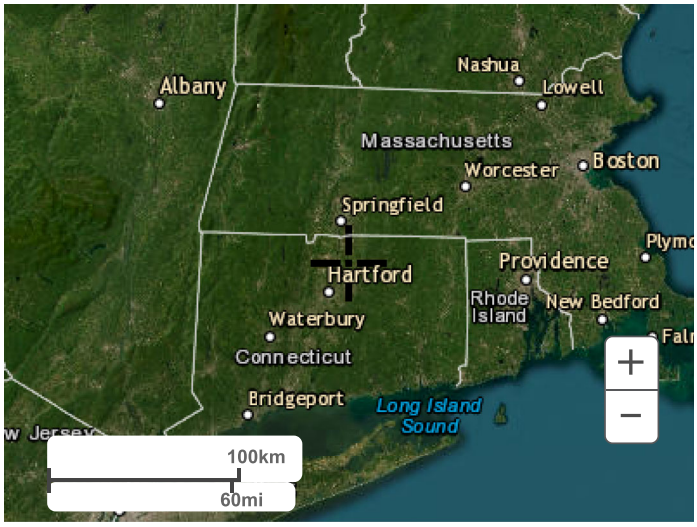
Large scale terrain



Large scale map



Large scale aerial



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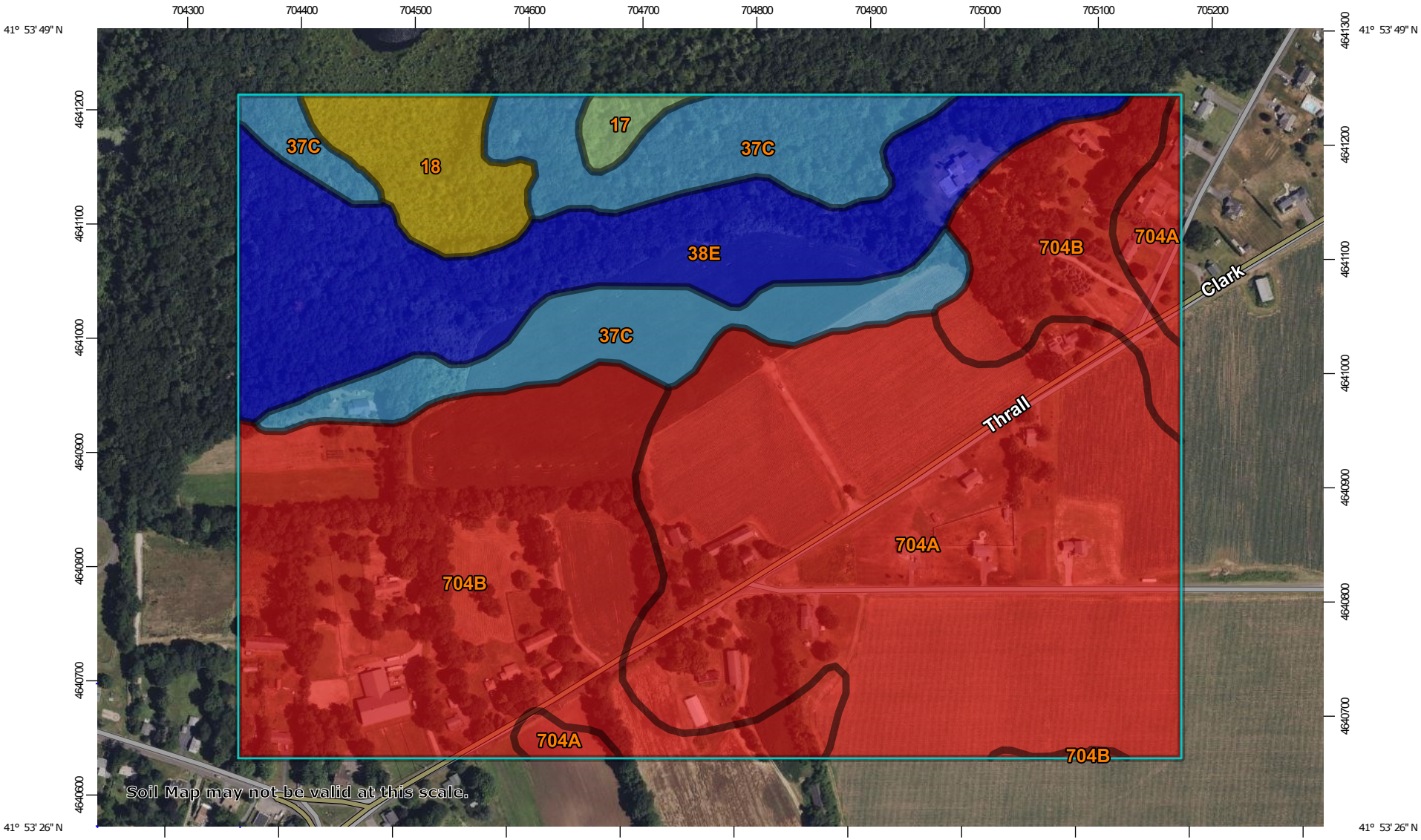
US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

APPENDIX F: NRCS SATURATED HYDRAULIC CONDUCTIVITY

Saturated Hydraulic Conductivity (Ksat)—State of Connecticut
(EAST WINDSOR SOLAR TWO, LLC)



Map Scale: 1:4,920 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

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

Soils

Soil Rating Polygons
- <= 8.9800
- > 8.9800 and <= 35.6800
- > 35.6800 and <= 39.7800
- > 39.7800 and <= 86.4688
- > 86.4688 and <= 98.0800
- Not rated or not available

Soil Rating Lines
- <= 8.9800
- > 8.9800 and <= 35.6800
- > 35.6800 and <= 39.7800
- > 39.7800 and <= 86.4688
- > 86.4688 and <= 98.0800
- Not rated or not available

Soil Rating Points
- <= 8.9800
- > 8.9800 and <= 35.6800
- > 35.6800 and <= 39.7800
- > 39.7800 and <= 86.4688
- > 86.4688 and <= 98.0800
- Not rated or not available

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: State of Connecticut
Survey Area Data: Version 22, Sep 12, 2022

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

Date(s) aerial images were photographed: Jun 14, 2022—Oct 6, 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.

Saturated Hydraulic Conductivity (Ksat)

Map unit symbol	Map unit name	Rating (micrometers per second)	Acres in AOI	Percent of AOI
17	Timakwa and Natchaug soils, 0 to 2 percent slopes	39.7800	0.9	0.8%
18	Catden and Freetown soils, 0 to 2 percent slopes	35.6800	4.6	3.8%
37C	Manchester gravelly sandy loam, 3 to 15 percent slopes	86.4688	15.8	13.2%
38E	Hinckley loamy sand, 15 to 45 percent slopes	98.0800	18.6	15.5%
704A	Enfield silt loam, 0 to 3 percent slopes	8.9800	42.8	35.9%
704B	Enfield silt loam, 3 to 8 percent slopes	8.9800	36.8	30.8%
Totals for Area of Interest			**119.5**	**100.0%**

Description

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity is considered in the design of soil drainage systems and septic tank absorption fields.

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

The numeric Ksat values have been grouped according to standard Ksat class limits.

Rating Options

Units of Measure: micrometers per second

Aggregation Method: Weighted Average

Component Percent Cutoff: None Specified

Tie-break Rule: Fastest

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)