Issue for Permit

Drainage Calculations

Litchfield Civil Design

Silicon Ranch Corporation

Litchfield, Connecticut

June 25, 2021

(Revision 3)

Version Control

Version	Date	Description/Summary of Changes
Revision 0	9-30-20	Issued for Permit
Revision 1	1-18-21	Amended 1.1 Project Description
Revision 2	2-3-21	Amended 2.3.1 Wetland Description and updated maps in Appendix B & F
Revision 3	6-25-21	

Contents

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Attachments

1. Narrative

1.1. Project Description

The owner intends to develop a photovoltaic solar site consisting of solar panels, inverters, and internal access roads. The panel and inverter layout was completed by Solvida. The project site is located on approximately 212 acres partially in the City of Torrington and Town of Litchfield. This report summarizes the proposed facilities and impacts to the stormwater runoff.

1.2. Existing Conditions

The area on site where project layout is proposed consists of a mix of vacant grassed, wooded, and previously farmed land. The parcels to the South are mostly fields with good crop residue and undeveloped adjacent properties. On the Northern half, some parcels are forested while others are cultivated areas with residential communities in the adjacent areas. For this project, the existing area was divided into fourteen drainage study areas based on areas of developable land for optimal solar panel orientation and placement. Analysis points were chosen for each of these areas to analyze drainage such that existing flow patterns are maintained and offsite flows do not enter the study areas. Only one drainage area, Drainage Area 14, was determined to have run-on contributing to it and it was accounted for in the discharge and water quality requirements.

1.3. Proposed Conditions

Under post-developed conditions, the overland drainage pattern will mimic the existing conditions. The ground cover in the Limits of Disturbance will change from wooded areas to open spaces with grass covering the area and in good condition, which creates the largest impact to the peak flows. Graded areas will be stabilized with vegetation, therefore the only effect of the time of concentration for the runoff is due to a lower Manning's N number because the proposed site will consist of grass within the Limits of Disturbance. Refer to the drainage area map in **Appendix C**. In compliance with Appendix I of the CT DEEP manual, Stormwater Management at Solar Array Construction Projects, the proposed conditions of the 2-year (24 hour), 10-year (24 hour), 25-year (24 hour), 50-year (24 hour), and 100-year (24 hour) storms were analyzed. Peak outflows for pre-developed and post-developed analyzed storms are in **Tables 1-4.**

2. Methodology

Sub-basins were developed and analyzed based on the existing and proposed land covers and the hydrologic soil groups for the site found in the Soil Survey of Litchfield, Connecticut. Gravel roadways, transformer pads, and solar arrays were accounted for as impervious in the Weighted Curve Numbers (CN) calculation which was based on the TR-55 method. The CN calculations account for soil compaction activities during the construction of the solar array by increasing the hydrologic soil group present on-site by one-half of the next higher group type. The Time of Concentrations were generated by using the velocity factors from the NRCS Part 630 of the National Engineering Handbook, Chapter 15 and limited to 100 feet for sheet flow. The curve number calculations can be found in **Appendix D**. The Soil Resource Report for the site can be found in **Appendix A.** The results of the CN and Time of Concentration can be found in Appendix D and E respectively. This data, along with the drainage area, was input into HydroCAD to generate hydrographs. The output of the HydroCAD model can be found in Appendix C. The entire site consists of type A, B, C, and D soils, but

primarily consists of soil type "C". The land use area is both wooded and pasture. The wooded land cover is sparsely covered in wood therefore fair hydrologic condition was used to compute the CN. Fair hydrologic condition was used woods land cover because from historical satellite images it appears that there is some forest litter which covers the soil. The pasture land cover is also covered in long grass and therefore fair hydrologic condition was used to compute the CN. For the existing and proposed conditions, the 2-year (24 hour), 10-year (24 hour), 25-year (24 hour), 50-year (24 hour), and 100-year (24 hour) storms were analyzed.

A hydrologic routing model was completed using the HydroCAD software program. The calculated drainage area size, composite curve number and time of concentration for each sub-drainage area was entered into the software. The total rainfall depths for the 2-year (24 hour), 10-year (24 hour), 25-year (24 hour), 50-year (24 hour), and 100-year (24 hour) storm events were obtained from Table 7-2 of the Connecticut Stormwater Manual. The table gives rainfall amounts for the 2-yr, 10-yr, 25-yr, and 100-yr, 24-hr rainstorm events. The 50-yr, 24-hr storm was logarithmically interpolated. **Table 7** shows the values used to calculate the flows for this study.

Table 7: County Design Rainfall Amounts for Litchfield from Connecticut Stormwater Manual

County	24-Hour Rainfall Amount (inches)				
	2-yr	10-yr	25-yr	50-yr	100-yr
Litchfield	3.2	4.7	5.5	6.3	7.0

The total rainfall depth was entered into the model and ran utilizing the NRCS Type III rainfall distribution with a fifteen minute time interval and antecedent moisture condition II.

Table 1: Pre- and Post-development for the 2-yr, 24-hr storm

Name	Area (ac)	Pre-Inflow Q2 (cfs)	Post-Inflow Q2 (cfs)	Pre-Inflow vs. Post-Inflow Q2	Post-Outflow Q2 (cfs)	Pre-Inflow vs. Post-Outflow Q2
1	1.28	1.53	2.37	0.84	0.99	-0.54
2a	3.85	5.74	7.01	1.27	6.09	0.35
2b	4.02	1.34	5.34	4.00	3.27	1.93
3	7.89	7.72	15.87	8.15	9.24	1.52
4	0.94	1.21	1.63	0.42	1.63	0.42
5	1.68	3.60	3.43	-0.17	0.34	-3.26
7	4.10	1.24	7.06	5.82	0.28	-0.96
8/10*	28.04	41.93	47.30	5.37	17.19	-24.74
9	6.81	9.06	10.75	1.69	3.38	-5.68
11	3.19	0.56	3.39	2.83	0.28	-0.28
12	1.93	3.16	3.80	0.64	2.27	-0.89
13	1.63	0.12	3.39	3.27	0.21	0.09
14	4.60	4.06	7.24	3.18	3.63	-0.43
15**	1.93	1.72	2.98	1.26	2.98	1.26

* One pond is used for basins 8 and 10. The Pre-Inflow vs. Post-Outflow shows the difference between the Post-Outflow vs. the combined Pre-Inflow.

**Due to the size of the subbasin, no pond was designed for this area.

Table 2: Pre- and Post-development for the 10-yr, 24-hr storm

Name	Area (ac)	Pre-Inflow Q10 (cfs)	Post-Inflow Q10 (cfs)	Pre-Inflow vs. Post-Inflow Q10	Post-Outflow Q10 (cfs)	Pre-Inflow vs. Post-Outflow Q10
1	1.28	3.20	4.14	0.94	3.99	0.79
2a	3.85	10.71	12.87	2.16	15.52	4.81
2b	4.02	4.39	10.00	5.61	9.60	5.21
3	7.89	16.62	26.88	10.26	17.88	1.26
4	0.94	2.31	2.81	0.50	2.81	0.5
5	1.68	6.01	5.90	-0.11	3.47	-2.54
7	4.10	4.00	12.95	8.95	0.90	-3.1
8/10*	28.04	73.68	81.47	7.79	52.62	-21.06
9	6.81	16.38	18.25	1.87	12.90	-3.48
11	3.19	2.07	6.46	4.39	3.64	1.57
12	1.93	5.55	6.53	0.98	6.35	0.8
13	1.63	0.82	5.82	5.00	0.32	-0.5
14	4.60	8.39	12.21	3.82	11.99	3.6
15**	1.93	3.71	5.30	1.59	5.30	1.59

* One pond is used for basins 8 and 10. The Pre-Inflow vs. Post-Outflow shows the difference between the Post-Outflow vs. the combined Pre-Inflow.

**Due to the size of the subbasin, no pond was designed for this area.

Table 3: Pre- and Post-development for the 25-yr, 24-hr storm

Name	Area (ac)	Pre-Inflow Q25 (cfs)	Post-Inflow Q25 (cfs)	Pre-Inflow vs. Post-Inflow Q25	Post-Outflow Q25 (cfs)	Pre-Inflow vs. Post-Outflow Q25
1	1.28	4.17	5.11	0.94	5.11	0.94
2a	3.85	13.46	16.10	2.64	15.72	2.26
2b	4.02	6.34	12.58	6.24	12.23	5.89
3	7.89	21.78	32.78	11.00	20.78	-1.0
4	0.94	2.92	3.44	0.52	3.44	0.52
5	1.68	7.29	7.23	-0.06	5.90	-1.39
7	4.10	5.80	16.19	10.39	3.18	-2.62
8/10*	28.04	90.80	99.88	9.08	67.34	-23.46
9	6.81	20.39	22.26	1.87	17.89	-2.5
11	3.19	3.10	8.18	5.08	6.37	3.27
12	1.93	6.84	8.00	1.16	7.81	0.97
13	1.63	1.40	7.13	5.73	0.36	-1.04
14	4.60	10.87	15.05	4.18	15.07	4.2
15**	1.93	4.86	6.56	1.70	6.56	1.7

* One pond is used for basins 8 and 10. The Pre-Inflow vs. Post-Outflow shows the difference between the Post-Outflow vs. the combined Pre-Inflow.

**Due to the size of the subbasin, no pond was designed for this area.

Table 4: Pre- and Post-development for the 50-yr, 24-hr storm

Name	Area (ac)	Pre-Inflow Q50 (cfs)	Post-Inflow Q50 (cfs)	Pre-Inflow vs. Post-Inflow Q50	Post-Outflow Q50 (cfs)	Pre-Inflow vs. Post-Outflow Q50
1	1.28	5.16	6.07	0.91	5.96	0.80
2a	3.85	16.24	19.35	3.11	18.97	2.73
2b	4.02	8.24	15.19	6.95	14.82	6.58
3	7.89	27.11	38.68	11.57	23.31	-3.80
4	0.94	3.56	4.08	0.52	4.08	0.52
5	1.68	8.58	8.55	-0.03	8.03	-0.55
7	4.10	7.72	19.46	11.74	6.89	-0.83
8/10*	28.04	107.96	118.30	10.34	79.47	-28.49
9	6.81	24.42	26.27	1.85	22.56	-1.86
11	3.19	4.23	9.92	5.69	8.95	4.72
12	1.93	8.13	9.47	1.34	9.27	1.14
13	1.63	2.08	8.44	6.36	0.39	-1.69
14	4.60	13.41	17.89	4.48	17.11	3.70
15**	1.93	6.05	7.83	1.78	7.83	1.78

* One pond is used for basins 8 and 10. The Pre-Inflow vs. Post-Outflow shows the difference between the Post-Outflow vs. the combined Pre-Inflow.

**Due to the size of the subbasin, no pond was designed for this area.

Table 5: Pre- and Post-development for the 100-yr, 24-hr storm

Name	Area (ac)	Pre-Inflow Q100 (cfs)	Post-Inflow Q100 (cfs)	Pre-Inflow vs. Post-Inflow Q100	Post-Outflow Q100 (cfs)	Pre-Inflow vs. Post-Outflow Q100
1	1.28	6.04	6.91	0.87	6.79	0.75
2a	3.85	18.69	22.21	3.52	22.03	3.34
2b	4.02	10.38	17.49	7.11	17.10	6.72
3	7.89	31.86	43.82	11.96	29.15	-2.71
4	0.94	4.11	4.63	0.52	4.63	0.52
5	1.68	9.69	9.71	0.02	9.37	-0.32
7	4.10	9.49	22.32	12.83	10.94	1.45
8/10	28.04	122.97	134.32	11.35	94.76	-28.21
9	6.81	27.96	29.78	1.82	26.58	-1.38
11	3.19	5.28	11.45	6.17	10.88	5.60
12	1.93	9.26	10.76	1.50	10.55	1.29
13	1.63	2.72	9.58	6.86	0.42	-2.30
14	4.60	15.67	20.37	4.70	18.83	3.16
15**	1.93	7.11	8.94	1.83	8.94	1.83

* One pond is used for basins 8 and 10. The Pre-Inflow vs. Post-Outflow shows the difference between the Post-Outflow vs. the combined Pre-Inflow.

**Due to the size of the subbasin, no pond was designed for this area.

Table 6: Pre VS Post Discharge Summary (Entire site)

Condition	Pre VS Post Discharge Summary (cfs)				
	2-yr	10-yr	25-yr	50-yr	100-yr
Pre-Development	82.99	157.84	200.02	242.89	281.23
Post-Development	51.78	147.29	187.76	227.64	270.97

* Discharges totals for Pre and Post are the sum of all pre-inflow and post-outflow for all drainage areas, respectively.

Table 6 above summarizes the Pre vs Post discharges at the downstream analysis point. The post-development flows are less than the Pre-development discharges, therefore, demonstrating no net increase in peak flows for the entire project and no adverse impacts to downstream properties.

2.1. Water Quality

In compliance with CT DEEP regulations for water quality, the volume generated by one inch of rainfall over each subbasin is being retained and treated on site. The site meets the Water Quality Volume (WQV) in the following manner; where ponds are used, the invert of the orifice at the outlet structure was set to be at the WQV water surface elevation. For subbasins under five acres and where infiltration was deemed feasible, infiltration trenches with forebays were implemented. For subbasins that had high groundwater table constraints, wet swales with forebays were used. See Appendix H for summary of the water quality mitigation measures.

2.2. Pond Calculation

As part of the Erosion and Sediment Control Plan (further discussed in Section 3), sediment basins and sediment traps will be used to mitigate the short-term impacts of construction. Also in every basin, the post-development discharge was greater than the pre-development discharges. In order to keep these post-development flows at or below the pre-development flows, these sediment basins will be converted to ponds. For these basins, a pond is was designed to attenuate the 100-year storm discharge. The pond will be converted from the erosion and sediment control sediment basin in Phase 3. The pond consists of an outfall structure with orifice, a weir, culvert and a spillway for 100-year storm discharge. Riprap armoring is provided at pipe outlets and spillways. Riprap aprons are positioned on slopes less than or equal to fifteen percent. Pond calculations can be found in **Appendix C** of this report.

There were 3 culvert crossing proposed in the original design; C-1, C-2, and C-3. To minimize wetland impacts, two culvert crossings were removed in the redesign. For the new design, there is one wetland crossing culvert C-1 proposed on site. This is an existing crossing, which will be improved with a bottomless arch culvert. This culvert was designed using AutoCAD Hydraflow Hydrographs Extension and SCS Curve Number method. These culverts were designed in accordance with CT DEEP Stream Crossing Guidelines and USACE Openness Ratio Calculations. For additional information on the culvert design calculations see Appendix H.

Where sheet flow was not feasible, permanent ditches or swales were incorporated to help the water flow to the stormwater management areas. The ditches were designed using AutoCAD

Hydraflow Express using the 100-yr (24 hour) storm event and CT DEEP conveyance criteria. Where more than one ditch was needed for one drainage area, the flows were calculated as a percentage of the overall subbasin flows per the proposed HydroCAD modeling results. These ditches consist of both trapezoidal and triangular channels. For additional information on ditch design calculations see Appendix H.

2.3. Wetlands, FEMA Floodplains, and Coastal Boundaries

2.3.1. Wetlands

Wetlands have been delineated for the site and a map of the wetlands can be found in Appendix F. Design has been considered in a way to reduce impacts to wetlands.

2.3.2. FEMA Floodplains

FEMA Floodplains are not located on the site. FEMA Maps of the site can be found in Appendix B.

2.3.3. Coastal Boundaries

Coastal Boundaries are not located near the site and were not a necessary consideration for this project. See FEMA Maps located in Appendix B.

3. Erosion and Sediment Control Plan

3.1. Erosion and Sediment Controls

An Erosion and Sediment (E&S) Control Plan has been developed to mitigate the short-term impacts of the site improvements during construction and includes the following information: descriptive specifications concerning land grading, topsoiling, temporary vegetative cover, permanent vegetative cover, vegetative cover selection and mulching, sediment basins, sediment traps, filter rolls, and erosion checks. Details can be found in the E&S plans and have been provided for all erosion controls as necessary. In all cases, the E&S Control Plan shall be implemented in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control. See **Appendix G** for the Erosion and Sediment Control Calculations.

3.2. Temporary Stabilization

Temporary stabilization for the site includes silt fence, filter rolls, baffles, temporary matting, ditch checks, sediment traps, and sediment basins. These stabilization practices shall be installed and reinforced on the site before any construction occurs and according to the E&S plans and according to the proper phase of the project. The construction and maintenance of temporary stabilization shall follow the requirements of the E&S plans.

3.3. Permanent Stabilization

Permanent stabilization practice on the site will include stabilization of the site with permanent seed. Sediment basins and traps will be constructed in each drainage area that will be converted to stormwater pond, infiltration trenches, and wet swales at the end of the project to keep the post-development flows at or below the pre-development flows. Stabilization and permanent seed will be in accordance with the project specifications and plans. Construction of E&S control measures are in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.

3.4. Sediment Tracking and Maintenance of Controls

The entrance of the construction site shall be installed and maintained to reduce vehicular tracking of sediment. The installation of these practices shall be according to the plans and all maintenance of controls shall be according to the E&S plans.

E&S controls will be installed and maintained throughout the construction in accordance with local, state, and federal requirements.

Appendix A

Soil Resource Report

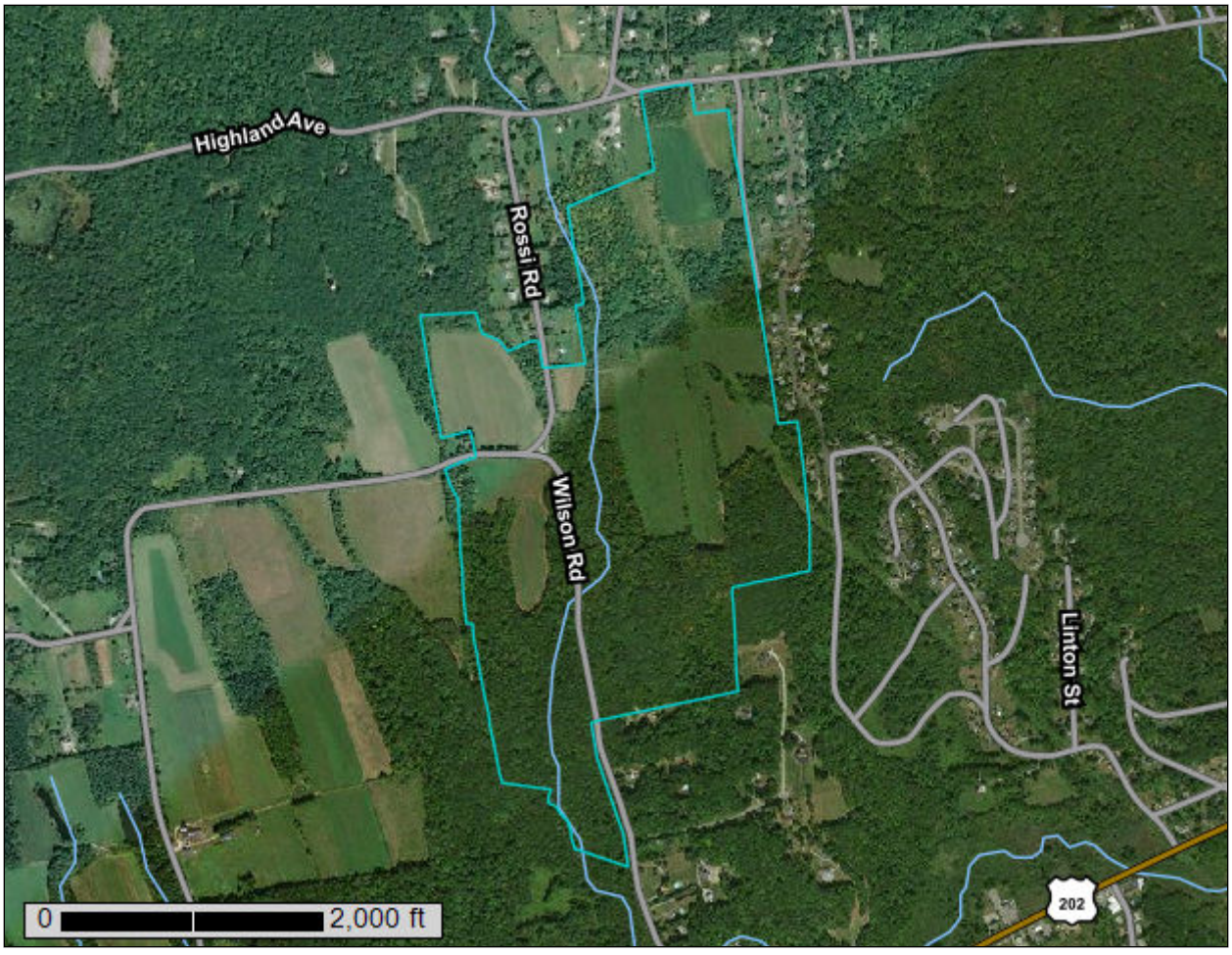
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for State of Connecticut



August 10, 2020

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

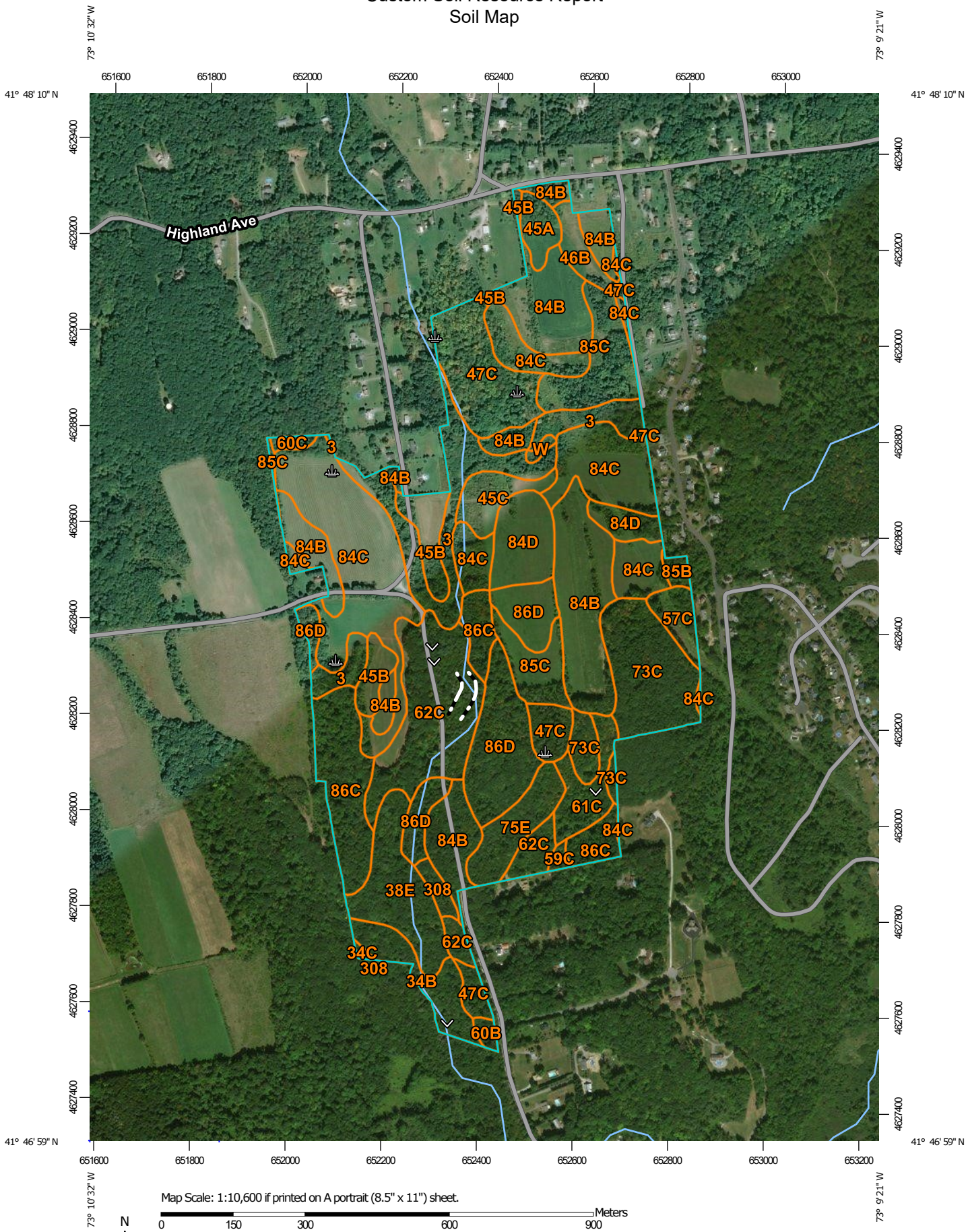
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:10,600 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 500 1000 2000 3000

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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 20, Jun 9, 2020

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

Date(s) aerial images were photographed: Jul 2, 2015—Sep 17, 2019

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
3	Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony	14.8	6.8%
34B	Merrimac fine sandy loam, 3 to 8 percent slopes	5.0	2.3%
34C	Merrimac fine sandy loam, 8 to 15 percent slopes	0.2	0.1%
38E	Hinckley loamy sand, 15 to 45 percent slopes	8.9	4.1%
45A	Woodbridge fine sandy loam, 0 to 3 percent slopes	2.3	1.1%
45B	Woodbridge fine sandy loam, 3 to 8 percent slopes	5.6	2.6%
45C	Woodbridge fine sandy loam, 8 to 15 percent slopes	3.4	1.6%
46B	Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony	2.3	1.1%
47C	Woodbridge fine sandy loam, 3 to 15 percent slopes, extremely stony	13.2	6.0%
57C	Gloucester gravelly sandy loam, 8 to 15 percent slopes	2.4	1.1%
59C	Gloucester gravelly sandy loam, 3 to 15 percent slopes, extremely stony	0.5	0.2%
60B	Canton and Charlton fine sandy loams, 3 to 8 percent slopes	0.6	0.3%
60C	Canton and Charlton fine sandy loams, 8 to 15 percent slopes	0.6	0.3%
61C	Canton and Charlton fine sandy loams, 8 to 15 percent slopes, very stony	4.3	2.0%
62C	Canton and Charlton fine sandy loams, 3 to 15 percent slopes, extremely stony	17.4	8.0%
73C	Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky	12.9	5.9%
75E	Hollis-Chatfield-Rock outcrop complex, 15 to 45 percent slopes	5.2	2.4%
84B	Paxton and Montauk fine sandy loams, 3 to 8 percent slopes	31.9	14.7%
84C	Paxton and Montauk fine sandy loams, 8 to 15 percent slopes	36.2	16.6%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
84D	Paxton and Montauk fine sandy loams, 15 to 25 percent slopes	7.8	3.6%
85B	Paxton and Montauk fine sandy loams, 3 to 8 percent slopes, very stony	0.8	0.4%
85C	Paxton and Montauk fine sandy loams, 8 to 15 percent slopes, very stony	11.1	5.1%
86C	Paxton and Montauk fine sandy loams, 3 to 15 percent slopes, extremely stony	13.4	6.2%
86D	Paxton and Montauk fine sandy loams, 15 to 35 percent slopes, extremely stony	15.6	7.2%
308	Udorthents, smoothed	1.1	0.5%
W	Water	0.4	0.2%
Totals for Area of Interest		**217.8**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it

was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

State of Connecticut

3—Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2t2qt
Elevation: 0 to 1,480 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Ridgebury, extremely stony, and similar soils: 40 percent
Leicester, extremely stony, and similar soils: 35 percent
Whitman, extremely stony, and similar soils: 17 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ridgebury, Extremely Stony

Setting

Landform: Drumlins, depressions, drainageways, hills, ground moraines
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 6 inches: fine sandy loam
Bw - 6 to 10 inches: sandy loam
Bg - 10 to 19 inches: gravelly sandy loam
Cd - 19 to 66 inches: gravelly sandy loam

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 15 to 35 inches to densic material
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: D
Ecological site: F144AY009CT - Wet Till Depressions
Hydric soil rating: Yes

Description of Leicester, Extremely Stony

Setting

Landform: Ground moraines, depressions, drainageways, hills
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Parent material: Coarse-loamy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 7 inches: fine sandy loam
Bg - 7 to 18 inches: fine sandy loam
BC - 18 to 24 inches: fine sandy loam
C1 - 24 to 39 inches: gravelly fine sandy loam
C2 - 39 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: High (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B/D
Ecological site: F144AY009CT - Wet Till Depressions
Hydric soil rating: Yes

Description of Whitman, Extremely Stony

Setting

Landform: Depressions, drainageways, hills, ground moraines, drumlins
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 1 inches: peat

A - 1 to 10 inches: fine sandy loam
Bg - 10 to 17 inches: gravelly fine sandy loam
Cdg - 17 to 61 inches: fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 7 to 38 inches to densic material
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: F144AY009CT - Wet Till Depressions
Hydric soil rating: Yes

Minor Components

Woodbridge, extremely stony

Percent of map unit: 6 percent
Landform: Ground moraines, drumlins, hills
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Swansea

Percent of map unit: 2 percent
Landform: Swamps, bogs
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

34B—Merrimac fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2tyqs
Elevation: 0 to 1,290 feet

Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Merrimac and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Merrimac

Setting

Landform: Kames, eskers, moraines, outwash terraces, outwash plains
Landform position (two-dimensional): Backslope, footslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest, riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy glaciofluvial deposits derived from granite, schist, and gneiss over sandy and gravelly glaciofluvial deposits derived from granite, schist, and gneiss

Typical profile

Ap - 0 to 10 inches: fine sandy loam
Bw1 - 10 to 22 inches: fine sandy loam
Bw2 - 22 to 26 inches: stratified gravel to gravelly loamy sand
2C - 26 to 65 inches: stratified gravel to very gravelly sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline (0.0 to 1.4 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water capacity: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F145XY008MA - Dry Outwash
Hydric soil rating: No

Minor Components

Sudbury

Percent of map unit: 5 percent
Landform: Outwash plains, terraces, deltas
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, dip

Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Hinckley

Percent of map unit: 5 percent
Landform: Deltas, outwash plains, eskers, kames
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest, head slope, rise
Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Windsor

Percent of map unit: 3 percent
Landform: Outwash plains, deltas, dunes, outwash terraces
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread, riser
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Agawam

Percent of map unit: 2 percent
Landform: Outwash terraces, outwash plains, kames, eskers, stream terraces, moraines
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

34C—Merrimac fine sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2tyqt
Elevation: 0 to 1,030 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Merrimac and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Merrimac

Setting

Landform: Eskers, outwash terraces, kames, moraines, outwash plains

Landform position (two-dimensional): Backslope, footslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest, riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy glaciofluvial deposits derived from granite, schist, and gneiss over sandy and gravelly glaciofluvial deposits derived from granite, schist, and gneiss

Typical profile

Ap - 0 to 10 inches: fine sandy loam
Bw1 - 10 to 22 inches: fine sandy loam
Bw2 - 22 to 26 inches: stratified gravel to gravelly loamy sand
2C - 26 to 65 inches: stratified gravel to very gravelly sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline (0.0 to 1.4 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water capacity: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F145XY008MA - Dry Outwash
Hydric soil rating: No

Minor Components

Windsor

Percent of map unit: 5 percent
Landform: Outwash terraces, deltas, dunes, outwash plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread, riser
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Hinckley

Percent of map unit: 5 percent
Landform: Outwash plains, eskers, kames, deltas
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest, head slope, rise
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Sudbury

Percent of map unit: 5 percent
Landform: Outwash plains, terraces, deltas
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

38E—Hinckley loamy sand, 15 to 45 percent slopes

Map Unit Setting

National map unit symbol: 2svmj
Elevation: 0 to 1,280 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Hinckley and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hinckley

Setting

Landform: Kames, eskers, kame terraces, outwash plains, moraines, outwash terraces, outwash deltas
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope, side slope, crest, head slope, riser
Down-slope shape: Linear, convex, concave
Across-slope shape: Convex, linear, concave
Parent material: Sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 8 inches: loamy sand
Bw1 - 8 to 11 inches: gravelly loamy sand
Bw2 - 11 to 16 inches: gravelly loamy sand
BC - 16 to 19 inches: very gravelly loamy sand
C - 19 to 65 inches: very gravelly sand

Properties and qualities

Slope: 15 to 45 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Merrimac

Percent of map unit: 5 percent
Landform: Kames, eskers, moraines, outwash terraces, outwash plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope, crest, head slope, nose slope, riser
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Windsor

Percent of map unit: 5 percent
Landform: Outwash deltas, moraines, kames, eskers, kame terraces, outwash plains, outwash terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Head slope, nose slope, side slope, crest, riser
Down-slope shape: Concave, linear, convex
Across-slope shape: Linear, concave, convex
Hydric soil rating: No

Agawam

Percent of map unit: 3 percent
Landform: Kames, moraines, outwash terraces, outwash deltas, kame terraces, eskers, outwash plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope, side slope, crest, head slope, riser
Down-slope shape: Linear, convex, concave
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Sudbury

Percent of map unit: 2 percent
Landform: Eskers, kames, moraines, outwash terraces, kame terraces, outwash plains, outwash deltas
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave

Hydric soil rating: No

45A—Woodbridge fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2w686
Elevation: 0 to 1,420 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Woodbridge and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Woodbridge

Setting

Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bw1 - 7 to 18 inches: fine sandy loam
Bw2 - 18 to 30 inches: fine sandy loam
Cd - 30 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D

Ecological site: F144AY037MA - Moist Dense Till Uplands
Hydric soil rating: No

Minor Components

Paxton
Percent of map unit: 7 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Ridgebury
Percent of map unit: 6 percent
Landform: Drumlins, drainageways, ground moraines, depressions, hills
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Whitman, extremely stony
Percent of map unit: 1 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Sutton
Percent of map unit: 1 percent
Landform: Hills, ground moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

45B—Woodbridge fine sandy loam, 3 to 8 percent slopes

Map Unit Setting
National map unit symbol: 2t2ql
Elevation: 0 to 1,470 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Woodbridge, fine sandy loam, and similar soils: 82 percent

Minor components: 18 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Woodbridge, Fine Sandy Loam

Setting

Landform: Hills, drumlins, ground moraines
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bw1 - 7 to 18 inches: fine sandy loam
Bw2 - 18 to 30 inches: fine sandy loam
Cd - 30 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Ecological site: F144AY037MA - Moist Dense Till Uplands
Hydric soil rating: No

Minor Components

Paxton

Percent of map unit: 10 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Ridgebury

Percent of map unit: 8 percent
Landform: Ground moraines, depressions, drainageways, hills
Landform position (two-dimensional): Toeslope, backslope, footslope
Landform position (three-dimensional): Base slope, head slope, dip
Down-slope shape: Concave

Across-slope shape: Concave
Hydric soil rating: Yes

45C—Woodbridge fine sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2w689
Elevation: 0 to 1,370 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Woodbridge and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Woodbridge

Setting

Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Footslope, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bw1 - 7 to 18 inches: fine sandy loam
Bw2 - 18 to 30 inches: fine sandy loam
Cd - 30 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C/D
Ecological site: F144AY037MA - Moist Dense Till Uplands
Hydric soil rating: No

Minor Components

Paxton
Percent of map unit: 10 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Ridgebury
Percent of map unit: 4 percent
Landform: Drainageways, hills, ground moraines, depressions, drumlins
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Sutton
Percent of map unit: 1 percent
Landform: Hills, ground moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

46B—Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony

Map Unit Setting
National map unit symbol: 2t2qr
Elevation: 0 to 1,440 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition
Woodbridge, very stony, and similar soils: 82 percent
Minor components: 18 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Woodbridge, Very Stony

Setting

Landform: Hills, ground moraines, drumlins
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 9 inches: fine sandy loam
Bw1 - 9 to 20 inches: fine sandy loam
Bw2 - 20 to 32 inches: fine sandy loam
Cd - 32 to 67 inches: gravelly fine sandy loam

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 19 to 27 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 4.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C/D
Ecological site: F144AY037MA - Moist Dense Till Uplands
Hydric soil rating: No

Minor Components

Paxton, very stony

Percent of map unit: 10 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Shoulder, backslope, summit
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Ridgebury, very stony

Percent of map unit: 8 percent
Landform: Ground moraines, depressions, drumlins, drainageways, hills
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Concave

Across-slope shape: Concave
Hydric soil rating: Yes

47C—Woodbridge fine sandy loam, 3 to 15 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2w685
Elevation: 10 to 1,470 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Woodbridge, extremely stony, and similar soils: 83 percent
Minor components: 17 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Woodbridge, Extremely Stony

Setting

Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 9 inches: fine sandy loam
Bw1 - 9 to 20 inches: fine sandy loam
Bw2 - 20 to 32 inches: fine sandy loam
Cd - 32 to 67 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 15 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 19 to 27 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C/D
Ecological site: F144AY037MA - Moist Dense Till Uplands
Hydric soil rating: No

Minor Components

Paxton, extremely stony

Percent of map unit: 9 percent
Landform: Ground moraines, drumlins, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Hydric soil rating: No

Ridgebury, extremely stony

Percent of map unit: 5 percent
Landform: Drumlins, ground moraines, drainageways, hills, depressions
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Sutton, extremely stony

Percent of map unit: 2 percent
Landform: Ground moraines, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Whitman, extremely stony

Percent of map unit: 1 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

57C—Gloucester gravelly sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9lpf
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F

Frost-free period: 140 to 185 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Gloucester and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gloucester

Setting

Landform: Hills
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy and gravelly melt-out till derived from granite and/or schist and/or gneiss

Typical profile

Ap - 0 to 4 inches: gravelly sandy loam
Bw1 - 4 to 12 inches: gravelly sandy loam
Bw2 - 12 to 25 inches: very gravelly loamy sand
C1 - 25 to 35 inches: very gravelly loamy coarse sand
C2 - 35 to 60 inches: very gravelly loamy coarse sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Ecological site: F144AY032NH - Dry Till Uplands
Hydric soil rating: No

Minor Components

Hinckley

Percent of map unit: 5 percent
Landform: Terraces, eskers, kames, outwash plains
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Canton

Percent of map unit: 5 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Convex

Hydric soil rating: No

Charlton

Percent of map unit: 3 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Paxton

Percent of map unit: 3 percent
Landform: Drumlins, hills, till plains
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Sutton

Percent of map unit: 2 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Leicester

Percent of map unit: 2 percent
Landform: Depressions, drainageways
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

59C—Gloucester gravelly sandy loam, 3 to 15 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 9lpk
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

Gloucester and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gloucester

Setting

Landform: Hills
Down-slope shape: Convex

Across-slope shape: Convex
Parent material: Sandy and gravelly melt-out till derived from granite and/or schist and/or gneiss

Typical profile

Ap - 0 to 4 inches: gravelly sandy loam
Bw1 - 4 to 12 inches: gravelly sandy loam
Bw2 - 12 to 25 inches: very gravelly loamy sand
C1 - 25 to 35 inches: very gravelly loamy coarse sand
C2 - 35 to 60 inches: very gravelly loamy coarse sand

Properties and qualities

Slope: 3 to 15 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Ecological site: F144AY032NH - Dry Till Uplands
Hydric soil rating: No

Minor Components

Hinckley

Percent of map unit: 5 percent
Landform: Eskers, kames, outwash plains, terraces
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Canton

Percent of map unit: 5 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Paxton

Percent of map unit: 3 percent
Landform: Drumlins, hills, till plains
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Charlton

Percent of map unit: 3 percent
Landform: Hills
Down-slope shape: Linear

Across-slope shape: Linear
Hydric soil rating: No

Sutton

Percent of map unit: 2 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Leicester

Percent of map unit: 2 percent
Landform: Drainageways, depressions
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

60B—Canton and Charlton fine sandy loams, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2w81s
Elevation: 0 to 1,460 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Canton and similar soils: 50 percent
Charlton and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting

Landform: Ridges, moraines, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, nose slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bw1 - 7 to 15 inches: fine sandy loam
Bw2 - 15 to 26 inches: gravelly fine sandy loam
2C - 26 to 65 inches: gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Charlton

Setting

Landform: Hills, ground moraines, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bw - 7 to 22 inches: gravelly fine sandy loam
C - 22 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Sutton

Percent of map unit: 5 percent
Landform: Hills, ridges, ground moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Leicester

Percent of map unit: 5 percent
Landform: Drainageways, ground moraines, hills, depressions
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Concave
Hydric soil rating: Yes

Chatfield

Percent of map unit: 5 percent
Landform: Ridges, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

60C—Canton and Charlton fine sandy loams, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2w81z
Elevation: 0 to 1,620 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Canton and similar soils: 50 percent
Charlton and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton

Setting

Landform: Ridges, moraines, hills

Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, nose slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bw1 - 7 to 15 inches: fine sandy loam
Bw2 - 15 to 26 inches: gravelly fine sandy loam
2C - 26 to 65 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Charlton

Setting

Landform: Hills, ground moraines, ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bw - 7 to 22 inches: gravelly fine sandy loam
C - 22 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Chatfield

Percent of map unit: 5 percent
Landform: Hills, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Leicester

Percent of map unit: 5 percent
Landform: Hills, depressions, drainageways, ground moraines
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Hydric soil rating: Yes

Sutton

Percent of map unit: 5 percent
Landform: Ground moraines, hills, ridges
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

61C—Canton and Charlton fine sandy loams, 8 to 15 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2w820
Elevation: 0 to 1,540 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F

Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Canton, very stony, and similar soils: 50 percent
Charlton, very stony, and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton, Very Stony

Setting

Landform: Ridges, hills, moraines
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: fine sandy loam
Bw1 - 5 to 16 inches: fine sandy loam
Bw2 - 16 to 22 inches: gravelly fine sandy loam
2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Charlton, Very Stony

Setting

Landform: Hills, ground moraines, ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex

Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 4 inches: fine sandy loam
Bw - 4 to 27 inches: gravelly fine sandy loam
C - 27 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Chatfield, very stony

Percent of map unit: 5 percent
Landform: Hills, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Leicester, very stony

Percent of map unit: 5 percent
Landform: Hills, ground moraines, depressions, drainageways
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Hydric soil rating: Yes

Sutton, very stony

Percent of map unit: 5 percent
Landform: Hills, ground moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear

Hydric soil rating: No

62C—Canton and Charlton fine sandy loams, 3 to 15 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2wks7
Elevation: 0 to 1,310 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Canton, extremely stony, and similar soils: 50 percent
Charlton, extremely stony, and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Canton, Extremely Stony

Setting

Landform: Ridges, hills, moraines
Landform position (two-dimensional): Shoulder, backslope, summit
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy melt-out till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 5 inches: fine sandy loam
Bw1 - 5 to 16 inches: fine sandy loam
Bw2 - 16 to 22 inches: gravelly fine sandy loam
2C - 22 to 67 inches: gravelly loamy sand

Properties and qualities

Slope: 3 to 15 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Charlton, Extremely Stony

Setting

Landform: Hills, ground moraines, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 4 inches: fine sandy loam
Bw - 4 to 27 inches: gravelly fine sandy loam
C - 27 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 15 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Leicester, extremely stony

Percent of map unit: 5 percent
Landform: Depressions, drainageways, hills, ground moraines
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Concave

Hydric soil rating: Yes

Sutton, extremely stony

Percent of map unit: 5 percent
Landform: Ground moraines, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Chatfield, extremely stony

Percent of map unit: 5 percent
Landform: Hills, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

73C—Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky

Map Unit Setting

National map unit symbol: 2w698
Elevation: 0 to 1,550 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Charlton, very stony, and similar soils: 50 percent
Chatfield, very stony, and similar soils: 30 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Charlton, Very Stony

Setting

Landform: Hills, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 4 inches: fine sandy loam

Bw - 4 to 27 inches: gravelly fine sandy loam
C - 27 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Chatfield, Very Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: fine sandy loam
Bw - 2 to 30 inches: gravelly fine sandy loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 3 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 41 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Sutton, very stony
Percent of map unit: 5 percent
Landform: Ground moraines, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Rock outcrop
Percent of map unit: 5 percent
Hydric soil rating: No

Hollis, very stony
Percent of map unit: 5 percent
Landform: Ridges, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Leicester, very stony
Percent of map unit: 5 percent
Landform: Drainageways, depressions
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

75E—Hollis-Chatfield-Rock outcrop complex, 15 to 45 percent slopes

Map Unit Setting
National map unit symbol: 9lqp
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 56 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition
Hollis and similar soils: 35 percent
Chatfield and similar soils: 30 percent
Rock outcrop: 15 percent

Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hollis

Setting

Landform: Hills, ridges
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy melt-out till derived from granite and/or schist and/or gneiss

Typical profile

Oa - 0 to 1 inches: highly decomposed plant material
A - 1 to 6 inches: gravelly fine sandy loam
Bw1 - 6 to 9 inches: channery fine sandy loam
Bw2 - 9 to 15 inches: gravelly fine sandy loam
2R - 15 to 80 inches: bedrock

Properties and qualities

Slope: 15 to 45 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 1.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Description of Chatfield

Setting

Landform: Hills, ridges
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Coarse-loamy melt-out till derived from granite and/or schist and/or gneiss

Typical profile

Oa - 0 to 1 inches: highly decomposed plant material
A - 1 to 6 inches: gravelly fine sandy loam
Bw1 - 6 to 15 inches: gravelly fine sandy loam
Bw2 - 15 to 29 inches: gravelly fine sandy loam
2R - 29 to 80 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 45 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent

Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Rock Outcrop

Properties and qualities

Slope: 15 to 45 percent
Depth to restrictive feature: 0 inches to lithic bedrock
Runoff class: Very high

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: Unranked

Minor Components

Charlton

Percent of map unit: 7 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Leicester

Percent of map unit: 5 percent
Landform: Depressions, drainageways
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Sutton

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Unnamed, red parent material

Percent of map unit: 1 percent
Hydric soil rating: No

Brimfield

Percent of map unit: 1 percent
Landform: Hills, ridges
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Unnamed, sandy subsoil

Percent of map unit: 1 percent
Hydric soil rating: No

84B—Paxton and Montauk fine sandy loams, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2t2qn
Elevation: 0 to 1,570 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Paxton and similar soils: 55 percent
Montauk and similar soils: 30 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton

Setting

Landform: Hills, drumlins, ground moraines
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 8 inches: fine sandy loam
Bw1 - 8 to 15 inches: fine sandy loam
Bw2 - 15 to 26 inches: fine sandy loam
Cd - 26 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 18 to 39 inches to densic material
Drainage class: Well drained

Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Description of Montauk

Setting

Landform: Drumlins, hills
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

A - 0 to 4 inches: fine sandy loam
Bw1 - 4 to 14 inches: fine sandy loam
Bw2 - 14 to 25 inches: sandy loam
2Cd1 - 25 to 39 inches: gravelly loamy coarse sand
2Cd2 - 39 to 60 inches: gravelly sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 38 inches to densic material
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 24 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Minor Components

Ridgebury

Percent of map unit: 5 percent
Landform: Hills, ground moraines, depressions, drainageways
Landform position (two-dimensional): Toeslope, backslope, footslope

Landform position (three-dimensional): Base slope, head slope, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Woodbridge

Percent of map unit: 5 percent
Landform: Hills, drumlins, ground moraines
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Charlton

Percent of map unit: 5 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

84C—Paxton and Montauk fine sandy loams, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2w67b
Elevation: 0 to 1,550 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Paxton and similar soils: 55 percent
Montauk and similar soils: 30 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton

Setting

Landform: Ground moraines, drumlins, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 8 inches: fine sandy loam

Bw1 - 8 to 15 inches: fine sandy loam
Bw2 - 15 to 26 inches: fine sandy loam
Cd - 26 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Description of Montauk

Setting

Landform: Recessionial moraines, drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 4 inches: fine sandy loam
Bw1 - 4 to 26 inches: fine sandy loam
Bw2 - 26 to 34 inches: sandy loam
2Cd - 34 to 72 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Minor Components

Woodbridge
Percent of map unit: 6 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Charlton
Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Ridgebury
Percent of map unit: 3 percent
Landform: Hills, depressions, drumlins, drainageways, ground moraines
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Stockbridge
Percent of map unit: 1 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

84D—Paxton and Montauk fine sandy loams, 15 to 25 percent slopes

Map Unit Setting
National map unit symbol: 2w67g
Elevation: 30 to 1,470 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days

Farmland classification: Not prime farmland

Map Unit Composition

Paxton and similar soils: 55 percent
Montauk and similar soils: 30 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton

Setting

Landform: Hills, ground moraines, drumlins
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 8 inches: fine sandy loam
Bw1 - 8 to 15 inches: fine sandy loam
Bw2 - 15 to 26 inches: fine sandy loam
Cd - 26 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Description of Montauk

Setting

Landform: Drumlins, hills, ground moraines, recessionial moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 4 inches: fine sandy loam
Bw1 - 4 to 26 inches: fine sandy loam
Bw2 - 26 to 34 inches: sandy loam
2Cd - 34 to 72 inches: gravelly loamy sand

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Minor Components

Charlton

Percent of map unit: 6 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Woodbridge

Percent of map unit: 5 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Ridgebury

Percent of map unit: 3 percent
Landform: Drainageways, hills, ground moraines, depressions, drumlins
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Linear, concave
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Stockbridge

Percent of map unit: 1 percent

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

85B—Paxton and Montauk fine sandy loams, 3 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2w679
Elevation: 0 to 1,530 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Paxton, very stony, and similar soils: 55 percent
Montauk, very stony, and similar soils: 30 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton, Very Stony

Setting

Landform: Drumlins, ground moraines, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 10 inches: fine sandy loam
Bw1 - 10 to 17 inches: fine sandy loam
Bw2 - 17 to 28 inches: fine sandy loam
Cd - 28 to 67 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Drainage class: Well drained
Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Description of Montauk, Very Stony

Setting

Landform: Ground moraines, recessionial moraines, drumlins, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 6 inches: fine sandy loam
Bw1 - 6 to 28 inches: fine sandy loam
Bw2 - 28 to 36 inches: sandy loam
2Cd - 36 to 74 inches: gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Minor Components

Woodbridge, very stony
Percent of map unit: 8 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope, summit, footslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Charlton, very stony
Percent of map unit: 3 percent
Landform: Hills
Landform position (two-dimensional): Shoulder, summit, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Ridgebury, very stony
Percent of map unit: 3 percent
Landform: Ground moraines, depressions, drumlins, drainageways, hills
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Stockbridge, very stony
Percent of map unit: 1 percent
Landform: Hills
Landform position (two-dimensional): Shoulder, backslope, summit
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

85C—Paxton and Montauk fine sandy loams, 8 to 15 percent slopes, very stony

Map Unit Setting
National map unit symbol: 2w67f
Elevation: 0 to 1,520 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Paxton, very stony, and similar soils: 55 percent
Montauk, very stony, and similar soils: 30 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton, Very Stony

Setting

Landform: Ground moraines, drumlins, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 10 inches: fine sandy loam
Bw1 - 10 to 17 inches: fine sandy loam
Bw2 - 17 to 28 inches: fine sandy loam
Cd - 28 to 67 inches: gravelly fine sandy loam

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Description of Montauk, Very Stony

Setting

Landform: Drumlins, hills, ground moraines, recessionial moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 6 inches: fine sandy loam
Bw1 - 6 to 28 inches: fine sandy loam
Bw2 - 28 to 36 inches: sandy loam
2Cd - 36 to 74 inches: gravelly loamy sand

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Minor Components

Woodbridge, very stony

Percent of map unit: 6 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Charlton, very stony

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Ridgebury, very stony

Percent of map unit: 3 percent
Landform: Ground moraines, depressions, drumlins, drainageways, hills
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Stockbridge, very stony

Percent of map unit: 1 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

86C—Paxton and Montauk fine sandy loams, 3 to 15 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2w67d
Elevation: 20 to 1,490 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Paxton, extremely stony, and similar soils: 55 percent
Montauk, extremely stony, and similar soils: 30 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton, Extremely Stony

Setting

Landform: Ground moraines, drumlins, hills
Landform position (two-dimensional): Summit, backslope, shoulder
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 10 inches: fine sandy loam
Bw1 - 10 to 17 inches: fine sandy loam
Bw2 - 17 to 28 inches: fine sandy loam
Cd - 28 to 67 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 15 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 20 to 43 inches to densic material

Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Description of Montauk, Extremely Stony

Setting

Landform: Drumlins, hills, ground moraines, recessionial moraines
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 6 inches: fine sandy loam
Bw1 - 6 to 28 inches: fine sandy loam
Bw2 - 28 to 36 inches: sandy loam
2Cd - 36 to 74 inches: gravelly loamy sand

Properties and qualities

Slope: 3 to 15 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Minor Components

Charlton, extremely stony
Percent of map unit: 6 percent
Landform: Hills
Landform position (two-dimensional): Shoulder, summit, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Woodbridge, extremely stony
Percent of map unit: 5 percent
Landform: Hills, ground moraines, drumlins
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Ridgebury, extremely stony
Percent of map unit: 3 percent
Landform: Drainageways, hills, ground moraines, depressions, drumlins
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Stockbridge, extremely stony
Percent of map unit: 1 percent
Landform: Hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

86D—Paxton and Montauk fine sandy loams, 15 to 35 percent slopes, extremely stony

Map Unit Setting
National map unit symbol: 2w67c
Elevation: 0 to 1,400 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Paxton, extremely stony, and similar soils: 55 percent
Montauk, extremely stony, and similar soils: 30 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton, Extremely Stony

Setting

Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 10 inches: fine sandy loam
Bw1 - 10 to 17 inches: fine sandy loam
Bw2 - 17 to 28 inches: fine sandy loam
Cd - 28 to 67 inches: gravelly fine sandy loam

Properties and qualities

Slope: 15 to 35 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Description of Montauk, Extremely Stony

Setting

Landform: Drumlins, ground moraines, recessionial moraines, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy over sandy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 6 inches: fine sandy loam
Bw1 - 6 to 28 inches: fine sandy loam
Bw2 - 28 to 36 inches: sandy loam
2Cd - 36 to 74 inches: gravelly loamy sand

Properties and qualities

Slope: 15 to 35 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Minor Components

Charlton, extremely stony

Percent of map unit: 6 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Woodbridge, extremely stony

Percent of map unit: 5 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Ridgebury, extremely stony

Percent of map unit: 3 percent
Landform: Drainageways, hills, ground moraines, depressions, drumlins
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Stockbridge, extremely stony

Percent of map unit: 1 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

308—Udorthents, smoothed

Map Unit Setting

National map unit symbol: 9lmj
Elevation: 0 to 2,000 feet
Mean annual precipitation: 43 to 56 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 120 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Setting

Down-slope shape: Convex
Across-slope shape: Linear

Typical profile

A - 0 to 5 inches: loam
C1 - 5 to 21 inches: gravelly loam
C2 - 21 to 80 inches: very gravelly sandy loam

Properties and qualities

Slope: 0 to 35 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 1.98 in/hr)
Depth to water table: About 24 to 54 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Unnamed, undisturbed soils
Percent of map unit: 7 percent
Hydric soil rating: No

Udorthents, wet substratum
Percent of map unit: 7 percent
Hydric soil rating: No

Urban land
Percent of map unit: 5 percent
Hydric soil rating: No

Rock outcrop
Percent of map unit: 1 percent
Hydric soil rating: No

W—Water

Map Unit Composition
Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Land Classifications

Land Classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Hydric Rating by Map Unit

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

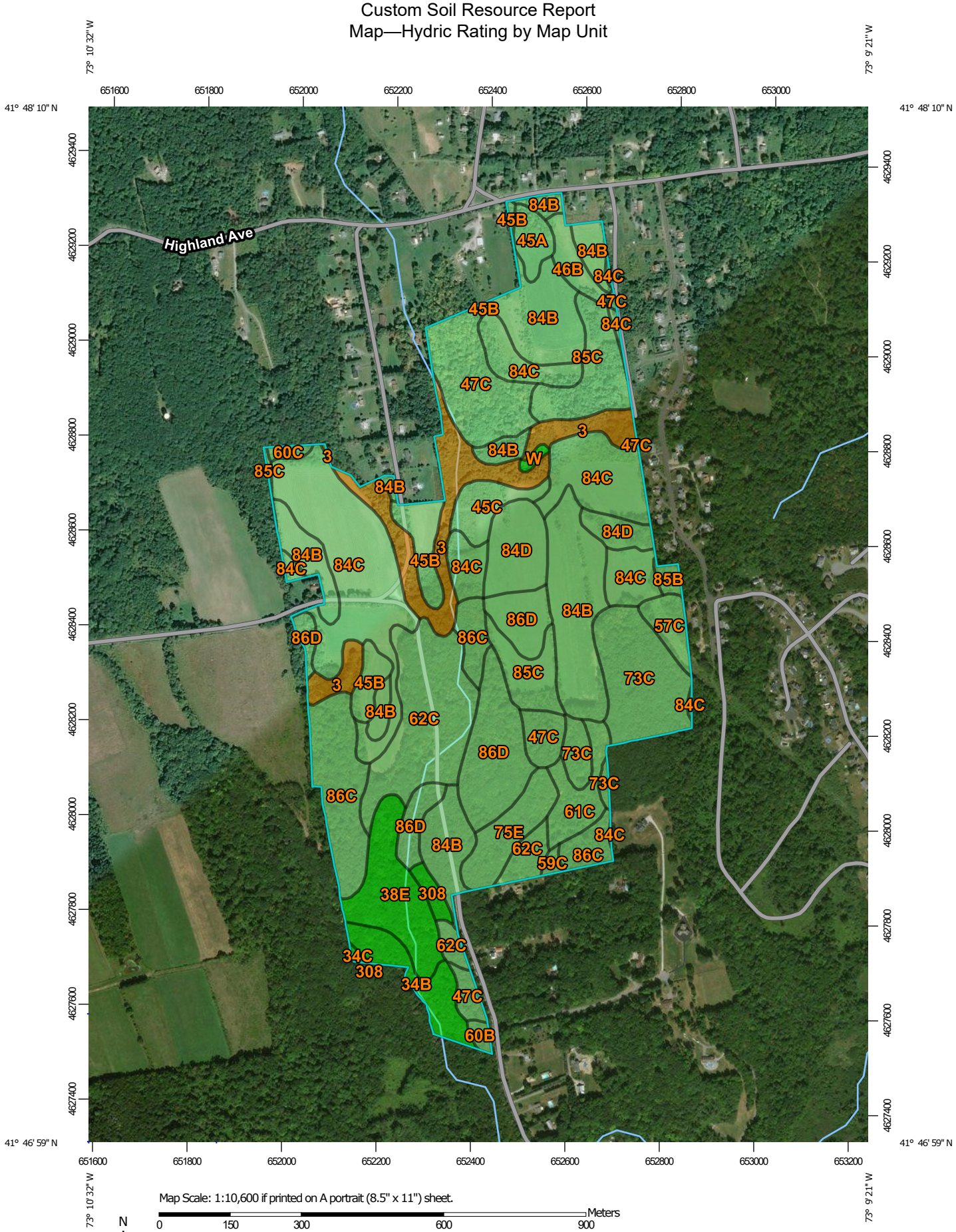
Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Custom Soil Resource Report
Map—Hydric Rating by Map Unit



Map Scale: 1:10,600 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 500 1000 2000 3000

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
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Lines
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Points
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- 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.

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 20, Jun 9, 2020

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

Date(s) aerial images were photographed: Jul 2, 2015—Sep 17, 2019

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.

Table—Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
3	Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony	94	14.8	6.8%
34B	Merrimac fine sandy loam, 3 to 8 percent slopes	0	5.0	2.3%
34C	Merrimac fine sandy loam, 8 to 15 percent slopes	0	0.2	0.1%
38E	Hinckley loamy sand, 15 to 45 percent slopes	0	8.9	4.1%
45A	Woodbridge fine sandy loam, 0 to 3 percent slopes	7	2.3	1.1%
45B	Woodbridge fine sandy loam, 3 to 8 percent slopes	8	5.6	2.6%
45C	Woodbridge fine sandy loam, 8 to 15 percent slopes	4	3.4	1.6%
46B	Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony	8	2.3	1.1%
47C	Woodbridge fine sandy loam, 3 to 15 percent slopes, extremely stony	6	13.2	6.0%
57C	Gloucester gravelly sandy loam, 8 to 15 percent slopes	2	2.4	1.1%
59C	Gloucester gravelly sandy loam, 3 to 15 percent slopes, extremely stony	2	0.5	0.2%
60B	Canton and Charlton fine sandy loams, 3 to 8 percent slopes	5	0.6	0.3%
60C	Canton and Charlton fine sandy loams, 8 to 15 percent slopes	5	0.6	0.3%
61C	Canton and Charlton fine sandy loams, 8 to 15 percent slopes, very stony	5	4.3	2.0%
62C	Canton and Charlton fine sandy loams, 3 to 15 percent slopes, extremely stony	5	17.4	8.0%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
73C	Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky	5	12.9	5.9%
75E	Hollis-Chatfield-Rock outcrop complex, 15 to 45 percent slopes	5	5.2	2.4%
84B	Paxton and Montauk fine sandy loams, 3 to 8 percent slopes	5	31.9	14.7%
84C	Paxton and Montauk fine sandy loams, 8 to 15 percent slopes	3	36.2	16.6%
84D	Paxton and Montauk fine sandy loams, 15 to 25 percent slopes	3	7.8	3.6%
85B	Paxton and Montauk fine sandy loams, 3 to 8 percent slopes, very stony	3	0.8	0.4%
85C	Paxton and Montauk fine sandy loams, 8 to 15 percent slopes, very stony	3	11.1	5.1%
86C	Paxton and Montauk fine sandy loams, 3 to 15 percent slopes, extremely stony	3	13.4	6.2%
86D	Paxton and Montauk fine sandy loams, 15 to 35 percent slopes, extremely stony	3	15.6	7.2%
308	Udorthents, smoothed	0	1.1	0.5%
W	Water	0	0.4	0.2%
Totals for Area of Interest			**217.8**	**100.0%**

Rating Options—Hydric Rating by Map Unit

Aggregation Method: Percent Present

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

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.

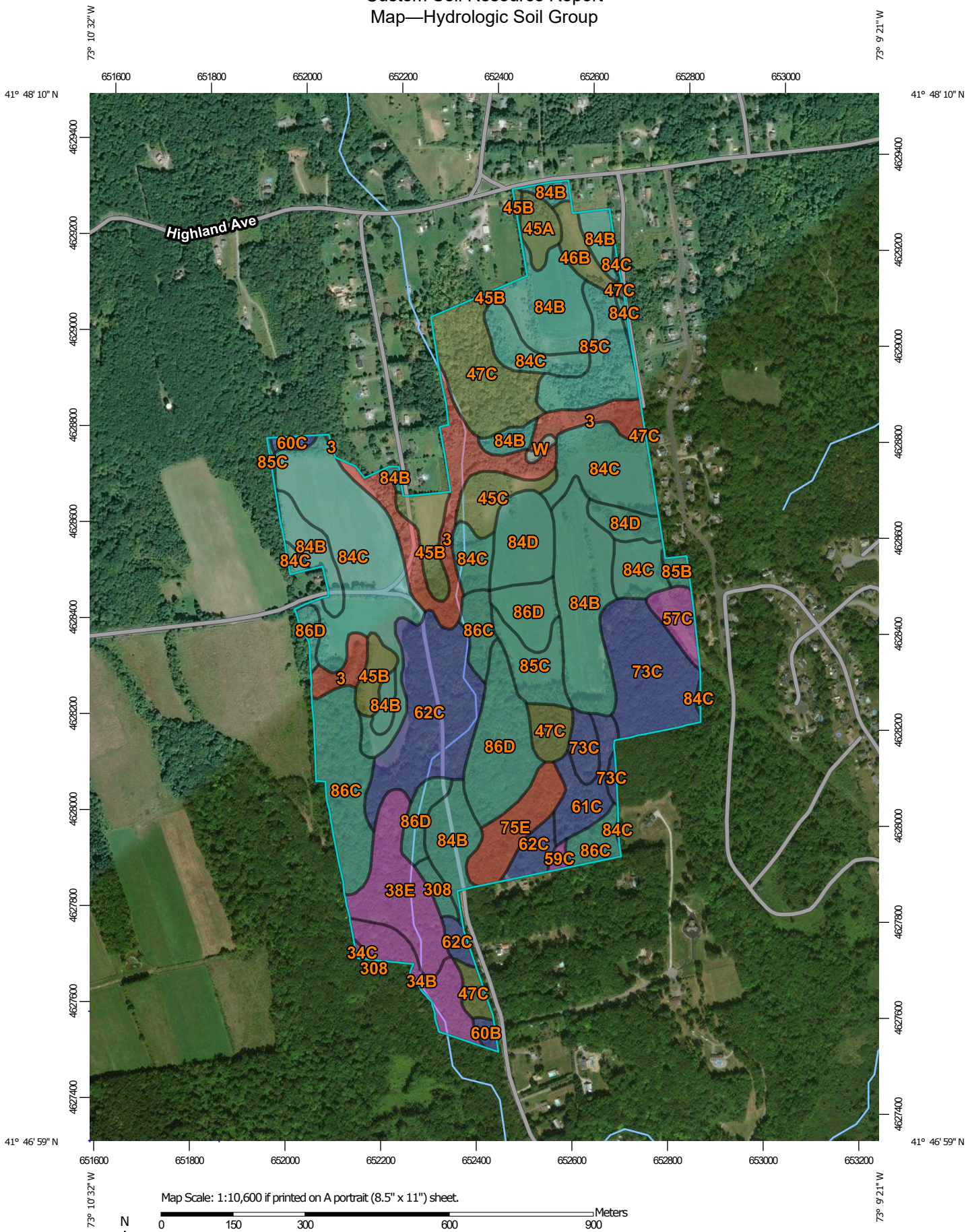
Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

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.

Custom Soil Resource Report
Map—Hydrologic Soil Group



Map Scale: 1:10,600 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 500 1000 2000 3000

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.

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 20, Jun 9, 2020

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

Date(s) aerial images were photographed: Jul 2, 2015—Sep 17, 2019

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.

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
3	Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony	D	14.8	6.8%
34B	Merrimac fine sandy loam, 3 to 8 percent slopes	A	5.0	2.3%
34C	Merrimac fine sandy loam, 8 to 15 percent slopes	A	0.2	0.1%
38E	Hinckley loamy sand, 15 to 45 percent slopes	A	8.9	4.1%
45A	Woodbridge fine sandy loam, 0 to 3 percent slopes	C/D	2.3	1.1%
45B	Woodbridge fine sandy loam, 3 to 8 percent slopes	C/D	5.6	2.6%
45C	Woodbridge fine sandy loam, 8 to 15 percent slopes	C/D	3.4	1.6%
46B	Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony	C/D	2.3	1.1%
47C	Woodbridge fine sandy loam, 3 to 15 percent slopes, extremely stony	C/D	13.2	6.0%
57C	Gloucester gravelly sandy loam, 8 to 15 percent slopes	A	2.4	1.1%
59C	Gloucester gravelly sandy loam, 3 to 15 percent slopes, extremely stony	A	0.5	0.2%
60B	Canton and Charlton fine sandy loams, 3 to 8 percent slopes	B	0.6	0.3%
60C	Canton and Charlton fine sandy loams, 8 to 15 percent slopes	B	0.6	0.3%
61C	Canton and Charlton fine sandy loams, 8 to 15 percent slopes, very stony	B	4.3	2.0%
62C	Canton and Charlton fine sandy loams, 3 to 15 percent slopes, extremely stony	B	17.4	8.0%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
73C	Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky	B	12.9	5.9%
75E	Hollis-Chatfield-Rock outcrop complex, 15 to 45 percent slopes	D	5.2	2.4%
84B	Paxton and Montauk fine sandy loams, 3 to 8 percent slopes	C	31.9	14.7%
84C	Paxton and Montauk fine sandy loams, 8 to 15 percent slopes	C	36.2	16.6%
84D	Paxton and Montauk fine sandy loams, 15 to 25 percent slopes	C	7.8	3.6%
85B	Paxton and Montauk fine sandy loams, 3 to 8 percent slopes, very stony	C	0.8	0.4%
85C	Paxton and Montauk fine sandy loams, 8 to 15 percent slopes, very stony	C	11.1	5.1%
86C	Paxton and Montauk fine sandy loams, 3 to 15 percent slopes, extremely stony	C	13.4	6.2%
86D	Paxton and Montauk fine sandy loams, 15 to 35 percent slopes, extremely stony	C	15.6	7.2%
308	Udorthents, smoothed	C	1.1	0.5%
W	Water		0.4	0.2%
Totals for Area of Interest			**217.8**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

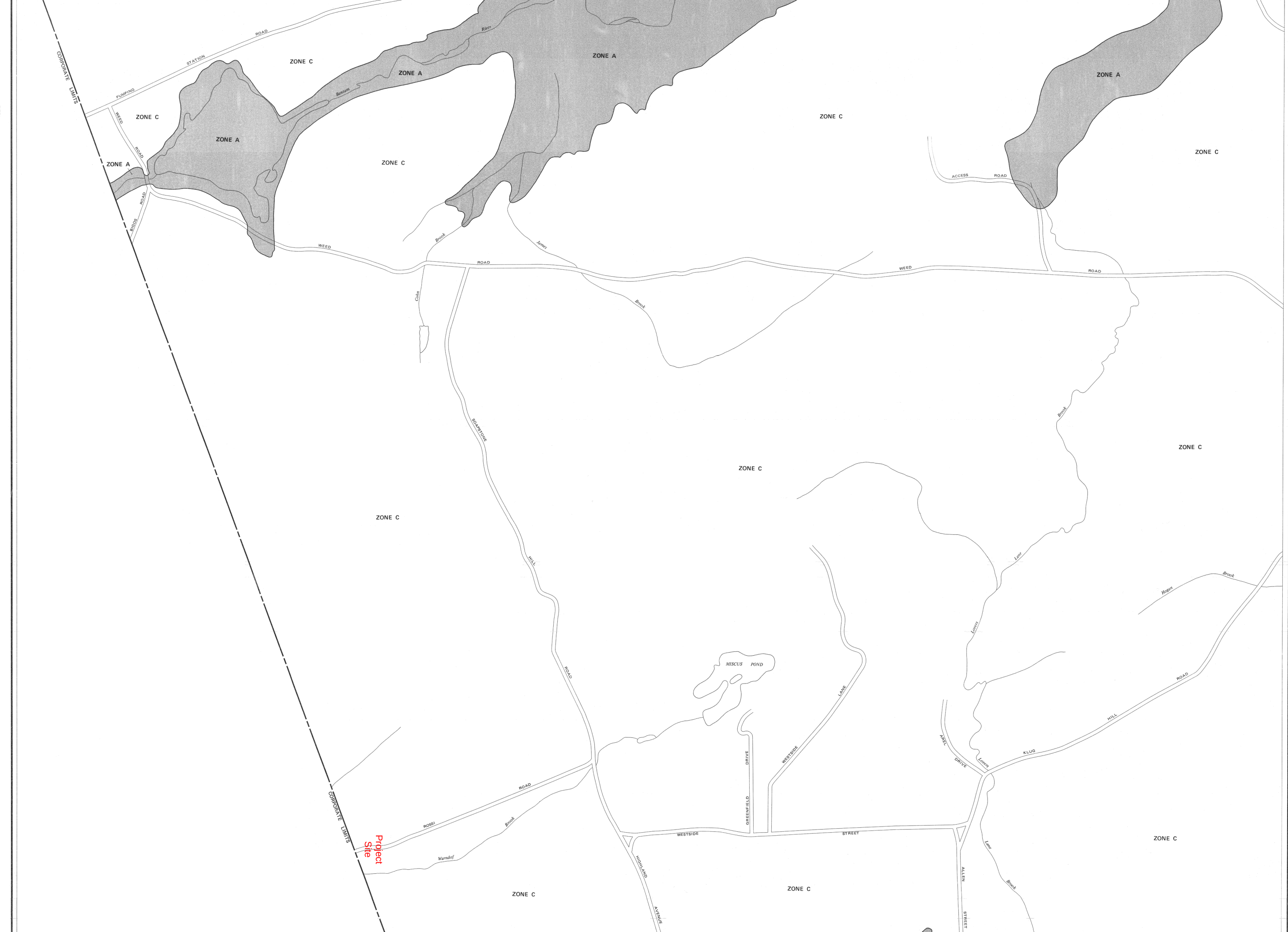
United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

Appendix B

USGS & FEMA Firm Maps



100-Year Flood Boundary ——— ZONE B

Zone Designations* With Date of Identification e.g., 12/2/74 ——— ZONE A1 DATE / ZONE A5 DATE

100-Year Flood Boundary ——— ZONE B

500-Year Flood Boundary ———

Base Flood Elevation Line With Elevation In Feet** ——— 513

Base Flood Elevation in Feet Where Uniform Within Zone** (EL 987)

Elevation Reference Mark RM7×

Zone D Boundary ———

River Mile •M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

For adjoining map panels, see separately printed Index To Map Panels.

INITIAL IDENTIFICATION:
JULY 1, 1970

FLOOD HAZARD BOUNDARY MAP REVISIONS:
NONE

FLOOD INSURANCE RATE MAP EFFECTIVE:
MAY 19, 1972

FLOOD INSURANCE RATE MAP REVISIONS:

July 1, 1974 - to change zone designations.

March 5, 1976 - to reflect curvilinear flood boundary and to add special flood hazard areas.

April 4, 1983 - to add special flood hazard areas, to change base flood elevations, to change zone designations.

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program, at (800) 638-6620.

APPROXIMATE SCALE
400 0 400 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
TORRINGTON,
CONNECTICUT
LITCHFIELD COUNTY

PANEL 1 OF 14
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
095081 0001 B

MAP REVISED:
APRIL 4, 1983

KEY TO MAP

500-Year Flood Boundary
100-Year Flood Boundary
Zone Designations*
100-Year Flood Boundary
500-Year Flood Boundary
Base Flood Elevation Line With Elevation In Feet**
Base Flood Elevation in Feet Where Uniform Within Zone**
Elevation Reference Mark
Zone D Boundary
River Mile

ZONE B
ZONE A1
ZONE AB
ZONE B
513
(EL 987)
RM7×
•M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
AO	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

For adjoining map panels, see separately printed Index To Map Panels.

INITIAL IDENTIFICATION:
JUNE 21, 1974
FLOOD HAZARD BOUNDARY MAP REVISIONS:
DECEMBER 17, 1976

FLOOD INSURANCE RATE MAP EFFECTIVE:
JUNE 15, 1982
FLOOD INSURANCE RATE MAP REVISIONS:

Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE date shown on this map to determine when actuarial rates apply to structures in the zones where elevations or depths have been established.

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program, at (800) 638-6620.

APPROXIMATE SCALE
400 0 400 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

TOWN OF
LITCHFIELD,
CONNECTICUT
LITCHFIELD COUNTY

PANEL 4 OF 18
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
090047 0004 B

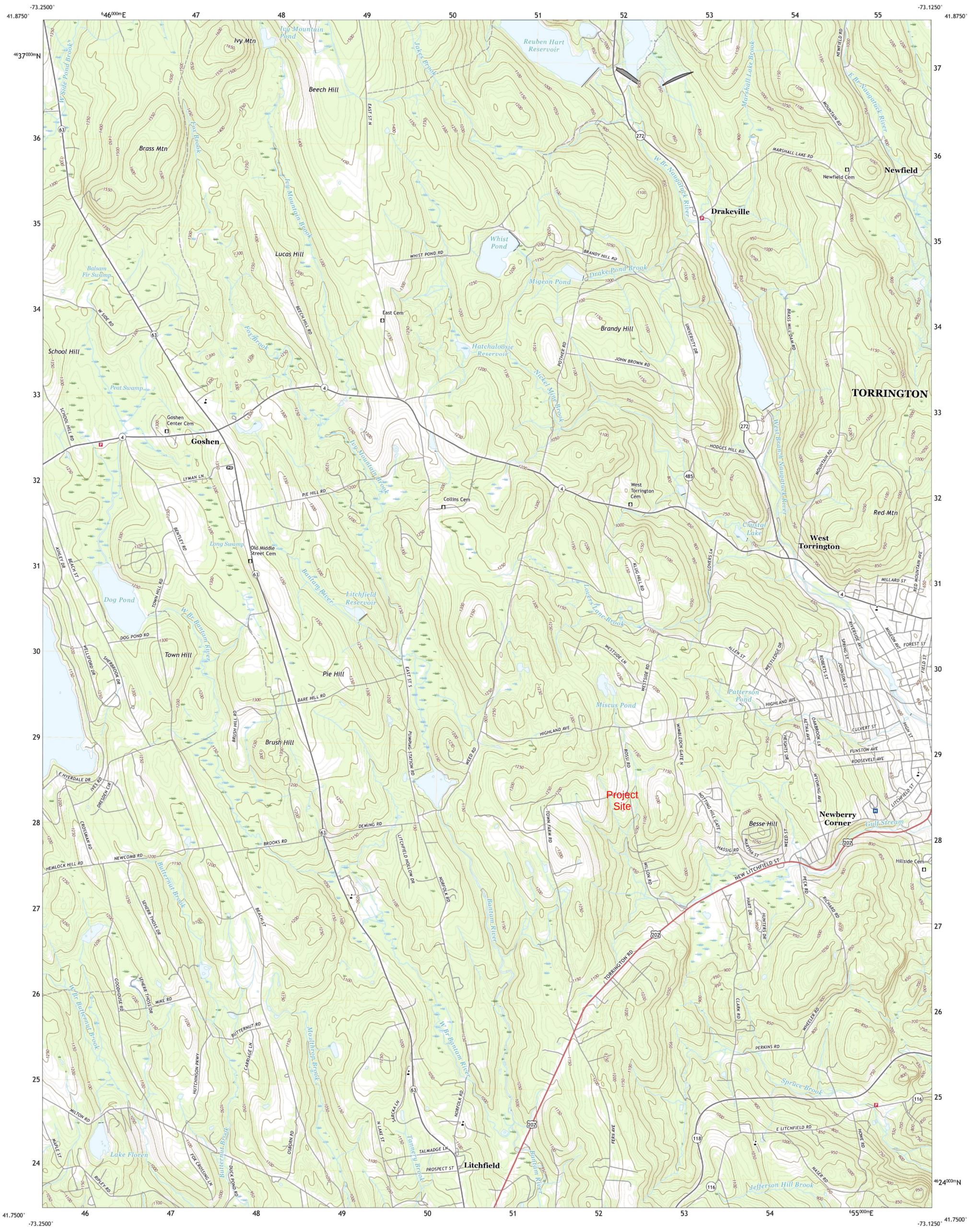
EFFECTIVE DATE:
JUNE 15, 1982

Federal Emergency Management Agency

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map US Topo

WEST TORRINGTON QUADRANGLE
CONNECTICUT - LITCHFIELD COUNTY
7.5-MINUTE SERIES



Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid:Universal Transverse Mercator, Zone 18T

This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands.

Imagery	NAIP,	July 2016 - September 2016
Roads	U.S. Census Bureau,	2016
Names	GNIS,	1979 - 2017
Hydrography	National Hydrography Dataset,	2004 - 2016
Contours	National Elevation Dataset,	2012
Boundaries	Multiple sources; see metadata file	2016 - 2017
Wetlands	FWS National Wetlands Inventory	2010

MN GN
13°35' 241 MILS
1°13' 22 MILS
UTM GRID AND 2017 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000 - m Square ID
XM
Grid Zone Designation 18T

SCALE 1:24 000
1 0.5 0 KILOMETERS 1 2
1000 500 0 METERS 1000 2000
1 0.5 0 1
MILES
1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000
FEET

CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard, 2011.
A metadata file associated with this product is draft version 0.6.18

QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

1 South Canaan
2 Norfolk
3 Winsted
4 Cornwall
5 Torrington
6 New Preston
7 Litchfield
8 Thomaston

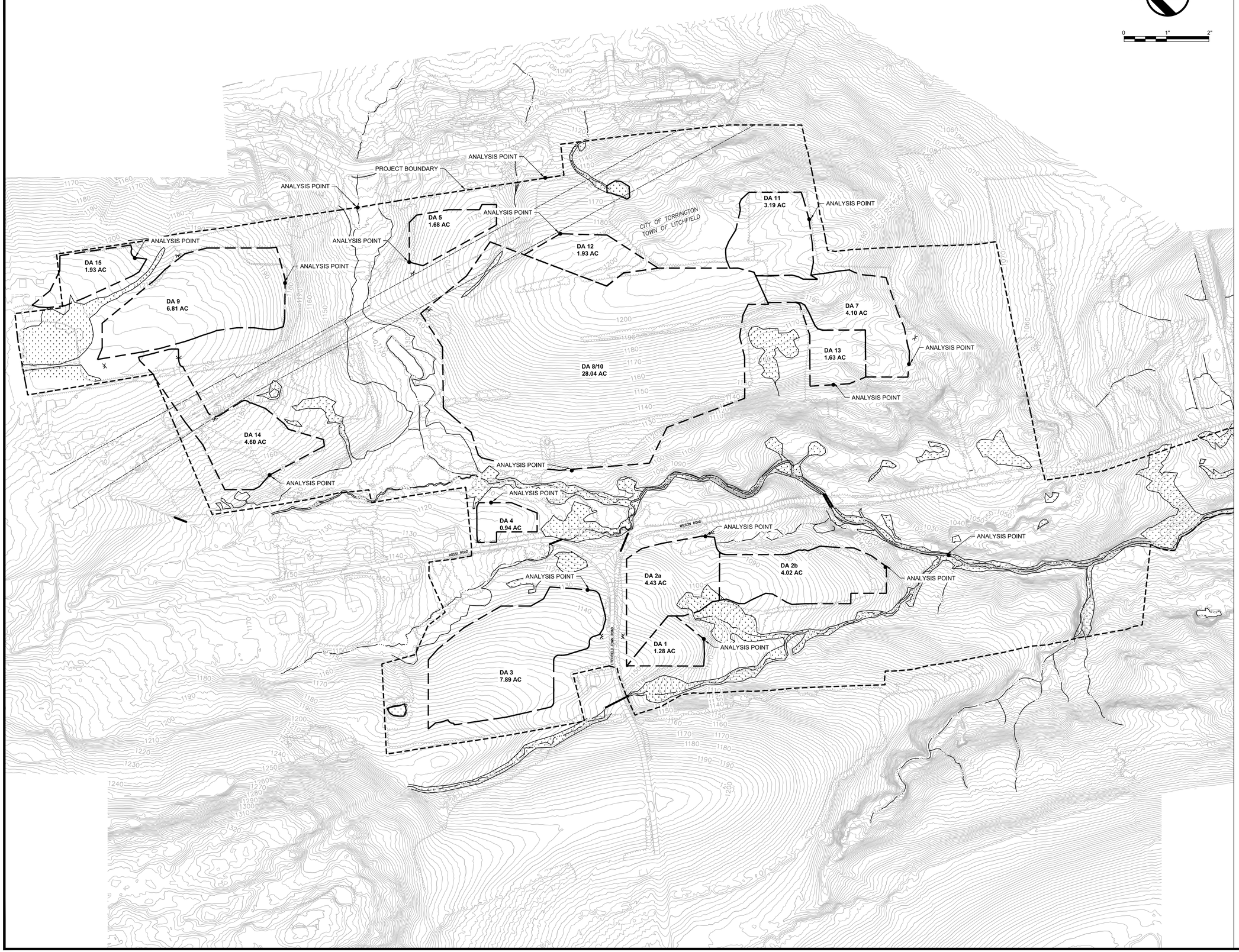
ADJOINING QUADRANGLES

ROAD CLASSIFICATION
Expressway
Secondary Hwy
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route

WEST TORRINGTON, CT
2018

Appendix C

Stormwater Drainage Area Map and Peak Flow Calculations



HDR

SILICON RANCH

NOT FOR CONSTRUCTION

LITCHFIELD SOLAR

2-298 ROSSI RD
TORRINGTON, CT 06790, USA
LAT: 41.794157°N
LON: 73.168028°W

LITCHFIELD, CT

REV. NO	DESCRIPTION	DATE
2	RE-ISSUED FOR PERMIT	06/25/21
1	RE-ISSUED FOR PERMIT	01/29/21
0	ISSUED FOR PERMIT	09/30/20

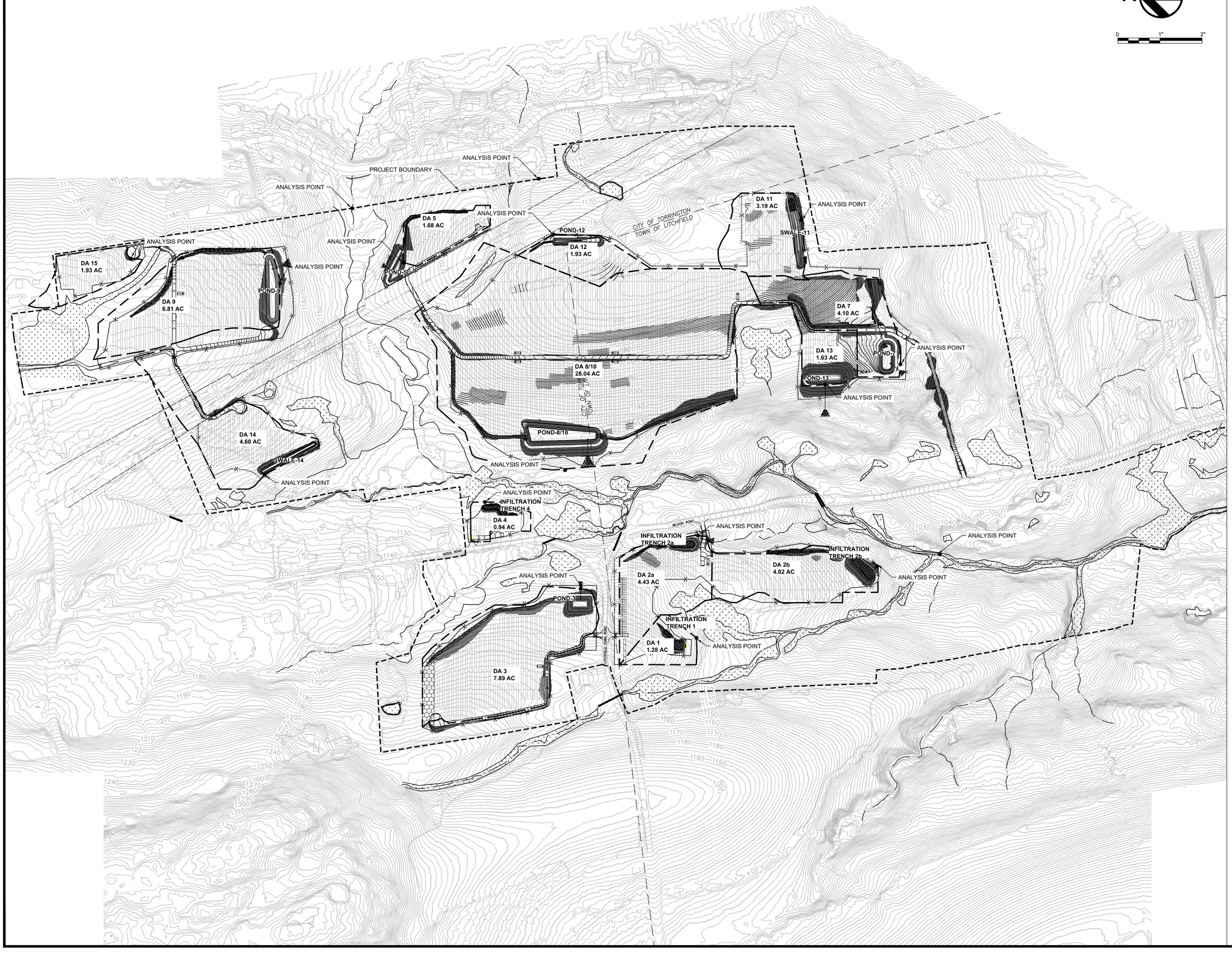
SHEET TITLE:

DRAINAGE AREA EXHIBIT EXISTING CONDITIONS

PROJ. MGR.	PROJ. ENGR.	DATE:
WK	MB	08/28/20
DRAWN BY:	CHECKED BY:	SCALE:
NC	CP	1"=200'

DRAWING NO.

EXHIBIT



HDR

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LITCHFIELD SOLAR

2-298 ROSSI RD
TORRINGTON, CT 06790, USA
LAT: 41.794157°N
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LITCHFIELD, CT

REV. NO	DESCRIPTION	DATE
2	RE-ISSUED FOR PERMIT	06/25/21
1	RE-ISSUED FOR PERMIT	01/29/21
0	ISSUED FOR PERMIT	09/30/20

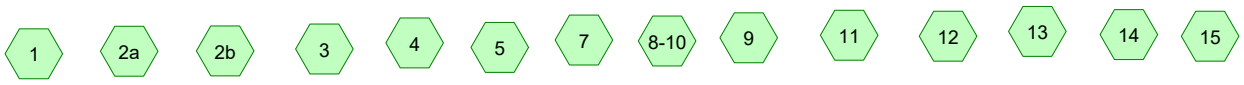
SHEET TITLE:

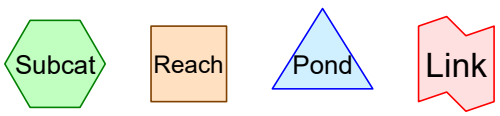
DRAINAGE AREA EXHIBIT PROPOSED CONDITIONS

PROJ. MGR.	PROJ. ENGR.	DATE:
WK	MB	08/28/20
DRAWN BY:	CHECKED BY:	SCALE:
NC	CP	1"=200'

DRAWING NO.

EXHIBIT





Routing Diagram for HydroCAD Litchfield Existing - Revised_5-21
Prepared by HDR, Inc, Printed 6/24/2021

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.280	75	(1)
3.850	81	(2a)
8.120	63	(2b, 7)
9.820	74	(3, 15)
0.940	80	(4)
1.680	88	(5)
29.970	85	(8-10, 12)
6.810	83	(9)
3.190	60	(11)
1.630	54	(13)
4.600	76	(14)
71.890	**78**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
71.890	Other	1, 2a, 2b, 3, 4, 5, 7, 8-10, 9, 11, 12, 13, 14, 15
71.890		**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	0.000	0.000	0.000	71.890	71.890		1, 2a, 2b, 3, 4, 5, 7, 8-10, 9, 11, 12, 13, 14, 15
0.000	**0.000**	**0.000**	**0.000**	**71.890**	**71.890**	**TOTAL AREA**	

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1: Runoff Area=1.280 ac Runoff Depth>1.09"
Tc=6.4 min CN=75 Runoff=1.53 cfs 0.117 af

Subcatchment2a: Runoff Area=3.850 ac Runoff Depth>1.47"
Tc=9.6 min CN=81 Runoff=5.74 cfs 0.470 af

Subcatchment2b: Runoff Area=4.020 ac Runoff Depth>0.52"
Tc=13.9 min CN=63 Runoff=1.34 cfs 0.173 af

Subcatchment3: Runoff Area=7.890 ac Runoff Depth>1.04"
Tc=10.5 min CN=74 Runoff=7.72 cfs 0.681 af

Subcatchment4: Runoff Area=0.940 ac Runoff Depth>1.40"
Tc=12.7 min CN=80 Runoff=1.21 cfs 0.110 af

Subcatchment5: Runoff Area=1.680 ac Runoff Depth>1.99"
Tc=8.1 min CN=88 Runoff=3.60 cfs 0.279 af

Subcatchment7: Runoff Area=4.100 ac Runoff Depth>0.52"
Tc=18.5 min CN=63 Runoff=1.24 cfs 0.176 af

Subcatchment8-10: Runoff Area=28.040 ac Runoff Depth>1.75"
Tc=16.4 min CN=85 Runoff=41.93 cfs 4.094 af

Subcatchment9: Runoff Area=6.810 ac Runoff Depth>1.60"
Tc=17.6 min CN=83 Runoff=9.06 cfs 0.910 af

Subcatchment11: Runoff Area=3.190 ac Runoff Depth>0.40"
Tc=30.4 min CN=60 Runoff=0.56 cfs 0.107 af

Subcatchment12: Runoff Area=1.930 ac Runoff Depth>1.75"
Tc=12.8 min CN=85 Runoff=3.16 cfs 0.282 af

Subcatchment13: Runoff Area=1.630 ac Runoff Depth>0.22"
Tc=14.4 min CN=54 Runoff=0.12 cfs 0.030 af

Subcatchment14: Runoff Area=4.600 ac Runoff Depth>1.15"
Tc=19.3 min CN=76 Runoff=4.06 cfs 0.440 af

Subcatchment15: Runoff Area=1.930 ac Runoff Depth>1.03"
Tc=13.7 min CN=74 Runoff=1.72 cfs 0.166 af

Total Runoff Area = 71.890 ac Runoff Volume = 8.036 af Average Runoff Depth = 1.34"

Summary for Subcatchment 1:

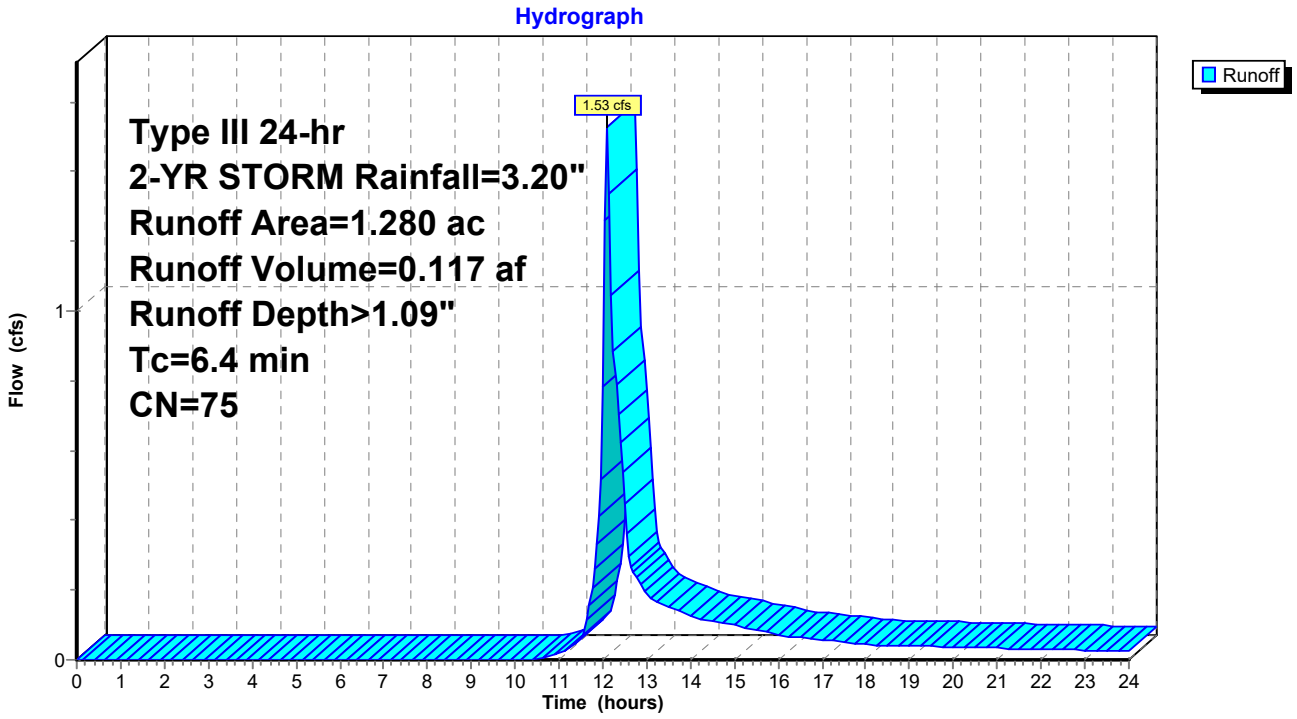
Runoff = 1.53 cfs @ 12.10 hrs, Volume= 0.117 af, Depth> 1.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR STORM Rainfall=3.20"

	Area (ac)	CN	Description
*	1.280	75	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4					**Direct Entry, NRCS Part 630**

Subcatchment 1:



Summary for Subcatchment 2a:

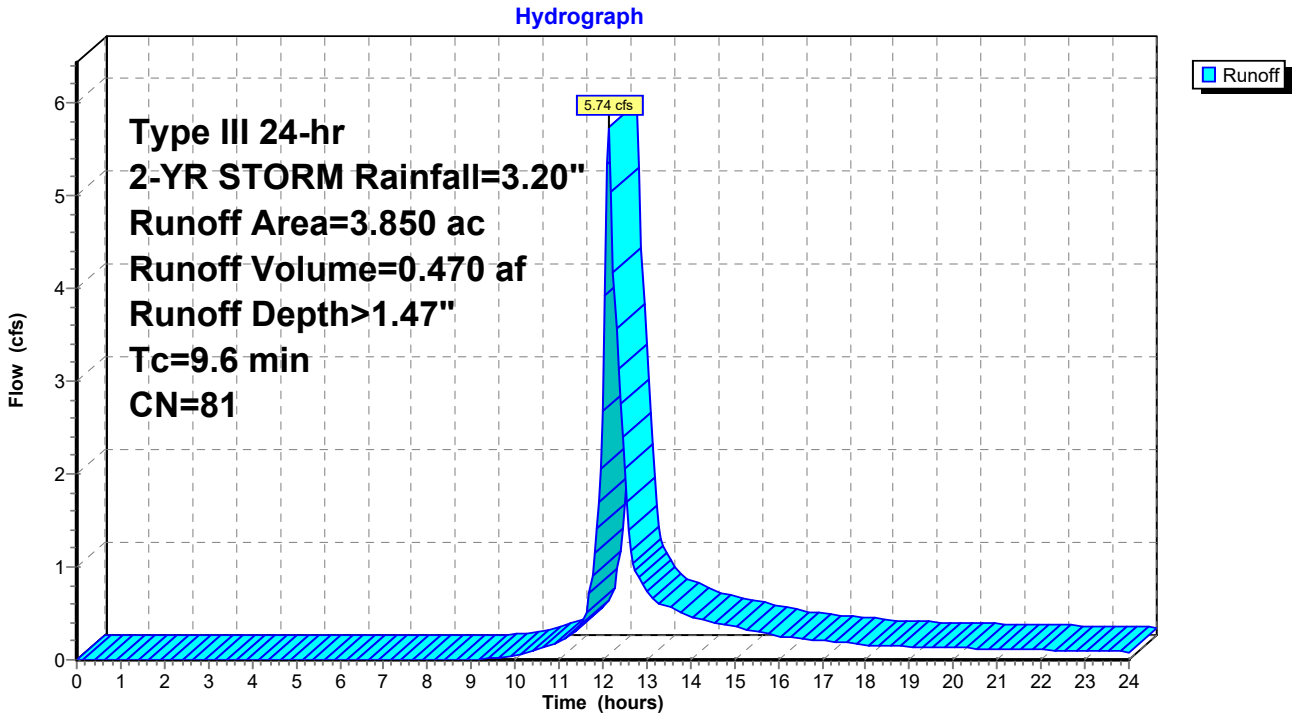
Runoff = 5.74 cfs @ 12.14 hrs, Volume= 0.470 af, Depth> 1.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR STORM Rainfall=3.20"

	Area (ac)	CN	Description
*	3.850	81	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6					**Direct Entry, NRCS Part 630**

Subcatchment 2a:



Summary for Subcatchment 2b:

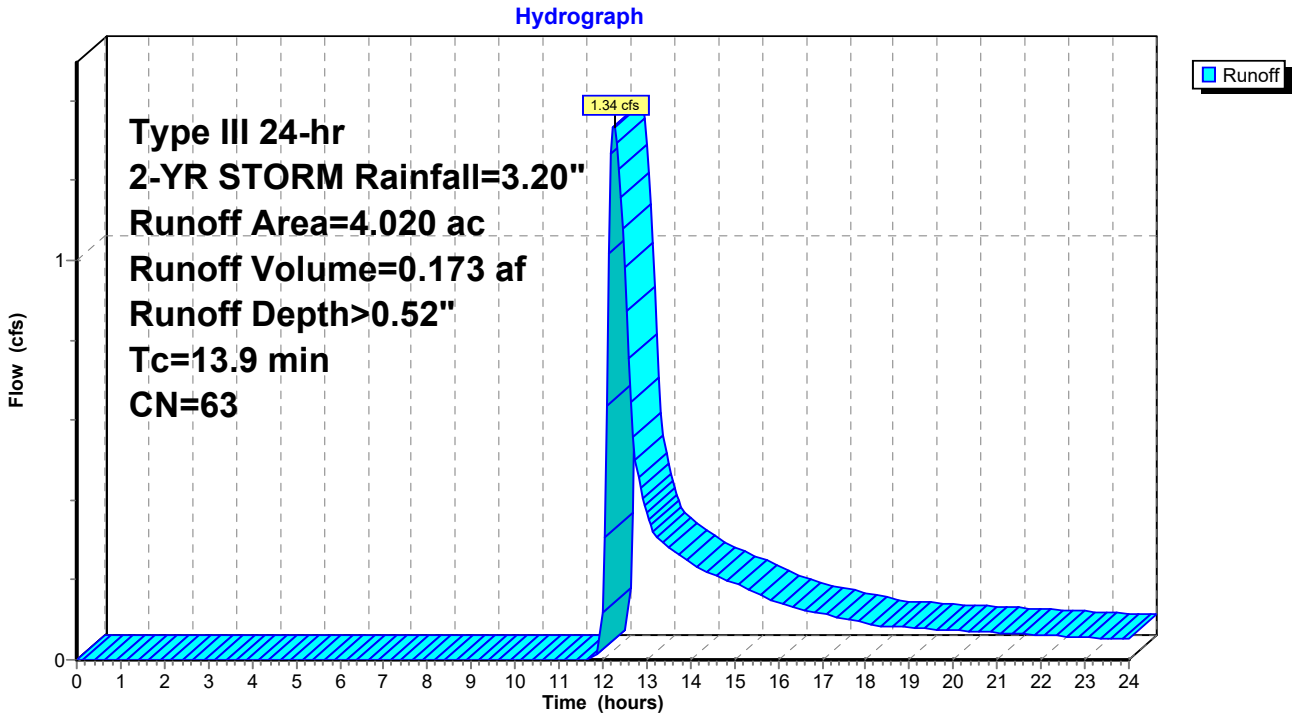
Runoff = 1.34 cfs @ 12.26 hrs, Volume= 0.173 af, Depth> 0.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR STORM Rainfall=3.20"

	Area (ac)	CN	Description
*	4.020	63	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9					**Direct Entry, NRCS Part 630**

Subcatchment 2b:



Summary for Subcatchment 3:

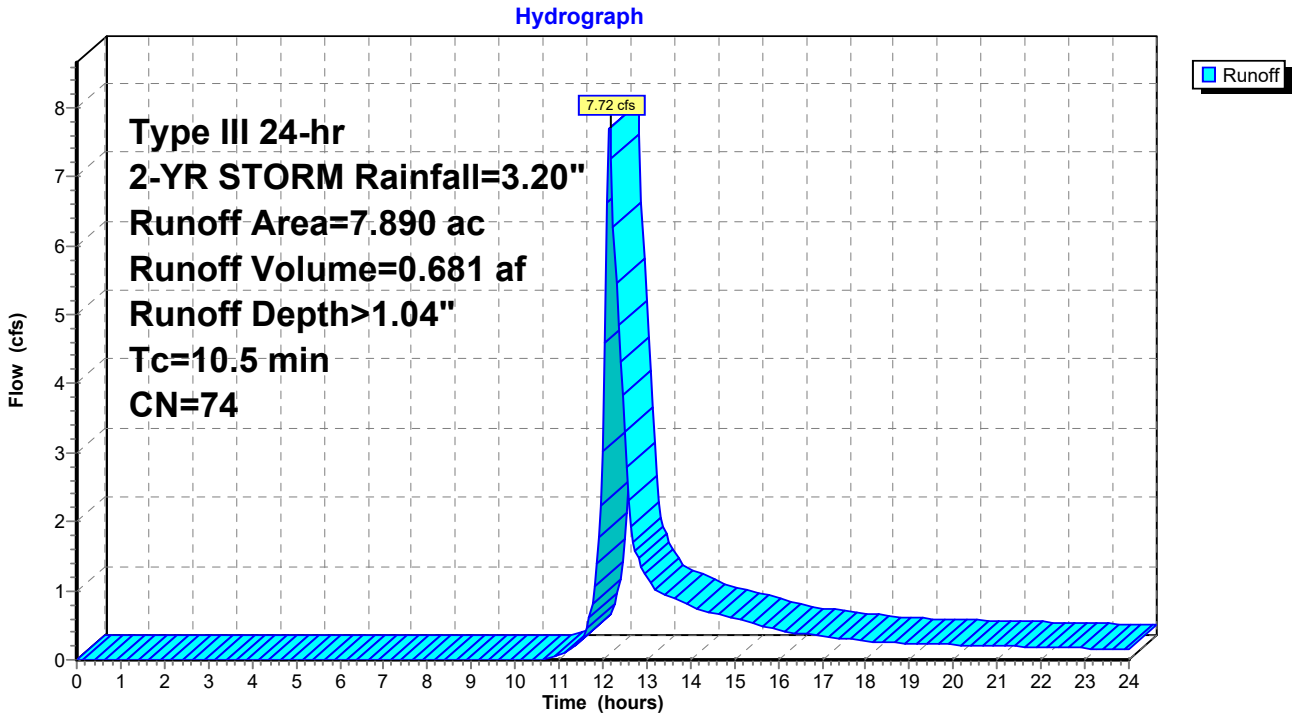
Runoff = 7.72 cfs @ 12.16 hrs, Volume= 0.681 af, Depth> 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR STORM Rainfall=3.20"

	Area (ac)	CN	Description
*	7.890	74	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5					**Direct Entry, NRCS Part 630**

Subcatchment 3:



Summary for Subcatchment 4:

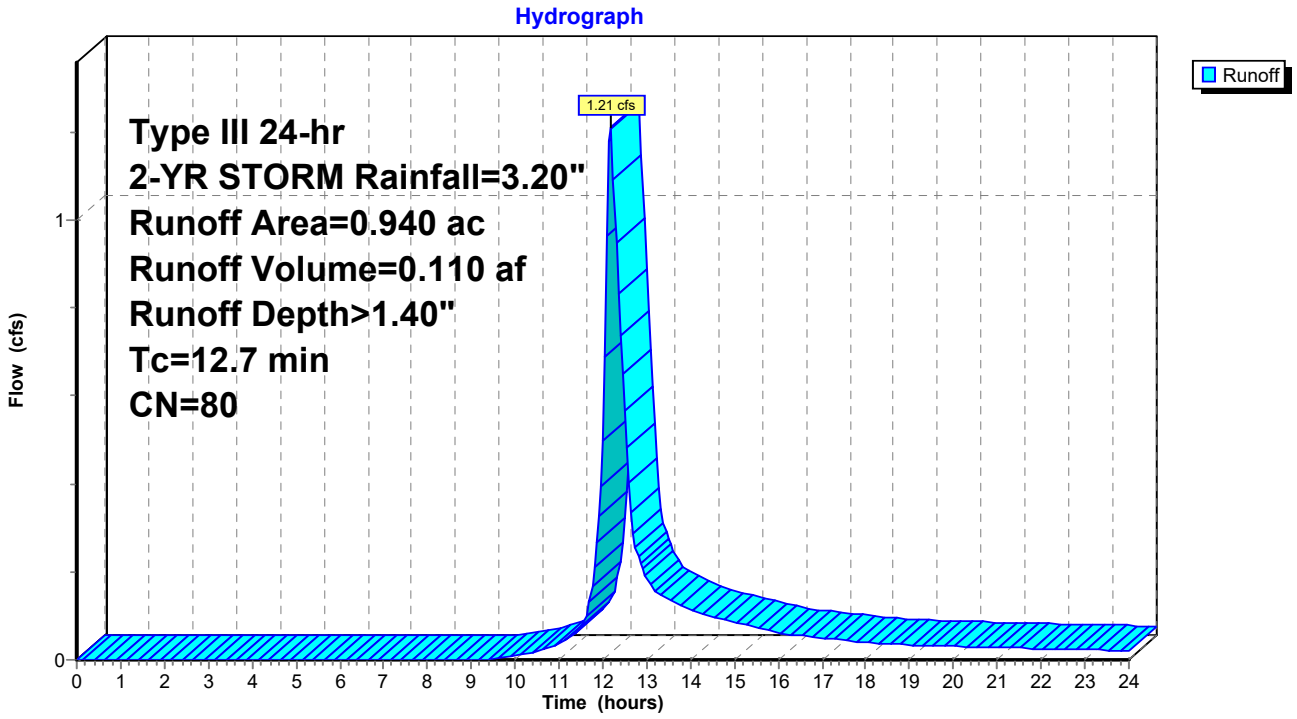
Runoff = 1.21 cfs @ 12.18 hrs, Volume= 0.110 af, Depth> 1.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR STORM Rainfall=3.20"

	Area (ac)	CN	Description
*	0.940	80	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7					**Direct Entry, NRCS Part 630**

Subcatchment 4:



Summary for Subcatchment 5:

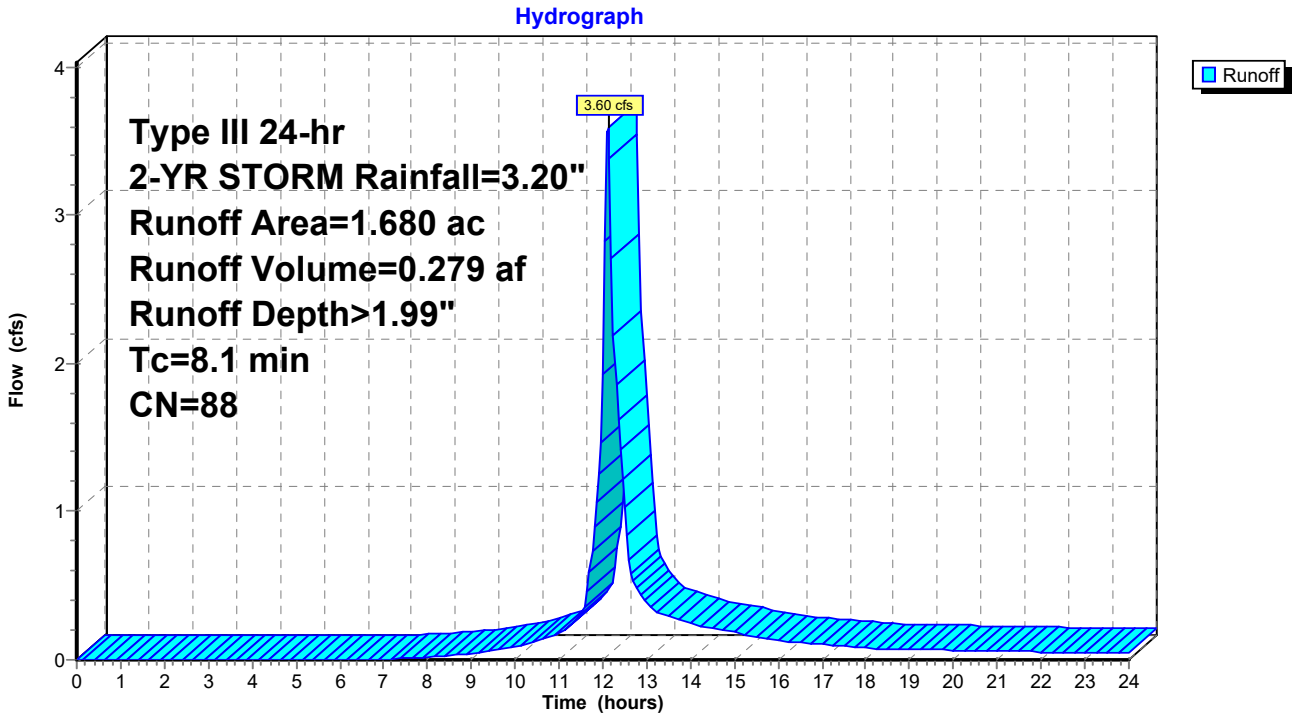
Runoff = 3.60 cfs @ 12.12 hrs, Volume= 0.279 af, Depth> 1.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR STORM Rainfall=3.20"

	Area (ac)	CN	Description
*	1.680	88	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1					**Direct Entry, NRCS Part 630**

Subcatchment 5:



Summary for Subcatchment 7:

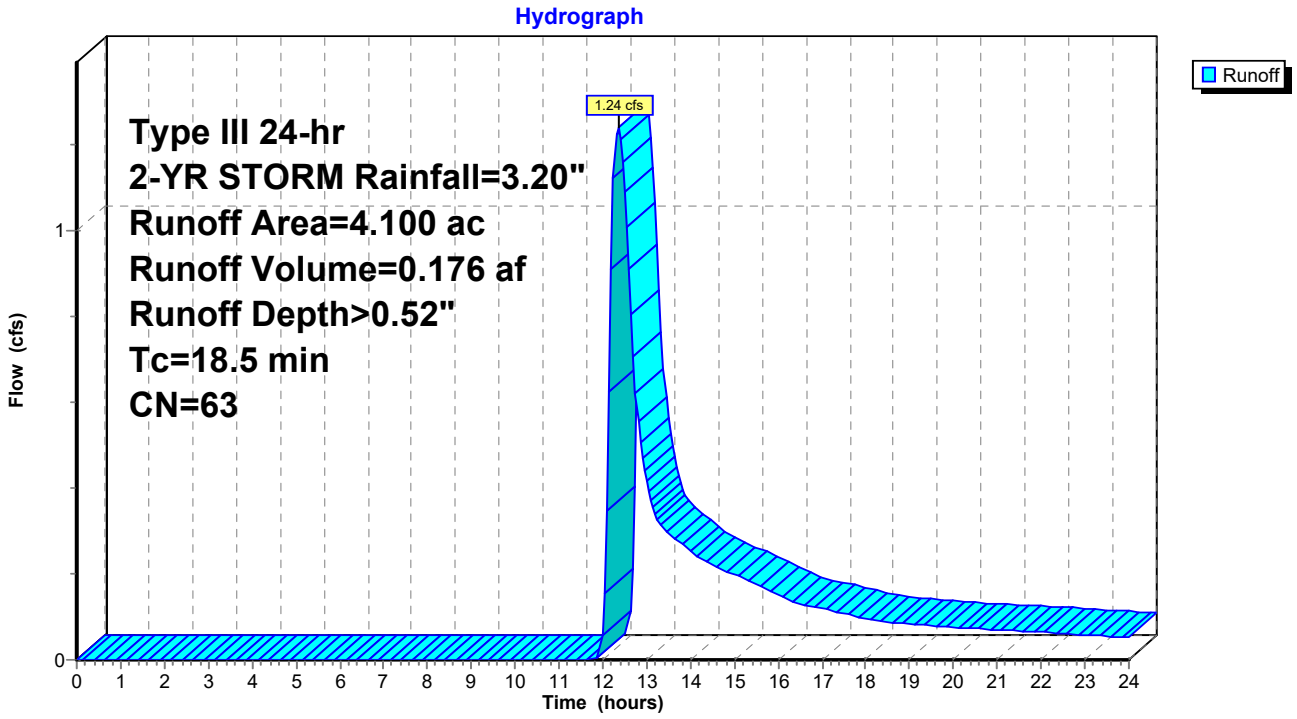
Runoff = 1.24 cfs @ 12.34 hrs, Volume= 0.176 af, Depth> 0.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR STORM Rainfall=3.20"

	Area (ac)	CN	Description
*	4.100	63	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.5					**Direct Entry, NRCS Part 630**

Subcatchment 7:



Summary for Subcatchment 8-10:

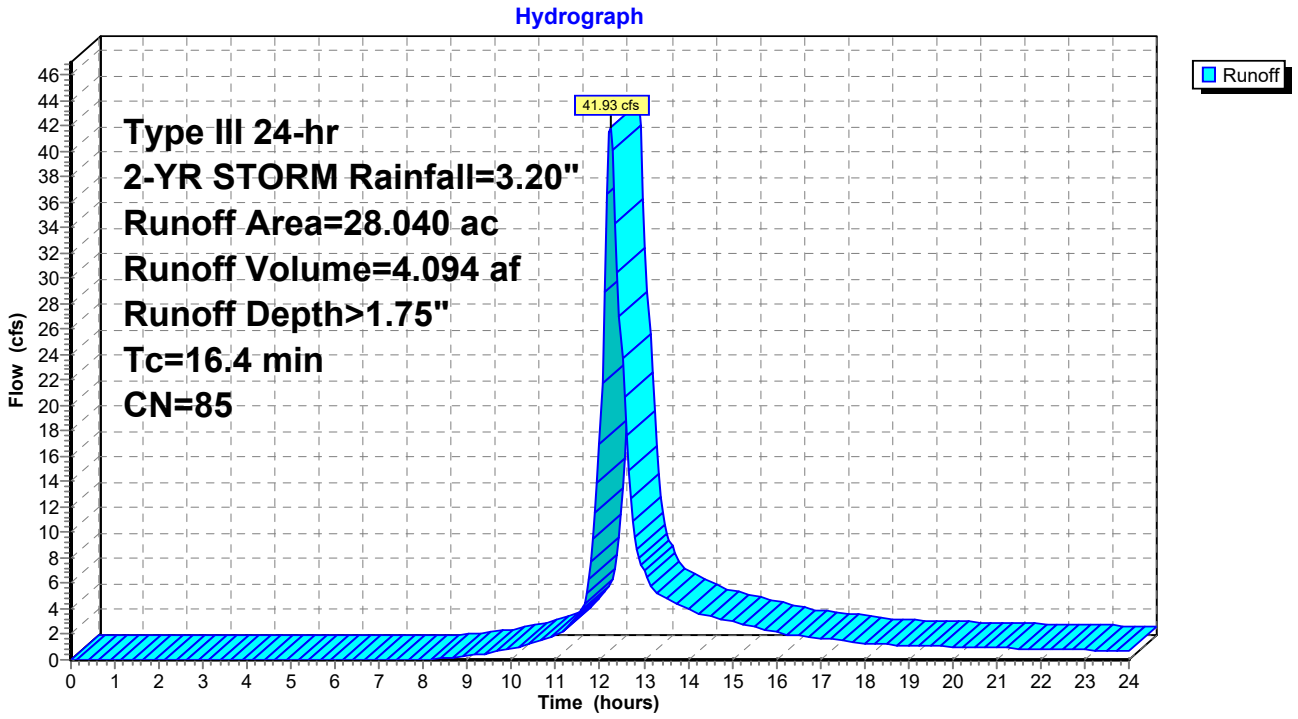
Runoff = 41.93 cfs @ 12.23 hrs, Volume= 4.094 af, Depth> 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR STORM Rainfall=3.20"

	Area (ac)	CN	Description
*	28.040	85	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.4					**Direct Entry, SCS TR-55**

Subcatchment 8-10:



Summary for Subcatchment 9:

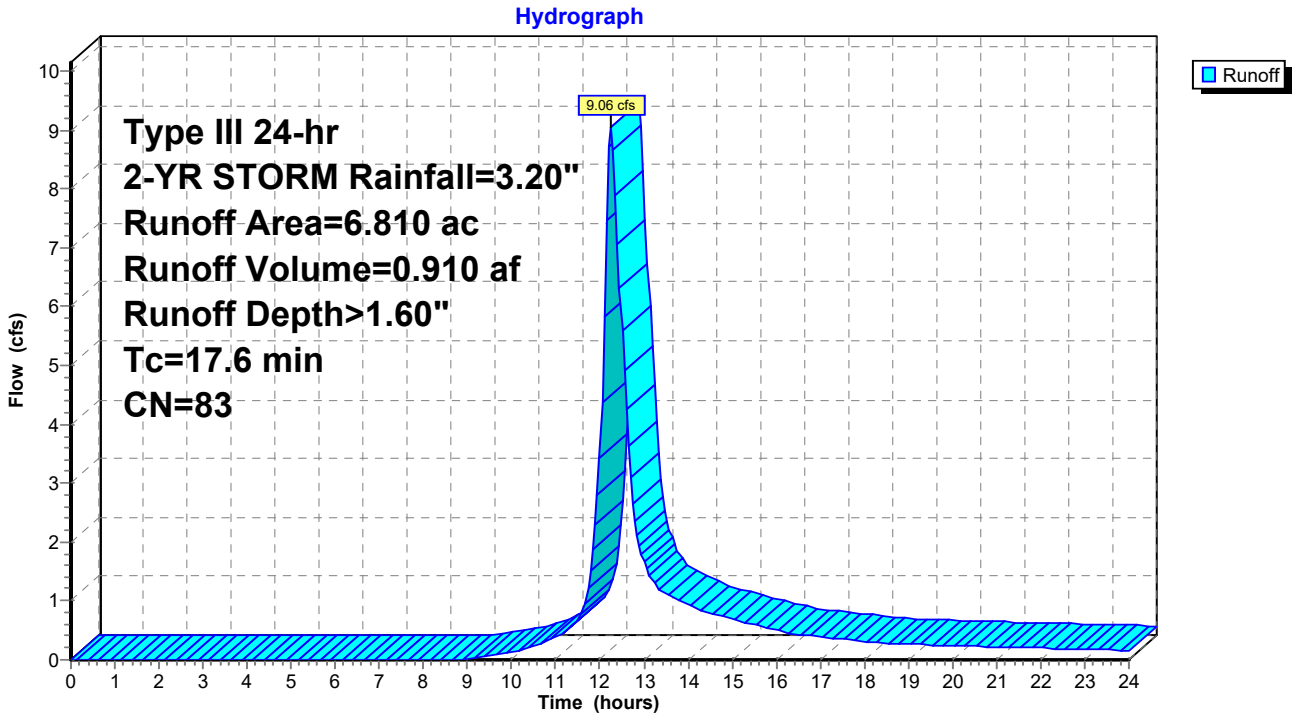
Runoff = 9.06 cfs @ 12.25 hrs, Volume= 0.910 af, Depth> 1.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR STORM Rainfall=3.20"

	Area (ac)	CN	Description
*	6.810	83	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6					**Direct Entry, NRCS Part 630**

Subcatchment 9:



Summary for Subcatchment 11:

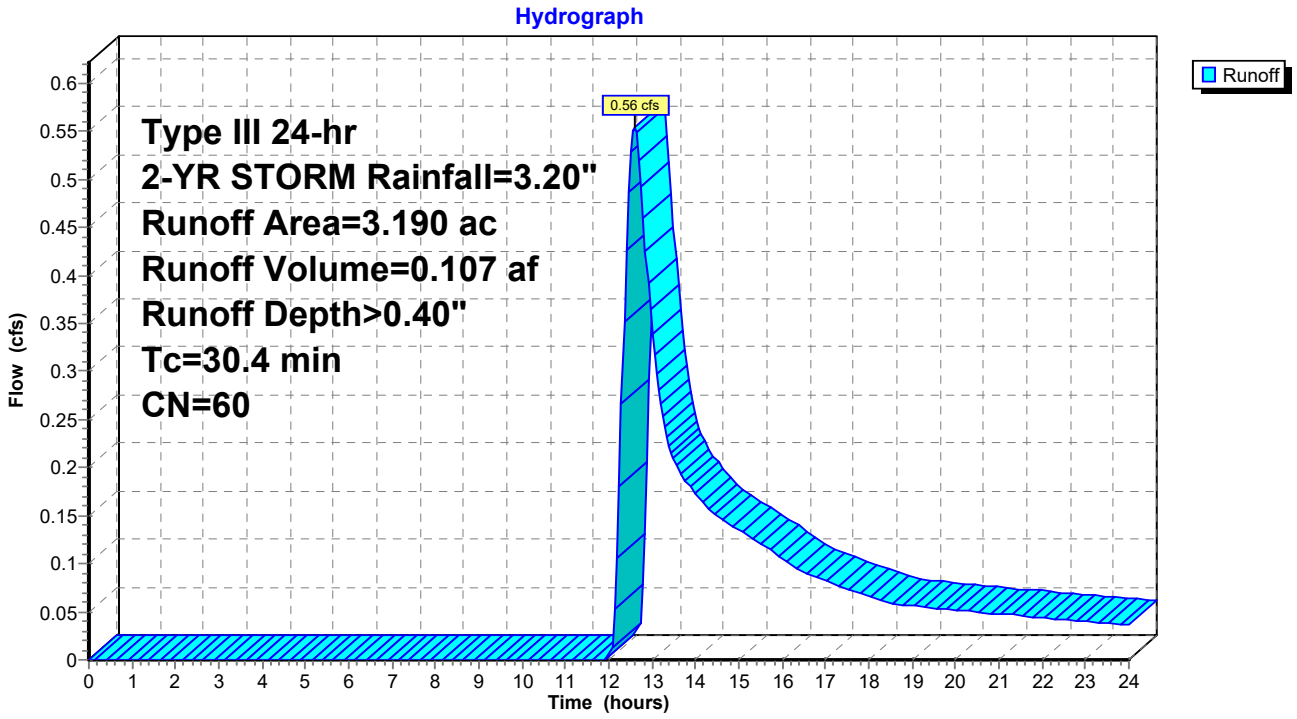
Runoff = 0.56 cfs @ 12.59 hrs, Volume= 0.107 af, Depth> 0.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR STORM Rainfall=3.20"

	Area (ac)	CN	Description
*	3.190	60	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.4					**Direct Entry, NRCS Part 630**

Subcatchment 11:



Summary for Subcatchment 12:

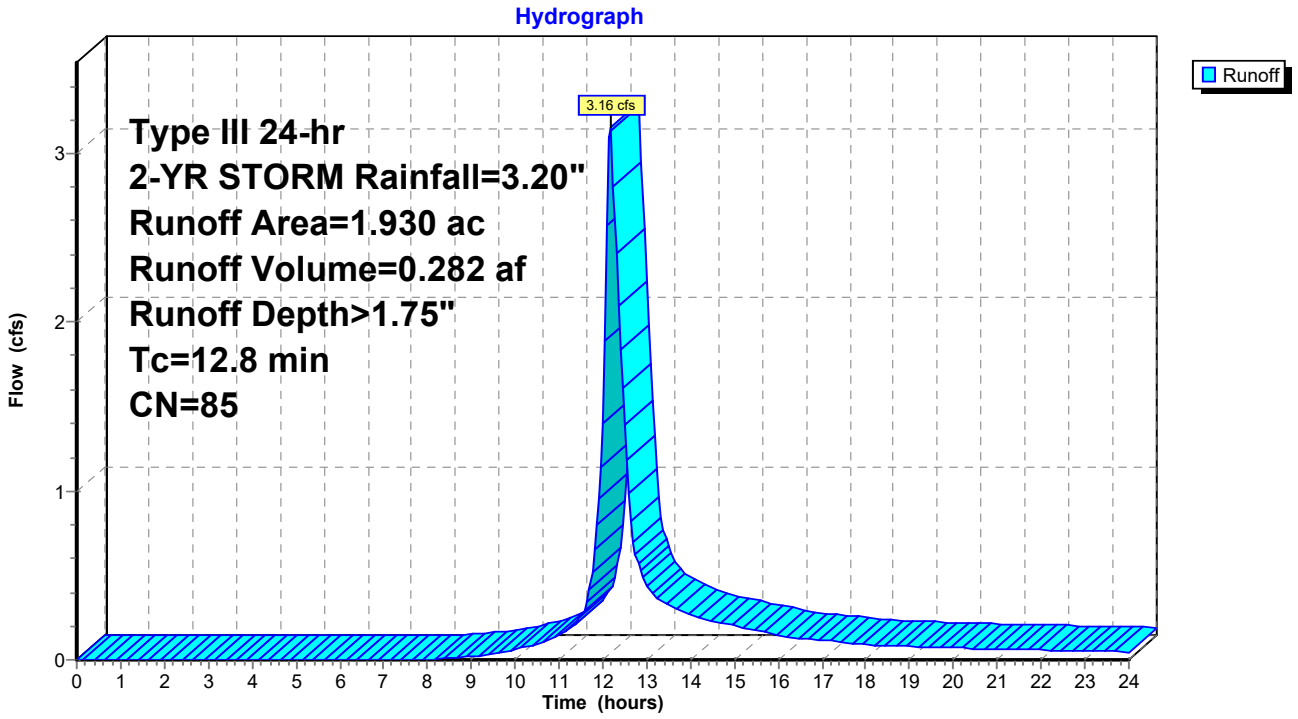
Runoff = 3.16 cfs @ 12.18 hrs, Volume= 0.282 af, Depth> 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR STORM Rainfall=3.20"

	Area (ac)	CN	Description
*	1.930	85	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8					**Direct Entry, NRCS Part 630**

Subcatchment 12:



Summary for Subcatchment 13:

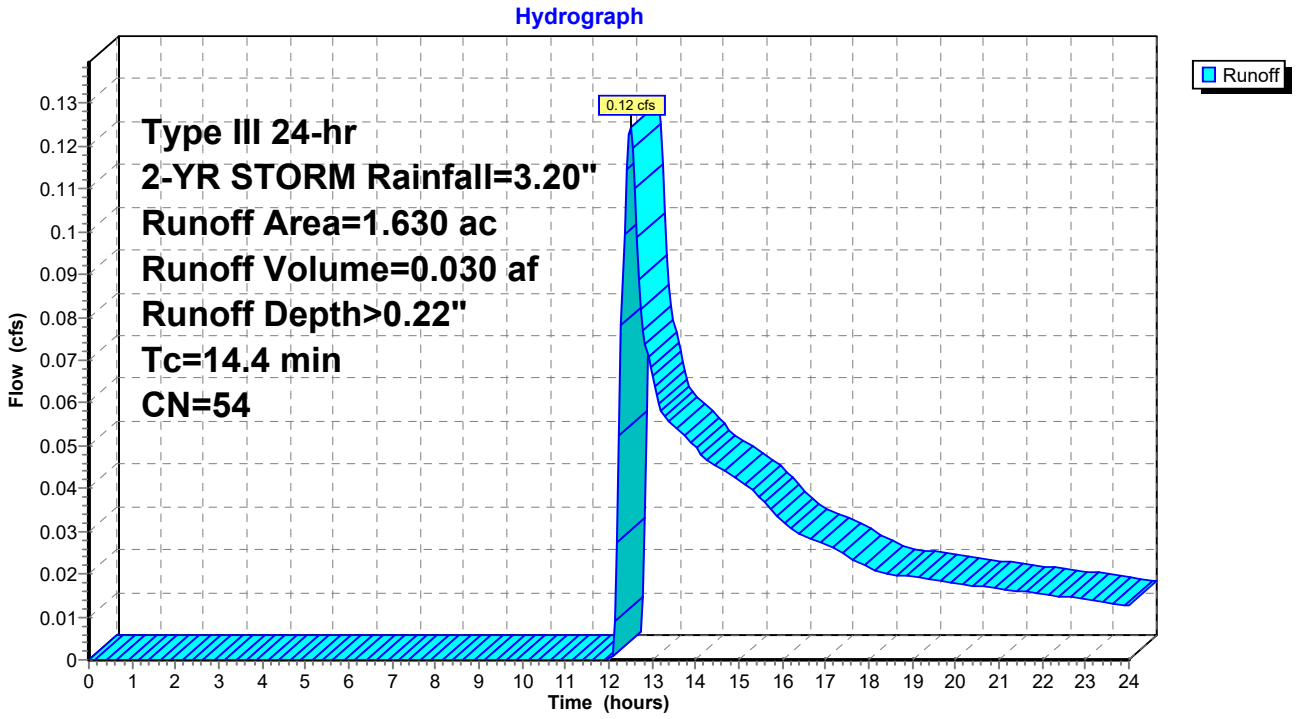
Runoff = 0.12 cfs @ 12.49 hrs, Volume= 0.030 af, Depth> 0.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR STORM Rainfall=3.20"

	Area (ac)	CN	Description
*	1.630	54	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4					**Direct Entry, NRCS Part 630**

Subcatchment 13:



Summary for Subcatchment 14:

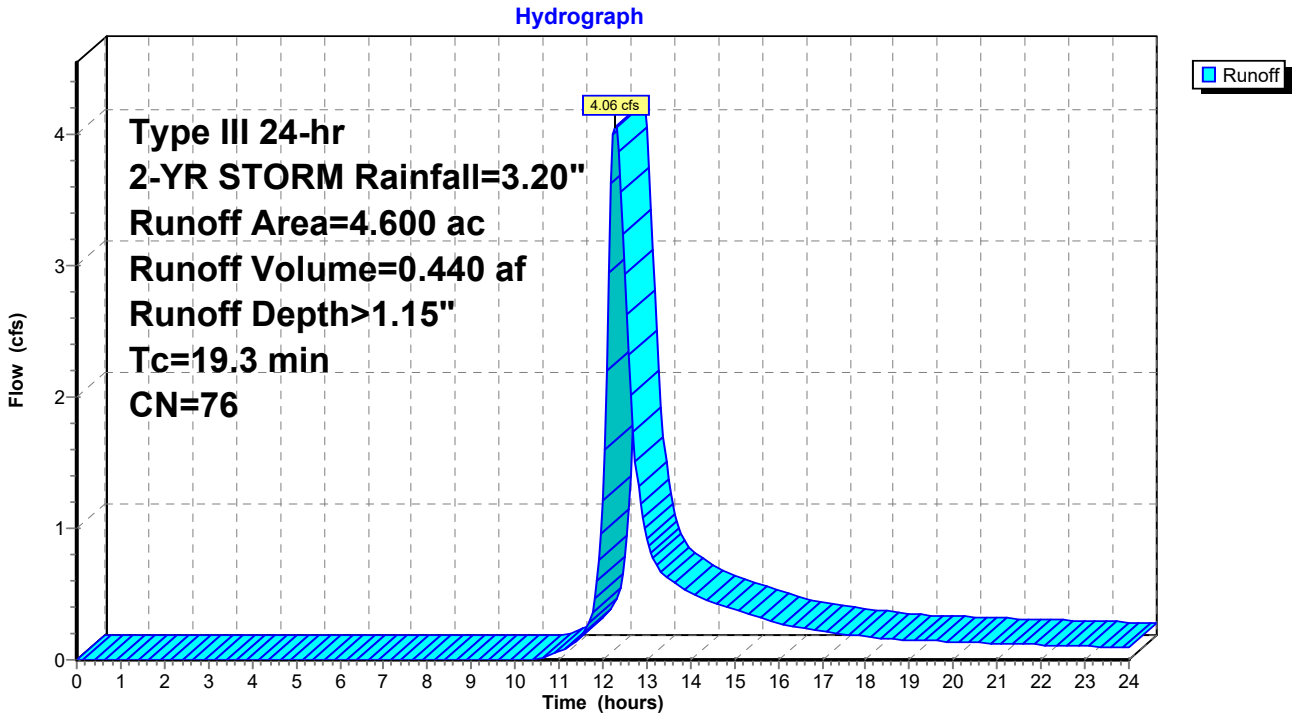
Runoff = 4.06 cfs @ 12.29 hrs, Volume= 0.440 af, Depth> 1.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR STORM Rainfall=3.20"

	Area (ac)	CN	Description
*	4.600	76	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.3					**Direct Entry, NRCS Part 630**

Subcatchment 14:



Summary for Subcatchment 15:

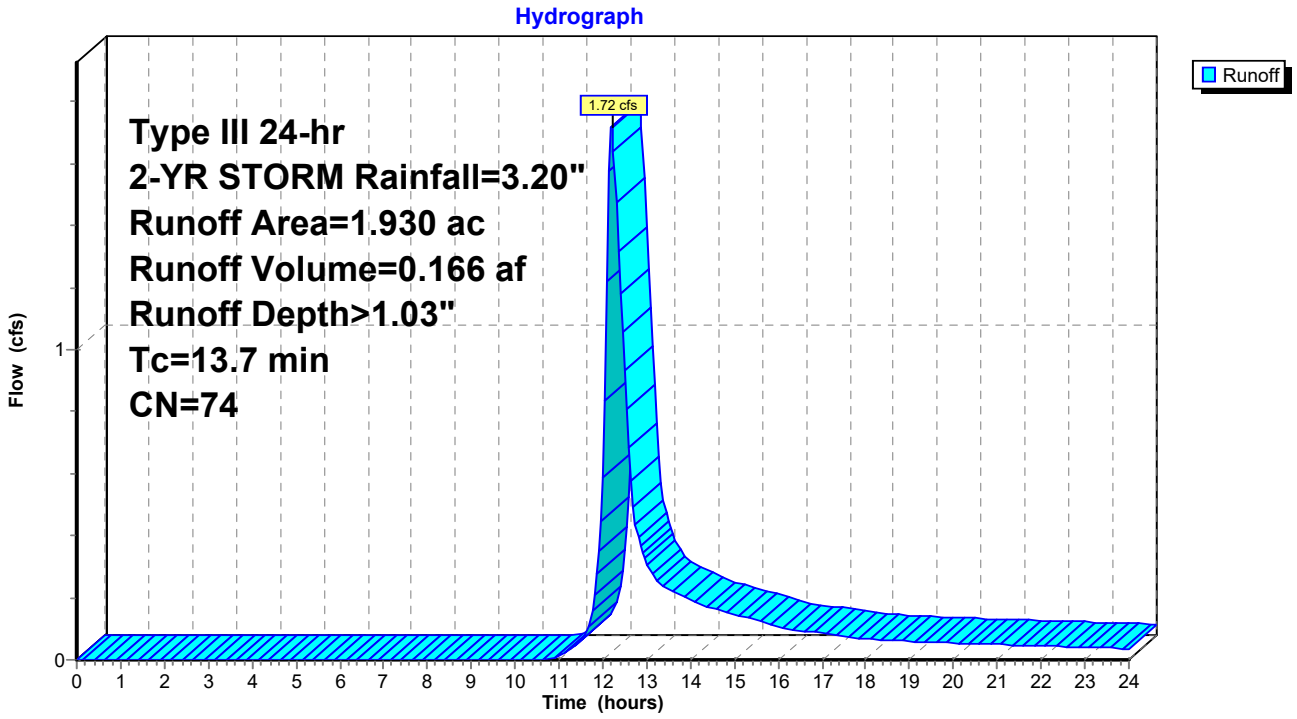
Runoff = 1.72 cfs @ 12.21 hrs, Volume= 0.166 af, Depth> 1.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR STORM Rainfall=3.20"

	Area (ac)	CN	Description
*	1.930	74	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7					**Direct Entry, NRCS Part 630**

Subcatchment 15:



Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1: Runoff Area=1.280 ac Runoff Depth>2.21"
Tc=6.4 min CN=75 Runoff=3.20 cfs 0.235 af

Subcatchment2a: Runoff Area=3.850 ac Runoff Depth>2.72"
Tc=9.6 min CN=81 Runoff=10.71 cfs 0.872 af

Subcatchment2b: Runoff Area=4.020 ac Runoff Depth>1.32"
Tc=13.9 min CN=63 Runoff=4.39 cfs 0.441 af

Subcatchment3: Runoff Area=7.890 ac Runoff Depth>2.12"
Tc=10.5 min CN=74 Runoff=16.62 cfs 1.396 af

Subcatchment4: Runoff Area=0.940 ac Runoff Depth>2.63"
Tc=12.7 min CN=80 Runoff=2.31 cfs 0.206 af

Subcatchment5: Runoff Area=1.680 ac Runoff Depth>3.38"
Tc=8.1 min CN=88 Runoff=6.01 cfs 0.473 af

Subcatchment7: Runoff Area=4.100 ac Runoff Depth>1.32"
Tc=18.5 min CN=63 Runoff=4.00 cfs 0.450 af

Subcatchment8-10: Runoff Area=28.040 ac Runoff Depth>3.08"
Tc=16.4 min CN=85 Runoff=73.68 cfs 7.205 af

Subcatchment9: Runoff Area=6.810 ac Runoff Depth>2.89"
Tc=17.6 min CN=83 Runoff=16.38 cfs 1.643 af

Subcatchment11: Runoff Area=3.190 ac Runoff Depth>1.12"
Tc=30.4 min CN=60 Runoff=2.07 cfs 0.298 af

Subcatchment12: Runoff Area=1.930 ac Runoff Depth>3.09"
Tc=12.8 min CN=85 Runoff=5.55 cfs 0.496 af

Subcatchment13: Runoff Area=1.630 ac Runoff Depth>0.78"
Tc=14.4 min CN=54 Runoff=0.82 cfs 0.105 af

Subcatchment14: Runoff Area=4.600 ac Runoff Depth>2.28"
Tc=19.3 min CN=76 Runoff=8.39 cfs 0.875 af

Subcatchment15: Runoff Area=1.930 ac Runoff Depth>2.12"
Tc=13.7 min CN=74 Runoff=3.71 cfs 0.341 af

Total Runoff Area = 71.890 ac Runoff Volume = 15.036 af Average Runoff Depth = 2.51"

Summary for Subcatchment 1:

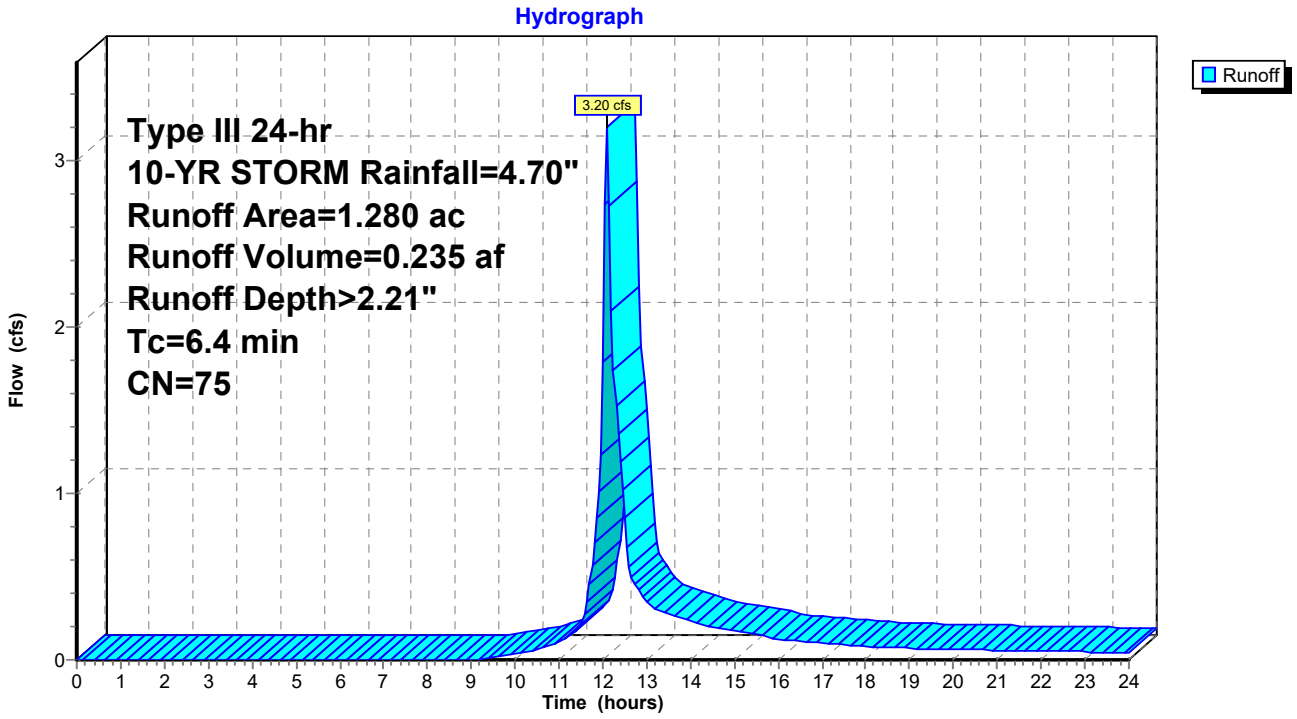
Runoff = 3.20 cfs @ 12.10 hrs, Volume= 0.235 af, Depth> 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	1.280	75	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4					**Direct Entry, NRCS Part 630**

Subcatchment 1:



Summary for Subcatchment 2a:

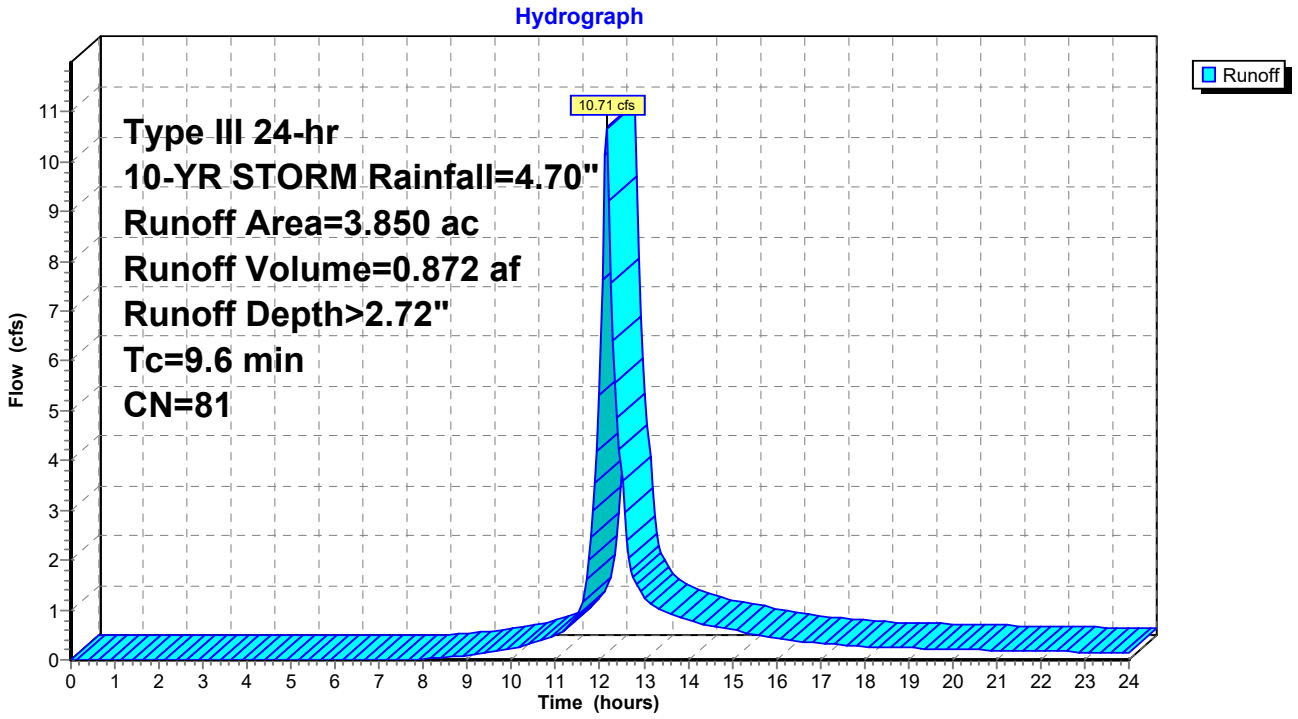
Runoff = 10.71 cfs @ 12.14 hrs, Volume= 0.872 af, Depth> 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	3.850	81	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6					**Direct Entry, NRCS Part 630**

Subcatchment 2a:



Summary for Subcatchment 2b:

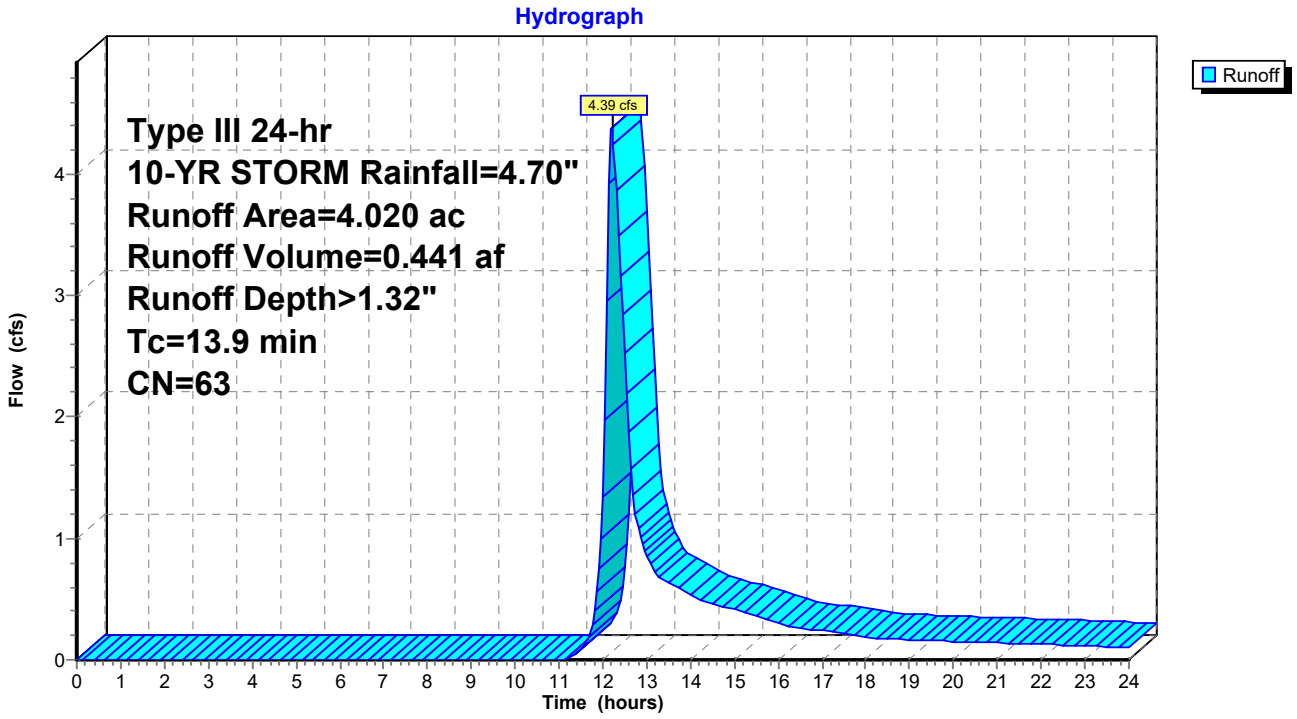
Runoff = 4.39 cfs @ 12.21 hrs, Volume= 0.441 af, Depth> 1.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	4.020	63	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9					**Direct Entry, NRCS Part 630**

Subcatchment 2b:



Summary for Subcatchment 3:

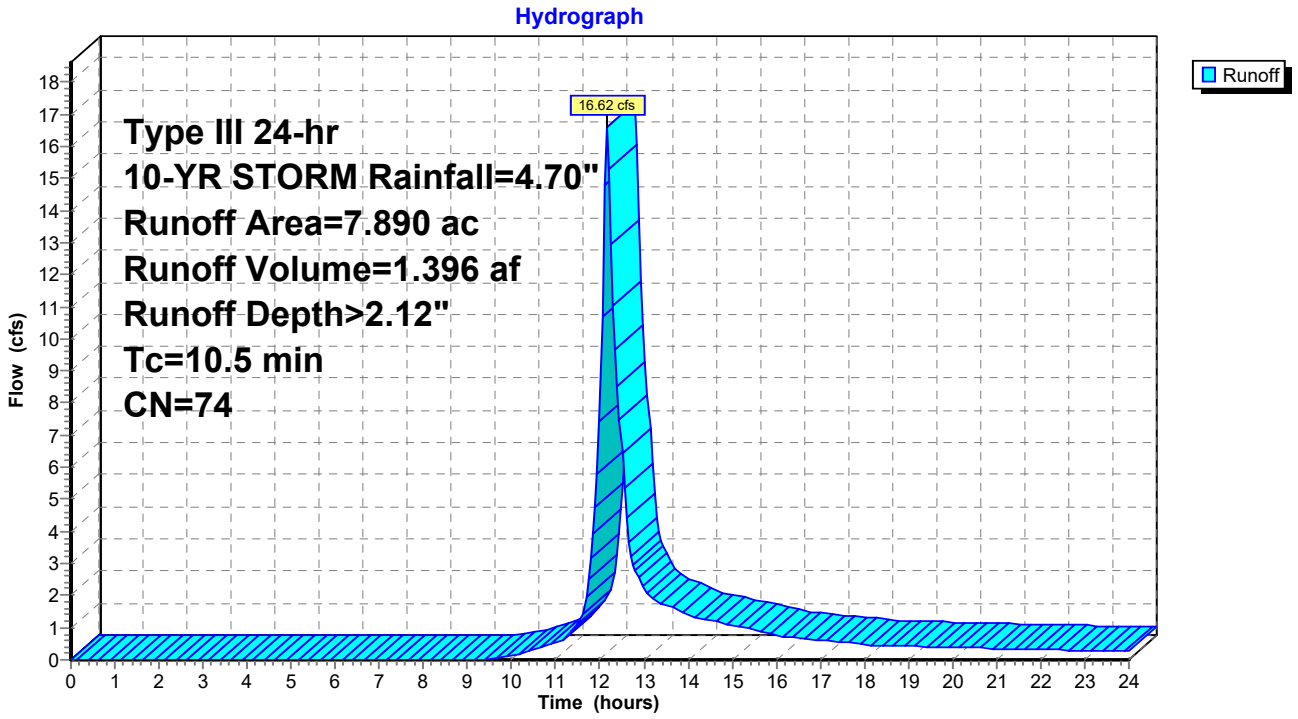
Runoff = 16.62 cfs @ 12.15 hrs, Volume= 1.396 af, Depth> 2.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	7.890	74	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5					**Direct Entry, NRCS Part 630**

Subcatchment 3:



Summary for Subcatchment 4:

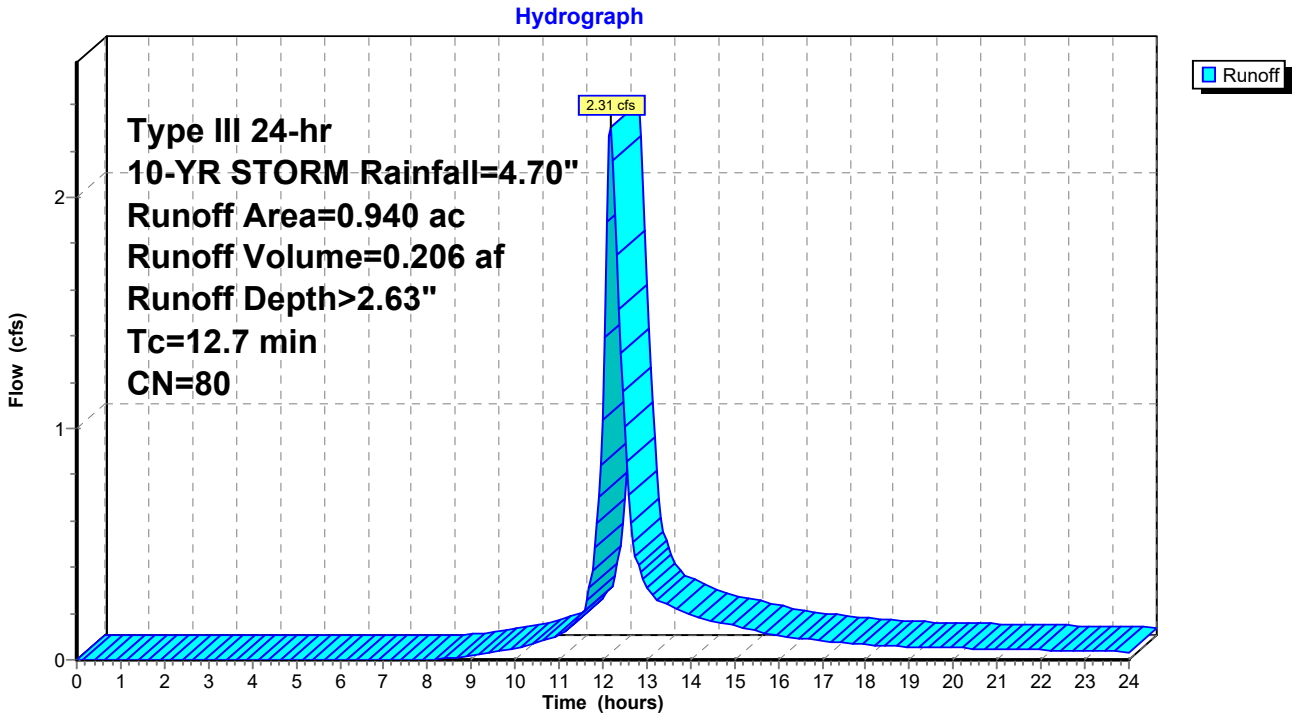
Runoff = 2.31 cfs @ 12.18 hrs, Volume= 0.206 af, Depth> 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	0.940	80	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7					**Direct Entry, NRCS Part 630**

Subcatchment 4:



Summary for Subcatchment 5:

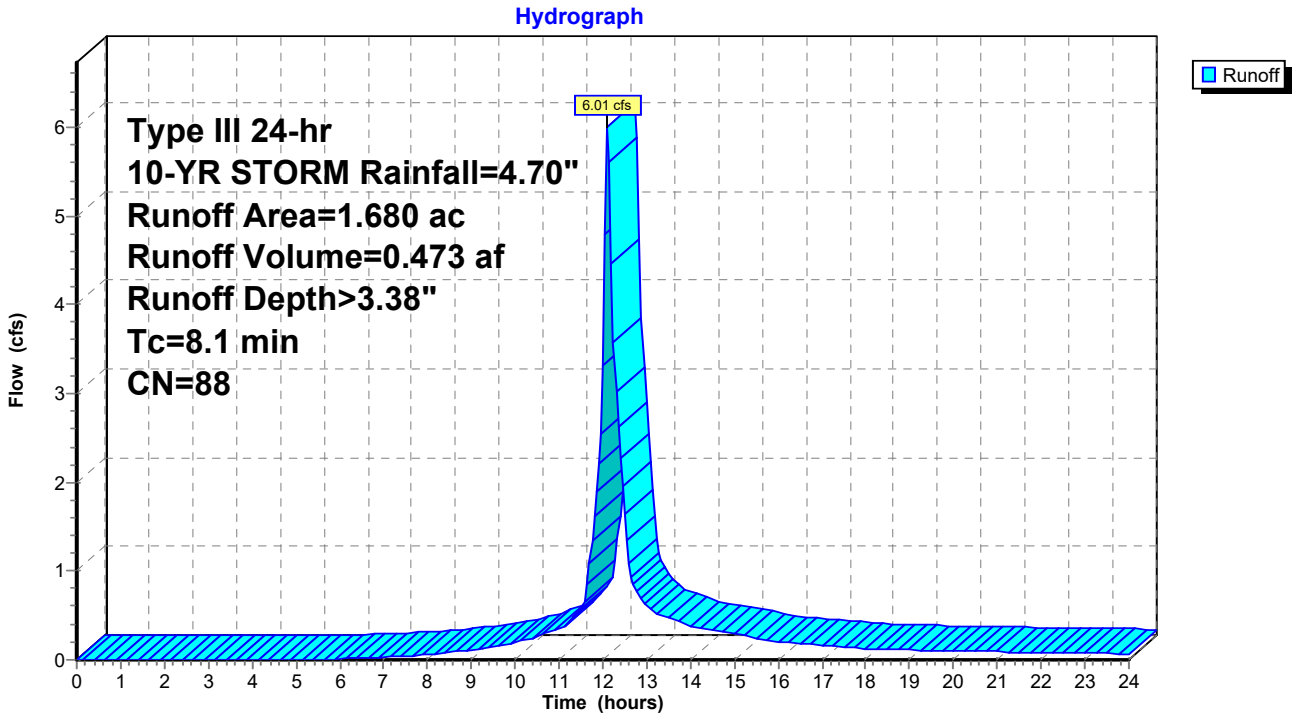
Runoff = 6.01 cfs @ 12.11 hrs, Volume= 0.473 af, Depth> 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	1.680	88	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1					**Direct Entry, NRCS Part 630**

Subcatchment 5:



Summary for Subcatchment 7:

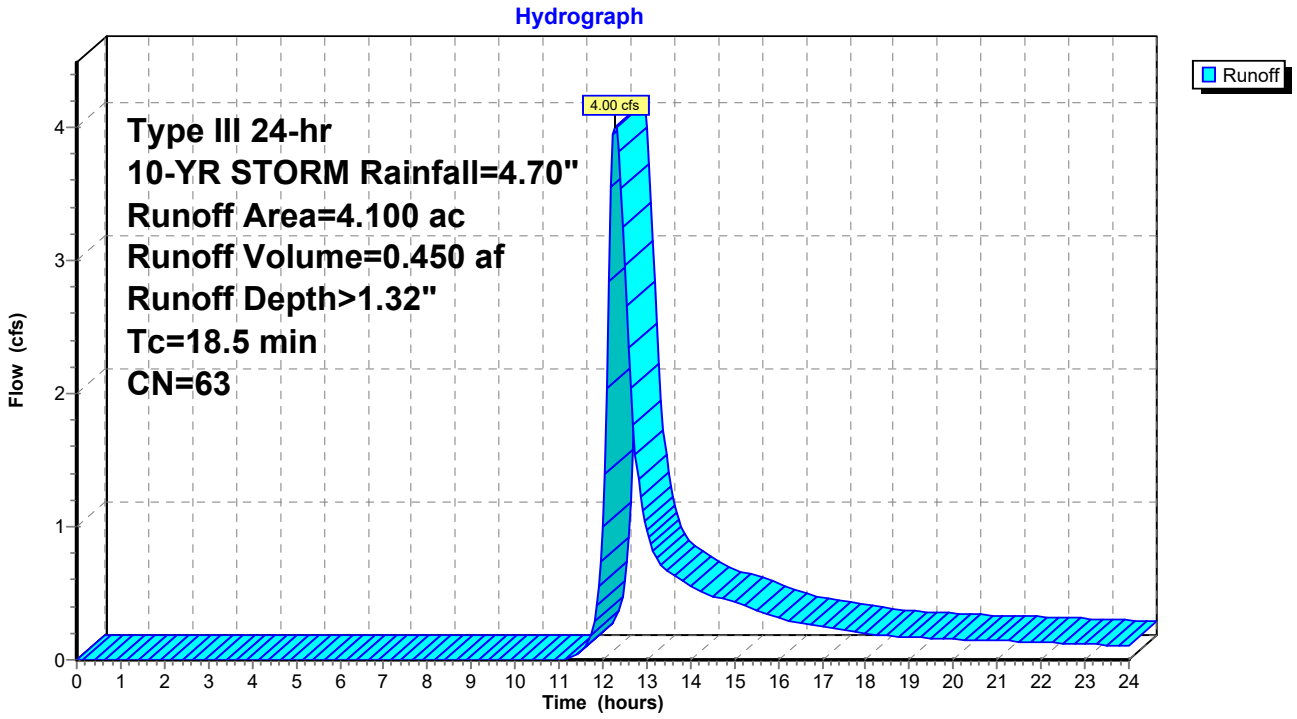
Runoff = 4.00 cfs @ 12.29 hrs, Volume= 0.450 af, Depth> 1.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	4.100	63	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.5					**Direct Entry, NRCS Part 630**

Subcatchment 7:



Summary for Subcatchment 8-10:

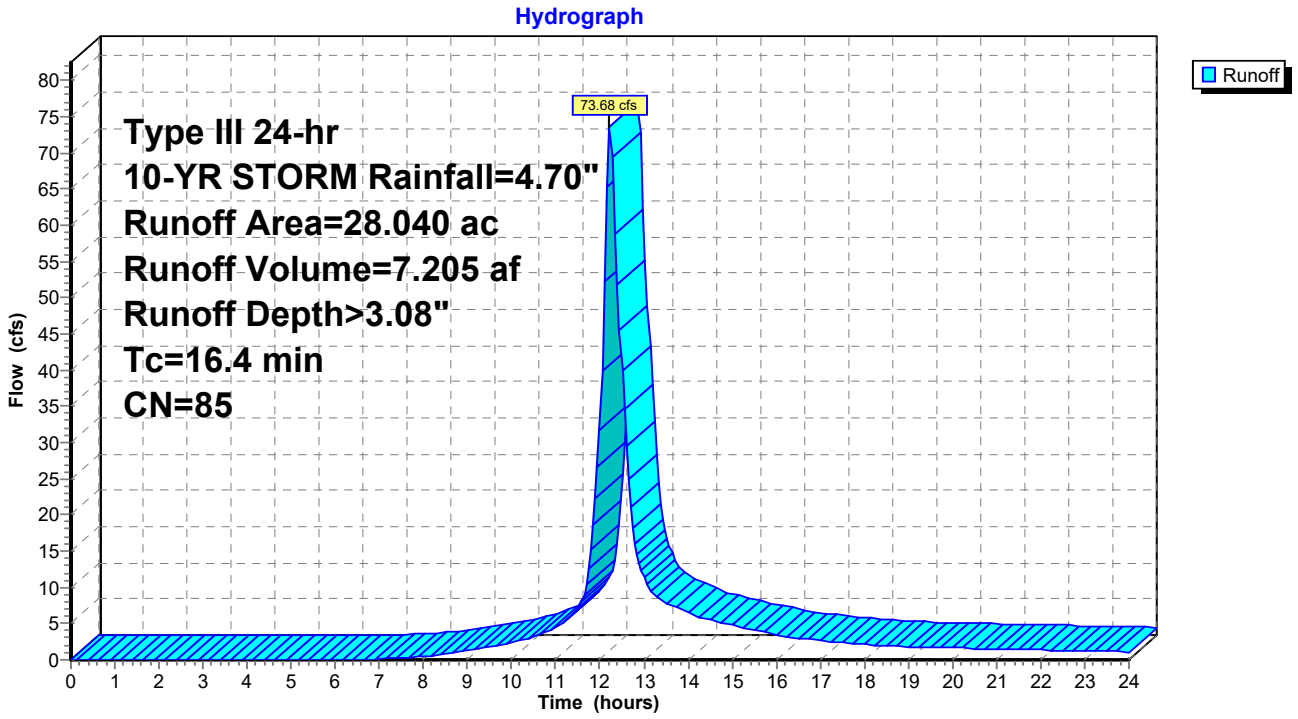
Runoff = 73.68 cfs @ 12.22 hrs, Volume= 7.205 af, Depth> 3.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	28.040	85	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.4					**Direct Entry, SCS TR-55**

Subcatchment 8-10:



Summary for Subcatchment 9:

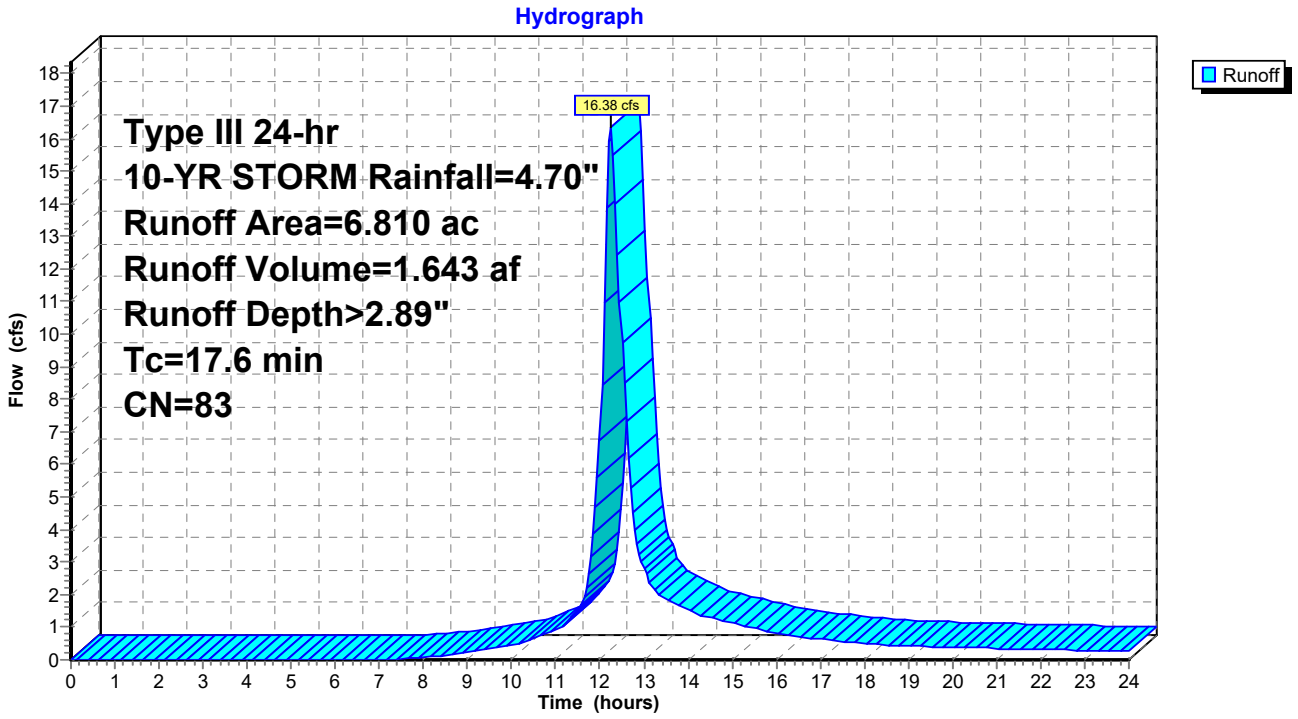
Runoff = 16.38 cfs @ 12.24 hrs, Volume= 1.643 af, Depth> 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	6.810	83	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6					**Direct Entry, NRCS Part 630**

Subcatchment 9:



Summary for Subcatchment 11:

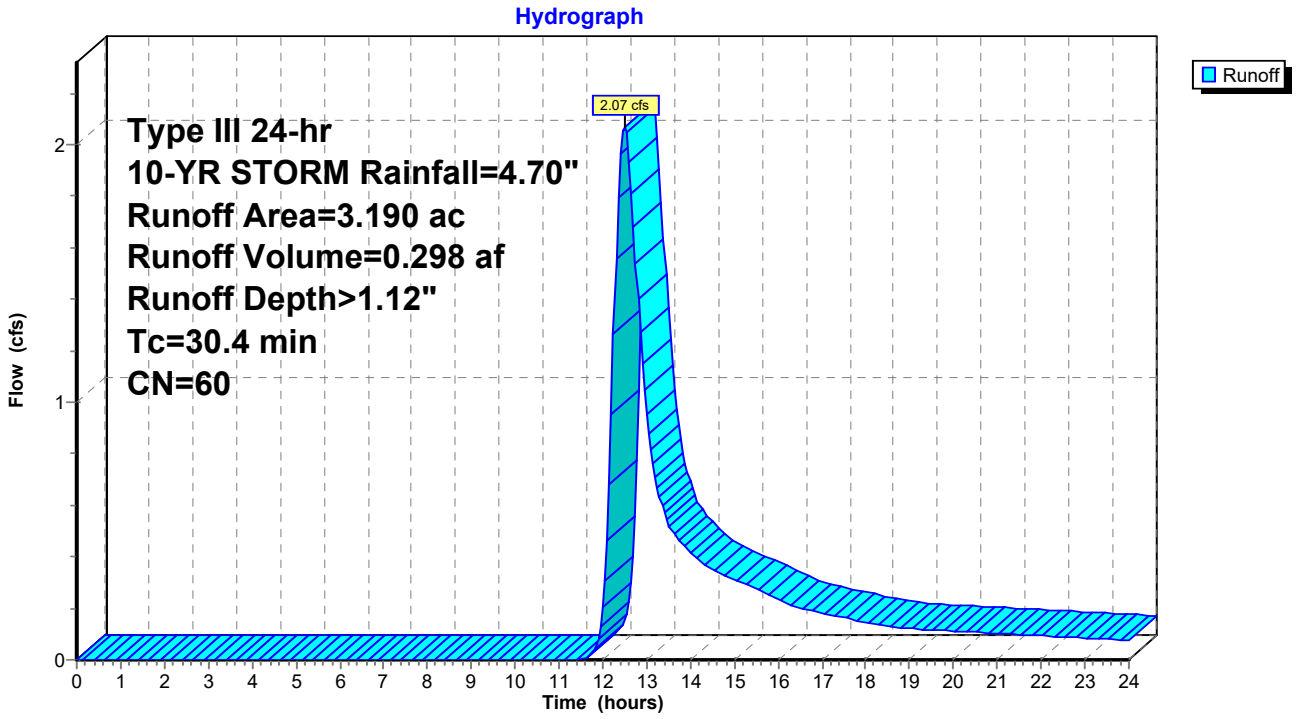
Runoff = 2.07 cfs @ 12.49 hrs, Volume= 0.298 af, Depth> 1.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	3.190	60	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.4					**Direct Entry, NRCS Part 630**

Subcatchment 11:



Summary for Subcatchment 12:

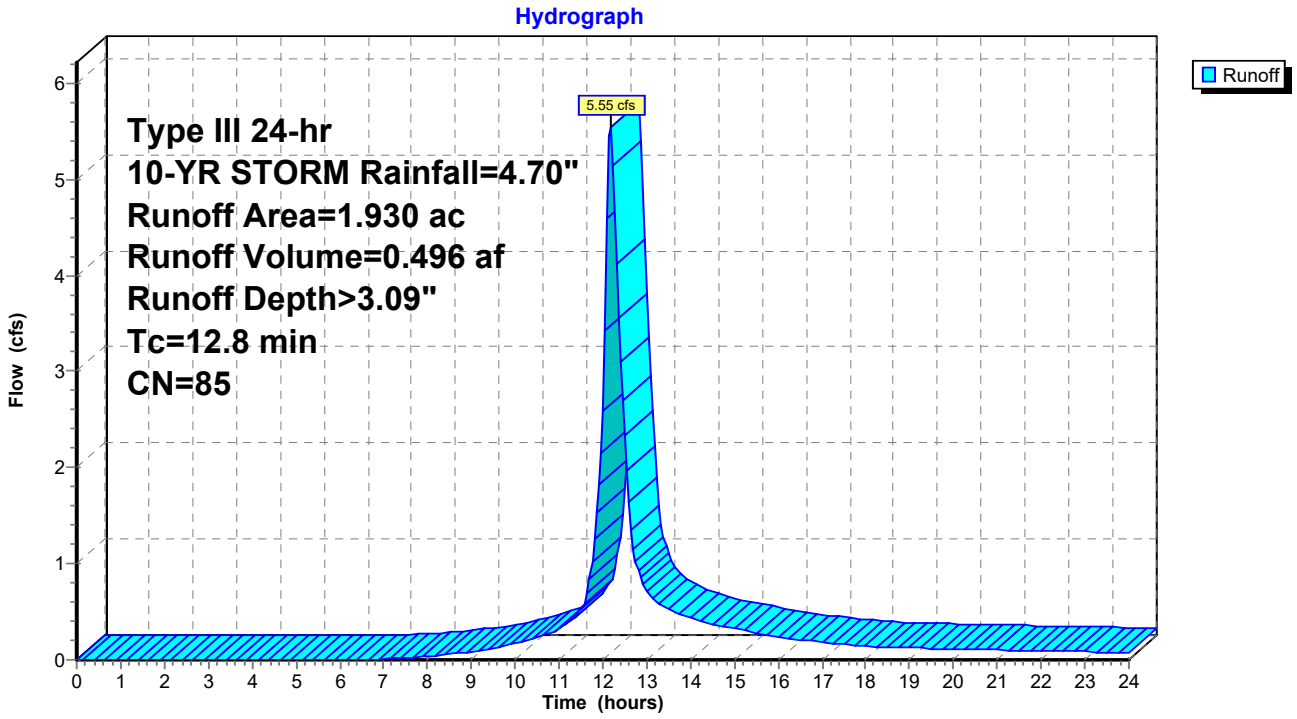
Runoff = 5.55 cfs @ 12.17 hrs, Volume= 0.496 af, Depth> 3.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	1.930	85	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8					**Direct Entry, NRCS Part 630**

Subcatchment 12:



Summary for Subcatchment 13:

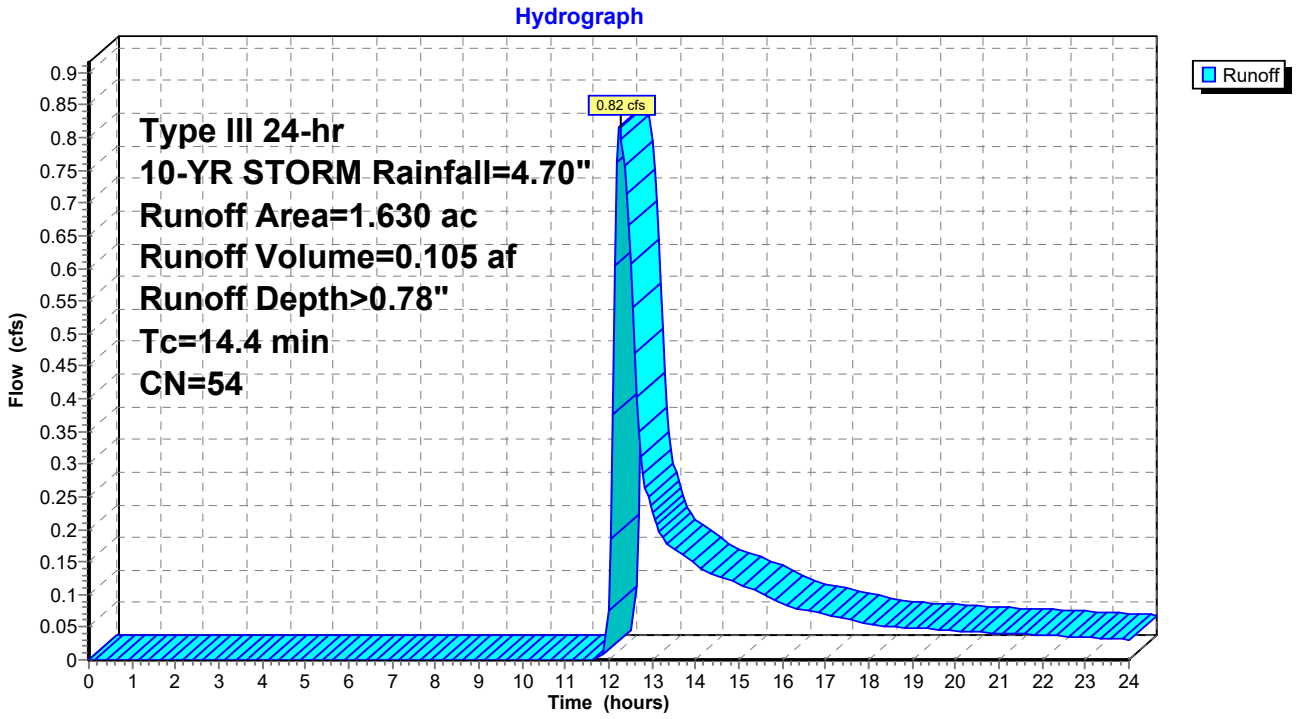
Runoff = 0.82 cfs @ 12.26 hrs, Volume= 0.105 af, Depth> 0.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	1.630	54	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4					**Direct Entry, NRCS Part 630**

Subcatchment 13:



Summary for Subcatchment 14:

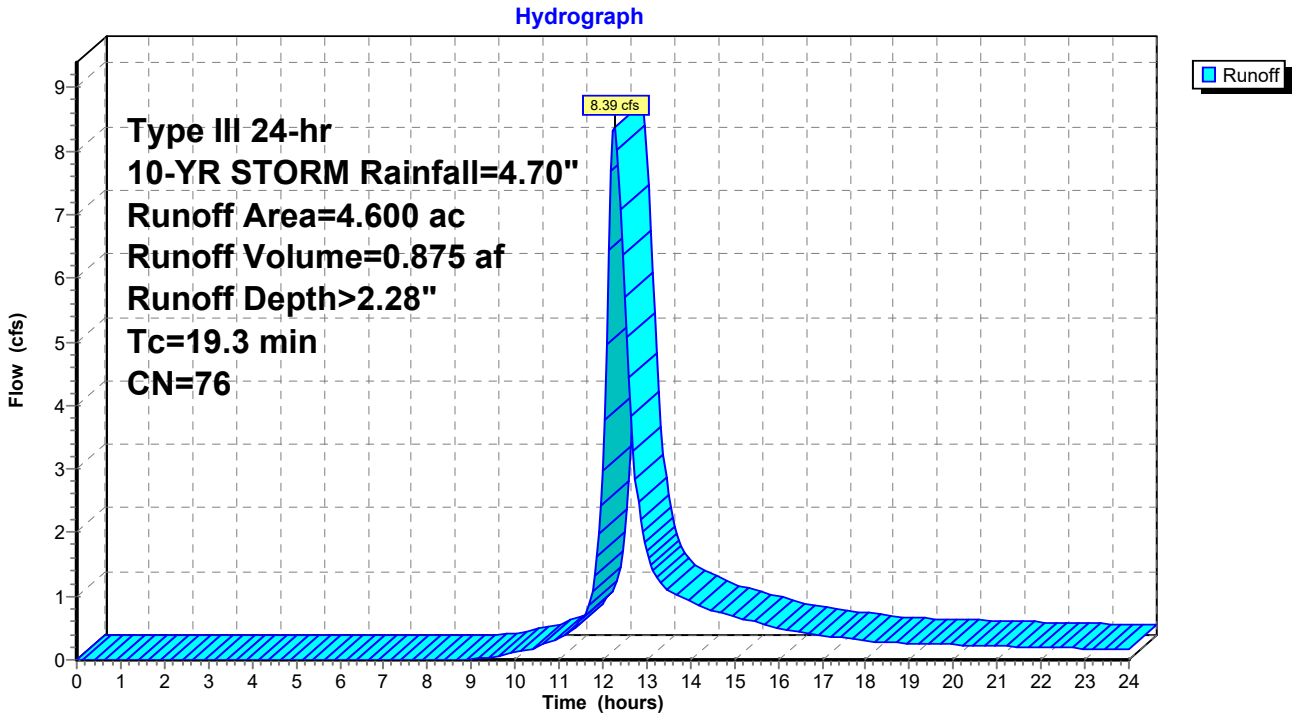
Runoff = 8.39 cfs @ 12.27 hrs, Volume= 0.875 af, Depth> 2.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	4.600	76	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.3					**Direct Entry, NRCS Part 630**

Subcatchment 14:



Summary for Subcatchment 15:

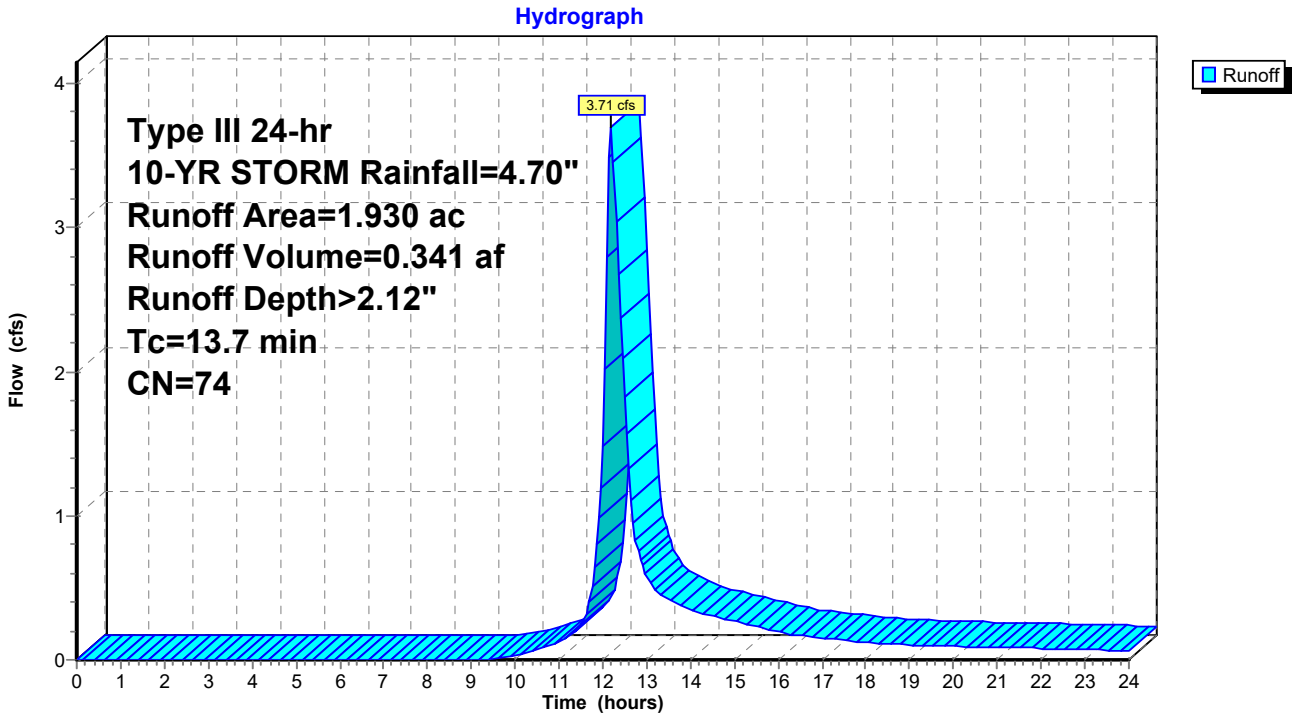
Runoff = 3.71 cfs @ 12.20 hrs, Volume= 0.341 af, Depth> 2.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	1.930	74	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7					**Direct Entry, NRCS Part 630**

Subcatchment 15:



Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1: Runoff Area=1.280 ac Runoff Depth>2.86"
Tc=6.4 min CN=75 Runoff=4.17 cfs 0.305 af

Subcatchment2a: Runoff Area=3.850 ac Runoff Depth>3.43"
Tc=9.6 min CN=81 Runoff=13.46 cfs 1.099 af

Subcatchment2b: Runoff Area=4.020 ac Runoff Depth>1.83"
Tc=13.9 min CN=63 Runoff=6.34 cfs 0.613 af

Subcatchment3: Runoff Area=7.890 ac Runoff Depth>2.76"
Tc=10.5 min CN=74 Runoff=21.78 cfs 1.817 af

Subcatchment4: Runoff Area=0.940 ac Runoff Depth>3.33"
Tc=12.7 min CN=80 Runoff=2.92 cfs 0.261 af

Subcatchment5: Runoff Area=1.680 ac Runoff Depth>4.14"
Tc=8.1 min CN=88 Runoff=7.29 cfs 0.580 af

Subcatchment7: Runoff Area=4.100 ac Runoff Depth>1.83"
Tc=18.5 min CN=63 Runoff=5.80 cfs 0.624 af

Subcatchment8-10: Runoff Area=28.040 ac Runoff Depth>3.82"
Tc=16.4 min CN=85 Runoff=90.80 cfs 8.932 af

Subcatchment9: Runoff Area=6.810 ac Runoff Depth>3.62"
Tc=17.6 min CN=83 Runoff=20.39 cfs 2.054 af

Subcatchment11: Runoff Area=3.190 ac Runoff Depth>1.59"
Tc=30.4 min CN=60 Runoff=3.10 cfs 0.422 af

Subcatchment12: Runoff Area=1.930 ac Runoff Depth>3.83"
Tc=12.8 min CN=85 Runoff=6.84 cfs 0.615 af

Subcatchment13: Runoff Area=1.630 ac Runoff Depth>1.17"
Tc=14.4 min CN=54 Runoff=1.40 cfs 0.158 af

Subcatchment14: Runoff Area=4.600 ac Runoff Depth>2.94"
Tc=19.3 min CN=76 Runoff=10.87 cfs 1.128 af

Subcatchment15: Runoff Area=1.930 ac Runoff Depth>2.76"
Tc=13.7 min CN=74 Runoff=4.86 cfs 0.444 af

Total Runoff Area = 71.890 ac Runoff Volume = 19.052 af Average Runoff Depth = 3.18"

Summary for Subcatchment 1:

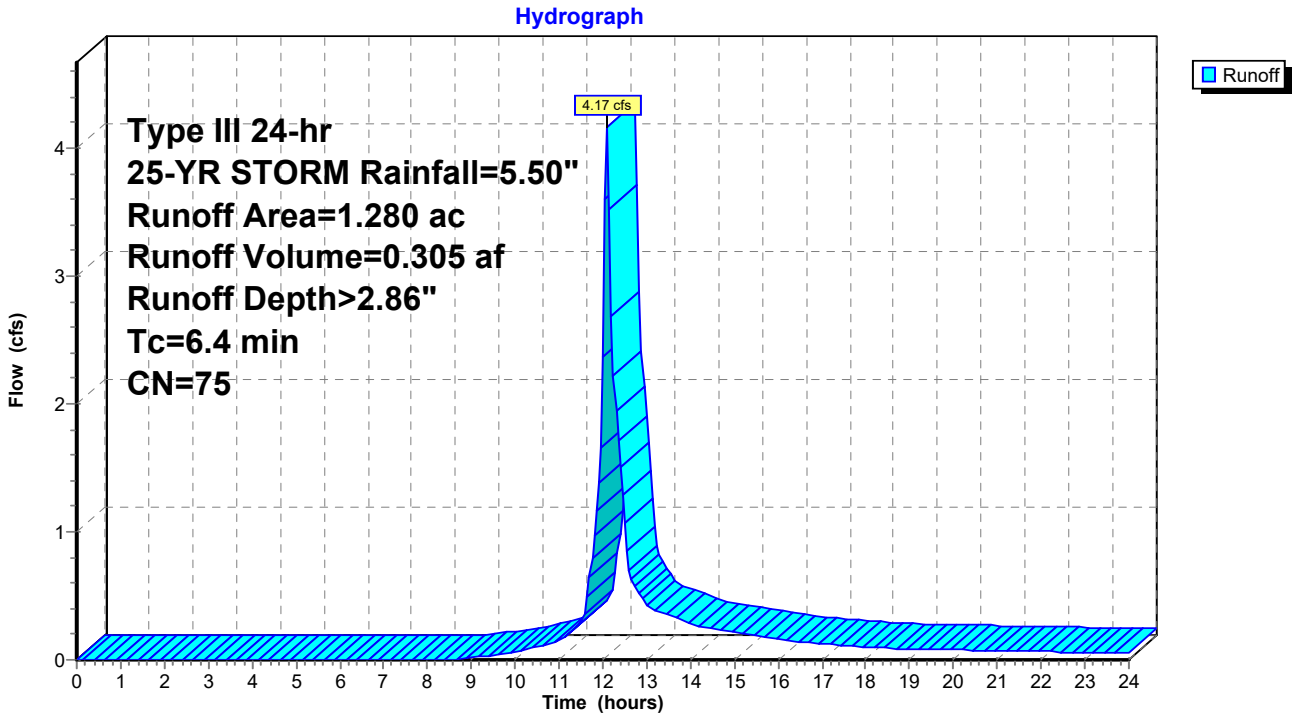
Runoff = 4.17 cfs @ 12.10 hrs, Volume= 0.305 af, Depth> 2.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR STORM Rainfall=5.50"

	Area (ac)	CN	Description
*	1.280	75	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4					**Direct Entry, NRCS Part 630**

Subcatchment 1:



Summary for Subcatchment 2a:

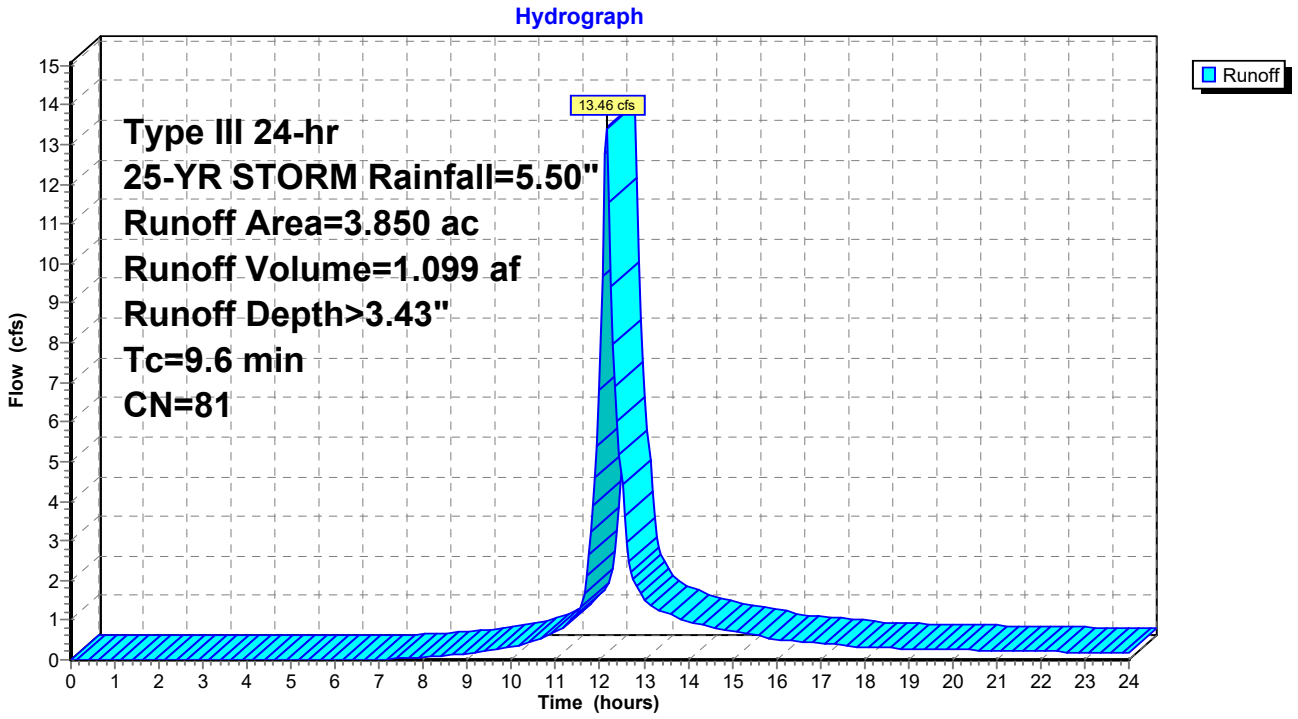
Runoff = 13.46 cfs @ 12.14 hrs, Volume= 1.099 af, Depth> 3.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR STORM Rainfall=5.50"

	Area (ac)	CN	Description
*	3.850	81	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6					**Direct Entry, NRCS Part 630**

Subcatchment 2a:



Summary for Subcatchment 2b:

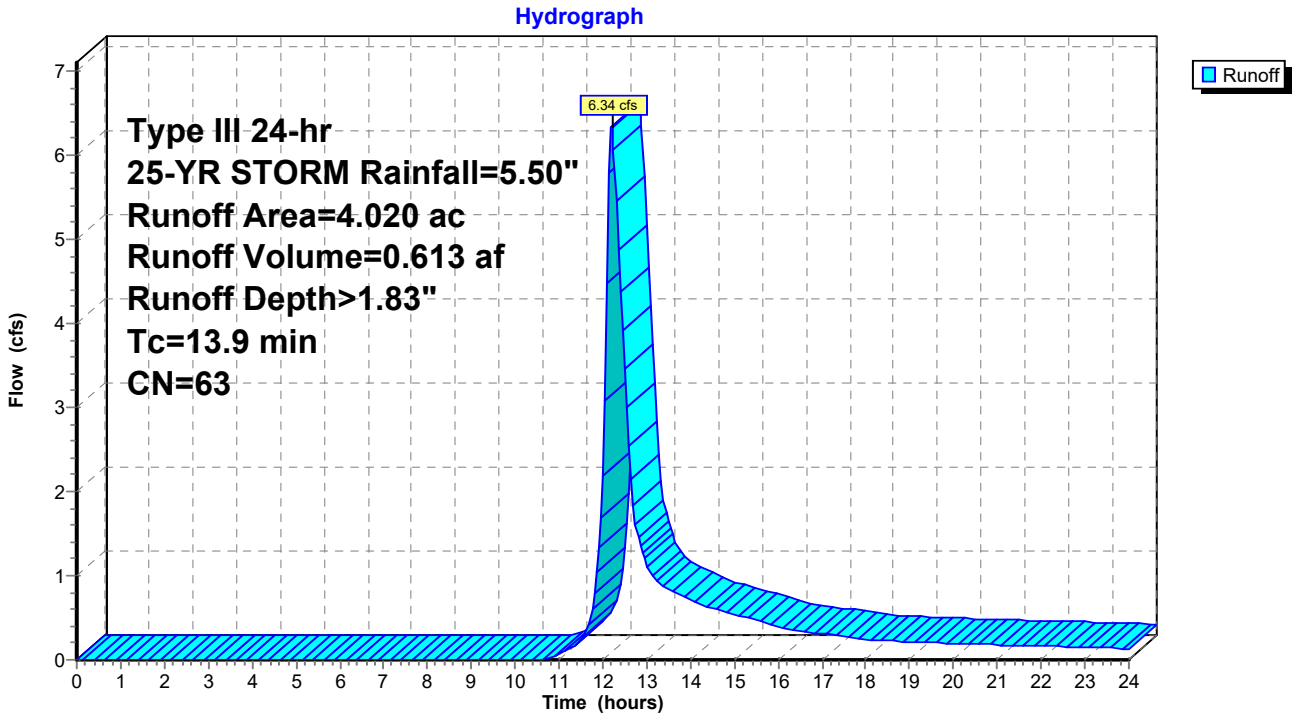
Runoff = 6.34 cfs @ 12.21 hrs, Volume= 0.613 af, Depth> 1.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR STORM Rainfall=5.50"

	Area (ac)	CN	Description
*	4.020	63	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9					**Direct Entry, NRCS Part 630**

Subcatchment 2b:



Summary for Subcatchment 3:

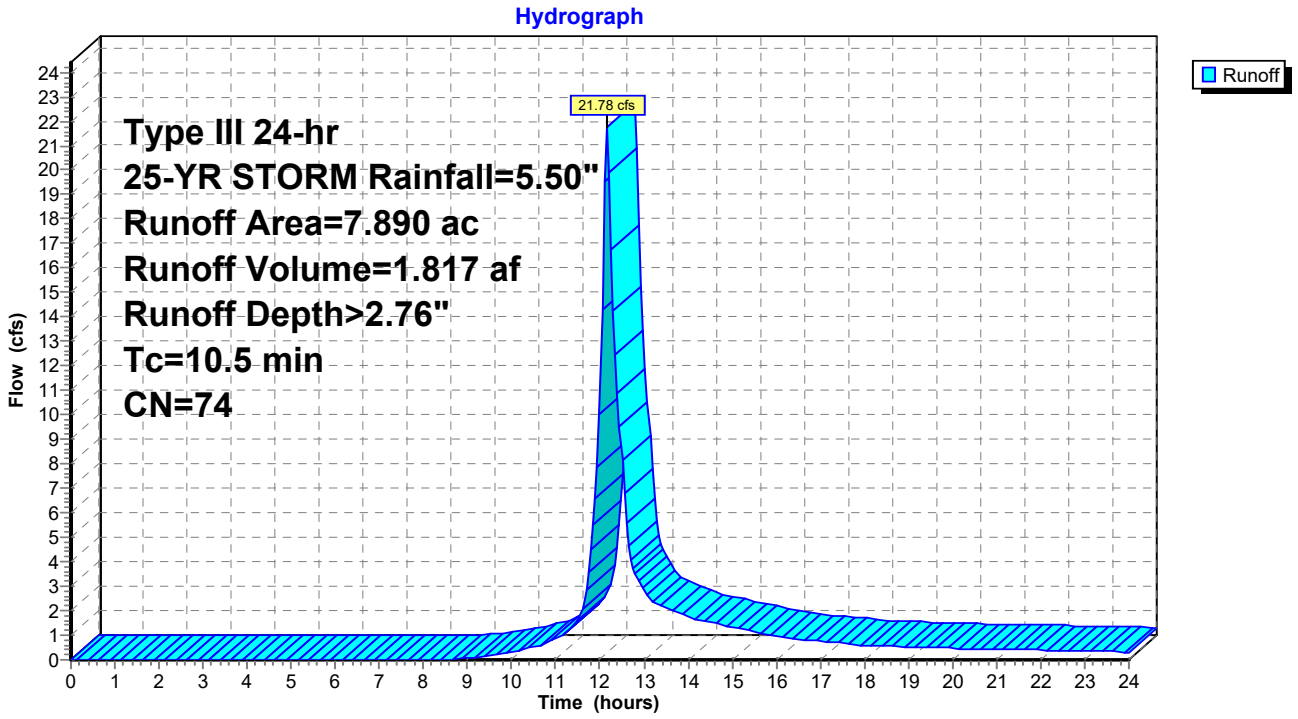
Runoff = 21.78 cfs @ 12.15 hrs, Volume= 1.817 af, Depth> 2.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR STORM Rainfall=5.50"

	Area (ac)	CN	Description
*	7.890	74	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5					**Direct Entry, NRCS Part 630**

Subcatchment 3:



Summary for Subcatchment 4:

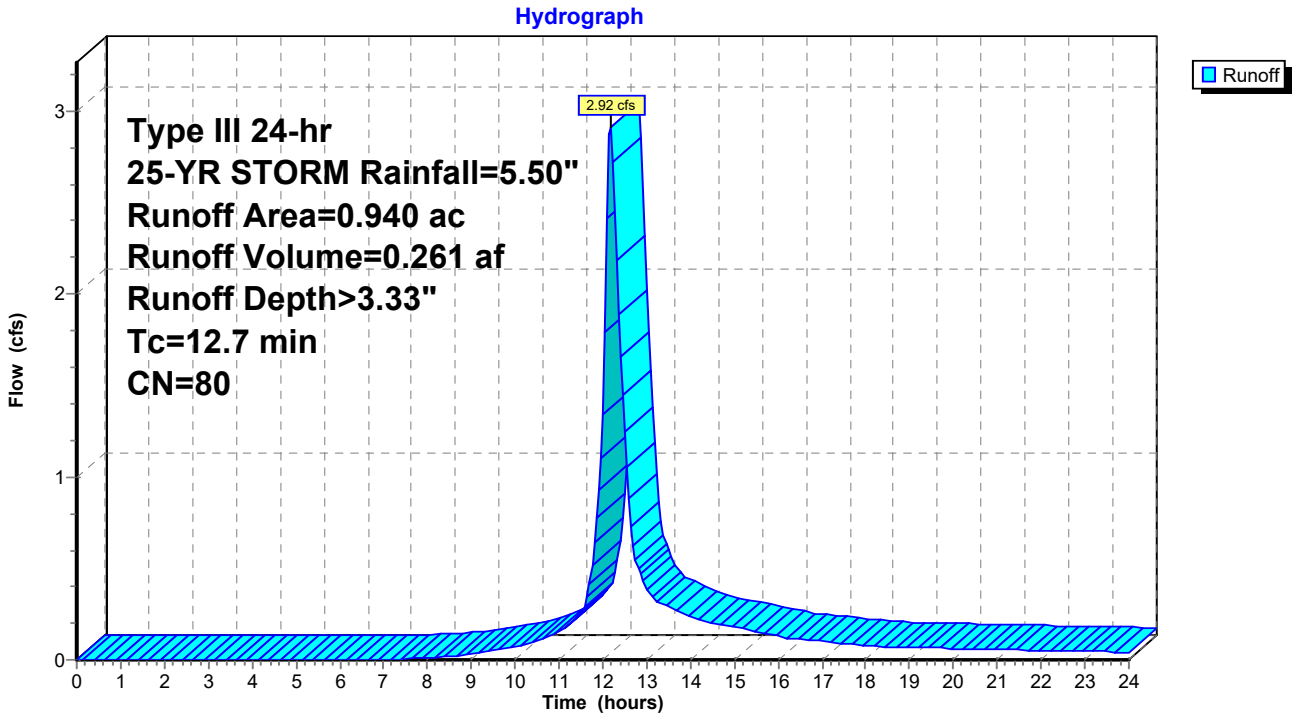
Runoff = 2.92 cfs @ 12.18 hrs, Volume= 0.261 af, Depth> 3.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR STORM Rainfall=5.50"

	Area (ac)	CN	Description
*	0.940	80	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7					**Direct Entry, NRCS Part 630**

Subcatchment 4:



Summary for Subcatchment 5:

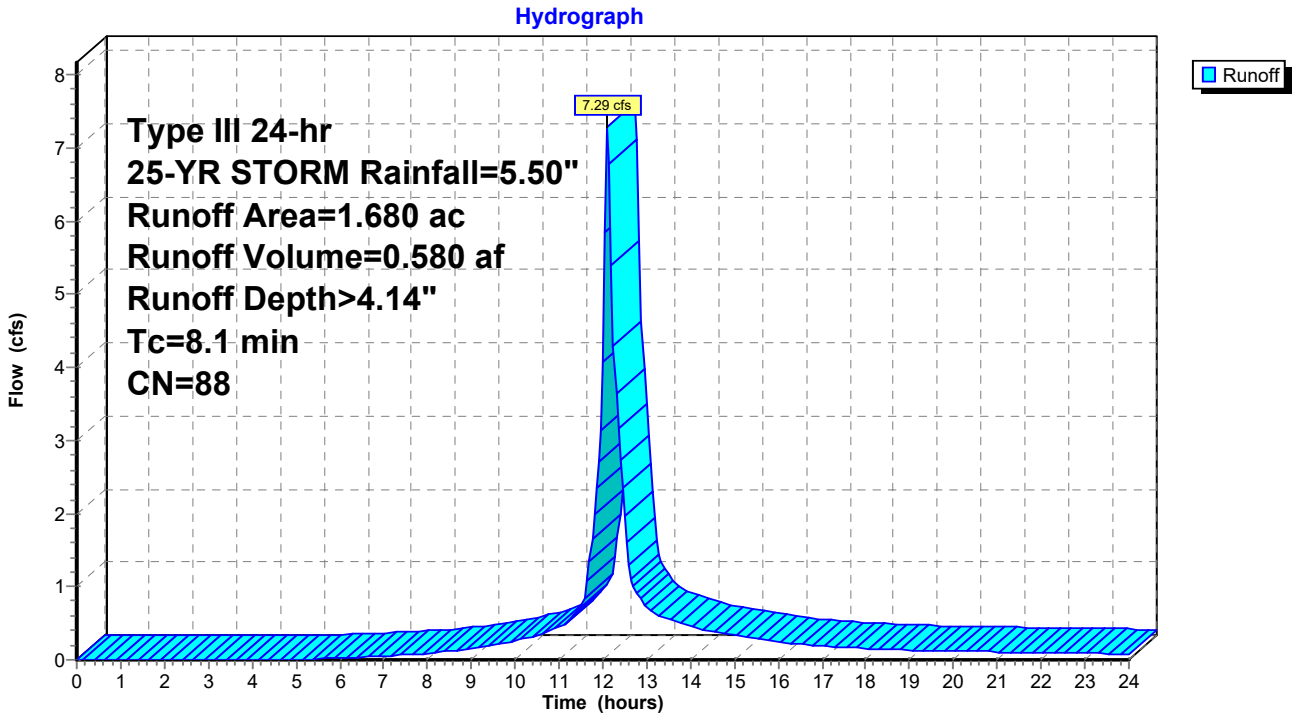
Runoff = 7.29 cfs @ 12.11 hrs, Volume= 0.580 af, Depth> 4.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR STORM Rainfall=5.50"

	Area (ac)	CN	Description
*	1.680	88	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1					**Direct Entry, NRCS Part 630**

Subcatchment 5:



Summary for Subcatchment 7:

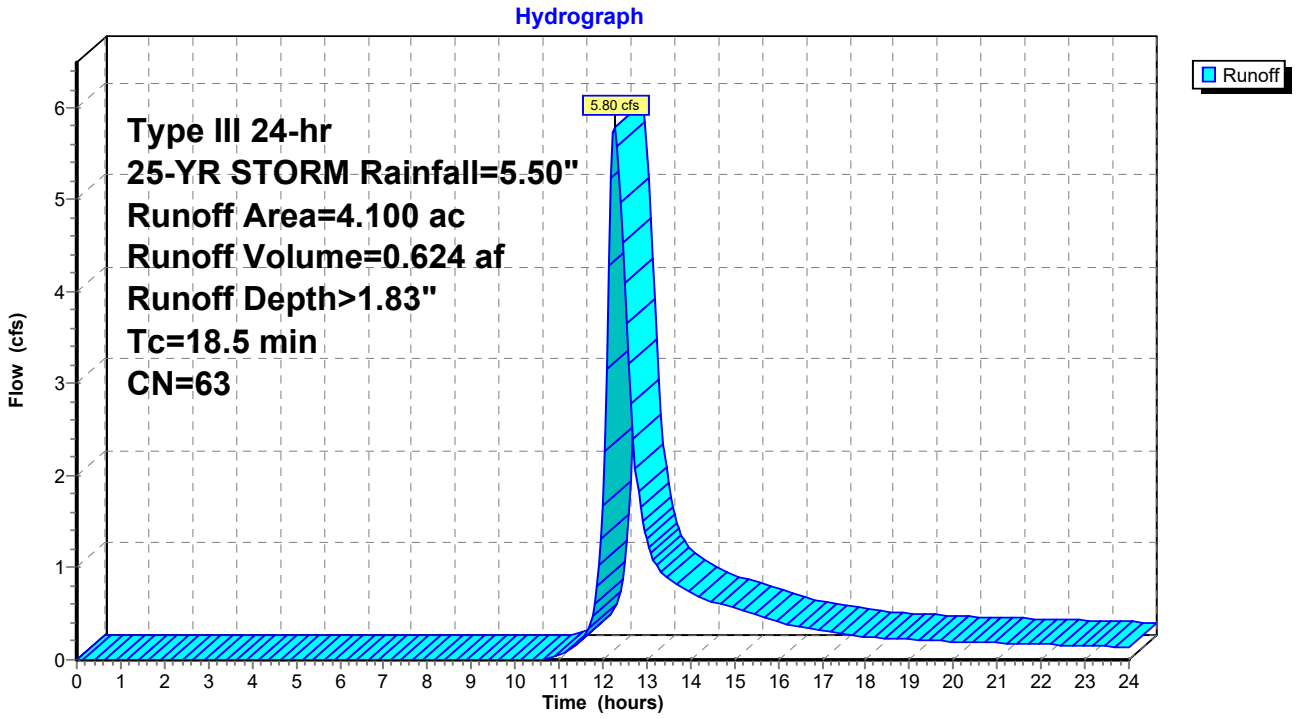
Runoff = 5.80 cfs @ 12.27 hrs, Volume= 0.624 af, Depth> 1.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR STORM Rainfall=5.50"

	Area (ac)	CN	Description
*	4.100	63	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.5					**Direct Entry, NRCS Part 630**

Subcatchment 7:



Summary for Subcatchment 8-10:

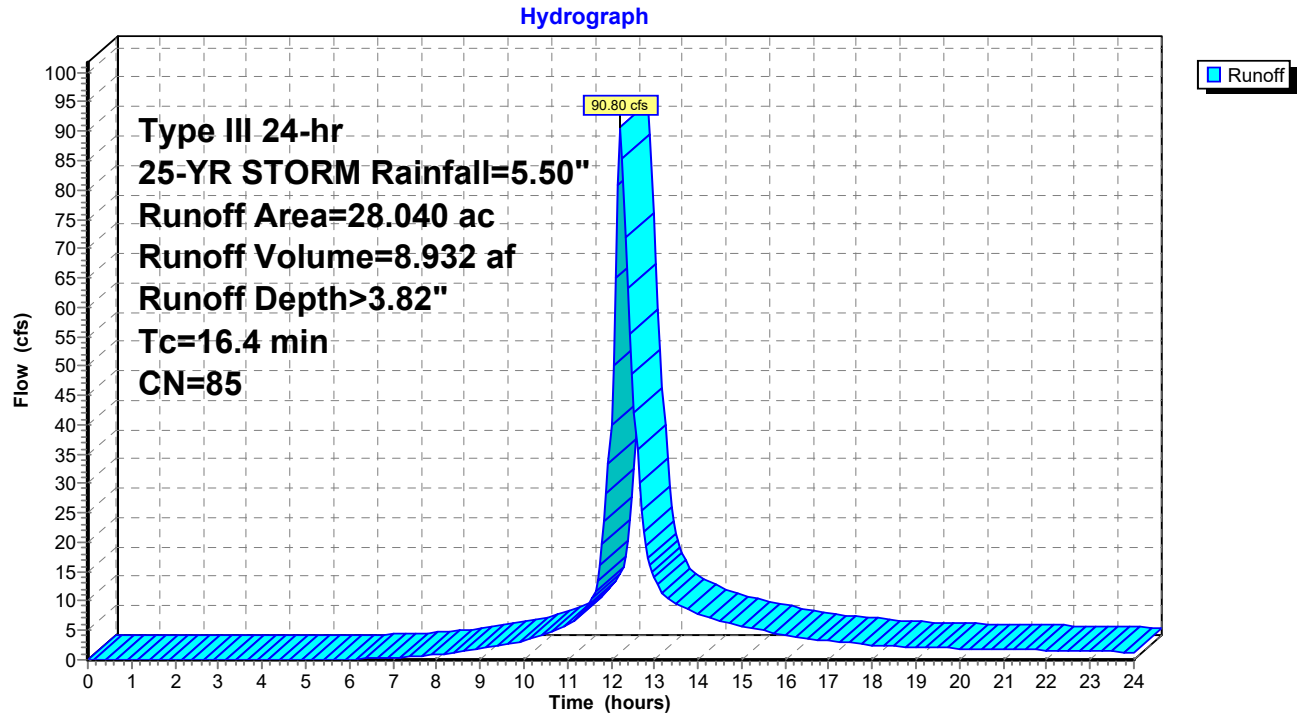
Runoff = 90.80 cfs @ 12.22 hrs, Volume= 8.932 af, Depth> 3.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR STORM Rainfall=5.50"

	Area (ac)	CN	Description
*	28.040	85	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.4					**Direct Entry, SCS TR-55**

Subcatchment 8-10:



Summary for Subcatchment 9:

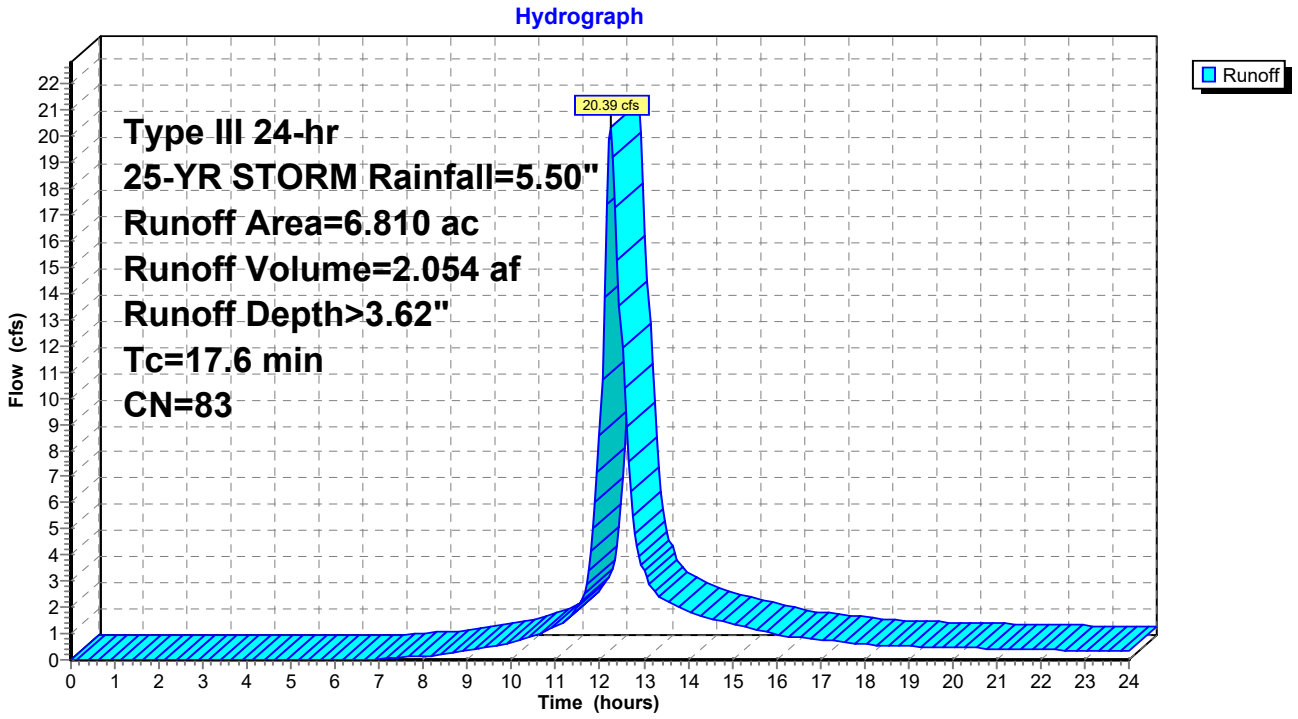
Runoff = 20.39 cfs @ 12.24 hrs, Volume= 2.054 af, Depth> 3.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR STORM Rainfall=5.50"

	Area (ac)	CN	Description
*	6.810	83	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6					**Direct Entry, NRCS Part 630**

Subcatchment 9:



Summary for Subcatchment 11:

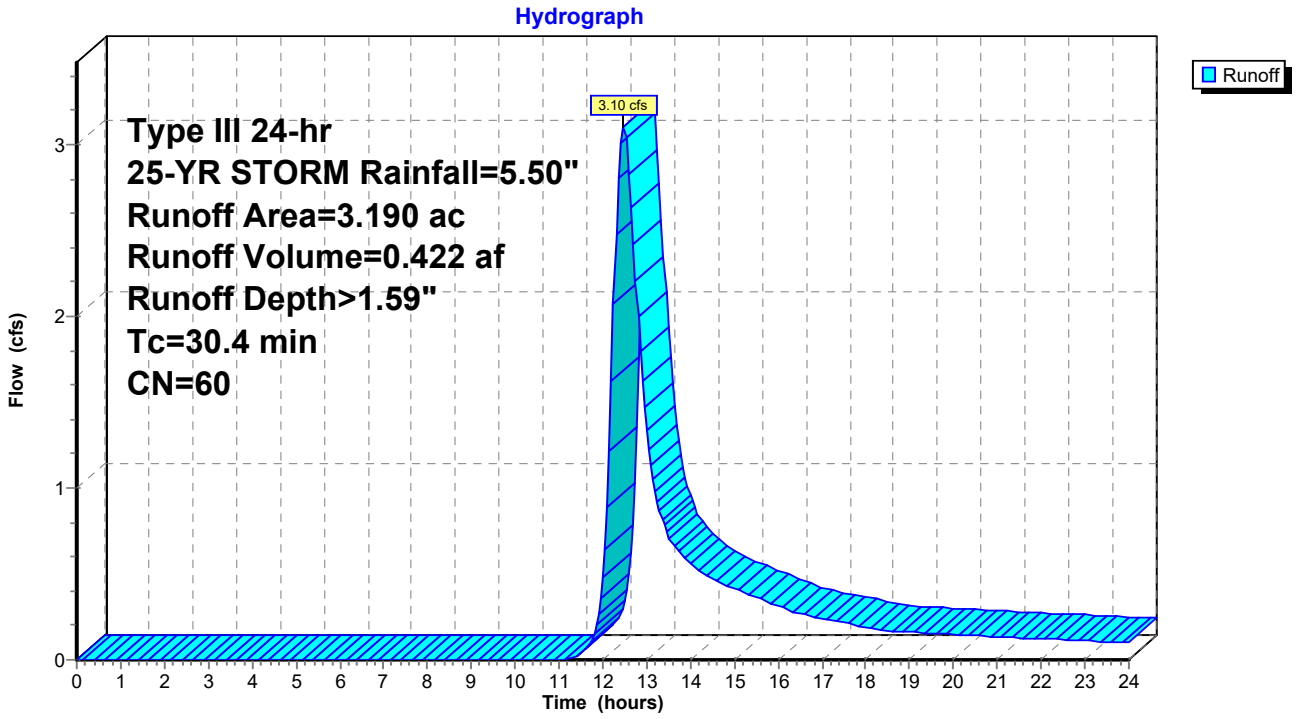
Runoff = 3.10 cfs @ 12.47 hrs, Volume= 0.422 af, Depth> 1.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR STORM Rainfall=5.50"

	Area (ac)	CN	Description
*	3.190	60	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.4					**Direct Entry, NRCS Part 630**

Subcatchment 11:



Summary for Subcatchment 12:

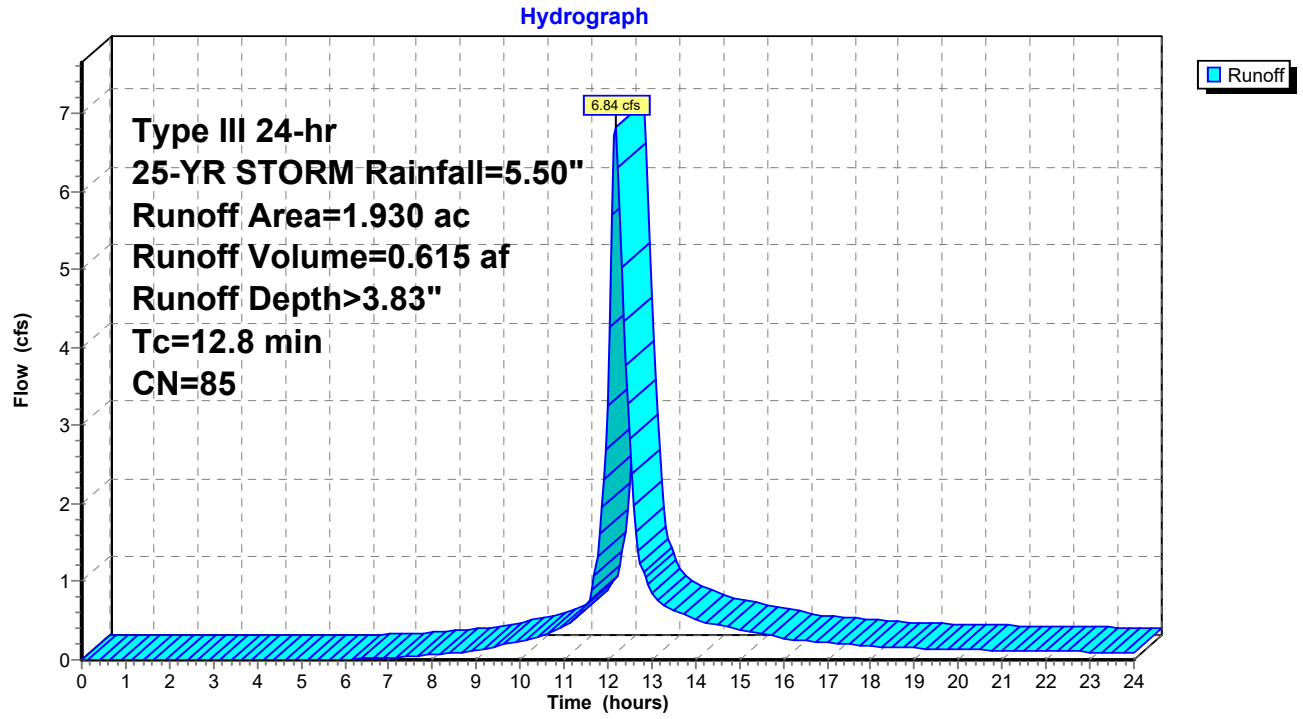
Runoff = 6.84 cfs @ 12.17 hrs, Volume= 0.615 af, Depth> 3.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR STORM Rainfall=5.50"

	Area (ac)	CN	Description
*	1.930	85	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8					**Direct Entry, NRCS Part 630**

Subcatchment 12:



Summary for Subcatchment 13:

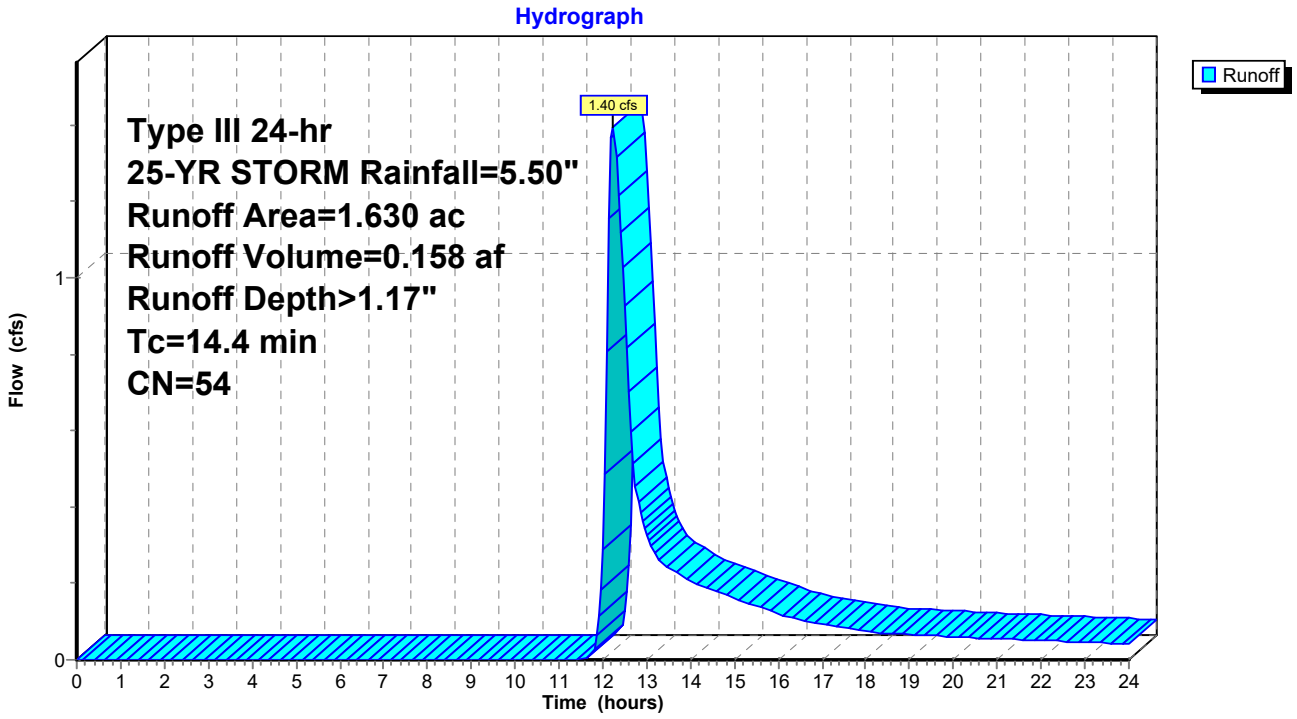
Runoff = 1.40 cfs @ 12.24 hrs, Volume= 0.158 af, Depth> 1.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR STORM Rainfall=5.50"

	Area (ac)	CN	Description
*	1.630	54	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4					**Direct Entry, NRCS Part 630**

Subcatchment 13:



Summary for Subcatchment 14:

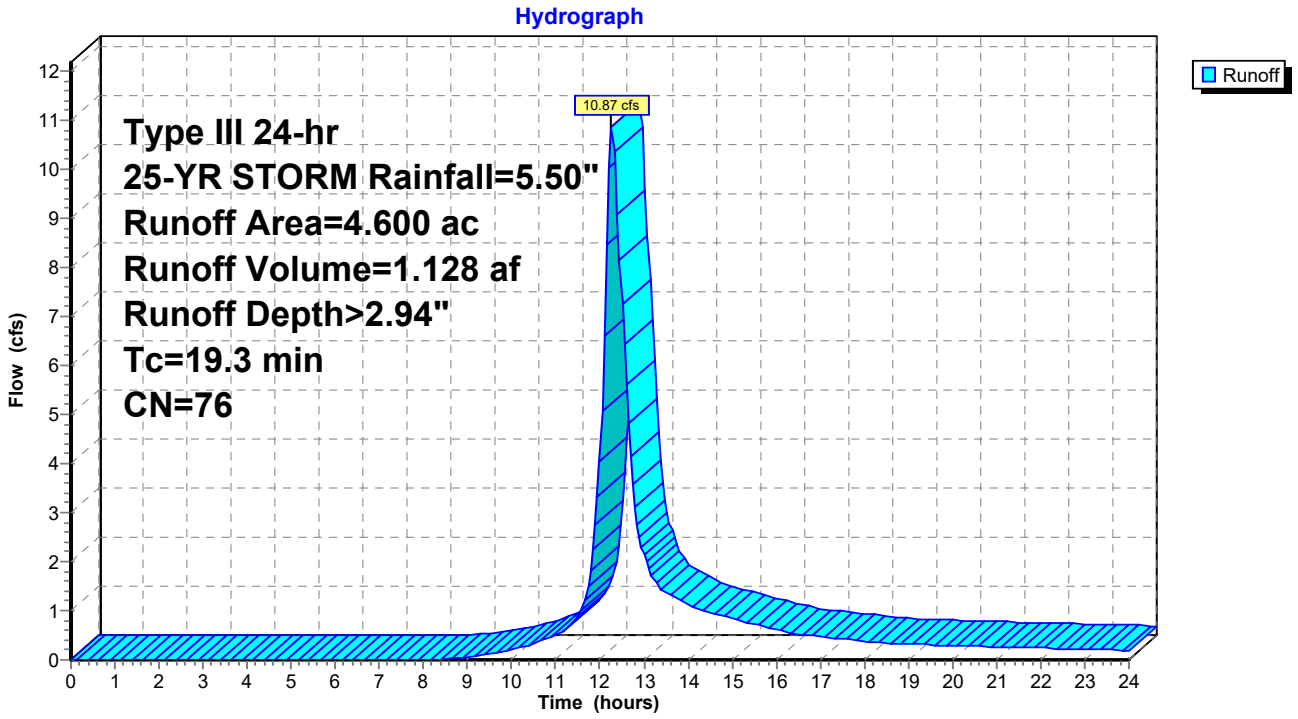
Runoff = 10.87 cfs @ 12.27 hrs, Volume= 1.128 af, Depth> 2.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR STORM Rainfall=5.50"

	Area (ac)	CN	Description
*	4.600	76	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.3					**Direct Entry, NRCS Part 630**

Subcatchment 14:



Summary for Subcatchment 15:

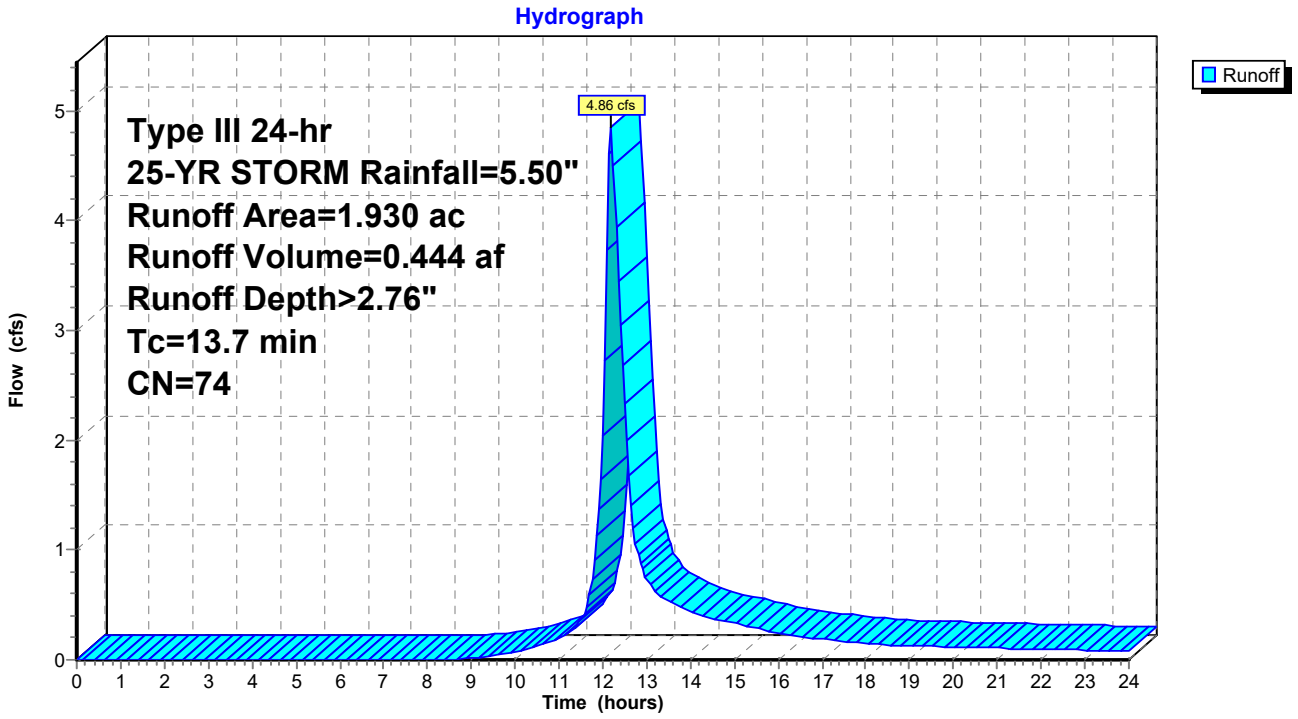
Runoff = 4.86 cfs @ 12.20 hrs, Volume= 0.444 af, Depth> 2.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YR STORM Rainfall=5.50"

	Area (ac)	CN	Description
*	1.930	74	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7					**Direct Entry, NRCS Part 630**

Subcatchment 15:



Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1: Runoff Area=1.280 ac Runoff Depth>3.54"
Tc=6.4 min CN=75 Runoff=5.16 cfs 0.377 af

Subcatchment2a: Runoff Area=3.850 ac Runoff Depth>4.15"
Tc=9.6 min CN=81 Runoff=16.24 cfs 1.332 af

Subcatchment2b: Runoff Area=4.020 ac Runoff Depth>2.38"
Tc=13.9 min CN=63 Runoff=8.44 cfs 0.798 af

Subcatchment3: Runoff Area=7.890 ac Runoff Depth>3.43"
Tc=10.5 min CN=74 Runoff=27.11 cfs 2.257 af

Subcatchment4: Runoff Area=0.940 ac Runoff Depth>4.04"
Tc=12.7 min CN=80 Runoff=3.56 cfs 0.317 af

Subcatchment5: Runoff Area=1.680 ac Runoff Depth>4.91"
Tc=8.1 min CN=88 Runoff=8.58 cfs 0.687 af

Subcatchment7: Runoff Area=4.100 ac Runoff Depth>2.38"
Tc=18.5 min CN=63 Runoff=7.72 cfs 0.813 af

Subcatchment8-10: Runoff Area=28.040 ac Runoff Depth>4.57"
Tc=16.4 min CN=85 Runoff=107.96 cfs 10.689 af

Subcatchment9: Runoff Area=6.810 ac Runoff Depth>4.36"
Tc=17.6 min CN=83 Runoff=24.42 cfs 2.473 af

Subcatchment11: Runoff Area=3.190 ac Runoff Depth>2.10"
Tc=30.4 min CN=60 Runoff=4.23 cfs 0.559 af

Subcatchment12: Runoff Area=1.930 ac Runoff Depth>4.58"
Tc=12.8 min CN=85 Runoff=8.13 cfs 0.736 af

Subcatchment13: Runoff Area=1.630 ac Runoff Depth>1.60"
Tc=14.4 min CN=54 Runoff=2.08 cfs 0.218 af

Subcatchment14: Runoff Area=4.600 ac Runoff Depth>3.63"
Tc=19.3 min CN=76 Runoff=13.41 cfs 1.390 af

Subcatchment15: Runoff Area=1.930 ac Runoff Depth>3.43"
Tc=13.7 min CN=74 Runoff=6.05 cfs 0.552 af

Total Runoff Area = 71.890 ac Runoff Volume = 23.198 af Average Runoff Depth = 3.87"

Summary for Subcatchment 1:

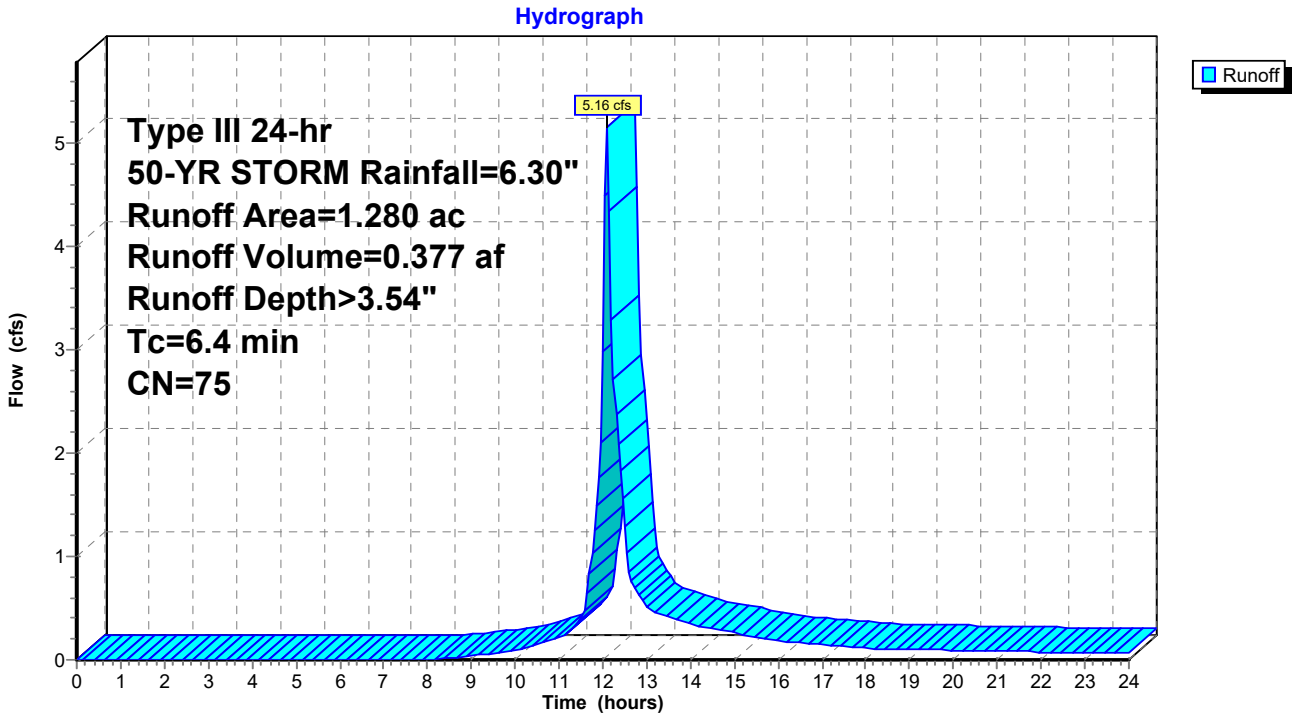
Runoff = 5.16 cfs @ 12.10 hrs, Volume= 0.377 af, Depth> 3.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR STORM Rainfall=6.30"

	Area (ac)	CN	Description
*	1.280	75	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4					**Direct Entry, NRCS Part 630**

Subcatchment 1:



Summary for Subcatchment 2a:

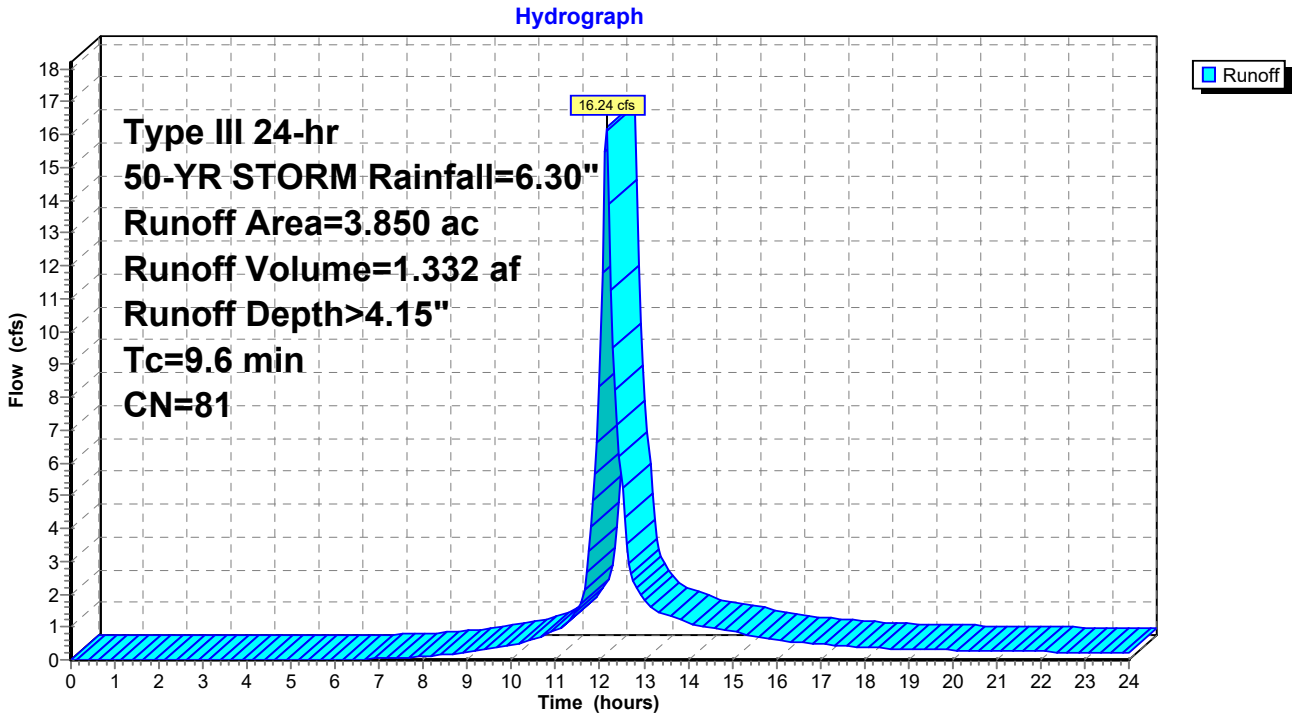
Runoff = 16.24 cfs @ 12.14 hrs, Volume= 1.332 af, Depth> 4.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR STORM Rainfall=6.30"

	Area (ac)	CN	Description
*	3.850	81	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6					**Direct Entry, NRCS Part 630**

Subcatchment 2a:



Summary for Subcatchment 2b:

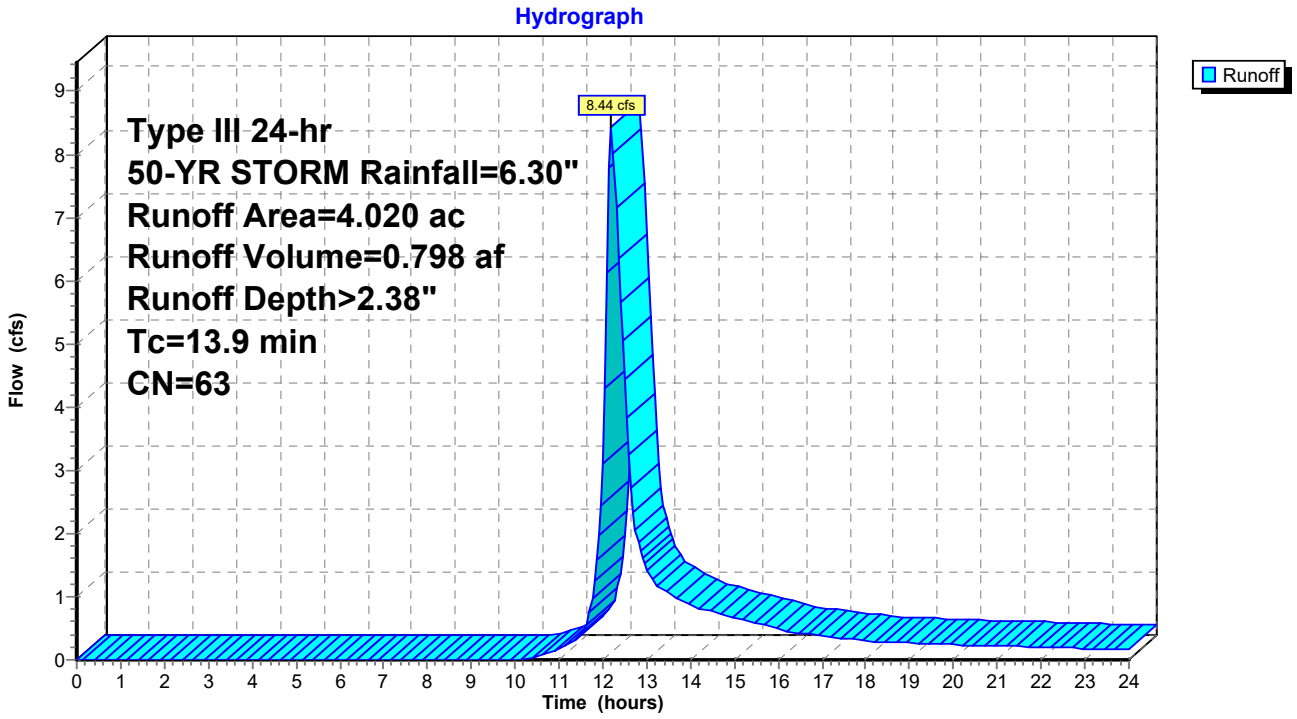
Runoff = 8.44 cfs @ 12.21 hrs, Volume= 0.798 af, Depth> 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR STORM Rainfall=6.30"

	Area (ac)	CN	Description
*	4.020	63	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9					**Direct Entry, NRCS Part 630**

Subcatchment 2b:



Summary for Subcatchment 3:

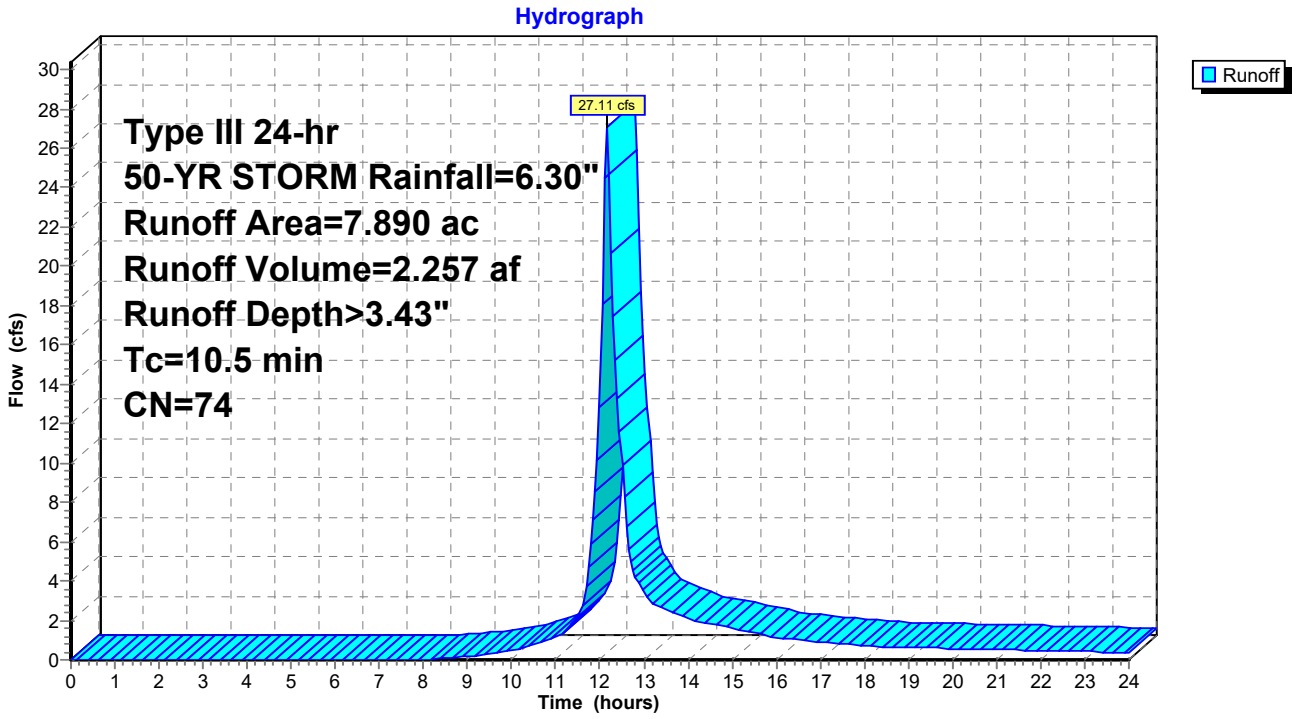
Runoff = 27.11 cfs @ 12.15 hrs, Volume= 2.257 af, Depth> 3.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR STORM Rainfall=6.30"

	Area (ac)	CN	Description
*	7.890	74	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5					**Direct Entry, NRCS Part 630**

Subcatchment 3:



Summary for Subcatchment 4:

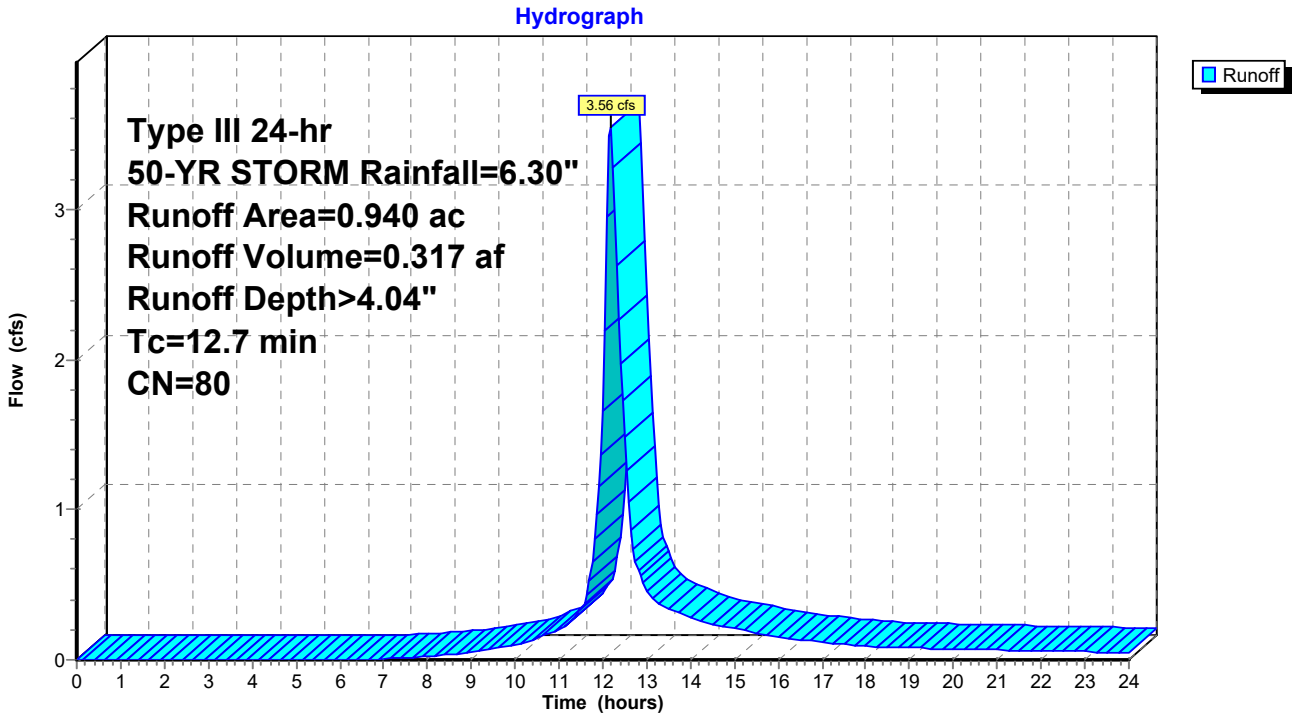
Runoff = 3.56 cfs @ 12.17 hrs, Volume= 0.317 af, Depth> 4.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR STORM Rainfall=6.30"

	Area (ac)	CN	Description
*	0.940	80	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7					**Direct Entry, NRCS Part 630**

Subcatchment 4:



Summary for Subcatchment 5:

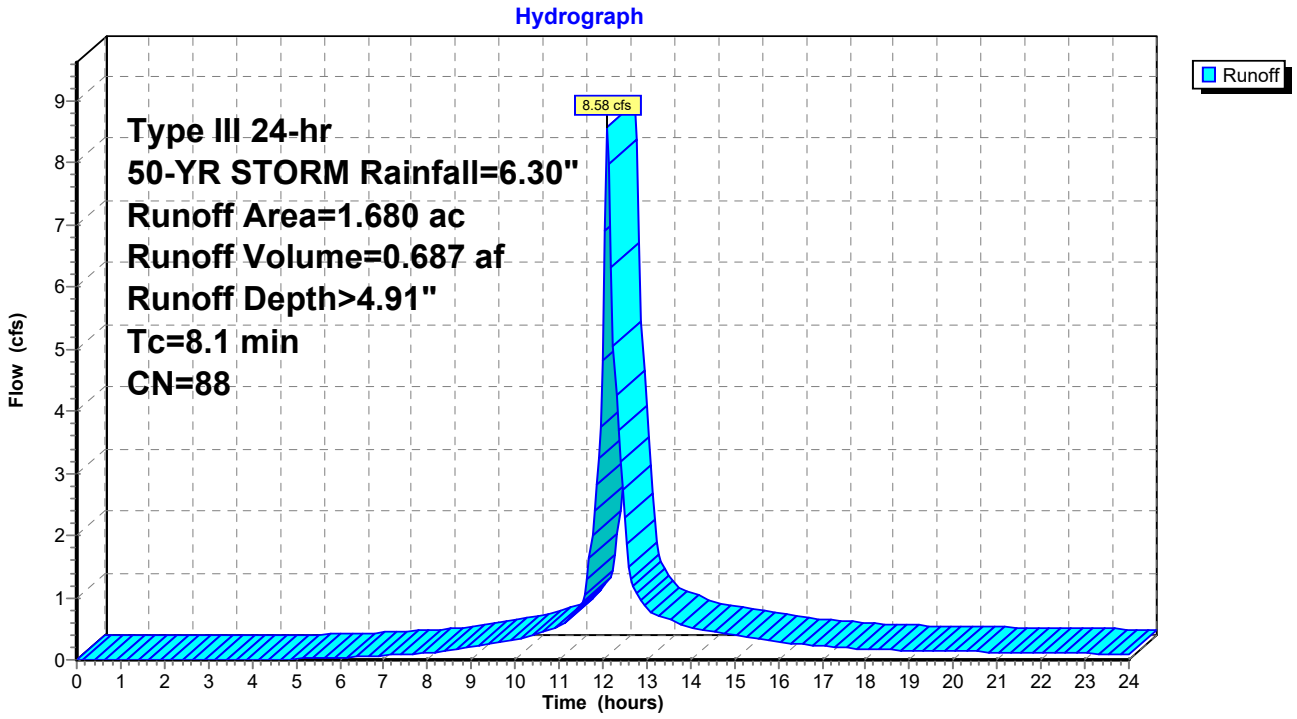
Runoff = 8.58 cfs @ 12.11 hrs, Volume= 0.687 af, Depth> 4.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR STORM Rainfall=6.30"

	Area (ac)	CN	Description
*	1.680	88	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1					**Direct Entry, NRCS Part 630**

Subcatchment 5:



Summary for Subcatchment 7:

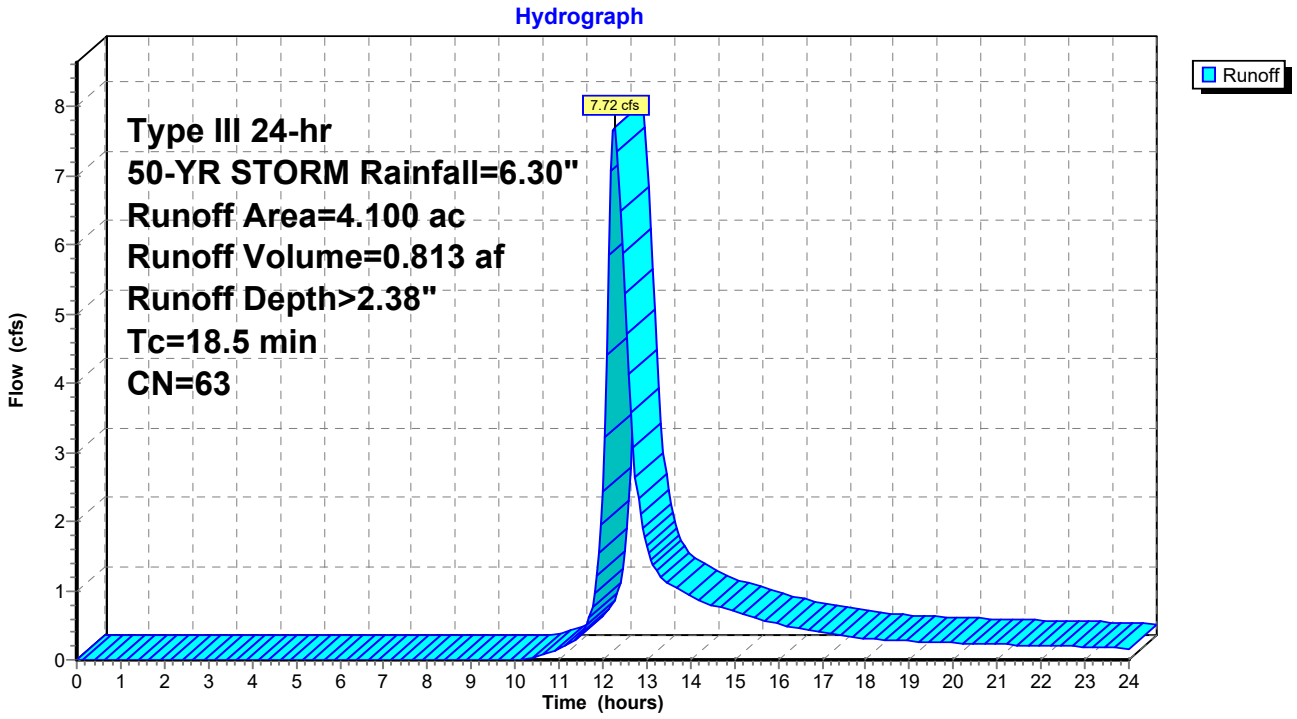
Runoff = 7.72 cfs @ 12.27 hrs, Volume= 0.813 af, Depth> 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR STORM Rainfall=6.30"

	Area (ac)	CN	Description
*	4.100	63	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.5					**Direct Entry, NRCS Part 630**

Subcatchment 7:



Summary for Subcatchment 8-10:

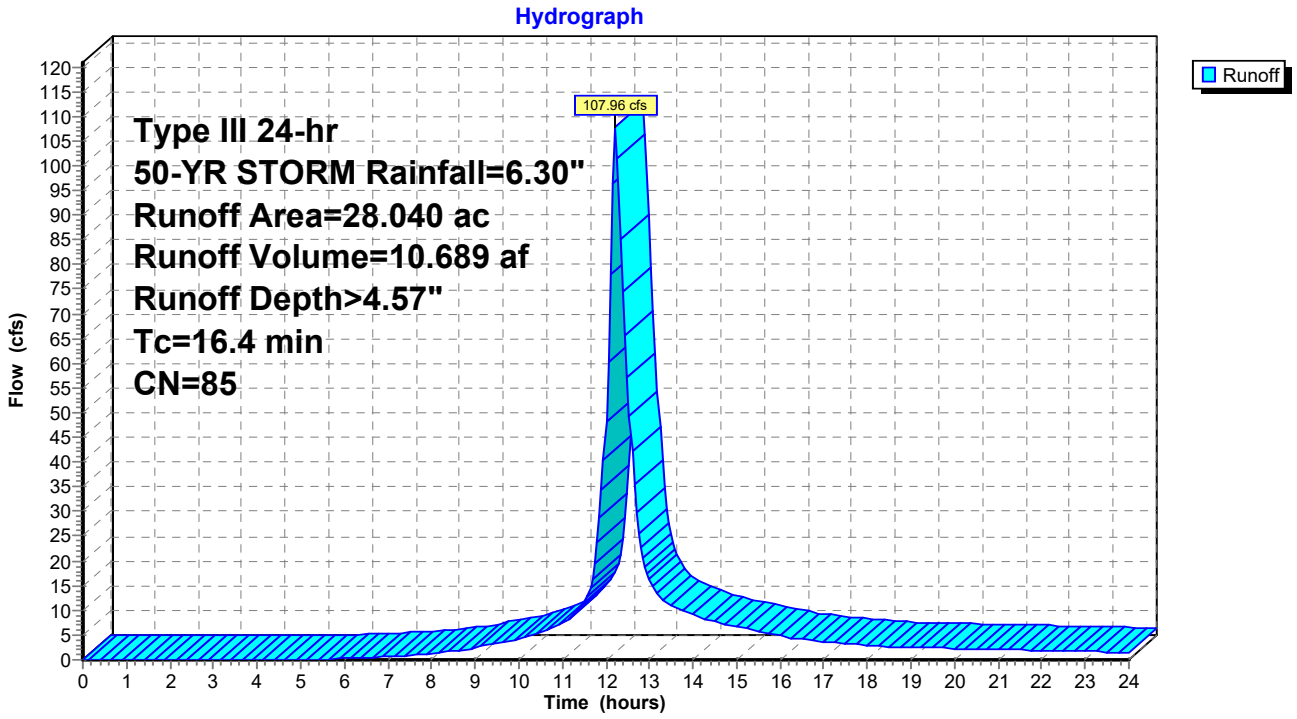
Runoff = 107.96 cfs @ 12.22 hrs, Volume= 10.689 af, Depth> 4.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR STORM Rainfall=6.30"

	Area (ac)	CN	Description
*	28.040	85	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.4					**Direct Entry, SCS TR-55**

Subcatchment 8-10:



Summary for Subcatchment 9:

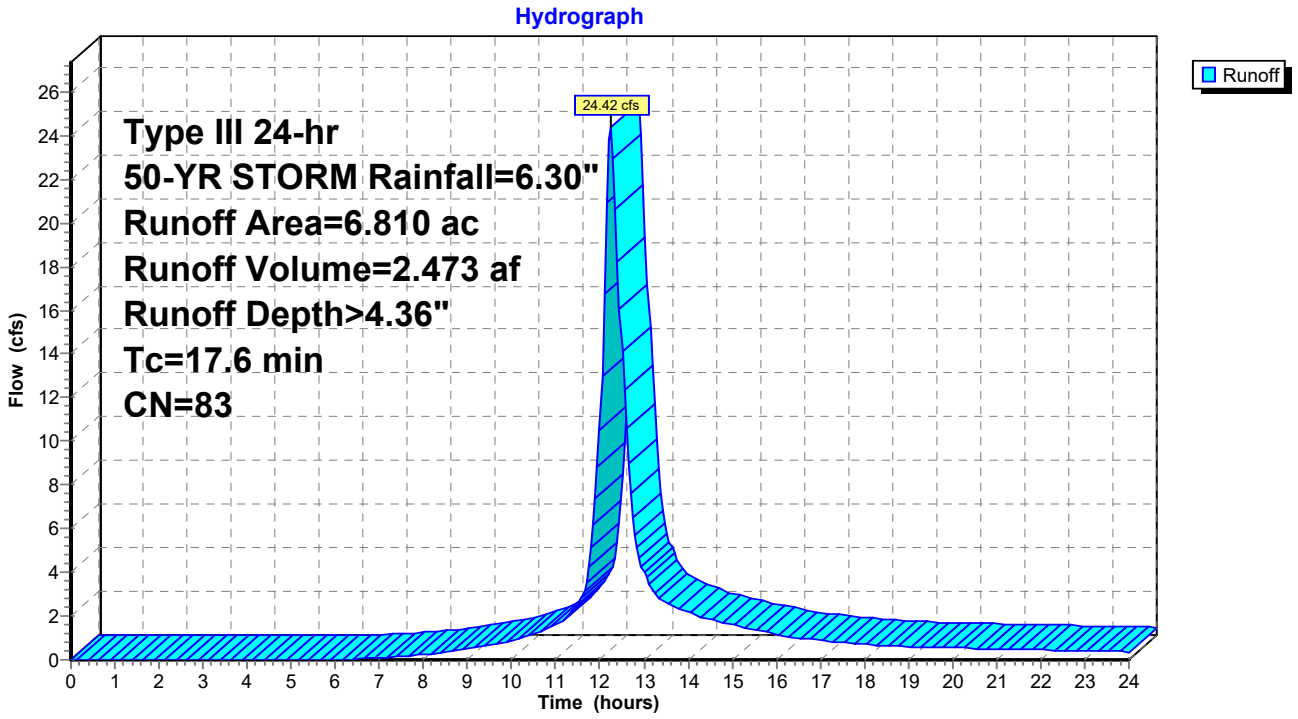
Runoff = 24.42 cfs @ 12.24 hrs, Volume= 2.473 af, Depth> 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR STORM Rainfall=6.30"

	Area (ac)	CN	Description
*	6.810	83	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6					**Direct Entry, NRCS Part 630**

Subcatchment 9:



Summary for Subcatchment 11:

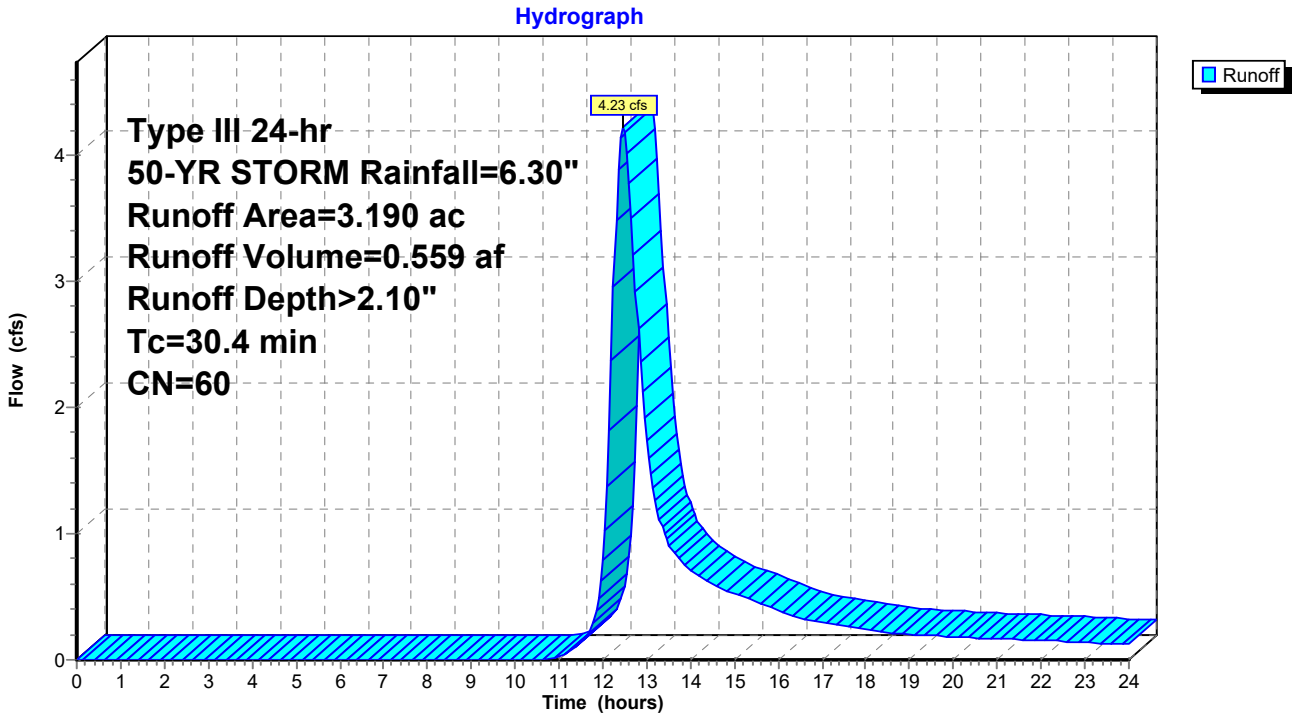
Runoff = 4.23 cfs @ 12.46 hrs, Volume= 0.559 af, Depth> 2.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR STORM Rainfall=6.30"

	Area (ac)	CN	Description
*	3.190	60	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.4					**Direct Entry, NRCS Part 630**

Subcatchment 11:



Summary for Subcatchment 12:

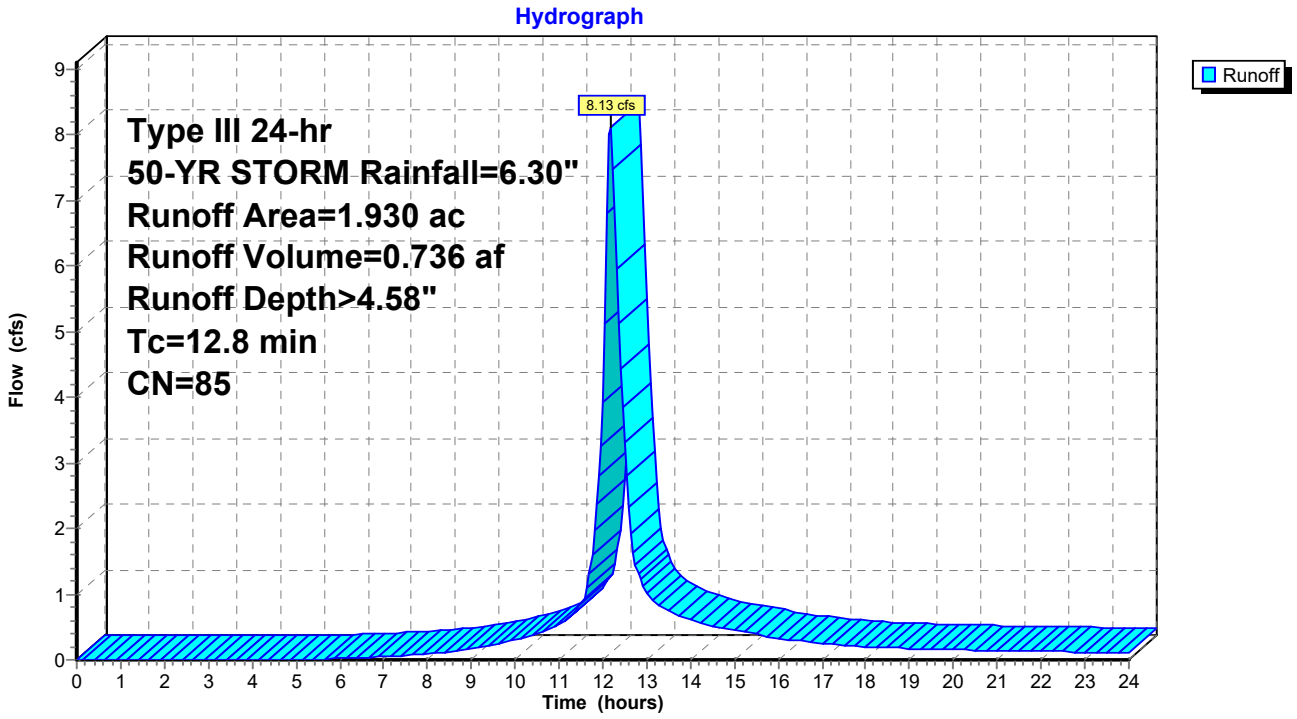
Runoff = 8.13 cfs @ 12.17 hrs, Volume= 0.736 af, Depth> 4.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR STORM Rainfall=6.30"

	Area (ac)	CN	Description
*	1.930	85	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8					**Direct Entry, NRCS Part 630**

Subcatchment 12:



Summary for Subcatchment 13:

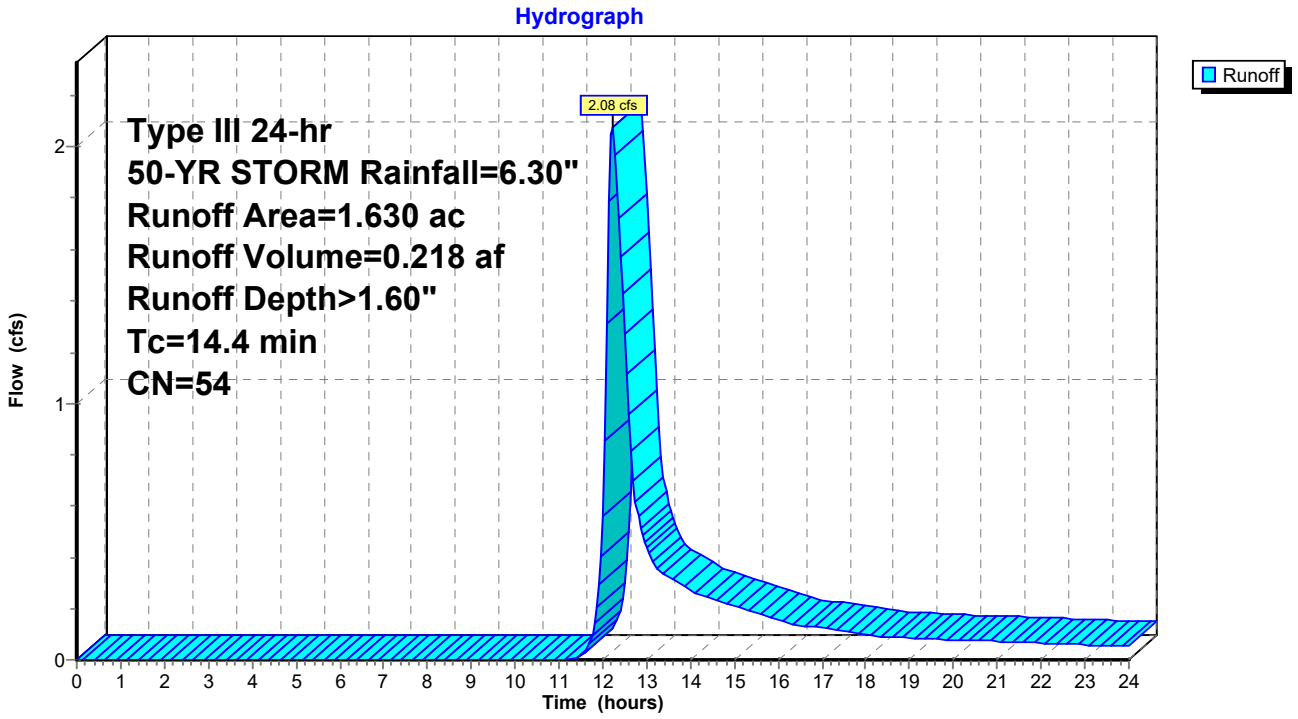
Runoff = 2.08 cfs @ 12.22 hrs, Volume= 0.218 af, Depth> 1.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR STORM Rainfall=6.30"

	Area (ac)	CN	Description
*	1.630	54	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4					**Direct Entry, NRCS Part 630**

Subcatchment 13:



Summary for Subcatchment 14:

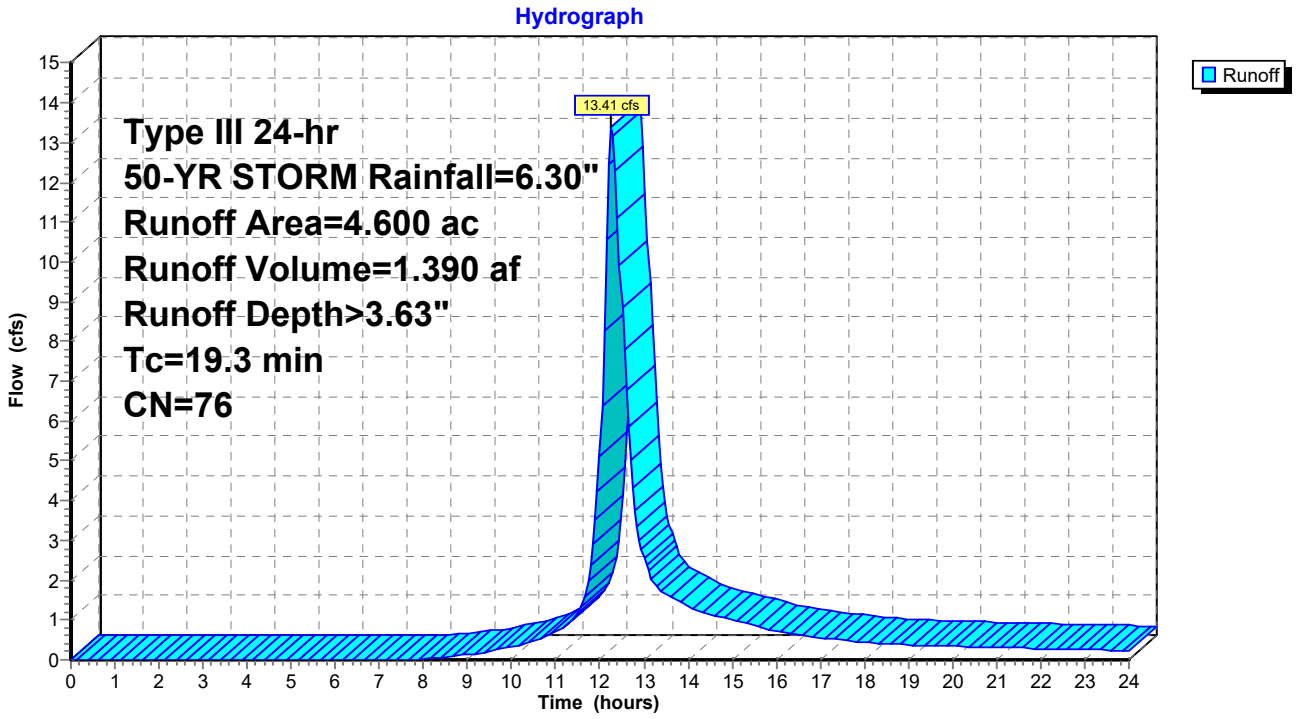
Runoff = 13.41 cfs @ 12.27 hrs, Volume= 1.390 af, Depth> 3.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR STORM Rainfall=6.30"

	Area (ac)	CN	Description
*	4.600	76	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.3					**Direct Entry, NRCS Part 630**

Subcatchment 14:



Summary for Subcatchment 15:

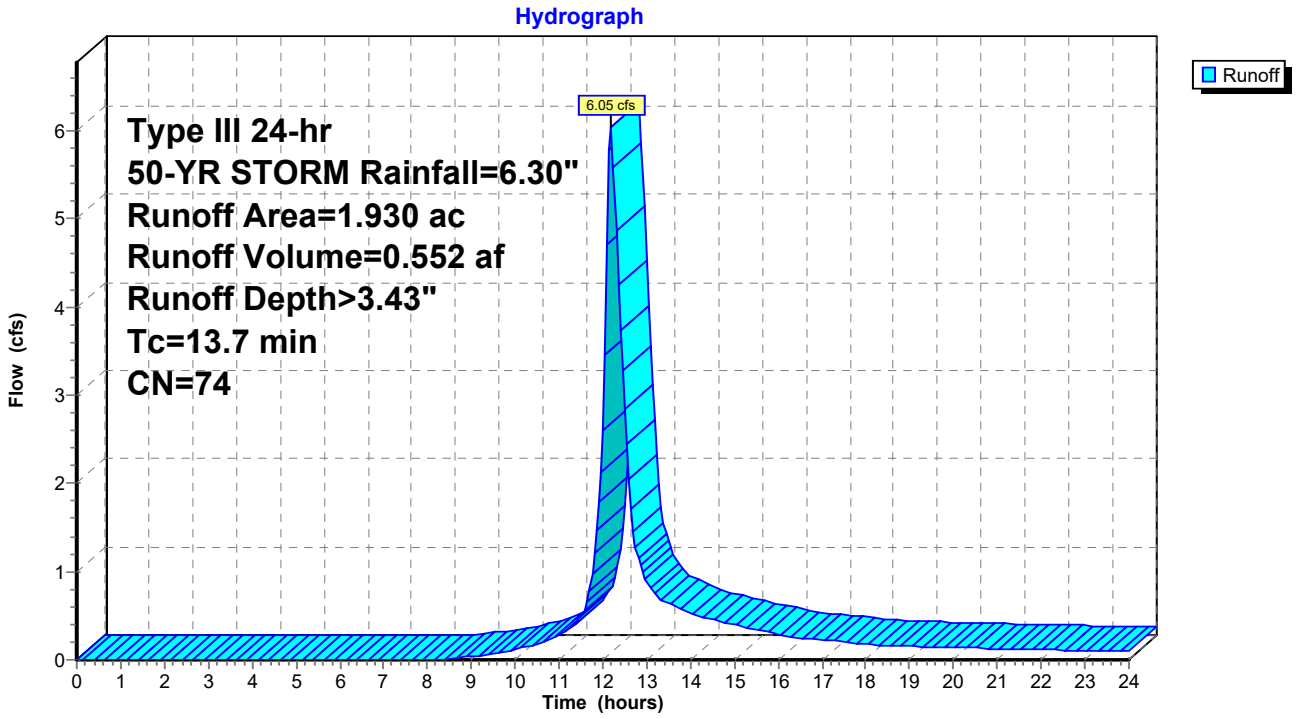
Runoff = 6.05 cfs @ 12.19 hrs, Volume= 0.552 af, Depth> 3.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-YR STORM Rainfall=6.30"

	Area (ac)	CN	Description
*	1.930	74	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7					**Direct Entry, NRCS Part 630**

Subcatchment 15:



Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1: Runoff Area=1.280 ac Runoff Depth>4.15"
Tc=6.4 min CN=75 Runoff=6.04 cfs 0.442 af

Subcatchment2a: Runoff Area=3.850 ac Runoff Depth>4.80"
Tc=9.6 min CN=81 Runoff=18.69 cfs 1.539 af

Subcatchment2b: Runoff Area=4.020 ac Runoff Depth>2.89"
Tc=13.9 min CN=63 Runoff=10.38 cfs 0.969 af

Subcatchment3: Runoff Area=7.890 ac Runoff Depth>4.03"
Tc=10.5 min CN=74 Runoff=31.86 cfs 2.653 af

Subcatchment4: Runoff Area=0.940 ac Runoff Depth>4.68"
Tc=12.7 min CN=80 Runoff=4.11 cfs 0.367 af

Subcatchment5: Runoff Area=1.680 ac Runoff Depth>5.59"
Tc=8.1 min CN=88 Runoff=9.69 cfs 0.782 af

Subcatchment7: Runoff Area=4.100 ac Runoff Depth>2.89"
Tc=18.5 min CN=63 Runoff=9.49 cfs 0.987 af

Subcatchment8-10: Runoff Area=28.040 ac Runoff Depth>5.24"
Tc=16.4 min CN=85 Runoff=122.97 cfs 12.243 af

Subcatchment9: Runoff Area=6.810 ac Runoff Depth>5.01"
Tc=17.6 min CN=83 Runoff=27.96 cfs 2.845 af

Subcatchment11: Runoff Area=3.190 ac Runoff Depth>2.58"
Tc=30.4 min CN=60 Runoff=5.28 cfs 0.687 af

Subcatchment12: Runoff Area=1.930 ac Runoff Depth>5.24"
Tc=12.8 min CN=85 Runoff=9.26 cfs 0.843 af

Subcatchment13: Runoff Area=1.630 ac Runoff Depth>2.02"
Tc=14.4 min CN=54 Runoff=2.72 cfs 0.275 af

Subcatchment14: Runoff Area=4.600 ac Runoff Depth>4.24"
Tc=19.3 min CN=76 Runoff=15.67 cfs 1.626 af

Subcatchment15: Runoff Area=1.930 ac Runoff Depth>4.03"
Tc=13.7 min CN=74 Runoff=7.11 cfs 0.649 af

Total Runoff Area = 71.890 ac Runoff Volume = 26.907 af Average Runoff Depth = 4.49"

Summary for Subcatchment 1:

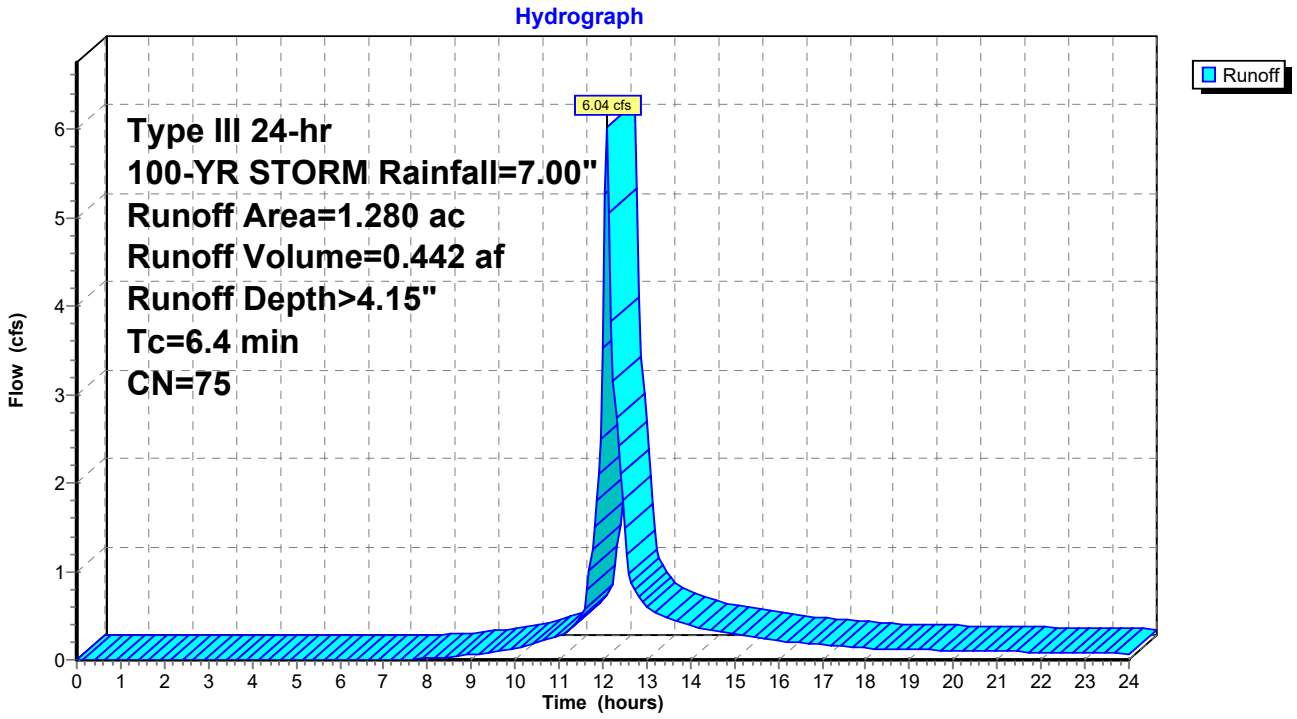
Runoff = 6.04 cfs @ 12.10 hrs, Volume= 0.442 af, Depth> 4.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR STORM Rainfall=7.00"

	Area (ac)	CN	Description
*	1.280	75	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4					**Direct Entry, NRCS Part 630**

Subcatchment 1:



Summary for Subcatchment 2a:

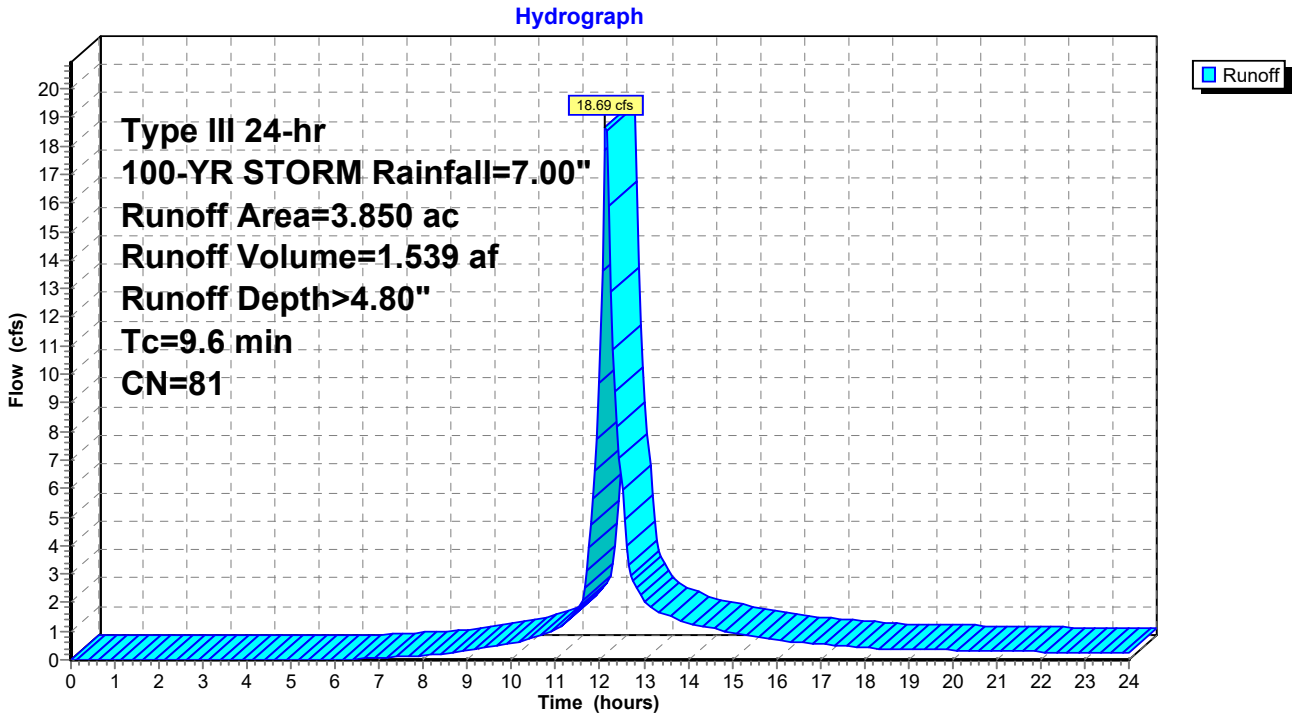
Runoff = 18.69 cfs @ 12.14 hrs, Volume= 1.539 af, Depth> 4.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR STORM Rainfall=7.00"

	Area (ac)	CN	Description
*	3.850	81	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6					**Direct Entry, NRCS Part 630**

Subcatchment 2a:



Summary for Subcatchment 2b:

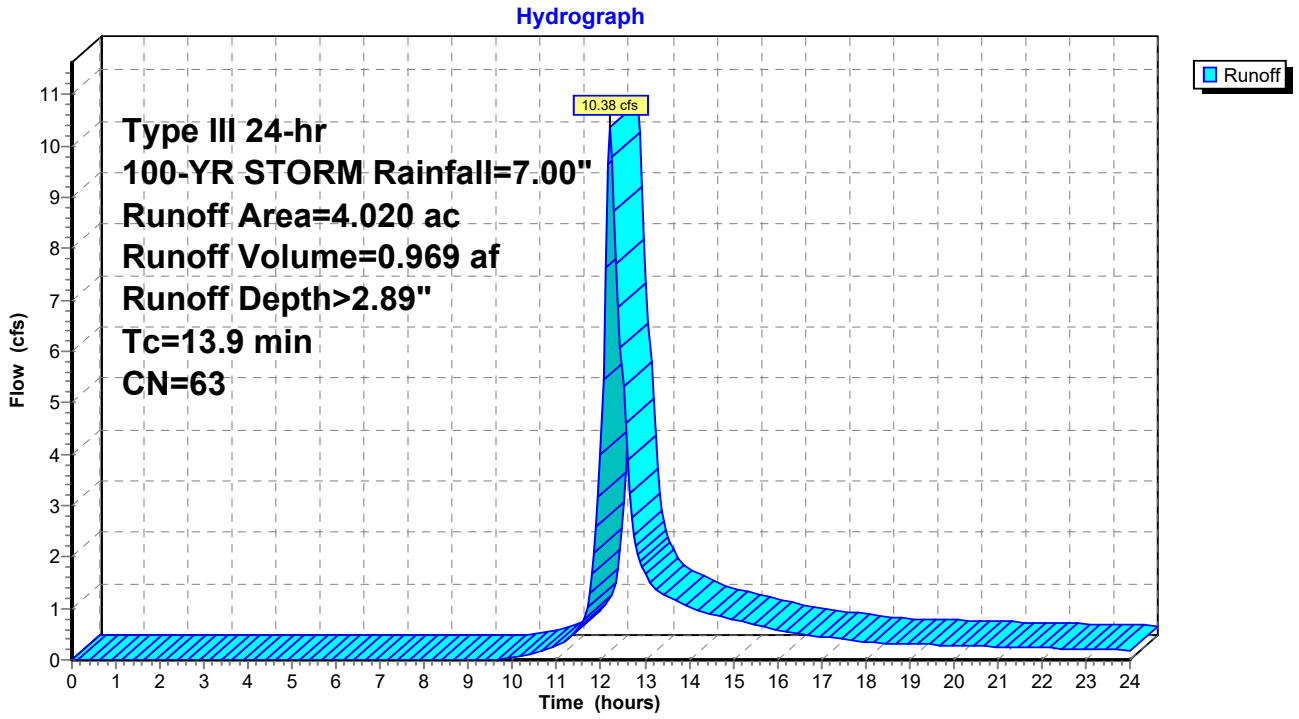
Runoff = 10.38 cfs @ 12.20 hrs, Volume= 0.969 af, Depth> 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR STORM Rainfall=7.00"

	Area (ac)	CN	Description
*	4.020	63	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9					**Direct Entry, NRCS Part 630**

Subcatchment 2b:



Summary for Subcatchment 3:

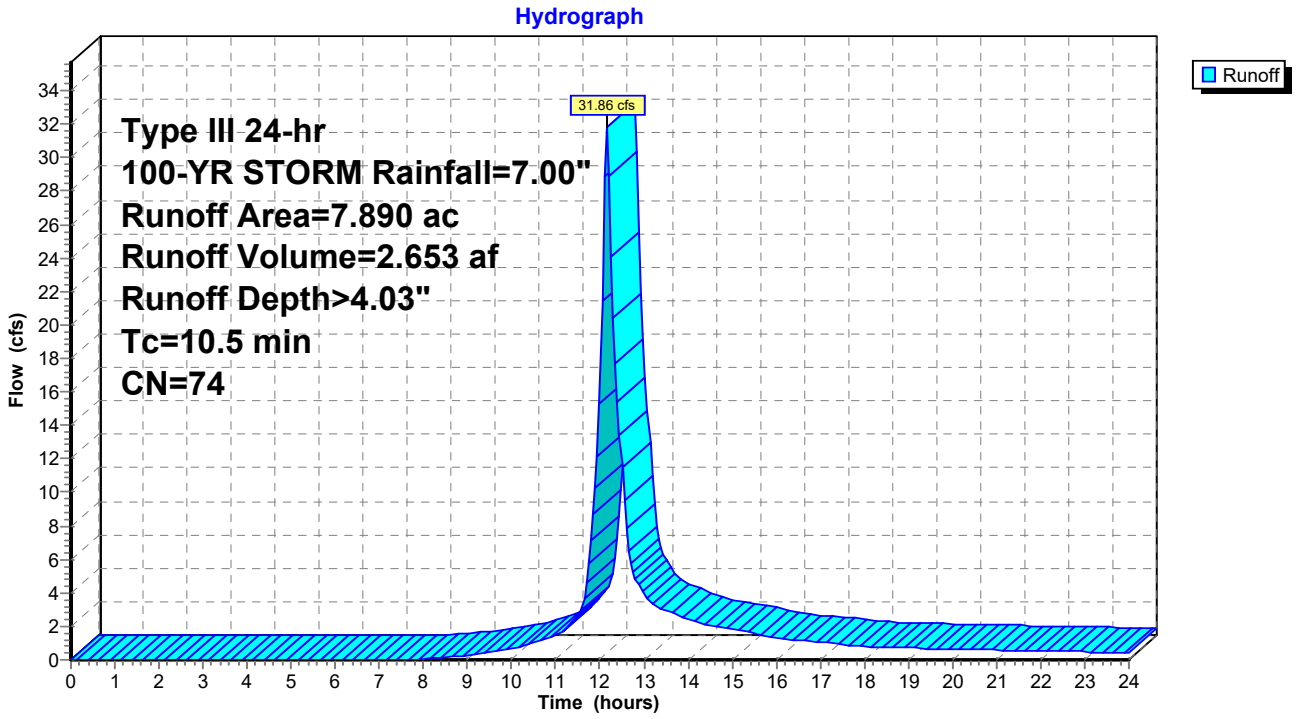
Runoff = 31.86 cfs @ 12.15 hrs, Volume= 2.653 af, Depth> 4.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR STORM Rainfall=7.00"

	Area (ac)	CN	Description
*	7.890	74	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5					**Direct Entry, NRCS Part 630**

Subcatchment 3:



Summary for Subcatchment 4:

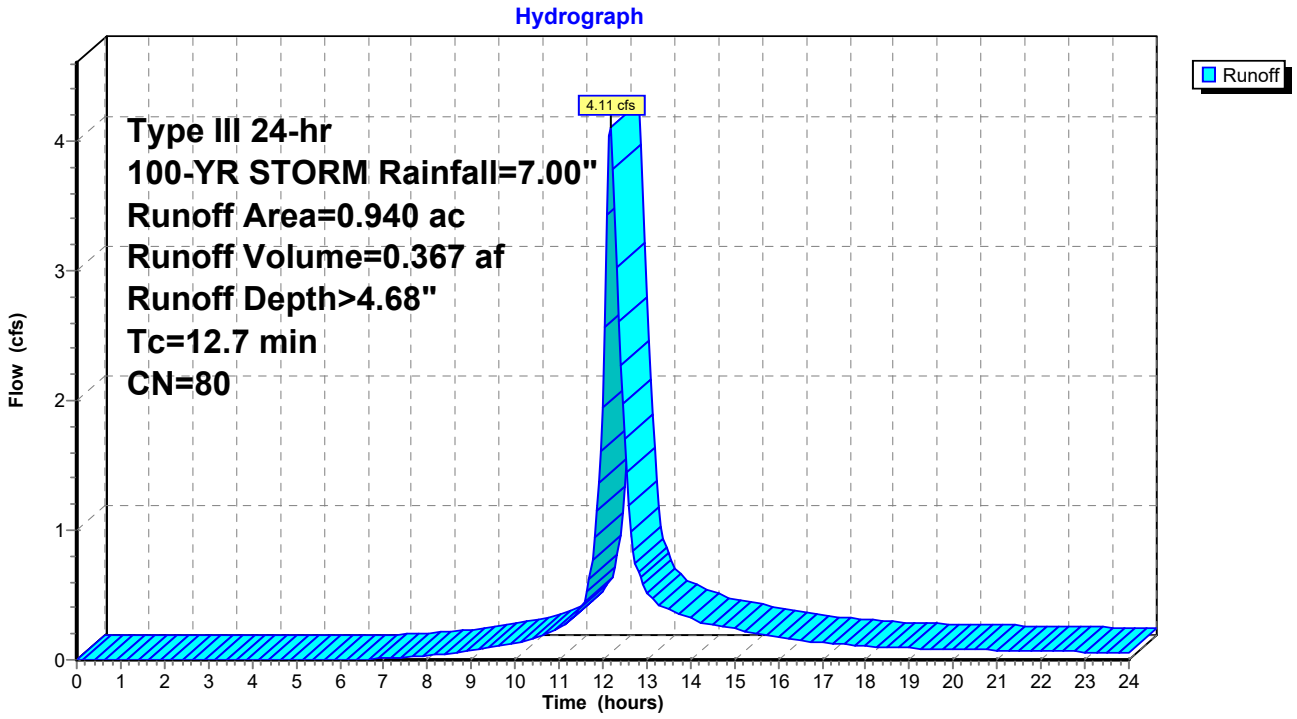
Runoff = 4.11 cfs @ 12.17 hrs, Volume= 0.367 af, Depth> 4.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR STORM Rainfall=7.00"

	Area (ac)	CN	Description
*	0.940	80	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7					**Direct Entry, NRCS Part 630**

Subcatchment 4:



Summary for Subcatchment 5:

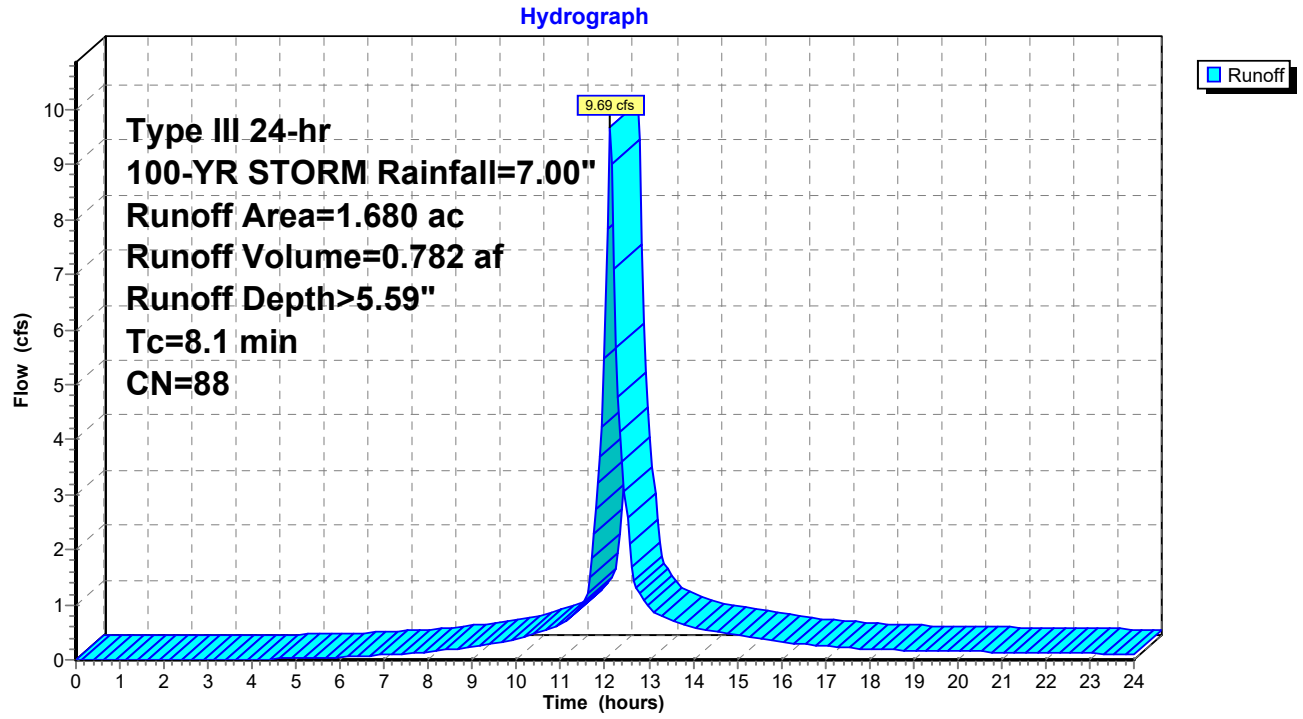
Runoff = 9.69 cfs @ 12.11 hrs, Volume= 0.782 af, Depth> 5.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR STORM Rainfall=7.00"

	Area (ac)	CN	Description
*	1.680	88	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1					**Direct Entry, NRCS Part 630**

Subcatchment 5:



Summary for Subcatchment 7:

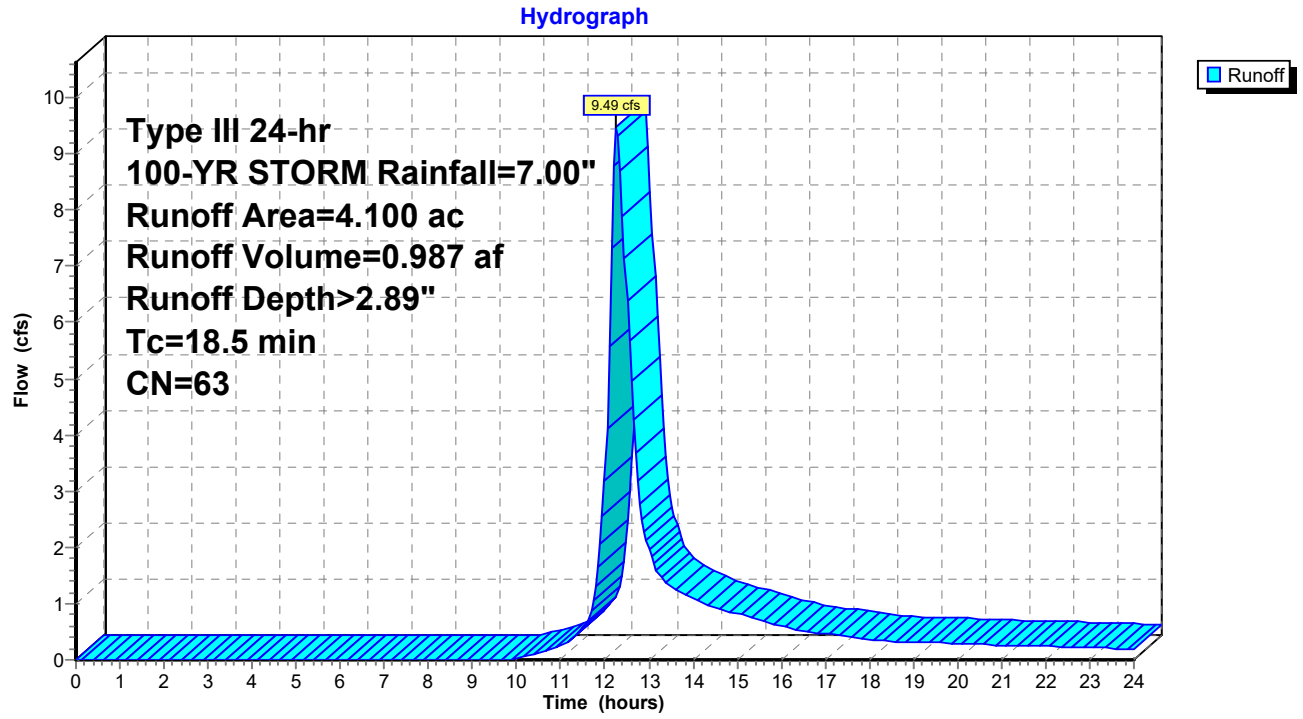
Runoff = 9.49 cfs @ 12.27 hrs, Volume= 0.987 af, Depth> 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR STORM Rainfall=7.00"

	Area (ac)	CN	Description
*	4.100	63	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.5					**Direct Entry, NRCS Part 630**

Subcatchment 7:



Summary for Subcatchment 8-10:

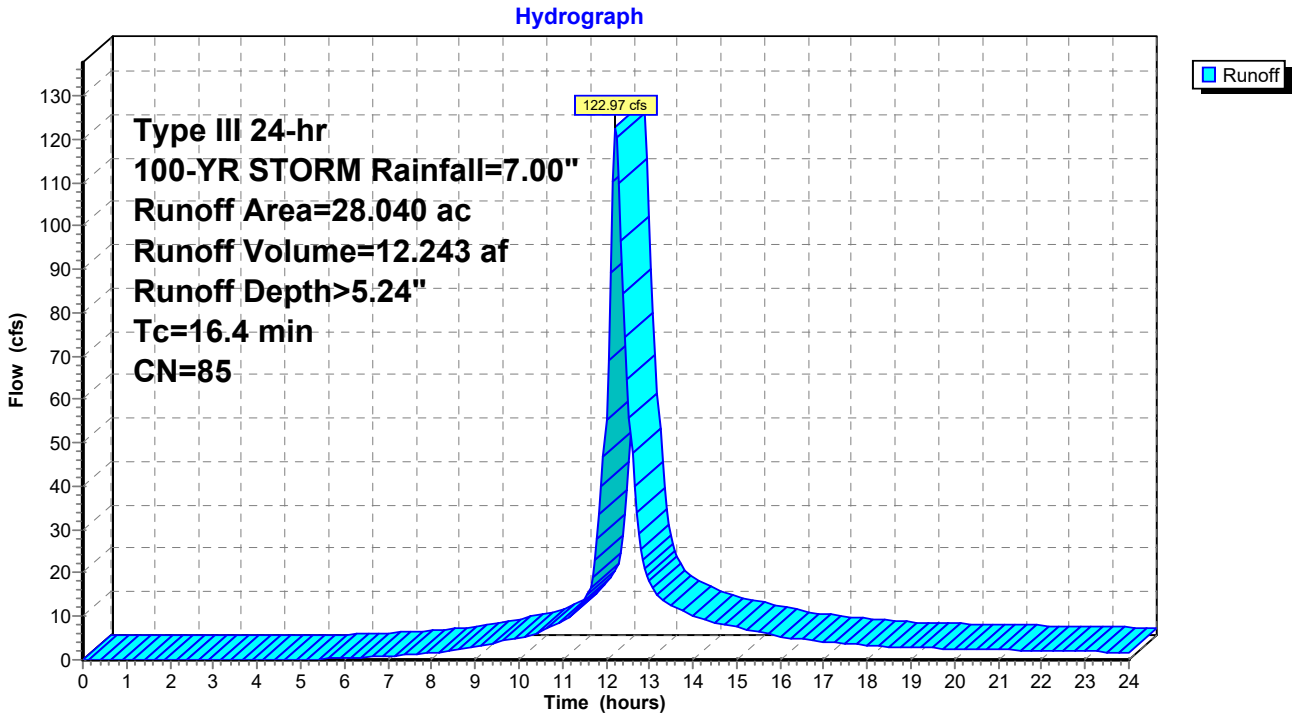
Runoff = 122.97 cfs @ 12.22 hrs, Volume= 12.243 af, Depth> 5.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR STORM Rainfall=7.00"

	Area (ac)	CN	Description
*	28.040	85	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.4					**Direct Entry, SCS TR-55**

Subcatchment 8-10:



Summary for Subcatchment 9:

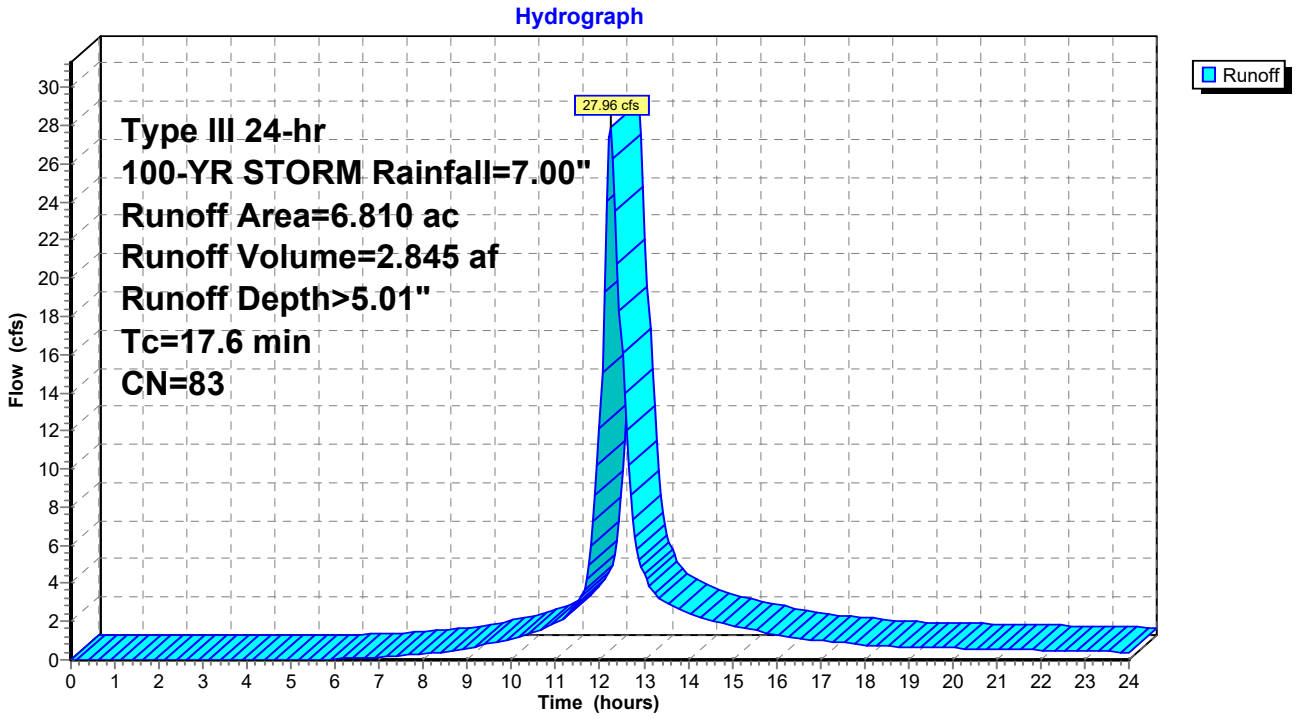
Runoff = 27.96 cfs @ 12.24 hrs, Volume= 2.845 af, Depth> 5.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR STORM Rainfall=7.00"

	Area (ac)	CN	Description
*	6.810	83	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6					**Direct Entry, NRCS Part 630**

Subcatchment 9:



Summary for Subcatchment 11:

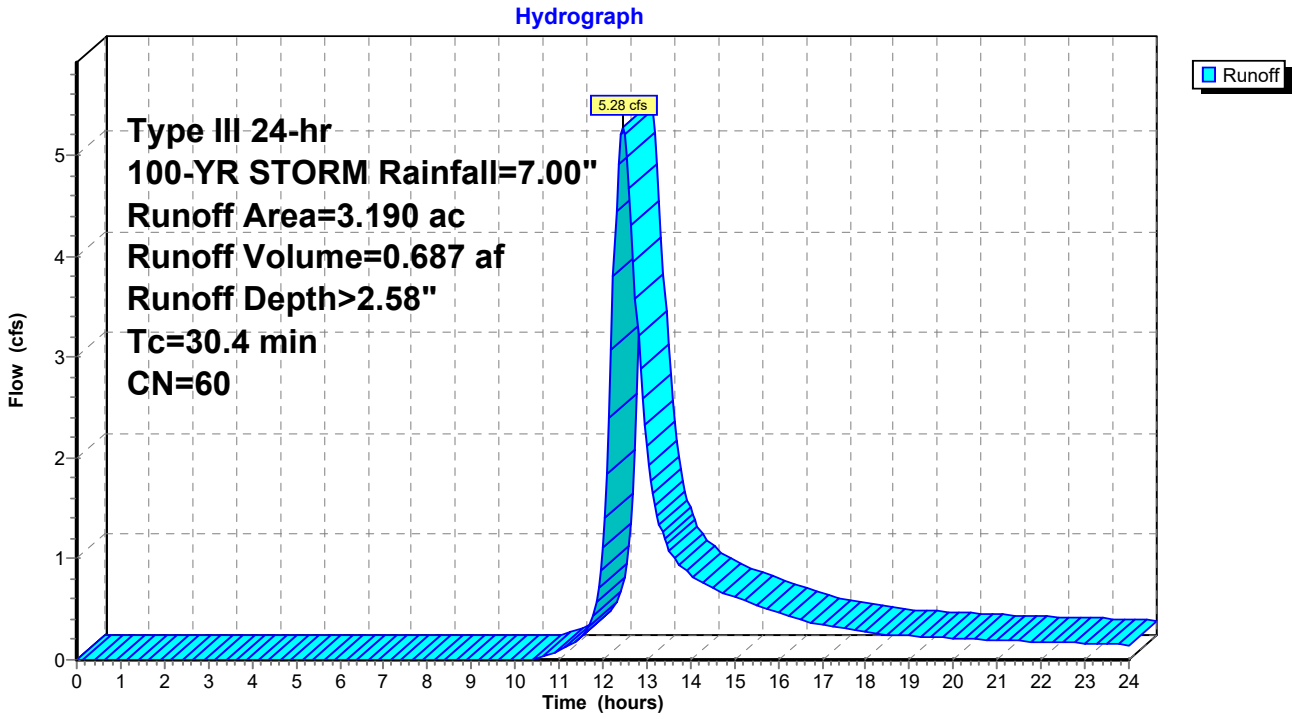
Runoff = 5.28 cfs @ 12.45 hrs, Volume= 0.687 af, Depth> 2.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR STORM Rainfall=7.00"

	Area (ac)	CN	Description
*	3.190	60	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.4					**Direct Entry, NRCS Part 630**

Subcatchment 11:



Summary for Subcatchment 12:

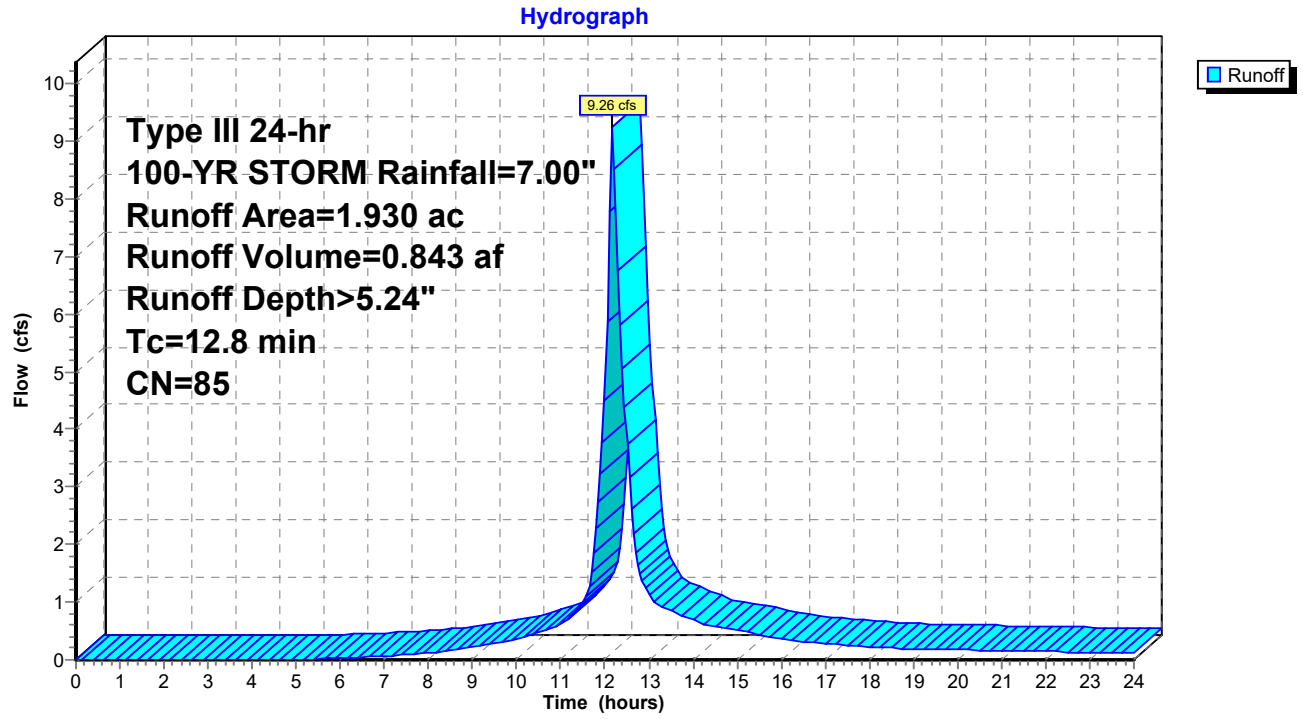
Runoff = 9.26 cfs @ 12.17 hrs, Volume= 0.843 af, Depth> 5.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR STORM Rainfall=7.00"

	Area (ac)	CN	Description
*	1.930	85	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8					**Direct Entry, NRCS Part 630**

Subcatchment 12:



Summary for Subcatchment 13:

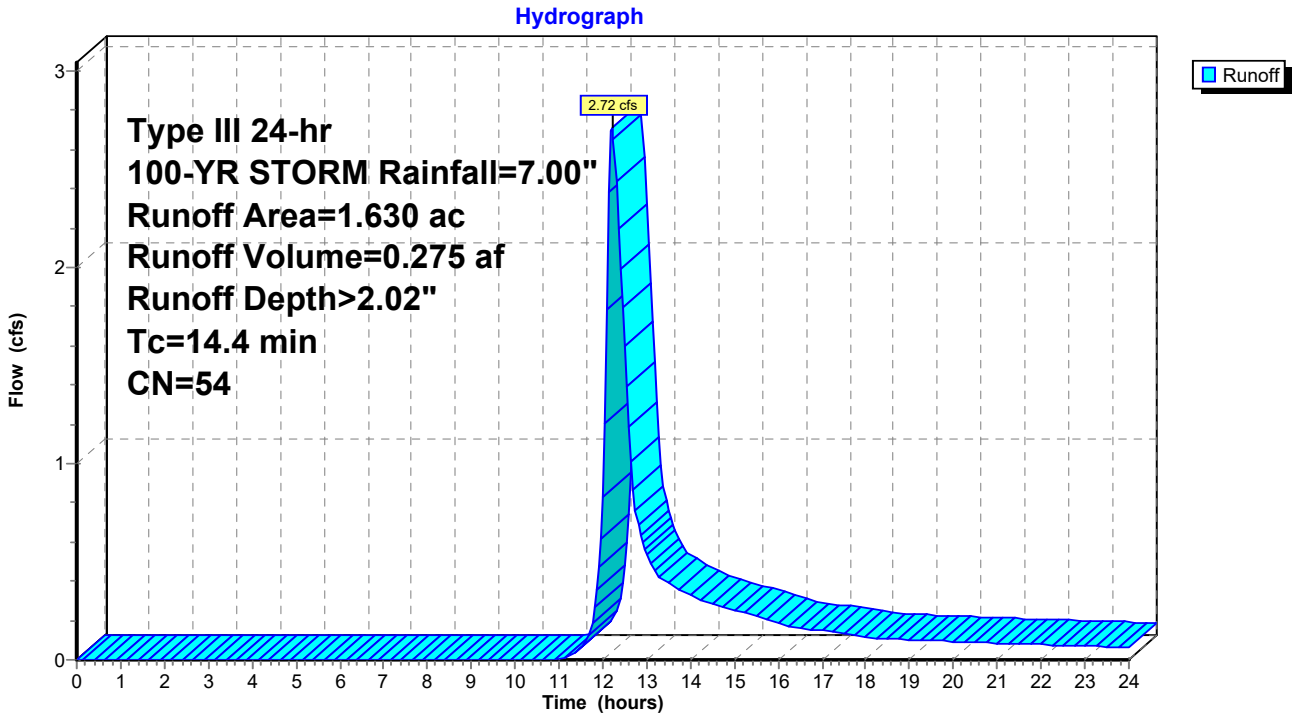
Runoff = 2.72 cfs @ 12.22 hrs, Volume= 0.275 af, Depth> 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR STORM Rainfall=7.00"

	Area (ac)	CN	Description
*	1.630	54	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4					**Direct Entry, NRCS Part 630**

Subcatchment 13:



Summary for Subcatchment 14:

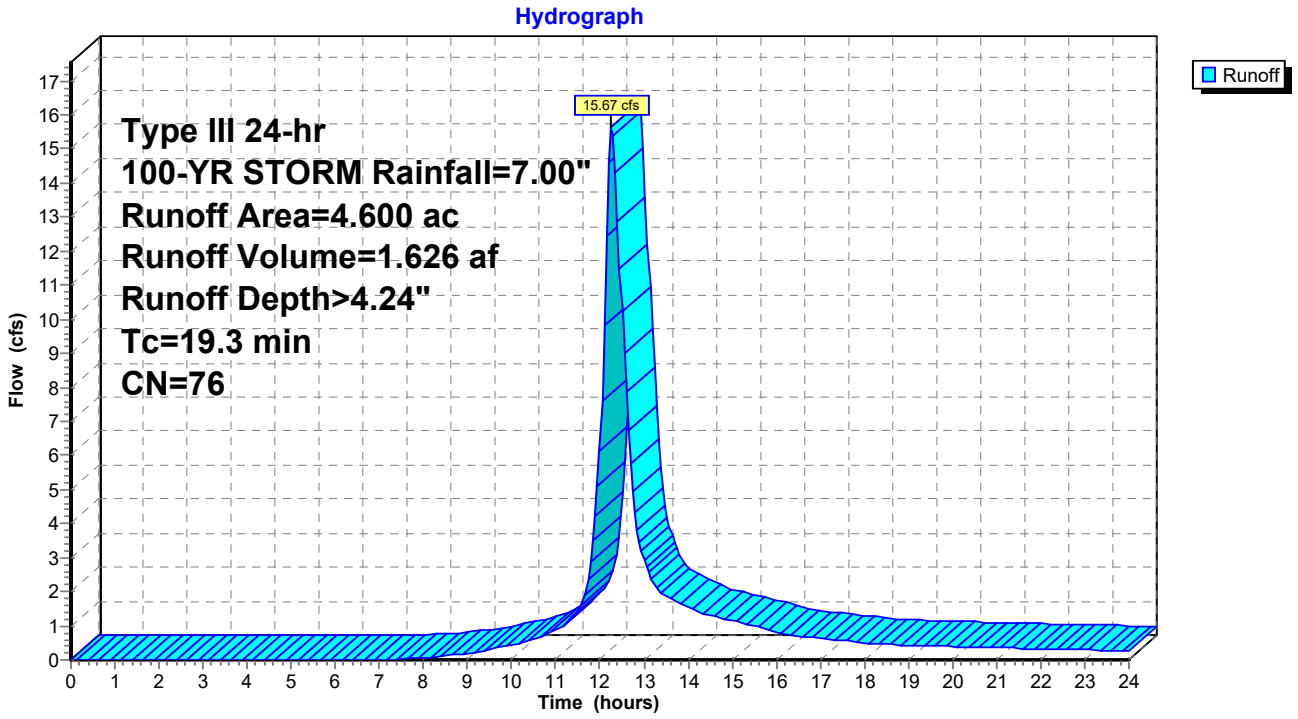
Runoff = 15.67 cfs @ 12.27 hrs, Volume= 1.626 af, Depth> 4.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR STORM Rainfall=7.00"

	Area (ac)	CN	Description
*	4.600	76	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.3					**Direct Entry, NRCS Part 630**

Subcatchment 14:



Summary for Subcatchment 15:

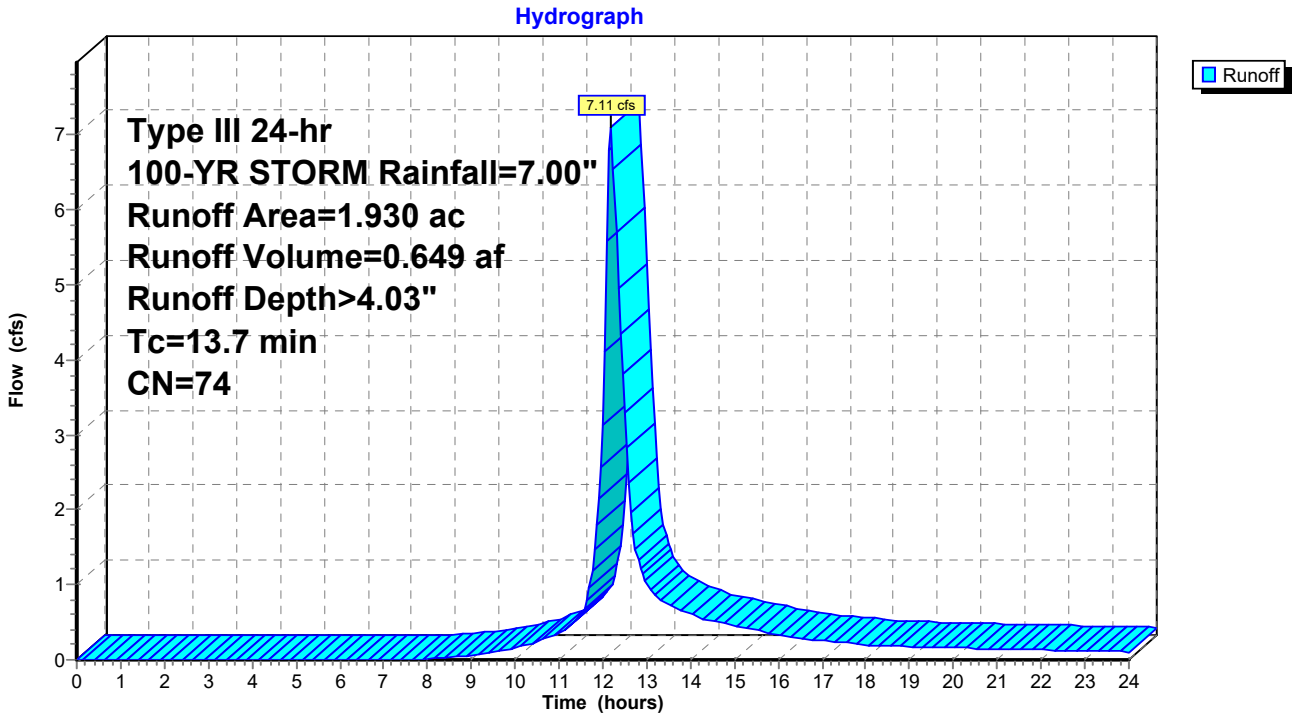
Runoff = 7.11 cfs @ 12.19 hrs, Volume= 0.649 af, Depth> 4.03"

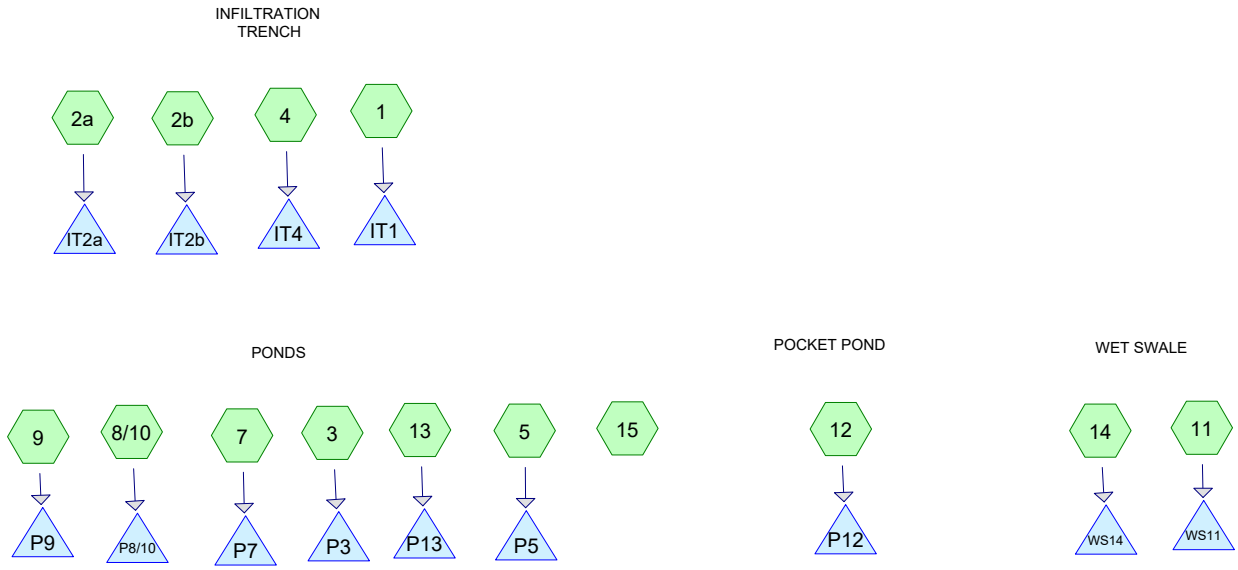
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-YR STORM Rainfall=7.00"

	Area (ac)	CN	Description
*	1.930	74	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7					**Direct Entry, NRCS Part 630**

Subcatchment 15:





Subcat Reach Pond Link

Routing Diagram for HydroCAD Litchfield Proposed - Revised_5-21

Prepared by HDR, Inc, Printed 6/24/2021

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
5.880	85	(1, 14)
8.530	82	(2a, 7)
4.020	81	(2b)
14.700	87	(3, 9)
34.217	86	(4, 5, 8/10, 12, 13)
3.190	80	(11)
1.930	84	(15)
72.467	**85**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
72.467	Other	1, 2a, 2b, 3, 4, 5, 7, 8/10, 9, 11, 12, 13, 14, 15
72.467		**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	0.000	0.000	0.000	72.467	72.467		1, 2a, 2b, 3, 4, 5, 7, 8/10, 9, 11, 12, 13, 14, 15
0.000	**0.000**	**0.000**	**0.000**	**72.467**	**72.467**	**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	P12	1,187.15	1,187.00	20.5	0.0073	0.012	8.0	0.0	0.0
2	P13	1,142.00	1,106.00	135.0	0.2667	0.012	48.0	0.0	0.0
3	P3	1,130.90	1,129.50	100.0	0.0140	0.012	24.0	0.0	0.0
4	P5	1,145.00	1,141.00	42.0	0.0952	0.012	24.0	0.0	0.0
5	P7	1,157.15	1,156.10	58.0	0.0181	0.012	30.0	0.0	0.0
6	P8/10	1,124.40	1,123.00	88.0	0.0159	0.012	48.0	0.0	0.0
7	P9	1,188.25	1,187.25	60.0	0.0167	0.012	48.0	0.0	0.0

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1: Runoff Area=1.280 ac Runoff Depth=1.76"
Tc=9.1 min CN=85 Runoff=2.37 cfs 0.187 af

Subcatchment2a: Runoff Area=4.430 ac Runoff Depth=1.54"
Tc=9.7 min CN=82 Runoff=7.01 cfs 0.568 af

Subcatchment2b: Runoff Area=4.020 ac Runoff Depth=1.47"
Tc=13.9 min CN=81 Runoff=5.34 cfs 0.492 af

Subcatchment3: Runoff Area=7.890 ac Runoff Depth=1.91"
Tc=9.2 min CN=87 Runoff=15.87 cfs 1.259 af

Subcatchment4: Runoff Area=0.937 ac Runoff Depth=1.84"
Tc=12.6 min CN=86 Runoff=1.63 cfs 0.143 af

Subcatchment5: Runoff Area=1.680 ac Runoff Depth=1.84"
Tc=7.5 min CN=86 Runoff=3.43 cfs 0.257 af

Subcatchment7: Runoff Area=4.100 ac Runoff Depth=1.54"
Tc=7.2 min CN=82 Runoff=7.06 cfs 0.526 af

Subcatchment8/10: Runoff Area=28.040 ac Runoff Depth=1.84"
Tc=13.7 min CN=86 Runoff=47.30 cfs 4.288 af

Subcatchment9: Runoff Area=6.810 ac Runoff Depth=1.91"
Tc=18.1 min CN=87 Runoff=10.75 cfs 1.087 af

Subcatchment11: Runoff Area=3.190 ac Runoff Depth=1.40"
Tc=21.4 min CN=80 Runoff=3.39 cfs 0.373 af

Subcatchment12: Runoff Area=1.930 ac Runoff Depth=1.84"
Tc=8.6 min CN=86 Runoff=3.80 cfs 0.295 af

Subcatchment13: Runoff Area=1.630 ac Runoff Depth=1.84"
Tc=7.0 min CN=86 Runoff=3.39 cfs 0.249 af

Subcatchment14: Runoff Area=4.600 ac Runoff Depth=1.76"
Tc=14.6 min CN=85 Runoff=7.24 cfs 0.674 af

Subcatchment15: Runoff Area=1.930 ac Runoff Depth=1.68"
Tc=13.7 min CN=84 Runoff=2.98 cfs 0.271 af

Pond IT1: Peak Elev=1,126.57' Storage=3,382 cf Inflow=2.37 cfs 0.187 af
Discarded=0.04 cfs 0.118 af Primary=0.94 cfs 0.066 af Outflow=0.99 cfs 0.185 af

Pond IT2a: Peak Elev=1,091.20' Storage=5,763 cf Inflow=7.01 cfs 0.568 af
Discarded=0.09 cfs 0.200 af Primary=6.00 cfs 0.368 af Outflow=6.09 cfs 0.568 af

Pond IT2b: Peak Elev=1,040.96' Storage=6,923 cf Inflow=5.34 cfs 0.492 af
Discarded=0.11 cfs 0.262 af Primary=3.16 cfs 0.230 af Outflow=3.27 cfs 0.492 af

Pond IT4: Peak Elev=1,113.78' Storage=5,066 cf Inflow=1.63 cfs 0.143 af
Discarded=0.02 cfs 0.071 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.071 af

Pond P12: Peak Elev=1,187.75' Storage=4,824 cf Inflow=3.80 cfs 0.295 af
Primary=0.73 cfs 0.191 af Secondary=1.54 cfs 0.035 af Outflow=2.27 cfs 0.227 af

Pond P13: Peak Elev=1,142.95' Storage=6,397 cf Inflow=3.39 cfs 0.249 af
Primary=0.21 cfs 0.187 af Secondary=0.00 cfs 0.000 af Outflow=0.21 cfs 0.187 af

Pond P3: Peak Elev=1,132.28' Storage=19,186 cf Inflow=15.87 cfs 1.259 af
Primary=9.24 cfs 0.982 af Secondary=0.00 cfs 0.000 af Outflow=9.24 cfs 0.982 af

Pond P5: Peak Elev=1,146.03' Storage=6,163 cf Inflow=3.43 cfs 0.257 af
Primary=0.34 cfs 0.198 af Secondary=0.00 cfs 0.000 af Outflow=0.34 cfs 0.198 af

Pond P7: Peak Elev=1,159.59' Storage=14,993 cf Inflow=7.06 cfs 0.526 af
Primary=0.28 cfs 0.391 af Secondary=0.00 cfs 0.000 af Outflow=0.28 cfs 0.391 af

Pond P8/10: Peak Elev=1,126.17' Storage=84,971 cf Inflow=47.30 cfs 4.288 af
Primary=17.19 cfs 3.121 af Secondary=0.00 cfs 0.000 af Outflow=17.19 cfs 3.121 af

Pond P9: Peak Elev=1,189.32' Storage=23,498 cf Inflow=10.75 cfs 1.087 af
Primary=3.38 cfs 0.811 af Secondary=0.00 cfs 0.000 af Outflow=3.38 cfs 0.811 af

Pond WS11: Peak Elev=1,197.03' Storage=11,645 cf Inflow=3.39 cfs 0.373 af
Outflow=0.28 cfs 0.111 af

Pond WS14: Peak Elev=1,150.18' Storage=12,710 cf Inflow=7.24 cfs 0.674 af
Outflow=3.63 cfs 0.411 af

Total Runoff Area = 72.467 ac Runoff Volume = 10.668 af Average Runoff Depth = 1.77"

Summary for Subcatchment 1:

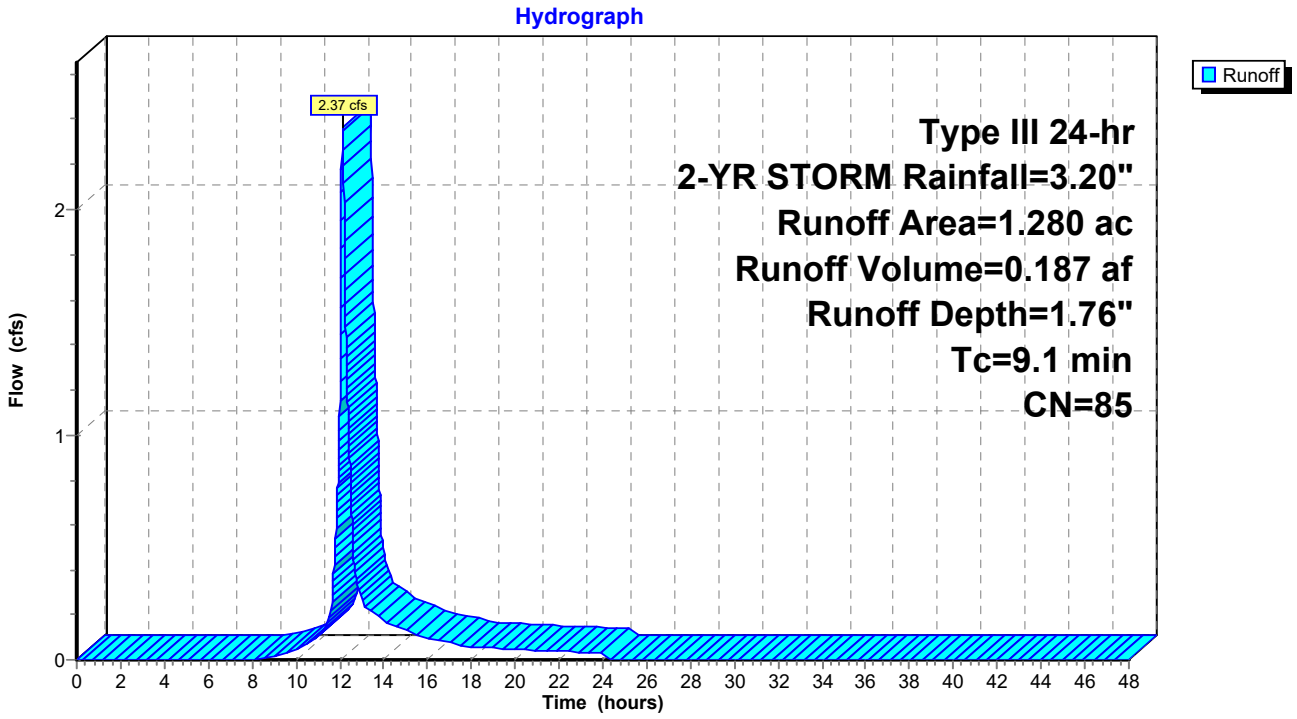
Runoff = 2.37 cfs @ 12.13 hrs, Volume= 0.187 af, Depth= 1.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR STORM Rainfall=3.20"

	Area (ac)	CN	Description
*	1.280	85	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1					**Direct Entry, NRCS Part 630**

Subcatchment 1:



Summary for Subcatchment 2a:

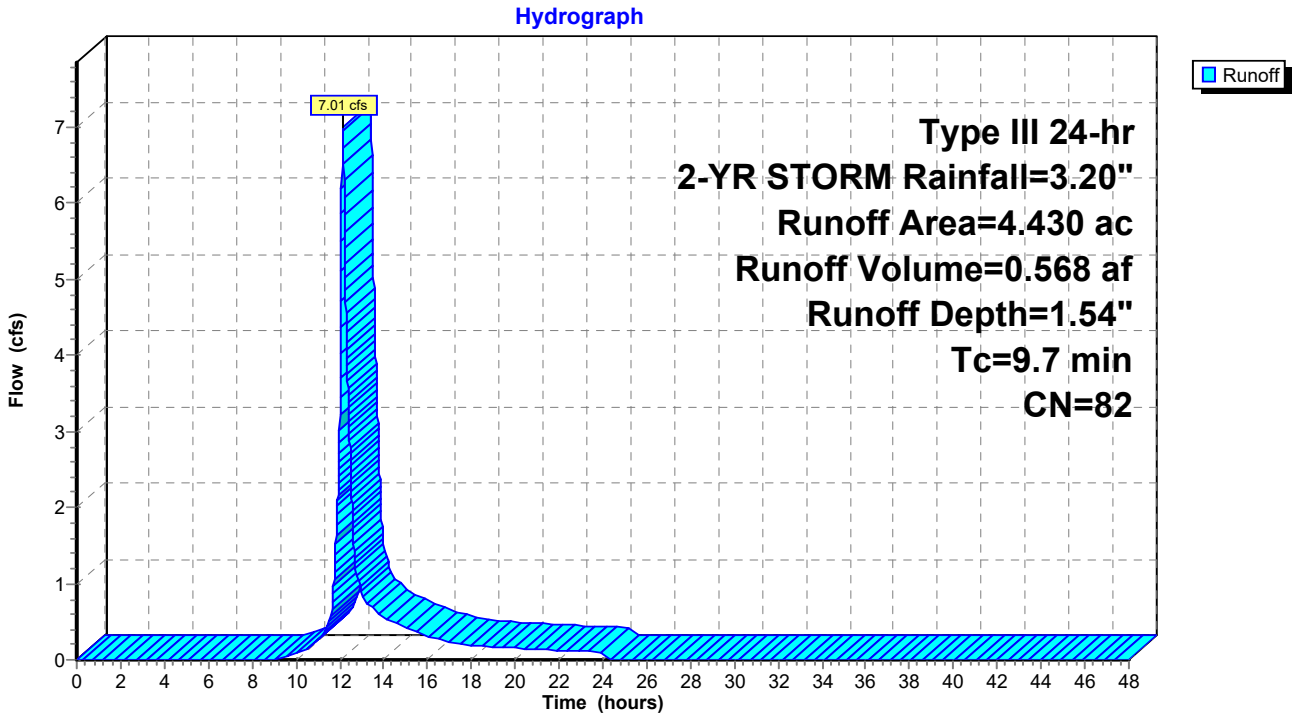
Runoff = 7.01 cfs @ 12.14 hrs, Volume= 0.568 af, Depth= 1.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR STORM Rainfall=3.20"

	Area (ac)	CN	Description
*	4.430	82	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7					**Direct Entry, NRCS Part 630**

Subcatchment 2a:



Summary for Subcatchment 2b:

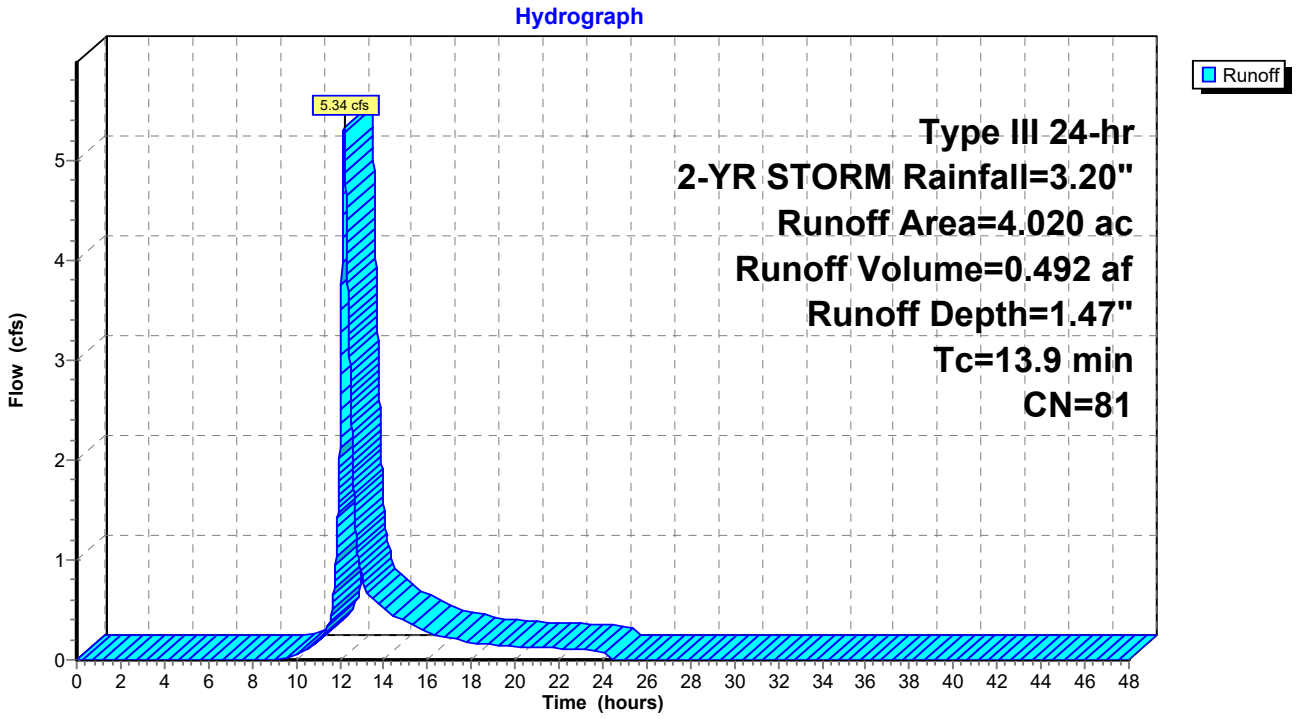
Runoff = 5.34 cfs @ 12.19 hrs, Volume= 0.492 af, Depth= 1.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR STORM Rainfall=3.20"

	Area (ac)	CN	Description
*	4.020	81	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9					**Direct Entry, NRCS Part 630**

Subcatchment 2b:



Summary for Subcatchment 3:

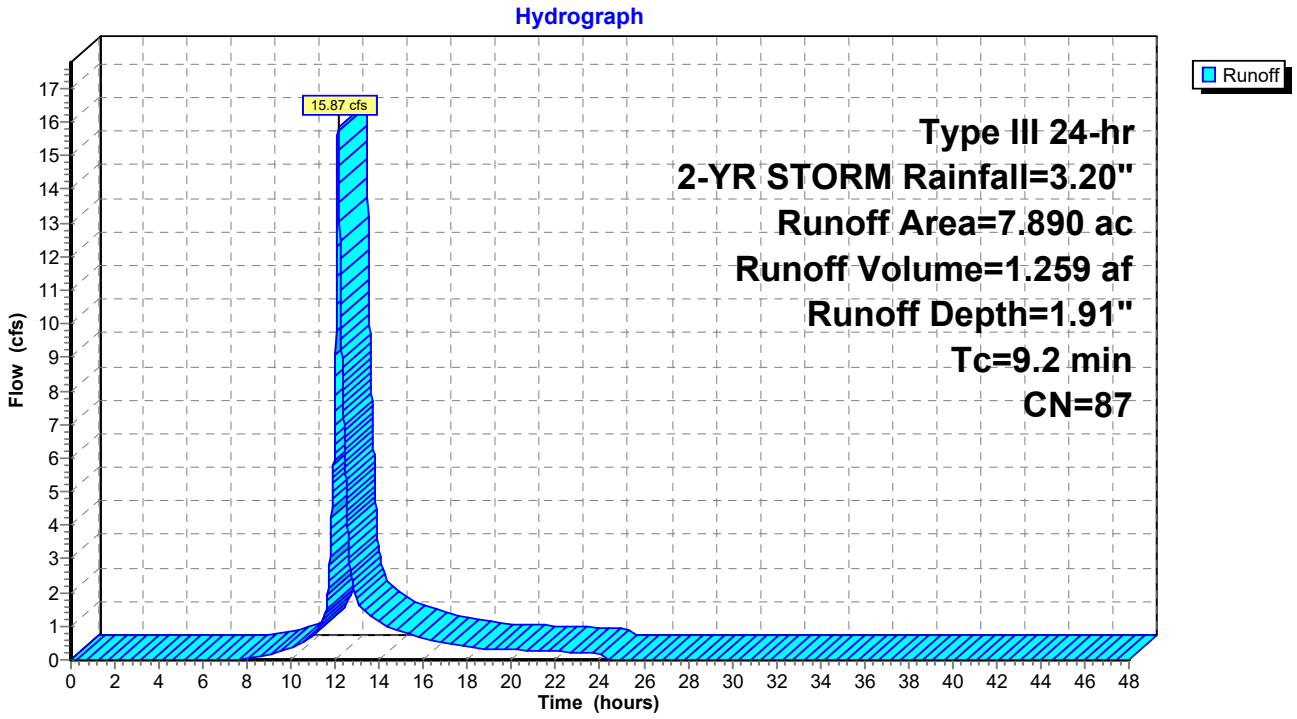
Runoff = 15.87 cfs @ 12.13 hrs, Volume= 1.259 af, Depth= 1.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR STORM Rainfall=3.20"

	Area (ac)	CN	Description
*	7.890	87	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2					**Direct Entry, NRCS Part 630**

Subcatchment 3:



Summary for Subcatchment 4:

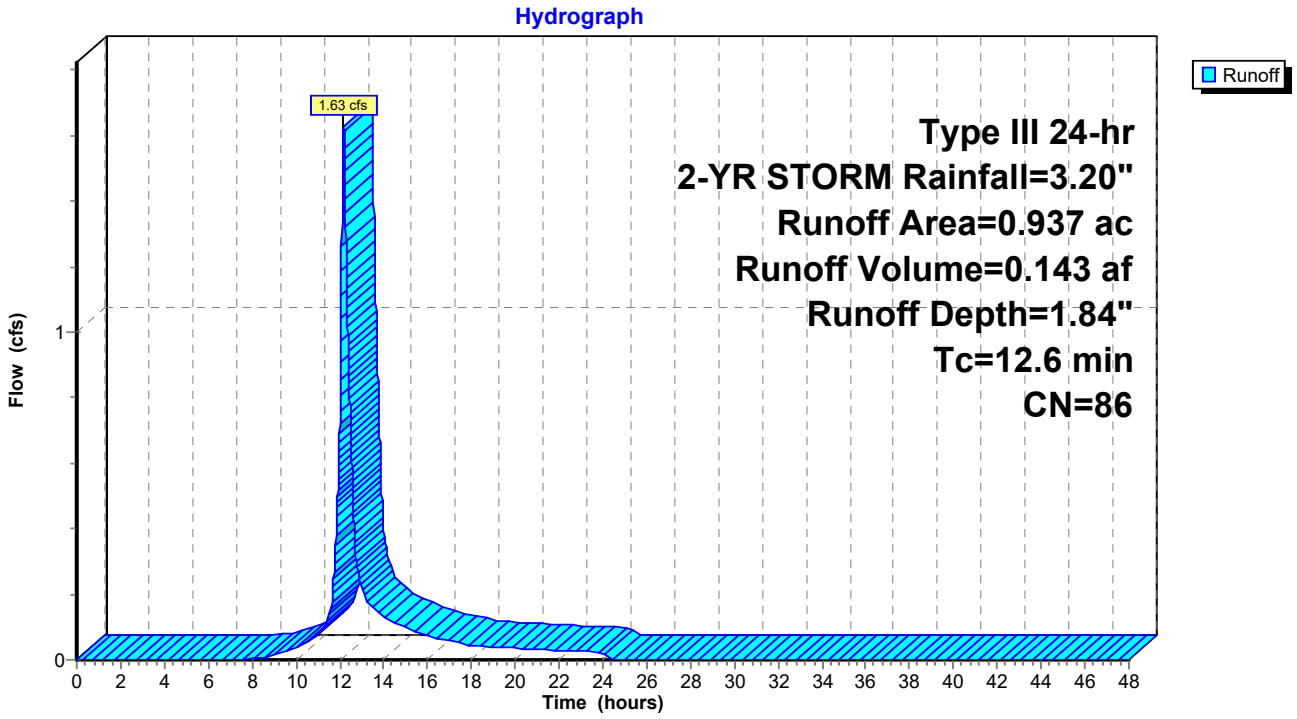
Runoff = 1.63 cfs @ 12.17 hrs, Volume= 0.143 af, Depth= 1.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR STORM Rainfall=3.20"

	Area (ac)	CN	Description
*	0.937	86	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6					**Direct Entry, NRCS Part 630**

Subcatchment 4:



Summary for Subcatchment 5:

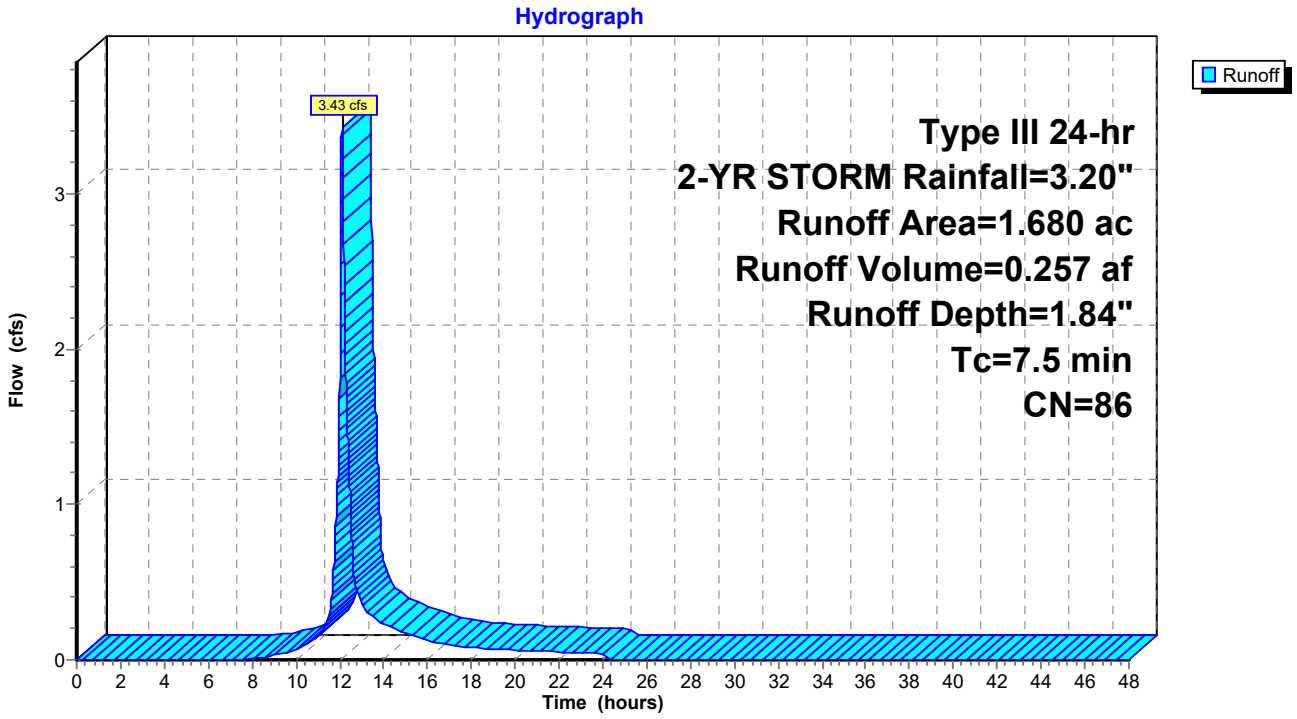
Runoff = 3.43 cfs @ 12.11 hrs, Volume= 0.257 af, Depth= 1.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR STORM Rainfall=3.20"

	Area (ac)	CN	Description
*	1.680	86	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5					**Direct Entry, NRCS Part 630**

Subcatchment 5:



Summary for Subcatchment 7:

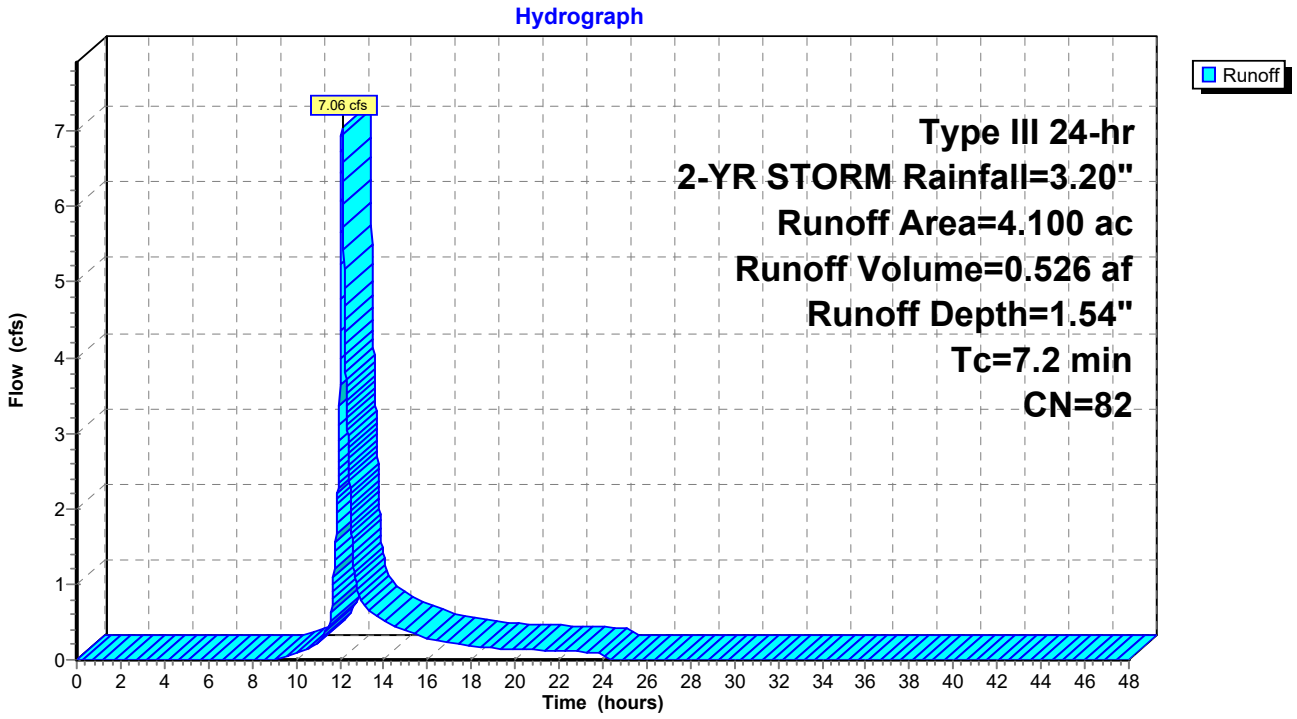
Runoff = 7.06 cfs @ 12.11 hrs, Volume= 0.526 af, Depth= 1.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR STORM Rainfall=3.20"

	Area (ac)	CN	Description
*	4.100	82	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2					**Direct Entry, NRCS Part 630**

Subcatchment 7:



Summary for Subcatchment 8/10:

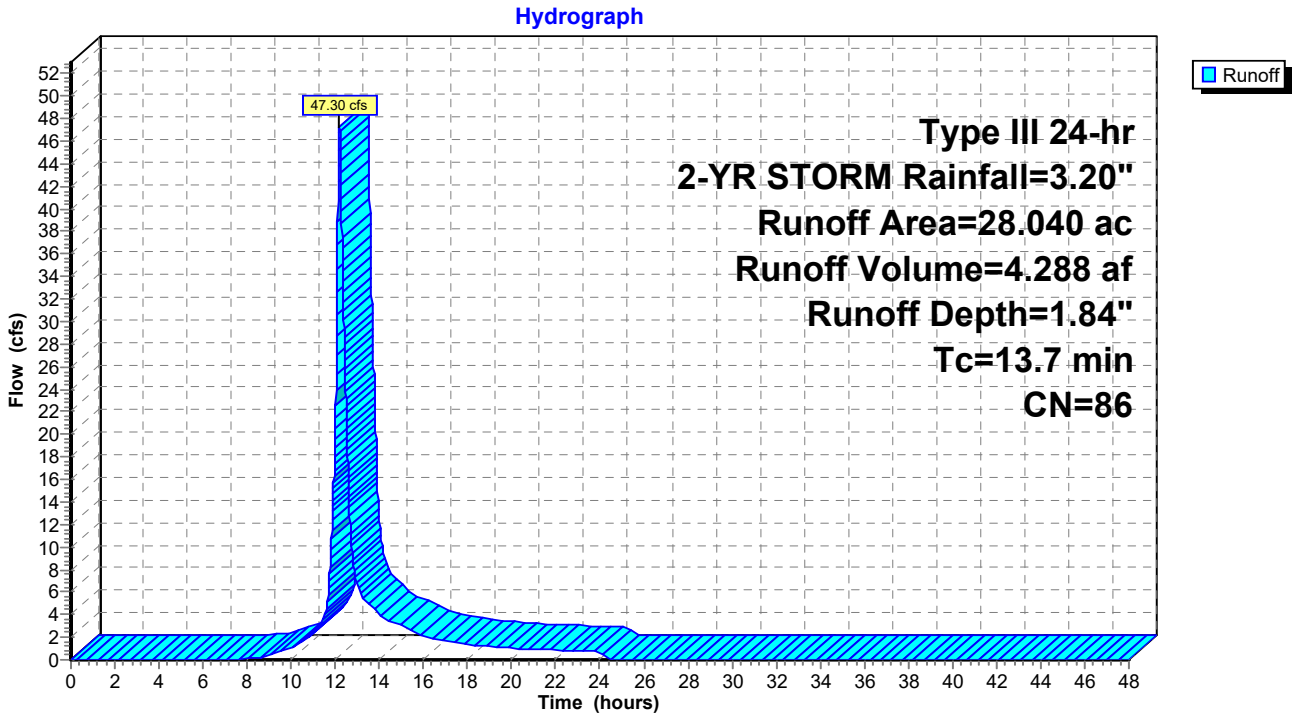
Runoff = 47.30 cfs @ 12.19 hrs, Volume= 4.288 af, Depth= 1.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR STORM Rainfall=3.20"

	Area (ac)	CN	Description
*	28.040	86	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7					**Direct Entry, NRCS Part 630**

Subcatchment 8/10:



Summary for Subcatchment 9:

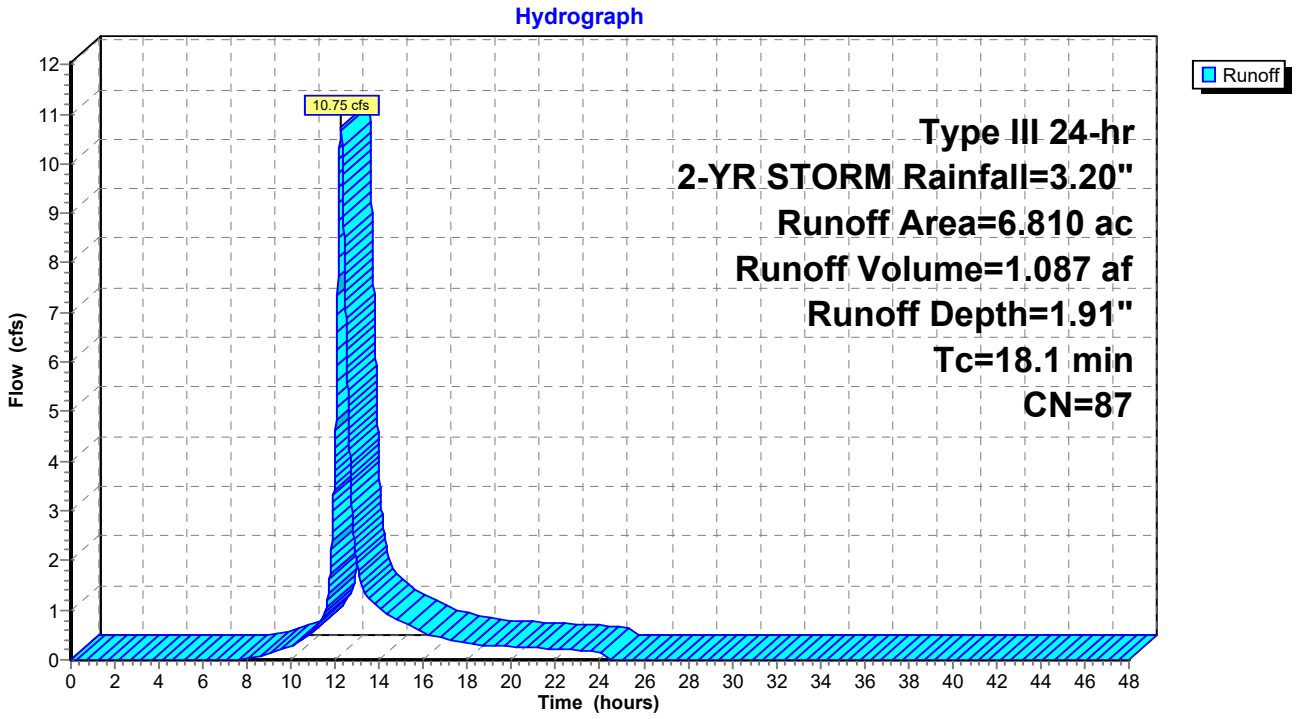
Runoff = 10.75 cfs @ 12.25 hrs, Volume= 1.087 af, Depth= 1.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR STORM Rainfall=3.20"

	Area (ac)	CN	Description
*	6.810	87	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1					**Direct Entry, NRCS Part 630**

Subcatchment 9:



Summary for Subcatchment 11:

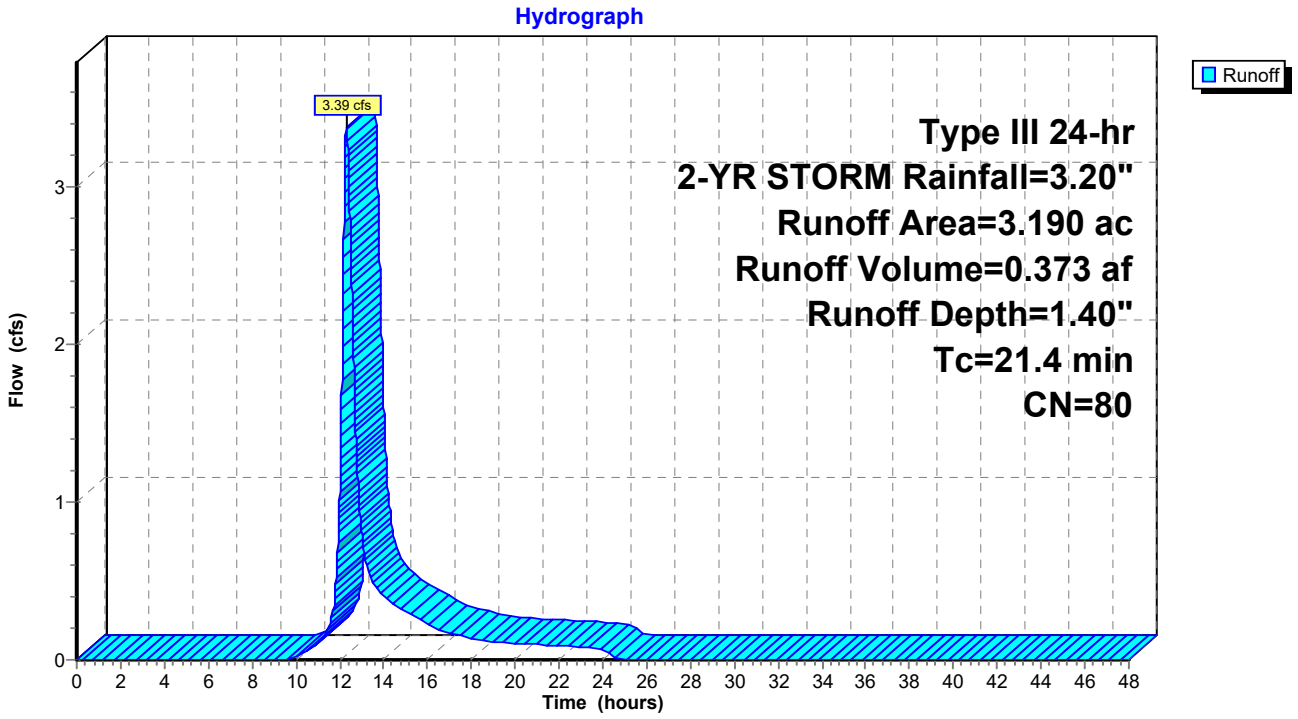
Runoff = 3.39 cfs @ 12.30 hrs, Volume= 0.373 af, Depth= 1.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR STORM Rainfall=3.20"

	Area (ac)	CN	Description
*	3.190	80	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.4					**Direct Entry, NRCS Part 630**

Subcatchment 11:



Summary for Subcatchment 12:

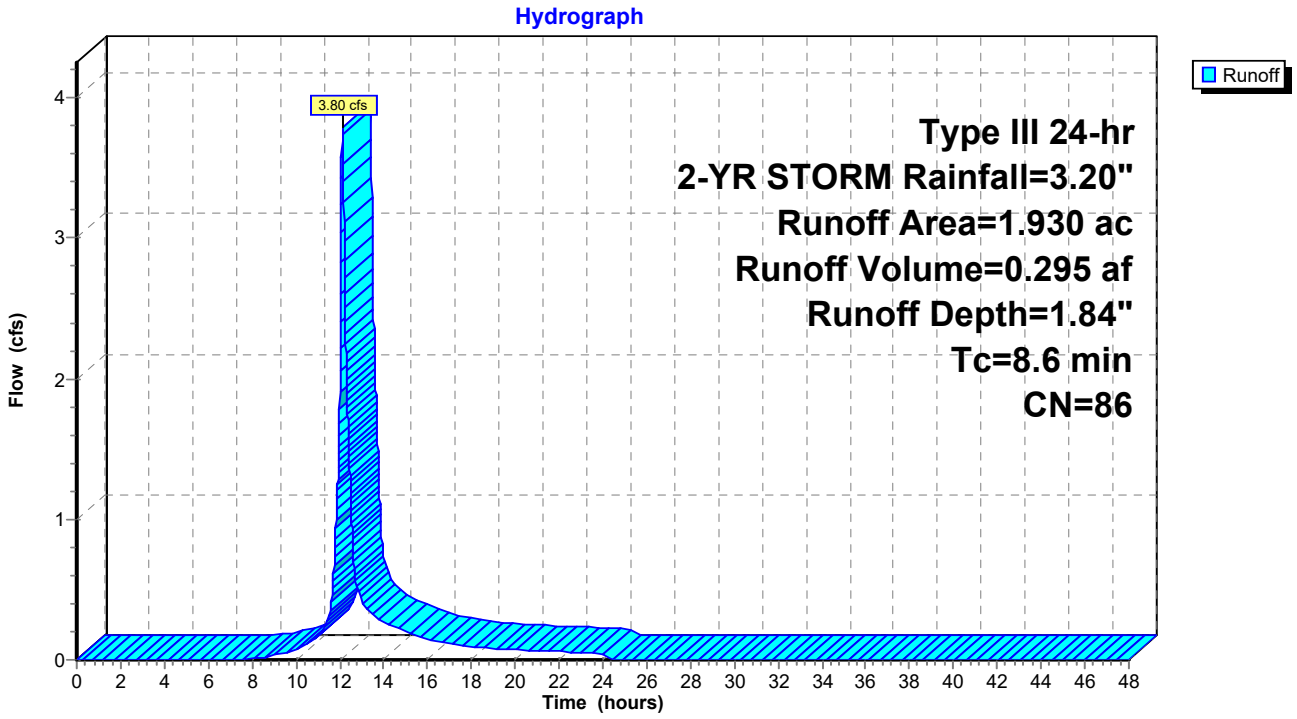
Runoff = 3.80 cfs @ 12.12 hrs, Volume= 0.295 af, Depth= 1.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR STORM Rainfall=3.20"

	Area (ac)	CN	Description
*	1.930	86	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6					**Direct Entry, NRCS Part 630**

Subcatchment 12:



Summary for Subcatchment 13:

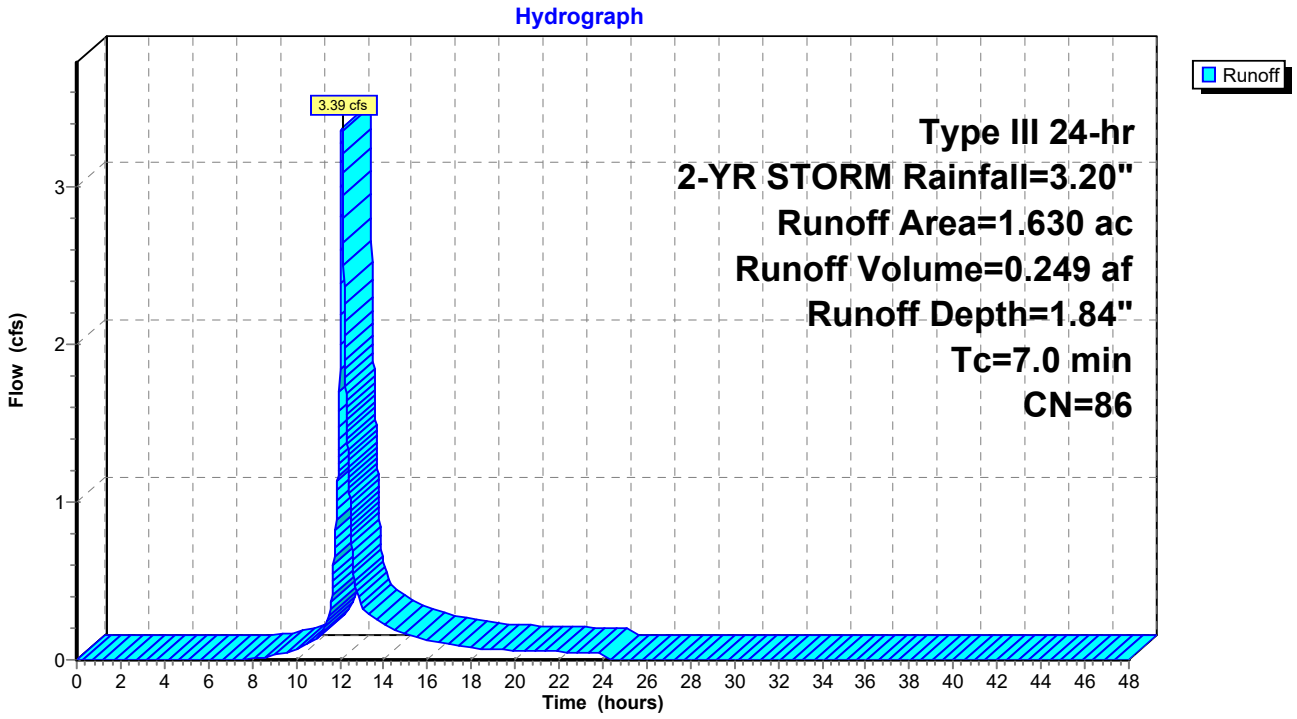
Runoff = 3.39 cfs @ 12.10 hrs, Volume= 0.249 af, Depth= 1.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR STORM Rainfall=3.20"

	Area (ac)	CN	Description
*	1.630	86	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					**Direct Entry, NRCS Part 630**

Subcatchment 13:



Summary for Subcatchment 14:

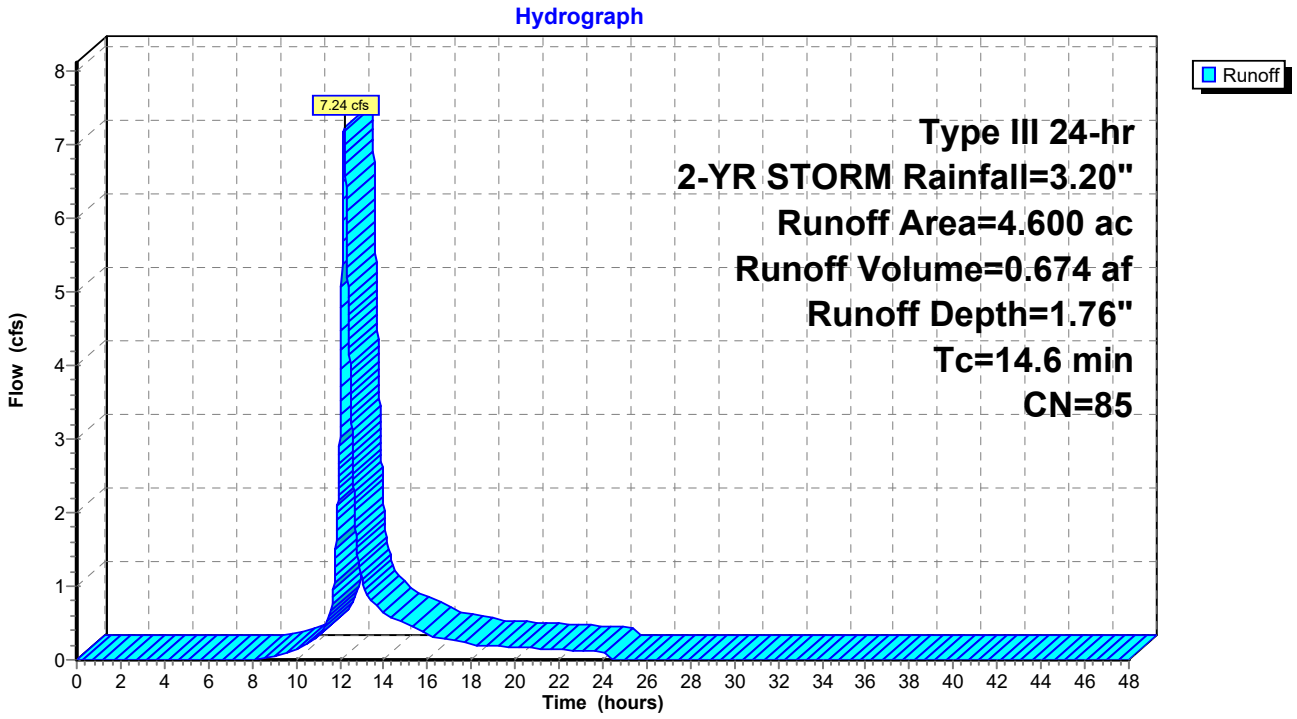
Runoff = 7.24 cfs @ 12.20 hrs, Volume= 0.674 af, Depth= 1.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR STORM Rainfall=3.20"

	Area (ac)	CN	Description
*	4.600	85	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6					**Direct Entry, NRCS Part 630**

Subcatchment 14:



Summary for Subcatchment 15:

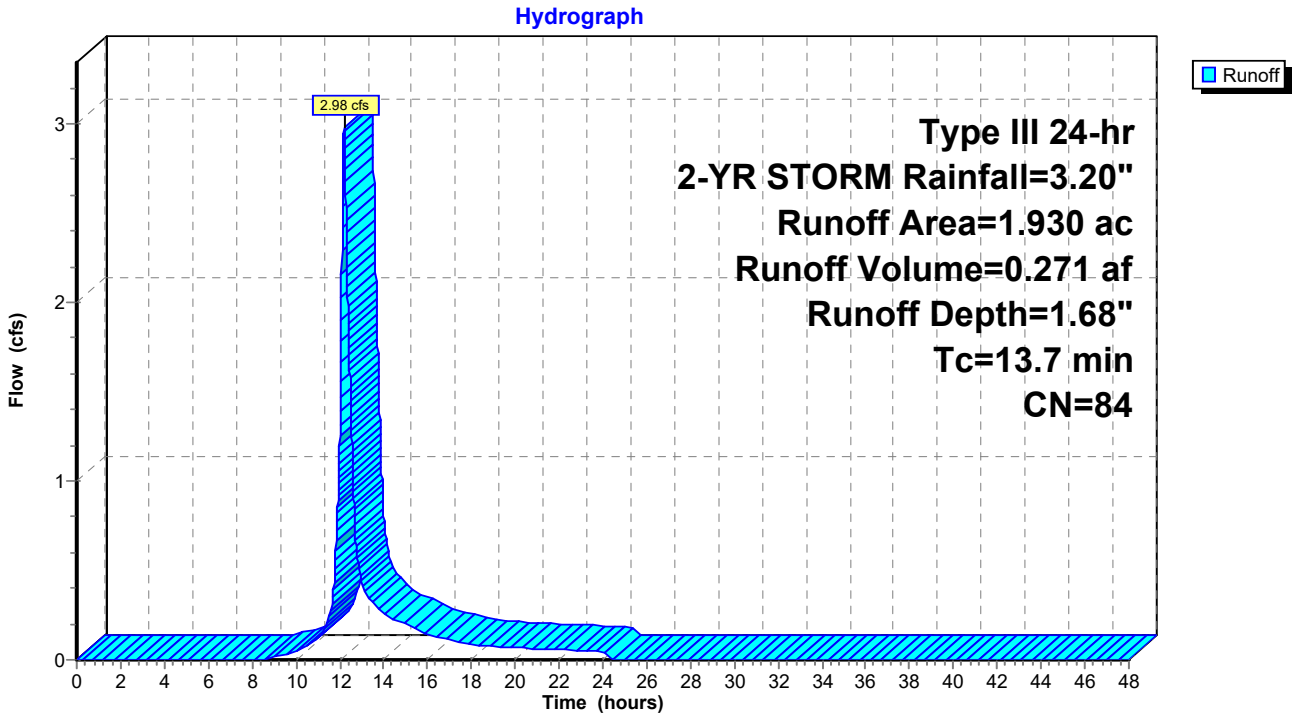
Runoff = 2.98 cfs @ 12.19 hrs, Volume= 0.271 af, Depth= 1.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-YR STORM Rainfall=3.20"

	Area (ac)	CN	Description
*	1.930	84	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7					**Direct Entry, NRCS Part 630**

Subcatchment 15:



Summary for Pond IT1:

Inflow Area = 1.280 ac, Inflow Depth = 1.76" for 2-YR STORM event
Inflow = 2.37 cfs @ 12.13 hrs, Volume= 0.187 af
Outflow = 0.99 cfs @ 12.42 hrs, Volume= 0.185 af, Atten= 58%, Lag= 17.3 min
Discarded = 0.04 cfs @ 12.42 hrs, Volume= 0.118 af
Primary = 0.94 cfs @ 12.42 hrs, Volume= 0.066 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,126.57' @ 12.42 hrs Surf.Area= 2,612 sf Storage= 3,382 cf

Plug-Flow detention time= 539.9 min calculated for 0.185 af (99% of inflow)
Center-of-Mass det. time= 531.1 min (1,360.1 - 829.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,125.00'	4,476 cf	**Custom Stage Data (Prismatic)** Listed below

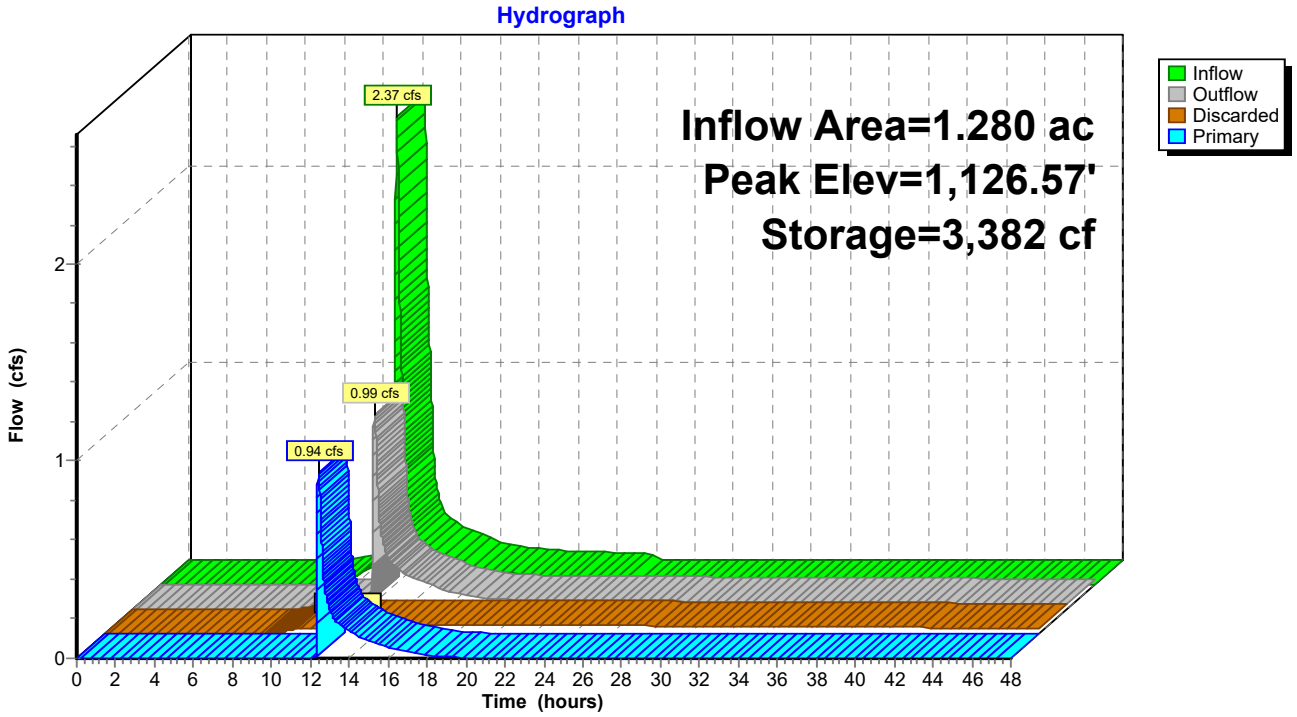
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,125.00	1,620	0	0
1,126.00	2,210	1,915	1,915
1,127.00	2,911	2,561	4,476

Device	Routing	Invert	Outlet Devices
#1	Primary	1,126.50'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Discarded	1,125.00'	**0.725 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.04 cfs @ 12.42 hrs HW=1,126.57' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=0.94 cfs @ 12.42 hrs HW=1,126.57' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 0.94 cfs @ 0.64 fps)

Pond IT1:


Hydrograph
Inflow Area=1.280 ac
Peak Elev=1,126.57'
Storage=3,382 cf
2.37 cfs
0.99 cfs
0.94 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0 1 2
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond IT2a:

Inflow Area = 4.430 ac, Inflow Depth = 1.54" for 2-YR STORM event
Inflow = 7.01 cfs @ 12.14 hrs, Volume= 0.568 af
Outflow = 6.09 cfs @ 12.20 hrs, Volume= 0.568 af, Atten= 13%, Lag= 3.7 min
Discarded = 0.09 cfs @ 12.20 hrs, Volume= 0.200 af
Primary = 6.00 cfs @ 12.20 hrs, Volume= 0.368 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,091.20' @ 12.20 hrs Surf.Area= 4,333 sf Storage= 5,763 cf

Plug-Flow detention time= 249.3 min calculated for 0.568 af (100% of inflow)
Center-of-Mass det. time= 249.3 min (1,089.0 - 839.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,089.50'	7,111 cf	**Custom Stage Data (Prismatic)** Listed below

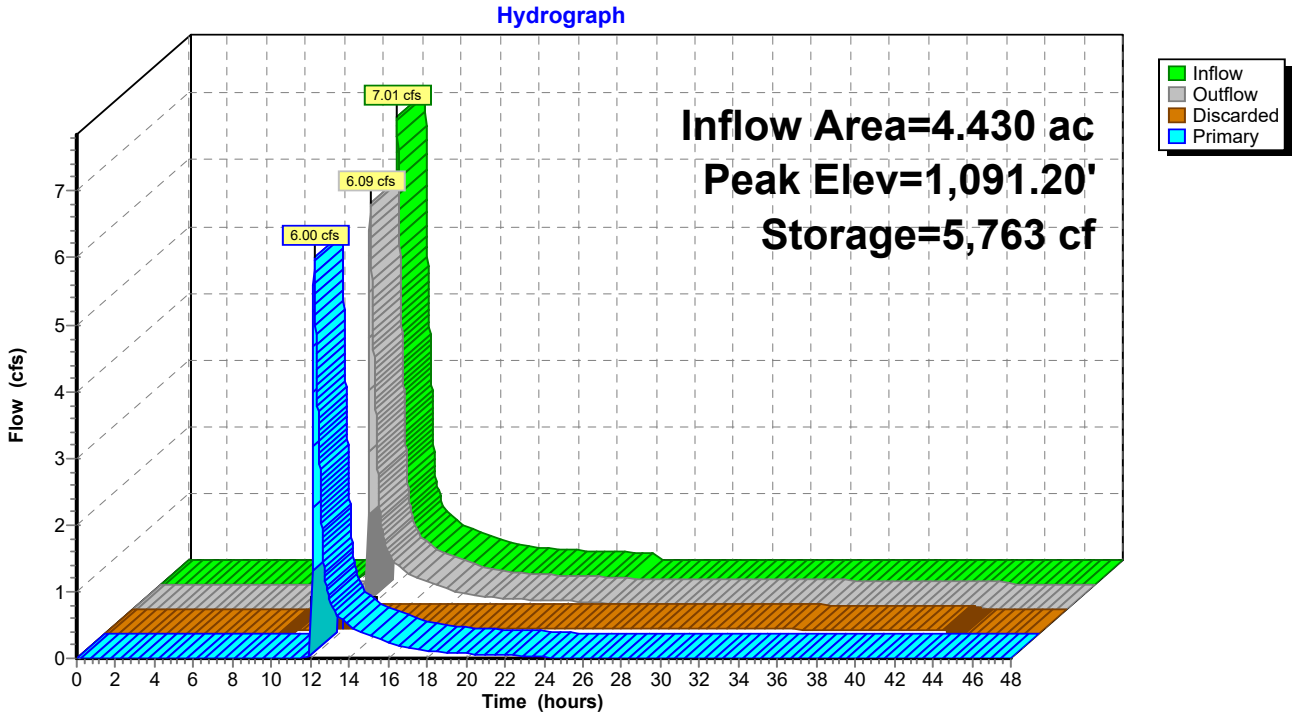
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,089.50	2,714	0	0
1,090.00	3,067	1,445	1,445
1,090.50	3,427	1,624	3,069
1,091.00	3,797	1,806	4,875
1,091.50	5,146	2,236	7,111

Device	Routing	Invert	Outlet Devices
#1	Primary	1,090.95'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Discarded	1,089.50'	**0.905 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.09 cfs @ 12.20 hrs HW=1,091.20' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.09 cfs)

Primary OutFlow Max=6.00 cfs @ 12.20 hrs HW=1,091.20' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 6.00 cfs @ 1.21 fps)

Pond IT2a:


Hydrograph
Inflow Area=4.430 ac
Peak Elev=1,091.20'
Storage=5,763 cf
7.01 cfs
6.09 cfs
6.00 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond IT2b:

Inflow Area = 4.020 ac, Inflow Depth = 1.47" for 2-YR STORM event
Inflow = 5.34 cfs @ 12.19 hrs, Volume= 0.492 af
Outflow = 3.27 cfs @ 12.42 hrs, Volume= 0.492 af, Atten= 39%, Lag= 13.5 min
Discarded = 0.11 cfs @ 12.42 hrs, Volume= 0.262 af
Primary = 3.16 cfs @ 12.42 hrs, Volume= 0.230 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,040.96' @ 12.42 hrs Surf.Area= 5,411 sf Storage= 6,923 cf

Plug-Flow detention time= 348.1 min calculated for 0.492 af (100% of inflow)
Center-of-Mass det. time= 348.2 min (1,195.1 - 846.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,039.50'	9,955 cf	**Custom Stage Data (Prismatic)** Listed below

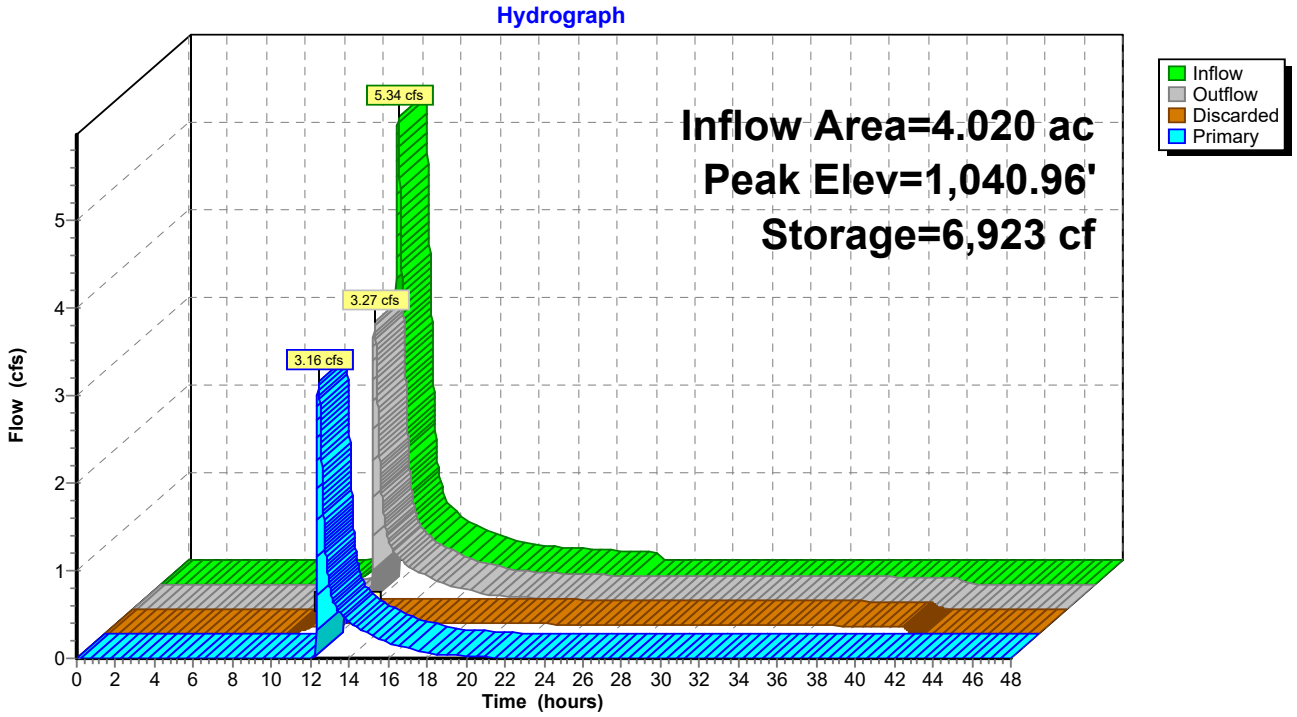
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,039.50	4,048	0	0
1,040.00	4,506	2,139	2,139
1,040.50	4,971	2,369	4,508
1,041.00	5,445	2,604	7,112
1,041.50	5,926	2,843	9,955

Device	Routing	Invert	Outlet Devices
#1	Primary	1,040.80'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Discarded	1,039.50'	**0.905 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.11 cfs @ 12.42 hrs HW=1,040.96' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=3.16 cfs @ 12.42 hrs HW=1,040.96' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 3.16 cfs @ 0.96 fps)

Pond IT2b:


Hydrograph
Inflow Area=4.020 ac
Peak Elev=1,040.96'
Storage=6,923 cf
5.34 cfs
3.27 cfs
3.16 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4 5
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond IT4:

Inflow Area = 0.937 ac, Inflow Depth = 1.84" for 2-YR STORM event
Inflow = 1.63 cfs @ 12.17 hrs, Volume= 0.143 af
Outflow = 0.02 cfs @ 23.72 hrs, Volume= 0.071 af, Atten= 99%, Lag= 692.9 min
Discarded = 0.02 cfs @ 23.72 hrs, Volume= 0.071 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,113.78' @ 23.72 hrs Surf.Area= 3,359 sf Storage= 5,066 cf

Plug-Flow detention time= 1,012.9 min calculated for 0.071 af (50% of inflow)
Center-of-Mass det. time= 897.6 min (1,726.2 - 828.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,112.00'	9,624 cf	**Custom Stage Data (Prismatic)** Listed below

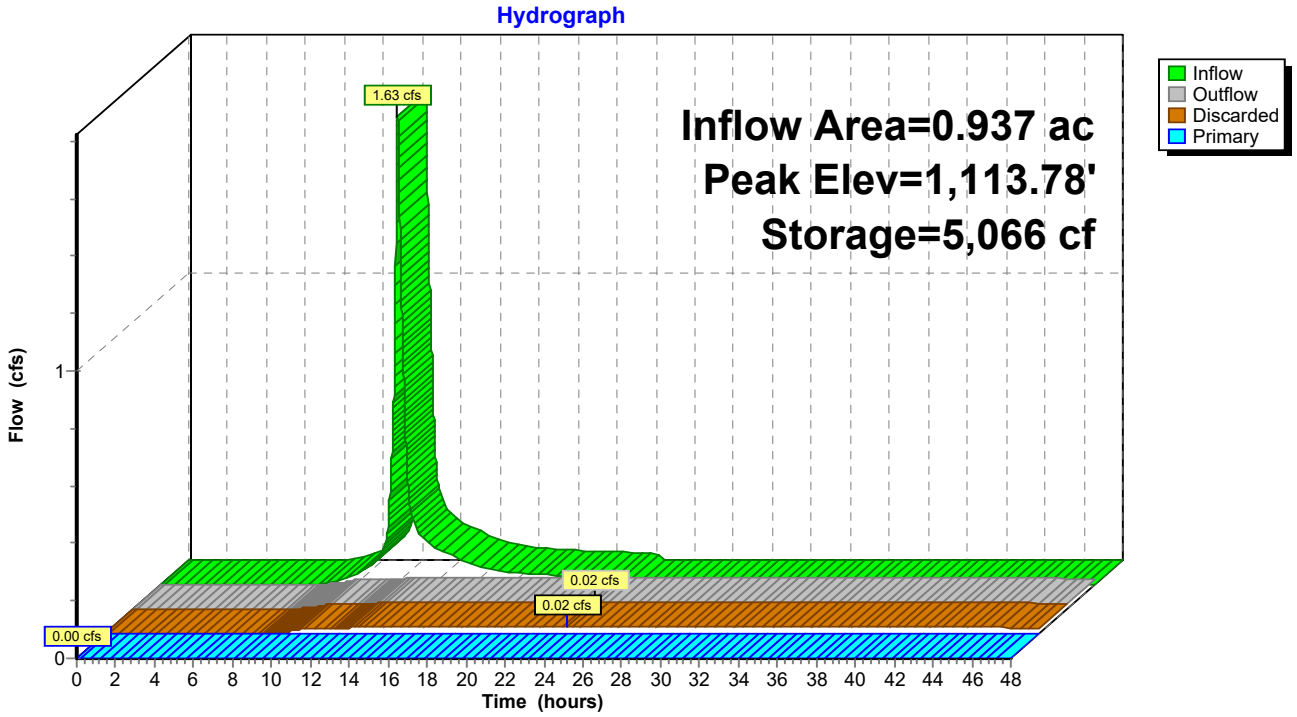
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,112.00	2,336	0	0
1,112.50	2,619	1,239	1,239
1,113.00	2,904	1,381	2,620
1,113.50	3,194	1,525	4,144
1,114.00	3,494	1,672	5,816
1,114.50	3,805	1,825	7,641
1,115.00	4,126	1,983	9,624

Device	Routing	Invert	Outlet Devices
#1	Primary	1,114.75'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Discarded	1,112.00'	**0.305 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.02 cfs @ 23.72 hrs HW=1,113.78' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,112.00' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond IT4:


Hydrograph
Inflow Area=0.937 ac
Peak Elev=1,113.78'
Storage=5,066 cf
1.63 cfs
0.02 cfs
0.02 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
0
1
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
Time (hours)

Summary for Pond P12:

Inflow Area = 1.930 ac, Inflow Depth = 1.84" for 2-YR STORM event
Inflow = 3.80 cfs @ 12.12 hrs, Volume= 0.295 af
Outflow = 2.27 cfs @ 12.27 hrs, Volume= 0.227 af, Atten= 40%, Lag= 8.8 min
Primary = 0.73 cfs @ 12.27 hrs, Volume= 0.191 af
Secondary = 1.54 cfs @ 12.27 hrs, Volume= 0.035 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,187.75' @ 12.27 hrs Surf.Area= 3,813 sf Storage= 4,824 cf

Plug-Flow detention time= 190.3 min calculated for 0.227 af (77% of inflow)
Center-of-Mass det. time= 106.1 min (931.0 - 824.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,185.00'	5,622 cf	**Custom Stage Data (Prismatic)** Listed below

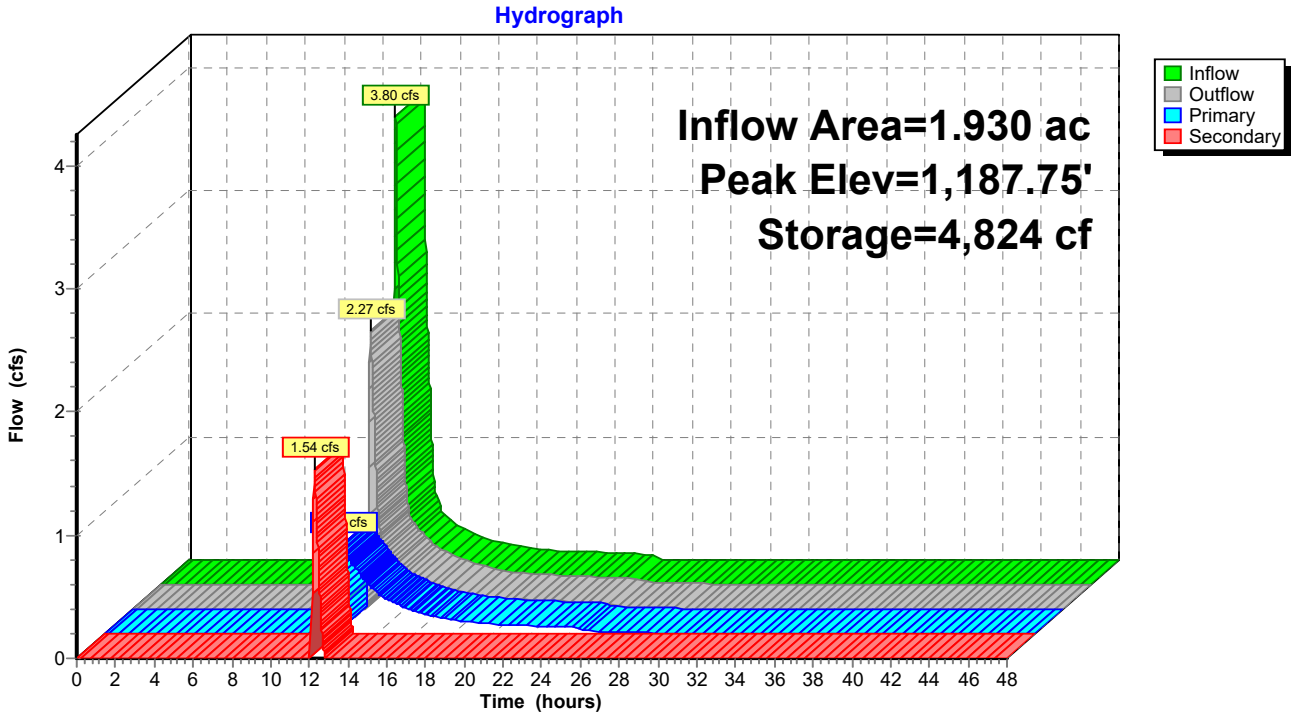
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,185.00	791	0	0
1,186.00	1,200	996	996
1,187.00	1,772	1,486	2,482
1,188.00	4,508	3,140	5,622

Device	Routing	Invert	Outlet Devices
#1	Primary	1,187.15'	**8.0" Round Culvert** L= 20.5' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,187.15' / 1,187.00' S= 0.0073 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#2	Secondary	1,187.65'	**20.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=0.73 cfs @ 12.27 hrs HW=1,187.75' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 0.73 cfs @ 2.91 fps)

Secondary OutFlow Max=1.53 cfs @ 12.27 hrs HW=1,187.75' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 1.53 cfs @ 0.80 fps)

Pond P12:


Hydrograph
Inflow Area=1.930 ac
Peak Elev=1,187.75'
Storage=4,824 cf
3.80 cfs
2.27 cfs
1.54 cfs
cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
1
2
3
4
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond P13:

Inflow Area = 1.630 ac, Inflow Depth = 1.84" for 2-YR STORM event
Inflow = 3.39 cfs @ 12.10 hrs, Volume= 0.249 af
Outflow = 0.21 cfs @ 14.09 hrs, Volume= 0.187 af, Atten= 94%, Lag= 119.6 min
Primary = 0.21 cfs @ 14.09 hrs, Volume= 0.187 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,142.95' @ 14.09 hrs Surf.Area= 4,550 sf Storage= 6,397 cf

Plug-Flow detention time= 381.8 min calculated for 0.187 af (75% of inflow)
Center-of-Mass det. time= 294.2 min (1,117.6 - 823.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,141.00'	37,325 cf	**Custom Stage Data (Prismatic)** Listed below

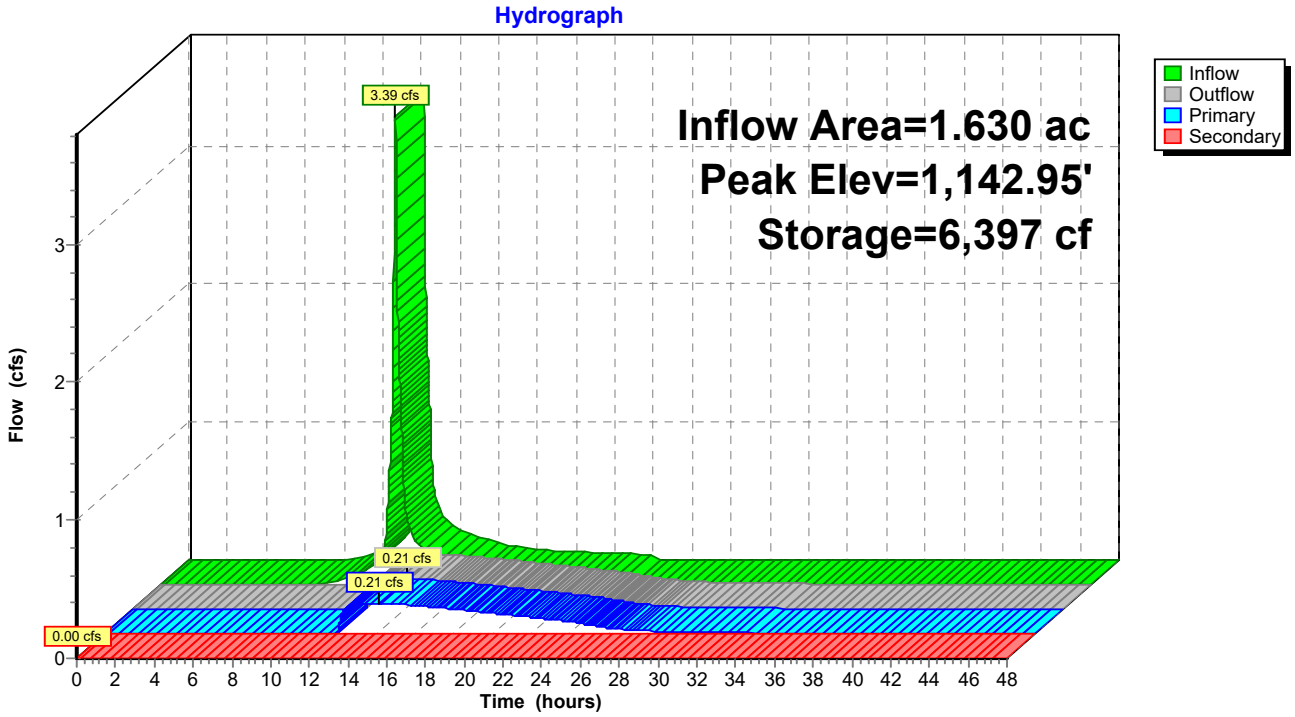
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,141.00	2,023	0	0
1,142.00	3,269	2,646	2,646
1,143.00	4,615	3,942	6,588
1,144.00	6,062	5,339	11,927
1,145.00	7,609	6,836	18,762
1,146.00	9,256	8,433	27,195
1,147.00	11,004	10,130	37,325

Device	Routing	Invert	Outlet Devices
#1	Primary	1,142.00'	**48.0" Round Culvert** L= 135.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,142.00' / 1,106.00' S= 0.2667 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Device 1	1,145.50'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Secondary	1,146.20'	**20.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	1,142.00'	**3.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.21 cfs @ 14.09 hrs HW=1,142.95' (Free Discharge)
└**1=Culvert** (Passes 0.21 cfs of 7.61 cfs potential flow)
  └**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Orifice Controls 0.21 cfs @ 4.38 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,141.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P13:


Hydrograph
Inflow Area=1.630 ac
Peak Elev=1,142.95'
Storage=6,397 cf
3.39 cfs
0.21 cfs
0.21 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond P3:

Inflow Area = 7.890 ac, Inflow Depth = 1.91" for 2-YR STORM event
Inflow = 15.87 cfs @ 12.13 hrs, Volume= 1.259 af
Outflow = 9.24 cfs @ 12.29 hrs, Volume= 0.982 af, Atten= 42%, Lag= 9.7 min
Primary = 9.24 cfs @ 12.29 hrs, Volume= 0.982 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,132.28' @ 12.29 hrs Surf.Area= 5,730 sf Storage= 19,186 cf

Plug-Flow detention time= 152.4 min calculated for 0.982 af (78% of inflow)
Center-of-Mass det. time= 71.3 min (893.1 - 821.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,127.00'	38,268 cf	**Custom Stage Data (Prismatic)** Listed below

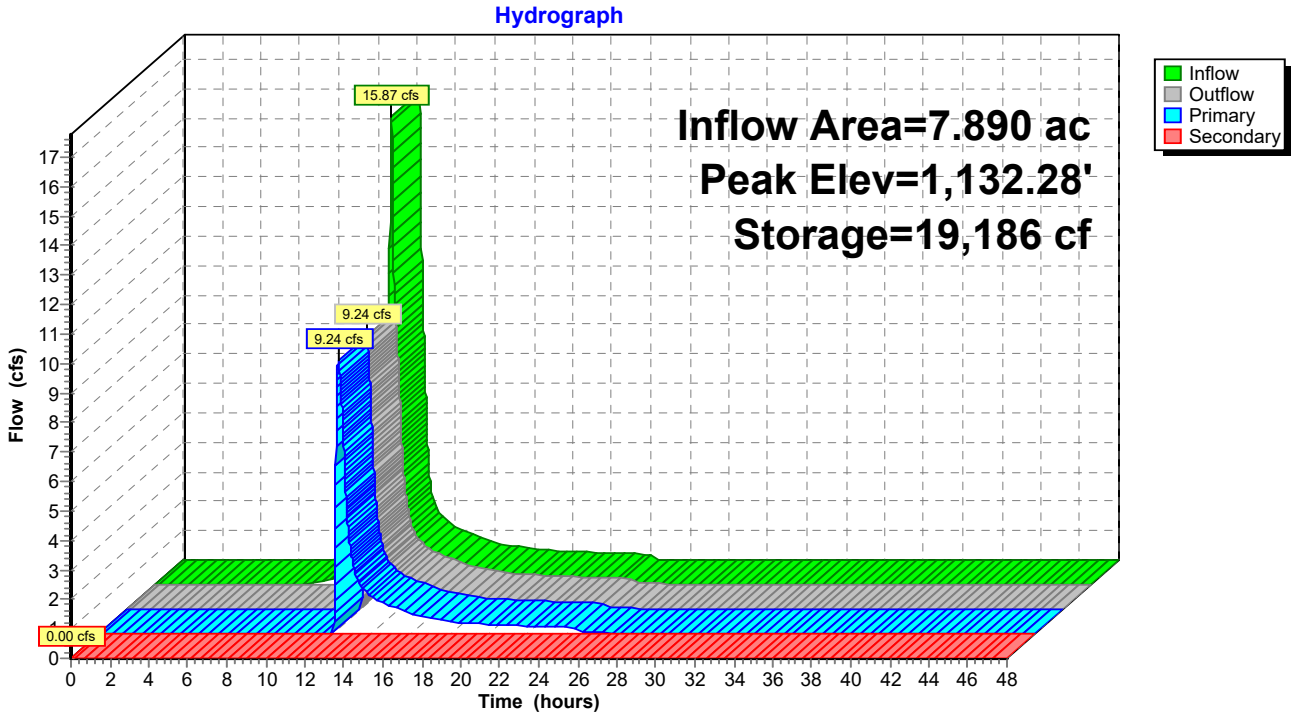
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,127.00	1,797	0	0
1,128.00	2,400	2,099	2,099
1,129.00	3,074	2,737	4,836
1,130.00	3,810	3,442	8,278
1,131.00	4,608	4,209	12,487
1,132.00	5,471	5,040	17,526
1,133.00	6,397	5,934	23,460
1,134.00	7,388	6,893	30,353
1,135.00	8,442	7,915	38,268

Device	Routing	Invert	Outlet Devices
#1	Primary	1,130.90'	**24.0" Round Culvert** L= 100.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,130.90' / 1,129.50' S= 0.0140 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	1,131.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Secondary	1,134.50'	**40.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	1,130.90'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=9.24 cfs @ 12.29 hrs HW=1,132.28' (Free Discharge)
└**1=Culvert** (Inlet Controls 9.24 cfs @ 4.00 fps)
  ├**2=Sharp-Crested Rectangular Weir** (Passes < 29.49 cfs potential flow)
  └**4=Orifice/Grate** (Passes < 4.44 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,127.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P3:


Hydrograph
Inflow Area=7.890 ac
Peak Elev=1,132.28'
Storage=19,186 cf
15.87 cfs
9.24 cfs
9.24 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

Summary for Pond P5:

Inflow Area = 1.680 ac, Inflow Depth = 1.84" for 2-YR STORM event
Inflow = 3.43 cfs @ 12.11 hrs, Volume= 0.257 af
Outflow = 0.34 cfs @ 13.05 hrs, Volume= 0.198 af, Atten= 90%, Lag= 56.6 min
Primary = 0.34 cfs @ 13.05 hrs, Volume= 0.198 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,146.03' @ 13.05 hrs Surf.Area= 4,002 sf Storage= 6,163 cf

Plug-Flow detention time= 315.2 min calculated for 0.198 af (77% of inflow)
Center-of-Mass det. time= 232.2 min (1,056.1 - 823.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,144.00'	10,517 cf	**Custom Stage Data (Prismatic)** Listed below

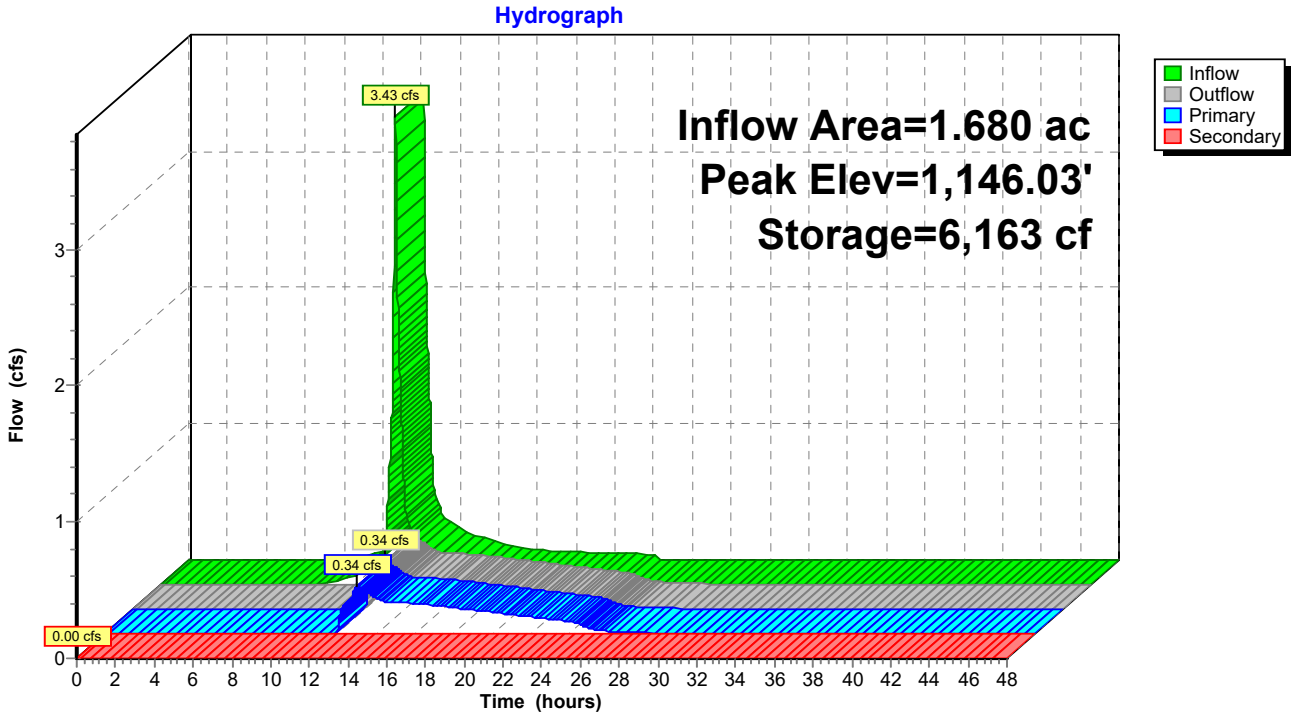
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,144.00	2,092	0	0
1,145.00	2,986	2,539	2,539
1,146.00	3,967	3,477	6,016
1,147.00	5,036	4,502	10,517

Device	Routing	Invert	Outlet Devices
#1	Primary	1,145.00'	**24.0" Round Culvert** L= 42.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,145.00' / 1,141.00' S= 0.0952 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	1,146.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Secondary	1,146.40'	**30.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	1,145.00'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.34 cfs @ 13.05 hrs HW=1,146.03' (Free Discharge)
└**1=Culvert** (Passes 0.34 cfs of 5.66 cfs potential flow)
  ├**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.10 cfs @ 0.60 fps)
  └**4=Orifice/Grate** (Orifice Controls 0.24 cfs @ 4.89 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,144.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P5:


Hydrograph
Inflow Area=1.680 ac
Peak Elev=1,146.03'
Storage=6,163 cf
3.43 cfs
0.34 cfs
0.34 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond P7:

Inflow Area = 4.100 ac, Inflow Depth = 1.54" for 2-YR STORM event
Inflow = 7.06 cfs @ 12.11 hrs, Volume= 0.526 af
Outflow = 0.28 cfs @ 16.02 hrs, Volume= 0.391 af, Atten= 96%, Lag= 234.7 min
Primary = 0.28 cfs @ 16.02 hrs, Volume= 0.391 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,159.59' @ 16.02 hrs Surf.Area= 0 sf Storage= 14,993 cf

Plug-Flow detention time= 583.5 min calculated for 0.391 af (74% of inflow)
Center-of-Mass det. time= 492.8 min (1,330.2 - 837.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,157.00'	34,851 cf	**Custom Stage Data** Listed below

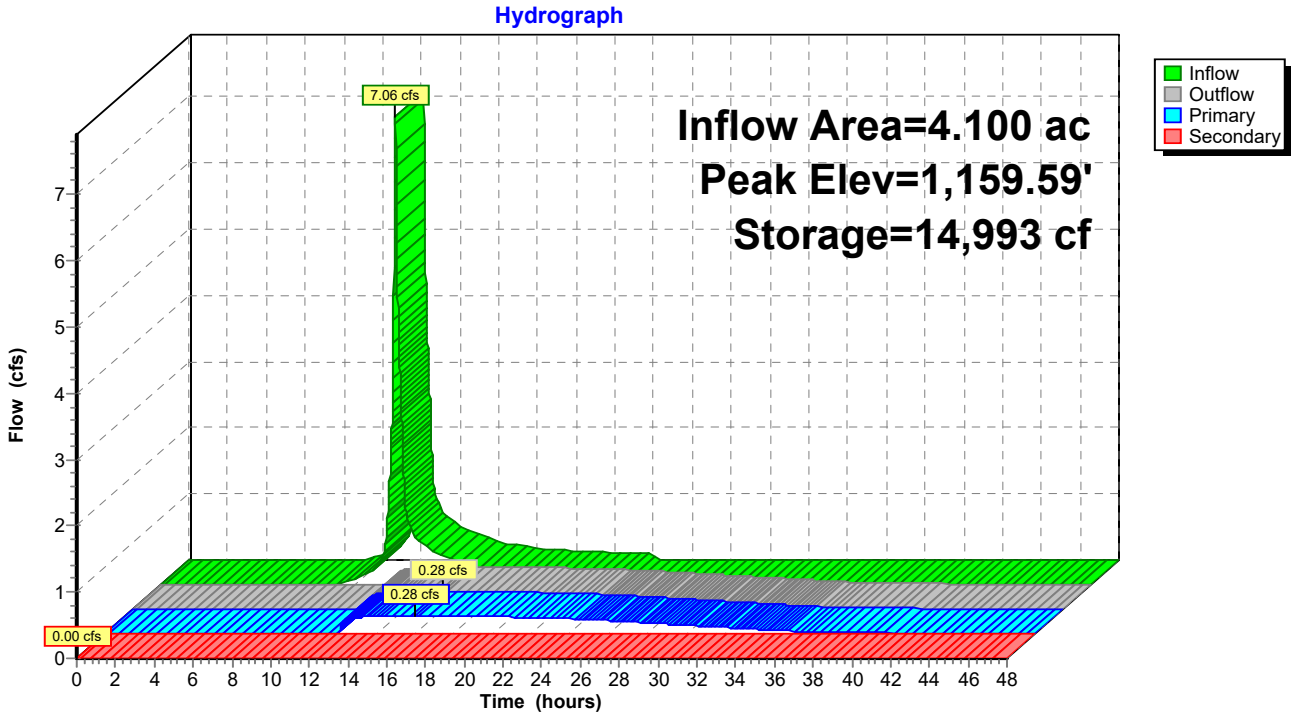
Elevation (feet)	Cum.Store (cubic-feet)
1,157.00	0
1,158.00	4,997
1,159.00	10,924
1,160.00	17,837
1,161.00	25,794
1,162.00	34,851

Device	Routing	Invert	Outlet Devices
#1	Primary	1,157.15'	**30.0" Round Culvert** L= 58.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,157.15' / 1,156.10' S= 0.0181 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	1,160.95'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Secondary	1,161.55'	**30.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	1,158.10'	**3.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.28 cfs @ 16.02 hrs HW=1,159.59' (Free Discharge)
└**1=Culvert** (Passes 0.28 cfs of 25.93 cfs potential flow)
  ├**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Orifice Controls 0.28 cfs @ 5.62 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,157.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P7:


Hydrograph
Inflow Area=4.100 ac
Peak Elev=1,159.59'
Storage=14,993 cf
7.06 cfs
0.28 cfs
0.28 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond P8/10:

Inflow Area = 28.040 ac, Inflow Depth = 1.84" for 2-YR STORM event
Inflow = 47.30 cfs @ 12.19 hrs, Volume= 4.288 af
Outflow = 17.19 cfs @ 12.57 hrs, Volume= 3.121 af, Atten= 64%, Lag= 23.1 min
Primary = 17.19 cfs @ 12.57 hrs, Volume= 3.121 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,126.17' @ 12.57 hrs Surf.Area= 0 sf Storage= 84,971 cf

Plug-Flow detention time= 299.4 min calculated for 3.121 af (73% of inflow)
Center-of-Mass det. time= 208.2 min (1,037.9 - 829.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,122.00'	166,405 cf	**Custom Stage Data** Listed below

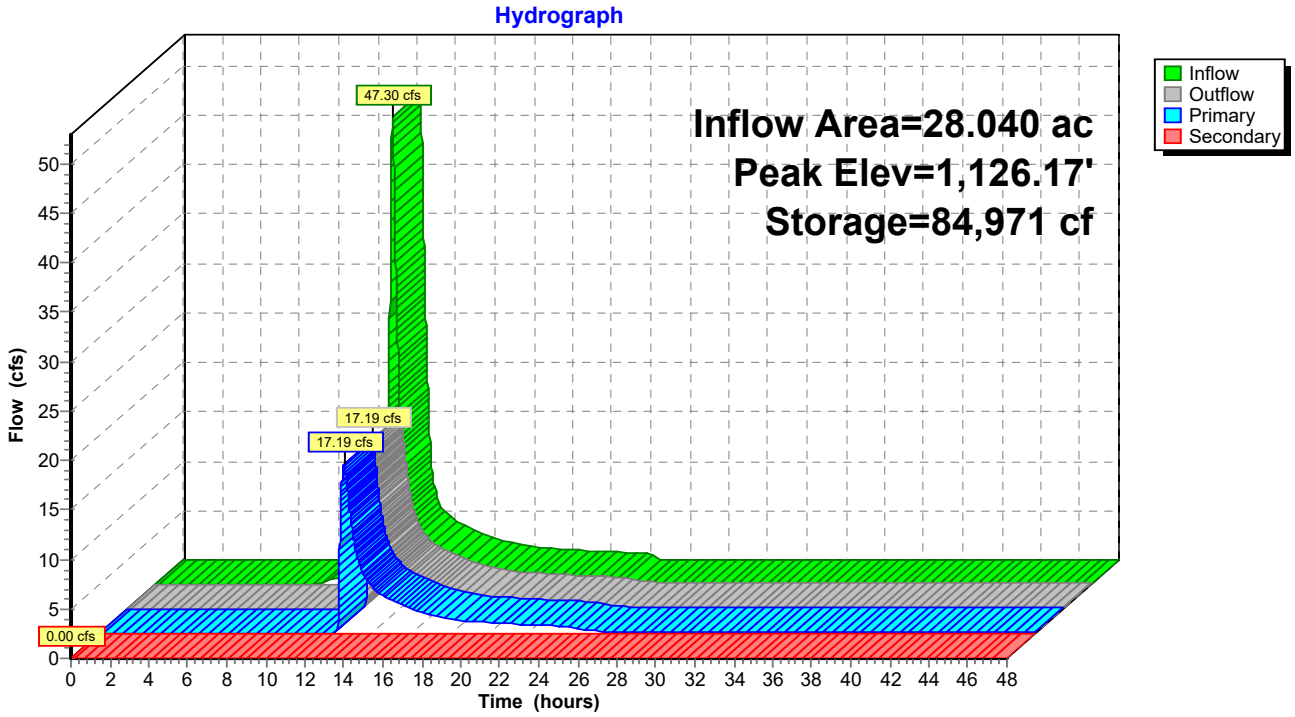
Elevation (feet)	Cum.Store (cubic-feet)
1,122.00	0
1,123.00	16,747
1,124.00	35,732
1,125.00	57,018
1,126.00	80,666
1,127.00	106,738
1,128.00	135,298
1,129.00	166,405

Device	Routing	Invert	Outlet Devices
#1	Primary	1,124.40'	**48.0" Round Culvert** L= 88.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,124.40' / 1,123.00' S= 0.0159 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Device 1	1,125.25'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Secondary	1,128.25'	**50.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	1,124.40'	**3.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=17.18 cfs @ 12.57 hrs HW=1,126.17' (Free Discharge)
└**1=Culvert** (Passes 17.18 cfs of 24.18 cfs potential flow)
  ├**2=Sharp-Crested Rectangular Weir** (Weir Controls 16.87 cfs @ 3.83 fps)
  └**4=Orifice/Grate** (Orifice Controls 0.30 cfs @ 6.17 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,122.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P8/10:


Hydrograph
Inflow Area=28.040 ac
Peak Elev=1,126.17'
Storage=84,971 cf
47.30 cfs
17.19 cfs
17.19 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 5 10 15 20 25 30 35 40 45 50

Summary for Pond P9:

Inflow Area = 6.810 ac, Inflow Depth = 1.91" for 2-YR STORM event
Inflow = 10.75 cfs @ 12.25 hrs, Volume= 1.087 af
Outflow = 3.38 cfs @ 12.72 hrs, Volume= 0.811 af, Atten= 69%, Lag= 28.4 min
Primary = 3.38 cfs @ 12.72 hrs, Volume= 0.811 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,189.32' @ 12.72 hrs Surf.Area= 12,947 sf Storage= 23,498 cf

Plug-Flow detention time= 394.0 min calculated for 0.811 af (75% of inflow)
Center-of-Mass det. time= 306.1 min (1,136.2 - 830.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,187.00'	48,733 cf	**Custom Stage Data (Prismatic)** Listed below

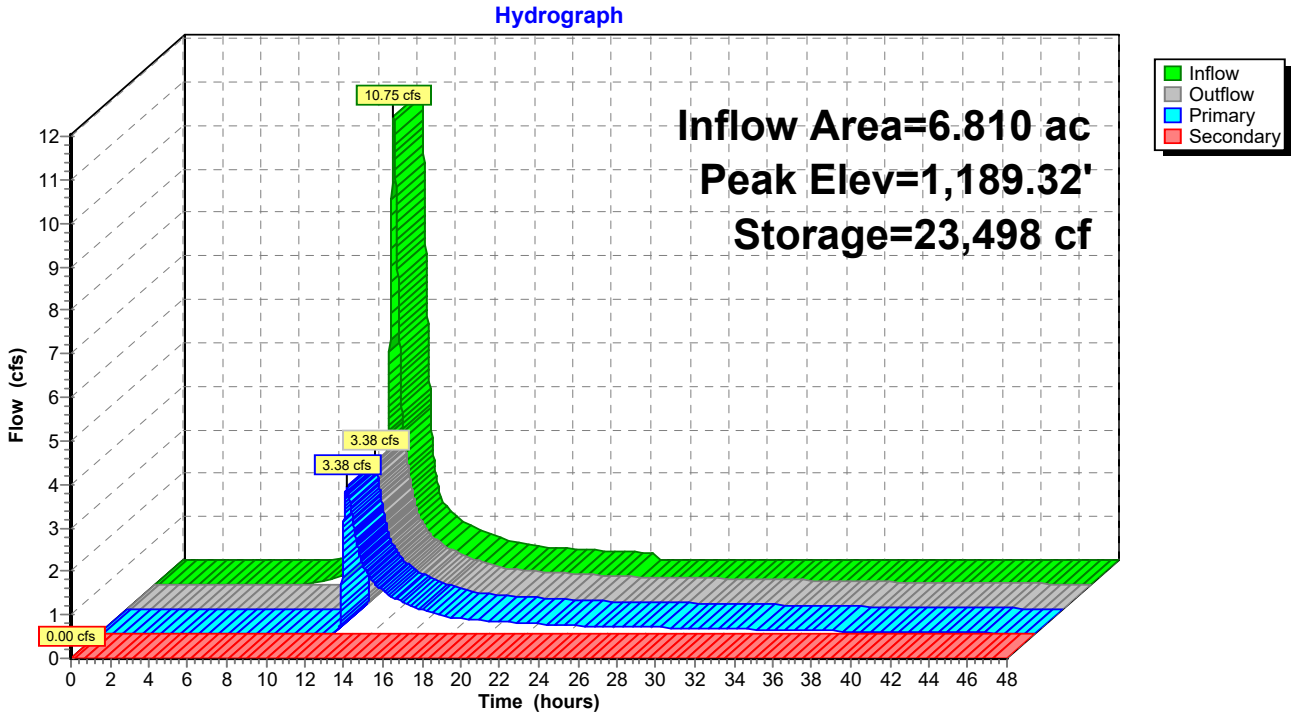
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,187.00	7,155	0	0
1,188.00	9,581	8,368	8,368
1,189.00	12,108	10,845	19,213
1,190.00	14,735	13,422	32,634
1,191.00	17,463	16,099	48,733

Device	Routing	Invert	Outlet Devices
#1	Primary	1,188.25'	**48.0" Round Culvert** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,188.25' / 1,187.25' S= 0.0167 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Device 1	1,189.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Secondary	1,190.00'	**20.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	1,188.25'	**3.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=3.37 cfs @ 12.72 hrs HW=1,189.32' (Free Discharge)
└**1=Culvert** (Passes 3.37 cfs of 9.50 cfs potential flow)
  └**2=Sharp-Crested Rectangular Weir** (Weir Controls 3.14 cfs @ 1.99 fps)
  └**4=Orifice/Grate** (Orifice Controls 0.23 cfs @ 4.68 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,187.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P9:


Hydrograph
Inflow Area=6.810 ac
Peak Elev=1,189.32'
Storage=23,498 cf
10.75 cfs
3.38 cfs
3.38 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 1 2 3 4 5 6 7 8 9 10 11 12

Summary for Pond WS11:

Inflow Area = 3.190 ac, Inflow Depth = 1.40" for 2-YR STORM event
Inflow = 3.39 cfs @ 12.30 hrs, Volume= 0.373 af
Outflow = 0.28 cfs @ 15.33 hrs, Volume= 0.111 af, Atten= 92%, Lag= 181.9 min
Primary = 0.28 cfs @ 15.33 hrs, Volume= 0.111 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 1,197.03' @ 15.33 hrs Surf.Area= 7,562 sf Storage= 11,645 cf

Plug-Flow detention time= 385.4 min calculated for 0.111 af (30% of inflow)
Center-of-Mass det. time= 249.9 min (1,107.0 - 857.0)

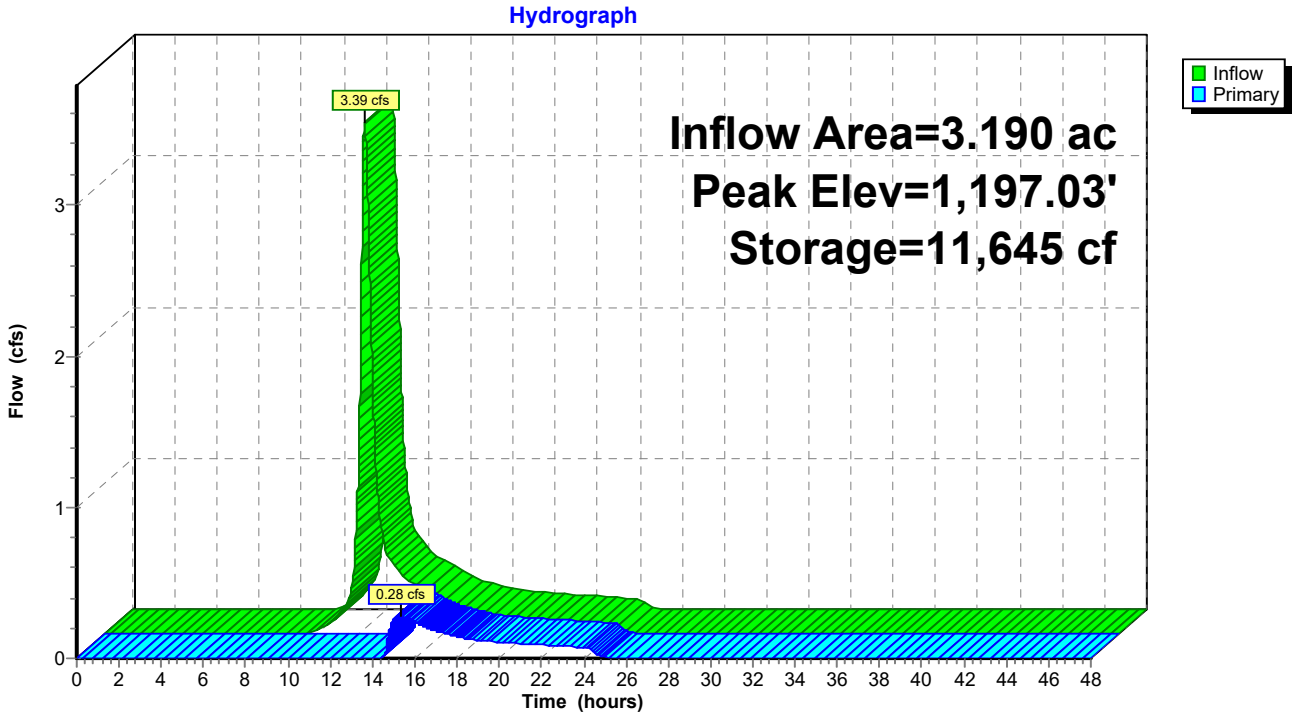
Volume	Invert	Avail.Storage	Storage Description
#1	1,194.00'	20,175 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,194.00	220	0	0
1,195.00	2,537	1,379	1,379
1,196.00	4,998	3,768	5,146
1,197.00	7,486	6,242	11,388
1,198.00	10,087	8,787	20,175

Device	Routing	Invert	Outlet Devices
#1	Primary	1,197.00'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Device 1	1,195.80'	**90.0 deg x 4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.50 (C= 3.13)

Primary OutFlow Max=0.24 cfs @ 15.33 hrs HW=1,197.03' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 0.24 cfs @ 0.41 fps)
↑—**2=Sharp-Crested Vee/Trap Weir** (Passes 0.24 cfs of 7.11 cfs potential flow)

Pond WS11:


Hydrograph
Inflow
Primary
3.39 cfs
0.28 cfs
Inflow Area=3.190 ac
Peak Elev=1,197.03'
Storage=11,645 cf
Flow (cfs)
0
1
2
3
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
Time (hours)

Summary for Pond WS14:

[95] Warning: Outlet Device #1 rise exceeded

Inflow Area = 4.600 ac, Inflow Depth = 1.76" for 2-YR STORM event
Inflow = 7.24 cfs @ 12.20 hrs, Volume= 0.674 af
Outflow = 3.63 cfs @ 12.50 hrs, Volume= 0.411 af, Atten= 50%, Lag= 17.8 min
Primary = 3.63 cfs @ 12.50 hrs, Volume= 0.411 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,150.18' @ 12.50 hrs Surf.Area= 6,505 sf Storage= 12,710 cf

Plug-Flow detention time= 196.6 min calculated for 0.411 af (61% of inflow)
Center-of-Mass det. time= 89.2 min (923.2 - 834.1)

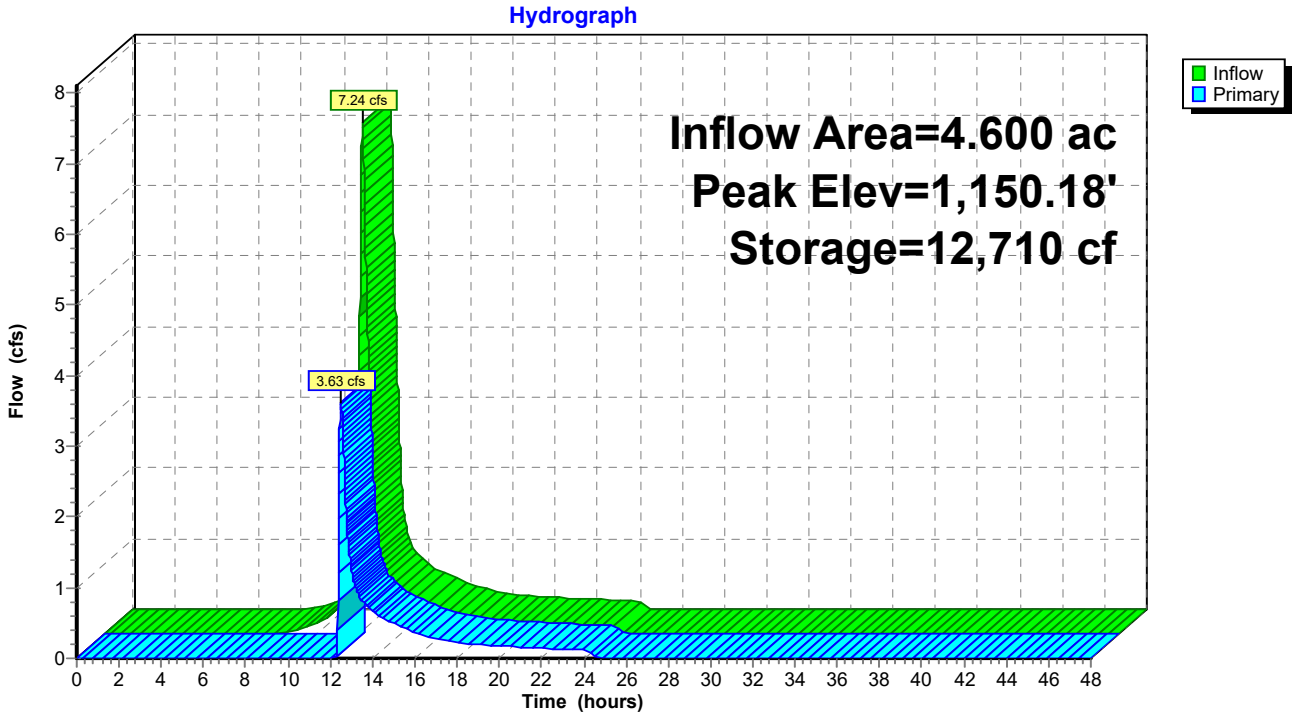
Volume	Invert	Avail.Storage	Storage Description
#1	1,147.00'	18,496 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,147.00	724	0	0
1,148.00	3,306	2,015	2,015
1,149.00	4,678	3,992	6,007
1,150.00	6,202	5,440	11,447
1,151.00	7,895	7,049	18,496

Device	Routing	Invert	Outlet Devices
#1	Device 2	1,148.80'	**90.0 deg x 4.0' long x 1.00' rise Sharp-Crested Vee/Trap Weir** Cv= 2.50 (C= 3.13)
#2	Primary	1,150.00'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=3.61 cfs @ 12.50 hrs HW=1,150.18' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 3.61 cfs @ 1.01 fps)
↑—**1=Sharp-Crested Vee/Trap Weir** (Passes 3.61 cfs of 9.92 cfs potential flow)

Pond WS14:


Hydrograph
Inflow
Primary
7.24 cfs
3.63 cfs
Inflow Area=4.600 ac
Peak Elev=1,150.18'
Storage=12,710 cf
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1: Runoff Area=1.280 ac Runoff Depth=3.09"
Tc=9.1 min CN=85 Runoff=4.14 cfs 0.330 af

Subcatchment2a: Runoff Area=4.430 ac Runoff Depth=2.81"
Tc=9.7 min CN=82 Runoff=12.87 cfs 1.038 af

Subcatchment2b: Runoff Area=4.020 ac Runoff Depth=2.72"
Tc=13.9 min CN=81 Runoff=10.00 cfs 0.912 af

Subcatchment3: Runoff Area=7.890 ac Runoff Depth=3.29"
Tc=9.2 min CN=87 Runoff=26.88 cfs 2.160 af

Subcatchment4: Runoff Area=0.937 ac Runoff Depth=3.19"
Tc=12.6 min CN=86 Runoff=2.81 cfs 0.249 af

Subcatchment5: Runoff Area=1.680 ac Runoff Depth=3.19"
Tc=7.5 min CN=86 Runoff=5.90 cfs 0.446 af

Subcatchment7: Runoff Area=4.100 ac Runoff Depth=2.81"
Tc=7.2 min CN=82 Runoff=12.95 cfs 0.961 af

Subcatchment8/10: Runoff Area=28.040 ac Runoff Depth=3.19"
Tc=13.7 min CN=86 Runoff=81.47 cfs 7.449 af

Subcatchment9: Runoff Area=6.810 ac Runoff Depth=3.29"
Tc=18.1 min CN=87 Runoff=18.25 cfs 1.865 af

Subcatchment11: Runoff Area=3.190 ac Runoff Depth=2.63"
Tc=21.4 min CN=80 Runoff=6.46 cfs 0.700 af

Subcatchment12: Runoff Area=1.930 ac Runoff Depth=3.19"
Tc=8.6 min CN=86 Runoff=6.53 cfs 0.513 af

Subcatchment13: Runoff Area=1.630 ac Runoff Depth=3.19"
Tc=7.0 min CN=86 Runoff=5.82 cfs 0.433 af

Subcatchment14: Runoff Area=4.600 ac Runoff Depth=3.09"
Tc=14.6 min CN=85 Runoff=12.68 cfs 1.185 af

Subcatchment15: Runoff Area=1.930 ac Runoff Depth=3.00"
Tc=13.7 min CN=84 Runoff=5.30 cfs 0.482 af

Pond IT1: Peak Elev=1,126.69' Storage=3,681 cf Inflow=4.14 cfs 0.330 af
Discarded=0.05 cfs 0.123 af Primary=3.94 cfs 0.202 af Outflow=3.99 cfs 0.326 af

Pond IT2a: Peak Elev=1,091.34' Storage=6,402 cf Inflow=12.87 cfs 1.038 af
Discarded=0.10 cfs 0.210 af Primary=12.42 cfs 0.828 af Outflow=12.52 cfs 1.038 af

Pond IT2b: Peak Elev=1,041.13' Storage=7,859 cf Inflow=10.00 cfs 0.912 af
Discarded=0.12 cfs 0.277 af Primary=9.48 cfs 0.635 af Outflow=9.60 cfs 0.912 af

Pond IT4: Peak Elev=1,114.76' Storage=8,675 cf Inflow=2.81 cfs 0.249 af
Discarded=0.03 cfs 0.086 af Primary=0.06 cfs 0.017 af Outflow=0.09 cfs 0.103 af

Pond P12: Peak Elev=1,187.87' Storage=5,221 cf Inflow=6.53 cfs 0.513 af
Primary=0.94 cfs 0.282 af Secondary=5.41 cfs 0.162 af Outflow=6.35 cfs 0.444 af

Pond P13: Peak Elev=1,143.96' Storage=11,718 cf Inflow=5.82 cfs 0.433 af
Primary=0.32 cfs 0.370 af Secondary=0.00 cfs 0.000 af Outflow=0.32 cfs 0.370 af

Pond P3: Peak Elev=1,133.30' Storage=25,505 cf Inflow=26.88 cfs 2.160 af
Primary=17.88 cfs 1.883 af Secondary=0.00 cfs 0.000 af Outflow=17.88 cfs 1.883 af

Pond P5: Peak Elev=1,146.32' Storage=7,469 cf Inflow=5.90 cfs 0.446 af
Primary=3.47 cfs 0.388 af Secondary=0.00 cfs 0.000 af Outflow=3.47 cfs 0.388 af

Pond P7: Peak Elev=1,161.05' Storage=26,214 cf Inflow=12.95 cfs 0.961 af
Primary=0.90 cfs 0.820 af Secondary=0.00 cfs 0.000 af Outflow=0.90 cfs 0.820 af

Pond P8/10: Peak Elev=1,127.17' Storage=111,592 cf Inflow=81.47 cfs 7.449 af
Primary=52.62 cfs 6.280 af Secondary=0.00 cfs 0.000 af Outflow=52.62 cfs 6.280 af

Pond P9: Peak Elev=1,189.77' Storage=29,492 cf Inflow=18.25 cfs 1.865 af
Primary=12.90 cfs 1.588 af Secondary=0.00 cfs 0.000 af Outflow=12.90 cfs 1.588 af

Pond WS11: Peak Elev=1,197.18' Storage=12,967 cf Inflow=6.46 cfs 0.700 af
Outflow=3.64 cfs 0.438 af

Pond WS14: Peak Elev=1,150.38' Storage=14,146 cf Inflow=12.68 cfs 1.185 af
Outflow=11.99 cfs 0.922 af

Total Runoff Area = 72.467 ac Runoff Volume = 18.723 af Average Runoff Depth = 3.10"

Summary for Subcatchment 1:

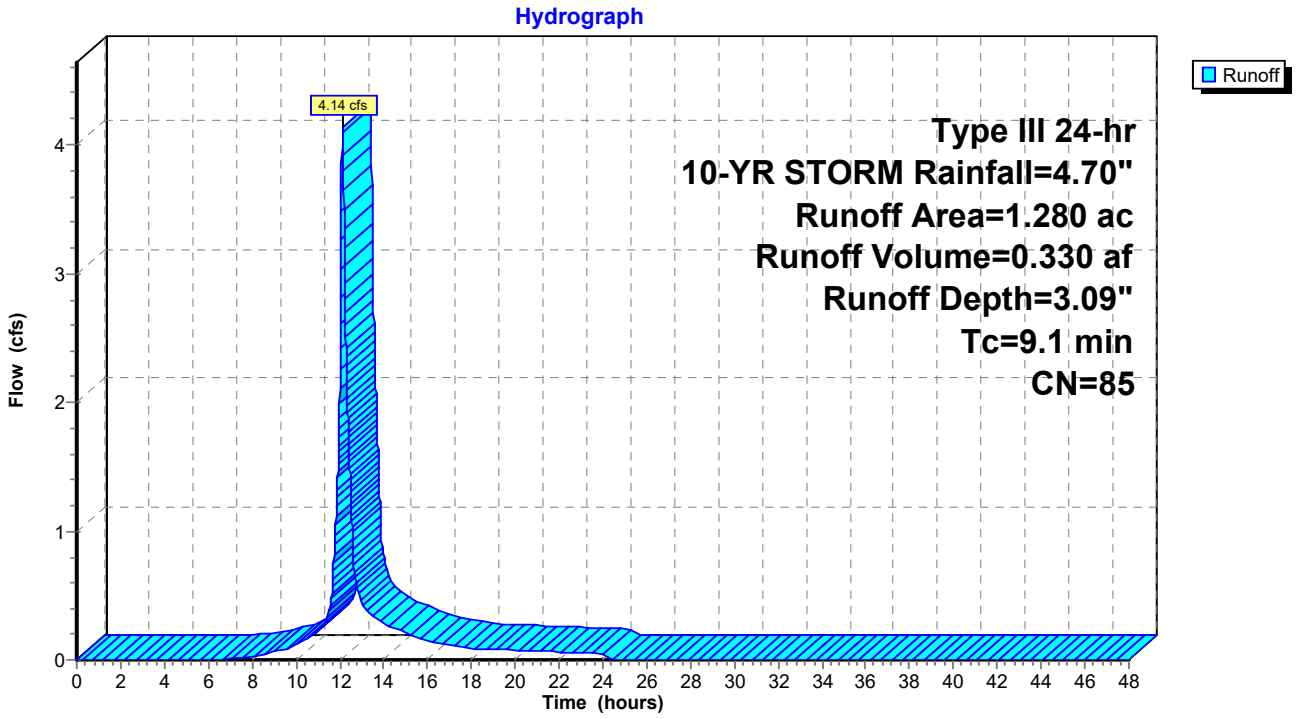
Runoff = 4.14 cfs @ 12.13 hrs, Volume= 0.330 af, Depth= 3.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	1.280	85	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1					**Direct Entry, NRCS Part 630**

Subcatchment 1:



Summary for Subcatchment 2a:

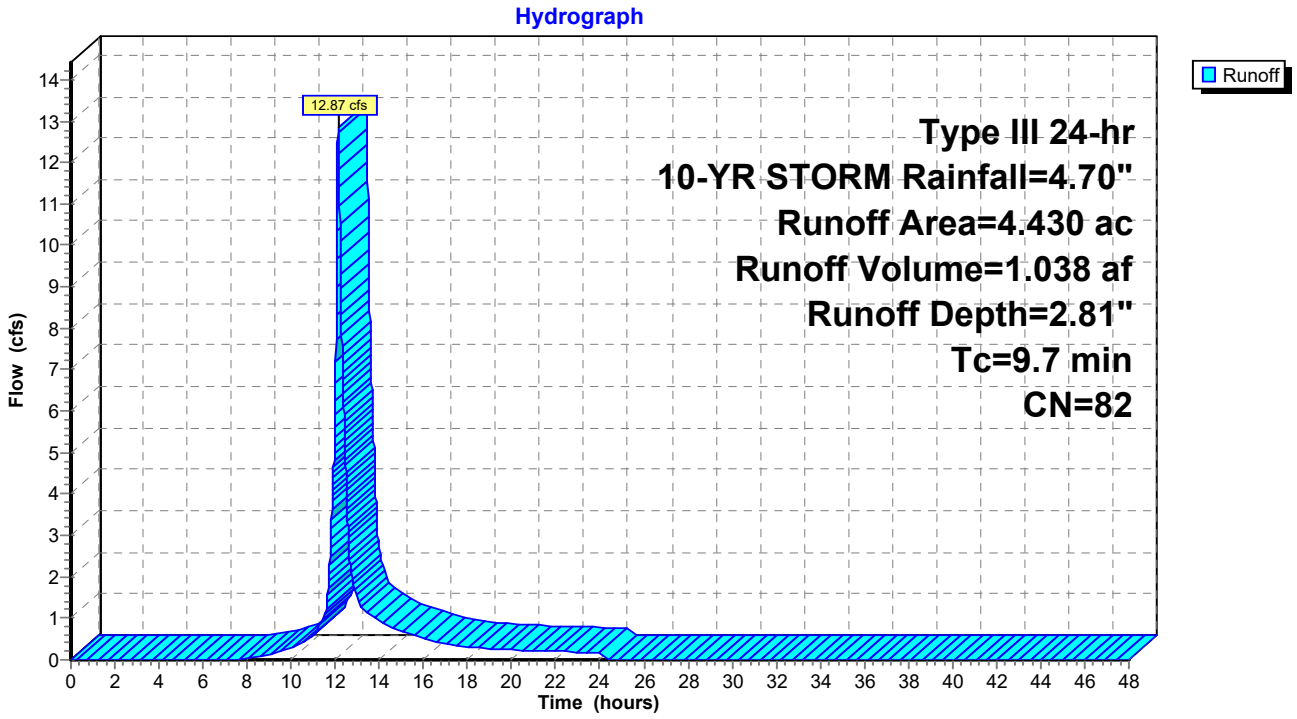
Runoff = 12.87 cfs @ 12.13 hrs, Volume= 1.038 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	4.430	82	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7					**Direct Entry, NRCS Part 630**

Subcatchment 2a:



Summary for Subcatchment 2b:

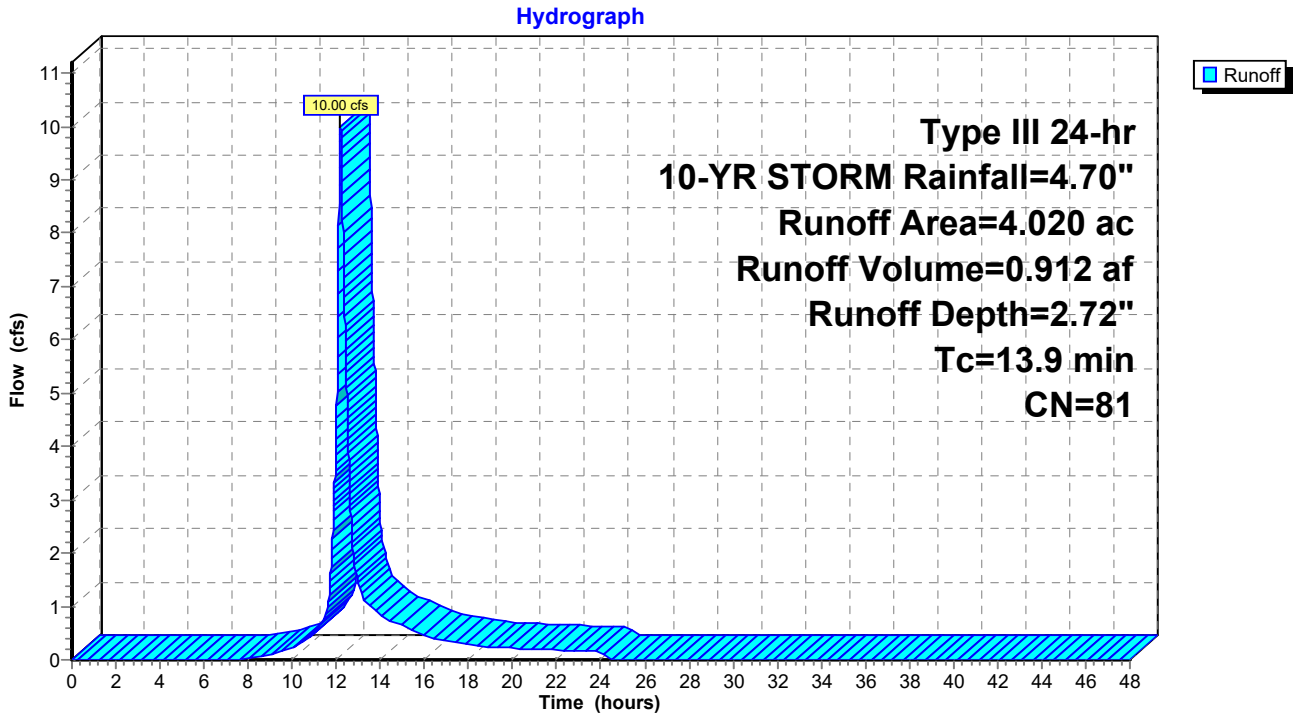
Runoff = 10.00 cfs @ 12.19 hrs, Volume= 0.912 af, Depth= 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	4.020	81	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9					**Direct Entry, NRCS Part 630**

Subcatchment 2b:



Summary for Subcatchment 3:

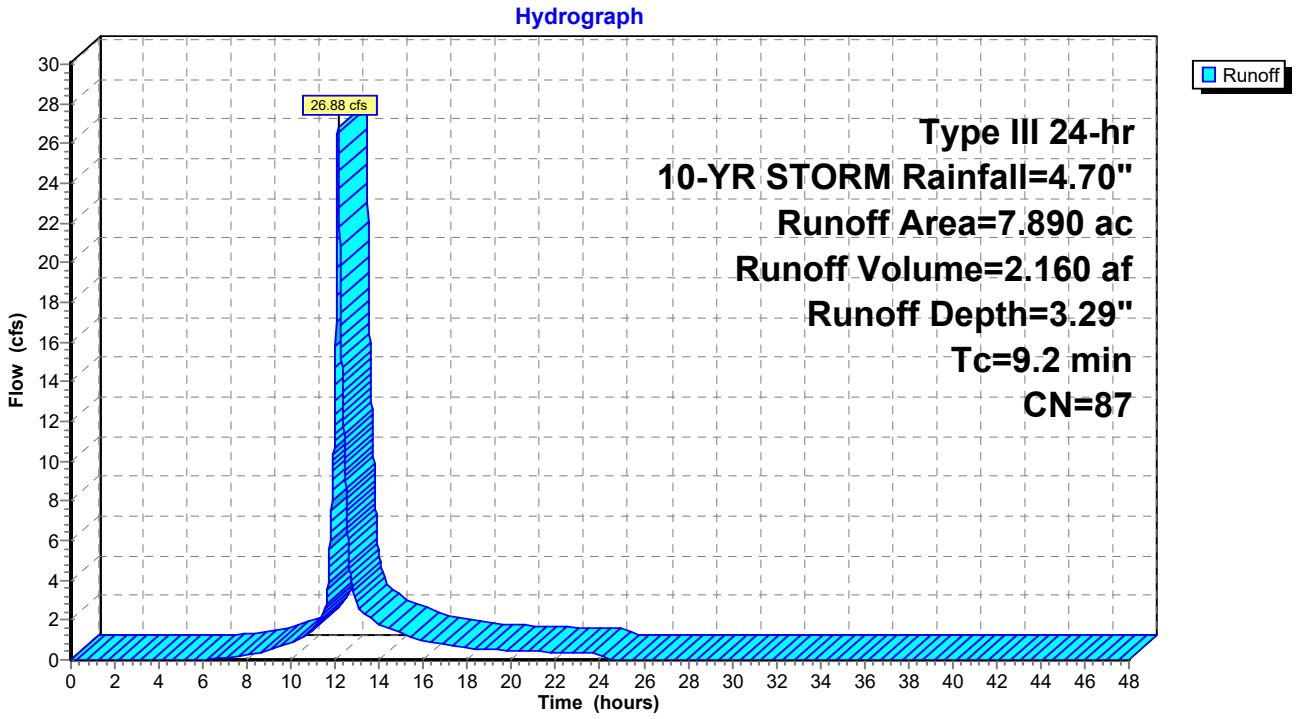
Runoff = 26.88 cfs @ 12.13 hrs, Volume= 2.160 af, Depth= 3.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	7.890	87	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2					**Direct Entry, NRCS Part 630**

Subcatchment 3:



Summary for Subcatchment 4:

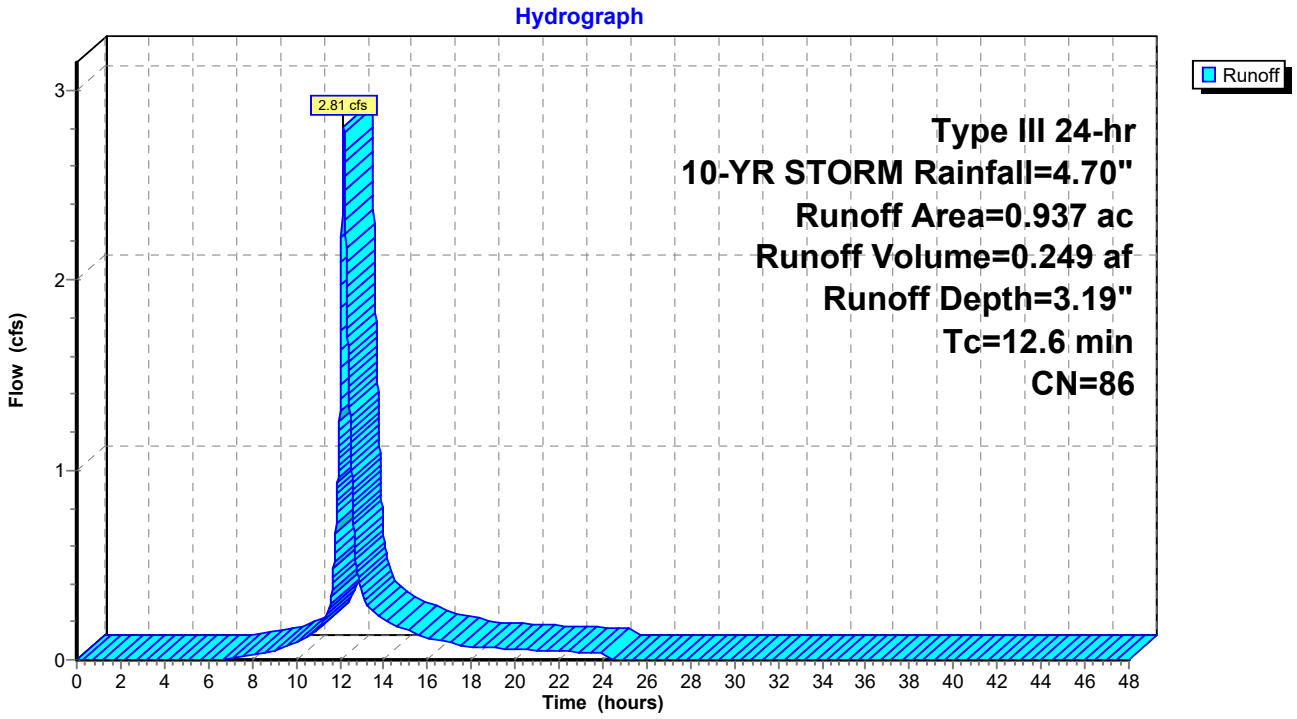
Runoff = 2.81 cfs @ 12.17 hrs, Volume= 0.249 af, Depth= 3.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	0.937	86	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6					**Direct Entry, NRCS Part 630**

Subcatchment 4:



Summary for Subcatchment 5:

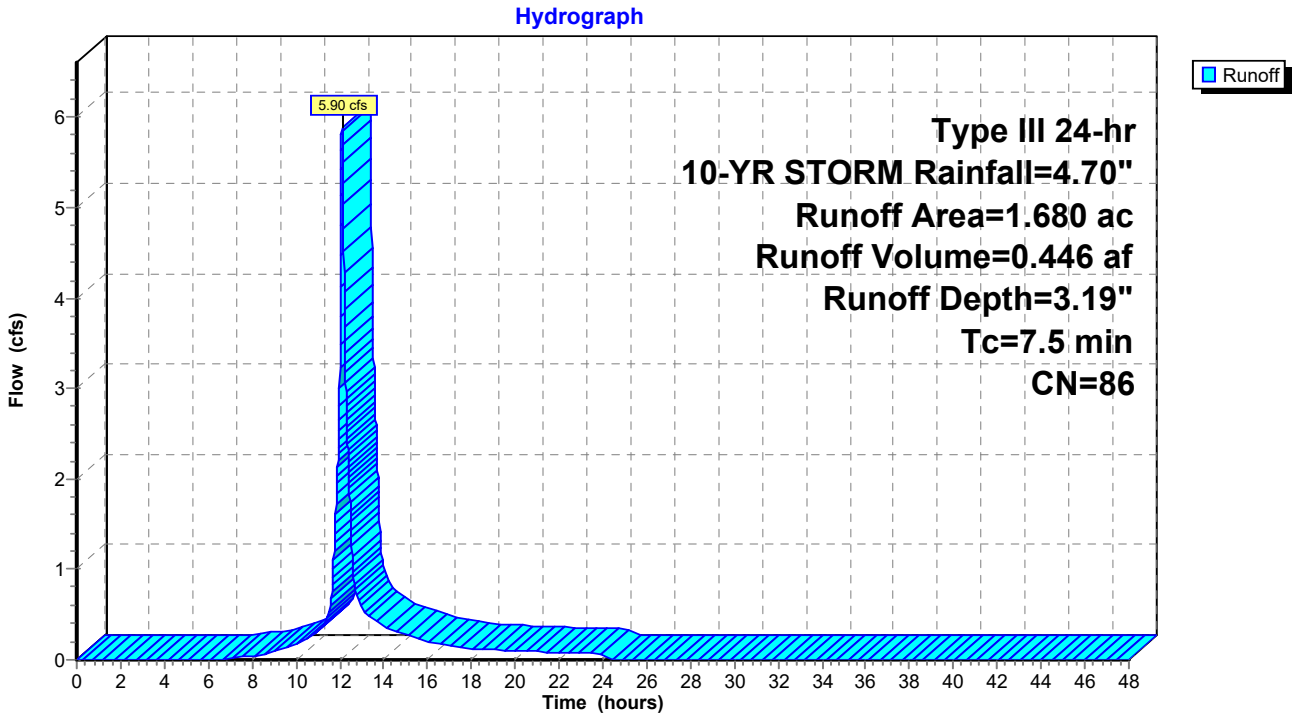
Runoff = 5.90 cfs @ 12.11 hrs, Volume= 0.446 af, Depth= 3.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	1.680	86	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5					**Direct Entry, NRCS Part 630**

Subcatchment 5:



Summary for Subcatchment 7:

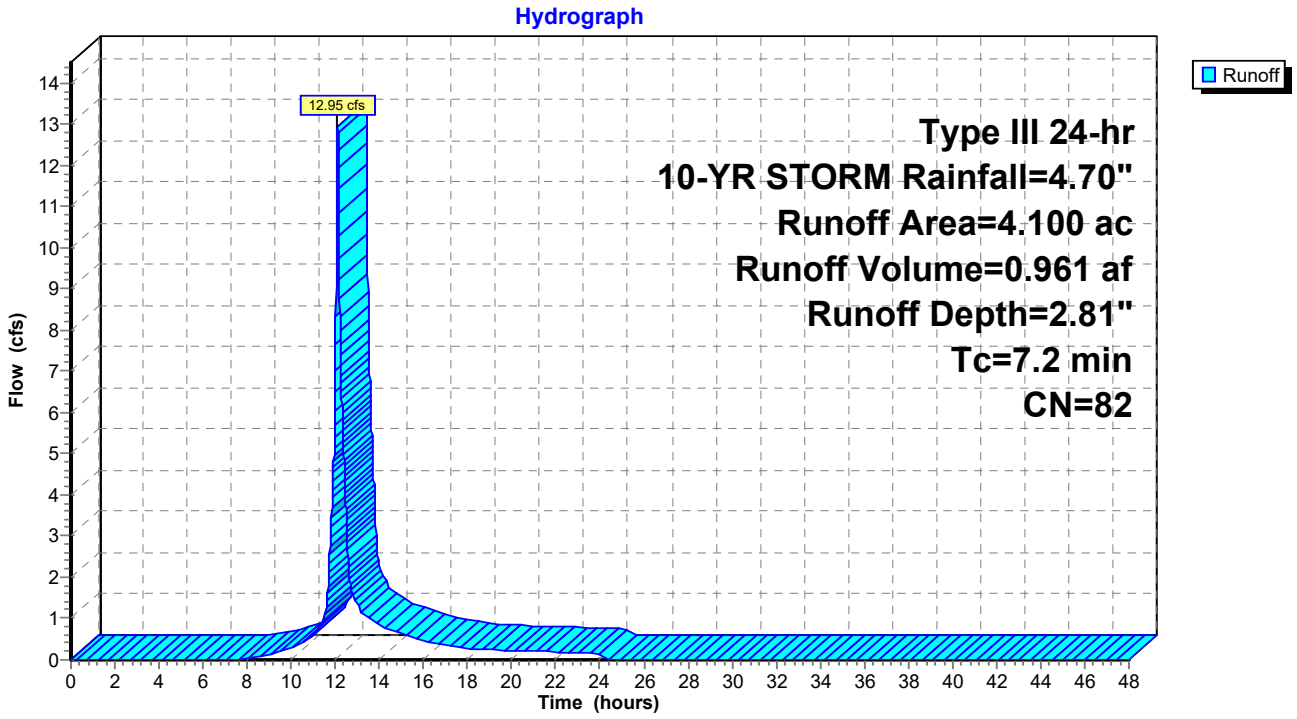
Runoff = 12.95 cfs @ 12.10 hrs, Volume= 0.961 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	4.100	82	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2					**Direct Entry, NRCS Part 630**

Subcatchment 7:



Summary for Subcatchment 8/10:

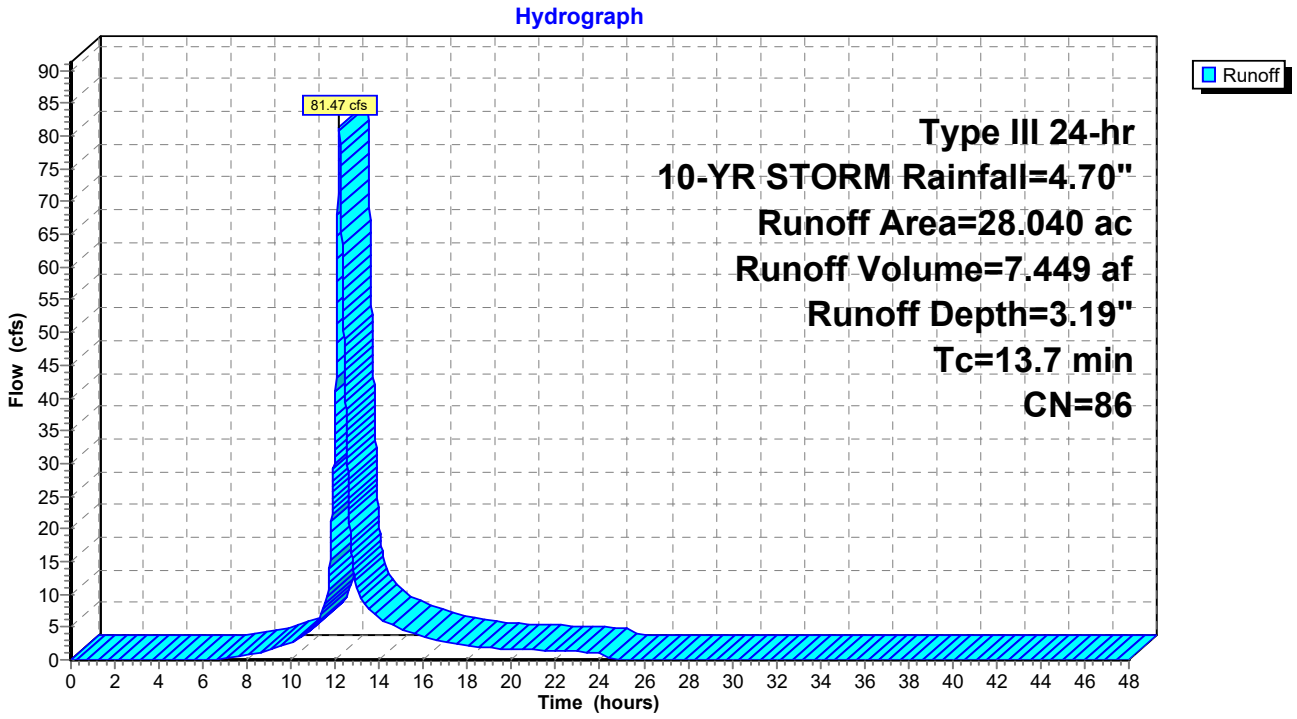
Runoff = 81.47 cfs @ 12.19 hrs, Volume= 7.449 af, Depth= 3.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	28.040	86	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7					**Direct Entry, NRCS Part 630**

Subcatchment 8/10:



Summary for Subcatchment 9:

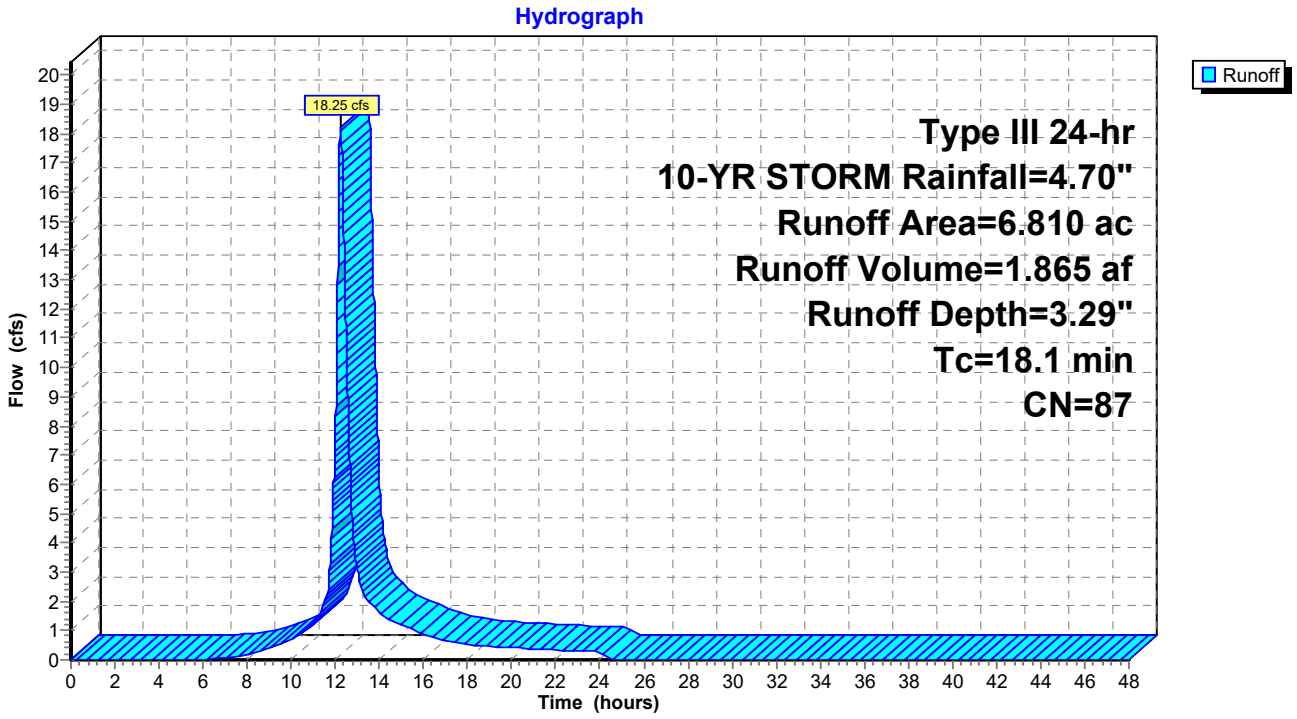
Runoff = 18.25 cfs @ 12.25 hrs, Volume= 1.865 af, Depth= 3.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	6.810	87	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1					**Direct Entry, NRCS Part 630**

Subcatchment 9:



Summary for Subcatchment 11:

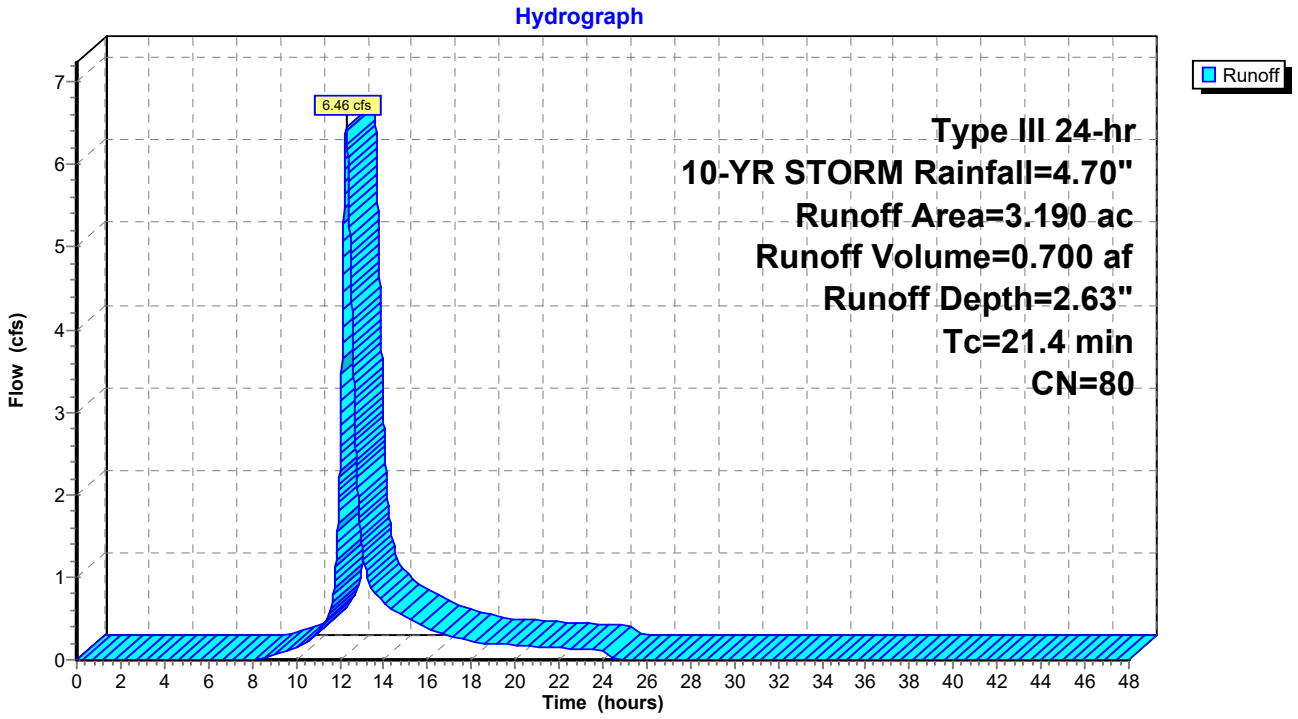
Runoff = 6.46 cfs @ 12.29 hrs, Volume= 0.700 af, Depth= 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	3.190	80	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.4					**Direct Entry, NRCS Part 630**

Subcatchment 11:



Summary for Subcatchment 12:

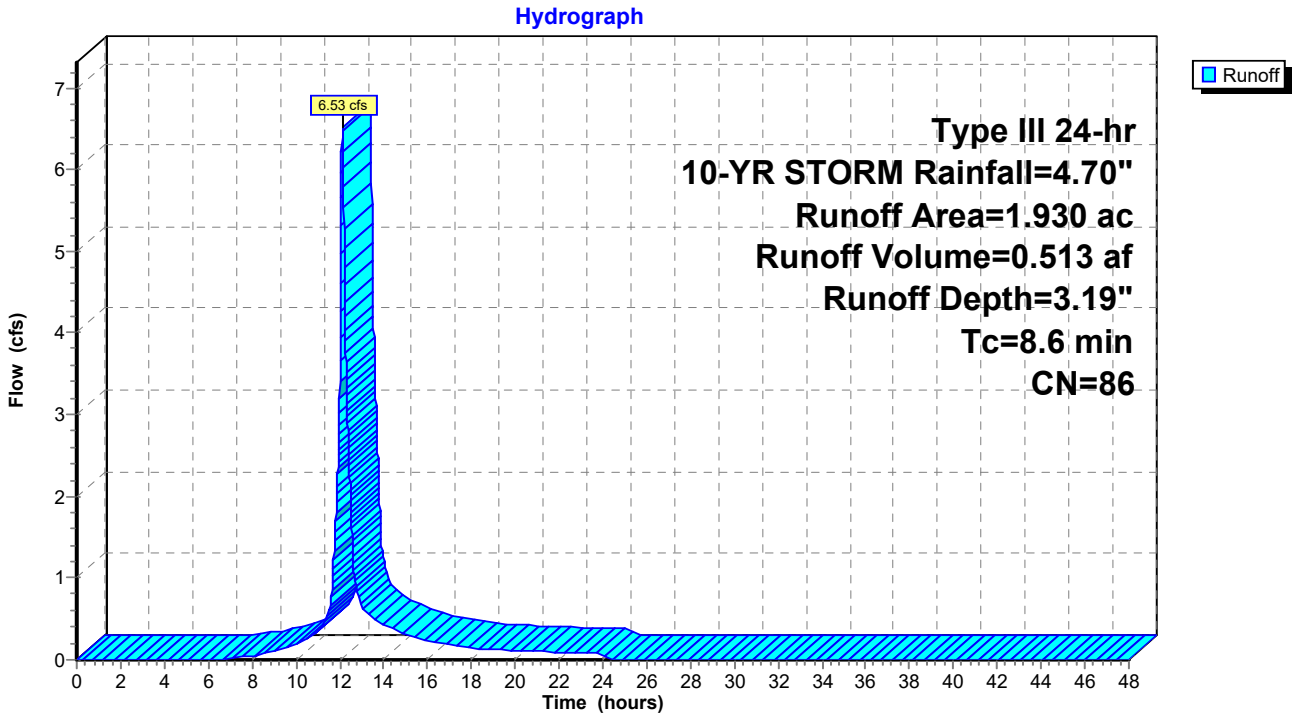
Runoff = 6.53 cfs @ 12.12 hrs, Volume= 0.513 af, Depth= 3.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	1.930	86	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6					**Direct Entry, NRCS Part 630**

Subcatchment 12:



Summary for Subcatchment 13:

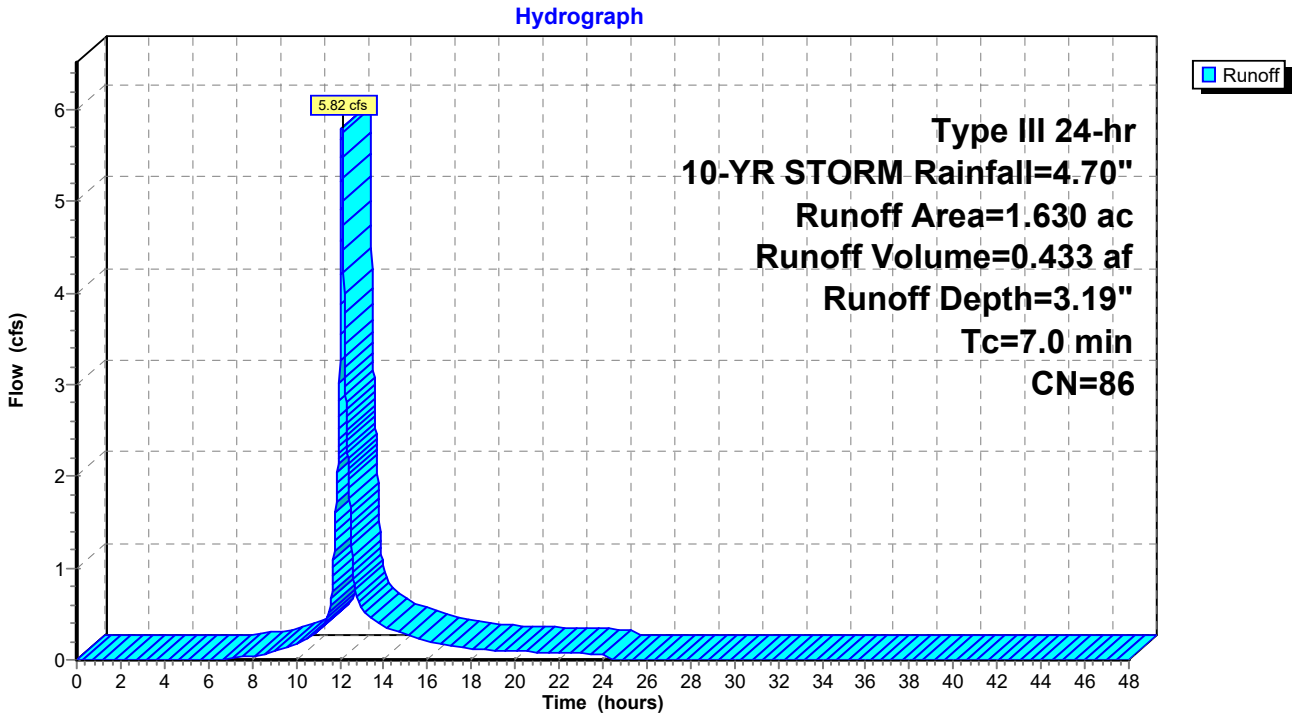
Runoff = 5.82 cfs @ 12.10 hrs, Volume= 0.433 af, Depth= 3.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	1.630	86	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					**Direct Entry, NRCS Part 630**

Subcatchment 13:



Summary for Subcatchment 14:

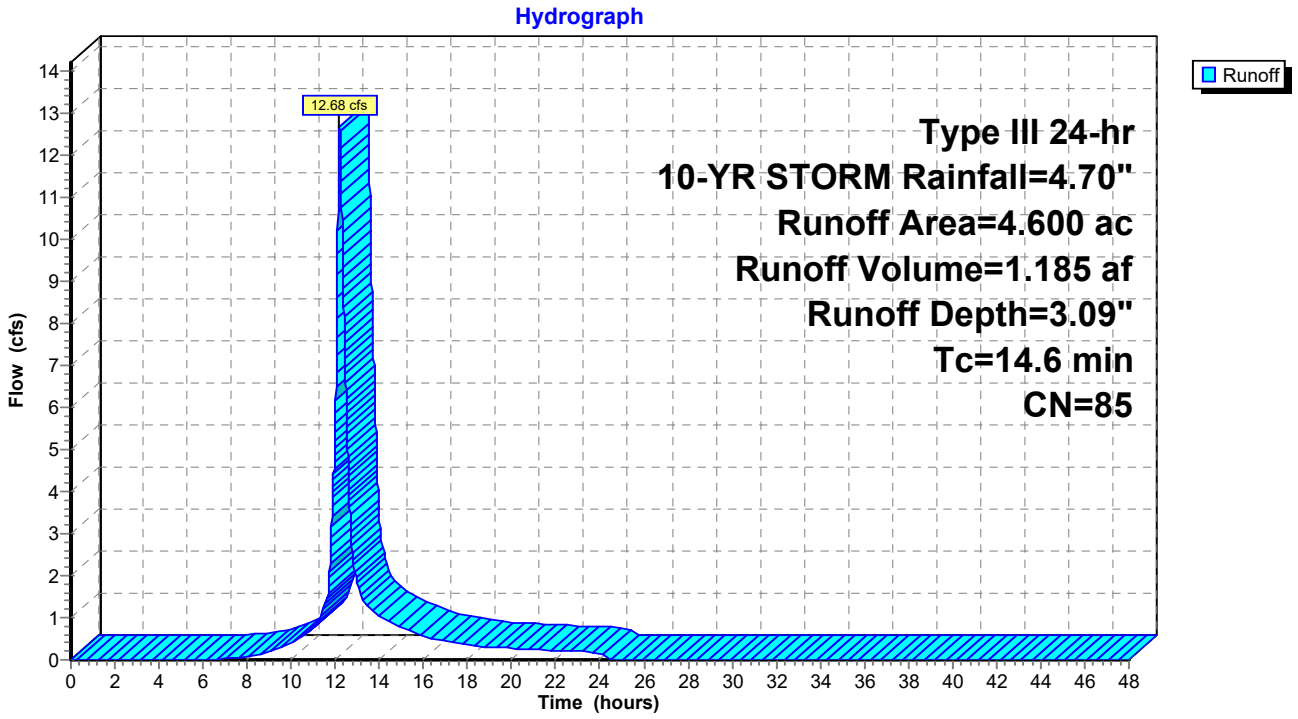
Runoff = 12.68 cfs @ 12.20 hrs, Volume= 1.185 af, Depth= 3.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	4.600	85	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6					**Direct Entry, NRCS Part 630**

Subcatchment 14:



Summary for Subcatchment 15:

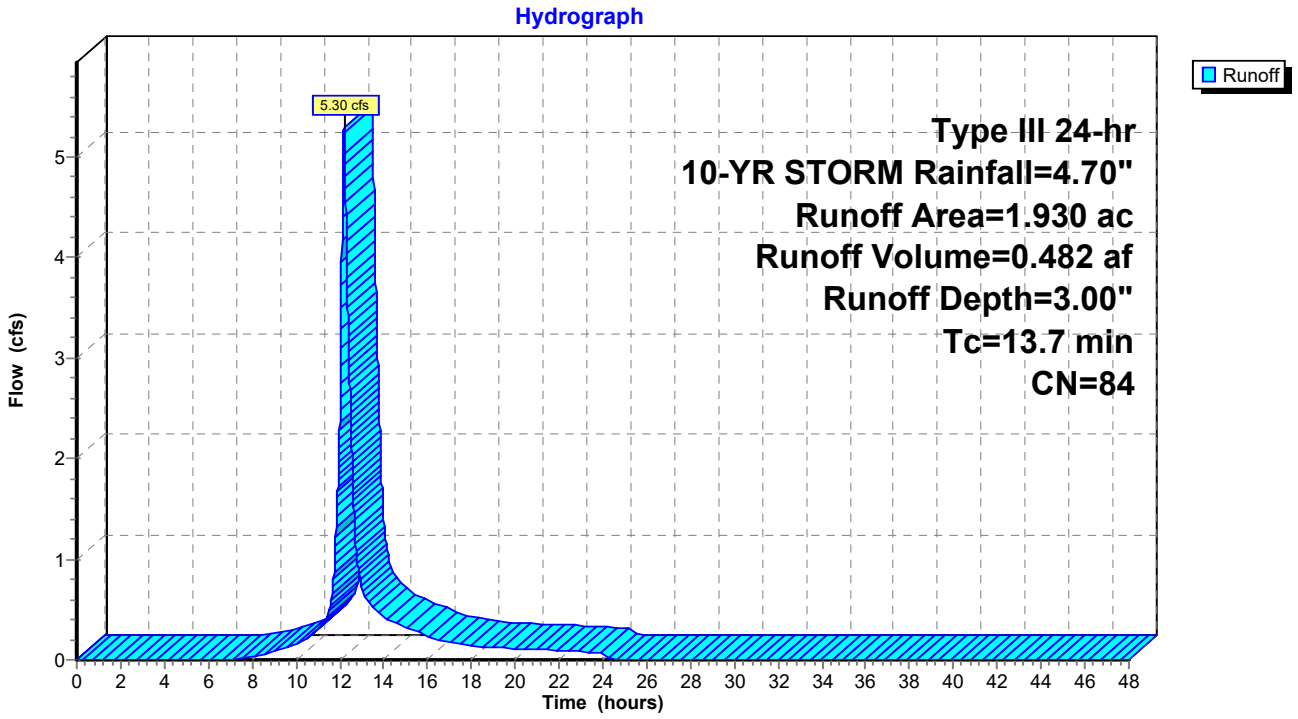
Runoff = 5.30 cfs @ 12.19 hrs, Volume= 0.482 af, Depth= 3.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	1.930	84	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7					**Direct Entry, NRCS Part 630**

Subcatchment 15:



Summary for Pond IT1:

Inflow Area = 1.280 ac, Inflow Depth = 3.09" for 10-YR STORM event
Inflow = 4.14 cfs @ 12.13 hrs, Volume= 0.330 af
Outflow = 3.99 cfs @ 12.15 hrs, Volume= 0.326 af, Atten= 4%, Lag= 1.7 min
Discarded = 0.05 cfs @ 12.15 hrs, Volume= 0.123 af
Primary = 3.94 cfs @ 12.15 hrs, Volume= 0.202 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,126.69' @ 12.15 hrs Surf.Area= 2,694 sf Storage= 3,681 cf

Plug-Flow detention time= 316.3 min calculated for 0.326 af (99% of inflow)
Center-of-Mass det. time= 309.2 min (1,122.0 - 812.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,125.00'	4,476 cf	**Custom Stage Data (Prismatic)** Listed below

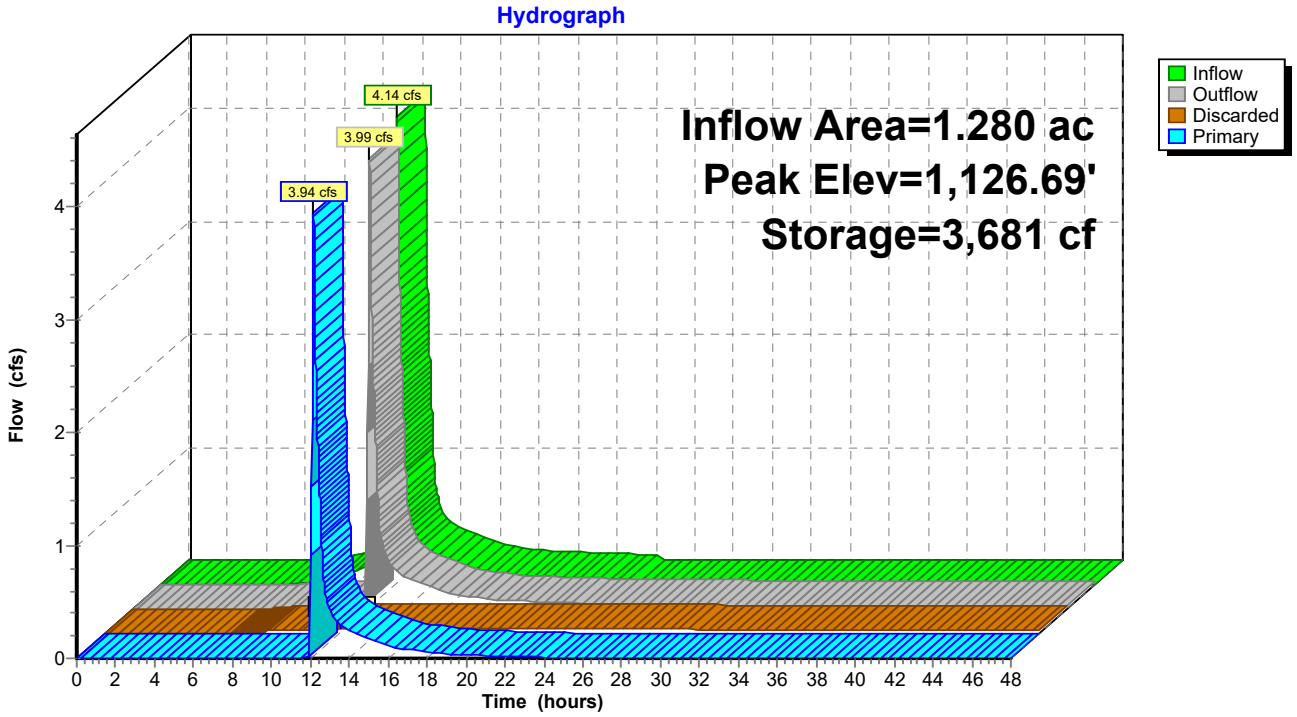
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,125.00	1,620	0	0
1,126.00	2,210	1,915	1,915
1,127.00	2,911	2,561	4,476

Device	Routing	Invert	Outlet Devices
#1	Primary	1,126.50'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Discarded	1,125.00'	**0.725 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.05 cfs @ 12.15 hrs HW=1,126.69' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=3.93 cfs @ 12.15 hrs HW=1,126.69' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 3.93 cfs @ 1.04 fps)

Pond IT1:


Hydrograph
Inflow Area=1.280 ac
Peak Elev=1,126.69'
Storage=3,681 cf
4.14 cfs
3.99 cfs
3.94 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond IT2a:

Inflow Area = 4.430 ac, Inflow Depth = 2.81" for 10-YR STORM event
Inflow = 12.87 cfs @ 12.13 hrs, Volume= 1.038 af
Outflow = 12.52 cfs @ 12.16 hrs, Volume= 1.038 af, Atten= 3%, Lag= 1.5 min
Discarded = 0.10 cfs @ 12.16 hrs, Volume= 0.210 af
Primary = 12.42 cfs @ 12.16 hrs, Volume= 0.828 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,091.34' @ 12.16 hrs Surf.Area= 4,719 sf Storage= 6,402 cf

Plug-Flow detention time= 143.5 min calculated for 1.038 af (100% of inflow)
Center-of-Mass det. time= 143.5 min (965.8 - 822.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,089.50'	7,111 cf	**Custom Stage Data (Prismatic)** Listed below

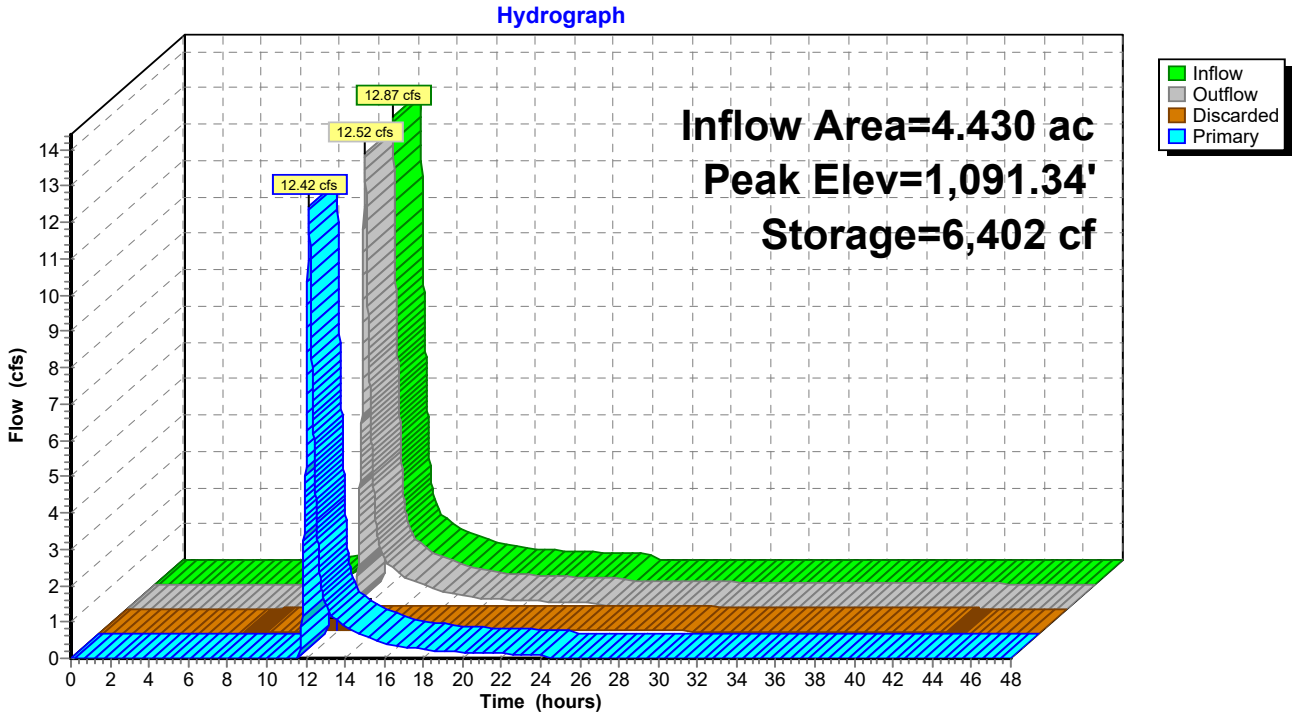
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,089.50	2,714	0	0
1,090.00	3,067	1,445	1,445
1,090.50	3,427	1,624	3,069
1,091.00	3,797	1,806	4,875
1,091.50	5,146	2,236	7,111

Device	Routing	Invert	Outlet Devices
#1	Primary	1,090.95'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Discarded	1,089.50'	**0.905 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.10 cfs @ 12.16 hrs HW=1,091.34' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.10 cfs)

Primary OutFlow Max=12.41 cfs @ 12.16 hrs HW=1,091.34' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 12.41 cfs @ 1.59 fps)

Pond IT2a:


Hydrograph
Inflow Area=4.430 ac
Peak Elev=1,091.34'
Storage=6,402 cf
12.87 cfs
12.52 cfs
12.42 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

Summary for Pond IT2b:

Inflow Area = 4.020 ac, Inflow Depth = 2.72" for 10-YR STORM event
Inflow = 10.00 cfs @ 12.19 hrs, Volume= 0.912 af
Outflow = 9.60 cfs @ 12.23 hrs, Volume= 0.912 af, Atten= 4%, Lag= 2.5 min
Discarded = 0.12 cfs @ 12.23 hrs, Volume= 0.277 af
Primary = 9.48 cfs @ 12.23 hrs, Volume= 0.635 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,041.13' @ 12.23 hrs Surf.Area= 5,571 sf Storage= 7,859 cf

Plug-Flow detention time= 198.0 min calculated for 0.912 af (100% of inflow)
Center-of-Mass det. time= 197.9 min (1,027.0 - 829.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,039.50'	9,955 cf	**Custom Stage Data (Prismatic)** Listed below

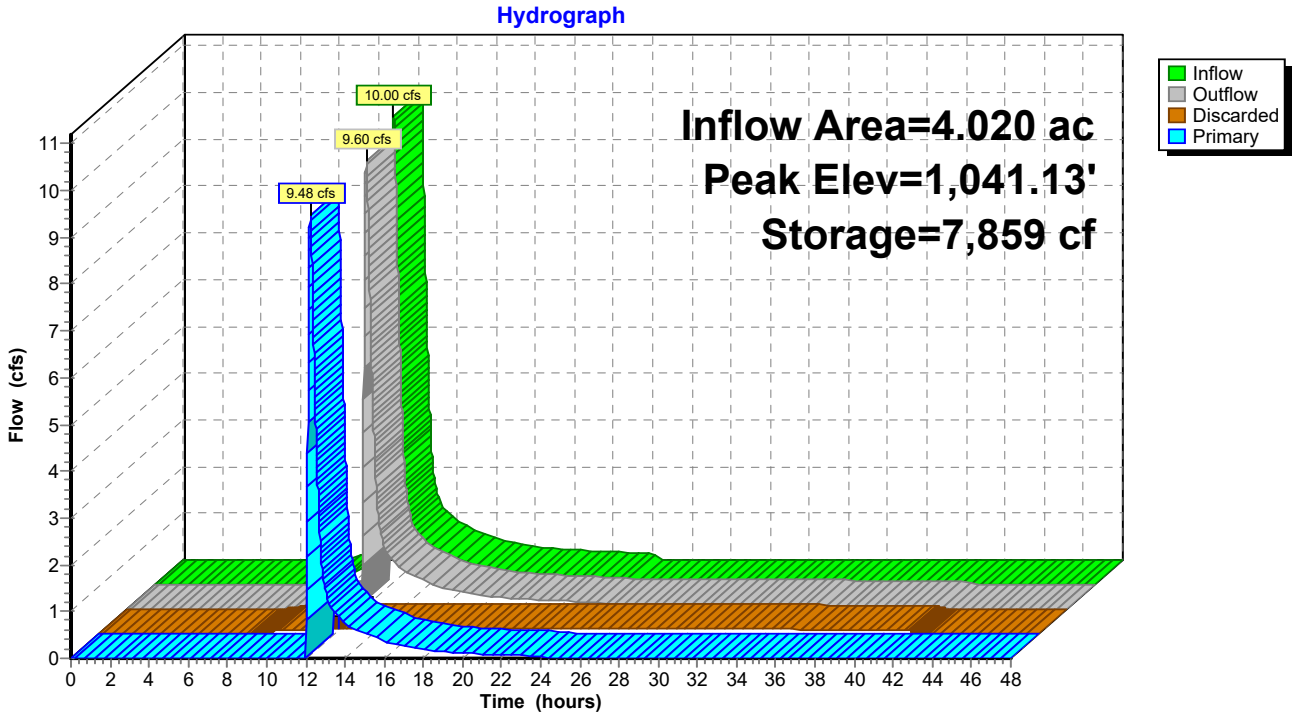
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,039.50	4,048	0	0
1,040.00	4,506	2,139	2,139
1,040.50	4,971	2,369	4,508
1,041.00	5,445	2,604	7,112
1,041.50	5,926	2,843	9,955

Device	Routing	Invert	Outlet Devices
#1	Primary	1,040.80'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Discarded	1,039.50'	**0.905 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.12 cfs @ 12.23 hrs HW=1,041.13' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.12 cfs)

Primary OutFlow Max=9.48 cfs @ 12.23 hrs HW=1,041.13' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 9.48 cfs @ 1.43 fps)

Pond IT2b:


Hydrograph
Inflow Area=4.020 ac
Peak Elev=1,041.13'
Storage=7,859 cf
10.00 cfs
9.60 cfs
9.48 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond IT4:

Inflow Area = 0.937 ac, Inflow Depth = 3.19" for 10-YR STORM event
Inflow = 2.81 cfs @ 12.17 hrs, Volume= 0.249 af
Outflow = 0.09 cfs @ 17.19 hrs, Volume= 0.103 af, Atten= 97%, Lag= 301.0 min
Discarded = 0.03 cfs @ 17.19 hrs, Volume= 0.086 af
Primary = 0.06 cfs @ 17.19 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,114.76' @ 17.19 hrs Surf.Area= 3,972 sf Storage= 8,675 cf

Plug-Flow detention time= 923.9 min calculated for 0.103 af (41% of inflow)
Center-of-Mass det. time= 802.9 min (1,615.9 - 812.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,112.00'	9,624 cf	**Custom Stage Data (Prismatic)** Listed below

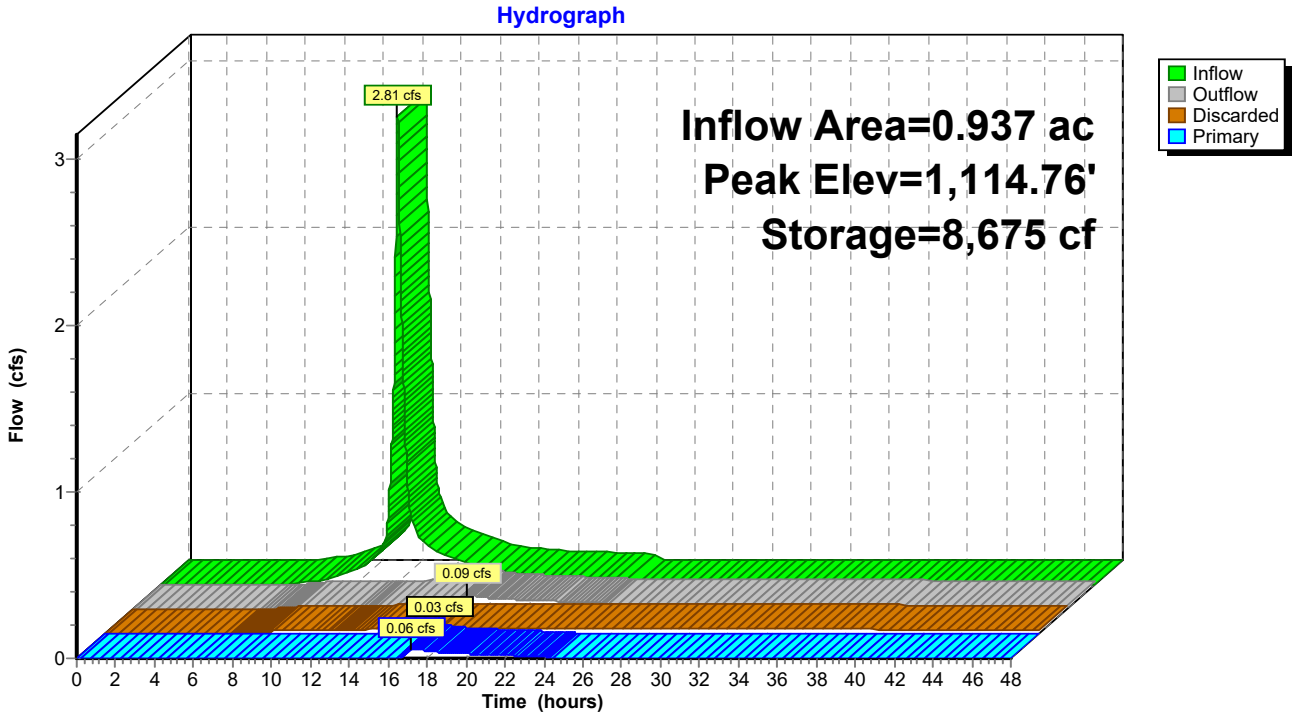
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,112.00	2,336	0	0
1,112.50	2,619	1,239	1,239
1,113.00	2,904	1,381	2,620
1,113.50	3,194	1,525	4,144
1,114.00	3,494	1,672	5,816
1,114.50	3,805	1,825	7,641
1,115.00	4,126	1,983	9,624

Device	Routing	Invert	Outlet Devices
#1	Primary	1,114.75'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Discarded	1,112.00'	**0.305 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.03 cfs @ 17.19 hrs HW=1,114.76' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.05 cfs @ 17.19 hrs HW=1,114.76' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 0.05 cfs @ 0.25 fps)

Pond IT4:


Hydrograph
Inflow Area=0.937 ac
Peak Elev=1,114.76'
Storage=8,675 cf
2.81 cfs
0.09 cfs
0.03 cfs
0.06 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0 1 2 3
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond P12:

Inflow Area = 1.930 ac, Inflow Depth = 3.19" for 10-YR STORM event
Inflow = 6.53 cfs @ 12.12 hrs, Volume= 0.513 af
Outflow = 6.35 cfs @ 12.14 hrs, Volume= 0.444 af, Atten= 3%, Lag= 1.4 min
Primary = 0.94 cfs @ 12.14 hrs, Volume= 0.282 af
Secondary = 5.41 cfs @ 12.14 hrs, Volume= 0.162 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,187.87' @ 12.14 hrs Surf.Area= 4,159 sf Storage= 5,221 cf

Plug-Flow detention time= 129.6 min calculated for 0.444 af (87% of inflow)
Center-of-Mass det. time= 70.1 min (879.3 - 809.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,185.00'	5,622 cf	**Custom Stage Data (Prismatic)** Listed below

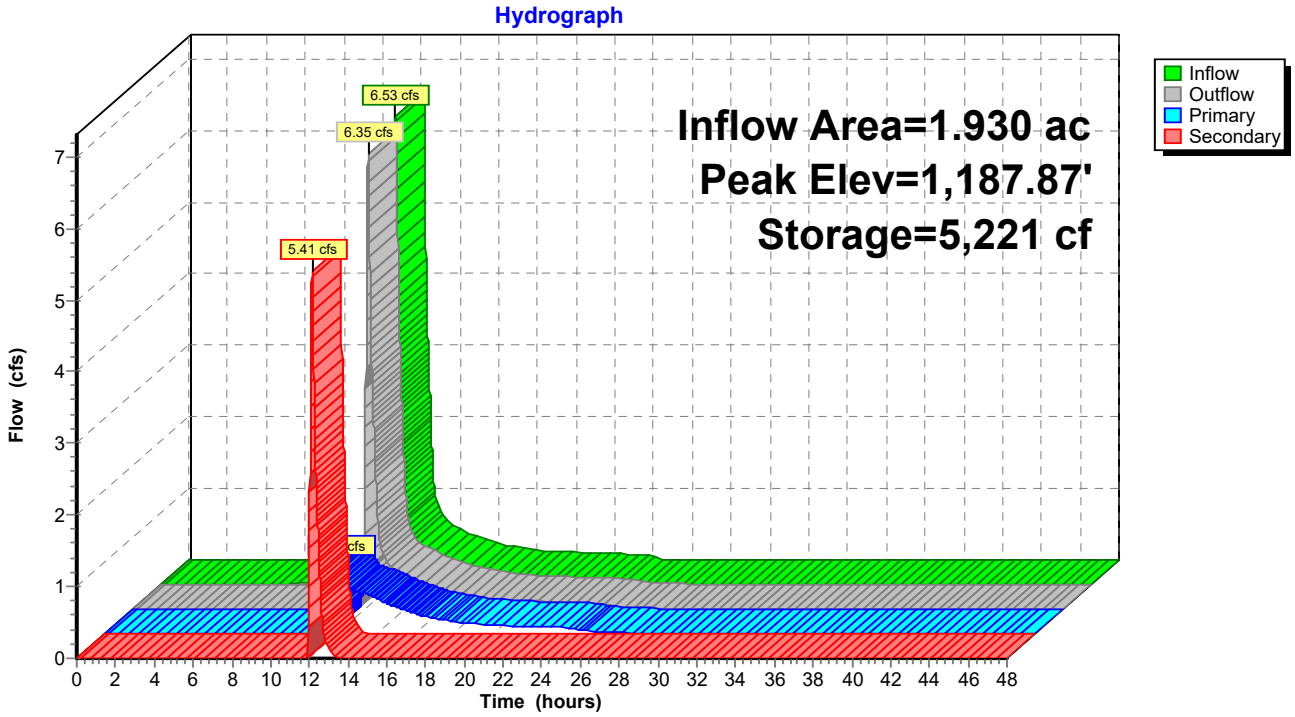
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,185.00	791	0	0
1,186.00	1,200	996	996
1,187.00	1,772	1,486	2,482
1,188.00	4,508	3,140	5,622

Device	Routing	Invert	Outlet Devices
#1	Primary	1,187.15'	**8.0" Round Culvert** L= 20.5' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,187.15' / 1,187.00' S= 0.0073 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#2	Secondary	1,187.65'	**20.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=0.94 cfs @ 12.14 hrs HW=1,187.87' (Free Discharge)
↑**1=Culvert** (Barrel Controls 0.94 cfs @ 3.09 fps)

Secondary OutFlow Max=5.39 cfs @ 12.14 hrs HW=1,187.87' (Free Discharge)
↑**2=Broad-Crested Rectangular Weir** (Weir Controls 5.39 cfs @ 1.21 fps)

Pond P12:


Hydrograph
Inflow Area=1.930 ac
Peak Elev=1,187.87'
Storage=5,221 cf
6.53 cfs
6.35 cfs
5.41 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond P13:

Inflow Area = 1.630 ac, Inflow Depth = 3.19" for 10-YR STORM event
Inflow = 5.82 cfs @ 12.10 hrs, Volume= 0.433 af
Outflow = 0.32 cfs @ 14.37 hrs, Volume= 0.370 af, Atten= 94%, Lag= 136.1 min
Primary = 0.32 cfs @ 14.37 hrs, Volume= 0.370 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,143.96' @ 14.37 hrs Surf.Area= 6,006 sf Storage= 11,718 cf

Plug-Flow detention time= 459.6 min calculated for 0.370 af (86% of inflow)
Center-of-Mass det. time= 396.9 min (1,204.7 - 807.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,141.00'	37,325 cf	**Custom Stage Data (Prismatic)** Listed below

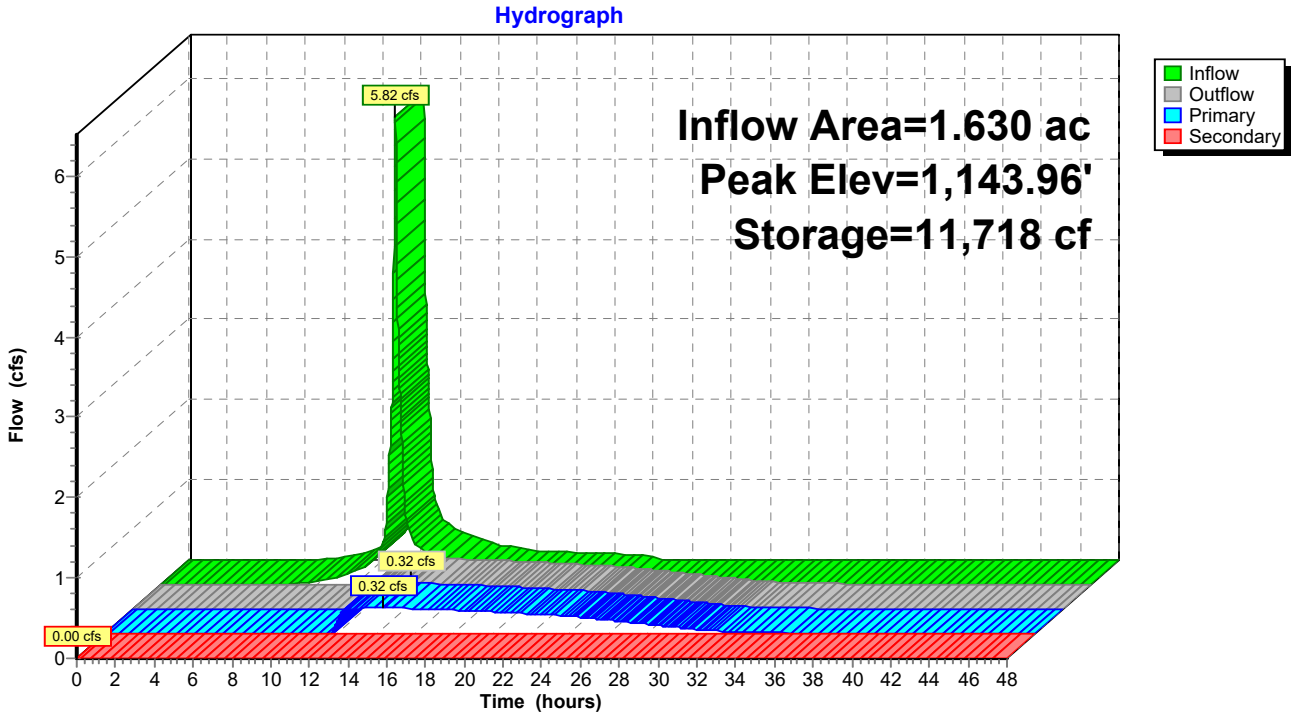
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,141.00	2,023	0	0
1,142.00	3,269	2,646	2,646
1,143.00	4,615	3,942	6,588
1,144.00	6,062	5,339	11,927
1,145.00	7,609	6,836	18,762
1,146.00	9,256	8,433	27,195
1,147.00	11,004	10,130	37,325

Device	Routing	Invert	Outlet Devices
#1	Primary	1,142.00'	**48.0" Round Culvert** L= 135.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,142.00' / 1,106.00' S= 0.2667 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Device 1	1,145.50'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Secondary	1,146.20'	**20.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	1,142.00'	**3.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.32 cfs @ 14.37 hrs HW=1,143.96' (Free Discharge)
└**1=Culvert** (Passes 0.32 cfs of 29.21 cfs potential flow)
  └**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Orifice Controls 0.32 cfs @ 6.52 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,141.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P13:


Hydrograph
Inflow Area=1.630 ac
Peak Elev=1,143.96'
Storage=11,718 cf
5.82 cfs
0.32 cfs
0.32 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond P3:

Inflow Area = 7.890 ac, Inflow Depth = 3.29" for 10-YR STORM event
Inflow = 26.88 cfs @ 12.13 hrs, Volume= 2.160 af
Outflow = 17.88 cfs @ 12.25 hrs, Volume= 1.883 af, Atten= 33%, Lag= 7.1 min
Primary = 17.88 cfs @ 12.25 hrs, Volume= 1.883 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,133.30' @ 12.25 hrs Surf.Area= 6,691 sf Storage= 25,505 cf

Plug-Flow detention time= 109.4 min calculated for 1.883 af (87% of inflow)
Center-of-Mass det. time= 51.9 min (858.4 - 806.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,127.00'	38,268 cf	**Custom Stage Data (Prismatic)** Listed below

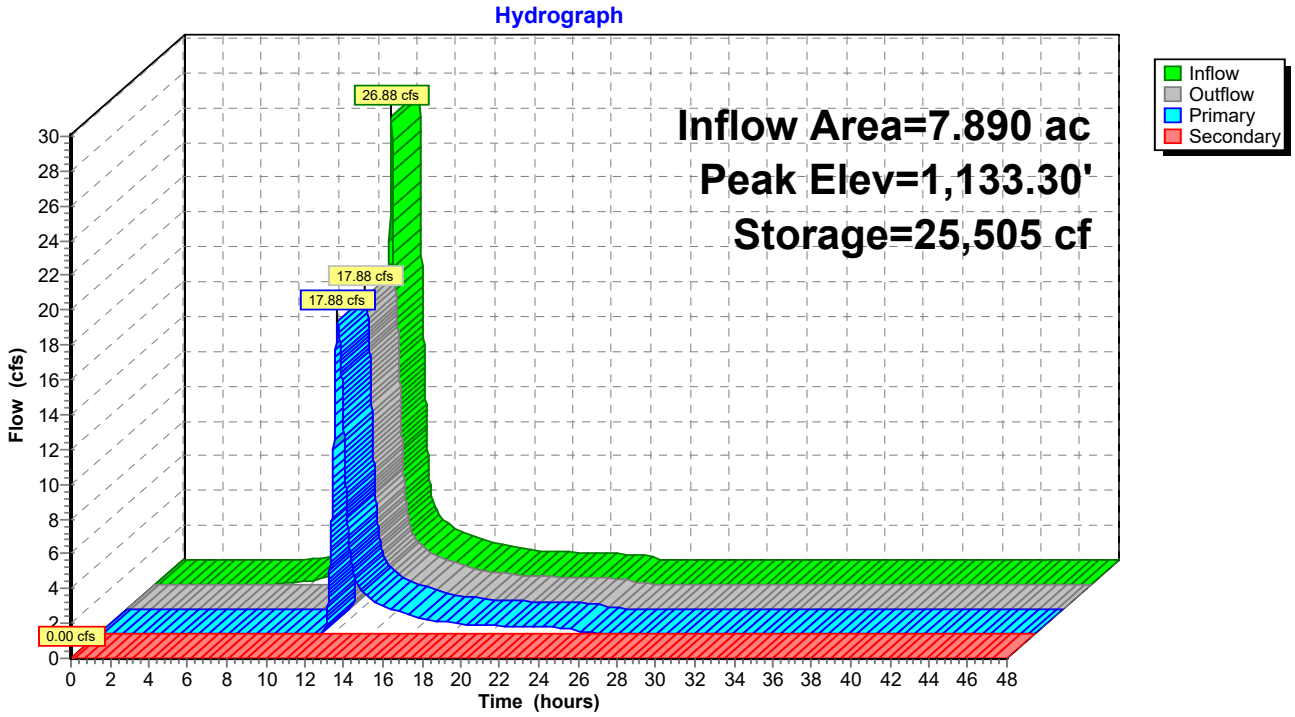
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,127.00	1,797	0	0
1,128.00	2,400	2,099	2,099
1,129.00	3,074	2,737	4,836
1,130.00	3,810	3,442	8,278
1,131.00	4,608	4,209	12,487
1,132.00	5,471	5,040	17,526
1,133.00	6,397	5,934	23,460
1,134.00	7,388	6,893	30,353
1,135.00	8,442	7,915	38,268

Device	Routing	Invert	Outlet Devices
#1	Primary	1,130.90'	**24.0" Round Culvert** L= 100.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,130.90' / 1,129.50' S= 0.0140 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	1,131.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Secondary	1,134.50'	**40.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	1,130.90'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=17.87 cfs @ 12.25 hrs HW=1,133.30' (Free Discharge)
└**1=Culvert** (Inlet Controls 17.87 cfs @ 5.69 fps)
  ├**2=Sharp-Crested Rectangular Weir** (Passes < 80.69 cfs potential flow)
  └**4=Orifice/Grate** (Passes < 5.85 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,127.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P3:


Hydrograph
Inflow Area=7.890 ac
Peak Elev=1,133.30'
Storage=25,505 cf
26.88 cfs
17.88 cfs
17.88 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30

Summary for Pond P5:

Inflow Area = 1.680 ac, Inflow Depth = 3.19" for 10-YR STORM event
Inflow = 5.90 cfs @ 12.11 hrs, Volume= 0.446 af
Outflow = 3.47 cfs @ 12.24 hrs, Volume= 0.388 af, Atten= 41%, Lag= 7.7 min
Primary = 3.47 cfs @ 12.24 hrs, Volume= 0.388 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,146.32' @ 12.24 hrs Surf.Area= 4,312 sf Storage= 7,469 cf

Plug-Flow detention time= 215.5 min calculated for 0.388 af (87% of inflow)
Center-of-Mass det. time= 157.1 min (965.3 - 808.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,144.00'	10,517 cf	**Custom Stage Data (Prismatic)** Listed below

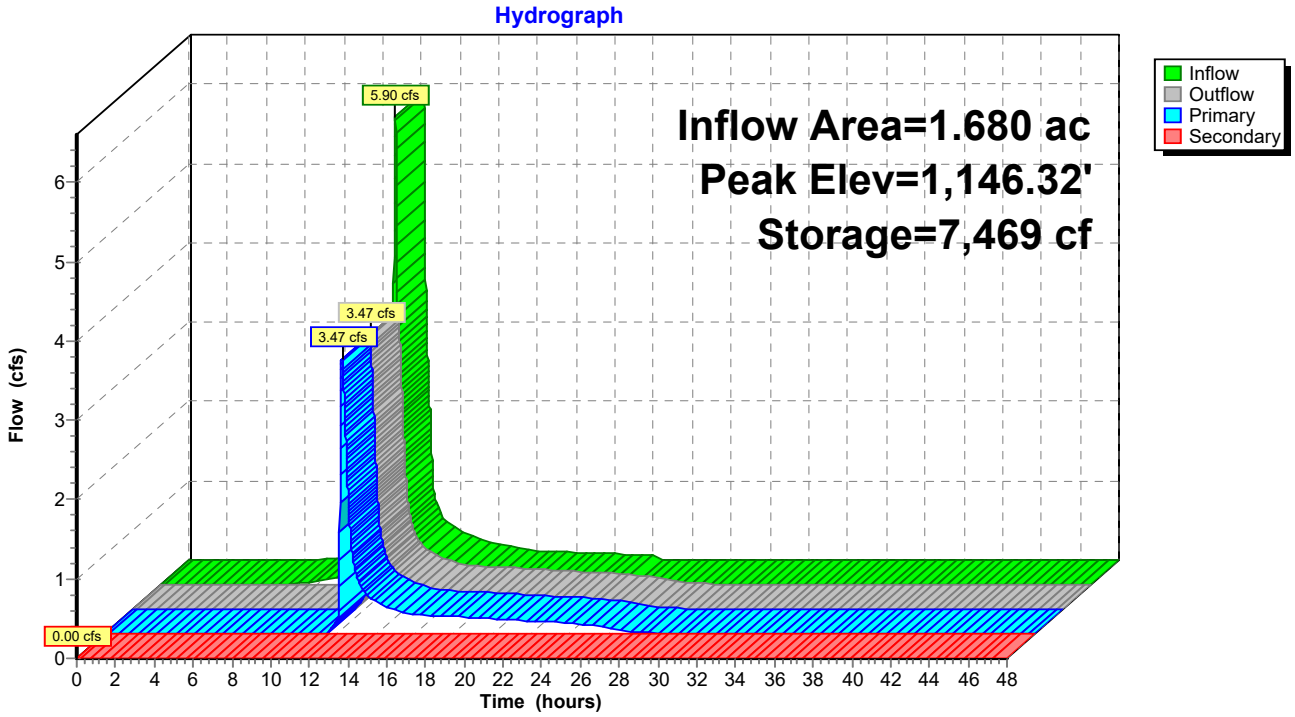
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,144.00	2,092	0	0
1,145.00	2,986	2,539	2,539
1,146.00	3,967	3,477	6,016
1,147.00	5,036	4,502	10,517

Device	Routing	Invert	Outlet Devices
#1	Primary	1,145.00'	**24.0" Round Culvert** L= 42.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,145.00' / 1,141.00' S= 0.0952 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	1,146.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Secondary	1,146.40'	**30.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	1,145.00'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.46 cfs @ 12.24 hrs HW=1,146.32' (Free Discharge)
└**1=Culvert** (Passes 3.46 cfs of 8.63 cfs potential flow)
  ├**2=Sharp-Crested Rectangular Weir** (Weir Controls 3.19 cfs @ 2.00 fps)
  └**4=Orifice/Grate** (Orifice Controls 0.27 cfs @ 5.54 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,144.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P5:


Hydrograph
Inflow Area=1.680 ac
Peak Elev=1,146.32'
Storage=7,469 cf
5.90 cfs
3.47 cfs
3.47 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0
1
2
3
4
5
6
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond P7:

Inflow Area = 4.100 ac, Inflow Depth = 2.81" for 10-YR STORM event
Inflow = 12.95 cfs @ 12.10 hrs, Volume= 0.961 af
Outflow = 0.90 cfs @ 13.86 hrs, Volume= 0.820 af, Atten= 93%, Lag= 105.4 min
Primary = 0.90 cfs @ 13.86 hrs, Volume= 0.820 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,161.05' @ 13.86 hrs Surf.Area= 0 sf Storage= 26,214 cf

Plug-Flow detention time= 663.4 min calculated for 0.820 af (85% of inflow)
Center-of-Mass det. time= 599.9 min (1,419.9 - 820.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,157.00'	34,851 cf	**Custom Stage Data** Listed below

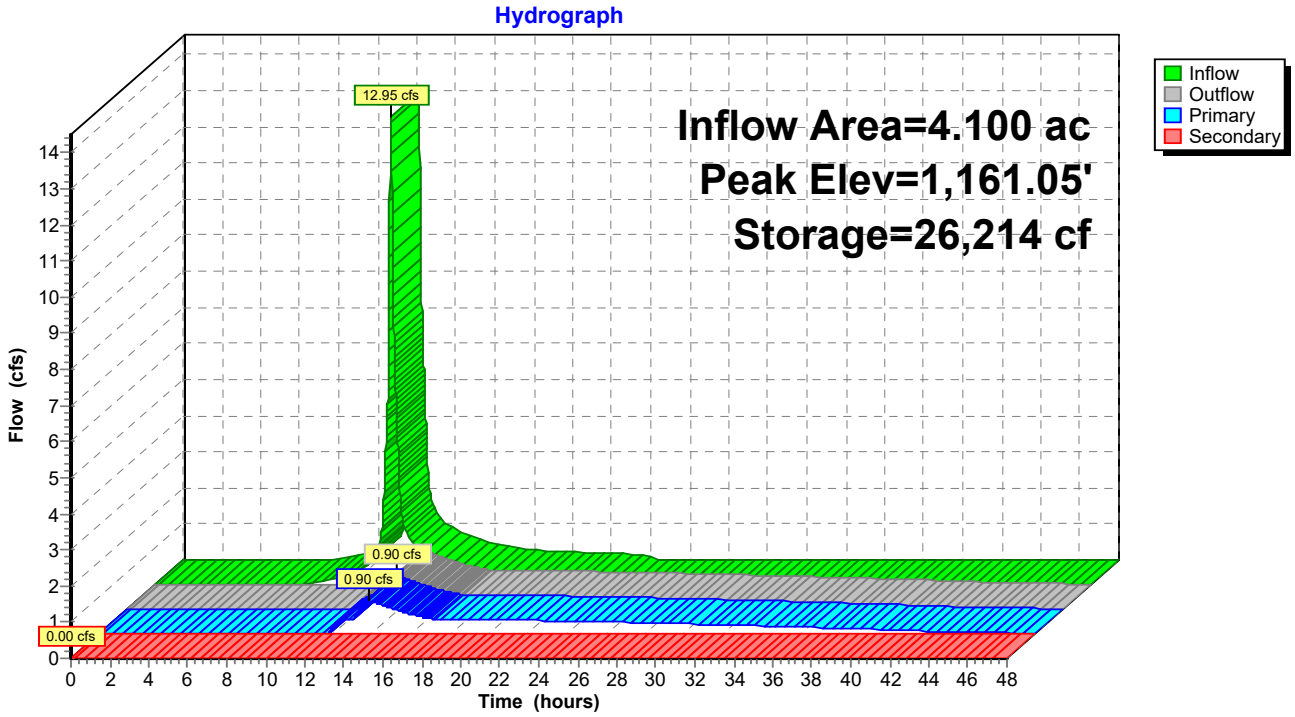
Elevation (feet)	Cum.Store (cubic-feet)
1,157.00	0
1,158.00	4,997
1,159.00	10,924
1,160.00	17,837
1,161.00	25,794
1,162.00	34,851

Device	Routing	Invert	Outlet Devices
#1	Primary	1,157.15'	**30.0" Round Culvert** L= 58.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,157.15' / 1,156.10' S= 0.0181 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	1,160.95'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Secondary	1,161.55'	**30.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	1,158.10'	**3.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.90 cfs @ 13.86 hrs HW=1,161.05' (Free Discharge)
└**1=Culvert** (Passes 0.90 cfs of 38.45 cfs potential flow)
  ├**2=Sharp-Crested Rectangular Weir** (Weir Controls 0.50 cfs @ 1.04 fps)
  └**4=Orifice/Grate** (Orifice Controls 0.40 cfs @ 8.09 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,157.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P7:


Hydrograph
Inflow Area=4.100 ac
Peak Elev=1,161.05'
Storage=26,214 cf
12.95 cfs
0.90 cfs
0.90 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

Summary for Pond P8/10:

Inflow Area = 28.040 ac, Inflow Depth = 3.19" for 10-YR STORM event
Inflow = 81.47 cfs @ 12.19 hrs, Volume= 7.449 af
Outflow = 52.62 cfs @ 12.36 hrs, Volume= 6.280 af, Atten= 35%, Lag= 10.7 min
Primary = 52.62 cfs @ 12.36 hrs, Volume= 6.280 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,127.17' @ 12.36 hrs Surf.Area= 0 sf Storage= 111,592 cf

Plug-Flow detention time= 187.2 min calculated for 6.280 af (84% of inflow)
Center-of-Mass det. time= 121.2 min (935.2 - 813.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,122.00'	166,405 cf	**Custom Stage Data** Listed below

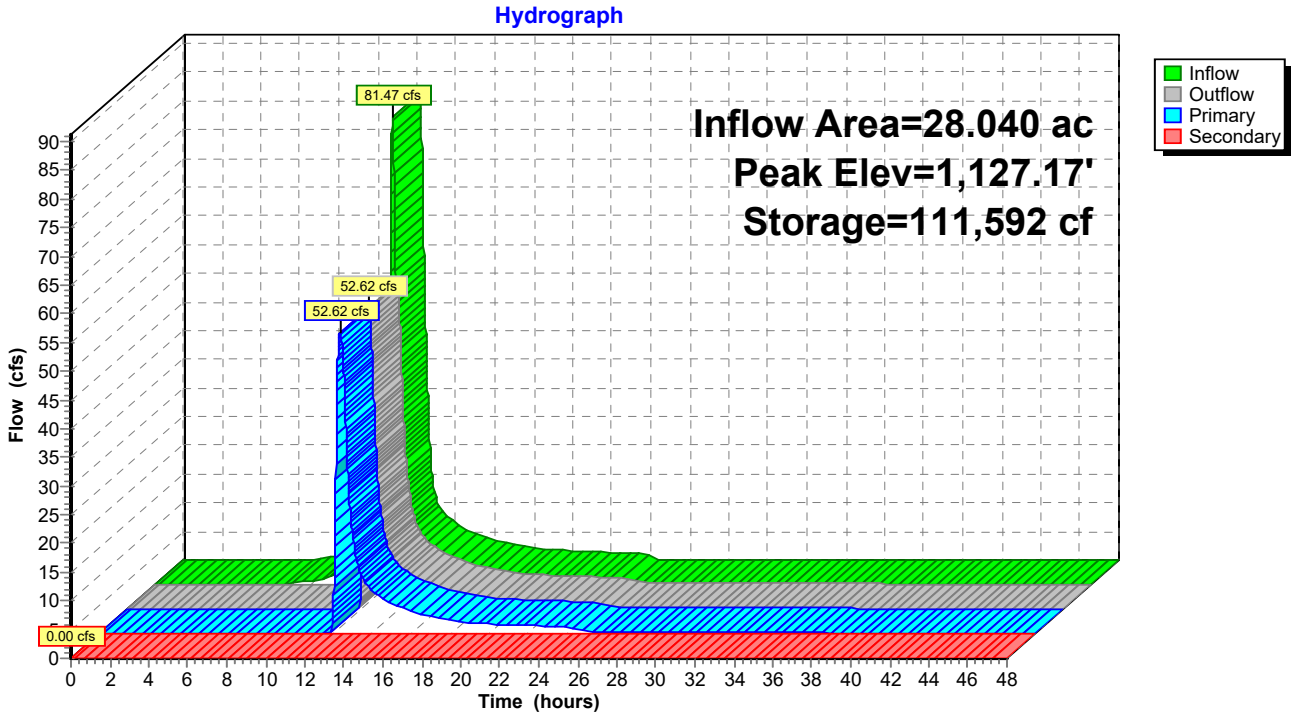
Elevation (feet)	Cum.Store (cubic-feet)
1,122.00	0
1,123.00	16,747
1,124.00	35,732
1,125.00	57,018
1,126.00	80,666
1,127.00	106,738
1,128.00	135,298
1,129.00	166,405

Device	Routing	Invert	Outlet Devices
#1	Primary	1,124.40'	**48.0" Round Culvert** L= 88.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,124.40' / 1,123.00' S= 0.0159 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Device 1	1,125.25'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Secondary	1,128.25'	**50.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	1,124.40'	**3.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=52.61 cfs @ 12.36 hrs HW=1,127.17' (Free Discharge)
└**1=Culvert** (Inlet Controls 52.61 cfs @ 5.67 fps)
  ├**2=Sharp-Crested Rectangular Weir** (Passes < 59.01 cfs potential flow)
  └**4=Orifice/Grate** (Passes < 0.38 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,122.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P8/10:


Hydrograph
Inflow Area=28.040 ac
Peak Elev=1,127.17'
Storage=111,592 cf
81.47 cfs
52.62 cfs
52.62 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Pond P9:

Inflow Area = 6.810 ac, Inflow Depth = 3.29" for 10-YR STORM event
Inflow = 18.25 cfs @ 12.25 hrs, Volume= 1.865 af
Outflow = 12.90 cfs @ 12.43 hrs, Volume= 1.588 af, Atten= 29%, Lag= 11.0 min
Primary = 12.90 cfs @ 12.43 hrs, Volume= 1.588 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,189.77' @ 12.43 hrs Surf.Area= 14,120 sf Storage= 29,492 cf

Plug-Flow detention time= 241.0 min calculated for 1.588 af (85% of inflow)
Center-of-Mass det. time= 177.4 min (992.2 - 814.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,187.00'	48,733 cf	**Custom Stage Data (Prismatic)** Listed below

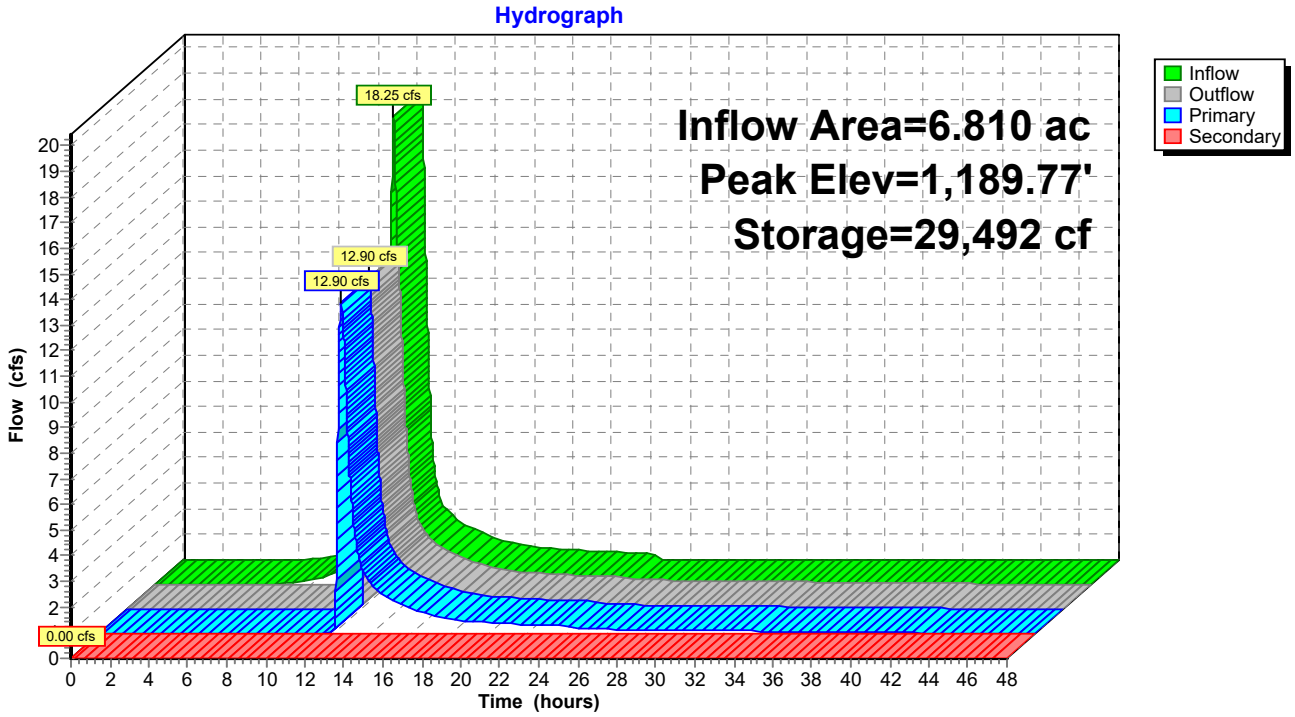
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,187.00	7,155	0	0
1,188.00	9,581	8,368	8,368
1,189.00	12,108	10,845	19,213
1,190.00	14,735	13,422	32,634
1,191.00	17,463	16,099	48,733

Device	Routing	Invert	Outlet Devices
#1	Primary	1,188.25'	**48.0" Round Culvert** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,188.25' / 1,187.25' S= 0.0167 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Device 1	1,189.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Secondary	1,190.00'	**20.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	1,188.25'	**3.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=12.89 cfs @ 12.43 hrs HW=1,189.77' (Free Discharge)
└**1=Culvert** (Passes 12.89 cfs of 18.30 cfs potential flow)
  └**2=Sharp-Crested Rectangular Weir** (Weir Controls 12.61 cfs @ 3.40 fps)
  └**4=Orifice/Grate** (Orifice Controls 0.28 cfs @ 5.68 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,187.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P9:


Hydrograph
Inflow Area=6.810 ac
Peak Elev=1,189.77'
Storage=29,492 cf
18.25 cfs
12.90 cfs
12.90 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Summary for Pond WS11:

Inflow Area = 3.190 ac, Inflow Depth = 2.63" for 10-YR STORM event
Inflow = 6.46 cfs @ 12.29 hrs, Volume= 0.700 af
Outflow = 3.64 cfs @ 12.61 hrs, Volume= 0.438 af, Atten= 44%, Lag= 18.9 min
Primary = 3.64 cfs @ 12.61 hrs, Volume= 0.438 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 1,197.18' @ 12.61 hrs Surf.Area= 7,953 sf Storage= 12,967 cf

Plug-Flow detention time= 192.8 min calculated for 0.438 af (63% of inflow)
Center-of-Mass det. time= 87.1 min (925.9 - 838.8)

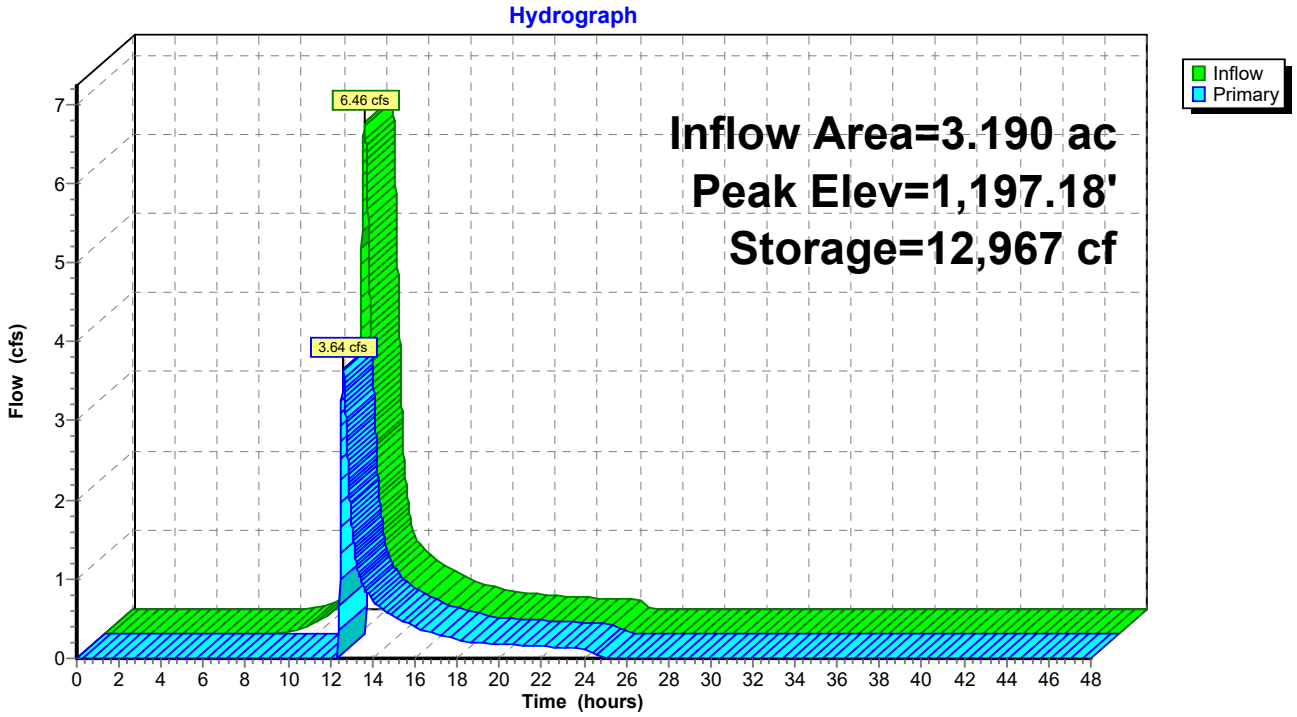
Volume	Invert	Avail.Storage	Storage Description
#1	1,194.00'	20,175 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,194.00	220	0	0
1,195.00	2,537	1,379	1,379
1,196.00	4,998	3,768	5,146
1,197.00	7,486	6,242	11,388
1,198.00	10,087	8,787	20,175

Device	Routing	Invert	Outlet Devices
#1	Primary	1,197.00'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Device 1	1,195.80'	**90.0 deg x 4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.50 (C= 3.13)

Primary OutFlow Max=3.62 cfs @ 12.61 hrs HW=1,197.18' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 3.62 cfs @ 1.01 fps)
↑—**2=Sharp-Crested Vee/Trap Weir** (Passes 3.62 cfs of 16.14 cfs potential flow)

Pond WS11:


Hydrograph
Inflow
Primary
6.46 cfs
3.64 cfs
Inflow Area=3.190 ac
Peak Elev=1,197.18'
Storage=12,967 cf
Flow (cfs)
Time (hours)
0
1
2
3
4
5
6
7
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond WS14:

[95] Warning: Outlet Device #1 rise exceeded

Inflow Area = 4.600 ac, Inflow Depth = 3.09" for 10-YR STORM event
Inflow = 12.68 cfs @ 12.20 hrs, Volume= 1.185 af
Outflow = 11.99 cfs @ 12.25 hrs, Volume= 0.922 af, Atten= 5%, Lag= 3.0 min
Primary = 11.99 cfs @ 12.25 hrs, Volume= 0.922 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,150.38' @ 12.25 hrs Surf.Area= 6,850 sf Storage= 14,146 cf

Plug-Flow detention time= 131.3 min calculated for 0.922 af (78% of inflow)
Center-of-Mass det. time= 50.4 min (868.3 - 817.9)

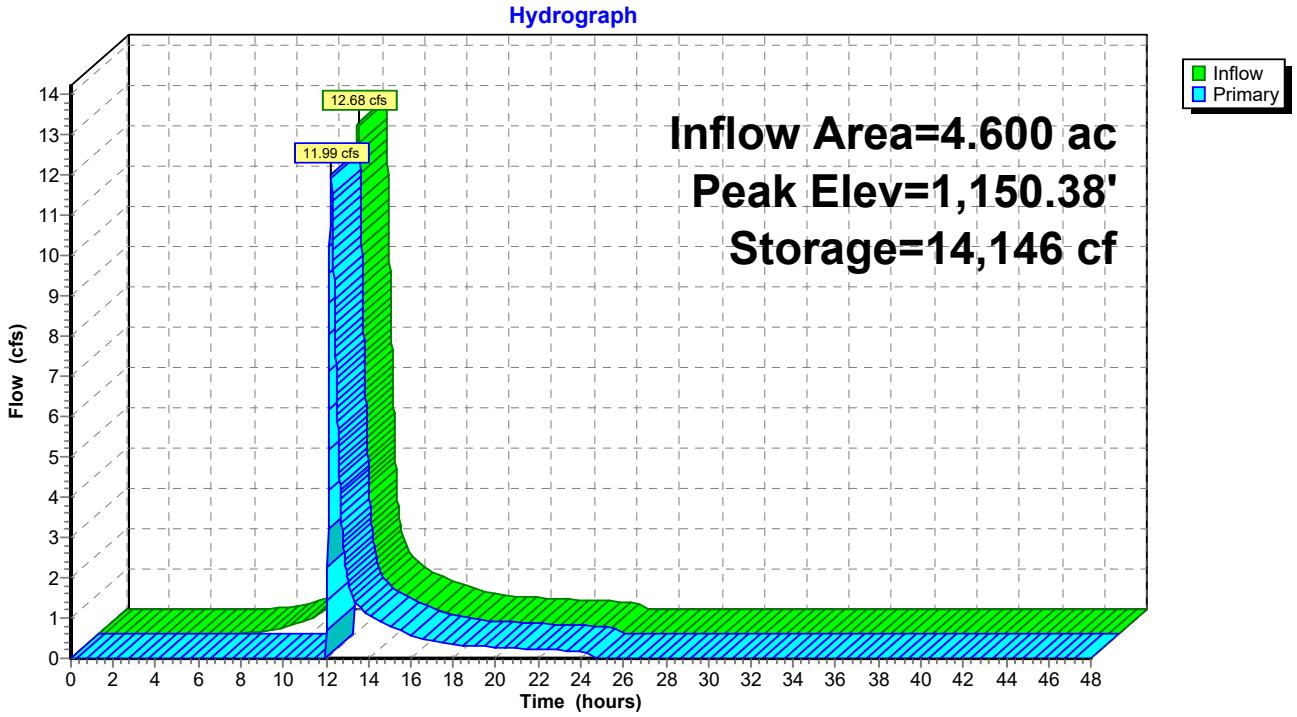
Volume	Invert	Avail.Storage	Storage Description
#1	1,147.00'	18,496 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,147.00	724	0	0
1,148.00	3,306	2,015	2,015
1,149.00	4,678	3,992	6,007
1,150.00	6,202	5,440	11,447
1,151.00	7,895	7,049	18,496

Device	Routing	Invert	Outlet Devices
#1	Device 2	1,148.80'	**90.0 deg x 4.0' long x 1.00' rise Sharp-Crested Vee/Trap Weir** Cv= 2.50 (C= 3.13)
#2	Primary	1,150.00'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=11.97 cfs @ 12.25 hrs HW=1,150.38' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 11.97 cfs @ 1.56 fps)
↑—**1=Sharp-Crested Vee/Trap Weir** (Passes 11.97 cfs of 14.50 cfs potential flow)

Pond WS14:


Hydrograph
Inflow
Primary
12.68 cfs
11.99 cfs
Inflow Area=4.600 ac
Peak Elev=1,150.38'
Storage=14,146 cf
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1: Runoff Area=1.280 ac Runoff Depth=3.83"
Tc=9.1 min CN=85 Runoff=5.11 cfs 0.409 af

Subcatchment2a: Runoff Area=4.430 ac Runoff Depth=3.53"
Tc=9.7 min CN=82 Runoff=16.10 cfs 1.303 af

Subcatchment2b: Runoff Area=4.020 ac Runoff Depth=3.43"
Tc=13.9 min CN=81 Runoff=12.58 cfs 1.149 af

Subcatchment3: Runoff Area=7.890 ac Runoff Depth=4.04"
Tc=9.2 min CN=87 Runoff=32.78 cfs 2.657 af

Subcatchment4: Runoff Area=0.937 ac Runoff Depth=3.94"
Tc=12.6 min CN=86 Runoff=3.44 cfs 0.307 af

Subcatchment5: Runoff Area=1.680 ac Runoff Depth=3.94"
Tc=7.5 min CN=86 Runoff=7.23 cfs 0.551 af

Subcatchment7: Runoff Area=4.100 ac Runoff Depth=3.53"
Tc=7.2 min CN=82 Runoff=16.19 cfs 1.206 af

Subcatchment8/10: Runoff Area=28.040 ac Runoff Depth=3.94"
Tc=13.7 min CN=86 Runoff=99.88 cfs 9.197 af

Subcatchment9: Runoff Area=6.810 ac Runoff Depth=4.04"
Tc=18.1 min CN=87 Runoff=22.26 cfs 2.293 af

Subcatchment11: Runoff Area=3.190 ac Runoff Depth=3.33"
Tc=21.4 min CN=80 Runoff=8.18 cfs 0.886 af

Subcatchment12: Runoff Area=1.930 ac Runoff Depth=3.94"
Tc=8.6 min CN=86 Runoff=8.00 cfs 0.633 af

Subcatchment13: Runoff Area=1.630 ac Runoff Depth=3.94"
Tc=7.0 min CN=86 Runoff=7.13 cfs 0.535 af

Subcatchment14: Runoff Area=4.600 ac Runoff Depth=3.83"
Tc=14.6 min CN=85 Runoff=15.62 cfs 1.469 af

Subcatchment15: Runoff Area=1.930 ac Runoff Depth=3.73"
Tc=13.7 min CN=84 Runoff=6.56 cfs 0.600 af

Pond IT1: Peak Elev=1,126.72' Storage=3,759 cf Inflow=5.11 cfs 0.409 af
Discarded=0.05 cfs 0.126 af Primary=4.95 cfs 0.279 af Outflow=5.00 cfs 0.405 af

Pond IT2a: Peak Elev=1,091.40' Storage=6,668 cf Inflow=16.10 cfs 1.303 af
Discarded=0.10 cfs 0.215 af Primary=15.62 cfs 1.088 af Outflow=15.72 cfs 1.303 af

Pond IT2b: Peak Elev=1,041.19' Storage=8,166 cf Inflow=12.58 cfs 1.149 af
Discarded=0.12 cfs 0.283 af Primary=12.11 cfs 0.867 af Outflow=12.23 cfs 1.149 af

Pond IT4: Peak Elev=1,114.78' Storage=8,754 cf Inflow=3.44 cfs 0.307 af
Discarded=0.03 cfs 0.088 af Primary=0.28 cfs 0.074 af Outflow=0.31 cfs 0.161 af

Pond P12: Peak Elev=1,187.91' Storage=5,336 cf Inflow=8.00 cfs 0.633 af
Primary=0.99 cfs 0.328 af Secondary=6.82 cfs 0.236 af Outflow=7.81 cfs 0.565 af

Pond P13: Peak Elev=1,144.42' Storage=14,818 cf Inflow=7.13 cfs 0.535 af
Primary=0.36 cfs 0.472 af Secondary=0.00 cfs 0.000 af Outflow=0.36 cfs 0.472 af

Pond P3: Peak Elev=1,133.79' Storage=28,892 cf Inflow=32.78 cfs 2.657 af
Primary=20.78 cfs 2.379 af Secondary=0.00 cfs 0.000 af Outflow=20.78 cfs 2.379 af

Pond P5: Peak Elev=1,146.43' Storage=7,972 cf Inflow=7.23 cfs 0.551 af
Primary=5.38 cfs 0.490 af Secondary=0.52 cfs 0.003 af Outflow=5.90 cfs 0.493 af

Pond P7: Peak Elev=1,161.24' Storage=28,010 cf Inflow=16.19 cfs 1.206 af
Primary=3.18 cfs 1.064 af Secondary=0.00 cfs 0.000 af Outflow=3.18 cfs 1.064 af

Pond P8/10: Peak Elev=1,127.66' Storage=125,517 cf Inflow=99.88 cfs 9.197 af
Primary=67.34 cfs 8.027 af Secondary=0.00 cfs 0.000 af Outflow=67.34 cfs 8.027 af

Pond P9: Peak Elev=1,189.94' Storage=31,811 cf Inflow=22.26 cfs 2.293 af
Primary=17.89 cfs 2.016 af Secondary=0.00 cfs 0.000 af Outflow=17.89 cfs 2.016 af

Pond WS11: Peak Elev=1,197.26' Storage=13,654 cf Inflow=8.18 cfs 0.886 af
Outflow=6.37 cfs 0.625 af

Pond WS14: Peak Elev=1,150.44' Storage=14,565 cf Inflow=15.62 cfs 1.469 af
Outflow=15.07 cfs 1.206 af

Total Runoff Area = 72.467 ac Runoff Volume = 23.196 af Average Runoff Depth = 3.84"

Summary for Subcatchment 1:

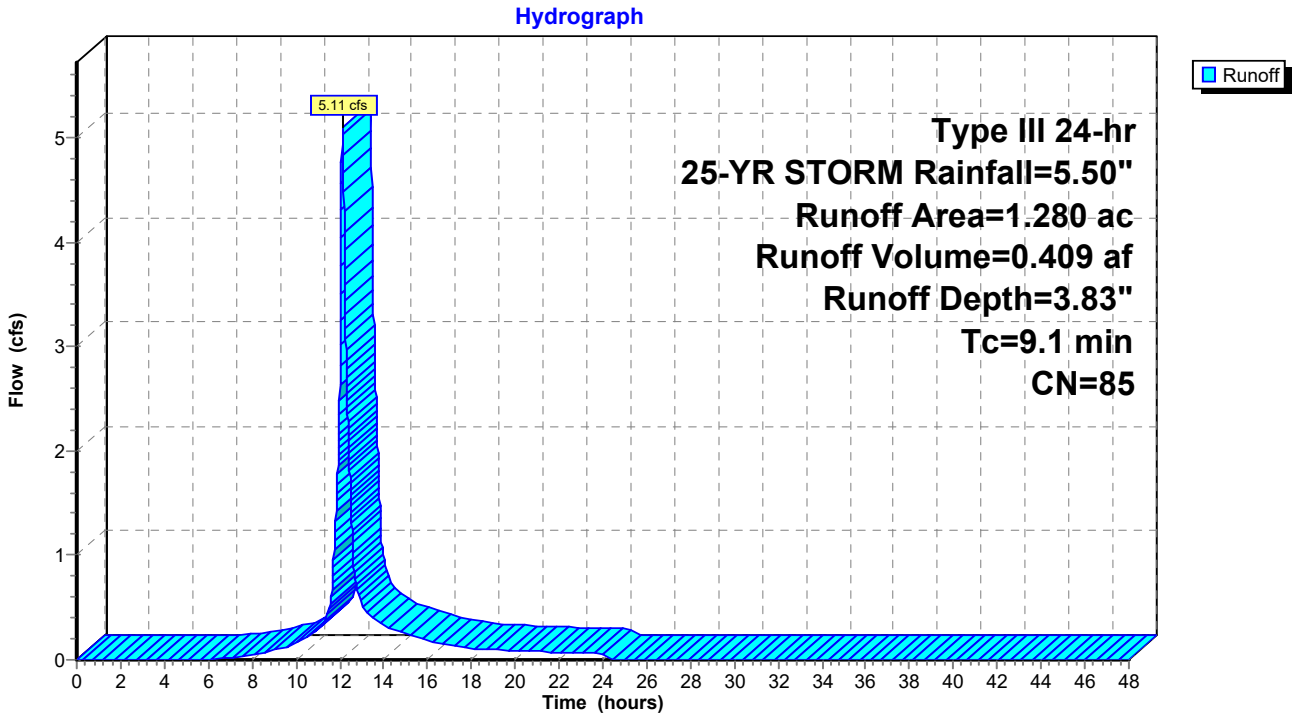
Runoff = 5.11 cfs @ 12.12 hrs, Volume= 0.409 af, Depth= 3.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR STORM Rainfall=5.50"

	Area (ac)	CN	Description
*	1.280	85	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1					**Direct Entry, NRCS Part 630**

Subcatchment 1:



Summary for Subcatchment 2a:

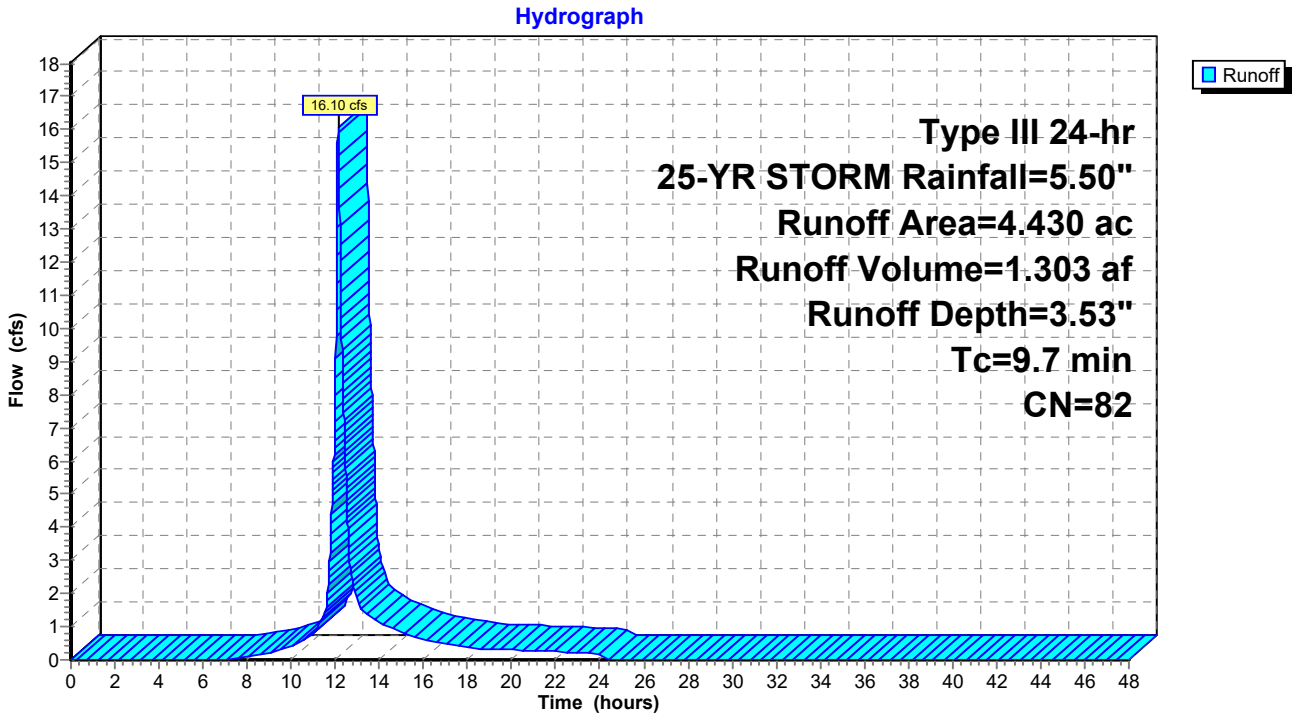
Runoff = 16.10 cfs @ 12.13 hrs, Volume= 1.303 af, Depth= 3.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR STORM Rainfall=5.50"

	Area (ac)	CN	Description
*	4.430	82	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7					**Direct Entry, NRCS Part 630**

Subcatchment 2a:



Summary for Subcatchment 2b:

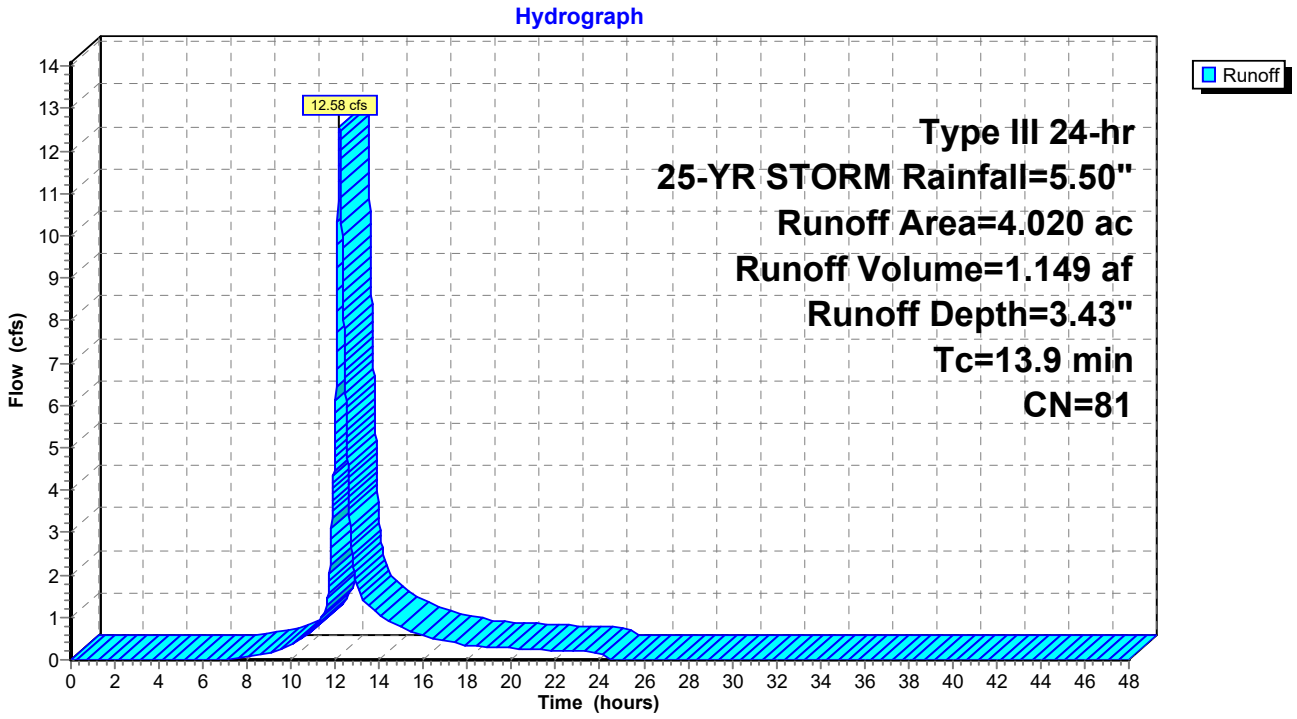
Runoff = 12.58 cfs @ 12.19 hrs, Volume= 1.149 af, Depth= 3.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR STORM Rainfall=5.50"

	Area (ac)	CN	Description
*	4.020	81	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9					**Direct Entry, NRCS Part 630**

Subcatchment 2b:



Summary for Subcatchment 3:

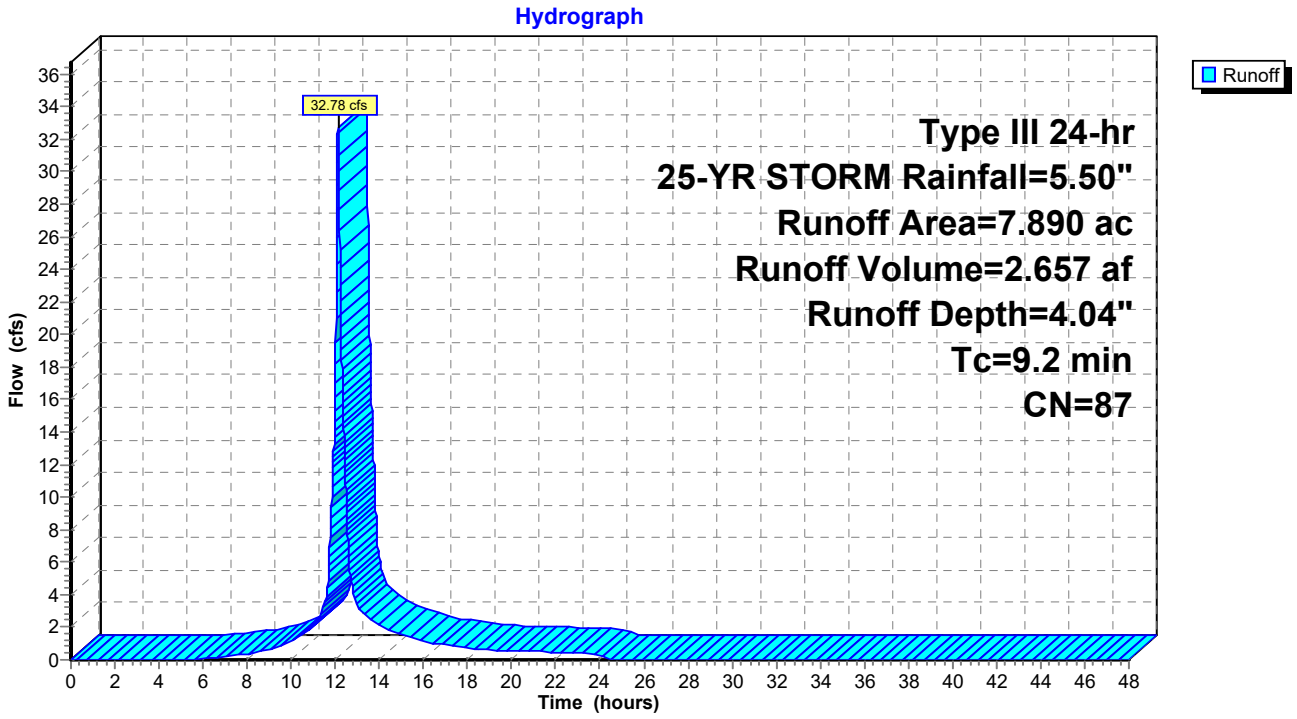
Runoff = 32.78 cfs @ 12.13 hrs, Volume= 2.657 af, Depth= 4.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR STORM Rainfall=5.50"

	Area (ac)	CN	Description
*	7.890	87	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2					**Direct Entry, NRCS Part 630**

Subcatchment 3:



Summary for Subcatchment 4:

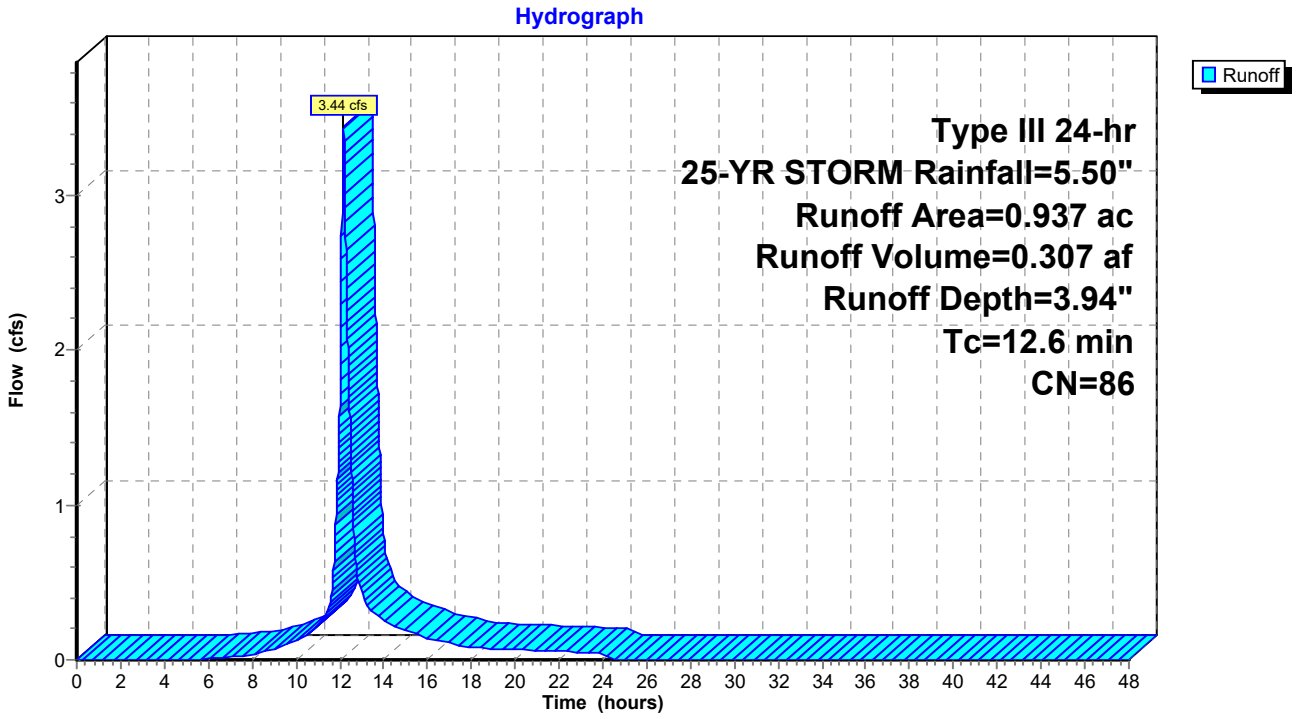
Runoff = 3.44 cfs @ 12.17 hrs, Volume= 0.307 af, Depth= 3.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR STORM Rainfall=5.50"

	Area (ac)	CN	Description
*	0.937	86	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6					**Direct Entry, NRCS Part 630**

Subcatchment 4:



Summary for Subcatchment 5:

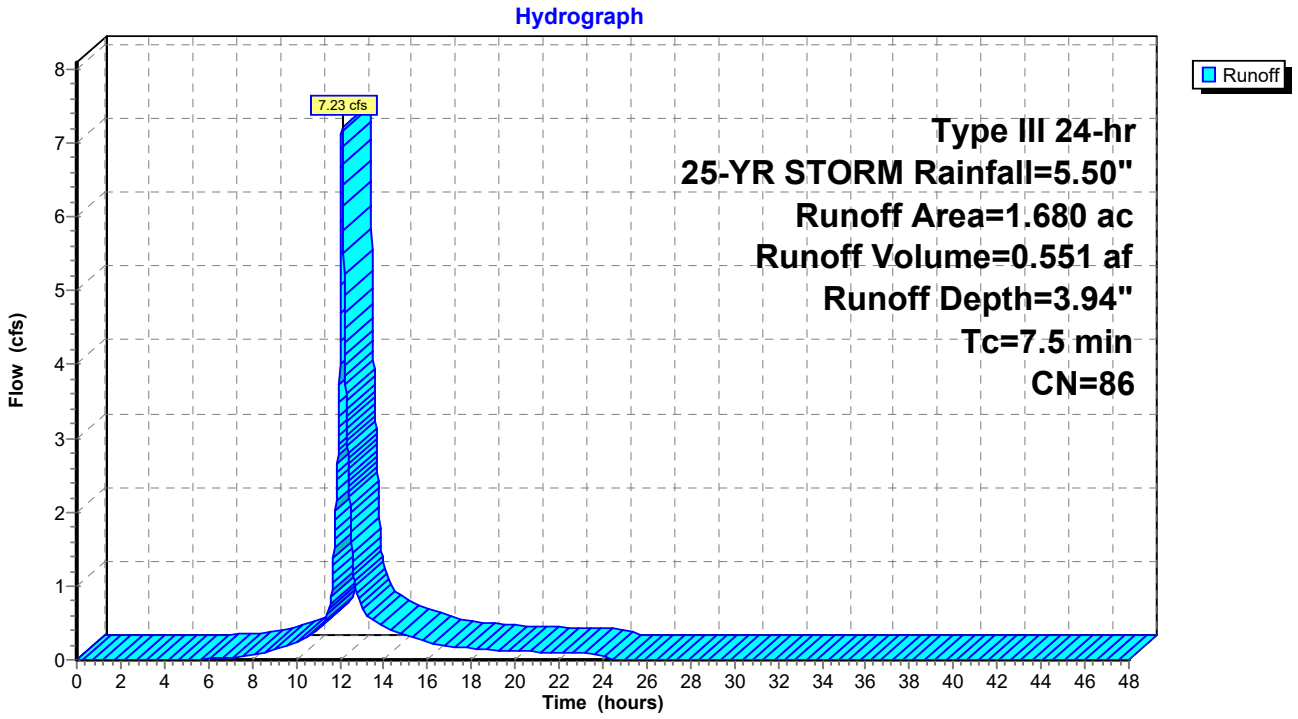
Runoff = 7.23 cfs @ 12.11 hrs, Volume= 0.551 af, Depth= 3.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR STORM Rainfall=5.50"

	Area (ac)	CN	Description
*	1.680	86	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5					**Direct Entry, NRCS Part 630**

Subcatchment 5:



Summary for Subcatchment 7:

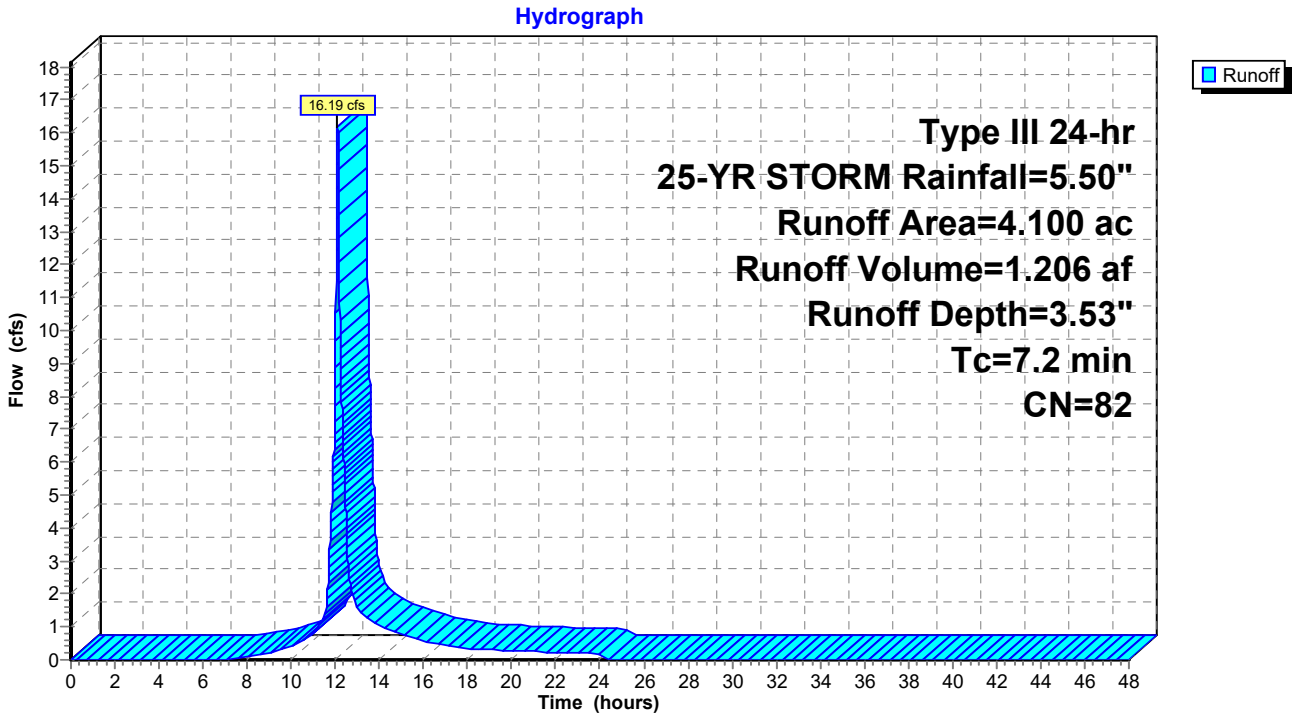
Runoff = 16.19 cfs @ 12.10 hrs, Volume= 1.206 af, Depth= 3.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR STORM Rainfall=5.50"

	Area (ac)	CN	Description
*	4.100	82	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2					**Direct Entry, NRCS Part 630**

Subcatchment 7:



Summary for Subcatchment 8/10:

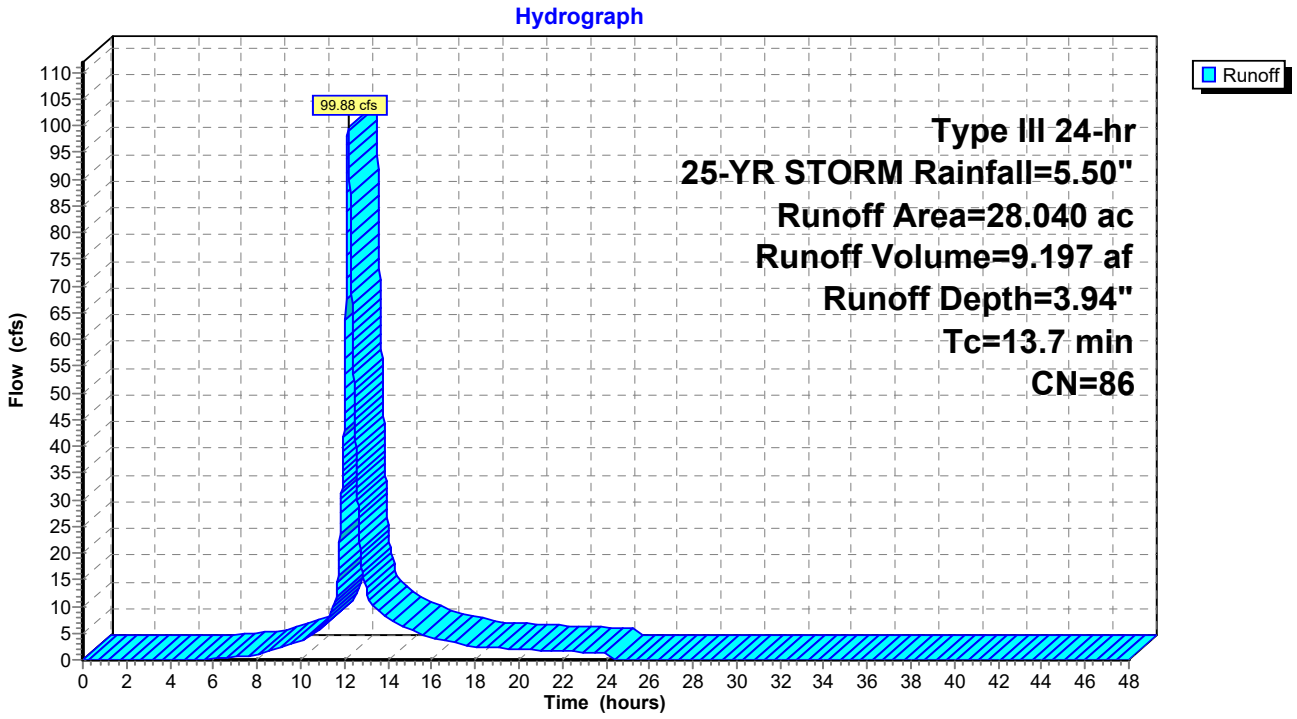
Runoff = 99.88 cfs @ 12.19 hrs, Volume= 9.197 af, Depth= 3.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR STORM Rainfall=5.50"

	Area (ac)	CN	Description
*	28.040	86	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7					**Direct Entry, NRCS Part 630**

Subcatchment 8/10:



Summary for Subcatchment 9:

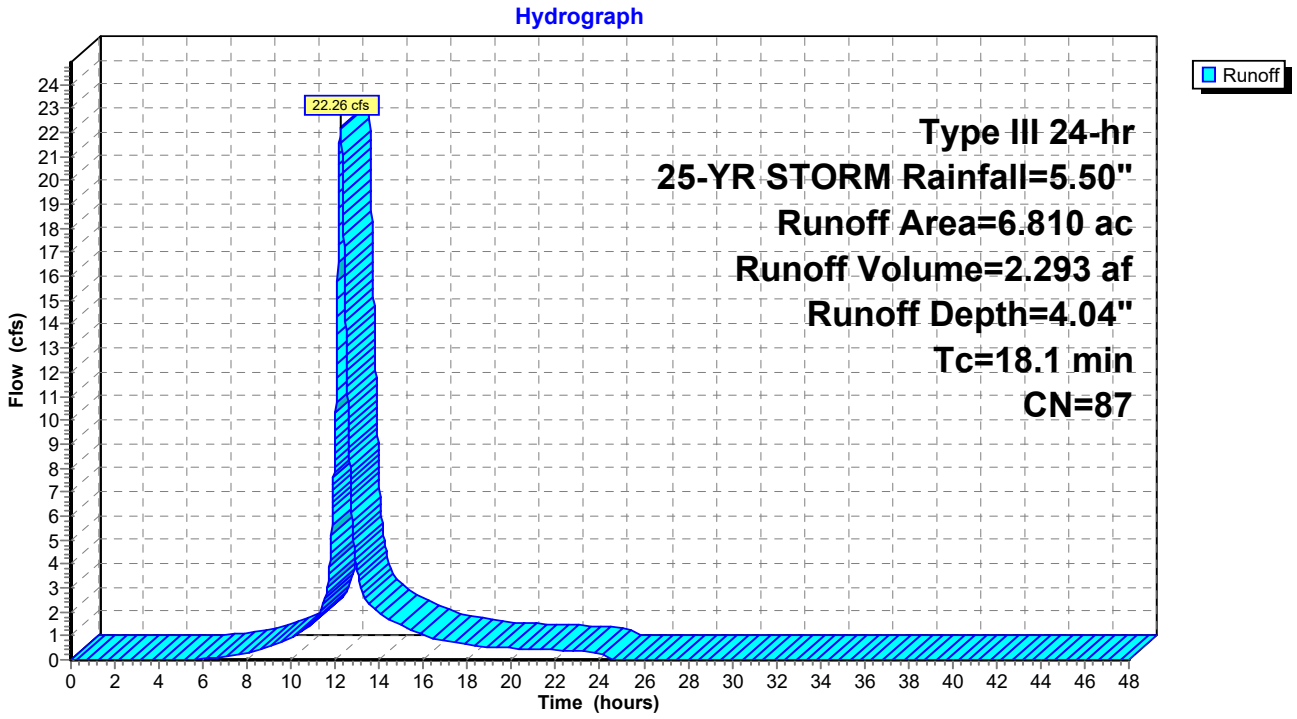
Runoff = 22.26 cfs @ 12.24 hrs, Volume= 2.293 af, Depth= 4.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR STORM Rainfall=5.50"

	Area (ac)	CN	Description
*	6.810	87	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1					**Direct Entry, NRCS Part 630**

Subcatchment 9:



Summary for Subcatchment 11:

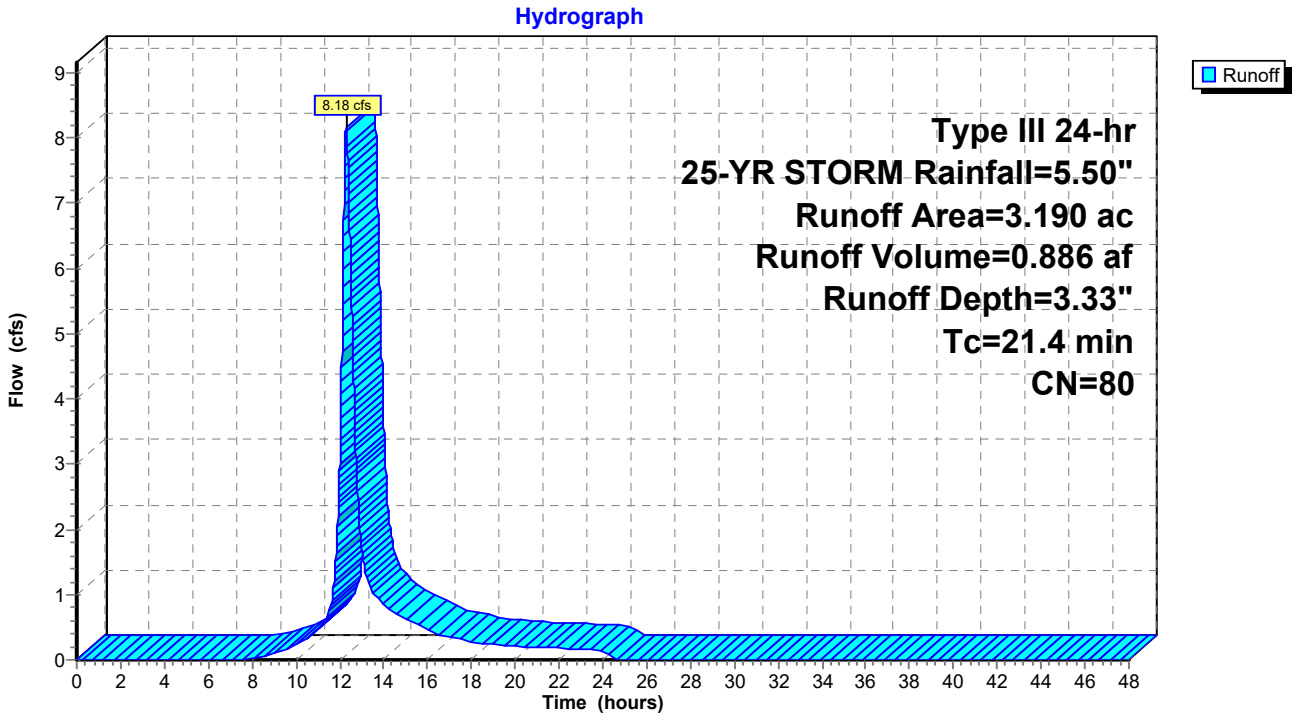
Runoff = 8.18 cfs @ 12.29 hrs, Volume= 0.886 af, Depth= 3.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR STORM Rainfall=5.50"

	Area (ac)	CN	Description
*	3.190	80	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.4					**Direct Entry, NRCS Part 630**

Subcatchment 11:



Summary for Subcatchment 12:

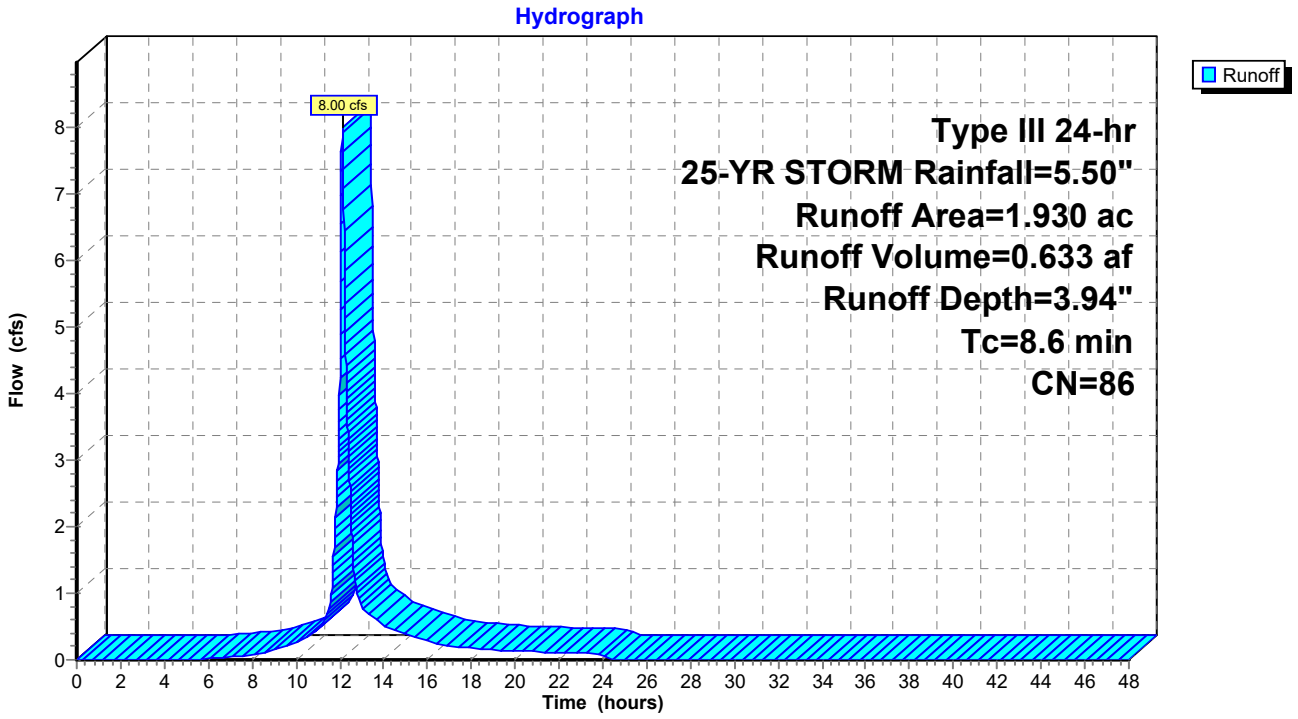
Runoff = 8.00 cfs @ 12.12 hrs, Volume= 0.633 af, Depth= 3.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR STORM Rainfall=5.50"

	Area (ac)	CN	Description
*	1.930	86	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6					**Direct Entry, NRCS Part 630**

Subcatchment 12:



Summary for Subcatchment 13:

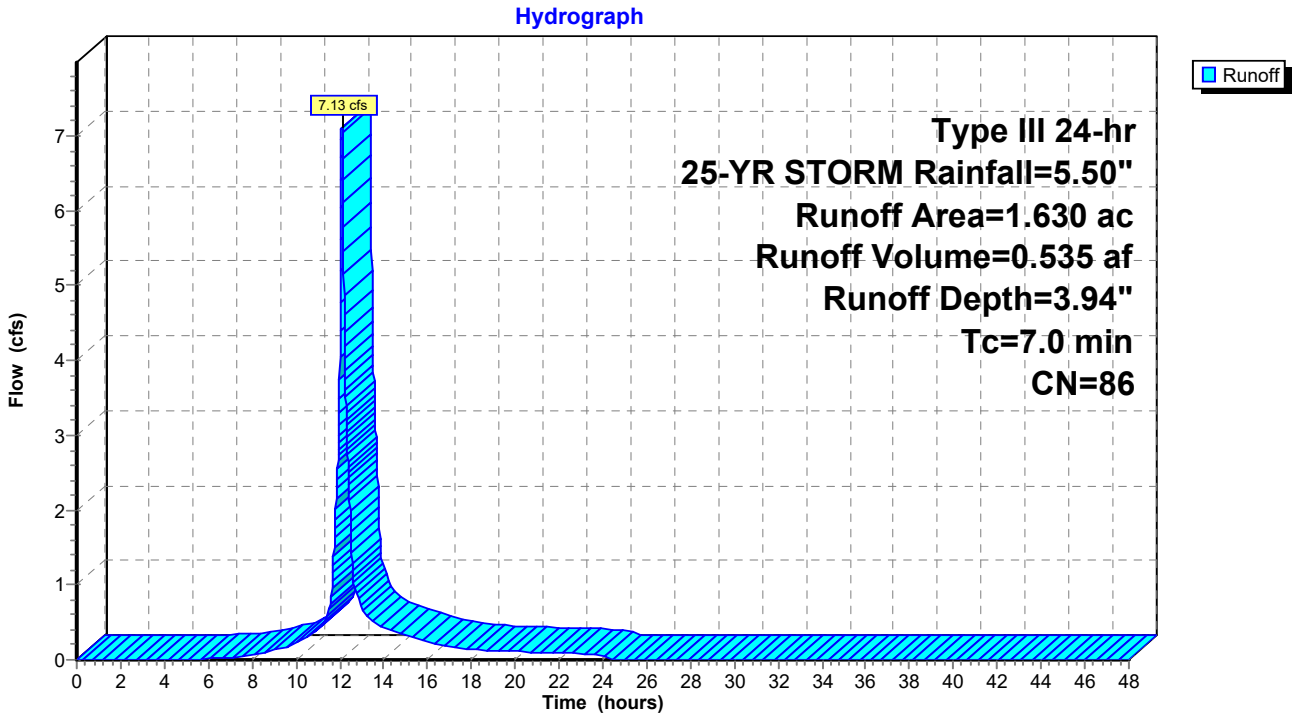
Runoff = 7.13 cfs @ 12.10 hrs, Volume= 0.535 af, Depth= 3.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR STORM Rainfall=5.50"

	Area (ac)	CN	Description
*	1.630	86	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					**Direct Entry, NRCS Part 630**

Subcatchment 13:



Summary for Subcatchment 14:

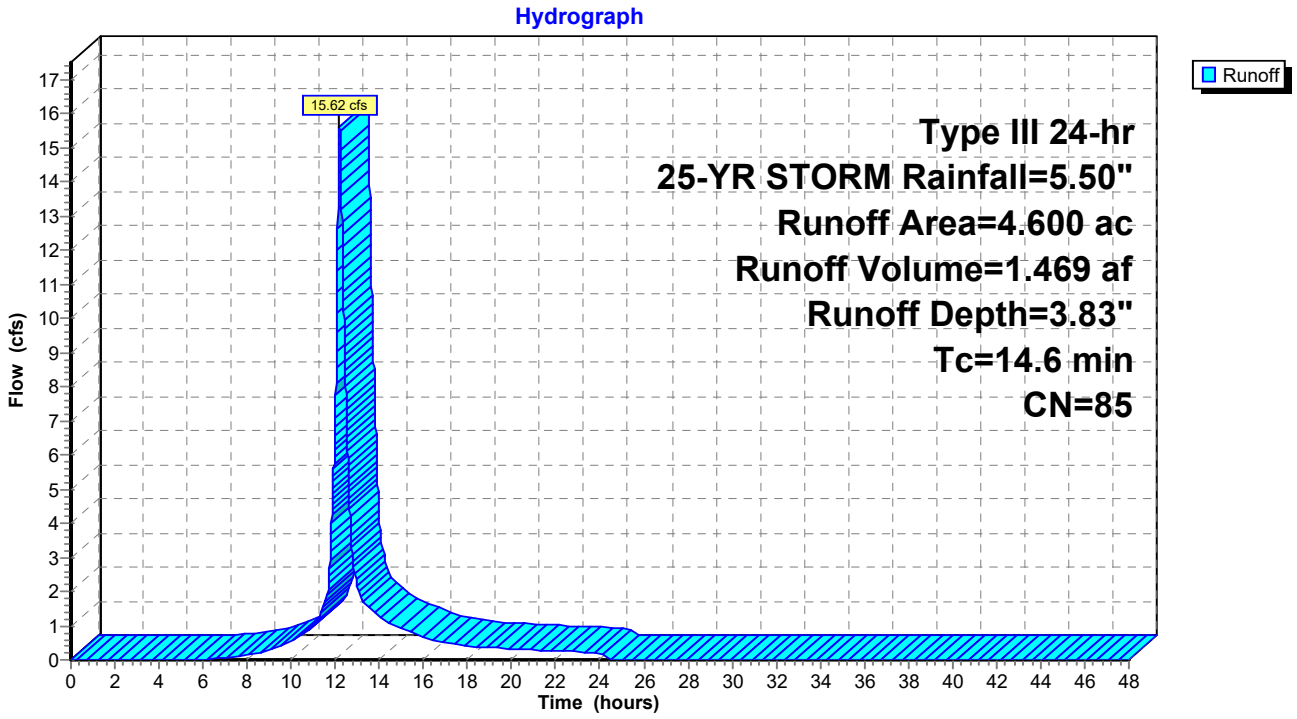
Runoff = 15.62 cfs @ 12.19 hrs, Volume= 1.469 af, Depth= 3.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR STORM Rainfall=5.50"

	Area (ac)	CN	Description
*	4.600	85	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6					**Direct Entry, NRCS Part 630**

Subcatchment 14:



Summary for Subcatchment 15:

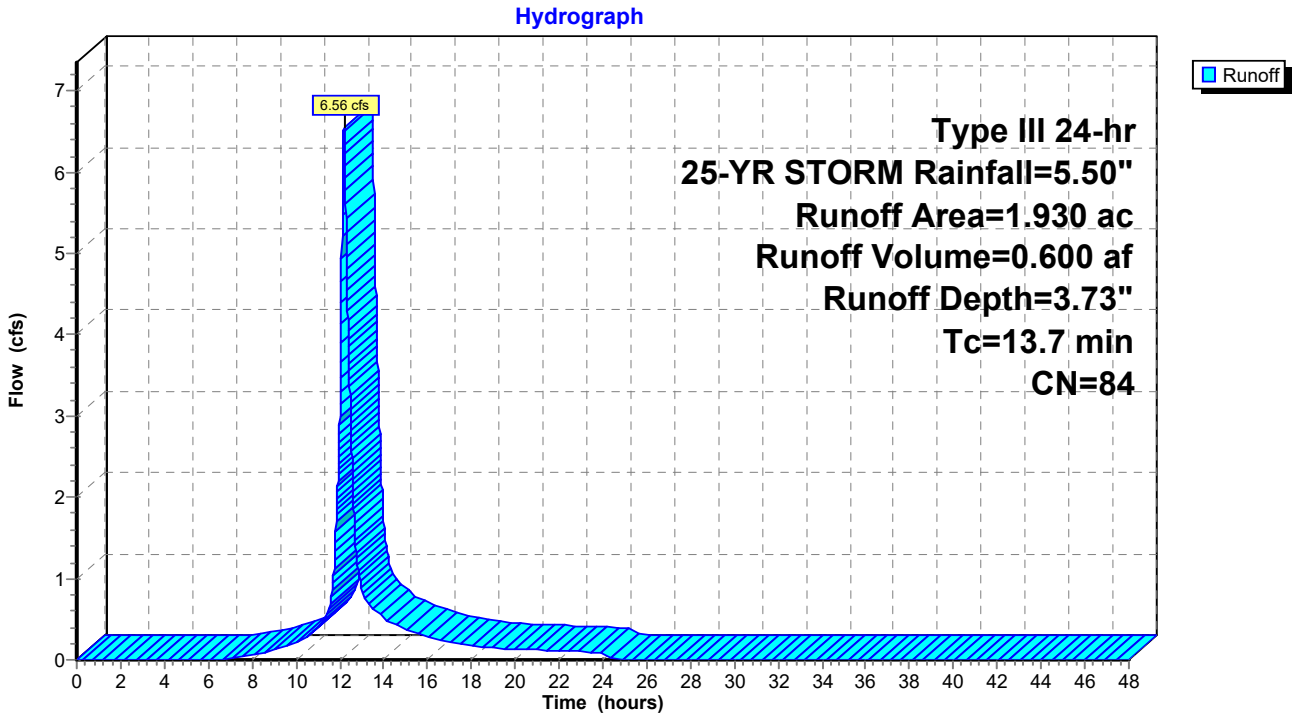
Runoff = 6.56 cfs @ 12.19 hrs, Volume= 0.600 af, Depth= 3.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR STORM Rainfall=5.50"

	Area (ac)	CN	Description
*	1.930	84	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7					**Direct Entry, NRCS Part 630**

Subcatchment 15:



Summary for Pond IT1:

Inflow Area = 1.280 ac, Inflow Depth = 3.83" for 25-YR STORM event
Inflow = 5.11 cfs @ 12.12 hrs, Volume= 0.409 af
Outflow = 5.00 cfs @ 12.15 hrs, Volume= 0.405 af, Atten= 2%, Lag= 1.3 min
Discarded = 0.05 cfs @ 12.15 hrs, Volume= 0.126 af
Primary = 4.95 cfs @ 12.15 hrs, Volume= 0.279 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,126.72' @ 12.15 hrs Surf.Area= 2,715 sf Storage= 3,759 cf

Plug-Flow detention time= 259.3 min calculated for 0.405 af (99% of inflow)
Center-of-Mass det. time= 253.1 min (1,059.9 - 806.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,125.00'	4,476 cf	**Custom Stage Data (Prismatic)** Listed below

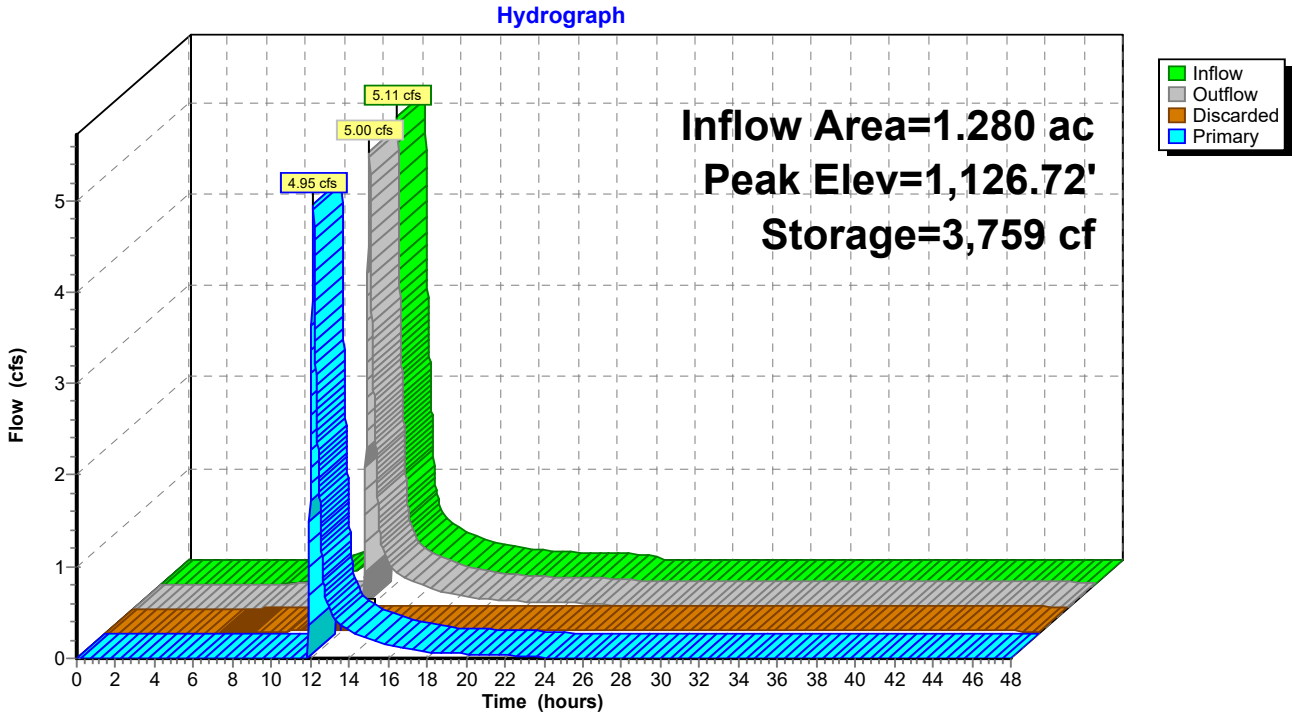
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,125.00	1,620	0	0
1,126.00	2,210	1,915	1,915
1,127.00	2,911	2,561	4,476

Device	Routing	Invert	Outlet Devices
#1	Primary	1,126.50'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Discarded	1,125.00'	**0.725 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.05 cfs @ 12.15 hrs HW=1,126.72' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=4.94 cfs @ 12.15 hrs HW=1,126.72' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 4.94 cfs @ 1.12 fps)

Pond IT1:


Hydrograph
Inflow Area=1.280 ac
Peak Elev=1,126.72'
Storage=3,759 cf
5.11 cfs
5.00 cfs
4.95 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4 5
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond IT2a:

Inflow Area = 4.430 ac, Inflow Depth = 3.53" for 25-YR STORM event
Inflow = 16.10 cfs @ 12.13 hrs, Volume= 1.303 af
Outflow = 15.72 cfs @ 12.16 hrs, Volume= 1.303 af, Atten= 2%, Lag= 1.4 min
Discarded = 0.10 cfs @ 12.16 hrs, Volume= 0.215 af
Primary = 15.62 cfs @ 12.16 hrs, Volume= 1.088 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,091.40' @ 12.16 hrs Surf.Area= 4,879 sf Storage= 6,668 cf

Plug-Flow detention time= 117.6 min calculated for 1.303 af (100% of inflow)
Center-of-Mass det. time= 117.6 min (933.4 - 815.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,089.50'	7,111 cf	**Custom Stage Data (Prismatic)** Listed below

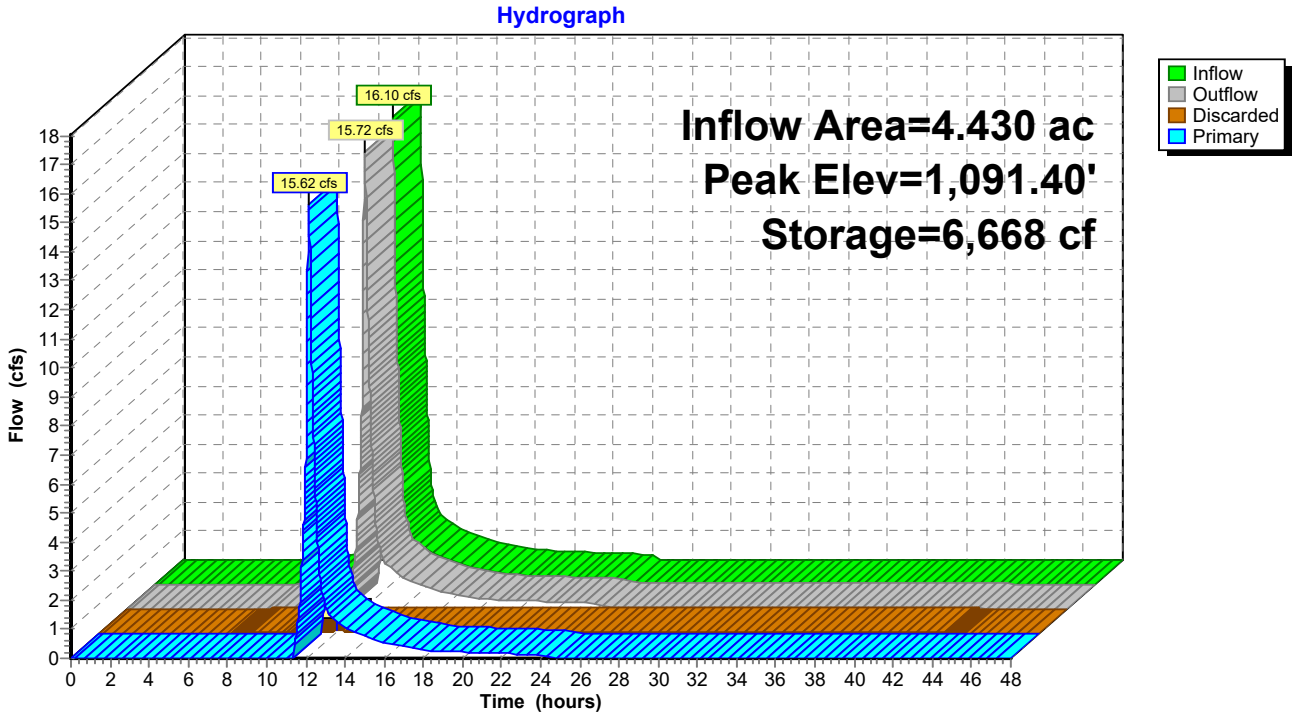
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,089.50	2,714	0	0
1,090.00	3,067	1,445	1,445
1,090.50	3,427	1,624	3,069
1,091.00	3,797	1,806	4,875
1,091.50	5,146	2,236	7,111

Device	Routing	Invert	Outlet Devices
#1	Primary	1,090.95'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Discarded	1,089.50'	**0.905 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.10 cfs @ 12.16 hrs HW=1,091.40' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.10 cfs)

Primary OutFlow Max=15.61 cfs @ 12.16 hrs HW=1,091.40' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 15.61 cfs @ 1.73 fps)

Pond IT2a:


Hydrograph
Inflow Area=4.430 ac
Peak Elev=1,091.40'
Storage=6,668 cf
16.10 cfs
15.72 cfs
15.62 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

Summary for Pond IT2b:

Inflow Area = 4.020 ac, Inflow Depth = 3.43" for 25-YR STORM event
Inflow = 12.58 cfs @ 12.19 hrs, Volume= 1.149 af
Outflow = 12.23 cfs @ 12.22 hrs, Volume= 1.149 af, Atten= 3%, Lag= 2.0 min
Discarded = 0.12 cfs @ 12.22 hrs, Volume= 0.283 af
Primary = 12.11 cfs @ 12.22 hrs, Volume= 0.867 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,041.19' @ 12.22 hrs Surf.Area= 5,623 sf Storage= 8,166 cf

Plug-Flow detention time= 161.0 min calculated for 1.149 af (100% of inflow)
Center-of-Mass det. time= 160.9 min (983.4 - 822.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,039.50'	9,955 cf	**Custom Stage Data (Prismatic)** Listed below

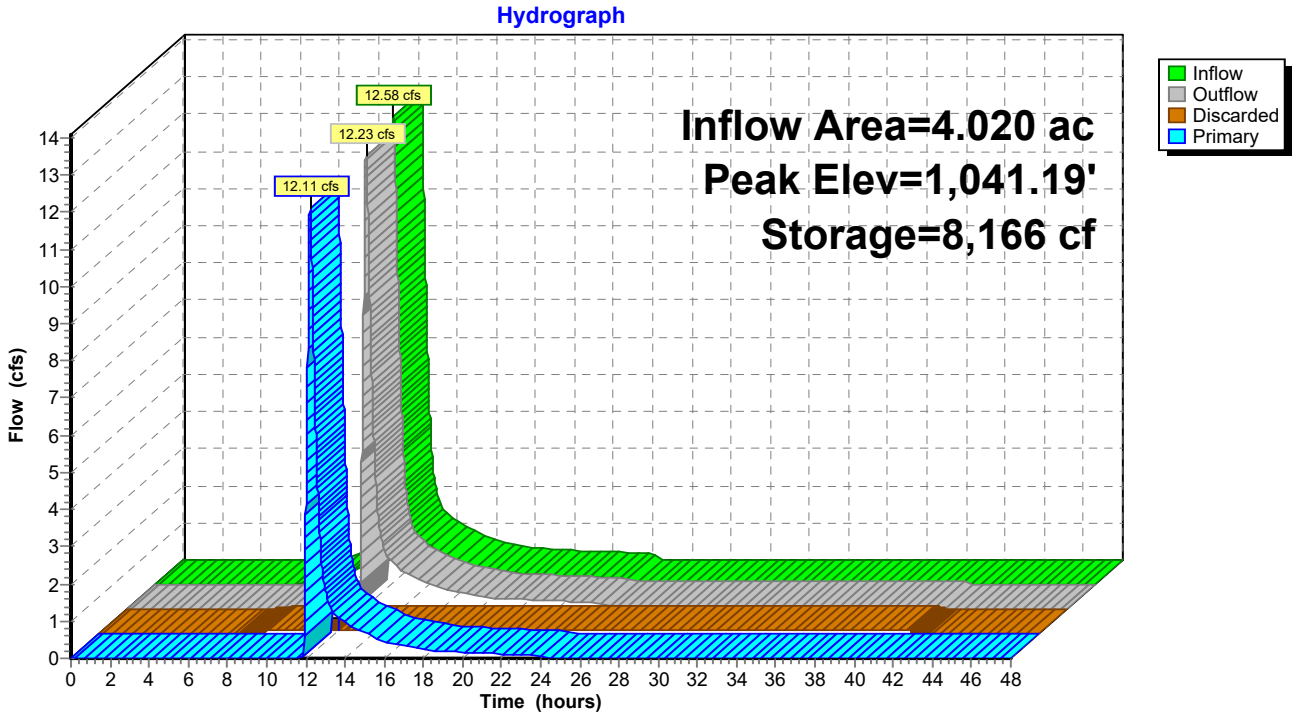
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,039.50	4,048	0	0
1,040.00	4,506	2,139	2,139
1,040.50	4,971	2,369	4,508
1,041.00	5,445	2,604	7,112
1,041.50	5,926	2,843	9,955

Device	Routing	Invert	Outlet Devices
#1	Primary	1,040.80'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Discarded	1,039.50'	**0.905 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.12 cfs @ 12.22 hrs HW=1,041.19' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.12 cfs)

Primary OutFlow Max=12.10 cfs @ 12.22 hrs HW=1,041.19' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 12.10 cfs @ 1.57 fps)

Pond IT2b:


Hydrograph
Inflow Area=4.020 ac
Peak Elev=1,041.19'
Storage=8,166 cf
12.58 cfs
12.23 cfs
12.11 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

Summary for Pond IT4:

Inflow Area = 0.937 ac, Inflow Depth = 3.94" for 25-YR STORM event
Inflow = 3.44 cfs @ 12.17 hrs, Volume= 0.307 af
Outflow = 0.31 cfs @ 13.56 hrs, Volume= 0.161 af, Atten= 91%, Lag= 83.2 min
Discarded = 0.03 cfs @ 13.56 hrs, Volume= 0.088 af
Primary = 0.28 cfs @ 13.56 hrs, Volume= 0.074 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,114.78' @ 13.56 hrs Surf.Area= 3,985 sf Storage= 8,754 cf

Plug-Flow detention time= 664.0 min calculated for 0.161 af (52% of inflow)
Center-of-Mass det. time= 553.8 min (1,360.8 - 807.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,112.00'	9,624 cf	**Custom Stage Data (Prismatic)** Listed below

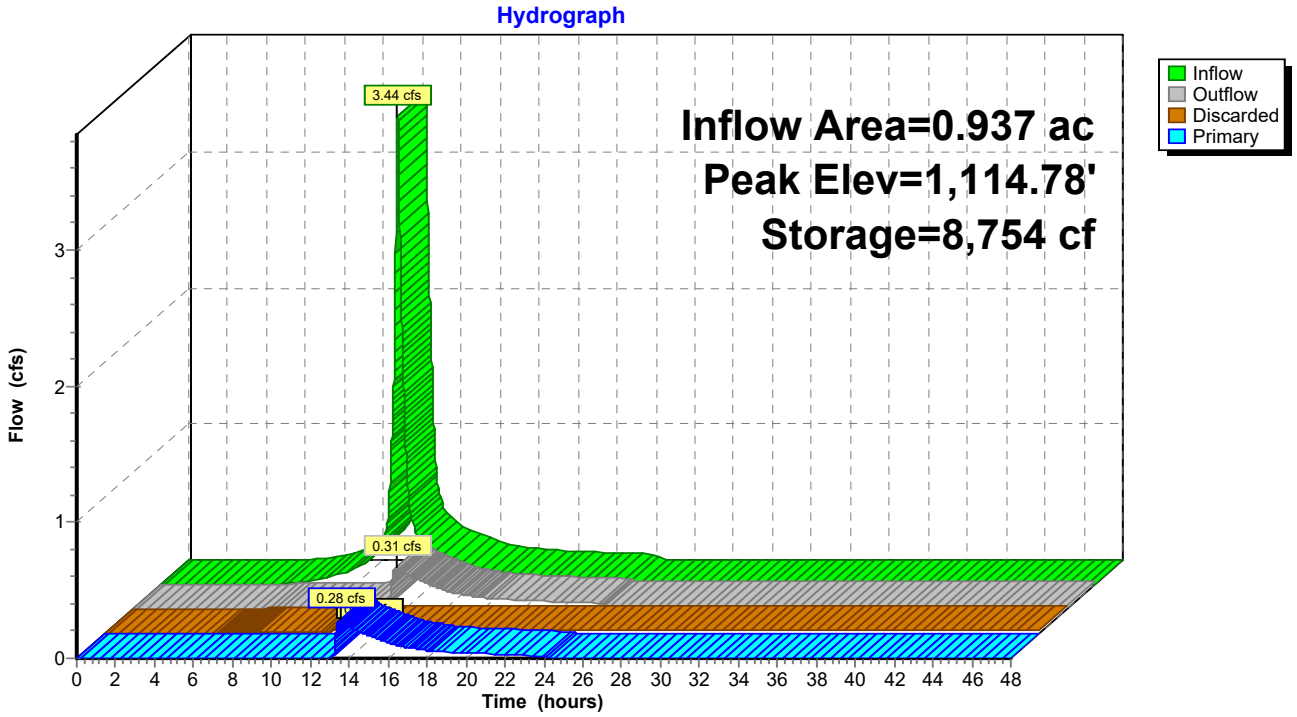
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,112.00	2,336	0	0
1,112.50	2,619	1,239	1,239
1,113.00	2,904	1,381	2,620
1,113.50	3,194	1,525	4,144
1,114.00	3,494	1,672	5,816
1,114.50	3,805	1,825	7,641
1,115.00	4,126	1,983	9,624

Device	Routing	Invert	Outlet Devices
#1	Primary	1,114.75'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Discarded	1,112.00'	**0.305 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.03 cfs @ 13.56 hrs HW=1,114.78' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.26 cfs @ 13.56 hrs HW=1,114.78' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 0.26 cfs @ 0.42 fps)

Pond IT4:


Hydrograph
Inflow Area=0.937 ac
Peak Elev=1,114.78'
Storage=8,754 cf
3.44 cfs
0.31 cfs
0.28 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0 1 2 3
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond P12:

Inflow Area = 1.930 ac, Inflow Depth = 3.94" for 25-YR STORM event
Inflow = 8.00 cfs @ 12.12 hrs, Volume= 0.633 af
Outflow = 7.81 cfs @ 12.14 hrs, Volume= 0.565 af, Atten= 2%, Lag= 1.3 min
Primary = 0.99 cfs @ 12.14 hrs, Volume= 0.328 af
Secondary = 6.82 cfs @ 12.14 hrs, Volume= 0.236 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,187.91' @ 12.14 hrs Surf.Area= 4,259 sf Storage= 5,336 cf

Plug-Flow detention time= 113.5 min calculated for 0.565 af (89% of inflow)
Center-of-Mass det. time= 62.1 min (865.4 - 803.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,185.00'	5,622 cf	**Custom Stage Data (Prismatic)** Listed below

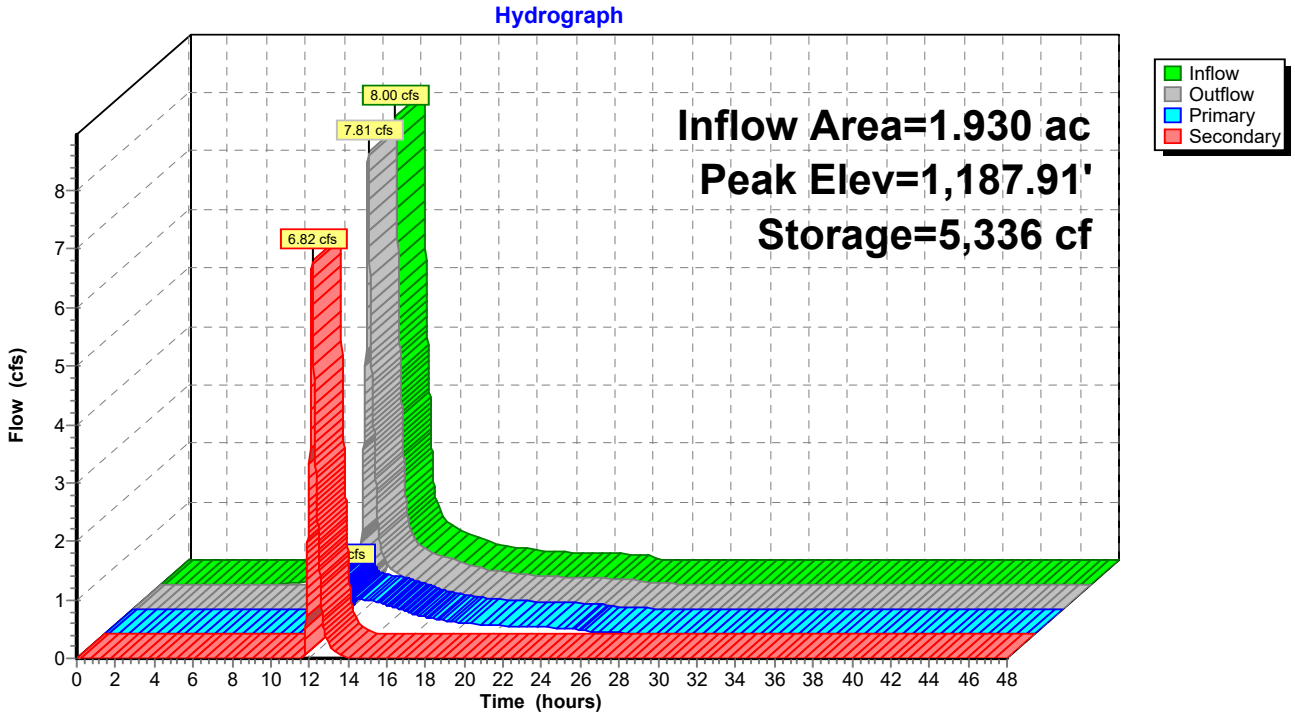
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,185.00	791	0	0
1,186.00	1,200	996	996
1,187.00	1,772	1,486	2,482
1,188.00	4,508	3,140	5,622

Device	Routing	Invert	Outlet Devices
#1	Primary	1,187.15'	**8.0" Round Culvert** L= 20.5' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,187.15' / 1,187.00' S= 0.0073 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#2	Secondary	1,187.65'	**20.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=0.99 cfs @ 12.14 hrs HW=1,187.91' (Free Discharge)
↑**1=Culvert** (Barrel Controls 0.99 cfs @ 3.13 fps)

Secondary OutFlow Max=6.81 cfs @ 12.14 hrs HW=1,187.91' (Free Discharge)
↑**2=Broad-Crested Rectangular Weir** (Weir Controls 6.81 cfs @ 1.32 fps)

Pond P12:


Hydrograph
Inflow Area=1.930 ac
Peak Elev=1,187.91'
Storage=5,336 cf
8.00 cfs
7.81 cfs
6.82 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 1 2 3 4 5 6 7 8

Summary for Pond P13:

Inflow Area = 1.630 ac, Inflow Depth = 3.94" for 25-YR STORM event
Inflow = 7.13 cfs @ 12.10 hrs, Volume= 0.535 af
Outflow = 0.36 cfs @ 14.64 hrs, Volume= 0.472 af, Atten= 95%, Lag= 152.4 min
Primary = 0.36 cfs @ 14.64 hrs, Volume= 0.472 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,144.42' @ 14.64 hrs Surf.Area= 6,716 sf Storage= 14,818 cf

Plug-Flow detention time= 508.7 min calculated for 0.472 af (88% of inflow)
Center-of-Mass det. time= 454.2 min (1,256.0 - 801.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,141.00'	37,325 cf	**Custom Stage Data (Prismatic)** Listed below

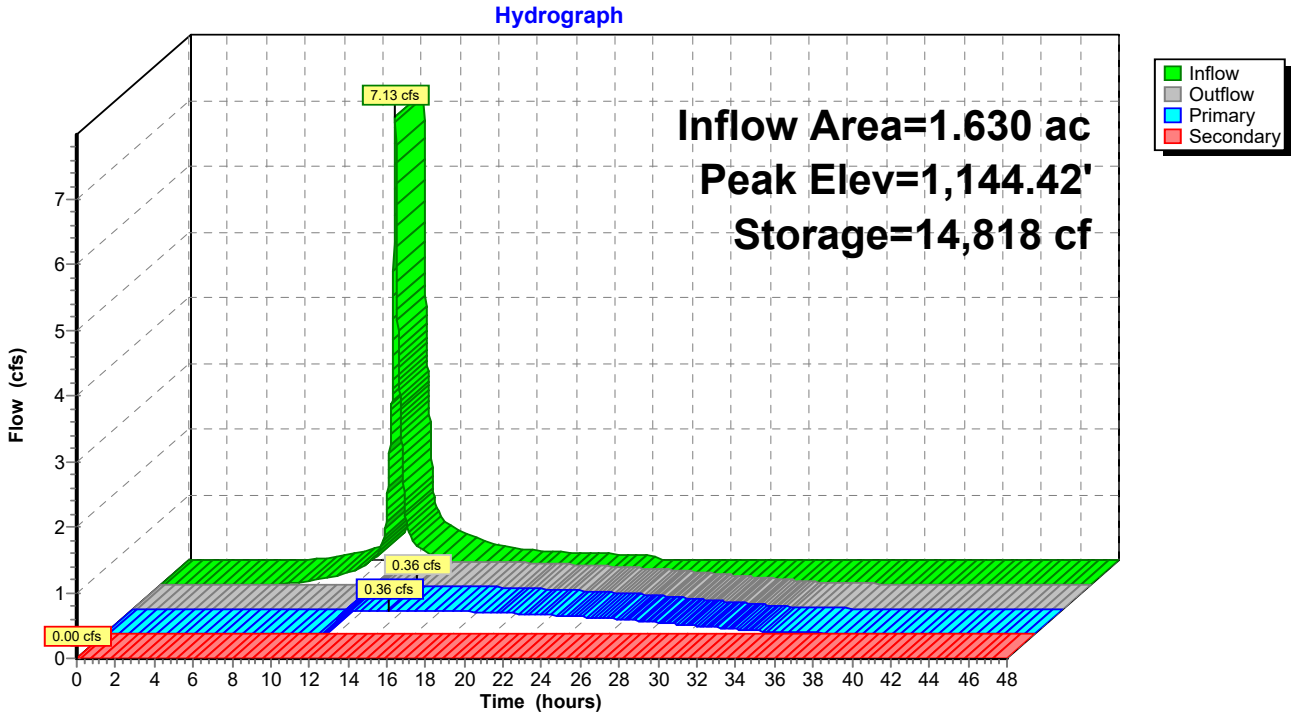
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,141.00	2,023	0	0
1,142.00	3,269	2,646	2,646
1,143.00	4,615	3,942	6,588
1,144.00	6,062	5,339	11,927
1,145.00	7,609	6,836	18,762
1,146.00	9,256	8,433	27,195
1,147.00	11,004	10,130	37,325

Device	Routing	Invert	Outlet Devices
#1	Primary	1,142.00'	**48.0" Round Culvert** L= 135.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,142.00' / 1,106.00' S= 0.2667 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Device 1	1,145.50'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Secondary	1,146.20'	**20.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	1,142.00'	**3.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.36 cfs @ 14.64 hrs HW=1,144.42' (Free Discharge)
└**1=Culvert** (Passes 0.36 cfs of 42.20 cfs potential flow)
  └**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Orifice Controls 0.36 cfs @ 7.30 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,141.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P13:


Hydrograph
Inflow Area=1.630 ac
Peak Elev=1,144.42'
Storage=14,818 cf
7.13 cfs
0.36 cfs
0.36 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 1 2 3 4 5 6 7

Summary for Pond P3:

Inflow Area = 7.890 ac, Inflow Depth = 4.04" for 25-YR STORM event
Inflow = 32.78 cfs @ 12.13 hrs, Volume= 2.657 af
Outflow = 20.78 cfs @ 12.26 hrs, Volume= 2.379 af, Atten= 37%, Lag= 7.7 min
Primary = 20.78 cfs @ 12.26 hrs, Volume= 2.379 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,133.79' @ 12.26 hrs Surf.Area= 7,178 sf Storage= 28,892 cf

Plug-Flow detention time= 97.9 min calculated for 2.379 af (90% of inflow)
Center-of-Mass det. time= 47.8 min (848.5 - 800.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,127.00'	38,268 cf	**Custom Stage Data (Prismatic)** Listed below

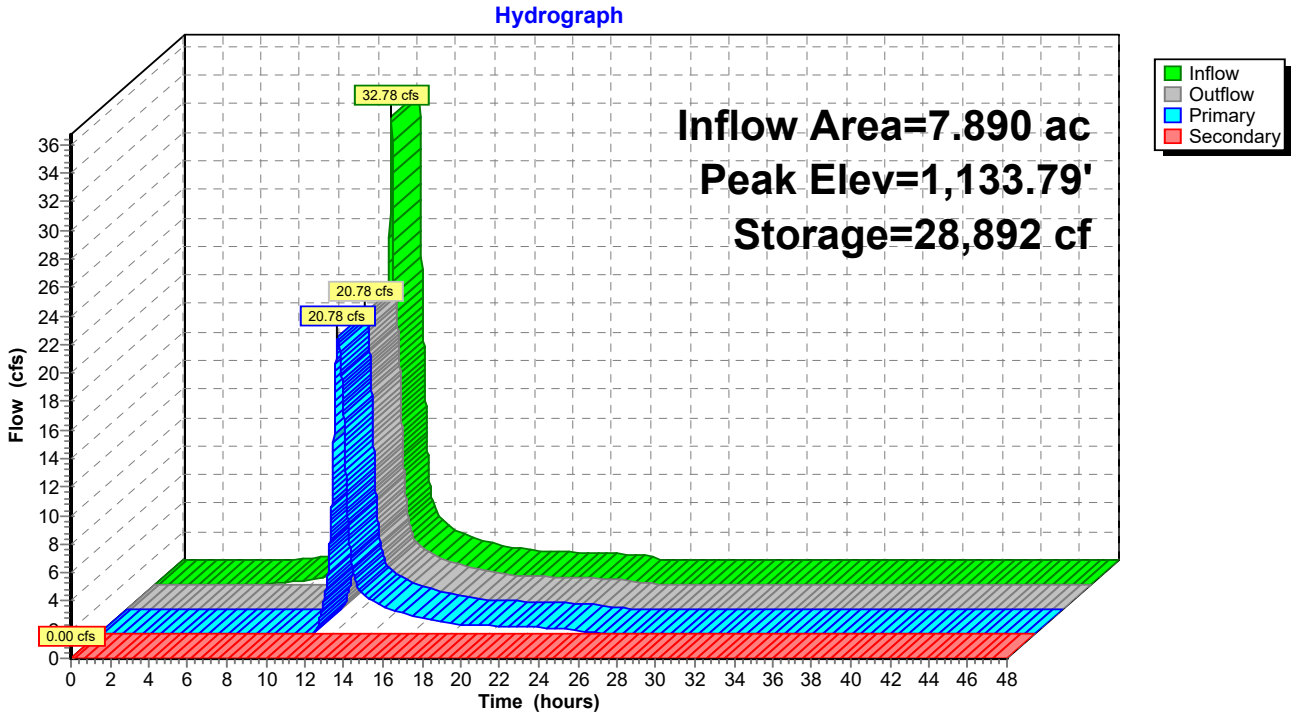
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,127.00	1,797	0	0
1,128.00	2,400	2,099	2,099
1,129.00	3,074	2,737	4,836
1,130.00	3,810	3,442	8,278
1,131.00	4,608	4,209	12,487
1,132.00	5,471	5,040	17,526
1,133.00	6,397	5,934	23,460
1,134.00	7,388	6,893	30,353
1,135.00	8,442	7,915	38,268

Device	Routing	Invert	Outlet Devices
#1	Primary	1,130.90'	**24.0" Round Culvert** L= 100.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,130.90' / 1,129.50' S= 0.0140 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	1,131.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Secondary	1,134.50'	**40.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	1,130.90'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=20.78 cfs @ 12.26 hrs HW=1,133.79' (Free Discharge)
└**1=Culvert** (Inlet Controls 20.78 cfs @ 6.62 fps)
  ├**2=Sharp-Crested Rectangular Weir** (Passes < 113.73 cfs potential flow)
  └**4=Orifice/Grate** (Passes < 6.43 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,127.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P3:


Hydrograph
Inflow Area=7.890 ac
Peak Elev=1,133.79'
Storage=28,892 cf
32.78 cfs
20.78 cfs
20.78 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36

Summary for Pond P5:

Inflow Area = 1.680 ac, Inflow Depth = 3.94" for 25-YR STORM event
Inflow = 7.23 cfs @ 12.11 hrs, Volume= 0.551 af
Outflow = 5.90 cfs @ 12.17 hrs, Volume= 0.493 af, Atten= 18%, Lag= 3.8 min
Primary = 5.38 cfs @ 12.17 hrs, Volume= 0.490 af
Secondary = 0.52 cfs @ 12.17 hrs, Volume= 0.003 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,146.43' @ 12.17 hrs Surf.Area= 4,432 sf Storage= 7,972 cf

Plug-Flow detention time= 188.4 min calculated for 0.492 af (89% of inflow)
Center-of-Mass det. time= 138.0 min (940.3 - 802.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,144.00'	10,517 cf	**Custom Stage Data (Prismatic)** Listed below

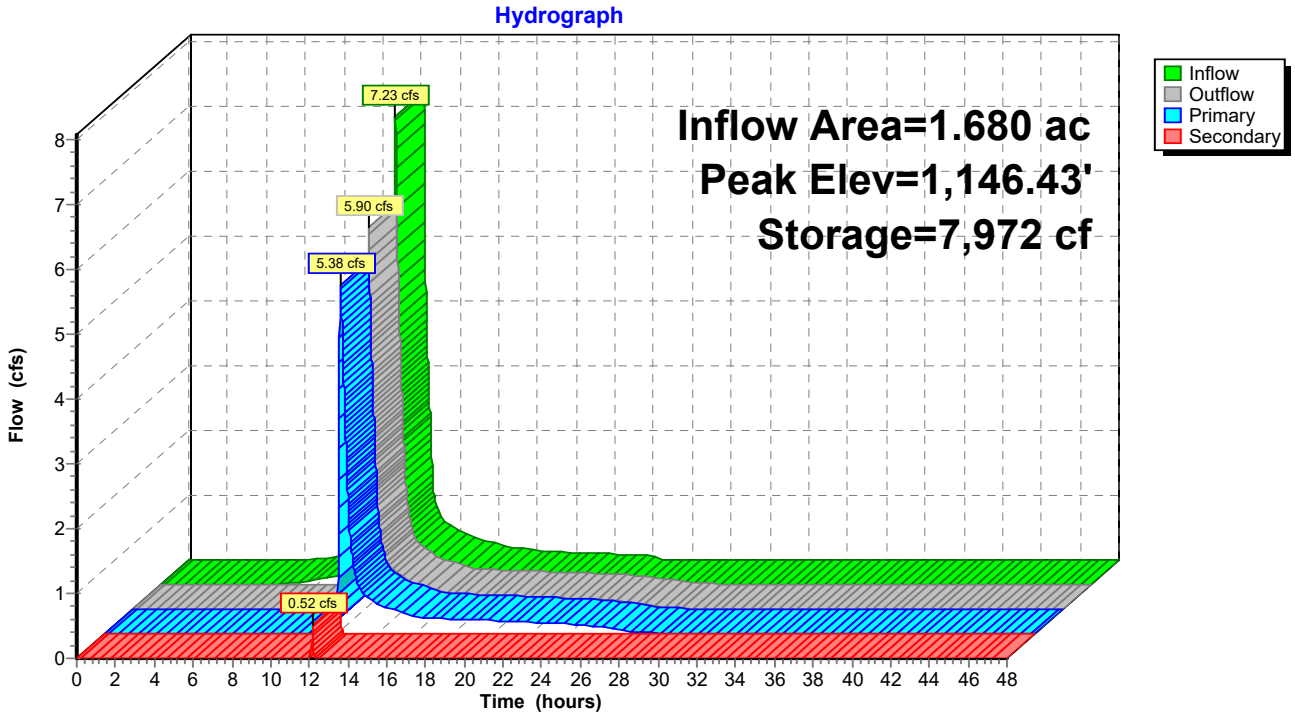
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,144.00	2,092	0	0
1,145.00	2,986	2,539	2,539
1,146.00	3,967	3,477	6,016
1,147.00	5,036	4,502	10,517

Device	Routing	Invert	Outlet Devices
#1	Primary	1,145.00'	**24.0" Round Culvert** L= 42.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,145.00' / 1,141.00' S= 0.0952 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	1,146.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Secondary	1,146.40'	**30.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	1,145.00'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.37 cfs @ 12.17 hrs HW=1,146.43' (Free Discharge)
└**1=Culvert** (Passes 5.37 cfs of 9.83 cfs potential flow)
  ├**2=Sharp-Crested Rectangular Weir** (Weir Controls 5.09 cfs @ 2.38 fps)
  └**4=Orifice/Grate** (Orifice Controls 0.28 cfs @ 5.77 fps)

Secondary OutFlow Max=0.50 cfs @ 12.17 hrs HW=1,146.43' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Weir Controls 0.50 cfs @ 0.48 fps)

Pond P5:


Hydrograph
Inflow Area=1.680 ac
Peak Elev=1,146.43'
Storage=7,972 cf
7.23 cfs
5.90 cfs
5.38 cfs
0.52 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 1 2 3 4 5 6 7 8

Summary for Pond P7:

Inflow Area = 4.100 ac, Inflow Depth = 3.53" for 25-YR STORM event
Inflow = 16.19 cfs @ 12.10 hrs, Volume= 1.206 af
Outflow = 3.18 cfs @ 12.56 hrs, Volume= 1.064 af, Atten= 80%, Lag= 27.4 min
Primary = 3.18 cfs @ 12.56 hrs, Volume= 1.064 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,161.24' @ 12.56 hrs Surf.Area= 0 sf Storage= 28,010 cf

Plug-Flow detention time= 547.6 min calculated for 1.064 af (88% of inflow)
Center-of-Mass det. time= 492.9 min (1,306.4 - 813.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,157.00'	34,851 cf	**Custom Stage Data** Listed below

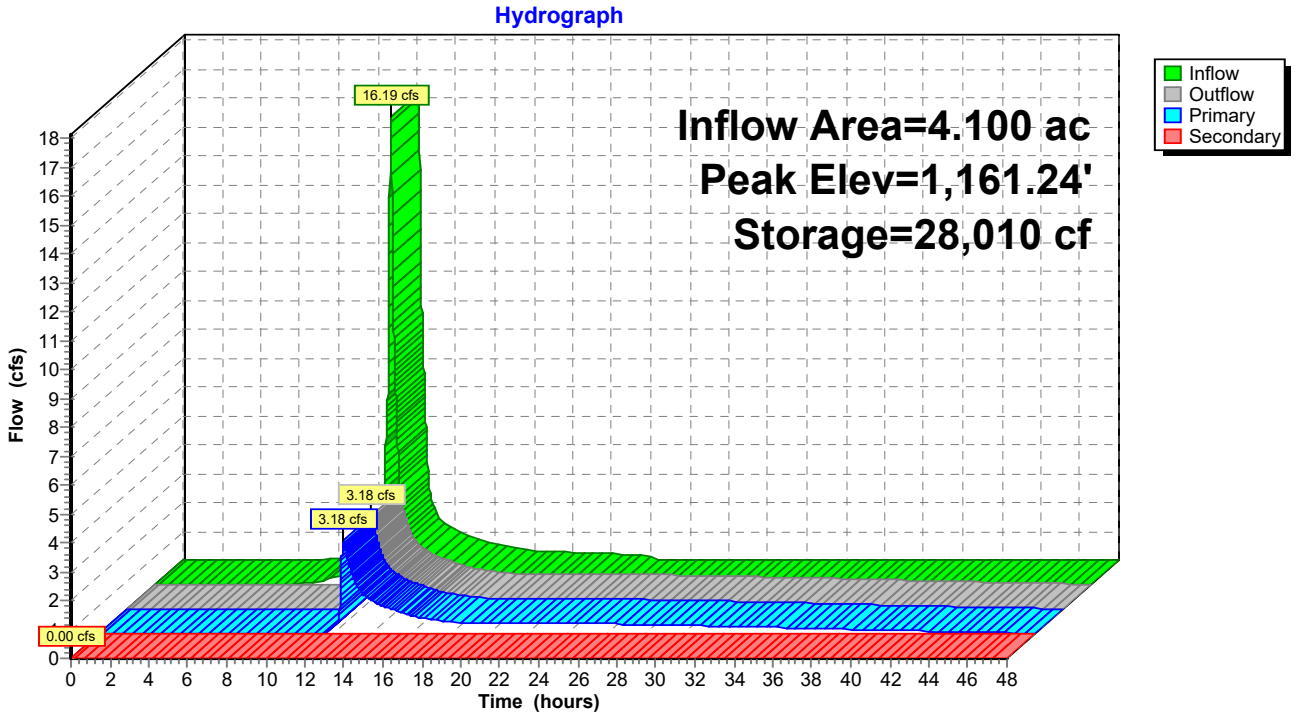
Elevation (feet)	Cum.Store (cubic-feet)
1,157.00	0
1,158.00	4,997
1,159.00	10,924
1,160.00	17,837
1,161.00	25,794
1,162.00	34,851

Device	Routing	Invert	Outlet Devices
#1	Primary	1,157.15'	**30.0" Round Culvert** L= 58.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,157.15' / 1,156.10' S= 0.0181 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	1,160.95'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Secondary	1,161.55'	**30.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	1,158.10'	**3.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=3.18 cfs @ 12.56 hrs HW=1,161.24' (Free Discharge)
└**1=Culvert** (Passes 3.18 cfs of 39.86 cfs potential flow)
  ├**2=Sharp-Crested Rectangular Weir** (Weir Controls 2.77 cfs @ 1.90 fps)
  └**4=Orifice/Grate** (Orifice Controls 0.41 cfs @ 8.37 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,157.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P7:


Hydrograph
Inflow Area=4.100 ac
Peak Elev=1,161.24'
Storage=28,010 cf
16.19 cfs
3.18 cfs
3.18 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

Summary for Pond P8/10:

Inflow Area = 28.040 ac, Inflow Depth = 3.94" for 25-YR STORM event
Inflow = 99.88 cfs @ 12.19 hrs, Volume= 9.197 af
Outflow = 67.34 cfs @ 12.35 hrs, Volume= 8.027 af, Atten= 33%, Lag= 9.6 min
Primary = 67.34 cfs @ 12.35 hrs, Volume= 8.027 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,127.66' @ 12.35 hrs Surf.Area= 0 sf Storage= 125,517 cf

Plug-Flow detention time= 160.7 min calculated for 8.027 af (87% of inflow)
Center-of-Mass det. time= 103.2 min (911.2 - 808.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,122.00'	166,405 cf	**Custom Stage Data** Listed below

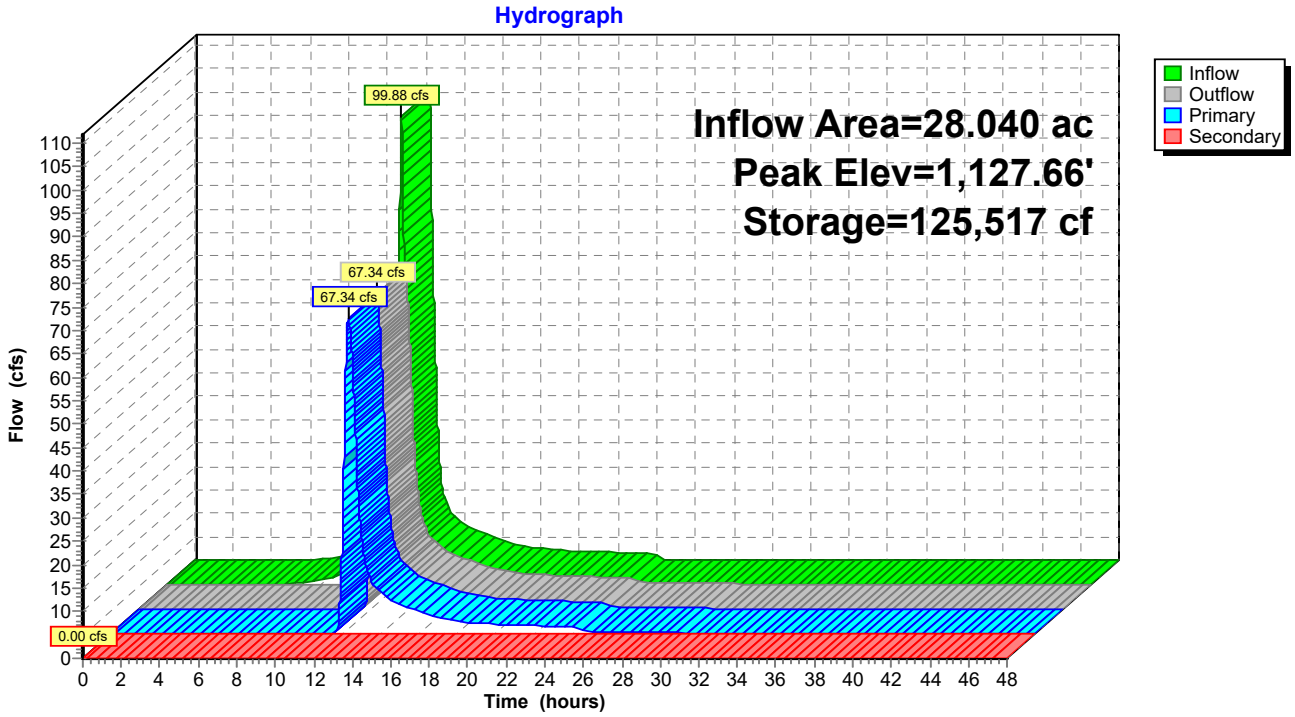
Elevation (feet)	Cum.Store (cubic-feet)
1,122.00	0
1,123.00	16,747
1,124.00	35,732
1,125.00	57,018
1,126.00	80,666
1,127.00	106,738
1,128.00	135,298
1,129.00	166,405

Device	Routing	Invert	Outlet Devices
#1	Primary	1,124.40'	**48.0" Round Culvert** L= 88.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,124.40' / 1,123.00' S= 0.0159 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Device 1	1,125.25'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Secondary	1,128.25'	**50.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	1,124.40'	**3.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=67.33 cfs @ 12.35 hrs HW=1,127.66' (Free Discharge)
└**1=Culvert** (Inlet Controls 67.33 cfs @ 6.14 fps)
  ├**2=Sharp-Crested Rectangular Weir** (Passes < 87.69 cfs potential flow)
  └**4=Orifice/Grate** (Passes < 0.42 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,122.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P8/10:


Hydrograph
Inflow Area=28.040 ac
Peak Elev=1,127.66'
Storage=125,517 cf
99.88 cfs
67.34 cfs
67.34 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110

Summary for Pond P9:

Inflow Area = 6.810 ac, Inflow Depth = 4.04" for 25-YR STORM event
Inflow = 22.26 cfs @ 12.24 hrs, Volume= 2.293 af
Outflow = 17.89 cfs @ 12.37 hrs, Volume= 2.016 af, Atten= 20%, Lag= 7.8 min
Primary = 17.89 cfs @ 12.37 hrs, Volume= 2.016 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,189.94' @ 12.37 hrs Surf.Area= 14,574 sf Storage= 31,811 cf

Plug-Flow detention time= 203.6 min calculated for 2.016 af (88% of inflow)
Center-of-Mass det. time= 148.6 min (957.6 - 809.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,187.00'	48,733 cf	**Custom Stage Data (Prismatic)** Listed below

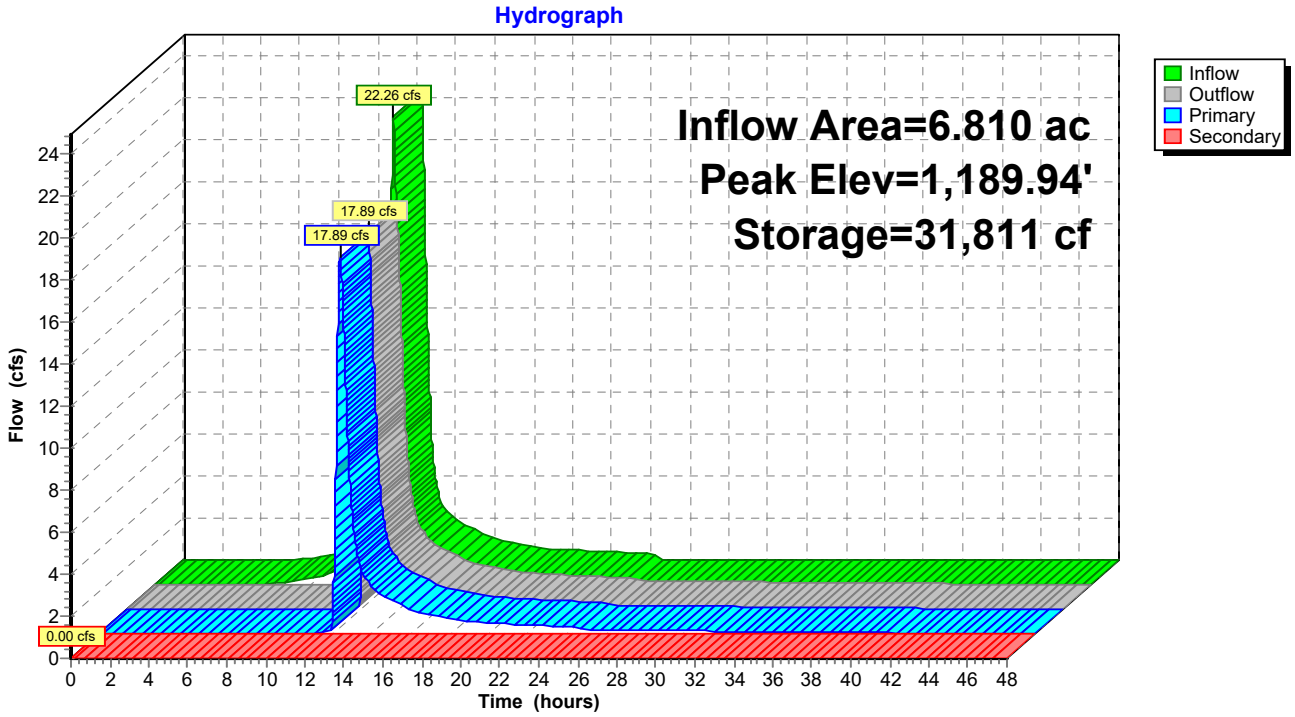
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,187.00	7,155	0	0
1,188.00	9,581	8,368	8,368
1,189.00	12,108	10,845	19,213
1,190.00	14,735	13,422	32,634
1,191.00	17,463	16,099	48,733

Device	Routing	Invert	Outlet Devices
#1	Primary	1,188.25'	**48.0" Round Culvert** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,188.25' / 1,187.25' S= 0.0167 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Device 1	1,189.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Secondary	1,190.00'	**20.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	1,188.25'	**3.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=17.89 cfs @ 12.37 hrs HW=1,189.94' (Free Discharge)
└**1=Culvert** (Passes 17.89 cfs of 22.31 cfs potential flow)
└**2=Sharp-Crested Rectangular Weir** (Weir Controls 17.59 cfs @ 3.90 fps)
└**4=Orifice/Grate** (Orifice Controls 0.30 cfs @ 6.02 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,187.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P9:


Hydrograph
Inflow Area=6.810 ac
Peak Elev=1,189.94'
Storage=31,811 cf
22.26 cfs
17.89 cfs
17.89 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond WS11:

Inflow Area = 3.190 ac, Inflow Depth = 3.33" for 25-YR STORM event
Inflow = 8.18 cfs @ 12.29 hrs, Volume= 0.886 af
Outflow = 6.37 cfs @ 12.46 hrs, Volume= 0.625 af, Atten= 22%, Lag= 10.4 min
Primary = 6.37 cfs @ 12.46 hrs, Volume= 0.625 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 1,197.26' @ 12.46 hrs Surf.Area= 8,157 sf Storage= 13,654 cf

Plug-Flow detention time= 161.4 min calculated for 0.625 af (70% of inflow)
Center-of-Mass det. time= 67.0 min (899.0 - 832.0)

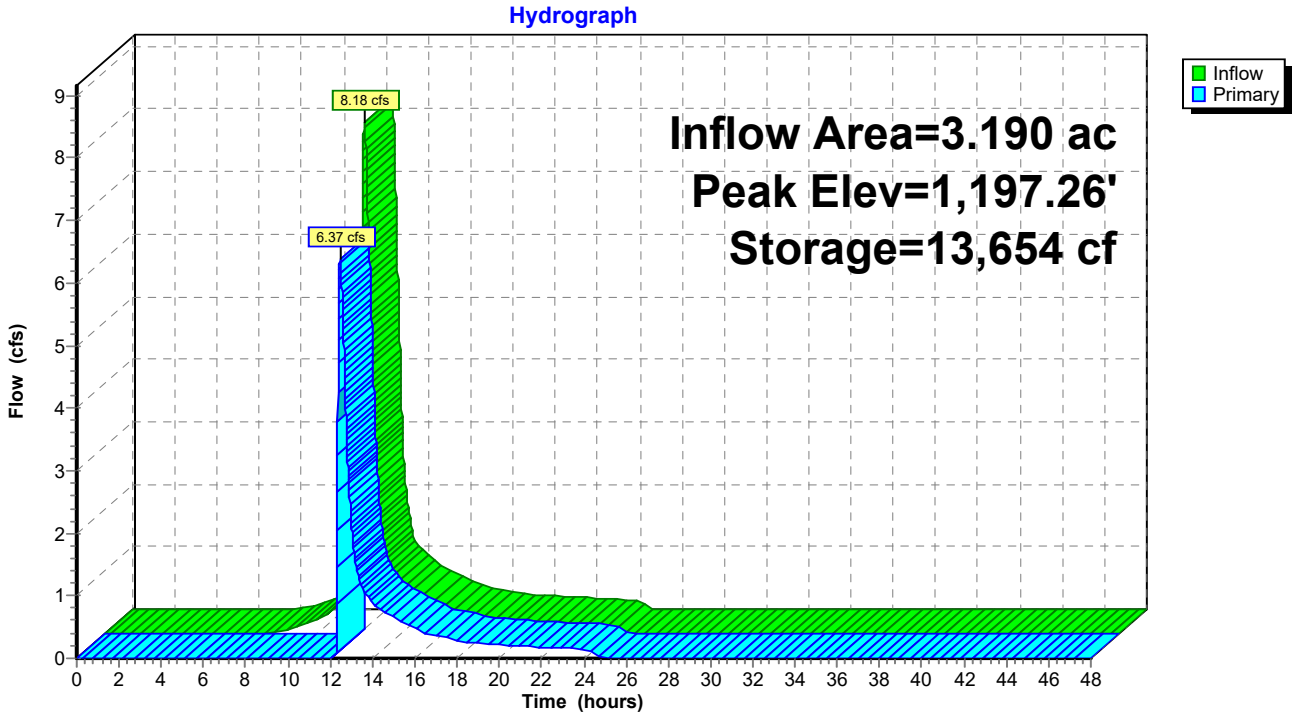
Volume	Invert	Avail.Storage	Storage Description
#1	1,194.00'	20,175 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,194.00	220	0	0
1,195.00	2,537	1,379	1,379
1,196.00	4,998	3,768	5,146
1,197.00	7,486	6,242	11,388
1,198.00	10,087	8,787	20,175

Device	Routing	Invert	Outlet Devices
#1	Primary	1,197.00'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Device 1	1,195.80'	**90.0 deg x 4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.50 (C= 3.13)

Primary OutFlow Max=6.35 cfs @ 12.46 hrs HW=1,197.26' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 6.35 cfs @ 1.23 fps)
↑—**2=Sharp-Crested Vee/Trap Weir** (Passes 6.35 cfs of 19.68 cfs potential flow)

Pond WS11:


Hydrograph
Inflow
Primary
8.18 cfs
6.37 cfs
Inflow Area=3.190 ac
Peak Elev=1,197.26'
Storage=13,654 cf
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond WS14:

[95] Warning: Outlet Device #1 rise exceeded

Inflow Area = 4.600 ac, Inflow Depth = 3.83" for 25-YR STORM event
Inflow = 15.62 cfs @ 12.19 hrs, Volume= 1.469 af
Outflow = 15.07 cfs @ 12.23 hrs, Volume= 1.206 af, Atten= 4%, Lag= 2.4 min
Primary = 15.07 cfs @ 12.23 hrs, Volume= 1.206 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,150.44' @ 12.23 hrs Surf.Area= 6,951 sf Storage= 14,565 cf

Plug-Flow detention time= 115.3 min calculated for 1.206 af (82% of inflow)
Center-of-Mass det. time= 44.0 min (855.9 - 811.9)

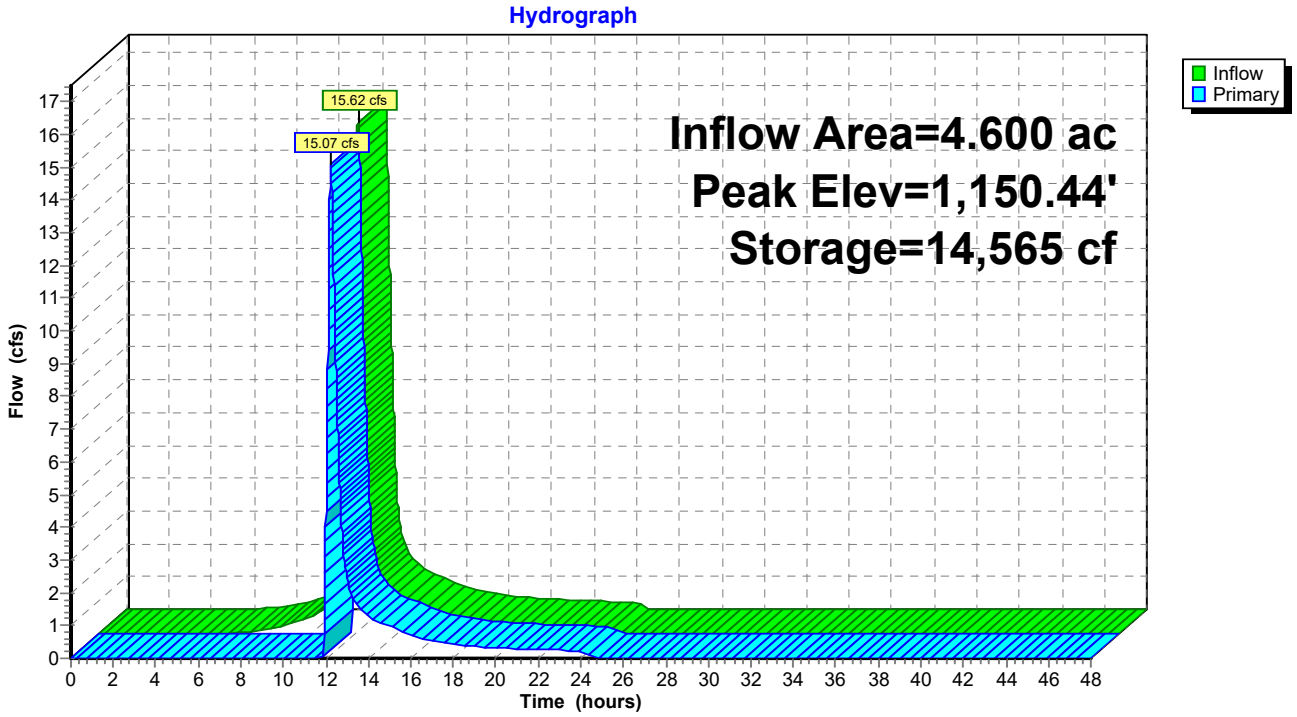
Volume	Invert	Avail.Storage	Storage Description
#1	1,147.00'	18,496 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,147.00	724	0	0
1,148.00	3,306	2,015	2,015
1,149.00	4,678	3,992	6,007
1,150.00	6,202	5,440	11,447
1,151.00	7,895	7,049	18,496

Device	Routing	Invert	Outlet Devices
#1	Device 2	1,148.80'	**90.0 deg x 4.0' long x 1.00' rise Sharp-Crested Vee/Trap Weir** Cv= 2.50 (C= 3.13)
#2	Primary	1,150.00'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=15.12 cfs @ 12.23 hrs HW=1,150.44' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 15.12 cfs @ 1.71 fps)
↑—**1=Sharp-Crested Vee/Trap Weir** (Passes 15.12 cfs of 15.59 cfs potential flow)

Pond WS14:


Hydrograph
Inflow
Primary
15.62 cfs
15.07 cfs
Inflow Area=4.600 ac
Peak Elev=1,150.44'
Storage=14,565 cf
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1: Runoff Area=1.280 ac Runoff Depth=4.59"
Tc=9.1 min CN=85 Runoff=6.07 cfs 0.489 af

Subcatchment2a: Runoff Area=4.430 ac Runoff Depth=4.26"
Tc=9.7 min CN=82 Runoff=19.35 cfs 1.574 af

Subcatchment2b: Runoff Area=4.020 ac Runoff Depth=4.16"
Tc=13.9 min CN=81 Runoff=15.19 cfs 1.393 af

Subcatchment3: Runoff Area=7.890 ac Runoff Depth=4.80"
Tc=9.2 min CN=87 Runoff=38.68 cfs 3.159 af

Subcatchment4: Runoff Area=0.937 ac Runoff Depth=4.70"
Tc=12.6 min CN=86 Runoff=4.08 cfs 0.367 af

Subcatchment5: Runoff Area=1.680 ac Runoff Depth=4.70"
Tc=7.5 min CN=86 Runoff=8.55 cfs 0.657 af

Subcatchment7: Runoff Area=4.100 ac Runoff Depth=4.26"
Tc=7.2 min CN=82 Runoff=19.46 cfs 1.457 af

Subcatchment8/10: Runoff Area=28.040 ac Runoff Depth=4.70"
Tc=13.7 min CN=86 Runoff=118.30 cfs 10.971 af

Subcatchment9: Runoff Area=6.810 ac Runoff Depth=4.80"
Tc=18.1 min CN=87 Runoff=26.27 cfs 2.727 af

Subcatchment11: Runoff Area=3.190 ac Runoff Depth=4.05"
Tc=21.4 min CN=80 Runoff=9.92 cfs 1.077 af

Subcatchment12: Runoff Area=1.930 ac Runoff Depth=4.70"
Tc=8.6 min CN=86 Runoff=9.47 cfs 0.755 af

Subcatchment13: Runoff Area=1.630 ac Runoff Depth=4.70"
Tc=7.0 min CN=86 Runoff=8.44 cfs 0.638 af

Subcatchment14: Runoff Area=4.600 ac Runoff Depth=4.59"
Tc=14.6 min CN=85 Runoff=18.57 cfs 1.758 af

Subcatchment15: Runoff Area=1.930 ac Runoff Depth=4.48"
Tc=13.7 min CN=84 Runoff=7.83 cfs 0.720 af

Pond IT1: Peak Elev=1,126.75' Storage=3,826 cf Inflow=6.07 cfs 0.489 af
Discarded=0.05 cfs 0.127 af Primary=5.91 cfs 0.358 af Outflow=5.96 cfs 0.485 af

Pond IT2a: Peak Elev=1,091.46' Storage=6,914 cf Inflow=19.35 cfs 1.574 af
Discarded=0.11 cfs 0.219 af Primary=18.86 cfs 1.355 af Outflow=18.97 cfs 1.574 af

Pond IT2b: Peak Elev=1,041.23' Storage=8,445 cf Inflow=15.19 cfs 1.393 af
Discarded=0.12 cfs 0.288 af Primary=14.70 cfs 1.105 af Outflow=14.82 cfs 1.393 af

Pond IT4: Peak Elev=1,114.83' Storage=8,938 cf Inflow=4.08 cfs 0.367 af
Discarded=0.03 cfs 0.089 af Primary=1.03 cfs 0.132 af Outflow=1.06 cfs 0.221 af

Pond P12: Peak Elev=1,187.94' Storage=5,443 cf Inflow=9.47 cfs 0.755 af
Primary=1.04 cfs 0.376 af Secondary=8.23 cfs 0.311 af Outflow=9.27 cfs 0.687 af

Pond P13: Peak Elev=1,144.89' Storage=17,990 cf Inflow=8.44 cfs 0.638 af
Primary=0.39 cfs 0.574 af Secondary=0.00 cfs 0.000 af Outflow=0.39 cfs 0.574 af

Pond P3: Peak Elev=1,134.27' Storage=32,519 cf Inflow=38.68 cfs 3.159 af
Primary=23.31 cfs 2.882 af Secondary=0.00 cfs 0.000 af Outflow=23.31 cfs 2.882 af

Pond P5: Peak Elev=1,146.48' Storage=8,177 cf Inflow=8.55 cfs 0.657 af
Primary=6.25 cfs 0.582 af Secondary=1.77 cfs 0.016 af Outflow=8.03 cfs 0.599 af

Pond P7: Peak Elev=1,161.45' Storage=29,914 cf Inflow=19.46 cfs 1.457 af
Primary=6.89 cfs 1.313 af Secondary=0.00 cfs 0.000 af Outflow=6.89 cfs 1.313 af

Pond P8/10: Peak Elev=1,128.10' Storage=138,385 cf Inflow=118.30 cfs 10.971 af
Primary=79.47 cfs 9.800 af Secondary=0.00 cfs 0.000 af Outflow=79.47 cfs 9.800 af

Pond P9: Peak Elev=1,190.06' Storage=33,579 cf Inflow=26.27 cfs 2.727 af
Primary=21.79 cfs 2.442 af Secondary=0.77 cfs 0.008 af Outflow=22.56 cfs 2.450 af

Pond WS11: Peak Elev=1,197.32' Storage=14,198 cf Inflow=9.92 cfs 1.077 af
Outflow=8.95 cfs 0.816 af

Pond WS14: Peak Elev=1,150.53' Storage=15,203 cf Inflow=18.57 cfs 1.758 af
Outflow=17.11 cfs 1.495 af

Total Runoff Area = 72.467 ac Runoff Volume = 27.742 af Average Runoff Depth = 4.59"

Summary for Subcatchment 1:

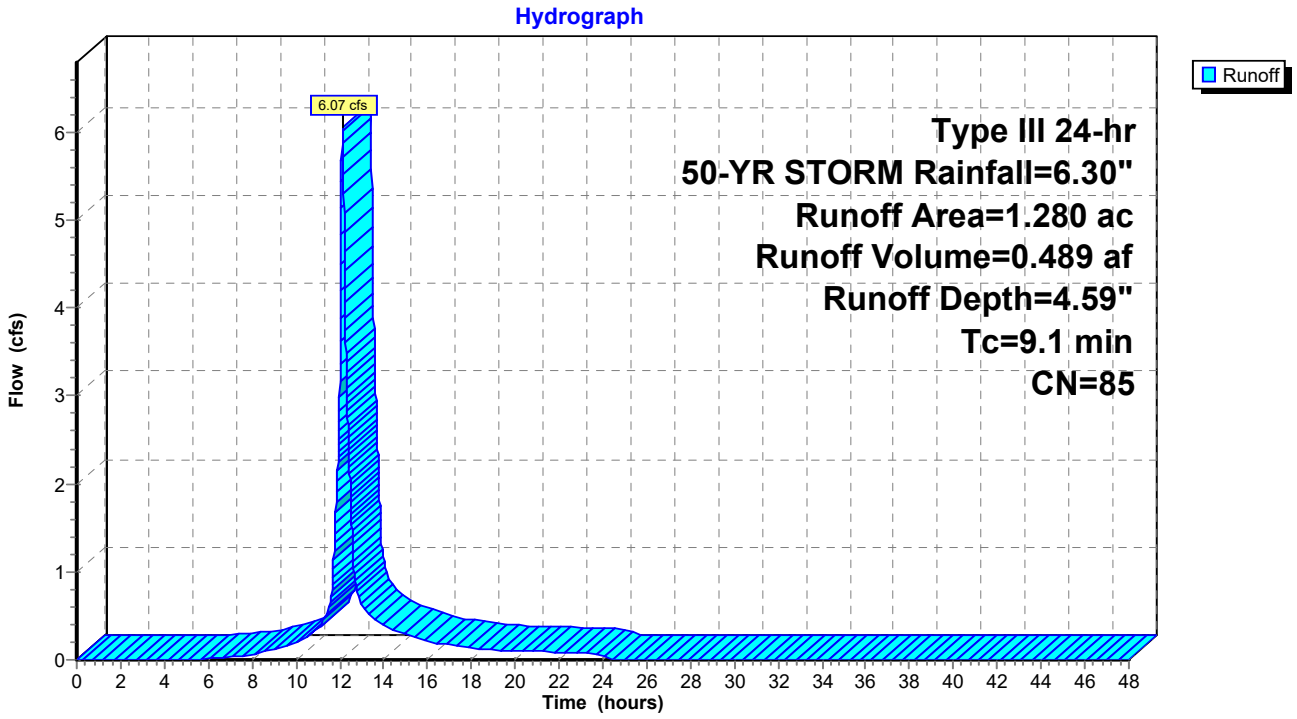
Runoff = 6.07 cfs @ 12.12 hrs, Volume= 0.489 af, Depth= 4.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-YR STORM Rainfall=6.30"

	Area (ac)	CN	Description
*	1.280	85	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1					**Direct Entry, NRCS Part 630**

Subcatchment 1:



Summary for Subcatchment 2a:

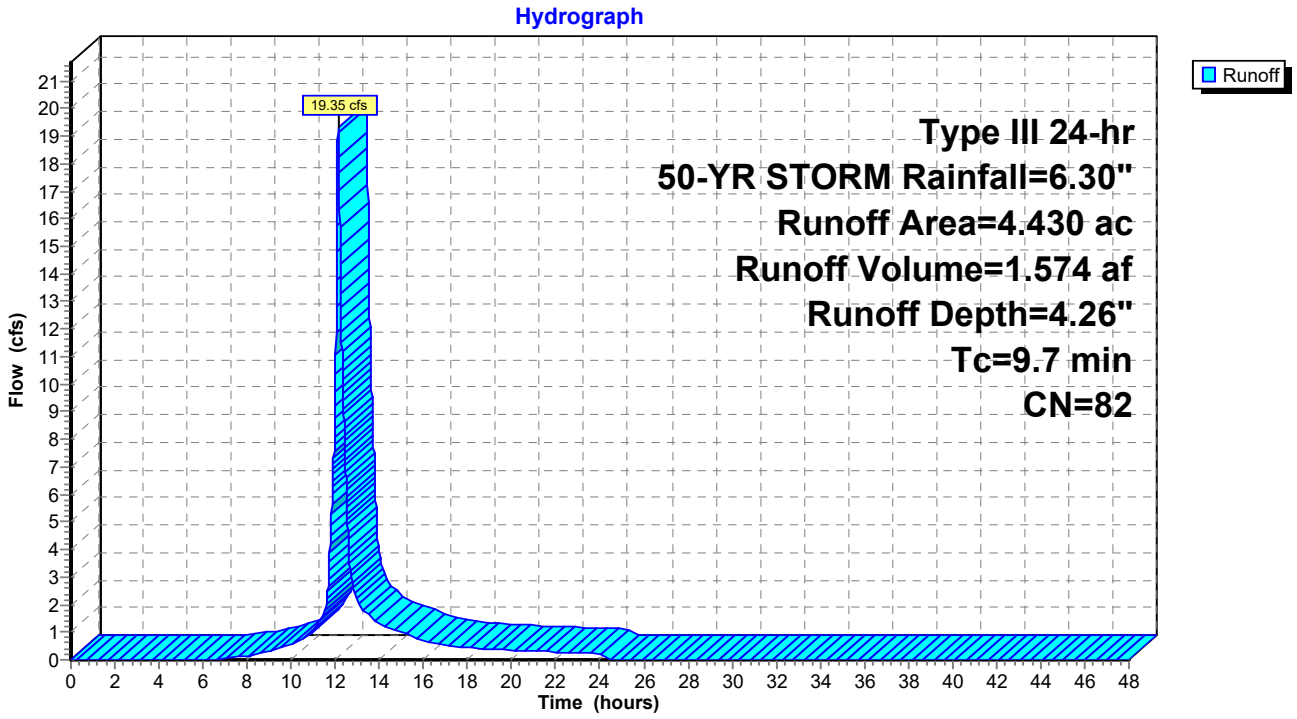
Runoff = 19.35 cfs @ 12.13 hrs, Volume= 1.574 af, Depth= 4.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-YR STORM Rainfall=6.30"

	Area (ac)	CN	Description
*	4.430	82	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7					**Direct Entry, NRCS Part 630**

Subcatchment 2a:



Summary for Subcatchment 2b:

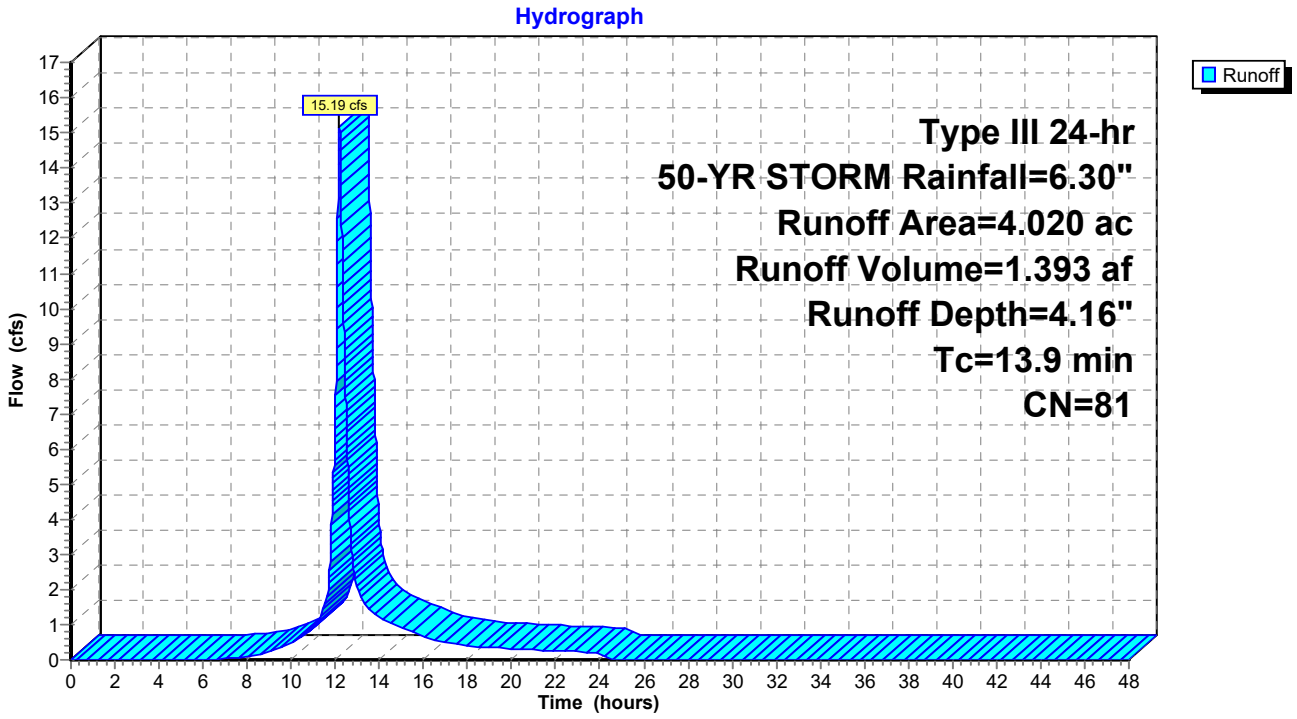
Runoff = 15.19 cfs @ 12.19 hrs, Volume= 1.393 af, Depth= 4.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-YR STORM Rainfall=6.30"

	Area (ac)	CN	Description
*	4.020	81	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9					**Direct Entry, NRCS Part 630**

Subcatchment 2b:



Summary for Subcatchment 3:

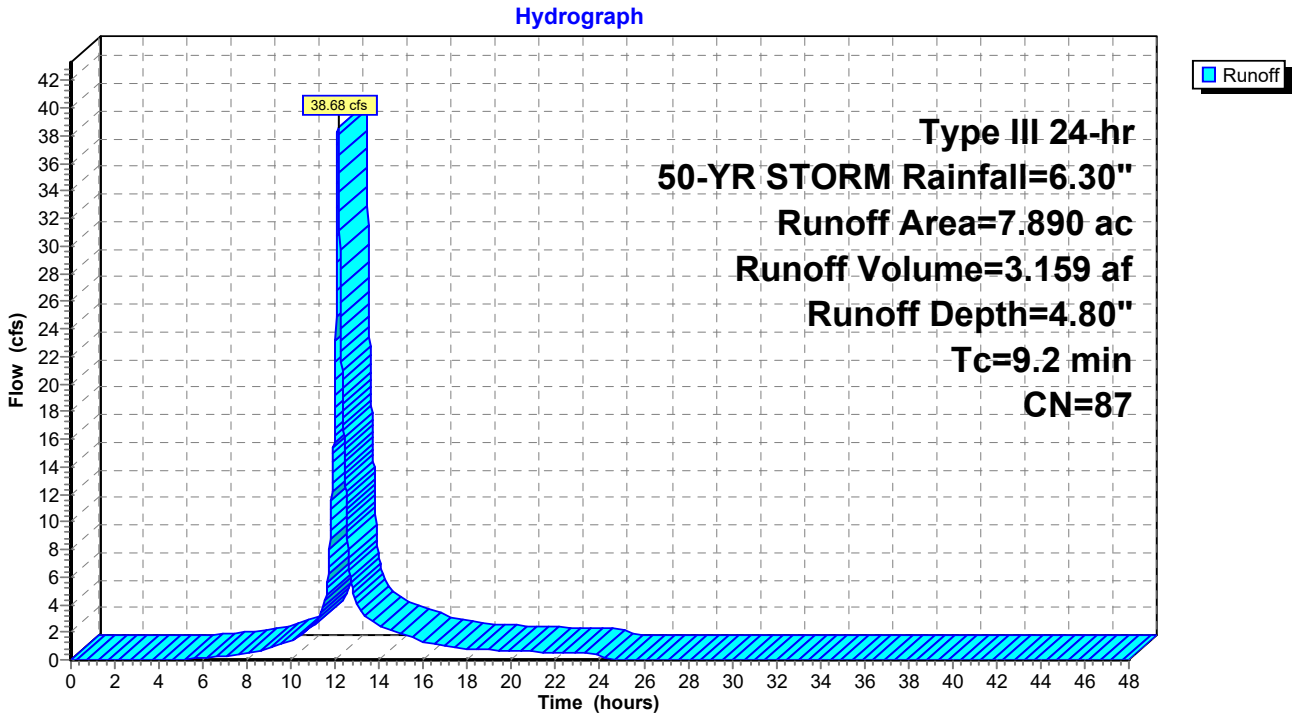
Runoff = 38.68 cfs @ 12.13 hrs, Volume= 3.159 af, Depth= 4.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-YR STORM Rainfall=6.30"

	Area (ac)	CN	Description
*	7.890	87	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2					**Direct Entry, NRCS Part 630**

Subcatchment 3:



Summary for Subcatchment 4:

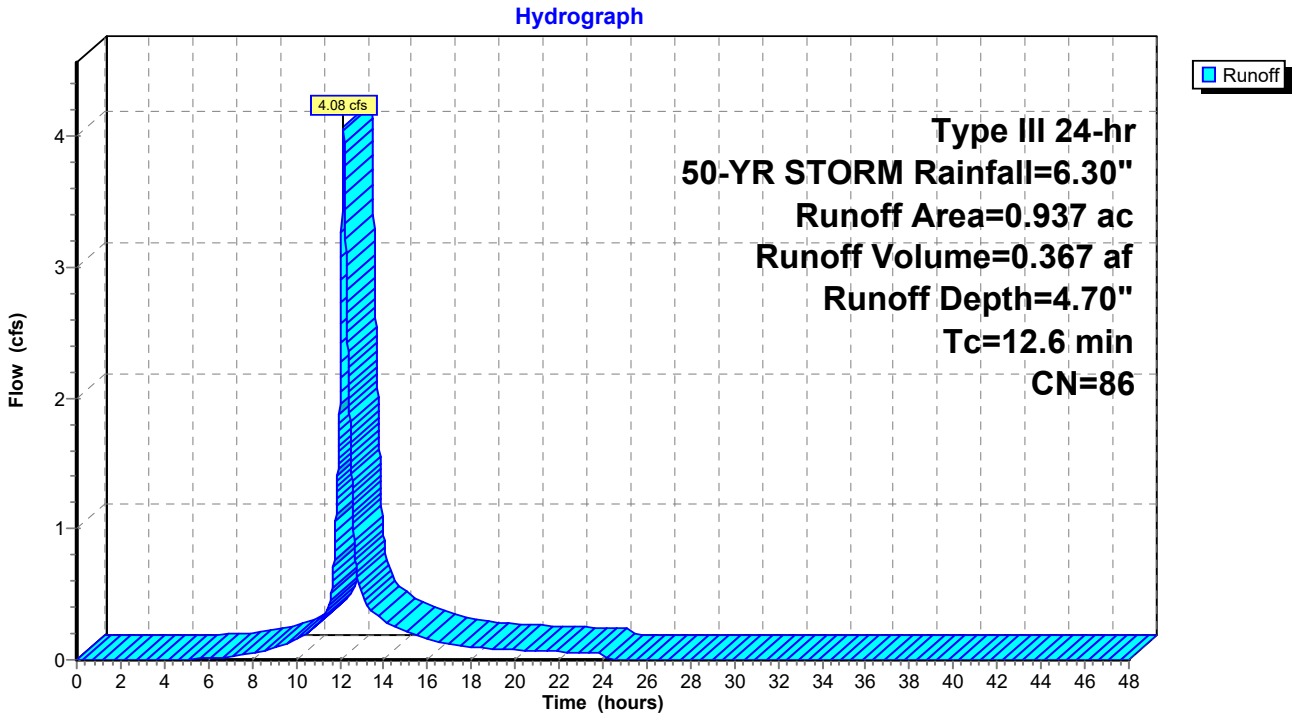
Runoff = 4.08 cfs @ 12.17 hrs, Volume= 0.367 af, Depth= 4.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-YR STORM Rainfall=6.30"

	Area (ac)	CN	Description
*	0.937	86	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6					**Direct Entry, NRCS Part 630**

Subcatchment 4:



Summary for Subcatchment 5:

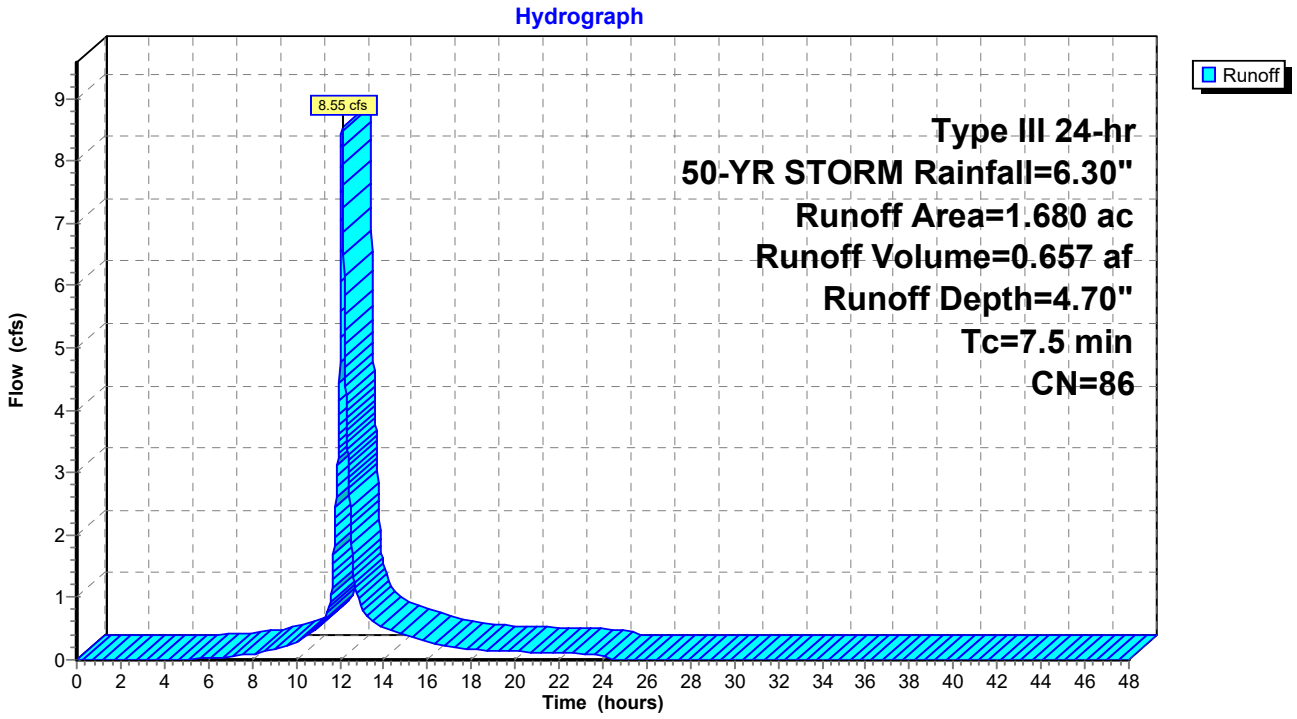
Runoff = 8.55 cfs @ 12.11 hrs, Volume= 0.657 af, Depth= 4.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-YR STORM Rainfall=6.30"

	Area (ac)	CN	Description
*	1.680	86	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5					**Direct Entry, NRCS Part 630**

Subcatchment 5:



Summary for Subcatchment 7:

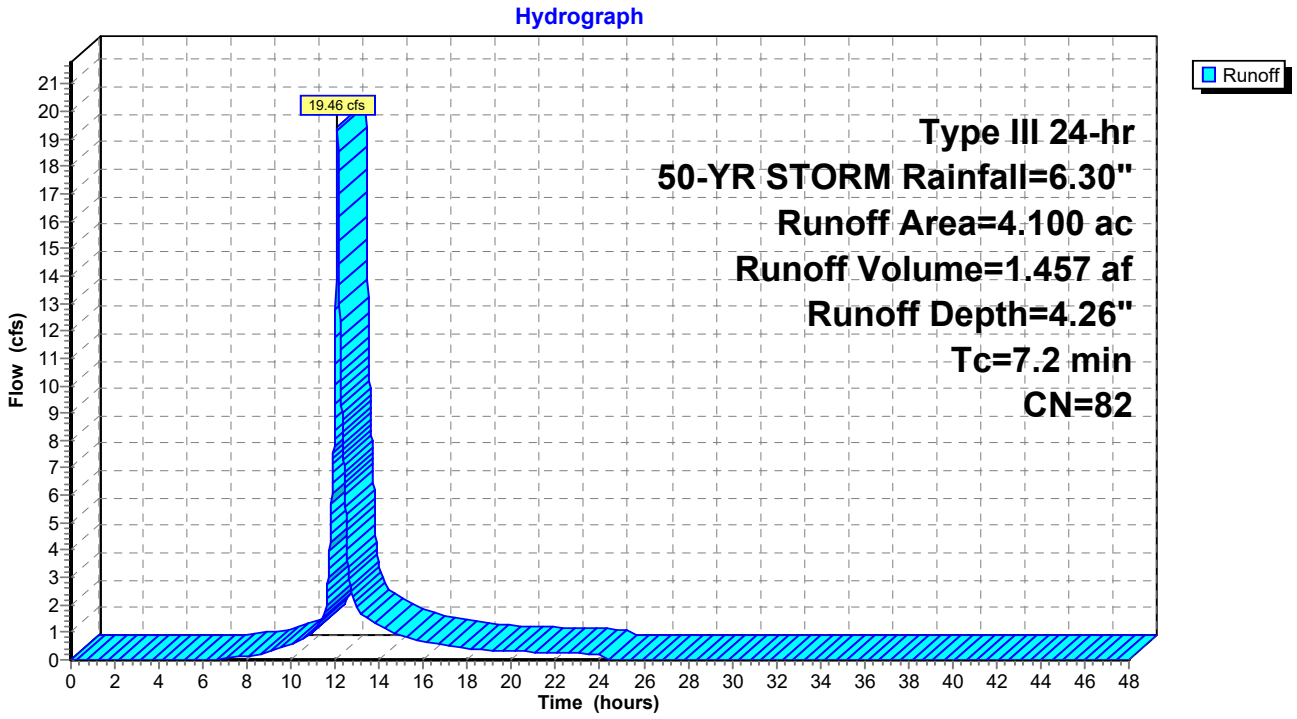
Runoff = 19.46 cfs @ 12.10 hrs, Volume= 1.457 af, Depth= 4.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-YR STORM Rainfall=6.30"

	Area (ac)	CN	Description
*	4.100	82	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2					**Direct Entry, NRCS Part 630**

Subcatchment 7:



Summary for Subcatchment 8/10:

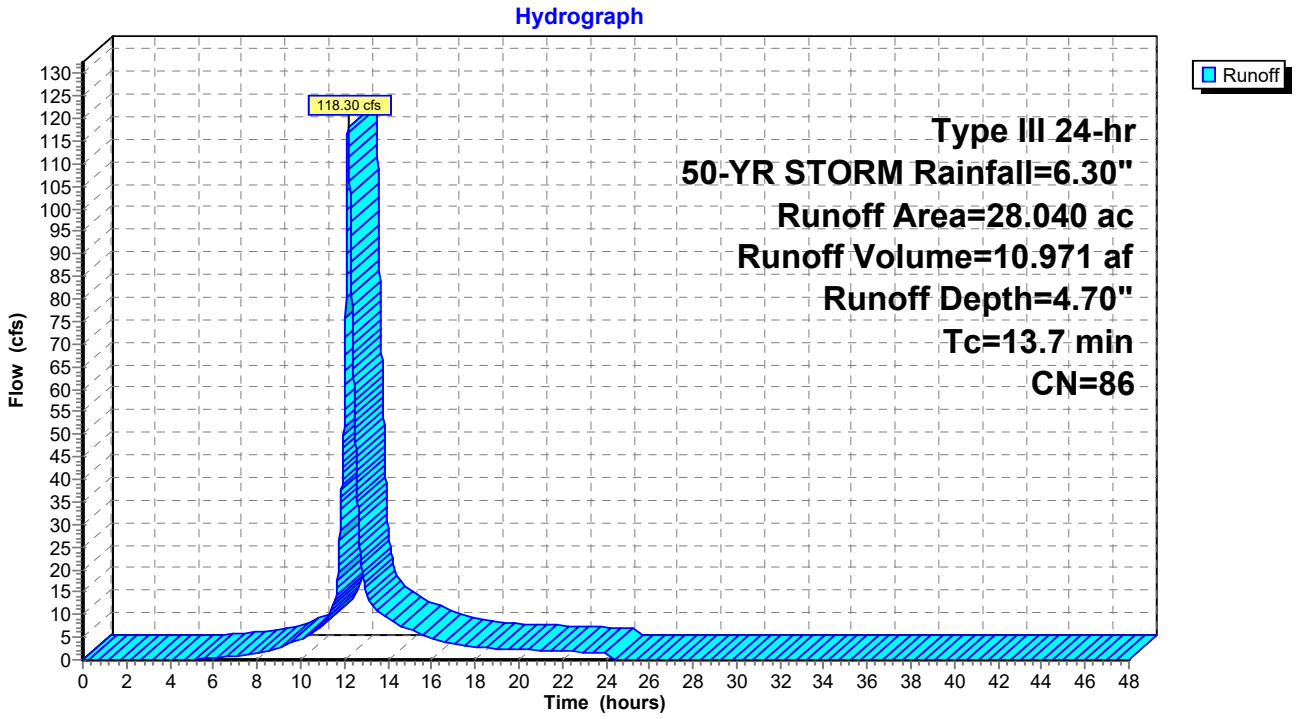
Runoff = 118.30 cfs @ 12.19 hrs, Volume= 10.971 af, Depth= 4.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-YR STORM Rainfall=6.30"

	Area (ac)	CN	Description
*	28.040	86	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7					**Direct Entry, NRCS Part 630**

Subcatchment 8/10:



Summary for Subcatchment 9:

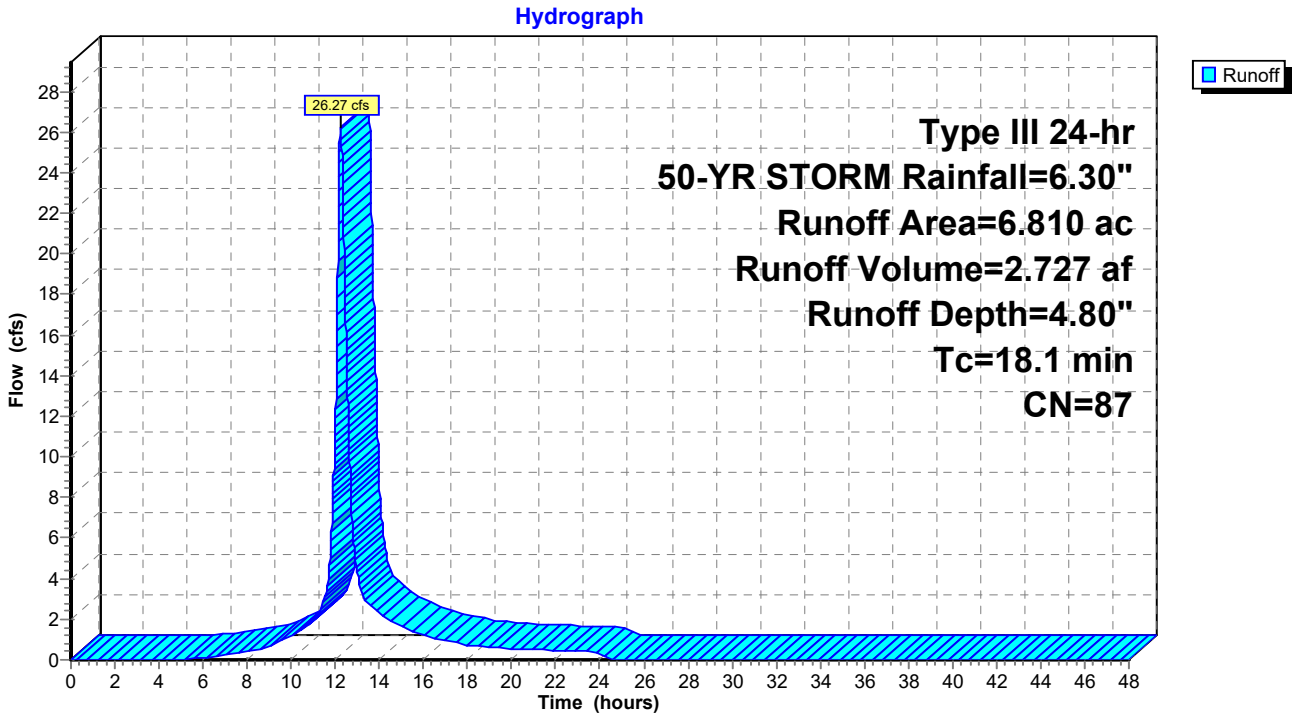
Runoff = 26.27 cfs @ 12.24 hrs, Volume= 2.727 af, Depth= 4.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-YR STORM Rainfall=6.30"

	Area (ac)	CN	Description
*	6.810	87	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1					**Direct Entry, NRCS Part 630**

Subcatchment 9:



Summary for Subcatchment 11:

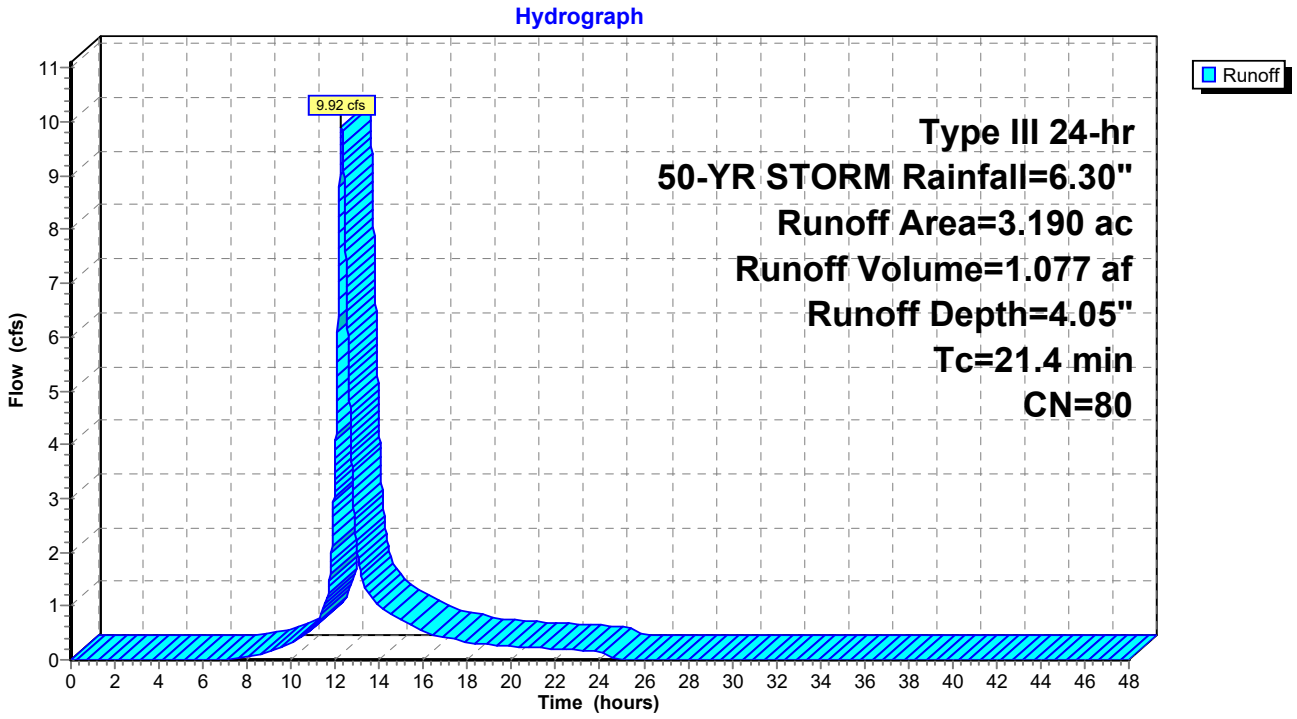
Runoff = 9.92 cfs @ 12.29 hrs, Volume= 1.077 af, Depth= 4.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-YR STORM Rainfall=6.30"

	Area (ac)	CN	Description
*	3.190	80	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.4					**Direct Entry, NRCS Part 630**

Subcatchment 11:



Summary for Subcatchment 12:

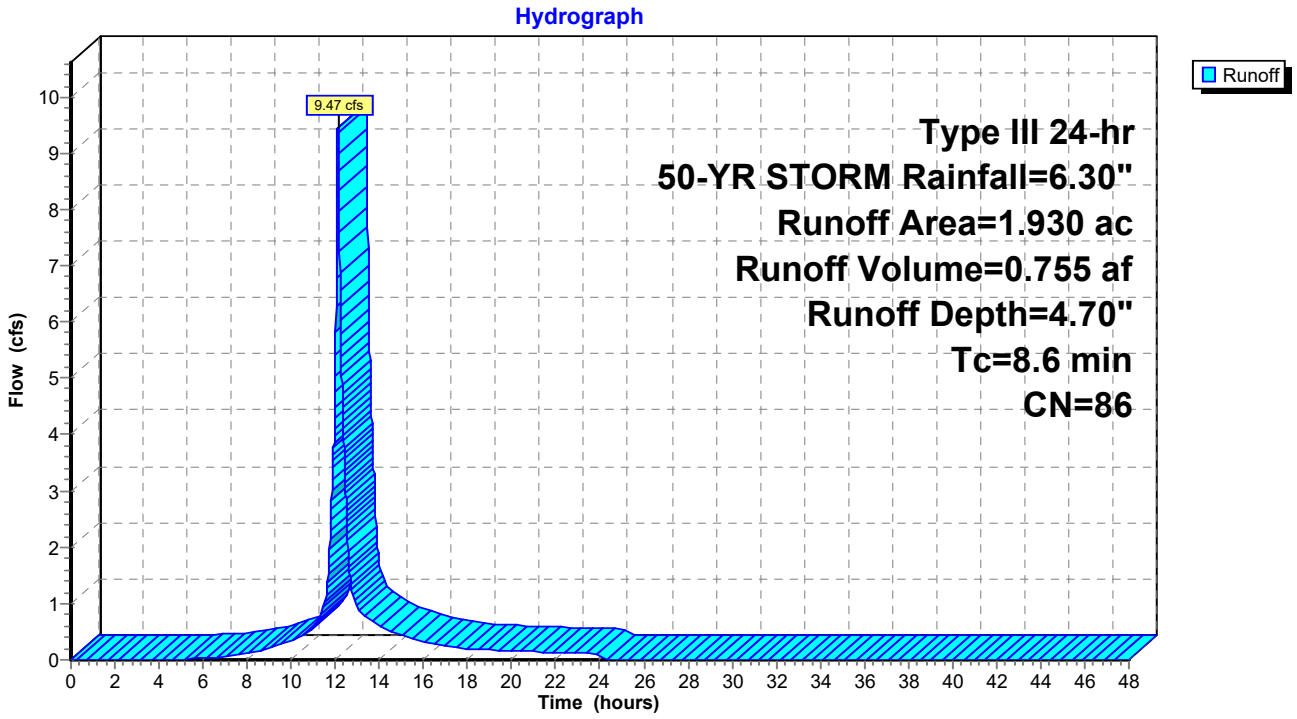
Runoff = 9.47 cfs @ 12.12 hrs, Volume= 0.755 af, Depth= 4.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-YR STORM Rainfall=6.30"

	Area (ac)	CN	Description
*	1.930	86	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6					**Direct Entry, NRCS Part 630**

Subcatchment 12:



Summary for Subcatchment 13:

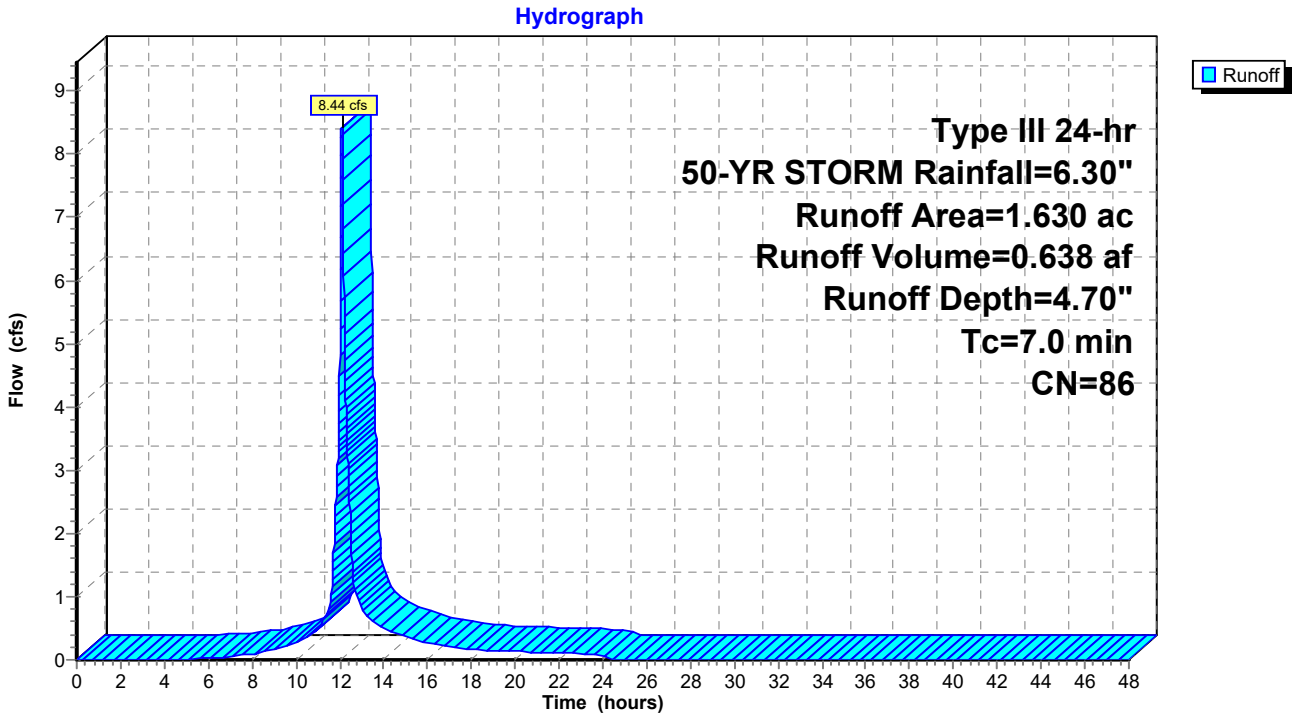
Runoff = 8.44 cfs @ 12.10 hrs, Volume= 0.638 af, Depth= 4.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-YR STORM Rainfall=6.30"

	Area (ac)	CN	Description
*	1.630	86	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					**Direct Entry, NRCS Part 630**

Subcatchment 13:



Summary for Subcatchment 14:

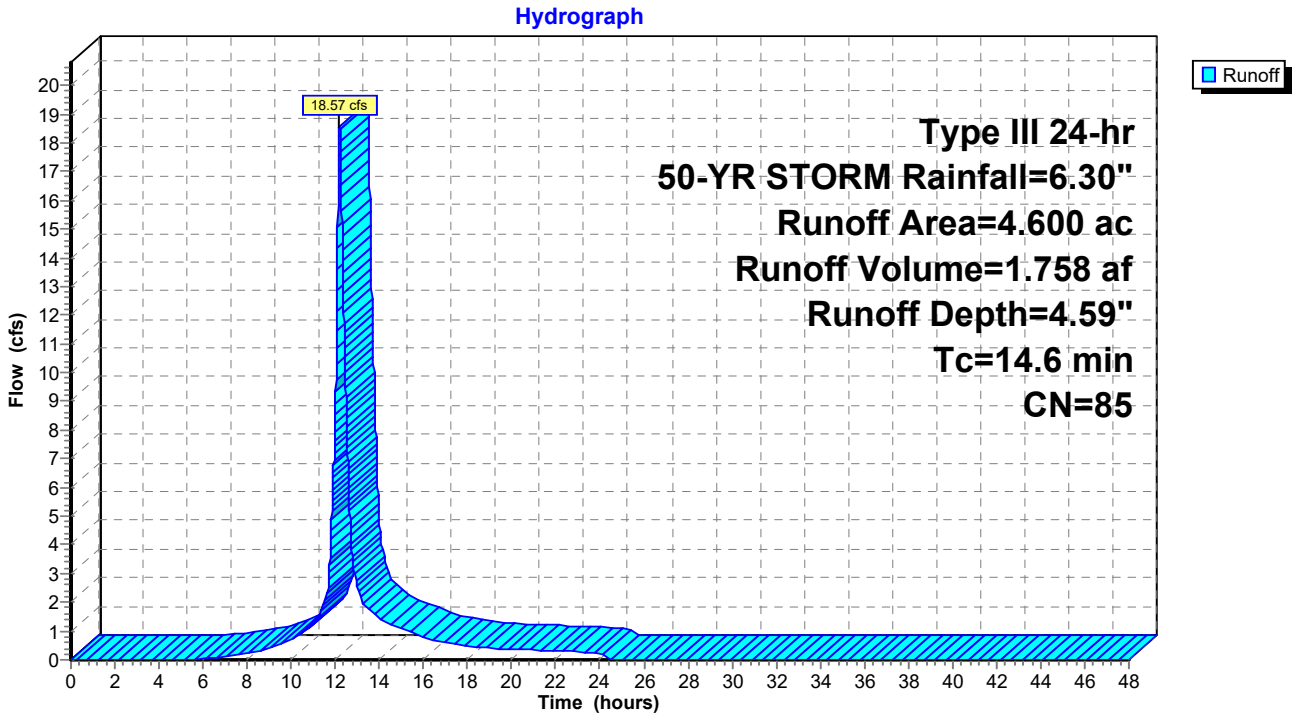
Runoff = 18.57 cfs @ 12.19 hrs, Volume= 1.758 af, Depth= 4.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-YR STORM Rainfall=6.30"

	Area (ac)	CN	Description
*	4.600	85	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6					**Direct Entry, NRCS Part 630**

Subcatchment 14:



Summary for Subcatchment 15:

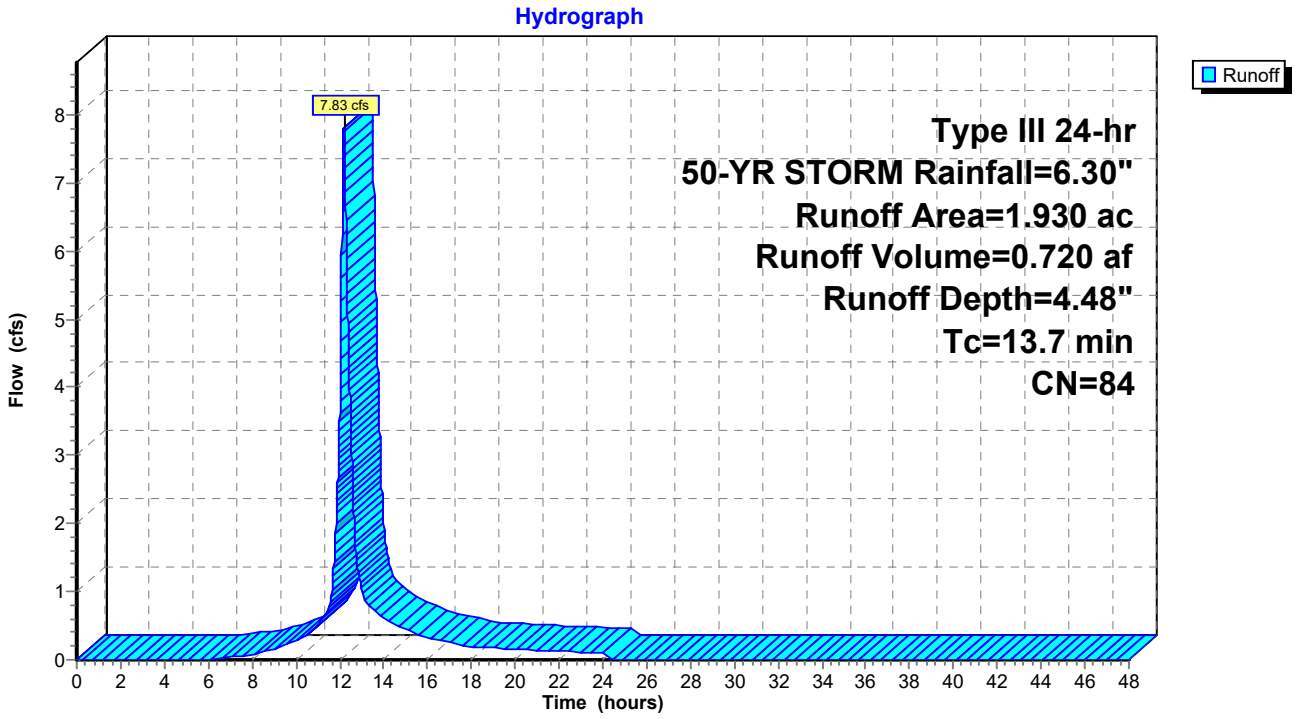
Runoff = 7.83 cfs @ 12.19 hrs, Volume= 0.720 af, Depth= 4.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-YR STORM Rainfall=6.30"

	Area (ac)	CN	Description
*	1.930	84	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7					**Direct Entry, NRCS Part 630**

Subcatchment 15:



Summary for Pond IT1:

Inflow Area = 1.280 ac, Inflow Depth = 4.59" for 50-YR STORM event
Inflow = 6.07 cfs @ 12.12 hrs, Volume= 0.489 af
Outflow = 5.96 cfs @ 12.14 hrs, Volume= 0.485 af, Atten= 2%, Lag= 1.2 min
Discarded = 0.05 cfs @ 12.14 hrs, Volume= 0.127 af
Primary = 5.91 cfs @ 12.14 hrs, Volume= 0.358 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,126.75' @ 12.14 hrs Surf.Area= 2,733 sf Storage= 3,826 cf

Plug-Flow detention time= 220.3 min calculated for 0.485 af (99% of inflow)
Center-of-Mass det. time= 215.1 min (1,016.8 - 801.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,125.00'	4,476 cf	**Custom Stage Data (Prismatic)** Listed below

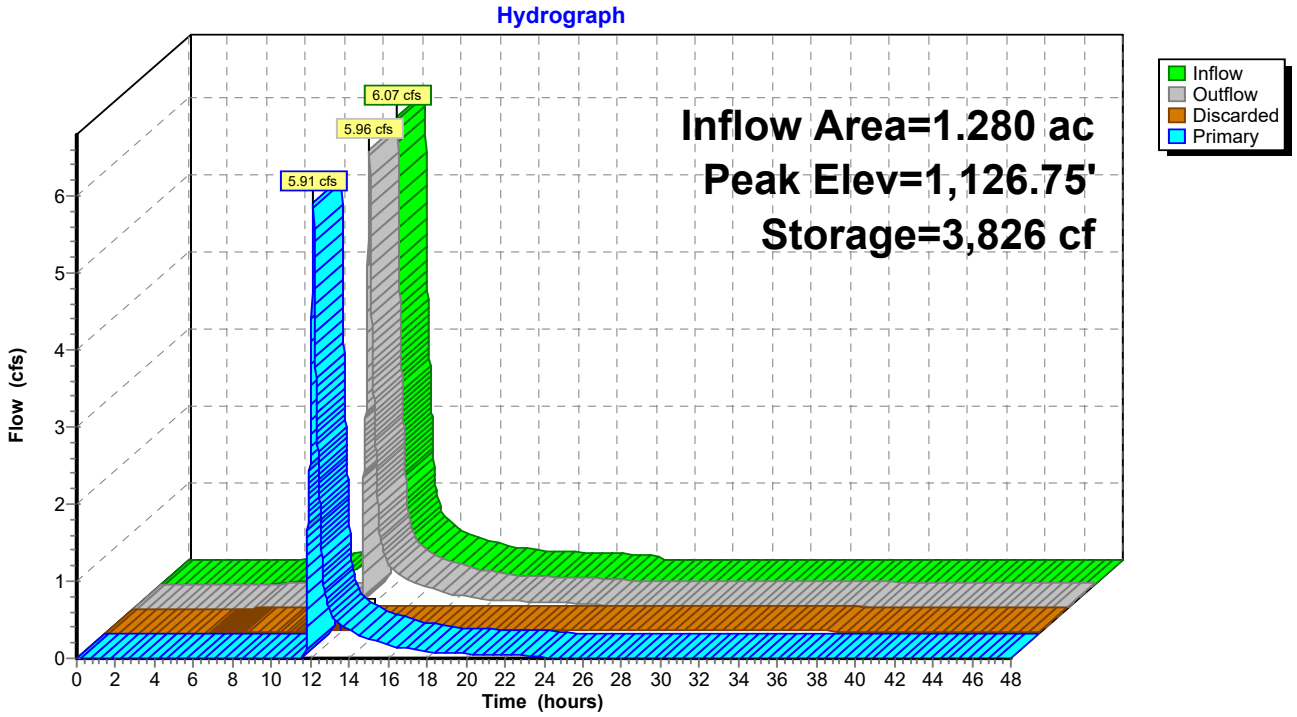
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,125.00	1,620	0	0
1,126.00	2,210	1,915	1,915
1,127.00	2,911	2,561	4,476

Device	Routing	Invert	Outlet Devices
#1	Primary	1,126.50'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Discarded	1,125.00'	**0.725 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.05 cfs @ 12.14 hrs HW=1,126.75' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=5.90 cfs @ 12.14 hrs HW=1,126.75' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 5.90 cfs @ 1.20 fps)

Pond IT1:


Hydrograph
Inflow Area=1.280 ac
Peak Elev=1,126.75'
Storage=3,826 cf
6.07 cfs
5.96 cfs
5.91 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond IT2a:

Inflow Area = 4.430 ac, Inflow Depth = 4.26" for 50-YR STORM event
Inflow = 19.35 cfs @ 12.13 hrs, Volume= 1.574 af
Outflow = 18.97 cfs @ 12.15 hrs, Volume= 1.574 af, Atten= 2%, Lag= 1.3 min
Discarded = 0.11 cfs @ 12.15 hrs, Volume= 0.219 af
Primary = 18.86 cfs @ 12.15 hrs, Volume= 1.355 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,091.46' @ 12.15 hrs Surf.Area= 5,027 sf Storage= 6,914 cf

Plug-Flow detention time= 99.7 min calculated for 1.574 af (100% of inflow)
Center-of-Mass det. time= 99.9 min (910.4 - 810.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,089.50'	7,111 cf	**Custom Stage Data (Prismatic)** Listed below

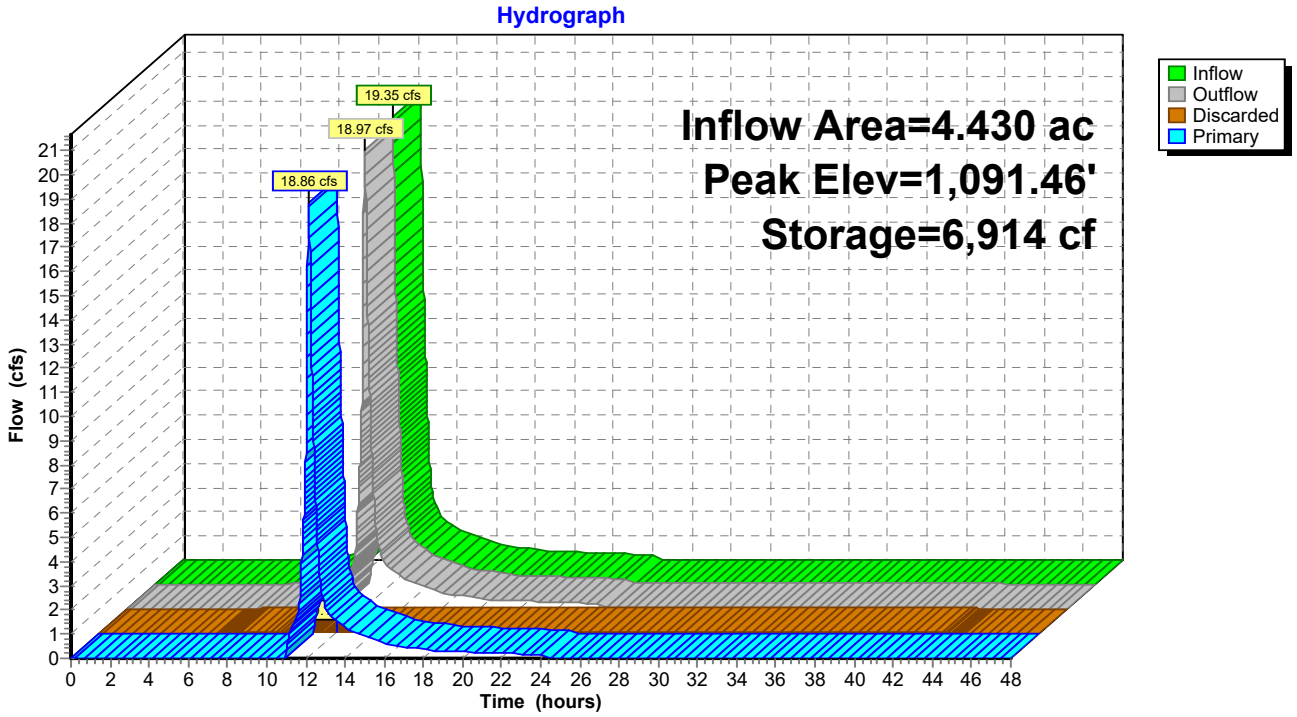
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,089.50	2,714	0	0
1,090.00	3,067	1,445	1,445
1,090.50	3,427	1,624	3,069
1,091.00	3,797	1,806	4,875
1,091.50	5,146	2,236	7,111

Device	Routing	Invert	Outlet Devices
#1	Primary	1,090.95'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Discarded	1,089.50'	**0.905 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.11 cfs @ 12.15 hrs HW=1,091.46' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=18.84 cfs @ 12.15 hrs HW=1,091.46' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 18.84 cfs @ 1.86 fps)

Pond IT2a:


Hydrograph
Inflow Area=4.430 ac
Peak Elev=1,091.46'
Storage=6,914 cf
19.35 cfs
18.97 cfs
18.86 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

Summary for Pond IT2b:

Inflow Area = 4.020 ac, Inflow Depth = 4.16" for 50-YR STORM event
Inflow = 15.19 cfs @ 12.19 hrs, Volume= 1.393 af
Outflow = 14.82 cfs @ 12.22 hrs, Volume= 1.393 af, Atten= 2%, Lag= 1.8 min
Discarded = 0.12 cfs @ 12.22 hrs, Volume= 0.288 af
Primary = 14.70 cfs @ 12.22 hrs, Volume= 1.105 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,041.23' @ 12.22 hrs Surf.Area= 5,671 sf Storage= 8,445 cf

Plug-Flow detention time= 135.9 min calculated for 1.393 af (100% of inflow)
Center-of-Mass det. time= 136.1 min (953.1 - 817.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,039.50'	9,955 cf	**Custom Stage Data (Prismatic)** Listed below

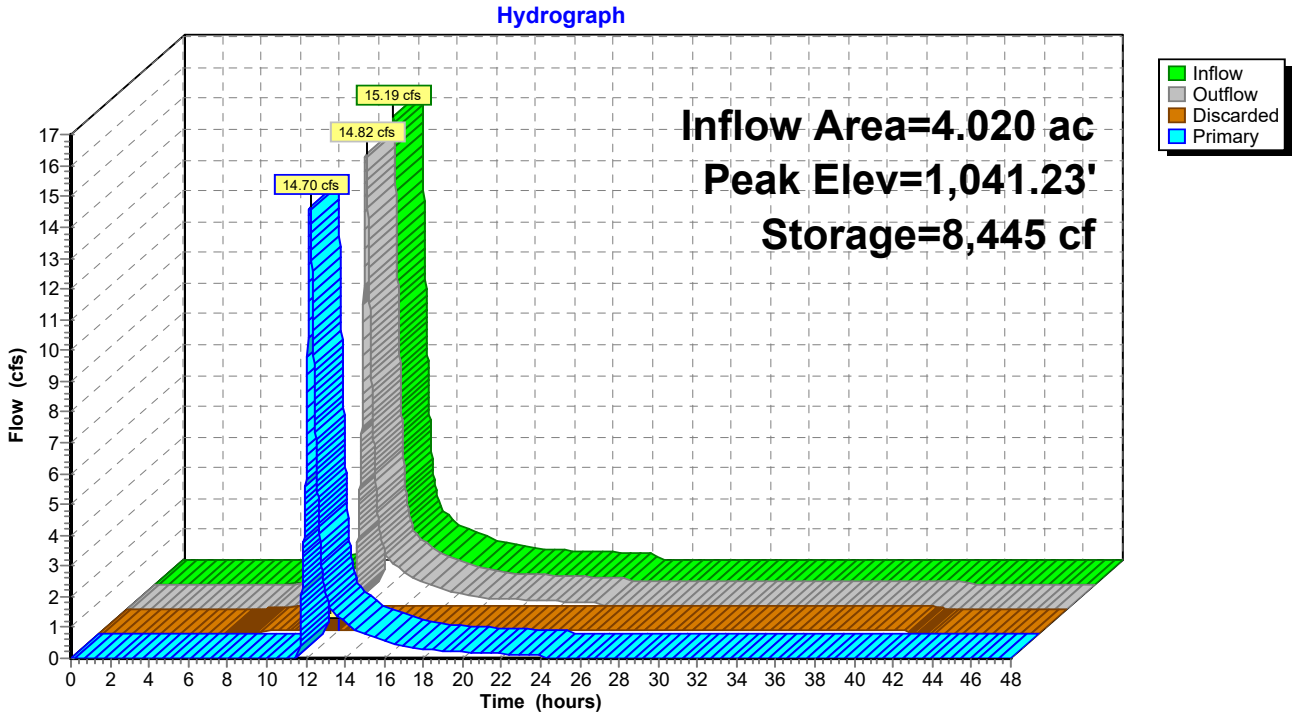
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,039.50	4,048	0	0
1,040.00	4,506	2,139	2,139
1,040.50	4,971	2,369	4,508
1,041.00	5,445	2,604	7,112
1,041.50	5,926	2,843	9,955

Device	Routing	Invert	Outlet Devices
#1	Primary	1,040.80'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Discarded	1,039.50'	**0.905 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.12 cfs @ 12.22 hrs HW=1,041.23' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.12 cfs)

Primary OutFlow Max=14.69 cfs @ 12.22 hrs HW=1,041.23' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 14.69 cfs @ 1.69 fps)

Pond IT2b:


Hydrograph
Inflow Area=4.020 ac
Peak Elev=1,041.23'
Storage=8,445 cf
15.19 cfs
14.82 cfs
14.70 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

Summary for Pond IT4:

Inflow Area = 0.937 ac, Inflow Depth = 4.70" for 50-YR STORM event
Inflow = 4.08 cfs @ 12.17 hrs, Volume= 0.367 af
Outflow = 1.06 cfs @ 12.62 hrs, Volume= 0.221 af, Atten= 74%, Lag= 26.9 min
Discarded = 0.03 cfs @ 12.62 hrs, Volume= 0.089 af
Primary = 1.03 cfs @ 12.62 hrs, Volume= 0.132 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,114.83' @ 12.62 hrs Surf.Area= 4,015 sf Storage= 8,938 cf

Plug-Flow detention time= 519.4 min calculated for 0.221 af (60% of inflow)
Center-of-Mass det. time= 416.5 min (1,218.6 - 802.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,112.00'	9,624 cf	**Custom Stage Data (Prismatic)** Listed below

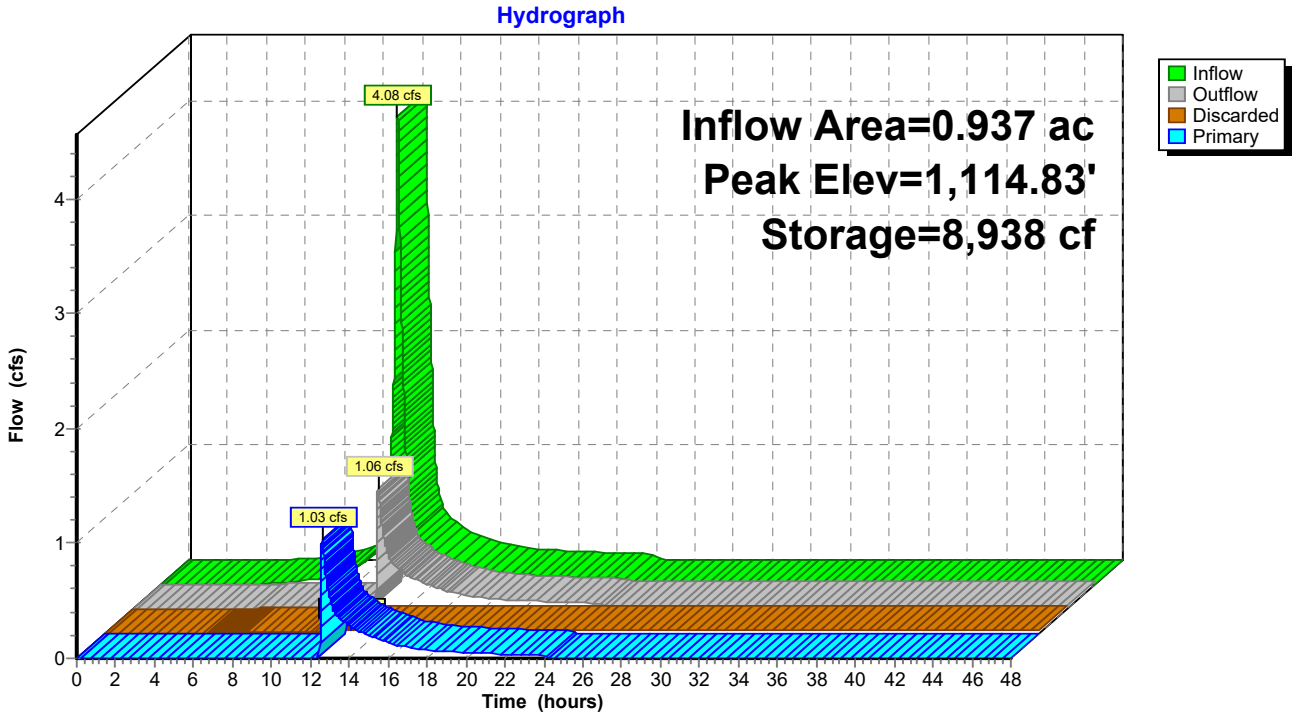
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,112.00	2,336	0	0
1,112.50	2,619	1,239	1,239
1,113.00	2,904	1,381	2,620
1,113.50	3,194	1,525	4,144
1,114.00	3,494	1,672	5,816
1,114.50	3,805	1,825	7,641
1,115.00	4,126	1,983	9,624

Device	Routing	Invert	Outlet Devices
#1	Primary	1,114.75'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Discarded	1,112.00'	**0.305 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.03 cfs @ 12.62 hrs HW=1,114.83' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=1.02 cfs @ 12.62 hrs HW=1,114.83' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 1.02 cfs @ 0.66 fps)

Pond IT4:


Hydrograph
Inflow Area=0.937 ac
Peak Elev=1,114.83'
Storage=8,938 cf
4.08 cfs
1.06 cfs
1.03 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond P12:

Inflow Area = 1.930 ac, Inflow Depth = 4.70" for 50-YR STORM event
Inflow = 9.47 cfs @ 12.12 hrs, Volume= 0.755 af
Outflow = 9.27 cfs @ 12.14 hrs, Volume= 0.687 af, Atten= 2%, Lag= 1.2 min
Primary = 1.04 cfs @ 12.14 hrs, Volume= 0.376 af
Secondary = 8.23 cfs @ 12.14 hrs, Volume= 0.311 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,187.94' @ 12.14 hrs Surf.Area= 4,352 sf Storage= 5,443 cf

Plug-Flow detention time= 101.9 min calculated for 0.687 af (91% of inflow)
Center-of-Mass det. time= 56.6 min (855.0 - 798.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,185.00'	5,622 cf	**Custom Stage Data (Prismatic)** Listed below

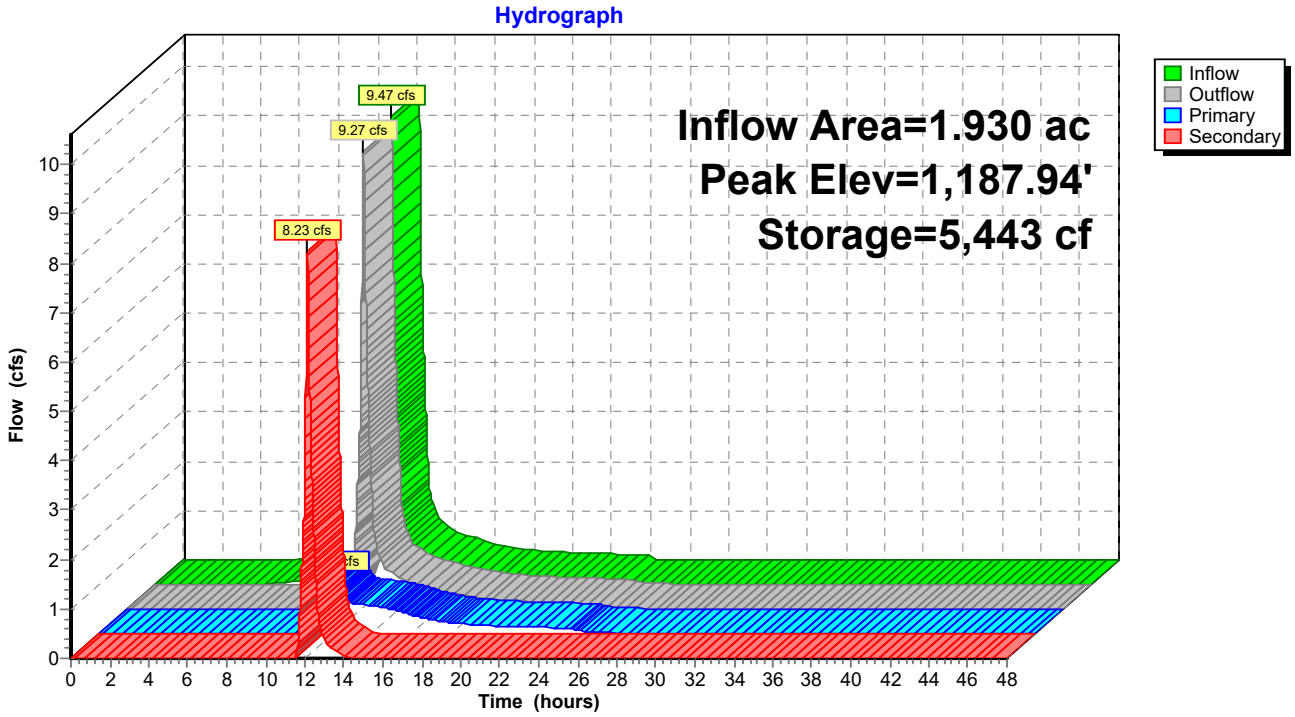
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,185.00	791	0	0
1,186.00	1,200	996	996
1,187.00	1,772	1,486	2,482
1,188.00	4,508	3,140	5,622

Device	Routing	Invert	Outlet Devices
#1	Primary	1,187.15'	**8.0" Round Culvert** L= 20.5' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,187.15' / 1,187.00' S= 0.0073 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#2	Secondary	1,187.65'	**20.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=1.04 cfs @ 12.14 hrs HW=1,187.94' (Free Discharge)
↑**1=Culvert** (Barrel Controls 1.04 cfs @ 3.16 fps)

Secondary OutFlow Max=8.23 cfs @ 12.14 hrs HW=1,187.94' (Free Discharge)
↑**2=Broad-Crested Rectangular Weir** (Weir Controls 8.23 cfs @ 1.40 fps)

Pond P12:


Hydrograph
Inflow Area=1.930 ac
Peak Elev=1,187.94'
Storage=5,443 cf
9.47 cfs
9.27 cfs
8.23 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 1 2 3 4 5 6 7 8 9 10

Summary for Pond P13:

Inflow Area = 1.630 ac, Inflow Depth = 4.70" for 50-YR STORM event
Inflow = 8.44 cfs @ 12.10 hrs, Volume= 0.638 af
Outflow = 0.39 cfs @ 14.86 hrs, Volume= 0.574 af, Atten= 95%, Lag= 165.6 min
Primary = 0.39 cfs @ 14.86 hrs, Volume= 0.574 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,144.89' @ 14.86 hrs Surf.Area= 7,434 sf Storage= 17,990 cf

Plug-Flow detention time= 555.8 min calculated for 0.574 af (90% of inflow)
Center-of-Mass det. time= 507.7 min (1,304.6 - 796.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,141.00'	37,325 cf	**Custom Stage Data (Prismatic)** Listed below

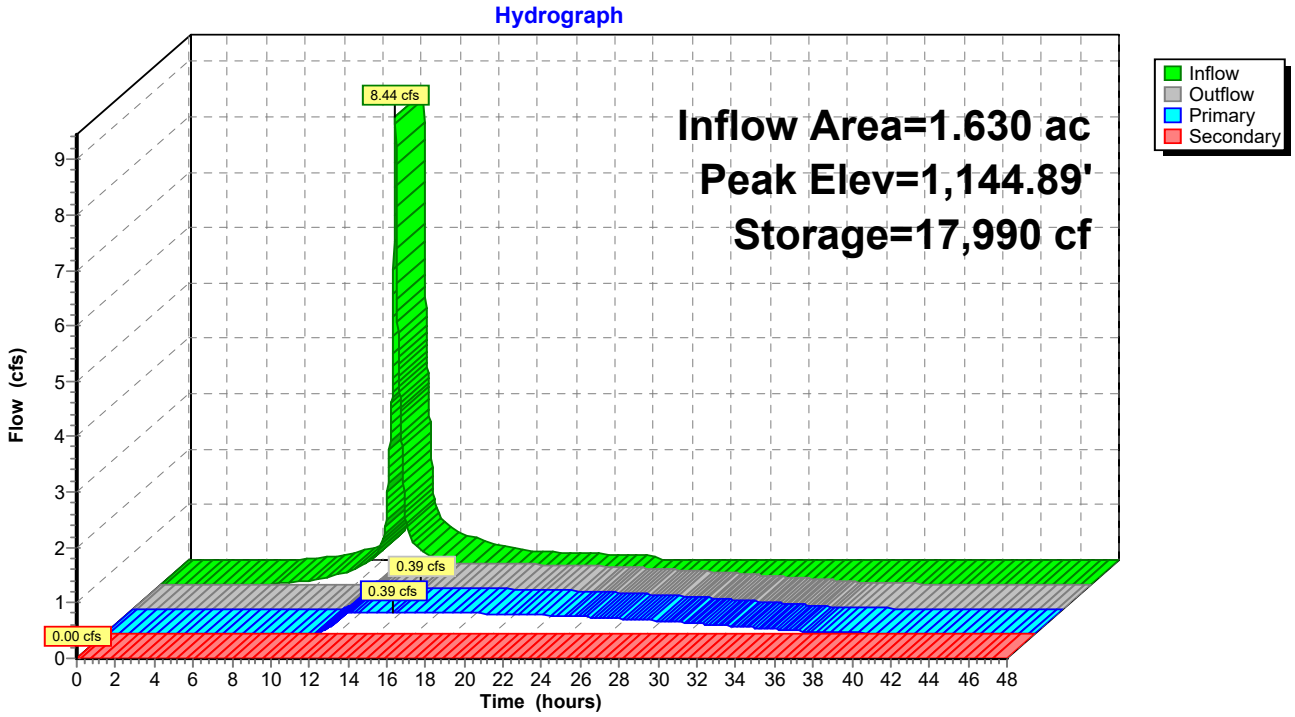
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,141.00	2,023	0	0
1,142.00	3,269	2,646	2,646
1,143.00	4,615	3,942	6,588
1,144.00	6,062	5,339	11,927
1,145.00	7,609	6,836	18,762
1,146.00	9,256	8,433	27,195
1,147.00	11,004	10,130	37,325

Device	Routing	Invert	Outlet Devices
#1	Primary	1,142.00'	**48.0" Round Culvert** L= 135.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,142.00' / 1,106.00' S= 0.2667 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Device 1	1,145.50'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Secondary	1,146.20'	**20.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	1,142.00'	**3.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.39 cfs @ 14.86 hrs HW=1,144.89' (Free Discharge)
└**1=Culvert** (Passes 0.39 cfs of 56.18 cfs potential flow)
  └**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Orifice Controls 0.39 cfs @ 8.00 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,141.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P13:


Hydrograph
Inflow Area=1.630 ac
Peak Elev=1,144.89'
Storage=17,990 cf
8.44 cfs
0.39 cfs
0.39 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond P3:

Inflow Area = 7.890 ac, Inflow Depth = 4.80" for 50-YR STORM event
Inflow = 38.68 cfs @ 12.13 hrs, Volume= 3.159 af
Outflow = 23.31 cfs @ 12.27 hrs, Volume= 2.882 af, Atten= 40%, Lag= 8.5 min
Primary = 23.31 cfs @ 12.27 hrs, Volume= 2.882 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,134.27' @ 12.27 hrs Surf.Area= 7,677 sf Storage= 32,519 cf

Plug-Flow detention time= 88.8 min calculated for 2.881 af (91% of inflow)
Center-of-Mass det. time= 44.9 min (840.9 - 795.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,127.00'	38,268 cf	**Custom Stage Data (Prismatic)** Listed below

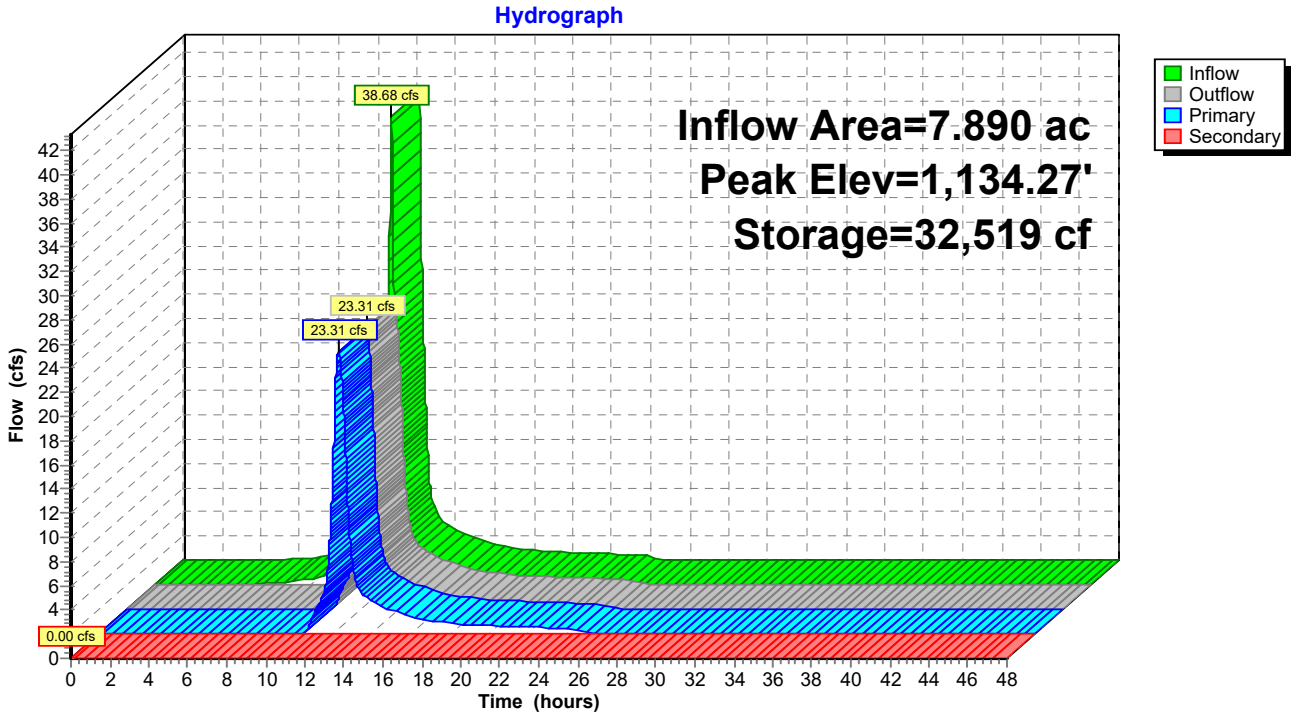
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,127.00	1,797	0	0
1,128.00	2,400	2,099	2,099
1,129.00	3,074	2,737	4,836
1,130.00	3,810	3,442	8,278
1,131.00	4,608	4,209	12,487
1,132.00	5,471	5,040	17,526
1,133.00	6,397	5,934	23,460
1,134.00	7,388	6,893	30,353
1,135.00	8,442	7,915	38,268

Device	Routing	Invert	Outlet Devices
#1	Primary	1,130.90'	**24.0" Round Culvert** L= 100.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,130.90' / 1,129.50' S= 0.0140 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	1,131.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Secondary	1,134.50'	**40.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	1,130.90'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=23.30 cfs @ 12.27 hrs HW=1,134.27' (Free Discharge)
└**1=Culvert** (Inlet Controls 23.30 cfs @ 7.42 fps)
  ├**2=Sharp-Crested Rectangular Weir** (Passes < 151.55 cfs potential flow)
  └**4=Orifice/Grate** (Passes < 6.95 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,127.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P3:


Hydrograph
Inflow Area=7.890 ac
Peak Elev=1,134.27'
Storage=32,519 cf
38.68 cfs
23.31 cfs
23.31 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42

Summary for Pond P5:

Inflow Area = 1.680 ac, Inflow Depth = 4.70" for 50-YR STORM event
Inflow = 8.55 cfs @ 12.11 hrs, Volume= 0.657 af
Outflow = 8.03 cfs @ 12.14 hrs, Volume= 0.599 af, Atten= 6%, Lag= 2.0 min
Primary = 6.25 cfs @ 12.14 hrs, Volume= 0.582 af
Secondary = 1.77 cfs @ 12.14 hrs, Volume= 0.016 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,146.48' @ 12.14 hrs Surf.Area= 4,480 sf Storage= 8,177 cf

Plug-Flow detention time= 169.0 min calculated for 0.599 af (91% of inflow)
Center-of-Mass det. time= 124.7 min (922.1 - 797.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,144.00'	10,517 cf	**Custom Stage Data (Prismatic)** Listed below

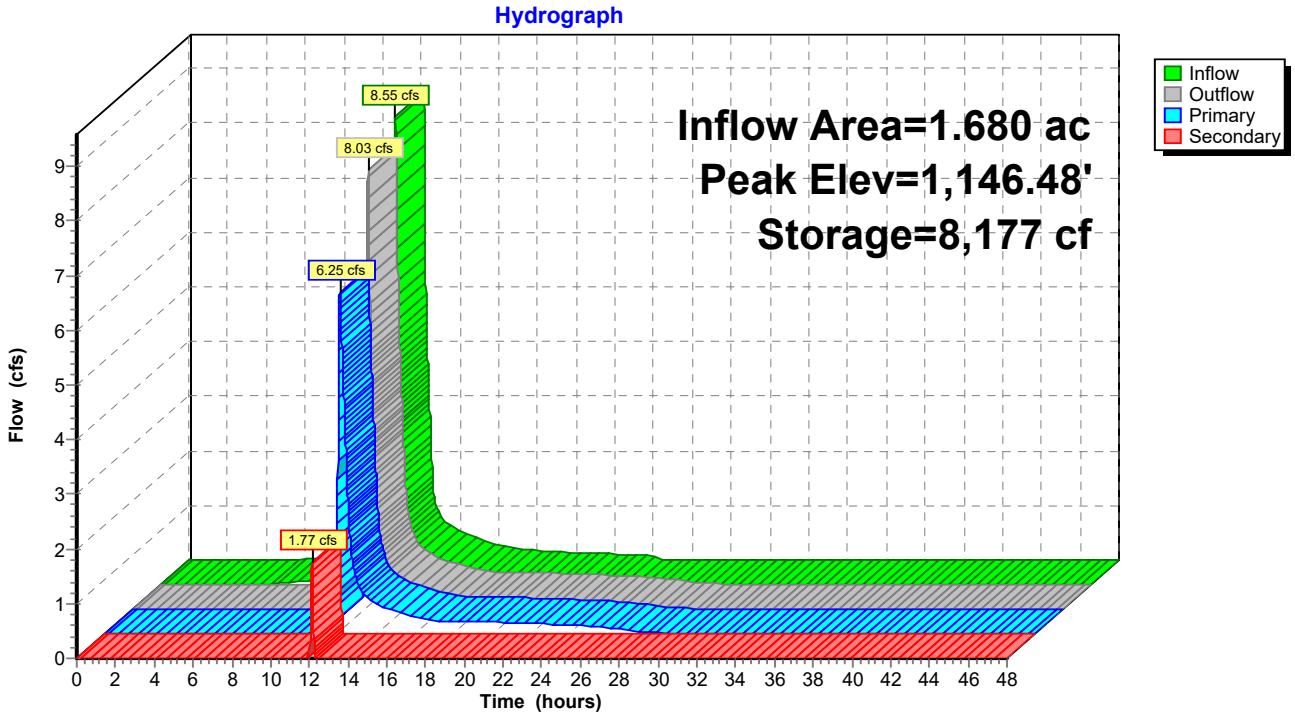
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,144.00	2,092	0	0
1,145.00	2,986	2,539	2,539
1,146.00	3,967	3,477	6,016
1,147.00	5,036	4,502	10,517

Device	Routing	Invert	Outlet Devices
#1	Primary	1,145.00'	**24.0" Round Culvert** L= 42.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,145.00' / 1,141.00' S= 0.0952 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	1,146.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Secondary	1,146.40'	**30.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	1,145.00'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.25 cfs @ 12.14 hrs HW=1,146.48' (Free Discharge)
└**1=Culvert** (Passes 6.25 cfs of 10.32 cfs potential flow)
  ├**2=Sharp-Crested Rectangular Weir** (Weir Controls 5.96 cfs @ 2.53 fps)
  └**4=Orifice/Grate** (Orifice Controls 0.29 cfs @ 5.86 fps)

Secondary OutFlow Max=1.75 cfs @ 12.14 hrs HW=1,146.48' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Weir Controls 1.75 cfs @ 0.73 fps)

Pond P5:


Hydrograph
Inflow Area=1.680 ac
Peak Elev=1,146.48'
Storage=8,177 cf
8.55 cfs
8.03 cfs
6.25 cfs
1.77 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 1 2 3 4 5 6 7 8 9

Summary for Pond P7:

Inflow Area = 4.100 ac, Inflow Depth = 4.26" for 50-YR STORM event
Inflow = 19.46 cfs @ 12.10 hrs, Volume= 1.457 af
Outflow = 6.89 cfs @ 12.40 hrs, Volume= 1.313 af, Atten= 65%, Lag= 17.8 min
Primary = 6.89 cfs @ 12.40 hrs, Volume= 1.313 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,161.45' @ 12.40 hrs Surf.Area= 0 sf Storage= 29,914 cf

Plug-Flow detention time= 467.0 min calculated for 1.313 af (90% of inflow)
Center-of-Mass det. time= 419.3 min (1,227.4 - 808.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,157.00'	34,851 cf	**Custom Stage Data** Listed below

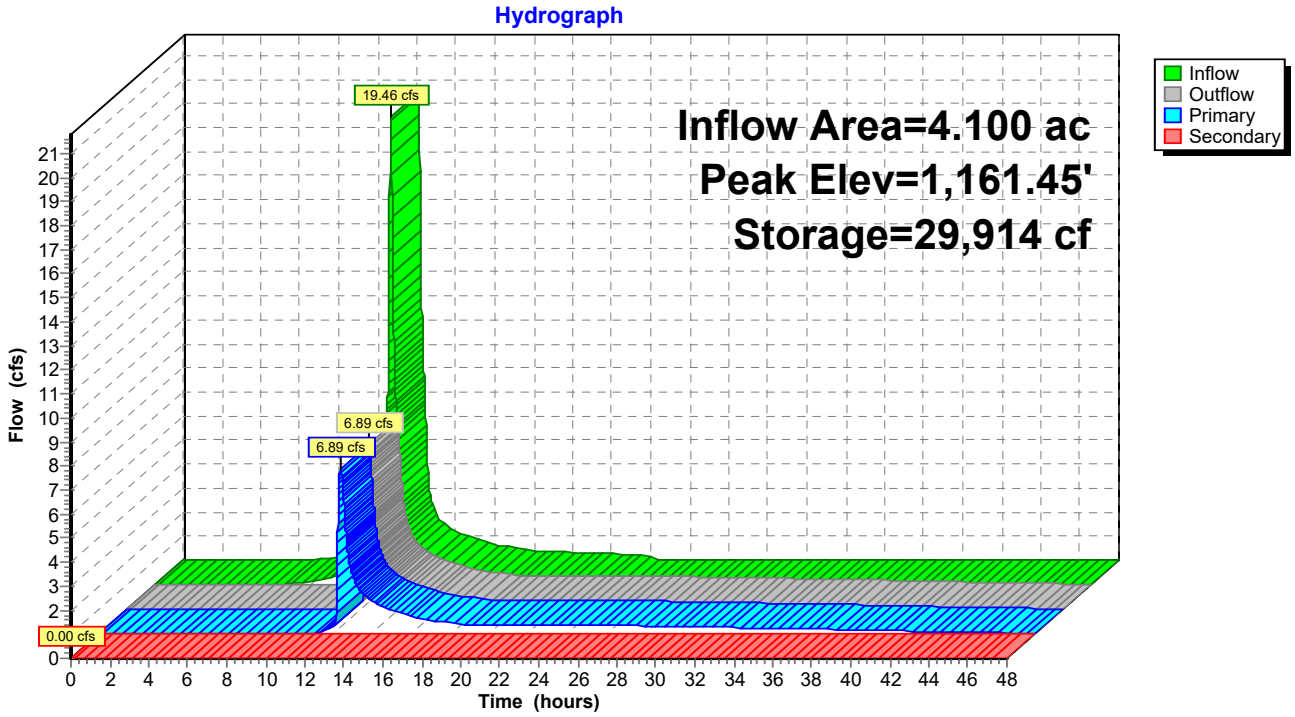
Elevation (feet)	Cum.Store (cubic-feet)
1,157.00	0
1,158.00	4,997
1,159.00	10,924
1,160.00	17,837
1,161.00	25,794
1,162.00	34,851

Device	Routing	Invert	Outlet Devices
#1	Primary	1,157.15'	**30.0" Round Culvert** L= 58.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,157.15' / 1,156.10' S= 0.0181 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	1,160.95'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Secondary	1,161.55'	**30.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	1,158.10'	**3.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=6.88 cfs @ 12.40 hrs HW=1,161.45' (Free Discharge)
└**1=Culvert** (Passes 6.88 cfs of 41.31 cfs potential flow)
  ├**2=Sharp-Crested Rectangular Weir** (Weir Controls 6.46 cfs @ 2.61 fps)
  └**4=Orifice/Grate** (Orifice Controls 0.42 cfs @ 8.65 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,157.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P7:


Hydrograph
Inflow Area=4.100 ac
Peak Elev=1,161.45'
Storage=29,914 cf
19.46 cfs
6.89 cfs
6.89 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

Summary for Pond P8/10:

Inflow Area = 28.040 ac, Inflow Depth = 4.70" for 50-YR STORM event
Inflow = 118.30 cfs @ 12.19 hrs, Volume= 10.971 af
Outflow = 79.47 cfs @ 12.35 hrs, Volume= 9.800 af, Atten= 33%, Lag= 9.6 min
Primary = 79.47 cfs @ 12.35 hrs, Volume= 9.800 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,128.10' @ 12.35 hrs Surf.Area= 0 sf Storage= 138,385 cf

Plug-Flow detention time= 142.5 min calculated for 9.800 af (89% of inflow)
Center-of-Mass det. time= 91.6 min (894.7 - 803.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,122.00'	166,405 cf	**Custom Stage Data** Listed below

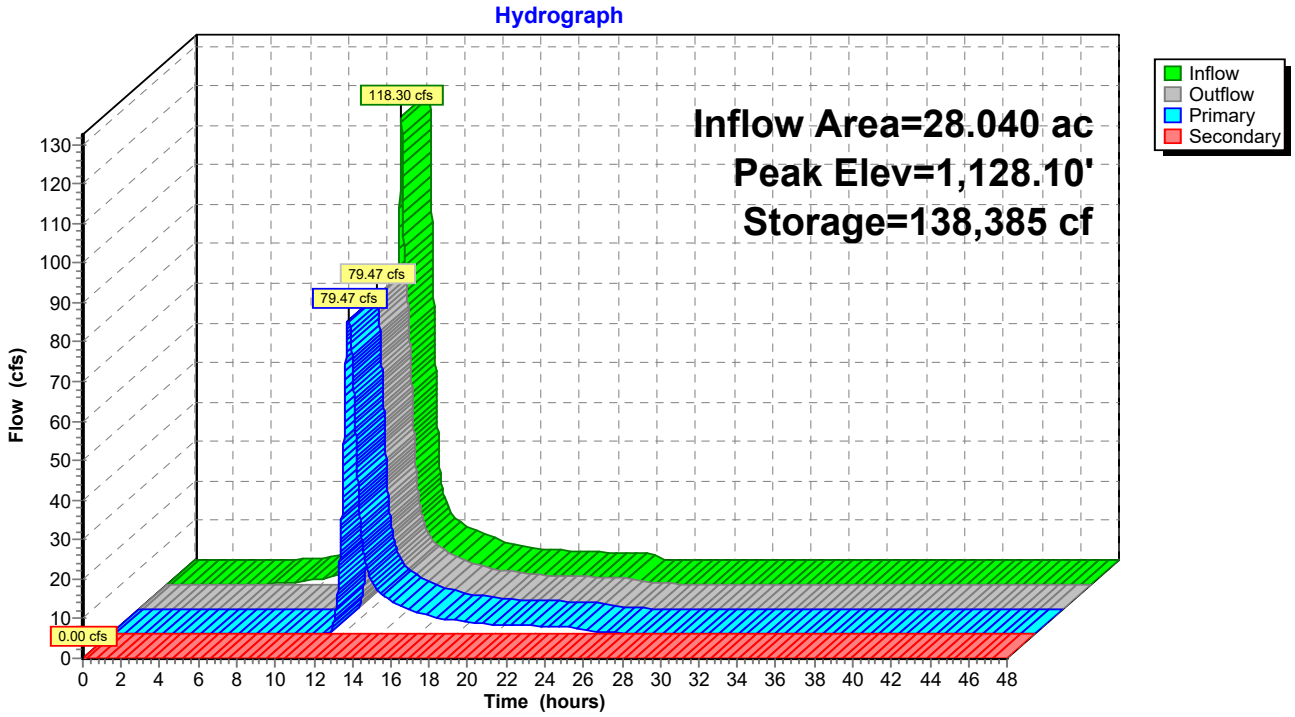
Elevation (feet)	Cum.Store (cubic-feet)
1,122.00	0
1,123.00	16,747
1,124.00	35,732
1,125.00	57,018
1,126.00	80,666
1,127.00	106,738
1,128.00	135,298
1,129.00	166,405

Device	Routing	Invert	Outlet Devices
#1	Primary	1,124.40'	**48.0" Round Culvert** L= 88.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,124.40' / 1,123.00' S= 0.0159 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Device 1	1,125.25'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Secondary	1,128.25'	**50.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	1,124.40'	**3.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=79.47 cfs @ 12.35 hrs HW=1,128.10' (Free Discharge)
└**1=Culvert** (Inlet Controls 79.47 cfs @ 6.55 fps)
└**2=Sharp-Crested Rectangular Weir** (Passes < 118.21 cfs potential flow)
└**4=Orifice/Grate** (Passes < 0.45 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,122.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P8/10:


Hydrograph
Inflow Area=28.040 ac
Peak Elev=1,128.10'
Storage=138,385 cf
118.30 cfs
79.47 cfs
79.47 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 10 20 30 40 50 60 70 80 90 100 110 120 130

Summary for Pond P9:

Inflow Area = 6.810 ac, Inflow Depth = 4.80" for 50-YR STORM event
Inflow = 26.27 cfs @ 12.24 hrs, Volume= 2.727 af
Outflow = 22.56 cfs @ 12.35 hrs, Volume= 2.450 af, Atten= 14%, Lag= 6.2 min
Primary = 21.79 cfs @ 12.35 hrs, Volume= 2.442 af
Secondary = 0.77 cfs @ 12.35 hrs, Volume= 0.008 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,190.06' @ 12.35 hrs Surf.Area= 14,895 sf Storage= 33,579 cf

Plug-Flow detention time= 178.6 min calculated for 2.450 af (90% of inflow)
Center-of-Mass det. time= 129.5 min (933.7 - 804.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,187.00'	48,733 cf	**Custom Stage Data (Prismatic)** Listed below

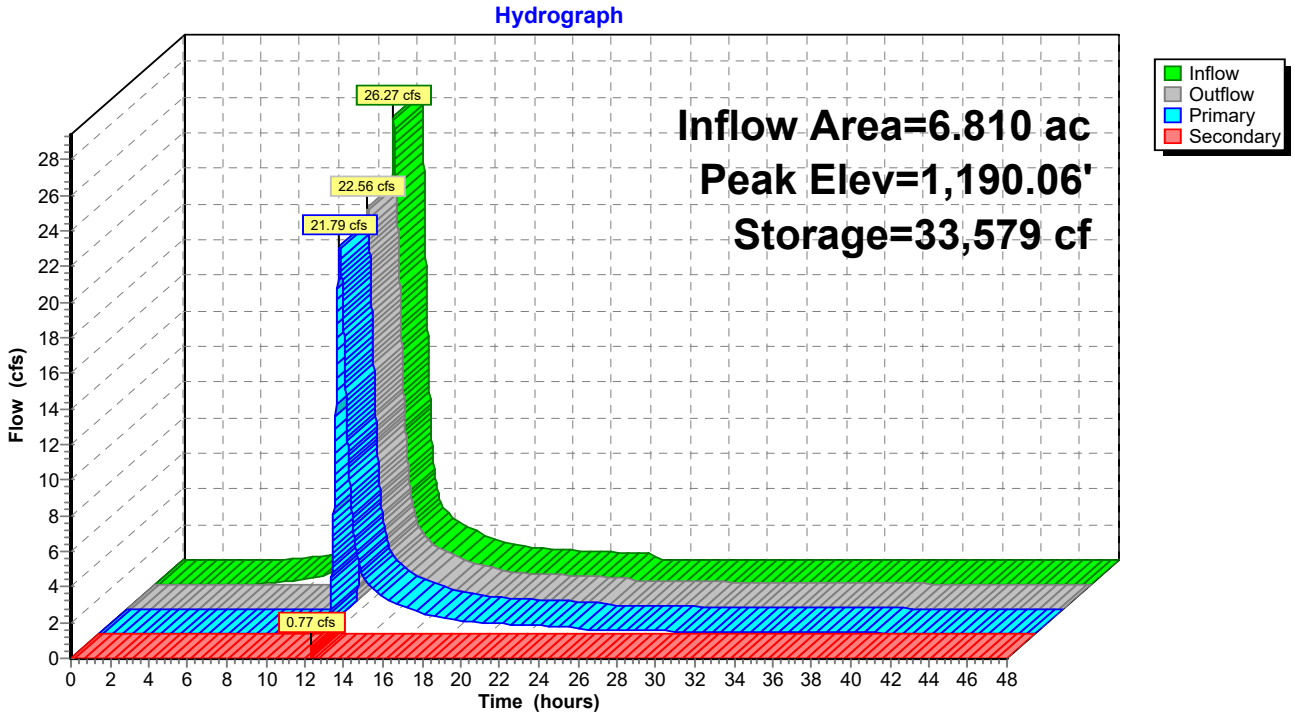
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,187.00	7,155	0	0
1,188.00	9,581	8,368	8,368
1,189.00	12,108	10,845	19,213
1,190.00	14,735	13,422	32,634
1,191.00	17,463	16,099	48,733

Device	Routing	Invert	Outlet Devices
#1	Primary	1,188.25'	**48.0" Round Culvert** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,188.25' / 1,187.25' S= 0.0167 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Device 1	1,189.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Secondary	1,190.00'	**20.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	1,188.25'	**3.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=21.78 cfs @ 12.35 hrs HW=1,190.06' (Free Discharge)
└**1=Culvert** (Passes 21.78 cfs of 25.27 cfs potential flow)
  └**2=Sharp-Crested Rectangular Weir** (Weir Controls 21.47 cfs @ 4.24 fps)
  └**4=Orifice/Grate** (Orifice Controls 0.31 cfs @ 6.25 fps)

Secondary OutFlow Max=0.73 cfs @ 12.35 hrs HW=1,190.06' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Weir Controls 0.73 cfs @ 0.62 fps)

Pond P9:


Hydrograph
Inflow Area=6.810 ac
Peak Elev=1,190.06'
Storage=33,579 cf
26.27 cfs
22.56 cfs
21.79 cfs
0.77 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28

Summary for Pond WS11:

Inflow Area = 3.190 ac, Inflow Depth = 4.05" for 50-YR STORM event
Inflow = 9.92 cfs @ 12.29 hrs, Volume= 1.077 af
Outflow = 8.95 cfs @ 12.39 hrs, Volume= 0.816 af, Atten= 10%, Lag= 5.9 min
Primary = 8.95 cfs @ 12.39 hrs, Volume= 0.816 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 1,197.32' @ 12.39 hrs Surf.Area= 8,318 sf Storage= 14,198 cf

Plug-Flow detention time= 141.4 min calculated for 0.816 af (76% of inflow)
Center-of-Mass det. time= 56.3 min (882.7 - 826.4)

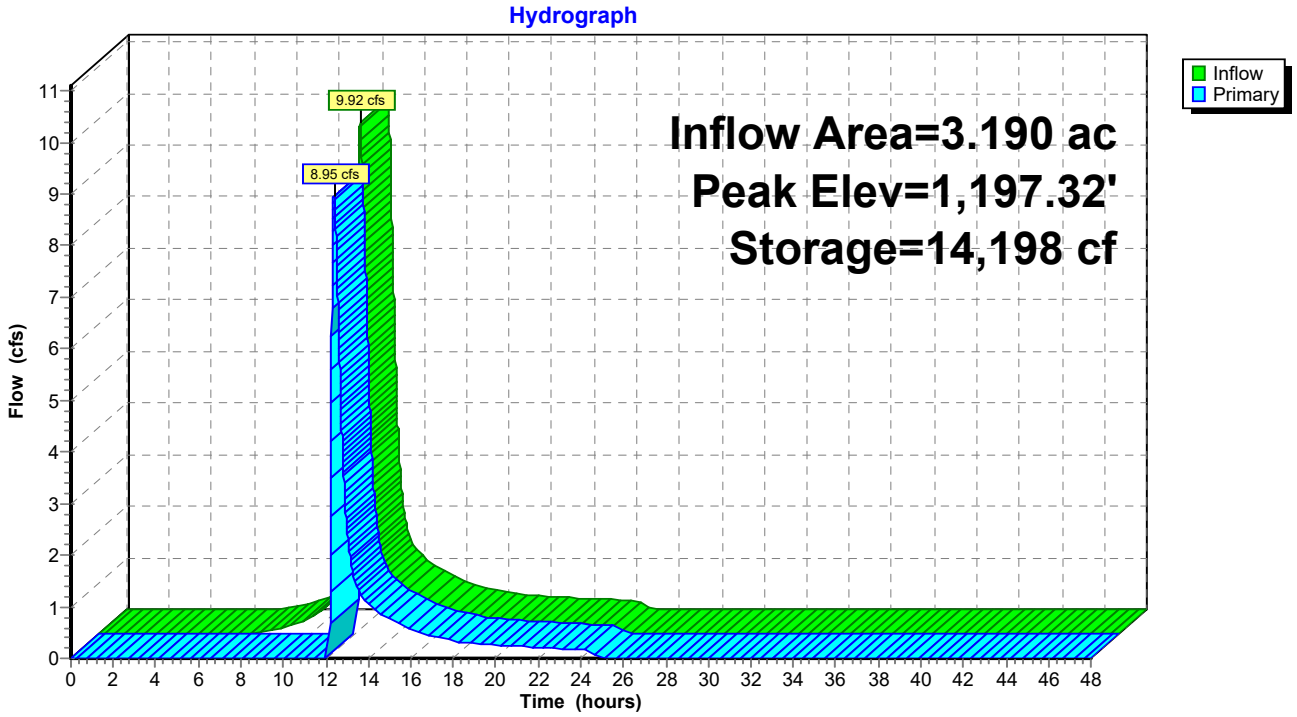
Volume	Invert	Avail.Storage	Storage Description
#1	1,194.00'	20,175 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,194.00	220	0	0
1,195.00	2,537	1,379	1,379
1,196.00	4,998	3,768	5,146
1,197.00	7,486	6,242	11,388
1,198.00	10,087	8,787	20,175

Device	Routing	Invert	Outlet Devices
#1	Primary	1,197.00'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Device 1	1,195.80'	**90.0 deg x 4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.50 (C= 3.13)

Primary OutFlow Max=8.95 cfs @ 12.39 hrs HW=1,197.32' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 8.95 cfs @ 1.40 fps)
↑—**2=Sharp-Crested Vee/Trap Weir** (Passes 8.95 cfs of 22.38 cfs potential flow)

Pond WS11:


Hydrograph
Inflow Area=3.190 ac
Peak Elev=1,197.32'
Storage=14,198 cf
9.92 cfs
8.95 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond WS14:

[95] Warning: Outlet Device #1 rise exceeded

Inflow Area = 4.600 ac, Inflow Depth = 4.59" for 50-YR STORM event
Inflow = 18.57 cfs @ 12.19 hrs, Volume= 1.758 af
Outflow = 17.11 cfs @ 12.26 hrs, Volume= 1.495 af, Atten= 8%, Lag= 3.7 min
Primary = 17.11 cfs @ 12.26 hrs, Volume= 1.495 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,150.53' @ 12.26 hrs Surf.Area= 7,104 sf Storage= 15,203 cf

Plug-Flow detention time= 104.0 min calculated for 1.495 af (85% of inflow)
Center-of-Mass det. time= 40.3 min (847.1 - 806.8)

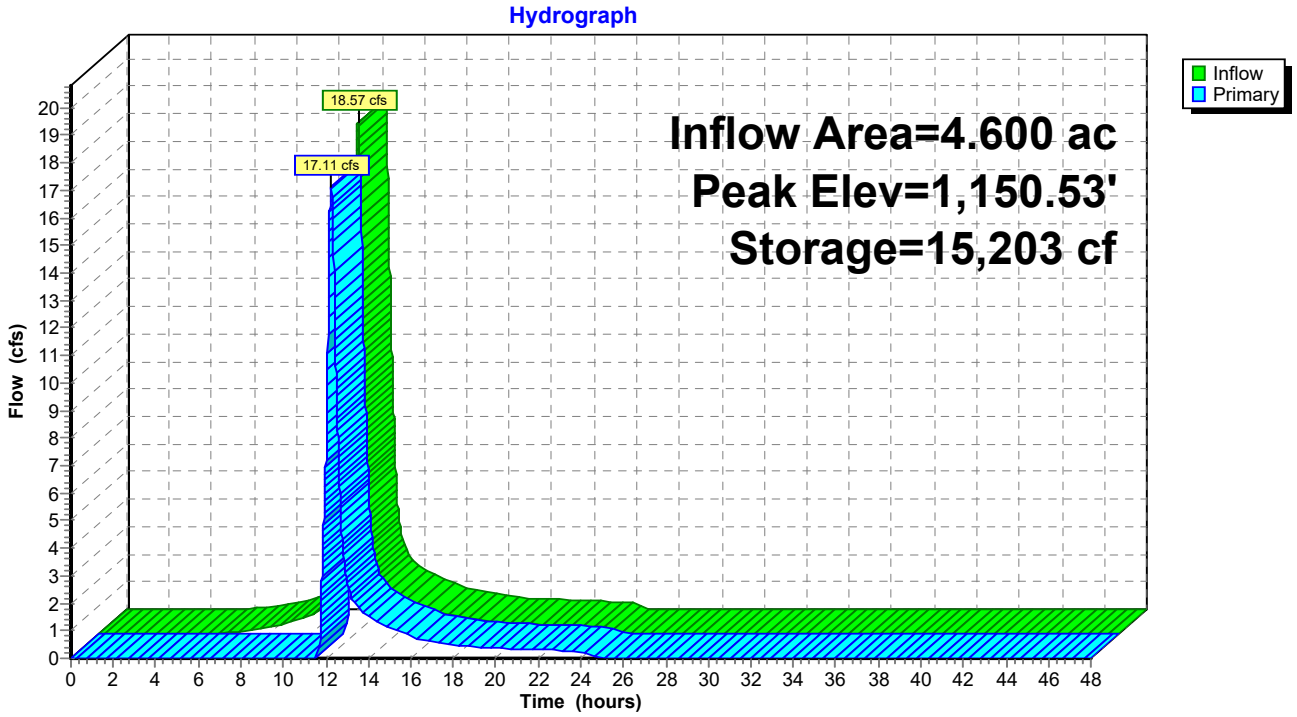
Volume	Invert	Avail.Storage	Storage Description
#1	1,147.00'	18,496 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,147.00	724	0	0
1,148.00	3,306	2,015	2,015
1,149.00	4,678	3,992	6,007
1,150.00	6,202	5,440	11,447
1,151.00	7,895	7,049	18,496

Device	Routing	Invert	Outlet Devices
#1	Device 2	1,148.80'	**90.0 deg x 4.0' long x 1.00' rise Sharp-Crested Vee/Trap Weir** Cv= 2.50 (C= 3.13)
#2	Primary	1,150.00'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=17.11 cfs @ 12.26 hrs HW=1,150.53' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Passes 17.11 cfs of 20.52 cfs potential flow)
↑—**1=Sharp-Crested Vee/Trap Weir** (Orifice Controls 17.11 cfs @ 3.42 fps)

Pond WS14:


Hydrograph
Inflow
Primary
18.57 cfs
17.11 cfs
Inflow Area=4.600 ac
Peak Elev=1,150.53'
Storage=15,203 cf
Flow (cfs)
Time (hours)

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1: Runoff Area=1.280 ac Runoff Depth=5.25"
Tc=9.1 min CN=85 Runoff=6.91 cfs 0.560 af

Subcatchment2a: Runoff Area=4.430 ac Runoff Depth=4.92"
Tc=9.7 min CN=82 Runoff=22.21 cfs 1.815 af

Subcatchment2b: Runoff Area=4.020 ac Runoff Depth=4.81"
Tc=13.9 min CN=81 Runoff=17.49 cfs 1.610 af

Subcatchment3: Runoff Area=7.890 ac Runoff Depth=5.48"
Tc=9.2 min CN=87 Runoff=43.82 cfs 3.603 af

Subcatchment4: Runoff Area=0.937 ac Runoff Depth=5.37"
Tc=12.6 min CN=86 Runoff=4.63 cfs 0.419 af

Subcatchment5: Runoff Area=1.680 ac Runoff Depth=5.37"
Tc=7.5 min CN=86 Runoff=9.71 cfs 0.751 af

Subcatchment7: Runoff Area=4.100 ac Runoff Depth=4.92"
Tc=7.2 min CN=82 Runoff=22.32 cfs 1.680 af

Subcatchment8/10: Runoff Area=28.040 ac Runoff Depth=5.37"
Tc=13.7 min CN=86 Runoff=134.32 cfs 12.538 af

Subcatchment9: Runoff Area=6.810 ac Runoff Depth=5.48"
Tc=18.1 min CN=87 Runoff=29.78 cfs 3.110 af

Subcatchment11: Runoff Area=3.190 ac Runoff Depth=4.69"
Tc=21.4 min CN=80 Runoff=11.45 cfs 1.248 af

Subcatchment12: Runoff Area=1.930 ac Runoff Depth=5.37"
Tc=8.6 min CN=86 Runoff=10.76 cfs 0.863 af

Subcatchment13: Runoff Area=1.630 ac Runoff Depth=5.37"
Tc=7.0 min CN=86 Runoff=9.58 cfs 0.729 af

Subcatchment14: Runoff Area=4.600 ac Runoff Depth=5.25"
Tc=14.6 min CN=85 Runoff=21.16 cfs 2.013 af

Subcatchment15: Runoff Area=1.930 ac Runoff Depth=5.14"
Tc=13.7 min CN=84 Runoff=8.94 cfs 0.827 af

Pond IT1: Peak Elev=1,126.77' Storage=3,881 cf Inflow=6.91 cfs 0.560 af
Discarded=0.05 cfs 0.129 af Primary=6.75 cfs 0.427 af Outflow=6.79 cfs 0.556 af

Pond IT2a: Peak Elev=1,091.50' Storage=7,111 cf Inflow=22.21 cfs 1.815 af
Discarded=0.11 cfs 0.222 af Primary=21.92 cfs 1.593 af Outflow=22.03 cfs 1.815 af

Pond IT2b: Peak Elev=1,041.27' Storage=8,673 cf Inflow=17.49 cfs 1.610 af
Discarded=0.12 cfs 0.293 af Primary=16.98 cfs 1.317 af Outflow=17.10 cfs 1.610 af

Pond IT4: Peak Elev=1,114.87' Storage=9,127 cf Inflow=4.63 cfs 0.419 af
Discarded=0.03 cfs 0.089 af Primary=2.10 cfs 0.183 af Outflow=2.13 cfs 0.273 af

Pond P12: Peak Elev=1,187.97' Storage=5,532 cf Inflow=10.76 cfs 0.863 af
Primary=1.07 cfs 0.416 af Secondary=9.48 cfs 0.378 af Outflow=10.55 cfs 0.794 af

Pond P13: Peak Elev=1,145.25' Storage=20,829 cf Inflow=9.58 cfs 0.729 af
Primary=0.42 cfs 0.665 af Secondary=0.00 cfs 0.000 af Outflow=0.42 cfs 0.665 af

Pond P3: Peak Elev=1,134.62' Storage=35,234 cf Inflow=43.82 cfs 3.603 af
Primary=24.93 cfs 3.296 af Secondary=4.22 cfs 0.030 af Outflow=29.15 cfs 3.325 af

Pond P5: Peak Elev=1,146.50' Storage=8,287 cf Inflow=9.71 cfs 0.751 af
Primary=6.74 cfs 0.663 af Secondary=2.63 cfs 0.030 af Outflow=9.37 cfs 0.693 af

Pond P7: Peak Elev=1,161.60' Storage=31,223 cf Inflow=22.32 cfs 1.680 af
Primary=10.09 cfs 1.526 af Secondary=0.85 cfs 0.009 af Outflow=10.94 cfs 1.535 af

Pond P8/10: Peak Elev=1,128.42' Storage=148,220 cf Inflow=134.32 cfs 12.538 af
Primary=85.98 cfs 11.276 af Secondary=8.78 cfs 0.090 af Outflow=94.76 cfs 11.366 af

Pond P9: Peak Elev=1,190.13' Storage=34,696 cf Inflow=29.78 cfs 3.110 af
Primary=24.19 cfs 2.797 af Secondary=2.39 cfs 0.036 af Outflow=26.58 cfs 2.833 af

Pond WS11: Peak Elev=1,197.36' Storage=14,559 cf Inflow=11.45 cfs 1.248 af
Outflow=10.88 cfs 0.986 af

Pond WS14: Peak Elev=1,150.65' Storage=15,997 cf Inflow=21.16 cfs 2.013 af
Outflow=18.83 cfs 1.751 af

Total Runoff Area = 72.467 ac Runoff Volume = 31.765 af Average Runoff Depth = 5.26"

Summary for Subcatchment 1:

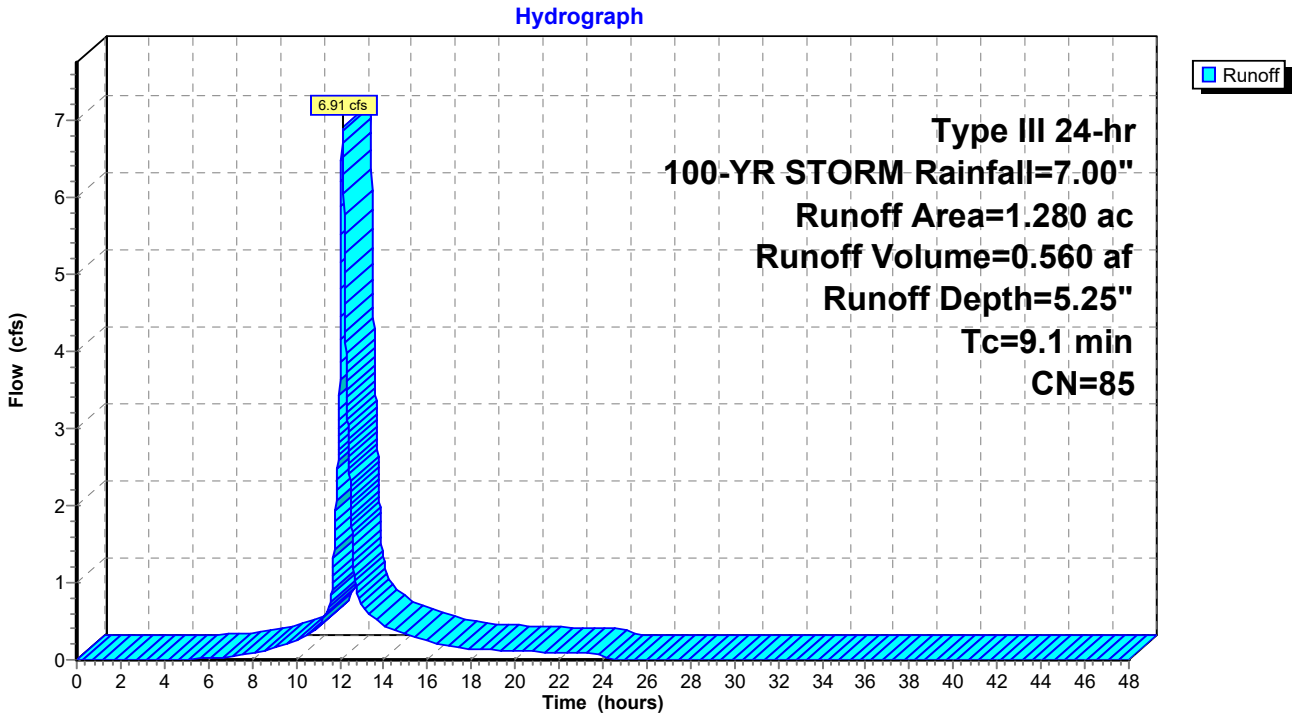
Runoff = 6.91 cfs @ 12.12 hrs, Volume= 0.560 af, Depth= 5.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-YR STORM Rainfall=7.00"

	Area (ac)	CN	Description
*	1.280	85	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1					**Direct Entry, NRCS Part 630**

Subcatchment 1:



Summary for Subcatchment 2a:

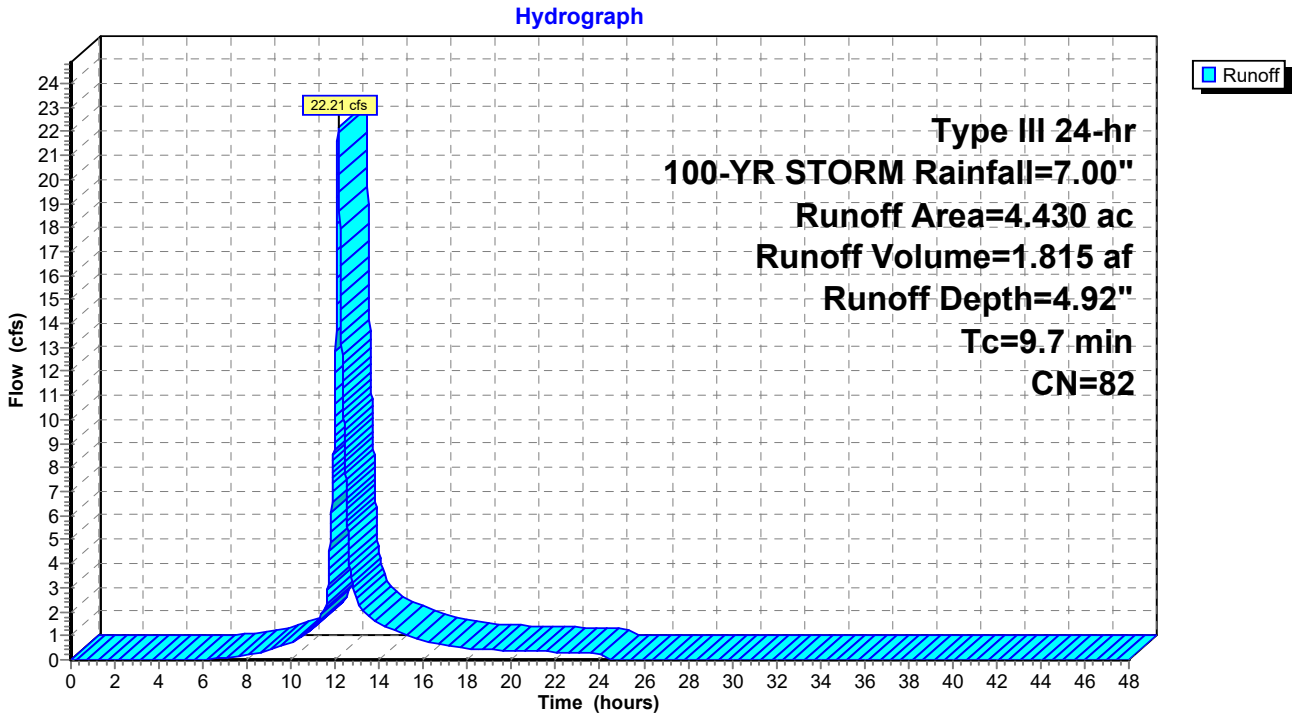
Runoff = 22.21 cfs @ 12.13 hrs, Volume= 1.815 af, Depth= 4.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-YR STORM Rainfall=7.00"

	Area (ac)	CN	Description
*	4.430	82	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7					**Direct Entry, NRCS Part 630**

Subcatchment 2a:



Summary for Subcatchment 2b:

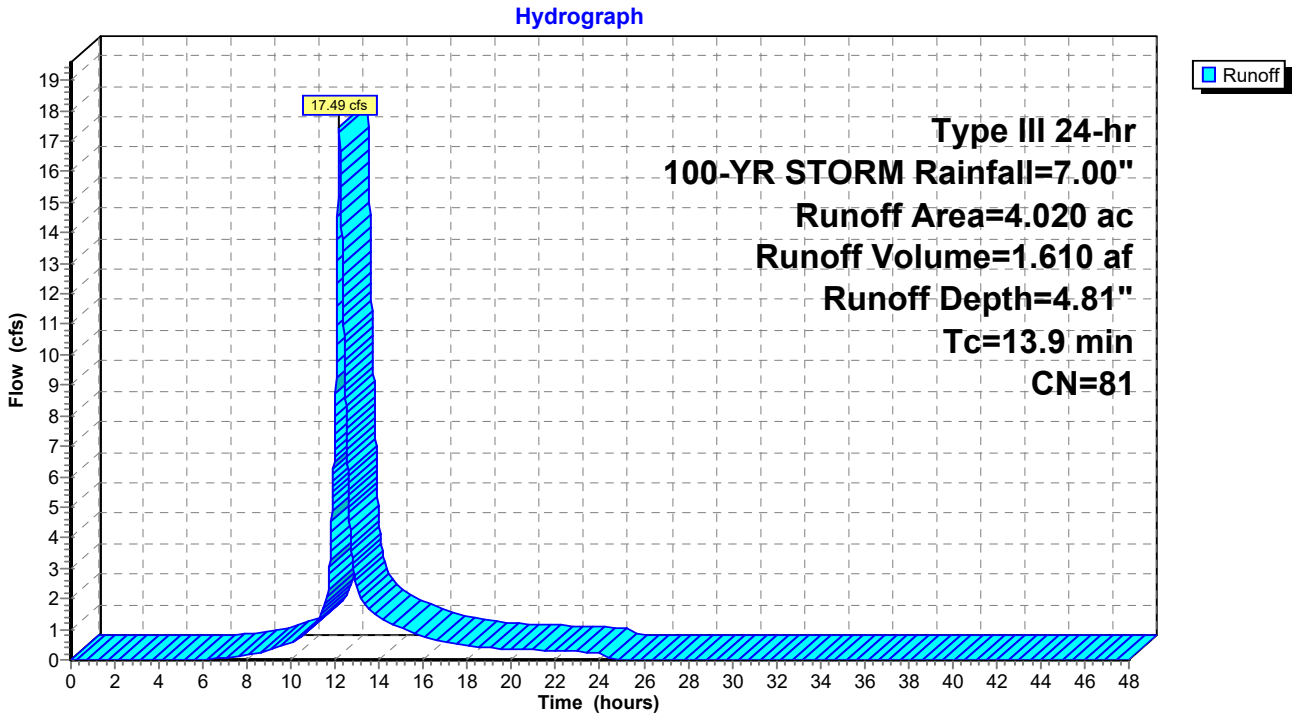
Runoff = 17.49 cfs @ 12.19 hrs, Volume= 1.610 af, Depth= 4.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-YR STORM Rainfall=7.00"

	Area (ac)	CN	Description
*	4.020	81	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9					**Direct Entry, NRCS Part 630**

Subcatchment 2b:



Summary for Subcatchment 3:

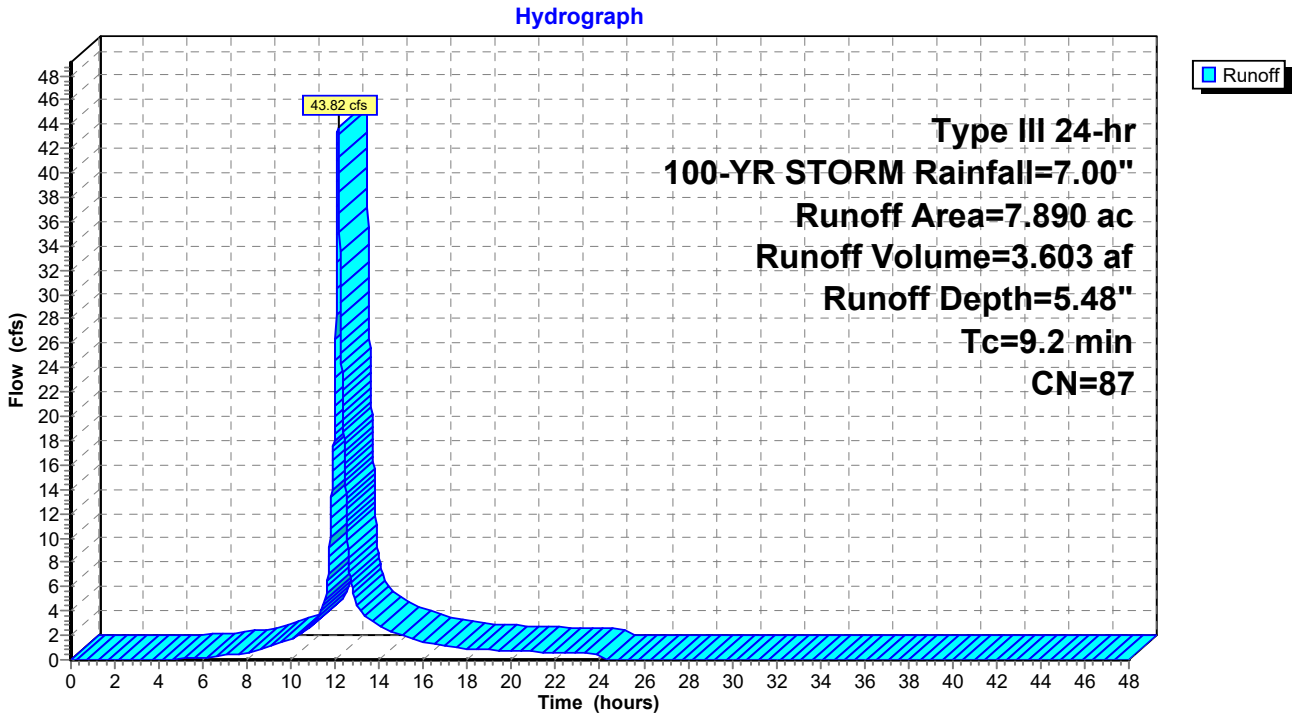
Runoff = 43.82 cfs @ 12.13 hrs, Volume= 3.603 af, Depth= 5.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-YR STORM Rainfall=7.00"

	Area (ac)	CN	Description
*	7.890	87	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2					**Direct Entry, NRCS Part 630**

Subcatchment 3:



Summary for Subcatchment 4:

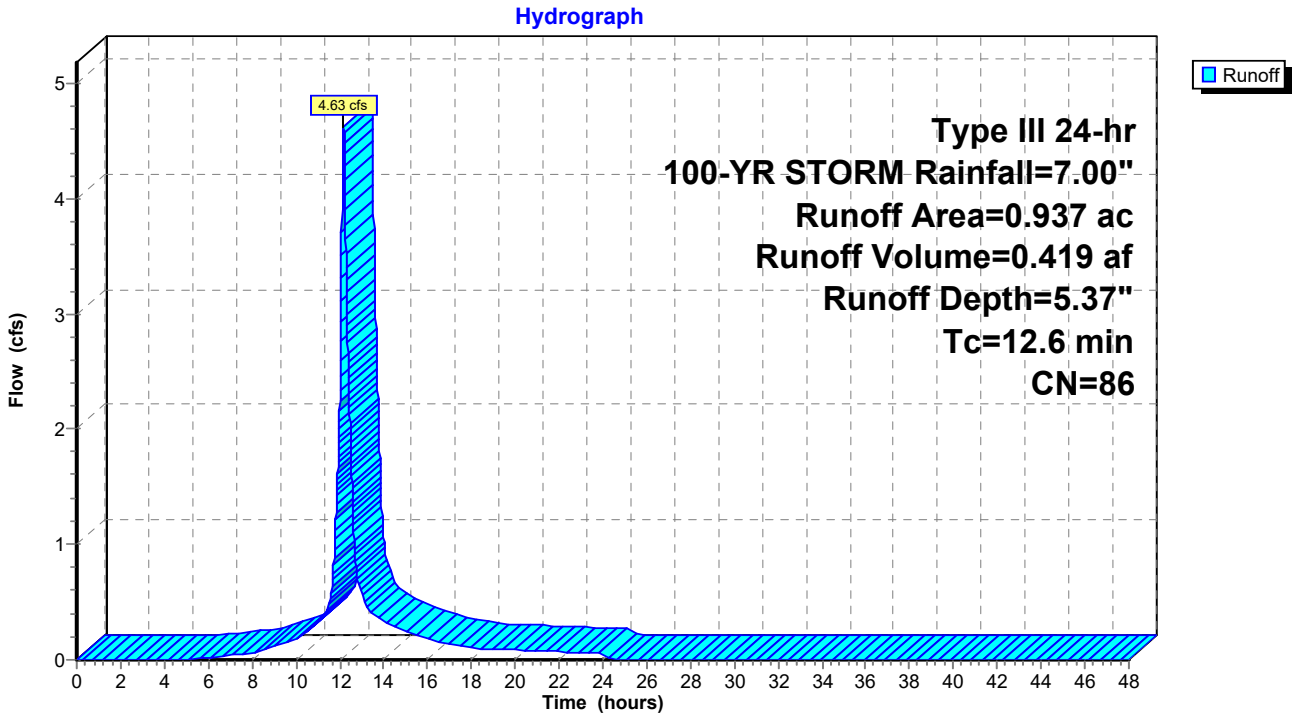
Runoff = 4.63 cfs @ 12.17 hrs, Volume= 0.419 af, Depth= 5.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-YR STORM Rainfall=7.00"

	Area (ac)	CN	Description
*	0.937	86	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.6					**Direct Entry, NRCS Part 630**

Subcatchment 4:



Summary for Subcatchment 5:

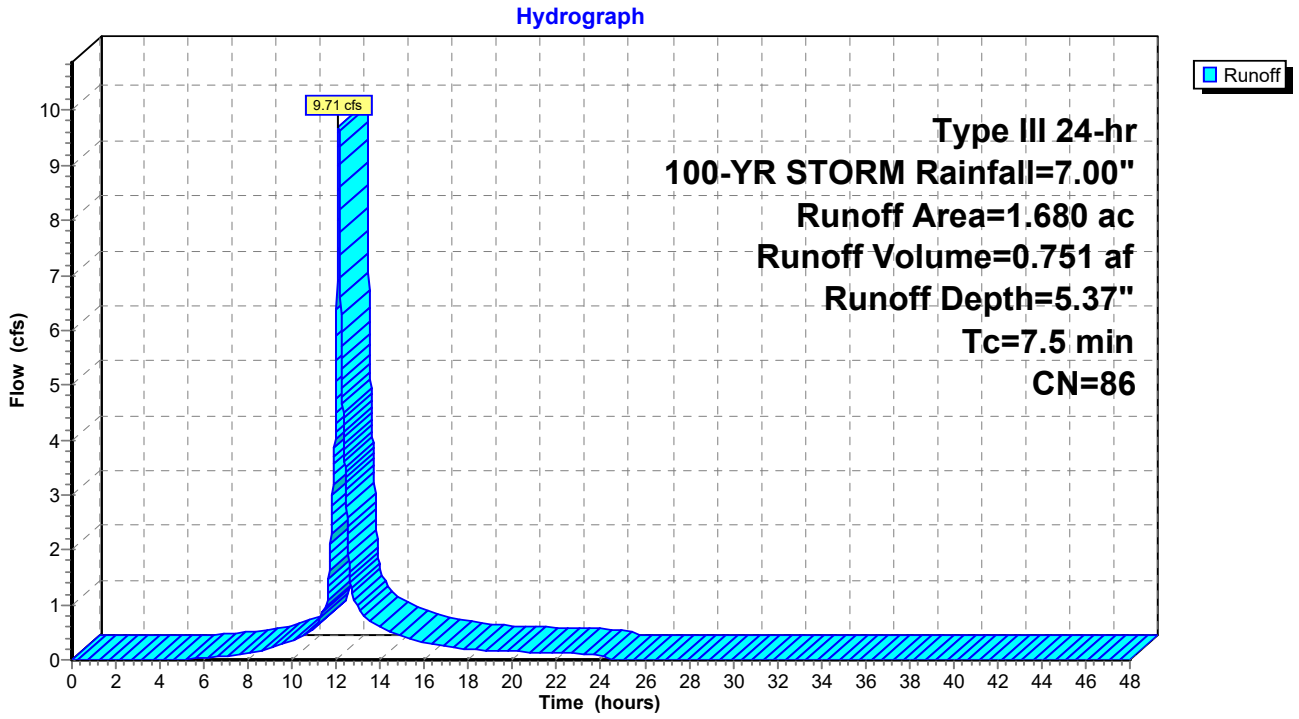
Runoff = 9.71 cfs @ 12.10 hrs, Volume= 0.751 af, Depth= 5.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-YR STORM Rainfall=7.00"

	Area (ac)	CN	Description
*	1.680	86	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5					**Direct Entry, NRCS Part 630**

Subcatchment 5:



Summary for Subcatchment 7:

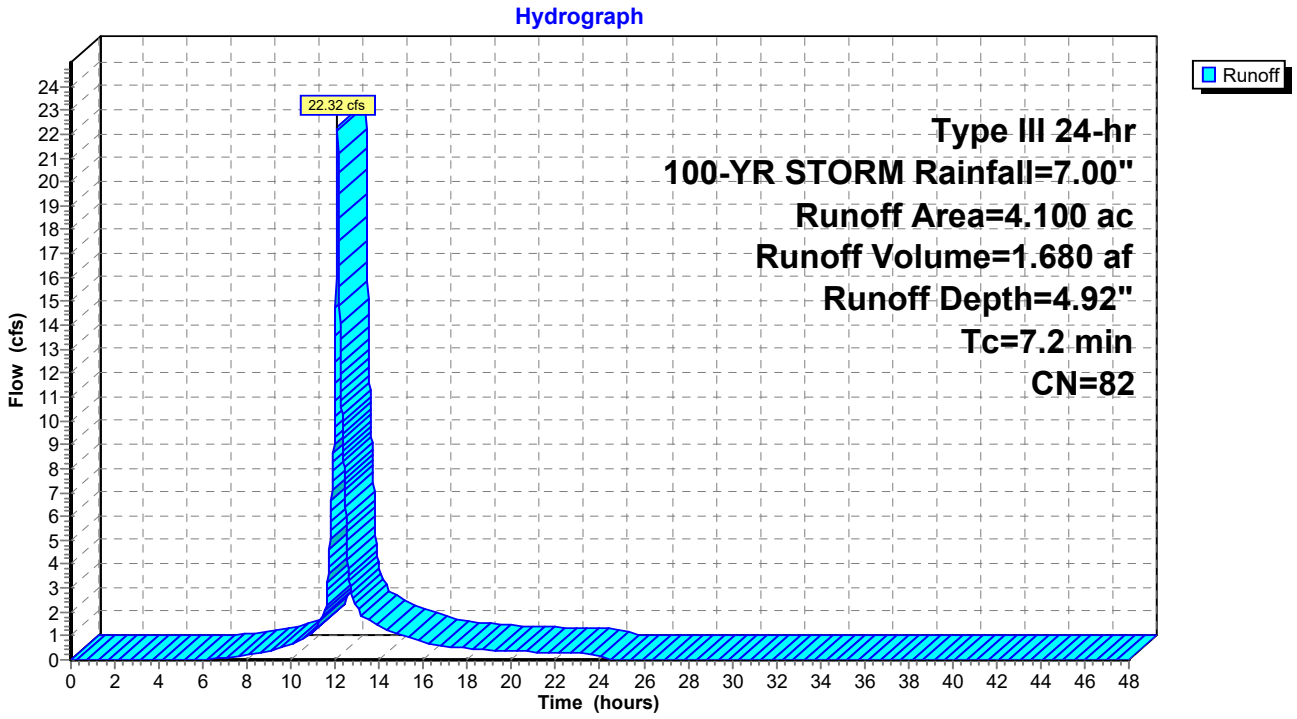
Runoff = 22.32 cfs @ 12.10 hrs, Volume= 1.680 af, Depth= 4.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-YR STORM Rainfall=7.00"

	Area (ac)	CN	Description
*	4.100	82	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2					**Direct Entry, NRCS Part 630**

Subcatchment 7:



Summary for Subcatchment 8/10:

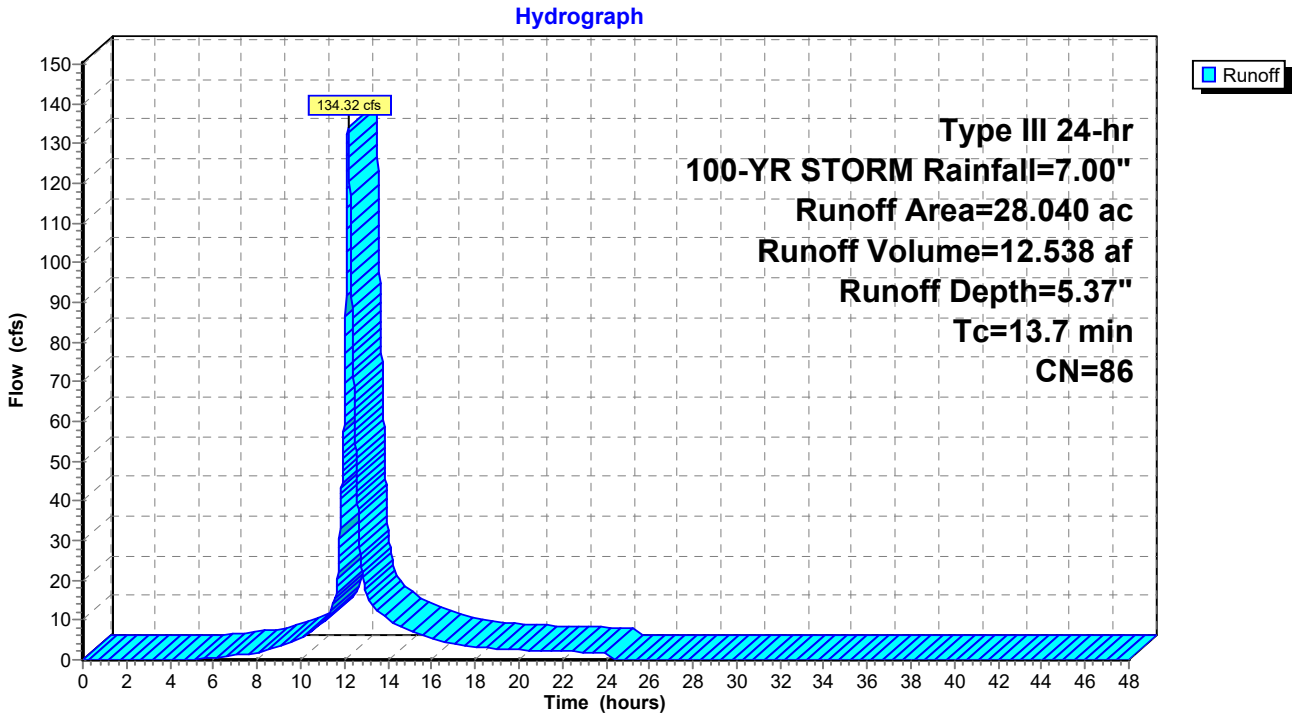
Runoff = 134.32 cfs @ 12.18 hrs, Volume= 12.538 af, Depth= 5.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-YR STORM Rainfall=7.00"

	Area (ac)	CN	Description
*	28.040	86	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7					**Direct Entry, NRCS Part 630**

Subcatchment 8/10:



Summary for Subcatchment 9:

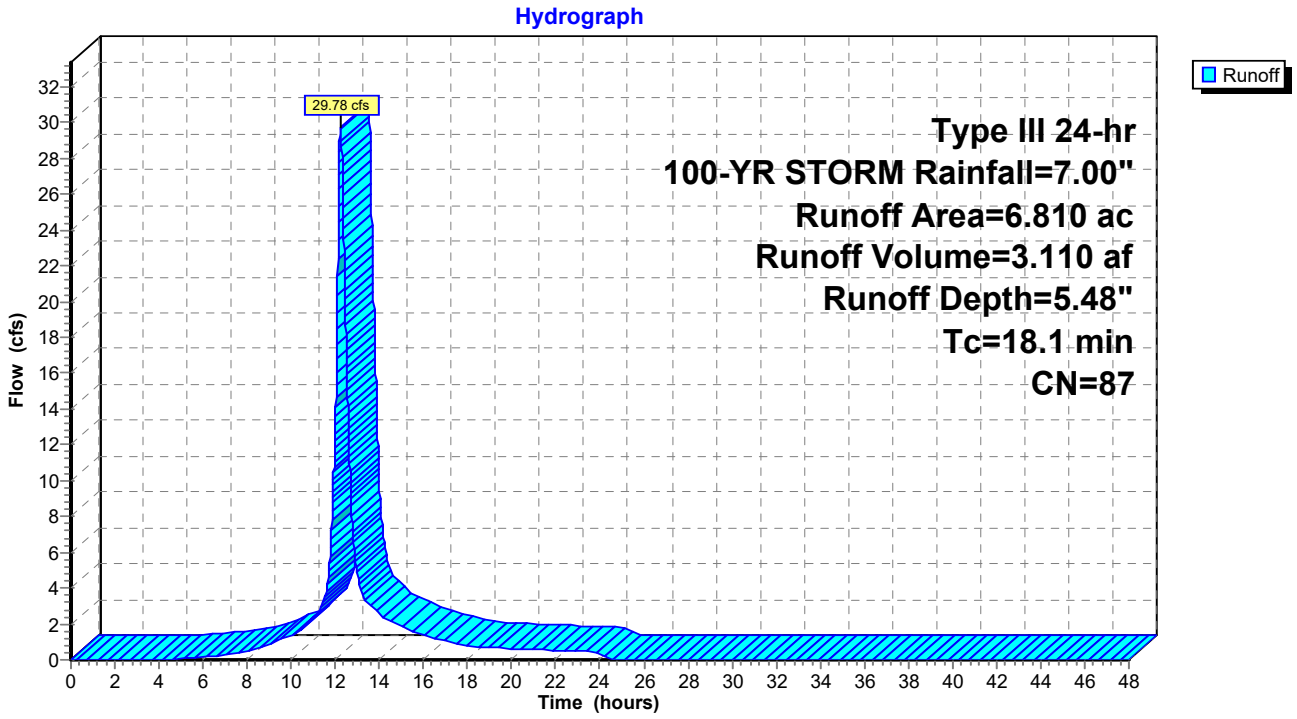
Runoff = 29.78 cfs @ 12.24 hrs, Volume= 3.110 af, Depth= 5.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-YR STORM Rainfall=7.00"

	Area (ac)	CN	Description
*	6.810	87	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1					**Direct Entry, NRCS Part 630**

Subcatchment 9:



Summary for Subcatchment 11:

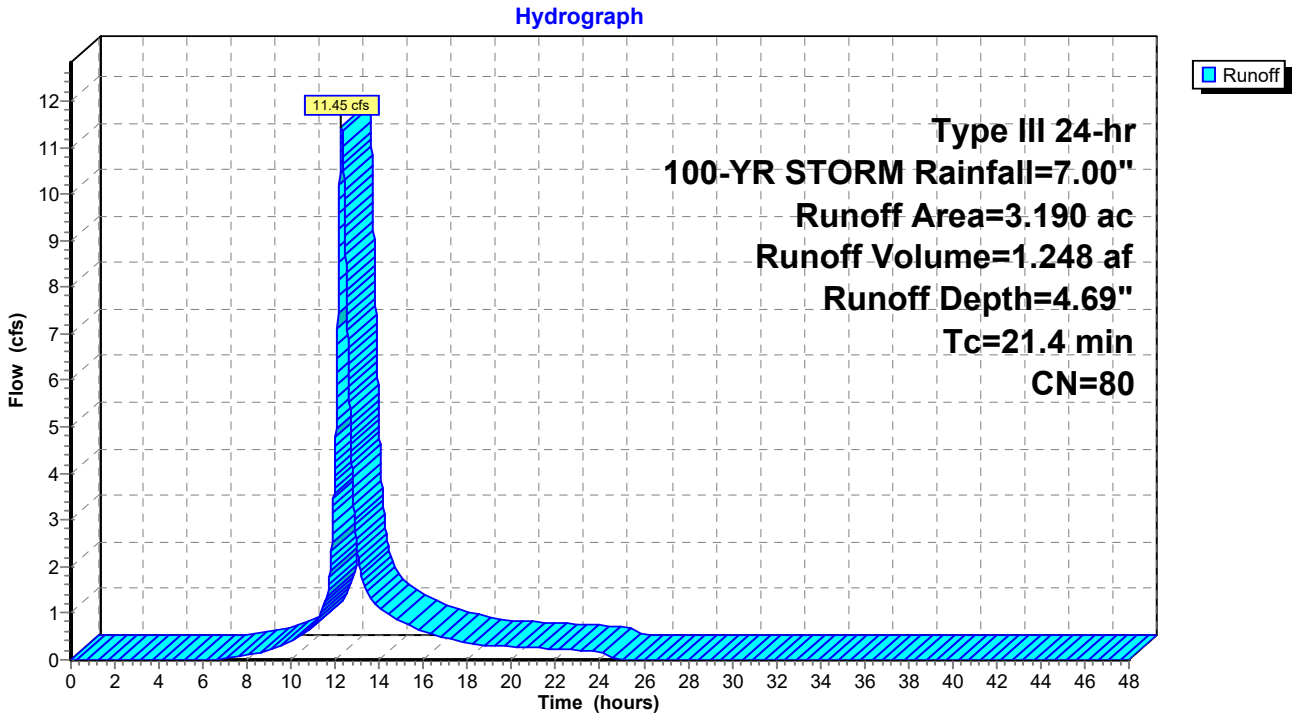
Runoff = 11.45 cfs @ 12.29 hrs, Volume= 1.248 af, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-YR STORM Rainfall=7.00"

	Area (ac)	CN	Description
*	3.190	80	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.4					**Direct Entry, NRCS Part 630**

Subcatchment 11:



Summary for Subcatchment 12:

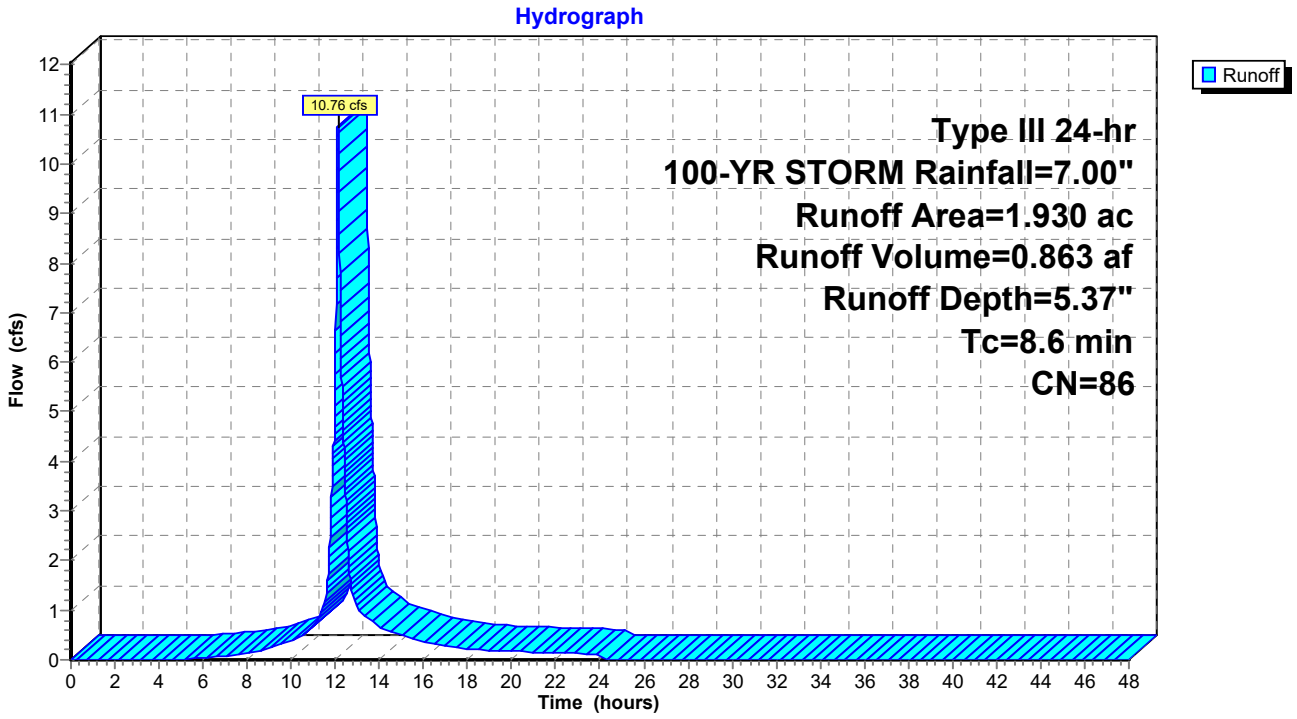
Runoff = 10.76 cfs @ 12.12 hrs, Volume= 0.863 af, Depth= 5.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-YR STORM Rainfall=7.00"

	Area (ac)	CN	Description
*	1.930	86	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6					**Direct Entry, NRCS Part 630**

Subcatchment 12:



Summary for Subcatchment 13:

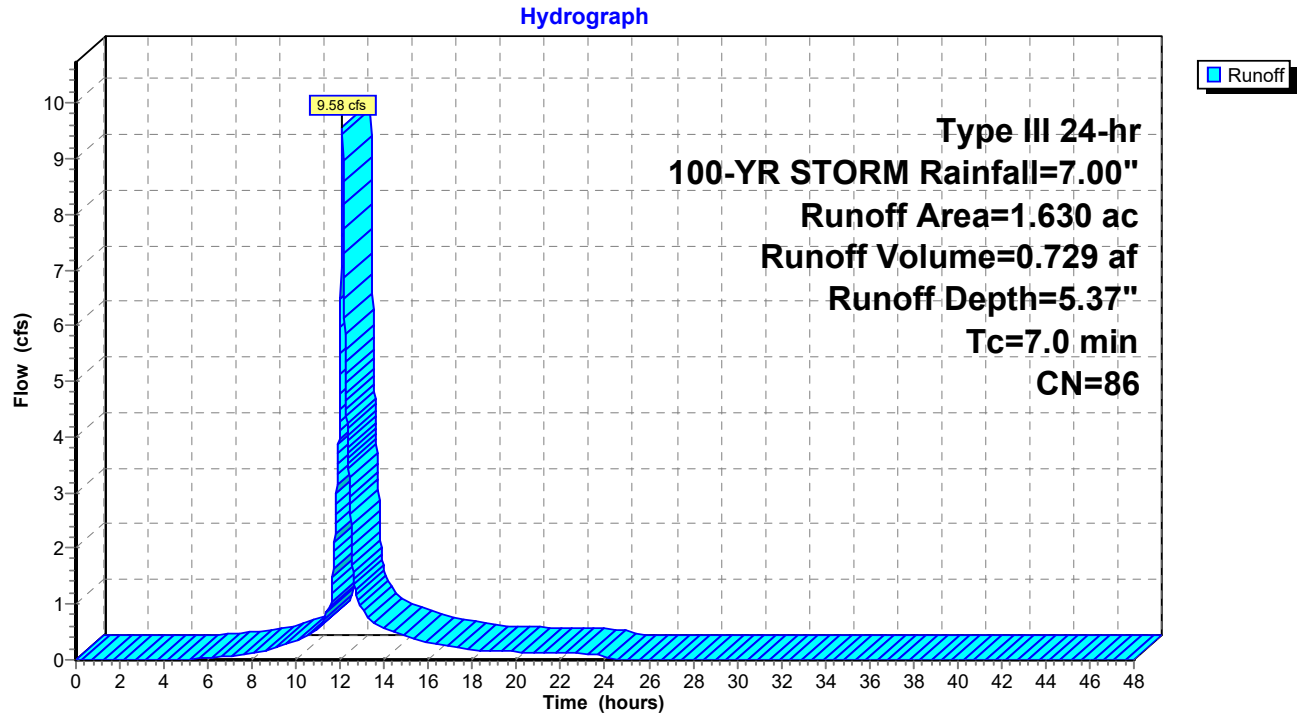
Runoff = 9.58 cfs @ 12.10 hrs, Volume= 0.729 af, Depth= 5.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-YR STORM Rainfall=7.00"

	Area (ac)	CN	Description
*	1.630	86	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					**Direct Entry, NRCS Part 630**

Subcatchment 13:



Summary for Subcatchment 14:

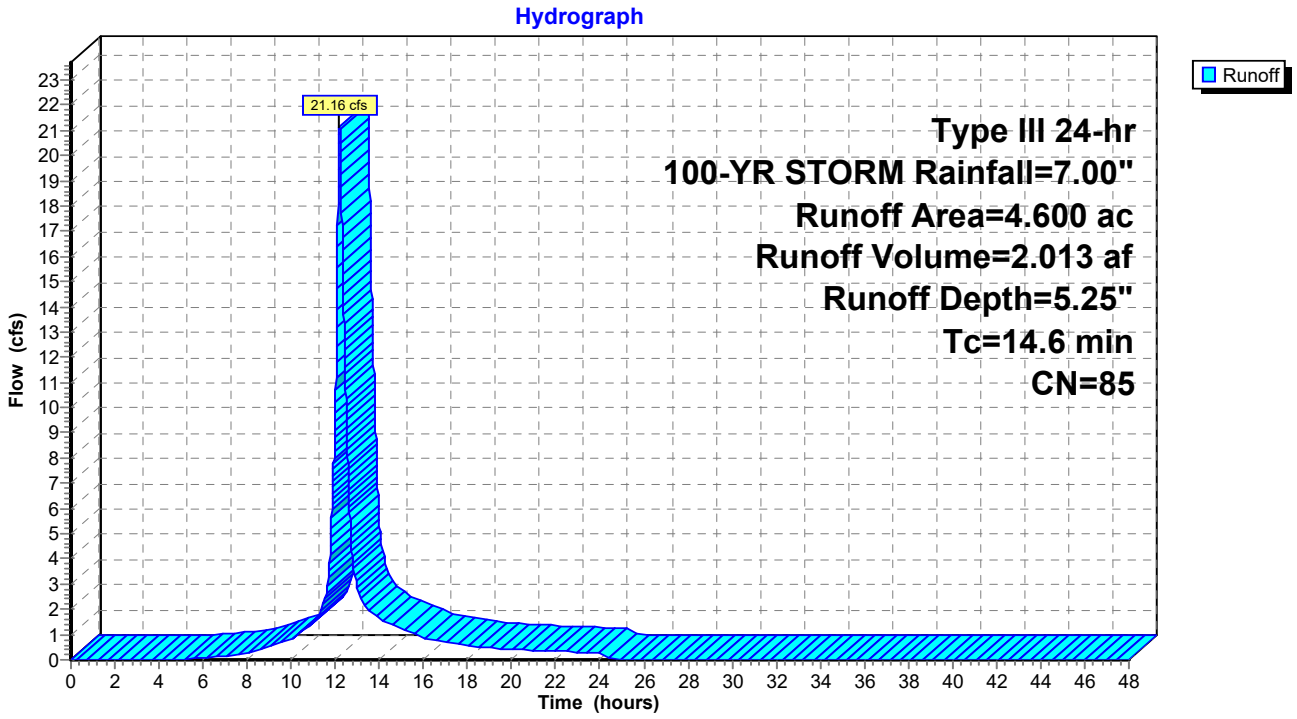
Runoff = 21.16 cfs @ 12.19 hrs, Volume= 2.013 af, Depth= 5.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-YR STORM Rainfall=7.00"

	Area (ac)	CN	Description
*	4.600	85	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6					**Direct Entry, NRCS Part 630**

Subcatchment 14:



Summary for Subcatchment 15:

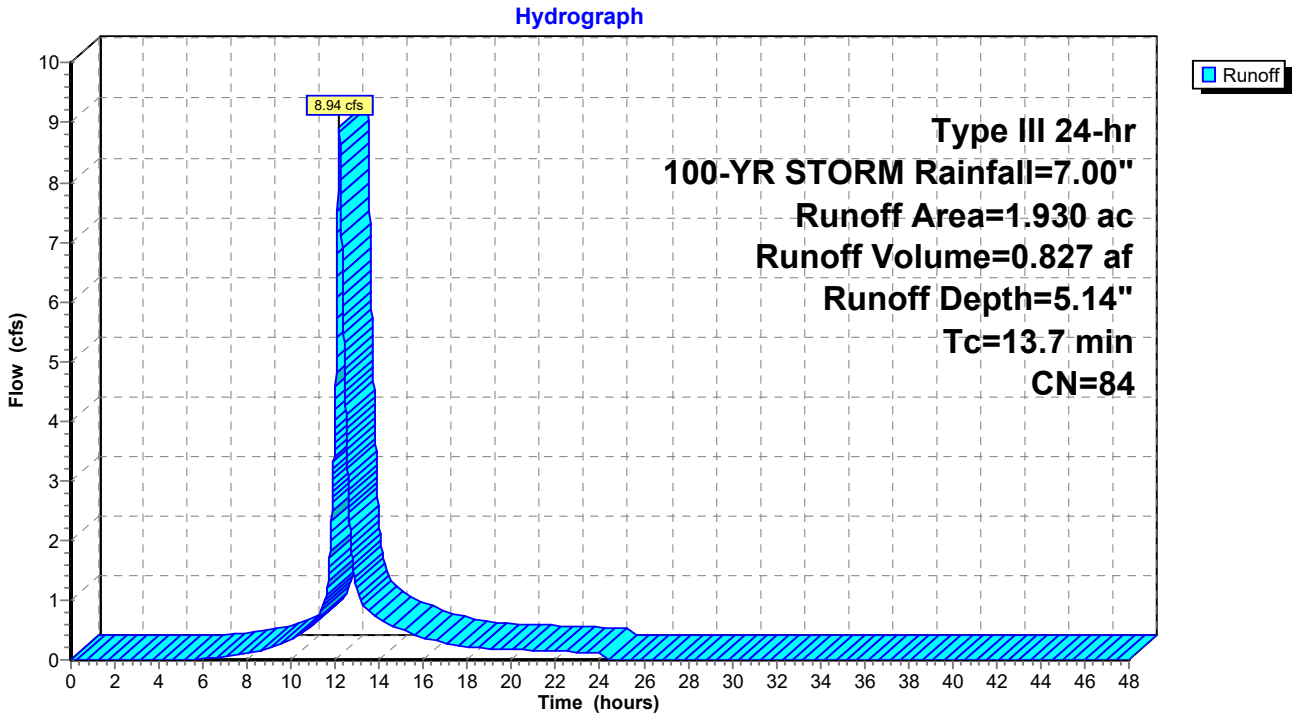
Runoff = 8.94 cfs @ 12.19 hrs, Volume= 0.827 af, Depth= 5.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-YR STORM Rainfall=7.00"

	Area (ac)	CN	Description
*	1.930	84	

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7					**Direct Entry, NRCS Part 630**

Subcatchment 15:



Summary for Pond IT1:

Inflow Area = 1.280 ac, Inflow Depth = 5.25" for 100-YR STORM event
Inflow = 6.91 cfs @ 12.12 hrs, Volume= 0.560 af
Outflow = 6.79 cfs @ 12.14 hrs, Volume= 0.556 af, Atten= 2%, Lag= 1.1 min
Discarded = 0.05 cfs @ 12.14 hrs, Volume= 0.129 af
Primary = 6.75 cfs @ 12.14 hrs, Volume= 0.427 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,126.77' @ 12.14 hrs Surf.Area= 2,748 sf Storage= 3,881 cf

Plug-Flow detention time= 195.3 min calculated for 0.556 af (99% of inflow)
Center-of-Mass det. time= 190.6 min (988.6 - 798.0)

Volume	Invert	Avail.Storage	Storage Description
#1	1,125.00'	4,476 cf	**Custom Stage Data (Prismatic)** Listed below

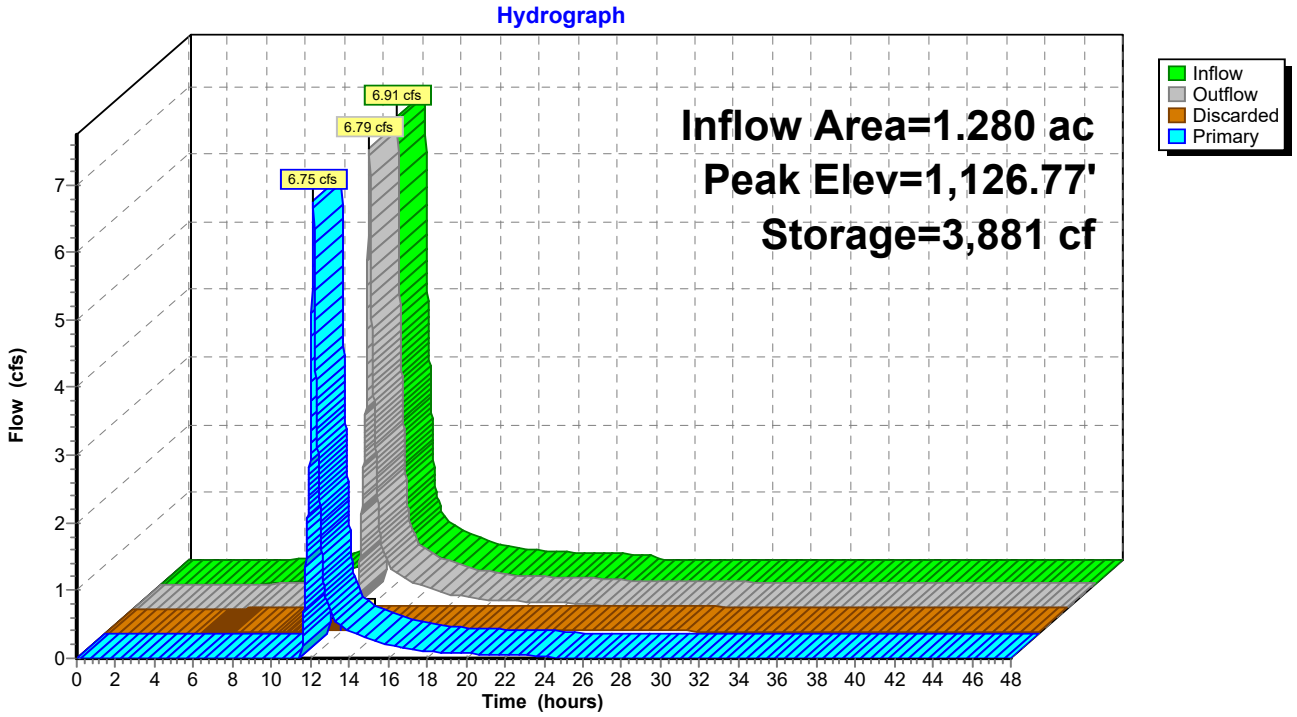
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,125.00	1,620	0	0
1,126.00	2,210	1,915	1,915
1,127.00	2,911	2,561	4,476

Device	Routing	Invert	Outlet Devices
#1	Primary	1,126.50'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Discarded	1,125.00'	**0.725 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.05 cfs @ 12.14 hrs HW=1,126.77' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=6.74 cfs @ 12.14 hrs HW=1,126.77' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 6.74 cfs @ 1.26 fps)

Pond IT1:


Hydrograph
Inflow Area=1.280 ac
Peak Elev=1,126.77'
Storage=3,881 cf
6.91 cfs
6.79 cfs
6.75 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond IT2a:

Inflow Area = 4.430 ac, Inflow Depth = 4.92" for 100-YR STORM event
Inflow = 22.21 cfs @ 12.13 hrs, Volume= 1.815 af
Outflow = 22.03 cfs @ 12.15 hrs, Volume= 1.815 af, Atten= 1%, Lag= 1.0 min
Discarded = 0.11 cfs @ 12.15 hrs, Volume= 0.222 af
Primary = 21.92 cfs @ 12.15 hrs, Volume= 1.593 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,091.50' @ 12.15 hrs Surf.Area= 5,146 sf Storage= 7,111 cf

Plug-Flow detention time= 88.5 min calculated for 1.815 af (100% of inflow)
Center-of-Mass det. time= 88.5 min (895.0 - 806.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,089.50'	7,111 cf	**Custom Stage Data (Prismatic)** Listed below

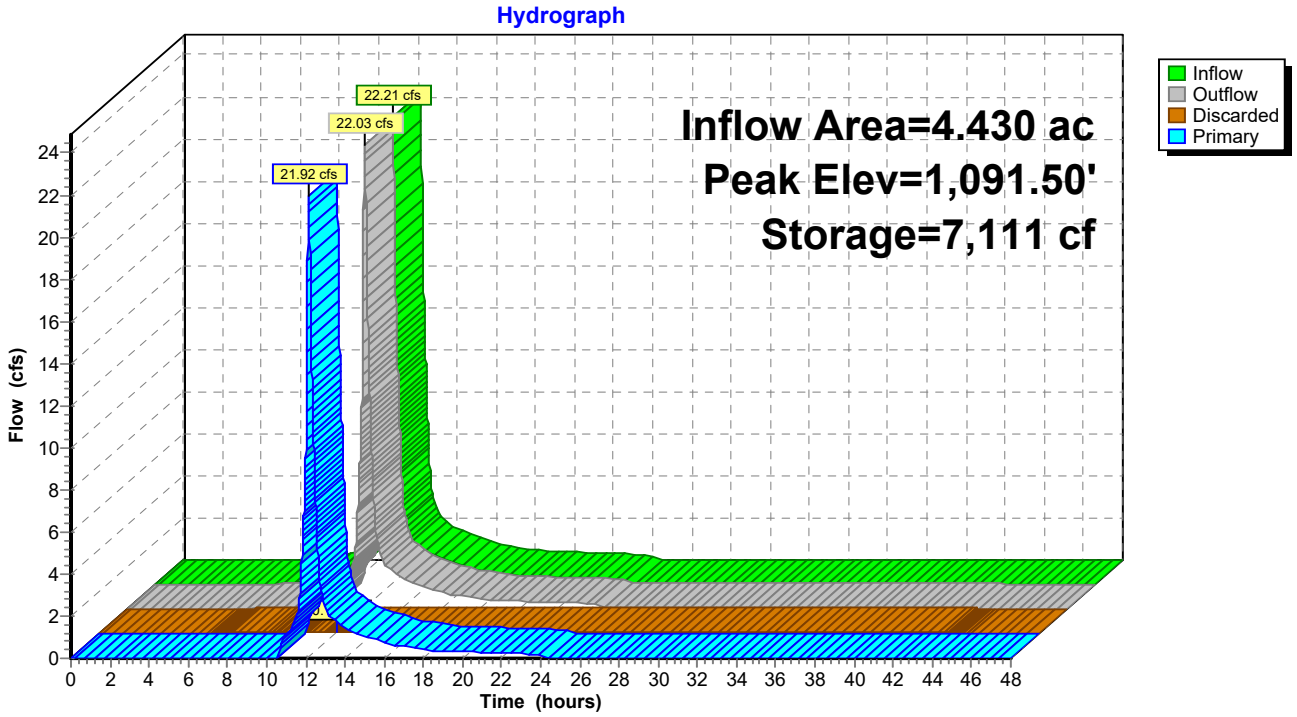
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,089.50	2,714	0	0
1,090.00	3,067	1,445	1,445
1,090.50	3,427	1,624	3,069
1,091.00	3,797	1,806	4,875
1,091.50	5,146	2,236	7,111

Device	Routing	Invert	Outlet Devices
#1	Primary	1,090.95'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Discarded	1,089.50'	**0.905 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.11 cfs @ 12.15 hrs HW=1,091.50' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=21.92 cfs @ 12.15 hrs HW=1,091.50' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 21.92 cfs @ 1.98 fps)

Pond IT2a:


Hydrograph
Inflow Area=4.430 ac
Peak Elev=1,091.50'
Storage=7,111 cf
22.21 cfs
22.03 cfs
21.92 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

Summary for Pond IT2b:

Inflow Area = 4.020 ac, Inflow Depth = 4.81" for 100-YR STORM event
Inflow = 17.49 cfs @ 12.19 hrs, Volume= 1.610 af
Outflow = 17.10 cfs @ 12.22 hrs, Volume= 1.610 af, Atten= 2%, Lag= 1.7 min
Discarded = 0.12 cfs @ 12.22 hrs, Volume= 0.293 af
Primary = 16.98 cfs @ 12.22 hrs, Volume= 1.317 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,041.27' @ 12.22 hrs Surf.Area= 5,709 sf Storage= 8,673 cf

Plug-Flow detention time= 120.1 min calculated for 1.609 af (100% of inflow)
Center-of-Mass det. time= 120.3 min (933.2 - 812.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,039.50'	9,955 cf	**Custom Stage Data (Prismatic)** Listed below

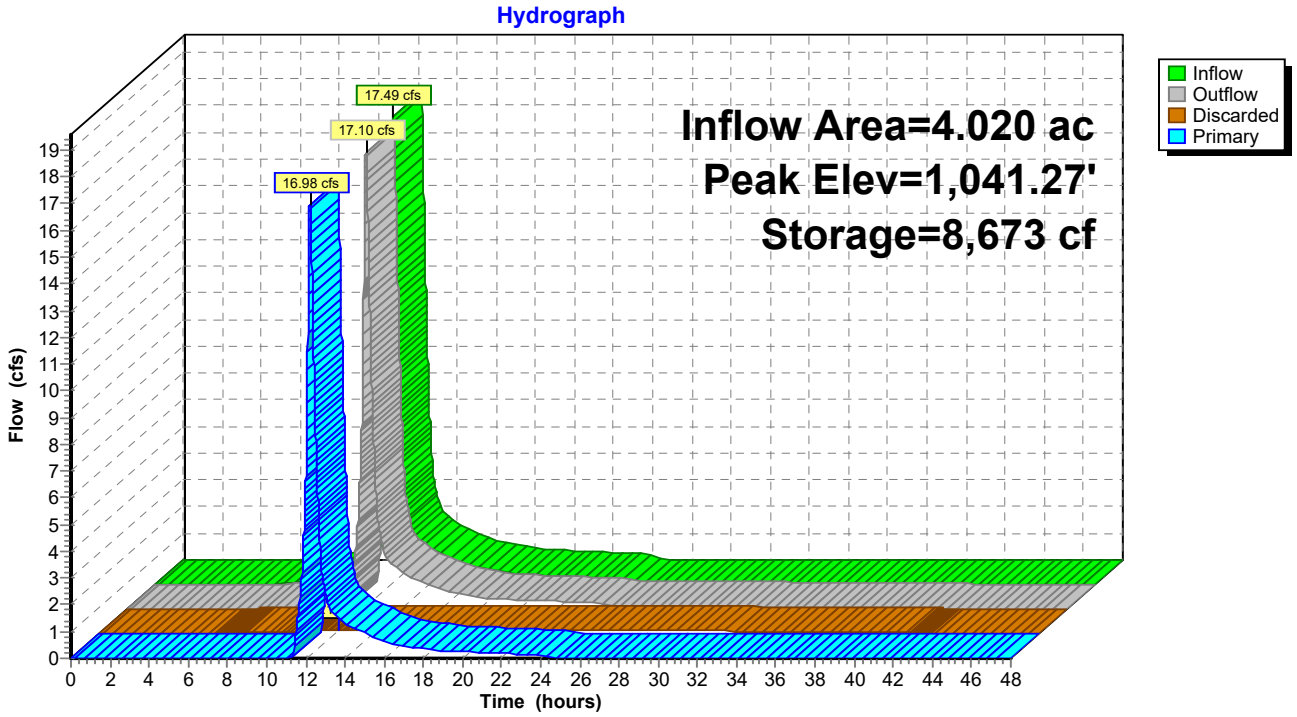
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,039.50	4,048	0	0
1,040.00	4,506	2,139	2,139
1,040.50	4,971	2,369	4,508
1,041.00	5,445	2,604	7,112
1,041.50	5,926	2,843	9,955

Device	Routing	Invert	Outlet Devices
#1	Primary	1,040.80'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Discarded	1,039.50'	**0.905 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.12 cfs @ 12.22 hrs HW=1,041.27' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.12 cfs)

Primary OutFlow Max=16.97 cfs @ 12.22 hrs HW=1,041.27' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 16.97 cfs @ 1.79 fps)

Pond IT2b:


Hydrograph
Inflow Area=4.020 ac
Peak Elev=1,041.27'
Storage=8,673 cf
17.49 cfs
17.10 cfs
16.98 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

Summary for Pond IT4:

Inflow Area = 0.937 ac, Inflow Depth = 5.37" for 100-YR STORM event
Inflow = 4.63 cfs @ 12.17 hrs, Volume= 0.419 af
Outflow = 2.13 cfs @ 12.45 hrs, Volume= 0.273 af, Atten= 54%, Lag= 16.8 min
Discarded = 0.03 cfs @ 12.45 hrs, Volume= 0.089 af
Primary = 2.10 cfs @ 12.45 hrs, Volume= 0.183 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,114.87' @ 12.45 hrs Surf.Area= 4,046 sf Storage= 9,127 cf

Plug-Flow detention time= 440.7 min calculated for 0.273 af (65% of inflow)
Center-of-Mass det. time= 343.0 min (1,141.4 - 798.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,112.00'	9,624 cf	**Custom Stage Data (Prismatic)** Listed below

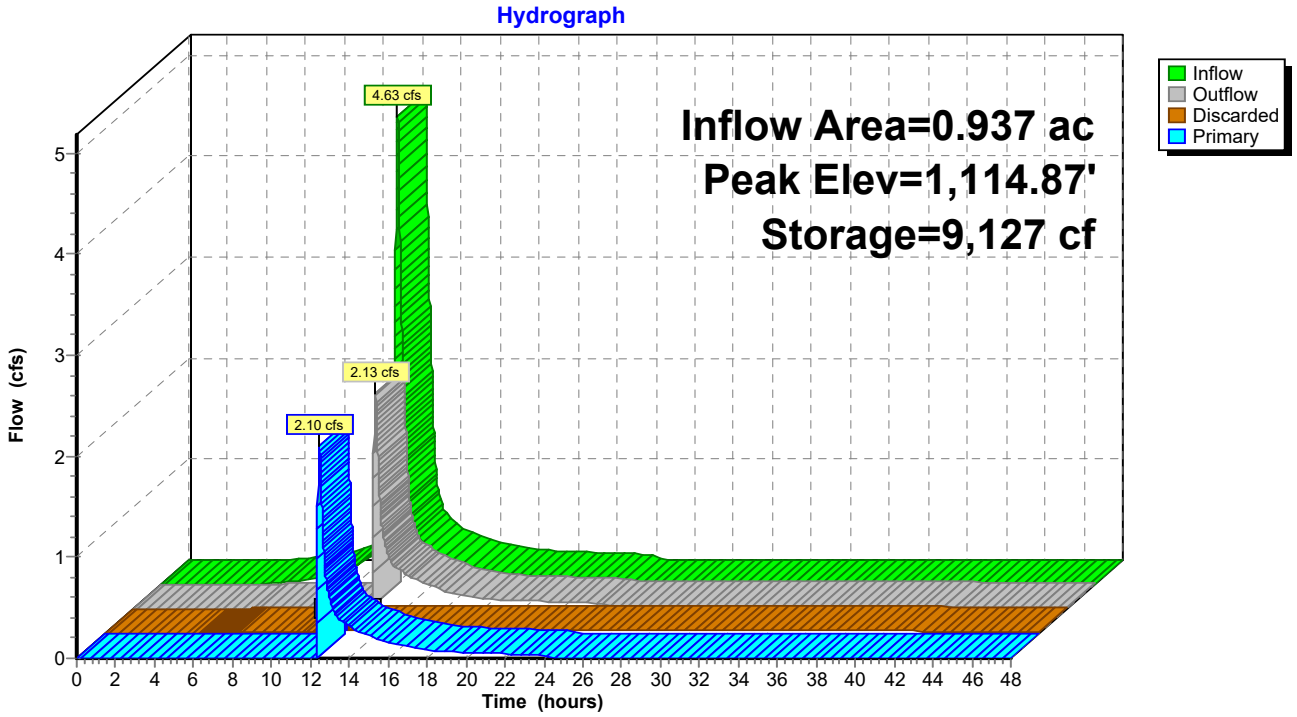
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,112.00	2,336	0	0
1,112.50	2,619	1,239	1,239
1,113.00	2,904	1,381	2,620
1,113.50	3,194	1,525	4,144
1,114.00	3,494	1,672	5,816
1,114.50	3,805	1,825	7,641
1,115.00	4,126	1,983	9,624

Device	Routing	Invert	Outlet Devices
#1	Primary	1,114.75'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Discarded	1,112.00'	**0.305 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.03 cfs @ 12.45 hrs HW=1,114.87' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=2.10 cfs @ 12.45 hrs HW=1,114.87' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 2.10 cfs @ 0.84 fps)

Pond IT4:


Hydrograph
Inflow Area=0.937 ac
Peak Elev=1,114.87'
Storage=9,127 cf
4.63 cfs
2.13 cfs
2.10 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4 5
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond P12:

Inflow Area = 1.930 ac, Inflow Depth = 5.37" for 100-YR STORM event
Inflow = 10.76 cfs @ 12.12 hrs, Volume= 0.863 af
Outflow = 10.55 cfs @ 12.14 hrs, Volume= 0.794 af, Atten= 2%, Lag= 1.2 min
Primary = 1.07 cfs @ 12.14 hrs, Volume= 0.416 af
Secondary = 9.48 cfs @ 12.14 hrs, Volume= 0.378 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,187.97' @ 12.14 hrs Surf.Area= 4,430 sf Storage= 5,532 cf

Plug-Flow detention time= 93.8 min calculated for 0.794 af (92% of inflow)
Center-of-Mass det. time= 52.9 min (847.6 - 794.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,185.00'	5,622 cf	**Custom Stage Data (Prismatic)** Listed below

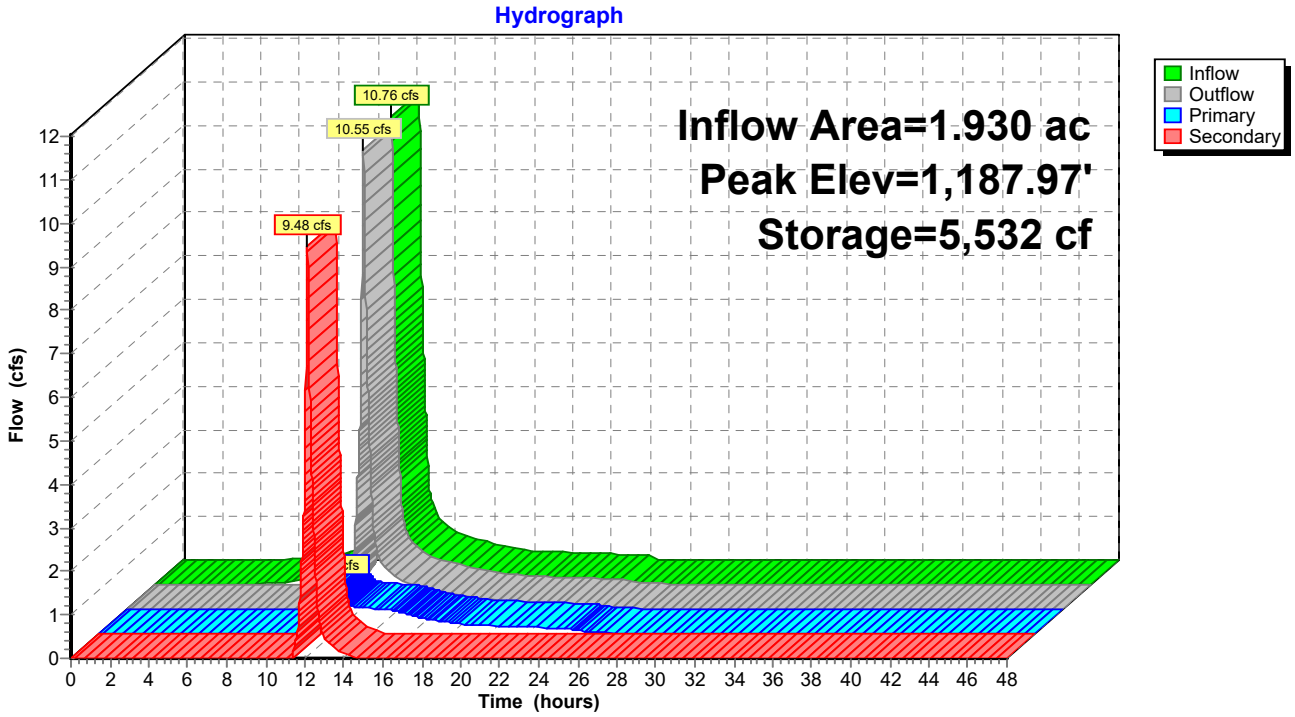
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,185.00	791	0	0
1,186.00	1,200	996	996
1,187.00	1,772	1,486	2,482
1,188.00	4,508	3,140	5,622

Device	Routing	Invert	Outlet Devices
#1	Primary	1,187.15'	**8.0" Round Culvert** L= 20.5' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,187.15' / 1,187.00' S= 0.0073 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#2	Secondary	1,187.65'	**20.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=1.07 cfs @ 12.14 hrs HW=1,187.97' (Free Discharge)
↑**1=Culvert** (Barrel Controls 1.07 cfs @ 3.18 fps)

Secondary OutFlow Max=9.47 cfs @ 12.14 hrs HW=1,187.97' (Free Discharge)
↑**2=Broad-Crested Rectangular Weir** (Weir Controls 9.47 cfs @ 1.47 fps)

Pond P12:


Hydrograph
Inflow Area=1.930 ac
Peak Elev=1,187.97'
Storage=5,532 cf
10.76 cfs
10.55 cfs
9.48 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond P13:

Inflow Area = 1.630 ac, Inflow Depth = 5.37" for 100-YR STORM event
Inflow = 9.58 cfs @ 12.10 hrs, Volume= 0.729 af
Outflow = 0.42 cfs @ 15.05 hrs, Volume= 0.665 af, Atten= 96%, Lag= 176.9 min
Primary = 0.42 cfs @ 15.05 hrs, Volume= 0.665 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,145.25' @ 15.05 hrs Surf.Area= 8,013 sf Storage= 20,829 cf

Plug-Flow detention time= 596.2 min calculated for 0.665 af (91% of inflow)
Center-of-Mass det. time= 552.3 min (1,345.5 - 793.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,141.00'	37,325 cf	**Custom Stage Data (Prismatic)** Listed below

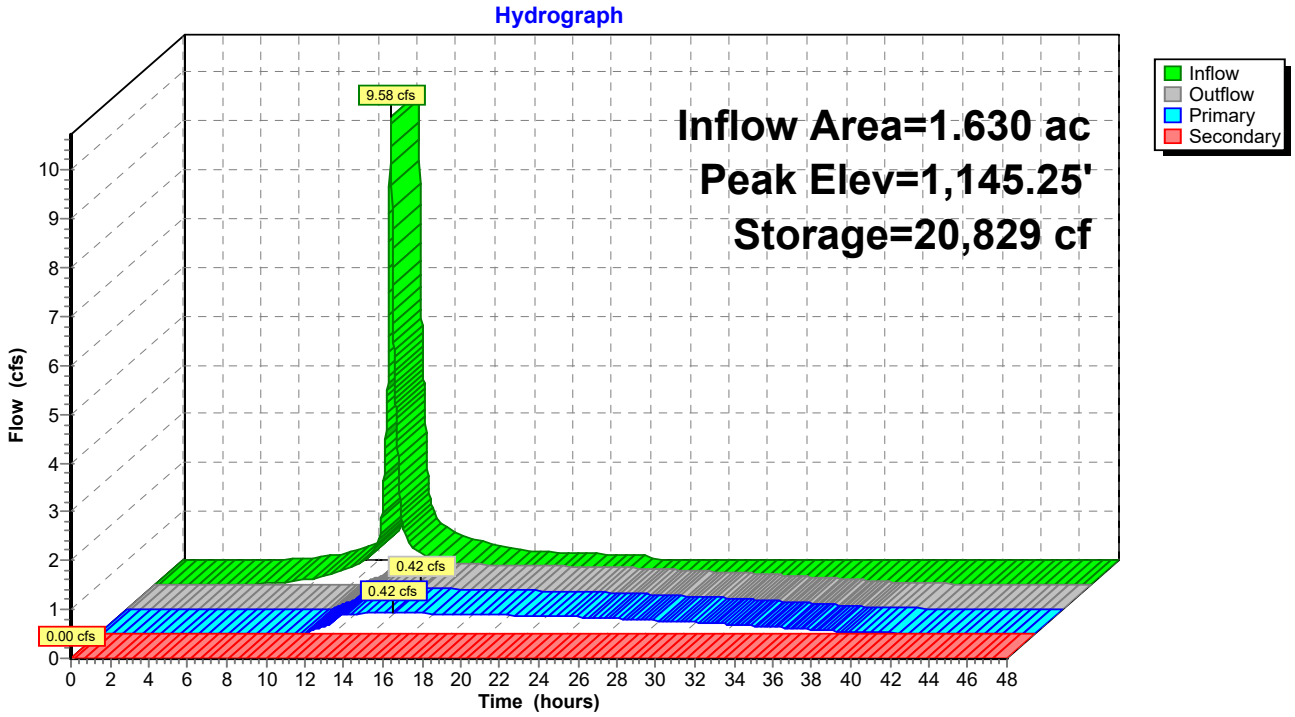
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,141.00	2,023	0	0
1,142.00	3,269	2,646	2,646
1,143.00	4,615	3,942	6,588
1,144.00	6,062	5,339	11,927
1,145.00	7,609	6,836	18,762
1,146.00	9,256	8,433	27,195
1,147.00	11,004	10,130	37,325

Device	Routing	Invert	Outlet Devices
#1	Primary	1,142.00'	**48.0" Round Culvert** L= 135.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,142.00' / 1,106.00' S= 0.2667 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Device 1	1,145.50'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Secondary	1,146.20'	**20.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	1,142.00'	**3.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.42 cfs @ 15.05 hrs HW=1,145.25' (Free Discharge)
└**1=Culvert** (Passes 0.42 cfs of 66.98 cfs potential flow)
  └**2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Orifice Controls 0.42 cfs @ 8.51 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,141.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P13:


Hydrograph
Inflow Area=1.630 ac
Peak Elev=1,145.25'
Storage=20,829 cf
9.58 cfs
0.42 cfs
0.42 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 1 2 3 4 5 6 7 8 9 10

Summary for Pond P3:

Inflow Area = 7.890 ac, Inflow Depth = 5.48" for 100-YR STORM event
Inflow = 43.82 cfs @ 12.13 hrs, Volume= 3.603 af
Outflow = 29.15 cfs @ 12.24 hrs, Volume= 3.325 af, Atten= 33%, Lag= 7.0 min
Primary = 24.93 cfs @ 12.24 hrs, Volume= 3.296 af
Secondary = 4.22 cfs @ 12.24 hrs, Volume= 0.030 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 1,134.62' @ 12.24 hrs Surf.Area= 8,038 sf Storage= 35,234 cf

Plug-Flow detention time= 82.6 min calculated for 3.325 af (92% of inflow)
Center-of-Mass det. time= 42.8 min (835.2 - 792.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,127.00'	38,268 cf	**Custom Stage Data (Prismatic)** Listed below

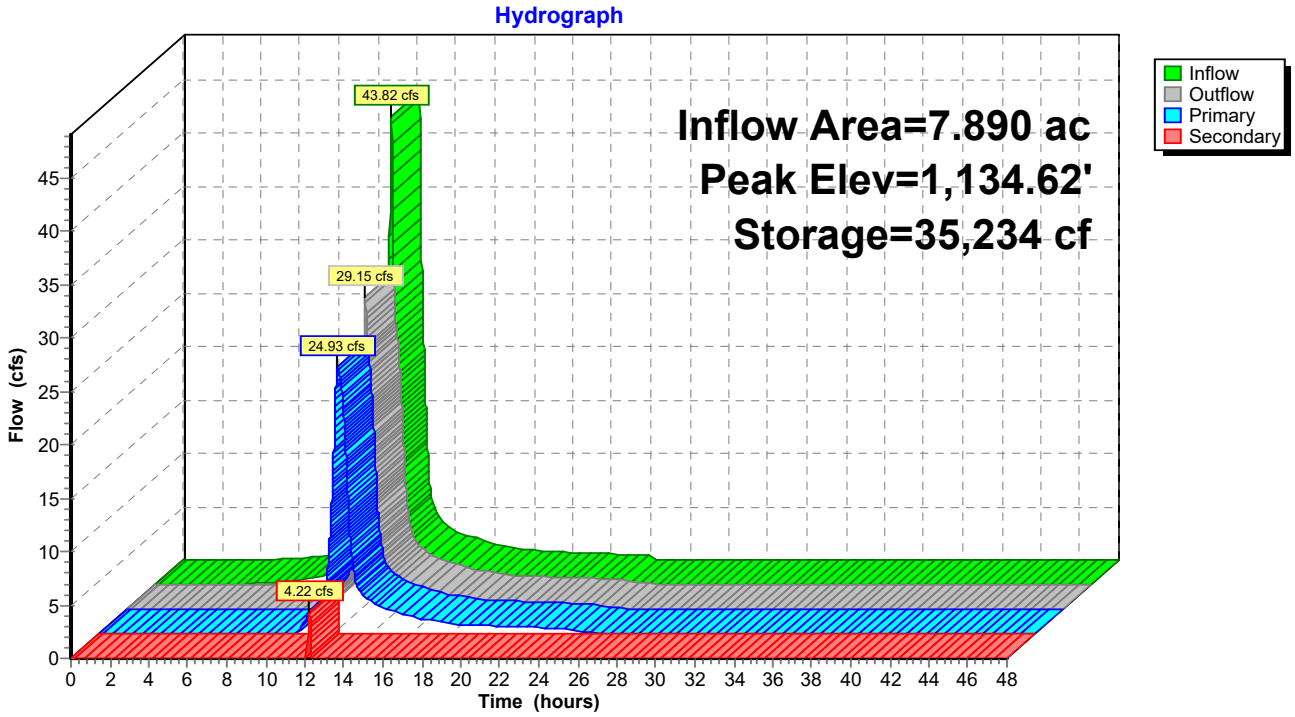
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,127.00	1,797	0	0
1,128.00	2,400	2,099	2,099
1,129.00	3,074	2,737	4,836
1,130.00	3,810	3,442	8,278
1,131.00	4,608	4,209	12,487
1,132.00	5,471	5,040	17,526
1,133.00	6,397	5,934	23,460
1,134.00	7,388	6,893	30,353
1,135.00	8,442	7,915	38,268

Device	Routing	Invert	Outlet Devices
#1	Primary	1,130.90'	**24.0" Round Culvert** L= 100.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,130.90' / 1,129.50' S= 0.0140 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	1,131.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Secondary	1,134.50'	**40.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	1,130.90'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=24.93 cfs @ 12.24 hrs HW=1,134.62' (Free Discharge)
└**1=Culvert** (Inlet Controls 24.93 cfs @ 7.94 fps)
└**2=Sharp-Crested Rectangular Weir** (Passes < 181.26 cfs potential flow)
└**4=Orifice/Grate** (Passes < 7.29 cfs potential flow)

Secondary OutFlow Max=4.08 cfs @ 12.24 hrs HW=1,134.62' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Weir Controls 4.08 cfs @ 0.88 fps)

Pond P3:


Hydrograph
Inflow Area=7.890 ac
Peak Elev=1,134.62'
Storage=35,234 cf
43.82 cfs
29.15 cfs
24.93 cfs
4.22 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 5 10 15 20 25 30 35 40 45

Summary for Pond P5:

Inflow Area = 1.680 ac, Inflow Depth = 5.37" for 100-YR STORM event
Inflow = 9.71 cfs @ 12.10 hrs, Volume= 0.751 af
Outflow = 9.37 cfs @ 12.13 hrs, Volume= 0.693 af, Atten= 4%, Lag= 1.4 min
Primary = 6.74 cfs @ 12.13 hrs, Volume= 0.663 af
Secondary = 2.63 cfs @ 12.13 hrs, Volume= 0.030 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,146.50' @ 12.13 hrs Surf.Area= 4,506 sf Storage= 8,287 cf

Plug-Flow detention time= 155.9 min calculated for 0.693 af (92% of inflow)
Center-of-Mass det. time= 115.9 min (909.6 - 793.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,144.00'	10,517 cf	**Custom Stage Data (Prismatic)** Listed below

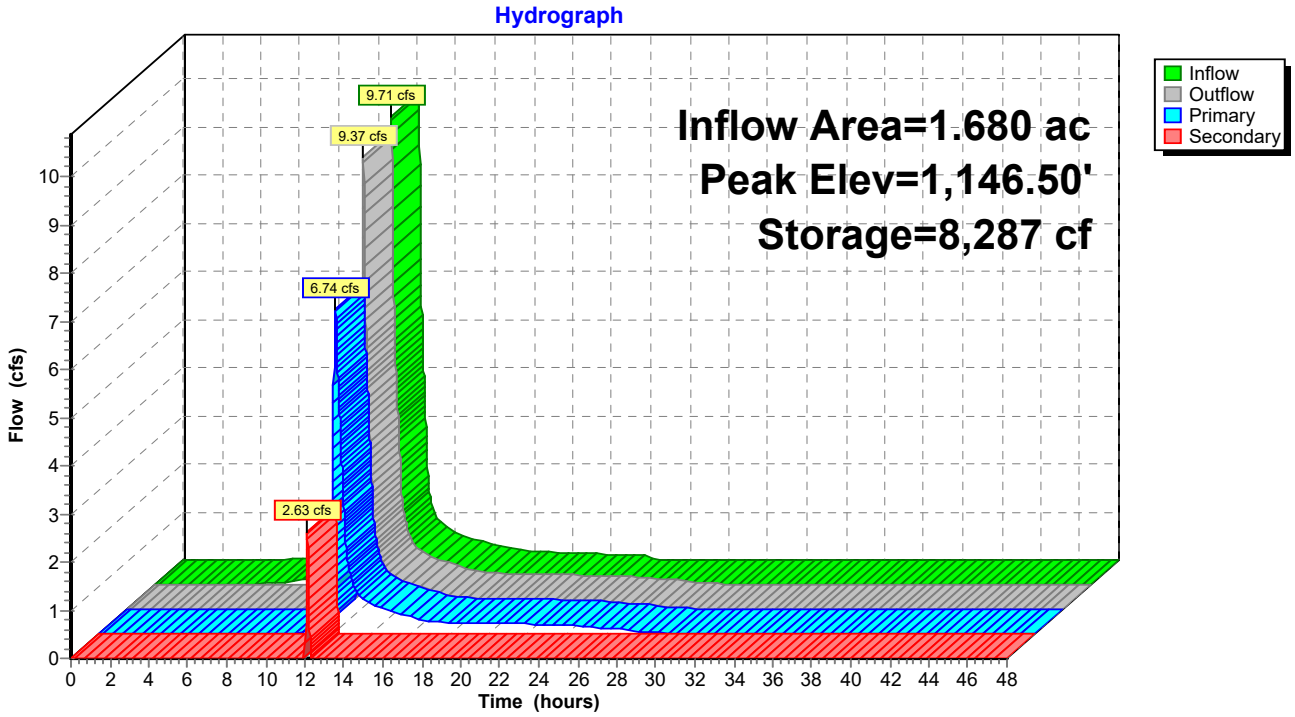
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,144.00	2,092	0	0
1,145.00	2,986	2,539	2,539
1,146.00	3,967	3,477	6,016
1,147.00	5,036	4,502	10,517

Device	Routing	Invert	Outlet Devices
#1	Primary	1,145.00'	**24.0" Round Culvert** L= 42.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,145.00' / 1,141.00' S= 0.0952 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	1,146.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Secondary	1,146.40'	**30.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	1,145.00'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.74 cfs @ 12.13 hrs HW=1,146.50' (Free Discharge)
└**1=Culvert** (Passes 6.74 cfs of 10.59 cfs potential flow)
  ├**2=Sharp-Crested Rectangular Weir** (Weir Controls 6.45 cfs @ 2.61 fps)
  └**4=Orifice/Grate** (Orifice Controls 0.29 cfs @ 5.91 fps)

Secondary OutFlow Max=2.60 cfs @ 12.13 hrs HW=1,146.50' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Weir Controls 2.60 cfs @ 0.83 fps)

Pond P5:


Hydrograph
Inflow Area=1.680 ac
Peak Elev=1,146.50'
Storage=8,287 cf
9.71 cfs
9.37 cfs
6.74 cfs
2.63 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 1 2 3 4 5 6 7 8 9 10

Summary for Pond P7:

Inflow Area = 4.100 ac, Inflow Depth = 4.92" for 100-YR STORM event
Inflow = 22.32 cfs @ 12.10 hrs, Volume= 1.680 af
Outflow = 10.94 cfs @ 12.28 hrs, Volume= 1.535 af, Atten= 51%, Lag= 10.6 min
Primary = 10.09 cfs @ 12.28 hrs, Volume= 1.526 af
Secondary = 0.85 cfs @ 12.28 hrs, Volume= 0.009 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,161.60' @ 12.28 hrs Surf.Area= 0 sf Storage= 31,223 cf

Plug-Flow detention time= 414.7 min calculated for 1.535 af (91% of inflow)
Center-of-Mass det. time= 371.6 min (1,175.8 - 804.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,157.00'	34,851 cf	**Custom Stage Data** Listed below

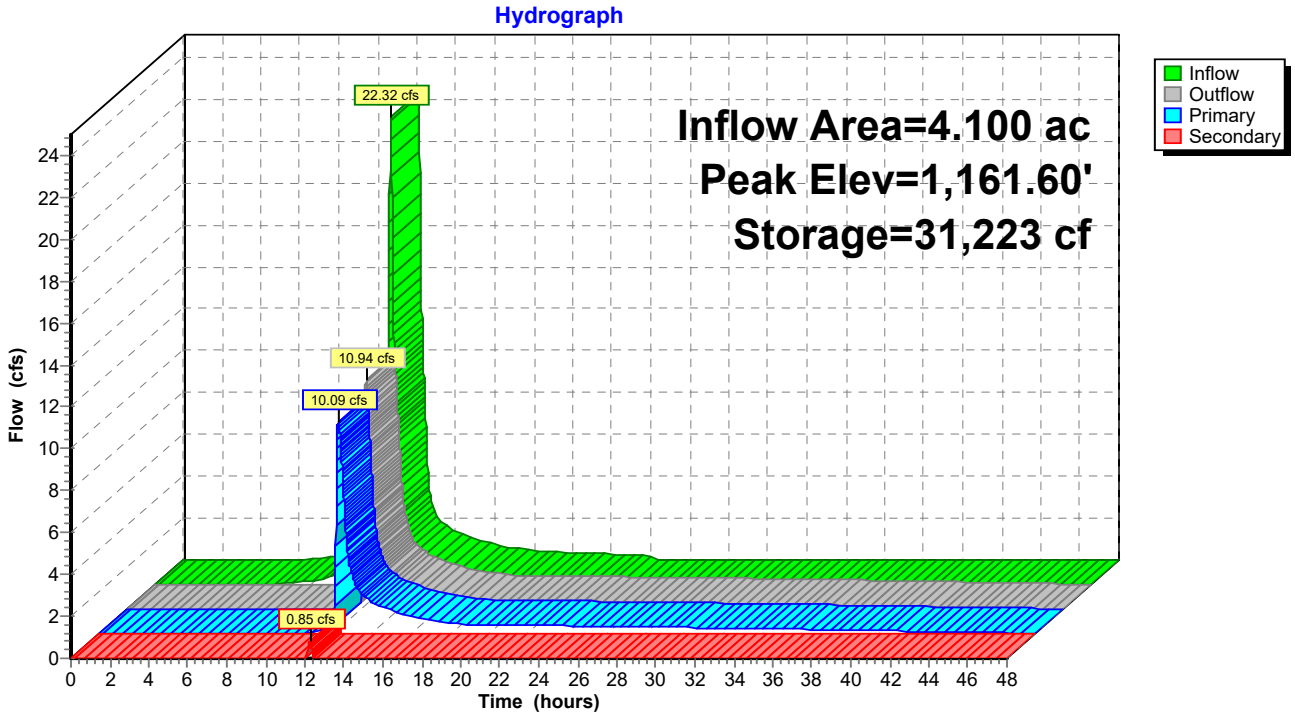
Elevation (feet)	Cum.Store (cubic-feet)
1,157.00	0
1,158.00	4,997
1,159.00	10,924
1,160.00	17,837
1,161.00	25,794
1,162.00	34,851

Device	Routing	Invert	Outlet Devices
#1	Primary	1,157.15'	**30.0" Round Culvert** L= 58.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,157.15' / 1,156.10' S= 0.0181 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	1,160.95'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Secondary	1,161.55'	**30.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	1,158.10'	**3.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=10.09 cfs @ 12.28 hrs HW=1,161.60' (Free Discharge)
└**1=Culvert** (Passes 10.09 cfs of 42.28 cfs potential flow)
  ├**2=Sharp-Crested Rectangular Weir** (Weir Controls 9.66 cfs @ 3.05 fps)
  └**4=Orifice/Grate** (Orifice Controls 0.43 cfs @ 8.84 fps)

Secondary OutFlow Max=0.84 cfs @ 12.28 hrs HW=1,161.60' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Weir Controls 0.84 cfs @ 0.57 fps)

Pond P7:


Hydrograph
Inflow Area=4.100 ac
Peak Elev=1,161.60'
Storage=31,223 cf
22.32 cfs
10.94 cfs
10.09 cfs
0.85 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Pond P8/10:

Inflow Area = 28.040 ac, Inflow Depth = 5.37" for 100-YR STORM event
Inflow = 134.32 cfs @ 12.18 hrs, Volume= 12.538 af
Outflow = 94.76 cfs @ 12.33 hrs, Volume= 11.366 af, Atten= 29%, Lag= 8.6 min
Primary = 85.98 cfs @ 12.33 hrs, Volume= 11.276 af
Secondary = 8.78 cfs @ 12.33 hrs, Volume= 0.090 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,128.42' @ 12.33 hrs Surf.Area= 0 sf Storage= 148,220 cf

Plug-Flow detention time= 130.1 min calculated for 11.364 af (91% of inflow)
Center-of-Mass det. time= 84.2 min (883.6 - 799.4)

Volume	Invert	Avail.Storage	Storage Description
#1	1,122.00'	166,405 cf	**Custom Stage Data** Listed below

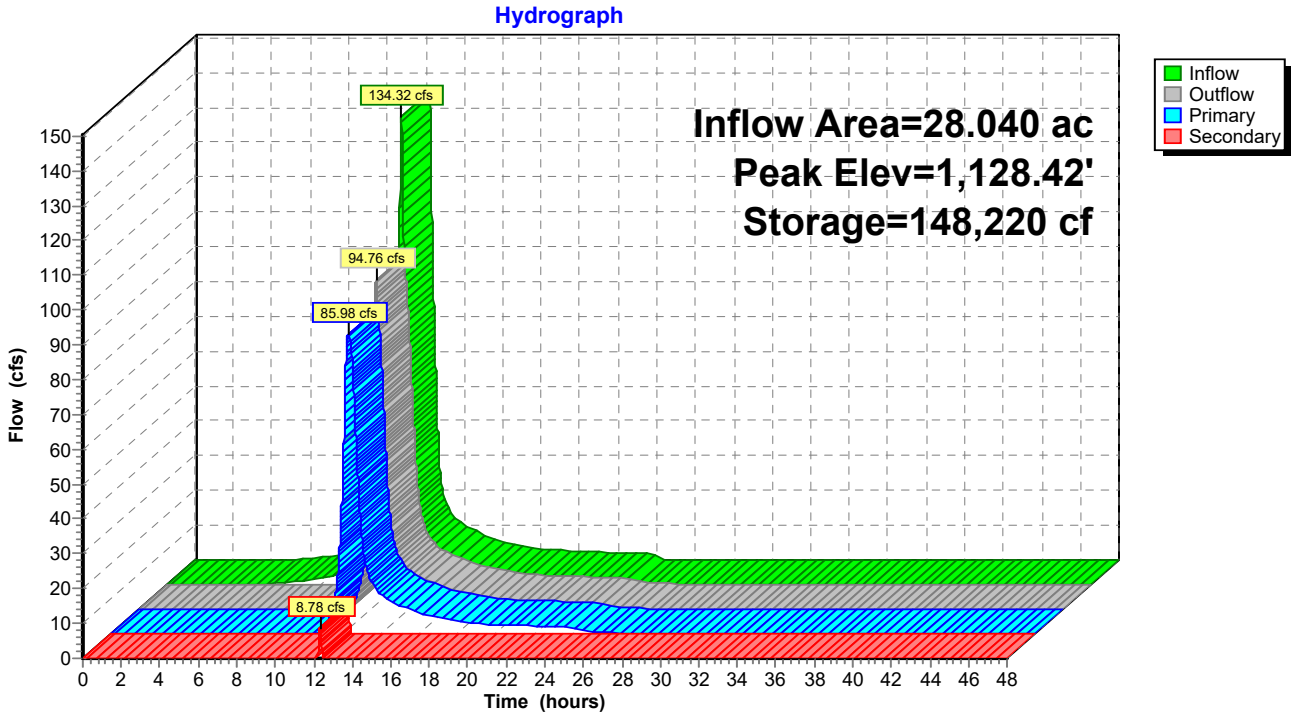
Elevation (feet)	Cum.Store (cubic-feet)
1,122.00	0
1,123.00	16,747
1,124.00	35,732
1,125.00	57,018
1,126.00	80,666
1,127.00	106,738
1,128.00	135,298
1,129.00	166,405

Device	Routing	Invert	Outlet Devices
#1	Primary	1,124.40'	**48.0" Round Culvert** L= 88.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,124.40' / 1,123.00' S= 0.0159 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Device 1	1,125.25'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Secondary	1,128.25'	**50.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	1,124.40'	**3.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=85.89 cfs @ 12.33 hrs HW=1,128.42' (Free Discharge)
└**1=Culvert** (Inlet Controls 85.89 cfs @ 6.84 fps)
  ├**2=Sharp-Crested Rectangular Weir** (Passes < 142.68 cfs potential flow)
  └**4=Orifice/Grate** (Passes < 0.47 cfs potential flow)

Secondary OutFlow Max=8.62 cfs @ 12.33 hrs HW=1,128.42' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Weir Controls 8.62 cfs @ 1.04 fps)

Pond P8/10:


Hydrograph
Inflow Area=28.040 ac
Peak Elev=1,128.42'
Storage=148,220 cf
134.32 cfs
94.76 cfs
85.98 cfs
8.78 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond P9:

Inflow Area = 6.810 ac, Inflow Depth = 5.48" for 100-YR STORM event
Inflow = 29.78 cfs @ 12.24 hrs, Volume= 3.110 af
Outflow = 26.58 cfs @ 12.33 hrs, Volume= 2.833 af, Atten= 11%, Lag= 5.2 min
Primary = 24.19 cfs @ 12.33 hrs, Volume= 2.797 af
Secondary = 2.39 cfs @ 12.33 hrs, Volume= 0.036 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,190.13' @ 12.33 hrs Surf.Area= 15,084 sf Storage= 34,696 cf

Plug-Flow detention time= 162.0 min calculated for 2.833 af (91% of inflow)
Center-of-Mass det. time= 117.3 min (917.9 - 800.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,187.00'	48,733 cf	**Custom Stage Data (Prismatic)** Listed below

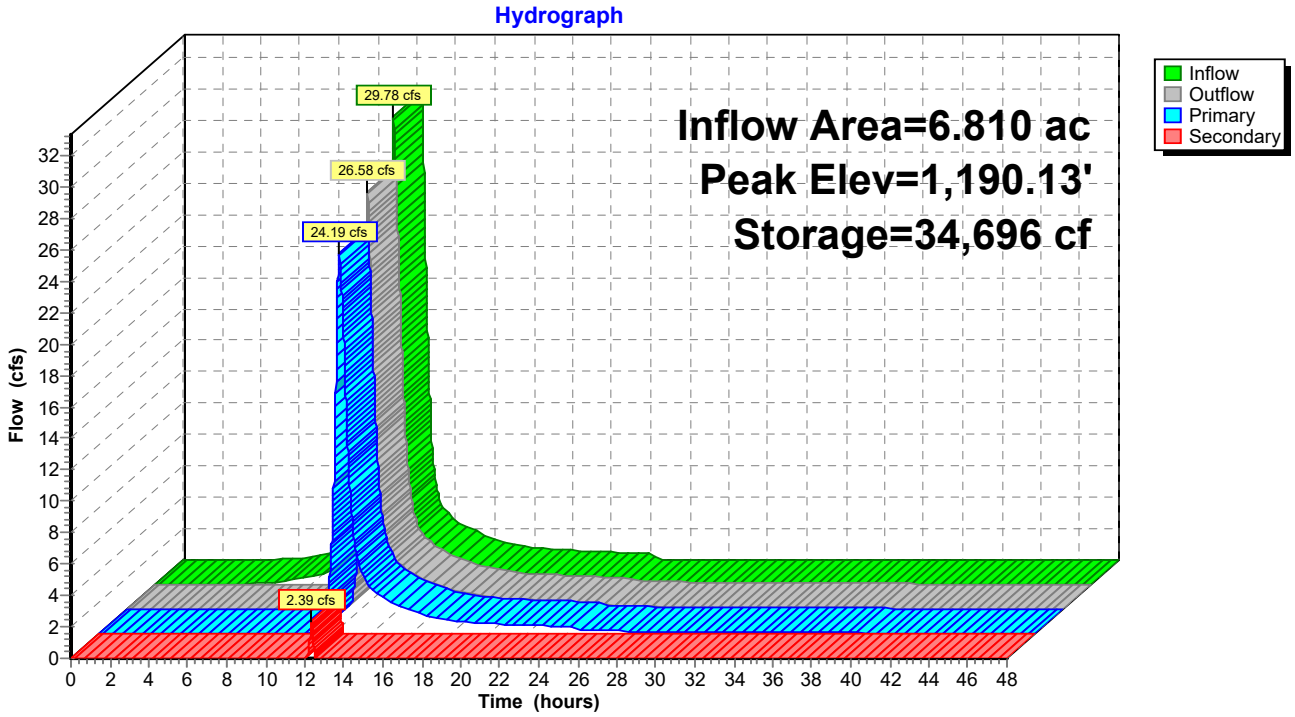
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,187.00	7,155	0	0
1,188.00	9,581	8,368	8,368
1,189.00	12,108	10,845	19,213
1,190.00	14,735	13,422	32,634
1,191.00	17,463	16,099	48,733

Device	Routing	Invert	Outlet Devices
#1	Primary	1,188.25'	**48.0" Round Culvert** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,188.25' / 1,187.25' S= 0.0167 '/' Cc= 0.900 n= 0.012, Flow Area= 12.57 sf
#2	Device 1	1,189.00'	**5.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s) 0.5' Crest Height
#3	Secondary	1,190.00'	**20.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#4	Device 1	1,188.25'	**3.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=24.18 cfs @ 12.33 hrs HW=1,190.13' (Free Discharge)
└**1=Culvert** (Passes 24.18 cfs of 27.04 cfs potential flow)
  ├**2=Sharp-Crested Rectangular Weir** (Weir Controls 23.87 cfs @ 4.43 fps)
  └**4=Orifice/Grate** (Orifice Controls 0.31 cfs @ 6.38 fps)

Secondary OutFlow Max=2.35 cfs @ 12.33 hrs HW=1,190.13' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Weir Controls 2.35 cfs @ 0.92 fps)

Pond P9:


Hydrograph
Inflow Area=6.810 ac
Peak Elev=1,190.13'
Storage=34,696 cf
29.78 cfs
26.58 cfs
24.19 cfs
2.39 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32

Summary for Pond WS11:

Inflow Area = 3.190 ac, Inflow Depth = 4.69" for 100-YR STORM event
Inflow = 11.45 cfs @ 12.29 hrs, Volume= 1.248 af
Outflow = 10.88 cfs @ 12.36 hrs, Volume= 0.986 af, Atten= 5%, Lag= 3.9 min
Primary = 10.88 cfs @ 12.36 hrs, Volume= 0.986 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 1,197.36' @ 12.36 hrs Surf.Area= 8,425 sf Storage= 14,559 cf

Plug-Flow detention time= 128.9 min calculated for 0.986 af (79% of inflow)
Center-of-Mass det. time= 50.6 min (872.8 - 822.3)

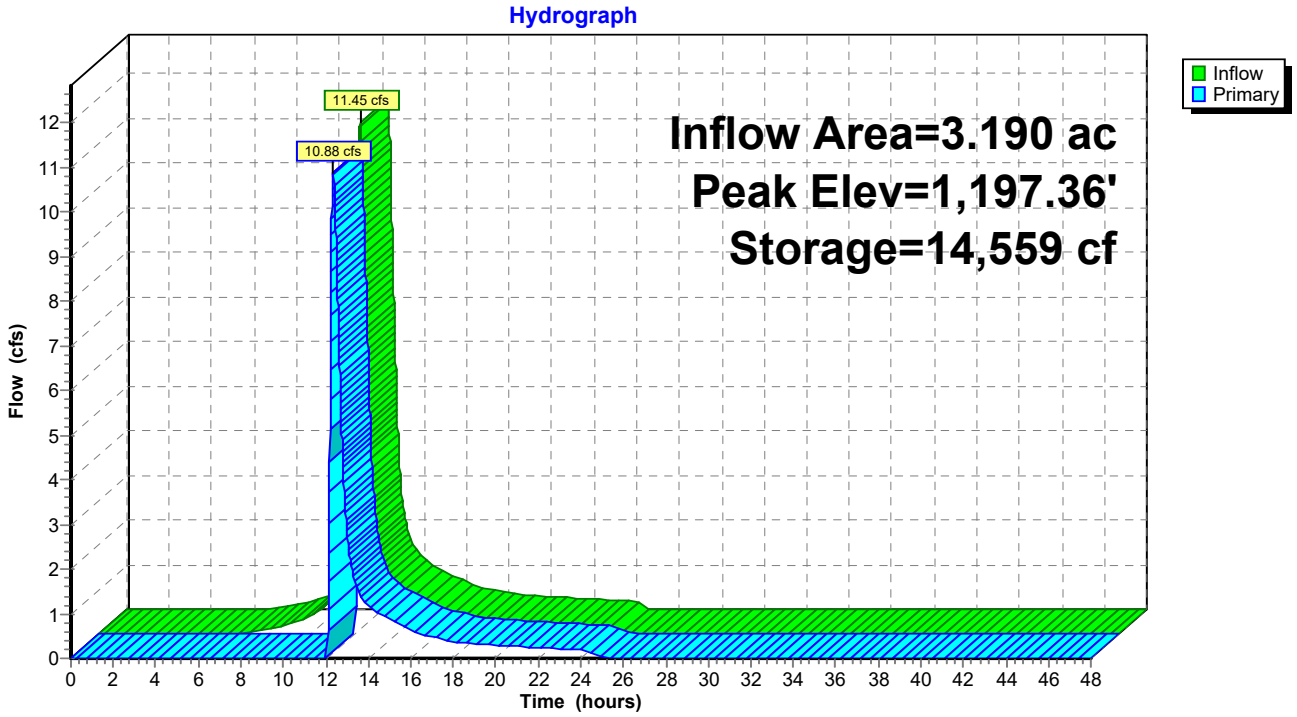
Volume	Invert	Avail.Storage	Storage Description
#1	1,194.00'	20,175 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,194.00	220	0	0
1,195.00	2,537	1,379	1,379
1,196.00	4,998	3,768	5,146
1,197.00	7,486	6,242	11,388
1,198.00	10,087	8,787	20,175

Device	Routing	Invert	Outlet Devices
#1	Primary	1,197.00'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Device 1	1,195.80'	**90.0 deg x 4.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.50 (C= 3.13)

Primary OutFlow Max=10.87 cfs @ 12.36 hrs HW=1,197.36' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 10.87 cfs @ 1.51 fps)
↑—**2=Sharp-Crested Vee/Trap Weir** (Passes 10.87 cfs of 24.14 cfs potential flow)

Pond WS11:


Hydrograph
Inflow Area=3.190 ac
Peak Elev=1,197.36'
Storage=14,559 cf
11.45 cfs
10.88 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond WS14:

[95] Warning: Outlet Device #1 rise exceeded

Inflow Area = 4.600 ac, Inflow Depth = 5.25" for 100-YR STORM event
Inflow = 21.16 cfs @ 12.19 hrs, Volume= 2.013 af
Outflow = 18.83 cfs @ 12.27 hrs, Volume= 1.751 af, Atten= 11%, Lag= 4.5 min
Primary = 18.83 cfs @ 12.27 hrs, Volume= 1.751 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 1,150.65' @ 12.27 hrs Surf.Area= 7,295 sf Storage= 15,997 cf

Plug-Flow detention time= 96.5 min calculated for 1.751 af (87% of inflow)
Center-of-Mass det. time= 38.1 min (841.2 - 803.1)

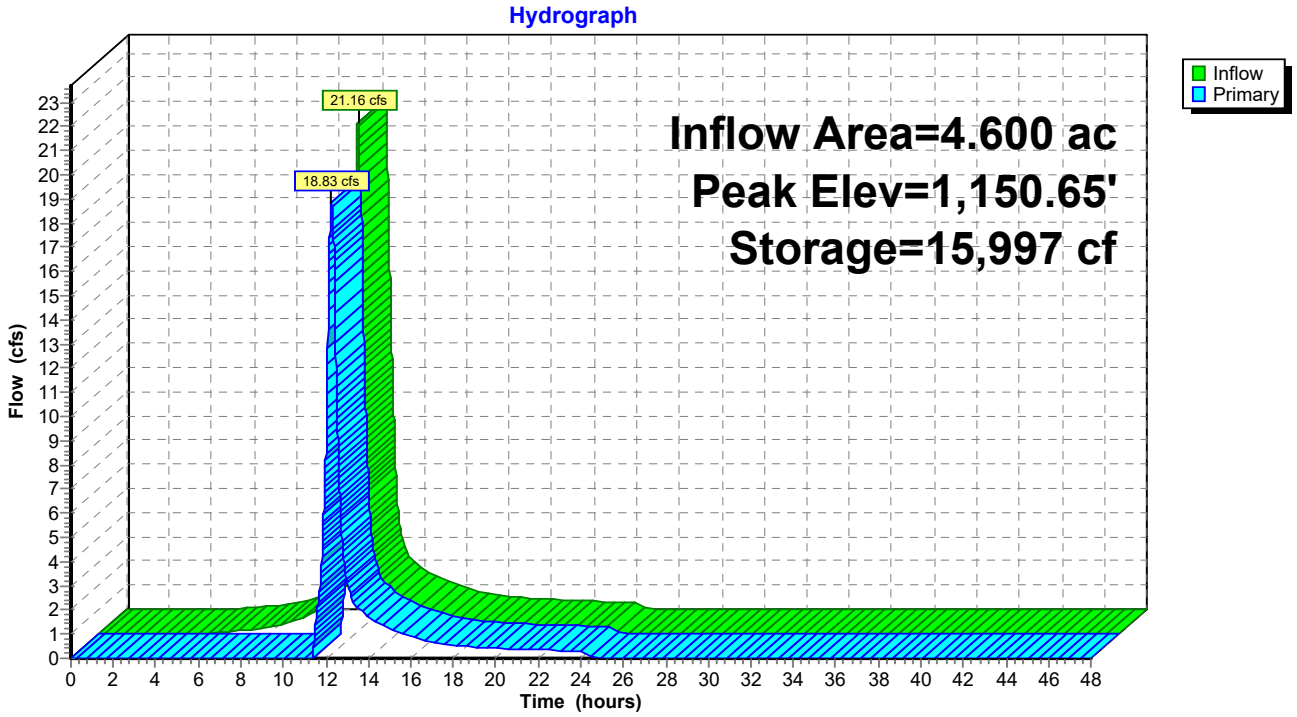
Volume	Invert	Avail.Storage	Storage Description
#1	1,147.00'	18,496 cf	**Custom Stage Data (Prismatic)** Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,147.00	724	0	0
1,148.00	3,306	2,015	2,015
1,149.00	4,678	3,992	6,007
1,150.00	6,202	5,440	11,447
1,151.00	7,895	7,049	18,496

Device	Routing	Invert	Outlet Devices
#1	Device 2	1,148.80'	**90.0 deg x 4.0' long x 1.00' rise Sharp-Crested Vee/Trap Weir** Cv= 2.50 (C= 3.13)
#2	Primary	1,150.00'	**20.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=18.83 cfs @ 12.27 hrs HW=1,150.65' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Passes 18.83 cfs of 27.87 cfs potential flow)
↑—**1=Sharp-Crested Vee/Trap Weir** (Orifice Controls 18.83 cfs @ 3.77 fps)

Pond WS14:


Hydrograph
Inflow
Primary
21.16 cfs
18.83 cfs
Inflow Area=4.600 ac
Peak Elev=1,150.65'
Storage=15,997 cf
Flow (cfs)
Time (hours)

Appendix D

Curve Number

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Pre-development
DATE: 4/16/2021
PREPARED BY: JRP

Drainage Area: 8/10 — **Total Drainage Area:** 28.04 Ac

Cover Description	Hydrologic Soil Group A		B		C		D		Hydrologic Soil Group A.5		B.5		C.5		D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98		98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61	0.76	74	0.74	80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55	4.6	70	0.20	77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74	0.02	83	20.36	88	1.36	90		78.5		85.5		89		90
Total HSG Areas:			**0.02**		**25.72**		**2.30**									

Calculated Total Drainage Area: 28.04 Ac
Calculated Composite Curve Number: 85

Composite SCS Curve Number

PROJECT: Solar - Litchfield **DATE:** 4/16/2021

SCENARIO: Post-development **PREPARED BY:** JRP

Drainage Area: 8/10 **Total Drainage Area:** 28.04 Ac

Cover Description	Hydrologic Soil Group A Area (Ac)	A CN	B Area (Ac)	B CN	C Area (Ac)	C CN	D Area (Ac)	D CN	Hydrologic Soil Group A.5 Area (Ac)	A.5 CN	B.5 Area (Ac)	B.5 CN	C.5 Area (Ac)	C.5 CN	D Area (Ac)	D CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50	0.01	67.5	14.58	77	1.47	80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98	0.01	98	10.53	98	0.83	98
Paved streets and roads; curbs and storm sewers (excluding right-of-way)		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65	0.61	75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:											**0.02**		**25.72**		**2.30**	

Calculated Total Drainage Area: **28.04 Ac**

Calculated Composite Curve Number: **86**

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Pre-development
DATE: 4/27/2021
PREPARED BY: YA

Drainage Area: 14 — **Total Drainage Area:** 4.60 Ac

Cover Description	Hydrologic Soil Group A Area (Ac)	A CN	B Area (Ac)	B CN	C Area (Ac)	C CN	D Area (Ac)	D CN	Hydrologic Soil Group A.5 Area (Ac)	A.5 CN	B.5 Area (Ac)	B.5 CN	C.5 Area (Ac)	C.5 CN	D Area (Ac)	D CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98		98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61	0.73	74		80		50		67.5	0.73	77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55	0.988	70	2.60	77		42.5		62.5	0.988	73.5	2.60	77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83	0.28	88		90		78.5		85.5	0.28	89		90
Total HSG Areas:					2.00		2.60						2.00		2.60	

Calculated Total Drainage Area: 4.60 Ac
Calculated Composite Curve Number: 76

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Post-development
DATE: 4/27/2021
PREPARED BY: YA

Drainage Area: 14 **Total Drainage Area:** 4.60 Ac

Cover Description	Hydrologic Soil Group A Area (Ac)	A CN	B Area (Ac)	B CN	C Area (Ac)	C CN	D Area (Ac)	D CN	Hydrologic Soil Group A.5 Area (Ac)	A.5 CN	B.5 Area (Ac)	B.5 CN	C.5 Area (Ac)	C.5 CN	D Area (Ac)	D CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5	0.402	77	1.75	80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98	0.478	98	0.83	98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5	0.647	77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5	0.237	73.5	0.03	77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5	0.224	89		90
Total HSG Areas:													**1.99**		**2.61**	

Calculated Total Drainage Area: 4.60 Ac
Calculated Composite Curve Number: 85

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Pre-development
DATE: 4/27/2021
PREPARED BY: YA

Drainage Area: 4 — **Total Drainage Area:** 0.94 Ac

Cover Description	Hydrologic Soil Group A Area (Ac)	A CN	B Area (Ac)	B CN	C Area (Ac)	C CN	D Area (Ac)	D CN	Hydrologic Soil Group A.5 Area (Ac)	A.5 CN	B.5 Area (Ac)	B.5 CN	C.5 Area (Ac)	C.5 CN	D Area (Ac)	D CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98		98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74	0.92	80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70	0.02	77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:							**0.94**									

Calculated Total Drainage Area: 0.94 Ac
Calculated Composite Curve Number: 80

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Post-development
DATE: 4/27/2021
PREPARED BY: YA

Drainage Area: 4 — **Total Drainage Area:** 0.94 Ac

Cover Description	Hydrologic Soil Group A Area (Ac)	A CN	B Area (Ac)	B CN	C Area (Ac)	C CN	D Area (Ac)	D CN	Hydrologic Soil Group A.5 Area (Ac)	A.5 CN	B.5 Area (Ac)	B.5 CN	C.5 Area (Ac)	C.5 CN	D Area (Ac)	D CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77	0.63	80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98		98	0.30	98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:															**0.94**	

Calculated Total Drainage Area: 0.94 Ac
Calculated Composite Curve Number: 86

Composite SCS Curve Number

PROJECT: Solar - Litchfield **DATE:** 4/27/2021

SCENARIO: Pre-development **PREPARED BY:** YA

Drainage Area: 1 **Total Drainage Area:** 1.28 Ac

Cover Description	Hydrologic Soil Group A Area (Ac)	A CN	B Area (Ac)	B CN	C Area (Ac)	C CN	D Area (Ac)	D CN	Hydrologic Soil Group A.5 Area (Ac)	A.5 CN	B.5 Area (Ac)	B.5 CN	C.5 Area (Ac)	C.5 CN	D Area (Ac)	D CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98		98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61	1.07	74	0.213	80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:					**1.07**		**0.21**									

Calculated Total Drainage Area: 1.28 Ac

Calculated Composite Curve Number: 75

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Post-development
DATE: 4/27/2021
PREPARED BY: YA

Drainage Area: 1 — **Total Drainage Area:** 1.28 Ac

Cover Description	Hydrologic Soil Group A		B		C		D		A.5		B.5		C.5		D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5	0.65	77	0.17	80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98	0.42	98	0.04	98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:													**1.07**		**0.21**	

Calculated Total Drainage Area: 1.28 Ac
Calculated Composite Curve Number: 85

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Pre-development
DATE: 4/27/2021
PREPARED BY: YA

Drainage Area: 7 — **Total Drainage Area:** 4.10 Ac

Cover Description	Hydrologic Soil Group A		B		C		D		A.5		B.5		C.5		D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98		98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30	2.36	55	0.81	70	0.93	77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:			**2.36**		**0.81**		**0.93**									

Calculated Total Drainage Area: 4.10 Ac
Calculated Composite Curve Number: 63

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Post-development
DATE: 4/27/2021
PREPARED BY: YA

Drainage Area: 7 — **Total Drainage Area:** 4.10 Ac

Cover Description	Hydrologic Soil Group A		B		C		D		A.5		B.5		C.5		D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50	1.48	67.5	0.39	77	0.71	80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98	0.867	98	0.400	98	0.247	98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:											**2.35**		**0.79**		**0.95**	

Calculated Total Drainage Area: 4.10 Ac
Calculated Composite Curve Number: 82

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Pre-development
DATE: 4/27/2021
PREPARED BY: YA

Drainage Area: 3 — **Total Drainage Area:** 7.89 Ac

Cover Description	Hydrologic Soil Group A		B		C		D		A.5		B.5		C.5		D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98		98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61	7.89	74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:					7.89											

Calculated Total Drainage Area: 7.89 Ac
Calculated Composite Curve Number: 74

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Post-development
DATE: 4/27/2021
PREPARED BY: YA

Drainage Area: 3 — **Total Drainage Area:** 7.89 Ac

Cover Description	Hydrologic Soil Group A		B		C		D		A.5		B.5		C.5		D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5	4.680	77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98	3.210	98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:													**7.89**			

Calculated Total Drainage Area: 7.89 Ac
Calculated Composite Curve Number: 86

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Pre-development
DATE: 4/27/2021
PREPARED BY: YA

Drainage Area: 9 **Total Drainage Area:** 6.81 Ac

Cover Description	Hydrologic Soil Group A Area (Ac)	A CN	B Area (Ac)	B CN	C Area (Ac)	C CN	D Area (Ac)	D CN	Hydrologic Soil Group A.5 Area (Ac)	A.5 CN	B.5 Area (Ac)	B.5 CN	C.5 Area (Ac)	C.5 CN	D Area (Ac)	D CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98		98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61	2.89	74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83	3.633	88	0.288	90		78.5		85.5		89		90
Total HSG Areas:					**6.52**		**0.29**									

Calculated Total Drainage Area: 6.81 Ac
Calculated Composite Curve Number: 83

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Post-development
DATE: 4/27/2021
PREPARED BY: YA

Drainage Area: 9 — **Total Drainage Area:** 6.81 Ac

Cover Description	Hydrologic Soil Group A Area (Ac)	A CN	B Area (Ac)	B CN	C Area (Ac)	C CN	D Area (Ac)	D CN	A.5 Area (Ac)	A.5 CN	B.5 Area (Ac)	B.5 CN	C.5 Area (Ac)	C.5 CN	D Area (Ac)	D CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5	3.610	77	0.20	80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98	2.910	98	0.095	98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:													**6.52**		**0.29**	

Calculated Total Drainage Area: 6.81 Ac
Calculated Composite Curve Number: 87

Composite SCS Curve Number

PROJECT: Solar - Litchfield **DATE:** 4/27/2021

SCENARIO: Pre-development **PREPARED BY:** YA

Drainage Area: 2a **Total Drainage Area:** 3.85 Ac

Cover Description	Hydrologic Soil Group A Area (Ac)	A CN	B Area (Ac)	B CN	C Area (Ac)	C CN	D Area (Ac)	D CN	Hydrologic Soil Group A.5 Area (Ac)	A.5 CN	B.5 Area (Ac)	B.5 CN	C.5 Area (Ac)	C.5 CN	D Area (Ac)	D CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98		98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30	0.33	55	0.17	70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74	3.35	83		88		90		78.5		85.5		89		90
Total HSG Areas:			**3.68**		**0.17**											

Calculated Total Drainage Area: 3.85 Ac

Calculated Composite Curve Number: 81

Composite SCS Curve Number

PROJECT: Solar - Litchfield **DATE:** 4/27/2021

SCENARIO: Post-development **PREPARED BY:** YA

Drainage Area: 2a **Total Drainage Area:** 3.85 Ac

Cover Description	Hydrologic Soil Group A		Hydrologic Soil Group B		Hydrologic Soil Group C		Hydrologic Soil Group D		Hydrologic Soil Group A.5		Hydrologic Soil Group B.5		Hydrologic Soil Group C.5		Hydrologic Soil Group D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50	0.559	67.5	2.140	77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98	0.229	98	0.751	98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5	0.17	89		90
Total HSG Areas:											**0.79**		**3.06**			

Calculated Total Drainage Area: **3.85 Ac**

Calculated Composite Curve Number: **82**

Composite SCS Curve Number

PROJECT: Solar - Litchfield **DATE:** 4/27/2021

SCENARIO: Pre-development **PREPARED BY:** YA

Drainage Area: 2b **Total Drainage Area:** 4.02 Ac

Cover Description	Hydrologic Soil Group A Area (Ac)	A CN	B Area (Ac)	B CN	C Area (Ac)	C CN	D Area (Ac)	D CN	Hydrologic Soil Group A.5 Area (Ac)	A.5 CN	B.5 Area (Ac)	B.5 CN	C.5 Area (Ac)	C.5 CN	D Area (Ac)	D CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98		98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39	3.15	61		74	0.388	80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30	0.486	55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:			**3.64**				**0.39**									

Calculated Total Drainage Area: 4.02 Ac

Calculated Composite Curve Number: 63

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Post-development
DATE: 4/27/2021
PREPARED BY: YA

Drainage Area: 2b — **Total Drainage Area:** 4.02 Ac

Cover Description	Hydrologic Soil Group A		B		C		D		A.5		B.5		C.5		D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50	2.120	67.5		77	0.320	80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98	1.500	98		98	0.082	98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:											**3.62**				**0.40**	

Calculated Total Drainage Area: 4.02 Ac
Calculated Composite Curve Number: 81

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Pre-development
DATE: 4/27/2021
PREPARED BY: YA

Drainage Area: 11 — **Total Drainage Area:** 3.19 Ac

Cover Description	Hydrologic Soil Group A Area (Ac)	A CN	B Area (Ac)	B CN	C Area (Ac)	C CN	D Area (Ac)	D CN	A.5 Area (Ac)	A.5 CN	B.5 Area (Ac)	B.5 CN	C.5 Area (Ac)	C.5 CN	D Area (Ac)	D CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98		98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30	2.45	55	0.57	70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83	0.17	88		90		78.5		85.5		89		90
Total HSG Areas:			2.45		0.74											

Calculated Total Drainage Area: 3.19 Ac
Calculated Composite Curve Number: 60

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Post-development
DATE: 4/27/2021
PREPARED BY: YA

Drainage Area: 11 — **Total Drainage Area:** 3.19 Ac

Cover Description	Hydrologic Soil Group A		B		C		D		A.5		B.5		C.5		D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50	1.420	67.5	0.302	77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98	0.834	98	0.292	98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5	0.201	62.5	0.144	73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:											**2.46**		**0.74**			

Calculated Total Drainage Area: 3.19 Ac
Calculated Composite Curve Number: 80

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Pre-development
DATE: 4/27/2021
PREPARED BY: YA

Drainage Area: 12 — **Total Drainage Area:** 1.93 Ac

Cover Description	Hydrologic Soil Group A Area (Ac)	A CN	B Area (Ac)	B CN	C Area (Ac)	C CN	D Area (Ac)	D CN	A.5 Area (Ac)	A.5 CN	B.5 Area (Ac)	B.5 CN	C.5 Area (Ac)	C.5 CN	D Area (Ac)	D CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98		98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55	0.4	70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83	1.53	88		90		78.5		85.5		89		90
Total HSG Areas:					**1.93**											

Calculated Total Drainage Area: 1.93 Ac
Calculated Composite Curve Number: 85

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Post-development
DATE: 4/27/2021
PREPARED BY: YA

Drainage Area: 12 — **Total Drainage Area:** 1.93 Ac

Cover Description	Hydrologic Soil Group A Area (Ac)	A CN	B Area (Ac)	B CN	C Area (Ac)	C CN	D Area (Ac)	D CN	Hydrologic Soil Group A.5 Area (Ac)	A.5 CN	B.5 Area (Ac)	B.5 CN	C.5 Area (Ac)	C.5 CN	D Area (Ac)	D CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5	1.160	77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98	0.766	98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:													**1.93**			

Calculated Total Drainage Area: 1.93 Ac
Calculated Composite Curve Number: 86

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Pre-development
DATE: 4/27/2021
PREPARED BY: YA

Drainage Area: 13 — **Total Drainage Area:** 1.63 Ac

Cover Description	Hydrologic Soil Group A Area (Ac)	A CN	B Area (Ac)	B CN	C Area (Ac)	C CN	D Area (Ac)	D CN	Hydrologic Soil Group A.5 Area (Ac)	A.5 CN	B.5 Area (Ac)	B.5 CN	C.5 Area (Ac)	C.5 CN	D Area (Ac)	D CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98		98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition	0.49	30	0.504	55	0.57	70	0.06	77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:	**0.49**		**0.50**		**0.57**		**0.06**									

Calculated Total Drainage Area: 1.63 Ac
Calculated Composite Curve Number: 54

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Post-development
DATE: 4/27/2021
PREPARED BY: YA

Drainage Area: 13 — **Total Drainage Area:** 1.63 Ac

Cover Description	Hydrologic Soil Group A		B		C		D		A.5		B.5		C.5		D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50	0.018	67.5	0.929	77	0.030	80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98	0.075	98	0.560	98	0.020	98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:											**0.09**		**1.49**		**0.05**	

Calculated Total Drainage Area: 1.63 Ac
Calculated Composite Curve Number: 86

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Pre-development
DATE: 4/27/2021
PREPARED BY: YA

Drainage Area: 5 — **Total Drainage Area:** 1.68 Ac

Cover Description	Hydrologic Soil Group A Area (Ac)	A CN	B Area (Ac)	B CN	C Area (Ac)	C CN	D Area (Ac)	D CN	Hydrologic Soil Group A.5 Area (Ac)	A.5 CN	B.5 Area (Ac)	B.5 CN	C.5 Area (Ac)	C.5 CN	D Area (Ac)	D CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98		98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83	1.68	88		90		78.5		85.5		89		90
Total HSG Areas:					**1.68**											

Calculated Total Drainage Area: 1.68 Ac
Calculated Composite Curve Number: 88

Composite SCS Curve Number

PROJECT: Solar - Litchfield **DATE:** 4/27/2021

SCENARIO: Post-development **PREPARED BY:** YA

Drainage Area: 5 **Total Drainage Area:** 1.68 Ac

Cover Description	Hydrologic Soil Group A		Hydrologic Soil Group B		Hydrologic Soil Group C		Hydrologic Soil Group D		Hydrologic Soil Group A.5		Hydrologic Soil Group B.5		Hydrologic Soil Group C.5		Hydrologic Soil Group D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5	1.000	77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98	0.676	98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5		77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:													1.68			

Calculated Total Drainage Area: 1.68 Ac

Calculated Composite Curve Number: 86

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Pre-development
DATE: 4/27/2021
PREPARED BY: YA

Drainage Area: 15 — **Total Drainage Area:** 1.93 Ac

Cover Description	Hydrologic Soil Group A		A		B		C		D		A.5		B.5		C.5		D	
	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN	Area (Ac)	CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																		
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89		
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84		
Good condition (grass cover > 75%)		39		61		74		80		50		67.5		77		80		
Impervious areas:																		
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98		98		98		
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98		
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93		
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91		
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89		
Woods-grass combonation (orchard or tree farm)																		
Fair hydrologic condition		43		65		76		82		54		70.5		79		82		
Good hydrologic condition		32		58		72		79		45		65		75.5		79		
Urban districts:																		
Commercial and business		89		92		94		95		90.5		93		94.5		95		
Industrial		81		88		91		93		84.5		89.5		92		93		
Residential districts by average lot size:																		
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92		
1/4 acre		61		75		83		87		68		79		85		87		
1/3 acre		57		72		81		86		64.5		76.5		83.5		86		
1/2 acre		54		70		80		85		62		75		82.5		85		
1 acre		51		68		79		84		59.5		73.5		81.5		84		
2 acres		46		65		77		82		55.5		71		79.5		82		
Pasture, grassland or range:																		
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89		
Fair hydrologic condition		49		69		79		84		59		74		81.5		84		
Good hydrologic condition		39		61	1.93	74		80		50		67.5		77		80		
Woods:																		
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83		
Fair hydrologic condition		36		60		73		79		48		66.5		76		79		
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77		
Developing urban areas:																		
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94		
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84		
Cultivated Agricultural Areas:																		
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90		
Total HSG Areas:					1.93													

Calculated Total Drainage Area: 1.93 Ac
Calculated Composite Curve Number: 74

Composite SCS Curve Number

PROJECT: Solar - Litchfield
SCENARIO: Post-development
DATE: 4/27/2021
PREPARED BY: YA

Drainage Area: 15 — **Total Drainage Area:** 1.93 Ac

Cover Description	Hydrologic Soil Group A Area (Ac)	A CN	B Area (Ac)	B CN	C Area (Ac)	C CN	D Area (Ac)	D CN	Hydrologic Soil Group A.5 Area (Ac)	A.5 CN	B.5 Area (Ac)	B.5 CN	C.5 Area (Ac)	C.5 CN	D Area (Ac)	D CN
Open space (lawns, parks, golf courses, cemeteries, etc.):																
Poor condition (grass cover < 50%)		68		79		86		89		73.5		82.5		87.5		89
Fair condition (grass cover 50% to 75%)		49		69		79		84		59		74		81.5		84
Good condition (grass cover > 75%)		39		61		74		80		50		67.5	0.909	77		80
Impervious areas:																
Paved parking lots, roofs, driveways, etc. (excluding R/W)		98		98		98		98		98		98	0.557	98		98
Paved streets and roads; curbs and storm sewers (excluding		98		98		98		98		98		98		98		98
Paved streets and roads; open ditches (including R/W)		83		89		92		93		86		90.5		92.5		93
Gravel streets and roads (including R/W)		76		85		89		91		80.5		87		90		91
Dirt streets and roads (including R/W)		72		82		87		89		77		84.5		88		89
Woods-grass combonation (orchard or tree farm)																
Fair hydrologic condition		43		65		76		82		54		70.5		79		82
Good hydrologic condition		32		58		72		79		45		65		75.5		79
Urban districts:																
Commercial and business		89		92		94		95		90.5		93		94.5		95
Industrial		81		88		91		93		84.5		89.5		92		93
Residential districts by average lot size:																
1/8 acre or less (town houses)		77		85		90		92		81		87.5		91		92
1/4 acre		61		75		83		87		68		79		85		87
1/3 acre		57		72		81		86		64.5		76.5		83.5		86
1/2 acre		54		70		80		85		62		75		82.5		85
1 acre		51		68		79		84		59.5		73.5		81.5		84
2 acres		46		65		77		82		55.5		71		79.5		82
Pasture, grassland or range:																
Poor hydrologic condition		68		79		86		89		73.5		82.5		87.5		89
Fair hydrologic condition		49		69		79		84		59		74		81.5		84
Good hydrologic condition		39		61		74		80		50		67.5	0.46	77		80
Woods:																
Poor hydrologic condition		45		66		77		83		55.5		71.5		80		83
Fair hydrologic condition		36		60		73		79		48		66.5		76		79
Good hydrologic condition		30		55		70		77		42.5		62.5		73.5		77
Developing urban areas:																
Newly graded areas (pervious areas only, no vegetation)		77		86		91		94		81.5		88.5		92.5		94
Substation Pad with 6" of Loose Washed Stone		49		69		79		84		59		74		81.5		84
Cultivated Agricultural Areas:																
Fallow Bare Soil Crop residue Cover Good Hydrolic Condition		74		83		88		90		78.5		85.5		89		90
Total HSG Areas:													**1.93**			

Calculated Total Drainage Area: 1.93 Ac
Calculated Composite Curve Number: 84

Appendix E

Time of Concentration

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information

DRAINAGE AREA ID:	1
TOTAL BASIN LENGTH:	348.3 ft
TOTAL ELEVATION UP:	1152.93
TOTAL ELEVATION DOWN:	1119.17
TOTAL ACRES:	28.08

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	27.15	4.8 mins.
Shallow Concentrated Flow	248.3	6.61	1.6 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**348.3**	**33.76**	**6.4 mins.**

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grass		
Manning's "n"	0.24		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1152.93		
Elevation Down (ft)	1125.78		
Land Slope (ft/ft)	0.272		
Time Of Concentration (Mins)	4.80		
Total Sheet Flow Tc (Minutes):			**4.8 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed		
Flow Length (ft)	248.3 ft		
Elevation Up (ft)	1125.78		
Elevation Down (ft)	1119.17		
Watercourse Slope (ft/ft)	0.027		
Average Velocity (ft/Sec)	2.6		
Time Of Concentration (Mins)	1.57		
Total Shallow Concentrated Tc (Mins):			**1.6 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Triangular Channel Tc		**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**6.4 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	2a
TOTAL BASIN LENGTH:	739.0 ft
TOTAL ELEVATION UP:	1152.88
TOTAL ELEVATION DOWN:	1086.60
TOTAL ACRES:	4.43

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	9.11	7.4 mins.
Shallow Concentrated Flow	639.0	57.17	2.2 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**739.0**	**66.28**	**9.6 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grass		
Manning's "n"	0.24		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1152.88		
Elevation Down (ft)	1143.77		
Land Slope (ft/ft)	0.091		
Time Of Concentration (Mins)	7.43		
Total Sheet Flow Tc (Minutes):			**7.4 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed		
Flow Length (ft)	639.0 ft		
Elevation Up (ft)	1143.77		
Elevation Down (ft)	1086.60		
Watercourse Slope (ft/ft)	0.089		
Average Velocity (ft/Sec)	4.8		
Time Of Concentration (Mins)	2.21		
Total Shallow Concentrated Tc (Mins):			**2.2 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Triangular Channel Tc		**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**9.6 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	2b
TOTAL BASIN LENGTH:	566.0 ft
TOTAL ELEVATION UP:	1102.55
TOTAL ELEVATION DOWN:	1054.00
TOTAL ACRES:	4.02

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	2.55	12.4 mins.
Shallow Concentrated Flow	466.0	46.00	1.5 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**566.0**	**48.55**	**13.9 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grass		
Manning's "n"	0.24		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1102.55		
Elevation Down (ft)	1100.00		
Land Slope (ft/ft)	0.025		
Time Of Concentration (Mins)	12.36		
Total Sheet Flow Tc (Minutes):			**12.4 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed	Unpaved	Unpaved
Flow Length (ft)	466.0 ft		
Elevation Up (ft)	1100.00		
Elevation Down (ft)	1054.00		
Watercourse Slope (ft/ft)	0.099		
Average Velocity (ft/Sec)	5.1		
Time Of Concentration (Mins)	1.53		
Total Shallow Concentrated Tc (Mins):			**1.5 min.**

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
Total Rectangular Channel Tc (Mins):									**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Triangular Channel Tc		**0.0 min.**

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**13.9 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	3
TOTAL BASIN LENGTH:	705.3 ft
TOTAL ELEVATION UP:	1182.78
TOTAL ELEVATION DOWN:	1130.58
TOTAL ACRES:	7.89

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	7.02	8.2 mins.
Shallow Concentrated Flow	605.3	45.18	2.3 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**705.3**	**52.20**	**10.5 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grass		
Manning's "n"	0.24		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1182.78		
Elevation Down (ft)	1175.76		
Land Slope (ft/ft)	0.070		
Time Of Concentration (Mins)	8.25		
Total Sheet Flow Tc (Minutes):			**8.2 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed		
Flow Length (ft)	605.3 ft		
Elevation Up (ft)	1175.76		
Elevation Down (ft)	1130.58		
Watercourse Slope (ft/ft)	0.075		
Average Velocity (ft/Sec)	4.4		
Time Of Concentration (Mins)	2.29		
Total Shallow Concentrated Tc (Mins):			**2.3 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Triangular Channel Tc		**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**10.5 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	4
TOTAL BASIN LENGTH:	259.0 ft
TOTAL ELEVATION UP:	1123.67
TOTAL ELEVATION DOWN:	1112.00
TOTAL ACRES:	0.94

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	2.74	12.0 mins.
Shallow Concentrated Flow	159.0	8.93	0.7 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**259.0**	**11.67**	**12.7 mins.**

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grass		
Manning's "n"	0.24		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1123.67		
Elevation Down (ft)	1120.93		
Land Slope (ft/ft)	0.027		
Time Of Concentration (Mins)	12.01		
Total Sheet Flow Tc (Minutes):			**12.0 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed		
Flow Length (ft)	159.0 ft		
Elevation Up (ft)	1120.93		
Elevation Down (ft)	1112.00		
Watercourse Slope (ft/ft)	0.056		
Average Velocity (ft/Sec)	3.8		
Time Of Concentration (Mins)	0.69		
Total Shallow Concentrated Tc (Mins):			**0.7 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
								Total Rectangular Channel Tc (Mins):	**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Triangular Channel Tc		**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**12.7 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	5
TOTAL BASIN LENGTH:	273.3 ft
TOTAL ELEVATION UP:	1175.39
TOTAL ELEVATION DOWN:	1146.87
TOTAL ACRES:	1.68

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	8.57	7.6 mins.
Shallow Concentrated Flow	173.3	19.95	0.5 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**273.3**	**28.52**	**8.1 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grass		
Manning's "n"	0.24		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1175.39		
Elevation Down (ft)	1166.82		
Land Slope (ft/ft)	0.086		
Time Of Concentration (Mins)	7.61		
Total Sheet Flow Tc (Minutes):			**7.6 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed		
Flow Length (ft)	173.3 ft		
Elevation Up (ft)	1166.82		
Elevation Down (ft)	1146.87		
Watercourse Slope (ft/ft)	0.115		
Average Velocity (ft/Sec)	5.5		
Time Of Concentration (Mins)	0.53		
Total Shallow Concentrated Tc (Mins):			**0.5 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Triangular Channel Tc		**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**8.1 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	7
TOTAL BASIN LENGTH:	476.2 ft
TOTAL ELEVATION UP:	1201.41
TOTAL ELEVATION DOWN:	1148.32
TOTAL ACRES:	4.10

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	9.03	11.2 mins.
Shallow Concentrated Flow	376.2	44.06	7.3 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**476.2**	**53.09**	**18.5 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Woods		
Manning's "n"	0.40		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1201.41		
Elevation Down (ft)	1192.38		
Land Slope (ft/ft)	0.090		
Time Of Concentration (Mins)	11.22		
Total Sheet Flow Tc (Minutes):			**11.2 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Forest		
Flow Length (ft)	376.2 ft		
Elevation Up (ft)	1192.38		
Elevation Down (ft)	1148.32		
Watercourse Slope (ft/ft)	0.117		
Average Velocity (ft/Sec)	0.9		
Time Of Concentration (Mins)	7.28		
Total Shallow Concentrated Tc (Mins):			**7.3 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Triangular Channel Tc		**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**18.5 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information

DRAINAGE AREA ID:	8/10
TOTAL BASIN LENGTH:	797.6 ft
TOTAL ELEVATION UP:	1209.53
TOTAL ELEVATION DOWN:	1126.00
TOTAL ACRES:	28.04

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	1.08	13.2 mins.
Shallow Concentrated Flow	697.6	82.45	3.1 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**797.6**	**83.53**	**16.4 mins.**

NOTES:

This time of concentration calculation is based on survey data, aerial photography, and field investigation.

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Other		
Manning's "n"	0.17		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1209.53		
Elevation Down (ft)	1208.45		
Land Slope (ft/ft)	0.011		
Time Of Concentration (Mins)	13.23		
Total Sheet Flow Tc (Minutes):			**13.2 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Cultivated	Grassed	
Flow Length (ft)	157.3 ft	540.4 ft	
Elevation Up (ft)	1208.45	1203.32	
Elevation Down (ft)	1203.32	1126.00	
Watercourse Slope (ft/ft)	0.033	0.143	
Average Velocity (ft/Sec)	1.6	6.1	
Time Of Concentration (Mins)	1.66	1.48	
Total Shallow Concentrated Tc (Mins):			**3.1 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Triangular Channel Tc		**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**16.4 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	9
TOTAL BASIN LENGTH:	745.8 ft
TOTAL ELEVATION UP:	1220.00
TOTAL ELEVATION DOWN:	1186.23
TOTAL ACRES:	7.97

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	1.26	12.4 mins.
Shallow Concentrated Flow	645.8	32.51	5.1 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**745.8**	**33.77**	**17.6 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Other		
Manning's "n"	0.17		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1220.00		
Elevation Down (ft)	1218.74		
Land Slope (ft/ft)	0.013		
Time Of Concentration (Mins)	12.44		
Total Sheet Flow Tc (Minutes):			**12.4 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Cultivated	Grassed	
Flow Length (ft)	455.0 ft	190.8 ft	
Elevation Up (ft)	1218.74	1201.47	
Elevation Down (ft)	1201.47	1186.23	
Watercourse Slope (ft/ft)	0.038	0.080	
Average Velocity (ft/Sec)	1.7	4.6	
Time Of Concentration (Mins)	4.44	0.70	
Total Shallow Concentrated Tc (Mins):			**5.1 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Triangular Channel Tc		**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**17.6 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/08/21
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	11
TOTAL BASIN LENGTH:	481.6 ft
TOTAL ELEVATION UP:	1208.00
TOTAL ELEVATION DOWN:	1191.00
TOTAL ACRES:	3.19

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	3.15	17.1 mins.
Shallow Concentrated Flow	381.6	13.85	13.3 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**481.6**	**17.00**	**30.4 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Woods		
Manning's "n"	0.40		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1208.00		
Elevation Down (ft)	1204.85		
Land Slope (ft/ft)	0.032		
Time Of Concentration (Mins)	17.10		
Total Sheet Flow Tc (Minutes):			**17.1 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Forest		
Flow Length (ft)	381.6 ft		
Elevation Up (ft)	1204.85		
Elevation Down (ft)	1191.00		
Watercourse Slope (ft/ft)	0.036		
Average Velocity (ft/Sec)	0.5		
Time Of Concentration (Mins)	13.27		
Total Shallow Concentrated Tc (Mins):			**13.3 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/08/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Triangular Channel Tc		**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/08/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**30.4 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information

DRAINAGE AREA ID:	12
TOTAL BASIN LENGTH:	282.0 ft
TOTAL ELEVATION UP:	1207.56
TOTAL ELEVATION DOWN:	1188.32
TOTAL ACRES:	1.93

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	7.62	12.0 mins.
Shallow Concentrated Flow	182.0	11.62	0.7 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**282.0**	**19.24**	**12.8 mins.**

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Woods		
Manning's "n"	0.40		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1207.56		
Elevation Down (ft)	1199.94		
Land Slope (ft/ft)	0.076		
Time Of Concentration (Mins)	12.01		
Total Sheet Flow Tc (Minutes):			**12.0 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed		
Flow Length (ft)	182.0 ft		
Elevation Up (ft)	1199.94		
Elevation Down (ft)	1188.32		
Watercourse Slope (ft/ft)	0.064		
Average Velocity (ft/Sec)	4.1		
Time Of Concentration (Mins)	0.74		
Total Shallow Concentrated Tc (Mins):			**0.7 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Triangular Channel Tc		**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**12.8 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information

DRAINAGE AREA ID:	13
TOTAL BASIN LENGTH:	359.0 ft
TOTAL ELEVATION UP:	1178.00
TOTAL ELEVATION DOWN:	1133.59
TOTAL ACRES:	1.63

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	14.15	9.4 mins.
Shallow Concentrated Flow	259.0	30.26	5.0 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**359.0**	**44.41**	**14.4 mins.**

NOTES:

This time of concentration calculation is based on survey data, aerial photography, and field investigation.

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Woods		
Manning's "n"	0.40		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1178.00		
Elevation Down (ft)	1163.85		
Land Slope (ft/ft)	0.142		
Time Of Concentration (Mins)	9.37		
Total Sheet Flow Tc (Minutes):			**9.4 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Forest		
Flow Length (ft)	259.0 ft		
Elevation Up (ft)	1163.85		
Elevation Down (ft)	1133.59		
Watercourse Slope (ft/ft)	0.117		
Average Velocity (ft/Sec)	0.9		
Time Of Concentration (Mins)	5.02		
Total Shallow Concentrated Tc (Mins):			**5.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Triangular Channel Tc		**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**14.4 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information

DRAINAGE AREA ID:	14
TOTAL BASIN LENGTH:	768.0 ft
TOTAL ELEVATION UP:	1220.02
TOTAL ELEVATION DOWN:	1151.52
TOTAL ACRES:	4.60

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	3.31	10.3 mins.
Shallow Concentrated Flow	668.0	65.19	8.9 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**768.0**	**68.50**	**19.3 mins.**

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Other	Woods	
Manning's "n"	0.17	0.40	
2- Year, 24- Hr. Rain Fall (In)	3.51	3.51	
Flow Length (ft)	90.5 ft	9.5 ft	
Elevation Up (ft)	1220.02	1217.03	
Elevation Down (ft)	1217.03	1216.71	
Land Slope (ft/ft)	0.033	0.034	
Time Of Concentration (Mins)	7.81	2.53	
Total Sheet Flow Tc (Minutes):			**10.3 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Forest	Grassed	Forest
Flow Length (ft)	45.0 ft	292.6 ft	330.4 ft
Elevation Up (ft)	1216.71	1213.72	1186.00
Elevation Down (ft)	1213.72	1186.00	1151.52
Watercourse Slope (ft/ft)	0.066	0.095	0.104
Average Velocity (ft/Sec)	0.6	5.0	0.8
Time Of Concentration (Mins)	1.16	0.98	6.78
Total Shallow Concentrated Tc (Mins):			**8.9 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Triangular Channel Tc		**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**19.3 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/10
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	15
TOTAL BASIN LENGTH:	411.5 ft
TOTAL ELEVATION UP:	1220.03
TOTAL ELEVATION DOWN:	1203.66
TOTAL ACRES:	1.93

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	2.63	12.2 mins.
Shallow Concentrated Flow	311.5	13.74	1.5 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**411.5**	**16.37**	**13.7 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grass		
Manning's "n"	0.24		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1220.03		
Elevation Down (ft)	1217.40		
Land Slope (ft/ft)	0.026		
Time Of Concentration (Mins)	12.21		
Total Sheet Flow Tc (Minutes):			**12.2 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed		
Flow Length (ft)	311.5 ft		
Elevation Up (ft)	1217.40		
Elevation Down (ft)	1203.66		
Watercourse Slope (ft/ft)	0.044		
Average Velocity (ft/Sec)	3.4		
Time Of Concentration (Mins)	1.53		
Total Shallow Concentrated Tc (Mins):			**1.5 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/10
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Triangular Channel Tc		**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Existing
DATE: 06/09/10
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**13.7 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information

DRAINAGE AREA ID:	1
TOTAL BASIN LENGTH:	348.3 ft
TOTAL ELEVATION UP:	1152.88
TOTAL ELEVATION DOWN:	1119.17
TOTAL ACRES:	1.28

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	6.85	8.3 mins.
Shallow Concentrated Flow	248.3	26.86	0.8 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**348.3**	**33.71**	**9.1 mins.**

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grass		
Manning's "n"	0.24		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1152.88		
Elevation Down (ft)	1146.03		
Land Slope (ft/ft)	0.069		
Time Of Concentration (Mins)	8.33		
Total Sheet Flow Tc (Minutes):			**8.3 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed		
Flow Length (ft)	248.3 ft		
Elevation Up (ft)	1146.03		
Elevation Down (ft)	1119.17		
Watercourse Slope (ft/ft)	0.108		
Average Velocity (ft/Sec)	5.3		
Time Of Concentration (Mins)	0.78		
Total Shallow Concentrated Tc (Mins):			**0.8 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Triangular Channel Tc		**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**9.1 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed

DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	2a
TOTAL BASIN LENGTH:	751.5 ft
TOTAL ELEVATION UP:	1152.88
TOTAL ELEVATION DOWN:	1084.60
TOTAL ACRES:	4.43

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	9.11	7.4 mins.
Shallow Concentrated Flow	651.5	59.17	2.2 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**751.5**	**68.28**	**9.7 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grass		
Manning's "n"	0.24		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1152.88		
Elevation Down (ft)	1143.77		
Land Slope (ft/ft)	0.091		
Time Of Concentration (Mins)	7.43		
Total Sheet Flow Tc (Minutes):			**7.4 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed	Grassed	Grassed
Flow Length (ft)	651.5 ft		
Elevation Up (ft)	1143.77		
Elevation Down (ft)	1084.60		
Watercourse Slope (ft/ft)	0.091		
Average Velocity (ft/Sec)	4.9		
Time Of Concentration (Mins)	2.23		
Total Shallow Concentrated Tc (Mins):			**2.2 min.**

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
								Total Triangular Channel Tc	**0.0 min.**

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**9.7 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	2b
TOTAL BASIN LENGTH:	566.0 ft
TOTAL ELEVATION UP:	1102.55
TOTAL ELEVATION DOWN:	1054.00
TOTAL ACRES:	4.02

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	2.55	12.4 mins.
Shallow Concentrated Flow	466.0	46.00	1.5 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**566.0**	**48.55**	**13.9 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grass		
Manning's "n"	0.24		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1102.55		
Elevation Down (ft)	1100.00		
Land Slope (ft/ft)	0.025		
Time Of Concentration (Mins)	12.36		
Total Sheet Flow Tc (Minutes):			**12.4 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed		
Flow Length (ft)	466.0 ft		
Elevation Up (ft)	1100.00		
Elevation Down (ft)	1054.00		
Watercourse Slope (ft/ft)	0.099		
Average Velocity (ft/Sec)	5.1		
Time Of Concentration (Mins)	1.53		
Total Shallow Concentrated Tc (Mins):			**1.5 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Triangular Channel Tc		**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**13.9 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	3
TOTAL BASIN LENGTH:	785.0 ft
TOTAL ELEVATION UP:	1191.20
TOTAL ELEVATION DOWN:	1140.00
TOTAL ACRES:	7.89

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	10.68	7.0 mins.
Shallow Concentrated Flow	236.6	28.52	0.7 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	448.4	12.00	1.5 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**785.0**	**51.20**	**9.2 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grass		
Manning's "n"	0.24		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1191.20		
Elevation Down (ft)	1180.52		
Land Slope (ft/ft)	0.107		
Time Of Concentration (Mins)	6.97		
Total Sheet Flow Tc (Minutes):			**7.0 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed		
Flow Length (ft)	236.6 ft		
Elevation Up (ft)	1180.52		
Elevation Down (ft)	1152.00		
Watercourse Slope (ft/ft)	0.121		
Average Velocity (ft/Sec)	5.6		
Time Of Concentration (Mins)	0.70		
Total Shallow Concentrated Tc (Mins):			**0.7 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description	Grass								
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description	Grass								
Top Width (ft)	8.0								
Depth (ft)	1.0								
Area (Sq. ft)	4.0								
Wetted Perimeter (ft)	8.2								
Hydraulic Radius (ft)	0.5								
Flow Length (ft)	448.4								
Elevation Up (ft)	1152.00								
Elevation Down (ft)	1140.00								
Channel Slope (ft/ft)	0.027								
Manning's "n"	0.030								
Average Velocity (ft/Sec)	5.0								
Time Of Concentration (Mins)	1.49								
							Total Triangular Channel Tc		**1.5 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**9.2 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	4
TOTAL BASIN LENGTH:	234.4 ft
TOTAL ELEVATION UP:	1123.67
TOTAL ELEVATION DOWN:	1112.00
TOTAL ACRES:	0.94

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	2.74	12.0 mins.
Shallow Concentrated Flow	134.4	8.93	0.5 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**234.4**	**11.67**	**12.6 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grass		
Manning's "n"	0.24		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1123.67		
Elevation Down (ft)	1120.93		
Land Slope (ft/ft)	0.027		
Time Of Concentration (Mins)	12.01		
Total Sheet Flow Tc (Minutes):			**12.0 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed		
Flow Length (ft)	134.4 ft		
Elevation Up (ft)	1120.93		
Elevation Down (ft)	1112.00		
Watercourse Slope (ft/ft)	0.066		
Average Velocity (ft/Sec)	4.2		
Time Of Concentration (Mins)	0.54		
Total Shallow Concentrated Tc (Mins):			**0.5 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Triangular Channel Tc		**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**12.6 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	FID 5
TOTAL BASIN LENGTH:	273.3 ft
TOTAL ELEVATION UP:	1175.39
TOTAL ELEVATION DOWN:	1146.87
TOTAL ACRES:	1.68

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	8.57	7.0 mins.
Shallow Concentrated Flow	173.3	19.95	0.5 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**273.3**	**28.52**	**7.6 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Asphalt	Grass	
Manning's "n"	0.01	0.24	
2- Year, 24- Hr. Rain Fall (In)	3.51	3.51	
Flow Length (ft)	9.0 ft	91.0 ft	
Elevation Up (ft)	1175.39	1175.18	
Elevation Down (ft)	1175.18	1166.82	
Land Slope (ft/ft)	0.023	0.092	
Time Of Concentration (Mins)	0.16	6.87	
Total Sheet Flow Tc (Minutes):			**7.0 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed		
Flow Length (ft)	173.3 ft		
Elevation Up (ft)	1166.82		
Elevation Down (ft)	1146.87		
Watercourse Slope (ft/ft)	0.115		
Average Velocity (ft/Sec)	5.5		
Time Of Concentration (Mins)	0.53		
Total Shallow Concentrated Tc (Mins):			**0.5 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Triangular Channel Tc		**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**7.6 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	7
TOTAL BASIN LENGTH:	476.2 ft
TOTAL ELEVATION UP:	1201.41
TOTAL ELEVATION DOWN:	1150.67
TOTAL ACRES:	4.10

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	16.26	5.9 mins.
Shallow Concentrated Flow	376.2	34.48	1.3 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**476.2**	**50.74**	**7.2 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grass		
Manning's "n"	0.24		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1201.41		
Elevation Down (ft)	1185.15		
Land Slope (ft/ft)	0.163		
Time Of Concentration (Mins)	5.89		
Total Sheet Flow Tc (Minutes):			**5.9 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed		
Flow Length (ft)	376.2 ft		
Elevation Up (ft)	1185.15		
Elevation Down (ft)	1150.67		
Watercourse Slope (ft/ft)	0.092		
Average Velocity (ft/Sec)	4.9		
Time Of Concentration (Mins)	1.28		
Total Shallow Concentrated Tc (Mins):			**1.3 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Triangular Channel Tc		**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**7.2 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/08/21
PREPARED BY: JRP

Drainage Area Information	
DRAINAGE AREA ID:	8/10
TOTAL BASIN LENGTH:	1321.0 ft
TOTAL ELEVATION UP:	1208.55
TOTAL ELEVATION DOWN:	1123.50
TOTAL ACRES:	28.04

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	2.14	9.4 mins.
Shallow Concentrated Flow	719.0	74.20	2.3 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	502.0	8.71	2.1 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**1321.0**	**85.05**	**13.7 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Asphalt	Grass	
Manning's "n"	0.01	0.24	
2- Year, 24- Hr. Rain Fall (In)	3.51	3.12	
Flow Length (ft)	45.0 ft	55.0 ft	
Elevation Up (ft)	1208.55	1207.57	
Elevation Down (ft)	1207.57	1206.41	
Land Slope (ft/ft)	0.022	0.021	
Time Of Concentration (Mins)	0.59	8.77	
Total Sheet Flow Tc (Minutes):			**9.4 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed		
Flow Length (ft)	719.0 ft		
Elevation Up (ft)	1206.41		
Elevation Down (ft)	1132.21		
Watercourse Slope (ft/ft)	0.103		
Average Velocity (ft/Sec)	5.2		
Time Of Concentration (Mins)	2.31		
Total Shallow Concentrated Tc (Mins):			**2.3 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/08/21
PREPARED BY: JRP

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									

Total Rectangular Channel Tc (Mins): **0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description	Grass								
Top Width (ft)	8.0								
Depth (ft)	1.0								
Area (Sq. ft)	4.0								
Wetted Perimeter (ft)	8.2								
Hydraulic Radius (ft)	0.5								
Flow Length (ft)	502.0								
Elevation Up (ft)	1132.21								
Elevation Down (ft)	1123.50								
Channel Slope (ft/ft)	0.017								
Manning's "n"	0.030								
Average Velocity (ft/Sec)	4.0								
Time Of Concentration (Mins)	2.08								

Total Triangular Channel Tc **2.1 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/08/21
PREPARED BY: JRP

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**13.7 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information

DRAINAGE AREA ID:	9
TOTAL BASIN LENGTH:	1063.6 ft
TOTAL ELEVATION UP:	1220.92
TOTAL ELEVATION DOWN:	1180.00
TOTAL ACRES:	6.81

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	1.77	14.3 mins.
Shallow Concentrated Flow	103.6	1.60	1.6 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	860.0	37.55	2.2 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**1063.6**	**40.92**	**18.1 mins.**

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grass		
Manning's "n"	0.24		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1220.92		
Elevation Down (ft)	1219.15		
Land Slope (ft/ft)	0.018		
Time Of Concentration (Mins)	14.31		
Total Sheet Flow Tc (Minutes):			**14.3 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Cultivated		
Flow Length (ft)	103.6 ft		
Elevation Up (ft)	1219.15		
Elevation Down (ft)	1217.55		
Watercourse Slope (ft/ft)	0.015		
Average Velocity (ft/Sec)	1.1		
Time Of Concentration (Mins)	1.59		
Total Shallow Concentrated Tc (Mins):			**1.6 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description	Grass								
Top Width (ft)	8.0								
Depth (ft)	1.0								
Area (Sq. ft)	4.0								
Wetted Perimeter (ft)	8.2								
Hydraulic Radius (ft)	0.5								
Flow Length (ft)	860.0								
Elevation Up (ft)	1217.55								
Elevation Down (ft)	1180.00								
Channel Slope (ft/ft)	0.044								
Manning's "n"	0.030								
Average Velocity (ft/Sec)	6.4								
Time Of Concentration (Mins)	2.24								
								Total Triangular Channel Tc	**2.2 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**18.1 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/08/21
PREPARED BY: YA

Drainage Area Information

DRAINAGE AREA ID:	11
TOTAL BASIN LENGTH:	456.0 ft
TOTAL ELEVATION UP:	1208.00
TOTAL ELEVATION DOWN:	1194.12
TOTAL ACRES:	3.41

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	3.15	17.1 mins.
Shallow Concentrated Flow	356.0	10.73	4.3 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**456.0**	**13.88**	**21.4 mins.**

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Woods		
Manning's "n"	0.40		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1208.00		
Elevation Down (ft)	1204.85		
Land Slope (ft/ft)	0.032		
Time Of Concentration (Mins)	17.10		
Total Sheet Flow Tc (Minutes):			**17.1 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Forest	Grassed	
Flow Length (ft)	54.0 ft	302.0 ft	
Elevation Up (ft)	1204.85	1203.83	
Elevation Down (ft)	1203.83	1194.12	
Watercourse Slope (ft/ft)	0.019	0.032	
Average Velocity (ft/Sec)	0.3	2.9	
Time Of Concentration (Mins)	2.60	1.74	
Total Shallow Concentrated Tc (Mins):			**4.3 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/08/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Triangular Channel Tc		**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/08/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**21.4 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information	
DRAINAGE AREA ID:	12
TOTAL BASIN LENGTH:	248.0 ft
TOTAL ELEVATION UP:	1207.56
TOTAL ELEVATION DOWN:	1191.65
TOTAL ACRES:	1.93

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	7.62	8.0 mins.
Shallow Concentrated Flow	148.0	8.29	0.6 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**248.0**	**15.91**	**8.6 mins.**

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grass		
Manning's "n"	0.24		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1207.56		
Elevation Down (ft)	1199.94		
Land Slope (ft/ft)	0.076		
Time Of Concentration (Mins)	7.98		
Total Sheet Flow Tc (Minutes):			**8.0 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed		
Flow Length (ft)	148.0 ft		
Elevation Up (ft)	1199.94		
Elevation Down (ft)	1191.65		
Watercourse Slope (ft/ft)	0.056		
Average Velocity (ft/Sec)	3.8		
Time Of Concentration (Mins)	0.65		
Total Shallow Concentrated Tc (Mins):			**0.6 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Triangular Channel Tc		**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**8.6 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information

DRAINAGE AREA ID:	13
TOTAL BASIN LENGTH:	363.6 ft
TOTAL ELEVATION UP:	1187.00
TOTAL ELEVATION DOWN:	1146.73
TOTAL ACRES:	3.19

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	14.85	6.1 mins.
Shallow Concentrated Flow	263.6	25.42	0.9 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**363.6**	**40.27**	**7.0 mins.**

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Asphalt		
Manning's "n"	0.24		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1187.00		
Elevation Down (ft)	1172.15		
Land Slope (ft/ft)	0.148		
Time Of Concentration (Mins)	6.11		
Total Sheet Flow Tc (Minutes):			**6.1 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed		
Flow Length (ft)	263.6 ft		
Elevation Up (ft)	1172.15		
Elevation Down (ft)	1146.73		
Watercourse Slope (ft/ft)	0.096		
Average Velocity (ft/Sec)	5.0		
Time Of Concentration (Mins)	0.88		
Total Shallow Concentrated Tc (Mins):			**0.9 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Triangular Channel Tc		**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**7.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information

DRAINAGE AREA ID:	14
TOTAL BASIN LENGTH:	768.0 ft
TOTAL ELEVATION UP:	1220.02
TOTAL ELEVATION DOWN:	1186.00
TOTAL ACRES:	4.60

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	3.31	10.3 mins.
Shallow Concentrated Flow	668.0	30.71	4.2 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**768.0**	**34.02**	**14.6 mins.**

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Other	Woods	
Manning's "n"	0.17	0.40	
2- Year, 24- Hr. Rain Fall (In)	3.51	3.51	
Flow Length (ft)	90.5 ft	9.5 ft	
Elevation Up (ft)	1220.02	1217.03	
Elevation Down (ft)	1217.03	1216.71	
Land Slope (ft/ft)	0.033	0.034	
Time Of Concentration (Mins)	7.81	2.53	
Total Sheet Flow Tc (Minutes):			**10.3 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Forest	Grassed	
Flow Length (ft)	45.0 ft	623.0 ft	
Elevation Up (ft)	1216.71	1213.72	
Elevation Down (ft)	1213.72	1186.00	
Watercourse Slope (ft/ft)	0.066	0.044	
Average Velocity (ft/Sec)	0.6	3.4	
Time Of Concentration (Mins)	1.16	3.05	
Total Shallow Concentrated Tc (Mins):			**4.2 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Triangular Channel Tc		**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**14.6 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

Drainage Area Information

DRAINAGE AREA ID:	15
TOTAL BASIN LENGTH:	411.5 ft
TOTAL ELEVATION UP:	1220.03
TOTAL ELEVATION DOWN:	1203.66
TOTAL ACRES:	1.93

Drainage Area Tc Summary Data

Flow Type	Length (ft)	Elev. Diff.	Tc
Sheet Flow	100.0	2.63	12.2 mins.
Shallow Concentrated Flow	311.5	13.74	1.5 mins.
Channel Flow - Rectangular	0.0	0.00	0.0 mins.
Channel Flow - Triangular	0.0	0.00	0.0 mins.
Channel Flow - Trapezoidal	0.0	0.00	0.0 mins.
Channel Flow - Circular	0.0	0.00	0.0 mins.
Basin Totals	**411.5**	**16.37**	**13.7 mins.**

NOTES:
This time of concentration calculation is based on survey data, aerial photography, and field investigation.

1. SHEET FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grass		
Manning's "n"	0.24		
2- Year, 24- Hr. Rain Fall (In)	3.51		
Flow Length (ft)	100.0 ft		
Elevation Up (ft)	1220.03		
Elevation Down (ft)	1217.40		
Land Slope (ft/ft)	0.026		
Time Of Concentration (Mins)	12.21		
Total Sheet Flow Tc (Minutes):			**12.2 min.**

2. SHALLOW CONCENTRATED FLOW

	Segment #1	Segment #2	Segment #3
Surface Description	Grassed		
Flow Length (ft)	311.5 ft		
Elevation Up (ft)	1217.40		
Elevation Down (ft)	1203.66		
Watercourse Slope (ft/ft)	0.044		
Average Velocity (ft/Sec)	3.4		
Time Of Concentration (Mins)	1.53		
Total Shallow Concentrated Tc (Mins):			**1.5 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

3. CHANNEL FLOW - RECTANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Area (Sq. ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wetted Perimeter (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydraulic Radius (ft)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Rectangular Channel Tc (Mins):		**0.0 mins.**

4. CHANNEL FLOW - TRIANGULAR CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Top Width (ft)									
Depth (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Triangular Channel Tc		**0.0 min.**

Time of Concentration Worksheet

PROJECT: Litchfield
SCENARIO: Proposed
DATE: 06/09/21
PREPARED BY: YA

5. CHANNEL FLOW - TRAPEZOIDAL CHANNEL

	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Bottom Width (ft)									
Depth (ft)									
Side Slopes (?H:1V) (ft)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Trapezoidal Channel Tc		**0.0 min.**

6. CHANNEL FLOW - CIRCULAR CHANNEL (Gravity Flow)

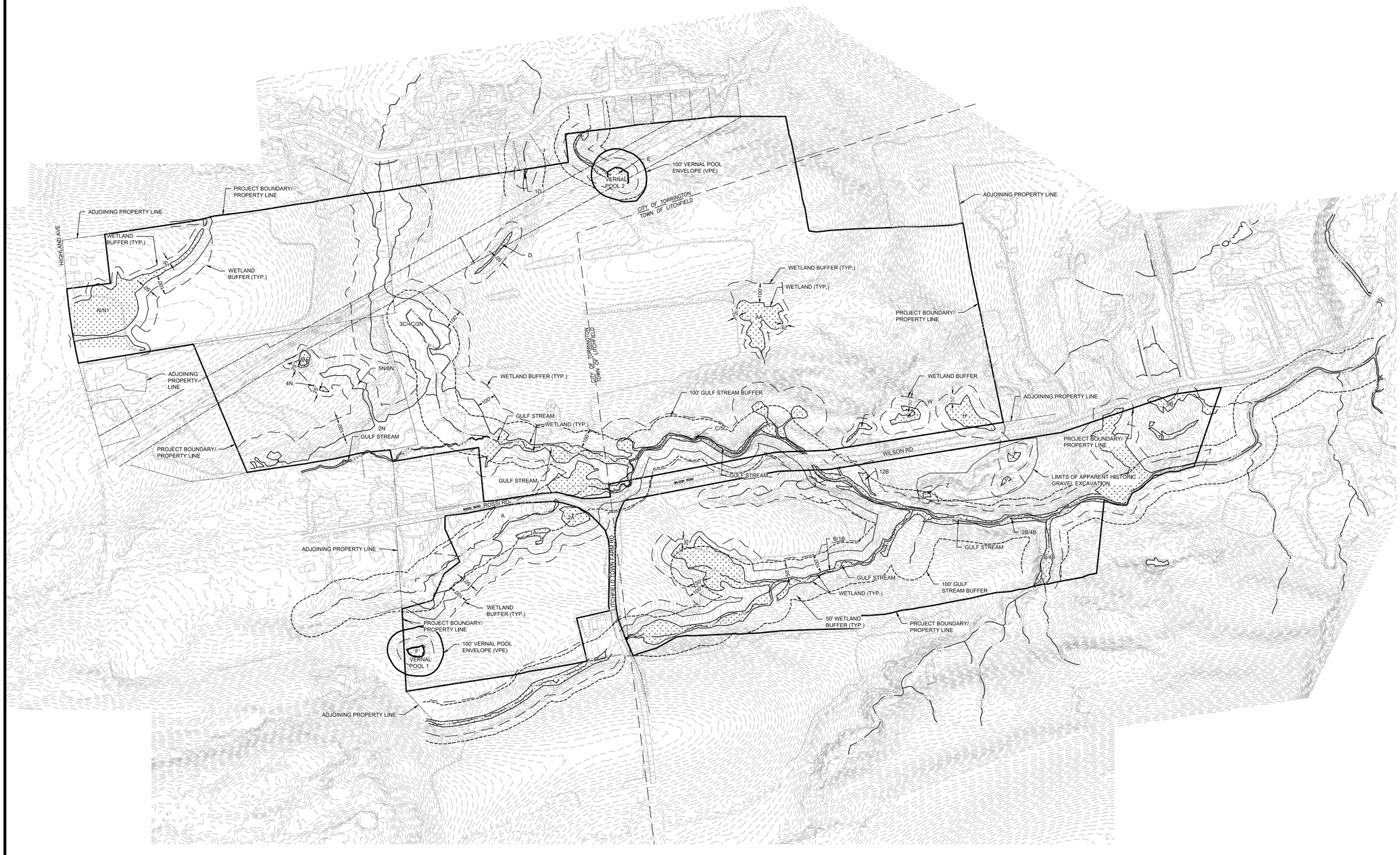
	Segment #1	Segment #2	Segment #3	Segment #4	Segment #5	Segment #6	Segment #7	Segment #8	Segment #9
Surface Description									
Pipe Diameter (In)									
Area (Sq. ft)									
Wetted Perimeter (ft)									
Hydraulic Radius (ft)									
Flow Length (ft)									
Elevation Up (ft)									
Elevation Down (ft)									
Channel Slope (ft/ft)									
Manning's "n"									
Average Velocity (ft/Sec)									
Time Of Concentration (Mins)									
							Total Circular Channel Tc (Mins):		**0.0 min.**

7. Total Basin Time of Concentration (Mintues)

Total Basin Tc (Mins):	**13.7 min.**

Appendix F

Map of Wetlands



HDR

SILICON RANCH

NOT FOR CONSTRUCTION

LITCHFIELD SOLAR

2-298 ROSSI RD
TORRINGTON, CT 06790, USA
LAT: 41.794157°N
LON: 73.168028°W

LITCHFIELD, CT

REV. NO	DESCRIPTION	DATE
2	RE-ISSUED FOR PERMIT	06/25/21
1	RE-ISSUED FOR PERMIT	01/29/21
0	ISSUED FOR PERMIT	09/30/20

SHEET TITLE:

WETLAND EXHIBIT

PROJ. MGR.	PROJ. ENGR.	DATE:
WK	MB	09/30/20
DRAWN BY:	CHECKED BY:	SCALE:
NC	CP	1"=250'

DRAWING NO.

EXHIBIT

Appendix G

Erosion and Sediment Control Calculations

SEDIMENT TRAP CALCULATIONS			
Litchfield Solar			
HDR PROJECT NO.:	-		
DATE:	6/17/2021	BY:	JRP
REVISED:		RVW:	

Sediment Trap T-1 **Scenario:** Erosion Control

Drainage Area Characteristics		
Total drainage area (TDA)[1]	0.92	ac

Required Storage Volume			
Req'd Min. Wet Storage Volume[3]	(1811 cf	per ac of DA)[5]	1,666 cf
Req'd Min. Dry Storage Volume[3]	(1811 cf	per ac of DA)[5]	1,666 cf

Design Criteria		
Bottom Elevation	1125.00	msl
Depth of Wet Storage	1.70	ft
Depth of Dry Storage	1.30	ft
1 ft over Weir	1.00	ft

Basin Configuration		
Bottom Elevation	1125.00	msl
Wet Storage Elevation (Base of Stone Outlet)	1126.70	msl
Dry Storage Elevation (Weir Crest)	1128.00	msl
Top of Berm	1129.00	msl

Spillway Outlet		
Bottom of Embankment Elevation	1125.00	msl
Height of Embankment[2]	4.00	ft
Top Width of Embankment	3.00	ft

Basin Size			
Elev. (msl)	Depth (ft)	Area (sf)	Cumulative Volume (cf)
1125.00	0.00	1,003	0
1126.00	1.00	1,272	1,135
1127.00	2.00	1,566	2,551
1128.00	3.00	1,885	4,274
1129.00	4.00	2,230	6,329

Basin Size Check		
Wet Storage Volume Provided	2,135	sf
Dry Storage Volume provided	2,186	cf

Notes

1. See attached drainage area map.
2. Maximum height of embankment is 5 ft.
3. Per 2002 Connecticut Guidelines for Soil and Sediment Control, 134 cubic yards per acre of drainage area are provided. Half of this storage is wet and half of this storage is dry.

SEDIMENT TRAP CALCULATIONS			
Litchfield Solar			
HDR PROJECT NO.:	-		
DATE:	4/22/2021	BY:	JRP
REVISED:		RVW:	

Sediment Trap T-2a

Scenario: Erosion Control

Drainage Area Characteristics		
Total drainage area (TDA)[1]	3.85	ac

Required Storage Volume			
Req'd Min. Wet Storage Volume[3]	(1811 cf	per ac of DA)[5]	6,972 cf
Req'd Min. Dry Storage Volume[3]	(1811 cf	per ac of DA)[5]	6,972 cf

Design Criteria		
Bottom Elevation	1084.00	msl
Depth of Wet Storage	2.35	ft
Depth of Dry Storage	1.65	ft
1 ft over Weir	1.00	ft

Basin Configuration		
Bottom Elevation	1084.00	msl
Wet Storage Elevation (Base of Stone Outlet)	1086.35	msl
Dry Storage Elevation (Weir Crest)	1088.00	msl
Top of Berm	1089.00	msl

Basin Size			
Elev. (msl)	Depth (ft)	Area (sf)	Cumulative Volume (cf)
1084.00	0.00	2,026	0
1085.00	1.00	2,685	2,348
1086.00	2.00	3,381	5,374
1087.00	3.00	4,115	9,116
1088.00	4.00	4,887	13,612
1089.00	5.00	5,696	18,898

Spillway Outlet		
Bottom of Embankment Elevation	1084.00	msl
Height of Embankment[2]	5.00	ft
Top Width of Embankment	4.50	ft

Basin Size Check		
Wet Storage Volume Provided	7,267	sf
Dry Storage Volume provided	7,033	cf

Notes

1. See attached drainage area map.
2. Maximum height of embankment is 5 ft.
3. Per 2002 Connecticut Guidelines for Soil and Sediment Control, 134 cubic yards per acre of drainage area are provided. Half of this storage is wet and half of this storage is dry.

SEDIMENT TRAP CALCULATIONS			
Litchfield Solar			
HDR PROJECT NO.:	-		
DATE:	6/17/2021	BY:	JRP
REVISED:		RVW:	

Sediment Trap T-2b

Scenario: Erosion Control

Drainage Area Characteristics		
Total drainage area (TDA)[1]	3.88	ac

Required Storage Volume			
Req'd Min. Wet Storage Volume[3]	(1811 cf	per ac of DA)[5]	7,026 cf
Req'd Min. Dry Storage Volume[3]	(1811 cf	per ac of DA)[5]	7,026 cf

Design Criteria		
Bottom Elevation	1040.00	msl
Depth of Wet Storage	2.30	ft
Depth of Dry Storage	1.70	ft
1 ft over Weir	1.00	ft

Basin Configuration		
Bottom Elevation	1040.00	msl
Wet Storage Elevation (Base of Stone Outlet)	1042.30	msl
Dry Storage Elevation (Weir Crest)	1044.00	msl
Top of Berm	1045.00	msl

Basin Size			
Elev. (msl)	Depth (ft)	Area (sf)	Cumulative Volume (cf)
1040.00	0.00	2,470	0
1041.00	1.00	2,996	2,729
1042.00	2.00	3,546	5,996
1043.00	3.00	4,122	9,826
1044.00	4.00	4,723	14,245
1045.00	5.00	5,350	19,279

Spillway Outlet		
Bottom of Embankment Elevation	1040.00	msl
Height of Embankment[2]	5.00	ft
Top Width of Embankment	4.50	ft

Basin Size Check		
Wet Storage Volume Provided	7,270	sf
Dry Storage Volume provided	7,176	cf

Notes

1. See attached drainage area map.
2. Maximum height of embankment is 5 ft.
3. Per 2002 Connecticut Guidelines for Soil and Sediment Control, 134 cubic yards per acre of drainage area are provided. Half of this storage is wet and half of this storage is dry.

SEDIMENT TRAP CALCULATIONS			
Litchfield Solar			
HDR PROJECT NO.:	-		
DATE:	6/17/2021	BY:	JRP
REVISED:		RVW:	

Sediment Trap T-4 **Scenario:** Erosion Control

Drainage Area Characteristics		
Total drainage area (TDA)[1]	1.12	ac

Required Storage Volume			
Req'd Min. Wet Storage Volume[3]	(1811 cf	per ac of DA)[5]	2,028 cf
Req'd Min. Dry Storage Volume[3]	(1811 cf	per ac of DA)[5]	2,028 cf

Design Criteria		
Bottom Elevation	1111.00	msl
Depth of Wet Storage	1.70	ft
Depth of Dry Storage	1.30	ft
1 ft over Weir	1.00	ft

Basin Configuration		
Bottom Elevation	1111.00	msl
Wet Storage Elevation (Base of Stone Outlet)	1112.70	msl
Dry Storage Elevation (Weir Crest)	1114.00	msl
Top of Berm	1115.00	msl

Basin Size			
Elev. (msl)	Depth (ft)	Area (sf)	Cumulative Volume (cf)
1111.00	0.00	1,388	0
1112.00	1.00	1,727	1,554
1113.00	2.00	2,090	3,460
1114.00	3.00	2,478	5,741
1115.00	4.00	2,892	8,424

Spillway Outlet		
Bottom of Embankment Elevation	1113.50	msl
Height of Embankment[2]	1.50	ft
Top Width of Embankment	2.00	ft

Basin Size Check		
Wet Storage Volume Provided	2,863	sf
Dry Storage Volume provided	2,898	cf

Notes

1. See attached drainage area map.
2. Maximum height of embankment is 5 ft.
3. Per 2002 Connecticut Guidelines for Soil and Sediment Control, 134 cubic yards per acre of drainage area are provided. Half of this storage is wet and half of this storage is dry.

SEDIMENT TRAP CALCULATIONS			
Litchfield Solar			
HDR PROJECT NO.:	-		
DATE:	6/16/2021	BY:	JRP
REVISED:		RVW:	

Sediment Trap T-5 **Scenario:** Erosion Control

Drainage Area Characteristics		
Total drainage area (TDA)[1]	2.72	ac

Required Storage Volume			
Req'd Min. Wet Storage Volume[3]	(1811 cf	per ac of DA)[5]	4,925 cf
Req'd Min. Dry Storage Volume[3]	(1811 cf	per ac of DA)[5]	4,925 cf

Design Criteria		
Bottom Elevation	1143.00	msl
Depth of Wet Storage	1.70	ft
Depth of Dry Storage	1.30	ft
1 ft over Weir	1.00	ft

Basin Configuration		
Bottom Elevation	1143.00	msl
Wet Storage Elevation (Base of Stone Outlet)	1144.70	msl
Dry Storage Elevation (Weir Crest)	1146.00	msl
Top of Berm	1147.00	msl

Basin Size			
Elev. (msl)	Depth (ft)	Area (sf)	Cumulative Volume (cf)
1143.00	0.00	2,383	0
1144.00	1.00	3,015	2,693
1145.00	2.00	3,684	6,037
1146.00	3.00	4,378	10,063
1147.00	4.00	5,097	14,796

Spillway Outlet		
Bottom of Embankment Elevation	1142.00	msl
Height of Embankment[2]	5.00	ft
Top Width of Embankment	4.50	ft

Basin Size Check		
Wet Storage Volume Provided	5,033	sf
Dry Storage Volume provided	5,110	cf

Notes

1. See attached drainage area map.
2. Maximum height of embankment is 5 ft.
3. Per 2002 Connecticut Guidelines for Soil and Sediment Control, 134 cubic yards per acre of drainage area are provided. Half of this storage is wet and half of this storage is dry.

SEDIMENT TRAP CALCULATIONS			
Litchfield Solar			
HDR PROJECT NO.:	-		
DATE:	6/17/2021	BY:	JRP
REVISED:		RVW:	

Sediment Trap T-11 **Scenario:** Erosion Control

Drainage Area Characteristics		
Total drainage area (TDA)[1]	3.14	ac

Required Storage Volume			
Req'd Min. Wet Storage Volume[3]	(1811 cf	per ac of DA)[5]	5,686 cf
Req'd Min. Dry Storage Volume[3]	(1811 cf	per ac of DA)[5]	5,686 cf

Design Criteria		
Bottom Elevation	1189.00	msl
Depth of Wet Storage	2.30	ft
Depth of Dry Storage	1.70	ft
1 ft over Weir	1.00	ft

Basin Configuration		
Bottom Elevation	1189.00	msl
Wet Storage Elevation (Base of Stone Outlet)	1191.30	msl
Dry Storage Elevation (Weir Crest)	1193.00	msl
Top of Berm	1194.00	msl

Basin Size			
Elev. (msl)	Depth (ft)	Area (sf)	Cumulative Volume (cf)
1189.00	0.00	1,823	0
1190.00	1.00	2,332	2,072
1191.00	2.00	2,867	4,667
1192.00	3.00	3,426	7,810
1193.00	4.00	4,011	11,524
1194.00	5.00	4,621	15,837

Spillway Outlet		
Bottom of Embankment Elevation	1192.00	msl
Height of Embankment[2]	2.00	ft
Top Width of Embankment	2.00	ft

Basin Size Check		
Wet Storage Volume Provided	5,933	sf
Dry Storage Volume provided	5,989	cf

Notes

1. See attached drainage area map.
2. Maximum height of embankment is 5 ft.
3. Per 2002 Connecticut Guidelines for Soil and Sediment Control, 134 cubic yards per acre of drainage area are provided. Half of this storage is wet and half of this storage is dry.

SEDIMENT TRAP CALCULATIONS			
Litchfield Solar			
HDR PROJECT NO.:	-		
DATE:	6/17/2021	BY:	JRP
REVISED:		RVW:	

Sediment Trap T-12 **Scenario:** Erosion Control

Drainage Area Characteristics		
Total drainage area (TDA)[1]	3.18	ac

Required Storage Volume			
Req'd Min. Wet Storage Volume[3]	(1811 cf	per ac of DA)[5]	5,758 cf
Req'd Min. Dry Storage Volume[3]	(1811 cf	per ac of DA)[5]	5,758 cf

Design Criteria		
Bottom Elevation	1184.00	msl
Depth of Wet Storage	2.40	ft
Depth of Dry Storage	1.60	ft
1 ft over Weir	1.00	ft

Basin Configuration		
Bottom Elevation	1184.00	msl
Wet Storage Elevation (Base of Stone Outlet)	1186.40	msl
Dry Storage Elevation (Weir Crest)	1188.00	msl
Top of Berm	1189.00	msl

Basin Size			
Elev. (msl)	Depth (ft)	Area (sf)	Cumulative Volume (cf)
1184.00	0.00	1,027	0
1185.00	1.00	1,866	1,426
1186.00	2.00	2,739	3,714
1187.00	3.00	3,637	6,892
1188.00	4.00	4,560	10,982
1189.00	5.00	5,509	16,009

Spillway Outlet		
Bottom of Embankment Elevation	1187.50	msl
Height of Embankment[2]	1.50	ft
Top Width of Embankment	2.00	ft

Basin Size Check		
Wet Storage Volume Provided	6,320	sf
Dry Storage Volume provided	6,127	cf

Notes

1. See attached drainage area map.
2. Maximum height of embankment is 5 ft.
3. Per 2002 Connecticut Guidelines for Soil and Sediment Control, 134 cubic yards per acre of drainage area are provided. Half of this storage is wet and half of this storage is dry.

SEDIMENT TRAP CALCULATIONS			
Litchfield Solar			
HDR PROJECT NO.:	-		
DATE:	6/17/2021	BY:	JRP
REVISED:		RVW:	

Sediment Trap T-15 **Scenario:** Erosion Control

Drainage Area Characteristics		
Total drainage area (TDA)[1]	1.89	ac

Required Storage Volume			
Req'd Min. Wet Storage Volume[3]	(1811 cf	per ac of DA)[5]	3,422 cf
Req'd Min. Dry Storage Volume[3]	(1811 cf	per ac of DA)[5]	3,422 cf

Design Criteria		
Bottom Elevation	1202.00	msl
Depth of Wet Storage	1.75	ft
Depth of Dry Storage	1.25	ft
1 ft over Weir	1.00	ft

Basin Configuration		
Bottom Elevation	1202.00	msl
Wet Storage Elevation (Base of Stone Outlet)	1203.75	msl
Dry Storage Elevation (Weir Crest)	1205.00	msl
Top of Berm	1206.00	msl

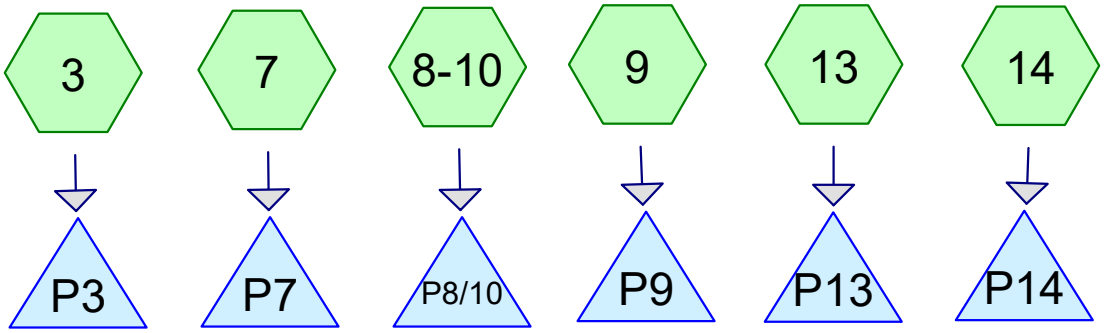
Basin Size			
Elev. (msl)	Depth (ft)	Area (sf)	Cumulative Volume (cf)
1202.00	0.00	1,935	0
1203.00	1.00	2,398	2,162
1204.00	2.00	2,885	4,800
1205.00	3.00	3,398	7,938
1206.00	4.00	3,936	11,602

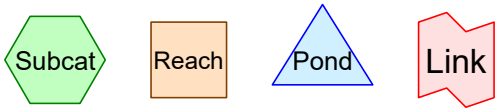
Spillway Outlet		
Bottom of Embankment Elevation	1204.50	msl
Height of Embankment[2]	1.50	ft
Top Width of Embankment	2.00	ft

Basin Size Check		
Wet Storage Volume Provided	4,110	sf
Dry Storage Volume provided	3,851	cf

Notes

1. See attached drainage area map.
2. Maximum height of embankment is 5 ft.
3. Per 2002 Connecticut Guidelines for Soil and Sediment Control, 134 cubic yards per acre of drainage area are provided. Half of this storage is wet and half of this storage is dry.





Routing Diagram for HydroCAD Litchfield Proposed - ESC Basins
Prepared by HDR, Inc, Printed 6/24/2021

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
7.890	74	(3)
4.100	63	(7)
28.040	85	(8-10)
6.810	83	(9)
1.630	54	(13)
4.600	76	(14)
53.070	**80**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
53.070	Other	3, 7, 8-10, 9, 13, 14
53.070		**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	0.000	0.000	0.000	53.070	53.070		3, 7, 8-10, 9, 13, 14
0.000	**0.000**	**0.000**	**0.000**	**53.070**	**53.070**	**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	P13	1,136.00	1,135.00	90.0	0.0111	0.012	18.0	0.0	0.0
2	P14	1,144.00	1,135.00	90.0	0.1000	0.012	24.0	0.0	0.0
3	P3	1,127.00	1,126.50	100.0	0.0050	0.012	18.0	0.0	0.0
4	P7	1,157.15	1,156.10	42.0	0.0250	0.012	18.0	0.0	0.0
5	P8/10	1,122.00	1,121.00	88.0	0.0114	0.012	36.0	0.0	0.0
6	P9	1,187.00	1,186.50	60.0	0.0083	0.012	18.0	0.0	0.0

Time span=0.00-60.00 hrs, dt=0.02 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 3: Runoff Area=7.890 ac 0.00% Impervious Runoff Depth=2.13"
Tc=10.5 min CN=74 Runoff=16.73 cfs 1.399 af

Subcatchment 7: Runoff Area=4.100 ac 0.00% Impervious Runoff Depth=1.32"
Tc=18.5 min CN=63 Runoff=4.02 cfs 0.452 af

Subcatchment 8-10: Runoff Area=28.040 ac 0.00% Impervious Runoff Depth=3.09"
Tc=16.4 min CN=85 Runoff=73.92 cfs 7.225 af

Subcatchment 9: Runoff Area=6.810 ac 0.00% Impervious Runoff Depth=2.90"
Tc=17.6 min CN=83 Runoff=16.43 cfs 1.648 af

Subcatchment 13: Runoff Area=1.630 ac 0.00% Impervious Runoff Depth=0.78"
Tc=14.4 min CN=54 Runoff=0.82 cfs 0.106 af

Subcatchment 14: Runoff Area=4.600 ac 0.00% Impervious Runoff Depth=2.29"
Tc=19.3 min CN=76 Runoff=8.40 cfs 0.878 af

Pond P13: Peak Elev=1,137.03' Storage=4,565 cf Inflow=0.82 cfs 0.106 af
Primary=0.01 cfs 0.005 af Secondary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.005 af

Pond P14: Peak Elev=1,148.88' Storage=21,288 cf Inflow=8.40 cfs 0.878 af
Primary=0.16 cfs 0.429 af Secondary=1.23 cfs 0.243 af Outflow=1.39 cfs 0.672 af

Pond P3: Peak Elev=1,134.64' Storage=35,412 cf Inflow=16.73 cfs 1.399 af
Primary=0.51 cfs 1.036 af Secondary=1.14 cfs 0.172 af Outflow=1.65 cfs 1.209 af

Pond P7: Peak Elev=1,159.79' Storage=16,364 cf Inflow=4.02 cfs 0.452 af
Primary=0.13 cfs 0.122 af Secondary=0.00 cfs 0.000 af Outflow=0.13 cfs 0.122 af

Pond P8/10: Peak Elev=1,128.64' Storage=155,124 cf Inflow=73.92 cfs 7.225 af
Primary=1.25 cfs 3.135 af Secondary=31.61 cfs 2.750 af Outflow=32.86 cfs 5.885 af

Pond P9: Peak Elev=1,190.62' Storage=42,647 cf Inflow=16.43 cfs 1.648 af
Primary=0.20 cfs 0.597 af Secondary=2.21 cfs 0.517 af Outflow=2.41 cfs 1.114 af

Total Runoff Area = 53.070 ac Runoff Volume = 11.707 af Average Runoff Depth = 2.65"
100.00% Pervious = 53.070 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 3:

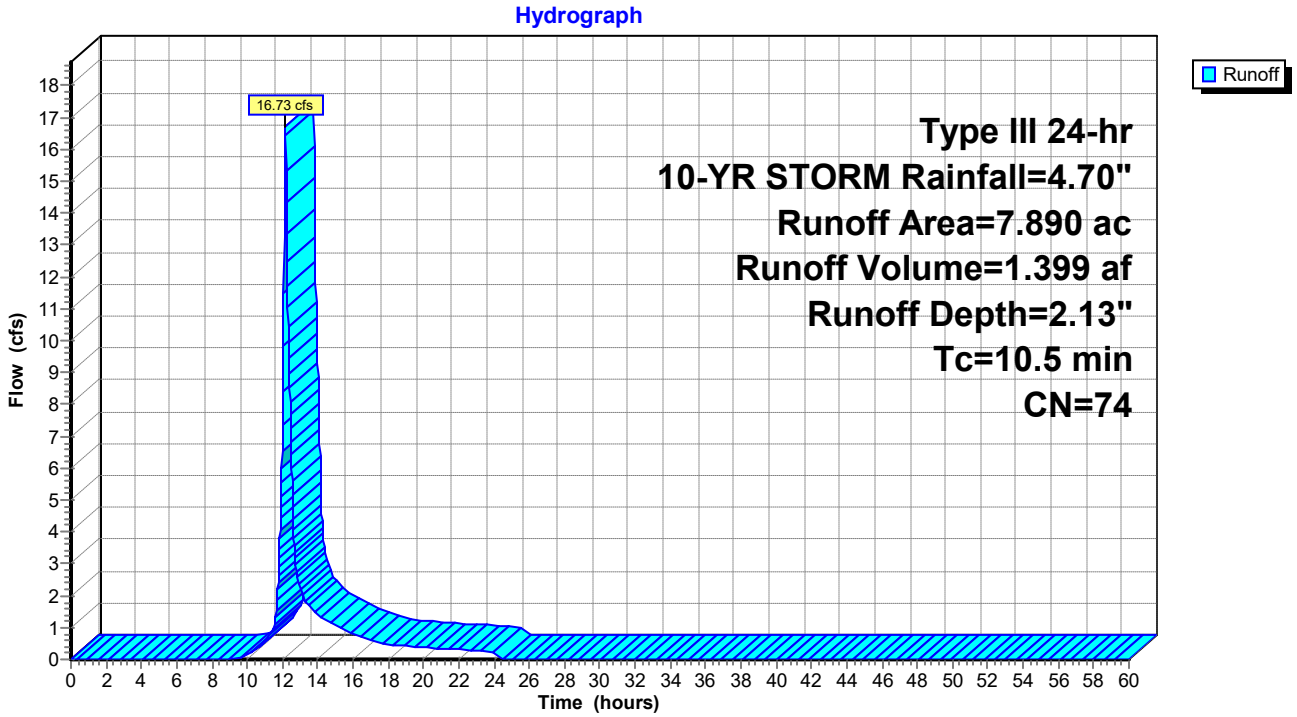
Runoff = 16.73 cfs @ 12.15 hrs, Volume= 1.399 af, Depth= 2.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	7.890	74	
	7.890		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5					**Direct Entry, NRCS Part 630**

Subcatchment 3:



Summary for Subcatchment 7:

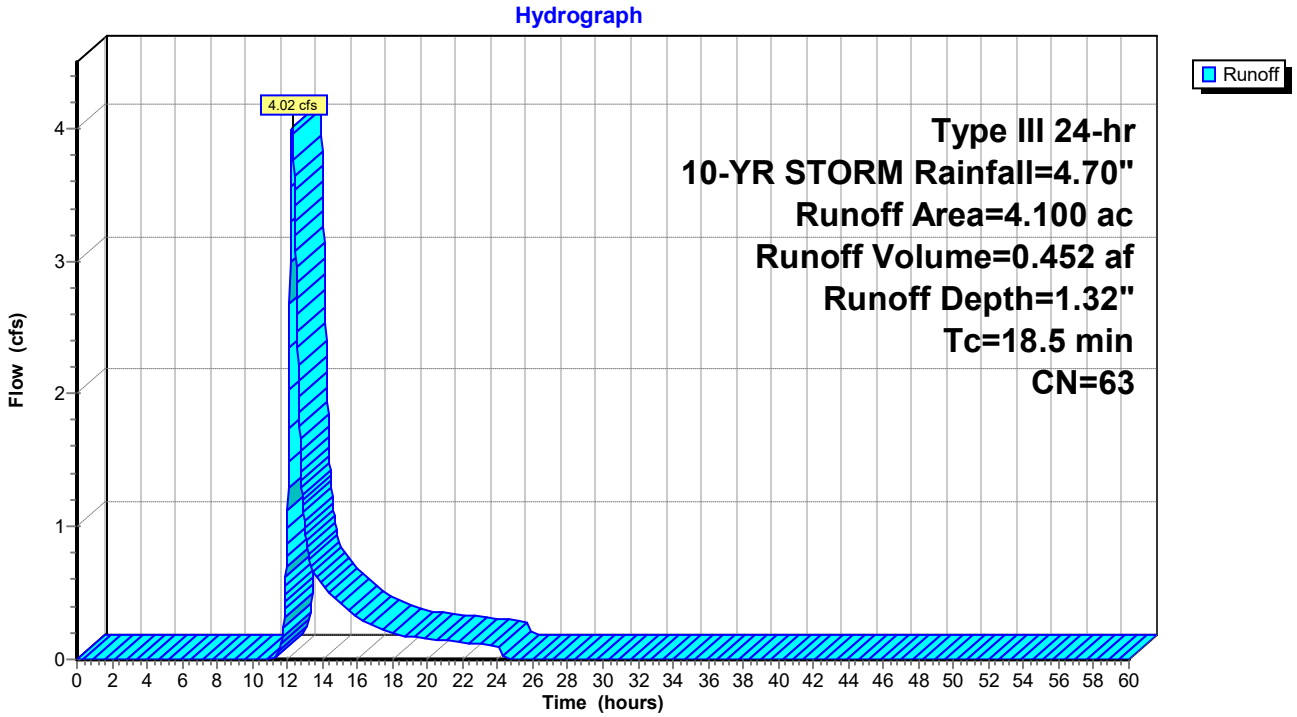
Runoff = 4.02 cfs @ 12.28 hrs, Volume= 0.452 af, Depth= 1.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	4.100	63	
	4.100		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.5					**Direct Entry, NRCS Part 630**

Subcatchment 7:



Summary for Subcatchment 8-10:

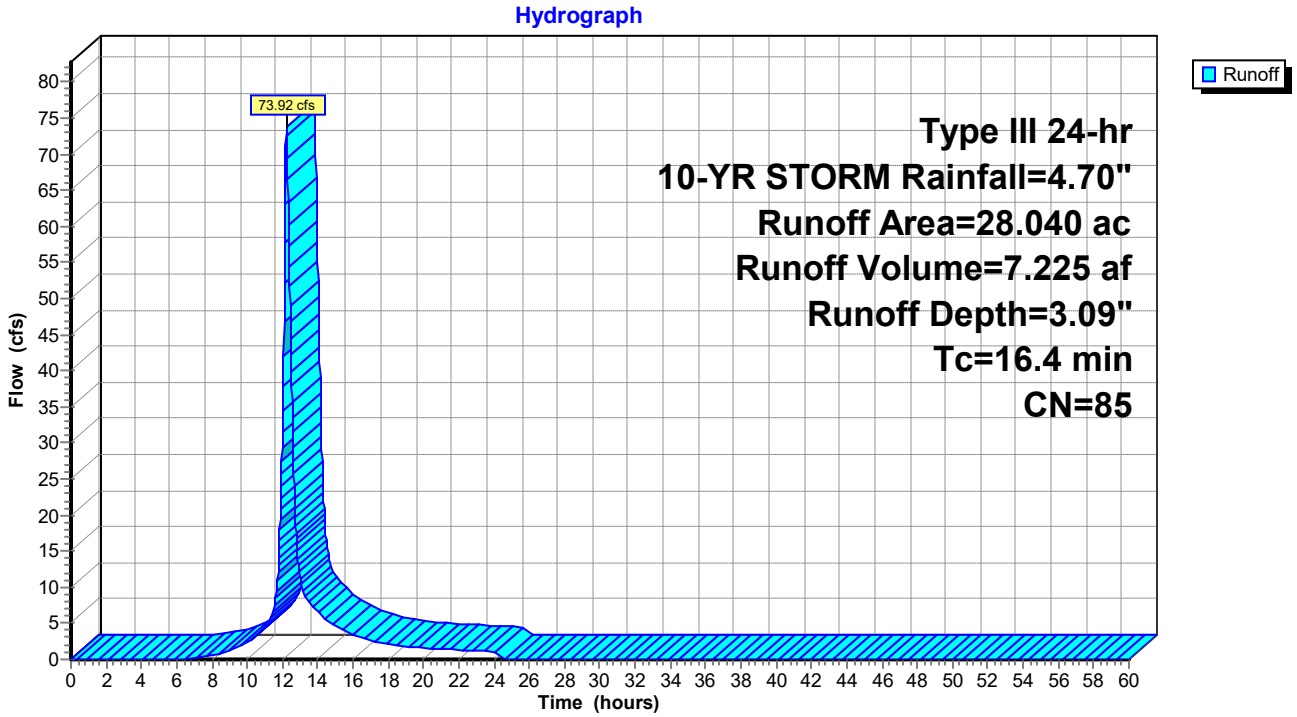
Runoff = 73.92 cfs @ 12.22 hrs, Volume= 7.225 af, Depth= 3.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	28.040	85	
	28.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.4					**Direct Entry, SCS TR-55**

Subcatchment 8-10:



Summary for Subcatchment 9:

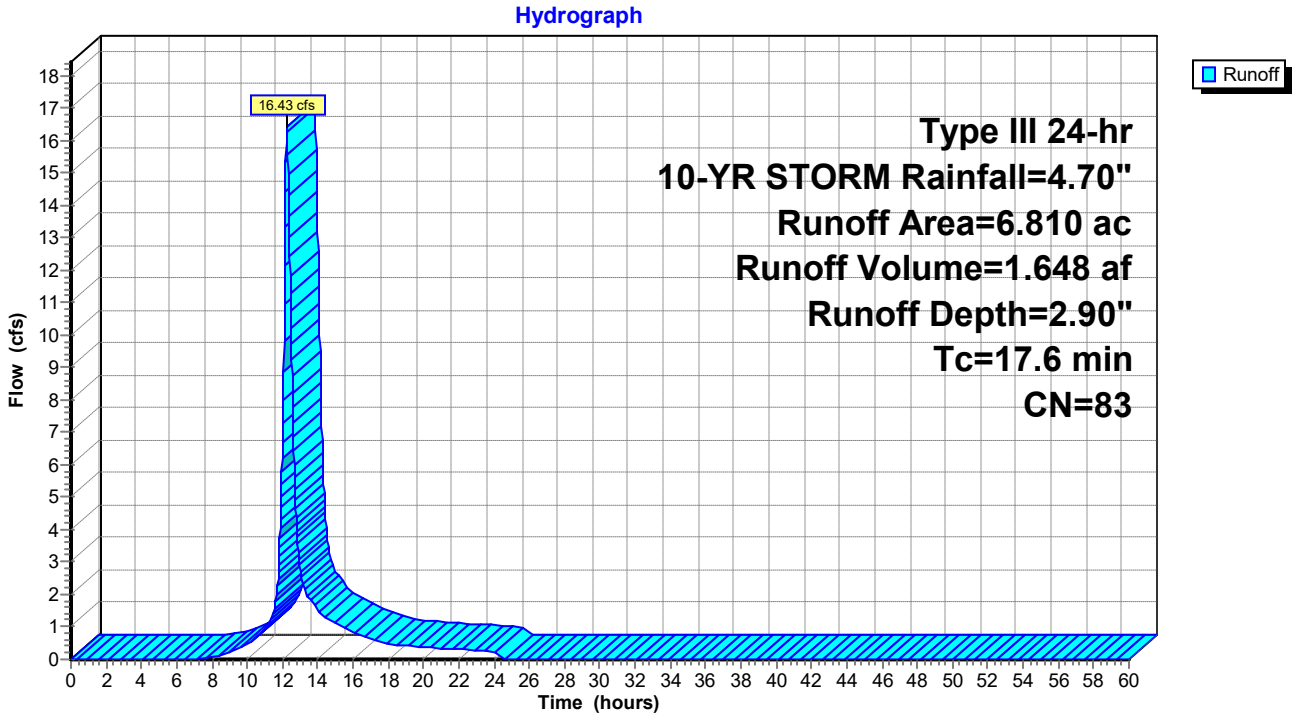
Runoff = 16.43 cfs @ 12.24 hrs, Volume= 1.648 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	6.810	83	
	6.810		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6					**Direct Entry, NRCS Part 630**

Subcatchment 9:



Summary for Subcatchment 13:

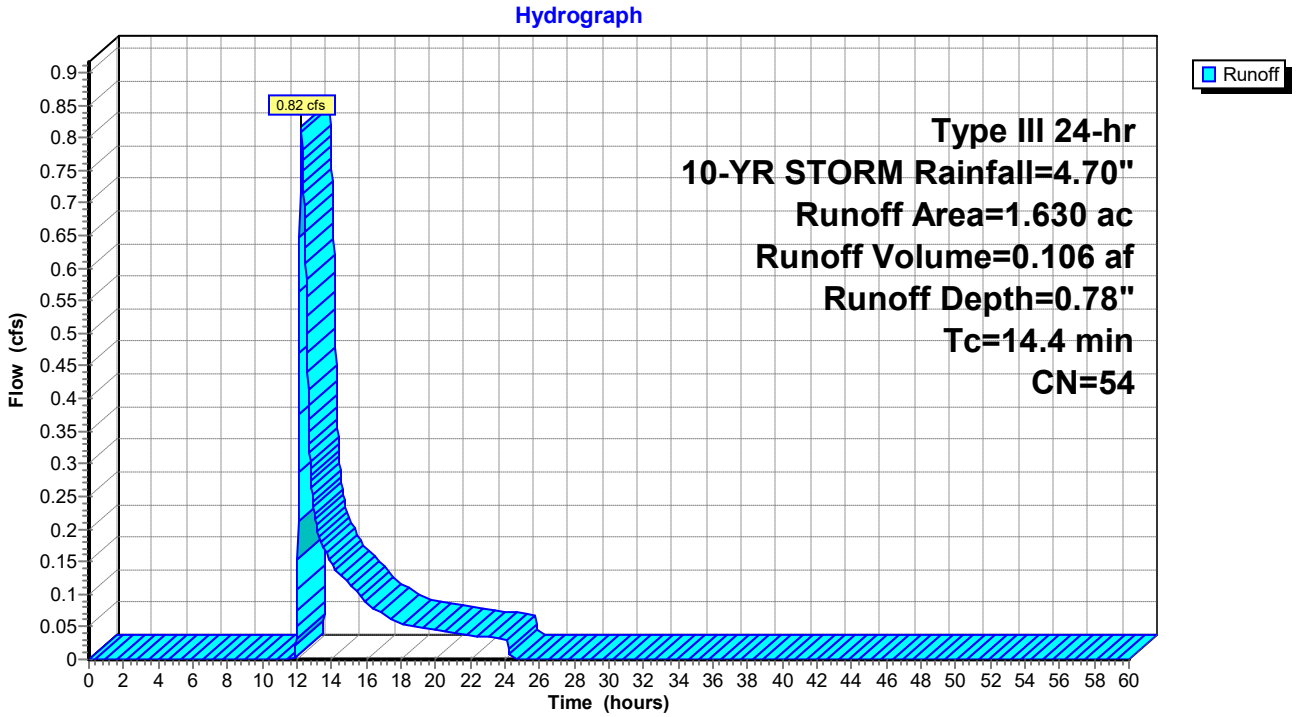
Runoff = 0.82 cfs @ 12.25 hrs, Volume= 0.106 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	1.630	54	
	1.630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4					**Direct Entry, NRCS Part 630**

Subcatchment 13:



Summary for Subcatchment 14:

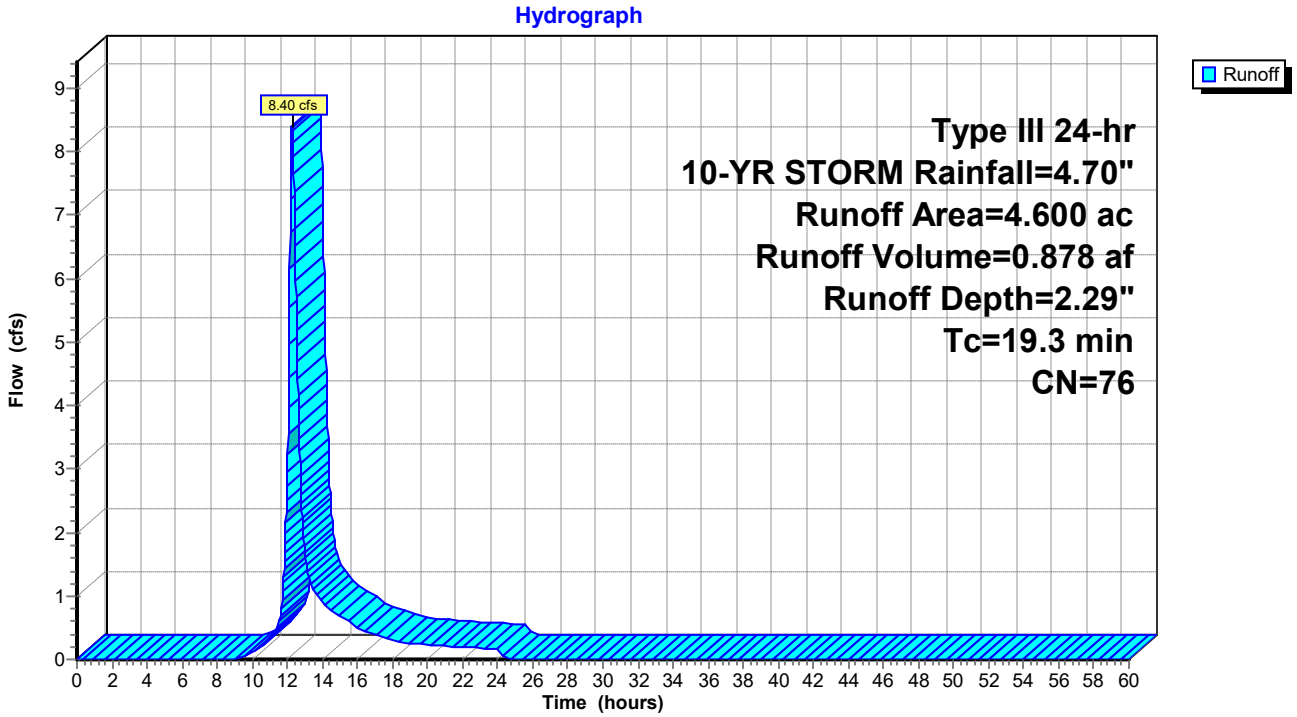
Runoff = 8.40 cfs @ 12.27 hrs, Volume= 0.878 af, Depth= 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YR STORM Rainfall=4.70"

	Area (ac)	CN	Description
*	4.600	76	
	4.600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.3					**Direct Entry, NRCS Part 630**

Subcatchment 14:



Summary for Pond P13:

Inflow Area = 1.630 ac, 0.00% Impervious, Inflow Depth = 0.78" for 10-YR STORM event
Inflow = 0.82 cfs @ 12.25 hrs, Volume= 0.106 af
Outflow = 0.01 cfs @ 24.21 hrs, Volume= 0.005 af, Atten= 98%, Lag= 717.2 min
Primary = 0.01 cfs @ 24.21 hrs, Volume= 0.005 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
Peak Elev= 1,137.03' @ 24.21 hrs Surf.Area= 4,961 sf Storage= 4,565 cf

Plug-Flow detention time= 906.1 min calculated for 0.005 af (4% of inflow)
Center-of-Mass det. time= 721.2 min (1,632.2 - 910.9)

Volume	Invert	Avail.Storage	Storage Description
#1	1,136.00'	43,506 cf	**Custom Stage Data (Prismatic)** Listed below

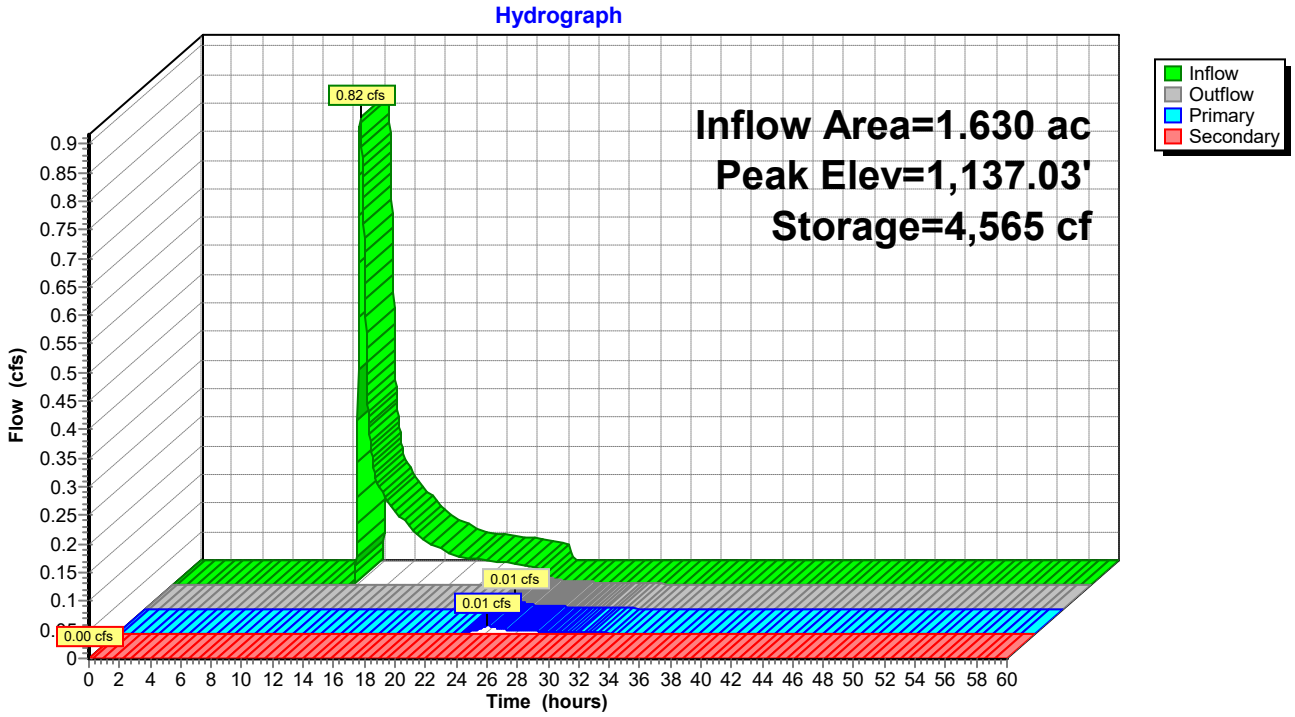
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,136.00	3,889	0	0
1,137.00	4,930	4,410	4,410
1,138.00	6,023	5,477	9,886
1,139.00	7,169	6,596	16,482
1,140.00	8,366	7,768	24,250
1,141.00	9,615	8,991	33,240
1,142.00	10,917	10,266	43,506

Device	Routing	Invert	Outlet Devices
#1	Primary	1,136.00'	**18.0" Round Culvert** L= 90.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,136.00' / 1,135.00' S= 0.0111 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Secondary	1,141.20'	**20.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#3	Device 1	1,137.00'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.01 cfs @ 24.21 hrs HW=1,137.03' (Free Discharge)
└**1=Culvert** (Passes 0.01 cfs of 4.46 cfs potential flow)
└**3=Orifice/Grate** (Weir Controls 0.01 cfs @ 0.55 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,136.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P13:


Hydrograph
Inflow Area=1.630 ac
Peak Elev=1,137.03'
Storage=4,565 cf
0.82 cfs
0.01 cfs
0.01 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Pond P14:

Inflow Area = 4.600 ac, 0.00% Impervious, Inflow Depth = 2.29" for 10-YR STORM event
Inflow = 8.40 cfs @ 12.27 hrs, Volume= 0.878 af
Outflow = 1.39 cfs @ 13.16 hrs, Volume= 0.672 af, Atten= 83%, Lag= 53.2 min
Primary = 0.16 cfs @ 13.16 hrs, Volume= 0.429 af
Secondary = 1.23 cfs @ 13.16 hrs, Volume= 0.243 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
Peak Elev= 1,148.88' @ 13.16 hrs Surf.Area= 6,161 sf Storage= 21,288 cf

Plug-Flow detention time= 738.4 min calculated for 0.672 af (77% of inflow)
Center-of-Mass det. time= 651.9 min (1,499.5 - 847.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,144.00'	21,986 cf	**Custom Stage Data (Prismatic)** Listed below

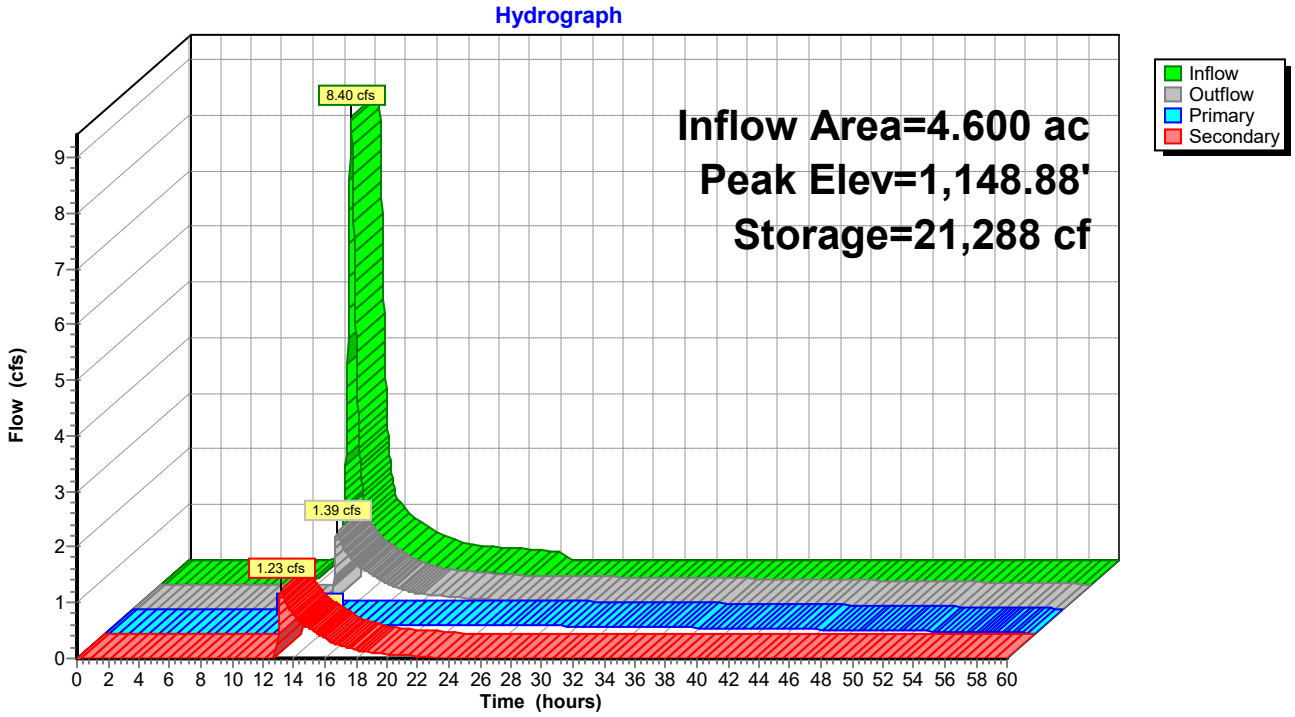
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,144.00	2,642	0	0
1,145.00	3,314	2,978	2,978
1,146.00	4,011	3,663	6,641
1,147.00	4,733	4,372	11,013
1,148.00	5,480	5,107	16,119
1,149.00	6,253	5,867	21,986

Device	Routing	Invert	Outlet Devices
#1	Primary	1,144.00'	**24.0" Round Culvert** L= 90.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,144.00' / 1,135.00' S= 0.1000 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Secondary	1,148.80'	**20.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#3	Device 1	1,146.50'	**2.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.16 cfs @ 13.16 hrs HW=1,148.88' (Free Discharge)
└**1=Culvert** (Passes 0.16 cfs of 29.80 cfs potential flow)
└**3=Orifice/Grate** (Orifice Controls 0.16 cfs @ 7.43 fps)

Secondary OutFlow Max=1.19 cfs @ 13.16 hrs HW=1,148.88' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 1.19 cfs @ 0.73 fps)

Pond P14:


Hydrograph
Inflow Area=4.600 ac
Peak Elev=1,148.88'
Storage=21,288 cf
8.40 cfs
1.39 cfs
1.23 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60

Summary for Pond P3:

Inflow Area = 7.890 ac, 0.00% Impervious, Inflow Depth = 2.13" for 10-YR STORM event
Inflow = 16.73 cfs @ 12.15 hrs, Volume= 1.399 af
Outflow = 1.65 cfs @ 13.60 hrs, Volume= 1.209 af, Atten= 90%, Lag= 86.8 min
Primary = 0.51 cfs @ 13.60 hrs, Volume= 1.036 af
Secondary = 1.14 cfs @ 13.60 hrs, Volume= 0.172 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 1,134.64' @ 13.60 hrs Surf.Area= 8,062 sf Storage= 35,412 cf

Plug-Flow detention time= 664.2 min calculated for 1.208 af (86% of inflow)
Center-of-Mass det. time= 603.3 min (1,448.0 - 844.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,127.00'	38,268 cf	**Custom Stage Data (Prismatic)** Listed below

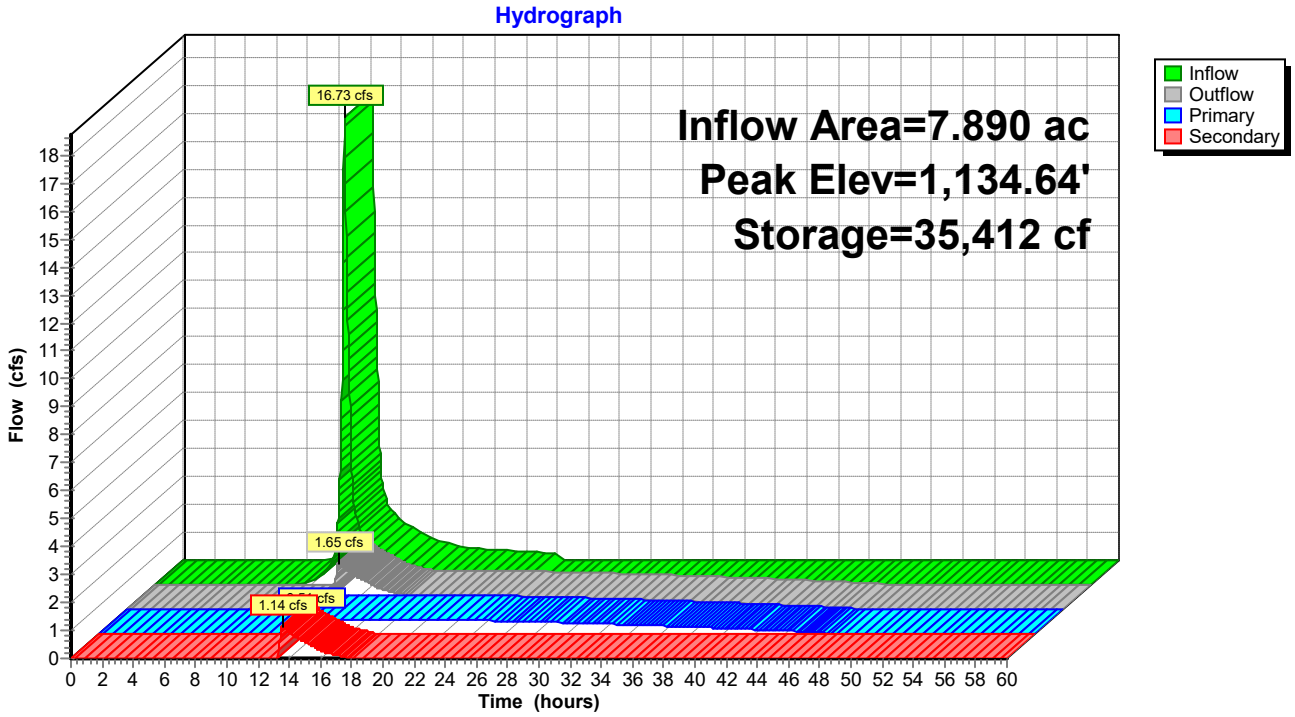
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,127.00	1,797	0	0
1,128.00	2,400	2,099	2,099
1,129.00	3,074	2,737	4,836
1,130.00	3,810	3,442	8,278
1,131.00	4,608	4,209	12,487
1,132.00	5,471	5,040	17,526
1,133.00	6,397	5,934	23,460
1,134.00	7,388	6,893	30,353
1,135.00	8,442	7,915	38,268

Device	Routing	Invert	Outlet Devices
#1	Primary	1,127.00'	**18.0" Round Culvert** L= 100.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,127.00' / 1,126.50' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Secondary	1,134.60'	**40.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#3	Device 1	1,130.00'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.51 cfs @ 13.60 hrs HW=1,134.64' (Free Discharge)
└**1=Culvert** (Passes 0.51 cfs of 20.89 cfs potential flow)
└**3=Orifice/Grate** (Orifice Controls 0.51 cfs @ 10.37 fps)

Secondary OutFlow Max=0.80 cfs @ 13.60 hrs HW=1,134.64' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 0.80 cfs @ 0.51 fps)

Pond P3:


Hydrograph
Inflow Area=7.890 ac
Peak Elev=1,134.64'
Storage=35,412 cf
16.73 cfs
1.65 cfs
1.14 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Pond P7:

Inflow Area = 4.100 ac, 0.00% Impervious, Inflow Depth = 1.32" for 10-YR STORM event
Inflow = 4.02 cfs @ 12.28 hrs, Volume= 0.452 af
Outflow = 0.13 cfs @ 22.22 hrs, Volume= 0.122 af, Atten= 97%, Lag= 596.4 min
Primary = 0.13 cfs @ 22.22 hrs, Volume= 0.122 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
Peak Elev= 1,159.79' @ 22.22 hrs Surf.Area= 0 sf Storage= 16,364 cf

Plug-Flow detention time= 648.5 min calculated for 0.122 af (27% of inflow)
Center-of-Mass det. time= 498.5 min (1,380.8 - 882.3)

Volume	Invert	Avail.Storage	Storage Description
#1	1,157.00'	34,851 cf	**Custom Stage Data** Listed below

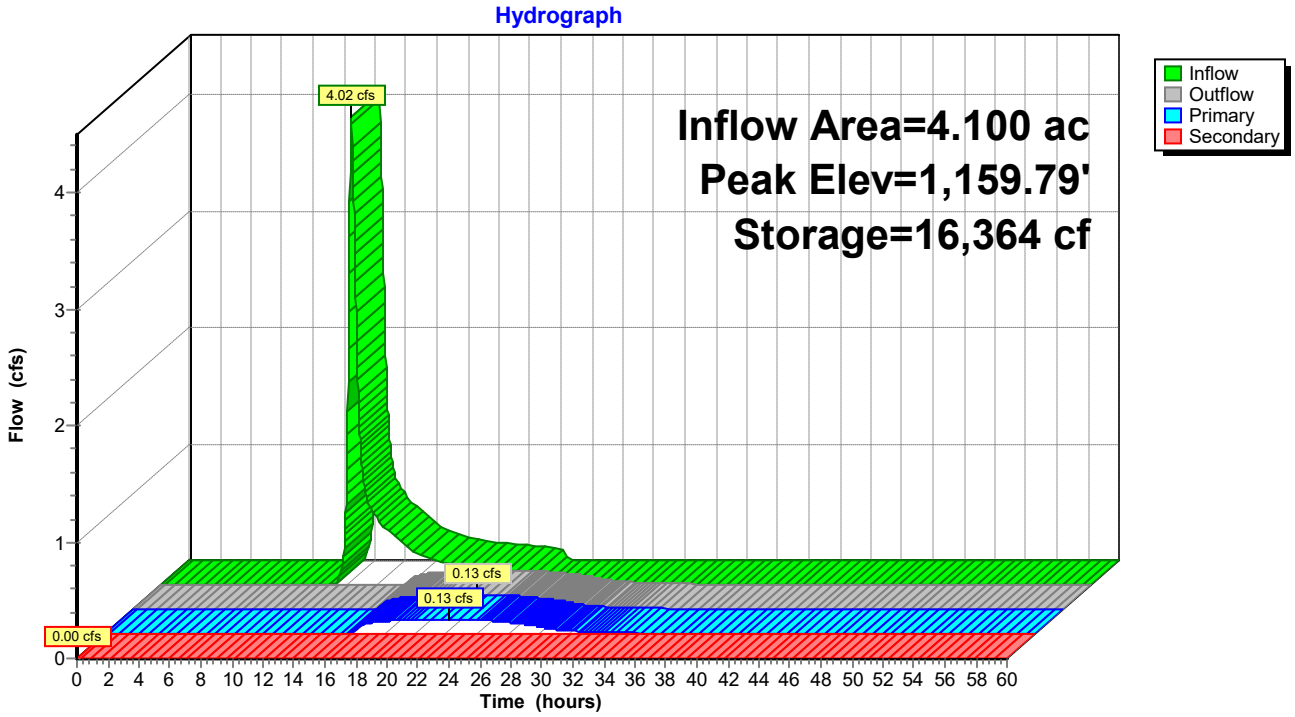
Elevation (feet)	Cum.Store (cubic-feet)
1,157.00	0
1,158.00	4,997
1,159.00	10,924
1,160.00	17,837
1,161.00	25,794
1,162.00	34,851

Device	Routing	Invert	Outlet Devices
#1	Primary	1,157.15'	**18.0" Round Culvert** L= 42.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,157.15' / 1,156.10' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Secondary	1,161.50'	**30.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#3	Device 1	1,159.50'	**3.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.13 cfs @ 22.22 hrs HW=1,159.79' (Free Discharge)
↑**1=Culvert** (Passes 0.13 cfs of 11.69 cfs potential flow)
↑**3=Orifice/Grate** (Orifice Controls 0.13 cfs @ 2.58 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,157.00' (Free Discharge)
↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P7:


Hydrograph
Inflow Area=4.100 ac
Peak Elev=1,159.79'
Storage=16,364 cf
4.02 cfs
0.13 cfs
0.13 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0 1 2 3 4
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60

Summary for Pond P8/10:

Inflow Area = 28.040 ac, 0.00% Impervious, Inflow Depth = 3.09" for 10-YR STORM event
Inflow = 73.92 cfs @ 12.22 hrs, Volume= 7.225 af
Outflow = 32.86 cfs @ 12.57 hrs, Volume= 5.885 af, Atten= 56%, Lag= 20.8 min
Primary = 1.25 cfs @ 12.57 hrs, Volume= 3.135 af
Secondary = 31.61 cfs @ 12.57 hrs, Volume= 2.750 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
Peak Elev= 1,128.64' @ 12.57 hrs Surf.Area= 0 sf Storage= 155,124 cf

Plug-Flow detention time= 604.8 min calculated for 5.884 af (81% of inflow)
Center-of-Mass det. time= 532.4 min (1,352.0 - 819.6)

Volume	Invert	Avail.Storage	Storage Description
#1	1,122.00'	166,405 cf	**Custom Stage Data** Listed below

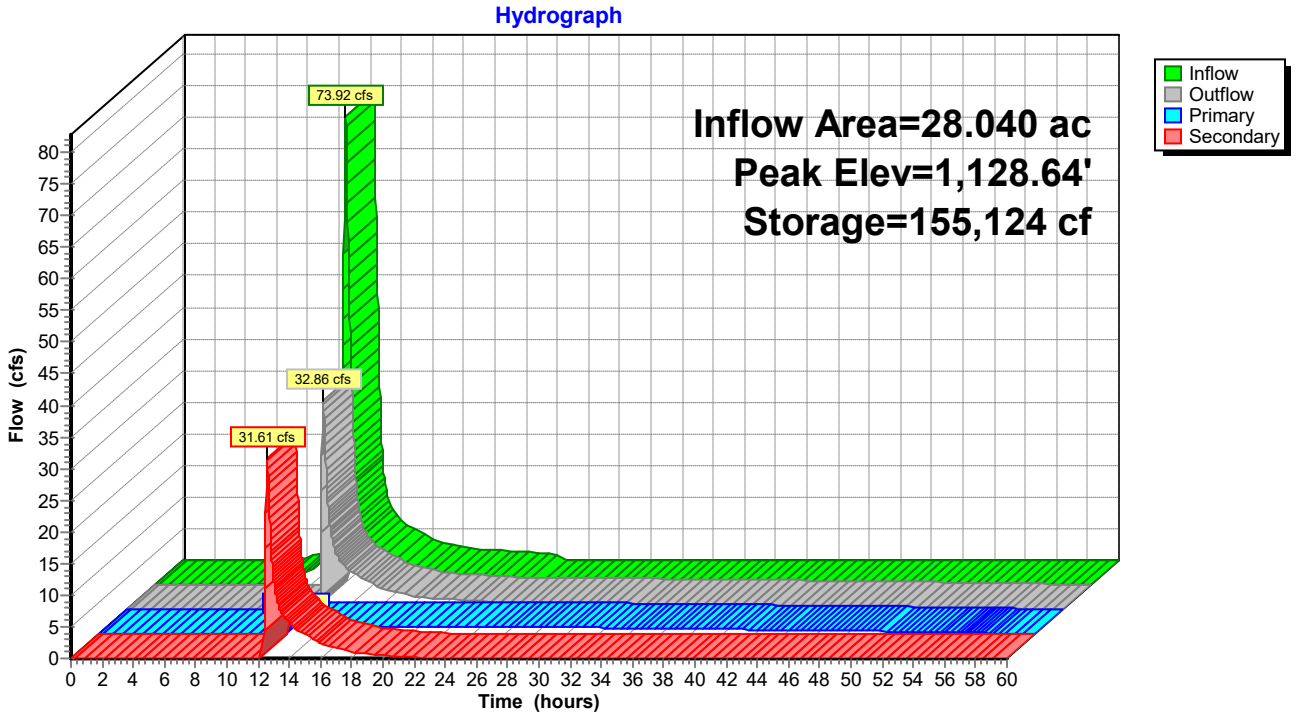
Elevation (feet)	Cum.Store (cubic-feet)
1,122.00	0
1,123.00	16,747
1,124.00	35,732
1,125.00	57,018
1,126.00	80,666
1,127.00	106,738
1,128.00	135,298
1,129.00	166,405

Device	Routing	Invert	Outlet Devices
#1	Primary	1,122.00'	**36.0" Round Culvert** L= 88.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,122.00' / 1,121.00' S= 0.0114 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Secondary	1,128.25'	**50.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#3	Device 1	1,125.00'	**5.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.25 cfs @ 12.57 hrs HW=1,128.64' (Free Discharge)
└**1=Culvert** (Passes 1.25 cfs of 77.14 cfs potential flow)
└**3=Orifice/Grate** (Orifice Controls 1.25 cfs @ 9.18 fps)

Secondary OutFlow Max=31.47 cfs @ 12.57 hrs HW=1,128.64' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 31.47 cfs @ 1.63 fps)

Pond P8/10:


Hydrograph
Inflow Area=28.040 ac
Peak Elev=1,128.64'
Storage=155,124 cf
73.92 cfs
32.86 cfs
31.61 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Summary for Pond P9:

Inflow Area = 6.810 ac, 0.00% Impervious, Inflow Depth = 2.90" for 10-YR STORM event
Inflow = 16.43 cfs @ 12.24 hrs, Volume= 1.648 af
Outflow = 2.41 cfs @ 13.12 hrs, Volume= 1.114 af, Atten= 85%, Lag= 52.7 min
Primary = 0.20 cfs @ 13.12 hrs, Volume= 0.597 af
Secondary = 2.21 cfs @ 13.12 hrs, Volume= 0.517 af

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs
Peak Elev= 1,190.62' @ 13.12 hrs Surf.Area= 16,432 sf Storage= 42,647 cf

Plug-Flow detention time= 753.8 min calculated for 1.113 af (68% of inflow)
Center-of-Mass det. time= 656.5 min (1,483.2 - 826.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,187.00'	48,733 cf	**Custom Stage Data (Prismatic)** Listed below

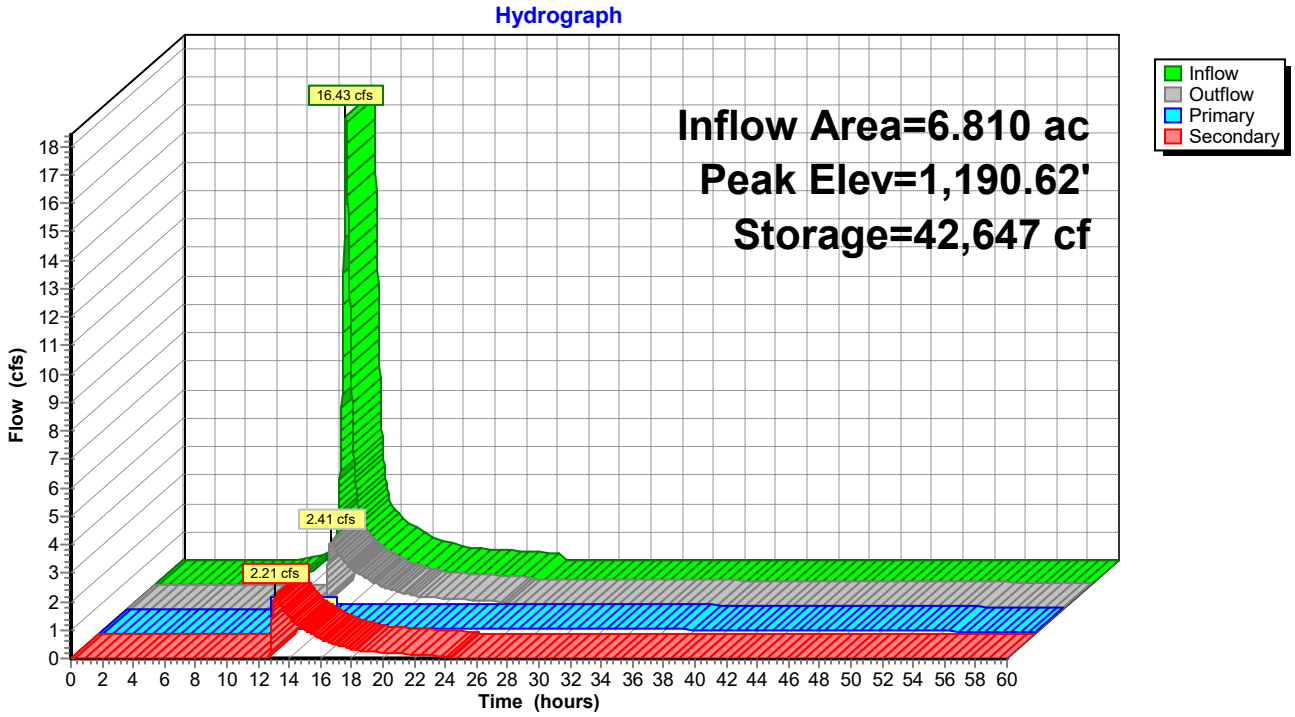
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,187.00	7,155	0	0
1,188.00	9,581	8,368	8,368
1,189.00	12,108	10,845	19,213
1,190.00	14,735	13,422	32,634
1,191.00	17,463	16,099	48,733

Device	Routing	Invert	Outlet Devices
#1	Primary	1,187.00'	**18.0" Round Culvert** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,187.00' / 1,186.50' S= 0.0083 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Secondary	1,190.50'	**20.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64
#3	Device 1	1,189.00'	**2.5" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.20 cfs @ 13.12 hrs HW=1,190.62' (Free Discharge)
↑—**1=Culvert** (Passes 0.20 cfs of 14.42 cfs potential flow)
↑—**3=Orifice/Grate** (Orifice Controls 0.20 cfs @ 5.93 fps)

Secondary OutFlow Max=2.19 cfs @ 13.12 hrs HW=1,190.62' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 2.19 cfs @ 0.90 fps)

Pond P9:


Hydrograph
Inflow Area=6.810 ac
Peak Elev=1,190.62'
Storage=42,647 cf
16.43 cfs
2.41 cfs
2.21 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Appendix H

Culvert and Ditch Calculations

Litchfield Solar Array Facility
Litchfield, CT
SRC

9/29/2020

Culvert Calculations

Storm Event: 50-yr
Min. Openness Ratio (OR) Required: 0.25

Rainfall (in.): 25-yr 50-yr 100-yr
5.5 6.3 7.0

0.30 min

Culvert	Type	Drainage Area	CN	Est. Peak Flow Q 25 (cfs)	Est. Peak Flow Q 50-yr (cfs)	Est. Peak Flow Q 100-yr (cfs)	Length (ft)	Shape	Span (ft)	Rise (ft)		Area (sf)	Open Area (sf)	OR (Open Area) / Length	Rise/ Span	Req'd Cover (in)	US Inv.	Min. Roadway Elev.	TOW Elev. (+6")	Ex Stream Slope (%)	Arch Req'd
C-1	New	11.51	80.4	28.13	34.03	N/A	16	Arch (Bottomless)	6	2.292	2' - 3.5"	13.752	13.75	0.86	0.38	12.00	1194.76	1198.05	1198.55	8.40	Yes
C-2	New	3.97	79.5	13.85	16.82	N/A	71	Arch (Bottomless)	6	3.167	3' - 2"	19.00	19.00	0.27	0.53	12.00	N/A	N/A	N/A	12.2	Yes
C-3	New	276.79	75.0	299.96	372.42	437.21	20	Arch (Bottomless)	15	4.625	4'-7.5"	69.38	69.38	3.47	0.31	24.00	1109.61	1116.24	1116.74	3.7	Yes

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

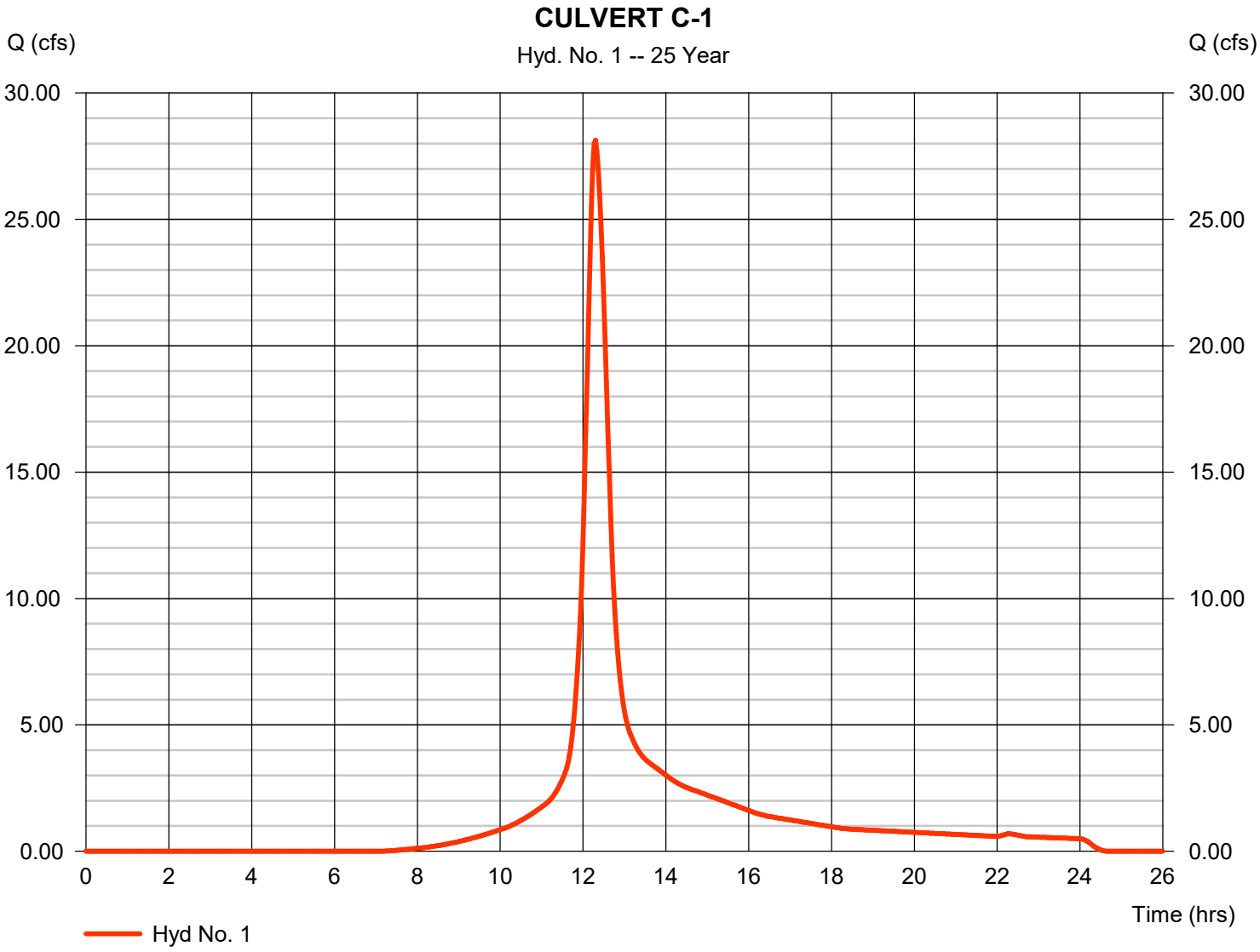
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	28.13	2	738	138,698	------	------	------	CULVERT C-1
2	SCS Runoff	13.85	2	726	47,338	------	------	------	CULVERT C-2
3	SCS Runoff	299.96	2	778	2,860,308	------	------	------	CULVERT C-3

Hydrograph Report

Hyd. No. 1

CULVERT C-1

Hydrograph type	=	SCS Runoff	Peak discharge	=	28.13 cfs
Storm frequency	=	25 yrs	Time to peak	=	12.30 hrs
Time interval	=	2 min	Hyd. volume	=	138,698 cuft
Drainage area	=	11.510 ac	Curve number	=	80.4
Basin Slope	=	2.7 %	Hydraulic length	=	1403 ft
Tc method	=	LAG	Time of conc. (Tc)	=	25.00 min
Total precip.	=	5.50 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

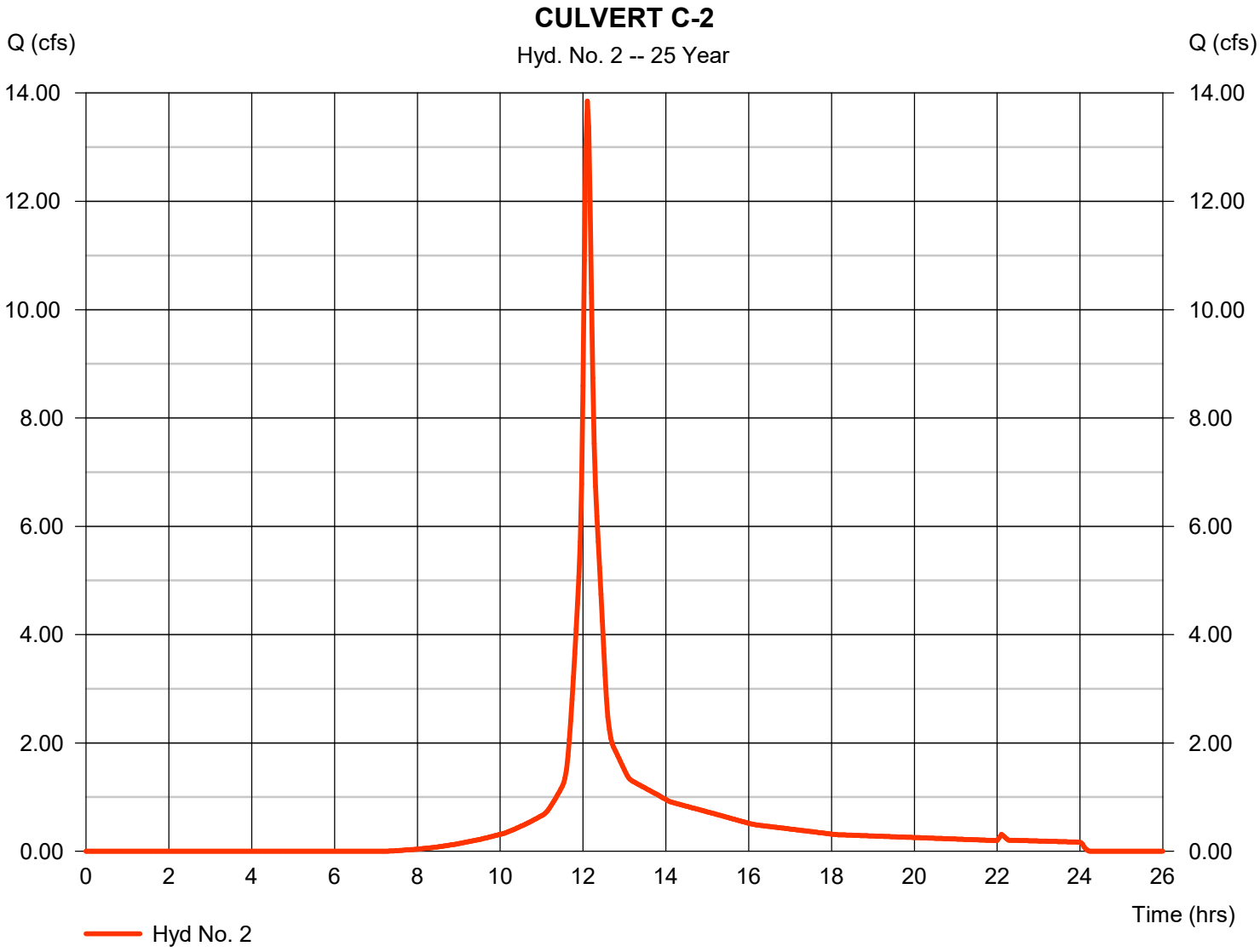


Hydrograph Report

Hyd. No. 2

CULVERT C-2

Hydrograph type	= SCS Runoff	Peak discharge	= 13.85 cfs
Storm frequency	= 25 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 47,338 cuft
Drainage area	= 3.970 ac	Curve number	= 79.5
Basin Slope	= 8.1 %	Hydraulic length	= 538 ft
Tc method	= LAG	Time of conc. (Tc)	= 6.93 min
Total precip.	= 5.50 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

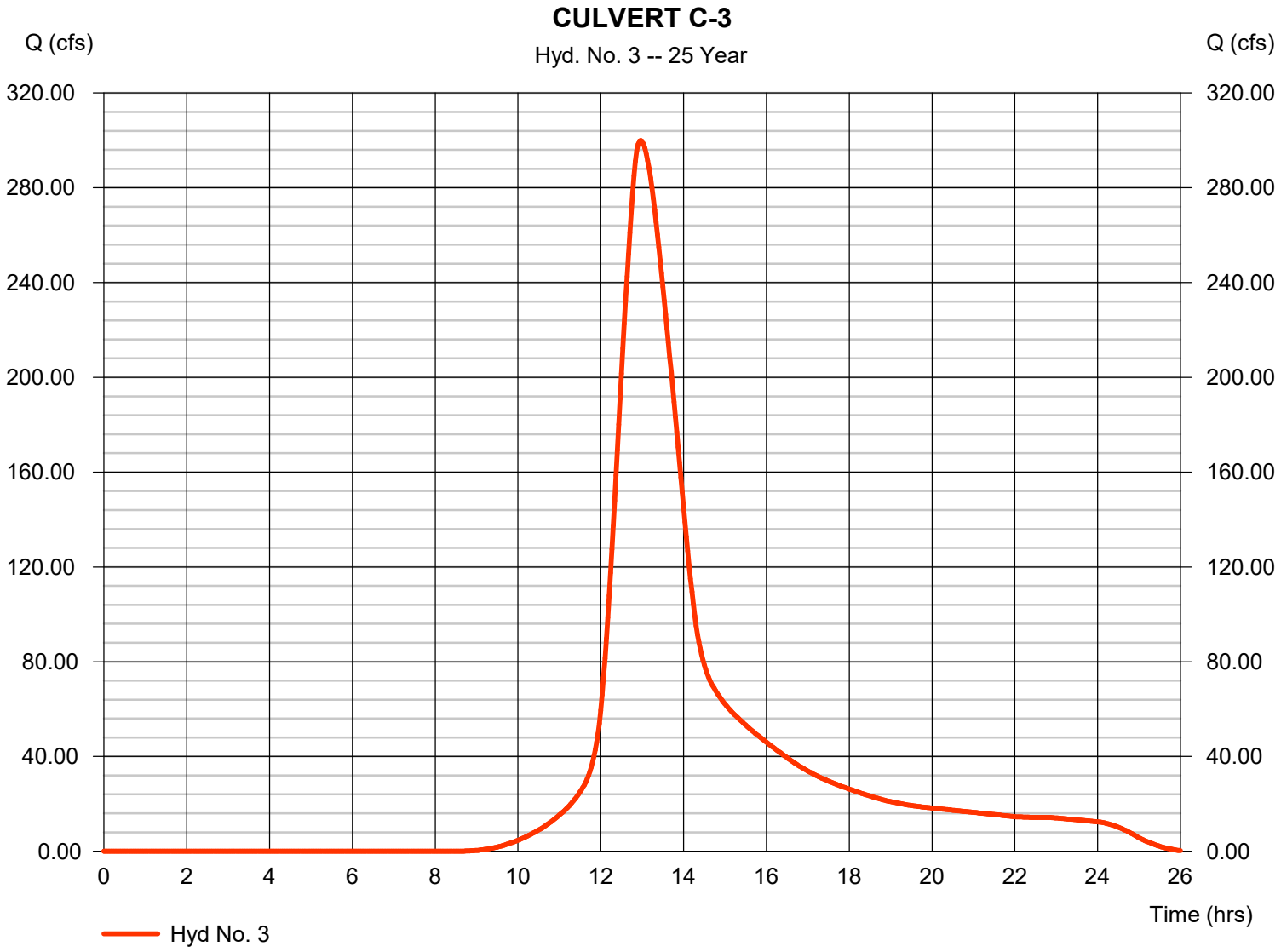


Hydrograph Report

Hyd. No. 3

CULVERT C-3

Hydrograph type	=	SCS Runoff	Peak discharge	=	299.96 cfs
Storm frequency	=	25 yrs	Time to peak	=	12.97 hrs
Time interval	=	2 min	Hyd. volume	=	2,860,308 cuft
Drainage area	=	276.790 ac	Curve number	=	75
Basin Slope	=	3.1 %	Hydraulic length	=	5798 ft
Tc method	=	LAG	Time of conc. (Tc)	=	85.67 min
Total precip.	=	5.50 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

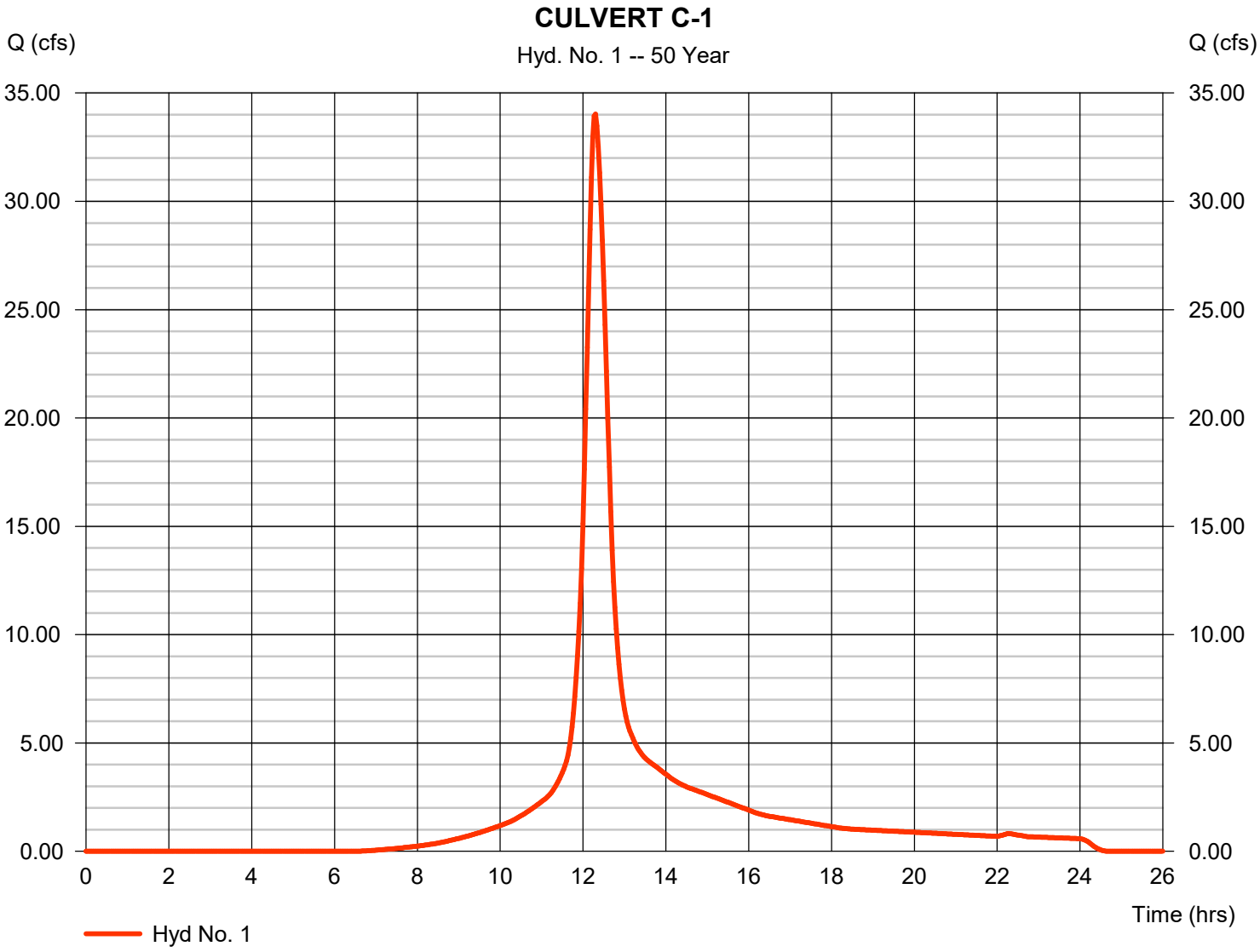
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	34.03	2	738	168,419	------	------	------	CULVERT C-1
2	SCS Runoff	16.82	2	726	57,655	------	------	------	CULVERT C-2
3	SCS Runoff	372.42	2	778	3,538,866	------	------	------	CULVERT C-3

Hydrograph Report

Hyd. No. 1

CULVERT C-1

Hydrograph type	= SCS Runoff	Peak discharge	= 34.03 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.30 hrs
Time interval	= 2 min	Hyd. volume	= 168,419 cuft
Drainage area	= 11.510 ac	Curve number	= 80.4
Basin Slope	= 2.7 %	Hydraulic length	= 1403 ft
Tc method	= LAG	Time of conc. (Tc)	= 25.00 min
Total precip.	= 6.30 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

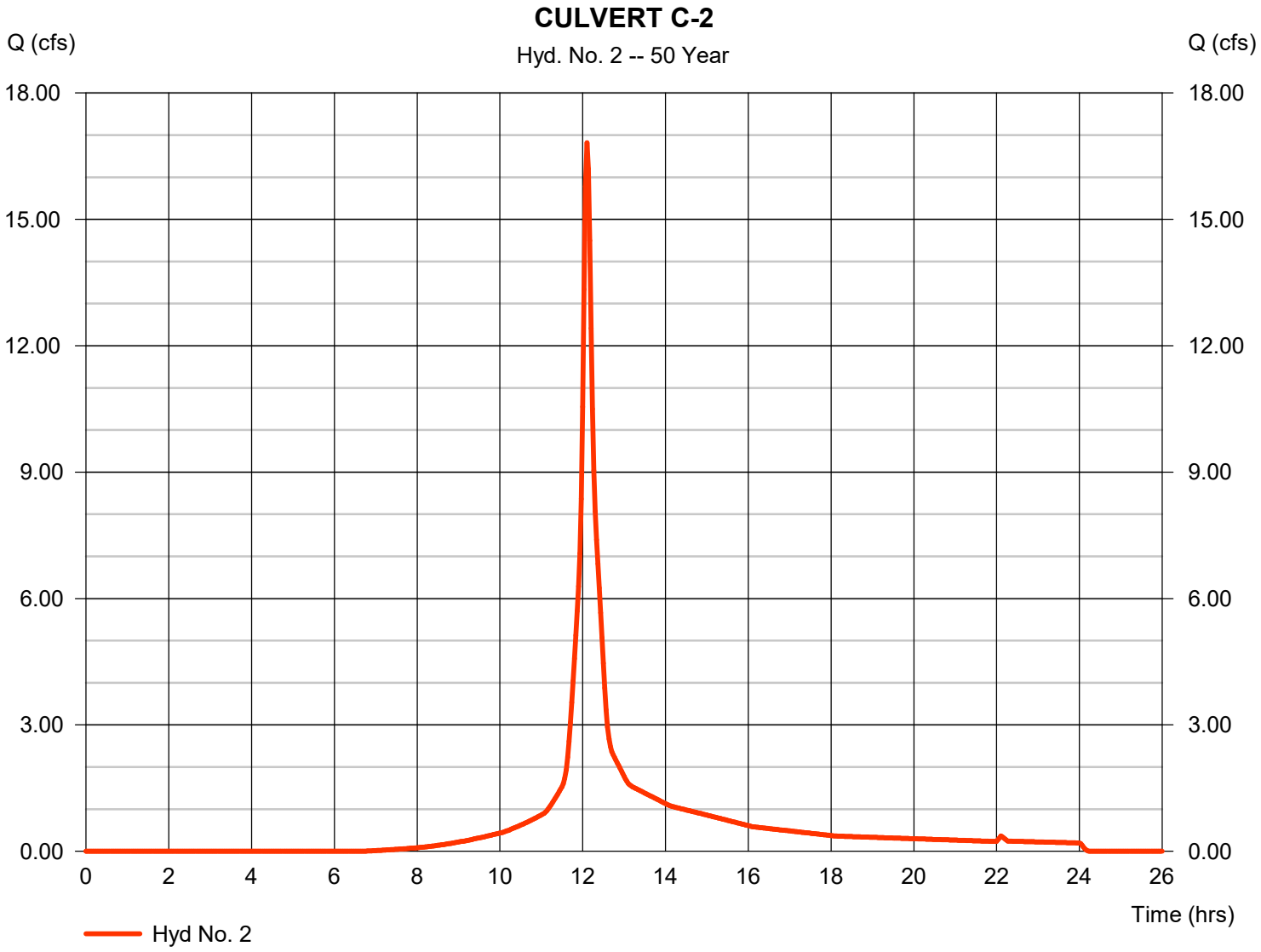


Hydrograph Report

Hyd. No. 2

CULVERT C-2

Hydrograph type	=	SCS Runoff	Peak discharge	=	16.82 cfs
Storm frequency	=	50 yrs	Time to peak	=	12.10 hrs
Time interval	=	2 min	Hyd. volume	=	57,655 cuft
Drainage area	=	3.970 ac	Curve number	=	79.5
Basin Slope	=	8.1 %	Hydraulic length	=	538 ft
Tc method	=	LAG	Time of conc. (Tc)	=	6.93 min
Total precip.	=	6.30 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

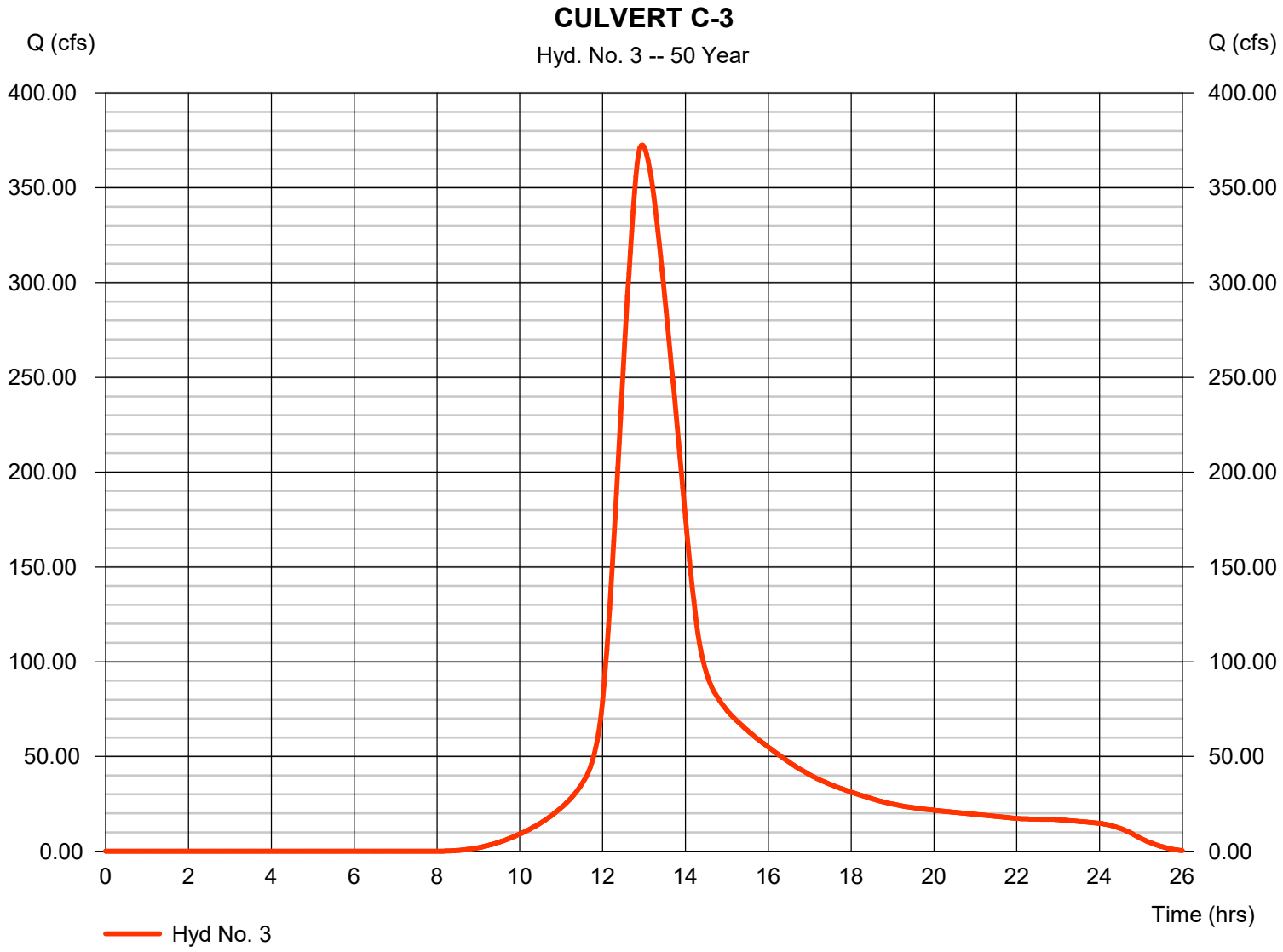


Hydrograph Report

Hyd. No. 3

CULVERT C-3

Hydrograph type	=	SCS Runoff	Peak discharge	=	372.42 cfs
Storm frequency	=	50 yrs	Time to peak	=	12.97 hrs
Time interval	=	2 min	Hyd. volume	=	3,538,866 cuft
Drainage area	=	276.790 ac	Curve number	=	75
Basin Slope	=	3.1 %	Hydraulic length	=	5798 ft
Tc method	=	LAG	Time of conc. (Tc)	=	85.67 min
Total precip.	=	6.30 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v2018.3

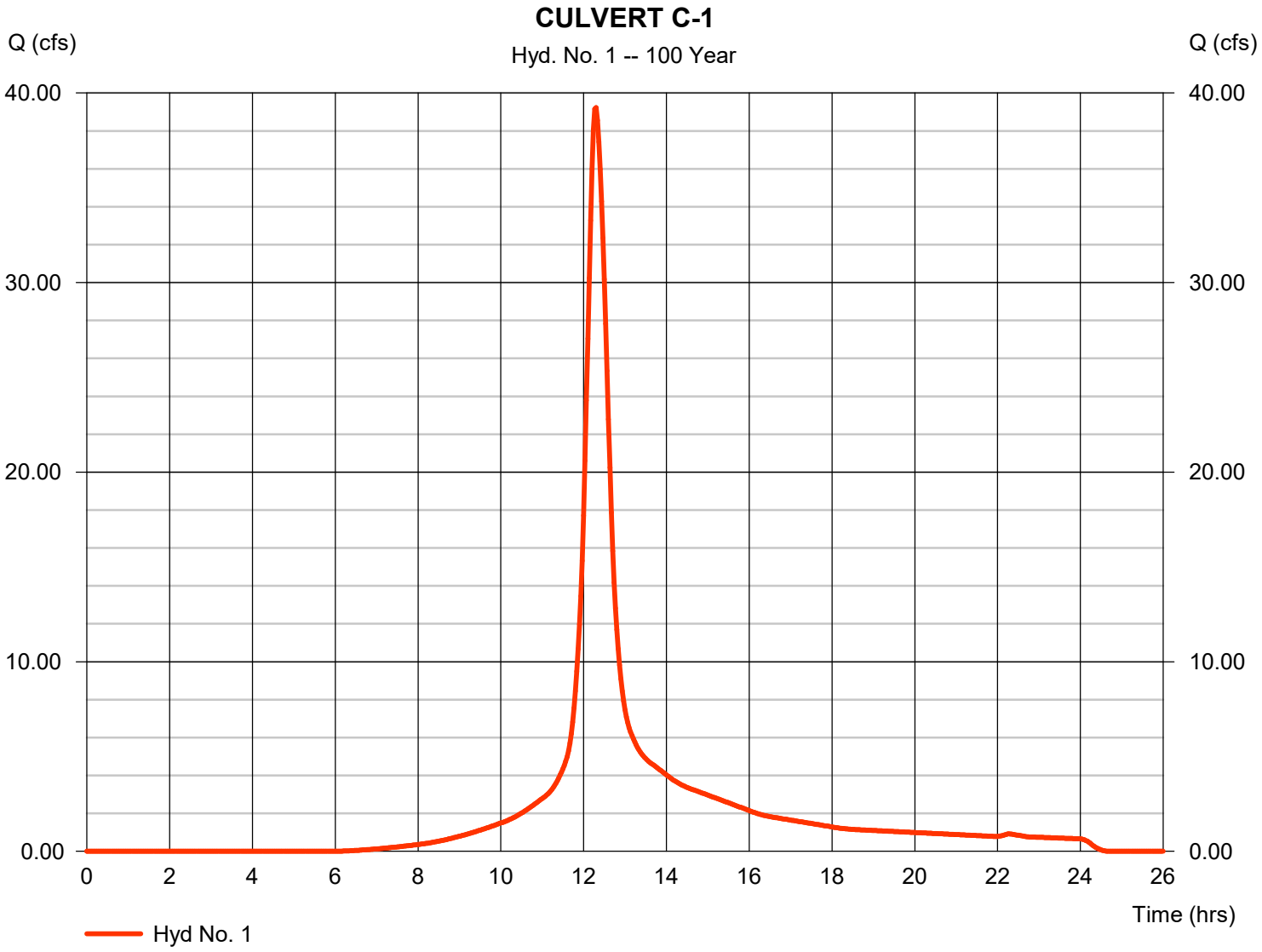
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	39.23	2	738	194,892	------	------	------	CULVERT C-1
2	SCS Runoff	19.43	2	726	66,858	------	------	------	CULVERT C-2
3	SCS Runoff	437.21	2	776	4,149,079	------	------	------	CULVERT C-3

Hydrograph Report

Hyd. No. 1

CULVERT C-1

Hydrograph type	=	SCS Runoff	Peak discharge	=	39.23 cfs
Storm frequency	=	100 yrs	Time to peak	=	12.30 hrs
Time interval	=	2 min	Hyd. volume	=	194,892 cuft
Drainage area	=	11.510 ac	Curve number	=	80.4
Basin Slope	=	2.7 %	Hydraulic length	=	1403 ft
Tc method	=	LAG	Time of conc. (Tc)	=	25.00 min
Total precip.	=	7.00 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

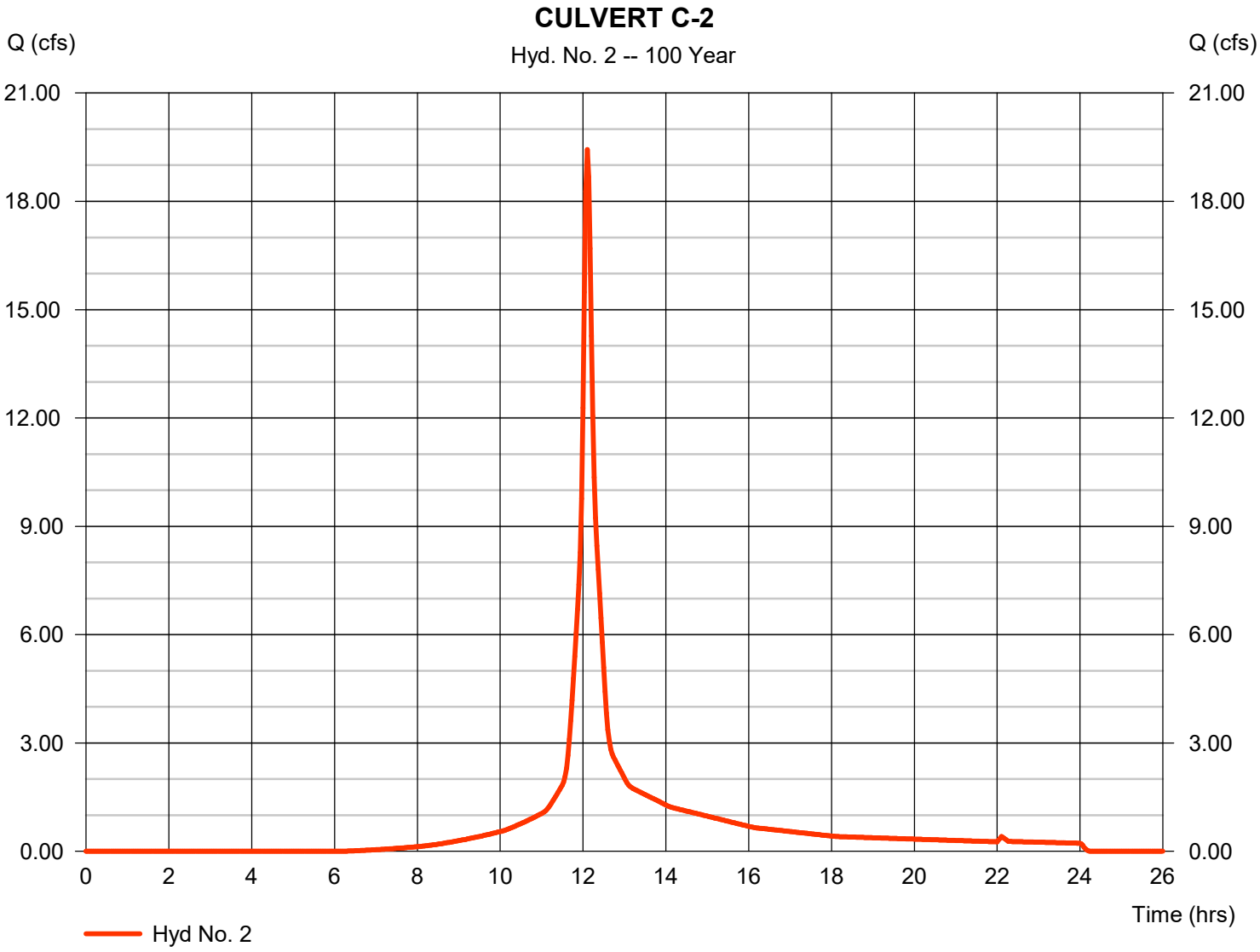


Hydrograph Report

Hyd. No. 2

CULVERT C-2

Hydrograph type	= SCS Runoff	Peak discharge	= 19.43 cfs
Storm frequency	= 100 yrs	Time to peak	= 12.10 hrs
Time interval	= 2 min	Hyd. volume	= 66,858 cuft
Drainage area	= 3.970 ac	Curve number	= 79.5
Basin Slope	= 8.1 %	Hydraulic length	= 538 ft
Tc method	= LAG	Time of conc. (Tc)	= 6.93 min
Total precip.	= 7.00 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

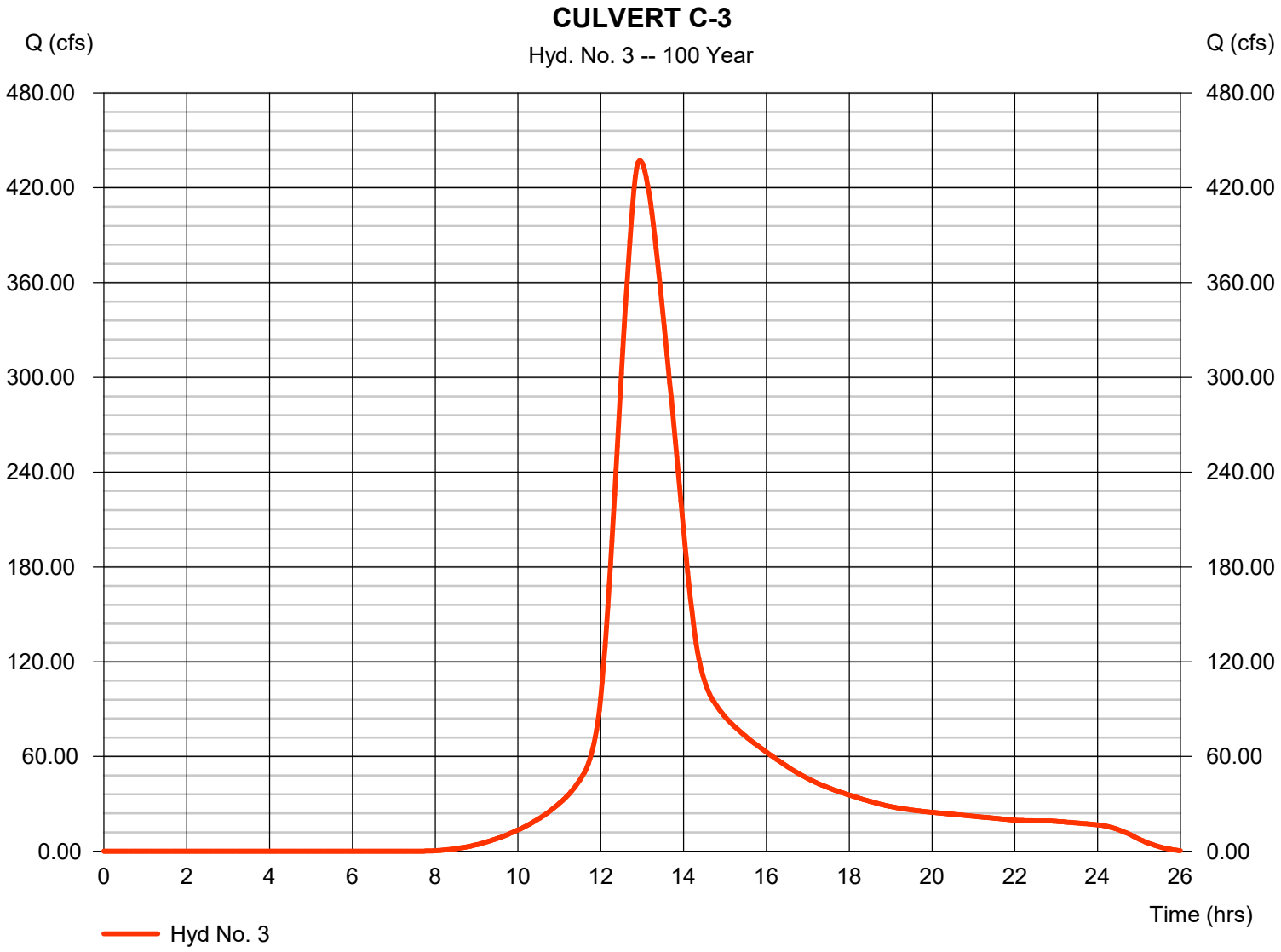


Hydrograph Report

Hyd. No. 3

CULVERT C-3

Hydrograph type	=	SCS Runoff	Peak discharge	=	437.21 cfs
Storm frequency	=	100 yrs	Time to peak	=	12.93 hrs
Time interval	=	2 min	Hyd. volume	=	4,149,079 cuft
Drainage area	=	276.790 ac	Curve number	=	75
Basin Slope	=	3.1 %	Hydraulic length	=	5798 ft
Tc method	=	LAG	Time of conc. (Tc)	=	85.67 min
Total precip.	=	7.00 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	69.8703	13.1000	0.8658	--------
3	0.0000	0.0000	0.0000	--------
5	79.2597	14.6000	0.8369	--------
10	88.2351	15.5000	0.8279	--------
25	102.6072	16.5000	0.8217	--------
50	114.8193	17.2000	0.8199	--------
100	127.1596	17.8000	0.8186	--------

File name: SampleFHA.idf

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	5.69	4.61	3.89	3.38	2.99	2.69	2.44	2.24	2.07	1.93	1.81	1.70
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.57	5.43	4.65	4.08	3.65	3.30	3.02	2.79	2.59	2.42	2.27	2.15
10	7.24	6.04	5.21	4.59	4.12	3.74	3.43	3.17	2.95	2.77	2.60	2.46
25	8.25	6.95	6.03	5.34	4.80	4.38	4.02	3.73	3.48	3.26	3.07	2.91
50	9.04	7.65	6.66	5.92	5.34	4.87	4.49	4.16	3.88	3.65	3.44	3.25
100	9.83	8.36	7.30	6.50	5.87	5.36	4.94	4.59	4.29	4.03	3.80	3.60

Tc = time in minutes. Values may exceed 60.

Precip. file name: Sample.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	2.20	0.00	3.30	4.25	5.50	6.30	7.00
SCS 6-Hr	0.00	1.80	0.00	0.00	2.60	0.00	0.00	0.00
Huff-1st	0.00	1.55	0.00	2.75	4.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	1.75	0.00	2.80	3.90	0.00	0.00	0.00

HY-8 Culvert Analysis Report

Water Surface Profile Plot for Culvert: CULV C-1

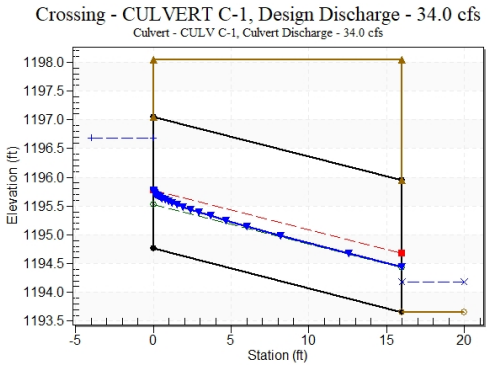


Table 1 - Culvert Summary Table: CULV C-1

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
10.00	10.00	1195.53	0.768	0.0*	1-S2n	0.340	0.445	0.340	0.262	4.990	6.306
12.40	12.40	1195.65	0.890	0.0*	1-S2n	0.390	0.514	0.390	0.296	5.403	6.769
14.81	14.81	1195.77	1.006	0.0*	1-S2n	0.438	0.578	0.438	0.327	5.764	7.167
17.21	17.21	1195.88	1.116	0.0*	1-S2n	0.484	0.640	0.484	0.356	6.084	7.519
19.61	19.61	1195.99	1.231	0.0*	1-S2n	0.528	0.698	0.528	0.383	6.370	7.836
22.02	22.02	1196.11	1.350	0.0*	1-S2n	0.571	0.755	0.574	0.408	6.611	8.126
24.42	24.42	1196.23	1.468	0.0*	1-S2n	0.613	0.810	0.613	0.433	6.883	8.388
26.82	26.82	1196.35	1.587	0.065	1-S2n	0.654	0.863	0.654	0.455	7.109	8.634
29.22	29.22	1196.47	1.705	0.173	1-S2n	0.694	0.913	0.694	0.477	7.322	8.863
31.63	31.63	1196.58	1.819	0.284	1-S2n	0.733	0.962	0.738	0.498	7.480	9.079
34.03	34.03	1196.69	1.927	0.398	1-S2n	0.773	1.011	0.779	0.518	7.644	9.278

* Full Flow Headwater elevation is below inlet invert.

****

Straight Culvert

Inlet Elevation (invert): 1194.76 ft, Outlet Elevation (invert): 1193.66 ft

Culvert Length: 16.04 ft, Culvert Slope: 0.0687

****

Site Data - CULV C-1

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 1194.76 ft

Outlet Station: 16.00 ft

Outlet Elevation: 1193.66 ft

Number of Barrels: 1

Culvert Data Summary - CULV C-1

Barrel Shape: Arch, Open Bottom

Barrel Span: 6.00 ft

Barrel Rise: 2.29 ft

Barrel Material: Corrugated Steel

Embedment: 0.00 in

Barrel Manning's n: 0.0350 (top and sides)

Manning's n: 0.0350 (bottom)

Culvert Type: Straight

Inlet Configuration: Thin Edge Projecting

Inlet Depression: None

Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 10 cfs

Design Flow: 34.03 cfs

Maximum Flow: 34.03 cfs

Table 2 - Summary of Culvert Flows at Crossing: CULVERT C-1

Headwater Elevation (ft)	Total Discharge (cfs)	CULV C-1 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
1195.53	10.00	10.00	0.00	1
1195.65	12.40	12.40	0.00	1
1195.77	14.81	14.81	0.00	1
1195.88	17.21	17.21	0.00	1
1195.99	19.61	19.61	0.00	1
1196.11	22.02	22.02	0.00	1
1196.23	24.42	24.42	0.00	1
1196.35	26.82	26.82	0.00	1
1196.47	29.22	29.22	0.00	1
1196.58	31.63	31.63	0.00	1
1196.69	34.03	34.03	0.00	1
1198.05	63.22	63.22	0.00	Overtopping

Table 3 - Downstream Channel Rating Curve (Crossing: CULVERT C-1)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
10.00	1193.92	0.26	6.31	1.37	2.35
12.40	1193.96	0.30	6.77	1.55	2.39
14.81	1193.99	0.33	7.17	1.72	2.43
17.21	1194.02	0.36	7.52	1.87	2.45
19.61	1194.04	0.38	7.84	2.01	2.48
22.02	1194.07	0.41	8.13	2.14	2.50
24.42	1194.09	0.43	8.39	2.27	2.52
26.82	1194.12	0.46	8.63	2.39	2.54
29.22	1194.14	0.48	8.86	2.50	2.55
31.63	1194.16	0.50	9.08	2.61	2.57
34.03	1194.18	0.52	9.28	2.72	2.58

Tailwater Channel Data - CULVERT C-1

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 5.00 ft

Side Slope (H:V): 4.00 (_:1)

Channel Slope: 0.0840

Channel Manning's n: 0.0250

Channel Invert Elevation: 1193.66 ft

Roadway Data for Crossing: CULVERT C-1

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 200.00 ft

Crest Elevation: 1198.05 ft

Roadway Surface: Gravel

Roadway Top Width: 16.00 ft

Water Surface Profile Plot for Culvert: CULV C-2

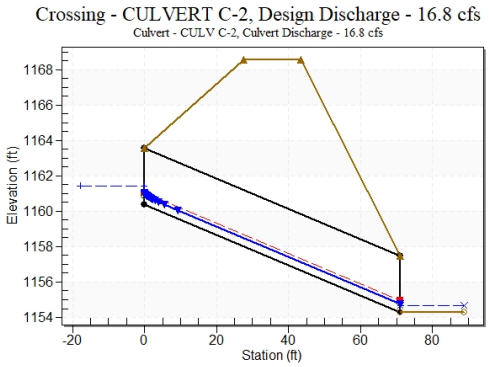


Table 4 - Culvert Summary Table: CULV C-2

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
10.00	10.00	1161.12	0.725	0.0*	1-S2n	0.311	0.442	0.311	0.262	5.371	6.306
10.68	10.68	1161.16	0.757	0.0*	1-S2n	0.325	0.462	0.325	0.272	5.491	6.446
11.36	11.36	1161.19	0.789	0.0*	1-S2n	0.337	0.481	0.337	0.282	5.631	6.577
12.05	12.05	1161.22	0.821	0.0*	1-S2n	0.349	0.500	0.349	0.291	5.761	6.705
12.73	12.73	1161.25	0.851	0.0*	1-S2n	0.361	0.519	0.361	0.301	5.883	6.827
13.41	13.41	1161.28	0.882	0.0*	1-S2n	0.374	0.538	0.374	0.310	5.996	6.943
14.09	14.09	1161.31	0.912	0.0*	1-S2n	0.386	0.556	0.386	0.318	6.103	7.055
14.77	14.77	1161.34	0.941	0.0*	1-S2n	0.398	0.574	0.398	0.327	6.203	7.162
15.46	15.46	1161.37	0.970	0.0*	1-S2n	0.410	0.591	0.410	0.335	6.304	7.265
16.14	16.14	1161.40	0.998	0.0*	1-S2n	0.421	0.608	0.421	0.344	6.411	7.366
16.82	16.82	1161.43	1.026	0.0*	1-S2n	0.432	0.626	0.432	0.352	6.513	7.464

* Full Flow Headwater elevation is below inlet invert.

****

Straight Culvert

Inlet Elevation (invert): 1160.40 ft, Outlet Elevation (invert): 1154.31 ft

Culvert Length: 71.26 ft, Culvert Slope: 0.0858

****

Site Data - CULV C-2

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 1160.40 ft

Outlet Station: 71.00 ft

Outlet Elevation: 1154.31 ft

Number of Barrels: 1

Culvert Data Summary - CULV C-2

Barrel Shape: Arch, Open Bottom

Barrel Span: 6.00 ft

Barrel Rise: 3.17 ft

Barrel Material: Corrugated Steel

Embedment: 0.00 in

Barrel Manning's n: 0.0350 (top and sides)

Manning's n: 0.0350 (bottom)

Culvert Type: Straight

Inlet Configuration: Thin Edge Projecting

Inlet Depression: None

Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 10 cfs

Design Flow: 16.82 cfs

Maximum Flow: 16.82 cfs

Table 5 - Summary of Culvert Flows at Crossing: CULVERT C-2

Headwater Elevation (ft)	Total Discharge (cfs)	CULV C-2 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
1161.12	10.00	10.00	0.00	1
1161.16	10.68	10.68	0.00	1
1161.19	11.36	11.36	0.00	1
1161.22	12.05	12.05	0.00	1
1161.25	12.73	12.73	0.00	1
1161.28	13.41	13.41	0.00	1
1161.31	14.09	14.09	0.00	1
1161.34	14.77	14.77	0.00	1
1161.37	15.46	15.46	0.00	1
1161.40	16.14	16.14	0.00	1
1161.43	16.82	16.82	0.00	1
1168.59	170.97	170.97	0.00	Overtopping

Table 6 - Downstream Channel Rating Curve (Crossing: CULVERT C-2)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
10.00	1154.57	0.26	6.31	1.37	2.35
10.68	1154.58	0.27	6.45	1.43	2.36
11.36	1154.59	0.28	6.58	1.48	2.38
12.05	1154.60	0.29	6.71	1.53	2.39
12.73	1154.61	0.30	6.83	1.58	2.40
13.41	1154.62	0.31	6.94	1.62	2.41
14.09	1154.63	0.32	7.05	1.67	2.42
14.77	1154.64	0.33	7.16	1.71	2.42
15.46	1154.65	0.34	7.27	1.76	2.43
16.14	1154.65	0.34	7.37	1.80	2.44
16.82	1154.66	0.35	7.46	1.84	2.45

Tailwater Channel Data - CULVERT C-2

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 5.00 ft

Side Slope (H:V): 4.00 (_:1)

Channel Slope: 0.0840

Channel Manning's n: 0.0250

Channel Invert Elevation: 1154.31 ft

Roadway Data for Crossing: CULVERT C-2

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 200.00 ft

Crest Elevation: 1168.59 ft

Roadway Surface: Gravel

Roadway Top Width: 16.00 ft

Water Surface Profile Plot for Culvert: CULV C-3

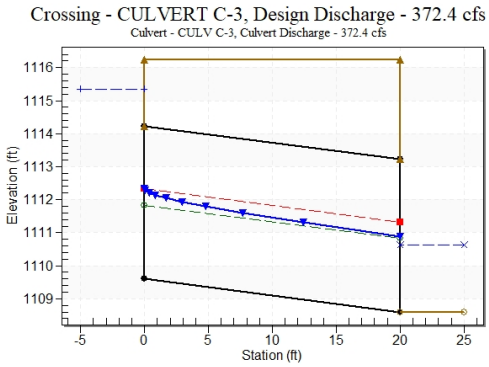


Table 7 - Culvert Summary Table: CULV C-3

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
299.96	299.96	1114.38	4.766	2.677	5-S2n	1.879	2.361	1.929	1.849	11.273	6.346
313.69	313.69	1114.56	4.945	2.873	5-S2n	1.944	2.434	1.995	1.883	11.442	6.417
327.41	327.41	1114.74	5.128	3.072	5-S2n	2.009	2.504	2.061	1.915	11.602	6.486
341.13	341.13	1114.92	5.313	3.275	5-S2n	2.075	2.572	2.128	1.946	11.753	6.553
354.86	354.86	1115.11	5.498	3.483	5-S2n	2.141	2.639	2.196	1.977	11.900	6.618
372.42	372.42	1115.34	5.734	3.756	5-S2n	2.225	2.723	2.282	2.015	12.079	6.699
382.31	382.31	1115.48	5.867	3.913	5-S2n	2.273	2.770	2.331	2.036	12.177	6.743
396.03	396.03	1115.66	6.052	4.134	5-S2n	2.340	2.834	2.399	2.065	12.308	6.803
409.76	409.76	1115.85	6.237	4.361	5-S2n	2.407	2.898	2.468	2.093	12.435	6.861
423.48	423.48	1116.03	6.422	4.592	5-S2n	2.475	2.961	2.537	2.120	12.558	6.918
437.21	436.41	1116.26	6.648	4.815	5-S2n	2.541	3.020	2.602	2.147	12.671	6.973

****
Straight Culvert
Inlet Elevation (invert): 1109.61 ft, Outlet Elevation (invert): 1108.60 ft
Culvert Length: 20.03 ft, Culvert Slope: 0.0505
****

Site Data - CULV C-3

Site Data Option: Culvert Invert Data
Inlet Station: 0.00 ft
Inlet Elevation: 1109.61 ft
Outlet Station: 20.00 ft
Outlet Elevation: 1108.60 ft
Number of Barrels: 1

Culvert Data Summary - CULV C-3

Barrel Shape: Arch, Open Bottom
Barrel Span: 15.00 ft
Barrel Rise: 4.63 ft
Barrel Material: Corrugated Steel
Embedment: 0.00 in
Barrel Manning's n: 0.0350 (top and sides)
Manning's n: 0.0350 (bottom)
Culvert Type: Straight
Inlet Configuration: Thin Edge Projecting
Inlet Depression: None

Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 299.96 cfs

Design Flow: 372.42 cfs

Maximum Flow: 437.21 cfs

Table 8 - Summary of Culvert Flows at Crossing: CULVERT C-3

Headwater Elevation (ft)	Total Discharge (cfs)	CULV C-3 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
1114.38	299.96	299.96	0.00	1
1114.56	313.69	313.69	0.00	1
1114.74	327.41	327.41	0.00	1
1114.92	341.13	341.13	0.00	1
1115.11	354.86	354.86	0.00	1
1115.34	372.42	372.42	0.00	1
1115.48	382.31	382.31	0.00	1
1115.66	396.03	396.03	0.00	1
1115.85	409.76	409.76	0.00	1
1116.03	423.48	423.48	0.00	1
1116.26	437.21	436.41	0.35	23
1116.25	435.96	435.96	0.00	Overtopping

Table 9 - Downstream Channel Rating Curve (Crossing: CULVERT C-3)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
299.96	1110.45	1.85	6.35	3.46	1.13
313.69	1110.48	1.88	6.42	3.52	1.13
327.41	1110.51	1.91	6.49	3.58	1.13
341.13	1110.55	1.95	6.55	3.64	1.14
354.86	1110.58	1.98	6.62	3.70	1.14
372.42	1110.62	2.02	6.70	3.77	1.14
382.31	1110.64	2.04	6.74	3.81	1.15
396.03	1110.66	2.06	6.80	3.87	1.15
409.76	1110.69	2.09	6.86	3.92	1.15
423.48	1110.72	2.12	6.92	3.97	1.15
437.21	1110.75	2.15	6.97	4.02	1.16

Tailwater Channel Data - CULVERT C-3

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 3.00 ft

Side Slope (H:V): 12.20 (_:1)

Channel Slope: 0.0300

Channel Manning's n: 0.0400

Channel Invert Elevation: 1108.60 ft

Roadway Data for Crossing: CULVERT C-3

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 170.00 ft

Crest Elevation: 1116.25 ft

Roadway Surface: Gravel

Roadway Top Width: 20.00 ft

Culvert Report

Culvert C7

Invert Elev Dn (ft)	=	1152.00
Pipe Length (ft)	=	96.50
Slope (%)	=	1.04
Invert Elev Up (ft)	=	1153.00
Rise (in)	=	24.0
Shape	=	Circular
Span (in)	=	24.0
No. Barrels	=	1
n-Value	=	0.012
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Groove end projecting (C)
Coeff. K,M,c,Y,k	=	0.0045, 2, 0.0317, 0.69, 0.2

Embankment

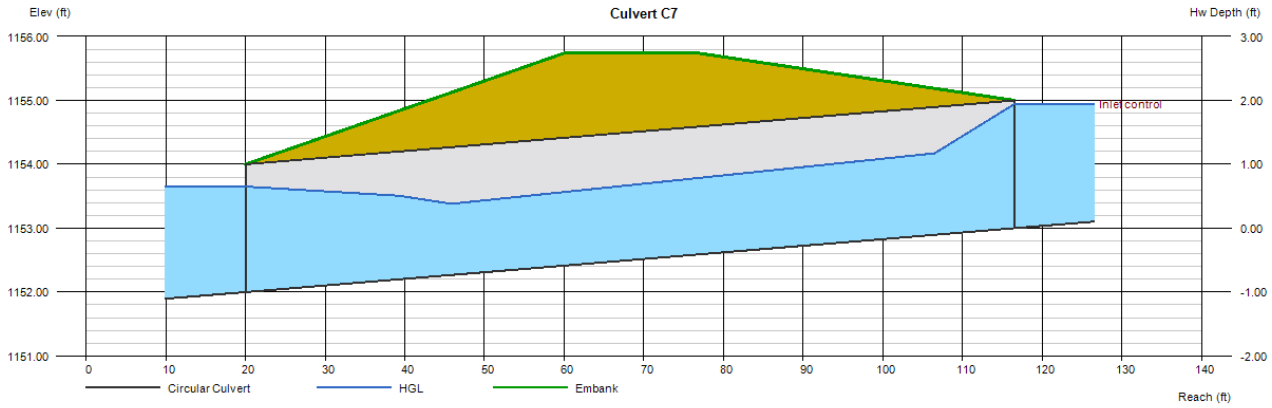
Top Elevation (ft)	=	1155.75
Top Width (ft)	=	16.00
Crest Width (ft)	=	40.00

Calculations

Qmin (cfs)	=	26.27
Qmax (cfs)	=	29.78
Tailwater Elev (ft)	=	(dc+D)/2

Highlighted

Qtotal (cfs)	=	26.27
Qpipe (cfs)	=	21.63
Qovertop (cfs)	=	4.64
Veloc Dn (ft/s)	=	7.18
Veloc Up (ft/s)	=	7.75
HGL Dn (ft)	=	1153.83
HGL Up (ft)	=	1154.66
Hw Elev (ft)	=	1155.87
Hw/D (ft)	=	1.44
Flow Regime	=	Inlet Control



Culvert Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Wednesday, Jun 16 2021

Culvert C9

Invert Elev Dn (ft)	=	1202.45
Pipe Length (ft)	=	63.50
Slope (%)	=	1.65
Invert Elev Up (ft)	=	1203.50
Rise (in)	=	24.0
Shape	=	Circular
Span (in)	=	24.0
No. Barrels	=	1
n-Value	=	0.012
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Groove end projecting (C)
Coeff. K,M,c,Y,k	=	0.0045, 2, 0.0317, 0.69, 0.2

Embankment

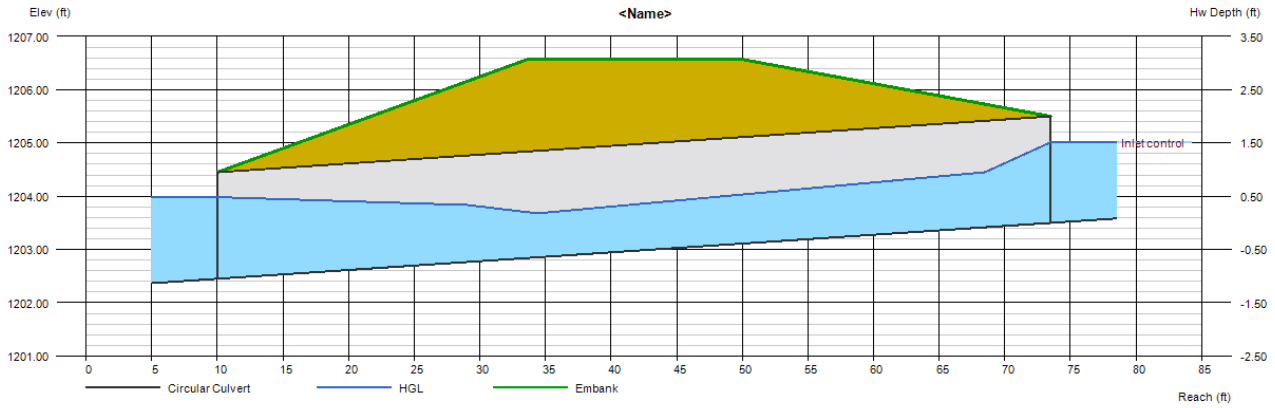
Top Elevation (ft)	=	1206.58
Top Width (ft)	=	16.00
Crest Width (ft)	=	40.00

Calculations

Qmin (cfs)	=	8.93
Qmax (cfs)	=	10.13
Tailwater Elev (ft)	=	(dc+D)/2

Highlighted

Qtotal (cfs)	=	8.93
Qpipe (cfs)	=	8.93
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	3.46
Veloc Up (ft/s)	=	5.25
HGL Dn (ft)	=	1203.98
HGL Up (ft)	=	1204.57
Hw Elev (ft)	=	1205.01
Hw/D (ft)	=	0.76
Flow Regime	=	Inlet Control



Culvert Report

Culvert C2a

Invert Elev Dn (ft)	=	1085.00
Pipe Length (ft)	=	50.00
Slope (%)	=	2.00
Invert Elev Up (ft)	=	1086.00
Rise (in)	=	24.0
Shape	=	Circular
Span (in)	=	24.0
No. Barrels	=	1
n-Value	=	0.012
Culvert Type	=	Circular Concrete
Culvert Entrance	=	Groove end projecting (C)
Coeff. K,M,c,Y,k	=	0.0045, 2, 0.0317, 0.69, 0.2

Embankment

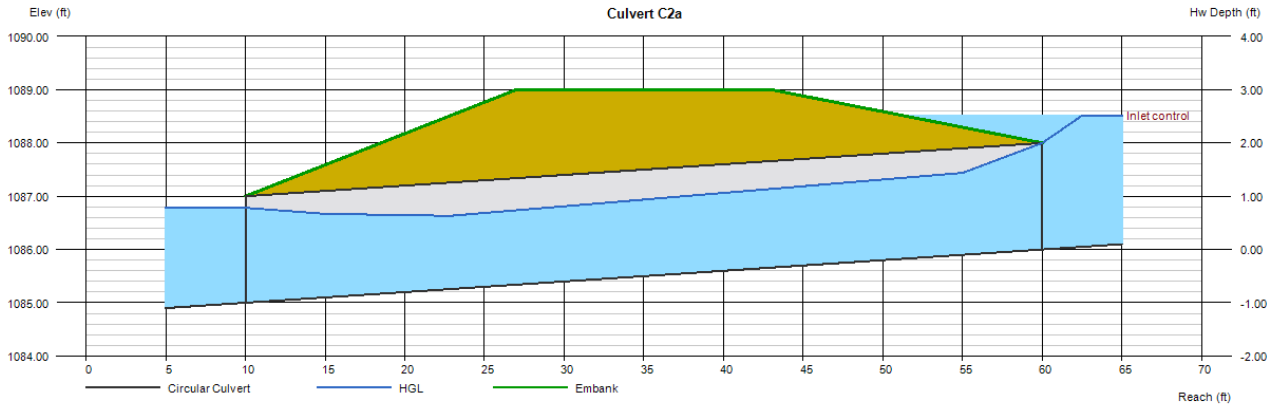
Top Elevation (ft)	=	1089.00
Top Width (ft)	=	16.00
Crest Width (ft)	=	40.00

Calculations

Qmin (cfs)	=	18.97
Qmax (cfs)	=	22.03
Tailwater Elev (ft)	=	(dc+D)/2

Highlighted

Qtotal (cfs)	=	18.97
Qpipe (cfs)	=	18.97
Qovertop (cfs)	=	0.00
Veloc Dn (ft/s)	=	6.42
Veloc Up (ft/s)	=	7.19
HGL Dn (ft)	=	1086.78
HGL Up (ft)	=	1087.57
Hw Elev (ft)	=	1088.52
Hw/D (ft)	=	1.26
Flow Regime	=	Inlet Control



Litchfield Solar Array Facility

6/15/2021

Ditch Calculations

Storm Event: 100-yr, 24-hr (Conveyance Protection, per DEEP storm manual 2004 Table 7-1)

Manning's "n": 0.025
Desired Freeboard: 6"

Drainage Area and Design Flow					Ditch Slope					Ditch Dims and Results							
Drainage Area	Total Peak Runoff 100-yr Event (cfs)	Ditch	% of Drainage Area	Weighted Peak Runoff 100-yr Event (cfs)	Length	Starting Inv.	Ending Inv.	Fall (ft)	Avg. Slope (%)	Shape	Side Slope z:1	Bott. (ft)	Depth (ft)	Top Width (ft)	Flow Depth (ft)	Free-board (ft)	Free-board (in)
2a	22.21	2a	100%	22.21	172	1110	1092	18	10.47%	Tri.	3	0	1.5	9	0.85	0.65	7.8
2b	17.49	2b	100%	17.49	1278	1086.9	1051.6	35.3	2.76%	Tri.	3	0	1.5	9	0.99	0.51	6.12
3	43.82	3	80%	35.06	724	1150	1134.4	15.55	2.15%	Trap.	3	1	1.75	12	1.19	0.56	6.72
5	9.71	5	100%	9.71	467.6	1168.7	1148	20.7	4.43%	Tri.	3	0	1.25	7.5	0.73	0.52	6.24
7	22.32	7a	68%	15.18	493	1185.6	1154	31.6	6.41%	Tri.	3	0	1.25	7.5	0.81	0.44	5.28
		7b	32%	7.14	225	1164.4	1154	10.4	4.62%	Tri.	3	0	1.25	7.5	0.65	0.6	7.2
8/10	134.32	8/10a	40%	53.73	636.5	1148	1129	19	2.99%	Trap.	3	2	1.75	12	1.2	0.55	6.6
		8/10b	19%	25.52	677	1134	1123.8	10.2	1.51%	Trap.	3	2	1.5	11	1	0.5	6
9	29.78	9	100%	29.78	345	1216.6	1181.3	35.3	10.23%	Trap.	3	1	1.25	8.5	0.7	0.55	6.6
12	10.76	12	100%	10.76	120	1190	1187	3	2.50%	Tri.	3	0	1.25	7.5	0.84	0.41	4.92

Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Tuesday, Jun 15 2021

Ditch 2a

Triangular

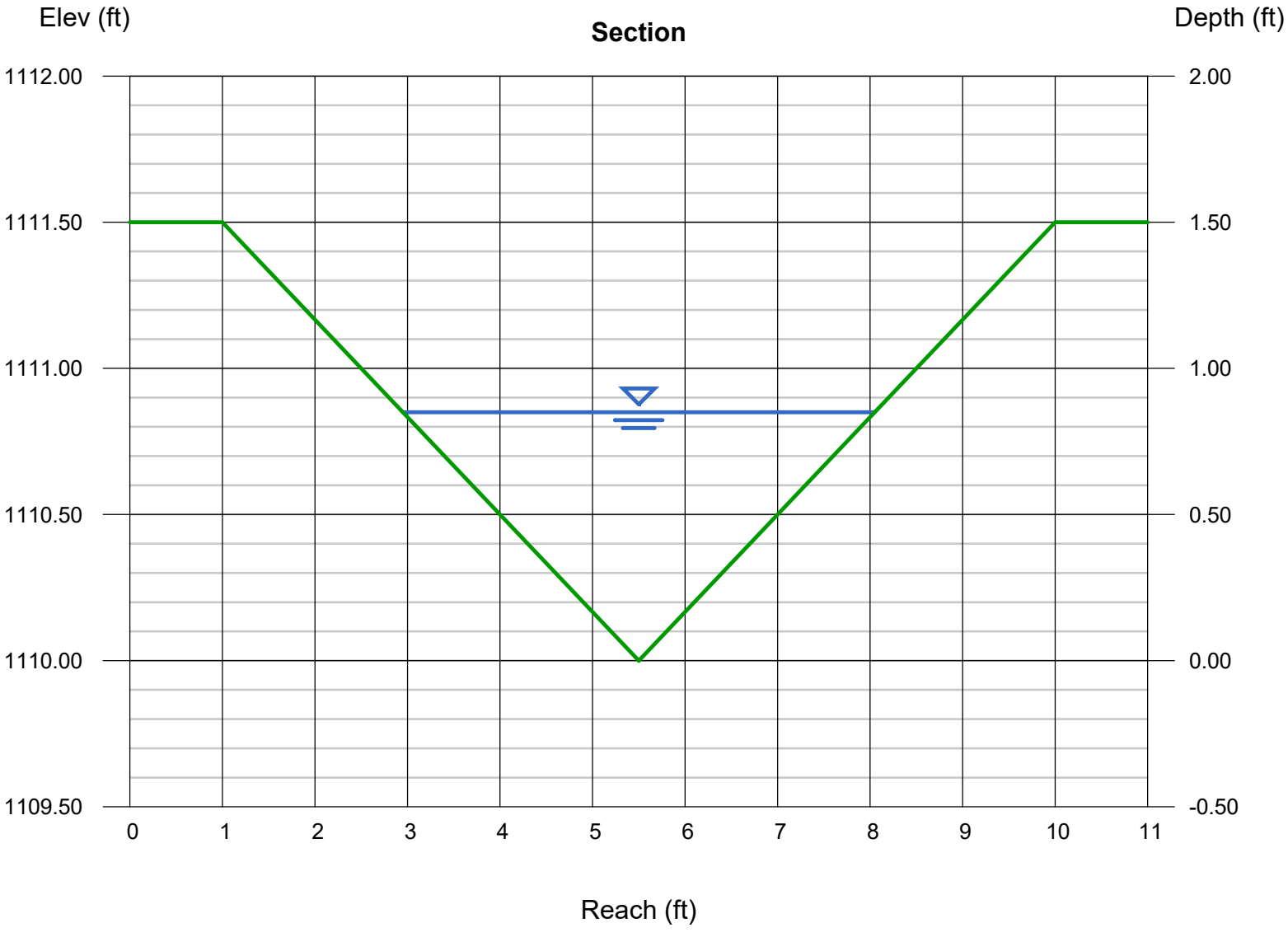
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 1.50
Invert Elev (ft)	= 1110.00
Slope (%)	= 10.47
N-Value	= 0.025

Calculations

Compute by:	Known Q
Known Q (cfs)	= 22.21

Highlighted

Depth (ft)	= 0.85
Q (cfs)	= 22.21
Area (sqft)	= 2.17
Velocity (ft/s)	= 10.25
Wetted Perim (ft)	= 5.38
Crit Depth, Yc (ft)	= 1.28
Top Width (ft)	= 5.10
EGL (ft)	= 2.48



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Tuesday, Jun 15 2021

Ditch 2b

Triangular

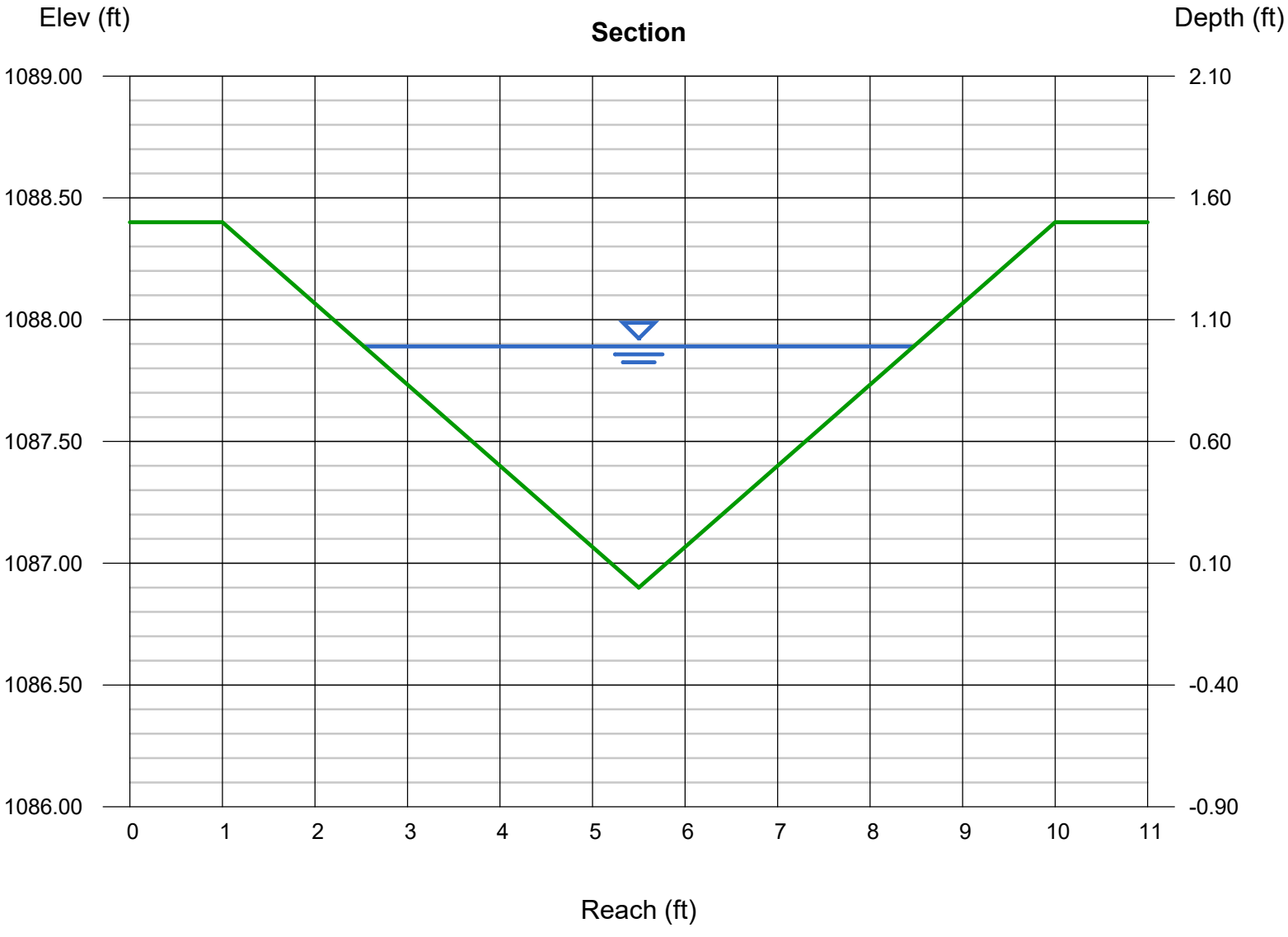
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 1.50
Invert Elev (ft)	= 1086.90
Slope (%)	= 2.76
N-Value	= 0.025

Calculations

Compute by:	Known Q
Known Q (cfs)	= 17.49

Highlighted

Depth (ft)	= 0.99
Q (cfs)	= 17.49
Area (sqft)	= 2.94
Velocity (ft/s)	= 5.95
Wetted Perim (ft)	= 6.26
Crit Depth, Yc (ft)	= 1.17
Top Width (ft)	= 5.94
EGL (ft)	= 1.54



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Tuesday, Jun 15 2021

Ditch 3

Trapezoidal

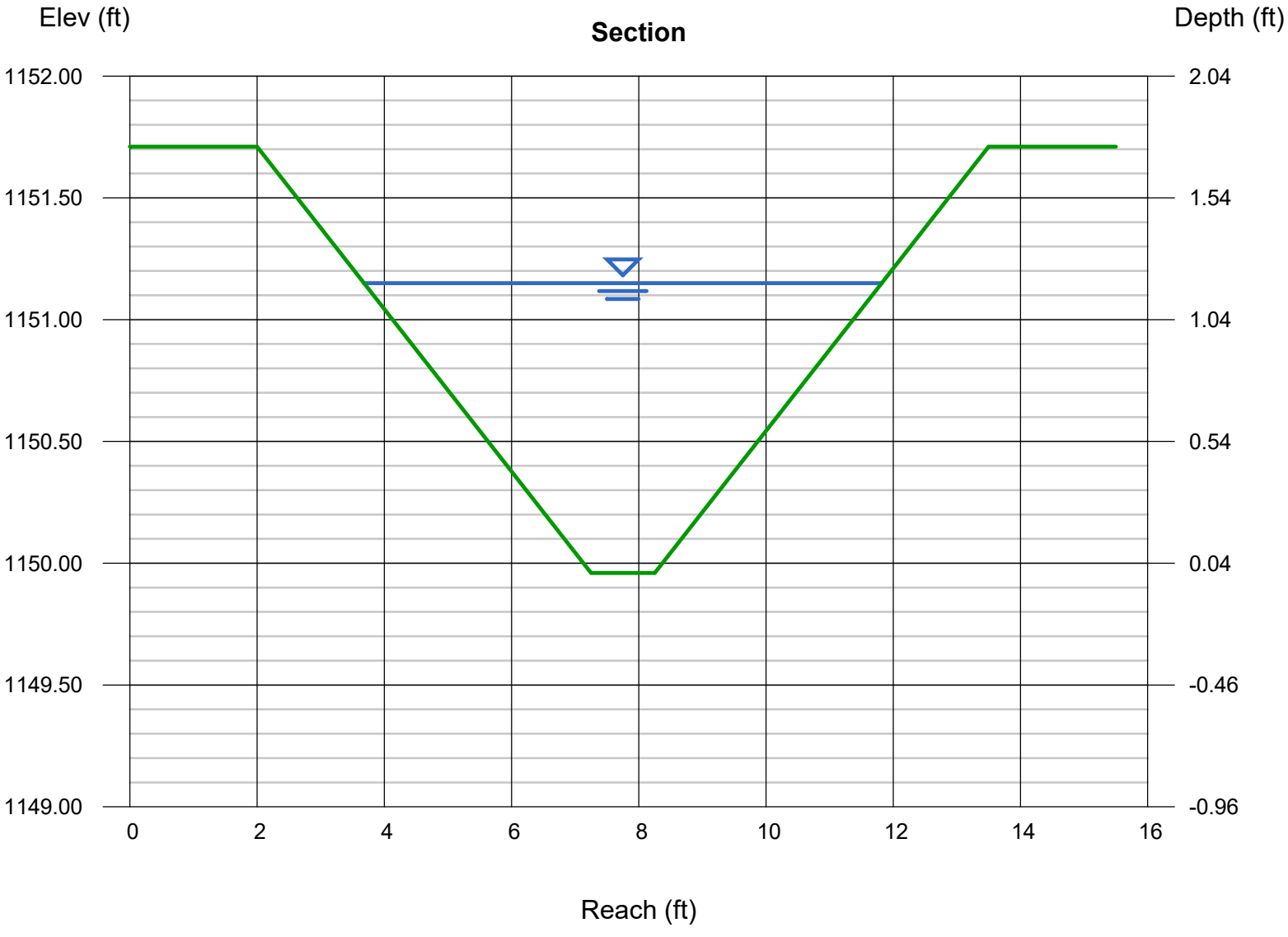
Bottom Width (ft)	= 1.00
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 1.75
Invert Elev (ft)	= 1149.96
Slope (%)	= 2.15
N-Value	= 0.025

Calculations

Compute by:	Known Q
Known Q (cfs)	= 35.06

Highlighted

Depth (ft)	= 1.19
Q (cfs)	= 35.06
Area (sqft)	= 5.44
Velocity (ft/s)	= 6.45
Wetted Perim (ft)	= 8.53
Crit Depth, Yc (ft)	= 1.38
Top Width (ft)	= 8.14
EGL (ft)	= 1.84



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Tuesday, Jun 15 2021

Ditch 5

Triangular

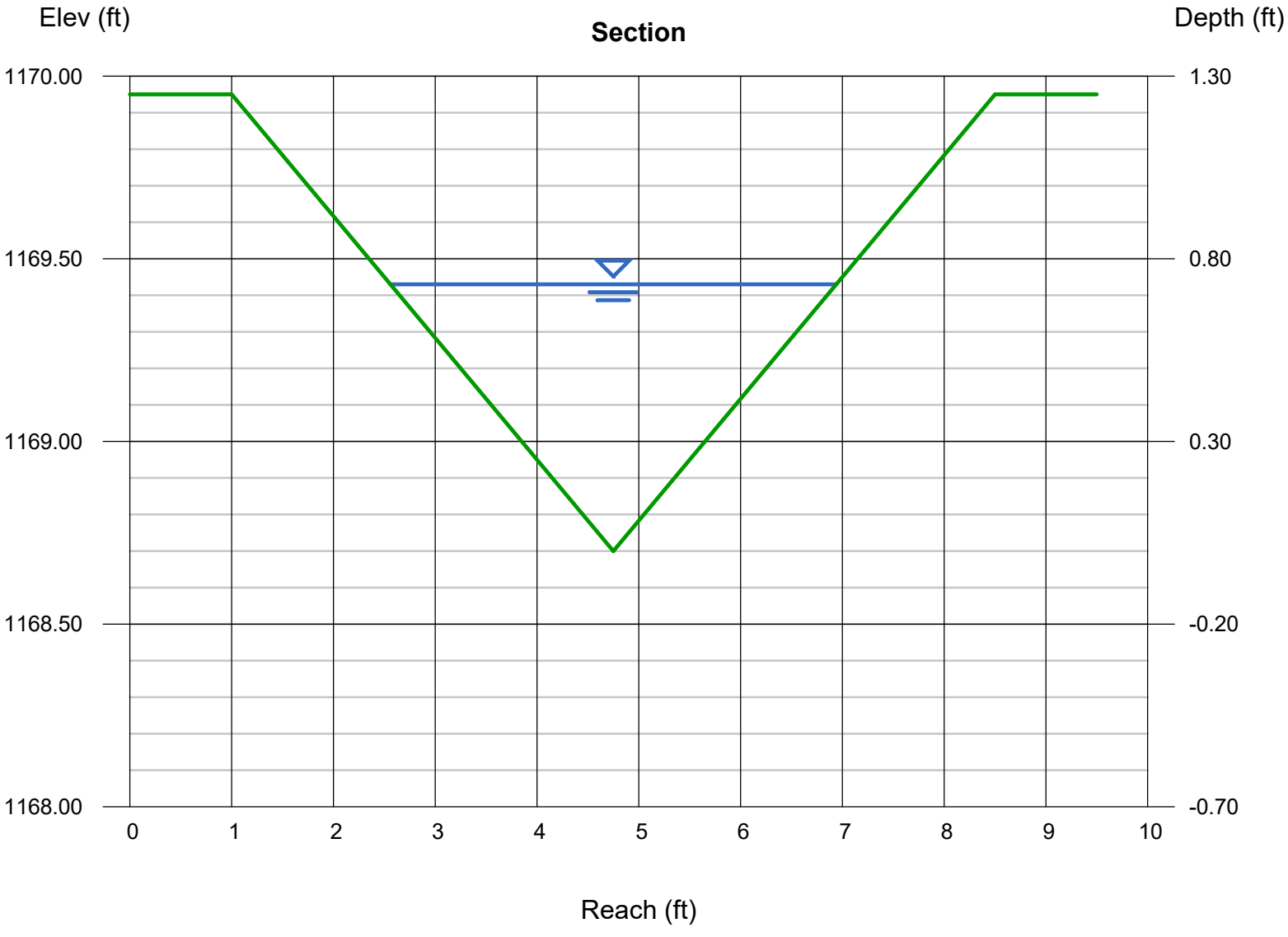
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 1.25
Invert Elev (ft)	= 1168.70
Slope (%)	= 4.43
N-Value	= 0.025

Calculations

Compute by:	Known Q
Known Q (cfs)	= 9.71

Highlighted

Depth (ft)	= 0.73
Q (cfs)	= 9.710
Area (sqft)	= 1.60
Velocity (ft/s)	= 6.07
Wetted Perim (ft)	= 4.62
Crit Depth, Yc (ft)	= 0.92
Top Width (ft)	= 4.38
EGL (ft)	= 1.30



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Tuesday, Jun 15 2021

Ditch 7a

Triangular

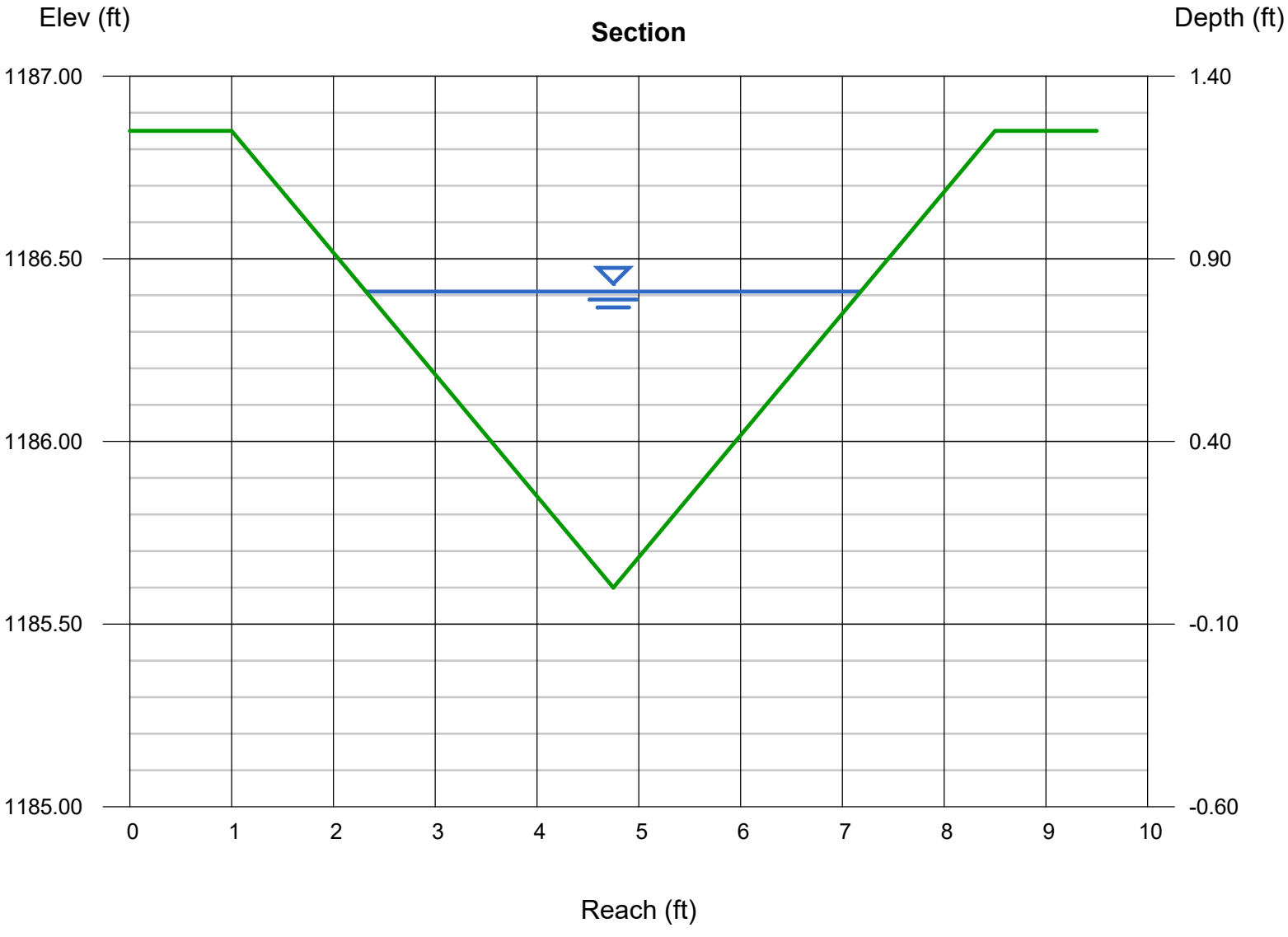
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 1.25
Invert Elev (ft)	= 1185.60
Slope (%)	= 6.41
N-Value	= 0.025

Calculations

Compute by:	Known Q
Known Q (cfs)	= 15.18

Highlighted

Depth (ft)	= 0.81
Q (cfs)	= 15.18
Area (sqft)	= 1.97
Velocity (ft/s)	= 7.71
Wetted Perim (ft)	= 5.12
Crit Depth, Yc (ft)	= 1.10
Top Width (ft)	= 4.86
EGL (ft)	= 1.73



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Tuesday, Jun 15 2021

Ditch 7b

Triangular

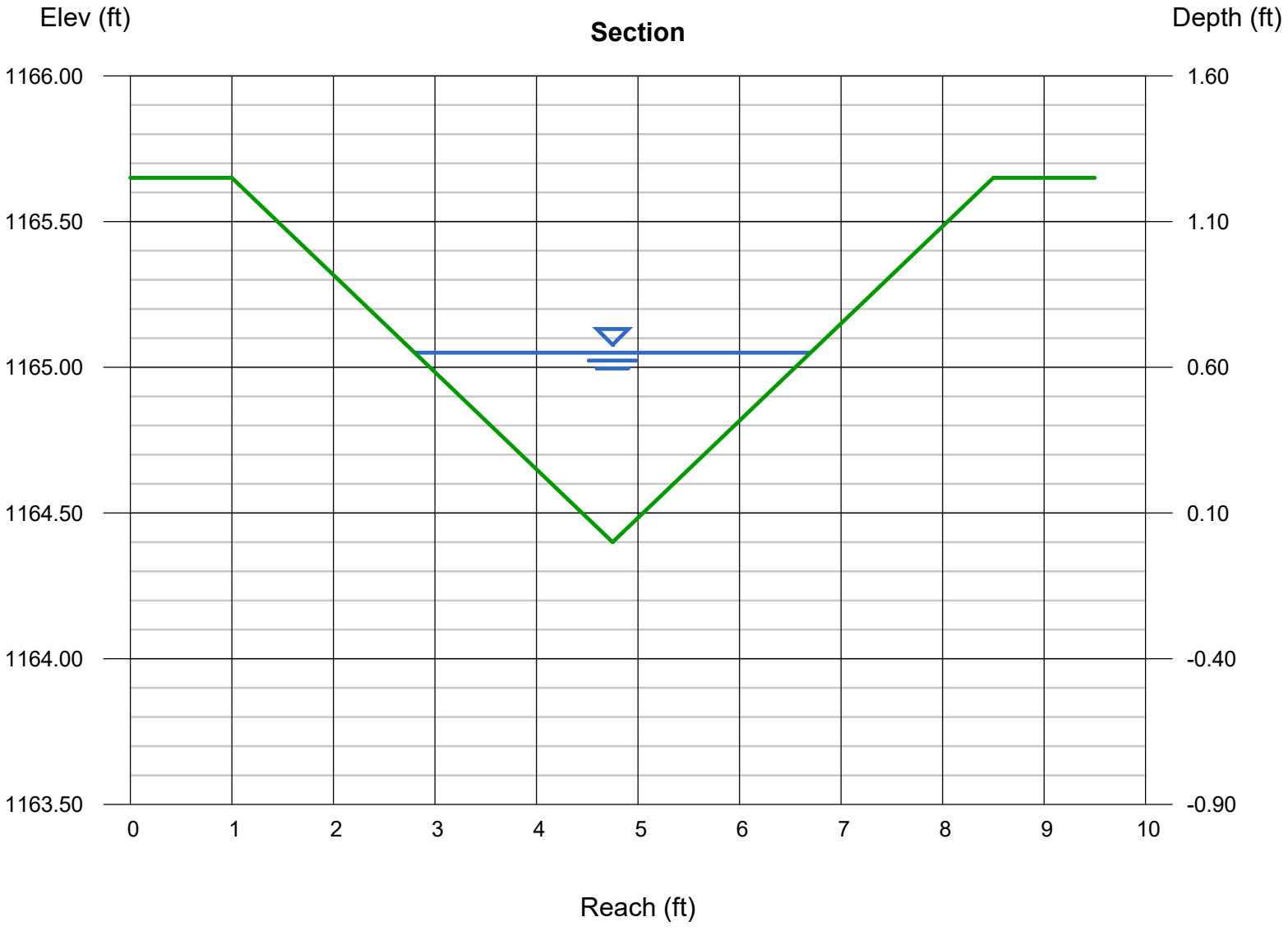
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 1.25
Invert Elev (ft)	= 1164.40
Slope (%)	= 4.62
N-Value	= 0.025

Calculations

Compute by:	Known Q
Known Q (cfs)	= 7.14

Highlighted

Depth (ft)	= 0.65
Q (cfs)	= 7.140
Area (sqft)	= 1.27
Velocity (ft/s)	= 5.63
Wetted Perim (ft)	= 4.11
Crit Depth, Yc (ft)	= 0.82
Top Width (ft)	= 3.90
EGL (ft)	= 1.14



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Tuesday, Jun 15 2021

Ditch 8/10a

Trapezoidal

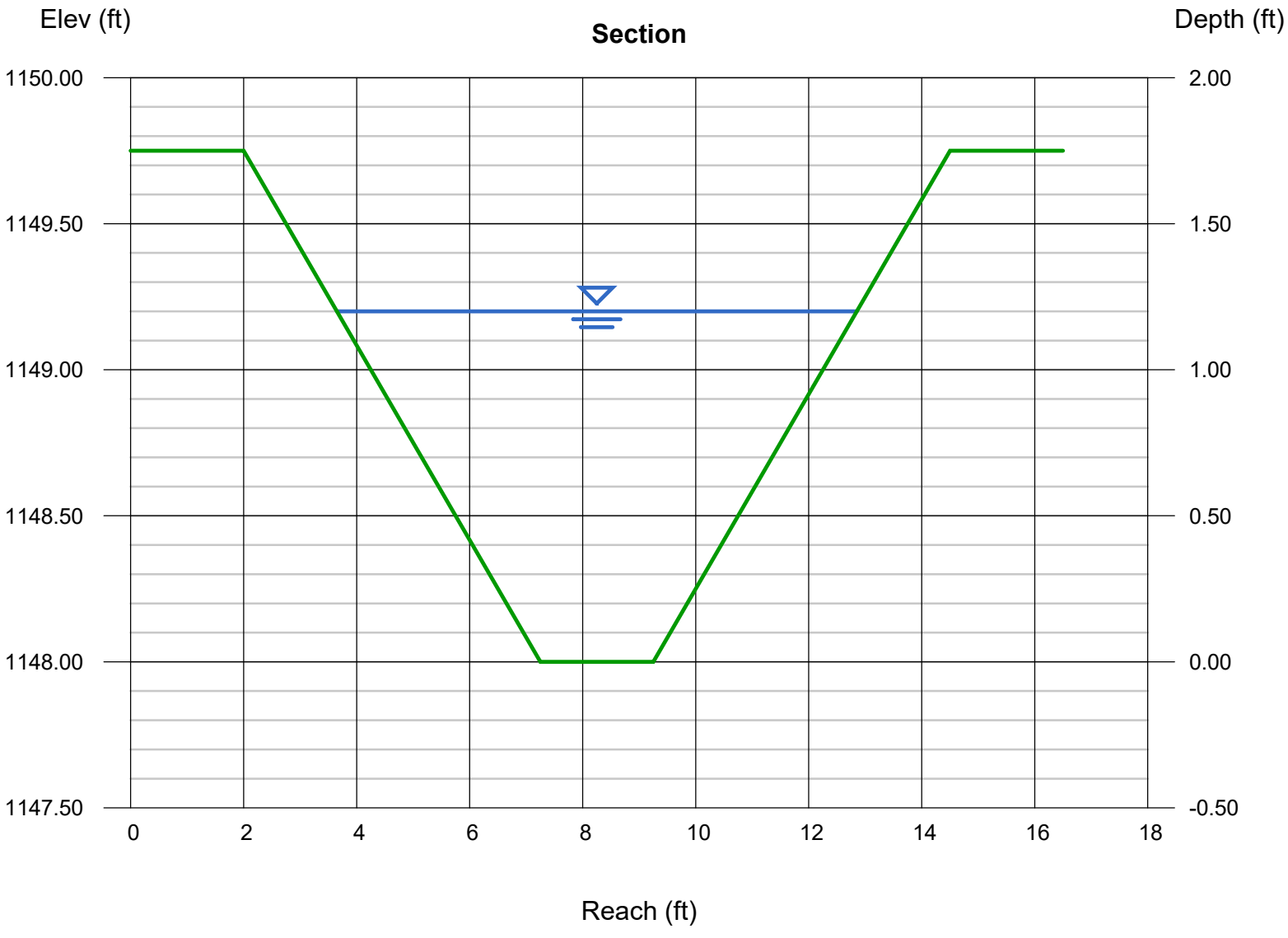
Bottom Width (ft)	= 2.00
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 1.75
Invert Elev (ft)	= 1148.00
Slope (%)	= 3.00
N-Value	= 0.025

Calculations

Compute by:	Known Q
Known Q (cfs)	= 53.73

Highlighted

Depth (ft)	= 1.20
Q (cfs)	= 53.73
Area (sqft)	= 6.72
Velocity (ft/s)	= 8.00
Wetted Perim (ft)	= 9.59
Crit Depth, Yc (ft)	= 1.53
Top Width (ft)	= 9.20
EGL (ft)	= 2.19



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Tuesday, Jun 15 2021

Ditch 8/10b

Trapezoidal

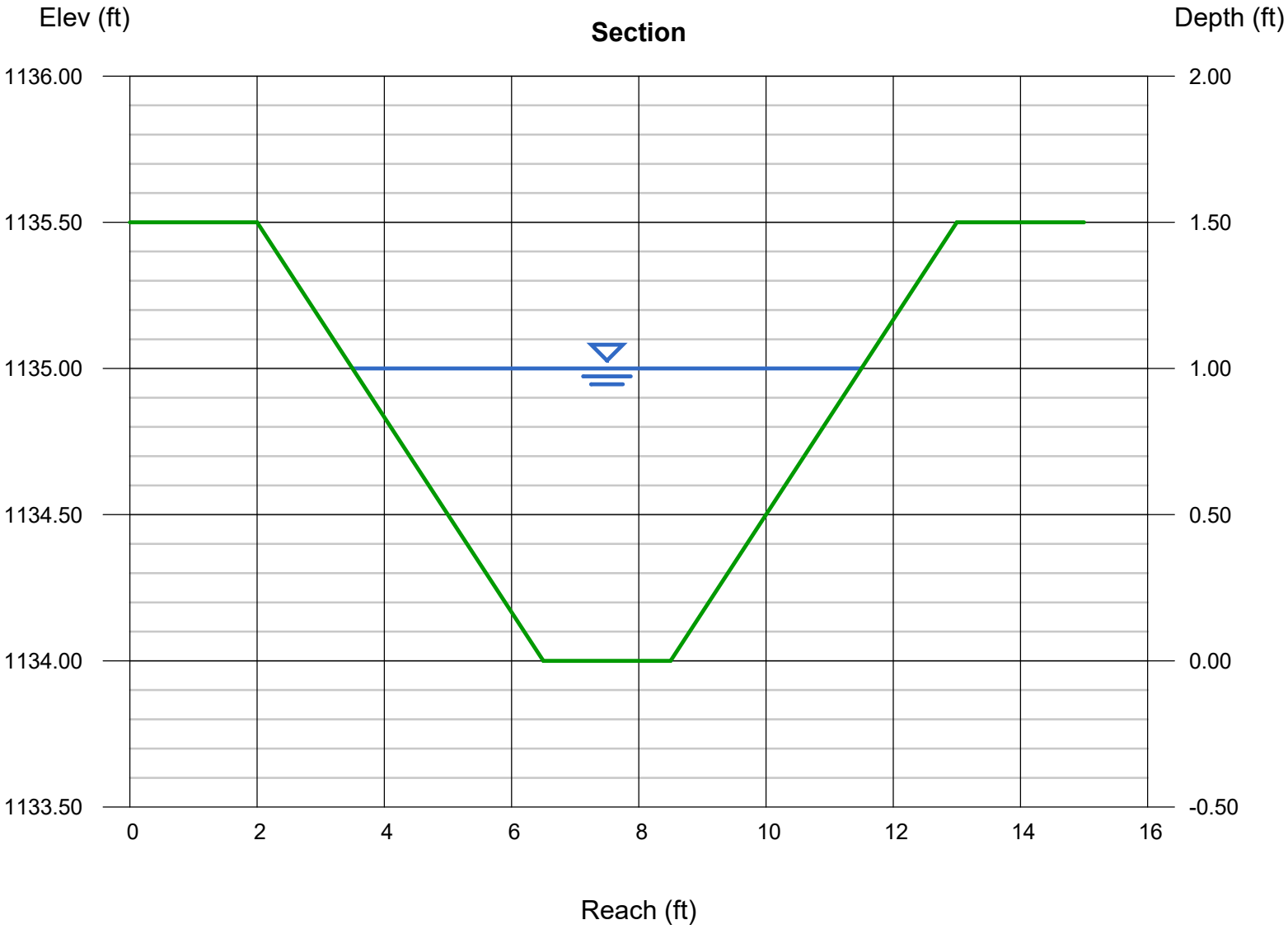
Bottom Width (ft)	= 2.00
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 1.50
Invert Elev (ft)	= 1134.00
Slope (%)	= 1.51
N-Value	= 0.025

Calculations

Compute by:	Known Q
Known Q (cfs)	= 25.52

Highlighted

Depth (ft)	= 1.00
Q (cfs)	= 25.52
Area (sqft)	= 5.00
Velocity (ft/s)	= 5.10
Wetted Perim (ft)	= 8.32
Crit Depth, Yc (ft)	= 1.07
Top Width (ft)	= 8.00
EGL (ft)	= 1.41



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Tuesday, Jun 15 2021

Ditch 9

Trapezoidal

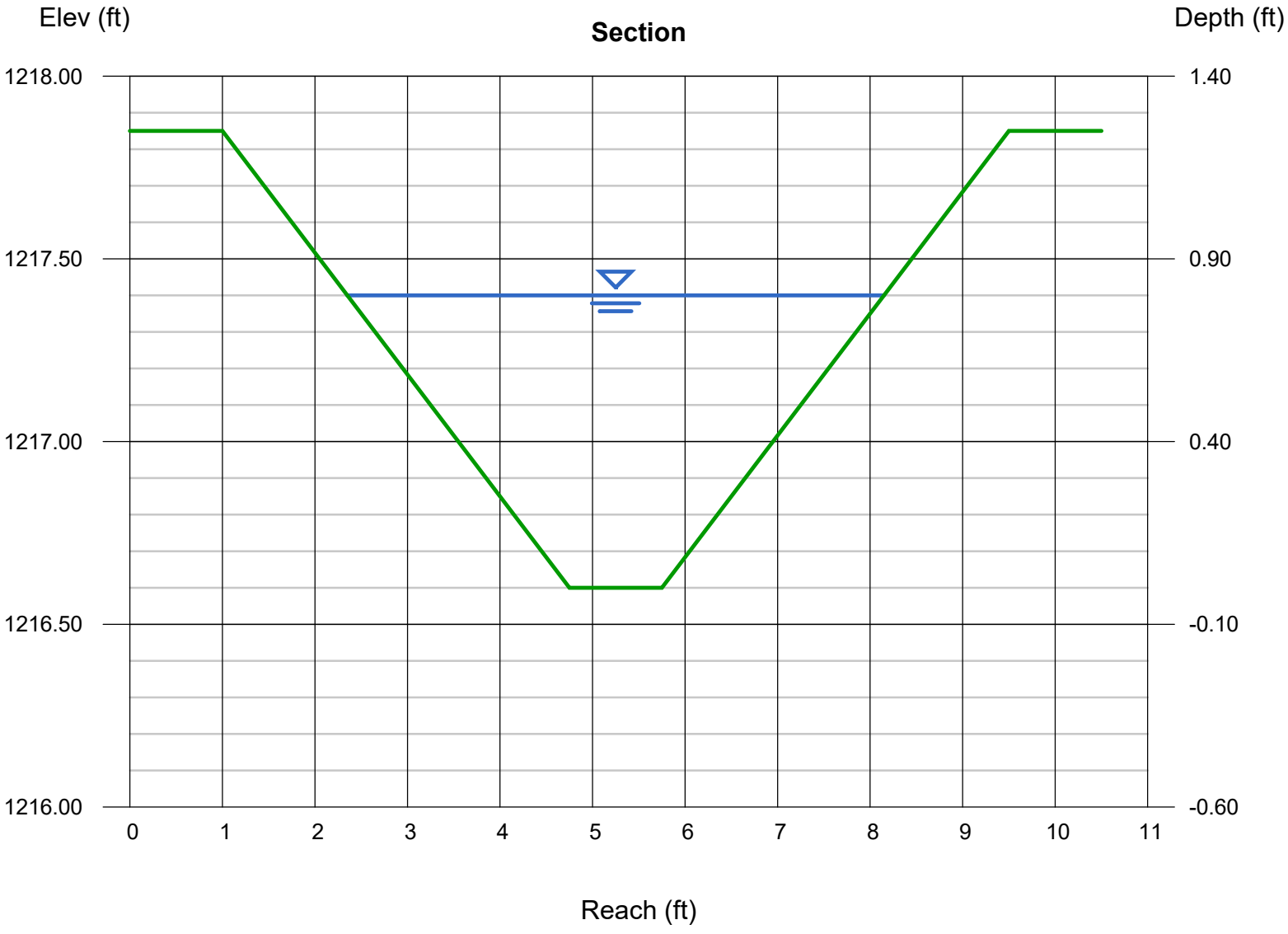
Bottom Width (ft)	= 1.00
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 1.25
Invert Elev (ft)	= 1216.60
Slope (%)	= 10.23
N-Value	= 0.025

Calculations

Compute by:	Known Q
Known Q (cfs)	= 29.78

Highlighted

Depth (ft)	= 0.80
Q (cfs)	= 29.78
Area (sqft)	= 2.72
Velocity (ft/s)	= 10.95
Wetted Perim (ft)	= 6.06
Crit Depth, Yc (ft)	= 1.25
Top Width (ft)	= 5.80
EGL (ft)	= 2.66



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Tuesday, Jun 15 2021

Ditch 12

Triangular

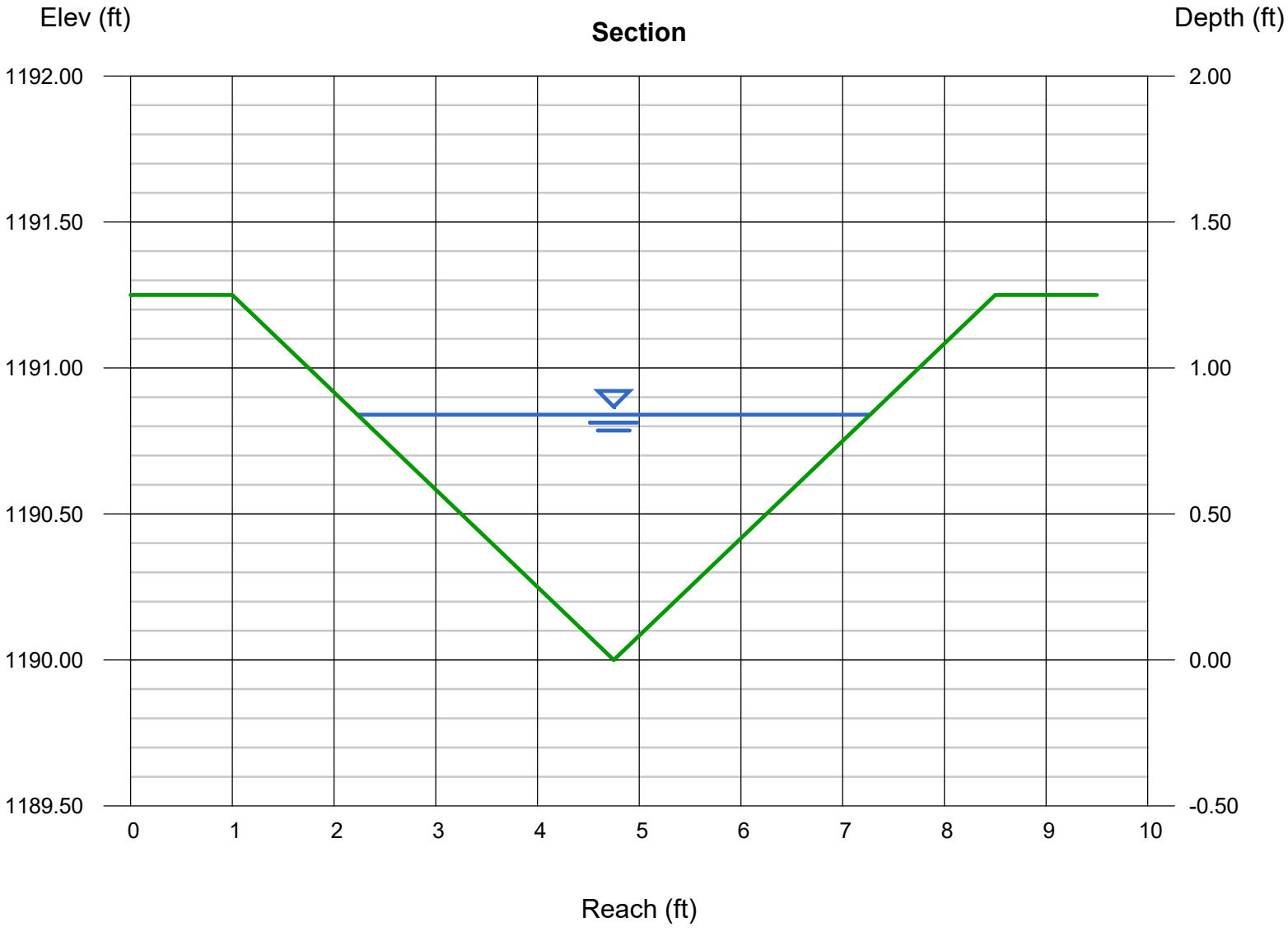
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 1.25
Invert Elev (ft)	= 1190.00
Slope (%)	= 2.50
N-Value	= 0.025

Calculations

Compute by:	Known Q
Known Q (cfs)	= 10.76

Highlighted

Depth (ft)	= 0.84
Q (cfs)	= 10.76
Area (sqft)	= 2.12
Velocity (ft/s)	= 5.08
Wetted Perim (ft)	= 5.31
Crit Depth, Yc (ft)	= 0.96
Top Width (ft)	= 5.04
EGL (ft)	= 1.24



Revised: 6/15/2021
Litchfield Solar Array Facility
Litchfield, CT
SRC

Water Quality Calculations

WQV = (1")(R)(A)/12

I = % Impervious Cover
R = Volumetric Runoff Coeff. = 0.05 + 0.009 (I)
A = Site Area (Ac)

Table 7-1 Summary of Stormwater Treatment Practice Sizing Criteria

Sizing Criteria	Description	Post-Development Storm Magnitude
Pollutant Reduction	***Water Quality Volume (WQV)*** Volume of runoff generated by one inch of rainfall on the site WQV = (1")(R)(A)/12 WQV = water quality volume (ac-ft) R = volumetric runoff coefficient = 0.05+0.009(I) I = percent impervious cover A = site area in acres ***Water Quality Flow (WQF)*** Peak flow associated with the water quality volume calculated using the NRCS Graphical Peak Discharge Method	First one inch of rainfall

Pond Trib Area	Area (A) (ac)	Impervious Area (ac)*	Imp. Cover (I) (%)	Vol. Runoff Coeff. (R)	RequiredWQV (Ac-ft)	RequiredWQV (Cu-ft)	Provided WQV (Ac-ft)	Pond Stage Elev.	Treatment and Capture Method	Pretreatment, required (Cu-ft)	Pretreatment, Provided (Cu-ft)	Field Infiltration Rate	Adjusted with Factor of Safety	Area of Trench, req (Sq ft) =	Area of Trench, prov (Sq ft) =	Trench Depth
1	1.28	0.486	38%	0.392	0.042	1,821	1,915	1126.00	Trench 1	455	611	1.45	0.725	1,570	1,620	1.2
2a	4.43	0.98	22%	0.248	0.092	3,988	4,152	1090.80	Trench 2a	997	1,006	1.81	0.905	2,754	2,793	1.4
2b	4.02	1.58	39%	0.401	0.134	5,852	6,070	1040.80	Trench 2b	1,463	2,165	1.81	0.905	4,041	4,076	1.4
3	7.89	3.21	41%	0.419	0.275	12,000	12,066	1130.90	Pond 3	-	-	-	-	-	-	-
4	0.94	0.304	32%	0.338	0.026	1,153	1,239	1112.5	Trench 4	288	905	0.61	0.305	2,363	2,363	0.5
5	1.68	0.676	40%	0.410	0.057	2,500	2,539	1145.00	Pond 5	-	-	-	-	-	-	-
7	2.54	1.514	60%	0.590	0.125	5,440	5,590	1158.10	Pond 7	-	-	-	-	-	-	-
8/10	28.04	11.37	41%	0.419	0.979	42,648	44,246	1124.40	Pond 8/10	-	-	-	-	-	-	-
9	6.81	3.005	44%	0.446	0.253	11,025	11,079	1188.25	Pond 9	-	-	-	-	-	-	-
11	3.19	1.126	35%	0.365	0.097	4,227	4,392	1195.80	Wet Swale 11	1,057	2,417	-	-	-	-	-
12	1.92	0.766	40%	0.410	0.066	2,858	2,953	1187.15	Pocket Pond 12	-	-	-	-	-	-	-
13	1.63	0.655	40%	0.410	0.056	2,426	2,646	1142.00	Pond 13	-	-	-	-	-	-	-
14	4.43	1.31	30%	0.320	0.118	5,146	5,209	1148.80	Wet Swale 14	1,286	2,091	-	-	-	-	-
15	1.93	0.557	29%	0.311	0.050	2,179	2,181	1204.50	N/A	-	-	-	-	-	-	-

May 11, 2021

Silicon Ranch Corporation
222 Second Ave. S. Suite 1900
Nashville, TN 37201

Attn: Ms. Ali Weaver
P: (615) 577 4786
E: Ali.weaver@siliconranch.com

Re: In-situ Infiltration Test Services Letter Report
Litchfield Solar Facility
Wilson Road
Litchfield, Connecticut
Terracon Project No. J2185197

Dear Ms. Weaver:

At your request, we have prepared this letter report to provide our findings based on six (6) in-situ infiltration tests performed on May 5 and 6, 2021. The services described in this letter were performed in general accordance with our Supplement to Agreement for Services approved on April 29, 2021.

PROJECT UNDERSTANDING AND SCOPE

The project area comprises of three parcels located to the east and west of Rossi Road / Wilson Road, approximately ½ mile north of its intersection with Torrington Road (Route 202), in the town of Litchfield, Connecticut. One parcel is located west of Wilson Road, north of Litchfield Town Road, and totals an approximate 17 acres in size. One parcel is located west of Wilson Road, south of Litchfield Town Farm Road, and totals an approximate 50 acres. The remaining parcel is located east of Wilson Road and totals an approximate 105 acres. The approximate site center coordinates are: 41.7889°N, 73.1665°W.

Our Scope of Services is based on our understanding of the project as described by Silicon Ranch Corporation and the expected subsurface conditions as described in our previous geotechnical engineering report dated January 15, 2021. The purpose of this study is to obtain infiltration rates of subsurface soil materials at selected locations of the proposed stormwater BMP.

GEOTECHNICAL CHARACTERIZATION

A geotechnical investigation was previously performed in May 2019 throughout the project area for a design purpose of solar array. A total of eight (8) auger boreholes was drilled for performing in-situ infiltration tests. A test location plan is provided in the **Attachment A**. Auger spoils were observed and classified at each borehole location and the soil materials are in an agreement with the previous investigation's findings. Please refer to our previous geotechnical engineering report for detailed subsurface conditions. A general subsurface profile presented below is based on the test borings performed previously.

Profile Layer	Soil Type	General Description
1	**Surface Material**	Topsoil
2	**Subsoil**	Silty Sand (SM), with gravel, trace roots, to Sandy Lean Clay (CL), trace gravel, brown
3	**Glacial Till**	Sandy Silt (ML) to Silty Sand (SM), with gravel, occasional cobbles and boulders, gray to brown

FINDINGS

Based on our visual classification, the subsurface soil materials at six (6) locations (IN-3 to IN-8) consist of silty sand with varying amounts of gravel and cobbles. Due to the amounts of gravel and cobbles at the testing depth in each borehole, the infiltration rates varied in a range between 0.04 inches per hour (in./hr.) to 2.2 in./hr. A summary of the infiltration rates is provided in the **Attachment B** and the testing data sheets are presented in the **Attachment C**.

Shallow groundwater, at approximately 2 feet below grade, was encountered in two (2) testing locations labeled as IN-1 and IN-2. Upon the agreement with Silicon Ranch, the infiltration tests at these locations were canceled. This area of the proposed stormwater BMP is located at the bottom of a slope with a power transmission right-of-way (ROW) to the east and a local live stream to the west. The soil materials encountered in the boreholes were classified as sandy silt with trace of clay. In addition, overland flow (runoff) was observed due to the rain from the previous day.

Groundwater was not observed in the other six (6) test locations (IN-3 to IN-8) within the depth of drilling. It is believed that the groundwater is below the depth of drilling at the time of drilling. Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff and other factors not evident at the time the borings were performed.

Testing depths ranged between approximately 2 and 4 feet below ground surface. The depths drilled depended on the amount of cobbles and boulders present. Offsets, when necessary, were completed within a 10 foot range from the original testing location.

A photography log is provided below to present the soil materials of silt and clay in the test boreholes IN-1 and IN-2.

LIMITATIONS

This work has been done in accordance with our authorized scope of work stated in our Supplement to Agreement for Services approved on April 29, 2021. The field testing was completed in accordance with modified ASTM D6391 and with generally accepted practice in performing in-situ cased-borehole infiltration test. No warranty is expressed or implied. The testing data of the in-situ cased-borehole infiltration test could be affected by the subsurface soil conditions encountered within the borehole, amount of precipitation prior to the testing, temperature, geographic condition, etc. Our findings are based on the data revealed by the field observation at four (4) proposed stormwater BMP locations and performing two (2) infiltration tests at each location. Since the project site consists of three parcels with a total of 172 acres, the infiltration rates provided herein represent the capability of infiltration at the testing locations and depths. If the subsurface conditions during the construction are different from the conditions stated herein, the infiltration rates should be re-evaluated. We are not responsible for any conclusions or opinions drawn from the data included herein, other than those specifically stated. This letter report is intended for use with regard to the specific project discussed herein.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this letter report or if we may be of further service, please do not hesitate to contact us.

Sincerely,
Terracon Consultants, Inc.

Shengkai Tu, P.E.
Geotechnical Department Manager

Reviewed by Authorized Project Reviewer (APR): Carl W. Thunberg, P.E.

ATTACHMENTS

ATTACHMENT A

TEST LOCATION PLAN

Litchfield Solar Facility ■ Litchfield, Connecticut
May 11, 2021 ■ Terracon Project No. J2185197

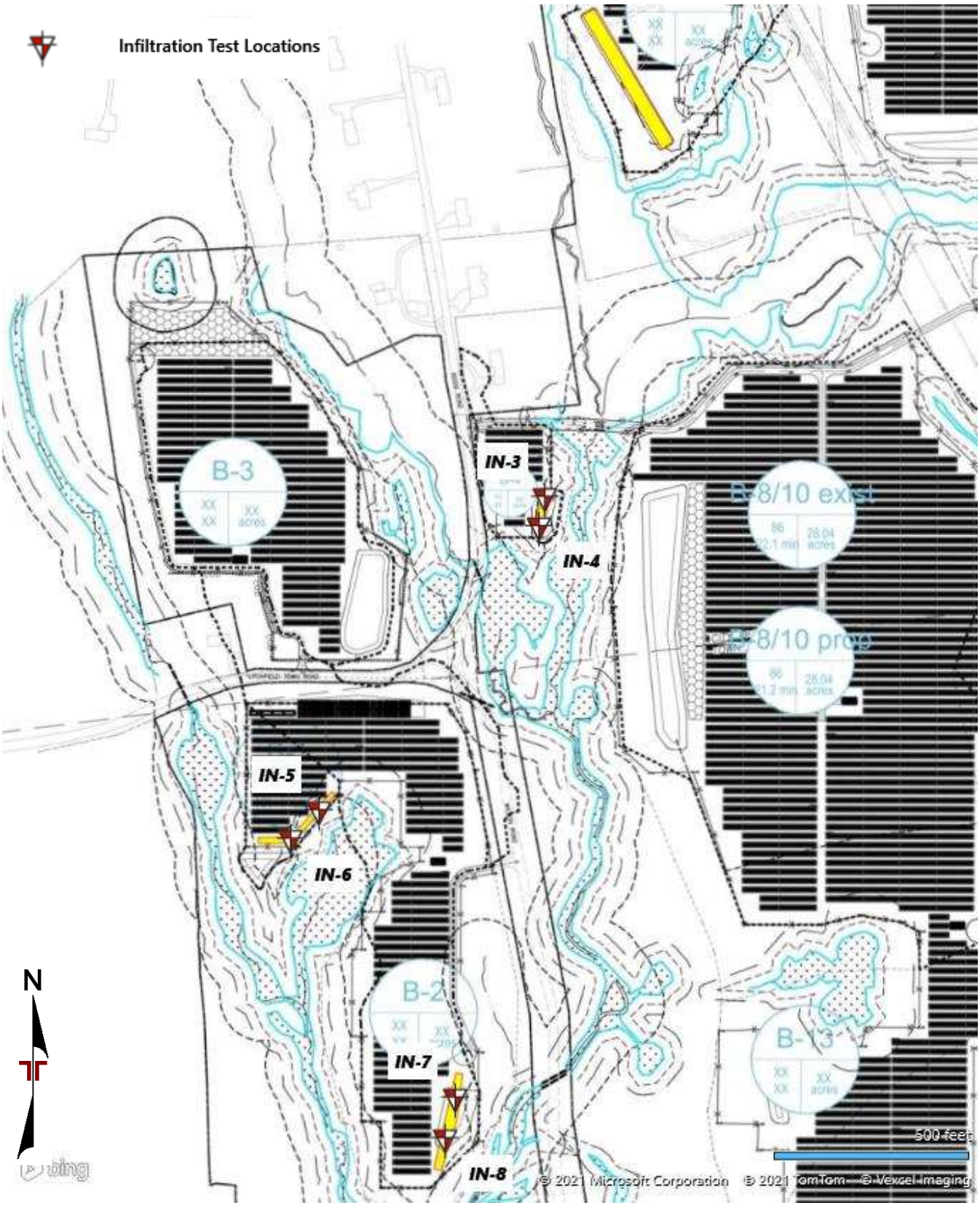


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

ATTACHMENT B

Summary of Infiltration Test

Test I.D.	Coordinates		Infiltration Rate (inches/hour)	Groundwater Depth (ft)	Soil Conditions	Remarks
IN-1	41.797902	-73.166488	N/A	2.1	Sandy Silt, trace clay	
IN-2	41.797298	-73.166019	N/A	2.2	Sandy Silt, trace clay	
IN-3	41.794654	-73.166999	0.06	Not Encountered	Silty Sand with gravel, cobbles & boulders	
IN-4	41.794451	-73.167053	0.61	Not Encountered	Silty Sand with gravel, cobbles & boulders	Offset 3 times due to cobbles
IN-5	41.792472	-73.169109	2.20	Not Encountered	Silty Sand with gravel, cobbles & boulders	
IN-6	41.792274	-73.169374	1.45	Not Encountered	Silty Sand with gravel, cobbles & boulders	Offset 5 times due to roots and cobbles
IN-7	41.790473	-73.167836	0.04	Not Encountered	Silty Sand with gravel, cobbles & boulders	
IN-8	41.790189	-73.167931	1.81	Not Encountered	Silty Sand with gravel, cobbles & boulders	Offset 6 times due to roots and cobbles

ATTACHMENT C

Cased Borehole Infiltration Testing Log (Modified ASTM D6391) *Version* *10/16/2020*

Project No.:	J2185197	**Date:**	5/5/2021
Location ID:	IN-3	**Weather:**	Cloudy
Ground EL (ft):	1114.0	**Temperature:**	56.0
Initial Water Depth[1] (ft):	1.18	**Inspector:**	J. Jurnack
Stick Up[1] (ft):	0.83	**Casing Diameter (in.):**	4
Testing Depth[1] (ft):	4.83	[1] Referenced to top of casing	
Groundwater[1] (ft):	None	[2] Referenced to existing grade	

Soil Characterization

Depth[2] (ft)	Soil Texture	Limiting Layers / Type and Thickness (ft)
0-1	Brown silty sand with roots	Topsoil/subsoil (1)
1-4	Brown silty sand with gravel and cobbles	Native material (3)

Presoak

Time	Time Interval	Measurement[1] (in.)	Drop in water level[1] (in.)	> 2", 10-min. increment < 2", 30-min. increment
0	0	13.20		
30	30	14.88	1.68	
60	30	15.60	0.72	

Infiltration Testing

Time	Time Interval (10 or 30 min.)	Measurement[1] (in.)	Drop in water level (in.)	Infiltration rate (in/hr):	Remarks:
0	0	14.16	n/a	n/a	
10	10	14.52	0.36	0.07	
20	10	14.76	0.24	0.05	
30	10	15.24	0.48	0.09	
40	10	15.72	0.48	0.09	
50	10	15.96	0.24	0.05	
60	10	16.20	0.24	0.05	
70	10	16.68	0.48	0.09	
80	10	16.80	0.12	0.02	
			Stabilized Infiltration Testing Rate (inches per hour):	0.06	

Remarks:

Cased Borehole Infiltration Testing Log (Modified ASTM D6391) *Version* *10/16/2020*

Project No.:	J2185197	**Date:**	5/5/2021
Location ID:	IN-4	**Weather:**	Cloudy
Ground EL (ft):	1110.0	**Temperature:**	56.0
Initial Water Depth[1] (ft):	1.85	**Inspector:**	J. Jurnack
Stick Up[1] (ft):	2.00	**Casing Diameter (in.):**	4
Testing Depth[1] (ft):	4.00	[1] **Referenced to top of casing**	
Groundwater[1] (ft):	None	[2] **Referenced to existing grade**	

Soil Characterization

Depth[2] (ft)	Soil Texture	Limiting Layers / Type and Thickness (ft)
0-1	Brown silty sand with roots	Topsoil/Subsoi (1)
1-2	Brown silty sand with gravel and cobbles	Native Material (1)

Presoak

Time	Time Interval	Measurement[1] (in.)	Drop in water level[1] (in.)	> 2", 10-min. increment < 2", 30-min. increment
0	**0**	**22.80**		
30	**30**	**27.60**	**4.80**	
60	**30**	**31.20**	**3.60**	

Infiltration Testing

Time	Time Interval (10 or 30 min.)	Measurement[1] (in.)	Drop in water level (in.)	Infiltration rate (in/hr):	Remarks:
0	**0**	**22.20**	**n/a**	**n/a**	
10	**10**	**25.08**	**2.88**	**0.97**	
20	**10**	**27.00**	**1.92**	**0.71**	
30	**10**	**28.44**	**1.44**	**0.58**	
40	**10**	**29.64**	**1.20**	**0.52**	
50	**10**	**30.96**	**1.32**	**0.61**	
60	**10**	**32.16**	**1.20**	**0.60**	
70	**10**	**33.00**	**0.84**	**0.45**	
80	**10**	**33.84**	**0.84**	**0.47**	
			Stabilized Infiltration Testing Rate (inches per hour):	**0.61**	

Remarks:

Cased Borehole Infiltration Testing Log (Modified ASTM D6391) *Version* *10/16/2020*

Project No.:	J2185197	**Date:**	5/5/2021
Location ID:	IN-5	**Weather:**	Cloudy
Ground EL (ft):	1121.0	**Temperature:**	56.0
Initial Water Depth[1] (ft):	1.85	**Inspector:**	J. Jurnack
Stick Up[1] (ft):	0.50	**Casing Diameter (in.):**	4
Testing Depth[1] (ft):	4.00	[1] **Referenced to top of casing**	
Groundwater[1] (ft):	None	[2] **Referenced to existing grade**	

Soil Characterization

Depth[2] (ft)	Soil Texture	Limiting Layers / Type and Thickness (ft)
0-1	Brown silty sand with roots	Topsoil/Subsoil (1)
1-3.17	Brown silty sand with gravel and cobbles	Native Material (2.17)

Presoak

Time	Time Interval	Measurement[1] (in.)	Drop in water level[1] (in.)
0	0	23.40	
30	30	40.68	17.28
60	30	44.76	4.08

> 2", 10-min. increment
< 2", 30-min. increment

Infiltration Testing

Time	Time Interval (10 or 30 min.)	Measurement[1] (in.)	Drop in water level (in.)	Infiltration rate (in/hr):	Remarks:
0	0	22.20	n/a	n/a	
10	10	33.00	10.80	4.43	
20	10	35.40	2.40	1.42	
30	10	37.80	2.40	1.73	
40	10	39.96	2.16	1.94	
50	10	41.40	1.44	1.61	
60	10	42.60	1.20	1.64	
70	10	43.80	1.20	2.05	
80	10	45.00	1.20	2.75	

Stabilized Infiltration Testing Rate (inches per hour): **2.20**

Remarks:

Cased Borehole Infiltration Testing Log (Modified ASTM D6391) *Version* *10/16/2020*

Project No.:	J2185197	**Date:**	5/5/2021
Location ID:	IN-6	**Weather:**	Cloudy
Ground EL (ft):	1120.0	**Temperature:**	56.0
Initial Water Depth[1] (ft):	1.84	**Inspector:**	J. Jurnack
Stick Up[1] (ft):	1.88	**Casing Diameter (in.):**	4
Testing Depth[1] (ft):	3.90	[1] Referenced to top of casing	
Groundwater[1] (ft):	None	[2] Referenced to existing grade	

Soil Characterization

Depth[2] (ft)	Soil Texture	Limiting Layers / Type and Thickness (ft)
0-1	Brown silty sand with roots	Topsoil/Subsoil (1)
1-2.02	Brown silty sand with gravel and cobbles	Native Material (1.02)

Presoak

Time	Time Interval	Measurement[1] (in.)	Drop in water level[1] (in.)	> 2", 10-min. increment < 2", 30-min. increment
0	0	22.80		
30	30	33.00	10.20	
60	30	36.96	3.96	

Infiltration Testing

Time	Time Interval (10 or 30 min.)	Measurement[1] (in.)	Drop in water level (in.)	Infiltration rate (in/hr):	Remarks:
0	0	22.08	n/a	n/a	
10	10	30.12	8.04	3.21	
20	10	31.20	1.08	0.55	
30	10	34.20	3.00	1.74	
40	10	36.00	1.80	1.26	
50	10	37.20	1.20	0.96	
60	10	38.40	1.20	1.09	
70	10	39.60	1.20	1.26	
80	10	40.80	1.20	1.49	
			Stabilized Infiltration Testing Rate (inches per hour):	1.45	

Remarks:

Cased Borehole Infiltration Testing Log (Modified ASTM D6391) *Version* *10/16/2020*

Project No.:	J2185197	**Date:**	5/6/2021
Location ID:	IN-7	**Weather:**	Sunny
Ground EL (ft):	1053.0	**Temperature:**	56.0
Initial Water Depth[1] (ft):	1.40	**Inspector:**	J. Jurnack
Stick Up[1] (ft):	1.25	**Casing Diameter (in.):**	4
Testing Depth[1] (ft):	3.95	**[1] Referenced to top of casing**	
Groundwater[1] (ft):	None	**[2] Referenced to existing grade**	

Soil Characterization

Depth[2] (ft)	Soil Texture	Limiting Layers / Type and Thickness (ft)
0-1	Brown silty sand with roots	Topsil/Subsoil (1)
1-2.7	Brown silty sand with gravel and cobbles	Native Material (1.7)

Presoak

Time	Time Interval	Measurement[1] (in.)	Drop in water level[1] (in.)	> 2", 10-min. increment < 2", 30-min. increment
0	0	17.04		
30	30	18.24	1.20	
60	30	19.20	0.96	

Infiltration Testing

Time	Time Interval (10 or 30 min.)	Measurement[1] (in.)	Drop in water level (in.)	Infiltration rate (in/hr):	Remarks:
0	0	16.80	n/a	n/a	
30	30	17.04	0.24	0.02	
60	30	17.40	0.36	0.03	
90	30	18.12	0.72	0.07	
120	30	18.48	0.36	0.03	
150	30	18.84	0.36	0.03	
180	30	19.44	0.60	0.06	
210	30	19.68	0.24	0.02	
240	30	20.16	0.48	0.05	
			Stabilized Infiltration Testing Rate (inches per hour):	0.04	

Remarks:

Cased Borehole Infiltration Testing Log (Modified ASTM D6391) *Version* *10/16/2020*

Project No.:	J2185197	**Date:**	5/6/2021
Location ID:	IN-8	**Weather:**	Sunny
Ground EL (ft):	1050.0	**Temperature:**	56.0
Initial Water Depth[1] (ft):	1.86	**Inspector:**	J. Jurnack
Stick Up[1] (ft):	1.50	**Casing Diameter (in.):**	4
Testing Depth[1] (ft):	3.90	**[1] Referenced to top of casing**	
Groundwater[1] (ft):	None	**[2] Referenced to existing grade**	

Soil Characterization

Depth[2] (ft)	Soil Texture	Limiting Layers / Type and Thickness (ft)
0-1	Brown silty sand with roots	Topsoil/Subsoil (1)
1-2.4	Brown silty sand with gravel and cobbles	Native Material (1.4)

Presoak

Time	Time Interval	Measurement[1] (in.)	Drop in water level[1] (in.)	> 2", 10-min. increment < 2", 30-min. increment
0	0	24.60		
30	30	40.92	16.32	
60	30	46.80	5.88	

Infiltration Testing

Time	Time Interval (10 or 30 min.)	Measurement[1] (in.)	Drop in water level (in.)	Infiltration rate (in/hr):	Remarks:
0	0	22.32	n/a	n/a	
30	30	30.00	7.68	1.03	
60	30	33.96	3.96	0.73	
90	30	36.00	2.04	0.47	
120	30	37.92	1.92	0.53	
150	30	39.60	1.68	0.57	
180	30	41.76	2.16	0.97	
210	30	44.40	2.64	2.02	
240	30	46.68	2.28	8.16	
			Stabilized Infiltration Testing Rate (inches per hour):	1.81	

Remarks:

PHOTOGRAPHY LOG

Test Location IN-1

Test Location IN-1

Shallow groundwater