Stormwater Management Report

For the Proposed:

Development

Located at:

107 Eastern Boulevard
Glastonbury, Connecticut

Prepared for Submission to:

Town of Glastonbury, Connecticut

August 24, 2020
Revised: September 30, 2020
Revised: December 16, 2020
Revised: January 20, 2021

Prepared for:

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107 Eastern Boulevard
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BL Project Number: 2000669

Contents

Executive Summary

This report has been prepared in support of a Permit Application by WE Acquisitions, LLC to the Town of Glastonbury for the proposed development at 107 Eastern Boulevard. The project parcel is approximately 12.5 acres in size and is currently a developed lot with a warehouse and associated paved parking areas and driveways, landscaped areas, and site utilities. The remaining site area is wooded and lawn area. The property is located at the northeastern corner of the intersection of National Drive and Eastern Boulevard. It is roughly bordered by the Planned Employment Zone (PE) on all sides. There is a small portion of wetland located on site towards the northwest of the site.

In general, the existing topography generally slopes from the north to the south of the site and eventually offsite to Salmon Brook. Elevations on site range from 70' to 110'. There are currently catch basins and drainage piping on site for the existing development, but no stormwater management system located within the project parcel.

Proposed site improvements will include minor building modifications, additional paved parking areas and driveways, landscaped areas, pedestrian sidewalks, site lighting, and a stormwater management system.

The proposed stormwater management system is designed to be in compliance with the 2002 State of Connecticut Guidelines for Soil Erosion and Sediment Control, and the 2004 State of Connecticut Stormwater Quality Manual.

A HydroCAD model, using TR-55 methodology, was developed to evaluate the existing and proposed drainage conditions of the property. The results of the analysis demonstrate that there will not be an increase in peak stormwater runoff rates for the 2-, 10-, 25-, and 100-year storm events.

The proposed stormwater management system has been designed to attenuate the increased flows generated by the proposed development. The project site is located in the Town of Glastonbury Groundwater Protection Zone 1 (GW-1). All proposed development will be in conformance with the Town of Glastonbury regulations including nitrogen loading and watertight sanitary sewer construction. Due to high groundwater, infiltration has been omitted from the stormwater management design. Stormwater quality is being addressed by a formalized street sweeping program, deep sumps and hooded outlet catch basins, and a sediment isolator row. These features will provide the minimum required 80% TSS removal as required in the CT Stormwater Quality Manual.

Existing Site Conditions and Hydrologic Conditions

General Site Information

The site soils identified by the United States Department of Agriculture (USDA) Natural Resources Conservation Services (NRCS) are Ellington silt loam, 0 to 5 percent slopes, Hartford sandy loam, 3 to 8 percent slopes, and udorthents-urban land complex. Per the USDA, the NRCS Hydrologic Soil Group ratings for soils within the project area are B, A, and B respectively. A copy of the USDA NRCS Hydrologic Soil Group Map is included in Appendix A for reference.

Per the FEMA Flood Insurance Rate Map Number 09003C0527F and 09003C0529F for the Town of Glastonbury, Connecticut, maps revised date: September 26, 2008, the site resides in FEMA Flood Hazard Area X (unshaded). Zone X (unshaded) is defined as "areas determined to be outside the 0.2% annual chance floodplain". A copy of the FEMA Flood insurance rate Map is included in Appendix A for reference.

Existing Hydrologic Conditions

The existing site drainage area that was analyzed totals 20.32 acres and is approximately 43% impervious. This area includes the portions of the properties to the north and west that sheet flow to the design points within the town roads. There is currently no existing stormwater management system onsite. Stormwater from the subject property enters the onsite drainage system by means of catch basins and flows untreated into the town drainage system or sheet flows untreated town drainage system or offsite. Below is a description of that area.

The following is a brief analysis of the existing design points as shown on the enclosed Existing Drainage Mapping (ED-1) Map, in Appendix E.

Existing Drainage Area 1 (EDA-1): This drainage area consists of the southeastern portion of the project parcel and portions of Eastern Boulevard that drain into the closed Town drainage system which flows towards the southeast of the site within eastern boulevard (DP-1). It is 1.67 acres and is approximately 61% impervious. EDA-1 consists of impervious parking, road, and building area, and lawn areas.

Existing Drainage Area 2 (EDA-2): This drainage area consists of the majority of the project parcel which drains into the closed Town drainage system which crosses National Drive to the south of the project parcel (DP-2). It is 9.45 acres and is approximately 40% impervious. EDA-2 consists of impervious parking, road, and building area, wooded, and lawn areas.

Existing Drainage Area 3 (EDA-3): This drainage area consists of the western portion of the project parcel and a portion of the adjacent parcel which drains into the closed Town drainage system which flows west along National Drive to the west of the project parcel (DP-3). It is 6.15 acres and is approximately 39% impervious. EDA-3 consists of impervious parking, road, and building area, wooded, and lawn areas.

Existing Drainage Area 4 (EDA-4): This drainage area consists of the northwestern portion of the project parcel which sheet flows offsite to the north (DP-4). It is 0.48 acres and is approximately 0% impervious. EDA-4 consists of wooded areas.

Table 1 – Pre-Development (Existing Conditions) Drainage Characteristics.

Drainage Area	Area (square feet)	Composite Curve Number	Impervious Cover (%)	Time of Concentration (minutes)
EDA-1 (Area to CBs Southeast of site)	184,485	86	61	9.7
EDA-2 (Area to CBs Southwest of site)	411,817	74	40	22.6
EDA-3 (Area to CBs West of site)	267,870	76	39	21.8
EDA-4 (Area sheet flowing north offsite)	21,119	36	0	15.0

Table 2 – Pre-Development Conditions Peak Flows

Analysis Point	Peak Flow (cfs)			
	2-yr	10-yr	25-yr	100-yr
Design Point 1 (CBs Southeast of site)	8.72	16.26	21.00	28.25
Design Point 2 (CBs Southwest of site)	6.42	15.71	22.06	32.25
Design Point 3 (CBs West of site)	4.83	11.21	15.50	22.32
Design Point 4 (Offsite to the North)	0.00	0.00	0.02	0.13

Developed Site Conditions and Hydrologic Conditions

In the proposed condition, a site stormwater management system will be installed to mitigate any increase in peak flow from the site. Two subsurface stormwater detention systems will be installed on-site. The site stormwater system will connect to the existing town drainage system by means of pipe connections to existing catch basins. The stormwater system will also provide stormwater detention and quality improvements through the implementation of a formalized street sweeping program for the impervious surfaces and the installation of deep sump and hooded outlet catch basins, and a subsurface sediment isolator row. These measures will treat the stormwater quality flow through structural means to provide water quality treatment in conformance with the State of Connecticut Water Quality Manual.

The Town of Glastonbury Groundwater Protection Zone regulations state that nitrogen loading to groundwater shall be less than 10 mg/L. Nitrogen Loading Calculations were performed, and included in Appendix D, adapted from the Cape Cod Commission Water Resources Office Nitrogen Loading manual from the Technical Bulletin 91-001 (FINAL) dated April 1992, using Town of Glastonbury constants. The calculations for nitrogen loading from the site include concentrations from impervious surface runoff and lawn area fertilizer applications, which result in a total nitrogen load to groundwater of 1.625 mg/L. The Town of Glastonbury Groundwater Protection Zone regulations also state that the proposed development shall not decrease the site's groundwater infiltration potential by more than 50%. As demonstrated by the Groundwater Recharge Calculations in Appendix D, the proposed site will provide water quality volumes for potential infiltration to groundwater that exceed the minimum required volume to meet the existing condition groundwater infiltration potential. Additionally, the pre development and post development outflow volume comparison Table 8 below shows a decrease to total outflow volume from the site in all storm events to the town drainage system, demonstrating that a greater volume of stormwater is infiltrated into groundwater in the proposed condition.

Due to the presence of damp soils and high groundwater, it is not feasible to infiltrate 50% of the WQV on site as required by the Town's MS4 Permit. A perforated pipe is proposed within the northern parking area to allow for infiltration to the maximum extent practical. This perforated pipe is not included in the hydrologic calculations since the required separation from the seasonal high groundwater cannot be provided. 50% of the WQV required by the Town's MS4 Permit. will be retained on site within the isolator rows and stone voids beneath the subsurface detention system.

The proposed site drainage area analyzed totals 20.32 acres and is approximately 62% impervious. The intent of the proposed site drainage is to match existing drainage patterns to the maximum extent practical. For the hydrologic analysis, the developed site retained the same Design Points as the existing model. The following drainage areas were developed to model the proposed site improvements.

Proposed Drainage Area 11 (PDA-11): This drainage area consists of the southeastern portion of the project parcel and portions of Eastern Boulevard that drain into the closed Town drainage system which flows towards the southeast of the site within eastern boulevard (DP-1). It is 3.37 acres and is approximately 57% impervious. PDA-11 consists of impervious parking, road, and building area, and lawn areas. This area's runoff is clean or unchanged.

Proposed Drainage Area 12 (PDA-12): This drainage area consists of the eastern portion of the project parcel that drains into Subsurface Detention System #1 with an isolator row and eventually

into the closed Town drainage system within eastern boulevard (DP-1). It is 1.02 acres and is approximately 80% impervious. The subsurface stormwater detention system has been designed to mitigate the increase in peak flows for all storm events. PDA-12 consists of impervious parking area and lawn area.

Proposed Drainage Area 21 (PDA-21): This drainage area consists of the southern portion of the project parcel which sheet flows or flows to catch basins which drain into the closed Town drainage system which crosses National Drive to the south of the project parcel (DP-2). It is 1.55 acres and is approximately 67% impervious. PDA-21 consists of impervious parking, road, and building area, and lawn areas. This area's runoff is clean or unchanged.

Proposed Drainage Area 22 (PDA-22): This drainage area consists of the majority of the project parcel that drains into Subsurface Detention System #2 with an isolator row and eventually into the closed Town drainage system which crosses National Drive to the south of the project parcel (DP-2). It is 8.87 acres and is approximately 72% impervious. The subsurface stormwater detention system has been designed to mitigate the increase in peak flows for all storm events. PDA-22 consists of impervious parking and building area, wooded, and lawn area.

Proposed Drainage Area 31 (PDA-31): This drainage area consists of the western portion of the project parcel and a portion of the adjacent parcel which drains into the closed Town drainage system which flows west along National Drive to the west of the project parcel (DP-3). It is 5.03 acres and is approximately 48% impervious. PDA-31 consists of impervious parking, road, and building area, wooded, and lawn areas. This area's runoff is clean or unchanged.

Proposed Drainage Area 41 (PDA-41): This drainage area consists of the northwestern portion of the project parcel which sheet flows offsite to the north (DP-4). It is 0.48 acres and is approximately 0% impervious. PDA-41 consists of wooded areas. This area's runoff is clean or unchanged.

Table 3 – Post-Development Drainage Characteristics.

Drainage Area	Area (square feet)	Composite Curve Number	Impervious Cover (%)	Time of Concentration (minutes)
PDA-11 (Area to CBs Southeast of site)	146,902	85	57	9.7
PDA-12 (Area to SSDS #1)	44,319	92	80	6.8
PDA-21 (Area to CBs Southwest of site)	67,486	88	67	18.1
PDA-22 (Area to SSDS #1)	386,565	84	72	21.9
PDA-31 (Area to CBs West of site)	218,900	78	48	21.8
PDA-41 (Area sheet flowing north offsite)	21,119	36	0	15.0

Table 4 – Post-Development Conditions Peak Flows

Analysis Point	Peak Flow (cfs)			
	2-yr	10-yr	25-yr	100-yr
Design Point 1 (CBs Southeast of site)	8.46	15.23	19.62	28.20
Design Point 2 (CBs Southwest of site)	6.15	11.62	17.37	30.99
Design Point 3 (CBs West of site)	4.47	9.86	13.43	19.05
Design Point 4 (Offsite to the North)	0.00	0.00	0.02	0.13

Table 5 – Existing vs Proposed Peak Rates of Runoff

	Peak Flow Rate in Cubic Feet per Second (cfs)			
Drainage Area	**2-yr**	**10-yr**	**25-yr**	**100-yr**
Design Point 1				
Existing	8.72	16.26	21.00	28.25
Proposed	8.46	15.23	19.62	28.20
Percent Change	-2.98%	-6.33%	-6.57%	-0.18%
Design Point 2				
Existing	6.42	15.71	22.06	32.25
Proposed	6.15	11.62	17.37	30.99
Percent Change	-4.21%	-26.03%	-21.26%	-3.91%
Design Point 3				
Existing	4.83	11.21	15.50	22.32
Proposed	4.47	9.86	13.43	19.05
Percent Change	-7.45%	-12.04%	-13.35%	-14.65%
Design Point 4				
Existing	0.00	0.00	0.02	0.13
Proposed	0.00	0.00	0.02	0.13
Percent Change	0.00%	0.00%	0.00%	0.00%

Stormwater Management

Hydrologic Modeling of the Entire Site

The hydrologic analysis to determine peak stormwater discharge rates was performed using the HydroCAD stormwater modeling system computer program, version 10.00 developed by HydroCAD Software Solutions, LLC. Hydrographs for each watershed were developed using the SCS Synthetic Unit Hydrograph Method. Rainfall depths and distribution per the NOAA Atlas 14 for Glastonbury, CT were used for the calculation of peak flow rates and are listed in Table 6. The drainage areas, or subcatchments as labeled by the program, are depicted by hexagons on the attached drainage diagrams. Pre-development HydroCAD output can be found in Appendix B and Post-development HydroCAD output can be found in Appendix C.

Table 6 – Rainfall Depths per NOAA Atlas 14
Appendix B - 24 hour Rainfall Data

Return Period	24-hour Rainfall Depth
2-year	3.09”
10-year	4.87”
25-year	5.98”
100-year	7.69”

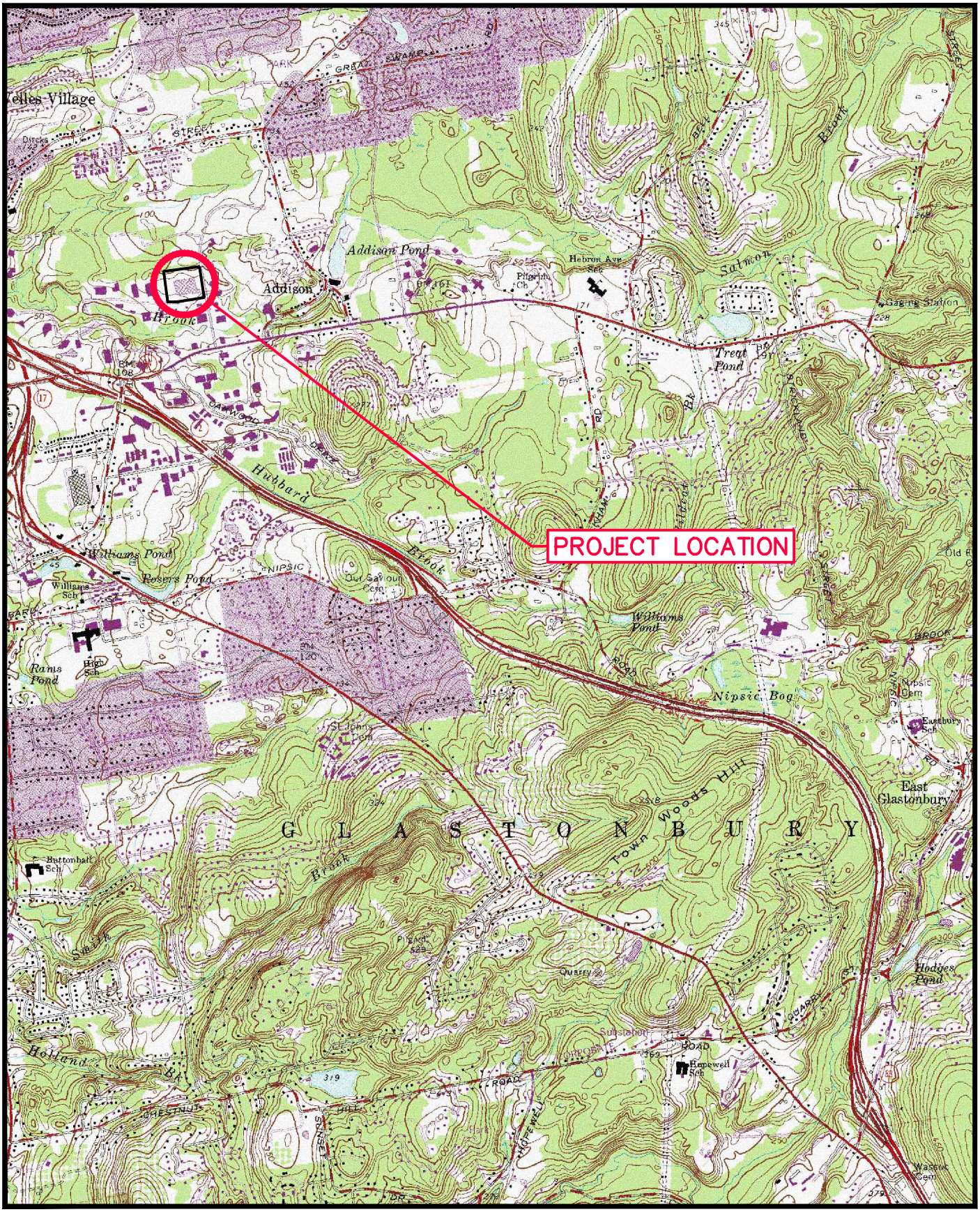
Summary

The post-development peak discharge rates for the total developed site have been maintained or decreased for all storm events. All post development stormwater will be discharged offsite to match existing drainage patterns. The proposed underground stormwater detention systems have been designed to attenuate peak flows for the 2-, 10-, 25-, and 100-year storm events. Due to damp soils and high groundwater on site, infiltration has been omitted from the stormwater management design. Stormwater quality is being addressed by a formalized street sweeping program, deep sump and hooded outlet catch basins, and a sediment isolator row. These features will provide the minimum required 80% TSS removal as required in the CT Stormwater Manual. The proposed stormwater management system will meet the stormwater quality requirements of the State of Connecticut.

APPENDIX A

LOCATION MAPS

Figure 1: USGS Location Map
Figure 2: Aerial Location Map
Figure 3: NRCS Soil Survey Map with Hydrologic Soil Group Data
Figure 4: FEMA Federal Insurance Rate Map
Figure 5: NOAA Atlas 14 Storm Data



BL Companies

ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

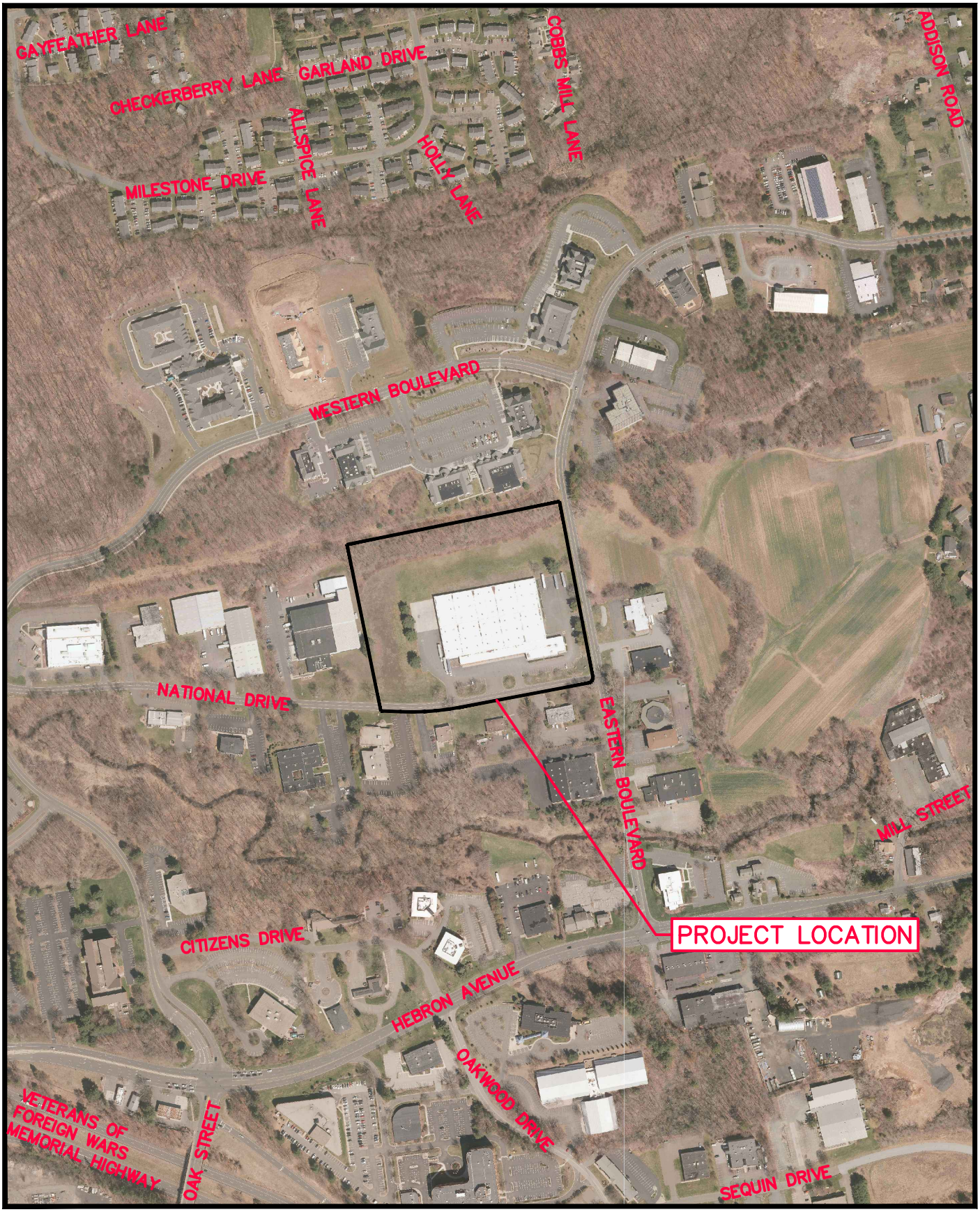
PROPOSED DEVELOPMENT

EASTERN BOULEVARD
GLASTONBURY, CONNECTICUT

Designed	H.J.T.
Drawn	H.J.T.
Checked	M.J.B.
Approved	M.J.B.
Scale	1"=2,000'
Project No.	2000669
Date	08/18/2020
CAD File	LOC200066901

FIGURE 1

USGS LOCATION MAP



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ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

PROPOSED DEVELOPMENT

EASTERN BOULEVARD
GLASTONBURY, CONNECTICUT

Designed	H.J.T.
Drawn	H.J.T.
Checked	M.J.B.
Approved	M.J.B.
Scale	1"=500'
Project No.	2000669
Date	08/18/2020
CAD File	LOC200066901

FIGURE 2

AERIAL LOCATION MAP

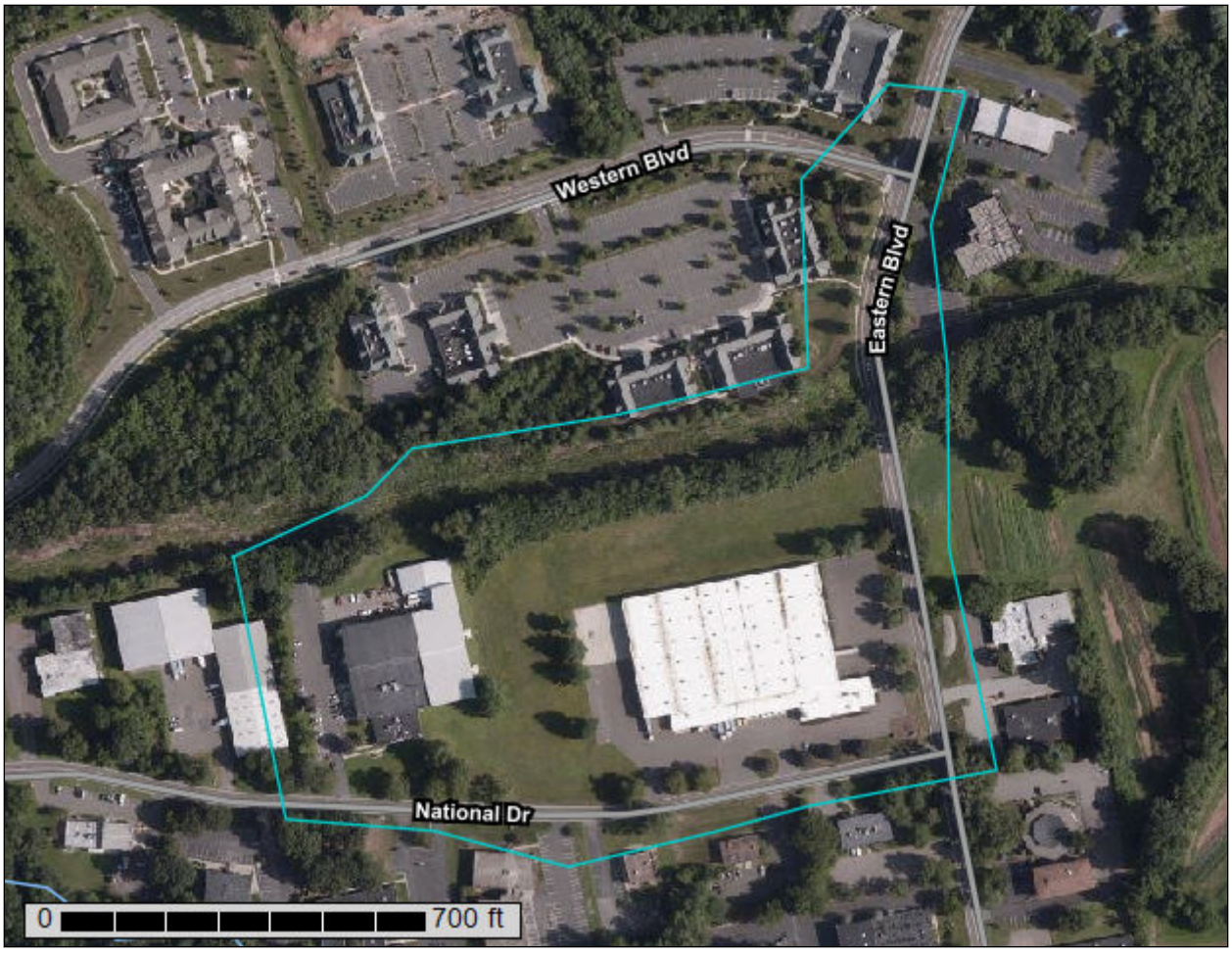
United States Department of Agriculture

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.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

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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.

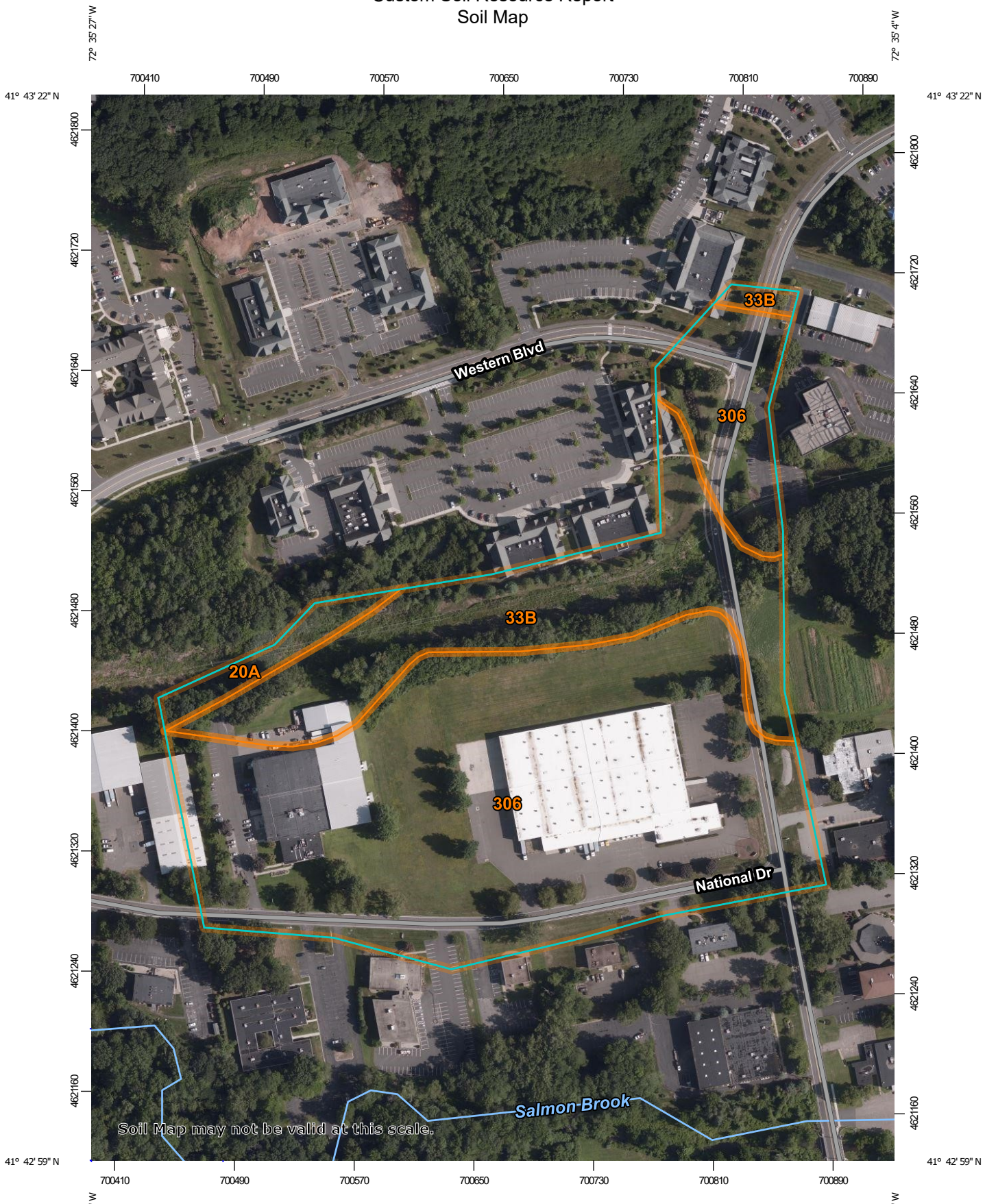
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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: 1:3,460 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

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.

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

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

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

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

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

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

Soil Survey Area: State of Connecticut
Survey Area Data: Version 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 15, 2019—Aug 29, 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
20A	Ellington silt loam, 0 to 5 percent slopes	0.8	2.9%
33B	Hartford sandy loam, 3 to 8 percent slopes	6.5	24.3%
306	Udorthents-Urban land complex	19.6	72.8%
Totals for Area of Interest		**27.0**	**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

20A—Ellington silt loam, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 9lk5
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: All areas are prime farmland

Map Unit Composition

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

Description of Ellington

Setting

Landform: Terraces, outwash plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-loamy eolian deposits over sandy and gravelly glaciofluvial deposits derived from sandstone and shale and/or basalt

Typical profile

Ap - 0 to 8 inches: silt loam
Bw1 - 8 to 18 inches: silt loam
Bw2 - 18 to 26 inches: very fine sandy loam
2C - 26 to 65 inches: stratified loamy fine sand to very gravelly coarse sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B
Ecological site: F145XY010CT - Moist Outwash
Hydric soil rating: No

Minor Components

Branford

Percent of map unit: 5 percent
Landform: Outwash plains, terraces

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

Unnamed, fine sandy loam surface
Percent of map unit: 5 percent
Hydric soil rating: No

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

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

33B—Hartford sandy loam, 3 to 8 percent slopes

Map Unit Setting
National map unit symbol: 9lmw
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: All areas are prime farmland

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

Description of Hartford

Setting
Landform: Outwash plains, terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy glaciofluvial deposits derived from sandstone and/or basalt

Typical profile
Ap - 0 to 8 inches: sandy loam
Bw1 - 8 to 20 inches: sandy loam
Bw2 - 20 to 26 inches: loamy sand
2C - 26 to 65 inches: stratified very gravelly coarse sand to loamy fine sand

Properties and qualities

Slope: 3 to 8 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 (1.98 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 4.5 inches)

Interpretive groups

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

Minor Components

Penwood

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

Ellington

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

Manchester

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

Branford

Percent of map unit: 5 percent
Landform: Outwash plains, terraces
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

306—Udorthents-Urban land complex

Map Unit Setting

National map unit symbol: 9lmg
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: 50 percent
Urban land: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Setting

Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Drift

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 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: 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 54 to 72 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): 3e
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Urban Land

Typical profile

H - 0 to 6 inches: material

Interpretive groups

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

Minor Components

Unnamed, undisturbed soils

Percent of map unit: 8 percent
Hydric soil rating: No

Udorthents, wet substratum

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

Rock outcrop

Percent of map unit: 2 percent
Hydric soil rating: No

Soil Information for All Uses

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:

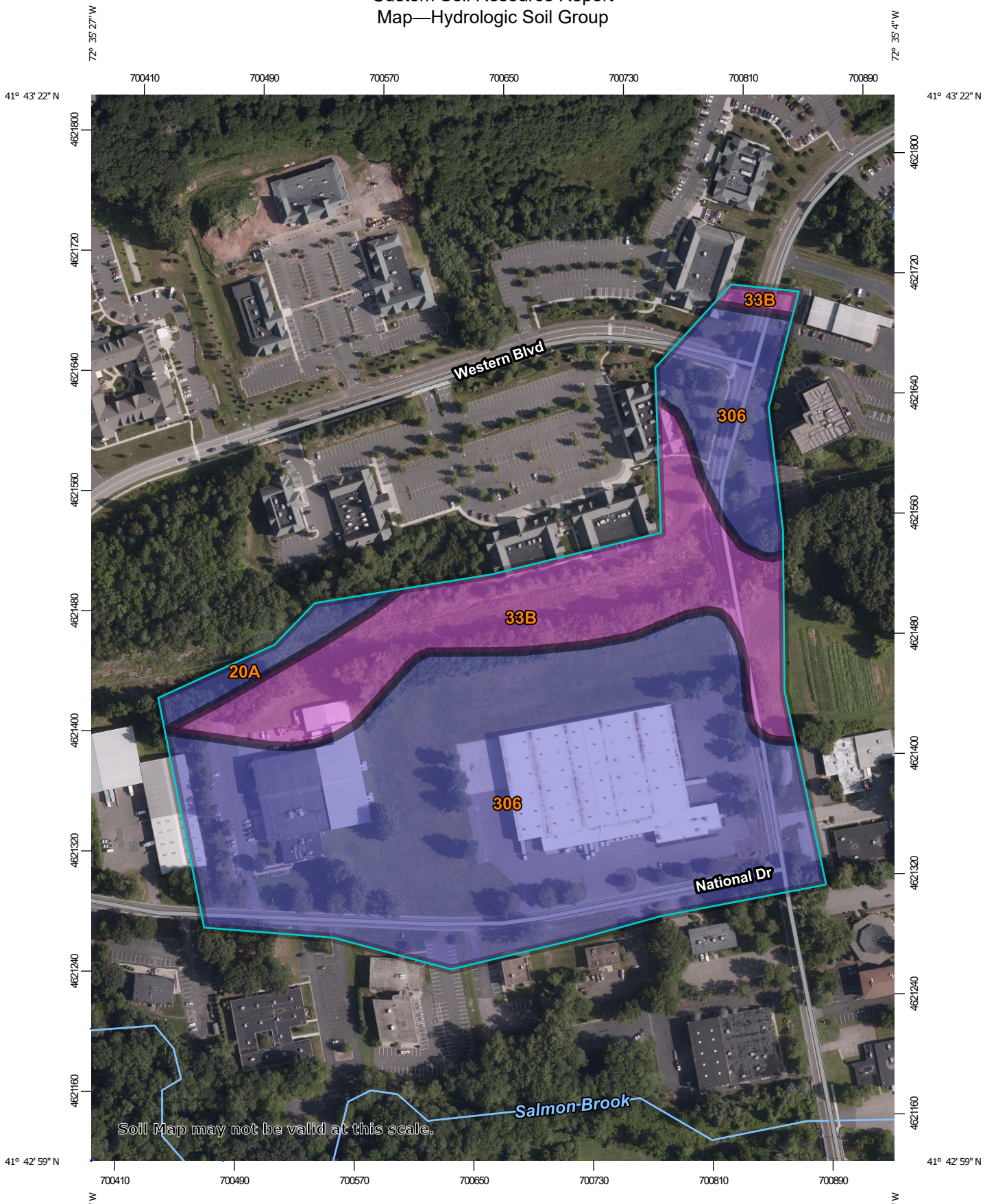
Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

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.



Map Scale: 1:3,460 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: State of Connecticut
Survey Area Data: Version 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 15, 2019—Aug 29, 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
20A	Ellington silt loam, 0 to 5 percent slopes	B	0.8	2.9%
33B	Hartford sandy loam, 3 to 8 percent slopes	A	6.5	24.3%
306	Udorthents-Urban land complex	B	19.6	72.8%
Totals for Area of Interest			**27.0**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

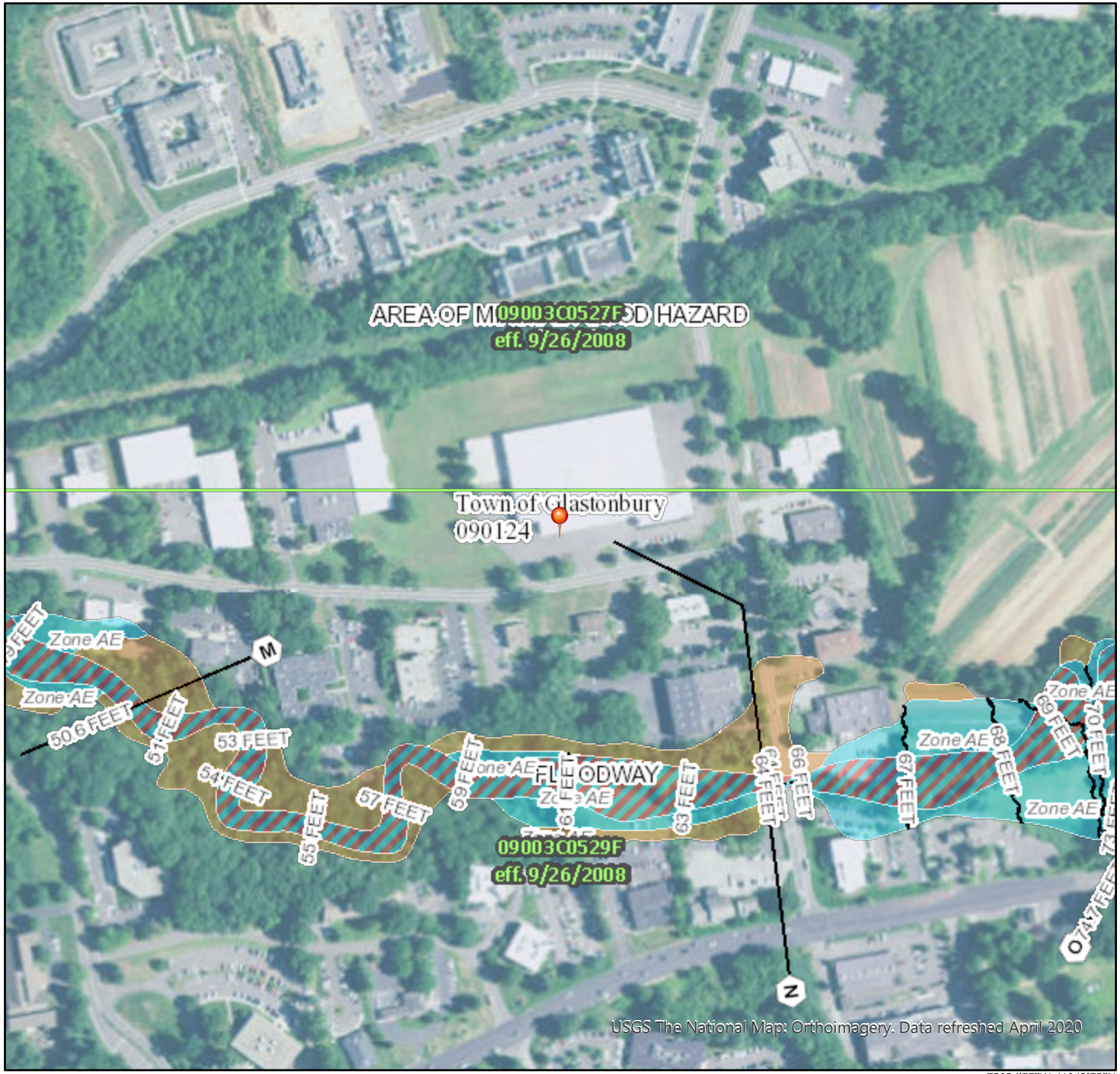
Component Percent Cutoff: None Specified

Tie-break Rule: Higher

National Flood Hazard Layer FIRMette

FEMA

72°35'33"W 41°43'20"N



72°34'55"W 41°42'53"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Legend

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

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

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

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 8/19/2020 at 11:41 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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

NOAA Atlas 14, Volume 10, Version 3
Location name: Glastonbury, Connecticut, USA*
Latitude: 41.718°, Longitude: -72.5896°
Elevation: 71.04 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.331 (0.263-0.416)	0.404 (0.320-0.508)	0.523 (0.412-0.659)	0.621 (0.487-0.789)	0.757 (0.573-1.01)	0.859 (0.635-1.17)	0.966 (0.692-1.37)	1.09 (0.735-1.58)	1.26 (0.817-1.90)	1.40 (0.886-2.15)
10-min	0.469 (0.372-0.589)	0.572 (0.453-0.719)	0.740 (0.583-0.933)	0.880 (0.690-1.12)	1.07 (0.811-1.43)	1.22 (0.900-1.66)	1.37 (0.981-1.94)	1.54 (1.04-2.23)	1.78 (1.16-2.68)	1.98 (1.25-3.05)
15-min	0.552 (0.438-0.693)	0.673 (0.533-0.846)	0.871 (0.687-1.10)	1.04 (0.811-1.31)	1.26 (0.954-1.68)	1.43 (1.06-1.95)	1.61 (1.15-2.28)	1.81 (1.23-2.63)	2.10 (1.36-3.16)	2.33 (1.48-3.59)
30-min	0.743 (0.588-0.932)	0.906 (0.717-1.14)	1.17 (0.924-1.48)	1.39 (1.09-1.77)	1.70 (1.28-2.26)	1.93 (1.43-2.62)	2.17 (1.55-3.07)	2.44 (1.65-3.53)	2.82 (1.83-4.25)	3.14 (1.99-4.83)
60-min	0.933 (0.739-1.17)	1.14 (0.900-1.43)	1.47 (1.16-1.86)	1.75 (1.37-2.22)	2.13 (1.61-2.84)	2.42 (1.79-3.29)	2.72 (1.95-3.85)	3.06 (2.07-4.44)	3.55 (2.30-5.34)	3.94 (2.50-6.06)
2-hr	1.22 (0.972-1.52)	1.48 (1.18-1.84)	1.90 (1.51-2.38)	2.25 (1.77-2.83)	2.73 (2.08-3.62)	3.09 (2.31-4.19)	3.47 (2.52-4.92)	3.93 (2.66-5.66)	4.60 (2.99-6.88)	5.16 (3.28-7.88)
3-hr	1.41 (1.13-1.75)	1.70 (1.36-2.12)	2.19 (1.74-2.73)	2.59 (2.05-3.25)	3.14 (2.40-4.15)	3.55 (2.66-4.81)	3.99 (2.90-5.64)	4.52 (3.07-6.49)	5.32 (3.47-7.93)	6.00 (3.82-9.13)
6-hr	1.76 (1.42-2.18)	2.14 (1.72-2.64)	2.75 (2.20-3.41)	3.25 (2.59-4.06)	3.95 (3.04-5.19)	4.46 (3.37-6.02)	5.02 (3.68-7.08)	5.70 (3.89-8.14)	6.75 (4.42-9.99)	7.65 (4.88-11.6)
12-hr	2.14 (1.74-2.63)	2.61 (2.12-3.21)	3.38 (2.73-4.17)	4.02 (3.22-4.99)	4.90 (3.80-6.41)	5.55 (4.21-7.44)	6.26 (4.62-8.77)	7.13 (4.89-10.1)	8.46 (5.56-12.4)	9.61 (6.15-14.4)
24-hr	2.50 (2.04-3.05)	3.09 (2.52-3.78)	4.06 (3.30-4.98)	4.87 (3.93-6.00)	5.98 (4.66-7.78)	6.79 (5.19-9.07)	7.69 (5.72-10.8)	8.81 (6.06-12.4)	10.6 (6.97-15.5)	12.1 (7.79-18.1)
2-day	2.84 (2.33-3.44)	3.57 (2.93-4.33)	4.77 (3.90-5.80)	5.76 (4.67-7.05)	7.12 (5.60-9.25)	8.11 (6.26-10.8)	9.23 (6.95-13.0)	10.7 (7.37-15.0)	13.1 (8.64-19.0)	15.2 (9.80-22.5)
3-day	3.09 (2.55-3.73)	3.90 (3.21-4.71)	5.21 (4.27-6.32)	6.30 (5.13-7.68)	7.80 (6.16-10.1)	8.89 (6.89-11.8)	10.1 (7.65-14.2)	11.8 (8.12-16.4)	14.4 (9.55-20.9)	16.9 (10.9-24.8)
4-day	3.31 (2.74-3.98)	4.16 (3.44-5.01)	5.56 (4.57-6.72)	6.71 (5.48-8.16)	8.31 (6.58-10.7)	9.46 (7.35-12.6)	10.8 (8.16-15.1)	12.5 (8.65-17.4)	15.4 (10.2-22.1)	17.9 (11.6-26.3)
7-day	3.89 (3.23-4.65)	4.83 (4.01-5.79)	6.38 (5.28-7.67)	7.67 (6.29-9.27)	9.43 (7.50-12.1)	10.7 (8.35-14.1)	12.2 (9.23-16.8)	14.0 (9.76-19.4)	17.1 (11.4-24.5)	19.9 (12.9-29.0)
10-day	4.48 (3.74-5.35)	5.48 (4.56-6.54)	7.11 (5.89-8.52)	8.46 (6.97-10.2)	10.3 (8.21-13.1)	11.7 (9.10-15.3)	13.2 (9.98-18.1)	15.1 (10.5-20.8)	18.2 (12.1-26.0)	20.9 (13.6-30.4)
20-day	6.44 (5.41-7.63)	7.49 (6.28-8.89)	9.22 (7.70-11.0)	10.6 (8.83-12.8)	12.6 (10.1-15.8)	14.1 (11.0-18.1)	15.7 (11.8-21.0)	17.5 (12.3-23.9)	20.3 (13.6-28.7)	22.7 (14.7-32.7)
30-day	8.12 (6.85-9.59)	9.21 (7.75-10.9)	11.0 (9.21-13.0)	12.5 (10.4-14.9)	14.5 (11.6-18.0)	16.0 (12.5-20.4)	17.6 (13.2-23.2)	19.4 (13.6-26.3)	21.9 (14.7-30.8)	23.9 (15.6-34.3)
45-day	10.2 (8.67-12.1)	11.4 (9.61-13.4)	13.2 (11.1-15.6)	14.7 (12.3-17.5)	16.8 (13.5-20.8)	18.5 (14.4-23.2)	20.1 (15.0-26.1)	21.7 (15.4-29.3)	23.9 (16.1-33.4)	25.5 (16.7-36.6)
60-day	12.0 (10.2-14.1)	13.2 (11.2-15.5)	15.1 (12.7-17.8)	16.7 (14.0-19.8)	18.9 (15.1-23.1)	20.6 (16.0-25.7)	22.2 (16.5-28.6)	23.8 (16.9-31.9)	25.7 (17.4-35.9)	27.1 (17.7-38.7)

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

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

Please refer to NOAA Atlas 14 document for more information.

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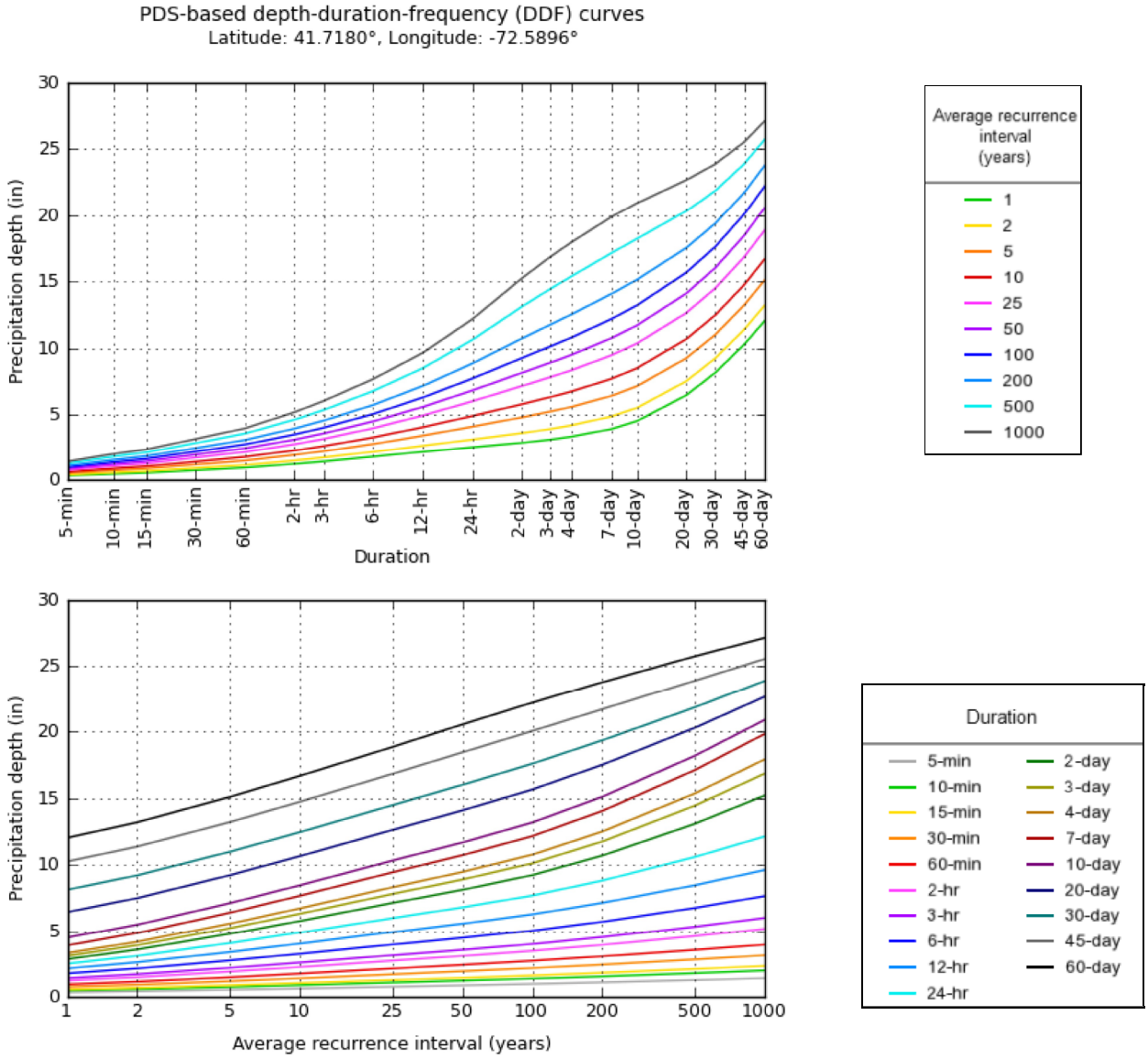
PF graphical



NOAA Atlas 14, Volume 10, Version 3

Created (GMT): Mon Aug 10 18:11:59 2020

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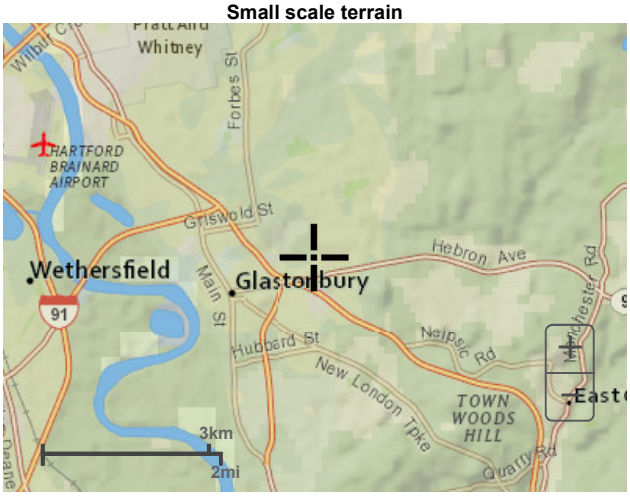
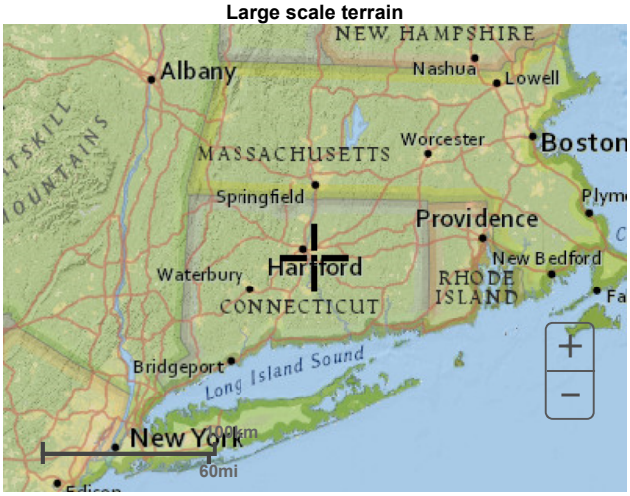
Maps & aerials

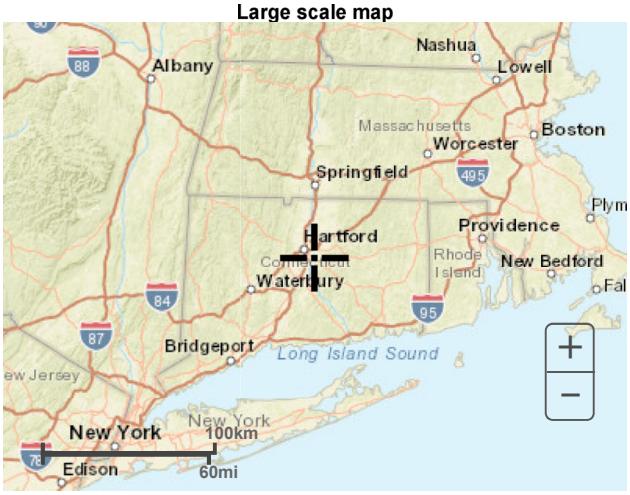
Small scale terrain



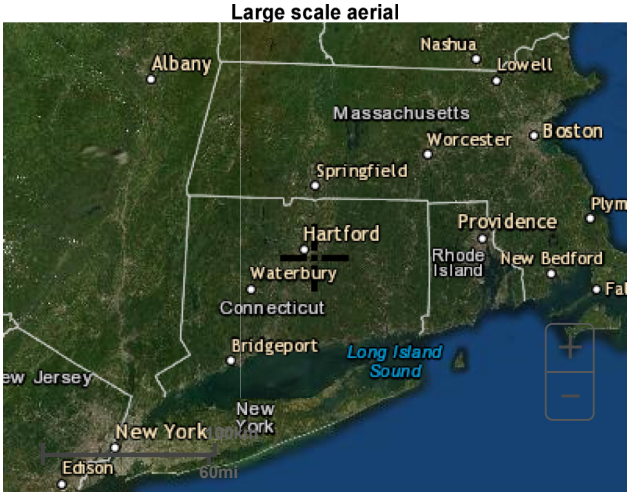
Large scale terrain



Large scale map



Large scale aerial



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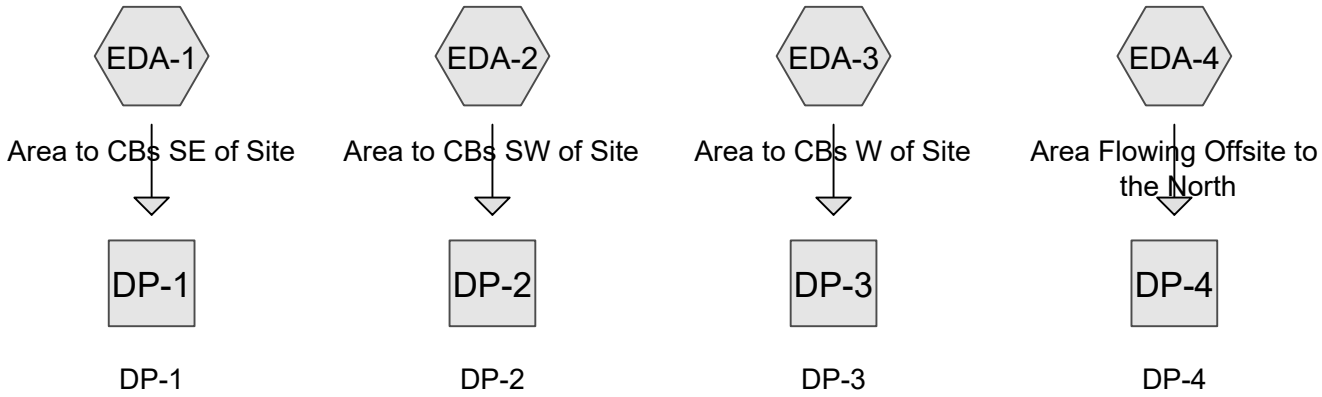
US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

APPENDIX B

PRE-DEVELOPMENT HYDROLOGY



Subcat Reach Pond Link

Routing Diagram for C-DAT-2000669-EXISTING HYDROLOGY
Prepared by BL Companies, Inc., Printed 8/19/2020

Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 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 EDA-1: Area to CBs SE of Runoff Area=184,485 sf 60.55% Impervious Runoff Depth=1.74"
Flow Length=248' Tc=9.7 min CN=86 Runoff=8.72 cfs 0.614 af

Subcatchment EDA-2: Area to CBs SW of Runoff Area=411,817 sf 39.56% Impervious Runoff Depth=0.97"
Flow Length=1,332' Tc=22.6 min CN=74 Runoff=6.42 cfs 0.761 af

Subcatchment EDA-3: Area to CBs W of Runoff Area=267,870 sf 39.03% Impervious Runoff Depth=1.08"
Flow Length=852' Tc=21.8 min CN=76 Runoff=4.83 cfs 0.551 af

Subcatchment EDA-4: Area Flowing Offsite Runoff Area=21,119 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=125' Tc=15.0 min CN=36 Runoff=0.00 cfs 0.000 af

Reach DP-1: DP-1 Inflow=8.72 cfs 0.614 af
Outflow=8.72 cfs 0.614 af

Reach DP-2: DP-2 Inflow=6.42 cfs 0.761 af
Outflow=6.42 cfs 0.761 af

Reach DP-3: DP-3 Inflow=4.83 cfs 0.551 af
Outflow=4.83 cfs 0.551 af

Reach DP-4: DP-4 Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Total Runoff Area = 20.323 ac Runoff Volume = 1.926 af Average Runoff Depth = 1.14"
57.17% Pervious = 11.618 ac 42.83% Impervious = 8.705 ac

Summary for Subcatchment EDA-1: Area to CBs SE of Site

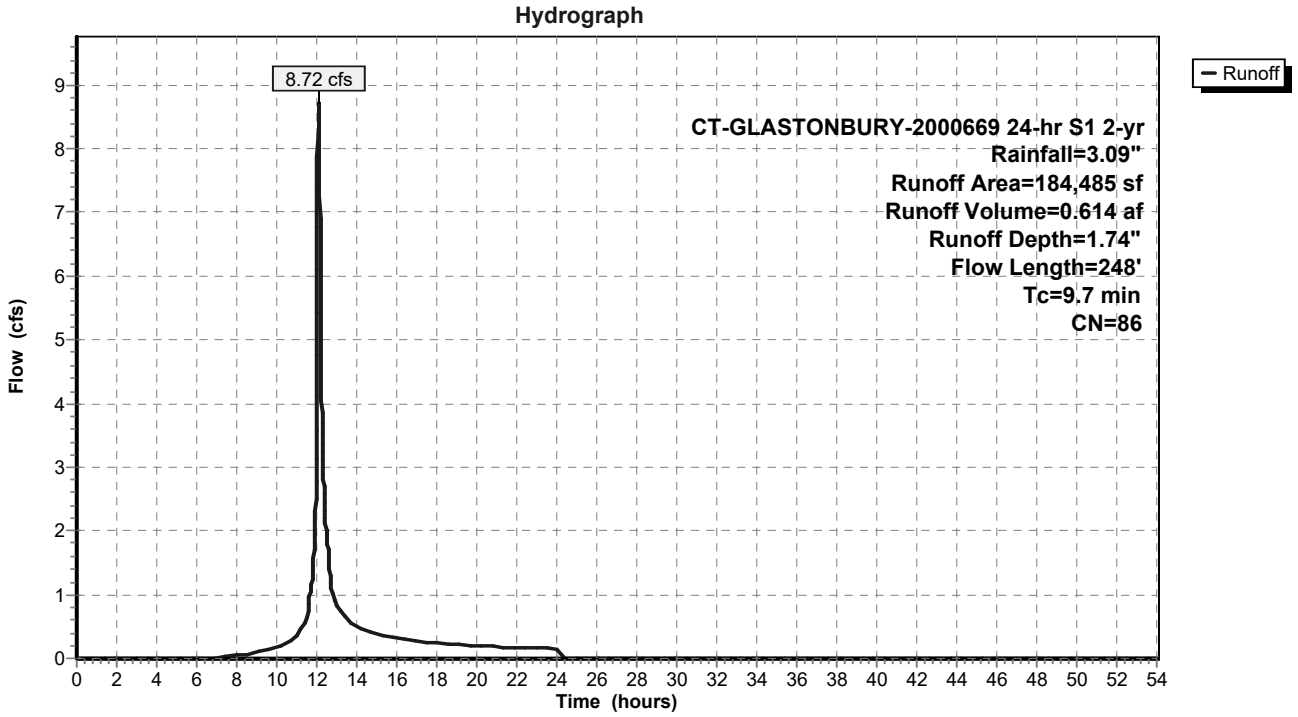
Runoff = 8.72 cfs @ 12.08 hrs, Volume= 0.614 af, Depth= 1.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 2-yr Rainfall=3.09"

Area (sf)	CN	Description
10,997	98	Paved parking, HSG A
7,473	49	50-75% Grass cover, Fair, HSG A
0	36	Woods, Fair, HSG A
100,716	98	Paved parking, HSG B
65,299	69	50-75% Grass cover, Fair, HSG B
0	60	Woods, Fair, HSG B
184,485	86	Weighted Average
72,772		39.45% Pervious Area
111,713		60.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	100	0.0260	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.09"
0.4	71	0.0408	3.03		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	13	0.0385	3.98		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	64	0.0125	6.38	7.82	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
9.7	248	Total			

Subcatchment EDA-1: Area to CBs SE of Site



Summary for Subcatchment EDA-2: Area to CBs SW of Site

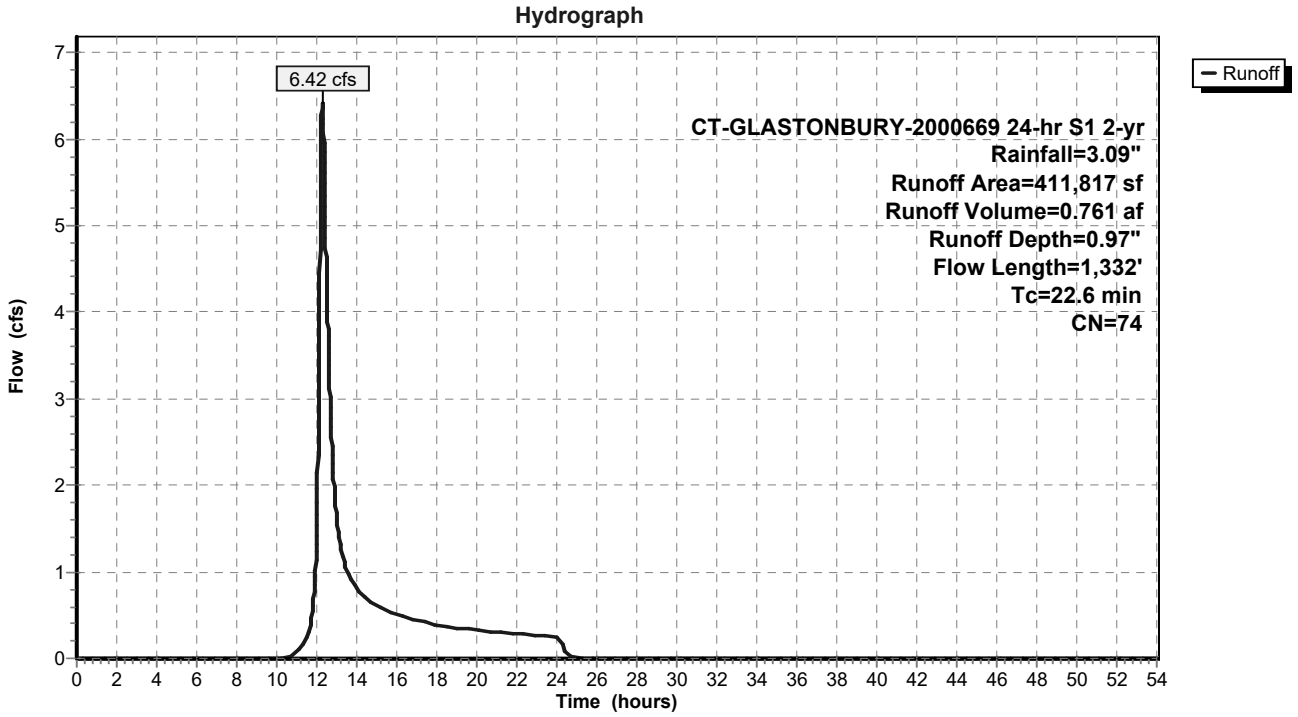
Runoff = 6.42 cfs @ 12.28 hrs, Volume= 0.761 af, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 2-yr Rainfall=3.09"

Area (sf)	CN	Description
666	98	Paved parking, HSG A
7,080	49	50-75% Grass cover, Fair, HSG A
72,925	36	Woods, Fair, HSG A
162,265	98	Paved parking, HSG B
153,049	69	50-75% Grass cover, Fair, HSG B
15,832	60	Woods, Fair, HSG B
411,817	74	Weighted Average
248,886		60.44% Pervious Area
162,931		39.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	100	0.0300	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.09"
0.5	76	0.2894	2.69		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	28	0.0428	1.03		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	181	0.0440	3.15		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
2.0	947	0.0100	7.80	24.51	**Pipe Channel, RCP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Concrete pipe, finished
22.6	1,332	Total			

Subcatchment EDA-2: Area to CBs SW of Site



Summary for Subcatchment EDA-3: Area to CBs W of Site

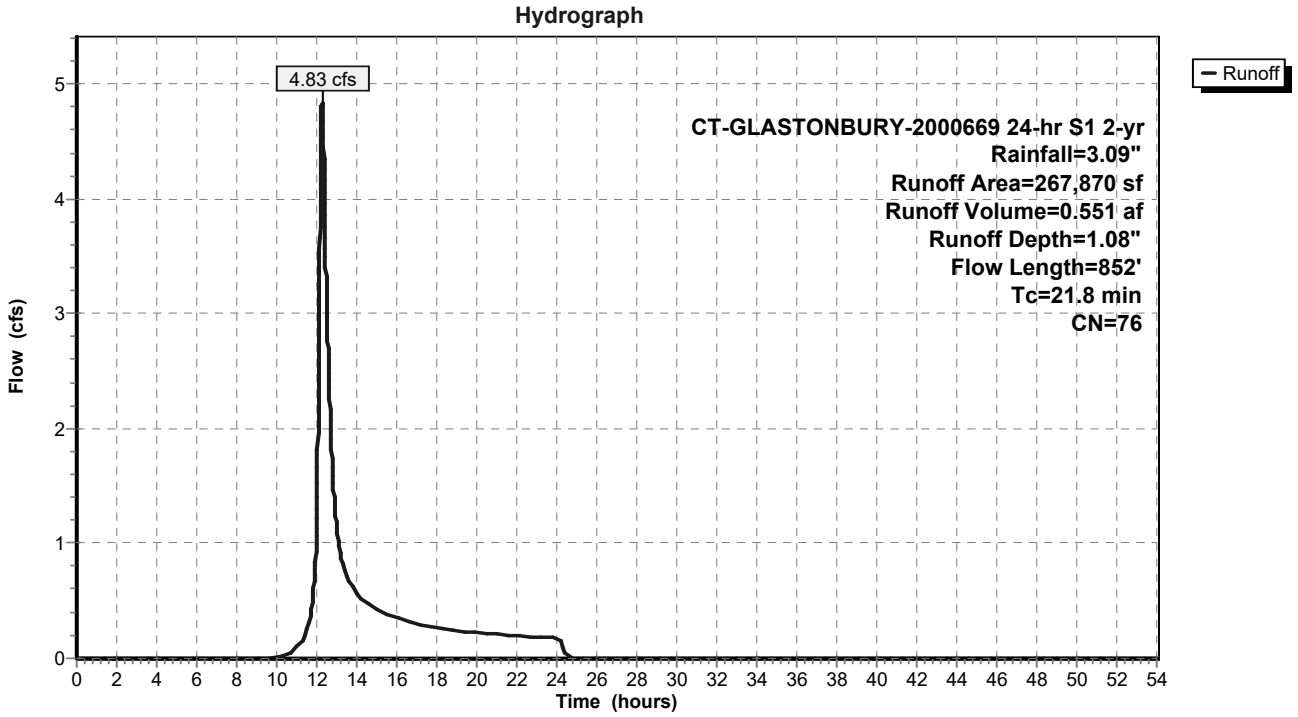
Runoff = 4.83 cfs @ 12.26 hrs, Volume= 0.551 af, Depth= 1.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 2-yr Rainfall=3.09"

Area (sf)	CN	Description
15,956	98	Paved parking, HSG A
16,147	49	50-75% Grass cover, Fair, HSG A
25,398	36	Woods, Fair, HSG A
88,595	98	Paved parking, HSG B
113,691	69	50-75% Grass cover, Fair, HSG B
8,083	60	Woods, Fair, HSG B
267,870	76	Weighted Average
163,319		60.97% Pervious Area
104,551		39.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.3	90	0.0222	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.09"
0.5	85	0.0353	2.82		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
2.0	677	0.0100	5.70	7.00	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
21.8	852	Total			

Subcatchment EDA-3: Area to CBs W of Site



Summary for Subcatchment EDA-4: Area Flowing Offsite to the North

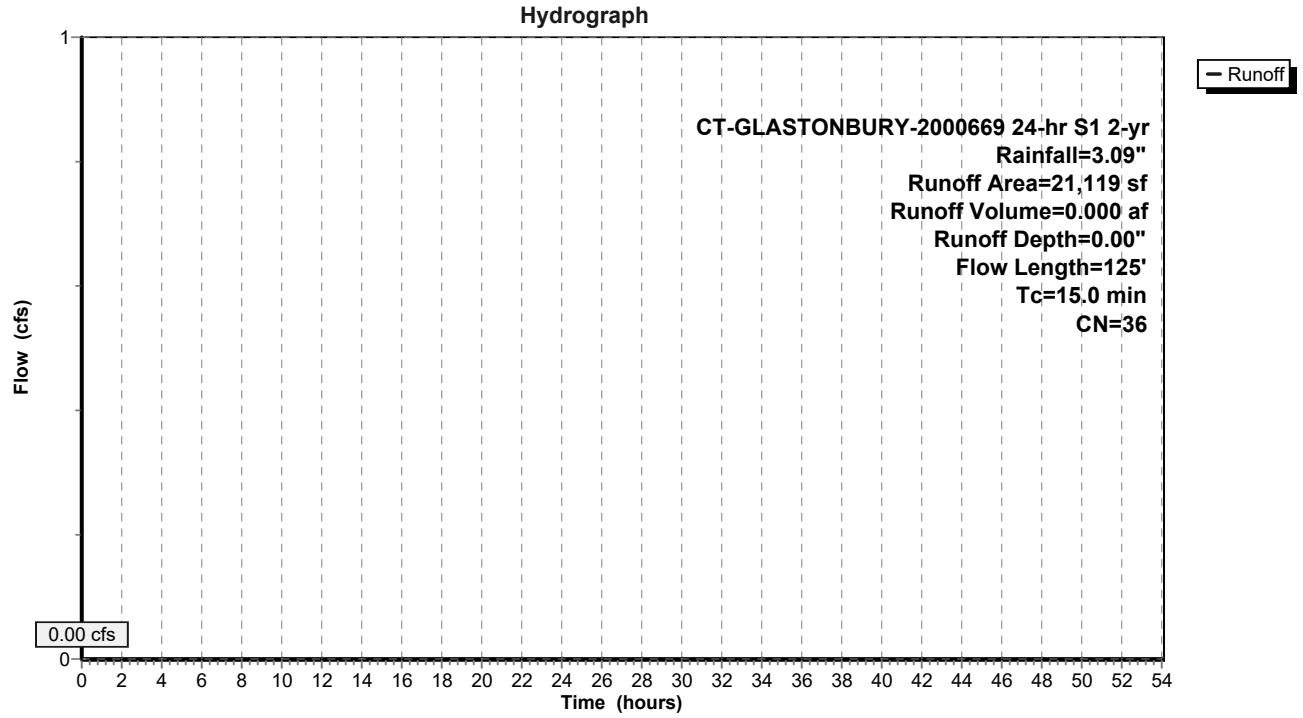
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 2-yr Rainfall=3.09"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
0	49	50-75% Grass cover, Fair, HSG A
21,040	36	Woods, Fair, HSG A
0	98	Paved parking, HSG B
0	69	50-75% Grass cover, Fair, HSG B
79	60	Woods, Fair, HSG B
21,119	36	Weighted Average
21,119		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	30	0.0333	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.09"
8.0	70	0.1214	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.09"
0.2	25	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.0	125	Total			

Subcatchment EDA-4: Area Flowing Offsite to the North

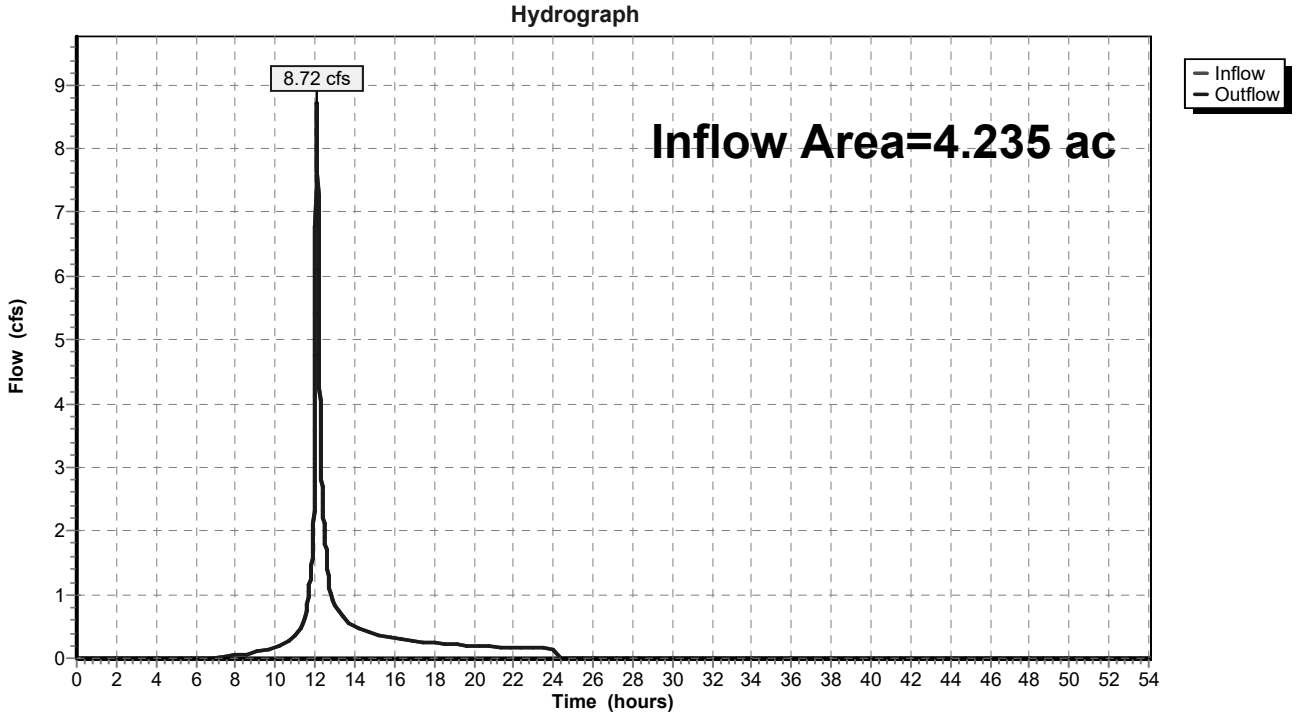


Summary for Reach DP-1: DP-1

Inflow Area = 4.235 ac, 60.55% Impervious, Inflow Depth = 1.74" for 2-yr event
Inflow = 8.72 cfs @ 12.08 hrs, Volume= 0.614 af
Outflow = 8.72 cfs @ 12.08 hrs, Volume= 0.614 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Reach DP-1: DP-1

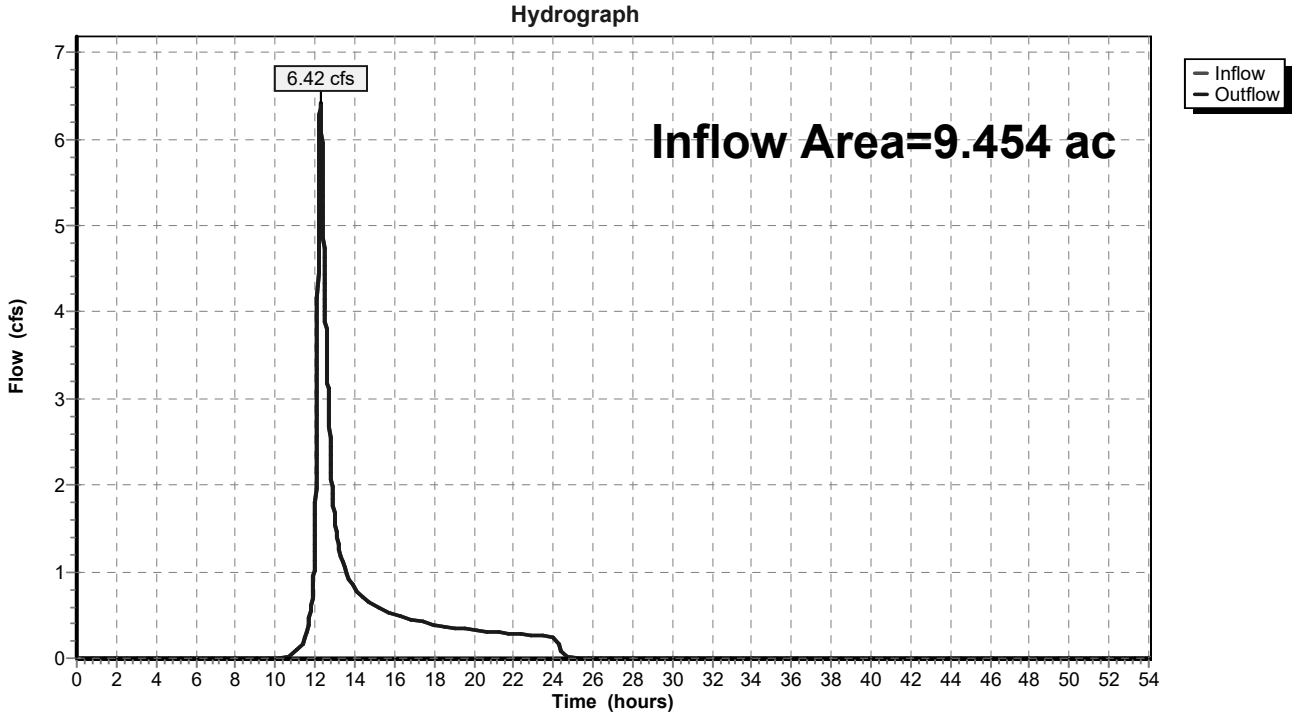


Summary for Reach DP-2: DP-2

Inflow Area = 9.454 ac, 39.56% Impervious, Inflow Depth = 0.97" for 2-yr event
Inflow = 6.42 cfs @ 12.28 hrs, Volume= 0.761 af
Outflow = 6.42 cfs @ 12.28 hrs, Volume= 0.761 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Reach DP-2: DP-2

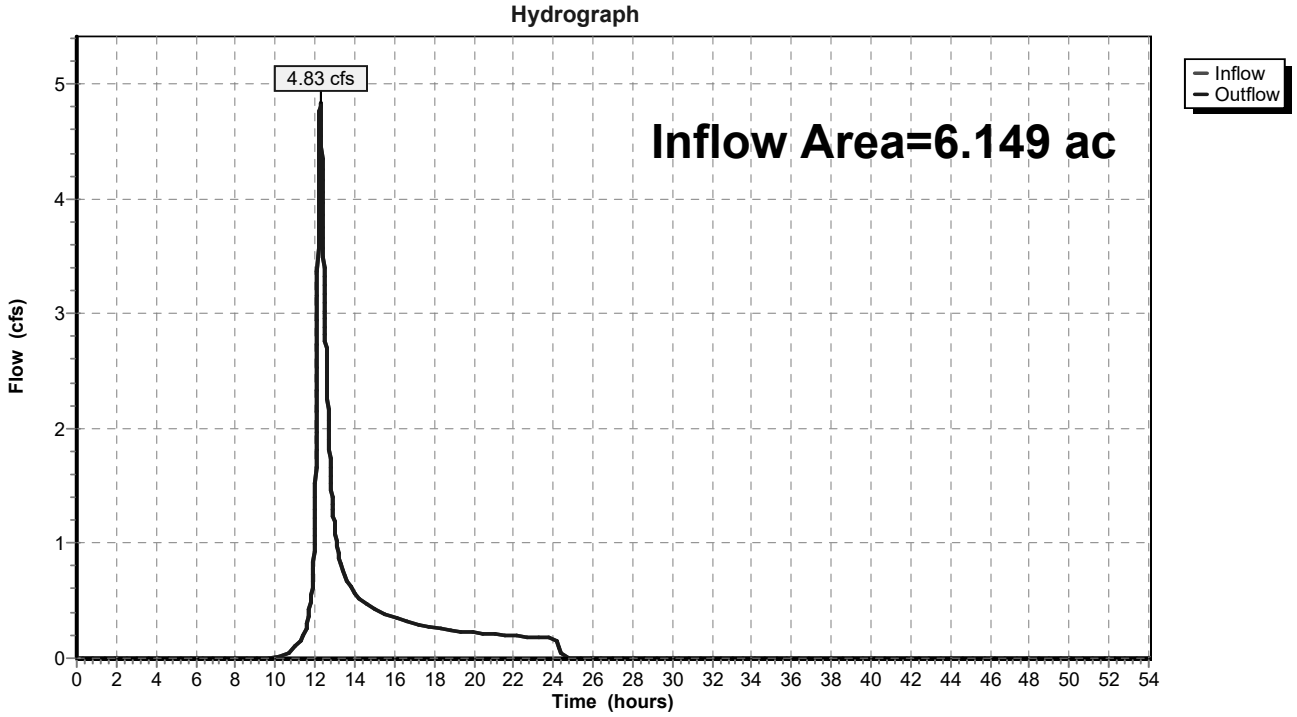


Summary for Reach DP-3: DP-3

Inflow Area = 6.149 ac, 39.03% Impervious, Inflow Depth = 1.08" for 2-yr event
Inflow = 4.83 cfs @ 12.26 hrs, Volume= 0.551 af
Outflow = 4.83 cfs @ 12.26 hrs, Volume= 0.551 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Reach DP-3: DP-3

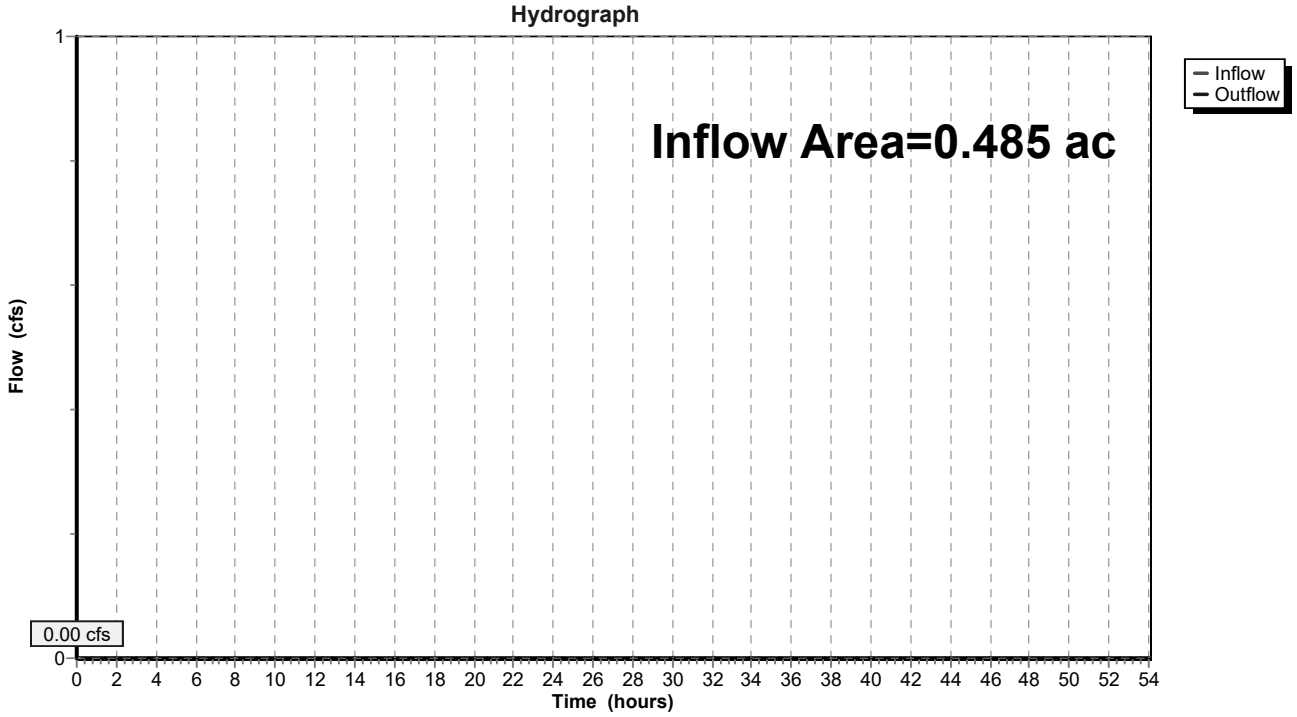


Summary for Reach DP-4: DP-4

Inflow Area = 0.485 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-yr event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Reach DP-4: DP-4



Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 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 EDA-1: Area to CBs SE of Runoff Area=184,485 sf 60.55% Impervious Runoff Depth=3.35"
Flow Length=248' Tc=9.7 min CN=86 Runoff=16.26 cfs 1.181 af

Subcatchment EDA-2: Area to CBs SW of Runoff Area=411,817 sf 39.56% Impervious Runoff Depth=2.26"
Flow Length=1,332' Tc=22.6 min CN=74 Runoff=15.71 cfs 1.781 af

Subcatchment EDA-3: Area to CBs W of Runoff Area=267,870 sf 39.03% Impervious Runoff Depth=2.43"
Flow Length=852' Tc=21.8 min CN=76 Runoff=11.21 cfs 1.245 af

Subcatchment EDA-4: Area Flowing Offsite Runoff Area=21,119 sf 0.00% Impervious Runoff Depth=0.09"
Flow Length=125' Tc=15.0 min CN=36 Runoff=0.00 cfs 0.004 af

Reach DP-1: DP-1 Inflow=16.26 cfs 1.181 af
Outflow=16.26 cfs 1.181 af

Reach DP-2: DP-2 Inflow=15.71 cfs 1.781 af
Outflow=15.71 cfs 1.781 af

Reach DP-3: DP-3 Inflow=11.21 cfs 1.245 af
Outflow=11.21 cfs 1.245 af

Reach DP-4: DP-4 Inflow=0.00 cfs 0.004 af
Outflow=0.00 cfs 0.004 af

Total Runoff Area = 20.323 ac Runoff Volume = 4.210 af Average Runoff Depth = 2.49"
57.17% Pervious = 11.618 ac 42.83% Impervious = 8.705 ac

Summary for Subcatchment EDA-1: Area to CBs SE of Site

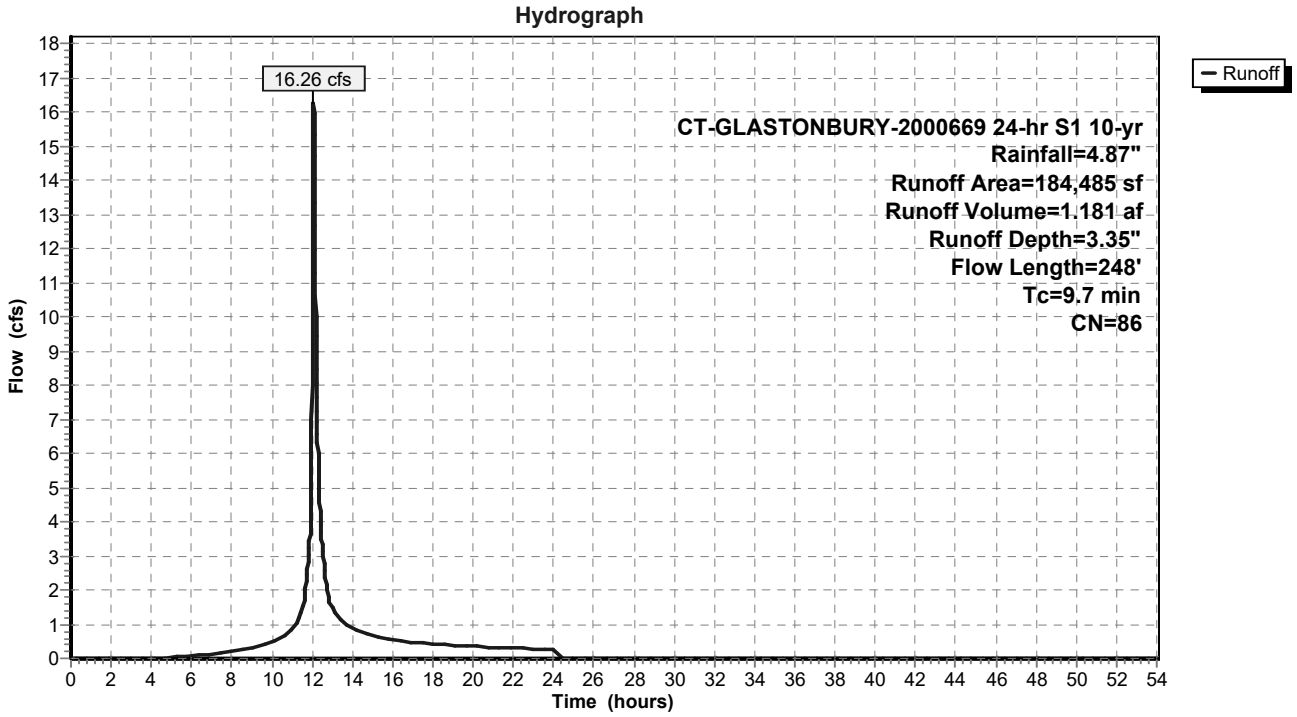
Runoff = 16.26 cfs @ 12.08 hrs, Volume= 1.181 af, Depth= 3.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 10-yr Rainfall=4.87"

Area (sf)	CN	Description
10,997	98	Paved parking, HSG A
7,473	49	50-75% Grass cover, Fair, HSG A
0	36	Woods, Fair, HSG A
100,716	98	Paved parking, HSG B
65,299	69	50-75% Grass cover, Fair, HSG B
0	60	Woods, Fair, HSG B
184,485	86	Weighted Average
72,772		39.45% Pervious Area
111,713		60.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	100	0.0260	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.09"
0.4	71	0.0408	3.03		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	13	0.0385	3.98		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	64	0.0125	6.38	7.82	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
9.7	248	Total			

Subcatchment EDA-1: Area to CBs SE of Site



Summary for Subcatchment EDA-2: Area to CBs SW of Site

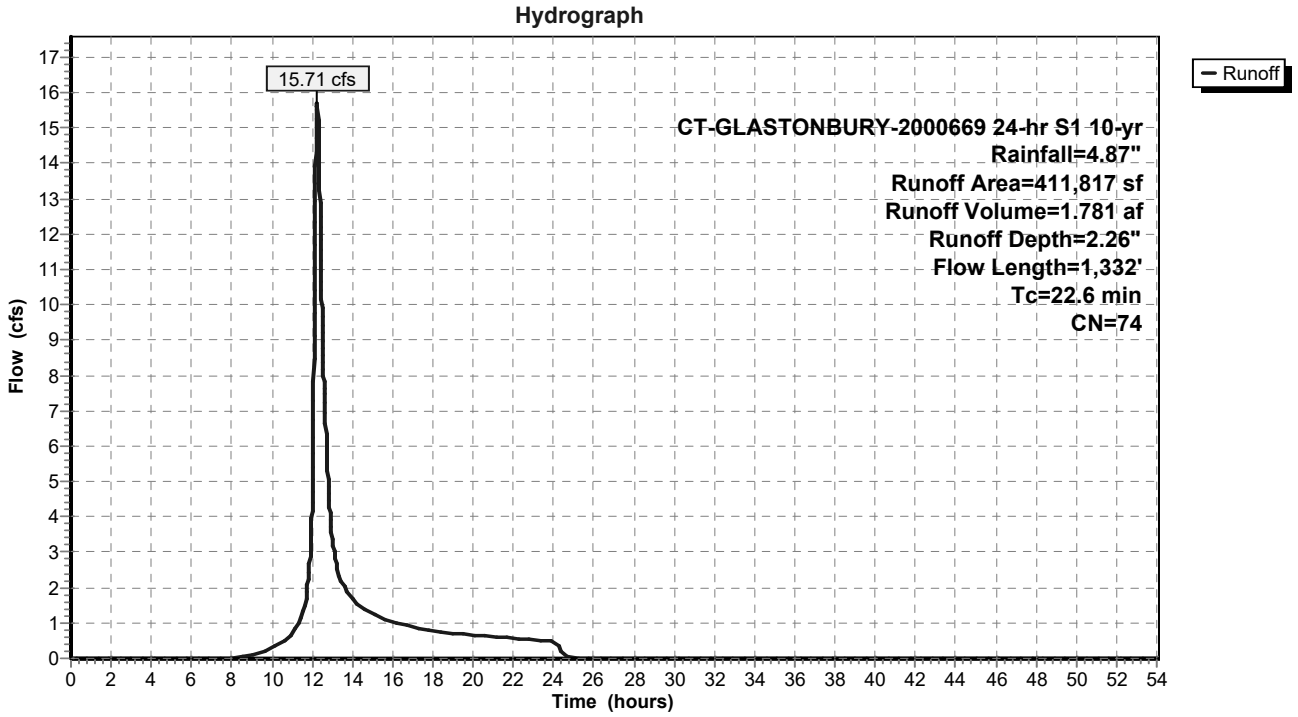
Runoff = 15.71 cfs @ 12.27 hrs, Volume= 1.781 af, Depth= 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 10-yr Rainfall=4.87"

Area (sf)	CN	Description
666	98	Paved parking, HSG A
7,080	49	50-75% Grass cover, Fair, HSG A
72,925	36	Woods, Fair, HSG A
162,265	98	Paved parking, HSG B
153,049	69	50-75% Grass cover, Fair, HSG B
15,832	60	Woods, Fair, HSG B
411,817	74	Weighted Average
248,886		60.44% Pervious Area
162,931		39.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	100	0.0300	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.09"
0.5	76	0.2894	2.69		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	28	0.0428	1.03		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	181	0.0440	3.15		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
2.0	947	0.0100	7.80	24.51	**Pipe Channel, RCP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Concrete pipe, finished
22.6	1,332	Total			

Subcatchment EDA-2: Area to CBs SW of Site



Summary for Subcatchment EDA-3: Area to CBs W of Site

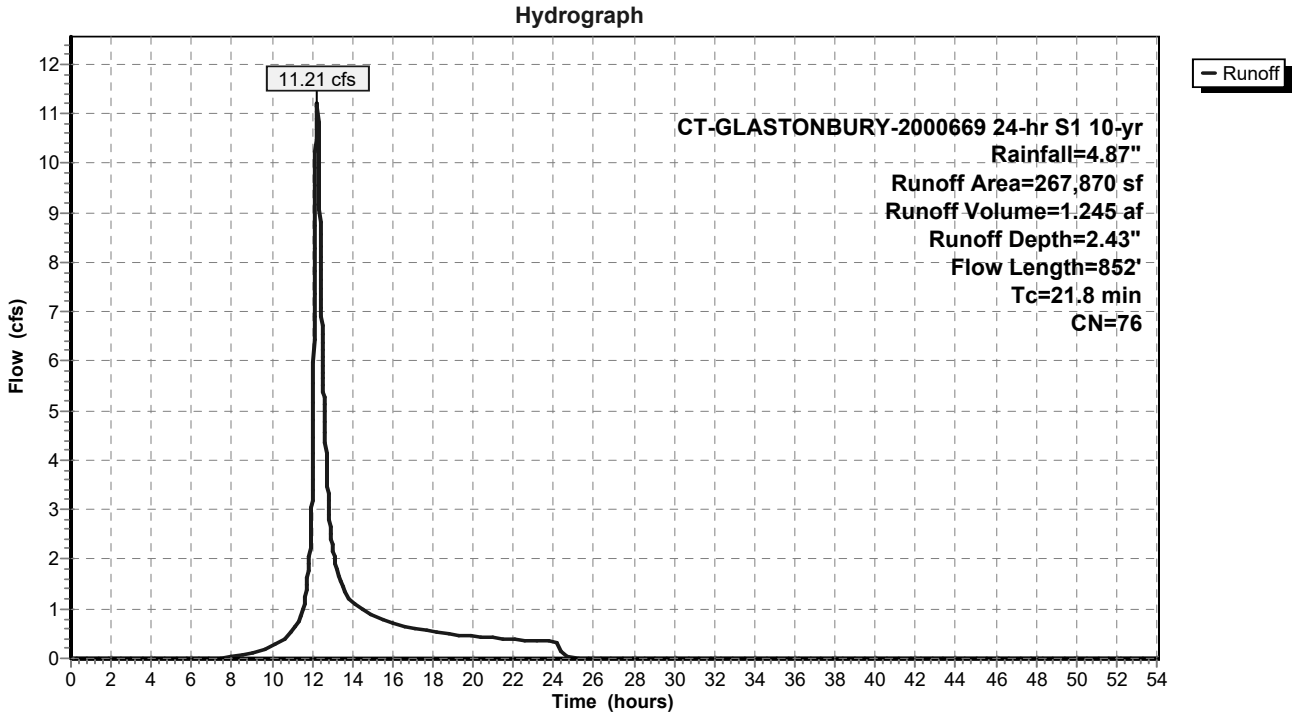
Runoff = 11.21 cfs @ 12.25 hrs, Volume= 1.245 af, Depth= 2.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 10-yr Rainfall=4.87"

Area (sf)	CN	Description
15,956	98	Paved parking, HSG A
16,147	49	50-75% Grass cover, Fair, HSG A
25,398	36	Woods, Fair, HSG A
88,595	98	Paved parking, HSG B
113,691	69	50-75% Grass cover, Fair, HSG B
8,083	60	Woods, Fair, HSG B
267,870	76	Weighted Average
163,319		60.97% Pervious Area
104,551		39.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.3	90	0.0222	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.09"
0.5	85	0.0353	2.82		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
2.0	677	0.0100	5.70	7.00	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
21.8	852	Total			

Subcatchment EDA-3: Area to CBs W of Site



Summary for Subcatchment EDA-4: Area Flowing Offsite to the North

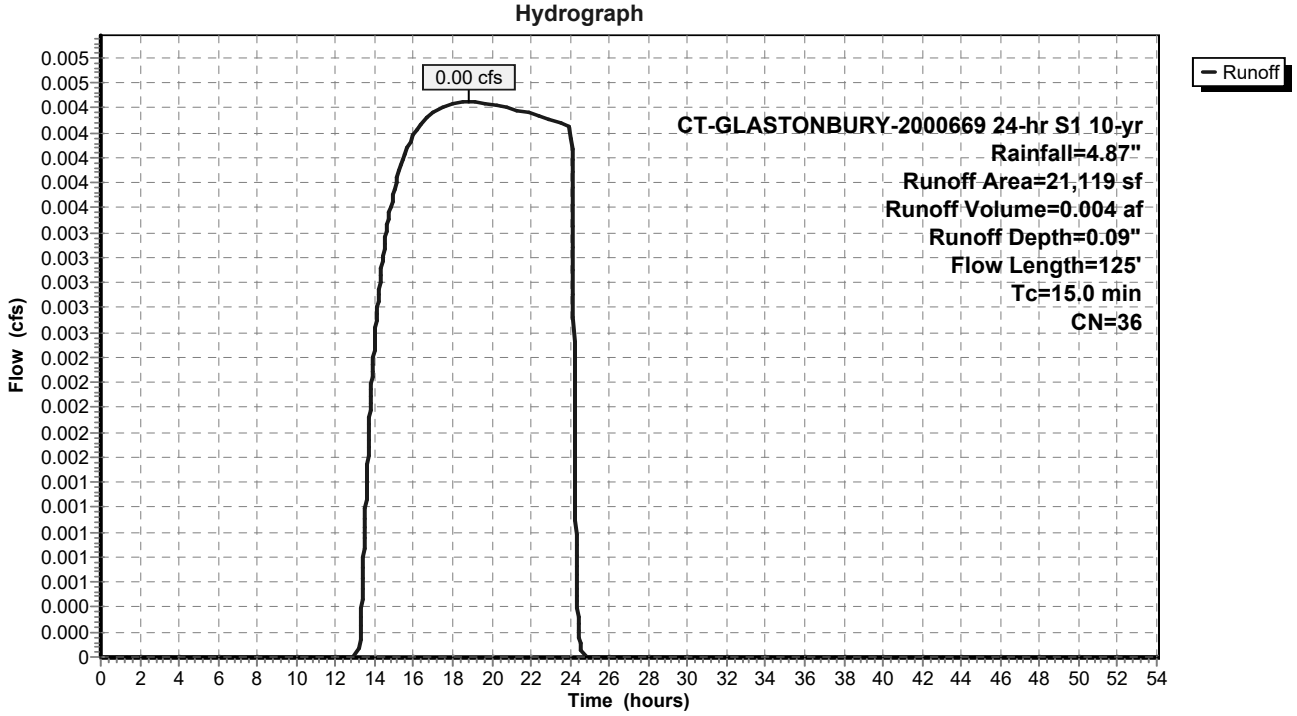
Runoff = 0.00 cfs @ 18.85 hrs, Volume= 0.004 af, Depth= 0.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 10-yr Rainfall=4.87"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
0	49	50-75% Grass cover, Fair, HSG A
21,040	36	Woods, Fair, HSG A
0	98	Paved parking, HSG B
0	69	50-75% Grass cover, Fair, HSG B
79	60	Woods, Fair, HSG B
21,119	36	Weighted Average
21,119		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	30	0.0333	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.09"
8.0	70	0.1214	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.09"
0.2	25	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.0	125	Total			

Subcatchment EDA-4: Area Flowing Offsite to the North

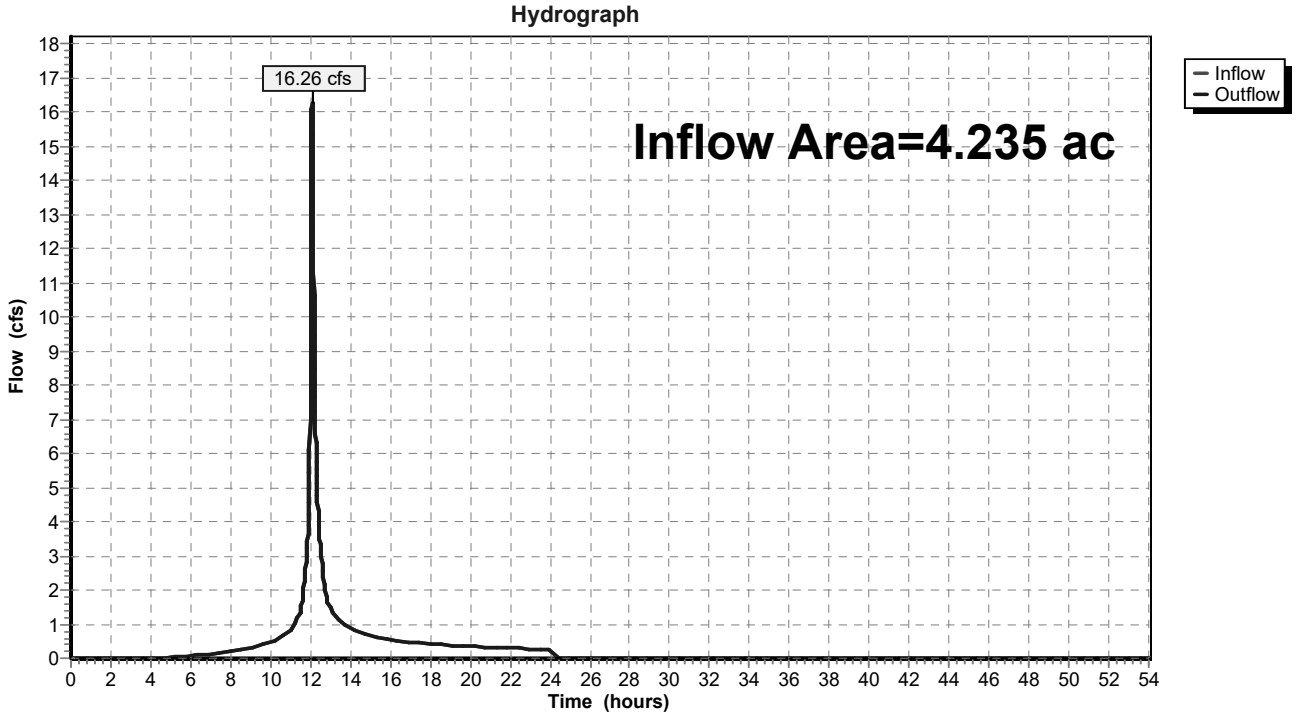


Summary for Reach DP-1: DP-1

Inflow Area = 4.235 ac, 60.55% Impervious, Inflow Depth = 3.35" for 10-yr event
Inflow = 16.26 cfs @ 12.08 hrs, Volume= 1.181 af
Outflow = 16.26 cfs @ 12.08 hrs, Volume= 1.181 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Reach DP-1: DP-1

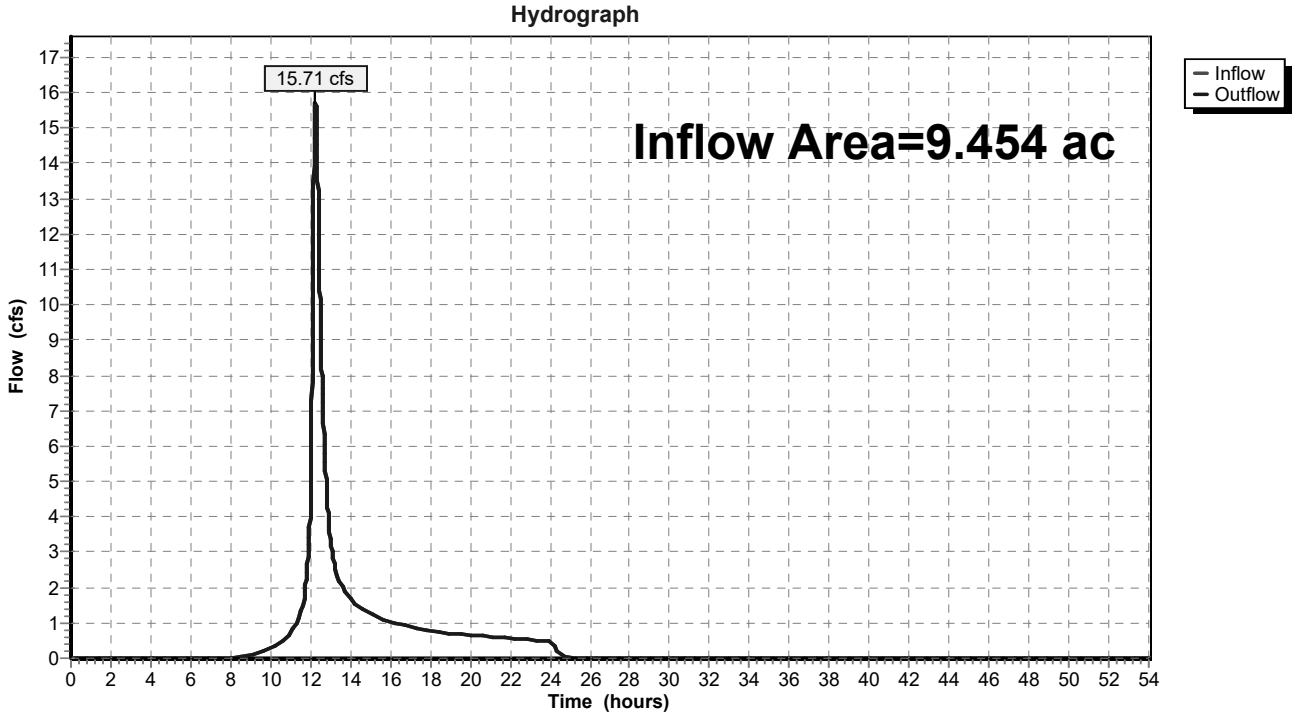


Summary for Reach DP-2: DP-2

Inflow Area = 9.454 ac, 39.56% Impervious, Inflow Depth = 2.26" for 10-yr event
Inflow = 15.71 cfs @ 12.27 hrs, Volume= 1.781 af
Outflow = 15.71 cfs @ 12.27 hrs, Volume= 1.781 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Reach DP-2: DP-2

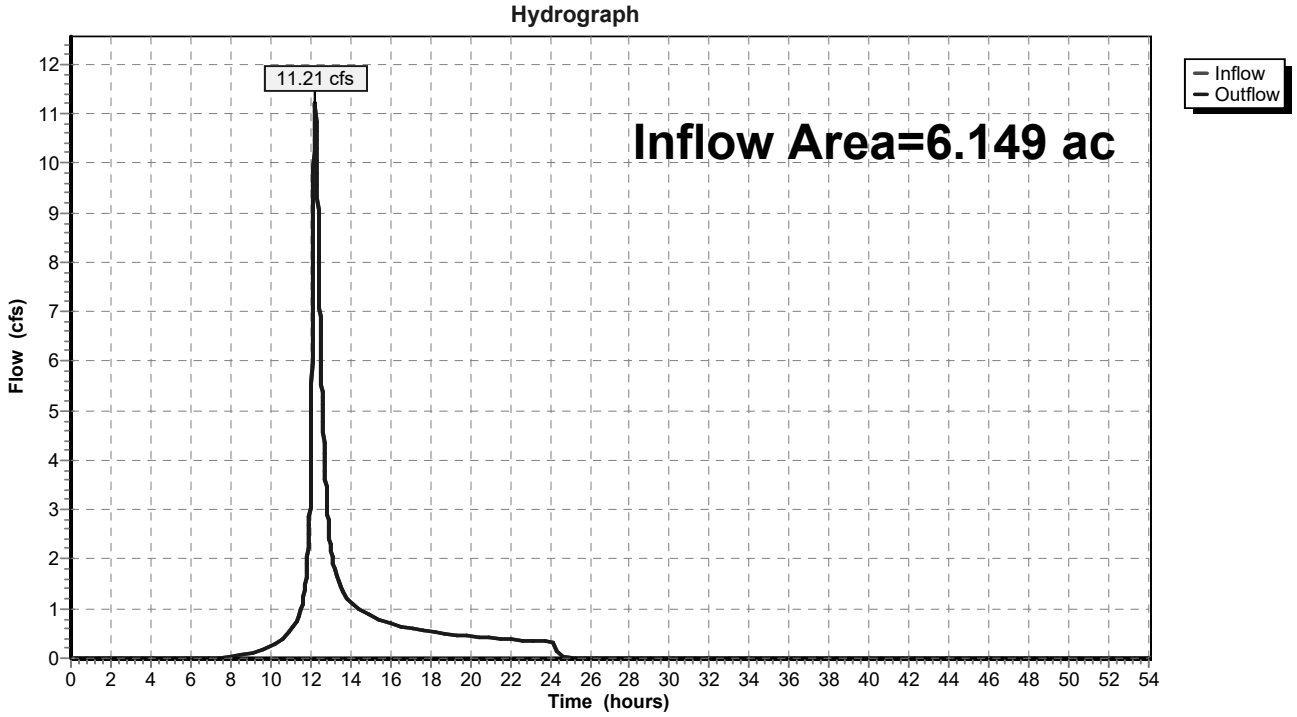


Summary for Reach DP-3: DP-3

Inflow Area = 6.149 ac, 39.03% Impervious, Inflow Depth = 2.43" for 10-yr event
Inflow = 11.21 cfs @ 12.25 hrs, Volume= 1.245 af
Outflow = 11.21 cfs @ 12.25 hrs, Volume= 1.245 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Reach DP-3: DP-3

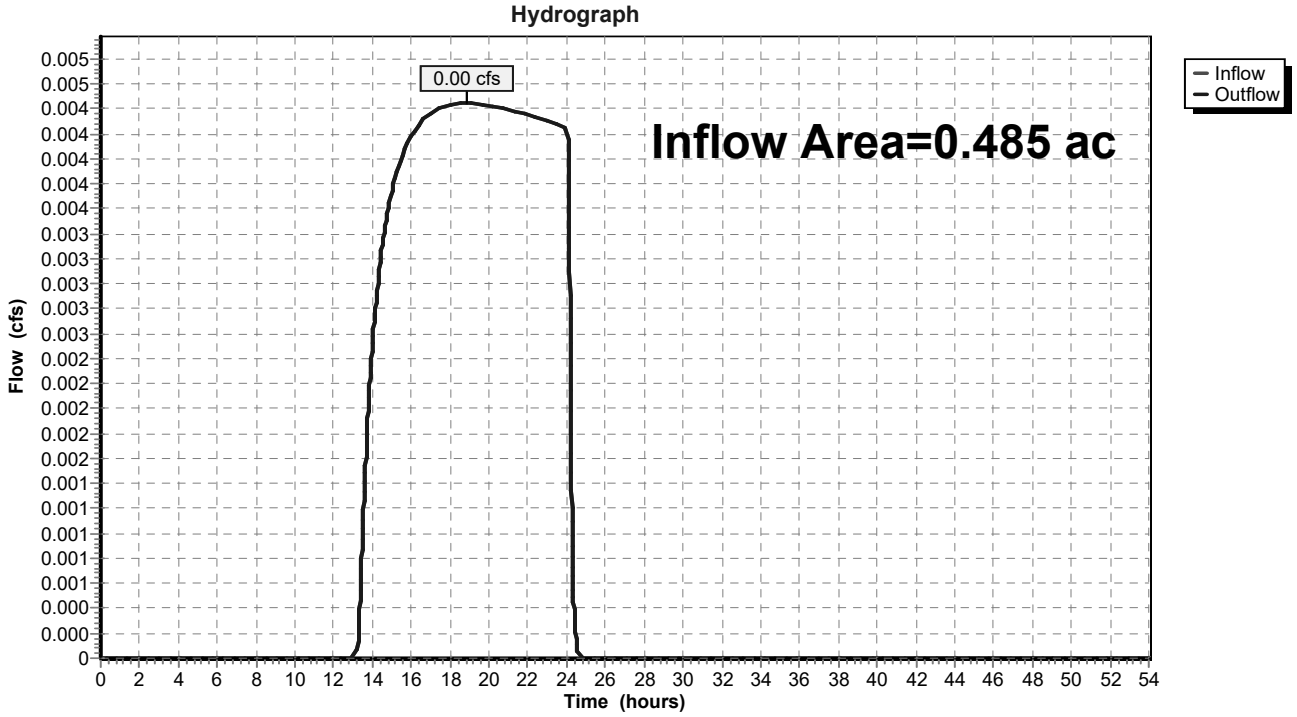


Summary for Reach DP-4: DP-4

Inflow Area = 0.485 ac, 0.00% Impervious, Inflow Depth = 0.09" for 10-yr event
Inflow = 0.00 cfs @ 18.85 hrs, Volume= 0.004 af
Outflow = 0.00 cfs @ 18.85 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Reach DP-4: DP-4



Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 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 EDA-1: Area to CBs SE of Runoff Area=184,485 sf 60.55% Impervious Runoff Depth=4.39"
Flow Length=248' Tc=9.7 min CN=86 Runoff=21.00 cfs 1.550 af

Subcatchment EDA-2: Area to CBs SW of Runoff Area=411,817 sf 39.56% Impervious Runoff Depth=3.17"
Flow Length=1,332' Tc=22.6 min CN=74 Runoff=22.06 cfs 2.496 af

Subcatchment EDA-3: Area to CBs W of Runoff Area=267,870 sf 39.03% Impervious Runoff Depth=3.36"
Flow Length=852' Tc=21.8 min CN=76 Runoff=15.50 cfs 1.723 af

Subcatchment EDA-4: Area Flowing Offsite Runoff Area=21,119 sf 0.00% Impervious Runoff Depth=0.29"
Flow Length=125' Tc=15.0 min CN=36 Runoff=0.02 cfs 0.012 af

Reach DP-1: DP-1 Inflow=21.00 cfs 1.550 af
Outflow=21.00 cfs 1.550 af

Reach DP-2: DP-2 Inflow=22.06 cfs 2.496 af
Outflow=22.06 cfs 2.496 af

Reach DP-3: DP-3 Inflow=15.50 cfs 1.723 af
Outflow=15.50 cfs 1.723 af

Reach DP-4: DP-4 Inflow=0.02 cfs 0.012 af
Outflow=0.02 cfs 0.012 af

Total Runoff Area = 20.323 ac Runoff Volume = 5.781 af Average Runoff Depth = 3.41"
57.17% Pervious = 11.618 ac 42.83% Impervious = 8.705 ac

Summary for Subcatchment EDA-1: Area to CBs SE of Site

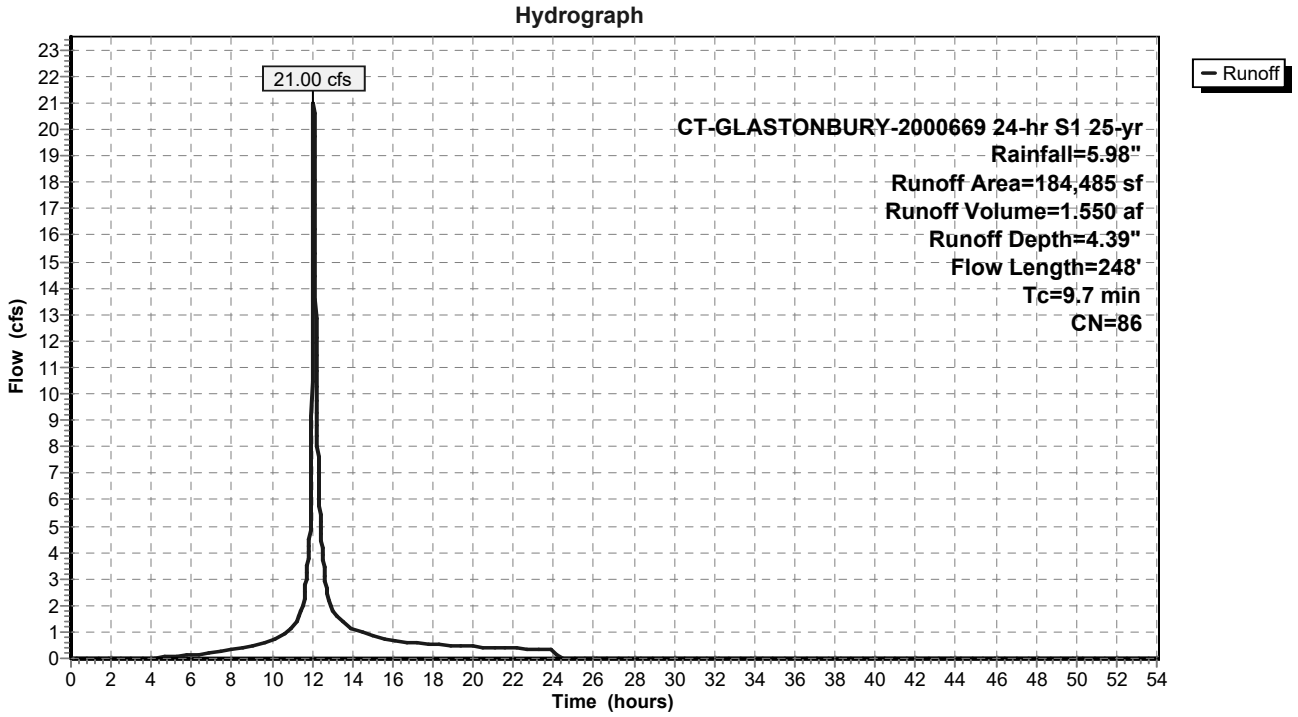
Runoff = 21.00 cfs @ 12.08 hrs, Volume= 1.550 af, Depth= 4.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 25-yr Rainfall=5.98"

Area (sf)	CN	Description
10,997	98	Paved parking, HSG A
7,473	49	50-75% Grass cover, Fair, HSG A
0	36	Woods, Fair, HSG A
100,716	98	Paved parking, HSG B
65,299	69	50-75% Grass cover, Fair, HSG B
0	60	Woods, Fair, HSG B
184,485	86	Weighted Average
72,772		39.45% Pervious Area
111,713		60.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	100	0.0260	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.09"
0.4	71	0.0408	3.03		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	13	0.0385	3.98		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	64	0.0125	6.38	7.82	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
9.7	248	Total			

Subcatchment EDA-1: Area to CBs SE of Site



Summary for Subcatchment EDA-2: Area to CBs SW of Site

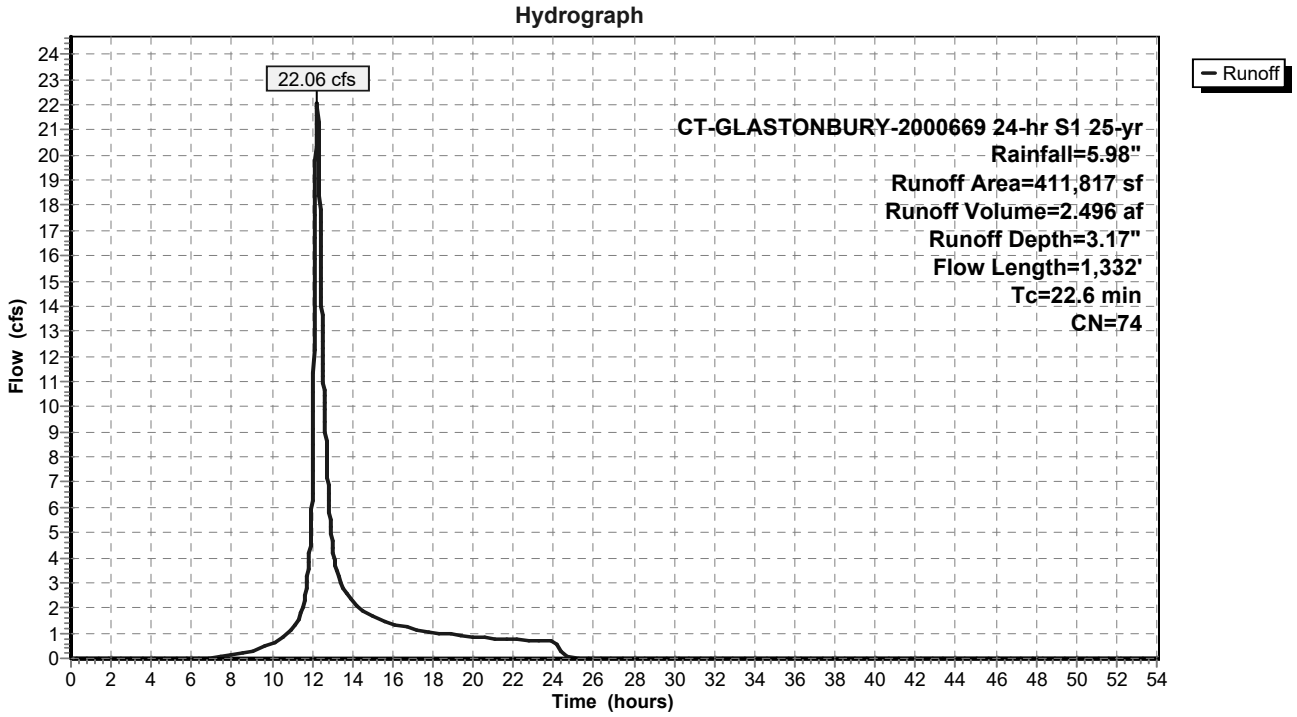
Runoff = 22.06 cfs @ 12.26 hrs, Volume= 2.496 af, Depth= 3.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 25-yr Rainfall=5.98"

Area (sf)	CN	Description
666	98	Paved parking, HSG A
7,080	49	50-75% Grass cover, Fair, HSG A
72,925	36	Woods, Fair, HSG A
162,265	98	Paved parking, HSG B
153,049	69	50-75% Grass cover, Fair, HSG B
15,832	60	Woods, Fair, HSG B
411,817	74	Weighted Average
248,886		60.44% Pervious Area
162,931		39.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	100	0.0300	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.09"
0.5	76	0.2894	2.69		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	28	0.0428	1.03		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	181	0.0440	3.15		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
2.0	947	0.0100	7.80	24.51	**Pipe Channel, RCP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Concrete pipe, finished
22.6	1,332	Total			

Subcatchment EDA-2: Area to CBs SW of Site



Summary for Subcatchment EDA-3: Area to CBs W of Site

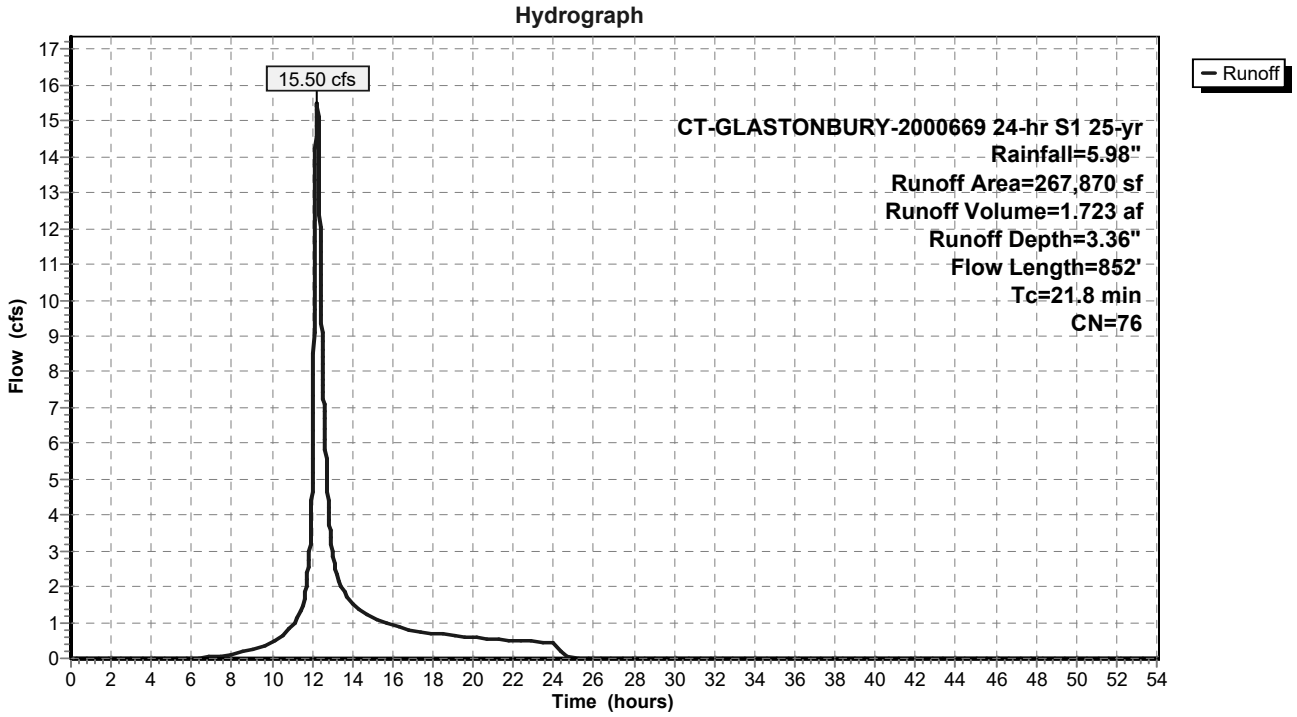
Runoff = 15.50 cfs @ 12.24 hrs, Volume= 1.723 af, Depth= 3.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 25-yr Rainfall=5.98"

Area (sf)	CN	Description
15,956	98	Paved parking, HSG A
16,147	49	50-75% Grass cover, Fair, HSG A
25,398	36	Woods, Fair, HSG A
88,595	98	Paved parking, HSG B
113,691	69	50-75% Grass cover, Fair, HSG B
8,083	60	Woods, Fair, HSG B
267,870	76	Weighted Average
163,319		60.97% Pervious Area
104,551		39.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.3	90	0.0222	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.09"
0.5	85	0.0353	2.82		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
2.0	677	0.0100	5.70	7.00	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
21.8	852	Total			

Subcatchment EDA-3: Area to CBs W of Site



Summary for Subcatchment EDA-4: Area Flowing Offsite to the North

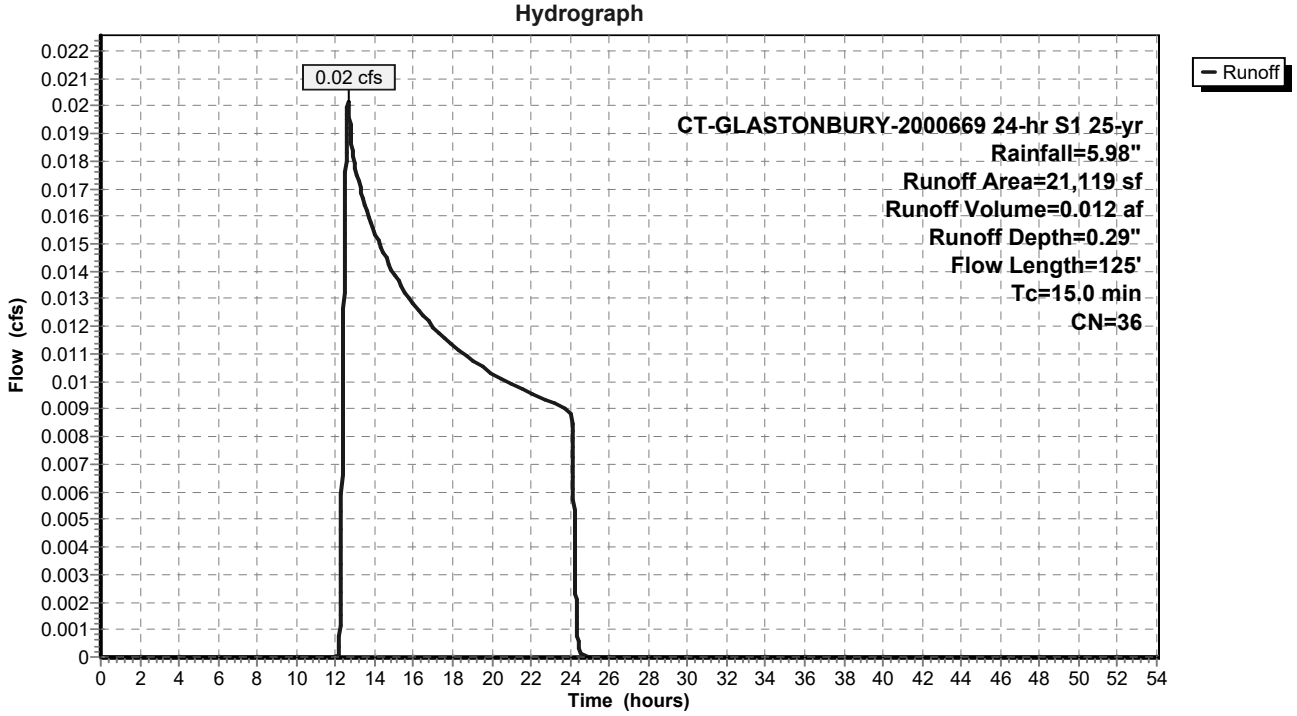
Runoff = 0.02 cfs @ 12.64 hrs, Volume= 0.012 af, Depth= 0.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 25-yr Rainfall=5.98"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
0	49	50-75% Grass cover, Fair, HSG A
21,040	36	Woods, Fair, HSG A
0	98	Paved parking, HSG B
0	69	50-75% Grass cover, Fair, HSG B
79	60	Woods, Fair, HSG B
21,119	36	Weighted Average
21,119		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	30	0.0333	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.09"
8.0	70	0.1214	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.09"
0.2	25	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.0	125	Total			

Subcatchment EDA-4: Area Flowing Offsite to the North

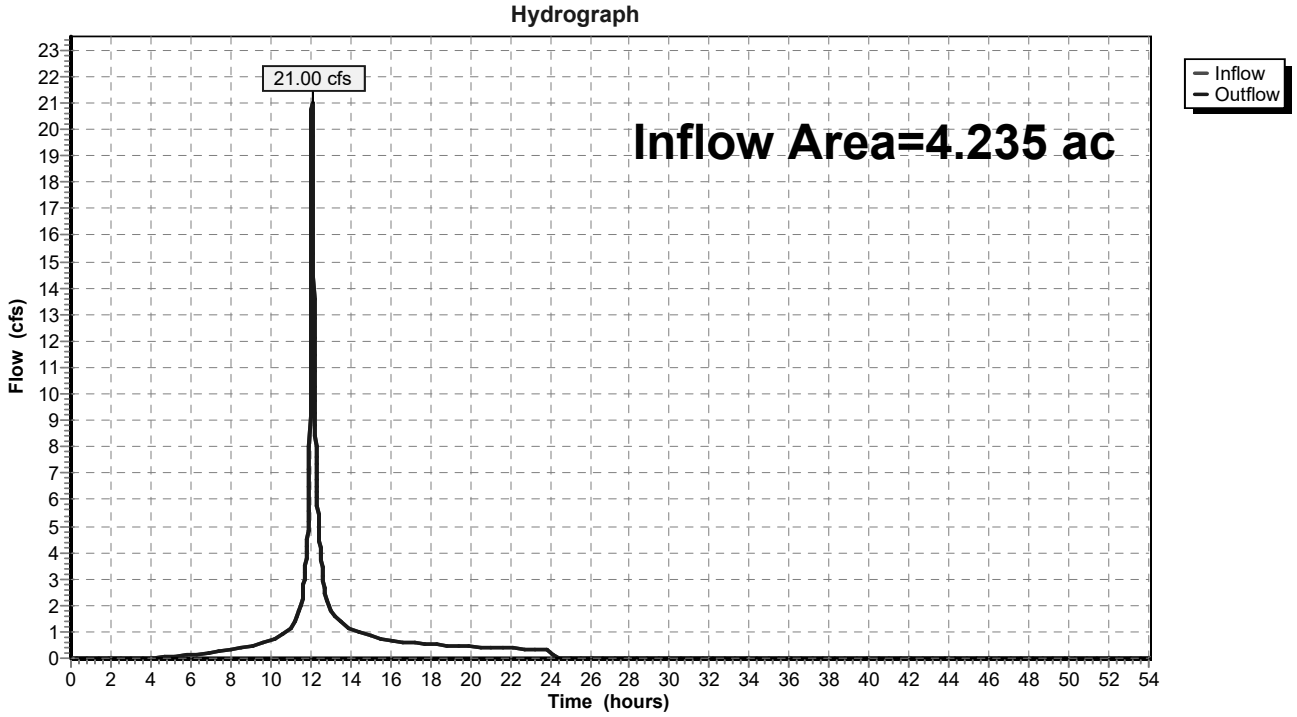


Summary for Reach DP-1: DP-1

Inflow Area = 4.235 ac, 60.55% Impervious, Inflow Depth = 4.39" for 25-yr event
Inflow = 21.00 cfs @ 12.08 hrs, Volume= 1.550 af
Outflow = 21.00 cfs @ 12.08 hrs, Volume= 1.550 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Reach DP-1: DP-1

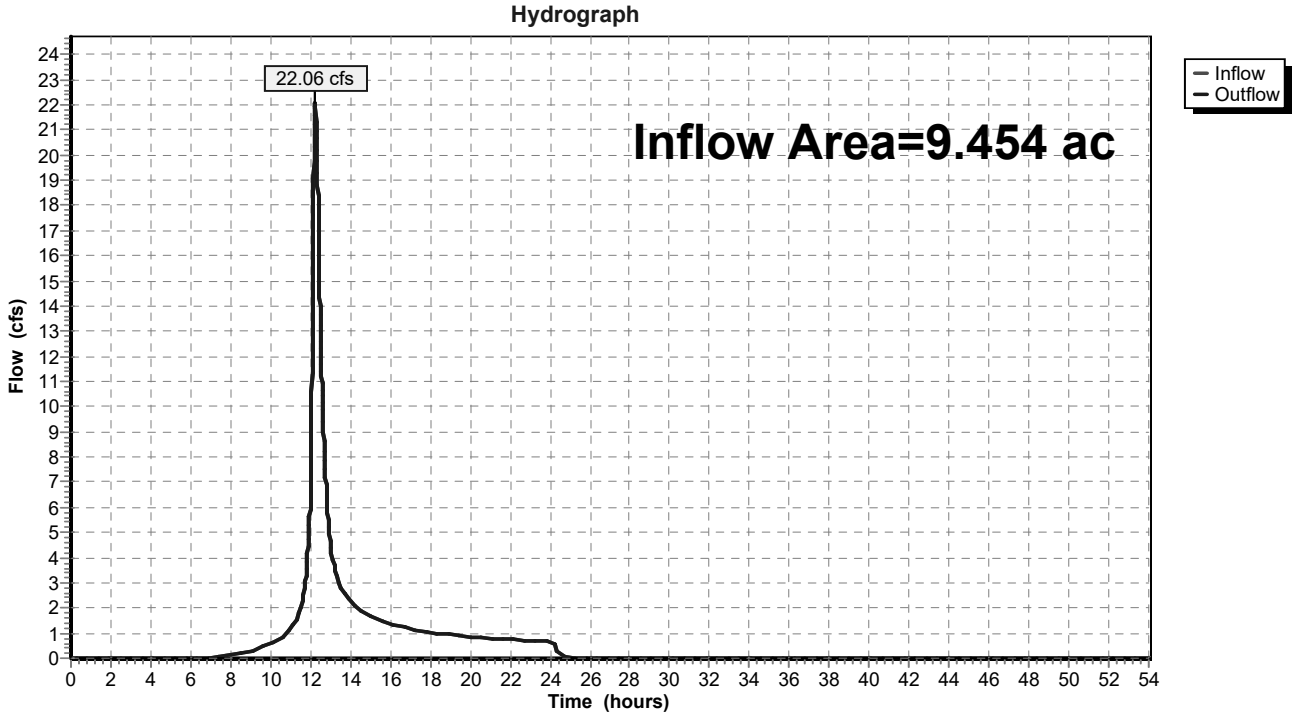


Summary for Reach DP-2: DP-2

Inflow Area = 9.454 ac, 39.56% Impervious, Inflow Depth = 3.17" for 25-yr event
Inflow = 22.06 cfs @ 12.26 hrs, Volume= 2.496 af
Outflow = 22.06 cfs @ 12.26 hrs, Volume= 2.496 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Reach DP-2: DP-2

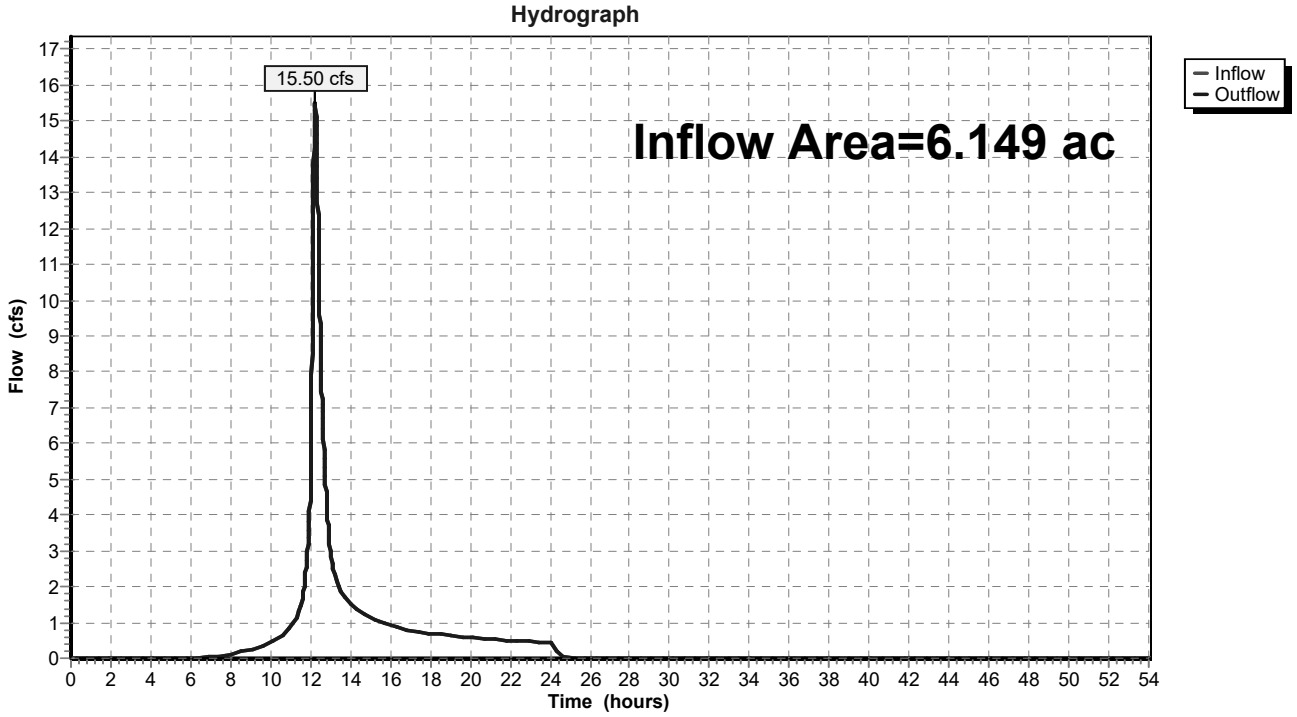


Summary for Reach DP-3: DP-3

Inflow Area = 6.149 ac, 39.03% Impervious, Inflow Depth = 3.36" for 25-yr event
Inflow = 15.50 cfs @ 12.24 hrs, Volume= 1.723 af
Outflow = 15.50 cfs @ 12.24 hrs, Volume= 1.723 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Reach DP-3: DP-3

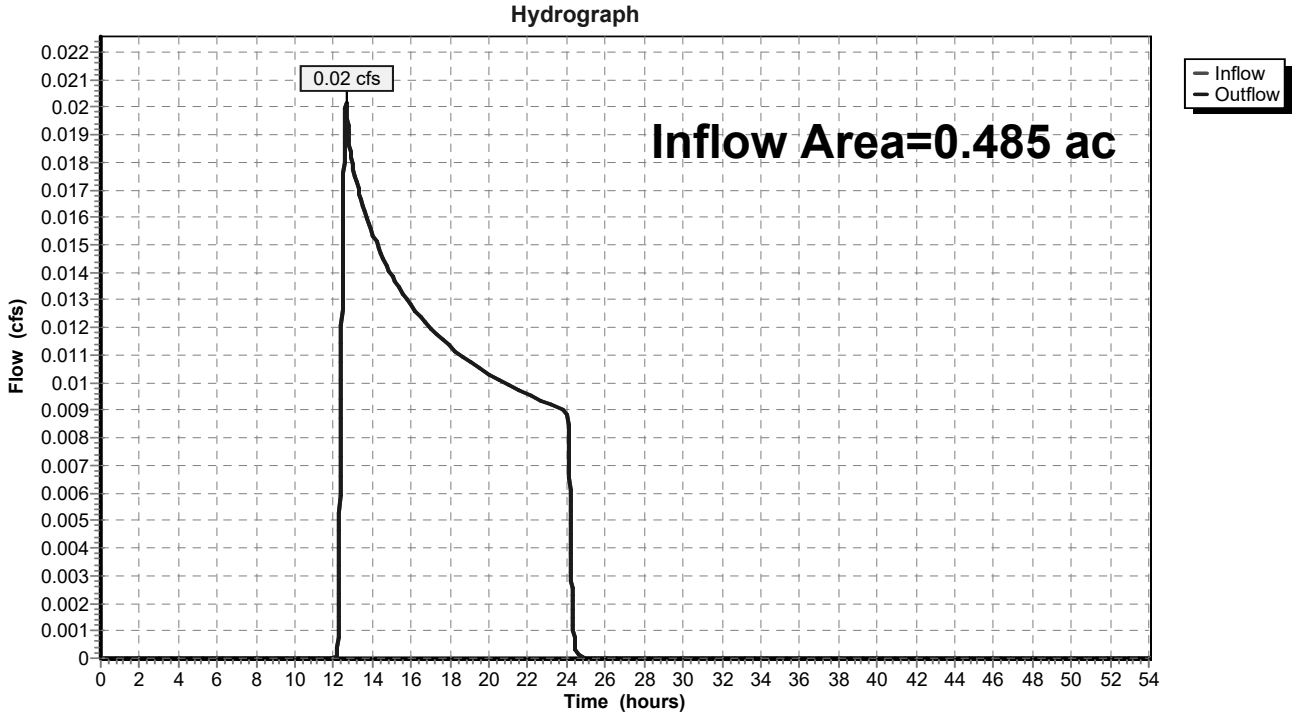


Summary for Reach DP-4: DP-4

Inflow Area = 0.485 ac, 0.00% Impervious, Inflow Depth = 0.29" for 25-yr event
Inflow = 0.02 cfs @ 12.64 hrs, Volume= 0.012 af
Outflow = 0.02 cfs @ 12.64 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Reach DP-4: DP-4



Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 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 EDA-1: Area to CBs SE of Runoff Area=184,485 sf 60.55% Impervious Runoff Depth=6.03"
Flow Length=248' Tc=9.7 min CN=86 Runoff=28.25 cfs 2.129 af

Subcatchment EDA-2: Area to CBs SW of Runoff Area=411,817 sf 39.56% Impervious Runoff Depth=4.65"
Flow Length=1,332' Tc=22.6 min CN=74 Runoff=32.25 cfs 3.663 af

Subcatchment EDA-3: Area to CBs W of Runoff Area=267,870 sf 39.03% Impervious Runoff Depth=4.88"
Flow Length=852' Tc=21.8 min CN=76 Runoff=22.32 cfs 2.499 af

Subcatchment EDA-4: Area Flowing Offsite Runoff Area=21,119 sf 0.00% Impervious Runoff Depth=0.78"
Flow Length=125' Tc=15.0 min CN=36 Runoff=0.13 cfs 0.032 af

Reach DP-1: DP-1 Inflow=28.25 cfs 2.129 af
Outflow=28.25 cfs 2.129 af

Reach DP-2: DP-2 Inflow=32.25 cfs 3.663 af
Outflow=32.25 cfs 3.663 af

Reach DP-3: DP-3 Inflow=22.32 cfs 2.499 af
Outflow=22.32 cfs 2.499 af

Reach DP-4: DP-4 Inflow=0.13 cfs 0.032 af
Outflow=0.13 cfs 0.032 af

Total Runoff Area = 20.323 ac Runoff Volume = 8.322 af Average Runoff Depth = 4.91"
57.17% Pervious = 11.618 ac 42.83% Impervious = 8.705 ac

Summary for Subcatchment EDA-1: Area to CBs SE of Site

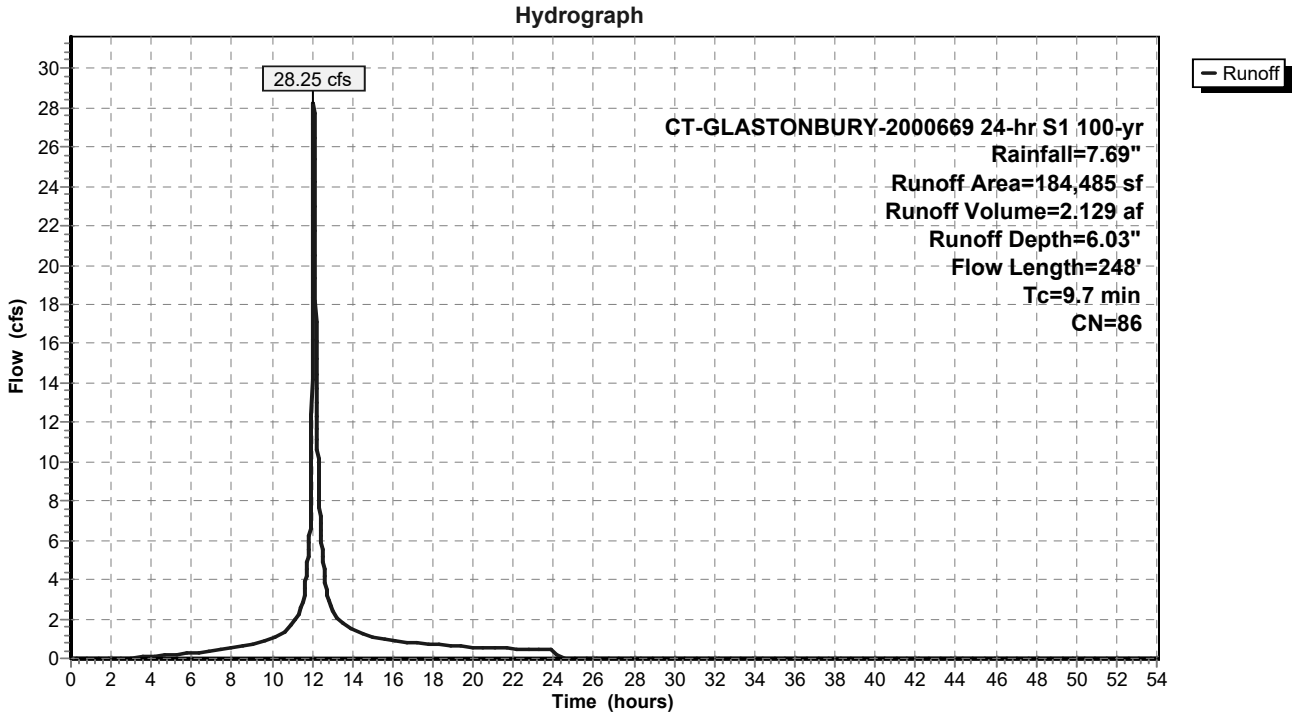
Runoff = 28.25 cfs @ 12.08 hrs, Volume= 2.129 af, Depth= 6.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 100-yr Rainfall=7.69"

Area (sf)	CN	Description
10,997	98	Paved parking, HSG A
7,473	49	50-75% Grass cover, Fair, HSG A
0	36	Woods, Fair, HSG A
100,716	98	Paved parking, HSG B
65,299	69	50-75% Grass cover, Fair, HSG B
0	60	Woods, Fair, HSG B
184,485	86	Weighted Average
72,772		39.45% Pervious Area
111,713		60.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	100	0.0260	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.09"
0.4	71	0.0408	3.03		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	13	0.0385	3.98		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	64	0.0125	6.38	7.82	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
9.7	248	Total			

Subcatchment EDA-1: Area to CBs SE of Site



Summary for Subcatchment EDA-2: Area to CBs SW of Site

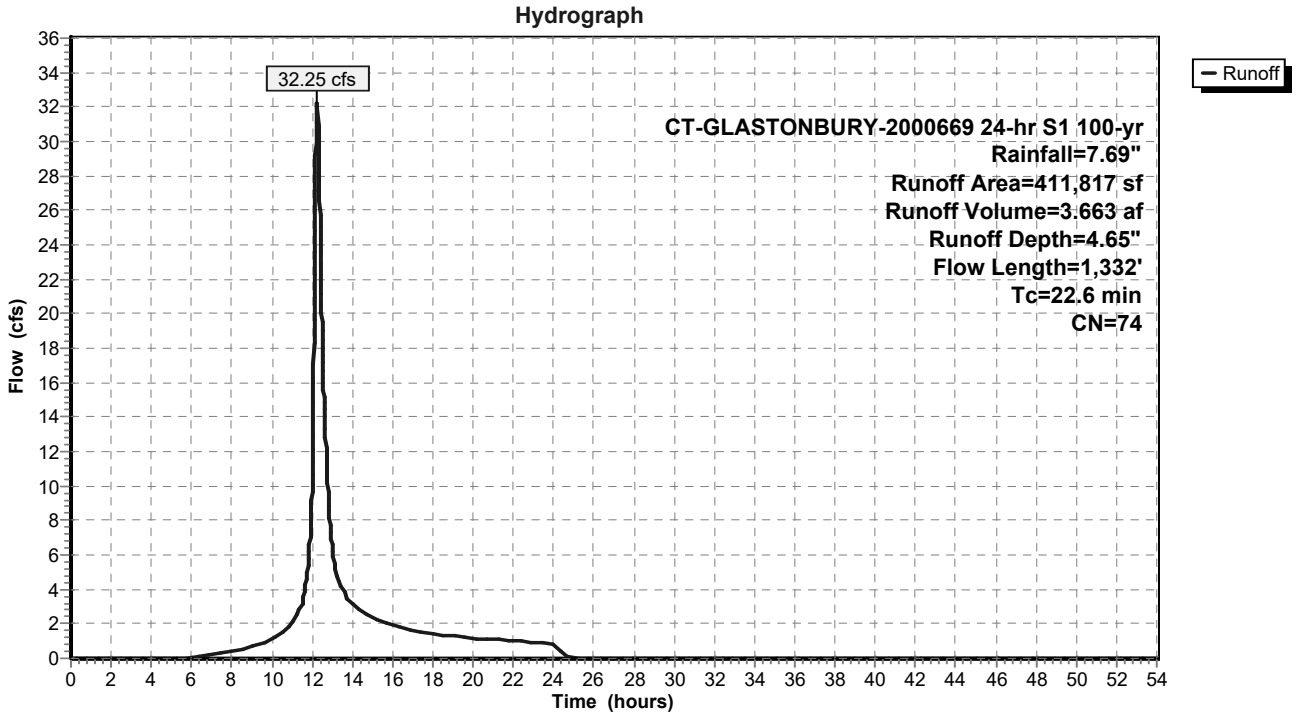
Runoff = 32.25 cfs @ 12.26 hrs, Volume= 3.663 af, Depth= 4.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 100-yr Rainfall=7.69"

Area (sf)	CN	Description
666	98	Paved parking, HSG A
7,080	49	50-75% Grass cover, Fair, HSG A
72,925	36	Woods, Fair, HSG A
162,265	98	Paved parking, HSG B
153,049	69	50-75% Grass cover, Fair, HSG B
15,832	60	Woods, Fair, HSG B
411,817	74	Weighted Average
248,886		60.44% Pervious Area
162,931		39.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	100	0.0300	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.09"
0.5	76	0.2894	2.69		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	28	0.0428	1.03		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.0	181	0.0440	3.15		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
2.0	947	0.0100	7.80	24.51	**Pipe Channel, RCP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Concrete pipe, finished
22.6	1,332	Total			

Subcatchment EDA-2: Area to CBs SW of Site



Summary for Subcatchment EDA-3: Area to CBs W of Site

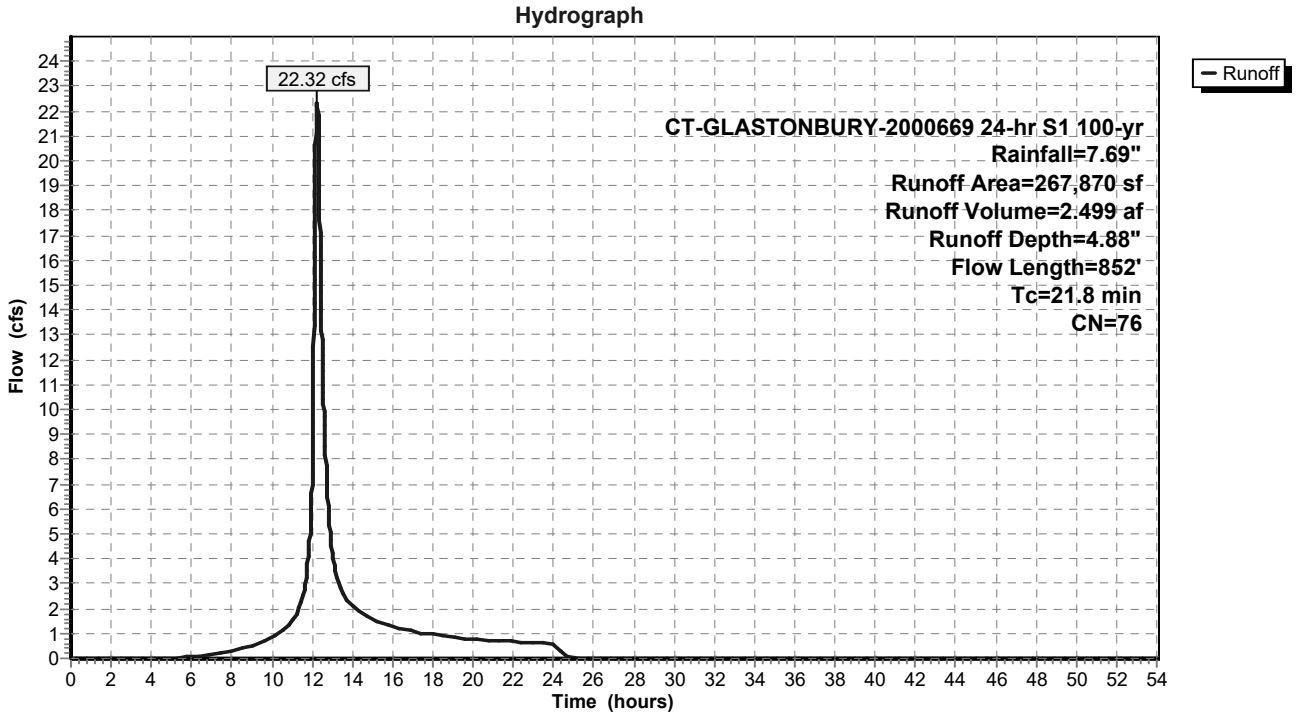
Runoff = 22.32 cfs @ 12.24 hrs, Volume= 2.499 af, Depth= 4.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 100-yr Rainfall=7.69"

Area (sf)	CN	Description
15,956	98	Paved parking, HSG A
16,147	49	50-75% Grass cover, Fair, HSG A
25,398	36	Woods, Fair, HSG A
88,595	98	Paved parking, HSG B
113,691	69	50-75% Grass cover, Fair, HSG B
8,083	60	Woods, Fair, HSG B
267,870	76	Weighted Average
163,319		60.97% Pervious Area
104,551		39.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.3	90	0.0222	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.09"
0.5	85	0.0353	2.82		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
2.0	677	0.0100	5.70	7.00	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
21.8	852	Total			

Subcatchment EDA-3: Area to CBs W of Site



Summary for Subcatchment EDA-4: Area Flowing Offsite to the North

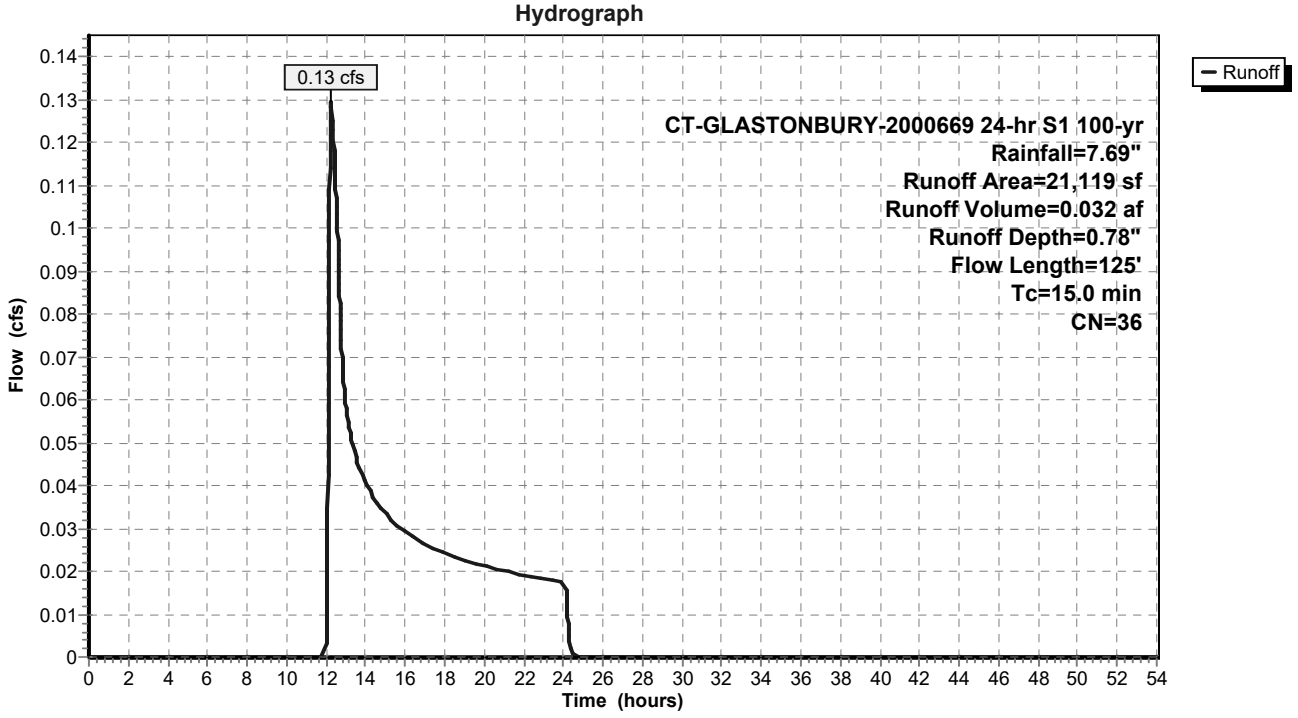
Runoff = 0.13 cfs @ 12.25 hrs, Volume= 0.032 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 100-yr Rainfall=7.69"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
0	49	50-75% Grass cover, Fair, HSG A
21,040	36	Woods, Fair, HSG A
0	98	Paved parking, HSG B
0	69	50-75% Grass cover, Fair, HSG B
79	60	Woods, Fair, HSG B
21,119	36	Weighted Average
21,119		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	30	0.0333	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.09"
8.0	70	0.1214	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.09"
0.2	25	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.0	125	Total			

Subcatchment EDA-4: Area Flowing Offsite to the North

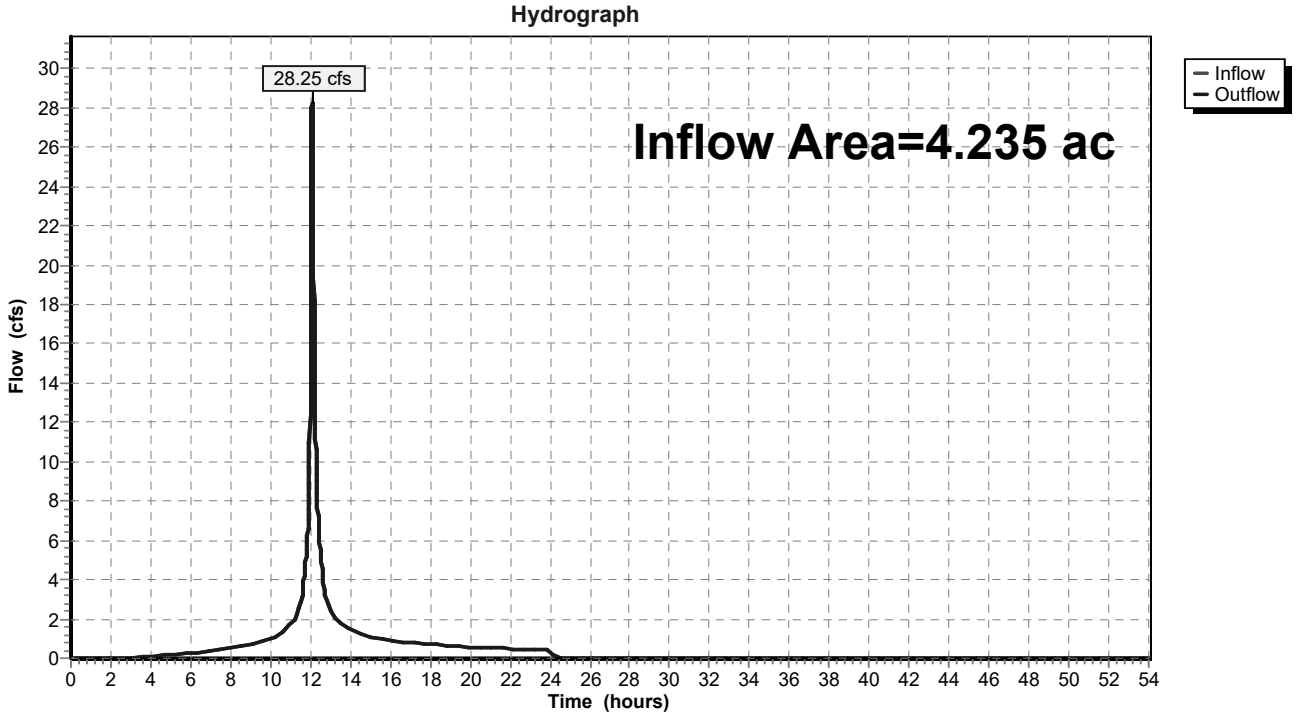


Summary for Reach DP-1: DP-1

Inflow Area = 4.235 ac, 60.55% Impervious, Inflow Depth = 6.03" for 100-yr event
Inflow = 28.25 cfs @ 12.08 hrs, Volume= 2.129 af
Outflow = 28.25 cfs @ 12.08 hrs, Volume= 2.129 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Reach DP-1: DP-1

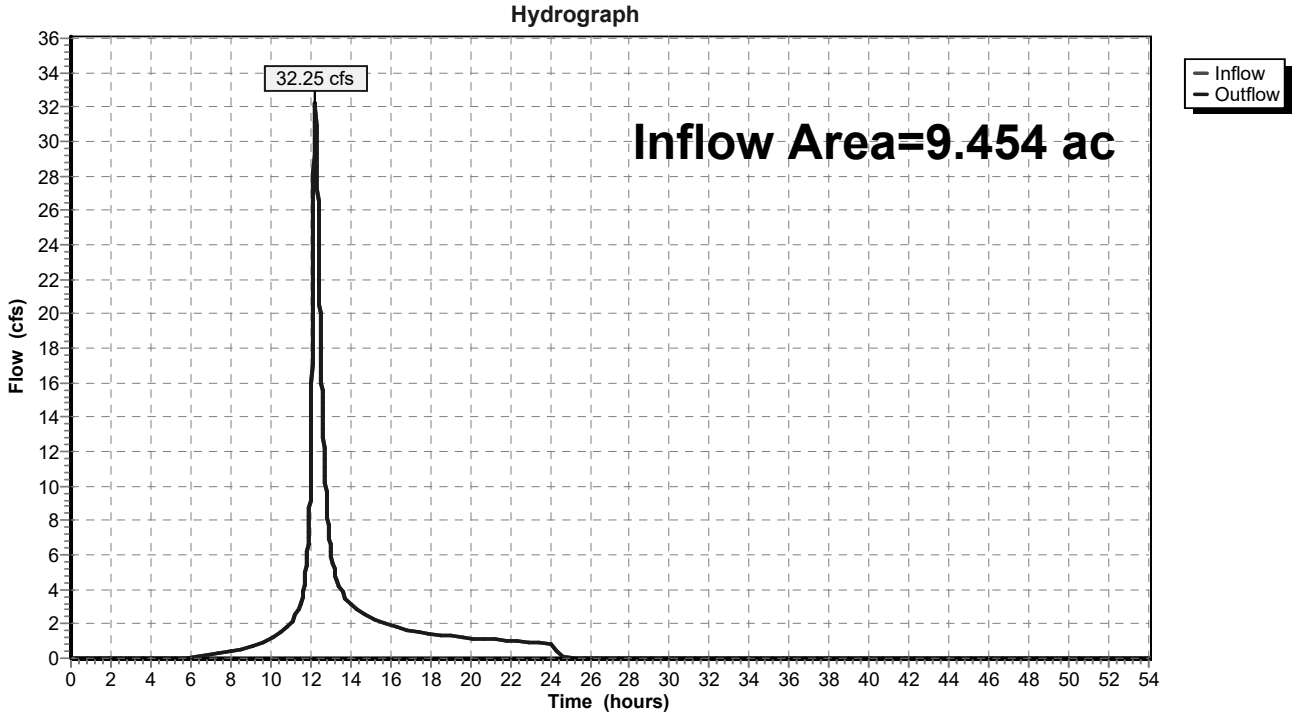


Summary for Reach DP-2: DP-2

Inflow Area = 9.454 ac, 39.56% Impervious, Inflow Depth = 4.65" for 100-yr event
Inflow = 32.25 cfs @ 12.26 hrs, Volume= 3.663 af
Outflow = 32.25 cfs @ 12.26 hrs, Volume= 3.663 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Reach DP-2: DP-2

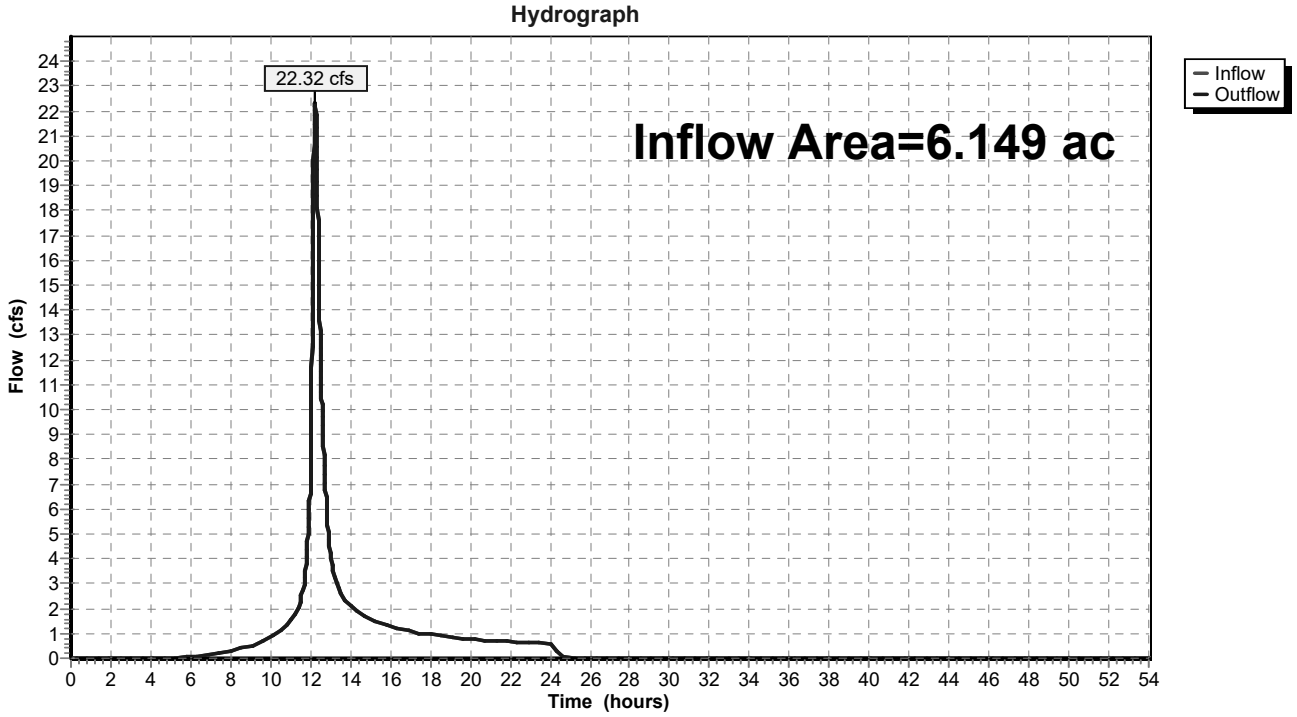


Summary for Reach DP-3: DP-3

Inflow Area = 6.149 ac, 39.03% Impervious, Inflow Depth = 4.88" for 100-yr event
Inflow = 22.32 cfs @ 12.24 hrs, Volume= 2.499 af
Outflow = 22.32 cfs @ 12.24 hrs, Volume= 2.499 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Reach DP-3: DP-3

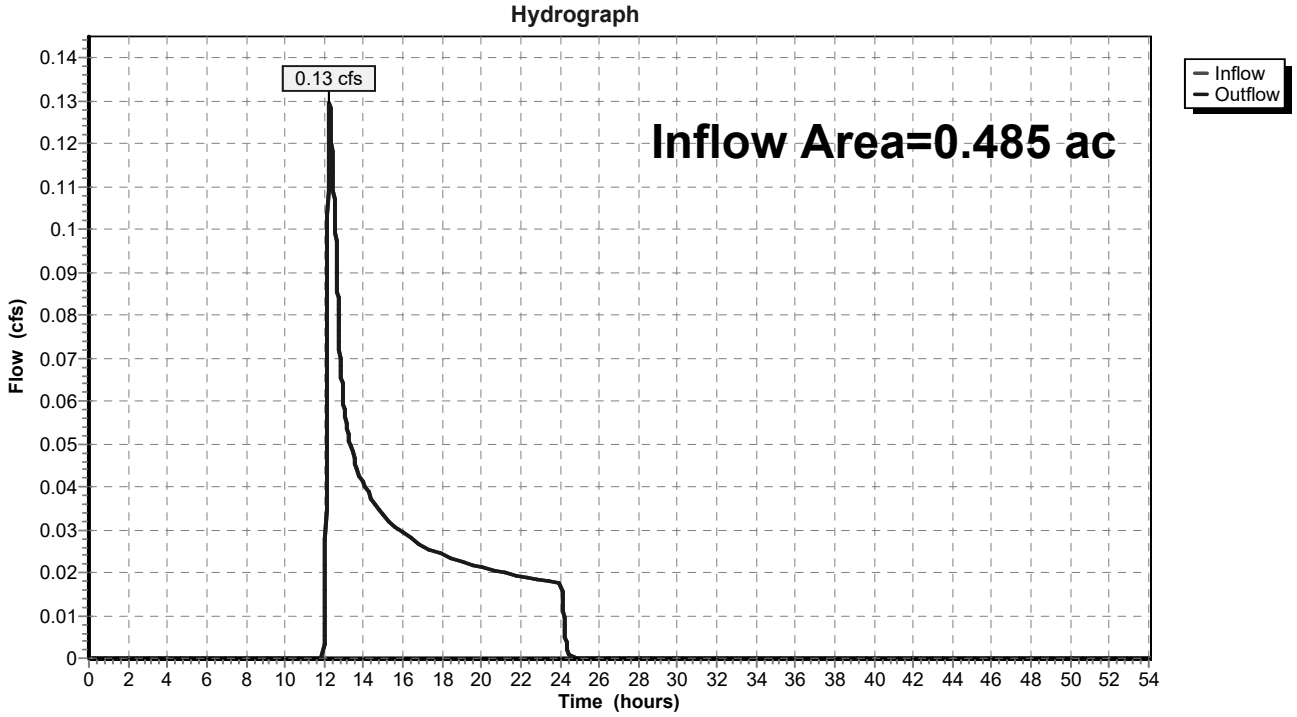


Summary for Reach DP-4: DP-4

Inflow Area = 0.485 ac, 0.00% Impervious, Inflow Depth = 0.78" for 100-yr event
Inflow = 0.13 cfs @ 12.25 hrs, Volume= 0.032 af
Outflow = 0.13 cfs @ 12.25 hrs, Volume= 0.032 af, Atten= 0%, Lag= 0.0 min

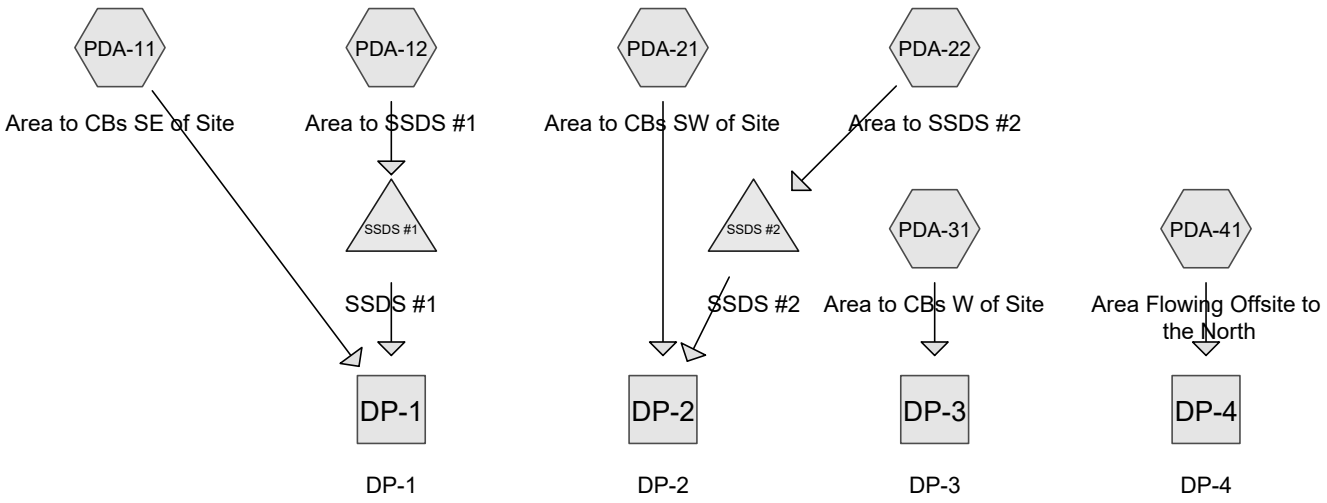
Routing by Stor-Ind+Trans method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Reach DP-4: DP-4



APPENDIX C

POST-DEVELOPMENT HYDROLOGY



Subcat Reach Pond Link

Routing Diagram for C-DAT-2000669-PROPOSED HYDROLOGY
Prepared by BL Companies, Inc., Printed 12/14/2020

Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 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 PDA-11: Area to CBs SE of Runoff Area=146,902 sf 57.08% Impervious Runoff Depth=1.66"
Flow Length=248' Tc=9.7 min CN=85 Runoff=6.63 cfs 0.468 af

Subcatchment PDA-12: Area to SSDS #1 Runoff Area=44,319 sf 79.76% Impervious Runoff Depth=2.25"
Flow Length=186' Tc=6.8 min CN=92 Runoff=3.10 cfs 0.190 af

Subcatchment PDA-21: Area to CBs SW of Runoff Area=67,486 sf 66.87% Impervious Runoff Depth=1.90"
Flow Length=176' Tc=18.1 min CN=88 Runoff=2.52 cfs 0.245 af

Subcatchment PDA-22: Area to SSDS #2 Runoff Area=386,565 sf 71.94% Impervious Runoff Depth=1.59"
Flow Length=1,036' Tc=21.9 min CN=84 Runoff=10.85 cfs 1.176 af

Subcatchment PDA-31: Area to CBs W of Runoff Area=218,900 sf 48.46% Impervious Runoff Depth=1.19"
Flow Length=852' Tc=21.8 min CN=78 Runoff=4.47 cfs 0.500 af

Subcatchment PDA-41: Area Flowing Runoff Area=21,119 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=125' Tc=15.0 min CN=36 Runoff=0.00 cfs 0.000 af

Reach DP-1: DP-1 Inflow=8.46 cfs 0.651 af
Outflow=8.46 cfs 0.651 af

Reach DP-2: DP-2 Inflow=6.15 cfs 1.328 af
Outflow=6.15 cfs 1.328 af

Reach DP-3: DP-3 Inflow=4.47 cfs 0.500 af
Outflow=4.47 cfs 0.500 af

Reach DP-4: DP-4 Inflow=0.00 cfs 0.000 af
Outflow=0.00 cfs 0.000 af

Pond SSDS #1: SSDS #1 Peak Elev=70.69' Storage=1,385 cf Inflow=3.10 cfs 0.190 af
Outflow=1.91 cfs 0.183 af

Pond SSDS #2: SSDS #2 Peak Elev=66.05' Storage=16,298 cf Inflow=10.85 cfs 1.176 af
Outflow=5.15 cfs 1.083 af

Total Runoff Area = 20.323 ac Runoff Volume = 2.579 af Average Runoff Depth = 1.52"
38.04% Pervious = 7.732 ac 61.96% Impervious = 12.592 ac

Summary for Subcatchment PDA-11: Area to CBs SE of Site

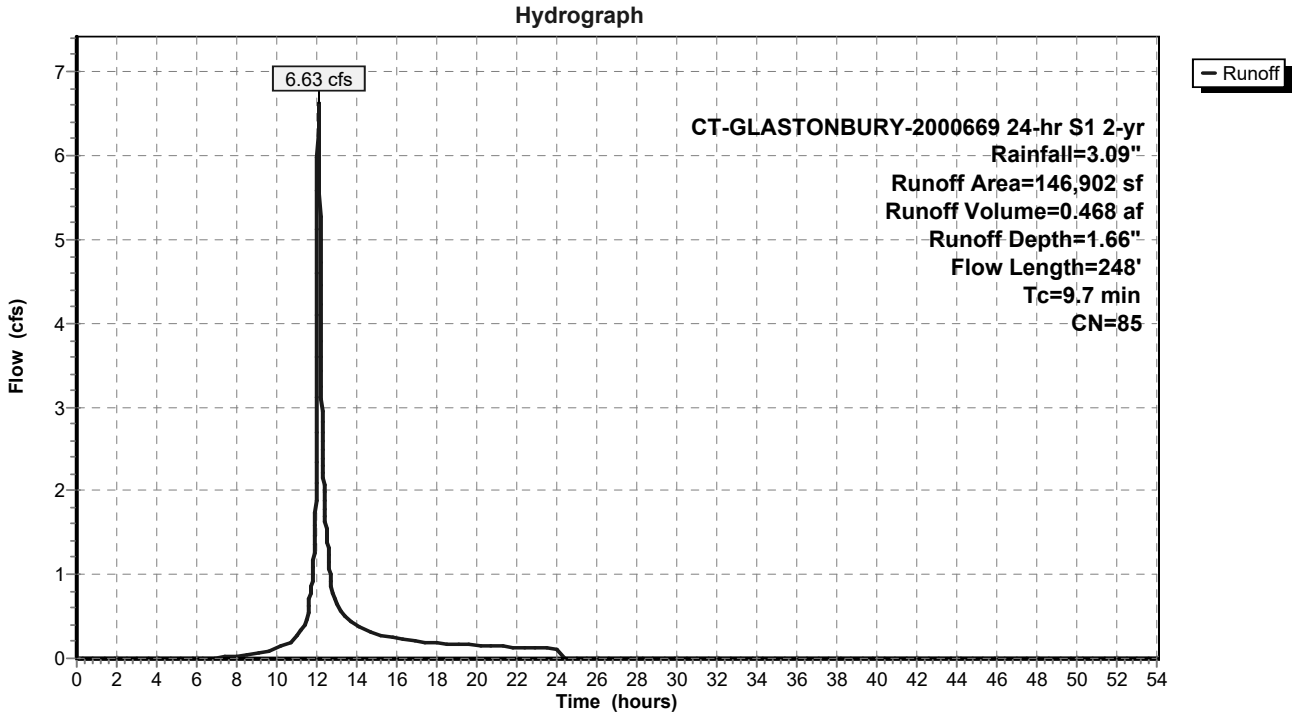
Runoff = 6.63 cfs @ 12.08 hrs, Volume= 0.468 af, Depth= 1.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 2-yr Rainfall=3.09"

Area (sf)	CN	Description
10,998	98	Paved parking, HSG A
7,473	49	50-75% Grass cover, Fair, HSG A
0	36	Woods, Fair, HSG A
72,861	98	Paved parking, HSG B
55,570	69	50-75% Grass cover, Fair, HSG B
0	60	Woods, Fair, HSG B
146,902	85	Weighted Average
63,043		42.92% Pervious Area
83,859		57.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	100	0.0260	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.09"
0.4	71	0.0408	3.03		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	13	0.0385	3.98		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	64	0.0125	6.38	7.82	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
9.7	248	Total			

Subcatchment PDA-11: Area to CBs SE of Site



Summary for Subcatchment PDA-12: Area to SSDS #1

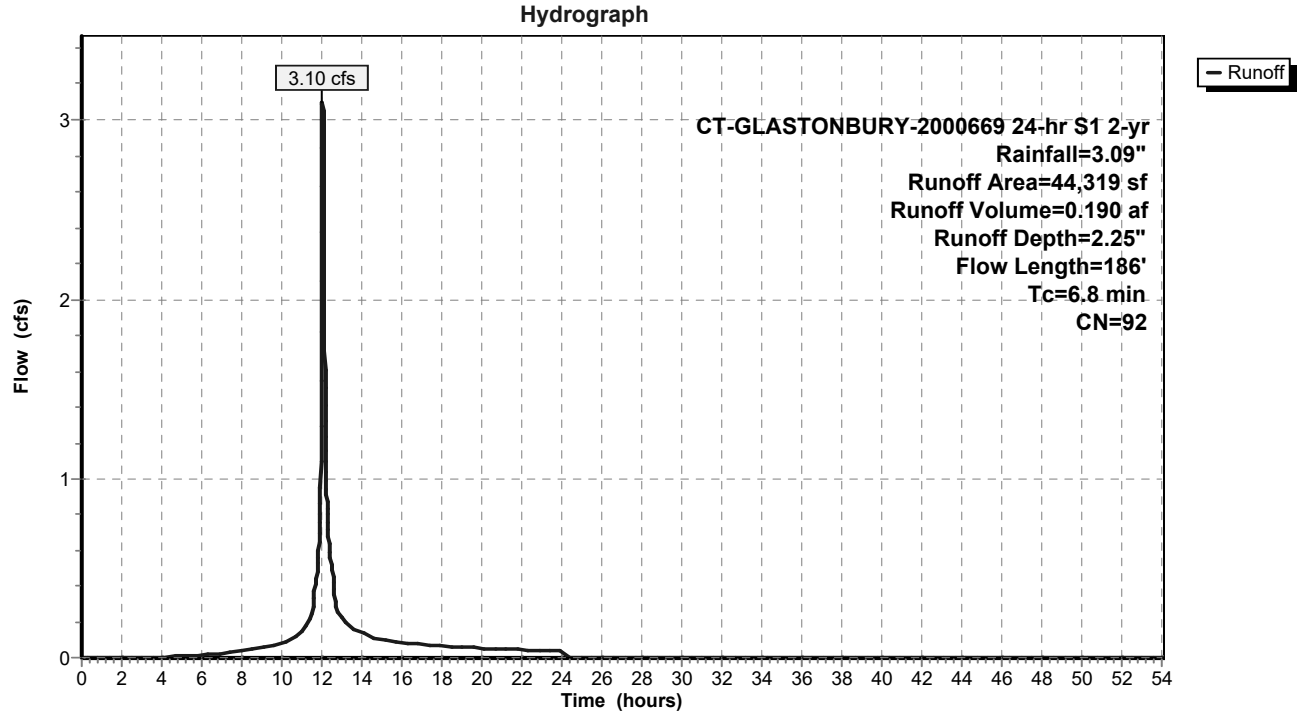
Runoff = 3.10 cfs @ 12.05 hrs, Volume= 0.190 af, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 2-yr Rainfall=3.09"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
0	49	50-75% Grass cover, Fair, HSG A
0	36	Woods, Fair, HSG A
35,349	98	Paved parking, HSG B
8,970	69	50-75% Grass cover, Fair, HSG B
0	60	Woods, Fair, HSG B
44,319	92	Weighted Average
8,970		20.24% Pervious Area
35,349		79.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	77	0.0357	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.09"
0.4	109	0.0415	4.14		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.8	186	Total			

Subcatchment PDA-12: Area to SSDS #1



Summary for Subcatchment PDA-21: Area to CBs SW of Site

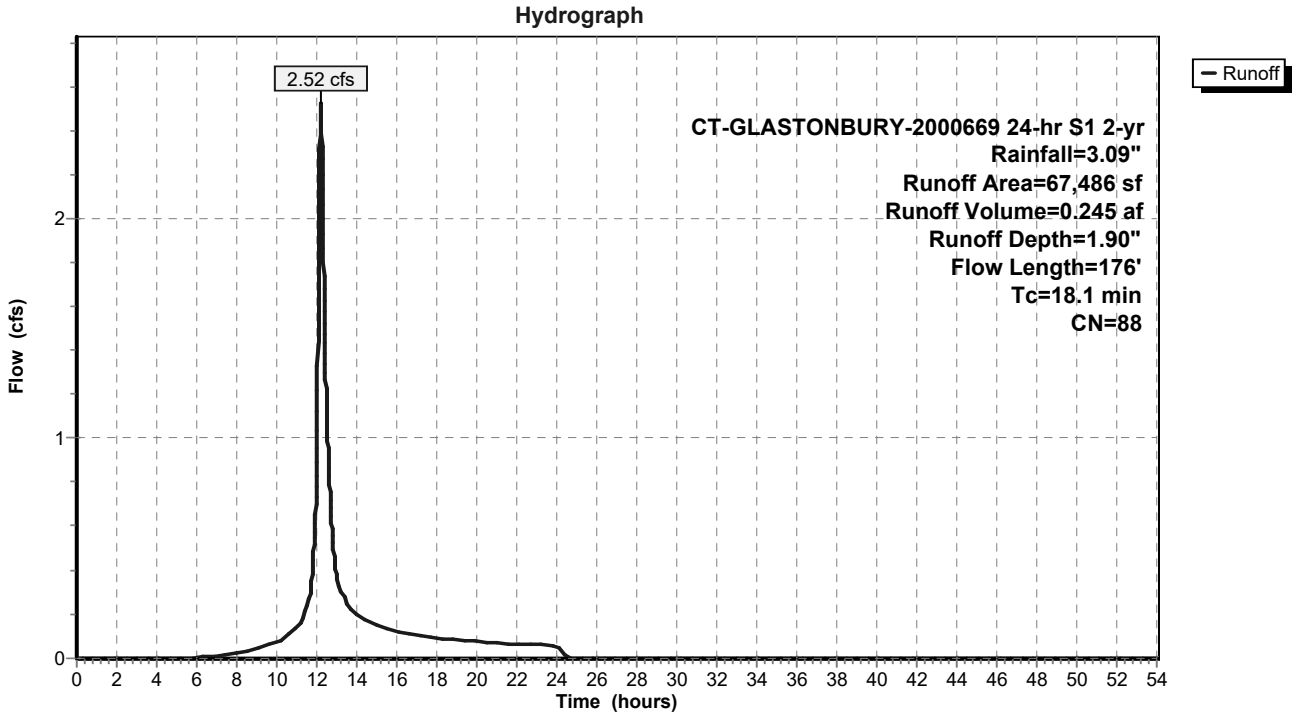
Runoff = 2.52 cfs @ 12.20 hrs, Volume= 0.245 af, Depth= 1.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 2-yr Rainfall=3.09"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
0	49	50-75% Grass cover, Fair, HSG A
0	36	Woods, Fair, HSG A
45,126	98	Paved parking, HSG B
22,360	69	50-75% Grass cover, Fair, HSG B
0	60	Woods, Fair, HSG B
67,486	88	Weighted Average
22,360		33.13% Pervious Area
45,126		66.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.4	100	0.0050	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.09"
0.4	26	0.0050	1.06		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.3	50	0.0160	2.57		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
18.1	176	Total			

Subcatchment PDA-21: Area to CBs SW of Site



Summary for Subcatchment PDA-22: Area to SSDS #2

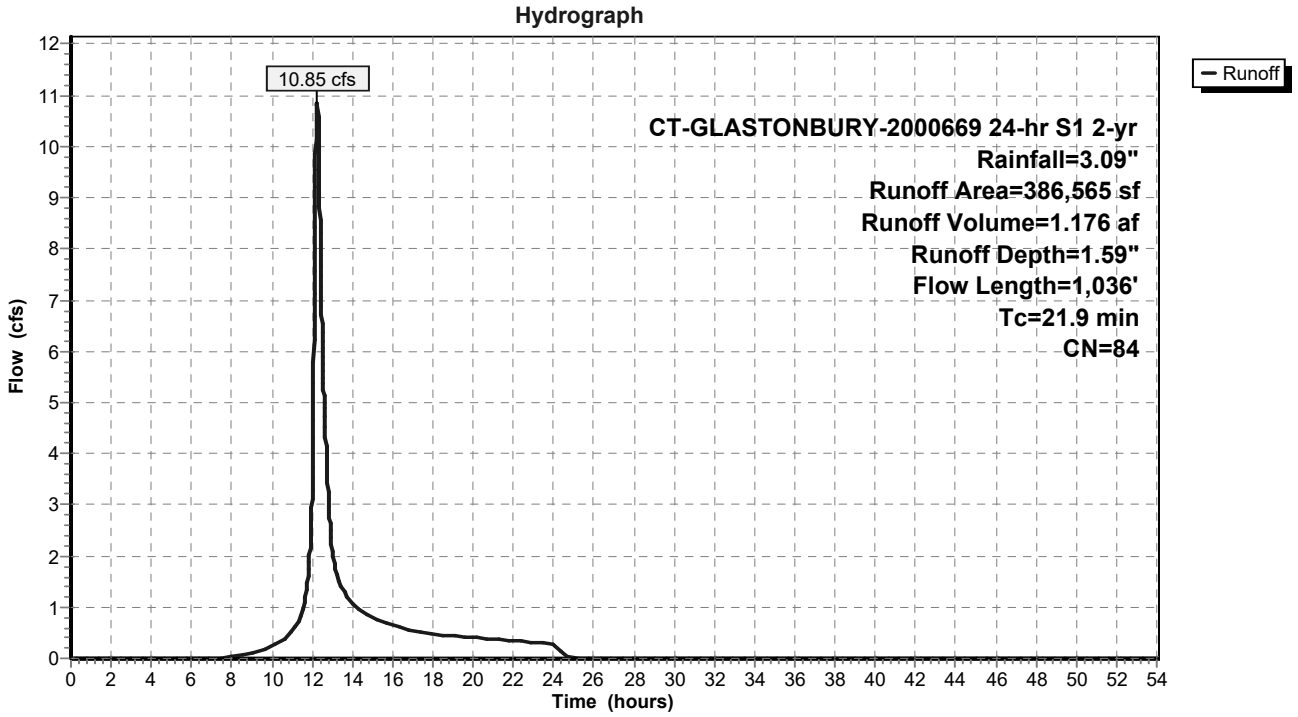
Runoff = 10.85 cfs @ 12.25 hrs, Volume= 1.176 af, Depth= 1.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 2-yr Rainfall=3.09"

Area (sf)	CN	Description
4,939	98	Paved parking, HSG A
20,953	49	50-75% Grass cover, Fair, HSG A
58,835	36	Woods, Fair, HSG A
273,153	98	Paved parking, HSG B
28,498	69	50-75% Grass cover, Fair, HSG B
187	60	Woods, Fair, HSG B
386,565	84	Weighted Average
108,473		28.06% Pervious Area
278,092		71.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	100	0.0300	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.09"
0.5	74	0.2894	2.69		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	39	0.0183	2.03		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.1	180	0.0183	2.75		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	643	0.0100	7.80	24.51	**Pipe Channel, RCP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Concrete pipe, finished
21.9	1,036	Total			

Subcatchment PDA-22: Area to SSDS #2



Summary for Subcatchment PDA-31: Area to CBs W of Site

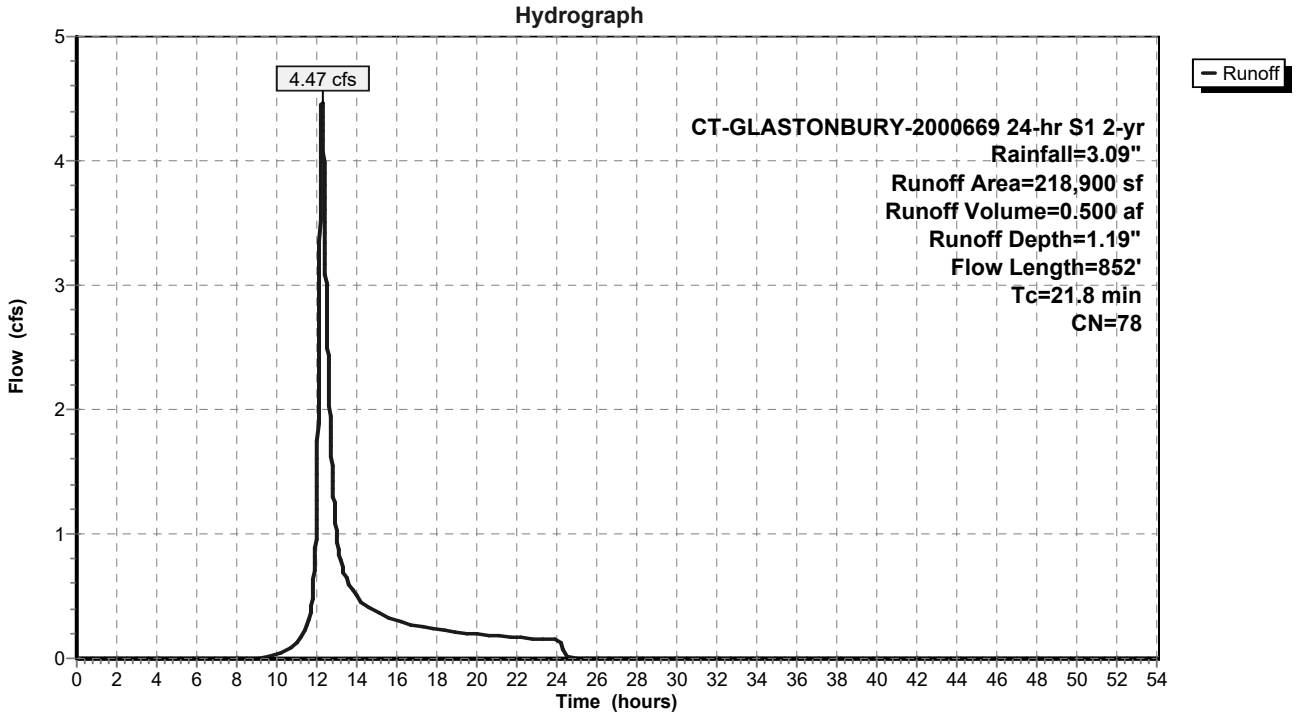
Runoff = 4.47 cfs @ 12.26 hrs, Volume= 0.500 af, Depth= 1.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 2-yr Rainfall=3.09"

Area (sf)	CN	Description
15,956	98	Paved parking, HSG A
16,147	49	50-75% Grass cover, Fair, HSG A
21,342	36	Woods, Fair, HSG A
90,124	98	Paved parking, HSG B
72,786	69	50-75% Grass cover, Fair, HSG B
2,545	60	Woods, Fair, HSG B
218,900	78	Weighted Average
112,820		51.54% Pervious Area
106,080		48.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.3	90	0.0222	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.09"
0.5	85	0.0353	2.82		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
2.0	677	0.0100	5.70	7.00	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
21.8	852	Total			

Subcatchment PDA-31: Area to CBs W of Site



Summary for Subcatchment PDA-41: Area Flowing Offsite to the North

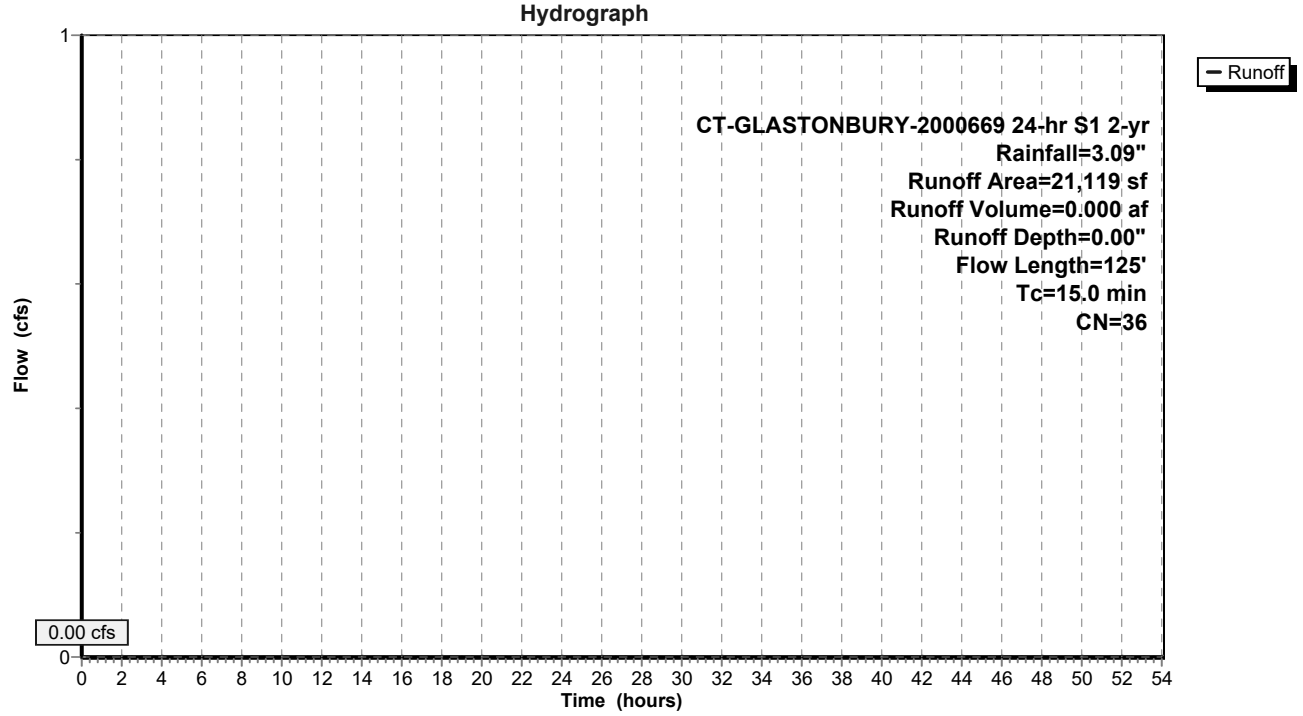
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 2-yr Rainfall=3.09"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
0	49	50-75% Grass cover, Fair, HSG A
21,040	36	Woods, Fair, HSG A
0	98	Paved parking, HSG B
0	69	50-75% Grass cover, Fair, HSG B
79	60	Woods, Fair, HSG B
21,119	36	Weighted Average
21,119		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	30	0.0333	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.09"
8.0	70	0.1214	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.09"
0.2	25	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.0	125	Total			

Subcatchment PDA-41: Area Flowing Offsite to the North

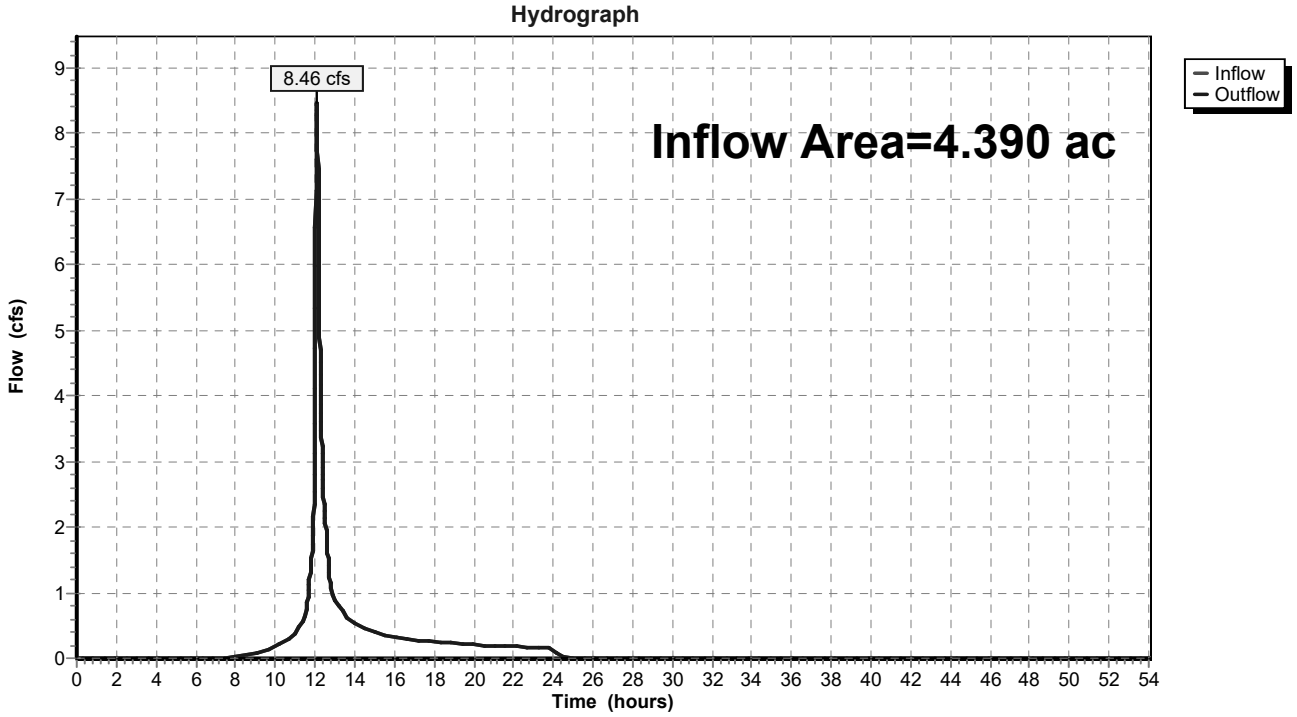


Summary for Reach DP-1: DP-1

Inflow Area = 4.390 ac, 62.34% Impervious, Inflow Depth = 1.78" for 2-yr event
Inflow = 8.46 cfs @ 12.09 hrs, Volume= 0.651 af
Outflow = 8.46 cfs @ 12.09 hrs, Volume= 0.651 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Reach DP-1: DP-1

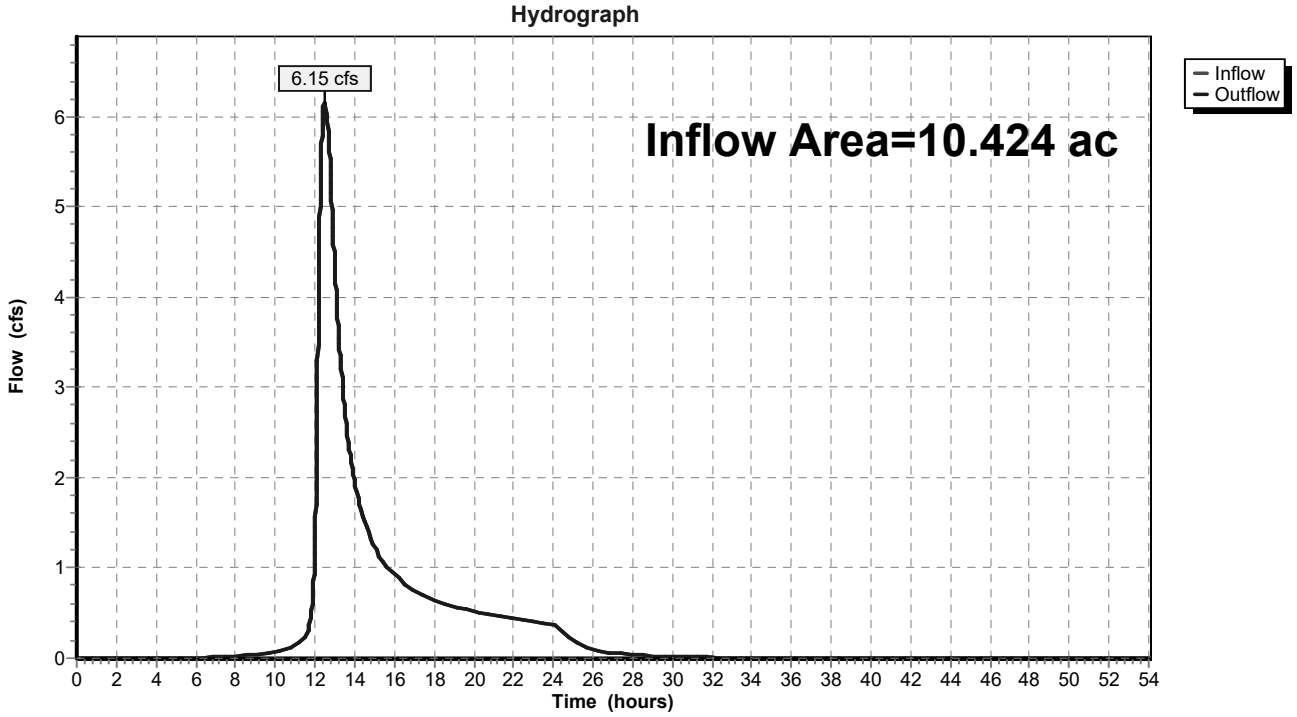


Summary for Reach DP-2: DP-2

Inflow Area = 10.424 ac, 71.19% Impervious, Inflow Depth = 1.53" for 2-yr event
Inflow = 6.15 cfs @ 12.48 hrs, Volume= 1.328 af
Outflow = 6.15 cfs @ 12.48 hrs, Volume= 1.328 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Reach DP-2: DP-2

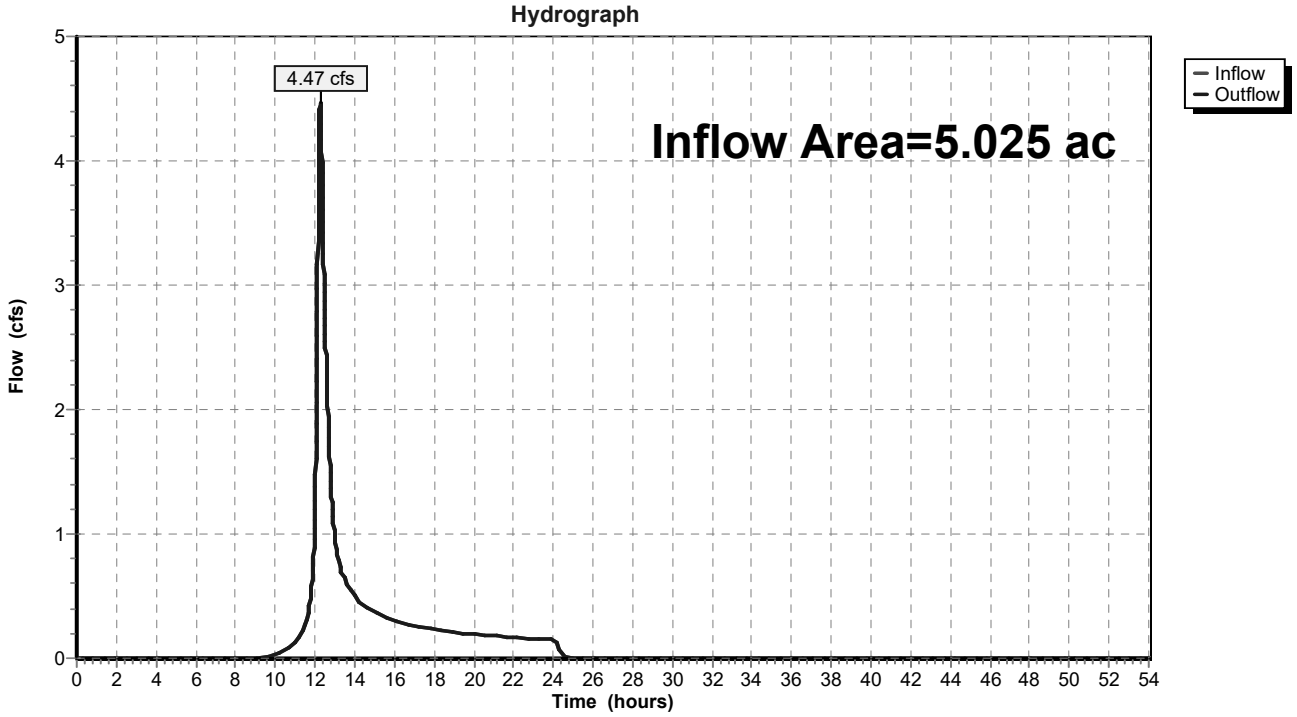


Summary for Reach DP-3: DP-3

Inflow Area = 5.025 ac, 48.46% Impervious, Inflow Depth = 1.19" for 2-yr event
Inflow = 4.47 cfs @ 12.26 hrs, Volume= 0.500 af
Outflow = 4.47 cfs @ 12.26 hrs, Volume= 0.500 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Reach DP-3: DP-3

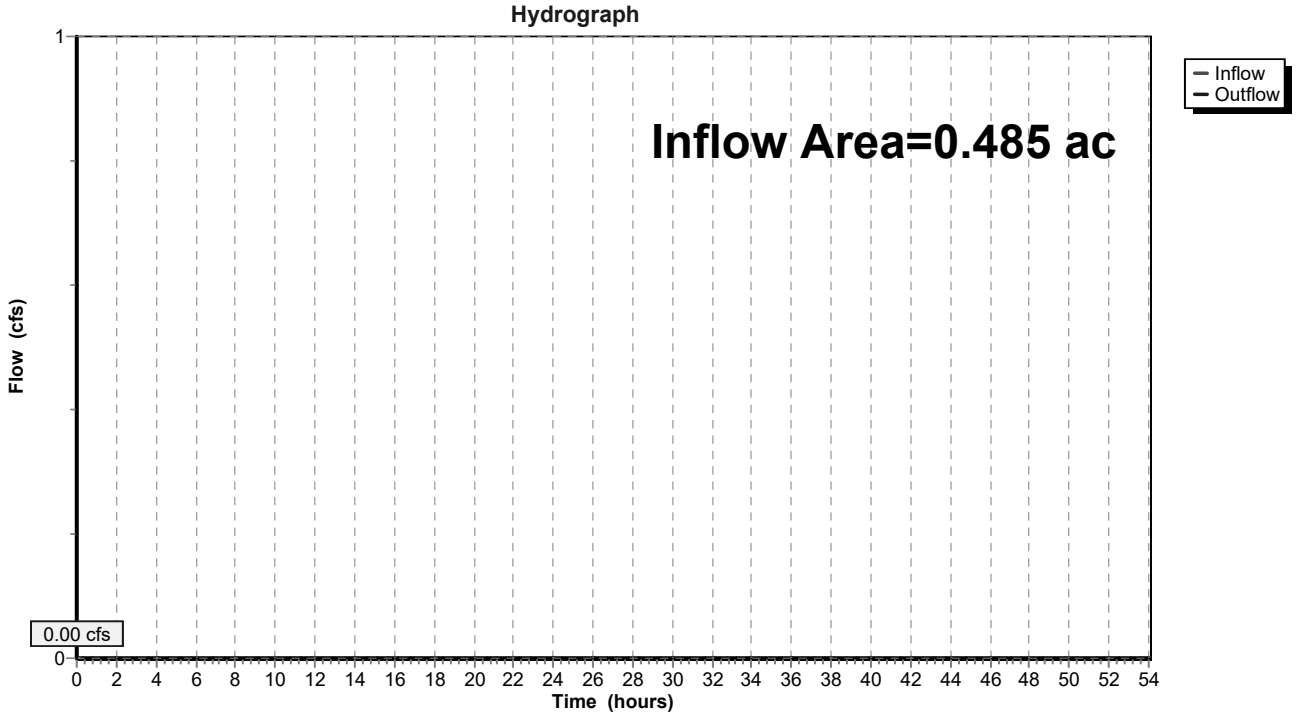


Summary for Reach DP-4: DP-4

Inflow Area = 0.485 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-yr event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Reach DP-4: DP-4



Summary for Pond SSDS #1: SSDS #1

Inflow Area = 1.017 ac, 79.76% Impervious, Inflow Depth = 2.25" for 2-yr event
Inflow = 3.10 cfs @ 12.05 hrs, Volume= 0.190 af
Outflow = 1.91 cfs @ 12.12 hrs, Volume= 0.183 af, Atten= 38%, Lag= 4.7 min
Primary = 1.91 cfs @ 12.12 hrs, Volume= 0.183 af

Routing by Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
Peak Elev= 70.69' @ 12.12 hrs Surf.Area= 1,530 sf Storage= 1,385 cf

Plug-Flow detention time= 59.9 min calculated for 0.183 af (96% of inflow)
Center-of-Mass det. time= 37.9 min (848.5 - 810.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	69.30'	1,406 cf	**25.25'W x 60.58'L x 3.50'H Field A** 5,353 cf Overall - 1,838 cf Embedded = 3,516 cf x 40.0% Voids
#2A	69.80'	1,838 cf	**ADS_StormTech SC-740 +Cap** x 40 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 40 Chambers in 5 Rows
		3,244 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	69.80'	**15.0" Round Culvert** L= 49.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 69.80' / 69.30' S= 0.0102 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.23 sf
#2	Device 1	69.80'	**12.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 1	72.30'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 1	71.50'	**8.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=1.91 cfs @ 12.12 hrs HW=70.69' (Free Discharge)
└**1=Culvert** (Passes 1.91 cfs of 2.91 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 1.91 cfs @ 3.82 fps)
  ├**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Pond SSDS #1: SSDS #1 - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

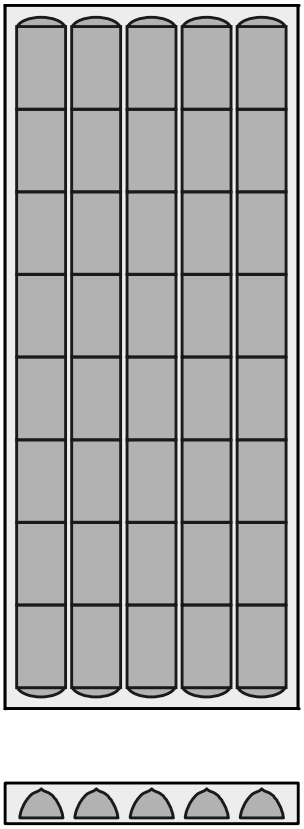
8 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 58.58' Row Length +12.0" End Stone x 2 = 60.58' Base Length
5 Rows x 51.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.25' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

40 Chambers x 45.9 cf = 1,837.6 cf Chamber Storage

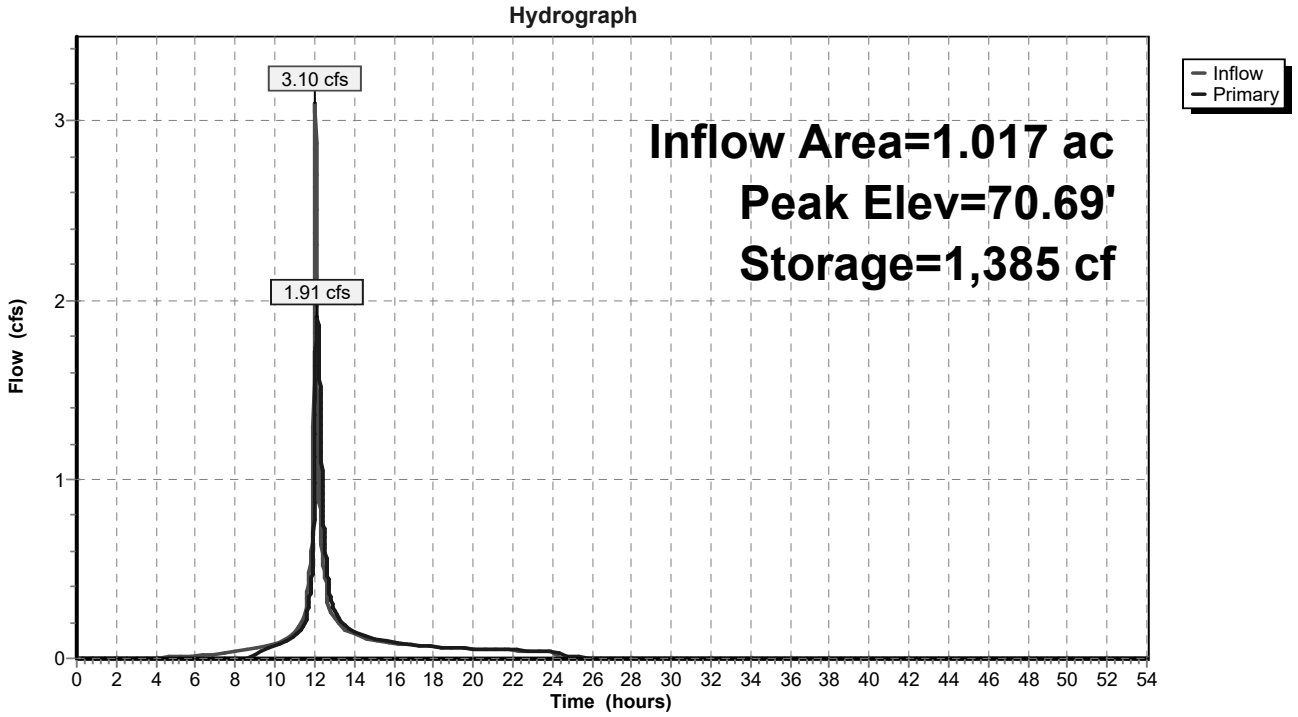
5,353.5 cf Field - 1,837.6 cf Chambers = 3,515.9 cf Stone x 40.0% Voids = 1,406.3 cf Stone Storage

Chamber Storage + Stone Storage = 3,243.9 cf = 0.074 af
Overall Storage Efficiency = 60.6%
Overall System Size = 60.58' x 25.25' x 3.50'

40 Chambers
198.3 cy Field
130.2 cy Stone



Pond SSDS #1: SSDS #1



Summary for Pond SSDS #2: SSDS #2

Inflow Area = 8.874 ac, 71.94% Impervious, Inflow Depth = 1.59" for 2-yr event
Inflow = 10.85 cfs @ 12.25 hrs, Volume= 1.176 af
Outflow = 5.15 cfs @ 12.59 hrs, Volume= 1.083 af, Atten= 53%, Lag= 20.5 min
Primary = 5.15 cfs @ 12.59 hrs, Volume= 1.083 af

Routing by Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
Peak Elev= 66.05' @ 12.59 hrs Surf.Area= 13,575 sf Storage= 16,298 cf

Plug-Flow detention time= 128.0 min calculated for 1.083 af (92% of inflow)
Center-of-Mass det. time= 85.9 min (950.0 - 864.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	64.25'	18,674 cf	**65.75'W x 206.46'L x 5.50'H Field A** 74,661 cf Overall - 27,976 cf Embedded = 46,685 cf x 40.0% Voids
#2A	65.00'	27,976 cf	**ADS_StormTech MC-3500 d +Cap** x 252 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 252 Chambers in 9 Rows Cap Storage= +14.9 cf x 2 x 9 rows = 268.2 cf
		46,650 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	64.50'	**24.0" Round Culvert** L= 80.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 64.50' / 64.10' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf
#2	Device 1	65.00'	**18.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 1	67.50'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=5.15 cfs @ 12.59 hrs HW=66.05' (Free Discharge)
└**1=Culvert** (Passes 5.15 cfs of 9.02 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 5.15 cfs @ 3.43 fps)
  └**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SSDS #2: SSDS #2 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= +14.9 cf x 2 x 9 rows = 268.2 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

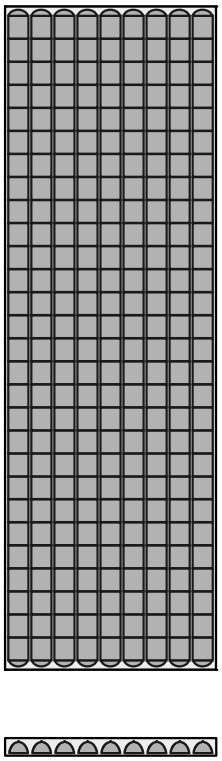
28 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 204.46' Row Length +12.0" End Stone x 2 = 206.46' Base Length
9 Rows x 77.0" Wide + 9.0" Spacing x 8 + 12.0" Side Stone x 2 = 65.75' Base Width
9.0" Base + 45.0" Chamber Height + 12.0" Cover = 5.50' Field Height

252 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 9 Rows = 27,976.1 cf Chamber Storage

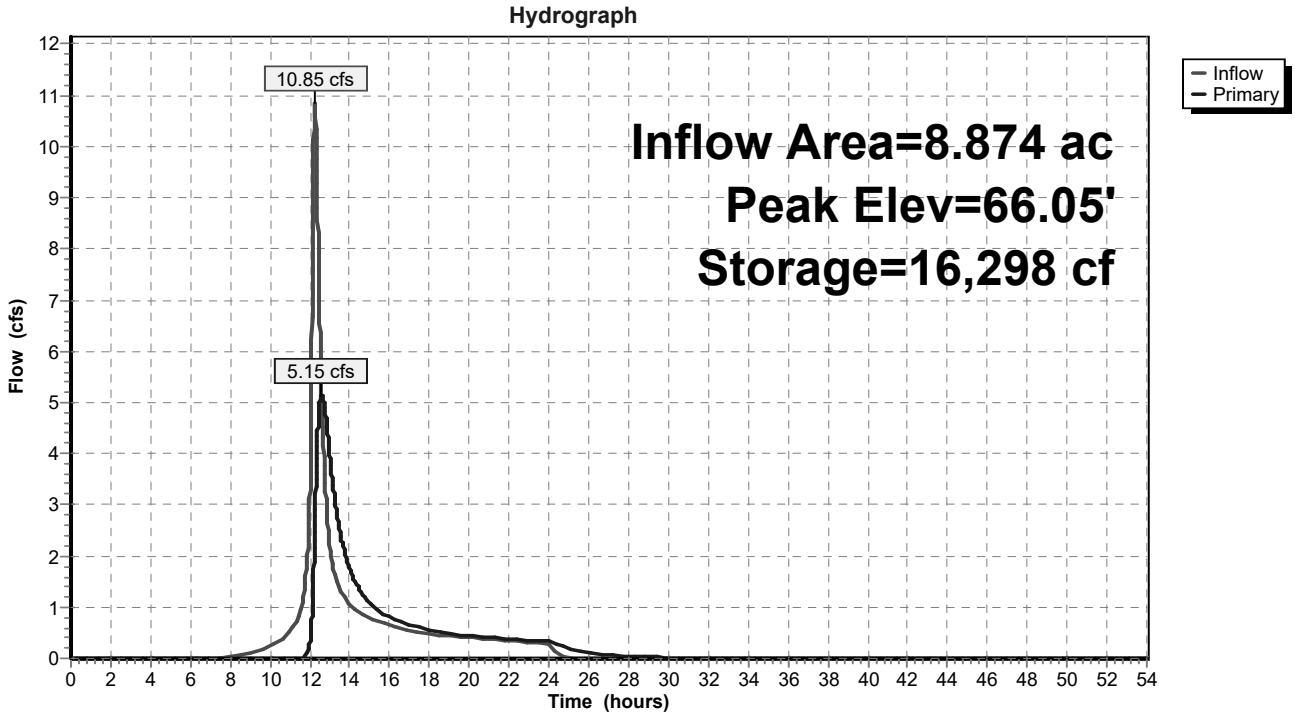
74,661.1 cf Field - 27,976.1 cf Chambers = 46,685.0 cf Stone x 40.0% Voids = 18,674.0 cf Stone Storage

Chamber Storage + Stone Storage = 46,650.1 cf = 1.071 af
Overall Storage Efficiency = 62.5%
Overall System Size = 206.46' x 65.75' x 5.50'

252 Chambers
2,765.2 cy Field
1,729.1 cy Stone



Pond SSDS #2: SSDS #2



Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 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 PDA-11: Area to CBs SE of Runoff Area=146,902 sf 57.08% Impervious Runoff Depth=3.25"
Flow Length=248' Tc=9.7 min CN=85 Runoff=12.60 cfs 0.913 af

Subcatchment PDA-12: Area to SSDS #1 Runoff Area=44,319 sf 79.76% Impervious Runoff Depth=3.96"
Flow Length=186' Tc=6.8 min CN=92 Runoff=5.20 cfs 0.336 af

Subcatchment PDA-21: Area to CBs SW of Runoff Area=67,486 sf 66.87% Impervious Runoff Depth=3.55"
Flow Length=176' Tc=18.1 min CN=88 Runoff=4.54 cfs 0.458 af

Subcatchment PDA-22: Area to SSDS #2 Runoff Area=386,565 sf 71.94% Impervious Runoff Depth=3.15"
Flow Length=1,036' Tc=21.9 min CN=84 Runoff=21.07 cfs 2.331 af

Subcatchment PDA-31: Area to CBs W of Runoff Area=218,900 sf 48.46% Impervious Runoff Depth=2.60"
Flow Length=852' Tc=21.8 min CN=78 Runoff=9.86 cfs 1.090 af

Subcatchment PDA-41: Area Flowing Runoff Area=21,119 sf 0.00% Impervious Runoff Depth=0.09"
Flow Length=125' Tc=15.0 min CN=36 Runoff=0.00 cfs 0.004 af

Reach DP-1: DP-1 Inflow=15.23 cfs 1.242 af
Outflow=15.23 cfs 1.242 af

Reach DP-2: DP-2 Inflow=11.62 cfs 2.695 af
Outflow=11.62 cfs 2.695 af

Reach DP-3: DP-3 Inflow=9.86 cfs 1.090 af
Outflow=9.86 cfs 1.090 af

Reach DP-4: DP-4 Inflow=0.00 cfs 0.004 af
Outflow=0.00 cfs 0.004 af

Pond SSDS #1: SSDS #1 Peak Elev=71.40' Storage=2,175 cf Inflow=5.20 cfs 0.336 af
Outflow=2.79 cfs 0.329 af

Pond SSDS #2: SSDS #2 Peak Elev=67.25' Storage=29,094 cf Inflow=21.07 cfs 2.331 af
Outflow=9.51 cfs 2.237 af

Total Runoff Area = 20.323 ac Runoff Volume = 5.130 af Average Runoff Depth = 3.03"
38.04% Pervious = 7.732 ac 61.96% Impervious = 12.592 ac

Summary for Subcatchment PDA-11: Area to CBs SE of Site

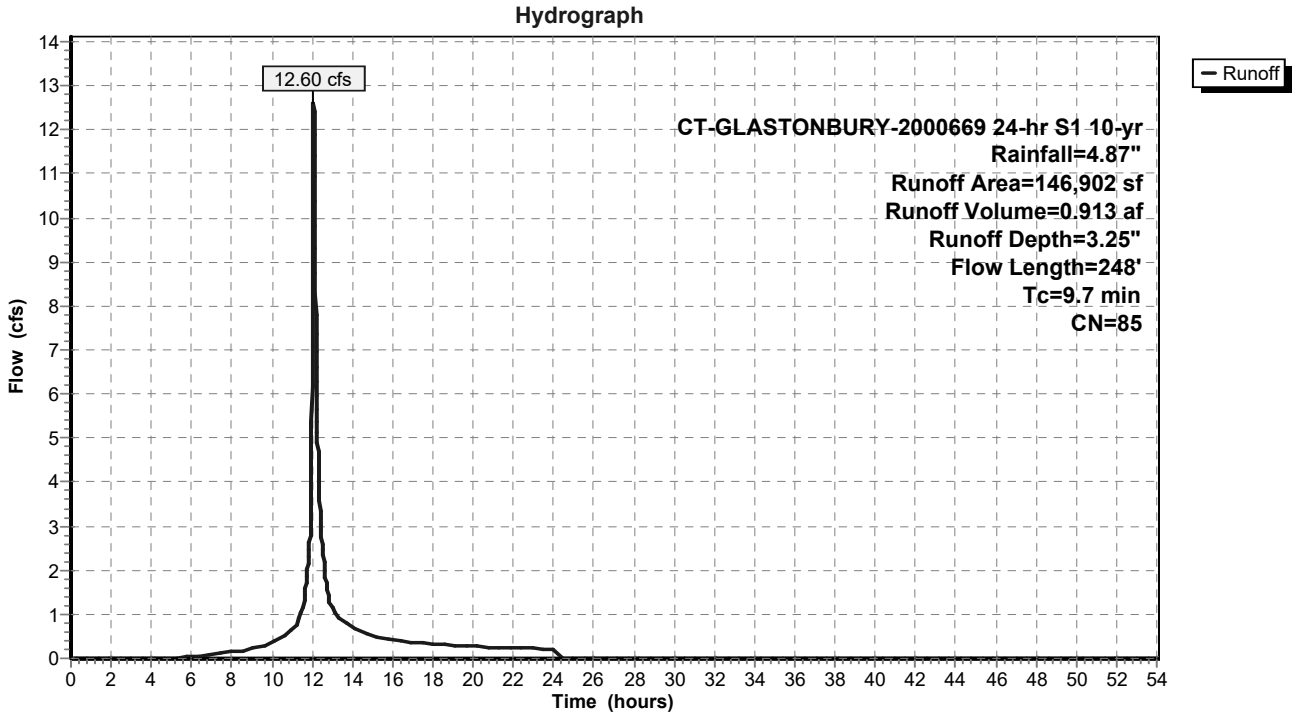
Runoff = 12.60 cfs @ 12.08 hrs, Volume= 0.913 af, Depth= 3.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 10-yr Rainfall=4.87"

Area (sf)	CN	Description
10,998	98	Paved parking, HSG A
7,473	49	50-75% Grass cover, Fair, HSG A
0	36	Woods, Fair, HSG A
72,861	98	Paved parking, HSG B
55,570	69	50-75% Grass cover, Fair, HSG B
0	60	Woods, Fair, HSG B
146,902	85	Weighted Average
63,043		42.92% Pervious Area
83,859		57.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	100	0.0260	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.09"
0.4	71	0.0408	3.03		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	13	0.0385	3.98		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	64	0.0125	6.38	7.82	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
9.7	248	Total			

Subcatchment PDA-11: Area to CBs SE of Site



Summary for Subcatchment PDA-12: Area to SSDS #1

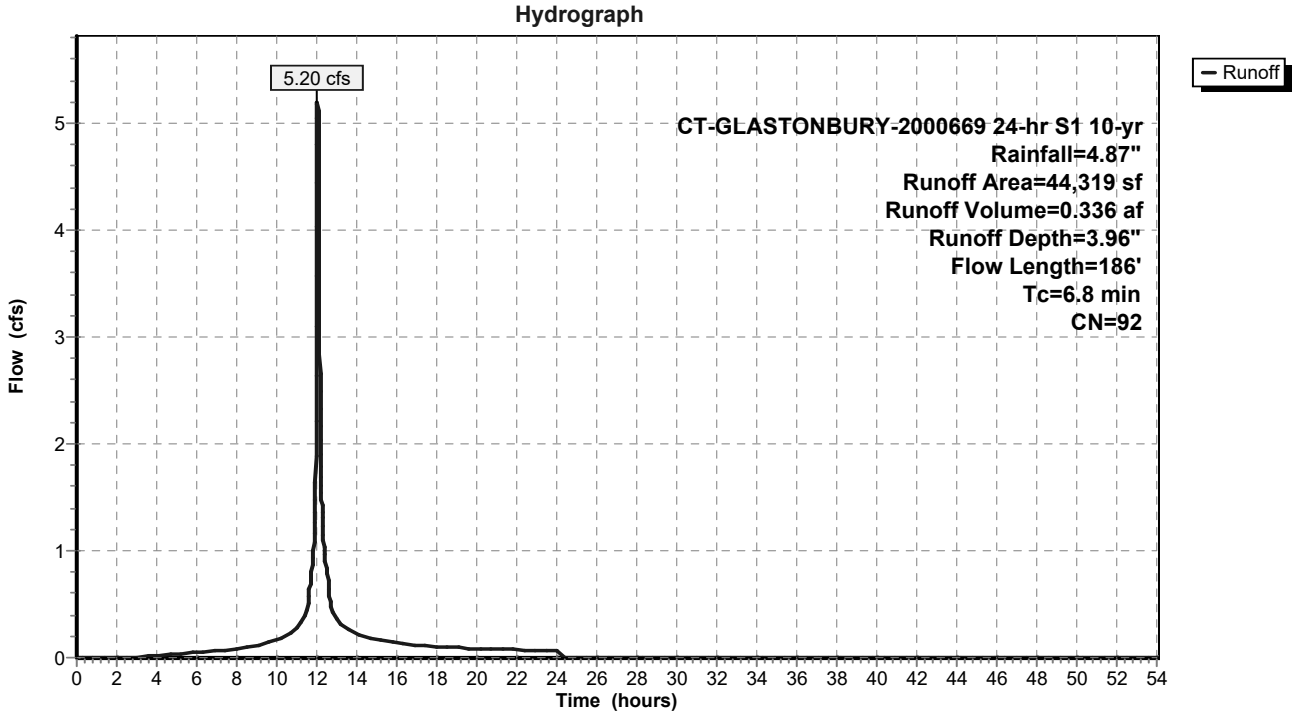
Runoff = 5.20 cfs @ 12.04 hrs, Volume= 0.336 af, Depth= 3.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 10-yr Rainfall=4.87"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
0	49	50-75% Grass cover, Fair, HSG A
0	36	Woods, Fair, HSG A
35,349	98	Paved parking, HSG B
8,970	69	50-75% Grass cover, Fair, HSG B
0	60	Woods, Fair, HSG B
44,319	92	Weighted Average
8,970		20.24% Pervious Area
35,349		79.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	77	0.0357	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.09"
0.4	109	0.0415	4.14		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.8	186	Total			

Subcatchment PDA-12: Area to SSDS #1



Summary for Subcatchment PDA-21: Area to CBs SW of Site

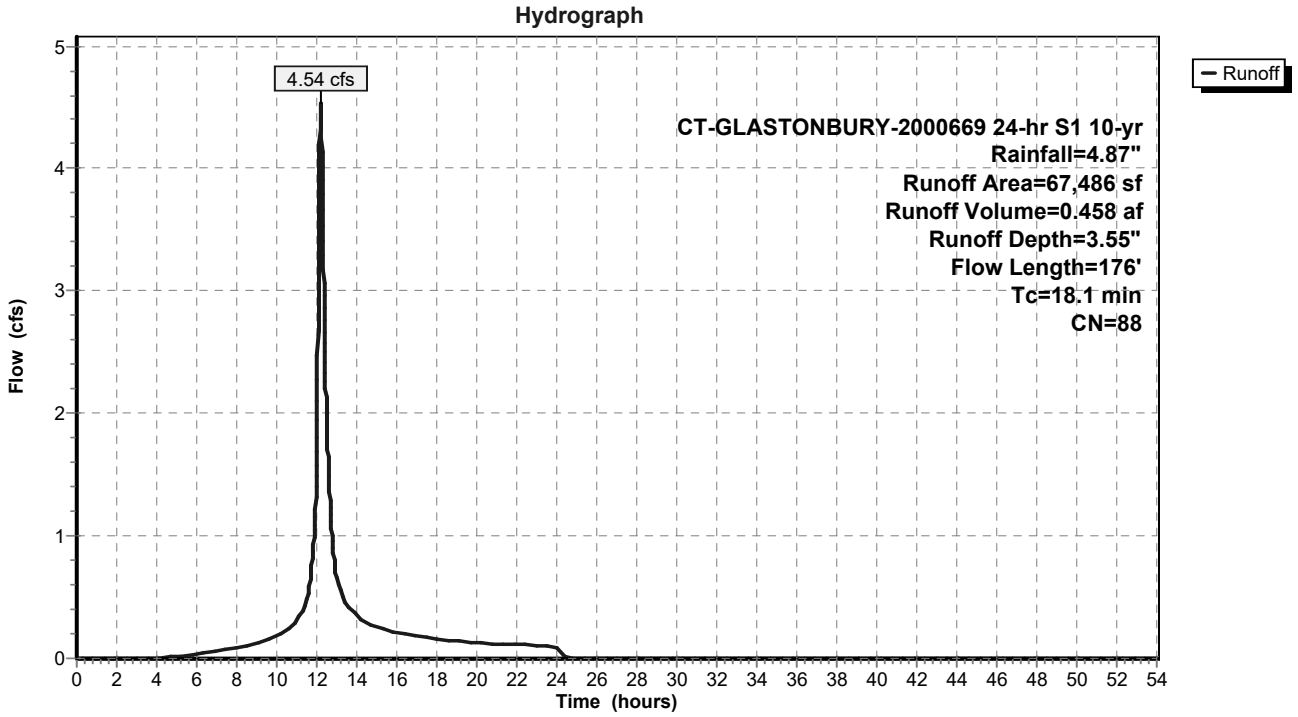
Runoff = 4.54 cfs @ 12.20 hrs, Volume= 0.458 af, Depth= 3.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 10-yr Rainfall=4.87"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
0	49	50-75% Grass cover, Fair, HSG A
0	36	Woods, Fair, HSG A
45,126	98	Paved parking, HSG B
22,360	69	50-75% Grass cover, Fair, HSG B
0	60	Woods, Fair, HSG B
67,486	88	Weighted Average
22,360		33.13% Pervious Area
45,126		66.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.4	100	0.0050	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.09"
0.4	26	0.0050	1.06		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.3	50	0.0160	2.57		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
18.1	176	Total			

Subcatchment PDA-21: Area to CBs SW of Site



Summary for Subcatchment PDA-22: Area to SSDS #2

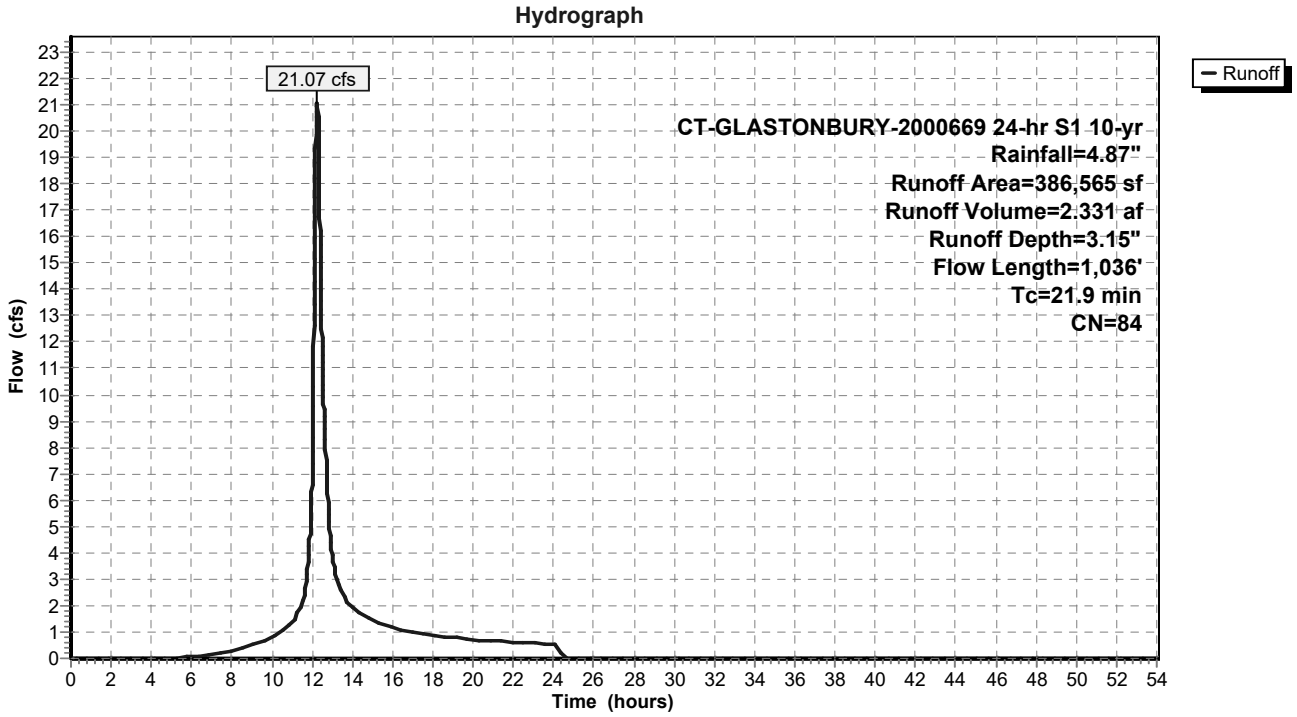
Runoff = 21.07 cfs @ 12.24 hrs, Volume= 2.331 af, Depth= 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 10-yr Rainfall=4.87"

Area (sf)	CN	Description
4,939	98	Paved parking, HSG A
20,953	49	50-75% Grass cover, Fair, HSG A
58,835	36	Woods, Fair, HSG A
273,153	98	Paved parking, HSG B
28,498	69	50-75% Grass cover, Fair, HSG B
187	60	Woods, Fair, HSG B
386,565	84	Weighted Average
108,473		28.06% Pervious Area
278,092		71.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	100	0.0300	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.09"
0.5	74	0.2894	2.69		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	39	0.0183	2.03		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.1	180	0.0183	2.75		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	643	0.0100	7.80	24.51	**Pipe Channel, RCP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Concrete pipe, finished
21.9	1,036	Total			

Subcatchment PDA-22: Area to SSDS #2



Summary for Subcatchment PDA-31: Area to CBs W of Site

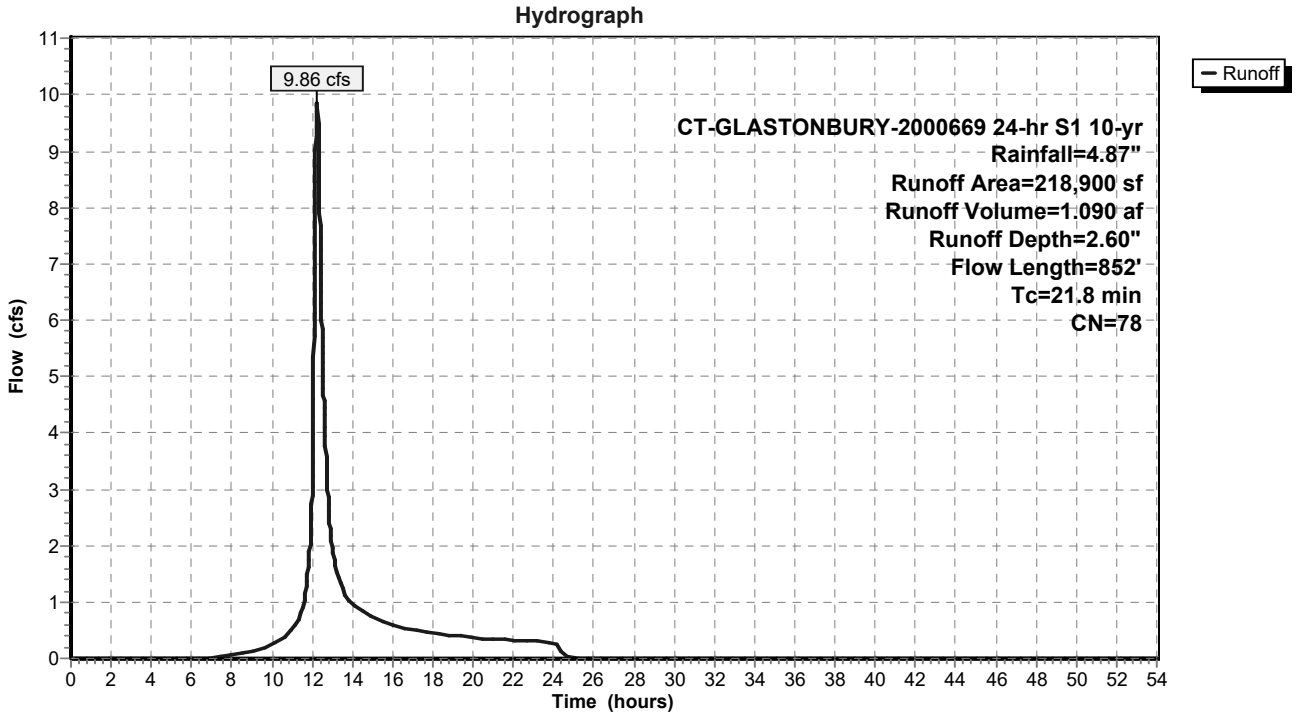
Runoff = 9.86 cfs @ 12.25 hrs, Volume= 1.090 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 10-yr Rainfall=4.87"

Area (sf)	CN	Description
15,956	98	Paved parking, HSG A
16,147	49	50-75% Grass cover, Fair, HSG A
21,342	36	Woods, Fair, HSG A
90,124	98	Paved parking, HSG B
72,786	69	50-75% Grass cover, Fair, HSG B
2,545	60	Woods, Fair, HSG B
218,900	78	Weighted Average
112,820		51.54% Pervious Area
106,080		48.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.3	90	0.0222	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.09"
0.5	85	0.0353	2.82		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
2.0	677	0.0100	5.70	7.00	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
21.8	852	Total			

Subcatchment PDA-31: Area to CBs W of Site



Summary for Subcatchment PDA-41: Area Flowing Offsite to the North

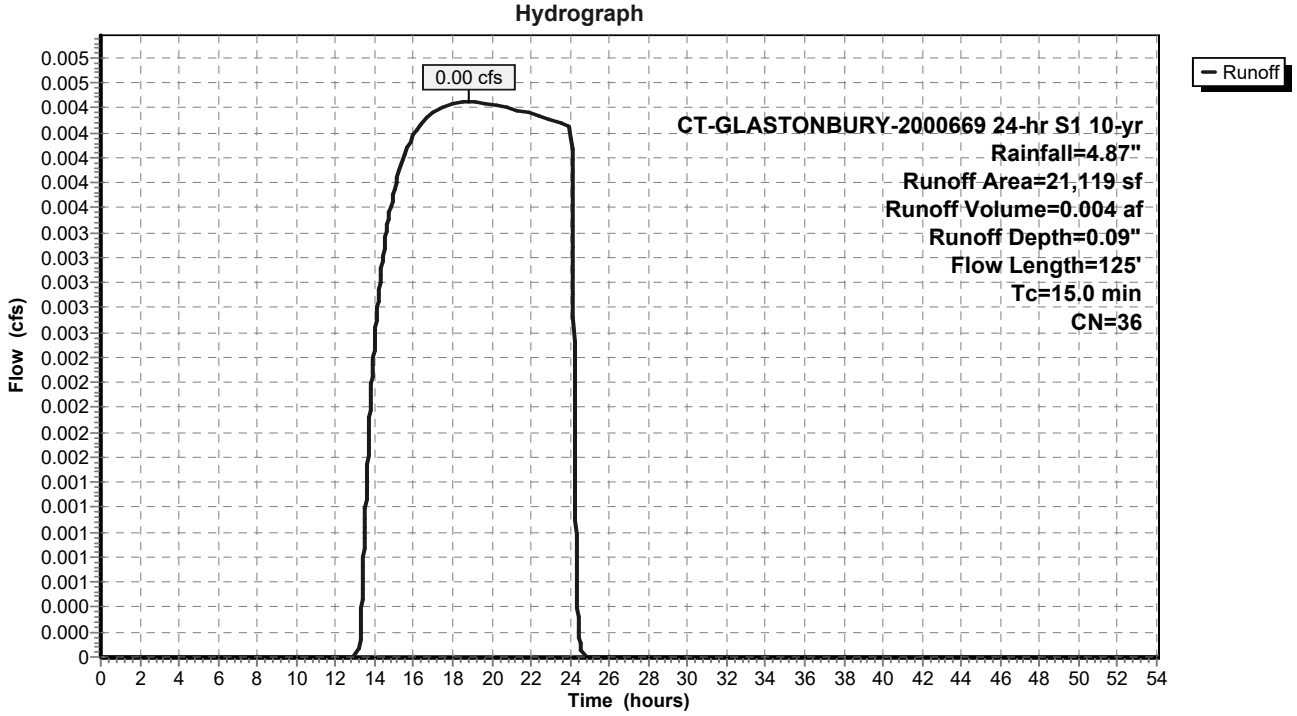
Runoff = 0.00 cfs @ 18.85 hrs, Volume= 0.004 af, Depth= 0.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 10-yr Rainfall=4.87"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
0	49	50-75% Grass cover, Fair, HSG A
21,040	36	Woods, Fair, HSG A
0	98	Paved parking, HSG B
0	69	50-75% Grass cover, Fair, HSG B
79	60	Woods, Fair, HSG B
21,119	36	Weighted Average
21,119		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	30	0.0333	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.09"
8.0	70	0.1214	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.09"
0.2	25	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.0	125	Total			

Subcatchment PDA-41: Area Flowing Offsite to the North

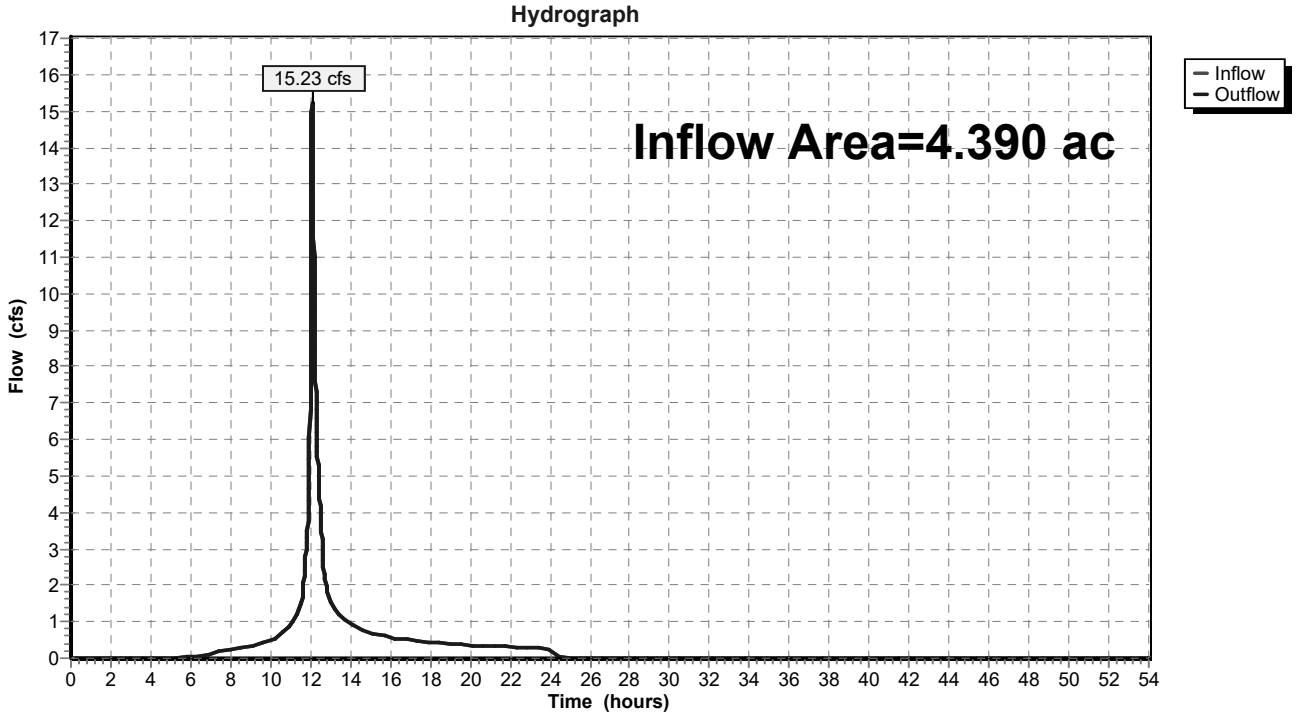


Summary for Reach DP-1: DP-1

Inflow Area = 4.390 ac, 62.34% Impervious, Inflow Depth = 3.39" for 10-yr event
Inflow = 15.23 cfs @ 12.08 hrs, Volume= 1.242 af
Outflow = 15.23 cfs @ 12.08 hrs, Volume= 1.242 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Reach DP-1: DP-1

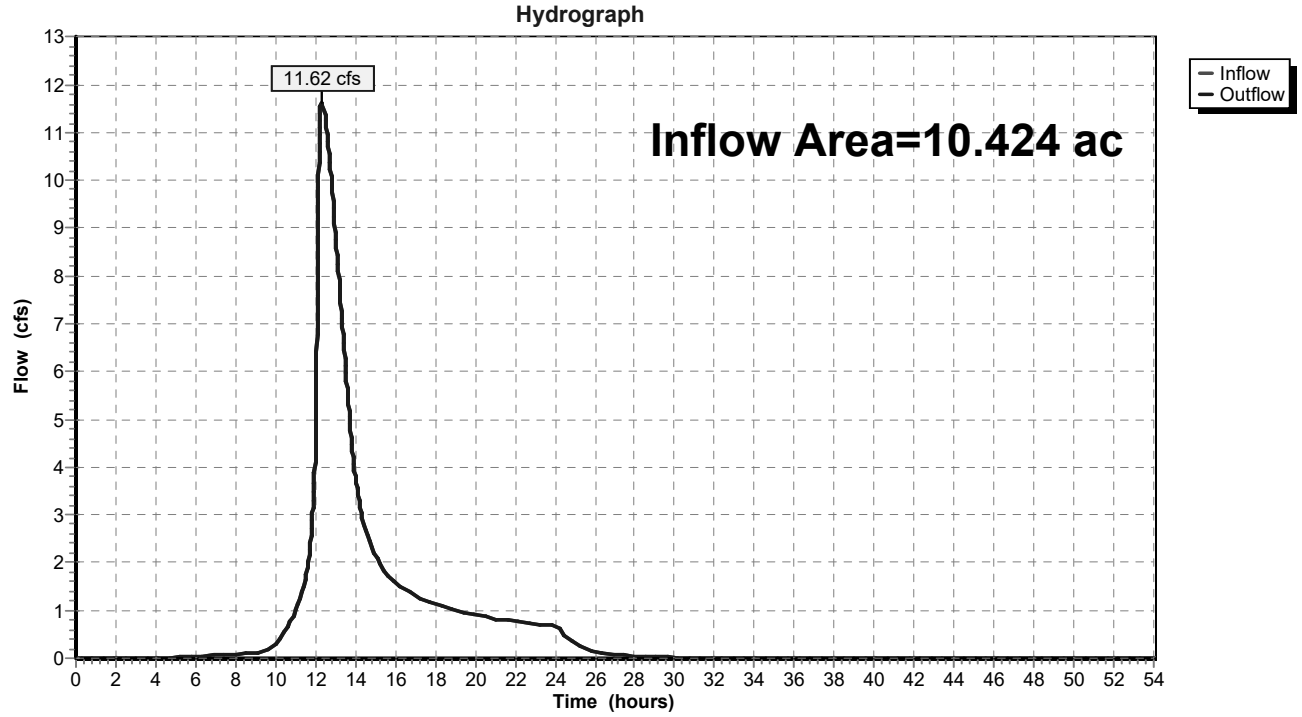


Summary for Reach DP-2: DP-2

Inflow Area = 10.424 ac, 71.19% Impervious, Inflow Depth = 3.10" for 10-yr event
Inflow = 11.62 cfs @ 12.32 hrs, Volume= 2.695 af
Outflow = 11.62 cfs @ 12.32 hrs, Volume= 2.695 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Reach DP-2: DP-2

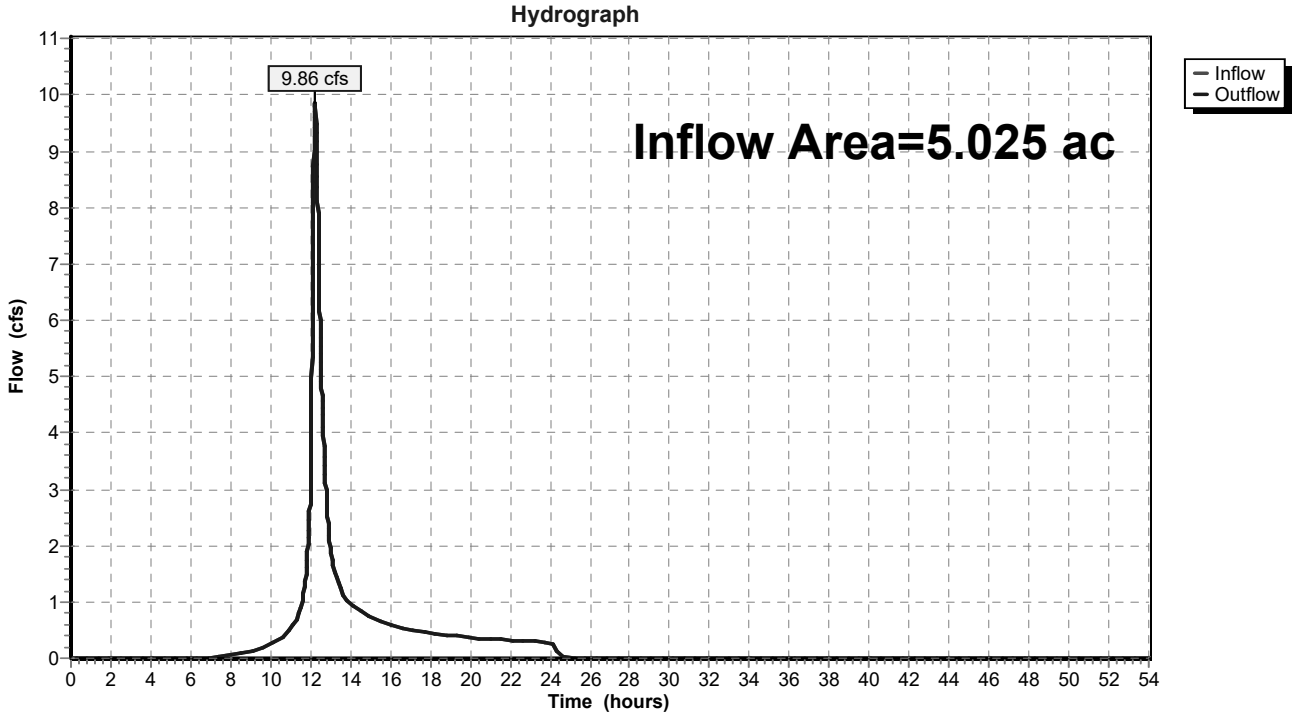


Summary for Reach DP-3: DP-3

Inflow Area = 5.025 ac, 48.46% Impervious, Inflow Depth = 2.60" for 10-yr event
Inflow = 9.86 cfs @ 12.25 hrs, Volume= 1.090 af
Outflow = 9.86 cfs @ 12.25 hrs, Volume= 1.090 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Reach DP-3: DP-3

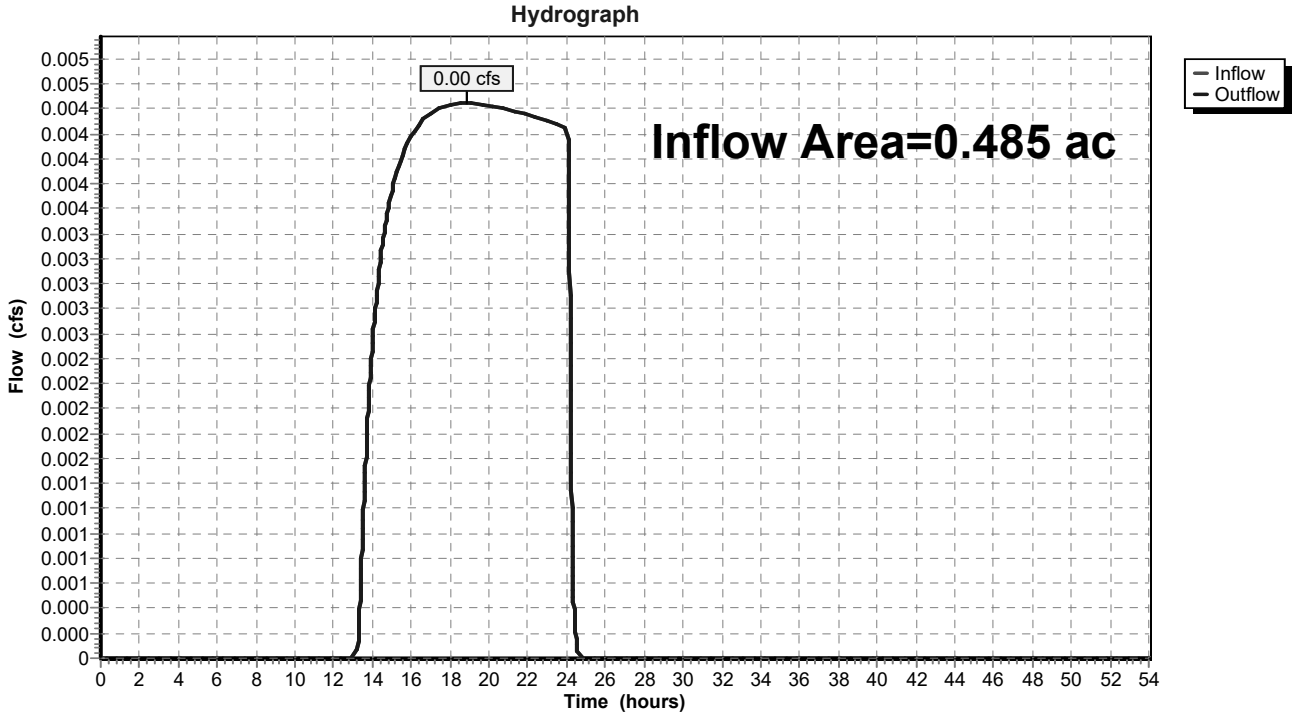


Summary for Reach DP-4: DP-4

Inflow Area = 0.485 ac, 0.00% Impervious, Inflow Depth = 0.09" for 10-yr event
Inflow = 0.00 cfs @ 18.85 hrs, Volume= 0.004 af
Outflow = 0.00 cfs @ 18.85 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Reach DP-4: DP-4



Summary for Pond SSDS #1: SSDS #1

Inflow Area = 1.017 ac, 79.76% Impervious, Inflow Depth = 3.96" for 10-yr event
Inflow = 5.20 cfs @ 12.04 hrs, Volume= 0.336 af
Outflow = 2.79 cfs @ 12.14 hrs, Volume= 0.329 af, Atten= 46%, Lag= 5.8 min
Primary = 2.79 cfs @ 12.14 hrs, Volume= 0.329 af

Routing by Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
Peak Elev= 71.40' @ 12.14 hrs Surf.Area= 1,530 sf Storage= 2,175 cf

Plug-Flow detention time= 43.0 min calculated for 0.329 af (98% of inflow)
Center-of-Mass det. time= 29.8 min (822.2 - 792.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	69.30'	1,406 cf	**25.25'W x 60.58'L x 3.50'H Field A** 5,353 cf Overall - 1,838 cf Embedded = 3,516 cf x 40.0% Voids
#2A	69.80'	1,838 cf	**ADS_StormTech SC-740 +Cap** x 40 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 40 Chambers in 5 Rows
		3,244 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	69.80'	**15.0" Round Culvert** L= 49.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 69.80' / 69.30' S= 0.0102 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.23 sf
#2	Device 1	69.80'	**12.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 1	72.30'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 1	71.50'	**8.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=2.79 cfs @ 12.14 hrs HW=71.40' (Free Discharge)
└**1=Culvert** (Passes 2.79 cfs of 5.84 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 2.79 cfs @ 5.59 fps)
  ├**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Pond SSDS #1: SSDS #1 - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

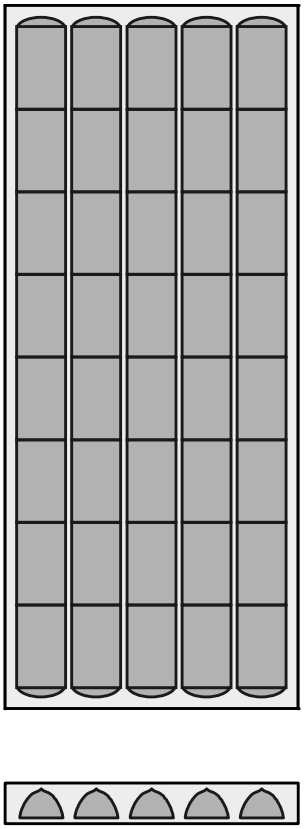
8 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 58.58' Row Length +12.0" End Stone x 2 = 60.58' Base Length
5 Rows x 51.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.25' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

40 Chambers x 45.9 cf = 1,837.6 cf Chamber Storage

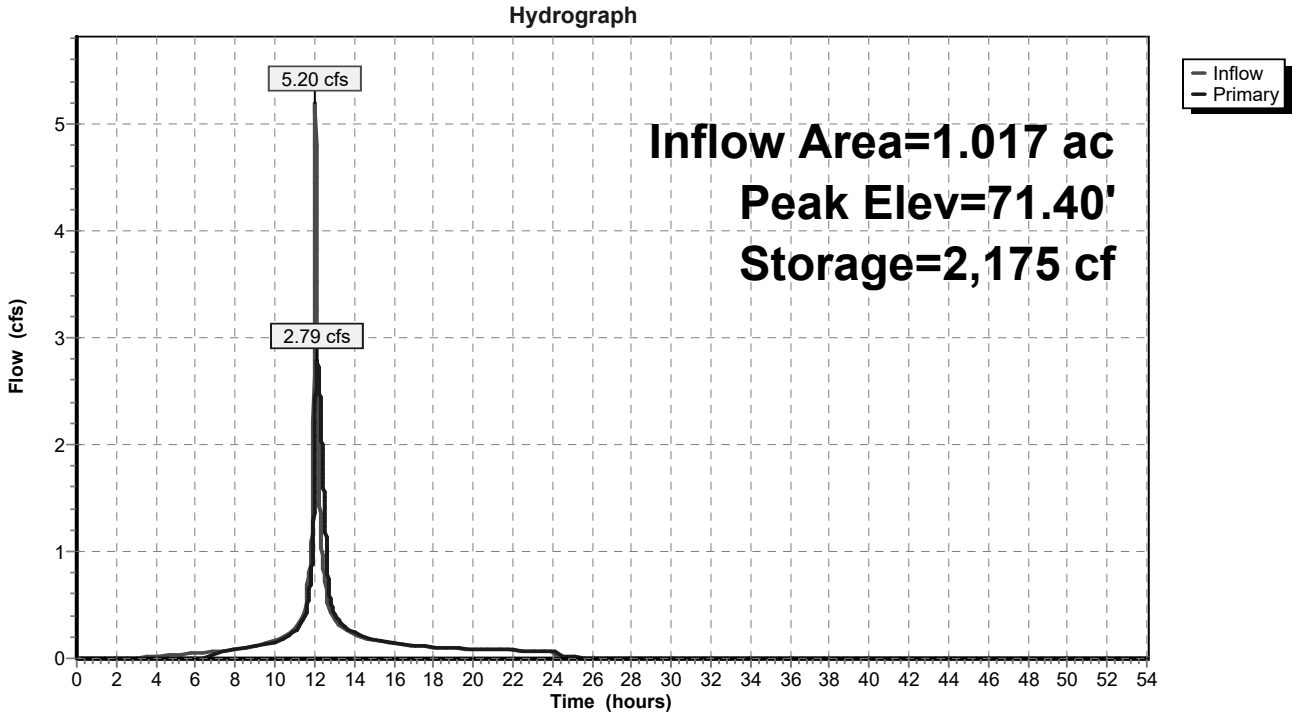
5,353.5 cf Field - 1,837.6 cf Chambers = 3,515.9 cf Stone x 40.0% Voids = 1,406.3 cf Stone Storage

Chamber Storage + Stone Storage = 3,243.9 cf = 0.074 af
Overall Storage Efficiency = 60.6%
Overall System Size = 60.58' x 25.25' x 3.50'

40 Chambers
198.3 cy Field
130.2 cy Stone



Pond SSDS #1: SSDS #1



Summary for Pond SSDS #2: SSDS #2

Inflow Area = 8.874 ac, 71.94% Impervious, Inflow Depth = 3.15" for 10-yr event
Inflow = 21.07 cfs @ 12.24 hrs, Volume= 2.331 af
Outflow = 9.51 cfs @ 12.59 hrs, Volume= 2.237 af, Atten= 55%, Lag= 20.6 min
Primary = 9.51 cfs @ 12.59 hrs, Volume= 2.237 af

Routing by Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
Peak Elev= 67.25' @ 12.59 hrs Surf.Area= 13,575 sf Storage= 29,094 cf

Plug-Flow detention time= 93.5 min calculated for 2.237 af (96% of inflow)
Center-of-Mass det. time= 70.2 min (911.7 - 841.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	64.25'	18,674 cf	**65.75'W x 206.46'L x 5.50'H Field A** 74,661 cf Overall - 27,976 cf Embedded = 46,685 cf x 40.0% Voids
#2A	65.00'	27,976 cf	**ADS_StormTech MC-3500 d +Cap**x 252 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 252 Chambers in 9 Rows Cap Storage= +14.9 cf x 2 x 9 rows = 268.2 cf
		46,650 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	64.50'	**24.0" Round Culvert** L= 80.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 64.50' / 64.10' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf
#2	Device 1	65.00'	**18.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 1	67.50'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=9.51 cfs @ 12.59 hrs HW=67.25' (Free Discharge)
└**1=Culvert** (Passes 9.51 cfs of 17.62 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 9.51 cfs @ 6.34 fps)
  └**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond SSDS #2: SSDS #2 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= +14.9 cf x 2 x 9 rows = 268.2 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

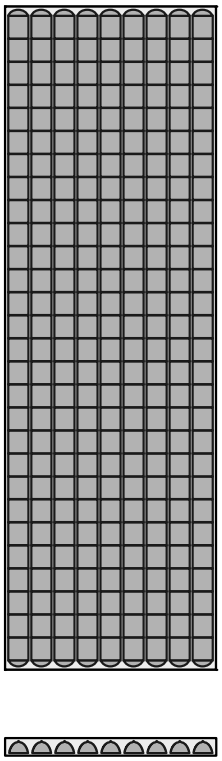
28 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 204.46' Row Length +12.0" End Stone x 2 = 206.46' Base Length
9 Rows x 77.0" Wide + 9.0" Spacing x 8 + 12.0" Side Stone x 2 = 65.75' Base Width
9.0" Base + 45.0" Chamber Height + 12.0" Cover = 5.50' Field Height

252 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 9 Rows = 27,976.1 cf Chamber Storage

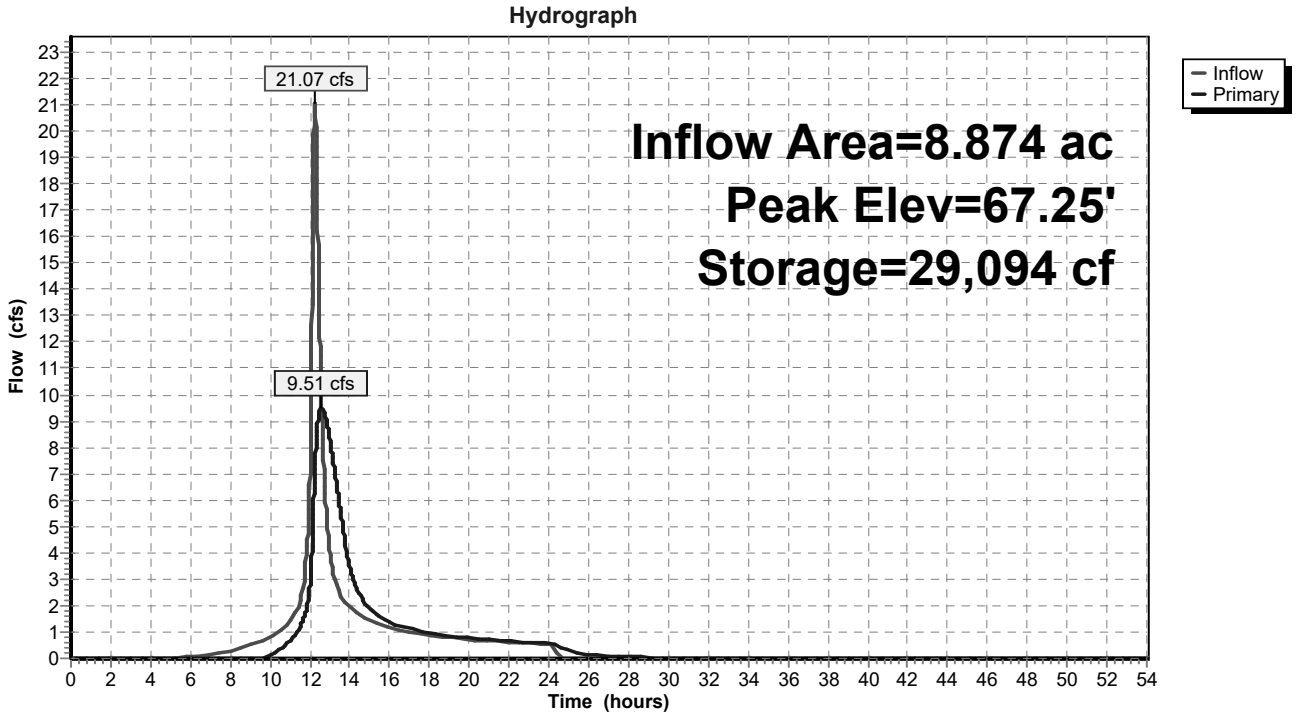
74,661.1 cf Field - 27,976.1 cf Chambers = 46,685.0 cf Stone x 40.0% Voids = 18,674.0 cf Stone Storage

Chamber Storage + Stone Storage = 46,650.1 cf = 1.071 af
Overall Storage Efficiency = 62.5%
Overall System Size = 206.46' x 65.75' x 5.50'

252 Chambers
2,765.2 cy Field
1,729.1 cy Stone



Pond SSDS #2: SSDS #2



Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 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 PDA-11: Area to CBs SE of Runoff Area=146,902 sf 57.08% Impervious Runoff Depth=4.28"
Flow Length=248' Tc=9.7 min CN=85 Runoff=16.37 cfs 1.204 af

Subcatchment PDA-12: Area to SSDS #1 Runoff Area=44,319 sf 79.76% Impervious Runoff Depth=5.05"
Flow Length=186' Tc=6.8 min CN=92 Runoff=6.49 cfs 0.428 af

Subcatchment PDA-21: Area to CBs SW of Runoff Area=67,486 sf 66.87% Impervious Runoff Depth=4.61"
Flow Length=176' Tc=18.1 min CN=88 Runoff=5.79 cfs 0.595 af

Subcatchment PDA-22: Area to SSDS #2 Runoff Area=386,565 sf 71.94% Impervious Runoff Depth=4.18"
Flow Length=1,036' Tc=21.9 min CN=84 Runoff=27.54 cfs 3.090 af

Subcatchment PDA-31: Area to CBs W of Runoff Area=218,900 sf 48.46% Impervious Runoff Depth=3.56"
Flow Length=852' Tc=21.8 min CN=78 Runoff=13.43 cfs 1.491 af

Subcatchment PDA-41: Area Flowing Runoff Area=21,119 sf 0.00% Impervious Runoff Depth=0.29"
Flow Length=125' Tc=15.0 min CN=36 Runoff=0.02 cfs 0.012 af

Reach DP-1: DP-1 Inflow=19.62 cfs 1.625 af
Outflow=19.62 cfs 1.625 af

Reach DP-2: DP-2 Inflow=17.37 cfs 3.591 af
Outflow=17.37 cfs 3.591 af

Reach DP-3: DP-3 Inflow=13.43 cfs 1.491 af
Outflow=13.43 cfs 1.491 af

Reach DP-4: DP-4 Inflow=0.02 cfs 0.012 af
Outflow=0.02 cfs 0.012 af

Pond SSDS #1: SSDS #1 Peak Elev=71.87' Storage=2,626 cf Inflow=6.49 cfs 0.428 af
Outflow=3.73 cfs 0.421 af

Pond SSDS #2: SSDS #2 Peak Elev=67.94' Storage=35,551 cf Inflow=27.54 cfs 3.090 af
Outflow=14.94 cfs 2.996 af

Total Runoff Area = 20.323 ac Runoff Volume = 6.819 af Average Runoff Depth = 4.03"
38.04% Pervious = 7.732 ac 61.96% Impervious = 12.592 ac

Summary for Subcatchment PDA-11: Area to CBs SE of Site

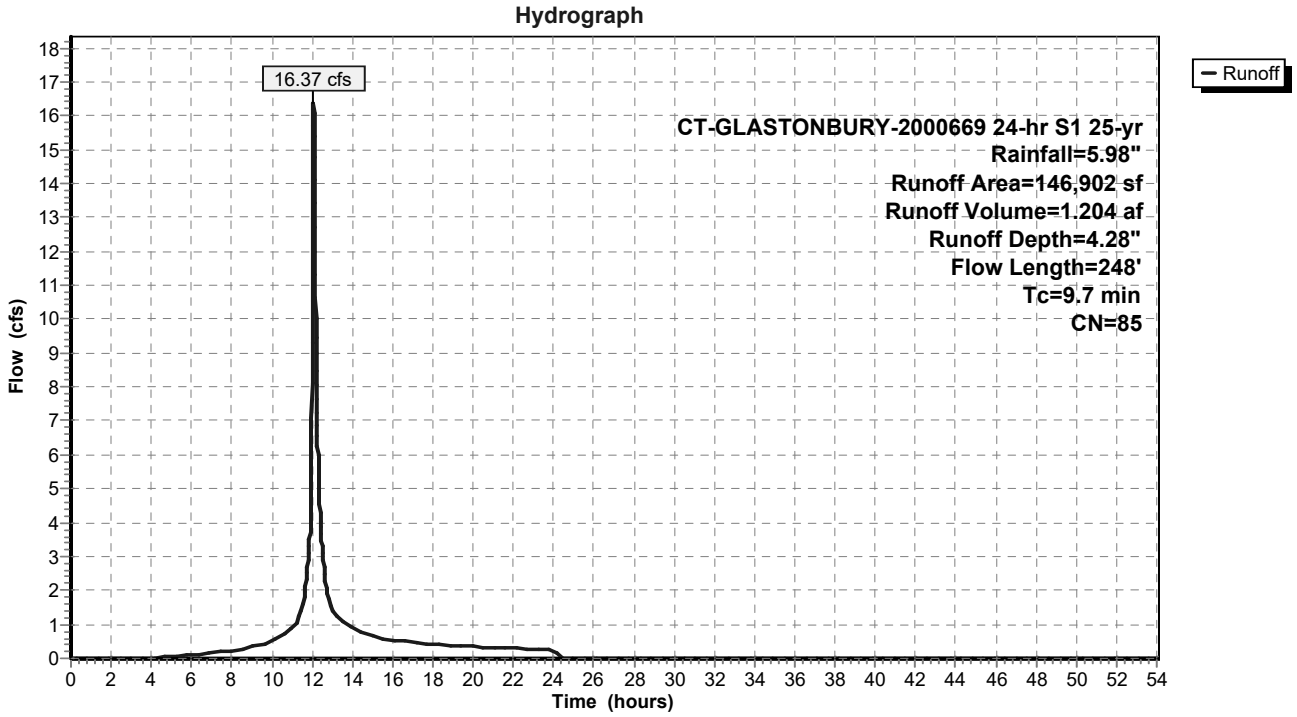
Runoff = 16.37 cfs @ 12.08 hrs, Volume= 1.204 af, Depth= 4.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 25-yr Rainfall=5.98"

Area (sf)	CN	Description
10,998	98	Paved parking, HSG A
7,473	49	50-75% Grass cover, Fair, HSG A
0	36	Woods, Fair, HSG A
72,861	98	Paved parking, HSG B
55,570	69	50-75% Grass cover, Fair, HSG B
0	60	Woods, Fair, HSG B
146,902	85	Weighted Average
63,043		42.92% Pervious Area
83,859		57.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	100	0.0260	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.09"
0.4	71	0.0408	3.03		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	13	0.0385	3.98		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	64	0.0125	6.38	7.82	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
9.7	248	Total			

Subcatchment PDA-11: Area to CBs SE of Site



Summary for Subcatchment PDA-12: Area to SSDS #1

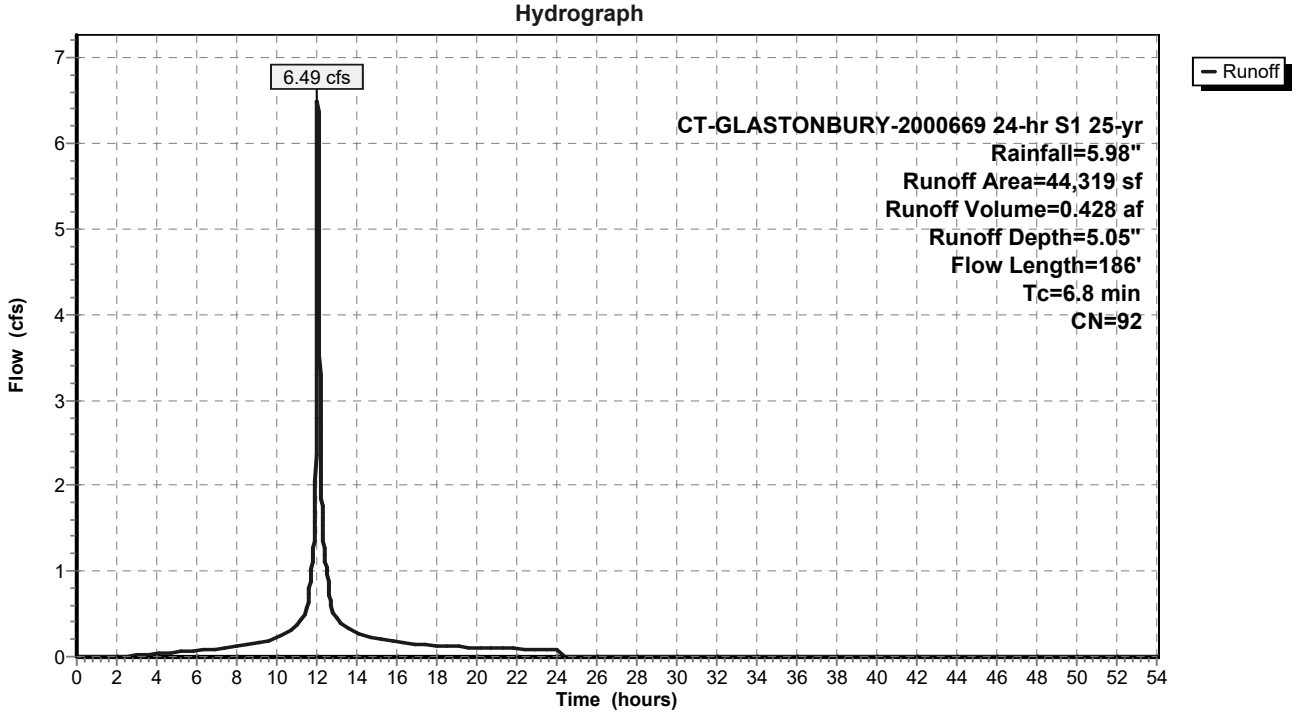
Runoff = 6.49 cfs @ 12.04 hrs, Volume= 0.428 af, Depth= 5.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 25-yr Rainfall=5.98"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
0	49	50-75% Grass cover, Fair, HSG A
0	36	Woods, Fair, HSG A
35,349	98	Paved parking, HSG B
8,970	69	50-75% Grass cover, Fair, HSG B
0	60	Woods, Fair, HSG B
44,319	92	Weighted Average
8,970		20.24% Pervious Area
35,349		79.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	77	0.0357	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.09"
0.4	109	0.0415	4.14		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.8	186	Total			

Subcatchment PDA-12: Area to SSDS #1



Summary for Subcatchment PDA-21: Area to CBs SW of Site

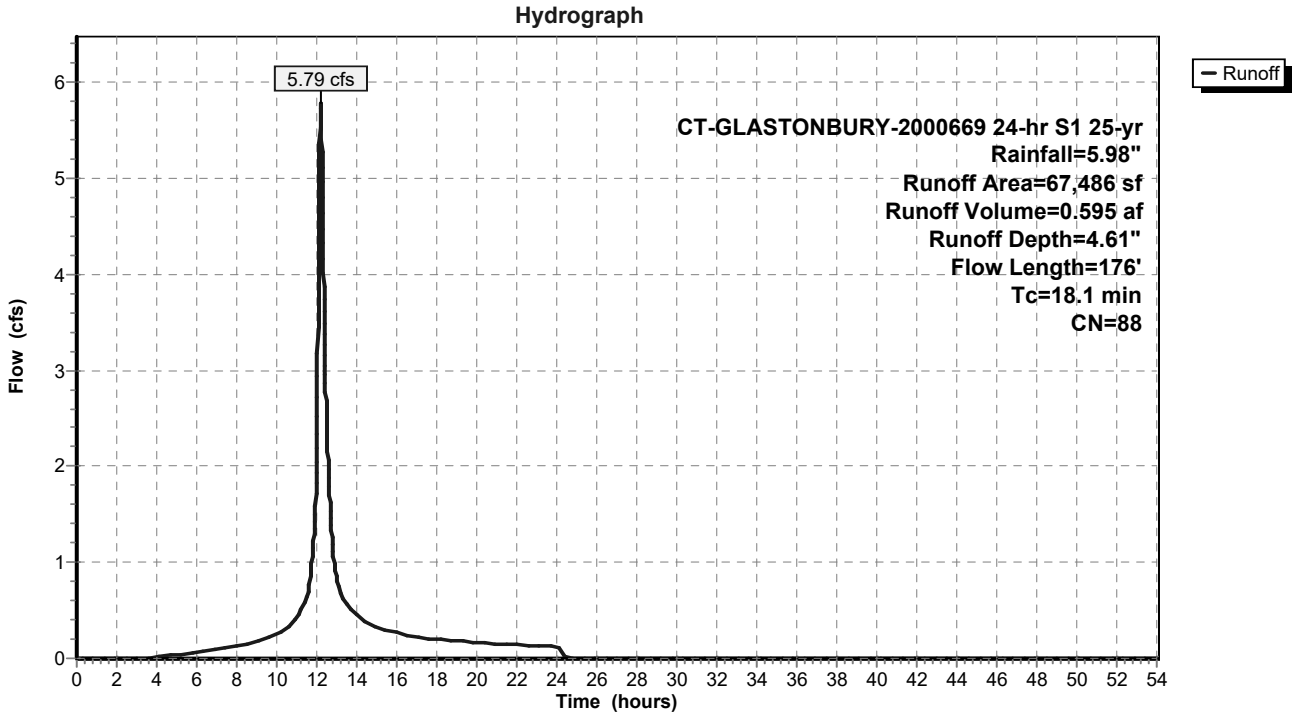
Runoff = 5.79 cfs @ 12.19 hrs, Volume= 0.595 af, Depth= 4.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 25-yr Rainfall=5.98"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
0	49	50-75% Grass cover, Fair, HSG A
0	36	Woods, Fair, HSG A
45,126	98	Paved parking, HSG B
22,360	69	50-75% Grass cover, Fair, HSG B
0	60	Woods, Fair, HSG B
67,486	88	Weighted Average
22,360		33.13% Pervious Area
45,126		66.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.4	100	0.0050	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.09"
0.4	26	0.0050	1.06		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.3	50	0.0160	2.57		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
18.1	176	Total			

Subcatchment PDA-21: Area to CBs SW of Site



Summary for Subcatchment PDA-22: Area to SSDS #2

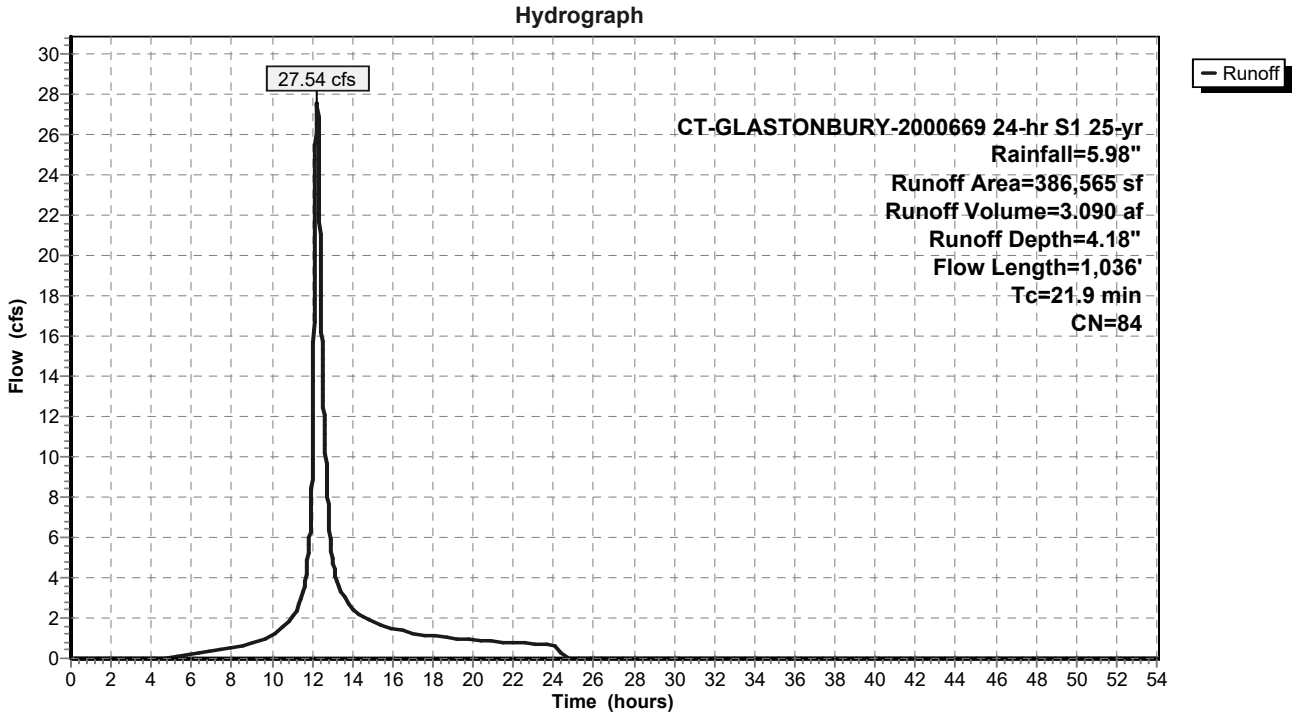
Runoff = 27.54 cfs @ 12.24 hrs, Volume= 3.090 af, Depth= 4.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 25-yr Rainfall=5.98"

Area (sf)	CN	Description
4,939	98	Paved parking, HSG A
20,953	49	50-75% Grass cover, Fair, HSG A
58,835	36	Woods, Fair, HSG A
273,153	98	Paved parking, HSG B
28,498	69	50-75% Grass cover, Fair, HSG B
187	60	Woods, Fair, HSG B
386,565	84	Weighted Average
108,473		28.06% Pervious Area
278,092		71.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	100	0.0300	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.09"
0.5	74	0.2894	2.69		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	39	0.0183	2.03		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.1	180	0.0183	2.75		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	643	0.0100	7.80	24.51	**Pipe Channel, RCP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Concrete pipe, finished
21.9	1,036	Total			

Subcatchment PDA-22: Area to SSDS #2



Summary for Subcatchment PDA-31: Area to CBs W of Site

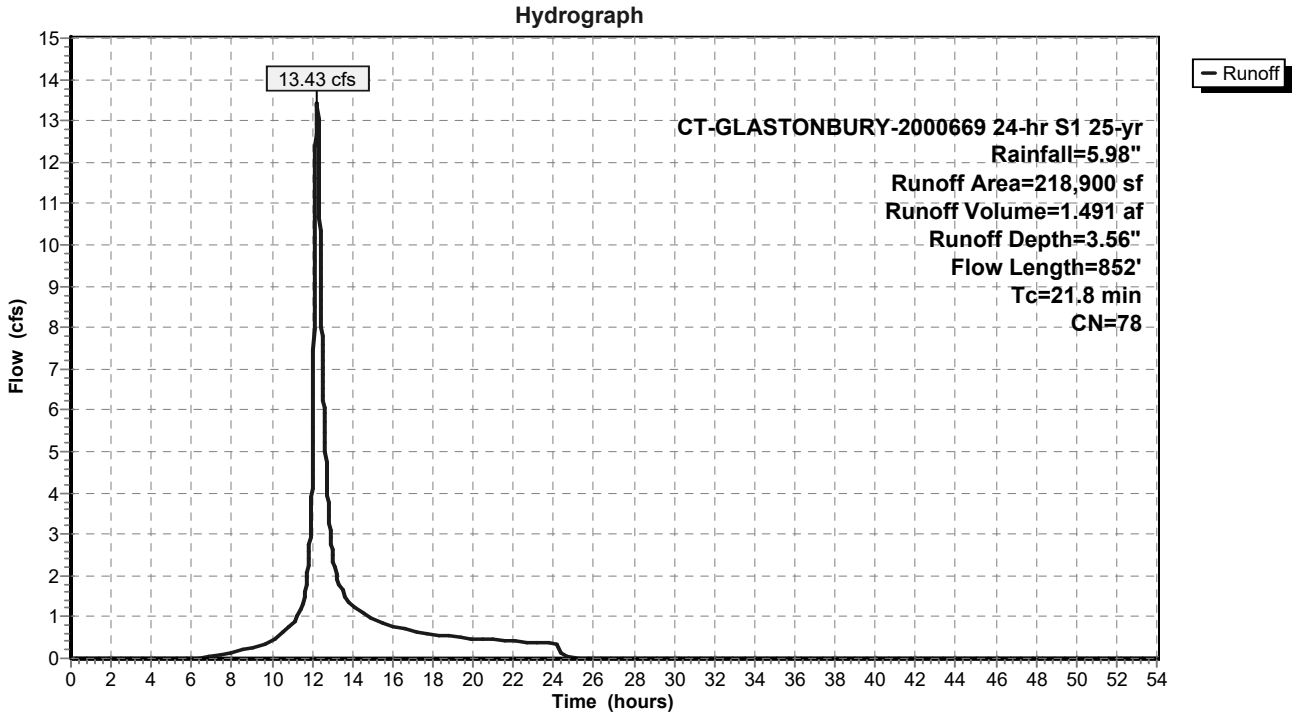
Runoff = 13.43 cfs @ 12.24 hrs, Volume= 1.491 af, Depth= 3.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 25-yr Rainfall=5.98"

Area (sf)	CN	Description
15,956	98	Paved parking, HSG A
16,147	49	50-75% Grass cover, Fair, HSG A
21,342	36	Woods, Fair, HSG A
90,124	98	Paved parking, HSG B
72,786	69	50-75% Grass cover, Fair, HSG B
2,545	60	Woods, Fair, HSG B
218,900	78	Weighted Average
112,820		51.54% Pervious Area
106,080		48.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.3	90	0.0222	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.09"
0.5	85	0.0353	2.82		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
2.0	677	0.0100	5.70	7.00	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
21.8	852	Total			

Subcatchment PDA-31: Area to CBs W of Site



Summary for Subcatchment PDA-41: Area Flowing Offsite to the North

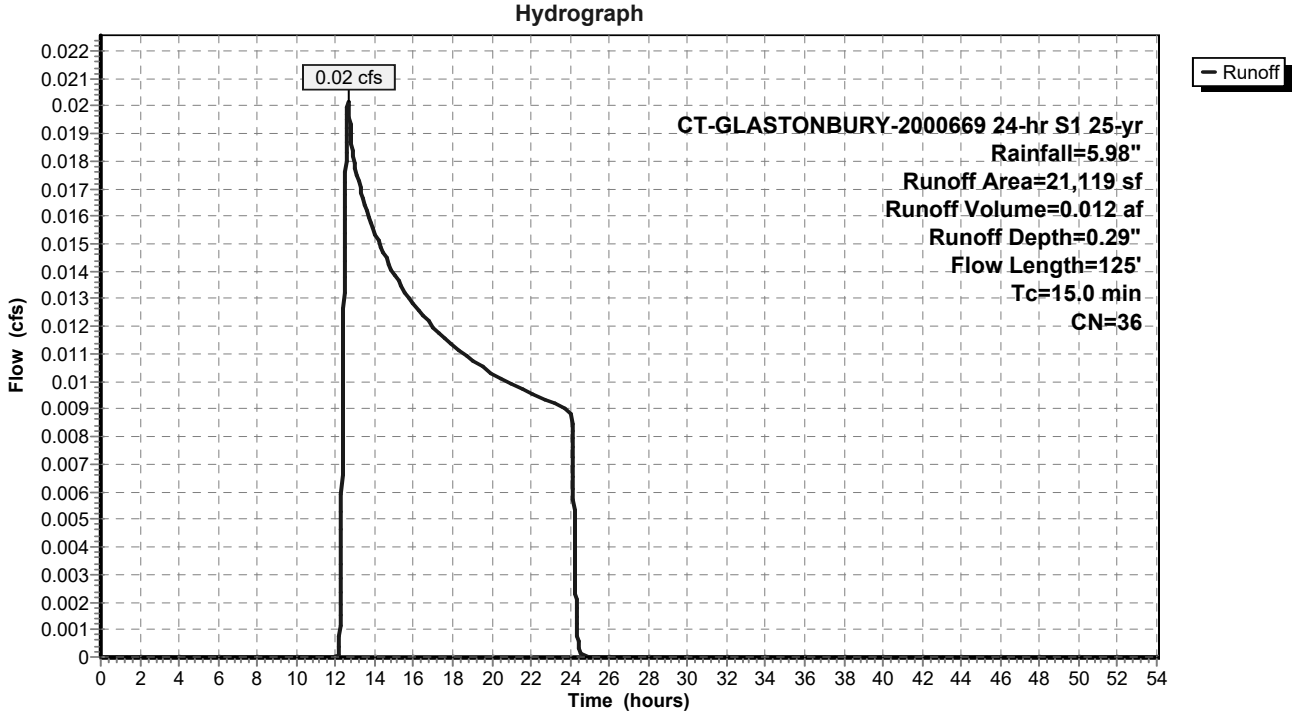
Runoff = 0.02 cfs @ 12.64 hrs, Volume= 0.012 af, Depth= 0.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 25-yr Rainfall=5.98"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
0	49	50-75% Grass cover, Fair, HSG A
21,040	36	Woods, Fair, HSG A
0	98	Paved parking, HSG B
0	69	50-75% Grass cover, Fair, HSG B
79	60	Woods, Fair, HSG B
21,119	36	Weighted Average
21,119		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	30	0.0333	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.09"
8.0	70	0.1214	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.09"
0.2	25	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.0	125	Total			

Subcatchment PDA-41: Area Flowing Offsite to the North

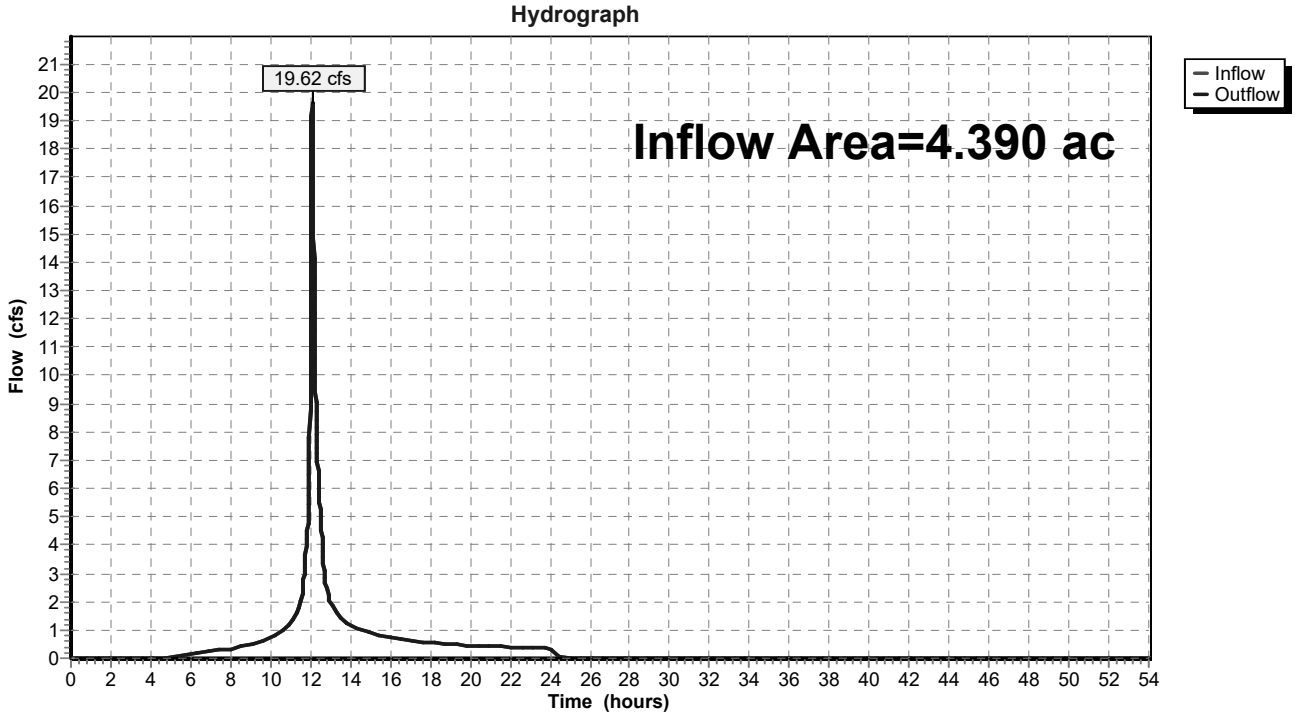


Summary for Reach DP-1: DP-1

Inflow Area = 4.390 ac, 62.34% Impervious, Inflow Depth = 4.44" for 25-yr event
Inflow = 19.62 cfs @ 12.09 hrs, Volume= 1.625 af
Outflow = 19.62 cfs @ 12.09 hrs, Volume= 1.625 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Reach DP-1: DP-1

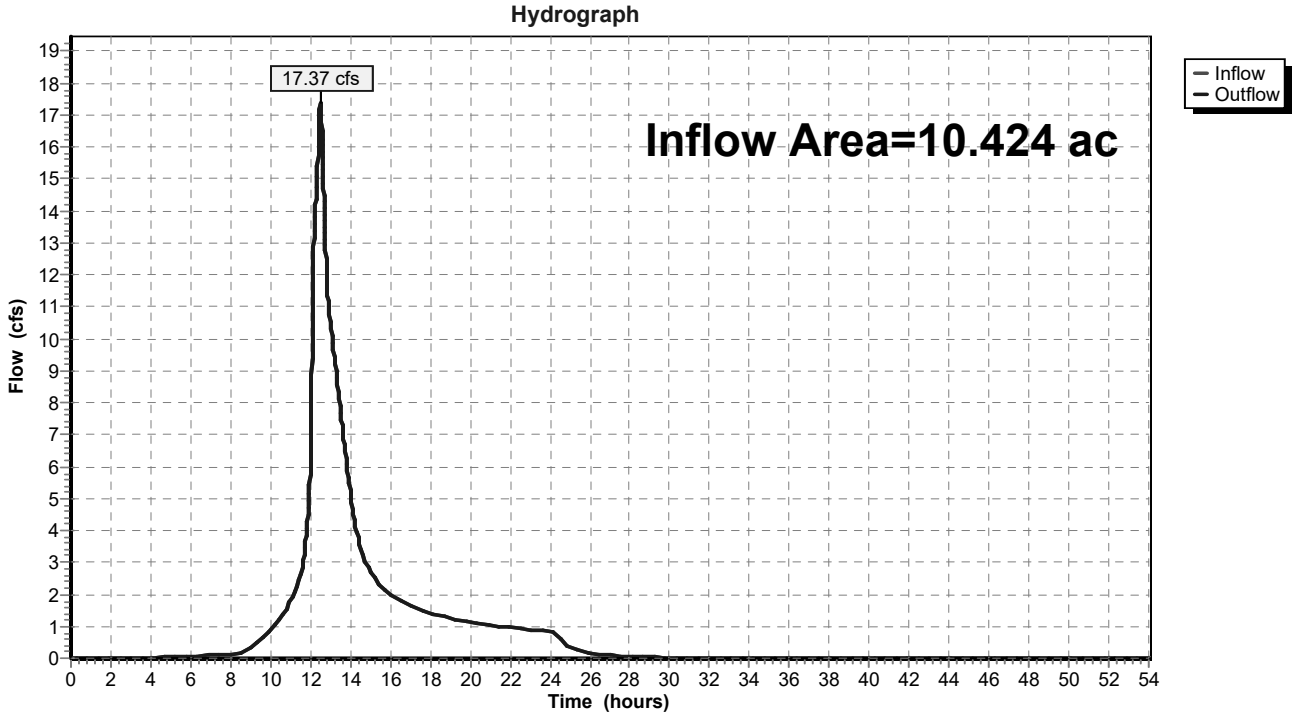


Summary for Reach DP-2: DP-2

Inflow Area = 10.424 ac, 71.19% Impervious, Inflow Depth = 4.13" for 25-yr event
Inflow = 17.37 cfs @ 12.48 hrs, Volume= 3.591 af
Outflow = 17.37 cfs @ 12.48 hrs, Volume= 3.591 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Reach DP-2: DP-2

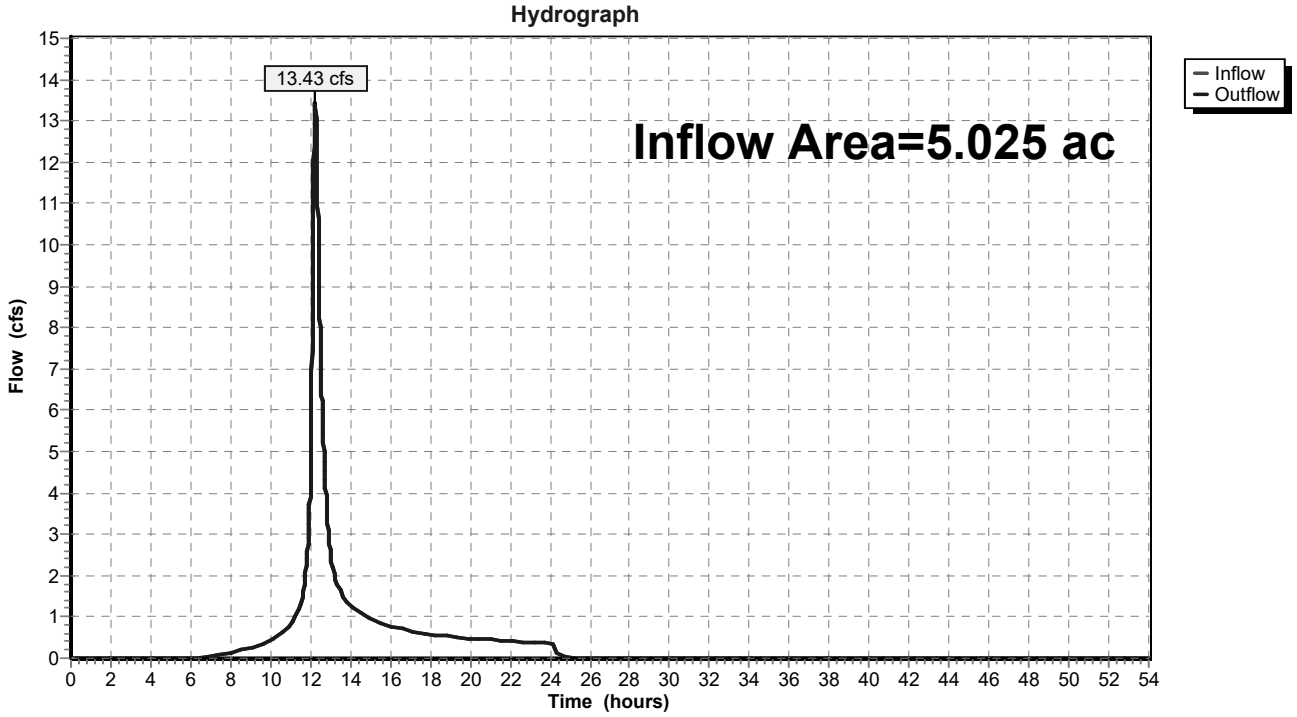


Summary for Reach DP-3: DP-3

Inflow Area = 5.025 ac, 48.46% Impervious, Inflow Depth = 3.56" for 25-yr event
Inflow = 13.43 cfs @ 12.24 hrs, Volume= 1.491 af
Outflow = 13.43 cfs @ 12.24 hrs, Volume= 1.491 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Reach DP-3: DP-3

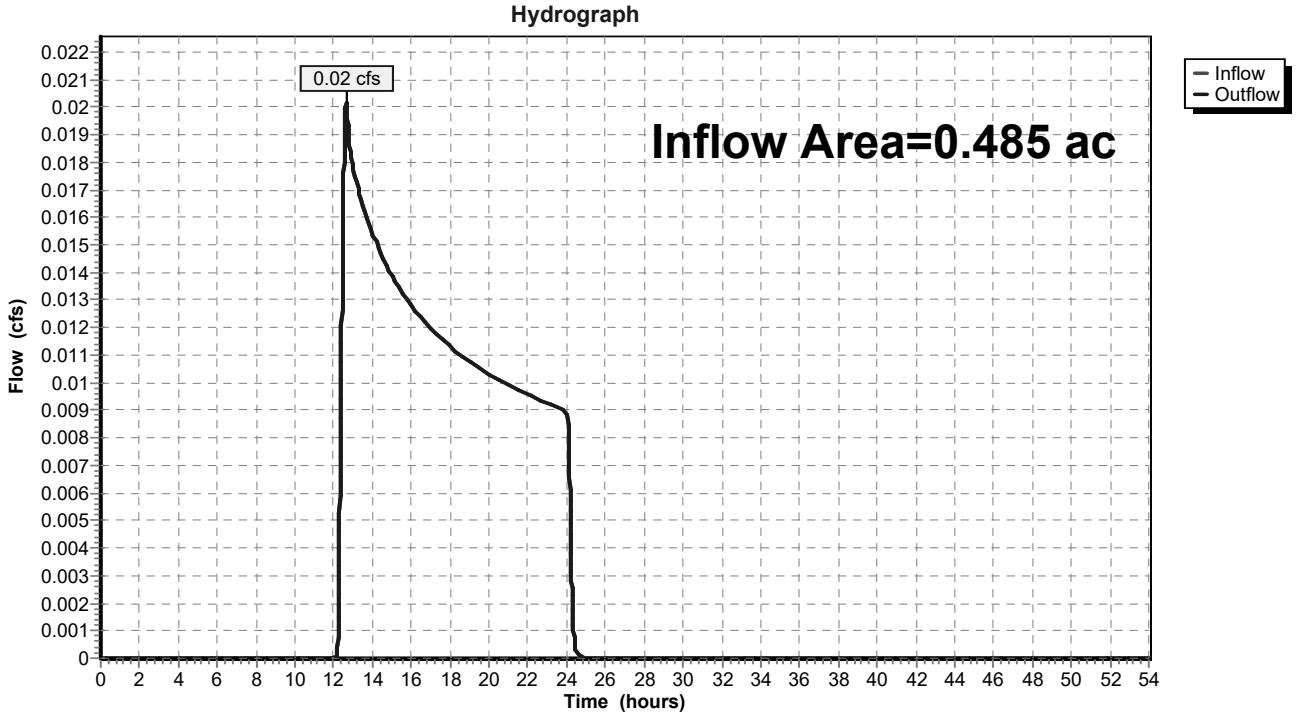


Summary for Reach DP-4: DP-4

Inflow Area = 0.485 ac, 0.00% Impervious, Inflow Depth = 0.29" for 25-yr event
Inflow = 0.02 cfs @ 12.64 hrs, Volume= 0.012 af
Outflow = 0.02 cfs @ 12.64 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Reach DP-4: DP-4



Summary for Pond SSDS #1: SSDS #1

Inflow Area = 1.017 ac, 79.76% Impervious, Inflow Depth = 5.05" for 25-yr event
Inflow = 6.49 cfs @ 12.04 hrs, Volume= 0.428 af
Outflow = 3.73 cfs @ 12.13 hrs, Volume= 0.421 af, Atten= 43%, Lag= 5.2 min
Primary = 3.73 cfs @ 12.13 hrs, Volume= 0.421 af

Routing by Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
Peak Elev= 71.87' @ 12.13 hrs Surf.Area= 1,530 sf Storage= 2,626 cf

Plug-Flow detention time= 37.1 min calculated for 0.421 af (98% of inflow)
Center-of-Mass det. time= 26.7 min (811.5 - 784.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	69.30'	1,406 cf	**25.25'W x 60.58'L x 3.50'H Field A** 5,353 cf Overall - 1,838 cf Embedded = 3,516 cf x 40.0% Voids
#2A	69.80'	1,838 cf	**ADS_StormTech SC-740 +Cap** x 40 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 40 Chambers in 5 Rows
		3,244 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	69.80'	**15.0" Round Culvert** L= 49.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 69.80' / 69.30' S= 0.0102 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.23 sf
#2	Device 1	69.80'	**12.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 1	72.30'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 1	71.50'	**8.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=3.73 cfs @ 12.13 hrs HW=71.87' (Free Discharge)
└**1=Culvert** (Passes 3.73 cfs of 7.10 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 3.25 cfs @ 6.49 fps)
  ├**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Orifice Controls 0.48 cfs @ 1.95 fps)

Pond SSDS #1: SSDS #1 - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

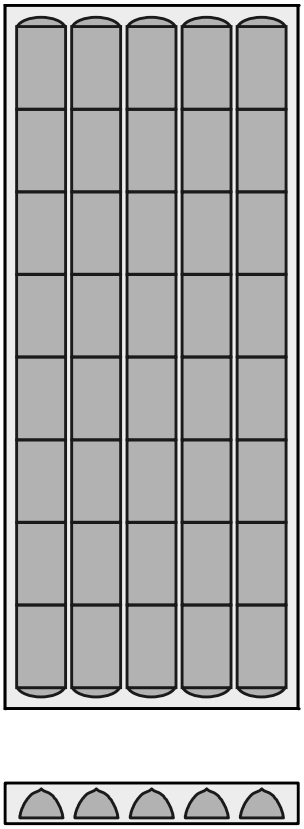
8 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 58.58' Row Length +12.0" End Stone x 2 = 60.58' Base Length
5 Rows x 51.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.25' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

40 Chambers x 45.9 cf = 1,837.6 cf Chamber Storage

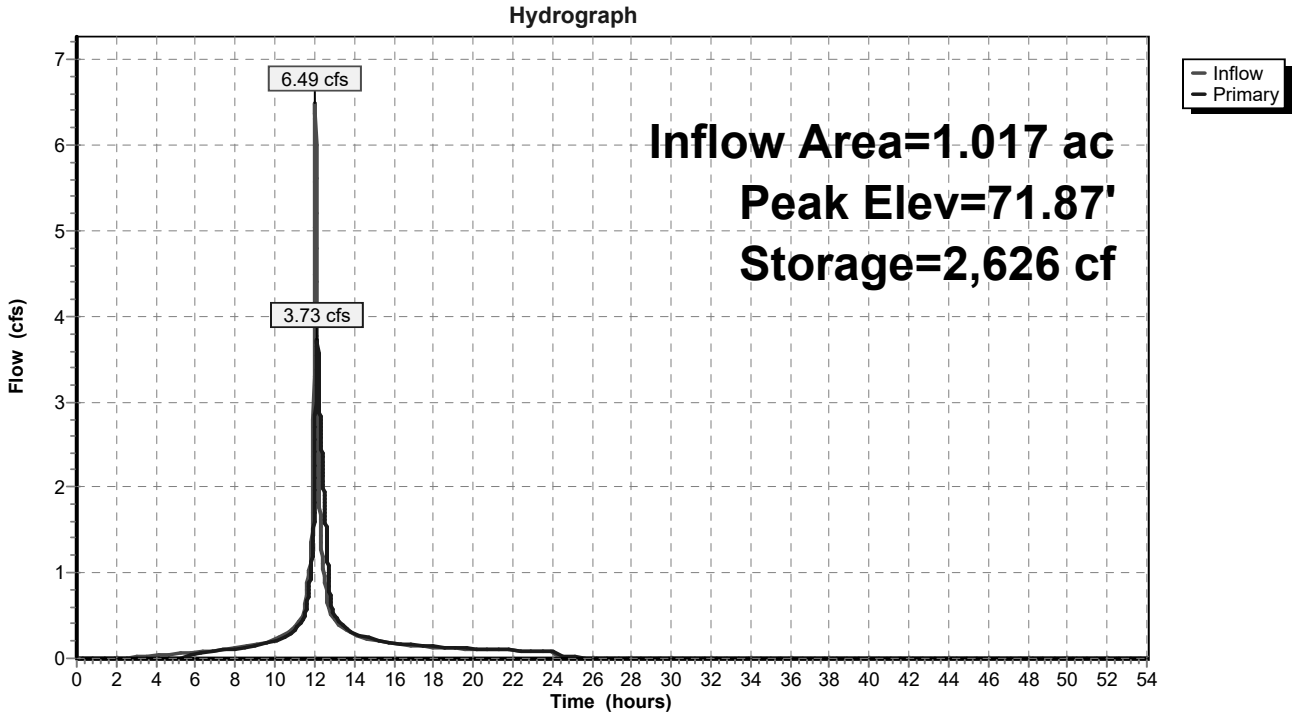
5,353.5 cf Field - 1,837.6 cf Chambers = 3,515.9 cf Stone x 40.0% Voids = 1,406.3 cf Stone Storage

Chamber Storage + Stone Storage = 3,243.9 cf = 0.074 af
Overall Storage Efficiency = 60.6%
Overall System Size = 60.58' x 25.25' x 3.50'

40 Chambers
198.3 cy Field
130.2 cy Stone



Pond SSDS #1: SSDS #1



Summary for Pond SSDS #2: SSDS #2

Inflow Area = 8.874 ac, 71.94% Impervious, Inflow Depth = 4.18" for 25-yr event
Inflow = 27.54 cfs @ 12.24 hrs, Volume= 3.090 af
Outflow = 14.94 cfs @ 12.51 hrs, Volume= 2.996 af, Atten= 46%, Lag= 16.0 min
Primary = 14.94 cfs @ 12.51 hrs, Volume= 2.996 af

Routing by Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
Peak Elev= 67.94' @ 12.51 hrs Surf.Area= 13,575 sf Storage= 35,551 cf

Plug-Flow detention time= 83.0 min calculated for 2.996 af (97% of inflow)
Center-of-Mass det. time= 64.8 min (896.7 - 831.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	64.25'	18,674 cf	**65.75'W x 206.46'L x 5.50'H Field A** 74,661 cf Overall - 27,976 cf Embedded = 46,685 cf x 40.0% Voids
#2A	65.00'	27,976 cf	**ADS_StormTech MC-3500 d +Cap**x 252 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 252 Chambers in 9 Rows Cap Storage= +14.9 cf x 2 x 9 rows = 268.2 cf
		46,650 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	64.50'	**24.0" Round Culvert** L= 80.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 64.50' / 64.10' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf
#2	Device 1	65.00'	**18.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 1	67.50'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=14.94 cfs @ 12.51 hrs HW=67.94' (Free Discharge)
└**1=Culvert** (Passes 14.94 cfs of 22.29 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 11.25 cfs @ 7.50 fps)
  └**3=Sharp-Crested Rectangular Weir**(Weir Controls 3.69 cfs @ 2.16 fps)

Pond SSDS #2: SSDS #2 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= +14.9 cf x 2 x 9 rows = 268.2 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

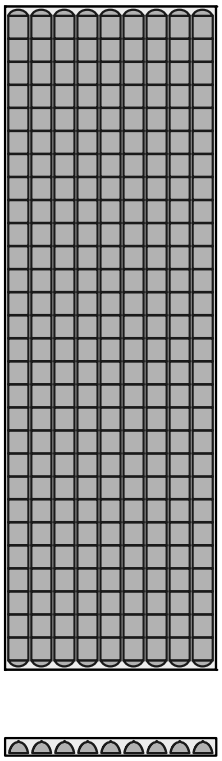
28 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 204.46' Row Length +12.0" End Stone x 2 = 206.46' Base Length
9 Rows x 77.0" Wide + 9.0" Spacing x 8 + 12.0" Side Stone x 2 = 65.75' Base Width
9.0" Base + 45.0" Chamber Height + 12.0" Cover = 5.50' Field Height

252 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 9 Rows = 27,976.1 cf Chamber Storage

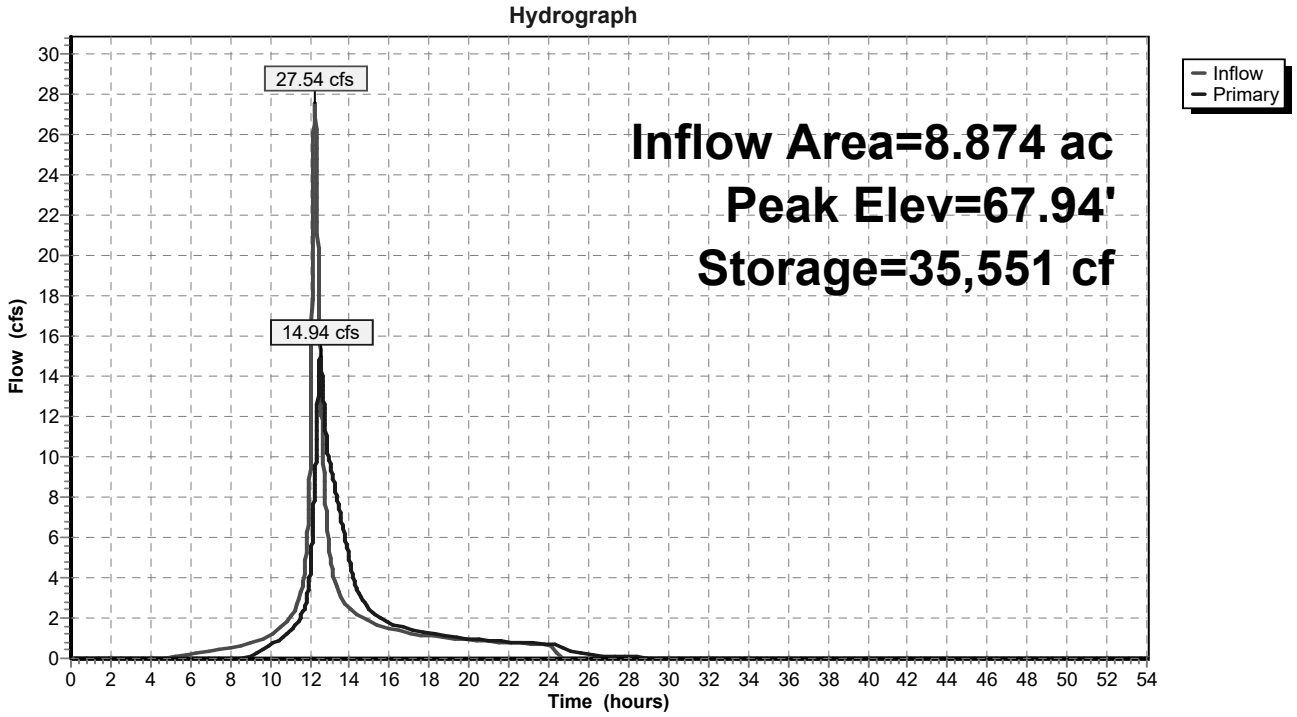
74,661.1 cf Field - 27,976.1 cf Chambers = 46,685.0 cf Stone x 40.0% Voids = 18,674.0 cf Stone Storage

Chamber Storage + Stone Storage = 46,650.1 cf = 1.071 af
Overall Storage Efficiency = 62.5%
Overall System Size = 206.46' x 65.75' x 5.50'

252 Chambers
2,765.2 cy Field
1,729.1 cy Stone



Pond SSDS #2: SSDS #2



Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 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 PDA-11: Area to CBs SE of Runoff Area=146,902 sf 57.08% Impervious Runoff Depth=5.91"
Flow Length=248' Tc=9.7 min CN=85 Runoff=22.16 cfs 1.662 af

Subcatchment PDA-12: Area to SSDS #1 Runoff Area=44,319 sf 79.76% Impervious Runoff Depth=6.74"
Flow Length=186' Tc=6.8 min CN=92 Runoff=8.46 cfs 0.571 af

Subcatchment PDA-21: Area to CBs SW of Runoff Area=67,486 sf 66.87% Impervious Runoff Depth=6.27"
Flow Length=176' Tc=18.1 min CN=88 Runoff=7.70 cfs 0.809 af

Subcatchment PDA-22: Area to SSDS #2 Runoff Area=386,565 sf 71.94% Impervious Runoff Depth=5.80"
Flow Length=1,036' Tc=21.9 min CN=84 Runoff=37.52 cfs 4.288 af

Subcatchment PDA-31: Area to CBs W of Runoff Area=218,900 sf 48.46% Impervious Runoff Depth=5.11"
Flow Length=852' Tc=21.8 min CN=78 Runoff=19.05 cfs 2.138 af

Subcatchment PDA-41: Area Flowing Runoff Area=21,119 sf 0.00% Impervious Runoff Depth=0.78"
Flow Length=125' Tc=15.0 min CN=36 Runoff=0.13 cfs 0.032 af

Reach DP-1: DP-1 Inflow=28.20 cfs 2.226 af
Outflow=28.20 cfs 2.226 af

Reach DP-2: DP-2 Inflow=30.99 cfs 5.003 af
Outflow=30.99 cfs 5.003 af

Reach DP-3: DP-3 Inflow=19.05 cfs 2.138 af
Outflow=19.05 cfs 2.138 af

Reach DP-4: DP-4 Inflow=0.13 cfs 0.032 af
Outflow=0.13 cfs 0.032 af

Pond SSDS #1: SSDS #1 Peak Elev=72.50' Storage=3,063 cf Inflow=8.46 cfs 0.571 af
Outflow=6.36 cfs 0.564 af

Pond SSDS #2: SSDS #2 Peak Elev=68.69' Storage=40,862 cf Inflow=37.52 cfs 4.288 af
Outflow=26.44 cfs 4.194 af

Total Runoff Area = 20.323 ac Runoff Volume = 9.499 af Average Runoff Depth = 5.61"
38.04% Pervious = 7.732 ac 61.96% Impervious = 12.592 ac

Summary for Subcatchment PDA-11: Area to CBs SE of Site

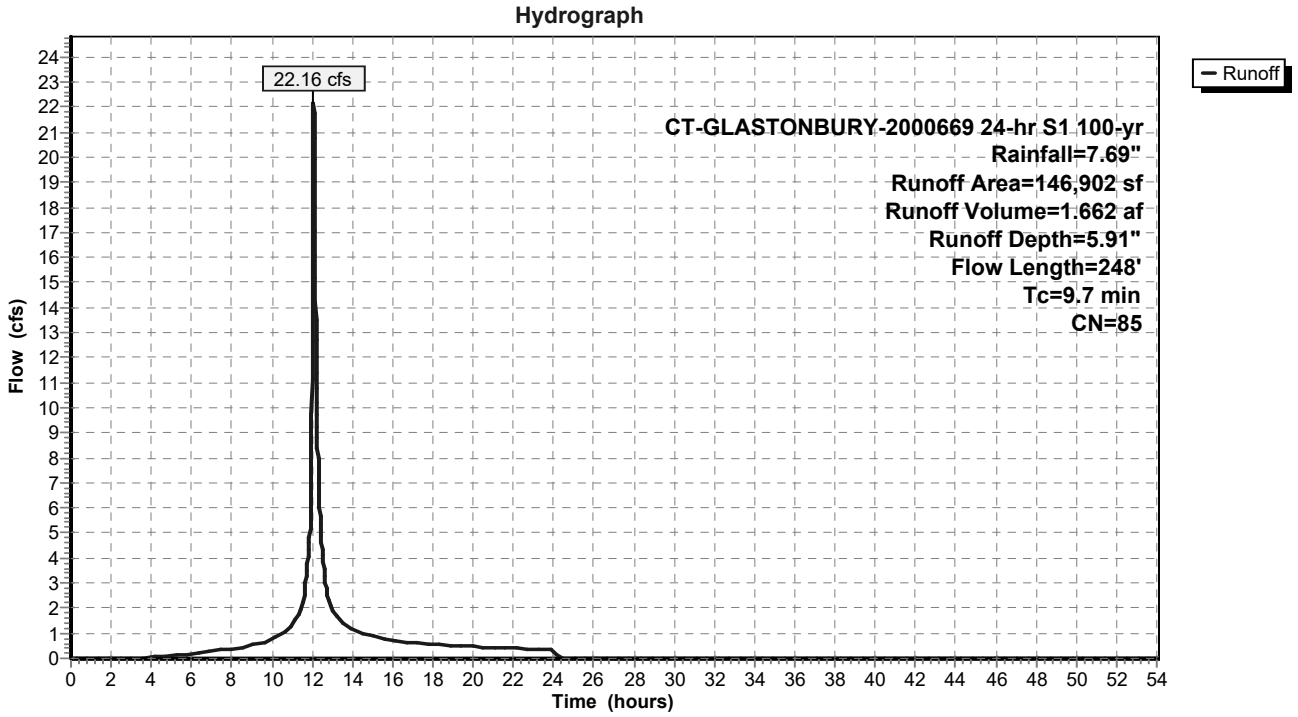
Runoff = 22.16 cfs @ 12.08 hrs, Volume= 1.662 af, Depth= 5.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 100-yr Rainfall=7.69"

Area (sf)	CN	Description
10,998	98	Paved parking, HSG A
7,473	49	50-75% Grass cover, Fair, HSG A
0	36	Woods, Fair, HSG A
72,861	98	Paved parking, HSG B
55,570	69	50-75% Grass cover, Fair, HSG B
0	60	Woods, Fair, HSG B
146,902	85	Weighted Average
63,043		42.92% Pervious Area
83,859		57.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	100	0.0260	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.09"
0.4	71	0.0408	3.03		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	13	0.0385	3.98		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	64	0.0125	6.38	7.82	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
9.7	248	Total			

Subcatchment PDA-11: Area to CBs SE of Site



Summary for Subcatchment PDA-12: Area to SSDS #1

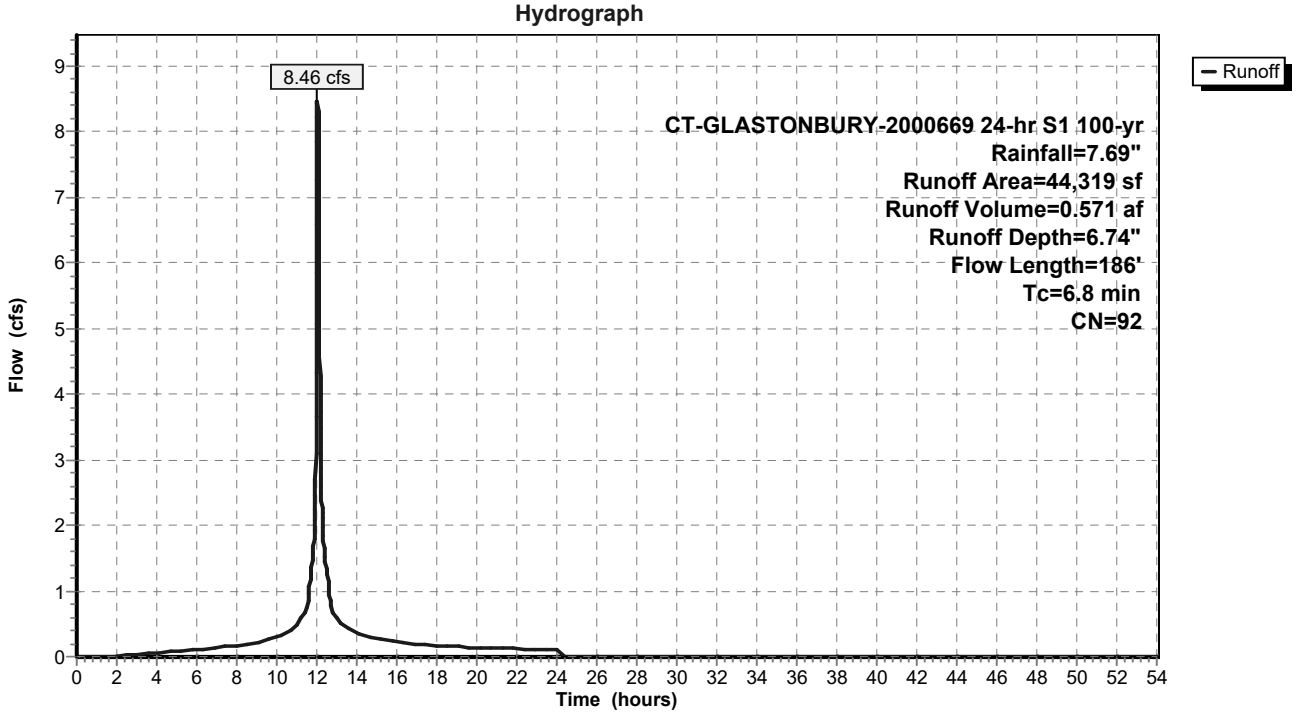
Runoff = 8.46 cfs @ 12.04 hrs, Volume= 0.571 af, Depth= 6.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 100-yr Rainfall=7.69"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
0	49	50-75% Grass cover, Fair, HSG A
0	36	Woods, Fair, HSG A
35,349	98	Paved parking, HSG B
8,970	69	50-75% Grass cover, Fair, HSG B
0	60	Woods, Fair, HSG B
44,319	92	Weighted Average
8,970		20.24% Pervious Area
35,349		79.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	77	0.0357	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.09"
0.4	109	0.0415	4.14		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.8	186	Total			

Subcatchment PDA-12: Area to SSDS #1



Summary for Subcatchment PDA-21: Area to CBs SW of Site

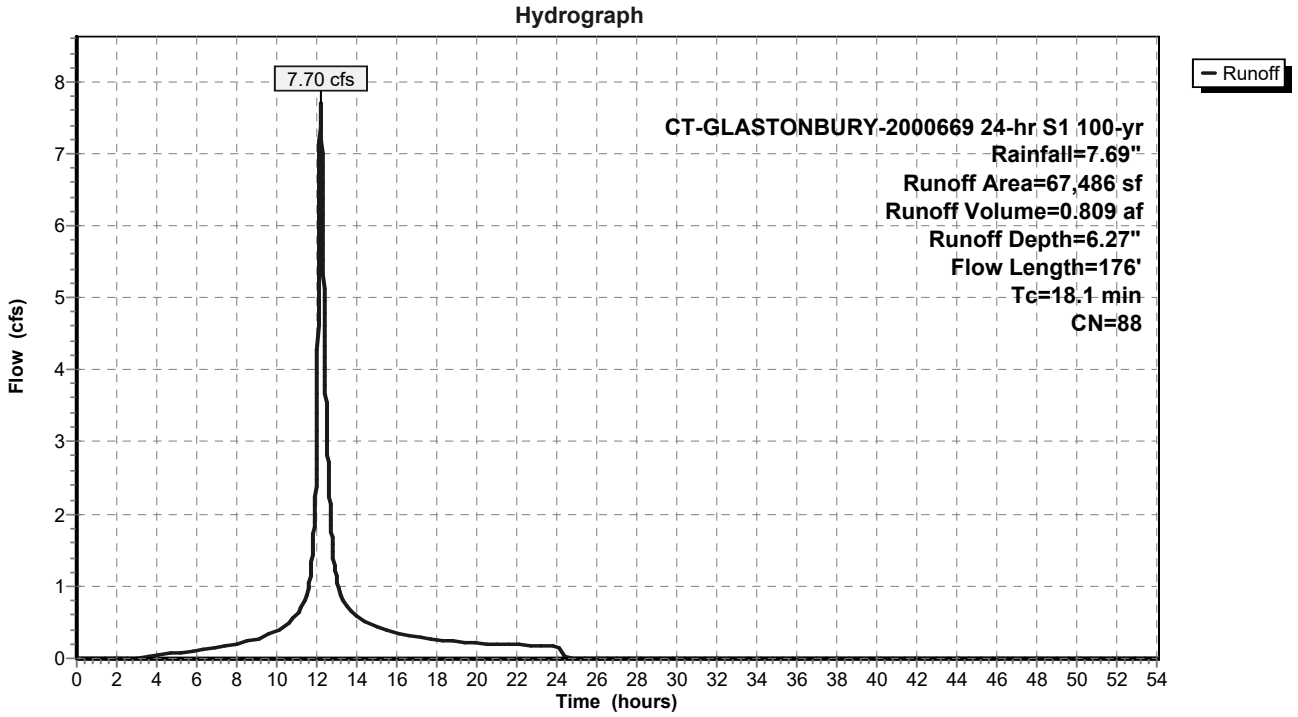
Runoff = 7.70 cfs @ 12.19 hrs, Volume= 0.809 af, Depth= 6.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 100-yr Rainfall=7.69"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
0	49	50-75% Grass cover, Fair, HSG A
0	36	Woods, Fair, HSG A
45,126	98	Paved parking, HSG B
22,360	69	50-75% Grass cover, Fair, HSG B
0	60	Woods, Fair, HSG B
67,486	88	Weighted Average
22,360		33.13% Pervious Area
45,126		66.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.4	100	0.0050	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.09"
0.4	26	0.0050	1.06		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.3	50	0.0160	2.57		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
18.1	176	Total			

Subcatchment PDA-21: Area to CBs SW of Site



Summary for Subcatchment PDA-22: Area to SSDS #2

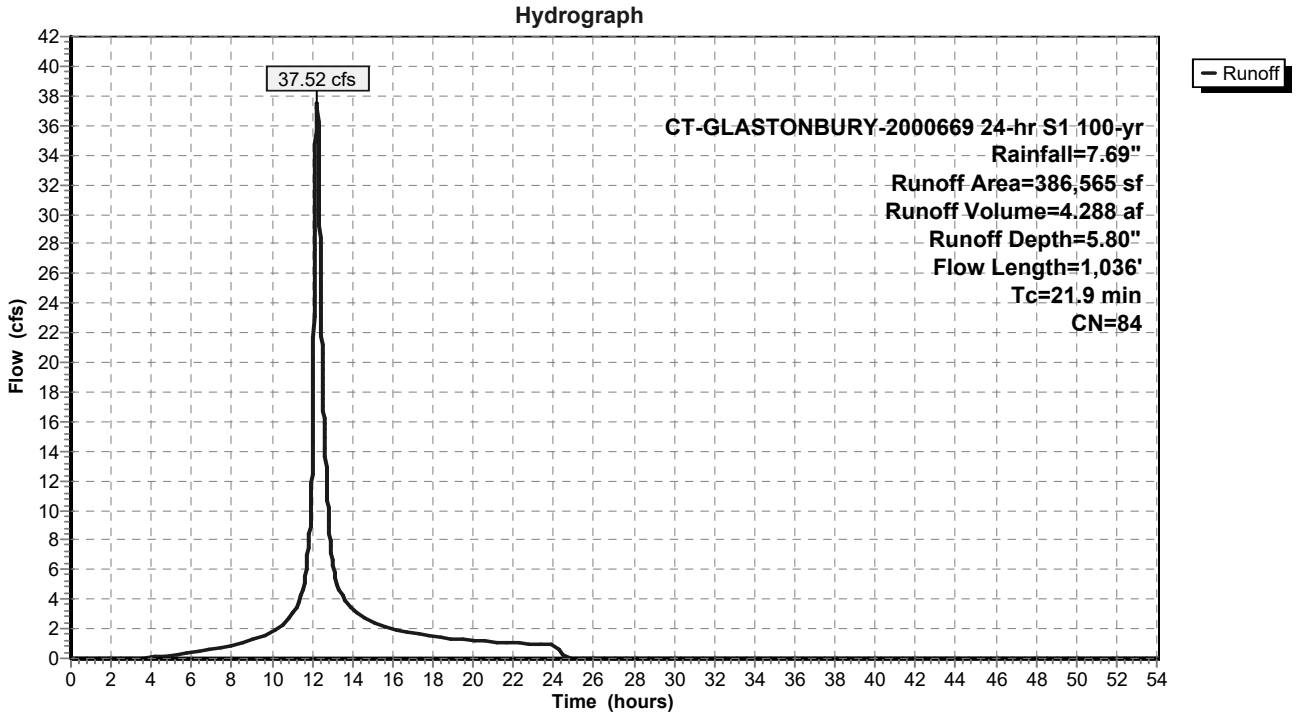
Runoff = 37.52 cfs @ 12.24 hrs, Volume= 4.288 af, Depth= 5.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 100-yr Rainfall=7.69"

Area (sf)	CN	Description
4,939	98	Paved parking, HSG A
20,953	49	50-75% Grass cover, Fair, HSG A
58,835	36	Woods, Fair, HSG A
273,153	98	Paved parking, HSG B
28,498	69	50-75% Grass cover, Fair, HSG B
187	60	Woods, Fair, HSG B
386,565	84	Weighted Average
108,473		28.06% Pervious Area
278,092		71.94% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	100	0.0300	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.09"
0.5	74	0.2894	2.69		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	39	0.0183	2.03		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.1	180	0.0183	2.75		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	643	0.0100	7.80	24.51	**Pipe Channel, RCP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Concrete pipe, finished
21.9	1,036	Total			

Subcatchment PDA-22: Area to SSDS #2



Summary for Subcatchment PDA-31: Area to CBs W of Site

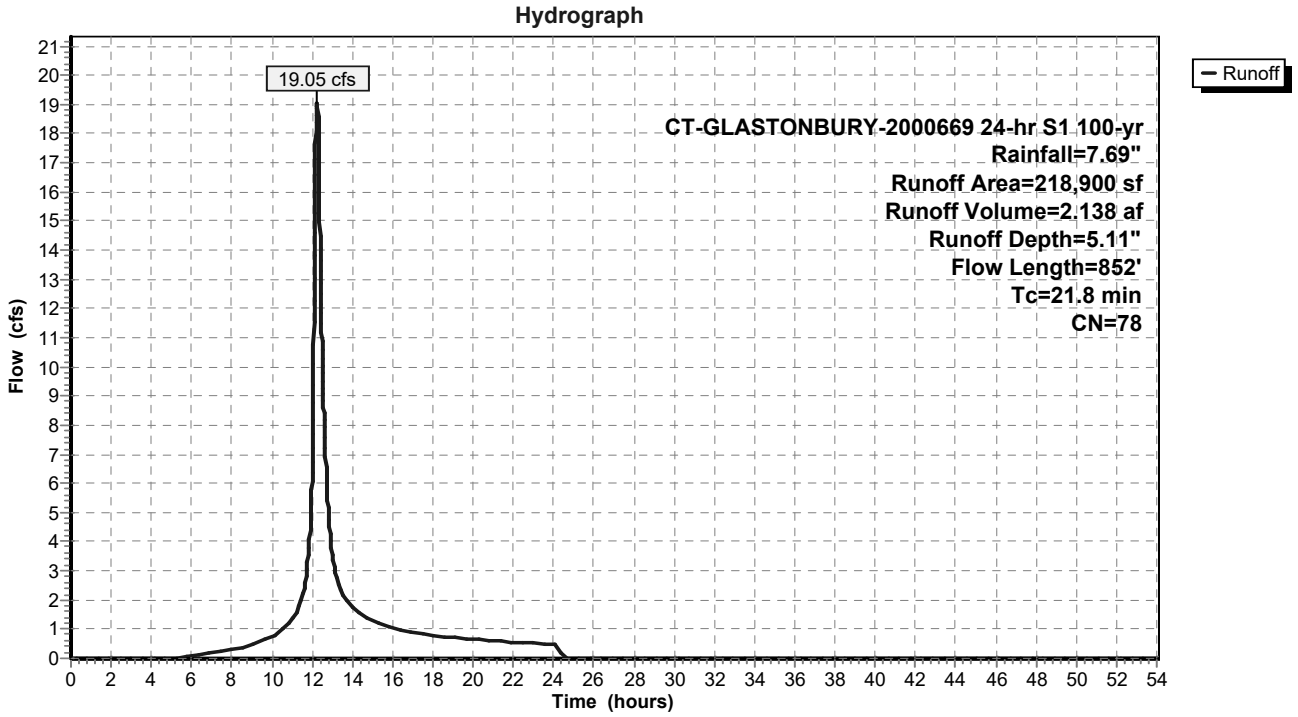
Runoff = 19.05 cfs @ 12.24 hrs, Volume= 2.138 af, Depth= 5.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 100-yr Rainfall=7.69"

Area (sf)	CN	Description
15,956	98	Paved parking, HSG A
16,147	49	50-75% Grass cover, Fair, HSG A
21,342	36	Woods, Fair, HSG A
90,124	98	Paved parking, HSG B
72,786	69	50-75% Grass cover, Fair, HSG B
2,545	60	Woods, Fair, HSG B
218,900	78	Weighted Average
112,820		51.54% Pervious Area
106,080		48.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.3	90	0.0222	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.09"
0.5	85	0.0353	2.82		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
2.0	677	0.0100	5.70	7.00	**Pipe Channel,** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
21.8	852	Total			

Subcatchment PDA-31: Area to CBs W of Site



Summary for Subcatchment PDA-41: Area Flowing Offsite to the North

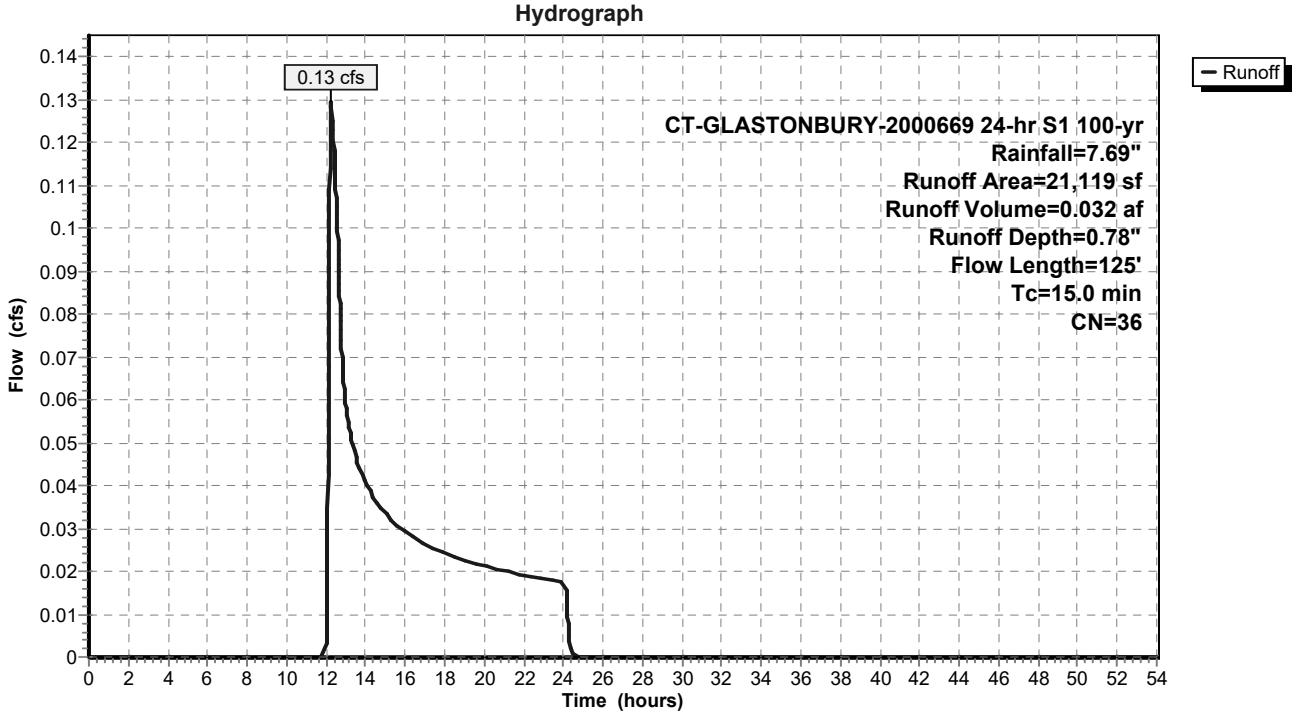
Runoff = 0.13 cfs @ 12.25 hrs, Volume= 0.032 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
CT-GLASTONBURY-2000669 24-hr S1 100-yr Rainfall=7.69"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
0	49	50-75% Grass cover, Fair, HSG A
21,040	36	Woods, Fair, HSG A
0	98	Paved parking, HSG B
0	69	50-75% Grass cover, Fair, HSG B
79	60	Woods, Fair, HSG B
21,119	36	Weighted Average
21,119		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	30	0.0333	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.09"
8.0	70	0.1214	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.09"
0.2	25	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.0	125	Total			

Subcatchment PDA-41: Area Flowing Offsite to the North

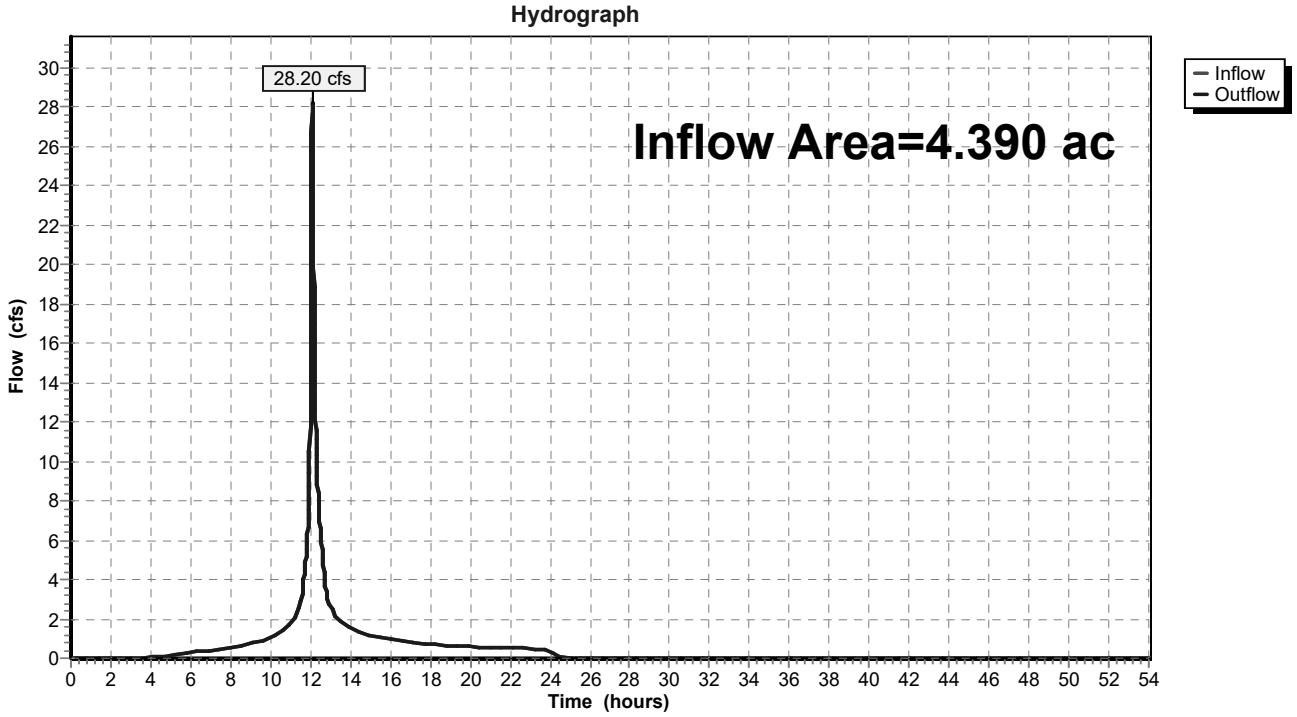


Summary for Reach DP-1: DP-1

Inflow Area = 4.390 ac, 62.34% Impervious, Inflow Depth = 6.09" for 100-yr event
Inflow = 28.20 cfs @ 12.09 hrs, Volume= 2.226 af
Outflow = 28.20 cfs @ 12.09 hrs, Volume= 2.226 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Reach DP-1: DP-1

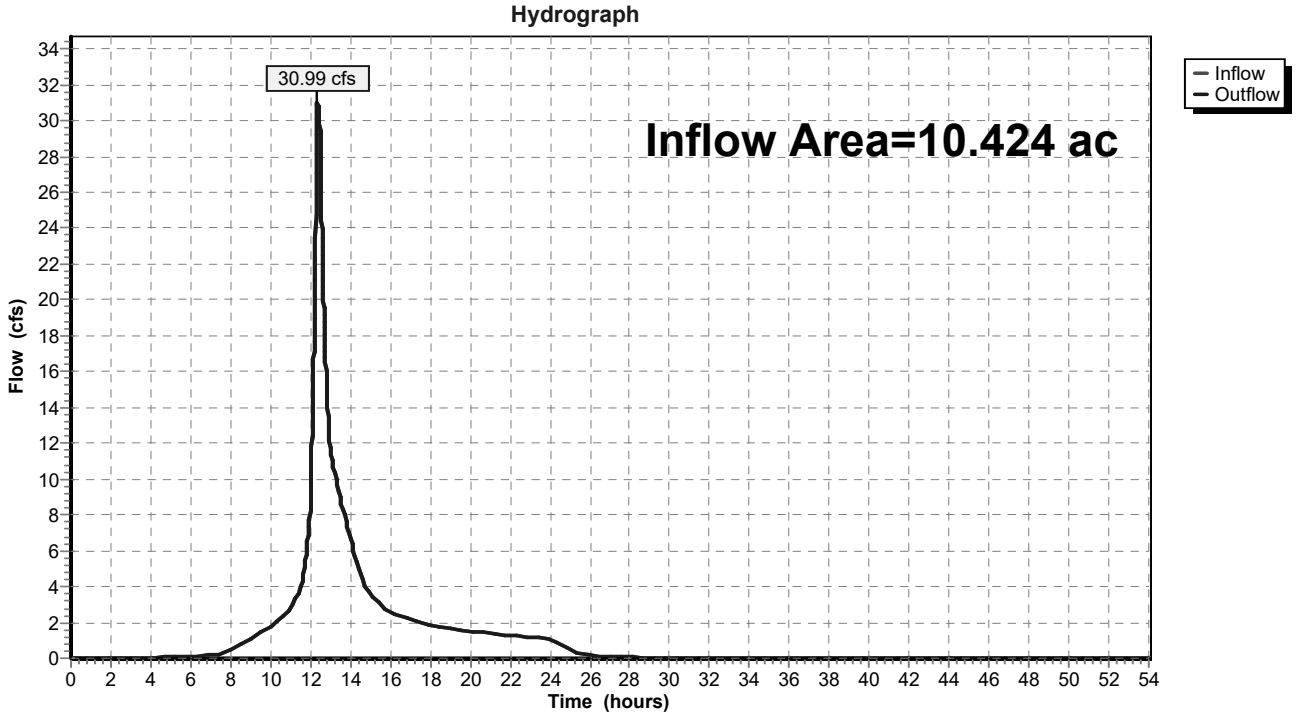


Summary for Reach DP-2: DP-2

Inflow Area = 10.424 ac, 71.19% Impervious, Inflow Depth = 5.76" for 100-yr event
Inflow = 30.99 cfs @ 12.35 hrs, Volume= 5.003 af
Outflow = 30.99 cfs @ 12.35 hrs, Volume= 5.003 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Reach DP-2: DP-2

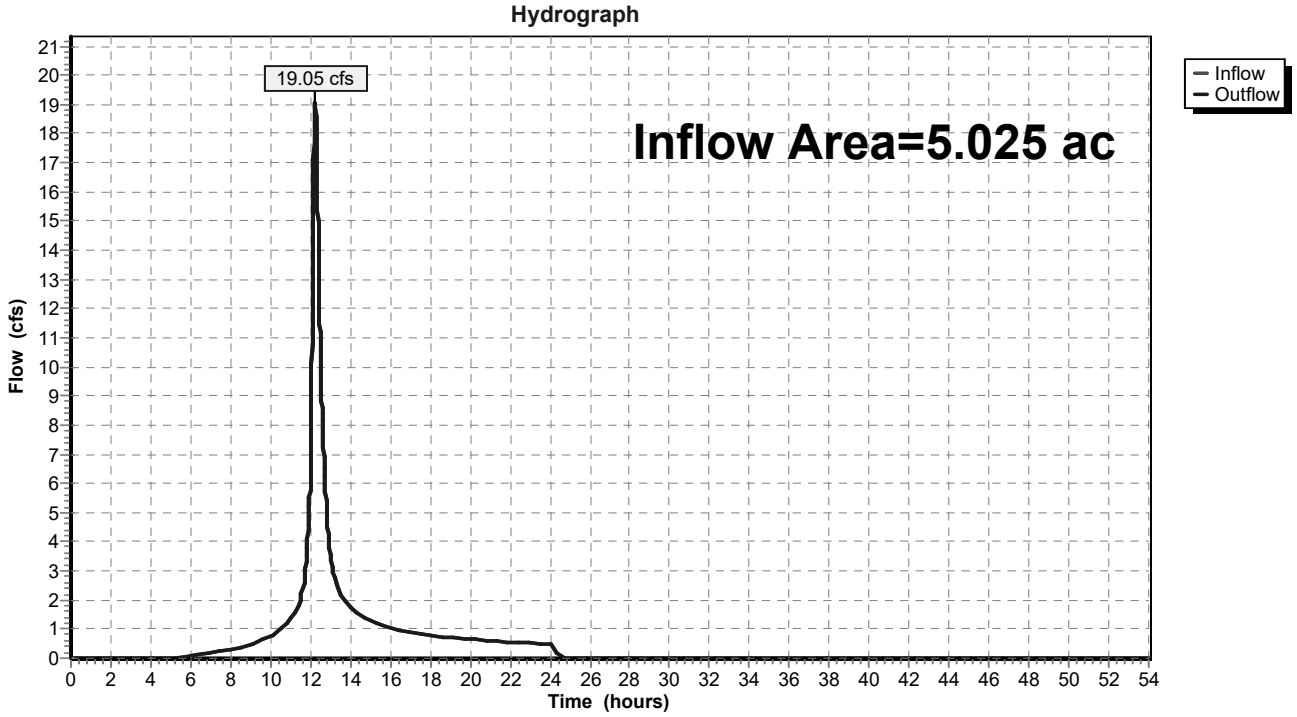


Summary for Reach DP-3: DP-3

Inflow Area = 5.025 ac, 48.46% Impervious, Inflow Depth = 5.11" for 100-yr event
Inflow = 19.05 cfs @ 12.24 hrs, Volume= 2.138 af
Outflow = 19.05 cfs @ 12.24 hrs, Volume= 2.138 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Reach DP-3: DP-3

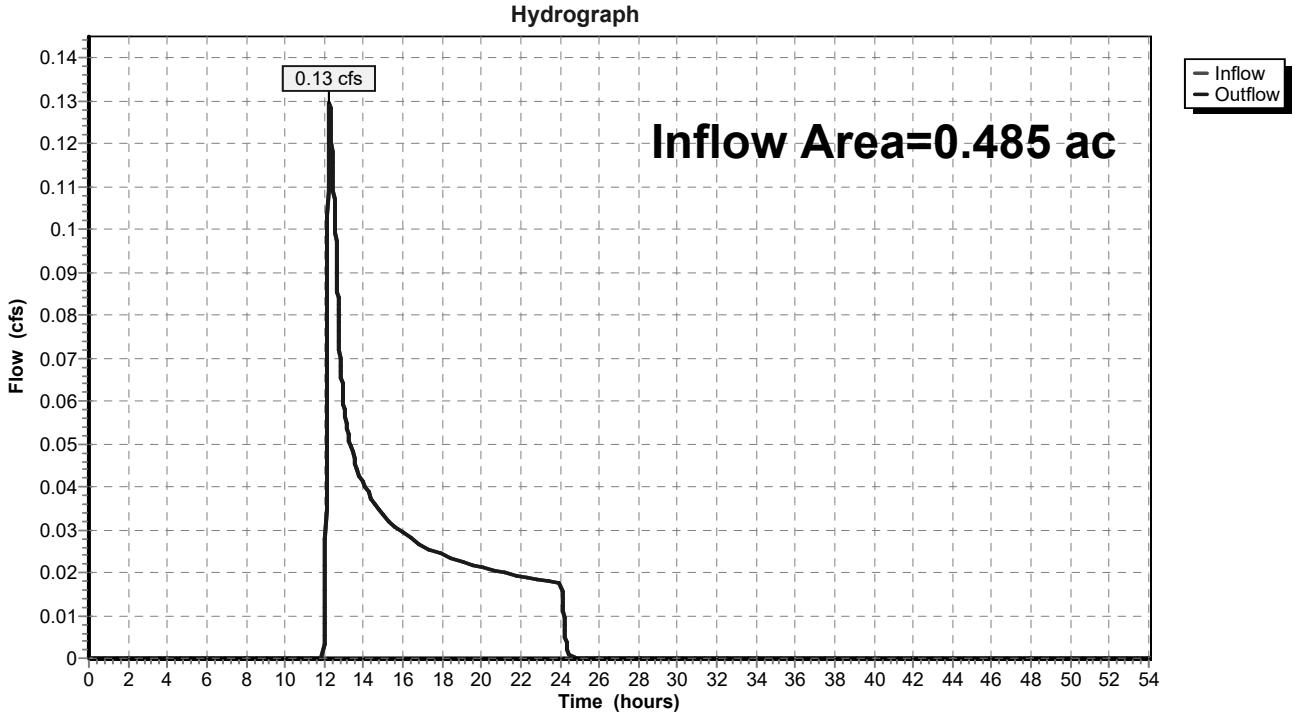


Summary for Reach DP-4: DP-4

Inflow Area = 0.485 ac, 0.00% Impervious, Inflow Depth = 0.78" for 100-yr event
Inflow = 0.13 cfs @ 12.25 hrs, Volume= 0.032 af
Outflow = 0.13 cfs @ 12.25 hrs, Volume= 0.032 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Reach DP-4: DP-4



Summary for Pond SSDS #1: SSDS #1

Inflow Area = 1.017 ac, 79.76% Impervious, Inflow Depth = 6.74" for 100-yr event
Inflow = 8.46 cfs @ 12.04 hrs, Volume= 0.571 af
Outflow = 6.36 cfs @ 12.10 hrs, Volume= 0.564 af, Atten= 25%, Lag= 3.3 min
Primary = 6.36 cfs @ 12.10 hrs, Volume= 0.564 af

Routing by Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
Peak Elev= 72.50' @ 12.10 hrs Surf.Area= 1,530 sf Storage= 3,063 cf

Plug-Flow detention time= 31.2 min calculated for 0.564 af (99% of inflow)
Center-of-Mass det. time= 23.1 min (799.3 - 776.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	69.30'	1,406 cf	**25.25'W x 60.58'L x 3.50'H Field A** 5,353 cf Overall - 1,838 cf Embedded = 3,516 cf x 40.0% Voids
#2A	69.80'	1,838 cf	**ADS_StormTech SC-740 +Cap** x 40 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 40 Chambers in 5 Rows
		3,244 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	69.80'	**15.0" Round Culvert** L= 49.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 69.80' / 69.30' S= 0.0102 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.23 sf
#2	Device 1	69.80'	**12.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 1	72.30'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#4	Device 1	71.50'	**8.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=6.34 cfs @ 12.10 hrs HW=72.50' (Free Discharge)
└**1=Culvert** (Passes 6.34 cfs of 8.52 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 3.77 cfs @ 7.54 fps)
  ├**3=Sharp-Crested Rectangular Weir** (Weir Controls 1.19 cfs @ 1.47 fps)
  └**4=Orifice/Grate** (Orifice Controls 1.39 cfs @ 4.16 fps)

Pond SSDS #1: SSDS #1 - Chamber Wizard Field A

Chamber Model = ADS_StormTechSC-740 +Cap (ADS StormTech®SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

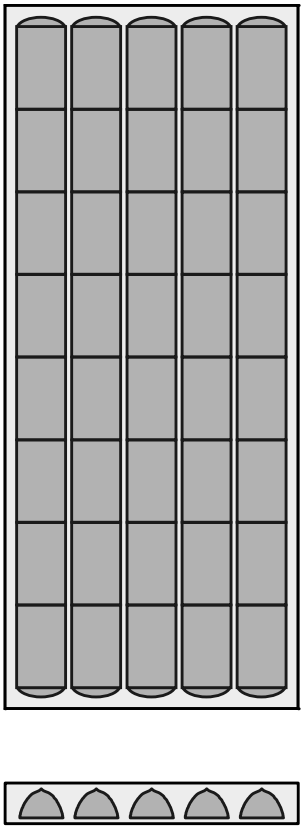
8 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 58.58' Row Length +12.0" End Stone x 2 = 60.58' Base Length
5 Rows x 51.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.25' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

40 Chambers x 45.9 cf = 1,837.6 cf Chamber Storage

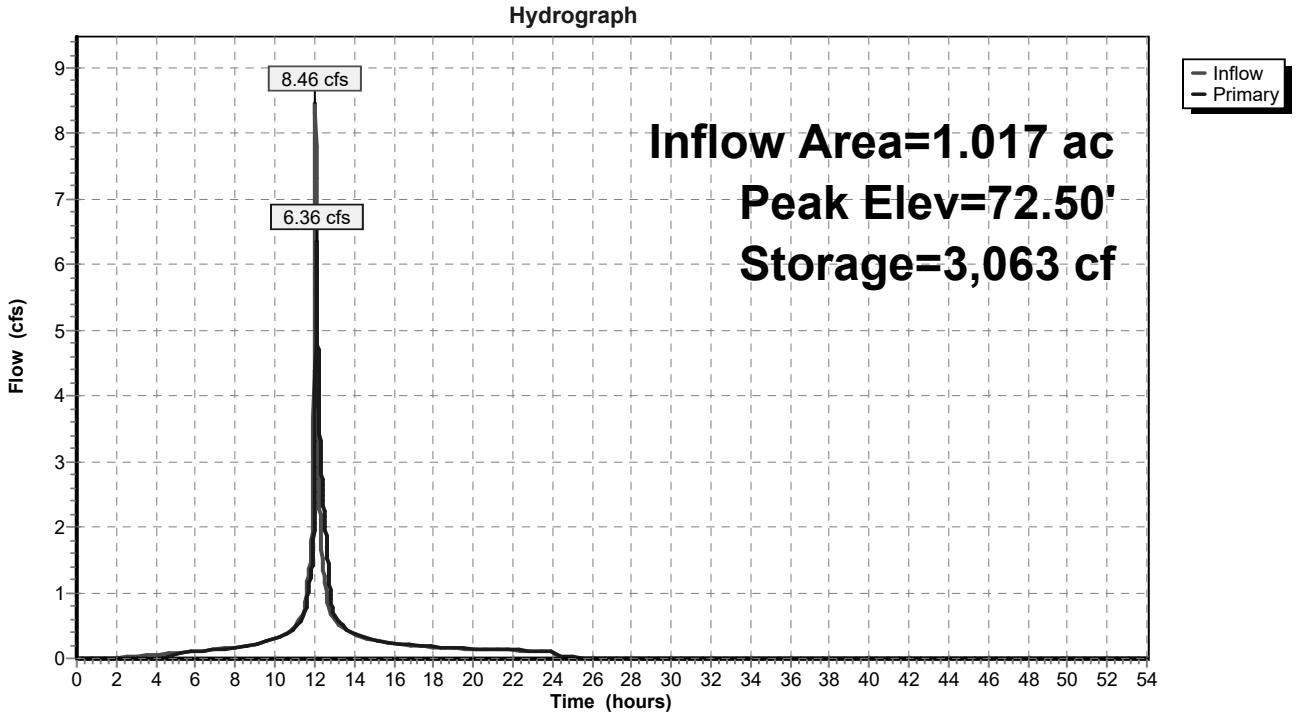
5,353.5 cf Field - 1,837.6 cf Chambers = 3,515.9 cf Stone x 40.0% Voids = 1,406.3 cf Stone Storage

Chamber Storage + Stone Storage = 3,243.9 cf = 0.074 af
Overall Storage Efficiency = 60.6%
Overall System Size = 60.58' x 25.25' x 3.50'

40 Chambers
198.3 cy Field
130.2 cy Stone



Pond SSDS #1: SSDS #1



Summary for Pond SSDS #2: SSDS #2

Inflow Area = 8.874 ac, 71.94% Impervious, Inflow Depth = 5.80" for 100-yr event
Inflow = 37.52 cfs @ 12.24 hrs, Volume= 4.288 af
Outflow = 26.44 cfs @ 12.41 hrs, Volume= 4.194 af, Atten= 30%, Lag= 10.3 min
Primary = 26.44 cfs @ 12.41 hrs, Volume= 4.194 af

Routing by Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs
Peak Elev= 68.69' @ 12.41 hrs Surf.Area= 13,575 sf Storage= 40,862 cf

Plug-Flow detention time= 70.2 min calculated for 4.193 af (98% of inflow)
Center-of-Mass det. time= 56.9 min (877.5 - 820.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	64.25'	18,674 cf	**65.75'W x 206.46'L x 5.50'H Field A** 74,661 cf Overall - 27,976 cf Embedded = 46,685 cf x 40.0% Voids
#2A	65.00'	27,976 cf	**ADS_StormTech MC-3500 d +Cap**x 252 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 252 Chambers in 9 Rows Cap Storage= +14.9 cf x 2 x 9 rows = 268.2 cf
		46,650 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	64.50'	**24.0" Round Culvert** L= 80.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 64.50' / 64.10' S= 0.0050 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 3.14 sf
#2	Device 1	65.00'	**18.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 1	67.50'	**4.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=26.44 cfs @ 12.41 hrs HW=68.68' (Free Discharge)
└**1=Culvert** (Barrel Controls 26.44 cfs @ 8.42 fps)
└**2=Orifice/Grate** (Passes < 12.88 cfs potential flow)
└**3=Sharp-Crested Rectangular Weir** (Passes < 15.86 cfs potential flow)

Pond SSDS #2: SSDS #2 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= +14.9 cf x 2 x 9 rows = 268.2 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

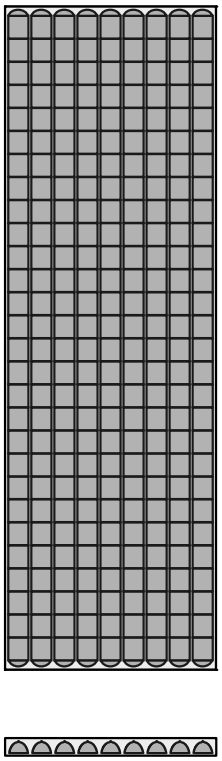
28 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 204.46' Row Length +12.0" End Stone x 2 = 206.46' Base Length
9 Rows x 77.0" Wide + 9.0" Spacing x 8 + 12.0" Side Stone x 2 = 65.75' Base Width
9.0" Base + 45.0" Chamber Height + 12.0" Cover = 5.50' Field Height

252 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 9 Rows = 27,976.1 cf Chamber Storage

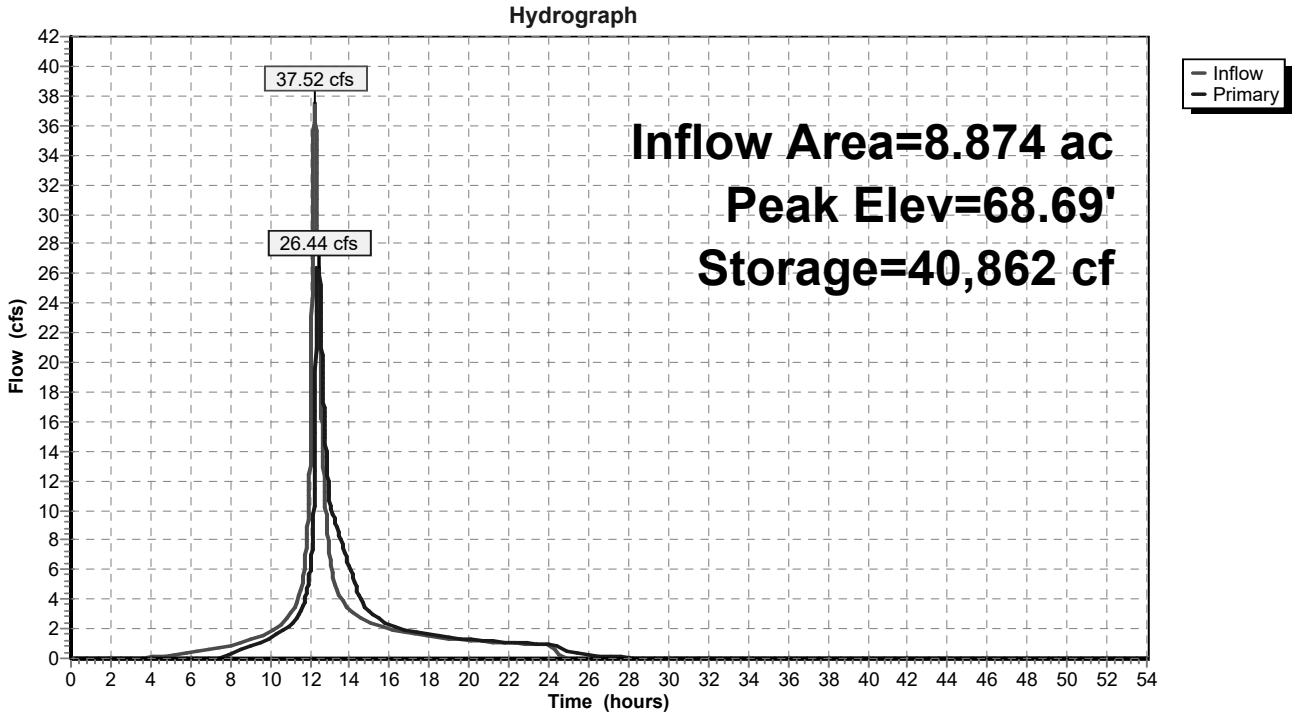
74,661.1 cf Field - 27,976.1 cf Chambers = 46,685.0 cf Stone x 40.0% Voids = 18,674.0 cf Stone Storage

Chamber Storage + Stone Storage = 46,650.1 cf = 1.071 af
Overall Storage Efficiency = 62.5%
Overall System Size = 206.46' x 65.75' x 5.50'

252 Chambers
2,765.2 cy Field
1,729.1 cy Stone



Pond SSDS #2: SSDS #2



APPENDIX D

WATER QUALITY CALCULATIONS

CTDEEP Water Quality Volume Calculations
CTDEEP Water Quality Volume-MS4 Calculations
CTDEEP Water Quality Flow Calculations
Groundwater Recharge Calculations
Nitrogen Loading Calculations
Treatment Train Efficiency Worksheet

Water Quality Calculations

Determine Water Quality Volume

From CT 2004 Stormwater Quality Manual:

$$WQV = \frac{(1")(R)(A)}{12}$$

$$R = 0.05 + 0.009(I)$$

WQV = water quality volume (ac-ft)
R = volumetric runoff coefficient
I = percent impervious cover
A = site area in acres

Area		Total Area		Impervious Area		Impervious Cover	Volumetric Runoff Coefficient	Water Quality Volume (WQV)	
ID		ac	ft^2	ac	ft^2	%	R	acre-feet	ft^3
Area to Subsurface Stormwater Detention System #1	PDA 12	1.017	44,319	0.812	35,349	79.84	0.769	0.065	2,831
Area to Subsurface Stormwater Detention System #2	PDA 22	8.874	386,565	6.384	278,092	71.94	0.697	0.515	22,433
							Total	**0.580**	**25,264.00**

Water Quality Calculations-MS4

Determine Water Quality Volume

From CT 2004 Stormwater Quality Manual:

$$WQV = \frac{(1")(R)(A)}{12}$$

$$R = 0.05 + 0.009(I)$$

WQV = water quality volume (ac-ft)
R = volumetric runoff coefficient
I = percent impervious cover
A = site area in acres

Area		Total Area		Impervious Area		Impervious Cover	Volumetric Runoff Coefficient	Water Quality Volume (WQV)		Proposed Water Quality Volume (WQV)	
ID		ac	ft^2	ac	ft^2	%	R	acre-feet	ft^3	acre-feet	ft^3
Total Site		12.500	544,505	8.415	366,549	67.32	0.656	0.683	29,751	0.419	18,232

*The existing property is greater than 40% impervious and therefore qualifies as a redevelopment parcel under the Town of Glastonbury's MS4 permit. This allows the storm drainage system to be designed to retain 50% of the Water Quality Volume (WQV).

Water Quality Calculations

Determine Water Quality Flow

From CT 2004 Stormwater Quality Manual:

$$CN = \frac{1000}{\left[10 + 5P + 10Q - 10\left(Q^2 + 1.25QP\right)^{\frac{1}{2}}\right]}$$

$$Q = \frac{[WQV\,(acre - feet) \times [12(inches / foot)]]}{DrainageArea(acres)}$$

$$WQF = (q_u)(A)(Q)$$

CN = Runoff Curve Number
P = design preciptation, inches, (1" for water quality storm)
Q = runoff depth (in watershed inches)
T_c = time of concentration
I_a = Initial abstraction, inches, from Table 4-1, Chapter 4, TR-55
q_u = unit peak discharge,
WQF = water quality flow (cfs)

Structure	Area	Total Area			Imp Area		Imp Cover	R	WQV	Q	P	CN	T_c		I_a	I_a/P	q_u *	WQF
ID	ID	ft^2	ac	mi^2	ft^2	ac	%	-	acre-feet	in	in	-	mins	hours	in	-	$cfs/mi^2/in$	cfs
Isolator Row 1	PDA 12	44,319	1.017	0.0016	35,349	0.812	79.84	0.769	0.065	0.77	1.00	98	5.0	0.08	0.041	0.041	660	0.81
Isolator Row 2	PDA 22	386,565	8.874	0.0139	278,092	6.384	71.94	0.697	0.516	0.7	1.00	97	5.0	0.08	0.062	0.062	660	6.41

* From Exhibit 4-III: Unit peak discharge (q_u) for SCS type III rainfall distribution, Urban Hydrology for Small Watersheds (TR-55), USDS< SCS, June 1986.

Groundwater Recharge Volume Calculations

Groundwater Recharge Volume

From CT 2004 Stormwater Quality Manual:

$$GVR = \frac{(D)(A)(I)}{12}$$

GRV Groundwater Recharge Volume (ac-ft)
D = Depth of Runoff to be Recharged (table 7-4)
A = site area in acres
I = impervious cover (decimal)

	A					I								
	Total Site Area (AC)	Site Area by NRCS Hydrologic Soil Group				Impervious Cover by NRCS Hydrologic Soil Group				Site Imperviousness (Decimel) by NRCS Hydrologic Soil Group				GRV Required (ac-ft)
		A	B	C	D	A	B	C	D	A	B	C	D	
	12.50	2.50	10.00	0	0	0.40	8.26	0.00	0.00	0.03	0.83	0.00	0.00	0.175

Table 7-4
Groundwater Recharge Depth

NRCS Hydrologic Soil Group	Average Annual Recharge	Groundwater Recharge Depth (D)
A	18 inches/year	0.4 inches
B	12 inches/year	0.25 inches
C	6 inches/year	0.10 inches
D	3 inches/year	0 inches (waived)

Source: MADEP, 1997.
NRCS – Natural Resources Conservation Service

Nitrogen Loading Calculations

Determine Nitrogen Loading to Groundwater

Adapted from Cape Cod Comission Water Resources Office Techical Bulletin 91-001 (FINAL), April 1992; using Town of Glastonbury constants:

Lot Size:	544,504 ft²
Total Impervious Surface Area:	366,548 ft²
- Roof area:	105,487 ft²
- Paved Area:	261,061 ft²
Total Pervious Surface Area:	177,956 ft²
- Lawn Area:	84,349 ft²
- Natural Area:	93,607 ft²

Impervious surface yearly recharge runoff depth = 46 in/yr
Pervious surface yearly recharge runoff depth = 9.2 in/yr
Nitrogen concentration of roof runoff = 0.75 mg/L
Nitrogen concentration of pavement runoff = 1.50 mg/L
Lawn fertilizer application rate = 3lb per 1,000 ft² per year
Fertilizer nitrogen leaching rate = 20%

- Nitrogen concentration from impervious surfaces:
  - Roof area: (105,487 ft²)(46 in/yr)(1/12 ft/in)(28.32 L/ft³)(1/365 yr/d) = 31,374.4 L/d Runoff
    (31,374.4 L/d)(0.75 mg/L) = 23530.8 mg/d Nitrogen
  - Pavement area: (261,061 ft²)(46 in/yr)(1/12 ft/in)(28.32 L/ft³)(1/365 yr/d) = 77,646.0 L/d Runoff
    (77,646 L/d)(1.50 mg/L) = 116,469.0 mg/d Nitrogen

- Nitrogen concentration from pervious surfaces:
  - Lawn area: (84,349 ft²)(3 lb/1,000 ft² per yr)(454,000 mg/lb)(1/365 yr/d)(0.20) = 62,949.8 mg/d Nitogen
  - Natural area: (93,607 ft²)(18 in/yr)(1/12 ft/in)(28.32 L/ft³)(1/365 yr/d) = 10,894.3 L/d Runoff

- Total Loading

$$\frac{\text{Total Nitrogen Load}}{\text{Total Runoff Volume}} = \frac{23{,}530.8 \text{ mg/d} + 116{,}469 \text{ mg/d} + 62{,}949.8 \text{ mg/d}}{31{,}374.4 \text{ L/d} + 77{,}646.0 \text{ L/d} + 10{,}894.3 \text{ L/d}} = \frac{202{,}949.6 \text{ mg/d}}{119{,}914.7 \text{ L/d}} = \boxed{1.692 \text{ mg/L Nitrogen}}$$

Best Management Practice (BMP) Treatment Train Efficiency Worksheet

Prepared for:
Proposed Development
107 Eastern Boulevard
Glastonbury, CT

Prepared by:
BL Companies
100 Constitution Plaza, 10th Floor
Hartford Connecticut

Date prepared:
September 30, 2020

Overall Site Treatment Train Efficiency

Et=[1-(1-E1)(1-E2)(1-E3)(1-E4)(1-E?)]*100

BMP	BMP Description	Type pf Treatment	Efficiency Rate %
E1	Impervious Surface Sweeping***	secondary (conventional)	10
E2	Deep Sump and Hooded Catch Basins	Secondary	25
E3	Isolator Row**	Secondary	80

Overall Treatment Train Efficiency (Et)= **87 % Total Suspended Solids (TSS) Remova**

* 80% require per CT DEP
** Manufacturers claim 80% TSS removal
*** Schueler 1996 & EPA 1993
**** University of New Hampshire

BMP	*Type pf Treatment*	*TSS Removal Rate*	*Starting TSS Load*	*Amount Removed*	*Remaining Load*
Impervious Surface Sweeping***	secondary (conventional)	0.10	1.00	0.10	0.90
Deep Sump and Hooded Catch Basins	Secondary	0.25	0.90	0.23	0.68
Isolator Row**	Secondary	0.8	0.68	0.54	0.14

Overall Treatment Train Efficiency (% **87**

TSS Removal Rates (adapted from Schueler, 1996, & EPA, 1993)

BMP List	Design Rate	Range of Average TSS Removal Rates	Brief Design Requirements
Extended Detention Pond	70%	60-80%	Sediment forebay
Wet Pond (a)	70%	60-80%	Sediment forebay
Constructed Wetland (b)	80%	65-80%	Designed to infiltrate or retain
Water Quality Swale	70%	60-80%	Designed to infiltrate or retain
Infiltration Trench	80%	75-80%	Pretreatment critical
Infiltration Basin	80%	75-80% (predicted)	Pretreatment critical
Dry Well	80%	80% (predicted)	Rooftop runoff
			(uncontaminated only)
Sand Filter (c)	80%	80%	Pretreatment
Organic Filter (d)	80%	80%+	Pretreatment
Water Quality Inlet	25%	15-35% w/ cleanout	Off-line only; 0.1" minimum Water Quality Volume (WQV) storage
Sediment Trap (Forebay)	25%	25% w/ cleanout	Storm flows for 2-year event must not cause erosion; 0.1" minimum WQV storage
Drainage Channel	25%	25%	Check dams; non-erosive for 2-yr.
Deep Sump and Hooded Catch Basin	25%	25% w/ cleanout	Deep sump general rule = 4 x pipe diameter or 4.0' for pipes 18" or less
Street Sweeping	10%	10%	Discretionary non-structural credit, must be part of approved plan

APPENDIX E

DRAINAGE MAPS

ED-1 – Existing Drainage Mapping
PD-1 – Proposed Drainage Mapping
GD-1 – Grading and Drainage Plan

GRADING AND DRAINAGE LEGEND

- PROPERTY LINE
- LOD — PROPOSED LIMIT OF DISTURBANCE AND CONTRACT LIMIT LINE
- 310 / 309 — EXISTING ELEVATION CONTOUR (1' INTERVAL)
- 620 / 618 — PROPOSED ELEVATION CONTOUR (1' INTERVAL)
- ×310.00 — PROPOSED SPOT ELEVATION
- STORMWATER DRAINAGE PIPE
- CATCH BASIN STRUCTURE WITH HOODED OUTLET
- STORMWATER DRAINAGE MANHOLE OR OUTLET CONTROL STRUCTURE
- PROVIDE MODULAR BLOCK RETAINING WALL

SPOT GRADE ABBREVIATIONS

BC	BOTTOM OF CURB
TC	TOP OF CURB
BW	BOTTOM OF WALL
TW	TOP OF WALL
MEX	MEET EXISTING CONDITION

NOTE: THE CONTRACTOR SHALL NOTIFY THE TOWN OF GLASTONBURY ENGINEERING DIVISION 24 HOURS PRIOR TO BEGINNING ANY STORM DRAINAGE, SANITARY SEWER INSTALLATION, ROADWAY PREPARATION, PAVING, SIDEWALK, CURBING, OR ANY EXCAVATION IN THE TOWN RIGHT-OF-WAY TO SCHEDULE INSPECTIONS. THE DIVISION CAN BE REACHED BETWEEN 8:00 AM – 4:30 PM MONDAY THRU FRIDAY AT (860) 652-7735.

DCIA CALCULATION TABLE

	DIRECTLY CONNECTED IMPERVIOUS AREA (SF)	INDIRECTLY CONNECTED IMPERVIOUS AREA (SF)	TOTAL IMPERVIOUS AREA (SF)
PRE-DEVELOPMENT	204,325	0	204,325
POST-DEVELOPMENT	56,676	309,873	366,549
CHANGE	-147,649	309,873	162,224

MS4 CALCULATION TABLE

	WQV (CF)
WQV FOR ENTIRE SITE	29,751
REQUIRED 50% REDEVELOPMENT WQV	14,876
WQV PROVIDED IN STORMWATER MANAGEMENT SYSTEM #1	799
WQV PROVIDED IN STORMWATER MANAGEMENT SYSTEM #2	17,433
TOTAL WQV PROVIDED	18,232

N/F HTA-Gateway 1 LLC Vol. 3333 Pg. 32 290-310 Western Blvd Glastonbury CT

N/F HTA-Gateway 1 LLC Vol. 3333 Pg. 32 320-330 Western Blvd Glastonbury CT

N: 823,199.37
E: 1,044,748.30

N 78°32'28" E 810.10'

CB-203 (TYPE C)
TF=78.09
INV IN=73.60(E)
INV OUT =73.50(S)

MH-214
TF=79.54
INV IN=75.60(E)
INV OUT =75.60(W)
INV OUT =73.60(NW)

TC 79.42
BC 78.92

TC 78.59
BC 78.09

10'-24" PERFORATED HDPE @ 0.00%

21'-15" HDPE @ 0.67%
CB-202 (TYPE C-HDS)
TF=79.76
INV IN=75.84(E)
INV OUT =75.74(W)

TP-7
TP-8
TP-9
TP-10

113'-15" HDPE @ 1.77%

276'-15" HDPE @ 1.12%

CB-201 (TYPE C)
TF=83.19
INV OUT =78.94(W)

TC 86.50
BC 86.00

TC 87.10
BC 86.60

TC 88.64
BC 88.14

TC 76.54
BC 76.04

EX. CB-208 (TYPE C-L)
RESET TO FINISHED GRADE
TF=75.74
EX. INV IN =70.30(E)
INV OUT =70.49(SW)

TC 81.18
BC 80.68

TC 80.50
BC 80.00

TP-4
TP-5

72'-8" HDPE @ 1.30%
72'-8" HDPE @ 1.30%

146'-24" HDPE @ 1.98%

MH-205
TF=74.38
INV IN=67.60(NE)
INV OUT =66.75(S)

24'-15" HDPE @ 1.88%

TC 77.09
BC 76.59

TC 84.83
BC 84.33

TC 83.04
BC 82.54

TC 83.00
BC 82.50

MH-209
TF=73.49
INV IN=67.25(W)
INV IN=69.50(N)
INV OUT =66.75(S)

8'-24" HDPE @ 3.08%

CB-204 (TYPE C)
TF=73.44
INV OUT =67.50(E)

TC 75.25
BC 74.75

TC 77.25
BC 76.75

TP-6

6'-24" HDPE @ 0.00%

25'-24" HDPE @ 0.00%

PROVIDE AND INSTALL UNDERGROUND STORMWATER MANAGEMENT SYSTEM #2 ADS STORMTECH MC-3500 CHAMBERS, 248 CHAMBERS PLUS 56 ISOLATOR ROW CHAMBERS FOR WATER QUALITY (304 TOTAL), ISOLATOR ROW SHALL BE SIZED FOR WQV=22,433CF/WQF=6.41CFS, ENTIRE SYSTEM SHALL BE WRAPPED WITH BTL 40 MIL IMPERMEABLE LINER OR APPROVED EQUAL;
TOP OF CRUSHED STONE BASE ELEV: 69.75
TOP OF SYSTEM ELEV: 68.75
BOTTOM OF SYSTEM ELEV: 65.00
BOTTOM OF CRUSHED STONE BASE ELEV: 64.25
INLET TO SYSTEM (N)-24" HDPE ELEV: 66.75
INLET TO SYSTEM (S)-15" HDPE ELEV: 67.00
OUTLET FROM SYSTEM-15" RCP ELEV: 65.00
UNDERDRAIN-6" HDPE ELEV: 64.25

TP-2

PROVIDE AND INSTALL ISOLATOR ROW CHAMBERS FOR WATER QUALITY

TP-1

TC 72.10
BC 71.60

6'-24" HDPE @ 0.00%

TC 72.61
BC 72.11

TC 74.22
BC 73.72

6'-24" HDPE @ 0.00%

MH-213
TF=71.03
INV IN=67.33(E)
INV IN=67.33(SW)
INV OUT =67.00(N)

TC 73.16
BC 72.66

OCS-221
TF=71.48
INV IN=65.00(N)
18"W X 12"H ORIFICE INV=65.00
4' WEIR WALL INV=67.50
INV OUT =64.50(S)

10'-15" HDPE @ 0.50%

CB-211 (TYPE-C)
TF=70.85
INV OUT =67.38(NE)

TC 72.00
BC 71.50

TC 74.72
BC 74.22

TC 72.87
BC 72.37

TC 74.29
BC 73.79

79'-15" HDPE @ 0.50%

80'-24" RCP @ 0.50%

TC 70.18
BC 69.68

EX. CB-222 (TYPE C-L)
PROVIDE AND INSTALL TYPE C-L FRAME AND GRATE
RESET TO FINISHED GRADE
TF=70.00
INV IN=64.10(N)
EX. INV IN=65.60(NW)
EX. INV IN=65.30(E)
EX. INV OUT=64.00(S)

TC 71.34
BC 70.84

CB-212 (TYPE 'C')
TF=70.97
INV OUT =67.72(W)

UPON COMMENCEMENT OF CONSTRUCTION, CONTRACTOR TO FIELD VERIFY ELEVATION OF GAS LINE IN STREET AND IMMEDIATELY NOTIFY CIVIL ENGINEER WITH ELEVATION

Δ=13°00'01"
R=970.00'
L=220.09'

TC 74.72
BC 74.22

TC 74.42
BC 73.92

TC 74.30
BC 73.80

TC 75.60
BC 75.10

PROVIDE AND INSTALL UNDERGROUND STORMWATER MANAGEMENT SYSTEM #1, ADS-STORMTECH SC-740 CHAMBERS, 40 CHAMBERS PLUS 8 ISOLATOR ROW CHAMBERS FOR WATER QUALITY (48 TOTAL), ISOLATOR ROW SHALL BE SIZED FOR WQV=2,831CF/WQF=0.81CFS, TOP OF CRUSHED STONE BASE ELEV: 72.80
TOP OF SYSTEM ELEV: 72.30
BOTTOM OF SYSTEM ELEV: 69.80
BOTTOM OF CRUSHED STONE BASE ELEV: 69.30
INLET TO SYSTEM-15" RCP ELEV: 71.05
OUTLET FROM SYSTEM-15" RCP ELEV: 69.80

TC 75.70
BC 75.81

TC 76.26
BC 75.70

TC 75.60
BC 75.10

60'-8" HDPE @ 1.00%
EX. CB-207 (TYPE C-L)
RESET TO FINISHED GRADE
TF=78.26
EX. INV IN =71.80(E)
EX. INV OUT =71.50(W)
INV IN=73.80(NE)

PROVIDE AND INSTALL DOWNSPOUT CONNECTION, REFER TO ARCHITECTURAL PLANS
INV OUT =74.80(E)

EX. CB-206 (TYPE C-L)
RESET TO FINISHED GRADE
TF=78.26
EX. INV OUT =75.100(W)

TC 79.50
BC 79.00

PROVIDE AND INSTALL DOWNSPOUT CONNECTION, REFER TO ARCHITECTURAL PLANS
INV OUT =74.80(W)

PROVIDE AND INSTALL DOWNSPOUT CONNECTION, REFER TO ARCHITECTURAL PLANS
INV IN=73.80(E)
INV IN=73.80(W)
INV OUT =74.40(SW)

N/F Mondelez Global LLC Vol. 3050 Pg. 348

Parcel Area:
544,505± S.F.
12.5± Acres
107 Eastern Boulevard
Glastonbury CT

FFE=79.70

TC 76.15
BC 75.65

TC 75.70
BC 75.20

EX. CB-101
TF=74.23
INV OUT =71.16(SE)

PROVIDE AND INSTALL TRANSFORMER, COORDINATE WITH ELECTRIC COMPANY

23'-15" RCP @ 0.50%

PROVIDE AND INSTALL ISOLATOR ROW CHAMBERS FOR WATER QUALITY

TC 76.06
BC 75.56

TC 75.95
BC 75.45

TC 76.20
BC 75.70

TC 74.32
BC 73.82

TC 74.09
BC 73.59

OCS-102
TF=74.94
INV IN=69.80(N)
12"W X 6"H ORIFICE INV=69.80
8"W X 6"H ORIFICE INV=71.50
4' WEIR WALL INV=72.30
INV OUT =69.80(S)

TC 75.43
BC 74.93

74.66

49'-15" RCP @ 1.02%

EX. CB-103 (TYPE C)
RESET TO FINISHED GRADE
TF=73.39
INV IN=69.30(N)
EX. INV IN=69.30(W)
EX. INV OUT=69.20(SE)

TC 78.55
BC 78.05

TC 77.50
BC 77.00

TC 76.27
BC 75.77

TC 75.85
BC 75.35

6'-15" RCP @ 0.00%

Δ=90°00'42"
R=20.00'
190.00'

Eastern Boulevard

National Drive

San. MH
T.F. 94.88
Sealed

San. MH
T.F. 91.84
Sealed

San. MH
T.F. 87.12
8" PVC Inv. In
12" PVC Inv. O

San. MH
T.F. 78.31
12" PVC Inv. In
12" PVC Inv. In
8" PVC Inv. In
12" PVC Inv. O

94.11
94.18

I HEREBY DECLARE TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT THIS PLAN IS SUBSTANTIALLY CORRECT.

Matthew J. Bruton

MATTHEW J. BRUTON CT PE # 33356

MOTOR FREIGHT TRANSPORTATION TERMINAL OR GARAGE / WINSTANLEY ENTERPRISES LLC	PE (PLANNED EMPLOYMENT)
PROJECT/APPLICANT	ZONE
107 EASTERN BOULEVARD, GLASTONBURY, CT	
PROJECT ADDRESS	
SPECIAL PERMIT SECTION	TPZ CHAIRMAN
DATE SPECIAL PERMIT APP'D	DIRECTOR OF COMMUNITY DEVELOPMENT
FILE NO.	

FOR PERMITTING PURPOSES ONLY
NOT RELEASED FOR CONSTRUCTION

GRAPHIC SCALE
40 20 0 40
SCALE IN FEET

Architecture
Engineering
Environmental
Land Surveying

BL Companies

100 Constitution Plaza, 10th Floor
Hartford, CT 06103
(860) 249-2200
(860) 249-2400 Fax

PROPOSED DEVELOPMENT
107 EASTERN BOULEVARD
TOWN OF GLASTONBURY, CT

REVISIONS		
No.	Date	Desc.
1.	12/16/2020	REVISED PER TOWN COMMENTS
2.	01/20/2021	REVISED PER TOWN COMMENTS

Designed	S.E.L.
Drawn	S.E.L.
Reviewed	
Scale	1"=40'
Project No.	2000669
Date	09/30/2020
CAD File: 2000669101	

Title

GRADING, DRAINAGE, AND UTILITIES PLAN

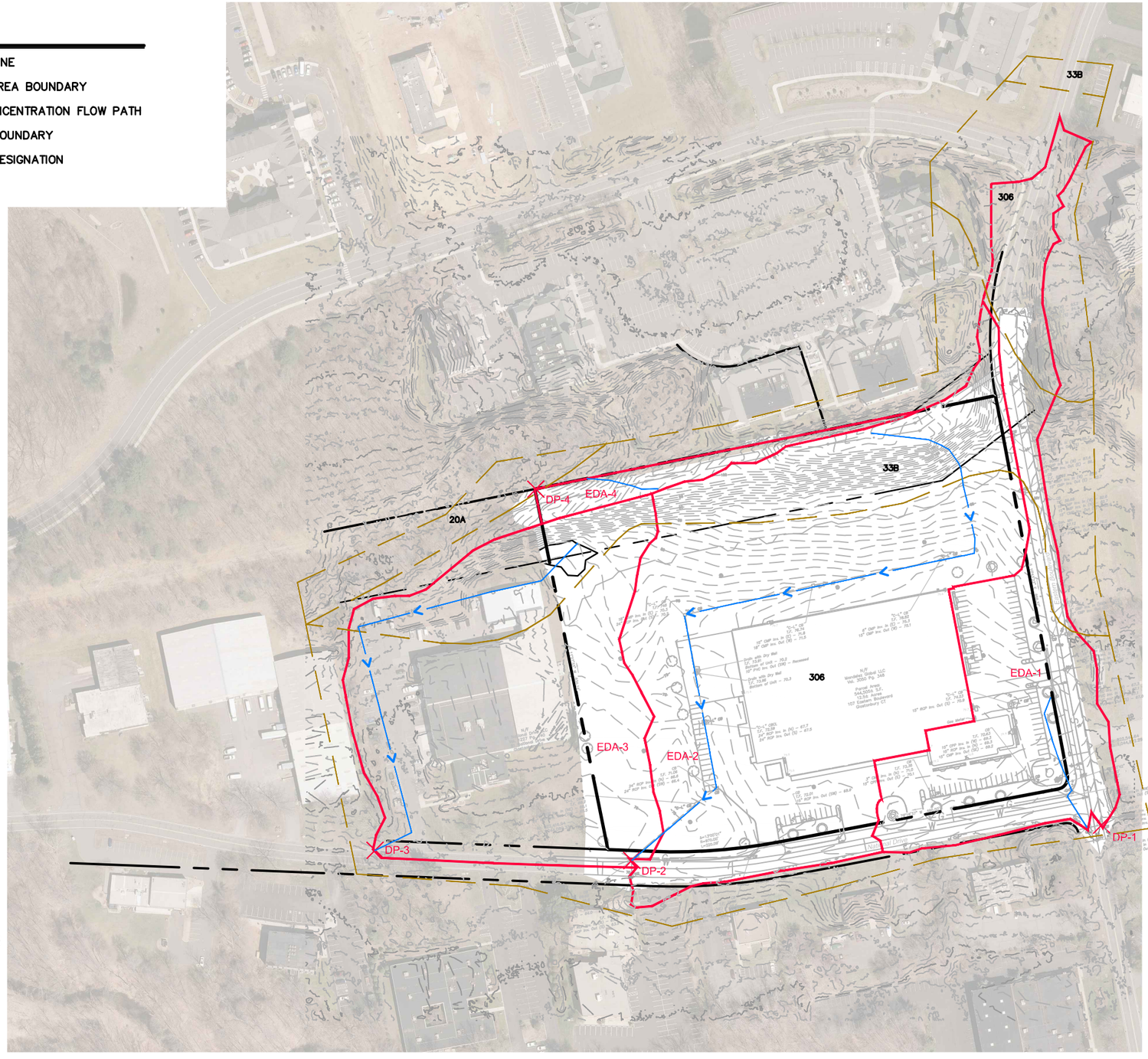
Sheet No.

GU-1

Xref (S): I:\BD\2000669\01 XY\2000669101_XC2000669102.dwg

HYDROLOGY LEGEND

- PROPERTY LINE
- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION FLOW PATH
- SOIL TYPE BOUNDARY
- 306 — SOIL TYPE DESIGNATION



GRAPHIC SCALE

200 100 0 200

SCALE IN FEET

BL Companies

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ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

100 Constitution Plaza, 10th Floor
Hartford, CT 06103
(860) 249-2200
(860) 249-2400 Fax

EXISTING DRAINAGE MAPPING

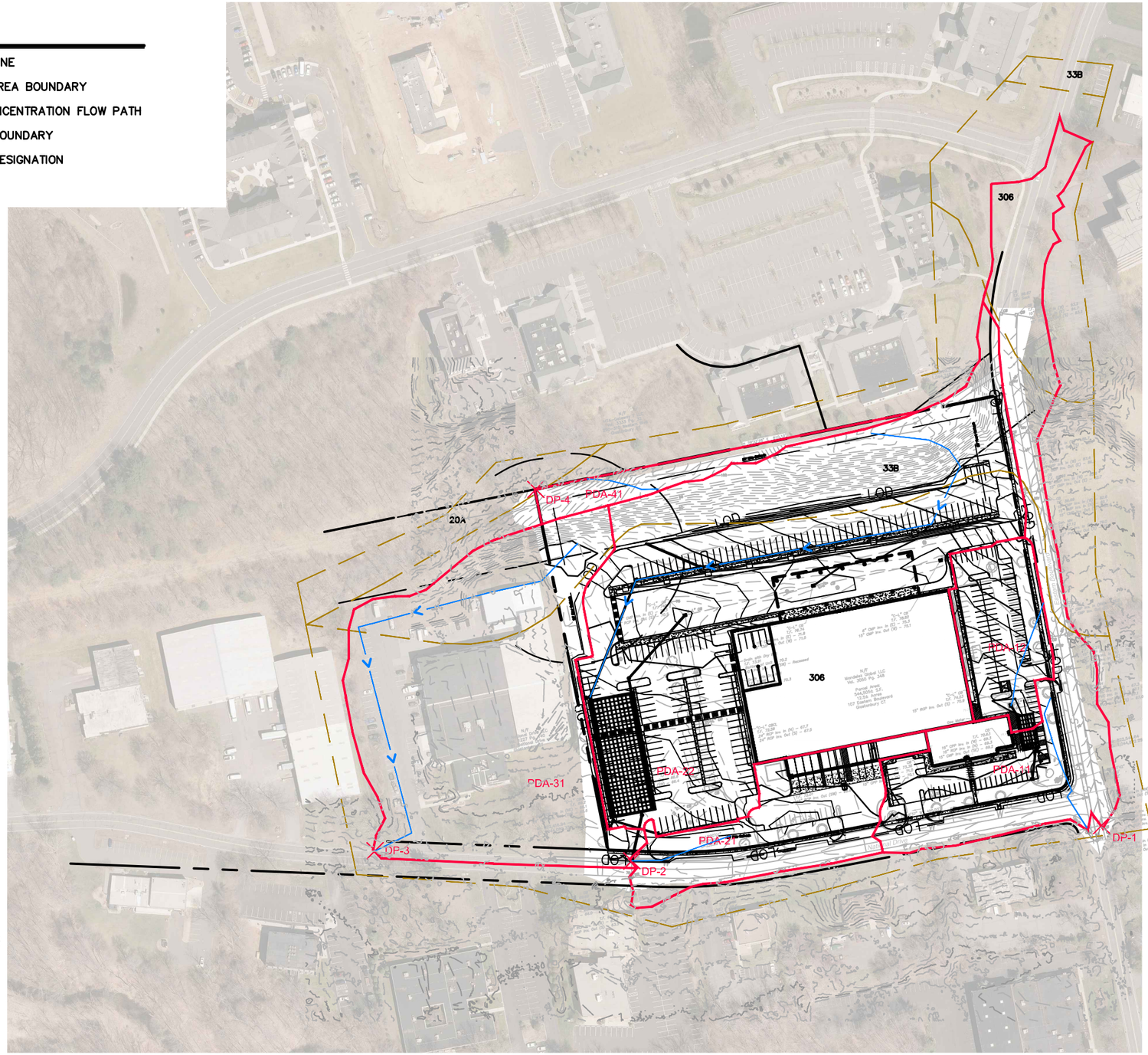
PROPOSED DEVELOPMENT
107 EASTERN BOULEVARD
GLASTONBURY, CONNECTICUT

Designed	S.E.L.
Drawn	S.E.L.
Reviewed	J.A.B.
Scale	1"=200'
Project No.	2000669
Date	08/21/2020
CAD File	ED200066901

ED-1

HYDROLOGY LEGEND

- PROPERTY LINE
- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION FLOW PATH
- SOIL TYPE BOUNDARY
- 306 — SOIL TYPE DESIGNATION



GRAPHIC SCALE

200 100 0 200

SCALE IN FEET

BL Companies

ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

100 Constitution Plaza, 10th Floor
Hartford, CT 06103
(860) 249-2200
(860) 249-2400 Fax

PROPOSED DRAINAGE MAPPING

PROPOSED DEVELOPMENT
107 EASTERN BOULEVARD
GLASTONBURY, CONNECTICUT

Designed	S.E.L.
Drawn	S.E.L.
Reviewed	J.A.B.
Scale	1"=200'
Project No.	2000669
Date	08/21/2020
CAD File	PD200066901

PD-1

APPENDIX F

STORMWATER SYSTEM
OPERATION AND MAINTENANCE MANUAL

Appendix F:

Stormwater System Operations and Maintenance Plan

For the Proposed:

Development

Located at:

107 Eastern Boulevard
Glastonbury, Connecticut

Prepared for Submission to:

Town of Glastonbury, Connecticut

August 24, 2020
Revised: January 20, 2021

Prepared for:

WE Acquisitions, LLC
107 Eastern Boulevard
Glastonbury, Connecticut

Prepared by:

Architecture
Engineering
Environmental
Land Surveying
Companies

BL Companies
100 Constitution Plaza, 10th Floor
Hartford, Connecticut 06103
Phone: (860) 249-2200
Fax: (860) 249-2400

BL Project Number: 2000669

Table of Contents

General Overview

The project parcel is located at 107 Eastern Boulevard The project parcel is approximately 12.5 acres in size and is currently a developed lot with a warehouse and associated paved parking areas and driveways, landscaped areas, and site utilities. The remaining site area is wooded and lawn area. The property is located at the northeastern corner of the intersection of National Drive and Eastern Boulevard. It is roughly bordered by the Planned Employment Zone (PE) on all sides. There is a small portion of wetland located on site towards the northwest of the site.

In general, the existing topography generally slopes from the north to the south of the site and eventually offsite to Salmon Brook. Elevations on site range from 70' to 110'. There are currently catch basins and drainage piping on site for the existing development, but no stormwater management system located within the project parcel. Proposed site improvements will include minor building modifications, additional paved parking areas and driveways, landscaped areas, pedestrian sidewalks, site lighting, and a stormwater management system.

The proposed stormwater management system is designed to be in compliance with the 2002 State of Connecticut Guidelines for Soil Erosion and Sediment Control, and the 2004 State of Connecticut Stormwater Quality Manual.

The following Operations and Maintenance Plan was prepared specifically for this proposed development in the Town of Glastonbury, Connecticut. The Plan was developed to satisfy the requirements of the Connecticut Department of Energy and Environmental Protection's 2002 Connecticut Guidelines for Soil Erosion and Sediment Control.

Purpose & Goals

The purpose of this Manual is to ensure that the stormwater management components are operated in accordance with all approvals and permits. The primary goal is to inform all the property managers about how the system operates and what maintenance items are necessary to protect downstream wetlands and watercourses. The secondary goal is to provide a practical, efficient means of maintenance planning and record keeping to verify permit compliance.

Responsible Parties

The Property Owner will be responsible for implementing the Plan on the property.

Maintenance inspections shall be performed by a qualified professional.

Some utilities located on the site will be owned and maintained by various utility companies in accordance with their standards. The property owner may maintain the service connections.

List of Permits & Special Conditions

The project will receive several permits, which may contain special conditions that require compliance by the property owner and maintenance contractors. This permit may include the following:

- Town of Glastonbury – Site Plan Permit, Building Permit

Maintenance Logs and Checklists

The property owner will keep a record of all maintenance procedures performed, date of inspection/ cleanings, etc. Copies of inspection reports and maintenance records shall be kept on-site.

Forms

The following forms will be developed for annual maintenance. Copies of the forms will be kept on-site as part of the Storm Water Management Plan.

- Annual Checklist
- Quarterly Checklist
- Monthly Checklist

Employee Training

The property owner will have an employee-training program, with annual up-dates, to ensure that the qualified employees charged with maintaining the buildings and grounds do so in accordance with the approved permit conditions. All employees that have maintenance duties will be adequately informed of their responsibilities.

Spill Control

In addition to the good housekeeping and material management practices discussed in the previous sections of this plan, the following practices will be followed for spill prevention and clean-up:

- Manufacturer's recommended methods for spill clean-up will be clearly posted and site personnel will be made aware of the procedures and the location of the information and clean-up supplies.
- Materials and equipment necessary for spill clean-up will be kept in the material storage area on-site. Equipment and materials will include but not be limited to: absorbent booms or mats, brooms, dust pans, mops, rags, gloves, goggles, sand, and plastic and metal trash containers specifically for this purpose.
- All spills will be cleaned immediately after discovery.

- The spill area will be kept well-ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with hazardous substance.
- Spills of toxic or hazardous material, regardless of size, will be reported to the appropriate State or local government agency.
- If a spill occurs, this plan will be adjusted to include measures to prevent this type of spill from reoccurring and how to clean the spill if there is another one. A description of the spill, the cause, and the remediation measures will also be included.

A spill report shall be prepared by the property owner following each occurrence. The spill report shall present a description of the release, including quantity and type of material, date of spill, circumstances leading to the release, location of spill, response actions and personnel, documentation of notifications and corrective measures implemented to prevent reoccurrence.

The property owner shall identify an appropriately qualified and trained site employee involved with day-to-day site operations to be the spill prevention and clean-up coordinator. The name(s) of responsible spill personnel shall be posted on-site. Each employee shall be instructed that all spills are to be reported to the spill prevention and clean-up coordinator.

Storm Water Management

System Components

The storm water management system has several components that are shown on the Grading and Drainage Plan (GD-1), that performs various functions in treating storm water runoff:

Catch Basins and Manholes

The property owner is responsible for cleaning the catch basins and manholes on the property. A Connecticut Licensed hauler shall clean the sumps and dispose of removed sand legally. The road sand may be reused for winter sanding but may not be stored on-site. As part of the hauling contract, the hauler shall notify the property owner in writing where the material is being disposed.

Each catch basin shall be inspected every four months, with one inspection occurring during the month of April. Any debris occurring within one foot from the bottom of each sump shall be removed by Vacuum "Vactor" type of maintenance equipment.

During the inspection of each of the catch basin sumps, the hoods (where provided) on each of the outlet pipes shall also be observed for trash accumulation as well as overall condition. In the event that a hood is damaged or off the hanger, it shall be reset or repaired.

Isolator Row and Underground Detention System

The underground detention system and Isolator Row shall be inspected every six months in the months of April and September. Each of the inspection ports provided shall be opened and visually checked from the surface. Observation of grit inside of the detention system shall be noted and any deposits found to be 2 inches or more, as measured from the invert of pipe, shall be cleaned and removed. The underground detention system qualifies as a Confined Space under OSHA regulations, and any

maintenance involving entry into the pipes should comply with OSHA Confined Space Entry Regulations.

Site Maintenance

Parking Lots

Parking lots and sidewalks shall be swept as necessary by the property owner, or at least once per year, to clean sediment, trash, and other debris. The property owner will sweep parking lots on the property in the spring to remove winter accumulations of road sand.

Landscaping

The management company retained by the property owner will maintain landscaped areas. Normally the landscaping maintenance will consist of pruning, mulching, planting, mowing lawns, raking leaves, etc. Use of fertilizers and pesticides will be controlled and limited to minimal amounts necessary for healthy landscape maintenance.

The lawn areas, once established, will be maintained at a typical height of 3 ½". This will allow the grass to be maintained with minimal impact from weeds and/or pests. The low-maintenance areas will be maintained as a meadow or allowed to revert back to natural conditions. Topsoil, brush, leaves, clippings, woodchips, mulch, equipment, and other material shall be stored off site.

Outdoor Storage

There will be no outdoor storage of hazardous chemicals, de-icing agents, fertilizer, pesticides, or herbicides anywhere around the buildings.

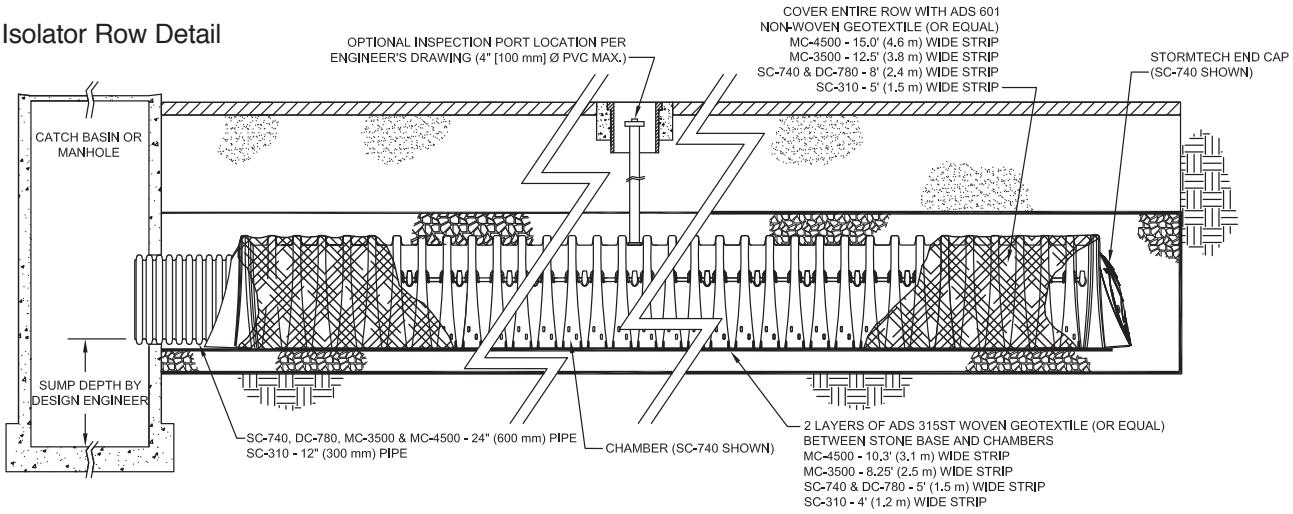
Deicing and Snow Removal & Storage

The use of clean sand may be used to aid traction in conjunction with salt and/or chemicals for deicing, snow melting and other related winter weather management. Snow shall be shoveled and plowed from sidewalk and parking areas as soon as practical during and after winter storms. Sand accumulation shall be removed from the site at the end of the winter season or appropriate time when seasonal snow has melted. Alternative deicing methods must be submitted prior to use onsite for review to the Town of Glastonbury for approval.

StormTech and Stormwater Quality

StormTech's patented Isolator™ Row is a row of chambers wrapped in a geotextile which filters the stormwater trapping pollutants in the row. The Isolator Row provides a way to inspect and maintain the system.

Isolator Row Detail



Note: For many applications, the non-woven geotextile over the DC-780, MC-3500 and MC-4500 Isolator Row chambers can be eliminated or substituted with the AASHTO Class 1 woven geotextile. Contact your StormTech representative for assistance.

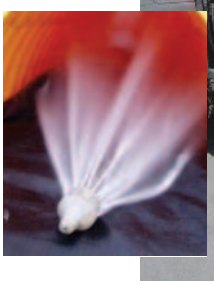
Isolator Row Field Verification Testing at the University of New Hampshire Stormwater Center

- Field testing (TARP tier II protocol) of the Isolator Row has been ongoing since December 2006.
- Removal efficiencies for TSS have improved as the filter cake has built up on the bottom fabric of the Isolator Row.
- Current data shows a TSS removal efficiency which exceeds 80%.

Removal Efficiency Results:

- Total Suspended Solids = 80%
- Phosphorous = 49%
- Total Petroleum Hydrocarbons = 90%
- Zinc = 53%

This system achieves a removal efficiency of 80% for TSS which meets most municipal recommended levels for water quality treatment.



Inspection and Maintenance

The Isolator Row can be inspected through the upstream manhole or optional inspection port.

Maintenance is easily accomplished with the JetVac process.

The frequency of inspection and maintenance varies by location. Contact StormTech for assistance with inspection and maintenance scheduling.

StormTech®
Detention • Retention • Water Quality
An ADS company

Isolator® Row O&M Manual

THE MOST **ADVANCED** NAME IN WATER MANAGEMENT SOLUTIONS™

ADS®

THE ISOLATOR® ROW

INTRODUCTION

An important component of any Stormwater Pollution Prevention Plan is inspection and maintenance. The StormTech Isolator Row is a technique to inexpensively enhance Total Suspended Solids (TSS) and Total Phosphorus (TP) removal with easy access for inspection and maintenance.

THE ISOLATOR ROW

The Isolator Row is a row of StormTech chambers, either SC-160, SC-310, SC-310-3, SC-740, DC-780, MC-3500 or MC-4500 models, that is surrounded with filter fabric and connected to a closely located manhole for easy access. The fabric-wrapped chambers provide for settling and filtration of sediment as storm water rises in the Isolator Row and ultimately passes through the filter fabric. The open bottom chambers and perforated sidewalls (SC-310, SC- 310-3 and SC-740 models) allow storm water to flow both vertically and horizontally out of the chambers. Sediments are captured in the Isolator Row protecting the storage areas of the adjacent stone and chambers from sediment accumulation.

A woven geotextile fabric is placed between the stone and the Isolator Row chambers. The woven geotextile provides a media for stormwater filtration, a durable surface for maintenance, prevents scour of the underlying stone and remains intact during high pressure jetting. A non-woven fabric is placed over the chambers to provide a filter media for flows passing through the perforations in the sidewall of the chamber. The non-woven fabric is not required over the SC-160, DC-780, MC-3500 or MC-4500 models as these chambers do not have perforated side walls.

The Isolator Row is typically designed to capture the “first flush” and offers the versatility to be sized on a volume basis or flow rate basis. An upstream manhole provides access to the Isolator Row and typically includes a high flow weir. When flow rates or volumes exceed the Isolator Row weir capacity the water will flow over the weir and discharge through a manifold to the other chambers.

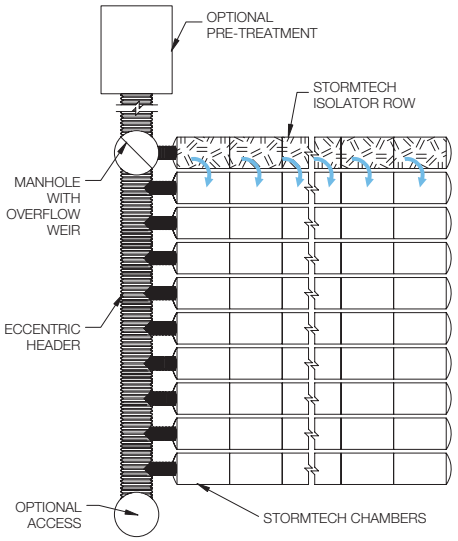
Another acceptable design uses one open grate inlet structure. Using a “high/low” design (low invert elevation on the Isolator Row and a higher invert elevation on the manifold) an open grate structure can provide the advantages of the Isolator Row by creating a differential between the Isolator Row and manifold thus allowing for settlement in the Isolator Row.

The Isolator Row may be part of a treatment train system. The design of the treatment train and selection of pretreatment devices by the design engineer is often driven by regulatory requirements. Whether pretreatment is used or not, the Isolator Row is recommended by StormTech as an effective means to minimize maintenance requirements and maintenance costs.

Note: See the StormTech Design Manual for detailed information on designing inlets for a StormTech system, including the Isolator Row.

Looking down the Isolator Row from the manhole opening, woven geotextile is shown between the chamber and stone base.

StormTech Isolator Row with Overflow Spillway (not to scale)



ISOLATOR ROW INSPECTION/MAINTENANCE

INSPECTION

The frequency of inspection and maintenance varies by location. A routine inspection schedule needs to be established for each individual location based upon site specific variables. The type of land use (i.e. industrial, commercial, residential), anticipated pollutant load, percent imperviousness, climate, etc. all play a critical role in determining the actual frequency of inspection and maintenance practices.

At a minimum, StormTech recommends annual inspections. Initially, the Isolator Row should be inspected every 6 months for the first year of operation. For subsequent years, the inspection should be adjusted based upon previous observation of sediment deposition.

The Isolator Row incorporates a combination of standard manhole(s) and strategically located inspection ports (as needed). The inspection ports allow for easy access to the system from the surface, eliminating the need to perform a confined space entry for inspection purposes.

If upon visual inspection it is found that sediment has accumulated, a stadia rod should be inserted to determine the depth of sediment. When the average depth of sediment exceeds 3 inches throughout the length of the Isolator Row, clean-out should be performed.

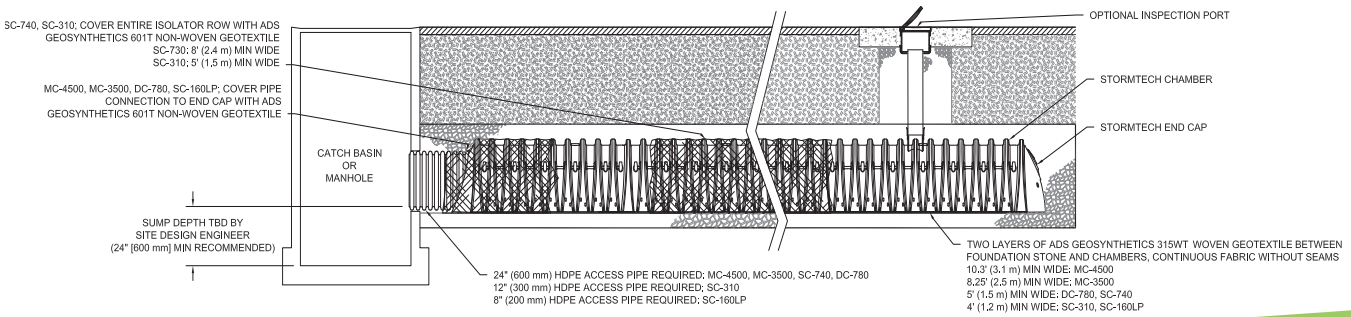
MAINTENANCE

The Isolator Row was designed to reduce the cost of periodic maintenance. By "isolating" sediments to just one row, costs are dramatically reduced by eliminating the need to clean out each row of the entire storage bed. If inspection indicates the potential need for maintenance, access is provided via a manhole(s) located on the end(s) of the row for cleanout. If entry into the manhole is required, please follow local and OSHA rules for a confined space entries.

Maintenance is accomplished with the JetVac process. The JetVac process utilizes a high pressure water nozzle to propel itself down the Isolator Row while scouring and suspending sediments. As the nozzle is retrieved, the captured pollutants are flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/JetVac combination vehicles. Selection of an appropriate JetVac nozzle will improve maintenance efficiency. Fixed nozzles designed for culverts or large diameter pipe cleaning are preferable. Rear facing jets with an effective spread of at least 45" are best. Most JetVac reels have 400 feet of hose allowing maintenance of an Isolator Row up to 50 chambers long. **The JetVac process shall only be performed on StormTech Isolator Rows that have AASHTO class 1 woven geotextile (as specified by StormTech) over their angular base stone.**

StormTech Isolator Row (not to scale)

Note: Non-woven fabric is only required over the inlet pipe connection into the end cap for SC-160LP, DC-780, MC-3500 and MC-4500 chamber models and is not required over the entire Isolator Row.



ISOLATOR ROW STEP BY STEP MAINTENANCE PROCEDURES

STEP 1

Inspect Isolator Row for sediment.

A) Inspection ports (if present)
   i. Remove lid from floor box frame
   ii. Remove cap from inspection riser
   iii. Using a flashlight and stadia rod,measure depth of sediment and record results on maintenance log.
   iv. If sediment is at or above 3 inch depth, proceed to Step 2. If not, proceed to Step 3.

B) All Isolator Rows
   i. Remove cover from manhole at upstream end of Isolator Row
   ii. Using a flashlight, inspect down Isolator Row through outlet pipe
      1. Mirrors on poles or cameras may be used to avoid a confined space entry
      2. Follow OSHA regulations for confined space entry if entering manhole
   iii. If sediment is at or above the lower row of sidewall holes (approximately 3 inches), proceed to Step 2. If not, proceed to Step 3.

STEP 2

Clean out Isolator Row using the JetVac process.

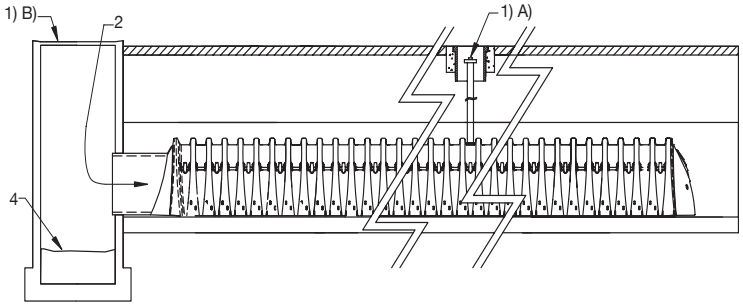
A) A fixed floor cleaning nozzle with rear facing nozzle spread of 45 inches or more is preferable
B) Apply multiple passes of JetVac until backflush water is clean
C) Vacuum manhole sump as required

STEP 3

Replace all caps, lids and covers, record observations and actions.

STEP 4

Inspect & clean catch basins and manholes upstream of the StormTech system.



SAMPLE MAINTENANCE LOG

Date	Stadia Rod Readings		Sediment Depth (1)–(2)	Observations/Actions	Inspector
	Fixed point to chamber bottom (1)	Fixed point to top of sediment (2)			
3/15/11	6.3 ft	none		New installation. Fixed point is CI frame at grade	DJM
9/24/11		6.2	0.1 ft	Some grit felt	SM
6/20/13		5.8	0.5 ft	Mucky feel, debris visible in manhole and in Isolator Row, maintenance due	NV
7/7/13	6.3 ft		0	System jetted and vacuumed	DJM

StormTech Detention • Retention • Water Quality
An ADS company

Advanced Drainage Systems, Inc.
4640 Trueman Blvd., Hilliard, OH 43026
1-800-821-6710 www.ads-pipe.com

MAINTENANCE SCHEDULE

During the First Year of Operation:		
Task:	Completion Date:	Manager's Initials:
JANUARY:		
Employee Training Program with Spill Program		
*Catch Basin Inspection		
*Inspect Isolator Row and Subsurface Stormwater Detention		
FEBRUARY:		
*Inspect Isolator Row and Subsurface Stormwater Detention		
MARCH:		
*Inspect Isolator Row and Subsurface Stormwater Detention		
APRIL:		
*Catch Basin Inspection		
*Inspect Isolator Row and Subsurface Stormwater Detention		
Sweeping of Paved Surfaces		
Shrub Fertilization		
Lawn Liming (if necessary)		
JUNE:		
*Catch Basin Inspection		
SEPTEMBER:		
*Inspect Isolator Row and Subsurface Stormwater Detention		
Sweeping of Paved Surfaces		
Tree and Lawn Fertilization		
DECEMBER:		
*Catch Basin Inspection		
*Inspect Isolator Row and Subsurface Stormwater Detention		

*NOTE: Use appropriate worksheet found in this plan to conduct the inspection.

After the First Year of Operation:			
FOR YEAR_____			
Task:		Completion Date:	Manager's Initials:
JANUARY:			
Employee Training Program with Spill Program			
APRIL:			
*Catch Basin Inspection			
*Inspect Isolator Row and Subsurface Stormwater Detention			
Sweeping of Paved Surfaces			
Shrub Fertilization			
Lawn Liming (if necessary)			
JUNE:			
*Catch Basin Inspection			
SEPTEMBER:			
*Inspect Isolator Row and Subsurface Stormwater Detention			
Tree and Lawn Fertilization			
DECEMBER:			
*Catch Basin Inspection			

*NOTE: Use appropriate worksheet found in this plan to conduct the inspection.

CATCH BASIN / CATCH BASIN INSERT INSPECTION LOG

Name of Inspector: Date:

Catch Basin ID	Condition (circle one)		Debris above 1’ within sump? (If yes then catch basin is to be cleaned)		Date of Catch Basin/Cleaning (if debris is greater than 1’)		Condition of Hood (if applicable, remove trash/debris if necessary)	Comments:
	Excellent							
	Fair	Poor	Yes	No	Yes	No		
	Excellent							
	Fair	Poor	Yes	No	Yes	No		
	Excellent							
	Fair	Poor	Yes	No	Yes	No		
	Excellent							
	Fair	Poor	Yes	No	Yes	No		
	Excellent							
	Fair	Poor	Yes	No	Yes	No		
	Excellent							
	Fair	Poor	Yes	No	Yes	No		
	Excellent							
	Fair	Poor	Yes	No	Yes	No		
	Excellent							
	Fair	Poor	Yes	No	Yes	No		
	Excellent							

On-site Procedures for Inspection and Maintenance of Catch Basin Inserts

• Secure traffic and pedestrian traffic with cones, barrels, etc.

• Clean surface area around each catch basin.

• Remove grates and set aside

• Clean grates, remove litter and debris that may be trapped within the grate

• Visually inspect condition of outlet hood and remove trash and debris from hood if necessary.

• Remove by vactor hose the debris that has been trapped in the trough area. Dispose of in accordance with local, state and federal regulatory agency requirements. Most debris that is captured in the trough or sump area will fall into the non-hazardous waste category.

• Visually inspect and check the condition of the trough area.

• Replace grate and lockdown as needed.

• Un-secure traffic control area.

• Complete service report and submit to facility owner.

StormTech Maintenance Log

Project Name:
Location:

	Stadia Rod Readings				
Date	**Fixed point to chamber bottom (1)**	**Fixed point to top of sediment (2)**	**Sediment Depth (1) - (2)**	**Observations / Actions**	**Inspector**