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DRAINAGE REPORT
33 Cannondale Road
Weston, CT
April 15, 2024
Revised April 19, 2024

NARRATIVE
The owners of 33 Cannondale Road are proposing to construct a dwelling and associated site improvements. The parcel has an area of 2.0948 acres.

The construction will include a new dwelling, driveway, patio, porch, walks and associated site improvements. A stormwater management system will be built to meet the drainage requirements of the Town of Weston.

NATURAL FEATURES
There currently exists on the property an abandoned single family home. The majority of the lot is overgrown and cleared.

SOILS
According to the USDA web soil survey the property lies predominately in the area of Canton and Charlton fine sandy loam with mapping symbol of 61B with hydrologic classifications B, Timakwa and Natcaug soils with mapping symbol 17 with hydrologic classification B/D, Sutton fine sandy loam with mapping symbol 50B with hydrologic classification B/D, and Charlton-Chatfield complex with mapping symbols 73C and 73E with hydrologic classification B. These soils are well drained and suitable for development.

PROPOSED STORMWATER MANAGEMENT SYSTEM
The new improvements will result in an increase of impervious surfaces. Two (2) underground retentions system will be constructed to capture and retain the increase in runoff due to the increase in impervious surfaces. A 40-unit Cultec 150XLHD system, with an approximately 2,176 cubic feet capacity, and a 6-unit Cultec 150XLHD system, with an approximately 368 cubic feet capacity, are proposed to mitigate the increase.

LOW IMPACT DEVELOPMENT STRATEGIES
The principles of Low Impact Development have been incorporated into the proposal. The sensitive areas of the site have been identified and will be protected. Clearing and grading will be confined to those areas to be permanently altered. The area of new impervious surfaces has been kept small.

Disturbance will be limited to the area previously developed. Protecting the remainder of the lot from this Development Envelope will protect trees, minimize soil compaction and minimize site disturbance.

The underground retention system will provide Water Quality treatment for the captured roof runoff. The Water Quality treatment includes sediment control, filtering and cooling. The Cultec system also provides Groundwater Recharge and TSS removal (Total Suspended Solids).

Structural BMPs (Best Management Practices) include the underground infiltration system. The Cultec system has been sized to contain more than the increase in runoff for the 50 Year SCS Design Storm. Since the Provided Volume will be greater than the Required Volume, peak flows for all storm events will be reduced.

DRAINAGE SUMMARY

The design seeks to maintain the existing drainage pattern for the site. The proposed retention system will capture and infiltrate the increase in runoff for the SCS 50 Year Design Storm and reduce the peak flows for all storms. The grading of the site will not redirect runoff onto adjacent properties.

This stormwater management system is to be built in accordance with the requirements of the Town of Weston, the manufacturer, and the Connecticut Basic Building Code. The design is consistent with the Town of Weston drainage requirements for development on residential properties.

Bryan Muller

Bryan S. Muller, P.E.,
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DRAINAGE CALCULATIONS

(Watershed 1S) Existing Conditions – Impervious Surfaces

Dwelling	1,283 sf
Walk	171 sf
Porch	139 sf
Total Existing Impervious	1,593 square feet

(Watershed 1S, 2S, 3S & 4S) Proposed Conditions – Impervious Surfaces

Dwelling	4,295 sf
Driveway	4,471 sf
Patio	882 sf
Walk	634 sf
Porch	111 sf
Total Proposed Impervious	10,393 square feet

Total increase in impervious surfaces = 10,393 – 1,593 = 8,800 square feet

PROPOSED CULTEC RETENTION SYSTEM

Details of the Cultec system are as follows:
40 Cultec 150XLHD units in 8 row, laid in a stone leaching bed
Stone bed dimensions: 54.00’ x 27.50’ x 2.54’
Quantity of stone = 99 cubic yards, wrapped in a non-woven fabric (top and sides)
Minimum ground elevation above system = 393.0
Elevation of bottom of units = 390.5
Storage Volume Provided = 2176 cf (stone voids @ 40% - see attachment)

Details of the Cultec system are as follows:
6 Cultec 150XLHD units in 3 row, laid in a stone leaching bed
Stone bed dimensions: 23.25’ x 11.25’ x 2.54’
Quantity of stone = 18 cubic yards, wrapped in a non-woven fabric (top and sides)
Minimum ground elevation above system = 391.5
Elevation of bottom of units = 389.0
Storage Volume Provided = 368 cf (stone voids @ 40% - see attachment)

CULTEC Stormwater Design Calculator

Date:	April 22, 2024

Project Information:

Wallis Residence
33 Cannondale Road
Weston
CT
Fairfield

Calculations Performed By:

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RECHARGER 150XLHD

Recharger 150XLHD Chamber Specifications

Height	**18.5**	inches
Width	**33.0**	inches
Length	**11.00**	feet
Installed Length	**10.25**	feet
Bare Chamber Volume	**27.19**	cu. feet
Installed Chamber Volume	**50.18**	cu. feet

Breakdown of Storage Provided by Recharger 150XLHD Stormwater System

Within Chambers	**1,103.65**	cu. feet
Within Feed Connectors	**6.37**	cu. feet
Within Stone	**1,065.74**	cu. feet
Total Storage Provided	**2,175.8**	**cu. feet**
Total Storage Required	2000.00	cu. feet

Materials List

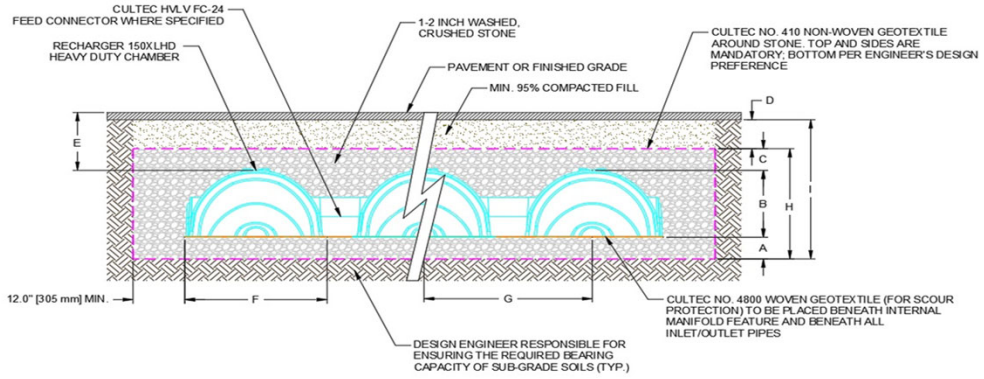
Recharger 150XLHD			
Total Number of Chambers Required	**40**	**pieces**	
Separator Row Chambers	**5**	pieces	Separator Row Qty Included in Total
Starter Chambers	**8**	pieces	
Intermediate Chambers	**24**	pieces	
End Chambers	**8**	pieces	
HVLV FC-24 Feed Connectors	**14**	pieces	*Based on 2 Internal Manifolds*
CULTEC No. 410 Non-Woven Geotextile	**470**	sq. yards	
CULTEC No. 4800 Woven Geotextile	**110**	feet	
Stone	**99**	cu. yards	

Bed Detail

Bed detail for reference only. Not project specific. Not to scale.

Bed Layout Information

Number of Rows Wide	**8**	pieces
Number of Chambers Long	**5**	pieces
Chamber Row Width	**25.50**	feet
Chamber Row Length	**52.00**	feet
Bed Width	**27.50**	feet
Bed Length	**54.00**	feet
Bed Area Required	**1485.00**	sq. feet
Length of Separator Row	**52.00**	feet



Conceptual graphic only. Not job specific.

Cross Section Table Reference

A	Depth of Stone Base	**6.0**	inches
B	Chamber Height	**18.5**	inches
C	Depth of Stone Above Units	**6.0**	inches
D	Depth of 95% Compacted Fill	**8.0**	inches
E	Max. Depth Allowed Above the Chamber	**12.00**	feet
F	Chamber Width	**33.0**	inches
G	Center to Center Spacing	**3.25**	feet
H	Effective Depth	**2.54**	feet
I	Bed Depth	**3.21**	feet

CULTEC Stormwater Design Calculator

Date:	April 17, 2024

Project Information:

Wallis Residence
33 Cannondale Road
Weston
CT
Fairfield

RECHARGER 150XLHD

Calculations Performed By:

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Recharger 150XLHD Chamber Specifications		
Height	**18.5**	inches
Width	**33.0**	inches
Length	**11.00**	feet
Installed Length	**10.25**	feet
Bare Chamber Volume	**27.19**	cu. feet
Installed Chamber Volume	**50.18**	cu. feet

Breakdown of Storage Provided by Recharger 150XLHD Stormwater System		
Within Chambers	**169.13**	cu. feet
Within Feed Connectors	**1.82**	cu. feet
Within Stone	**197.54**	cu. feet
Total Storage Provided	**368.5**	**cu. feet**
Total Storage Required	250.00	cu. feet

Materials List

Recharger 150XLHD		
Total Number of Chambers Required	**6**	**pieces**
Separator Row Chambers	**2**	pieces
Starter Chambers	**3**	pieces
Intermediate Chambers	**0**	pieces
End Chambers	**3**	pieces
HVLV FC-24 Feed Connectors	**4**	pieces
CULTEC No. 410 Non-Woven Geotextile	**97**	sq. yards
CULTEC No. 4800 Woven Geotextile	**46**	feet
Stone	**18**	cu. yards

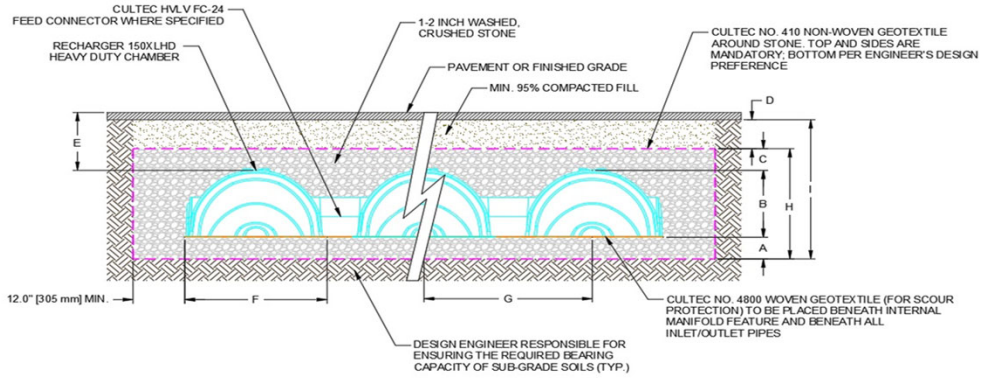
Separator Row Qty Included in Total

Based on 2 Internal Manifolds

Bed Detail

Bed detail for reference only. Not project specific. Not to scale.

Bed Layout Information		
Number of Rows Wide	**3**	pieces
Number of Chambers Long	**2**	pieces
Chamber Row Width	**9.25**	feet
Chamber Row Length	**21.25**	feet
Bed Width	**11.25**	feet
Bed Length	**23.25**	feet
Bed Area Required	**261.56**	sq. feet
Length of Separator Row	**21.25**	feet



Conceptual graphic only. Not job specific.

Cross Section Table Reference			
A	Depth of Stone Base	**6.0**	inches
B	Chamber Height	**18.5**	inches
C	Depth of Stone Above Units	**6.0**	inches
D	Depth of 95% Compacted Fill	**8.0**	inches
E	Max. Depth Allowed Above the Chamber	**12.00**	feet
F	Chamber Width	**33.0**	inches
G	Center to Center Spacing	**3.25**	feet
H	Effective Depth	**2.54**	feet
I	Bed Depth	**3.21**	feet

Custom Soil Resource Report
Soil Map

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, Western Part
Survey Area Data: Version 1, Sep 15, 2023

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

Date(s) aerial images were photographed: Oct 21, 2022—Oct 27, 2022

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
17	Timakwa and Natchaug soils, 0 to 2 percent slopes	1.1	41.8%
50B	Sutton fine sandy loam, 3 to 8 percent slopes	0.3	10.7%
60C	Canton and Charlton fine sandy loams, 8 to 15 percent slopes	0.0	0.2%
73C	Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky	1.1	44.4%
73E	Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky	0.1	2.9%
Totals for Area of Interest		**2.6**	**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, Western Part

17—Timakwa and Natchaug soils, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2t2qx
Elevation: 0 to 1,420 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Timakwa and similar soils: 45 percent
Natchaug and similar soils: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Timakwa

Setting

Landform: Depressions
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Herbaceous and woody organic material over sandy and gravelly glaciofluvial deposits

Typical profile

Oa1 - 0 to 12 inches: muck
Oa2 - 12 to 37 inches: muck
2Cg1 - 37 to 47 inches: very gravelly loamy coarse sand
2Cg2 - 47 to 60 inches: gravelly loamy very fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Rare
Frequency of ponding: Frequent
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 14.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: F144AY042NY - Semi-Rich Organic Wetlands
Hydric soil rating: Yes

Description of Natchaug

Setting

Landform: Depressions, depressions, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Highly decomposed organic material over loamy glaciofluvial deposits and/or loamy glaciolacustrine deposits and/or loamy till

Typical profile

Oa1 - 0 to 12 inches: muck
Oa2 - 12 to 31 inches: muck
2Cg1 - 31 to 39 inches: silt loam
2Cg2 - 39 to 79 inches: fine sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.01 to 14.17 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Rare
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 25 percent
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 17.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: F144AY042NY - Semi-Rich Organic Wetlands
Hydric soil rating: Yes

Minor Components

Whitman

Percent of map unit: 7 percent
Landform: Depressions, drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Catden

Percent of map unit: 3 percent
Landform: Swamps, bogs, marshes, kettles, depressions, fens, depressions, depressions
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Concave
Across-slope shape: Concave

Hydric soil rating: Yes

Maybid

Percent of map unit: 3 percent
Landform: Depressions, terraces, drainageways
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Scarboro

Percent of map unit: 2 percent
Landform: Outwash terraces, depressions, outwash deltas, drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread, dip
Down-slope shape: Concave
Across-slope shape: Concave, linear
Hydric soil rating: Yes

50B—Sutton fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2w69j
Elevation: 0 to 1,410 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Sutton

Setting

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

Typical profile

Ap - 0 to 5 inches: fine sandy loam
Bw1 - 5 to 17 inches: fine sandy loam
Bw2 - 17 to 25 inches: sandy loam
C1 - 25 to 39 inches: gravelly sandy loam

C2 - 39 to 60 inches: gravelly sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 12 to 27 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Ecological site: F144AY008CT - Moist Till Uplands
Hydric soil rating: No

Minor Components

Charlton

Percent of map unit: 9 percent
Landform: Hills, ground moraines, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Leicester

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

Woodbridge

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

Whitman

Percent of map unit: 1 percent
Landform: Depressions, drainageways, hills, ground moraines, drumlins
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave

Across-slope shape: Concave
Hydric soil rating: Yes

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

Map Unit Setting

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

Map Unit Composition

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

Description of Canton

Setting

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

Typical profile

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

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 19 to 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Charlton

Setting

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

Typical profile

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

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.9 inches)

Interpretive groups

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

Minor Components

Leicester

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

Sutton

Percent of map unit: 5 percent
Landform: Ground moraines, hills, ridges
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope

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

Chatfield

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

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

Map Unit Setting

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

Map Unit Composition

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

Description of Charlton, Very Stony

Setting

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

Typical profile

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

Properties and qualities

Slope: 3 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: More than 80 inches

Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.7 inches)

Interpretive groups

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

Description of Chatfield, Very Stony

Setting

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

Typical profile

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

Properties and qualities

Slope: 3 to 15 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 41 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

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

Minor Components

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

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

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

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

73E—Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky

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

Map Unit Composition
Charlton and similar soils: 45 percent
Chatfield and similar soils: 30 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Charlton

Setting

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

Typical profile

Ap - 0 to 4 inches: fine sandy loam
Bw1 - 4 to 7 inches: fine sandy loam
Bw2 - 7 to 19 inches: fine sandy loam
Bw3 - 19 to 27 inches: gravelly fine sandy loam
C - 27 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 15 to 45 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.9 inches)

Interpretive groups

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

Description of Chatfield

Setting

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

Typical profile

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

Properties and qualities

Slope: 15 to 45 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained

Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.3 inches)

Interpretive groups

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

Minor Components

Rock outcrop

Percent of map unit: 10 percent
Hydric soil rating: No

Leicester

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

Sutton, very stony

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

Hollis

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

Unnamed, sandy subsoil

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

Unnamed, red parent material

Percent of map unit: 1 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 (33 Cannondale Road)

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.

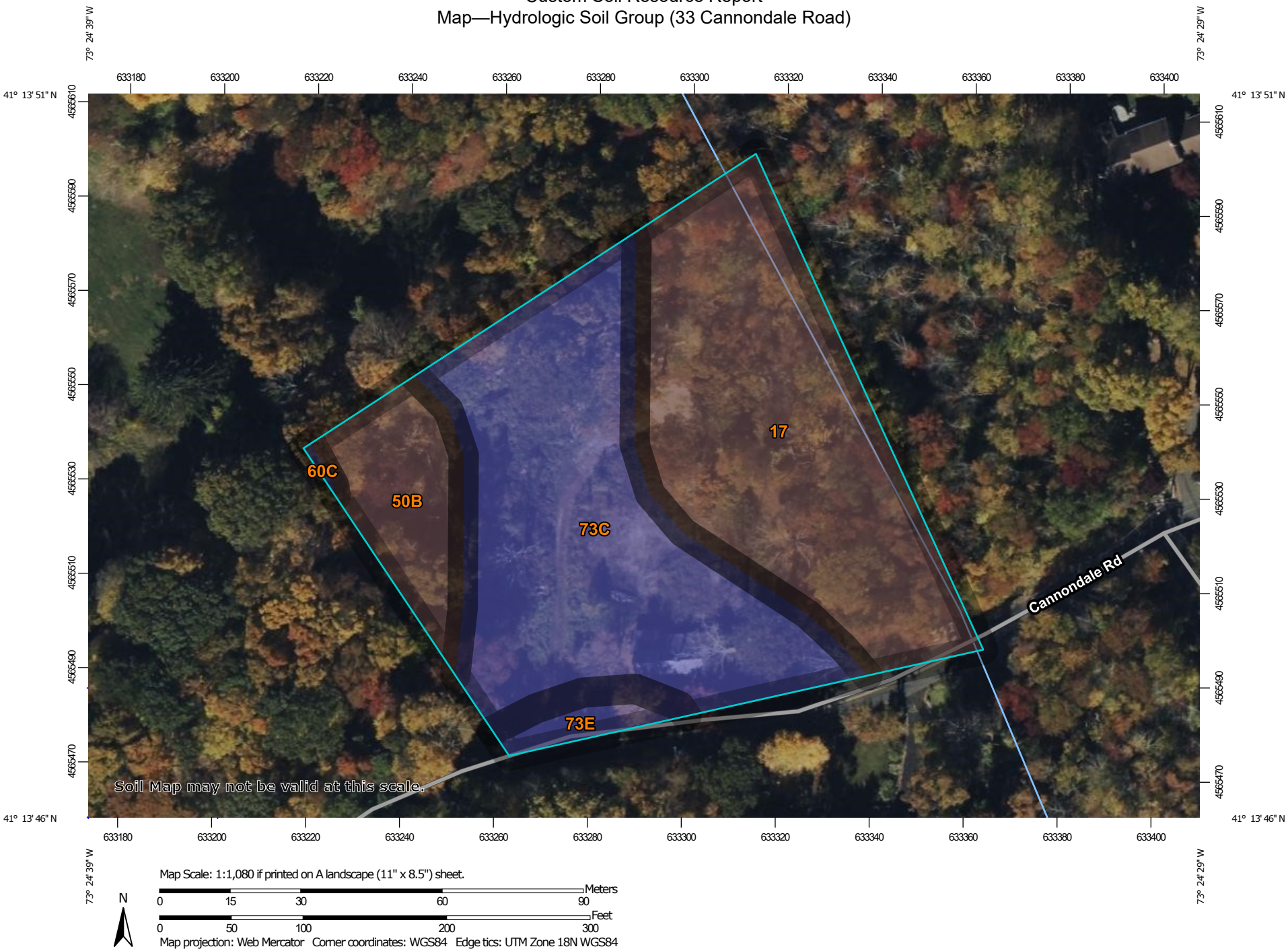
Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

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—Hydrologic Soil Group (33 Cannondale Road)



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, Western Part
Survey Area Data: Version 1, Sep 15, 2023

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

Date(s) aerial images were photographed: Oct 21, 2022—Oct 27, 2022

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

Table—Hydrologic Soil Group (33 Cannondale Road)

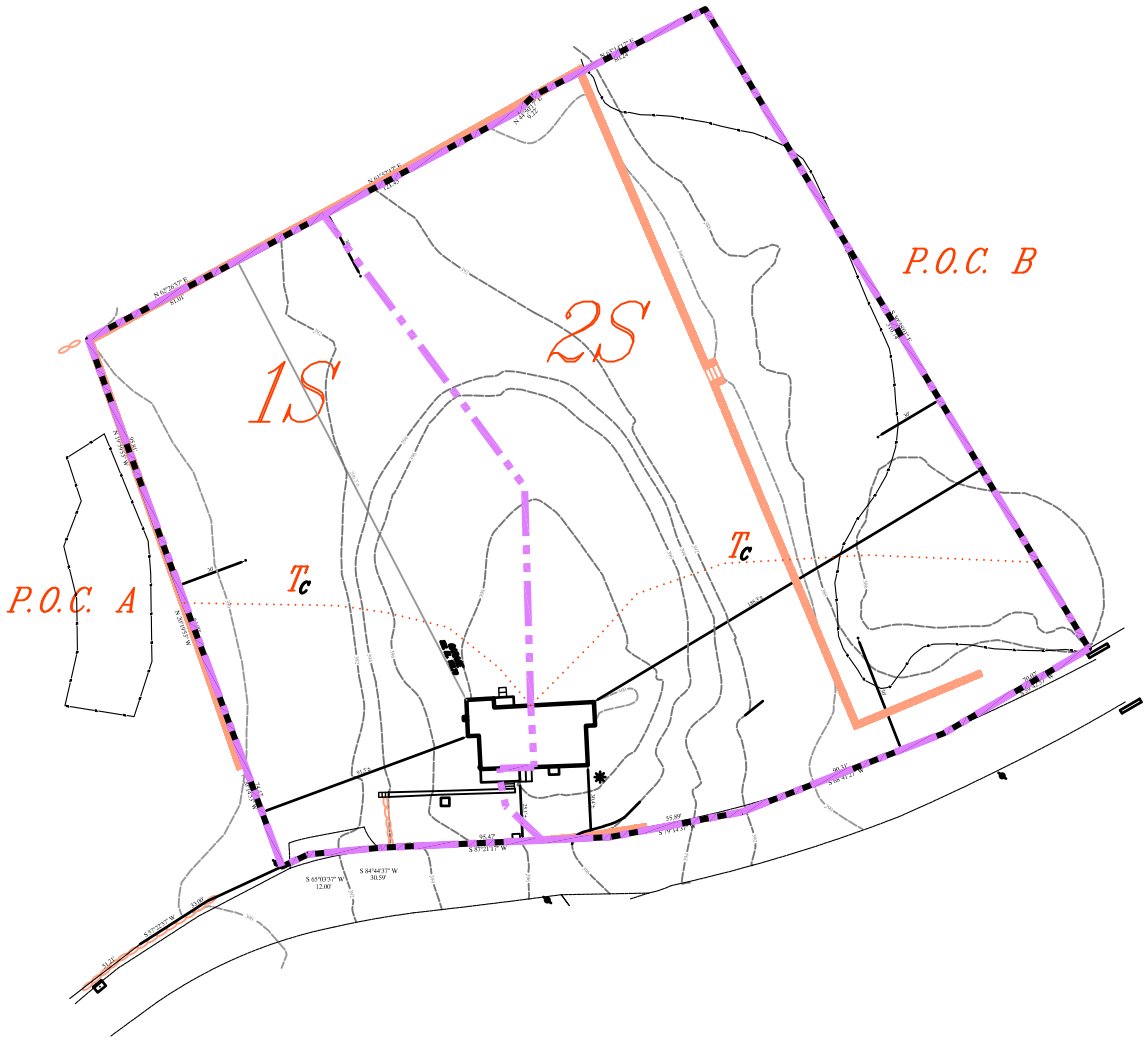
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
17	Timakwa and Natchaug soils, 0 to 2 percent slopes	B/D	1.1	41.8%
50B	Sutton fine sandy loam, 3 to 8 percent slopes	B/D	0.3	10.7%
60C	Canton and Charlton fine sandy loams, 8 to 15 percent slopes	B	0.0	0.2%
73C	Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky	B	1.1	44.4%
73E	Charlton-Chatfield complex, 15 to 45 percent slopes, very rocky	B	0.1	2.9%
Totals for Area of Interest			**2.6**	**100.0%**

Rating Options—Hydrologic Soil Group (33 Cannondale Road)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher



WATERSHED 1S
Total Watershed 32,475 sf
Impervious 855 sf
Pervious 31,620 sf

WATERSHED 2S
Total Watershed 58,777 sf
Impervious 738 sf
Pervious 58,039 sf

0 40 80 160

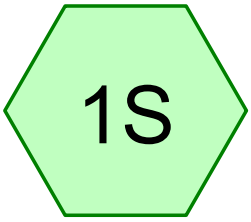
GRAPHIC SCALE

EXISTING WATERSHED

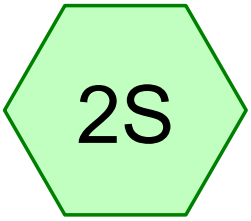
WALLIS RESIDENCE

33 CANNONDALE STREET
WESTON, CONNECTICUT

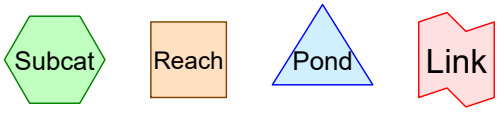
SCALE: 1"=80' DATE: APRIL 9, 2024



Existing Watershed
(P.O.C. "A")



Existing Watershed
(P.O.C. "B")



Routing Diagram for Existing Conditions
Prepared by Muller Engineering LLC, Printed 4/22/2024

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	25 year storm	Type III 24-hr		Default	24.00	1	6.58	2
2	50 year storm	Type III 24-hr		Default	24.00	1	7.46	2

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
89,659	61	>75% Grass cover, Good, HSG B (1S, 2S)
1,593	98	Impervious, HSG B (1S, 2S)
91,252	**62**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
91,252	HSG B	1S, 2S
0	HSG C	
0	HSG D	
0	Other	
91,252		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Sub Num
0	89,659	0	0	0	89,659	>75% Grass cover, Good	
0	1,593	0	0	0	1,593	Impervious	
0	**91,252**	**0**	**0**	**0**	**91,252**	**TOTAL AREA**	

Time span=0.00-27.00 hrs, dt=0.05 hrs, 541 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 1S: Existing Watershed Runoff Area=32,475 sf 2.63% Impervious Runoff Depth=3.14"
Flow Length=150' Tc=6.4 min CN=62 Runoff=2.63 cfs 8,507 cf

Subcatchment 2S: Existing Watershed Runoff Area=58,777 sf 1.26% Impervious Runoff Depth=3.04"
Flow Length=233' Tc=7.0 min CN=61 Runoff=4.50 cfs 14,883 cf

Total Runoff Area = 91,252 sf Runoff Volume = 23,390 cf Average Runoff Depth = 3.08"
98.25% Pervious = 89,659 sf 1.75% Impervious = 1,593 sf

Summary for Subcatchment 1S: Existing Watershed (P.O.C. "A")

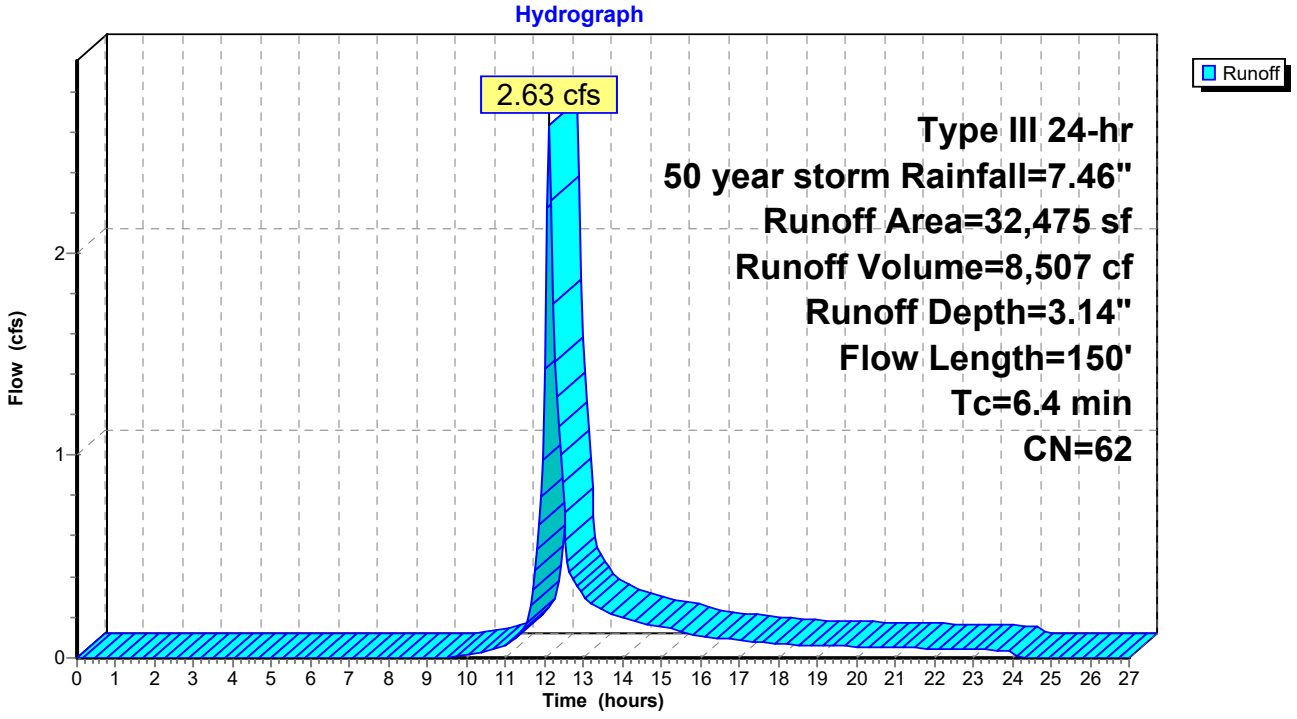
Runoff = 2.63 cfs @ 12.10 hrs, Volume= 8,507 cf, Depth= 3.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year storm Rainfall=7.46"

	Area (sf)	CN	Description
*	855	98	Impervious, HSG B
	31,620	61	>75% Grass cover, Good, HSG B
	32,475	62	Weighted Average
	31,620		97.37% Pervious Area
	855		2.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	100	0.0600	0.28		**Sheet Flow, Grass Lawn** Grass: Short n= 0.150 P2= 3.50"
0.4	50	0.0200	2.28		**Shallow Concentrated Flow, Lawn** Unpaved Kv= 16.1 fps
6.4	150	Total			

Subcatchment 1S: Existing Watershed (P.O.C. "A")



Hydrograph for Subcatchment 1S: Existing Watershed (P.O.C. "A")

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.04	0.00	0.00
1.00	0.07	0.00	0.00
1.50	0.11	0.00	0.00
2.00	0.15	0.00	0.00
2.50	0.19	0.00	0.00
3.00	0.23	0.00	0.00
3.50	0.27	0.00	0.00
4.00	0.32	0.00	0.00
4.50	0.37	0.00	0.00
5.00	0.42	0.00	0.00
5.50	0.48	0.00	0.00
6.00	0.54	0.00	0.00
6.50	0.60	0.00	0.00
7.00	0.68	0.00	0.00
7.50	0.76	0.00	0.00
8.00	0.85	0.00	0.00
8.50	0.96	0.00	0.00
9.00	1.09	0.00	0.00
9.50	1.24	0.00	0.00
10.00	1.41	0.01	0.01
10.50	1.62	0.02	0.03
11.00	1.87	0.06	0.07
11.50	2.22	0.14	0.15
12.00	3.73	0.73	**1.43**
12.50	5.24	1.59	**0.72**
13.00	5.59	1.82	0.30
13.50	5.84	1.99	0.24
14.00	6.05	2.12	0.20
14.50	6.22	2.24	0.17
15.00	6.37	2.35	0.15
15.50	6.50	2.44	0.13
16.00	6.61	2.52	0.11
16.50	6.70	2.58	0.10
17.00	6.78	2.64	0.09
17.50	6.86	2.70	0.08
18.00	6.92	2.74	0.07
18.50	6.98	2.79	0.06
19.00	7.04	2.83	0.06
19.50	7.09	2.87	0.06
20.00	7.14	2.90	0.05
20.50	7.19	2.94	0.05
21.00	7.23	2.97	0.05
21.50	7.28	3.00	0.05
22.00	7.32	3.04	0.05
22.50	7.36	3.06	0.04
23.00	7.39	3.09	0.04
23.50	7.43	3.12	0.04
24.00	**7.46**	**3.14**	0.04
24.50	7.46	3.14	0.00
25.00	7.46	3.14	0.00
25.50	7.46	3.14	0.00
26.00	7.46	3.14	0.00
26.50	7.46	3.14	0.00
27.00	7.46	3.14	0.00

Summary for Subcatchment 2S: Existing Watershed (P.O.C. "B")

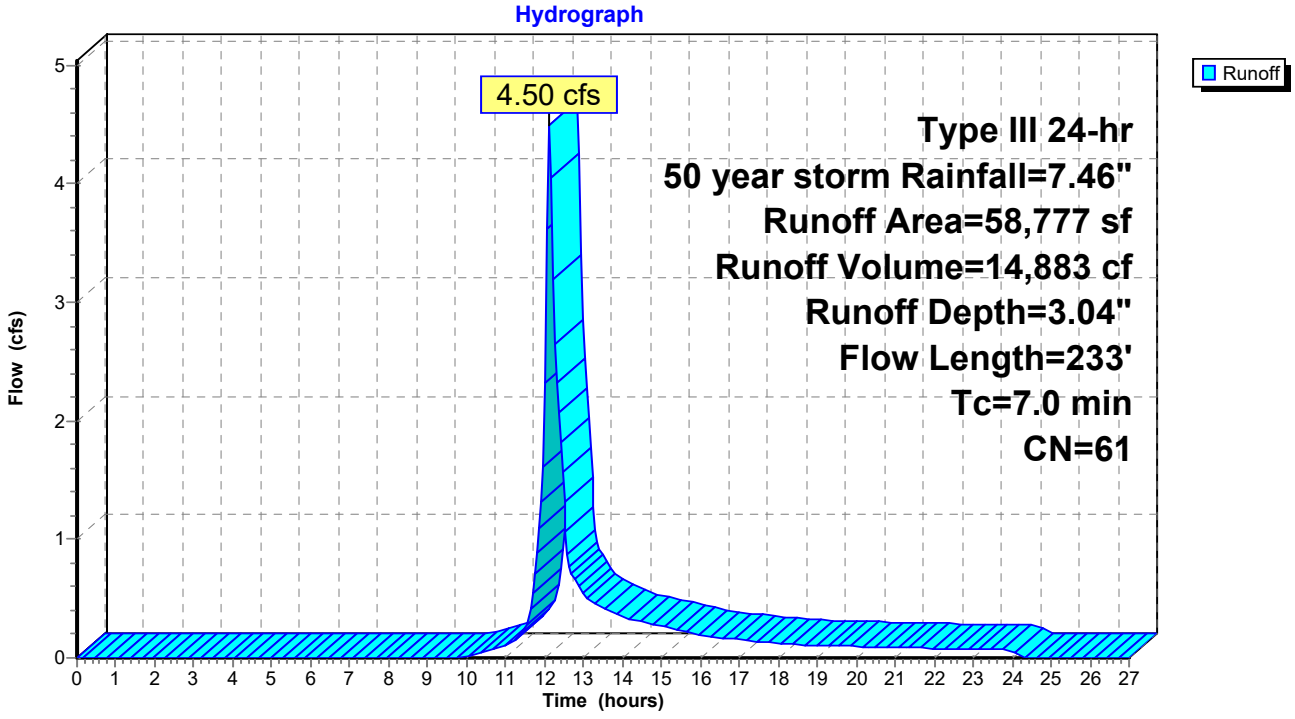
Runoff = 4.50 cfs @ 12.11 hrs, Volume= 14,883 cf, Depth= 3.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year storm Rainfall=7.46"

	Area (sf)	CN	Description
*	738	98	Impervious, HSG B
	58,039	61	>75% Grass cover, Good, HSG B
	58,777	61	Weighted Average
	58,039		98.74% Pervious Area
	738		1.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	100	0.0600	0.28		**Sheet Flow, Grass Lawn** Grass: Short n= 0.150 P2= 3.50"
1.0	133	0.0200	2.28		**Shallow Concentrated Flow, Lawn** Unpaved Kv= 16.1 fps
7.0	233	Total			

Subcatchment 2S: Existing Watershed (P.O.C. "B")



Hydrograph for Subcatchment 2S: Existing Watershed (P.O.C. "B")

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.04	0.00	0.00
1.00	0.07	0.00	0.00
1.50	0.11	0.00	0.00
2.00	0.15	0.00	0.00
2.50	0.19	0.00	0.00
3.00	0.23	0.00	0.00
3.50	0.27	0.00	0.00
4.00	0.32	0.00	0.00
4.50	0.37	0.00	0.00
5.00	0.42	0.00	0.00
5.50	0.48	0.00	0.00
6.00	0.54	0.00	0.00
6.50	0.60	0.00	0.00
7.00	0.68	0.00	0.00
7.50	0.76	0.00	0.00
8.00	0.85	0.00	0.00
8.50	0.96	0.00	0.00
9.00	1.09	0.00	0.00
9.50	1.24	0.00	0.00
10.00	1.41	0.00	0.01
10.50	1.62	0.02	0.05
11.00	1.87	0.05	0.11
11.50	2.22	0.12	0.25
12.00	3.73	0.68	**2.32**
12.50	5.24	1.51	**1.32**
13.00	5.59	1.74	0.54
13.50	5.84	1.90	0.42
14.00	6.05	2.04	0.35
14.50	6.22	2.16	0.31
15.00	6.37	2.26	0.27
15.50	6.50	2.35	0.23
16.00	6.61	2.42	0.19
16.50	6.70	2.49	0.17
17.00	6.78	2.55	0.16
17.50	6.86	2.60	0.14
18.00	6.92	2.65	0.12
18.50	6.98	2.69	0.11
19.00	7.04	2.73	0.11
19.50	7.09	2.77	0.10
20.00	7.14	2.80	0.10
20.50	7.19	2.84	0.09
21.00	7.23	2.87	0.09
21.50	7.28	2.90	0.09
22.00	7.32	2.93	0.08
22.50	7.36	2.96	0.08
23.00	7.39	2.99	0.07
23.50	7.43	3.01	0.07
24.00	**7.46**	**3.04**	0.06
24.50	7.46	3.04	0.00
25.00	7.46	3.04	0.00
25.50	7.46	3.04	0.00
26.00	7.46	3.04	0.00
26.50	7.46	3.04	0.00
27.00	7.46	3.04	0.00

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	25 year storm	Type III 24-hr		Default	24.00	1	6.58	2
2	50 year storm	Type III 24-hr		Default	24.00	1	7.46	2

Summary for Subcatchment 1S: Existing Watershed (P.O.C. "A")

Runoff = 2.06 cfs @ 12.10 hrs, Volume= 6,756 cf, Depth= 2.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 year storm Rainfall=6.58"

	Area (sf)	CN	Description
*	855	98	Impervious, HSG B
	31,620	61	>75% Grass cover, Good, HSG B
	32,475	62	Weighted Average
	31,620		97.37% Pervious Area
	855		2.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	100	0.0600	0.28		**Sheet Flow, Grass Lawn** Grass: Short n= 0.150 P2= 3.50"
0.4	50	0.0200	2.28		**Shallow Concentrated Flow, Lawn** Unpaved Kv= 16.1 fps
6.4	150	Total			

Summary for Subcatchment 2S: Existing Watershed (P.O.C. "B")

Runoff = 3.51 cfs @ 12.11 hrs, Volume= 11,771 cf, Depth= 2.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 year storm Rainfall=6.58"

	Area (sf)	CN	Description
*	738	98	Impervious, HSG B
	58,039	61	>75% Grass cover, Good, HSG B
	58,777	61	Weighted Average
	58,039		98.74% Pervious Area
	738		1.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	100	0.0600	0.28		**Sheet Flow, Grass Lawn** Grass: Short n= 0.150 P2= 3.50"
1.0	133	0.0200	2.28		**Shallow Concentrated Flow, Lawn** Unpaved Kv= 16.1 fps
7.0	233	Total			

Summary for Subcatchment 1S: Existing Watershed (P.O.C. "A")

Runoff = 2.63 cfs @ 12.10 hrs, Volume= 8,507 cf, Depth= 3.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year storm Rainfall=7.46"

	Area (sf)	CN	Description
*	855	98	Impervious, HSG B
	31,620	61	>75% Grass cover, Good, HSG B
	32,475	62	Weighted Average
	31,620		97.37% Pervious Area
	855		2.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	100	0.0600	0.28		**Sheet Flow, Grass Lawn** Grass: Short n= 0.150 P2= 3.50"
0.4	50	0.0200	2.28		**Shallow Concentrated Flow, Lawn** Unpaved Kv= 16.1 fps
6.4	150	Total			

Summary for Subcatchment 2S: Existing Watershed (P.O.C. "B")

Runoff = 4.50 cfs @ 12.11 hrs, Volume= 14,883 cf, Depth= 3.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year storm Rainfall=7.46"

	Area (sf)	CN	Description
*	738	98	Impervious, HSG B
	58,039	61	>75% Grass cover, Good, HSG B
	58,777	61	Weighted Average
	58,039		98.74% Pervious Area
	738		1.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	100	0.0600	0.28		**Sheet Flow, Grass Lawn** Grass: Short n= 0.150 P2= 3.50"
1.0	133	0.0200	2.28		**Shallow Concentrated Flow, Lawn** Unpaved Kv= 16.1 fps
7.0	233	Total			

WATERSHED 1S
Total Watershed 26,668 sf
Impervious 1,149 sf
Pervious 25,519 sf

WATERSHED 2S
Total Watershed 55,715 sf
Impervious 998 sf
Pervious 54,717 sf

WATERSHED 3S
Total Watershed 7,661 sf
Impervious 7,038 sf
Pervious 623 sf

WATERSHED 4S
Total Watershed 1,208 sf
Impervious 1,208 sf
Pervious 0 sf

0 40 80 160

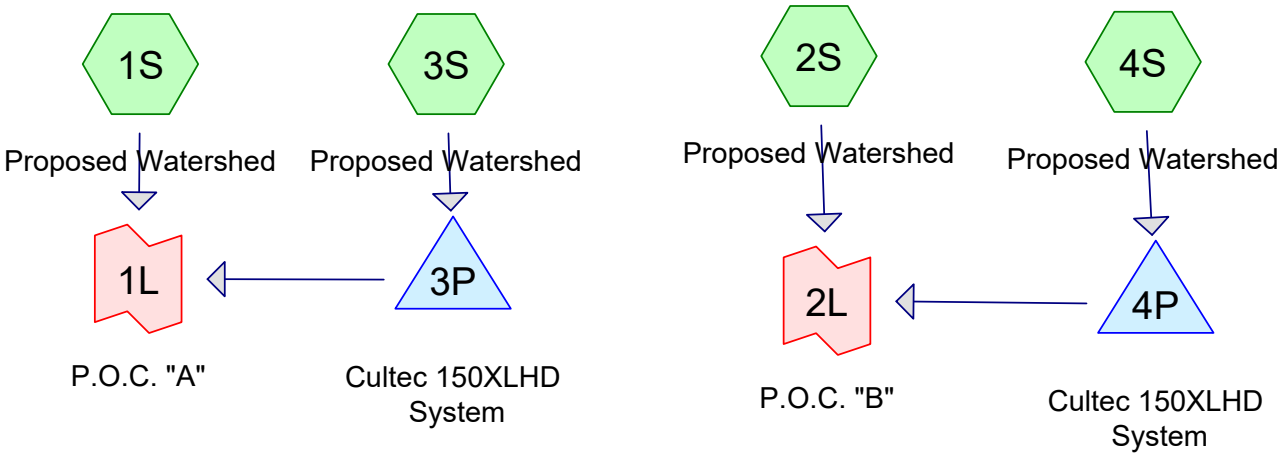
GRAPHIC SCALE

PROPOSED WATERSHED

WALLIS RESIDENCE

33 CANNONDALE STREET
WESTON, CONNECTICUT

SCALE: 1"=80' DATE: APRIL 9, 2024



Subcat Reach Pond Link

Routing Diagram for Proposed Conditions
Prepared by Muller Engineering LLC, Printed 4/22/2024

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	25 year storm	Type III 24-hr		Default	24.00	1	6.58	2
2	50 year storm	Type III 24-hr		Default	24.00	1	7.46	2

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
80,859	61	>75% Grass cover, Good, HSG B (1S, 2S, 3S)
10,393	98	Impervious, HSG B (1S, 2S, 3S, 4S)
91,252	**65**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
91,252	HSG B	1S, 2S, 3S, 4S
0	HSG C	
0	HSG D	
0	Other	
91,252		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Sub Num
0	80,859	0	0	0	80,859	>75% Grass cover, Good	
0	10,393	0	0	0	10,393	Impervious	
0	**91,252**	**0**	**0**	**0**	**91,252**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
1	3P	392.00	389.50	20.0	0.1250	0.011	0.0	6.0	0.0

Time span=0.00-27.00 hrs, dt=0.05 hrs, 541 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 1S: Proposed Watershed Runoff Area=26,668 sf 4.31% Impervious Runoff Depth=3.25"
Flow Length=150' Tc=6.4 min CN=63 Runoff=2.24 cfs 7,221 cf

Subcatchment 2S: Proposed Watershed Runoff Area=55,715 sf 1.79% Impervious Runoff Depth=3.14"
Flow Length=233' Tc=7.0 min CN=62 Runoff=4.43 cfs 14,596 cf

Subcatchment 3S: Proposed Watershed Runoff Area=7,661 sf 91.87% Impervious Runoff Depth=6.86"
Tc=6.0 min CN=95 Runoff=1.24 cfs 4,382 cf

Subcatchment 4S: Proposed Watershed Runoff Area=1,208 sf 100.00% Impervious Runoff Depth=7.22"
Tc=6.0 min CN=98 Runoff=0.20 cfs 727 cf

Pond 3P: Cultec 150XLHD System Peak Elev=392.81' Storage=2,179 cf Inflow=1.24 cfs 4,382 cf
6.0" Round Culvert n=0.011 L=20.0' S=0.1250 '/' Outflow=0.56 cfs 2,376 cf

Pond 4P: Cultec 150XLHD System Peak Elev=391.03' Storage=374 cf Inflow=0.20 cfs 727 cf
Outflow=0.18 cfs 356 cf

Link 1L: P.O.C. "A" Inflow=2.54 cfs 9,597 cf
Primary=2.54 cfs 9,597 cf

Link 2L: P.O.C. "B" Inflow=4.45 cfs 14,952 cf
Primary=4.45 cfs 14,952 cf

Total Runoff Area = 91,252 sf Runoff Volume = 26,925 cf Average Runoff Depth = 3.54"
88.61% Pervious = 80,859 sf 11.39% Impervious = 10,393 sf

Summary for Subcatchment 1S: Proposed Watershed

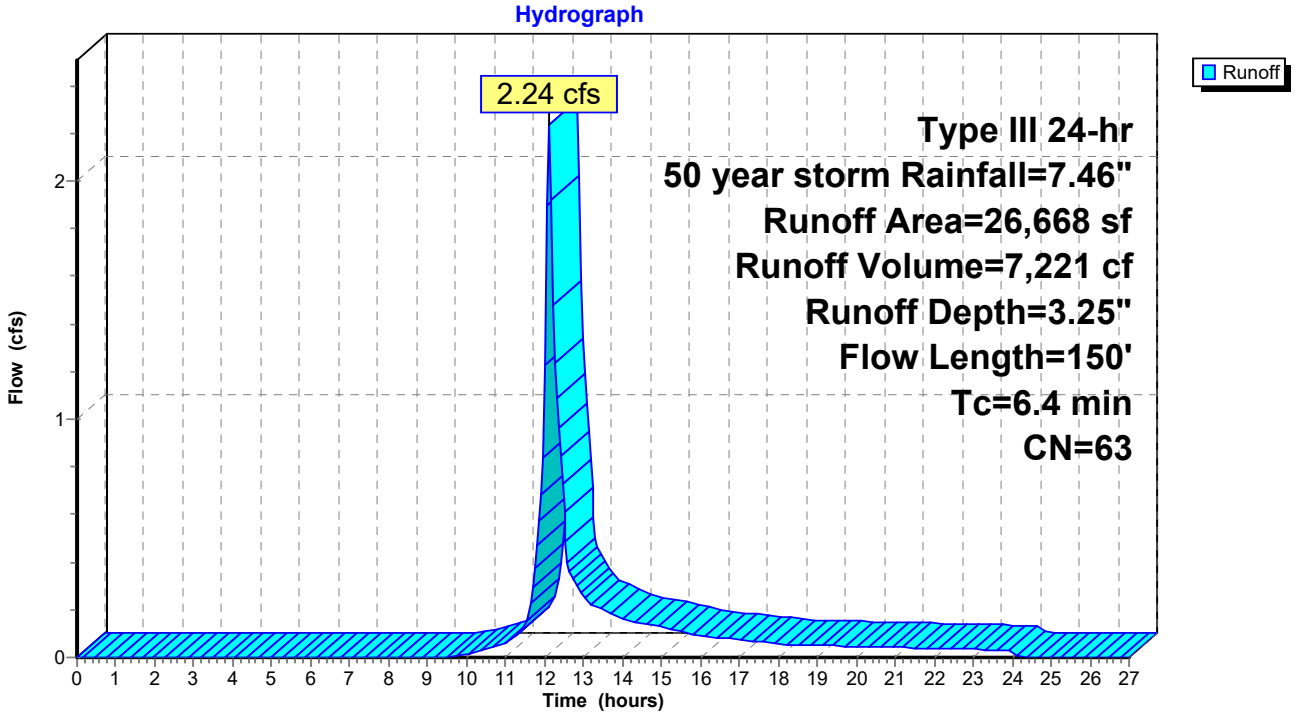
Runoff = 2.24 cfs @ 12.10 hrs, Volume= 7,221 cf, Depth= 3.25"
Routed to Link 1L : P.O.C. "A"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year storm Rainfall=7.46"

	Area (sf)	CN	Description
*	1,149	98	Impervious, HSG B
	25,519	61	>75% Grass cover, Good, HSG B
	26,668	63	Weighted Average
	25,519		95.69% Pervious Area
	1,149		4.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	100	0.0600	0.28		**Sheet Flow, Grass Lawn** Grass: Short n= 0.150 P2= 3.50"
0.4	50	0.0200	2.28		**Shallow Concentrated Flow, Lawn** Unpaved Kv= 16.1 fps
6.4	150	Total			

Subcatchment 1S: Proposed Watershed



Hydrograph for Subcatchment 1S: Proposed Watershed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.04	0.00	0.00
1.00	0.07	0.00	0.00
1.50	0.11	0.00	0.00
2.00	0.15	0.00	0.00
2.50	0.19	0.00	0.00
3.00	0.23	0.00	0.00
3.50	0.27	0.00	0.00
4.00	0.32	0.00	0.00
4.50	0.37	0.00	0.00
5.00	0.42	0.00	0.00
5.50	0.48	0.00	0.00
6.00	0.54	0.00	0.00
6.50	0.60	0.00	0.00
7.00	0.68	0.00	0.00
7.50	0.76	0.00	0.00
8.00	0.85	0.00	0.00
8.50	0.96	0.00	0.00
9.00	1.09	0.00	0.00
9.50	1.24	0.00	0.00
10.00	1.41	0.01	0.01
10.50	1.62	0.03	0.03
11.00	1.87	0.07	0.06
11.50	2.22	0.16	0.13
12.00	3.73	0.77	**1.23**
12.50	5.24	1.66	**0.61**
13.00	5.59	1.90	0.25
13.50	5.84	2.07	0.20
14.00	6.05	2.21	0.17
14.50	6.22	2.33	0.14
15.00	6.37	2.44	0.13
15.50	6.50	2.53	0.11
16.00	6.61	2.61	0.09
16.50	6.70	2.68	0.08
17.00	6.78	2.74	0.07
17.50	6.86	2.80	0.06
18.00	6.92	2.84	0.06
18.50	6.98	2.89	0.05
19.00	7.04	2.93	0.05
19.50	7.09	2.97	0.05
20.00	7.14	3.01	0.05
20.50	7.19	3.04	0.04
21.00	7.23	3.08	0.04
21.50	7.28	3.11	0.04
22.00	7.32	3.14	0.04
22.50	7.36	3.17	0.04
23.00	7.39	3.20	0.03
23.50	7.43	3.22	0.03
24.00	**7.46**	**3.25**	0.03
24.50	7.46	3.25	0.00
25.00	7.46	3.25	0.00
25.50	7.46	3.25	0.00
26.00	7.46	3.25	0.00
26.50	7.46	3.25	0.00
27.00	7.46	3.25	0.00

Summary for Subcatchment 2S: Proposed Watershed

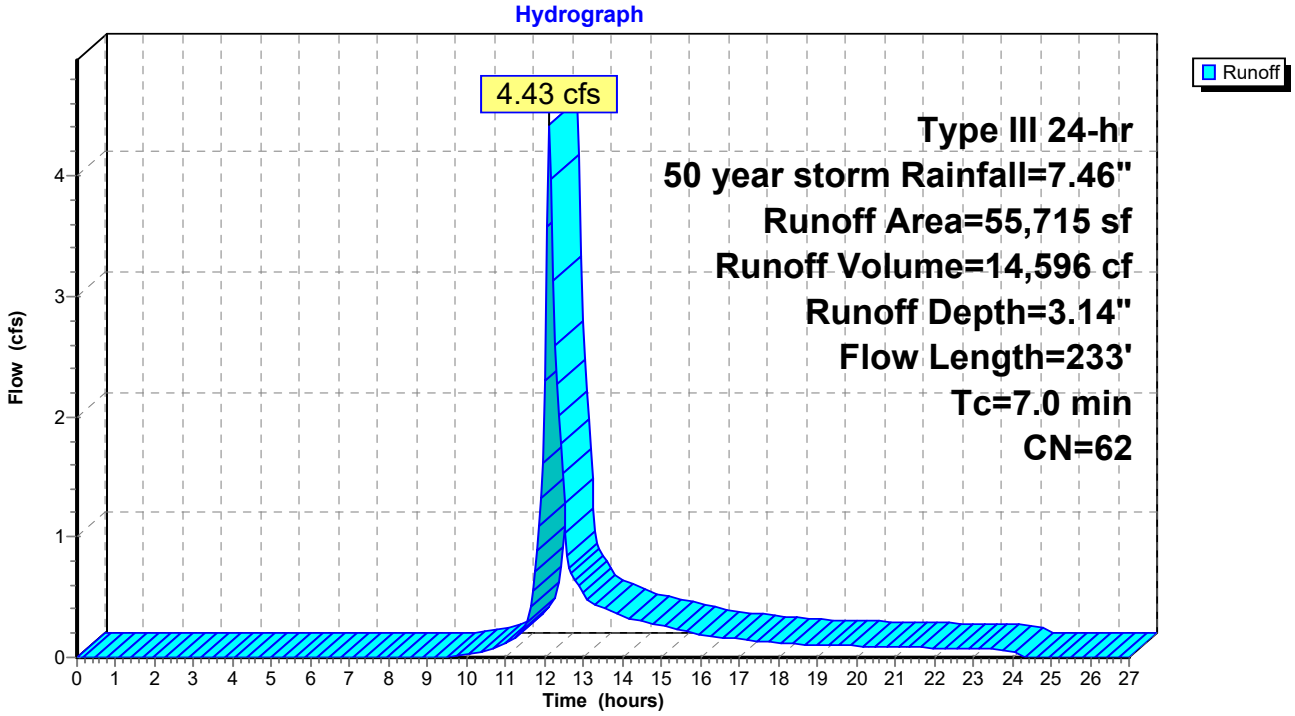
Runoff = 4.43 cfs @ 12.11 hrs, Volume= 14,596 cf, Depth= 3.14"
Routed to Link 2L : P.O.C. "B"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year storm Rainfall=7.46"

	Area (sf)	CN	Description
*	998	98	Impervious, HSG B
	54,717	61	>75% Grass cover, Good, HSG B
	55,715	62	Weighted Average
	54,717		98.21% Pervious Area
	998		1.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	100	0.0600	0.28		**Sheet Flow, Grass Lawn** Grass: Short n= 0.150 P2= 3.50"
1.0	133	0.0200	2.28		**Shallow Concentrated Flow, Lawn** Unpaved Kv= 16.1 fps
7.0	233	Total			

Subcatchment 2S: Proposed Watershed



Hydrograph for Subcatchment 2S: Proposed Watershed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.04	0.00	0.00
1.00	0.07	0.00	0.00
1.50	0.11	0.00	0.00
2.00	0.15	0.00	0.00
2.50	0.19	0.00	0.00
3.00	0.23	0.00	0.00
3.50	0.27	0.00	0.00
4.00	0.32	0.00	0.00
4.50	0.37	0.00	0.00
5.00	0.42	0.00	0.00
5.50	0.48	0.00	0.00
6.00	0.54	0.00	0.00
6.50	0.60	0.00	0.00
7.00	0.68	0.00	0.00
7.50	0.76	0.00	0.00
8.00	0.85	0.00	0.00
8.50	0.96	0.00	0.00
9.00	1.09	0.00	0.00
9.50	1.24	0.00	0.00
10.00	1.41	0.01	0.02
10.50	1.62	0.02	0.06
11.00	1.87	0.06	0.11
11.50	2.22	0.14	0.25
12.00	3.73	0.73	**2.30**
12.50	5.24	1.59	**1.28**
13.00	5.59	1.82	0.52
13.50	5.84	1.99	0.41
14.00	6.05	2.12	0.34
14.50	6.22	2.24	0.30
15.00	6.37	2.35	0.26
15.50	6.50	2.44	0.23
16.00	6.61	2.52	0.19
16.50	6.70	2.58	0.17
17.00	6.78	2.64	0.15
17.50	6.86	2.70	0.13
18.00	6.92	2.74	0.12
18.50	6.98	2.79	0.11
19.00	7.04	2.83	0.10
19.50	7.09	2.87	0.10
20.00	7.14	2.90	0.09
20.50	7.19	2.94	0.09
21.00	7.23	2.97	0.09
21.50	7.28	3.00	0.08
22.00	7.32	3.04	0.08
22.50	7.36	3.06	0.07
23.00	7.39	3.09	0.07
23.50	7.43	3.12	0.07
24.00	**7.46**	**3.14**	0.06
24.50	7.46	3.14	0.00
25.00	7.46	3.14	0.00
25.50	7.46	3.14	0.00
26.00	7.46	3.14	0.00
26.50	7.46	3.14	0.00
27.00	7.46	3.14	0.00

Summary for Subcatchment 3S: Proposed Watershed

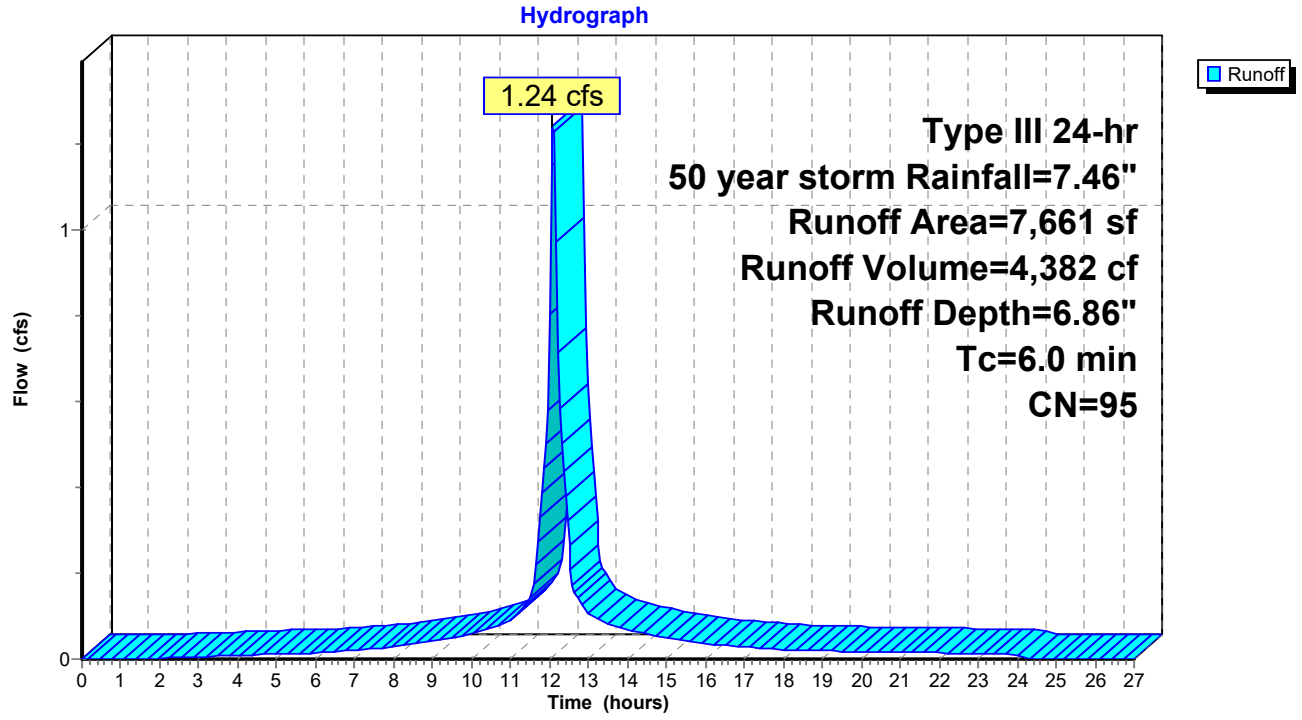
Runoff = 1.24 cfs @ 12.09 hrs, Volume= 4,382 cf, Depth= 6.86"
Routed to Pond 3P : Cultec 150XLHD System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year storm Rainfall=7.46"

	Area (sf)	CN	Description
*	7,038	98	Impervious, HSG B
	623	61	>75% Grass cover, Good, HSG B
	7,661	95	Weighted Average
	623		8.13% Pervious Area
	7,038		91.87% Impervious Area

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

Subcatchment 3S: Proposed Watershed



Hydrograph for Subcatchment 3S: Proposed Watershed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.04	0.00	0.00
1.00	0.07	0.00	0.00
1.50	0.11	0.00	0.00
2.00	0.15	0.00	0.00
2.50	0.19	0.01	0.00
3.00	0.23	0.02	0.00
3.50	0.27	0.04	0.01
4.00	0.32	0.06	0.01
4.50	0.37	0.09	0.01
5.00	0.42	0.12	0.01
5.50	0.48	0.16	0.01
6.00	0.54	0.19	0.01
6.50	0.60	0.24	0.02
7.00	0.68	0.30	0.02
7.50	0.76	0.36	0.02
8.00	0.85	0.44	0.03
8.50	0.96	0.53	0.03
9.00	1.09	0.64	0.04
9.50	1.24	0.77	0.05
10.00	1.41	0.93	0.06
10.50	1.62	1.12	0.07
11.00	1.87	1.35	0.09
11.50	2.22	1.70	0.14
12.00	3.73	3.17	**0.80**
12.50	5.24	4.65	**0.26**
13.00	5.59	5.01	0.11
13.50	5.84	5.26	0.08
14.00	6.05	5.46	0.07
14.50	6.22	5.63	0.06
15.00	6.37	5.78	0.05
15.50	6.50	5.91	0.04
16.00	6.61	6.02	0.04
16.50	6.70	6.11	0.03
17.00	6.78	6.19	0.03
17.50	6.86	6.27	0.02
18.00	6.92	6.33	0.02
18.50	6.98	6.39	0.02
19.00	7.04	6.44	0.02
19.50	7.09	6.49	0.02
20.00	7.14	6.54	0.02
20.50	7.19	6.59	0.02
21.00	7.23	6.64	0.02
21.50	7.28	6.68	0.02
22.00	7.32	6.72	0.01
22.50	7.36	6.76	0.01
23.00	7.39	6.80	0.01
23.50	7.43	6.83	0.01
24.00	**7.46**	**6.86**	0.01
24.50	7.46	6.86	0.00
25.00	7.46	6.86	0.00
25.50	7.46	6.86	0.00
26.00	7.46	6.86	0.00
26.50	7.46	6.86	0.00
27.00	7.46	6.86	0.00

Summary for Subcatchment 4S: Proposed Watershed

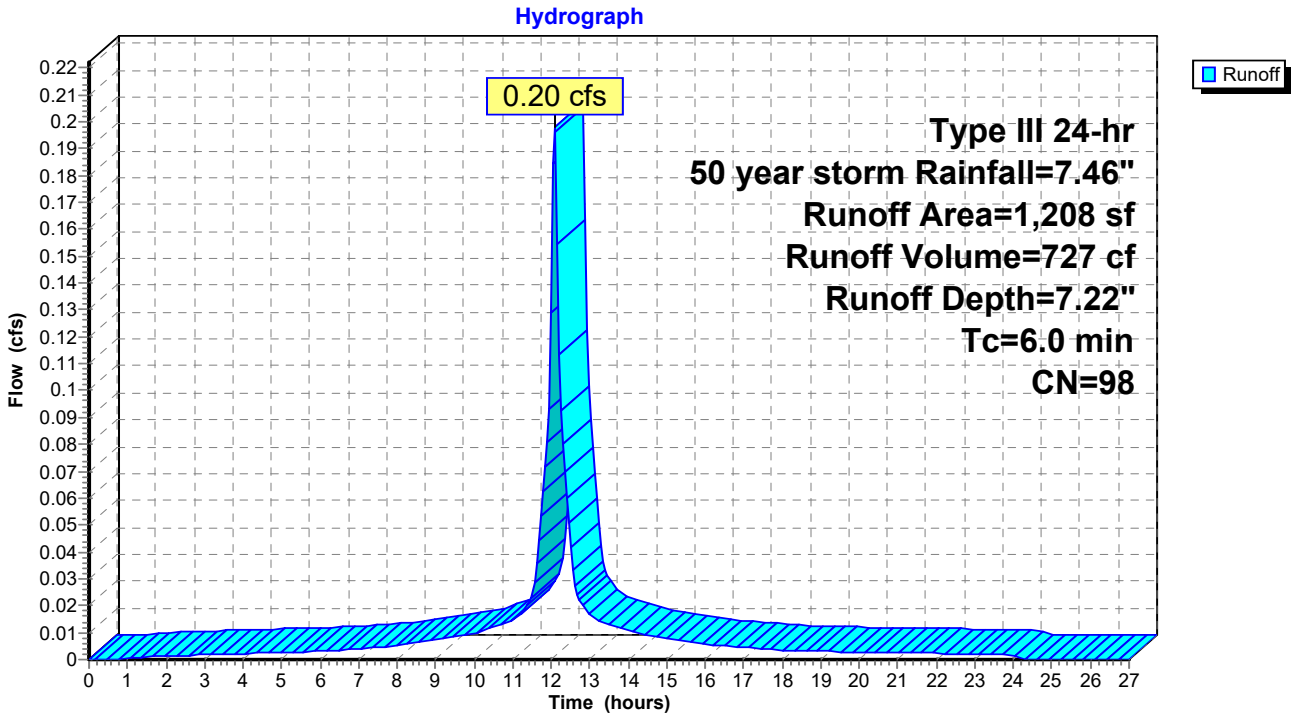
Runoff = 0.20 cfs @ 12.09 hrs, Volume= 727 cf, Depth= 7.22"
Routed to Pond 4P : Cultec 150XLHD System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year storm Rainfall=7.46"

	Area (sf)	CN	Description
*	1,208	98	Impervious, HSG B
	0	61	>75% Grass cover, Good, HSG B
	1,208	98	Weighted Average
	1,208		100.00% Impervious Area

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

Subcatchment 4S: Proposed Watershed



Hydrograph for Subcatchment 4S: Proposed Watershed

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.50	0.04	0.00	0.00
1.00	0.07	0.00	0.00
1.50	0.11	0.02	0.00
2.00	0.15	0.04	0.00
2.50	0.19	0.06	0.00
3.00	0.23	0.09	0.00
3.50	0.27	0.12	0.00
4.00	0.32	0.16	0.00
4.50	0.37	0.20	0.00
5.00	0.42	0.25	0.00
5.50	0.48	0.30	0.00
6.00	0.54	0.35	0.00
6.50	0.60	0.41	0.00
7.00	0.68	0.48	0.00
7.50	0.76	0.56	0.00
8.00	0.85	0.65	0.01
8.50	0.96	0.75	0.01
9.00	1.09	0.88	0.01
9.50	1.24	1.02	0.01
10.00	1.41	1.19	0.01
10.50	1.62	1.39	0.01
11.00	1.87	1.64	0.01
11.50	2.22	2.00	0.02
12.00	3.73	3.50	**0.13**
12.50	5.24	5.00	**0.04**
13.00	5.59	5.36	0.02
13.50	5.84	5.61	0.01
14.00	6.05	5.81	0.01
14.50	6.22	5.98	0.01
15.00	6.37	6.13	0.01
15.50	6.50	6.26	0.01
16.00	6.61	6.37	0.01
16.50	6.70	6.46	0.00
17.00	6.78	6.55	0.00
17.50	6.86	6.62	0.00
18.00	6.92	6.68	0.00
18.50	6.98	6.74	0.00
19.00	7.04	6.80	0.00
19.50	7.09	6.85	0.00
20.00	7.14	6.90	0.00
20.50	7.19	6.95	0.00
21.00	7.23	6.99	0.00
21.50	7.28	7.04	0.00
22.00	7.32	7.08	0.00
22.50	7.36	7.12	0.00
23.00	7.39	7.15	0.00
23.50	7.43	7.19	0.00
24.00	**7.46**	**7.22**	0.00
24.50	7.46	7.22	0.00
25.00	7.46	7.22	0.00
25.50	7.46	7.22	0.00
26.00	7.46	7.22	0.00
26.50	7.46	7.22	0.00
27.00	7.46	7.22	0.00

Summary for Pond 3P: Cultec 150XLHD System

Inflow Area = 7,661 sf, 91.87% Impervious, Inflow Depth = 6.86" for 50 year storm event
Inflow = 1.24 cfs @ 12.09 hrs, Volume= 4,382 cf
Outflow = 0.56 cfs @ 12.16 hrs, Volume= 2,376 cf, Atten= 55%, Lag= 4.4 min
Primary = 0.56 cfs @ 12.16 hrs, Volume= 2,376 cf
Routed to Link 1L : P.O.C. "A"

Routing by Stor-Ind method, Time Span= 0.00-27.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 392.81' @ 12.16 hrs Surf.Area= 1,489 sf Storage= 2,179 cf

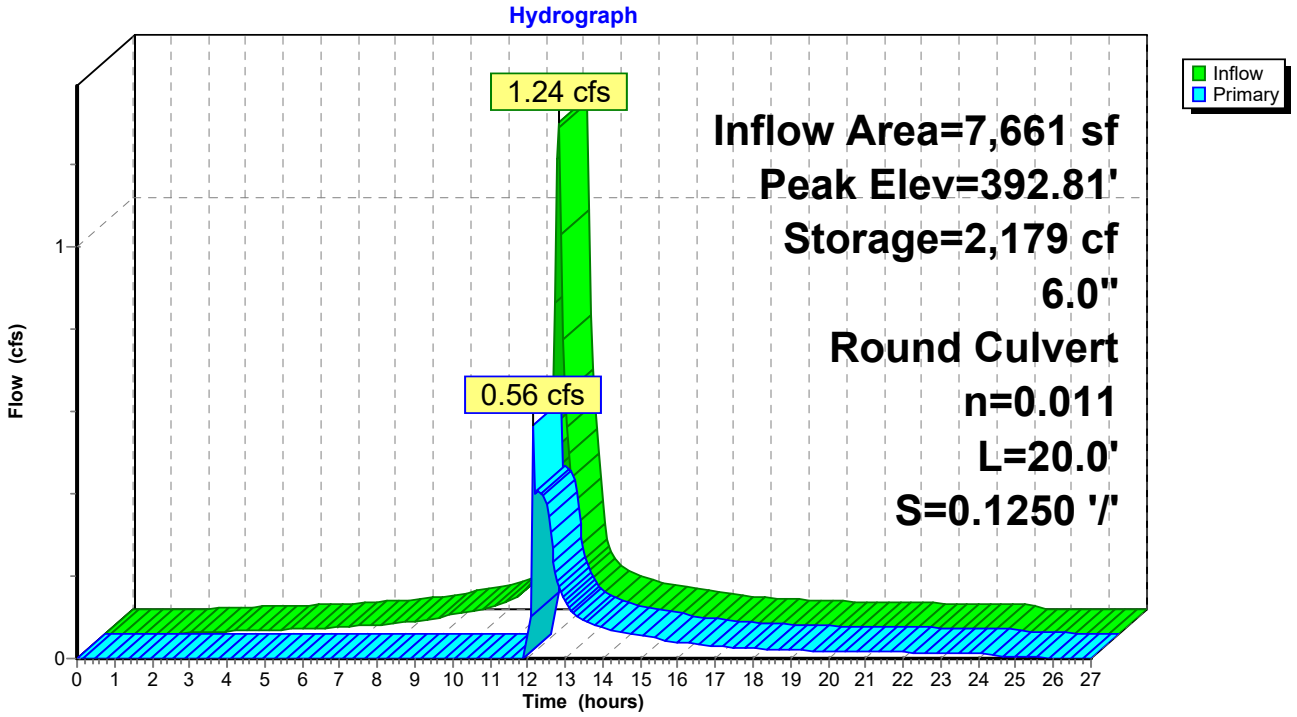
Plug-Flow detention time= 249.9 min calculated for 2,376 cf (54% of inflow)
Center-of-Mass det. time= 134.0 min (892.6 - 758.6)

Volume	Invert	Avail.Storage	Storage Description
#1	390.00'	1,068 cf	**27.50'W x 54.00'L x 2.54'H Stone Bed** 3,772 cf Overall - 1,102 cf Embedded = 2,670 cf x 40.0% Voids
#2	390.50'	1,102 cf	**Cultec R-150XLHD** x 40 Inside #1 Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap Row Length Adjustment= +0.75' x 2.65 sf x 8 rows
#3	390.50'	10 cf	**2.00'W x 2.00'L x 2.50'H Junction Box**
		2,180 cf	Total Available Storage

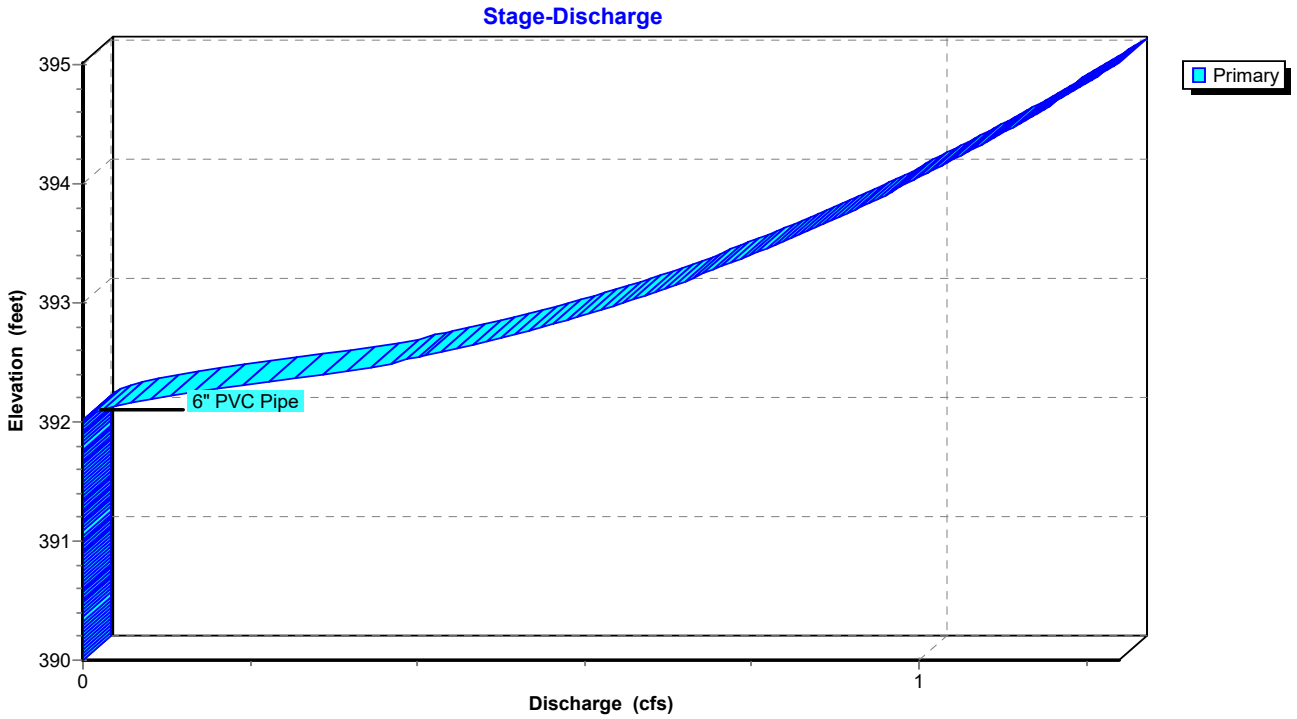
Device	Routing	Invert	Outlet Devices
#1	Primary	392.00'	**6.0" Round 6" PVC Pipe** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 392.00' / 389.50' S= 0.1250 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.53 cfs @ 12.16 hrs HW=392.75' (Free Discharge)
↑—**1=6" PVC Pipe** (Inlet Controls 0.53 cfs @ 2.68 fps)

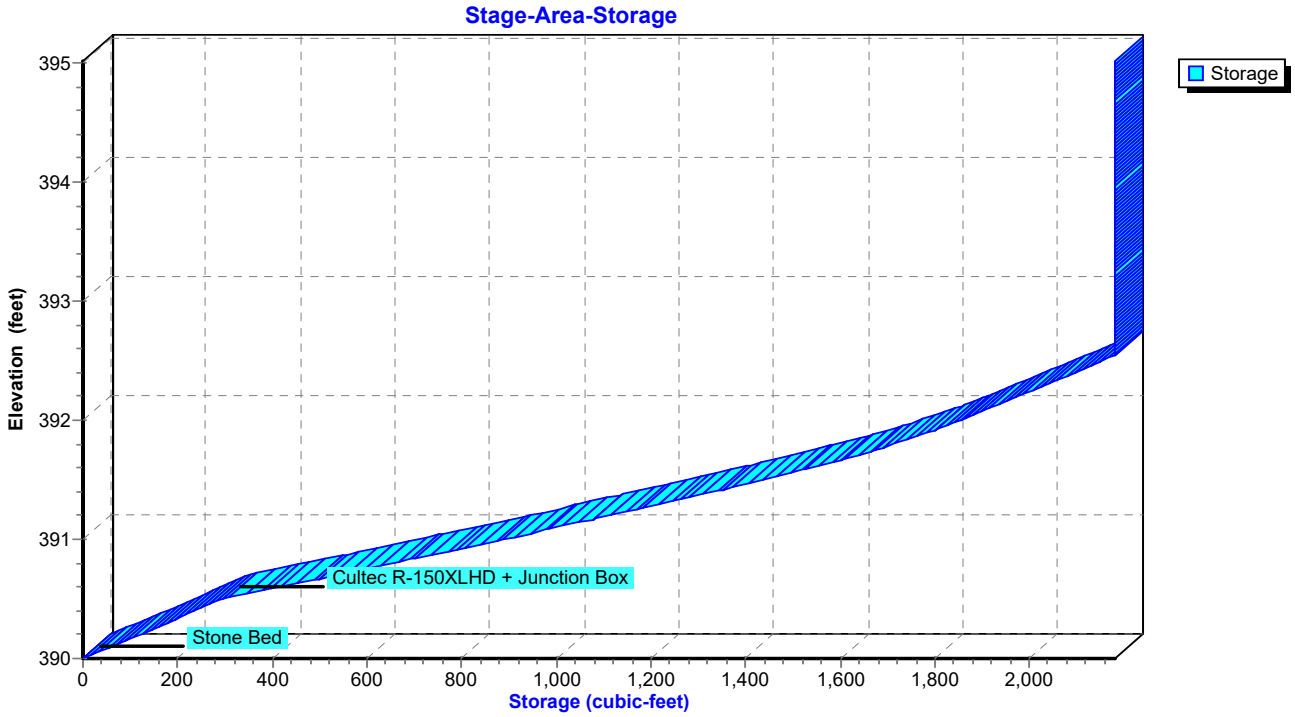
Pond 3P: Cultec 150XLHD System



Pond 3P: Cultec 150XLHD System



Pond 3P: Cultec 150XLHD System



Hydrograph for Pond 3P: Cultec 150XLHD System

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	390.00	0.00
1.00	0.00	0	390.00	0.00
2.00	0.00	2	390.00	0.00
3.00	0.00	13	390.02	0.00
4.00	0.01	37	390.06	0.00
5.00	0.01	73	390.12	0.00
6.00	0.01	119	390.20	0.00
7.00	0.02	182	390.31	0.00
8.00	0.03	269	390.45	0.00
9.00	0.04	394	390.58	0.00
10.00	0.06	574	390.73	0.00
11.00	0.09	835	390.95	0.00
12.00	**0.80**	**1,670**	**391.75**	**0.00**
13.00	**0.11**	**2,009**	**392.26**	**0.14**
14.00	0.07	1,964	392.18	0.07
15.00	0.05	1,947	392.15	0.05
16.00	0.04	1,933	392.13	0.04
17.00	0.03	1,923	392.11	0.03
18.00	0.02	1,915	392.10	0.02
19.00	0.02	1,910	392.09	0.02
20.00	0.02	1,907	392.09	0.02
21.00	0.02	1,904	392.08	0.02
22.00	0.01	1,902	392.08	0.01
23.00	0.01	1,899	392.07	0.01
24.00	0.01	1,897	392.07	0.01
25.00	0.00	1,876	392.04	0.00
26.00	0.00	1,868	392.02	0.00
27.00	0.00	1,864	392.01	0.00

Stage-Discharge for Pond 3P: Cultec 150XLHD System

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
390.00	0.00	392.65	0.47
390.05	0.00	392.70	0.50
390.10	0.00	392.75	0.53
390.15	0.00	392.80	0.55
390.20	0.00	392.85	0.58
390.25	0.00	392.90	0.60
390.30	0.00	392.95	0.62
390.35	0.00	393.00	0.65
390.40	0.00	393.05	0.67
390.45	0.00	393.10	0.69
390.50	0.00	393.15	0.71
390.55	0.00	393.20	0.73
390.60	0.00	393.25	0.75
390.65	0.00	393.30	0.76
390.70	0.00	393.35	0.78
390.75	0.00	393.40	0.80
390.80	0.00	393.45	0.82
390.85	0.00	393.50	0.83
390.90	0.00	393.55	0.85
390.95	0.00	393.60	0.87
391.00	0.00	393.65	0.88
391.05	0.00	393.70	0.90
391.10	0.00	393.75	0.91
391.15	0.00	393.80	0.93
391.20	0.00	393.85	0.94
391.25	0.00	393.90	0.96
391.30	0.00	393.95	0.97
391.35	0.00	394.00	0.99
391.40	0.00	394.05	1.00
391.45	0.00	394.10	1.02
391.50	0.00	394.15	1.03
391.55	0.00	394.20	1.04
391.60	0.00	394.25	1.06
391.65	0.00	394.30	1.07
391.70	0.00	394.35	1.08
391.75	0.00	394.40	1.09
391.80	0.00	394.45	1.11
391.85	0.00	394.50	1.12
391.90	0.00	394.55	1.13
391.95	0.00	394.60	1.14
392.00	0.00	394.65	1.16
392.05	0.01	394.70	1.17
392.10	0.02	394.75	1.18
392.15	0.05	394.80	1.19
392.20	0.09	394.85	1.20
392.25	0.13	394.90	1.22
392.30	0.18	394.95	1.23
392.35	0.23	395.00	**1.24**
392.40	0.29		
392.45	0.34		
392.50	0.37		
392.55	0.41		
392.60	0.44		

Stage-Area-Storage for Pond 3P: Cultec 150XLHD System

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
390.00	0	392.65	2,179
390.05	30	392.70	2,179
390.10	59	392.75	2,179
390.15	89	392.80	2,179
390.20	119	392.85	2,179
390.25	149	392.90	2,180
390.30	178	392.95	2,180
390.35	208	393.00	**2,180**
390.40	238	393.05	2,180
390.45	267	393.10	2,180
390.50	297	393.15	2,180
390.55	358	393.20	2,180
390.60	418	393.25	2,180
390.65	478	393.30	2,180
390.70	537	393.35	2,180
390.75	596	393.40	2,180
390.80	655	393.45	2,180
390.85	713	393.50	2,180
390.90	772	393.55	2,180
390.95	830	393.60	2,180
391.00	888	393.65	2,180
391.05	946	393.70	2,180
391.10	1,003	393.75	2,180
391.15	1,059	393.80	2,180
391.20	1,115	393.85	2,180
391.25	1,171	393.90	2,180
391.30	1,226	393.95	2,180
391.35	1,280	394.00	2,180
391.40	1,333	394.05	2,180
391.45	1,385	394.10	2,180
391.50	1,437	394.15	2,180
391.55	1,487	394.20	2,180
391.60	1,536	394.25	2,180
391.65	1,584	394.30	2,180
391.70	1,630	394.35	2,180
391.75	1,674	394.40	2,180
391.80	1,716	394.45	2,180
391.85	1,754	394.50	2,180
391.90	1,790	394.55	2,180
391.95	1,823	394.60	2,180
392.00	1,855	394.65	2,180
392.05	1,885	394.70	2,180
392.10	1,915	394.75	2,180
392.15	1,945	394.80	2,180
392.20	1,975	394.85	2,180
392.25	2,005	394.90	2,180
392.30	2,035	394.95	2,180
392.35	2,064	395.00	2,180
392.40	2,094		
392.45	2,124		
392.50	2,154		
392.55	2,178		
392.60	2,178		

Summary for Pond 4P: Cultec 150XLHD System

Inflow Area = 1,208 sf,100.00% Impervious, Inflow Depth = 7.22" for 50 year storm event
Inflow = 0.20 cfs @ 12.09 hrs, Volume= 727 cf
Outflow = 0.18 cfs @ 12.16 hrs, Volume= 356 cf, Atten= 8%, Lag= 4.4 min
Primary = 0.18 cfs @ 12.16 hrs, Volume= 356 cf
Routed to Link 2L : P.O.C. "B"

Routing by Stor-Ind method, Time Span= 0.00-27.00 hrs, dt= 0.05 hrs
Peak Elev= 391.03' @ 12.15 hrs Surf.Area= 266 sf Storage= 374 cf

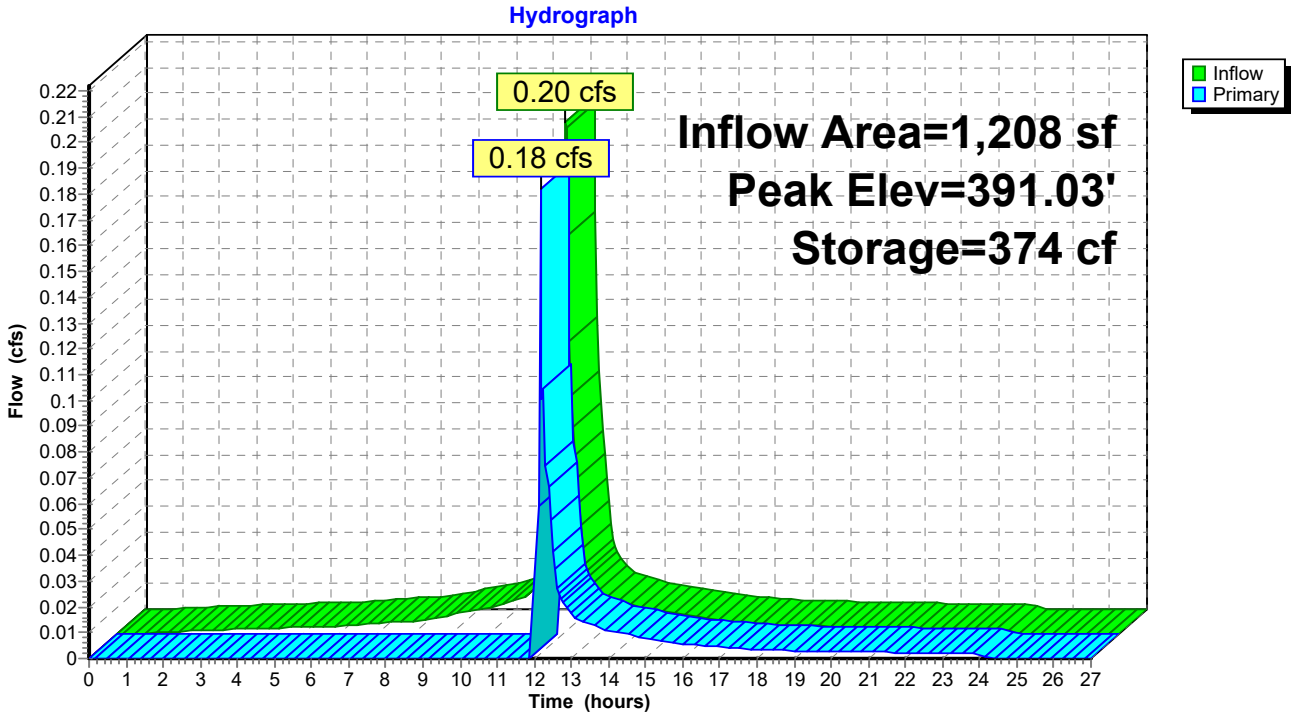
Plug-Flow detention time= 271.9 min calculated for 356 cf (49% of inflow)
Center-of-Mass det. time= 136.8 min (878.9 - 742.1)

Volume	Invert	Avail.Storage	Storage Description
#1	388.50'	198 cf	**23.25'W x 11.25'L x 2.54'H Stone Bed** 664 cf Overall - 169 cf Embedded = 495 cf x 40.0% Voids
#2	389.00'	169 cf	**Cultec R-150XLHD** x 6 Inside #1 Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap Row Length Adjustment= +0.75' x 2.65 sf x 3 rows
#3	389.00'	10 cf	**2.00'W x 2.00'L x 2.50'H Junction Box**
		377 cf	Total Available Storage

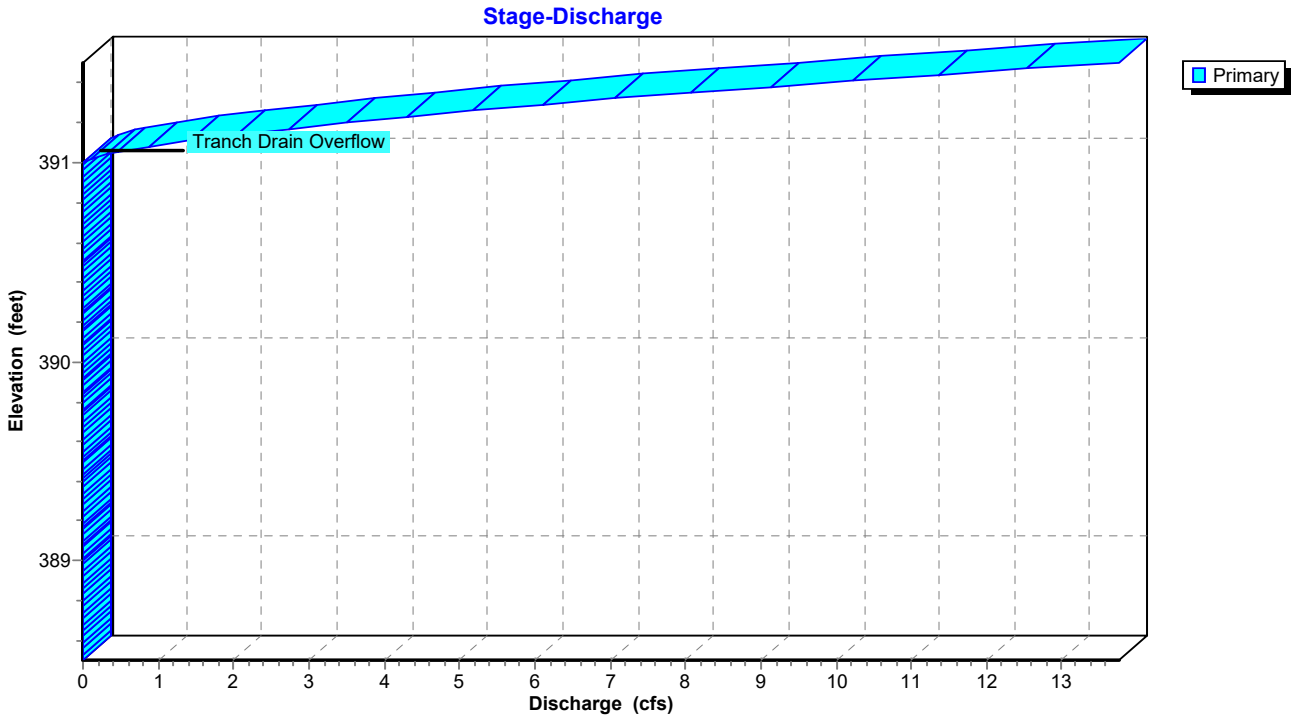
Device	Routing	Invert	Outlet Devices
#1	Primary	391.00'	**12.0' long Tranch Drain Overflow** 2 End Contraction(s)

Primary OutFlow Max=0.15 cfs @ 12.16 hrs HW=391.02' (Free Discharge)
↑—**1=Tranch Drain Overflow** (Weir Controls 0.15 cfs @ 0.52 fps)

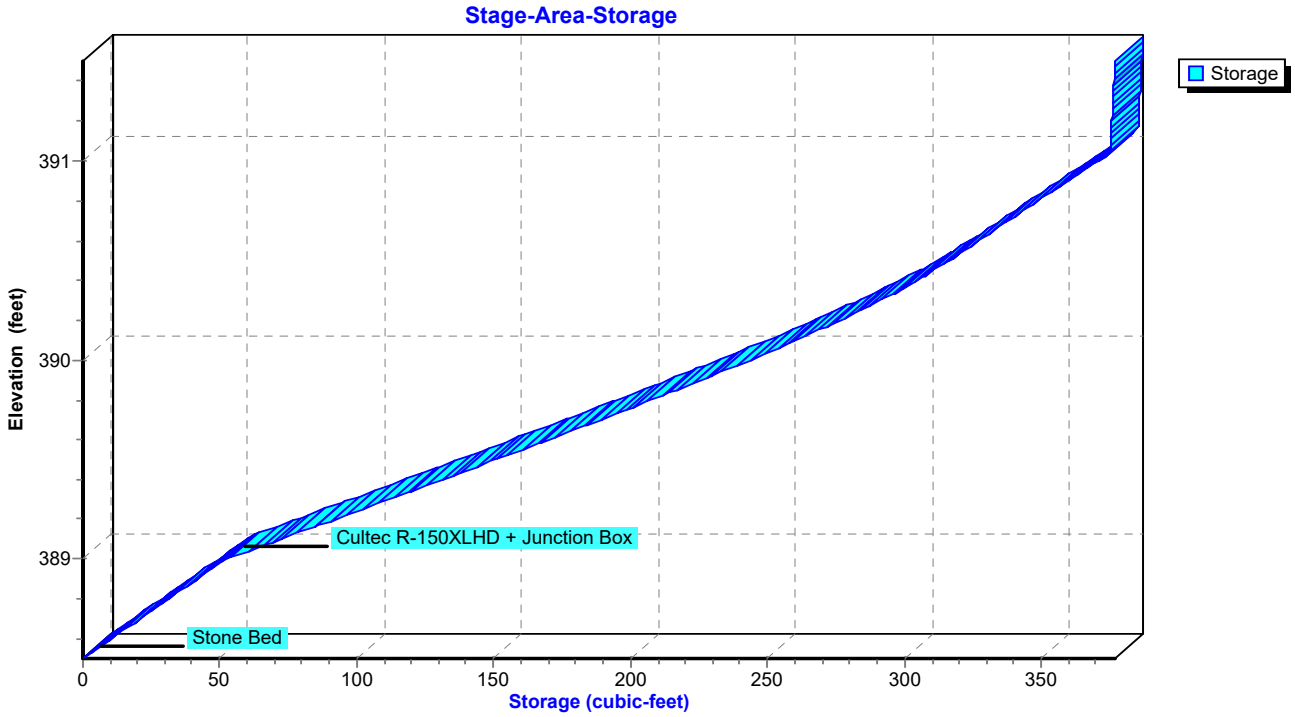
Pond 4P: Cultec 150XLHD System



Pond 4P: Cultec 150XLHD System



Pond 4P: Cultec 150XLHD System



Hydrograph for Pond 4P: Cultec 150XLHD System

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	388.50	0.00
1.00	0.00	0	388.50	0.00
2.00	0.00	3	388.53	0.00
3.00	0.00	9	388.58	0.00
4.00	0.00	16	388.65	0.00
5.00	0.00	24	388.73	0.00
6.00	0.00	34	388.83	0.00
7.00	0.00	47	388.95	0.00
8.00	0.01	63	389.05	0.00
9.00	0.01	86	389.17	0.00
10.00	0.01	117	389.32	0.00
11.00	0.01	160	389.55	0.00
12.00	**0.13**	**296**	**390.33**	**0.00**
13.00	**0.02**	**371**	**391.00**	**0.02**
14.00	0.01	371	391.00	0.01
15.00	0.01	371	391.00	0.01
16.00	0.01	371	391.00	0.01
17.00	0.00	371	391.00	0.00
18.00	0.00	371	391.00	0.00
19.00	0.00	371	391.00	0.00
20.00	0.00	371	391.00	0.00
21.00	0.00	371	391.00	0.00
22.00	0.00	371	391.00	0.00
23.00	0.00	371	391.00	0.00
24.00	0.00	371	391.00	0.00
25.00	0.00	371	391.00	0.00
26.00	0.00	371	391.00	0.00
27.00	0.00	371	391.00	0.00

Stage-Discharge for Pond 4P: Cultec 150XLHD System

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
388.50	0.00	389.56	0.00	390.62	0.00
388.52	0.00	389.58	0.00	390.64	0.00
388.54	0.00	389.60	0.00	390.66	0.00
388.56	0.00	389.62	0.00	390.68	0.00
388.58	0.00	389.64	0.00	390.70	0.00
388.60	0.00	389.66	0.00	390.72	0.00
388.62	0.00	389.68	0.00	390.74	0.00
388.64	0.00	389.70	0.00	390.76	0.00
388.66	0.00	389.72	0.00	390.78	0.00
388.68	0.00	389.74	0.00	390.80	0.00
388.70	0.00	389.76	0.00	390.82	0.00
388.72	0.00	389.78	0.00	390.84	0.00
388.74	0.00	389.80	0.00	390.86	0.00
388.76	0.00	389.82	0.00	390.88	0.00
388.78	0.00	389.84	0.00	390.90	0.00
388.80	0.00	389.86	0.00	390.92	0.00
388.82	0.00	389.88	0.00	390.94	0.00
388.84	0.00	389.90	0.00	390.96	0.00
388.86	0.00	389.92	0.00	390.98	0.00
388.88	0.00	389.94	0.00	391.00	0.00
388.90	0.00	389.96	0.00	391.02	0.11
388.92	0.00	389.98	0.00	391.04	0.31
388.94	0.00	390.00	0.00	391.06	0.58
388.96	0.00	390.02	0.00	391.08	0.89
388.98	0.00	390.04	0.00	391.10	1.24
389.00	0.00	390.06	0.00	391.12	1.63
389.02	0.00	390.08	0.00	391.14	2.05
389.04	0.00	390.10	0.00	391.16	2.50
389.06	0.00	390.12	0.00	391.18	2.99
389.08	0.00	390.14	0.00	391.20	3.50
389.10	0.00	390.16	0.00	391.22	4.03
389.12	0.00	390.18	0.00	391.24	4.60
389.14	0.00	390.20	0.00	391.26	5.18
389.16	0.00	390.22	0.00	391.28	5.79
389.18	0.00	390.24	0.00	391.30	6.42
389.20	0.00	390.26	0.00	391.32	7.07
389.22	0.00	390.28	0.00	391.34	7.74
389.24	0.00	390.30	0.00	391.36	8.42
389.26	0.00	390.32	0.00	391.38	9.13
389.28	0.00	390.34	0.00	391.40	9.86
389.30	0.00	390.36	0.00	391.42	10.61
389.32	0.00	390.38	0.00	391.44	11.37
389.34	0.00	390.40	0.00	391.46	12.15
389.36	0.00	390.42	0.00	391.48	12.95
389.38	0.00	390.44	0.00	391.50	**13.76**
389.40	0.00	390.46	0.00		
389.42	0.00	390.48	0.00		
389.44	0.00	390.50	0.00		
389.46	0.00	390.52	0.00		
389.48	0.00	390.54	0.00		
389.50	0.00	390.56	0.00		
389.52	0.00	390.58	0.00		
389.54	0.00	390.60	0.00		

Stage-Area-Storage for Pond 4P: Cultec 150XLHD System

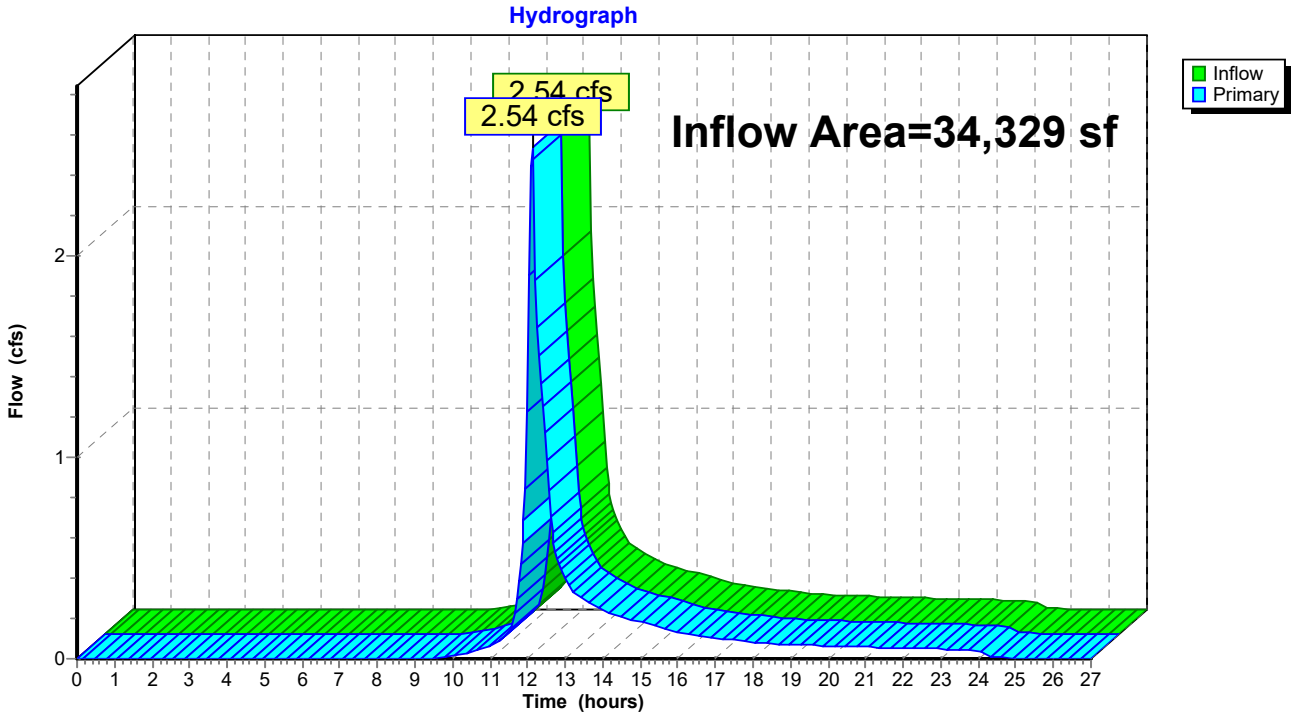
Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
388.50	0	389.56	163	390.62	330
388.52	2	389.58	167	390.64	332
388.54	4	389.60	171	390.66	334
388.56	6	389.62	174	390.68	336
388.58	8	389.64	178	390.70	338
388.60	10	389.66	182	390.72	340
388.62	13	389.68	186	390.74	343
388.64	15	389.70	190	390.76	345
388.66	17	389.72	193	390.78	347
388.68	19	389.74	197	390.80	349
388.70	21	389.76	201	390.82	351
388.72	23	389.78	205	390.84	354
388.74	25	389.80	208	390.86	356
388.76	27	389.82	212	390.88	358
388.78	29	389.84	216	390.90	360
388.80	31	389.86	219	390.92	362
388.82	33	389.88	223	390.94	364
388.84	36	389.90	226	390.96	367
388.86	38	389.92	230	390.98	369
388.88	40	389.94	233	391.00	371
388.90	42	389.96	237	391.02	373
388.92	44	389.98	240	391.04	375
388.94	46	390.00	244	391.06	375
388.96	48	390.02	247	391.08	375
388.98	50	390.04	251	391.10	375
389.00	52	390.06	254	391.12	376
389.02	56	390.08	258	391.14	376
389.04	60	390.10	261	391.16	376
389.06	64	390.12	264	391.18	376
389.08	69	390.14	267	391.20	376
389.10	73	390.16	271	391.22	376
389.12	77	390.18	274	391.24	376
389.14	81	390.20	277	391.26	376
389.16	85	390.22	280	391.28	376
389.18	88	390.24	283	391.30	376
389.20	92	390.26	286	391.32	376
389.22	96	390.28	289	391.34	376
389.24	100	390.30	292	391.36	377
389.26	104	390.32	295	391.38	377
389.28	108	390.34	297	391.40	377
389.30	112	390.36	300	391.42	377
389.32	116	390.38	302	391.44	377
389.34	120	390.40	305	391.46	377
389.36	124	390.42	307	391.48	377
389.38	128	390.44	310	391.50	**377**
389.40	132	390.46	312		
389.42	136	390.48	314		
389.44	140	390.50	317		
389.46	144	390.52	319		
389.48	147	390.54	321		
389.50	151	390.56	323		
389.52	155	390.58	325		
389.54	159	390.60	327		

Summary for Link 1L: P.O.C. "A"

Inflow Area = 34,329 sf, 23.85% Impervious, Inflow Depth > 3.35" for 50 year storm event
Inflow = 2.54 cfs @ 12.13 hrs, Volume= 9,597 cf
Primary = 2.54 cfs @ 12.13 hrs, Volume= 9,597 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-27.00 hrs, dt= 0.05 hrs

Link 1L: P.O.C. "A"



Hydrograph for Link 1L: P.O.C. "A"

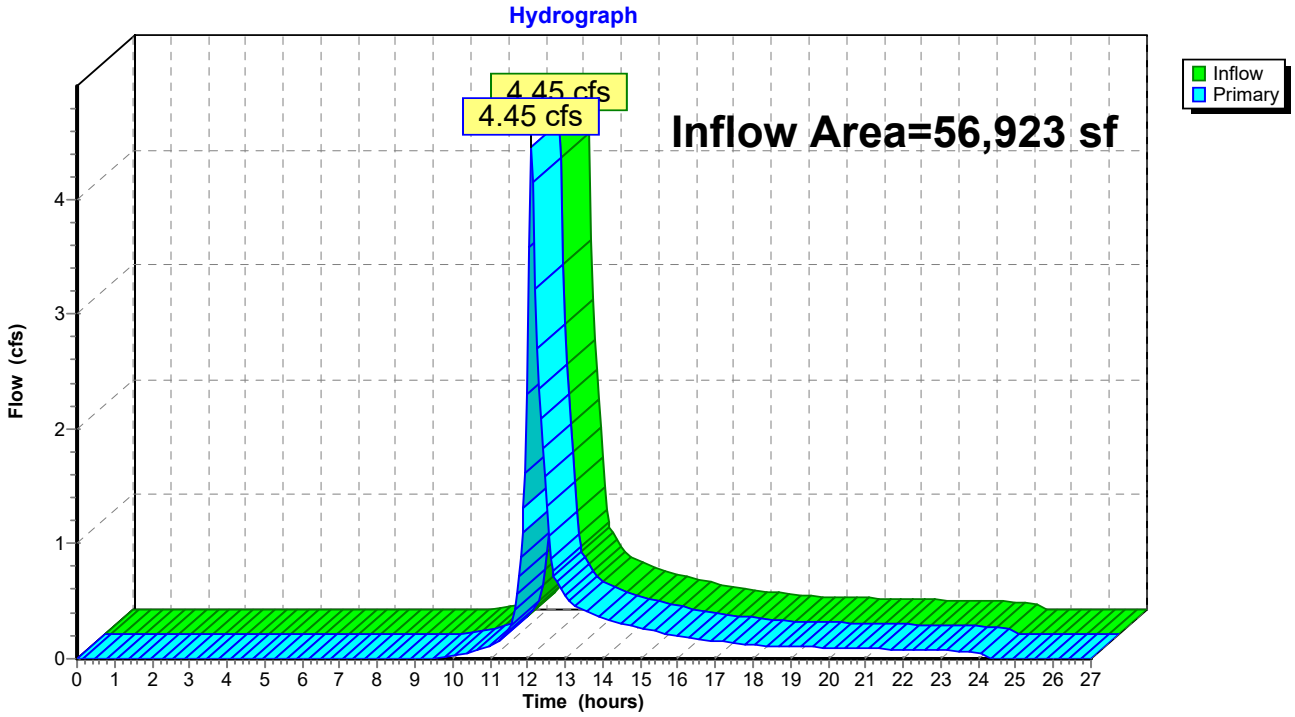
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00
0.50	0.00	0.00	0.00
1.00	0.00	0.00	0.00
1.50	0.00	0.00	0.00
2.00	0.00	0.00	0.00
2.50	0.00	0.00	0.00
3.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00
4.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00
5.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00
8.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00
9.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00
10.00	0.01	0.00	0.01
10.50	0.03	0.00	0.03
11.00	0.06	0.00	0.06
11.50	0.13	0.00	0.13
12.00	**1.23**	0.00	**1.23**
12.50	**0.98**	0.00	**0.98**
13.00	0.39	0.00	0.39
13.50	0.29	0.00	0.29
14.00	0.24	0.00	0.24
14.50	0.21	0.00	0.21
15.00	0.18	0.00	0.18
15.50	0.16	0.00	0.16
16.00	0.13	0.00	0.13
16.50	0.12	0.00	0.12
17.00	0.10	0.00	0.10
17.50	0.09	0.00	0.09
18.00	0.08	0.00	0.08
18.50	0.07	0.00	0.07
19.00	0.07	0.00	0.07
19.50	0.07	0.00	0.07
20.00	0.06	0.00	0.06
20.50	0.06	0.00	0.06
21.00	0.06	0.00	0.06
21.50	0.06	0.00	0.06
22.00	0.05	0.00	0.05
22.50	0.05	0.00	0.05
23.00	0.05	0.00	0.05
23.50	0.05	0.00	0.05
24.00	0.04	0.00	0.04
24.50	0.01	0.00	0.01
25.00	0.00	0.00	0.00
25.50	0.00	0.00	0.00
26.00	0.00	0.00	0.00
26.50	0.00	0.00	0.00
27.00	0.00	0.00	0.00

Summary for Link 2L: P.O.C. "B"

Inflow Area = 56,923 sf, 3.88% Impervious, Inflow Depth = 3.15" for 50 year storm event
Inflow = 4.45 cfs @ 12.11 hrs, Volume= 14,952 cf
Primary = 4.45 cfs @ 12.11 hrs, Volume= 14,952 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-27.00 hrs, dt= 0.05 hrs

Link 2L: P.O.C. "B"



Hydrograph for Link 2L: P.O.C. "B"

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00
0.50	0.00	0.00	0.00
1.00	0.00	0.00	0.00
1.50	0.00	0.00	0.00
2.00	0.00	0.00	0.00
2.50	0.00	0.00	0.00
3.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00
4.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00
5.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00
8.00	0.00	0.00	0.00
8.50	0.00	0.00	0.00
9.00	0.00	0.00	0.00
9.50	0.00	0.00	0.00
10.00	0.02	0.00	0.02
10.50	0.06	0.00	0.06
11.00	0.11	0.00	0.11
11.50	0.25	0.00	0.25
12.00	**2.30**	0.00	**2.30**
12.50	**1.32**	0.00	**1.32**
13.00	0.54	0.00	0.54
13.50	0.42	0.00	0.42
14.00	0.35	0.00	0.35
14.50	0.31	0.00	0.31
15.00	0.27	0.00	0.27
15.50	0.23	0.00	0.23
16.00	0.19	0.00	0.19
16.50	0.17	0.00	0.17
17.00	0.15	0.00	0.15
17.50	0.14	0.00	0.14
18.00	0.12	0.00	0.12
18.50	0.11	0.00	0.11
19.00	0.11	0.00	0.11
19.50	0.10	0.00	0.10
20.00	0.10	0.00	0.10
20.50	0.09	0.00	0.09
21.00	0.09	0.00	0.09
21.50	0.08	0.00	0.08
22.00	0.08	0.00	0.08
22.50	0.08	0.00	0.08
23.00	0.07	0.00	0.07
23.50	0.07	0.00	0.07
24.00	0.06	0.00	0.06
24.50	0.00	0.00	0.00
25.00	0.00	0.00	0.00
25.50	0.00	0.00	0.00
26.00	0.00	0.00	0.00
26.50	0.00	0.00	0.00
27.00	0.00	0.00	0.00

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	25 year storm	Type III 24-hr		Default	24.00	1	6.58	2
2	50 year storm	Type III 24-hr		Default	24.00	1	7.46	2

Summary for Subcatchment 1S: Proposed Watershed

Runoff = 1.77 cfs @ 12.10 hrs, Volume= 5,757 cf, Depth= 2.59"
Routed to Link 1L : P.O.C. "A"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 year storm Rainfall=6.58"

	Area (sf)	CN	Description
*	1,149	98	Impervious, HSG B
	25,519	61	>75% Grass cover, Good, HSG B
	26,668	63	Weighted Average
	25,519		95.69% Pervious Area
	1,149		4.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	100	0.0600	0.28		**Sheet Flow, Grass Lawn** Grass: Short n= 0.150 P2= 3.50"
0.4	50	0.0200	2.28		**Shallow Concentrated Flow, Lawn** Unpaved Kv= 16.1 fps
6.4	150	Total			

Summary for Subcatchment 2S: Proposed Watershed

Runoff = 3.47 cfs @ 12.11 hrs, Volume= 11,591 cf, Depth= 2.50"
Routed to Link 2L : P.O.C. "B"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 year storm Rainfall=6.58"

	Area (sf)	CN	Description
*	998	98	Impervious, HSG B
	54,717	61	>75% Grass cover, Good, HSG B
	55,715	62	Weighted Average
	54,717		98.21% Pervious Area
	998		1.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	100	0.0600	0.28		**Sheet Flow, Grass Lawn** Grass: Short n= 0.150 P2= 3.50"
1.0	133	0.0200	2.28		**Shallow Concentrated Flow, Lawn** Unpaved Kv= 16.1 fps
7.0	233	Total			

Summary for Subcatchment 3S: Proposed Watershed

Runoff = 1.09 cfs @ 12.09 hrs, Volume= 3,823 cf, Depth= 5.99"
Routed to Pond 3P : Cultec 150XLHD System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 year storm Rainfall=6.58"

	Area (sf)	CN	Description
*	7,038	98	Impervious, HSG B
	623	61	>75% Grass cover, Good, HSG B
	7,661	95	Weighted Average
	623		8.13% Pervious Area
	7,038		91.87% Impervious Area

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

Summary for Subcatchment 4S: Proposed Watershed

Runoff = 0.17 cfs @ 12.09 hrs, Volume= 638 cf, Depth= 6.34"
Routed to Pond 4P : Cultec 150XLHD System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 year storm Rainfall=6.58"

	Area (sf)	CN	Description
*	1,208	98	Impervious, HSG B
	0	61	>75% Grass cover, Good, HSG B
	1,208	98	Weighted Average
	1,208		100.00% Impervious Area

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

Summary for Pond 3P: Cultec 150XLHD System

Inflow Area = 7,661 sf, 91.87% Impervious, Inflow Depth = 5.99" for 25 year storm event
Inflow = 1.09 cfs @ 12.09 hrs, Volume= 3,823 cf
Outflow = 0.37 cfs @ 12.37 hrs, Volume= 1,960 cf, Atten= 66%, Lag= 17.0 min
Primary = 0.37 cfs @ 12.37 hrs, Volume= 1,960 cf
Routed to Link 1L : P.O.C. "A"

Routing by Stor-Ind method, Time Span= 0.00-27.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 392.49' @ 12.37 hrs Surf.Area= 1,489 sf Storage= 2,147 cf

Plug-Flow detention time= 263.2 min calculated for 1,960 cf (51% of inflow)
Center-of-Mass det. time= 143.5 min (904.9 - 761.4)

Volume	Invert	Avail.Storage	Storage Description
#1	390.00'	1,068 cf	**27.50'W x 54.00'L x 2.54'H Stone Bed** 3,772 cf Overall - 1,102 cf Embedded = 2,670 cf x 40.0% Voids
#2	390.50'	1,102 cf	**Cultec R-150XLHD** x 40 Inside #1 Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap Row Length Adjustment= +0.75' x 2.65 sf x 8 rows
#3	390.50'	10 cf	**2.00'W x 2.00'L x 2.50'H Junction Box**
		2,180 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	392.00'	**6.0" Round 6" PVC Pipe** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 392.00' / 389.50' S= 0.1250 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.36 cfs @ 12.37 hrs HW=392.49' (Free Discharge)
1=6" PVC Pipe (Inlet Controls 0.36 cfs @ 1.87 fps)

Summary for Pond 4P: Cultec 150XLHD System

Inflow Area = 1,208 sf,100.00% Impervious, Inflow Depth = 6.34" for 25 year storm event
Inflow = 0.17 cfs @ 12.09 hrs, Volume= 638 cf
Outflow = 0.08 cfs @ 12.29 hrs, Volume= 267 cf, Atten= 54%, Lag= 12.1 min
Primary = 0.08 cfs @ 12.29 hrs, Volume= 267 cf
Routed to Link 2L : P.O.C. "B"

Routing by Stor-Ind method, Time Span= 0.00-27.00 hrs, dt= 0.05 hrs
Peak Elev= 391.01' @ 12.30 hrs Surf.Area= 266 sf Storage= 372 cf

Plug-Flow detention time= 314.2 min calculated for 267 cf (42% of inflow)
Center-of-Mass det. time= 160.9 min (904.7 - 743.8)

Volume	Invert	Avail.Storage	Storage Description
#1	388.50'	198 cf	**23.25'W x 11.25'L x 2.54'H Stone Bed** 664 cf Overall - 169 cf Embedded = 495 cf x 40.0% Voids
#2	389.00'	169 cf	**Cultec R-150XLHD** x 6 Inside #1 Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap Row Length Adjustment= +0.75' x 2.65 sf x 3 rows
#3	389.00'	10 cf	**2.00'W x 2.00'L x 2.50'H Junction Box**
		377 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	391.00'	**12.0' long Tranch Drain Overflow** 2 End Contraction(s)

Primary OutFlow Max=0.06 cfs @ 12.29 hrs HW=391.01' (Free Discharge)
1=Tranch Drain Overflow (Weir Controls 0.06 cfs @ 0.39 fps)

Summary for Link 1L: P.O.C. "A"

Inflow Area = 34,329 sf, 23.85% Impervious, Inflow Depth > 2.70" for 25 year storm event
Inflow = 1.77 cfs @ 12.11 hrs, Volume= 7,717 cf
Primary = 1.77 cfs @ 12.11 hrs, Volume= 7,717 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-27.00 hrs, dt= 0.05 hrs

Summary for Link 2L: P.O.C. "B"

Inflow Area = 56,923 sf, 3.88% Impervious, Inflow Depth = 2.50" for 25 year storm event
Inflow = 3.47 cfs @ 12.11 hrs, Volume= 11,858 cf
Primary = 3.47 cfs @ 12.11 hrs, Volume= 11,858 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-27.00 hrs, dt= 0.05 hrs

Summary for Subcatchment 1S: Proposed Watershed

Runoff = 2.24 cfs @ 12.10 hrs, Volume= 7,221 cf, Depth= 3.25"
Routed to Link 1L : P.O.C. "A"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year storm Rainfall=7.46"

	Area (sf)	CN	Description
*	1,149	98	Impervious, HSG B
	25,519	61	>75% Grass cover, Good, HSG B
	26,668	63	Weighted Average
	25,519		95.69% Pervious Area
	1,149		4.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	100	0.0600	0.28		**Sheet Flow, Grass Lawn** Grass: Short n= 0.150 P2= 3.50"
0.4	50	0.0200	2.28		**Shallow Concentrated Flow, Lawn** Unpaved Kv= 16.1 fps
6.4	150	Total			

Summary for Subcatchment 2S: Proposed Watershed

Runoff = 4.43 cfs @ 12.11 hrs, Volume= 14,596 cf, Depth= 3.14"
Routed to Link 2L : P.O.C. "B"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year storm Rainfall=7.46"

	Area (sf)	CN	Description
*	998	98	Impervious, HSG B
	54,717	61	>75% Grass cover, Good, HSG B
	55,715	62	Weighted Average
	54,717		98.21% Pervious Area
	998		1.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	100	0.0600	0.28		**Sheet Flow, Grass Lawn** Grass: Short n= 0.150 P2= 3.50"
1.0	133	0.0200	2.28		**Shallow Concentrated Flow, Lawn** Unpaved Kv= 16.1 fps
7.0	233	Total			

Summary for Subcatchment 3S: Proposed Watershed

Runoff = 1.24 cfs @ 12.09 hrs, Volume= 4,382 cf, Depth= 6.86"
Routed to Pond 3P : Cultec 150XLHD System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year storm Rainfall=7.46"

	Area (sf)	CN	Description
*	7,038	98	Impervious, HSG B
	623	61	>75% Grass cover, Good, HSG B
	7,661	95	Weighted Average
	623		8.13% Pervious Area
	7,038		91.87% Impervious Area

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

Summary for Subcatchment 4S: Proposed Watershed

Runoff = 0.20 cfs @ 12.09 hrs, Volume= 727 cf, Depth= 7.22"
Routed to Pond 4P : Cultec 150XLHD System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-27.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year storm Rainfall=7.46"

	Area (sf)	CN	Description
*	1,208	98	Impervious, HSG B
	0	61	>75% Grass cover, Good, HSG B
	1,208	98	Weighted Average
	1,208		100.00% Impervious Area

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

Summary for Pond 3P: Cultec 150XLHD System

Inflow Area = 7,661 sf, 91.87% Impervious, Inflow Depth = 6.86" for 50 year storm event
Inflow = 1.24 cfs @ 12.09 hrs, Volume= 4,382 cf
Outflow = 0.56 cfs @ 12.16 hrs, Volume= 2,376 cf, Atten= 55%, Lag= 4.4 min
Primary = 0.56 cfs @ 12.16 hrs, Volume= 2,376 cf
Routed to Link 1L : P.O.C. "A"

Routing by Stor-Ind method, Time Span= 0.00-27.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 392.81' @ 12.16 hrs Surf.Area= 1,489 sf Storage= 2,179 cf

Plug-Flow detention time= 249.9 min calculated for 2,376 cf (54% of inflow)
Center-of-Mass det. time= 134.0 min (892.6 - 758.6)

Volume	Invert	Avail.Storage	Storage Description
#1	390.00'	1,068 cf	**27.50'W x 54.00'L x 2.54'H Stone Bed** 3,772 cf Overall - 1,102 cf Embedded = 2,670 cf x 40.0% Voids
#2	390.50'	1,102 cf	**Cultec R-150XLHD** x 40 Inside #1 Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap Row Length Adjustment= +0.75' x 2.65 sf x 8 rows
#3	390.50'	10 cf	**2.00'W x 2.00'L x 2.50'H Junction Box**
		2,180 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	392.00'	**6.0" Round 6" PVC Pipe** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 392.00' / 389.50' S= 0.1250 '/' Cc= 0.900 n= 0.011 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.53 cfs @ 12.16 hrs HW=392.75' (Free Discharge)
1=6" PVC Pipe (Inlet Controls 0.53 cfs @ 2.68 fps)

Summary for Pond 4P: Cultec 150XLHD System

Inflow Area = 1,208 sf,100.00% Impervious, Inflow Depth = 7.22" for 50 year storm event
Inflow = 0.20 cfs @ 12.09 hrs, Volume= 727 cf
Outflow = 0.18 cfs @ 12.16 hrs, Volume= 356 cf, Atten= 8%, Lag= 4.4 min
Primary = 0.18 cfs @ 12.16 hrs, Volume= 356 cf
Routed to Link 2L : P.O.C. "B"

Routing by Stor-Ind method, Time Span= 0.00-27.00 hrs, dt= 0.05 hrs
Peak Elev= 391.03' @ 12.15 hrs Surf.Area= 266 sf Storage= 374 cf

Plug-Flow detention time= 271.9 min calculated for 356 cf (49% of inflow)
Center-of-Mass det. time= 136.8 min (878.9 - 742.1)

Volume	Invert	Avail.Storage	Storage Description
#1	388.50'	198 cf	**23.25'W x 11.25'L x 2.54'H Stone Bed** 664 cf Overall - 169 cf Embedded = 495 cf x 40.0% Voids
#2	389.00'	169 cf	**Cultec R-150XLHD** x 6 Inside #1 Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap Row Length Adjustment= +0.75' x 2.65 sf x 3 rows
#3	389.00'	10 cf	**2.00'W x 2.00'L x 2.50'H Junction Box**
		377 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	391.00'	**12.0' long Tranch Drain Overflow** 2 End Contraction(s)

Primary OutFlow Max=0.15 cfs @ 12.16 hrs HW=391.02' (Free Discharge)
1=Tranch Drain Overflow (Weir Controls 0.15 cfs @ 0.52 fps)

Summary for Link 1L: P.O.C. "A"

Inflow Area = 34,329 sf, 23.85% Impervious, Inflow Depth > 3.35" for 50 year storm event
Inflow = 2.54 cfs @ 12.13 hrs, Volume= 9,597 cf
Primary = 2.54 cfs @ 12.13 hrs, Volume= 9,597 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-27.00 hrs, dt= 0.05 hrs

Summary for Link 2L: P.O.C. "B"

Inflow Area = 56,923 sf, 3.88% Impervious, Inflow Depth = 3.15" for 50 year storm event
Inflow = 4.45 cfs @ 12.11 hrs, Volume= 14,952 cf
Primary = 4.45 cfs @ 12.11 hrs, Volume= 14,952 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-27.00 hrs, dt= 0.05 hrs