STORMWATER MANAGEMENT REPORT

BREEZLINE UNCASVILLE CT
TAX MAP 30 BLOCK 89 LOT 00A

689 Old Colchester Road
Uncasville, Connecticut

January 10, 2023

Prepared For:

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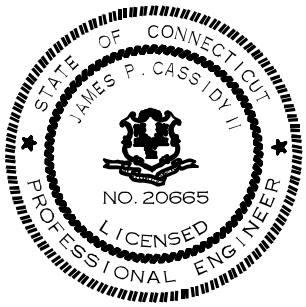

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1.0 INTRODUCTION

This report is a hydrologic water quantity quality analysis of the subject parcel located on 689 Old Colchester Road in Uncasville, CT. The 8.3-acre property is identified as Tax Map 30, Block 89, Lot 00A. The lot consists of five (5) existing utility buildings, twelve (12) concrete pads for various utilities and an access driveway. There are no wetlands associated with the site. No portion of Tax Map 30, Block 89, Lot 00A is within the flood plain. In addition to the building, the site consists of pavement, gravel, grass/open field, and woodland.

Redevelopment of the site proposes the construction of a 1,216 s.f office building abd associated site improvements including parking, grading, utilities, and other appurtenances, as well as a stormwater management basin.

To effectively analyze the pre-development conditions, a 55,644 s.f. watershed was created, while off-site runoff accounts for 4,166 s.f. from an adjacent property. The sub-catchment is routed through site prior to discharge. This point of discharge is identified as Design Point 1 and is located at the property line below the development area.

The same watershed from the pre-development analysis has been utilized in the post-development. The pre- and post-development watersheds discharge to the same point of analysis. Sub-catchments model the areas of the site that are directed through proposed drainage basin.

The project proposes a bioretention basin with a total storage volume of 3,945 cf ±, including above and below ground storage. Stormwater conveyance consists of overland flow to the bioretention basin. The basin utilizes open storage, infiltration of water into the ground and controlled outflow. An outlet structure for the basin consists of a sharp crested vee weir which discharges limited runoff in all design storms into a stone-lined level spreader upgradient of the property line. A 24” diameter Nyloplast-type riser has been proposed with three (3) 6” perforated underdrains. This structure will ensure that if the water is not infiltrating through the top planting mix (bio mix), for example in certain winter conditions, then runoff in the basin pond up to the rim and then route to the underdrains below to infiltrate through the stone layer surrounding the underdrains.

The analysis shows that with the mitigation measures proposed for the development of this site, the post-development conditions will improve over existing conditions in that stormwater flow rates and runoff volumes to the adjacent property will be significantly reduced for all design storms.

2.0 DRAINAGE ANALYSIS

A comprehensive hydrologic study of this site has been performed utilizing nationally recognized runoff estimating techniques developed by the USDA, Soil Conservation Services (SCS). The technique and runoff models are described in various SCS publications and references as follows:

TR-55/ TR-20 Methodology using “Stormwater Modeling System” HydroCAD Ver. 10.0

“Extreme Precipitation Tables; Northeast Regional Climate Center”

2.1 DRAINAGE DESIGN PARAMETERS

A brief review of the procedures and parameters used in the drainage study follows:

2.1.1 Watersheds

The watersheds and sub-catchment areas were delineated using on-site topographic survey data provided by North by Northeast Survey and Mapping Consultants.

2.1.2 Soils

Natural Resources Conservation Services (NRCS) web soil survey shows the site as Woodbridge, with the surrounding area indicated as having a hydrologic soil grouping (HSG) of C.

From test pits performed on site, the texture class of the underlying native soil that will receive recharged water was determined to be Loamy Sand. As per Volume 3: Documenting Compliance with the Massachusetts Stormwater Management Standards; Table 2.3.3 1982 Rawls Rates, a Rawls infiltration rate of 2.41 Inches/Hour was utilized for exfiltration and recharge calculations.

2.1.3 Rainfall Data

Extreme precipitation estimate values from the Northeast Regional Climate Center were utilized in this analysis. The analysis has been performed for the 2-year, 10-year, 50-year, and 100-year storm events with 3.35”, 4.83”, 6.98”, and 8.18” rainfall depths respectively.

2.1.4 Runoff Curve Numbers

The SCS runoff curve numbers were used for the various land uses and are summarized within each sub-catchment drainage summary in the hydrologic calculations.

2.2 EXISTING CONDITIONS

For purposes of this analysis the subject parcel was analyzed as one point of discharge.

2.2.1 Table A – Existing Conditions (2, 10, 50 and 100-year storm events)

Watershed	**Pre Development Peak Flows (cfs)**			
Design Point	**2-yr**	**10-yr**	**50-yr**	**100-yr**
1	1.80	3.24	5.42	6.65
Watershed	**Pre Development Peak Volume (cf)**			
Design Point	**2-yr**	**10-yr**	**50-yr**	**100-yr**
1	7,040	12,729	21,683	26,867

2.3 DEVELOPED CONDITIONS

The post development watershed was analyzed utilizing the same summing points as the pre development analysis.

2.3.1 Table B – Developed Conditions (2, 10, 50 and 100-year storm events)

Watershed	**Post Development Peak Flows (cfs)**			
Design Point	**2-yr**	**10-yr**	**50-yr**	**100-yr**
1	0.44	2.48	5.23	6.52
Watershed	**Post Development Peak Volume (cf)**			
Design Point	**2-yr**	**10-yr**	**50-yr**	**100-yr**
1	1,015	4,578	11,011	15,039

HYDROLOGIC CALCULATIONS

3.1 STORMWATER MANAGEMENT – SUPPLEMENTAL INFORMATION

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	No
State	Connecticut
Location	
Longitude	72.155 degrees West
Latitude	41.453 degrees North
Elevation	0 feet
Date/Time	Wed, 28 Dec 2022 12:24:29 -0500

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.31	0.48	0.58	0.78	0.96	1.17	**1yr**	0.83	1.14	1.37	1.75	2.23	2.80	3.06	**1yr**	2.48	2.94	3.40	4.10	4.72	**1yr**
2yr	0.37	0.57	0.70	0.95	1.18	1.42	**2yr**	1.02	1.39	1.63	2.11	2.66	3.35	3.67	**2yr**	2.97	3.53	4.02	4.79	5.40	**2yr**
5yr	0.44	0.68	0.84	1.16	1.47	1.77	**5yr**	1.27	1.73	2.02	2.60	3.23	4.13	4.57	**5yr**	3.65	4.40	5.04	5.90	6.66	**5yr**
10yr	0.51	0.78	0.97	1.35	1.74	2.08	**10yr**	1.51	2.04	2.36	3.05	3.75	4.83	5.41	**10yr**	4.28	5.20	5.98	6.92	7.82	**10yr**
25yr	0.61	0.94	1.16	1.66	2.18	2.59	**25yr**	1.89	2.53	2.92	3.77	4.57	5.95	6.75	**25yr**	5.27	6.49	7.52	8.55	9.66	**25yr**
50yr	0.71	1.08	1.34	1.93	2.60	3.05	**50yr**	2.24	2.99	3.43	4.42	5.32	6.98	7.99	**50yr**	6.17	7.68	8.94	10.04	11.34	**50yr**
100yr	0.82	1.24	1.56	2.25	3.09	3.61	**100yr**	2.67	3.53	4.03	5.20	6.19	8.18	9.46	**100yr**	7.24	9.10	10.64	11.79	13.32	**100yr**
200yr	0.96	1.44	1.82	2.64	3.68	4.26	**200yr**	3.17	4.17	4.73	6.12	7.21	9.60	11.21	**200yr**	8.50	10.78	12.68	13.86	15.66	**200yr**
500yr	1.17	1.75	2.25	3.26	4.64	5.32	**500yr**	4.01	5.20	5.87	7.60	8.83	11.87	14.05	**500yr**	10.50	13.51	15.99	17.17	19.40	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.41	0.50	0.67	0.82	0.97	**1yr**	0.71	0.95	1.16	1.53	2.02	2.35	2.85	**1yr**	2.08	2.74	3.21	3.84	4.43	**1yr**
2yr	0.36	0.55	0.68	0.92	1.14	1.37	**2yr**	0.98	1.34	1.59	2.06	2.59	3.28	3.59	**2yr**	2.91	3.45	3.93	4.70	5.29	**2yr**
5yr	0.40	0.62	0.77	1.06	1.35	1.62	**5yr**	1.16	1.58	1.89	2.41	3.00	3.90	4.33	**5yr**	3.45	4.16	4.76	5.58	6.31	**5yr**
10yr	0.44	0.68	0.84	1.18	1.52	1.81	**10yr**	1.31	1.77	2.08	2.73	3.36	4.45	4.97	**10yr**	3.94	4.78	5.47	6.37	7.24	**10yr**
25yr	0.50	0.75	0.94	1.34	1.76	2.11	**25yr**	1.52	2.06	2.42	3.21	3.93	5.28	6.00	**25yr**	4.67	5.77	6.59	7.59	8.65	**25yr**
50yr	0.53	0.81	1.01	1.46	1.96	2.45	**50yr**	1.69	2.40	2.72	3.65	4.42	6.03	6.93	**50yr**	5.34	6.66	7.62	8.69	9.92	**50yr**
100yr	0.59	0.89	1.11	1.61	2.20	2.62	**100yr**	1.90	2.56	3.07	4.17	4.98	6.89	8.02	**100yr**	6.10	7.71	8.83	9.97	11.39	**100yr**
200yr	0.64	0.96	1.22	1.76	2.46	2.91	**200yr**	2.12	2.85	3.44	4.77	5.63	7.90	9.29	**200yr**	6.99	8.93	10.22	11.46	13.10	**200yr**
500yr	0.72	1.07	1.37	2.00	2.84	3.90	**500yr**	2.45	3.81	4.02	5.72	6.63	9.48	11.32	**500yr**	8.39	10.89	12.47	13.82	15.77	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.34	0.52	0.64	0.86	1.05	1.29	**1yr**	0.91	1.26	1.50	1.94	2.38	3.01	3.26	**1yr**	2.66	3.13	3.59	4.30	4.98	**1yr**
2yr	0.39	0.61	0.75	1.01	1.24	1.50	**2yr**	1.07	1.46	1.71	2.20	2.76	3.45	3.77	**2yr**	3.05	3.63	4.16	4.92	5.54	**2yr**
5yr	0.47	0.73	0.90	1.24	1.58	1.92	**5yr**	1.36	1.88	2.15	2.80	3.49	4.35	4.85	**5yr**	3.85	4.67	5.33	6.22	7.03	**5yr**
10yr	0.56	0.86	1.06	1.49	1.92	2.35	**10yr**	1.66	2.30	2.67	3.37	4.18	5.20	5.87	**10yr**	4.60	5.64	6.46	7.46	8.39	**10yr**
25yr	0.71	1.08	1.34	1.91	2.52	3.08	**25yr**	2.17	3.01	3.48	4.32	5.33	6.58	7.55	**25yr**	5.82	7.26	8.35	9.44	10.71	**25yr**
50yr	0.84	1.28	1.60	2.29	3.09	3.57	**50yr**	2.67	3.49	4.24	5.21	6.39	7.88	9.12	**50yr**	6.97	8.77	10.12	11.29	12.85	**50yr**
100yr	1.01	1.53	1.92	2.77	3.80	4.65	**100yr**	3.28	4.55	5.18	6.29	7.67	9.42	11.04	**100yr**	8.33	10.62	12.26	13.50	15.40	**100yr**
200yr	1.22	1.83	2.32	3.35	4.68	5.74	**200yr**	4.04	5.61	6.33	7.58	9.20	11.25	13.36	**200yr**	9.96	12.85	14.88	16.14	18.48	**200yr**
500yr	1.56	2.32	2.99	4.34	6.18	6.89	**500yr**	5.33	6.73	8.28	9.72	11.74	14.23	17.20	**500yr**	12.60	16.54	19.25	20.44	23.51	**500yr**

Powered by ACIS Northeast Regional Climate Center

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for State of Connecticut

December 28, 2022

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
Survey Area Data: Version 22, Sep 12, 2022

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

Date(s) aerial images were photographed: Data not available.

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
3	Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony	0.0	0.0%
45A	Woodbridge fine sandy loam, 0 to 3 percent slopes	5.0	43.9%
45B	Woodbridge fine sandy loam, 3 to 8 percent slopes	6.2	54.4%
46B	Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony	0.2	1.7%
Totals for Area of Interest		**11.4**	**100.0%**

Map Unit Descriptions

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

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

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

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

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

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

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

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

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

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

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

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

State of Connecticut

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

Map Unit Setting

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

Map Unit Composition

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

Description of Ridgebury, Extremely Stony

Setting

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

Typical profile

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

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 15 to 35 inches to densic material
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.0 inches)

Interpretive groups

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

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

Description of Leicester, Extremely Stony

Setting

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

Typical profile

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

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.0 inches)

Interpretive groups

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

Description of Whitman, Extremely Stony

Setting

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

Typical profile

Oi - 0 to 1 inches: peat

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

Properties and qualities

Slope: 0 to 3 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 7 to 38 inches to densic material
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.0 inches)

Interpretive groups

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

Minor Components

Woodbridge, extremely stony

Percent of map unit: 6 percent
Landform: Hills, drumlins, ground moraines
Landform position (two-dimensional): Summit, backslope, footslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Swansea

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

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

Map Unit Setting

National map unit symbol: 2w686
Elevation: 0 to 1,420 feet

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

Map Unit Composition

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

Description of Woodbridge

Setting

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

Typical profile

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

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.7 inches)

Interpretive groups

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

Minor Components

Paxton

Percent of map unit: 7 percent
Landform: Ground moraines, hills, drumlins
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Ridgebury

Percent of map unit: 6 percent
Landform: Depressions, ground moraines, drainageways, drumlins, hills
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Sutton

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

Whitman, extremely stony

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

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

Map Unit Setting

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

Map Unit Composition

Woodbridge, fine sandy loam, and similar soils: 82 percent
Minor components: 18 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Woodbridge, Fine Sandy Loam

Setting

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

Typical profile

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

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

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

Minor Components

Paxton

Percent of map unit: 10 percent
Landform: Drumlins, ground moraines, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Ridgebury

Percent of map unit: 8 percent
Landform: Depressions, ground moraines, hills, drainageways
Landform position (two-dimensional): Toeslope, backslope, footslope
Landform position (three-dimensional): Base slope, head slope, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

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

Map Unit Setting

National map unit symbol: 2t2qr

Elevation: 0 to 1,440 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Woodbridge, Very Stony

Setting

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

Typical profile

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

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 19 to 27 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.0 inches)

Interpretive groups

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

Minor Components

Paxton, very stony

Percent of map unit: 10 percent
Landform: Ground moraines, hills, drumlins
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest

Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Hydric soil rating: No

Ridgebury, very stony

Percent of map unit: 8 percent
Landform: Hills, drainageways, drumlins, depressions, ground moraines
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Test Pit: TP-SW1

Depth (ft)	Horizon	Texture	Redox Features	Notes
0 - 6"	A	Loam	None	topsoil
6" - 22"	B	FSL	None	subsoil
22" - 36"	C1	FSL	See Note	iron striations to 40", fine roots to 32"
36" - 70"	C2	LS	None	clean, stopped excavation at 70" (not refusal)

Estimated Seasonal High Water: None
Observed Water: None
Restrictive Layer: None
Bedrock/Refusal: None

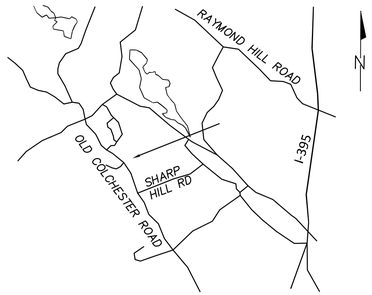
Test Pit: TP-SW2

Depth (ft)	Horizon	Texture	Redox Features	Notes
0 - 6"	A	Loam	None	topsoil
6" - 18"	B	FSL	None	subsoil
18" - 32"	C1	FSL	None	some silt pockets, fine roots to 32"
32" - 42" North	C2	LS	None	clean, rock encountered at 42" on north end
32" - 60" South	C2	LS	None	stopped excav. at 60" on south end (rock not hit)

Estimated Seasonal High Water: None
Observed Water: None
Restrictive Layer: At 42" on north end of test pit
Bedrock/Refusal: At 42" on north end of test pit

3.2 EXISTING WATERSHEDS

LOCUS MAP



CONNECTICUT COORDINATE SYSTEM 1983

n/f
ROBERT C. ECCLESTON JR
#715 OLD COLCHESTER ROAD
VOLUME 610 PAGE 1013
TAX MAP 30 BLOCK 88 LOT 000

ATLANTIC BROADBAND(CT) LLC
(BREEZELINE)
#689 OLD COLCHESTER ROAD
VOLUME 608 PAGE 350
TAX MAP 30 BLOCK 89 LOT 00A

45A

n/f
PETER & MARIANNE
PIERFEDERICI
#699 OLD COLCHESTER ROAD
VOLUME 147 PAGE 140
TAX MAP 30 BLOCK 88 LOT 00A

45B

n/f
ROBERT C. ECCLESTON JR
#695 OLD COLCHESTER ROAD
VOLUME 590 PAGE 92
TAX MAP 30 BLOCK 89 LOT T00

n/f
GLENN MAZZEI
#687 OLD COLCHESTER ROAD
VOLUME 681 PAGE 1003
TAX MAP 22 BLOCK 016 LOT 000

BUILDING SETBACK LINE

EDGE OF LAWN

GENERATOR PAD

ELEC. TRANSFORMER PAD

CHAINLINK FENCE (TYP)

ANTENNA MAST

GRAVEL

MANHOLE

ELEC. SVC. ENT.

SATELLITE DISH CONCRETE FOOTING (TYP)

UNDERGROUND ELECTRIC & CABLE MARKINGS

UNDERGROUND MARKING UNKNOWN

TELE. PULL BOX

DRIVE

STEEL PIPE FND DOWN 3"

STEEL REBAR FND. DOWN 3" N: 726,225.169 E: 1,163,107.810

ledge or exposed stone

461.9 SW2

SW1 461.4

TPA1 467.5

TPA2 467.9

TPA3 465.2

TPA4 466.7

GUY WIRES FOR ANTENNA

STEEL PIPE FND DISTURBED, NO EVIDENCE OF MERESTONE

STEEL PIPE FND DOWN 3"

DESIGN PT. A

STEEL PIPE FND DOWN 3" BENT, DOWN 3.5"

BENCHMARKS:
TOP CORNER OF CONCRETE PAD

A = 470.59
B = 471.84
C = 472.83

CATCH BASIN

CURB TOE ELEV: 441.5

UNDERGROUND VAULTS

UTILITY POLES WITH MULTIPLE RISERS

STEEL PIPE FND.

OLD COLCHESTER ROAD

gate

LEGEND

- EX 2' CONTOUR
- EX 10' CONTOUR
- EDGE OF PAVEMENT
- SOIL BOUNDARY
- SUBCATCHMENT BOUNDARY
- LONGEST FLOW PATH WITH DIRECTION OF FLOW
- (1) SUBCATCHMENT DESIGNATION

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

NO.	REVISION	APP'D	DATE

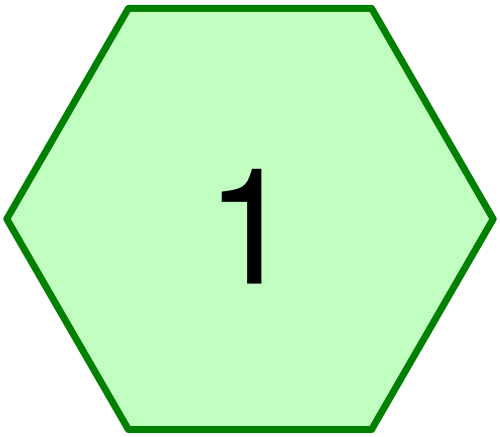
DATE: 1-10-23
SCALE: 1"=30'
DRAWN BY: MJM
DESIGN BY: MEB
APPROVED BY: JPC
PROJECT NO: 22102
FILE: 22102-DRN

PRE-DEVELOPMENT PLAN

ATLANTIC BROADBAND (CT) LLC
689 OLD COLCHESTER ROAD
UNCASVILLE, CT

BREEZELINE UNCASVILLE CT
689 OLD COLCHESTER ROAD
UNCASVILLE, CT

WS-1



WS1

Subcat Reach Pond Link

Routing Diagram for 22102-PRE
Prepared by {enter your company name here}, Printed 1/6/2023

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
39,631	74	>75% Grass cover, Good, HSG C (1)
5,957	96	Gravel surface, HSG C (1)
6,159	98	Paved parking, HSG C (1)
2,066	98	Roofs, HSG C (1)
565	98	Unconnected pavement, HSG C (1)
1,266	70	Woods, Good, HSG C (1)
55,644	**80**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
55,644	HSG C	1
0	HSG D	
0	Other	
55,644		**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	Subcatch Numbers
0	0	39,631	0	0	39,631	>75% Grass cover, Good	
0	0	5,957	0	0	5,957	Gravel surface	
0	0	6,159	0	0	6,159	Paved parking	
0	0	2,066	0	0	2,066	Roofs	
0	0	565	0	0	565	Unconnected pavement	
0	0	1,266	0	0	1,266	Woods, Good	
0	**0**	**55,644**	**0**	**0**	**55,644**	**TOTAL AREA**	

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: WS1 Runoff Area=55,644 sf 15.80% Impervious Runoff Depth=1.52"
Flow Length=410' Tc=11.7 min CN=80 Runoff=1.80 cfs 7,040 cf

Total Runoff Area = 55,644 sf Runoff Volume = 7,040 cf Average Runoff Depth = 1.52"
84.20% Pervious = 46,854 sf 15.80% Impervious = 8,790 sf

Summary for Subcatchment 1: WS1

Runoff = 1.80 cfs @ 12.11 hrs, Volume= 7,040 cf, Depth= 1.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
22102 24-hr S1 2-yr Rainfall=3.35"

Area (sf)	CN	Description
1,266	70	Woods, Good, HSG C
39,631	74	>75% Grass cover, Good, HSG C
5,957	96	Gravel surface, HSG C
565	98	Unconnected pavement, HSG C
2,066	98	Roofs, HSG C
6,159	98	Paved parking, HSG C
55,644	80	Weighted Average
46,854		84.20% Pervious Area
8,790		15.80% Impervious Area
565		6.43% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0280	0.12		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 3.23"
0.6	39	0.0231	1.06		**Shallow Concentrated Flow, 2** Short Grass Pasture Kv= 7.0 fps
0.2	58	0.0363	3.87		**Shallow Concentrated Flow, 3** Paved Kv= 20.3 fps
0.6	57	0.0456	1.49		**Shallow Concentrated Flow, 4** Short Grass Pasture Kv= 7.0 fps
0.1	23	0.0605	4.99		**Shallow Concentrated Flow, 5** Paved Kv= 20.3 fps
0.2	27	0.0980	2.19		**Shallow Concentrated Flow, 6** Short Grass Pasture Kv= 7.0 fps
0.3	34	0.0582	1.69		**Shallow Concentrated Flow, 7** Short Grass Pasture Kv= 7.0 fps
1.2	73	0.0219	1.04		**Shallow Concentrated Flow, 8** Short Grass Pasture Kv= 7.0 fps
0.8	31	0.0096	0.69		**Shallow Concentrated Flow, 9** Short Grass Pasture Kv= 7.0 fps
0.6	18	0.0057	0.53		**Shallow Concentrated Flow, 10** Short Grass Pasture Kv= 7.0 fps
11.7	410	Total			

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: WS1 Runoff Area=55,644 sf 15.80% Impervious Runoff Depth=2.75"
Flow Length=410' Tc=11.7 min CN=80 Runoff=3.24 cfs 12,729 cf

Total Runoff Area = 55,644 sf Runoff Volume = 12,729 cf Average Runoff Depth = 2.75"
84.20% Pervious = 46,854 sf 15.80% Impervious = 8,790 sf

Summary for Subcatchment 1: WS1

Runoff = 3.24 cfs @ 12.11 hrs, Volume= 12,729 cf, Depth= 2.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
22102 24-hr S1 10-yr Rainfall=4.83"

Area (sf)	CN	Description
1,266	70	Woods, Good, HSG C
39,631	74	>75% Grass cover, Good, HSG C
5,957	96	Gravel surface, HSG C
565	98	Unconnected pavement, HSG C
2,066	98	Roofs, HSG C
6,159	98	Paved parking, HSG C
55,644	80	Weighted Average
46,854		84.20% Pervious Area
8,790		15.80% Impervious Area
565		6.43% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0280	0.12		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 3.23"
0.6	39	0.0231	1.06		**Shallow Concentrated Flow, 2** Short Grass Pasture Kv= 7.0 fps
0.2	58	0.0363	3.87		**Shallow Concentrated Flow, 3** Paved Kv= 20.3 fps
0.6	57	0.0456	1.49		**Shallow Concentrated Flow, 4** Short Grass Pasture Kv= 7.0 fps
0.1	23	0.0605	4.99		**Shallow Concentrated Flow, 5** Paved Kv= 20.3 fps
0.2	27	0.0980	2.19		**Shallow Concentrated Flow, 6** Short Grass Pasture Kv= 7.0 fps
0.3	34	0.0582	1.69		**Shallow Concentrated Flow, 7** Short Grass Pasture Kv= 7.0 fps
1.2	73	0.0219	1.04		**Shallow Concentrated Flow, 8** Short Grass Pasture Kv= 7.0 fps
0.8	31	0.0096	0.69		**Shallow Concentrated Flow, 9** Short Grass Pasture Kv= 7.0 fps
0.6	18	0.0057	0.53		**Shallow Concentrated Flow, 10** Short Grass Pasture Kv= 7.0 fps
11.7	410	Total			

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: WS1 Runoff Area=55,644 sf 15.80% Impervious Runoff Depth=4.68"
Flow Length=410' Tc=11.7 min CN=80 Runoff=5.42 cfs 21,683 cf

Total Runoff Area = 55,644 sf Runoff Volume = 21,683 cf Average Runoff Depth = 4.68"
84.20% Pervious = 46,854 sf 15.80% Impervious = 8,790 sf

Summary for Subcatchment 1: WS1

Runoff = 5.42 cfs @ 12.11 hrs, Volume= 21,683 cf, Depth= 4.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
22102 24-hr S1 50-yr Rainfall=6.98"

Area (sf)	CN	Description
1,266	70	Woods, Good, HSG C
39,631	74	>75% Grass cover, Good, HSG C
5,957	96	Gravel surface, HSG C
565	98	Unconnected pavement, HSG C
2,066	98	Roofs, HSG C
6,159	98	Paved parking, HSG C
55,644	80	Weighted Average
46,854		84.20% Pervious Area
8,790		15.80% Impervious Area
565		6.43% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0280	0.12		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 3.23"
0.6	39	0.0231	1.06		**Shallow Concentrated Flow, 2** Short Grass Pasture Kv= 7.0 fps
0.2	58	0.0363	3.87		**Shallow Concentrated Flow, 3** Paved Kv= 20.3 fps
0.6	57	0.0456	1.49		**Shallow Concentrated Flow, 4** Short Grass Pasture Kv= 7.0 fps
0.1	23	0.0605	4.99		**Shallow Concentrated Flow, 5** Paved Kv= 20.3 fps
0.2	27	0.0980	2.19		**Shallow Concentrated Flow, 6** Short Grass Pasture Kv= 7.0 fps
0.3	34	0.0582	1.69		**Shallow Concentrated Flow, 7** Short Grass Pasture Kv= 7.0 fps
1.2	73	0.0219	1.04		**Shallow Concentrated Flow, 8** Short Grass Pasture Kv= 7.0 fps
0.8	31	0.0096	0.69		**Shallow Concentrated Flow, 9** Short Grass Pasture Kv= 7.0 fps
0.6	18	0.0057	0.53		**Shallow Concentrated Flow, 10** Short Grass Pasture Kv= 7.0 fps
11.7	410	Total			

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: WS1 Runoff Area=55,644 sf 15.80% Impervious Runoff Depth=5.79"
Flow Length=410' Tc=11.7 min CN=80 Runoff=6.65 cfs 26,867 cf

Total Runoff Area = 55,644 sf Runoff Volume = 26,867 cf Average Runoff Depth = 5.79"
84.20% Pervious = 46,854 sf 15.80% Impervious = 8,790 sf

Summary for Subcatchment 1: WS1

Runoff = 6.65 cfs @ 12.11 hrs, Volume= 26,867 cf, Depth= 5.79"

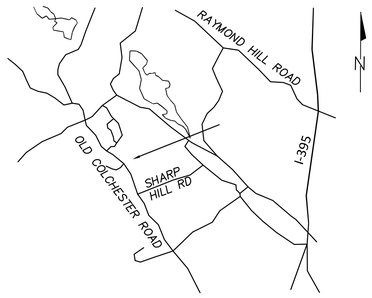
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
22102 24-hr S1 100-yr Rainfall=8.18"

Area (sf)	CN	Description
1,266	70	Woods, Good, HSG C
39,631	74	>75% Grass cover, Good, HSG C
5,957	96	Gravel surface, HSG C
565	98	Unconnected pavement, HSG C
2,066	98	Roofs, HSG C
6,159	98	Paved parking, HSG C
55,644	80	Weighted Average
46,854		84.20% Pervious Area
8,790		15.80% Impervious Area
565		6.43% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0280	0.12		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 3.23"
0.6	39	0.0231	1.06		**Shallow Concentrated Flow, 2** Short Grass Pasture Kv= 7.0 fps
0.2	58	0.0363	3.87		**Shallow Concentrated Flow, 3** Paved Kv= 20.3 fps
0.6	57	0.0456	1.49		**Shallow Concentrated Flow, 4** Short Grass Pasture Kv= 7.0 fps
0.1	23	0.0605	4.99		**Shallow Concentrated Flow, 5** Paved Kv= 20.3 fps
0.2	27	0.0980	2.19		**Shallow Concentrated Flow, 6** Short Grass Pasture Kv= 7.0 fps
0.3	34	0.0582	1.69		**Shallow Concentrated Flow, 7** Short Grass Pasture Kv= 7.0 fps
1.2	73	0.0219	1.04		**Shallow Concentrated Flow, 8** Short Grass Pasture Kv= 7.0 fps
0.8	31	0.0096	0.69		**Shallow Concentrated Flow, 9** Short Grass Pasture Kv= 7.0 fps
0.6	18	0.0057	0.53		**Shallow Concentrated Flow, 10** Short Grass Pasture Kv= 7.0 fps
11.7	410	Total			

3.3 DEVELOPED WATERSHEDS

LOCUS MAP



n/f
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VOLUME 681 PAGE 1003
TAX MAP 22 BLOCK 016 LOT 000

ATLANTIC BROADBAND(CT) LLC
(BREEZELINE)
#689 OLD COLCHESTER ROAD
VOLUME 608 PAGE 350
TAX MAP 30 BLOCK 89 LOT 00A

CONNECTICUT COORDINATE SYSTEM 1983

45A
45B
A1
BUILDING SETBACK LINE
GENERATOR PAD
ELEC. TRANSFORMER PAD
CHAINLINK FENCE (TYP)
ANTENNA MAST
75' WELL RADIUS
PROPOSED WELL
MANHOLE
ELEC. SVC. ENT.
SATELLITE DISH CONCRETE FOOTING (TYP)
EDGE OF LAWN
GRAVEL
CMU RETAINING WALL HEIGHT VARIES 18" MAX
UNDERGROUND ELECTRIC & CABLE MARKINGS
UNDERGROUND MARKING UNKNOWN
TELE. PULL BOX
CAPE COD BERM
PROPOSED BUILDING FEE: 466.4
DRIVE
WIRES FOR ANTENNA
LONGEST FLOW PATH (TYP.)
BENCHMARKS:
TOP CORNER OF CONCRETE PAD
A = 470.59
B = 471.84
C = 472.83
BC: 462.5
TC: 463.0
BC: 462.5
TC: 462.8
BC: 462.3
TC: 462.6
462.0
462.1
459.75
BIORETENTION POND
BOT. OF POND: 459.75
SHARP CRESTED VEE WEIR
4.28'L X 5'W X 1.5'H
110° VEE
W/RIPRAP SPLASH PAD
INV. OUT=460.65
OVERLAND REACH (TYP.)
(3) 6" PERFORATED UNDERDRAIN (TYP)
24" DIA NYLOPLAST RISER
RIM=461.50
DESIGN PT. A1
CATCH BASIN
CURB TOE
ELEV: 441.5
UNDERGROUND VAULTS
UTILITY POLES WITH MULTIPLE RISERS
OLD COLCHESTER ROAD
gate

LEGEND

- EX 2' CONTOUR
- EX 10' CONTOUR
- PROPOSED CONTOUR
- EDGE OF PAVEMENT
- SOIL BOUNDARY
- SUBCATCHMENT BOUNDARY
- LONGEST FLOW PATH WITH DIRECTION OF FLOW
- REACH WITH DIRECTION OF FLOW
- (1) SUBCATCHMENT DESIGNATION

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)

NOT FOR CONSTRUCTION FOR PERMIT USE ONLY

NO.	REVISION	APP'D	DATE

DATE: 1-10-23
SCALE: 1"=30'
DRAWN BY: MJM
DESIGN BY: MEB
APPROVED BY: JPC
PROJECT NO: 22102
FILE: 22102-DRN

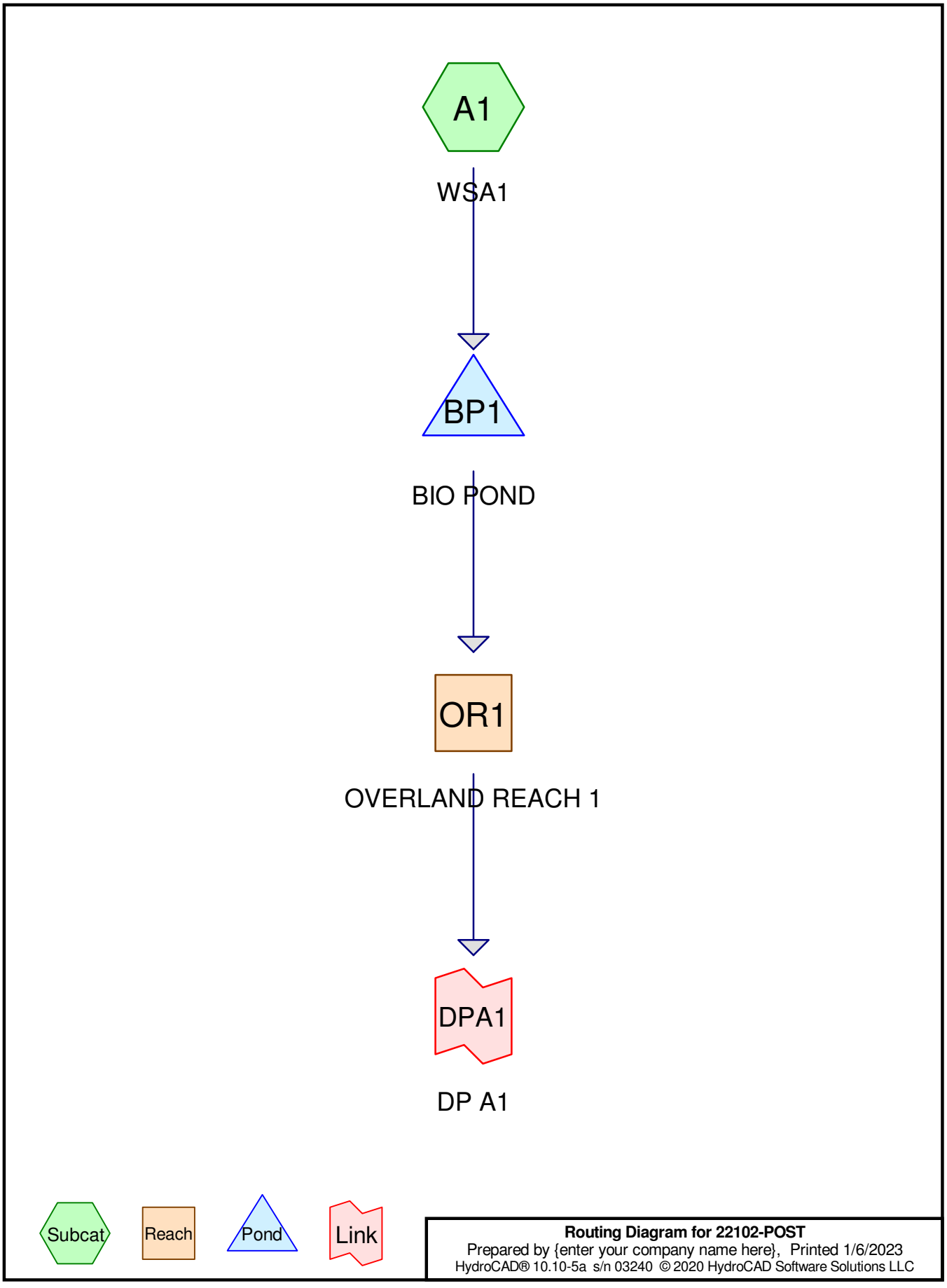
CIVILWORKS NEW ENGLAND
CIVIL & WATERFRONT ENGINEERING
181 Watson Road, PO Box 1166
Dover, New Hampshire 03821
603.749.0443

POST-DEVELOPMENT PLAN

ATLANTIC BROADBAND (CT) LLC
689 OLD COLCHESTER ROAD
UNCASVILLE, CT

BREEZELINE UNCASVILLE CT
689 OLD COLCHESTER ROAD
UNCASVILLE, CT

WS-2



Routing Diagram for 22102-POST
Prepared by {enter your company name here}, Printed 1/6/2023

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
33,500	74	>75% Grass cover, Good, HSG C (A1)
5,957	96	Gravel surface, HSG C (A1)
11,022	98	Paved parking, HSG C (A1)
3,282	98	Roofs, HSG C (A1)
617	98	Unconnected pavement, HSG C (A1)
1,266	70	Woods, Good, HSG C (A1)
55,644	**83**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
55,644	HSG C	A1
0	HSG D	
0	Other	
55,644		**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	Subcatch Numbers
0	0	33,500	0	0	33,500	>75% Grass cover, Good	
0	0	5,957	0	0	5,957	Gravel surface	
0	0	11,022	0	0	11,022	Paved parking	
0	0	3,282	0	0	3,282	Roofs	
0	0	617	0	0	617	Unconnected pavement	
0	0	1,266	0	0	1,266	Woods, Good	
0	**0**	**55,644**	**0**	**0**	**55,644**	**TOTAL AREA**	

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment A1: WSA1 Runoff Area=55,644 sf 26.82% Impervious Runoff Depth=1.73"
Flow Length=339' Tc=10.1 min CN=83 Runoff=2.23 cfs 8,036 cf

Reach OR1: OVERLAND REACH 1 Avg. Flow Depth=0.09' Max Vel=0.88 fps Inflow=0.44 cfs 1,015 cf
n=0.030 L=36.4' S=0.0137 '/' Capacity=18.59 cfs Outflow=0.44 cfs 1,015 cf

Pond BP1: BIO POND Peak Elev=461.08' Storage=2,388 cf Inflow=2.23 cfs 8,036 cf
Discarded=0.24 cfs 7,021 cf Primary=0.44 cfs 1,015 cf Outflow=0.68 cfs 8,036 cf

Link DPA1: DP A1 Inflow=0.44 cfs 1,015 cf
Primary=0.44 cfs 1,015 cf

Total Runoff Area = 55,644 sf Runoff Volume = 8,036 cf Average Runoff Depth = 1.73"
73.18% Pervious = 40,723 sf 26.82% Impervious = 14,921 sf

Summary for Subcatchment A1: WSA1

Runoff = 2.23 cfs @ 12.09 hrs, Volume= 8,036 cf, Depth= 1.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
22102 24-hr S1 2-yr Rainfall=3.35"

Area (sf)	CN	Description
1,266	70	Woods, Good, HSG C
33,500	74	>75% Grass cover, Good, HSG C
5,957	96	Gravel surface, HSG C
3,282	98	Roofs, HSG C
617	98	Unconnected pavement, HSG C
11,022	98	Paved parking, HSG C
55,644	83	Weighted Average
40,723		73.18% Pervious Area
14,921		26.82% Impervious Area
617		4.14% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0280	0.12		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 3.23"
0.6	39	0.0231	1.06		**Shallow Concentrated Flow, 2** Short Grass Pasture Kv= 7.0 fps
0.2	58	0.0363	3.87		**Shallow Concentrated Flow, 3** Paved Kv= 20.3 fps
0.6	57	0.0456	1.49		**Shallow Concentrated Flow, 4** Short Grass Pasture Kv= 7.0 fps
0.1	23	0.0605	4.99		**Shallow Concentrated Flow, 5** Paved Kv= 20.3 fps
0.1	17	0.0937	2.14		**Shallow Concentrated Flow, 6** Short Grass Pasture Kv= 7.0 fps
0.8	38	0.0132	0.80		**Shallow Concentrated Flow, 7** Short Grass Pasture Kv= 7.0 fps
0.4	25	0.0204	1.00		**Shallow Concentrated Flow, 8** Short Grass Pasture Kv= 7.0 fps
0.2	21	0.0970	2.18		**Shallow Concentrated Flow, 9** Short Grass Pasture Kv= 7.0 fps
0.0	11	0.2990	3.83		**Shallow Concentrated Flow, 10** Short Grass Pasture Kv= 7.0 fps
10.1	339	Total			

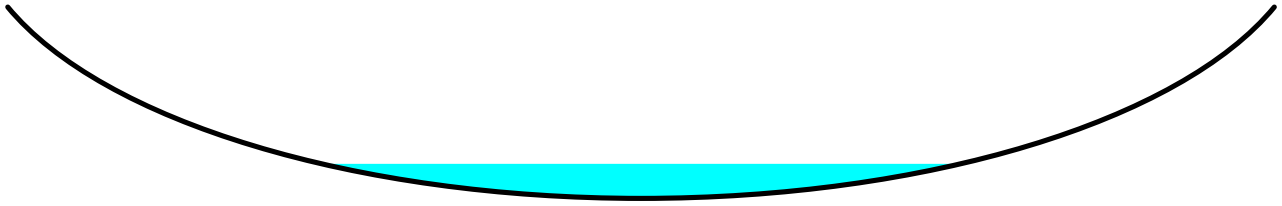
Summary for Reach OR1: OVERLAND REACH 1

Inflow Area = 55,644 sf, 26.82% Impervious, Inflow Depth = 0.22" for 2-yr event
Inflow = 0.44 cfs @ 12.44 hrs, Volume= 1,015 cf
Outflow = 0.44 cfs @ 12.45 hrs, Volume= 1,015 cf, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.88 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 0.46 fps, Avg. Travel Time= 1.3 min

Peak Storage= 18 cf @ 12.45 hrs
Average Depth at Peak Storage= 0.09' , Surface Width= 8.41'
Bank-Full Depth= 0.50' Flow Area= 6.7 sf, Capacity= 18.59 cfs

20.00' x 0.50' deep Parabolic Channel, n= 0.030 Earth, grassed & winding
Length= 36.4' Slope= 0.0137 '/'
Inlet Invert= 460.50', Outlet Invert= 460.00'



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Summary for Pond BP1: BIO POND

Inflow Area = 55,644 sf, 26.82% Impervious, Inflow Depth = 1.73" for 2-yr event
Inflow = 2.23 cfs @ 12.09 hrs, Volume= 8,036 cf
Outflow = 0.68 cfs @ 12.44 hrs, Volume= 8,036 cf, Atten= 70%, Lag= 21.2 min
Discarded = 0.24 cfs @ 12.44 hrs, Volume= 7,021 cf
Primary = 0.44 cfs @ 12.44 hrs, Volume= 1,015 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 461.08' @ 12.44 hrs Surf.Area= 1,484 sf Storage= 2,388 cf
Flood Elev= 462.10' Surf.Area= 1,919 sf Storage= 3,945 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 87.4 min (943.7 - 856.3)

Volume	Invert	Avail.Storage	Storage Description
#1	456.92'	3,945 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
456.92	943	119.3	0.0	0	0	943
457.92	943	119.3	40.0	377	377	1,062
458.25	943	119.3	40.0	124	502	1,102
459.75	943	119.3	20.0	283	785	1,281
460.00	1,035	124.2	100.0	247	1,032	1,380
461.00	1,448	144.4	100.0	1,236	2,267	1,832
462.00	1,919	165.1	100.0	1,678	3,945	2,365

Device	Routing	Invert	Outlet Devices
#1	Discarded	456.92'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 455.50'
#2	Primary	460.65'	**110.0 deg x 1.50' rise Sharp-Crested Vee/Trap Weir** Cv= 2.49 (C= 3.11)

Discarded OutFlow Max=0.24 cfs @ 12.44 hrs HW=461.08' (Free Discharge)
1=Exfiltration (Controls 0.24 cfs)

Primary OutFlow Max=0.44 cfs @ 12.44 hrs HW=461.08' TW=460.59' (Dynamic Tailwater)
2=Sharp-Crested Vee/Trap Weir (Weir Controls 0.44 cfs @ 1.64 fps)

Summary for Link DPA1: DP A1

Inflow Area = 55,644 sf, 26.82% Impervious, Inflow Depth = 0.22" for 2-yr event
Inflow = 0.44 cfs @ 12.45 hrs, Volume= 1,015 cf
Primary = 0.44 cfs @ 12.45 hrs, Volume= 1,015 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment A1: WSA1 Runoff Area=55,644 sf 26.82% Impervious Runoff Depth=3.02"
Flow Length=339' Tc=10.1 min CN=83 Runoff=3.80 cfs 14,007 cf

Reach OR1: OVERLAND REACH 1 Avg. Flow Depth=0.20' Max Vel=1.50 fps Inflow=2.48 cfs 4,578 cf
n=0.030 L=36.4' S=0.0137 '/' Capacity=18.59 cfs Outflow=2.48 cfs 4,578 cf

Pond BP1: BIO POND Peak Elev=461.52' Storage=3,075 cf Inflow=3.80 cfs 14,007 cf
Discarded=0.27 cfs 9,429 cf Primary=2.48 cfs 4,578 cf Outflow=2.75 cfs 14,008 cf

Link DPA1: DP A1 Inflow=2.48 cfs 4,578 cf
Primary=2.48 cfs 4,578 cf

Total Runoff Area = 55,644 sf Runoff Volume = 14,007 cf Average Runoff Depth = 3.02"
73.18% Pervious = 40,723 sf 26.82% Impervious = 14,921 sf

Summary for Subcatchment A1: WSA1

Runoff = 3.80 cfs @ 12.09 hrs, Volume= 14,007 cf, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
22102 24-hr S1 10-yr Rainfall=4.83"

Area (sf)	CN	Description
1,266	70	Woods, Good, HSG C
33,500	74	>75% Grass cover, Good, HSG C
5,957	96	Gravel surface, HSG C
3,282	98	Roofs, HSG C
617	98	Unconnected pavement, HSG C
11,022	98	Paved parking, HSG C
55,644	83	Weighted Average
40,723		73.18% Pervious Area
14,921		26.82% Impervious Area
617		4.14% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0280	0.12		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 3.23"
0.6	39	0.0231	1.06		**Shallow Concentrated Flow, 2** Short Grass Pasture Kv= 7.0 fps
0.2	58	0.0363	3.87		**Shallow Concentrated Flow, 3** Paved Kv= 20.3 fps
0.6	57	0.0456	1.49		**Shallow Concentrated Flow, 4** Short Grass Pasture Kv= 7.0 fps
0.1	23	0.0605	4.99		**Shallow Concentrated Flow, 5** Paved Kv= 20.3 fps
0.1	17	0.0937	2.14		**Shallow Concentrated Flow, 6** Short Grass Pasture Kv= 7.0 fps
0.8	38	0.0132	0.80		**Shallow Concentrated Flow, 7** Short Grass Pasture Kv= 7.0 fps
0.4	25	0.0204	1.00		**Shallow Concentrated Flow, 8** Short Grass Pasture Kv= 7.0 fps
0.2	21	0.0970	2.18		**Shallow Concentrated Flow, 9** Short Grass Pasture Kv= 7.0 fps
0.0	11	0.2990	3.83		**Shallow Concentrated Flow, 10** Short Grass Pasture Kv= 7.0 fps
10.1	339	Total			

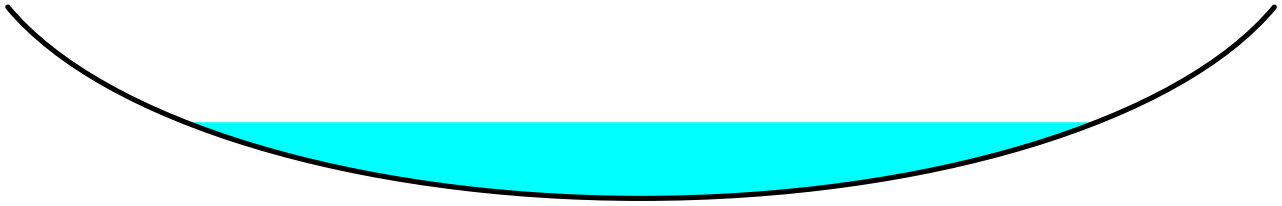
Summary for Reach OR1: OVERLAND REACH 1

Inflow Area = 55,644 sf, 26.82% Impervious, Inflow Depth = 0.99" for 10-yr event
Inflow = 2.48 cfs @ 12.19 hrs, Volume= 4,578 cf
Outflow = 2.48 cfs @ 12.19 hrs, Volume= 4,578 cf, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.50 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 0.58 fps, Avg. Travel Time= 1.1 min

Peak Storage= 60 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.20' , Surface Width= 12.56'
Bank-Full Depth= 0.50' Flow Area= 6.7 sf, Capacity= 18.59 cfs

20.00' x 0.50' deep Parabolic Channel, n= 0.030 Earth, grassed & winding
Length= 36.4' Slope= 0.0137 '/'
Inlet Invert= 460.50', Outlet Invert= 460.00'



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Summary for Pond BP1: BIO POND

Inflow Area = 55,644 sf, 26.82% Impervious, Inflow Depth = 3.02" for 10-yr event
Inflow = 3.80 cfs @ 12.09 hrs, Volume= 14,007 cf
Outflow = 2.75 cfs @ 12.19 hrs, Volume= 14,008 cf, Atten= 28%, Lag= 5.9 min
Discarded = 0.27 cfs @ 12.19 hrs, Volume= 9,429 cf
Primary = 2.48 cfs @ 12.19 hrs, Volume= 4,578 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 461.52' @ 12.19 hrs Surf.Area= 1,683 sf Storage= 3,075 cf
Flood Elev= 462.10' Surf.Area= 1,919 sf Storage= 3,945 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 75.0 min (909.6 - 834.7)

Volume	Invert	Avail.Storage	Storage Description
#1	456.92'	3,945 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
456.92	943	119.3	0.0	0	0	943
457.92	943	119.3	40.0	377	377	1,062
458.25	943	119.3	40.0	124	502	1,102
459.75	943	119.3	20.0	283	785	1,281
460.00	1,035	124.2	100.0	247	1,032	1,380
461.00	1,448	144.4	100.0	1,236	2,267	1,832
462.00	1,919	165.1	100.0	1,678	3,945	2,365

Device	Routing	Invert	Outlet Devices
#1	Discarded	456.92'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 455.50'
#2	Primary	460.65'	**110.0 deg x 1.50' rise Sharp-Crested Vee/Trap Weir** Cv= 2.49 (C= 3.11)

Discarded OutFlow Max=0.27 cfs @ 12.19 hrs HW=461.52' (Free Discharge)
1=Exfiltration (Controls 0.27 cfs)

Primary OutFlow Max=2.48 cfs @ 12.19 hrs HW=461.52' TW=460.70' (Dynamic Tailwater)
2=Sharp-Crested Vee/Trap Weir (Weir Controls 2.48 cfs @ 2.32 fps)

Summary for Link DPA1: DP A1

Inflow Area = 55,644 sf, 26.82% Impervious, Inflow Depth = 0.99" for 10-yr event
Inflow = 2.48 cfs @ 12.19 hrs, Volume= 4,578 cf
Primary = 2.48 cfs @ 12.19 hrs, Volume= 4,578 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment A1: WSA1 Runoff Area=55,644 sf 26.82% Impervious Runoff Depth=5.01"
Flow Length=339' Tc=10.1 min CN=83 Runoff=6.13 cfs 23,226 cf

Reach OR1: OVERLAND REACH 1 Avg. Flow Depth=0.28' Max Vel=1.89 fps Inflow=5.23 cfs 11,011 cf
n=0.030 L=36.4' S=0.0137 '/' Capacity=18.59 cfs Outflow=5.23 cfs 11,011 cf

Pond BP1: BIO POND Peak Elev=461.82' Storage=3,603 cf Inflow=6.13 cfs 23,226 cf
Discarded=0.29 cfs 12,216 cf Primary=5.23 cfs 11,011 cf Outflow=5.53 cfs 23,227 cf

Link DPA1: DP A1 Inflow=5.23 cfs 11,011 cf
Primary=5.23 cfs 11,011 cf

Total Runoff Area = 55,644 sf Runoff Volume = 23,226 cf Average Runoff Depth = 5.01"
73.18% Pervious = 40,723 sf 26.82% Impervious = 14,921 sf

Summary for Subcatchment A1: WSA1

Runoff = 6.13 cfs @ 12.09 hrs, Volume= 23,226 cf, Depth= 5.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
22102 24-hr S1 50-yr Rainfall=6.98"

Area (sf)	CN	Description
1,266	70	Woods, Good, HSG C
33,500	74	>75% Grass cover, Good, HSG C
5,957	96	Gravel surface, HSG C
3,282	98	Roofs, HSG C
617	98	Unconnected pavement, HSG C
11,022	98	Paved parking, HSG C
55,644	83	Weighted Average
40,723		73.18% Pervious Area
14,921		26.82% Impervious Area
617		4.14% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0280	0.12		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 3.23"
0.6	39	0.0231	1.06		**Shallow Concentrated Flow, 2** Short Grass Pasture Kv= 7.0 fps
0.2	58	0.0363	3.87		**Shallow Concentrated Flow, 3** Paved Kv= 20.3 fps
0.6	57	0.0456	1.49		**Shallow Concentrated Flow, 4** Short Grass Pasture Kv= 7.0 fps
0.1	23	0.0605	4.99		**Shallow Concentrated Flow, 5** Paved Kv= 20.3 fps
0.1	17	0.0937	2.14		**Shallow Concentrated Flow, 6** Short Grass Pasture Kv= 7.0 fps
0.8	38	0.0132	0.80		**Shallow Concentrated Flow, 7** Short Grass Pasture Kv= 7.0 fps
0.4	25	0.0204	1.00		**Shallow Concentrated Flow, 8** Short Grass Pasture Kv= 7.0 fps
0.2	21	0.0970	2.18		**Shallow Concentrated Flow, 9** Short Grass Pasture Kv= 7.0 fps
0.0	11	0.2990	3.83		**Shallow Concentrated Flow, 10** Short Grass Pasture Kv= 7.0 fps
10.1	339	Total			

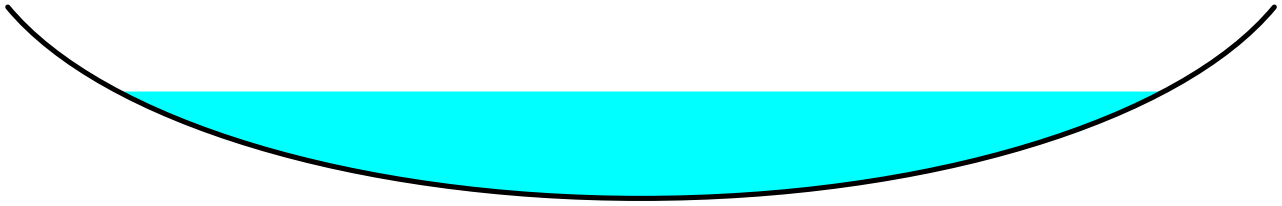
Summary for Reach OR1: OVERLAND REACH 1

Inflow Area = 55,644 sf, 26.82% Impervious, Inflow Depth = 2.37" for 50-yr event
Inflow = 5.23 cfs @ 12.14 hrs, Volume= 11,011 cf
Outflow = 5.23 cfs @ 12.14 hrs, Volume= 11,011 cf, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.89 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.63 fps, Avg. Travel Time= 1.0 min

Peak Storage= 101 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.28' , Surface Width= 14.92'
Bank-Full Depth= 0.50' Flow Area= 6.7 sf, Capacity= 18.59 cfs

20.00' x 0.50' deep Parabolic Channel, n= 0.030 Earth, grassed & winding
Length= 36.4' Slope= 0.0137 '/'
Inlet Invert= 460.50', Outlet Invert= 460.00'



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Summary for Pond BP1: BIO POND

Inflow Area = 55,644 sf, 26.82% Impervious, Inflow Depth = 5.01" for 50-yr event
Inflow = 6.13 cfs @ 12.09 hrs, Volume= 23,226 cf
Outflow = 5.53 cfs @ 12.14 hrs, Volume= 23,227 cf, Atten= 10%, Lag= 2.9 min
Discarded = 0.29 cfs @ 12.14 hrs, Volume= 12,216 cf
Primary = 5.23 cfs @ 12.14 hrs, Volume= 11,011 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 461.82' @ 12.14 hrs Surf.Area= 1,828 sf Storage= 3,603 cf
Flood Elev= 462.10' Surf.Area= 1,919 sf Storage= 3,945 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 64.7 min (879.8 - 815.2)

Volume	Invert	Avail.Storage	Storage Description
#1	456.92'	3,945 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
456.92	943	119.3	0.0	0	0	943
457.92	943	119.3	40.0	377	377	1,062
458.25	943	119.3	40.0	124	502	1,102
459.75	943	119.3	20.0	283	785	1,281
460.00	1,035	124.2	100.0	247	1,032	1,380
461.00	1,448	144.4	100.0	1,236	2,267	1,832
462.00	1,919	165.1	100.0	1,678	3,945	2,365

Device	Routing	Invert	Outlet Devices
#1	Discarded	456.92'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 455.50'
#2	Primary	460.65'	**110.0 deg x 1.50' rise Sharp-Crested Vee/Trap Weir** Cv= 2.49 (C= 3.11)

Discarded OutFlow Max=0.29 cfs @ 12.14 hrs HW=461.82' (Free Discharge)
1=Exfiltration (Controls 0.29 cfs)

Primary OutFlow Max=5.23 cfs @ 12.14 hrs HW=461.82' TW=460.78' (Dynamic Tailwater)
2=Sharp-Crested Vee/Trap Weir (Weir Controls 5.23 cfs @ 2.69 fps)

Summary for Link DPA1: DP A1

Inflow Area = 55,644 sf, 26.82% Impervious, Inflow Depth = 2.37" for 50-yr event
Inflow = 5.23 cfs @ 12.14 hrs, Volume= 11,011 cf
Primary = 5.23 cfs @ 12.14 hrs, Volume= 11,011 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment A1: WSA1 Runoff Area=55,644 sf 26.82% Impervious Runoff Depth=6.15"
Flow Length=339' Tc=10.1 min CN=83 Runoff=7.42 cfs 28,515 cf

Reach OR1: OVERLAND REACH 1 Avg. Flow Depth=0.31' Max Vel=2.02 fps Inflow=6.52 cfs 15,039 cf
n=0.030 L=36.4' S=0.0137 '/' Capacity=18.59 cfs Outflow=6.52 cfs 15,039 cf

Pond BP1: BIO POND Peak Elev=461.92' Storage=3,803 cf Inflow=7.42 cfs 28,515 cf
Discarded=0.30 cfs 13,476 cf Primary=6.52 cfs 15,039 cf Outflow=6.82 cfs 28,515 cf

Link DPA1: DP A1 Inflow=6.52 cfs 15,039 cf
Primary=6.52 cfs 15,039 cf

Total Runoff Area = 55,644 sf Runoff Volume = 28,515 cf Average Runoff Depth = 6.15"
73.18% Pervious = 40,723 sf 26.82% Impervious = 14,921 sf

Summary for Subcatchment A1: WSA1

Runoff = 7.42 cfs @ 12.09 hrs, Volume= 28,515 cf, Depth= 6.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
22102 24-hr S1 100-yr Rainfall=8.18"

Area (sf)	CN	Description
1,266	70	Woods, Good, HSG C
33,500	74	>75% Grass cover, Good, HSG C
5,957	96	Gravel surface, HSG C
3,282	98	Roofs, HSG C
617	98	Unconnected pavement, HSG C
11,022	98	Paved parking, HSG C
55,644	83	Weighted Average
40,723		73.18% Pervious Area
14,921		26.82% Impervious Area
617		4.14% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0280	0.12		**Sheet Flow, 1** Grass: Dense n= 0.240 P2= 3.23"
0.6	39	0.0231	1.06		**Shallow Concentrated Flow, 2** Short Grass Pasture Kv= 7.0 fps
0.2	58	0.0363	3.87		**Shallow Concentrated Flow, 3** Paved Kv= 20.3 fps
0.6	57	0.0456	1.49		**Shallow Concentrated Flow, 4** Short Grass Pasture Kv= 7.0 fps
0.1	23	0.0605	4.99		**Shallow Concentrated Flow, 5** Paved Kv= 20.3 fps
0.1	17	0.0937	2.14		**Shallow Concentrated Flow, 6** Short Grass Pasture Kv= 7.0 fps
0.8	38	0.0132	0.80		**Shallow Concentrated Flow, 7** Short Grass Pasture Kv= 7.0 fps
0.4	25	0.0204	1.00		**Shallow Concentrated Flow, 8** Short Grass Pasture Kv= 7.0 fps
0.2	21	0.0970	2.18		**Shallow Concentrated Flow, 9** Short Grass Pasture Kv= 7.0 fps
0.0	11	0.2990	3.83		**Shallow Concentrated Flow, 10** Short Grass Pasture Kv= 7.0 fps
10.1	339	Total			

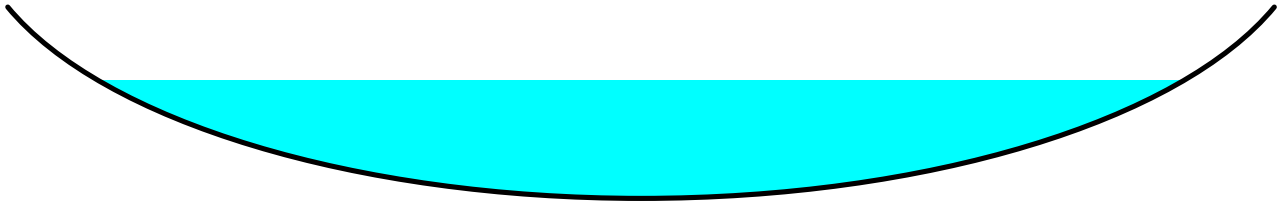
Summary for Reach OR1: OVERLAND REACH 1

Inflow Area = 55,644 sf, 26.82% Impervious, Inflow Depth = 3.24" for 100-yr event
Inflow = 6.52 cfs @ 12.13 hrs, Volume= 15,039 cf
Outflow = 6.52 cfs @ 12.13 hrs, Volume= 15,039 cf, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.02 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.64 fps, Avg. Travel Time= 0.9 min

Peak Storage= 117 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.31' , Surface Width= 15.70'
Bank-Full Depth= 0.50' Flow Area= 6.7 sf, Capacity= 18.59 cfs

20.00' x 0.50' deep Parabolic Channel, n= 0.030 Earth, grassed & winding
Length= 36.4' Slope= 0.0137 '/'
Inlet Invert= 460.50', Outlet Invert= 460.00'



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Summary for Pond BP1: BIO POND

Inflow Area = 55,644 sf, 26.82% Impervious, Inflow Depth = 6.15" for 100-yr event
Inflow = 7.42 cfs @ 12.09 hrs, Volume= 28,515 cf
Outflow = 6.82 cfs @ 12.13 hrs, Volume= 28,515 cf, Atten= 8%, Lag= 2.6 min
Discarded = 0.30 cfs @ 12.13 hrs, Volume= 13,476 cf
Primary = 6.52 cfs @ 12.13 hrs, Volume= 15,039 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 461.92' @ 12.13 hrs Surf.Area= 1,881 sf Storage= 3,803 cf
Flood Elev= 462.10' Surf.Area= 1,919 sf Storage= 3,945 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 60.8 min (868.5 - 807.7)

Volume	Invert	Avail.Storage	Storage Description
#1	456.92'	3,945 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

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462.00	1,919	165.1	100.0	1,678	3,945	2,365

Device	Routing	Invert	Outlet Devices
#1	Discarded	456.92'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 455.50'
#2	Primary	460.65'	**110.0 deg x 1.50' rise Sharp-Crested Vee/Trap Weir** Cv= 2.49 (C= 3.11)

Discarded OutFlow Max=0.30 cfs @ 12.13 hrs HW=461.92' (Free Discharge)
└**1=Exfiltration** (Controls 0.30 cfs)

Primary OutFlow Max=6.52 cfs @ 12.13 hrs HW=461.92' TW=460.81' (Dynamic Tailwater)
└**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 6.52 cfs @ 2.81 fps)

Summary for Link DPA1: DP A1

Inflow Area = 55,644 sf, 26.82% Impervious, Inflow Depth = 3.24" for 100-yr event
Inflow = 6.52 cfs @ 12.13 hrs, Volume= 15,039 cf
Primary = 6.52 cfs @ 12.13 hrs, Volume= 15,039 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs