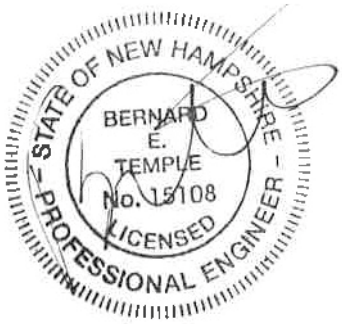
DRAINAGE REPORT

SITE PLAN
2A TACTICAL, LLC

Tax Map 251 Lots 63
99 Tolend Road
Barrington NH 03825

July 12, 2021
September 10, 2021



Prepared For:

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Site Plan
2A Tactical, LLC
Map 251 Lot 63
Barrington NH

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Introduction

This proposed project is located on Map 251, Lot 63 of the Barrington NH tax maps. The project consists of the construction of a 6000 square foot retail building as well as a 3500 square foot trailer storage pad with associated access, parking, utilities and other site improvements. Drainage from the developed area will be routed both open and closed drainage to one infiltration pond located at the back of the site. The site will be provided with onsite septic and water.

Existing Conditions

This parcel is 8.5 acres with approximately 700 feet of frontage on NH Rout 125 as well as frontage on Bumford Road which is a Class VI town road. It is located in the commercial district of Barrington. The site is moderately sloping with all of the site draining from West to East before entering a large wetland complex on the Easterly side of the property. The NRCS web soils maps indicate that the majority of the soils are classified as a Hinckley Loamy Sand (HaB and HaC). This soil complex is a moderately well drained hydrological class “A” soil. The pre-developed analysis shows the site divided into one subcatchment drainage area as can be seen on the pre-development drainage area plan. Subcatchment 1 discharges off the easterly corner of the property at Bumford road.

Proposed development

As noted above the project consists of the construction of a 6000 square foot retail building as well as a 3500 square foot trailer storage pad with associated access, parking, utilities and other site improvements. The site has been designed with both open and closed drainage with all of the drainage and roof top ending up in one infiltration basin located on the easterly side of the proposed parking area. The access road and parking area drainage will be directed to three deep sump catch basins for sediment removal and then into a sediment forebay located in the pond prior to entering the infiltration pond. There is no change proposed to the existing drainage patterns. Because of the favorable soil conditions, the infiltration pond has been designed to infiltrate and treat the water quality volume and retain peak stormwater flows per local regulations. Onsite soils as noted above are Hinckley Loamy Sand HaB. This soil complex is a well-drained class “A” soil. The infiltration rate for the soil as shown SSSNNE special publication No. 5 Ksat values for NH soils is 6 inches per hour, this rate is then used at 50% or 3 inches per

hour for design purposes. The drainage system is designed to mitigate any increase in stormwater runoff as a result from the site development per local regulations.

Design methodology

The drainage analysis in this study was completed using HydroCad Version 10.1, a stormwater modeling program utilizing TR-20 and TR-55 methodology. This program performs both the hydrologic computations for determination of runoff flows, and the hydraulic calculations for pipe, ditch, and pond design. Calculations were performed for 2,10,25 and 50-year return frequency storms in accordance with Town regulations. Rainfall information is provided from the most recent Extreme Precipitation Tables provided from the Northeast Regional Climate Center. The following design parameters were used:

Rainfall distribution: Type III
AMC: 2
Extreme Precipitation Estimates
2-year storm rainfall: 3.08 inches
10-year storm rainfall: 4.65 inches
25-year storm rainfall: 5.88 inches
50-year storm rainfall: 7.03 inches

Design analysis

The drainage improvements designed for the proposed project have been designed to conform to Municipal requirements. The proposed underground drainage system is designed to mitigate peak runoff rates such that post-development flows are equal to or less than pre-development flows. The design analysis therefore includes outputs for the 2,10,25 and 50-year event.

The drainage calculations are included in the appendix of this report. Peak runoff rates of the pre-development and post-development runoff rates are summarized in the following table:

Storm event / Sub-basin	**Pre-development (cfs)**	**Phase 1 Post-development (cfs)**
Event	**1L**	**1L**
2-yr	**1.18**	**1.18**

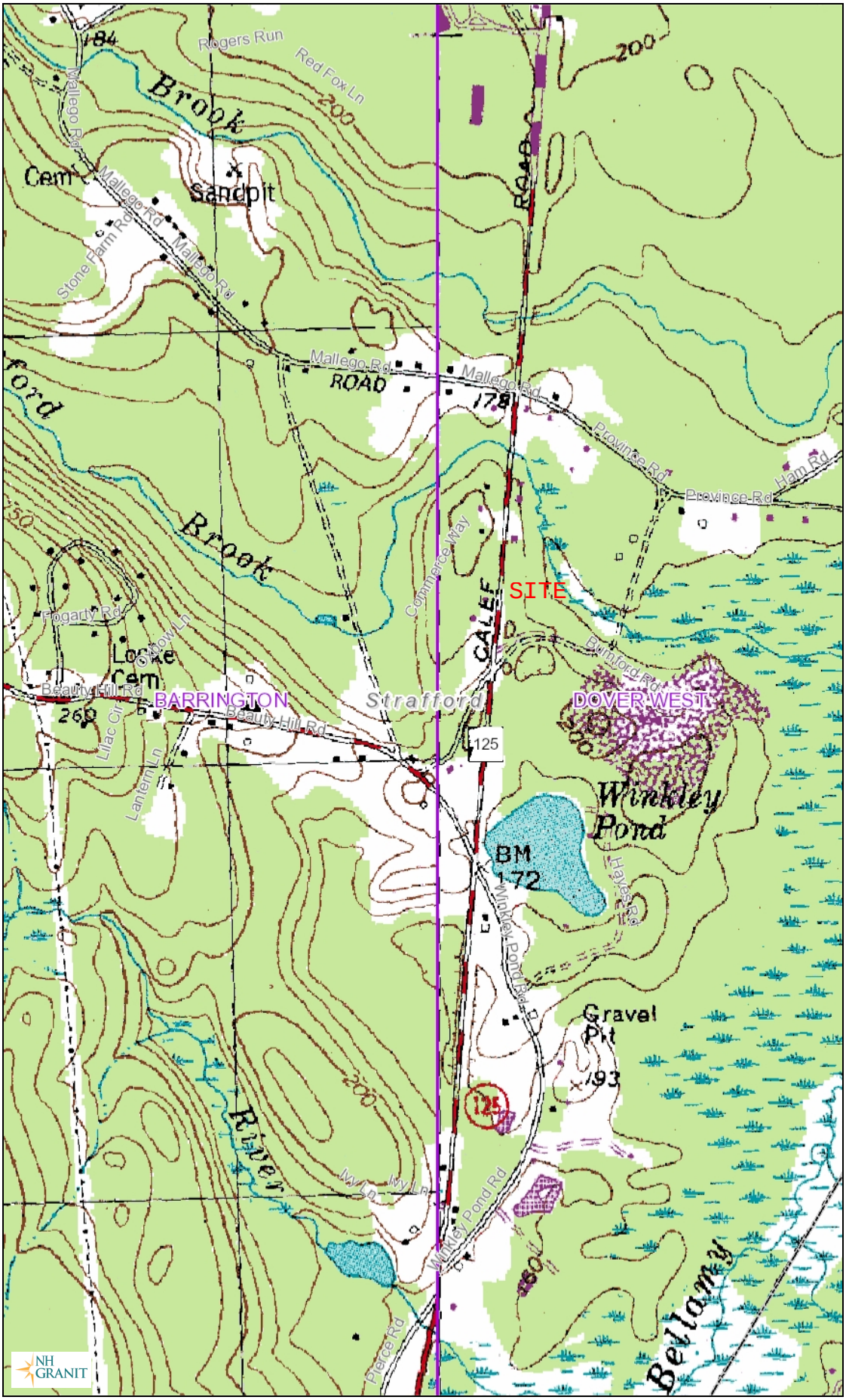
10-yr	**3.06**	**3.06**
25-year	**4.74**	**4.74**
50-year	**6.40**	**6.40**

The calculations show that there is no increase in peak runoff rates for the storm events analyzed. Therefore, there will be no effect on downstream drainage patterns.

Site Plan
2A Tactical, LLC
Map 251 Lot 63
Barrington NH

USGS

Map by NH GRANIT



Legend

- 7.5-Minute
- State
- County
- City/Town

Map Scale

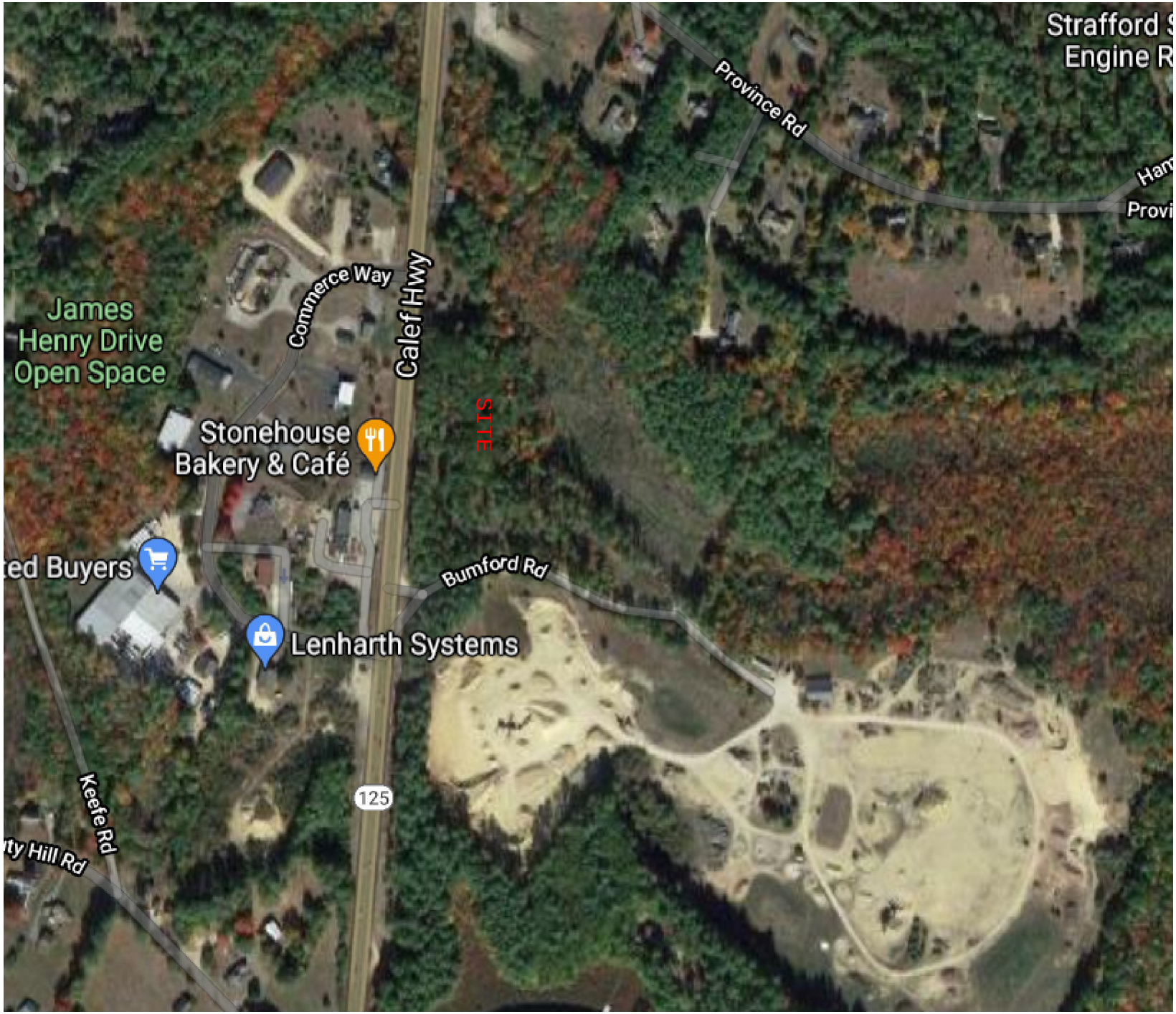
1: 12,988

Map Generated: 7/12/2021

Notes

Site Plan
2A Tactical, LLC
Map 251 Lot 63
Barrington NH

AERIAL PHOTO


Province Rd
Commerce Way
Calef Hwy
James
Henry Drive
Open Space
SITE
Stonehouse
Bakery & Café
Bumford Rd
Lenharth Systems
125
Keefe Rd

Site Plan
2A Tactical, LLC
Map 251 Lot 63
Barrington NH

WEBB SOIL SURVEY

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 Strafford County, New Hampshire

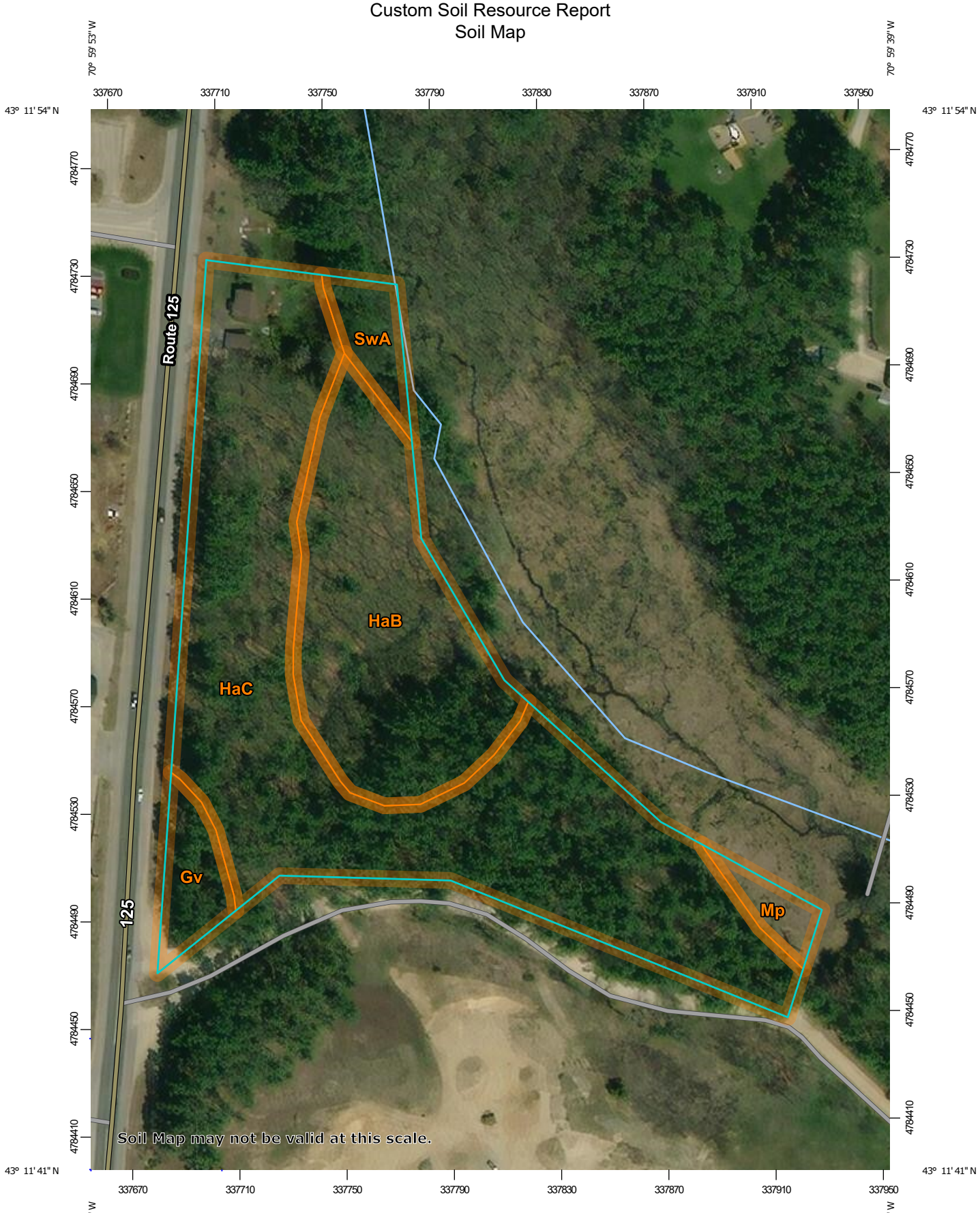
June 28, 2021

Contents

Soil Map

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

Custom Soil Resource Report
Soil Map



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

N

Meters: 0 25 50 100 150

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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: Strafford County, New Hampshire
Survey Area Data: Version 20, May 29, 2020

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

Date(s) aerial images were photographed: Dec 31, 2009—Sep 9, 2017

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
Gv	Gravel and borrow pits	0.3	4.2%
HaB	Hinckley loamy sand, 3 to 8 percent slopes	2.1	28.0%
HaC	Hinckley loamy sand, 8 to 15 percent slopes	4.6	62.2%
Mp	Freetown and Swansea mucky peats, 0 to 2 percent slopes	0.2	2.2%
SwA	Swanton fine sandy loam, 0 to 3 percent slopes	0.3	3.5%
Totals for Area of Interest		**7.4**	**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.

Strafford County, New Hampshire

Gv—Gravel and borrow pits

Map Unit Setting

National map unit symbol: 9d7c
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

Gravel and borrow pits: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gravel And Borrow Pits

Typical profile

H1 - 0 to 6 inches: extremely gravelly sand
H2 - 6 to 60 inches: extremely gravelly sand

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: Unranked

HaB—Hinckley loamy sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2svm8
Elevation: 0 to 1,430 feet
Mean annual precipitation: 36 to 53 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Hinckley

Setting

Landform: Outwash deltas, outwash plains, eskers, moraines, kame terraces, kames, outwash terraces
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Nose slope, side slope, base slope, crest, riser, tread
Down-slope shape: Linear, convex, concave
Across-slope shape: Convex, linear, concave

Parent material: Sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist

Typical profile

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

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water capacity: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Windsor

Percent of map unit: 8 percent
Landform: Outwash deltas, kame terraces, outwash plains, kames, eskers, moraines, outwash terraces
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Nose slope, side slope, base slope, crest, riser, tread
Down-slope shape: Linear, convex, concave
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

Sudbury

Percent of map unit: 5 percent
Landform: Kame terraces, outwash plains, moraines, outwash terraces, outwash deltas
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope, base slope, head slope, tread
Down-slope shape: Concave, linear
Across-slope shape: Linear, concave
Hydric soil rating: No

Agawam

Percent of map unit: 2 percent

Landform: Outwash terraces, outwash deltas, kame terraces, outwash plains, kames, eskers, moraines
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Nose slope, side slope, base slope, crest, riser, tread
Down-slope shape: Linear, convex, concave
Across-slope shape: Convex, linear, concave
Hydric soil rating: No

HaC—Hinckley loamy sand, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2svm9
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

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

Description of Hinckley

Setting

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

Typical profile

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

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low

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

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Sudbury

Percent of map unit: 5 percent
Landform: Outwash deltas, outwash terraces, kame terraces, outwash plains, moraines
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: No

Merrimac

Percent of map unit: 5 percent
Landform: Eskers, moraines, outwash terraces, outwash plains, kames
Landform position (two-dimensional): Shoulder, backslope, footslope, toeslope
Landform position (three-dimensional): Side slope, head slope, nose slope, crest, riser
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Windsor

Percent of map unit: 5 percent
Landform: Eskers, moraines, kame terraces, outwash plains, outwash terraces, outwash deltas, kames
Landform position (two-dimensional): Shoulder, backslope, footslope, toeslope
Landform position (three-dimensional): Nose slope, side slope, crest, head slope, riser
Down-slope shape: Convex, concave, linear
Across-slope shape: Concave, linear, convex
Hydric soil rating: No

Mp—Freetown and Swansea mucky peats, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2w68w
Elevation: 10 to 940 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Freetown and similar soils: 50 percent
Swansea and similar soils: 30 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Freetown

Setting

Landform: Depressions, swamps, bogs, marshes, kettles
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Moderately decomposed organic material

Typical profile

Oe1 - 0 to 2 inches: mucky peat
Oe2 - 2 to 79 inches: mucky peat

Properties and qualities

Slope: 0 to 2 percent
Surface area covered with cobbles, stones or boulders: 0.0 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 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water capacity: Very high (about 20.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: B/D
Ecological site: F144AY043MA - Acidic Organic Wetlands
Hydric soil rating: Yes

Description of Swansea

Setting

Landform: Marshes, kettles, swamps, bogs, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Moderately decomposed organic material over sandy and gravelly glaciofluvial deposits

Typical profile

Oe1 - 0 to 12 inches: mucky peat
Oe2 - 12 to 25 inches: mucky peat
Cg - 25 to 79 inches: 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 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water capacity: High (about 11.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: B/D
Ecological site: F144AY043MA - Acidic Organic Wetlands
Hydric soil rating: Yes

Minor Components

Natchaug

Percent of map unit: 10 percent
Landform: Depressions, depressions, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Scarboro

Percent of map unit: 4 percent
Landform: Drainageways, outwash terraces, depressions, outwash deltas
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Whitman

Percent of map unit: 4 percent
Landform: Hills, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave

Hydric soil rating: Yes

Maybid

Percent of map unit: 2 percent
Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

SwA—Swanton fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9d90
Elevation: 0 to 260 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 local importance

Map Unit Composition

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

Description of Swanton

Setting

Landform: Marine terraces

Typical profile

H1 - 0 to 19 inches: fine sandy loam
H2 - 19 to 26 inches: sandy loam
H3 - 26 to 41 inches: silty clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w

Hydrologic Soil Group: C/D
Hydric soil rating: Yes

Minor Components

Not named wet
Percent of map unit: 10 percent
Landform: Marine terraces
Hydric soil rating: Yes

Scantic
Percent of map unit: 5 percent
Landform: Marine terraces
Hydric soil rating: Yes

Hydrologic Soil Group

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

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

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

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

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

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

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

Custom Soil Resource Report
Map—Hydrologic Soil Group

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

N

Meters: 0 25 50 100 150

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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: Strafford County, New Hampshire
Survey Area Data: Version 20, May 29, 2020

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

Date(s) aerial images were photographed: Dec 31, 2009—Sep 9, 2017

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

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Gv	Gravel and borrow pits		0.3	4.2%
HaB	Hinckley loamy sand, 3 to 8 percent slopes	A	2.1	28.0%
HaC	Hinckley loamy sand, 8 to 15 percent slopes	A	4.6	62.2%
Mp	Freetown and Swansea mucky peats, 0 to 2 percent slopes	B/D	0.2	2.2%
SwA	Swanton fine sandy loam, 0 to 3 percent slopes	C/D	0.3	3.5%
Totals for Area of Interest			**7.4**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Site Plan
2A Tactical, LLC
Map 251 Lot 63
Barrington NH

EXTREME PRECIPITATION TABLE

Extreme Precipitation Tables

Northeast Regional Climate Center

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

Smoothing	Yes
State	New Hampshire
Location	
Longitude	70.996 degrees West
Latitude	43.196 degrees North
Elevation	0 feet
Date/Time	Mon, 28 Jun 2021 13:39:05 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.81	1.03	**1yr**	0.70	0.98	1.20	1.53	1.98	2.57	2.81	**1yr**	2.27	2.70	3.11	3.83	4.41	**1yr**
2yr	0.32	0.49	0.61	0.80	1.01	1.28	**2yr**	0.87	1.16	1.49	1.89	2.41	3.08	3.43	**2yr**	2.73	3.30	3.80	4.52	5.15	**2yr**
5yr	0.37	0.57	0.72	0.96	1.23	1.57	**5yr**	1.06	1.44	1.84	2.36	3.03	3.90	4.39	**5yr**	3.45	4.22	4.83	5.70	6.45	**5yr**
10yr	0.40	0.63	0.80	1.09	1.42	1.84	**10yr**	1.22	1.69	2.17	2.80	3.61	4.65	5.29	**10yr**	4.12	5.08	5.81	6.80	7.66	**10yr**
25yr	0.46	0.74	0.94	1.30	1.72	2.27	**25yr**	1.49	2.08	2.69	3.50	4.54	5.88	6.77	**25yr**	5.20	6.51	7.41	8.59	9.60	**25yr**
50yr	0.52	0.83	1.06	1.49	2.00	2.66	**50yr**	1.73	2.45	3.17	4.15	5.41	7.03	8.17	**50yr**	6.22	7.86	8.91	10.25	11.41	**50yr**
100yr	0.58	0.94	1.21	1.71	2.33	3.12	**100yr**	2.01	2.88	3.74	4.92	6.44	8.40	9.87	**100yr**	7.43	9.49	10.71	12.25	13.55	**100yr**
200yr	0.64	1.05	1.36	1.96	2.71	3.67	**200yr**	2.34	3.39	4.42	5.85	7.68	10.04	11.91	**200yr**	8.89	11.45	12.89	14.63	16.11	**200yr**
500yr	0.76	1.25	1.63	2.37	3.32	4.54	**500yr**	2.86	4.21	5.49	7.32	9.69	12.73	15.29	**500yr**	11.27	14.70	16.47	18.53	20.27	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.24	0.36	0.45	0.60	0.74	0.90	**1yr**	0.64	0.88	0.91	1.25	1.52	1.95	2.49	**1yr**	1.72	2.39	2.92	3.29	3.96	**1yr**
2yr	0.31	0.49	0.60	0.81	1.00	1.18	**2yr**	0.86	1.15	1.36	1.82	2.34	2.99	3.33	**2yr**	2.65	3.20	3.69	4.41	5.03	**2yr**
5yr	0.35	0.54	0.67	0.92	1.16	1.40	**5yr**	1.01	1.37	1.61	2.14	2.77	3.61	4.04	**5yr**	3.20	3.89	4.49	5.35	6.02	**5yr**
10yr	0.38	0.59	0.73	1.02	1.32	1.60	**10yr**	1.14	1.56	1.81	2.44	3.13	4.14	4.68	**10yr**	3.66	4.50	5.21	6.19	6.89	**10yr**
25yr	0.44	0.67	0.83	1.19	1.56	1.91	**25yr**	1.35	1.87	2.12	2.84	3.64	4.94	5.66	**25yr**	4.37	5.44	6.35	7.51	8.30	**25yr**
50yr	0.49	0.74	0.92	1.33	1.78	2.19	**50yr**	1.54	2.14	2.37	3.21	4.09	5.65	6.52	**50yr**	5.00	6.27	7.38	8.68	9.58	**50yr**
100yr	0.55	0.82	1.03	1.49	2.04	2.52	**100yr**	1.76	2.46	2.67	3.60	4.57	6.44	7.51	**100yr**	5.70	7.23	8.58	10.04	10.96	**100yr**
200yr	0.61	0.91	1.16	1.68	2.34	2.89	**200yr**	2.02	2.82	2.99	4.05	5.10	7.34	8.88	**200yr**	6.50	8.54	9.98	11.61	12.57	**200yr**
500yr	0.71	1.06	1.36	1.98	2.82	3.49	**500yr**	2.43	3.41	3.49	4.72	5.94	8.68	10.77	**500yr**	7.68	10.35	12.21	14.08	14.99	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.43	0.53	0.71	0.87	1.07	**1yr**	0.75	1.05	1.23	1.73	2.19	2.77	3.02	**1yr**	2.45	2.91	3.34	4.12	4.73	**1yr**
2yr	0.33	0.50	0.62	0.84	1.03	1.24	**2yr**	0.89	1.21	1.46	1.94	2.50	3.19	3.54	**2yr**	2.83	3.41	3.92	4.65	5.30	**2yr**
5yr	0.39	0.60	0.75	1.02	1.30	1.57	**5yr**	1.13	1.54	1.84	2.47	3.16	4.18	4.72	**5yr**	3.70	4.54	5.19	6.06	6.86	**5yr**
10yr	0.45	0.70	0.87	1.21	1.56	1.90	**10yr**	1.35	1.86	2.21	3.01	3.80	5.17	5.88	**10yr**	4.57	5.65	6.43	7.41	8.34	**10yr**
25yr	0.55	0.84	1.05	1.49	1.97	2.44	**25yr**	1.70	2.39	2.84	3.90	4.87	6.84	7.87	**25yr**	6.05	7.57	8.52	9.75	10.76	**25yr**
50yr	0.64	0.97	1.21	1.74	2.34	2.94	**50yr**	2.02	2.88	3.44	4.75	5.89	8.46	9.83	**50yr**	7.49	9.45	10.57	11.96	13.15	**50yr**
100yr	0.74	1.12	1.41	2.03	2.79	3.55	**100yr**	2.41	3.47	4.17	5.80	7.14	10.47	12.29	**100yr**	9.27	11.81	13.10	14.69	16.06	**100yr**
200yr	0.86	1.30	1.64	2.38	3.32	4.29	**200yr**	2.86	4.20	5.07	7.07	8.65	13.01	15.09	**200yr**	11.51	14.51	16.22	18.03	19.64	**200yr**
500yr	1.05	1.57	2.01	2.93	4.16	5.49	**500yr**	3.59	5.37	6.53	9.23	11.15	17.37	20.22	**500yr**	15.37	19.44	21.54	23.69	25.65	**500yr**

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Northeast Regional Climate Center

Site Plan
2A Tactical, LLC
Map 251 Lot 63
Barrington NH

BMP Worksheets

INFILTRATION PRACTICE CRITERIA
(Env-Wq 1508.06)

Type/Node Name: **POND 1 INFILTRATION 9-10-21**

Enter the type of infiltration practice (e.g., basin, trench) and the node name in the drainage analysis, if applicable.

Y		Have you reviewed Env-Wq 1508.06(a) to ensure that infiltration is allowed?	← **yes**
2.85	ac	A = Area draining to the practice	
1.81	ac	A_I = Impervious area draining to the practice	
0.64	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.62	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
1.77	ac-in	WQV= 1" x Rv x A	
6,431	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
1,608	cf	25% x WQV (check calc for sediment forebay volume)	
FOREBAY		Method of pretreatment? (not required for clean or roof runoff)	
1,650	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	≥ **25%WQV**
6,543	cf	V = Volume[1] (attach a stage-storage table)	≥ **WQV**
1,881	sf	A_{SA} = Surface area of the bottom of the pond	
3.00	iph	$Ksat_{DESIGN}$ = Design infiltration rate[2]	
13.7	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	≤ **72-hrs**
169.00	feet	E_{BTM} = Elevation of the bottom of the basin	
166.00	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
3.00	feet	D_{SHWT} = Separation from SHWT	≥ *[3]
169.0	feet	D_{ROCK} = Separation from bedrock	≥ *[3]
	ft	D_{amend} = Depth of amended soil, if applicable due high infiltation rate	≥ **24"**
	ft	D_T = Depth of trench, if trench proposed	**4 - 10 ft**
	Yes/No	If a trench or underground system is proposed, has observation well been provided?	←**yes**
		If a trench is proposed, does materialmeet Env-Wq 1508.06(k)(2) requirements.[4]	← **yes**
Y	Yes/No	If a basin is proposed, Is the perimeter curvilinear, and basin floor flat?	← **yes**
3.0	:1	If a basin is proposed, pond side slopes.	≥**3:1**
170.82	ft	Peak elevation of the 10-year storm event (infiltration can be used in analysis)	
171.40	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
172.40	ft	Elevation of the top of the practice (if a basin, this is the elevation of the berm)	
YES		10 peak elevation ≤ Elevation of the top of the trench?[5]	← **yes**
YES		If a basin is proposed, 50-year peak elevation ≤ Elevation of berm?	← **yes**

1. Volume below the lowest invert of the outlet structure and excludes forebay volume
2. $Ksat_{DESIGN}$ includes a factor of safety. See Env-Wq 1504.14 for requirements for determining the infiltr. rate
3. 1' separation if treatment not required; 4' for treatment in GPAs & WSIPAs; & 3' in all other areas.
4. Clean, washed well graded diameter of 1.5 to 3 inches above the in-situ soil.
5. If 50-year peak elevation exceeds top of trench, the overflow must be routed in HydroCAD as secondary discharge.

Designer's Notes:

Summary for Pond 5P: DETENTION POND

Inflow Area = 124,181 sf, 41.44% Impervious, Inflow Depth > 1.24" for 10YR event
Inflow = 4.07 cfs @ 12.10 hrs, Volume= 12,862 cf
Outflow = 0.33 cfs @ 14.00 hrs, Volume= 10,126 cf, Atten= 92%, Lag= 114.2 min
Discarded = 0.33 cfs @ 14.00 hrs, Volume= 10,126 cf
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 170.55' @ 14.00 hrs Surf.Area= 4,765 sf Storage= 5,732 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 114.7 min (919.6 - 804.9)

Volume	Invert	Avail.Storage	Storage Description
#1	169.00'	13,845 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
169.00	2,440	0	0
170.00	4,150	3,295	3,295
172.00	6,400	10,550	13,845

Device	Routing	Invert	Outlet Devices
#1	Primary	167.00'	**18.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 167.00' / 164.00' S= 0.0750 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Discarded	169.00'	**3.000 in/hr Exfiltration over Surface area**
#3	Device 1	171.25'	**32.0" W x 42.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	170.70'	**16.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.33 cfs @ 14.00 hrs HW=170.55' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.33 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=169.00' TW=164.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.00 cfs of 9.51 cfs potential flow)
  ├**3=Orifice/Grate** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Stage-Area-Storage for Pond 5P: DETENTION POND

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
169.00	2,440	0
169.10	2,611	253
169.20	2,782	522
169.30	2,953	809
169.40	3,124	1,113
169.50	3,295	1,434
169.60	3,466	1,772
169.70	3,637	2,127
169.80	3,808	2,499
169.90	3,979	2,889
170.00	4,150	3,295
170.10	4,262	3,716
170.20	4,375	4,147
170.30	4,488	4,591
170.40	4,600	5,045
170.50	4,713	5,511
170.60	4,825	5,987
170.70	4,937	6,476
170.80	5,050	6,975
170.90	5,163	7,486
171.00	5,275	8,008
171.10	5,387	8,541
171.20	5,500	9,085
171.30	5,613	9,641
171.40	5,725	10,208
171.50	5,838	10,786
171.60	5,950	11,375
171.70	6,062	11,976
171.80	6,175	12,588
171.90	6,288	13,211
172.00	**6,400**	**13,845**
172.10	6,400	13,845
172.20	6,400	13,845
172.30	6,400	13,845
172.40	6,400	13,845
172.50	6,400	13,845
172.60	6,400	13,845
172.70	6,400	13,845
172.80	6,400	13,845
172.90	6,400	13,845
173.00	6,400	13,845
173.10	6,400	13,845
173.20	6,400	13,845
173.30	6,400	13,845
173.40	6,400	13,845
173.50	6,400	13,845
173.60	6,400	13,845
173.70	6,400	13,845
173.80	6,400	13,845
173.90	6,400	13,845
174.00	6,400	13,845
174.10	6,400	13,845
174.20	6,400	13,845
174.30	6,400	13,845
174.40	6,400	13,845
174.50	6,400	13,845
174.60	6,400	13,845
174.70	6,400	13,845

Infiltration Feasibility Report

TAX MAP 251 LOT 63
2A TACTICAL, LLC
ROUTE 125 & BUMFORD ROAD
BARRINGTON NH

Prepared for:
Steven & Pamela Lenzi
TRS Rev. Trust
304 Young Road
Barrington NH 03825

Prepared By:

Bernie Temple, P.E.
Po Box 7,
Gilmanton I W, NH 03837
Phone: 603-630-1008

TABLE OF CONTENTS:

Infiltration Pond

I. Location of the practice

The Infiltration area is a porous paved area and is located in the back of the proposed parking lot on the East side of the project. This system is identified as infiltration pond node 5p. The pond uses infiltration for treatment of the stormwater as well as providing the required GRV recharge per state regulations.

II. Existing topography at the location of the practice

The topography located at the practice is moderately sloping
wooded area. Soils at the location are mapped as HaC Hinkley-Sandy Loam.

III. Test pit or boring locations

Two test pits were performed at the area of the proposed pond area test pit 2 and test pit 3. For design purposes the average of both pits was use or 2' to SHWT.

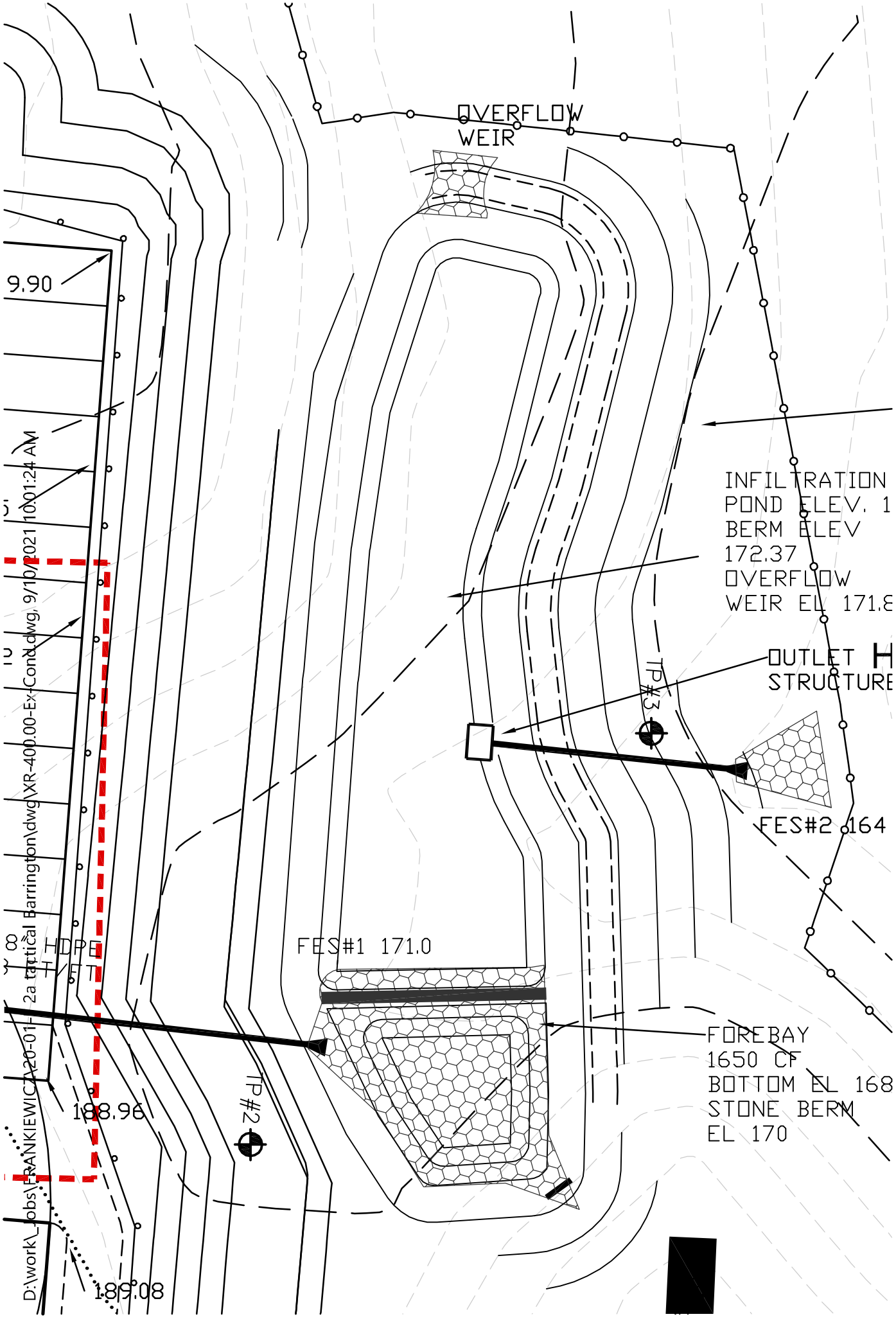
IV. Seasonal high water table (SHWT) and bedrock elevations

(See attached data sheet)
Pond 5p
Infiltration Basin
Bottom of Pond Elevation= 169
Existing Elevation Average 168
SHWT 166

See test pit. 2 and 3

V. Summary of [Default, Field Testing, or Lab Testing] data used to determine the infiltration rate

Infiltration rate is based on 50% of the SSNNE for the soil complex or 6 inch per hour @50%= 3 inch per hour. This infiltration is used for the required GRV and treatment.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WEIR
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INFILTRATION
POND ELEV. 1
BERM ELEV
172.37
OVERFLOW
WEIR EL 171.8
OUTLET H
STRUCTURE
TP#3
FES#2 164
FES#1 171.0
HDPE
FOREBAY
1650 CF
BOTTOM EL 168
STONE BERM
EL 170
TP#2
188.96
189.08
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Site Plan
2A Tactical, LLC
Map 251 Lot 63
Barrington NH

Test Pit Data

Tax Map 251 Lot 63
Bumford Road & Rte. 4
Barrington, NH

Test Pit #1
Date: 8-13-21

0-6" Topsoil
10YR 3/3 – Dark Brown

6-38" Gravelly Sand
Granular/Friable
7.5 YR 5/6 – Strong Brown

38-72" Loamy Sand
Granular, Firm in Place
7.5 YR 5/8 – Strong Brown

ESHWT = 38"
Roots to 38"
No water Observed
No ledge Observed
Boulders 6"-

Parent Soils: HaC-Hinckley-sandy loam, excessively drained, NHDES group 1 (per WEBSOILS)
Perc: 2-4 min./inch

Tax Map 251 Lot 63
Bumford Road & Rte. 4
Barrington, NH

Test Pit #2
Date: 8-13-21

0-6" Topsoil
10YR 3/3 – Dark Brown

6-32" Gravelly Sand
Granular/Friable
7.5 YR 5/6 – Strong Brown

32-60" Loamy Sand
Granular, Firm in Place
2.5 YR= 5/6 – Light Olive Brown

ESHWT = 32"
Roots to 32"
No water Observed
No ledge Observed

Parent Soils: HaB-Hinckley-sandy loam, excessively drained, NHDES group 1 (per WEBSOILS)
Perc: 2-4 min./inch

Tax Map 251 Lot 63
Bumford Road & Rte. 4
Barrington, NH

Tax Map 251 Lot 63
Bumford Road & Rte. 4
Barrington, NH

Test Pit #3
Date: 8-13-21

0-6" Topsoil
10YR 3/3 – Dark Brown

6-16" Gravelly Sand
Granular/Friable
7.5 YR 5/6 – Strong Brown

16-48" Loamy sand
Granular, Firm in Place
2.5 YR 5/6 – Light Olive Brown

ESHWT = 16"
Roots to 16"
No water Observed
No ledge Observed

Parent Soils: HaB-Hinckley-sandy loam, excessively drained, NHDES group 1 (per WEBSOILS)
Perc: 2-4 min./inch

Site Plan
2A Tactical, LLC
Map 251 Lot 63
Barrington NH

Rip-rap apron calculations

RIPRAP CALCULATIONS DESIGN STORM: 25 YEARS

DATE: 7/7/21 REVISED:

PROJECT NAME: TACTICAL

LOCATION: BARRINGTON JOB NO.

VARIABLES:

Q = DISCHARGE FROM OUTLET
Do = PIPE DIAMETER
Tw = TAIL WATER
La = LENGTH OF RIPRAP
Wi = WIDTH OF RIPRAP AT OUTLET
We = WIDTH OF RIPRAP DOWNSTREAM FROM OUTLET
d50 = RIPRAP SIZE

EQUATIONS:

FOR Tw < 1/2 Do

La = (1.8Q/Do^1.5) + 7Do
Wi = 3Do
We = Do + La
d50 = (0.02Q^1.33)/(Tw)(Do)

FOR Tw > or = 1/2 Do

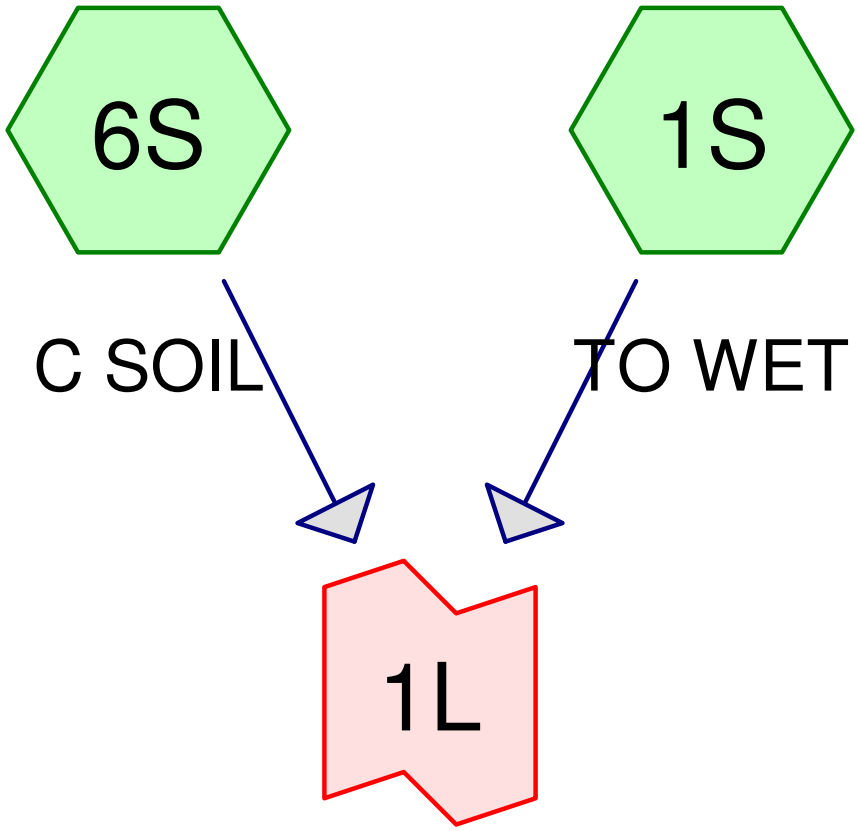
La = (3Q)/(Do^1.5)
Wi = 3Do
We = Do + 0.4La
d50 = (0.02Q^1.33)/(Tw)(Do)

OUTLET	Q CFS	Do FEET	Tw FEET	La FEET	Wi FEET	We FEET	d50 INCHES
FES 1	4.74	1.50	0.20	15.14	4.50	16.64	6.34
FES 2	1.30	1.50	0.20	11.77	4.50	13.27	1.13
FES 3	1.00	1.25	0.20	10.04	3.75	11.29	0.96

Site Plan
2A Tactical, LLC
Map 251 Lot 63
Barrington NH

Pre-Drainage analysis output

Pre-development 2,10, 25, 50-year



DESIGN NODE

Subcat Reach Pond Link

Routing Diagram for PRE
Prepared by HP, Printed 7/12/2021

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
31,196	39	>75% Grass cover, Good, HSG A (1S)
10,997	98	Paved parking, HSG A (1S)
297,762	30	Woods, Good, HSG A (1S)
66,595	70	Woods, Good, HSG C (6S)
406,550	**39**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
339,955	HSG A	1S
0	HSG B	
66,595	HSG C	6S
0	HSG D	
0	Other	
406,550		**TOTAL AREA**

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 1S: TO WET Runoff Area=339,955 sf 3.23% Impervious Runoff Depth=0.00"
Flow Length=979' Tc=30.1 min CN=33 Runoff=0.00 cfs 0 cf

Subcatchment 6S: C SOIL Runoff Area=66,595 sf 0.00% Impervious Runoff Depth>0.68"
Tc=6.0 min CN=70 Runoff=1.18 cfs 3,795 cf

Link 1L: DESIGN NODE Inflow=1.18 cfs 3,795 cf
Primary=1.18 cfs 3,795 cf

Total Runoff Area = 406,550 sf Runoff Volume = 3,795 cf Average Runoff Depth = 0.11"
97.30% Pervious = 395,553 sf 2.70% Impervious = 10,997 sf

Summary for Subcatchment 1S: TO WET

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.08"

Area (sf)	CN	Description
10,997	98	Paved parking, HSG A
31,196	39	>75% Grass cover, Good, HSG A
297,762	30	Woods, Good, HSG A
339,955	33	Weighted Average
328,958		96.77% Pervious Area
10,997		3.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	14	0.0200	0.91		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.08"
2.2	15	0.0200	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.08"
12.6	50	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.08"
15.0	900	0.0400	1.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
30.1	979	Total			

Summary for Subcatchment 6S: C SOIL

Runoff = 1.18 cfs @ 12.11 hrs, Volume= 3,795 cf, Depth> 0.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.08"

Area (sf)	CN	Description
66,595	70	Woods, Good, HSG C
66,595		100.00% Pervious Area

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

Summary for Link 1L: DESIGN NODE

Inflow Area = 406,550 sf, 2.70% Impervious, Inflow Depth > 0.11" for 2YR event
Inflow = 1.18 cfs @ 12.11 hrs, Volume= 3,795 cf
Primary = 1.18 cfs @ 12.11 hrs, Volume= 3,795 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 1S: TO WET Runoff Area=339,955 sf 3.23% Impervious Runoff Depth>0.01"
Flow Length=979' Tc=30.1 min CN=33 Runoff=0.02 cfs 180 cf

Subcatchment 6S: C SOIL Runoff Area=66,595 sf 0.00% Impervious Runoff Depth>1.64"
Tc=6.0 min CN=70 Runoff=3.06 cfs 9,077 cf

Link 1L: DESIGN NODE Inflow=3.06 cfs 9,257 cf
Primary=3.06 cfs 9,257 cf

Total Runoff Area = 406,550 sf Runoff Volume = 9,257 cf Average Runoff Depth = 0.27"
97.30% Pervious = 395,553 sf 2.70% Impervious = 10,997 sf

Summary for Subcatchment 1S: TO WET

Runoff = 0.02 cfs @ 20.00 hrs, Volume= 180 cf, Depth> 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.65"

Area (sf)	CN	Description
10,997	98	Paved parking, HSG A
31,196	39	>75% Grass cover, Good, HSG A
297,762	30	Woods, Good, HSG A
339,955	33	Weighted Average
328,958		96.77% Pervious Area
10,997		3.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	14	0.0200	0.91		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.08"
2.2	15	0.0200	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.08"
12.6	50	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.08"
15.0	900	0.0400	1.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
30.1	979	Total			

Summary for Subcatchment 6S: C SOIL

Runoff = 3.06 cfs @ 12.10 hrs, Volume= 9,077 cf, Depth> 1.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.65"

Area (sf)	CN	Description
66,595	70	Woods, Good, HSG C
66,595		100.00% Pervious Area

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

Summary for Link 1L: DESIGN NODE

Inflow Area = 406,550 sf, 2.70% Impervious, Inflow Depth > 0.27" for 10YR event
Inflow = 3.06 cfs @ 12.10 hrs, Volume= 9,257 cf
Primary = 3.06 cfs @ 12.10 hrs, Volume= 9,257 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 1S: TO WET Runoff Area=339,955 sf 3.23% Impervious Runoff Depth>0.11"
Flow Length=979' Tc=30.1 min CN=33 Runoff=0.16 cfs 3,045 cf

Subcatchment 6S: C SOIL Runoff Area=66,595 sf 0.00% Impervious Runoff Depth>2.51"
Tc=6.0 min CN=70 Runoff=4.74 cfs 13,921 cf

Link 1L: DESIGN NODE Inflow=4.74 cfs 16,966 cf
Primary=4.74 cfs 16,966 cf

Total Runoff Area = 406,550 sf Runoff Volume = 16,966 cf Average Runoff Depth = 0.50"
97.30% Pervious = 395,553 sf 2.70% Impervious = 10,997 sf

Summary for Subcatchment 1S: TO WET

Runoff = 0.16 cfs @ 15.01 hrs, Volume= 3,045 cf, Depth> 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR Rainfall=5.88"

Area (sf)	CN	Description
10,997	98	Paved parking, HSG A
31,196	39	>75% Grass cover, Good, HSG A
297,762	30	Woods, Good, HSG A
339,955	33	Weighted Average
328,958		96.77% Pervious Area
10,997		3.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	14	0.0200	0.91		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.08"
2.2	15	0.0200	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.08"
12.6	50	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.08"
15.0	900	0.0400	1.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
30.1	979	Total			

Summary for Subcatchment 6S: C SOIL

Runoff = 4.74 cfs @ 12.10 hrs, Volume= 13,921 cf, Depth> 2.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR Rainfall=5.88"

Area (sf)	CN	Description
66,595	70	Woods, Good, HSG C
66,595		100.00% Pervious Area

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

Summary for Link 1L: DESIGN NODE

Inflow Area = 406,550 sf, 2.70% Impervious, Inflow Depth > 0.50" for 25YR event
Inflow = 4.74 cfs @ 12.10 hrs, Volume= 16,966 cf
Primary = 4.74 cfs @ 12.10 hrs, Volume= 16,966 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 1S: TO WET Runoff Area=339,955 sf 3.23% Impervious Runoff Depth>0.30"
Flow Length=979' Tc=30.1 min CN=33 Runoff=0.60 cfs 8,518 cf

Subcatchment 6S: C SOIL Runoff Area=66,595 sf 0.00% Impervious Runoff Depth>3.39"
Tc=6.0 min CN=70 Runoff=6.40 cfs 18,803 cf

Link 1L: DESIGN NODE Inflow=6.40 cfs 27,321 cf
Primary=6.40 cfs 27,321 cf

Total Runoff Area = 406,550 sf Runoff Volume = 27,321 cf Average Runoff Depth = 0.81"
97.30% Pervious = 395,553 sf 2.70% Impervious = 10,997 sf

Summary for Subcatchment 1S: TO WET

Runoff = 0.60 cfs @ 12.81 hrs, Volume= 8,518 cf, Depth> 0.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 YR Rainfall=7.03"

Area (sf)	CN	Description
10,997	98	Paved parking, HSG A
31,196	39	>75% Grass cover, Good, HSG A
297,762	30	Woods, Good, HSG A
339,955	33	Weighted Average
328,958		96.77% Pervious Area
10,997		3.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	14	0.0200	0.91		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.08"
2.2	15	0.0200	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.08"
12.6	50	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.08"
15.0	900	0.0400	1.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
30.1	979	Total			

Summary for Subcatchment 6S: C SOIL

Runoff = 6.40 cfs @ 12.09 hrs, Volume= 18,803 cf, Depth> 3.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 YR Rainfall=7.03"

Area (sf)	CN	Description
66,595	70	Woods, Good, HSG C
66,595		100.00% Pervious Area

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

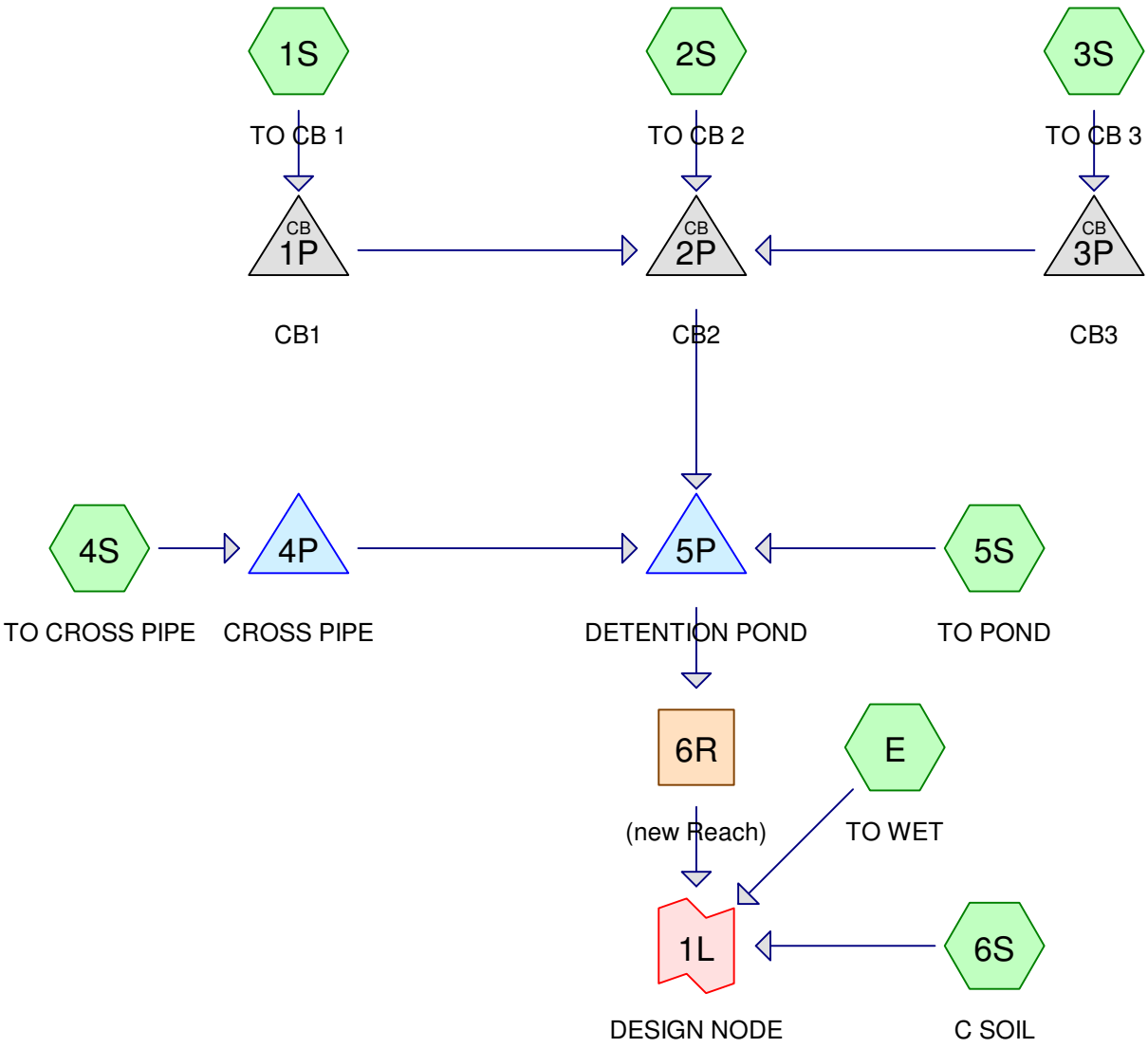
Summary for Link 1L: DESIGN NODE

Inflow Area = 406,550 sf, 2.70% Impervious, Inflow Depth > 0.81" for 50 YR event
Inflow = 6.40 cfs @ 12.09 hrs, Volume= 27,321 cf
Primary = 6.40 cfs @ 12.09 hrs, Volume= 27,321 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Site Plan
2A Tactical, LLC
Map 251 Lot 63
Barrington NH

Post-Drainage analysis output
Post development 2,10, 25, 50-year



Subcat Reach Pond Link

Routing Diagram for POST
Prepared by HP, Printed 9/10/2021

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
68,019	39	>75% Grass cover, Good, HSG A (1S, 2S, 3S, 4S, 5S, E)
43,518	98	Paved parking, HSG A (1S, 2S, 3S, 4S, 5S, E)
9,575	98	Roofs, HSG A (5S)
218,767	30	Woods, Good, HSG A (1S, 4S, E)
66,595	70	Woods, Good, HSG C (6S)
406,474	**47**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
339,879	HSG A	1S, 2S, 3S, 4S, 5S, E
0	HSG B	
66,595	HSG C	6S
0	HSG D	
0	Other	
406,474		**TOTAL AREA**

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1P	181.00	180.49	51.0	0.0100	0.013	15.0	0.0	0.0
2	2P	175.00	171.00	105.0	0.0381	0.013	18.0	0.0	0.0
3	3P	184.00	182.50	97.0	0.0155	0.013	15.0	0.0	0.0
4	4P	176.50	176.00	45.0	0.0111	0.013	15.0	0.0	0.0
5	5P	167.00	164.00	40.0	0.0750	0.013	18.0	0.0	0.0

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 1S: TO CB 1 Runoff Area=56,421 sf 41.81% Impervious Runoff Depth>0.38"
Tc=6.0 min CN=62 Runoff=0.40 cfs 1,770 cf

Subcatchment 2S: TO CB 2 Runoff Area=11,234 sf 87.33% Impervious Runoff Depth>2.02"
Tc=6.0 min CN=91 Runoff=0.63 cfs 1,891 cf

Subcatchment 3S: TO CB 3 Runoff Area=6,237 sf 81.59% Impervious Runoff Depth>1.69"
Tc=6.0 min CN=87 Runoff=0.30 cfs 879 cf

Subcatchment 4S: TO CROSS PIPE Runoff Area=20,668 sf 7.06% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=37 Runoff=0.00 cfs 0 cf

Subcatchment 5S: TO POND Runoff Area=29,621 sf 38.86% Impervious Runoff Depth>0.38"
Tc=6.0 min CN=62 Runoff=0.21 cfs 929 cf

Subcatchment 6S: C SOIL Runoff Area=66,595 sf 0.00% Impervious Runoff Depth>0.68"
Tc=6.0 min CN=70 Runoff=1.18 cfs 3,795 cf

Subcatchment E: TO WET Runoff Area=215,698 sf 0.76% Impervious Runoff Depth=0.00"
Flow Length=979' Tc=30.1 min CN=31 Runoff=0.00 cfs 0 cf

Reach 6R: (new Reach) Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0 cf
n=0.050 L=600.0' S=0.0100 '/' Capacity=28.97 cfs Outflow=0.00 cfs 0 cf

Pond 1P: CB1 Peak Elev=181.30' Inflow=0.40 cfs 1,770 cf
15.0" Round Culvert n=0.013 L=51.0' S=0.0100 '/' Outflow=0.40 cfs 1,770 cf

Pond 2P: CB2 Peak Elev=175.51' Inflow=1.31 cfs 4,540 cf
18.0" Round Culvert n=0.013 L=105.0' S=0.0381 '/' Outflow=1.31 cfs 4,540 cf

Pond 3P: CB3 Peak Elev=184.25' Inflow=0.30 cfs 879 cf
15.0" Round Culvert n=0.013 L=97.0' S=0.0155 '/' Outflow=0.30 cfs 879 cf

Pond 4P: CROSS PIPE Peak Elev=176.50' Storage=0 cf Inflow=0.00 cfs 0 cf
15.0" Round Culvert n=0.013 L=45.0' S=0.0111 '/' Outflow=0.00 cfs 0 cf

Pond 5P: DETENTION POND Peak Elev=169.56' Storage=1,626 cf Inflow=1.52 cfs 5,470 cf
Discarded=0.24 cfs 5,468 cf Primary=0.00 cfs 0 cf Outflow=0.24 cfs 5,468 cf

Link 1L: DESIGN NODE Inflow=1.18 cfs 3,795 cf
Primary=1.18 cfs 3,795 cf

Total Runoff Area = 406,474 sf Runoff Volume = 9,265 cf Average Runoff Depth = 0.27"
86.94% Pervious = 353,381 sf 13.06% Impervious = 53,093 sf

Summary for Subcatchment 1S: TO CB 1

Runoff = 0.40 cfs @ 12.13 hrs, Volume= 1,770 cf, Depth> 0.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.08"

Area (sf)	CN	Description
9,363	98	Paved parking, HSG A
11,529	39	>75% Grass cover, Good, HSG A
14,226	98	Paved parking, HSG A
8,380	39	>75% Grass cover, Good, HSG A
12,923	30	Woods, Good, HSG A
56,421	62	Weighted Average
32,832		58.19% Pervious Area
23,589		41.81% Impervious Area

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

Summary for Subcatchment 2S: TO CB 2

Runoff = 0.63 cfs @ 12.09 hrs, Volume= 1,891 cf, Depth> 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.08"

Area (sf)	CN	Description
9,811	98	Paved parking, HSG A
1,423	39	>75% Grass cover, Good, HSG A
11,234	91	Weighted Average
1,423		12.67% Pervious Area
9,811		87.33% Impervious Area

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

Summary for Subcatchment 3S: TO CB 3

Runoff = 0.30 cfs @ 12.09 hrs, Volume= 879 cf, Depth> 1.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.08"

Area (sf)	CN	Description
5,089	98	Paved parking, HSG A
1,148	39	>75% Grass cover, Good, HSG A
6,237	87	Weighted Average
1,148		18.41% Pervious Area
5,089		81.59% Impervious Area

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

Summary for Subcatchment 4S: TO CROSS PIPE

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.08"

Area (sf)	CN	Description
1,460	98	Paved parking, HSG A
4,463	39	>75% Grass cover, Good, HSG A
14,745	30	Woods, Good, HSG A
20,668	37	Weighted Average
19,208		92.94% Pervious Area
1,460		7.06% Impervious Area

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

Summary for Subcatchment 5S: TO POND

Runoff = 0.21 cfs @ 12.13 hrs, Volume= 929 cf, Depth> 0.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.08"

Area (sf)	CN	Description
6,000	98	Roofs, HSG A
3,575	98	Roofs, HSG A
1,935	98	Paved parking, HSG A
18,111	39	>75% Grass cover, Good, HSG A
29,621	62	Weighted Average
18,111		61.14% Pervious Area
11,510		38.86% Impervious Area

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

Summary for Subcatchment 6S: C SOIL

Runoff = 1.18 cfs @ 12.11 hrs, Volume= 3,795 cf, Depth> 0.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.08"

Area (sf)	CN	Description
66,595	70	Woods, Good, HSG C
66,595		100.00% Pervious Area

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

Summary for Subcatchment E: TO WET

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2YR Rainfall=3.08"

Area (sf)	CN	Description
1,634	98	Paved parking, HSG A
4,498	39	>75% Grass cover, Good, HSG A
191,099	30	Woods, Good, HSG A
12,911	39	>75% Grass cover, Good, HSG A
5,556	39	>75% Grass cover, Good, HSG A
215,698	31	Weighted Average
214,064		99.24% Pervious Area
1,634		0.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	14	0.0200	0.91		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.08"
2.2	15	0.0200	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.08"
12.6	50	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.08"
15.0	900	0.0400	1.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
30.1	979	Total			

Summary for Reach 6R: (new Reach)

Inflow Area = 124,181 sf, 41.44% Impervious, Inflow Depth = 0.00" for 2YR event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 5.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.50' Flow Area= 18.8 sf, Capacity= 28.97 cfs

25.00' x 0.50' deep channel, n= 0.050
Side Slope Z-value= 25.0 '/' Top Width= 50.00'
Length= 600.0' Slope= 0.0100 '/'
Inlet Invert= 164.00', Outlet Invert= 158.00'

‡

Summary for Pond 1P: CB1

Inflow Area = 56,421 sf, 41.81% Impervious, Inflow Depth > 0.38" for 2YR event
Inflow = 0.40 cfs @ 12.13 hrs, Volume= 1,770 cf
Outflow = 0.40 cfs @ 12.13 hrs, Volume= 1,770 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.40 cfs @ 12.13 hrs, Volume= 1,770 cf

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 181.30' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	181.00'	**15.0" Round Culvert** L= 51.0' Ke= 0.500 Inlet / Outlet Invert= 181.00' / 180.49' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=0.39 cfs @ 12.13 hrs HW=181.29' TW=175.49' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.39 cfs @ 2.69 fps)

Summary for Pond 2P: CB2

Inflow Area = 73,892 sf, 52.09% Impervious, Inflow Depth > 0.74" for 2YR event
Inflow = 1.31 cfs @ 12.10 hrs, Volume= 4,540 cf
Outflow = 1.31 cfs @ 12.10 hrs, Volume= 4,540 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.31 cfs @ 12.10 hrs, Volume= 4,540 cf

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 175.51' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	175.00'	**18.0" Round Culvert** L= 105.0' Ke= 0.500 Inlet / Outlet Invert= 175.00' / 171.00' S= 0.0381 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=1.30 cfs @ 12.10 hrs HW=175.51' TW=169.20' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 1.30 cfs @ 2.44 fps)

Summary for Pond 3P: CB3

Inflow Area = 6,237 sf, 81.59% Impervious, Inflow Depth > 1.69" for 2YR event
Inflow = 0.30 cfs @ 12.09 hrs, Volume= 879 cf
Outflow = 0.30 cfs @ 12.09 hrs, Volume= 879 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.30 cfs @ 12.09 hrs, Volume= 879 cf

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 184.25' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	184.00'	**15.0" Round Culvert** L= 97.0' Ke= 0.500 Inlet / Outlet Invert= 184.00' / 182.50' S= 0.0155 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=0.29 cfs @ 12.09 hrs HW=184.25' TW=175.51' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.29 cfs @ 1.69 fps)

Summary for Pond 4P: CROSS PIPE

Inflow Area = 20,668 sf, 7.06% Impervious, Inflow Depth = 0.00" for 2YR event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 176.50' @ 5.00 hrs Surf.Area= 50 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	176.50'	2,338 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
176.50	50	0	0
178.00	400	338	338
180.00	1,600	2,000	2,338

Device	Routing	Invert	Outlet Devices
#1	Primary	176.50'	**15.0" Round Culvert** L= 45.0' Ke= 0.500 Inlet / Outlet Invert= 176.50' / 176.00' S= 0.0111 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=176.50' TW=169.00' (Dynamic Tailwater)
└**1=Culvert** (Controls 0.00 cfs)

Summary for Pond 5P: DETENTION POND

Inflow Area = 124,181 sf, 41.44% Impervious, Inflow Depth > 0.53" for 2YR event
Inflow = 1.52 cfs @ 12.11 hrs, Volume= 5,470 cf
Outflow = 0.24 cfs @ 12.95 hrs, Volume= 5,468 cf, Atten= 84%, Lag= 50.7 min
Discarded = 0.24 cfs @ 12.95 hrs, Volume= 5,468 cf
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 169.56' @ 12.95 hrs Surf.Area= 3,393 sf Storage= 1,626 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 63.4 min (879.4 - 816.0)

Volume	Invert	Avail.Storage	Storage Description
#1	169.00'	13,845 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
169.00	2,440	0	0
170.00	4,150	3,295	3,295
172.00	6,400	10,550	13,845

Device	Routing	Invert	Outlet Devices
#1	Primary	167.00'	**18.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 167.00' / 164.00' S= 0.0750 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Discarded	169.00'	**3.000 in/hr Exfiltration over Surface area**
#3	Device 1	171.25'	**32.0" W x 42.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	170.70'	**16.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.24 cfs @ 12.95 hrs HW=169.56' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.24 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=169.00' TW=164.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.00 cfs of 9.51 cfs potential flow)
  └**3=Orifice/Grate** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Link 1L: DESIGN NODE

Inflow Area = 406,474 sf, 13.06% Impervious, Inflow Depth > 0.11" for 2YR event
Inflow = 1.18 cfs @ 12.11 hrs, Volume= 3,795 cf
Primary = 1.18 cfs @ 12.11 hrs, Volume= 3,795 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 1S: TO CB 1 Runoff Area=56,421 sf 41.81% Impervious Runoff Depth>1.11"
Tc=6.0 min CN=62 Runoff=1.65 cfs 5,215 cf

Subcatchment 2S: TO CB 2 Runoff Area=11,234 sf 87.33% Impervious Runoff Depth>3.44"
Tc=6.0 min CN=91 Runoff=1.04 cfs 3,223 cf

Subcatchment 3S: TO CB 3 Runoff Area=6,237 sf 81.59% Impervious Runoff Depth>3.05"
Tc=6.0 min CN=87 Runoff=0.52 cfs 1,585 cf

Subcatchment 4S: TO CROSS PIPE Runoff Area=20,668 sf 7.06% Impervious Runoff Depth>0.06"
Tc=6.0 min CN=37 Runoff=0.01 cfs 103 cf

Subcatchment 5S: TO POND Runoff Area=29,621 sf 38.86% Impervious Runoff Depth>1.11"
Tc=6.0 min CN=62 Runoff=0.87 cfs 2,738 cf

Subcatchment 6S: C SOIL Runoff Area=66,595 sf 0.00% Impervious Runoff Depth>1.64"
Tc=6.0 min CN=70 Runoff=3.06 cfs 9,077 cf

Subcatchment E: TO WET Runoff Area=215,698 sf 0.76% Impervious Runoff Depth=0.00"
Flow Length=979' Tc=30.1 min CN=31 Runoff=0.00 cfs 0 cf

Reach 6R: (new Reach) Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0 cf
n=0.050 L=600.0' S=0.0100 '/' Capacity=28.97 cfs Outflow=0.00 cfs 0 cf

Pond 1P: CB1 Peak Elev=181.64' Inflow=1.65 cfs 5,215 cf
15.0" Round Culvert n=0.013 L=51.0' S=0.0100 '/' Outflow=1.65 cfs 5,215 cf

Pond 2P: CB2 Peak Elev=175.84' Inflow=3.20 cfs 10,022 cf
18.0" Round Culvert n=0.013 L=105.0' S=0.0381 '/' Outflow=3.20 cfs 10,022 cf

Pond 3P: CB3 Peak Elev=184.34' Inflow=0.52 cfs 1,585 cf
15.0" Round Culvert n=0.013 L=97.0' S=0.0155 '/' Outflow=0.52 cfs 1,585 cf

Pond 4P: CROSS PIPE Peak Elev=176.54' Storage=2 cf Inflow=0.01 cfs 103 cf
15.0" Round Culvert n=0.013 L=45.0' S=0.0111 '/' Outflow=0.01 cfs 102 cf

Pond 5P: DETENTION POND Peak Elev=170.55' Storage=5,732 cf Inflow=4.07 cfs 12,862 cf
Discarded=0.33 cfs 10,126 cf Primary=0.00 cfs 0 cf Outflow=0.33 cfs 10,126 cf

Link 1L: DESIGN NODE Inflow=3.06 cfs 9,077 cf
Primary=3.06 cfs 9,077 cf

Total Runoff Area = 406,474 sf Runoff Volume = 21,940 cf Average Runoff Depth = 0.65"
86.94% Pervious = 353,381 sf 13.06% Impervious = 53,093 sf

Summary for Subcatchment 1S: TO CB 1

Runoff = 1.65 cfs @ 12.10 hrs, Volume= 5,215 cf, Depth> 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.65"

Area (sf)	CN	Description
9,363	98	Paved parking, HSG A
11,529	39	>75% Grass cover, Good, HSG A
14,226	98	Paved parking, HSG A
8,380	39	>75% Grass cover, Good, HSG A
12,923	30	Woods, Good, HSG A
56,421	62	Weighted Average
32,832		58.19% Pervious Area
23,589		41.81% Impervious Area

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

Summary for Subcatchment 2S: TO CB 2

Runoff = 1.04 cfs @ 12.09 hrs, Volume= 3,223 cf, Depth> 3.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.65"

Area (sf)	CN	Description
9,811	98	Paved parking, HSG A
1,423	39	>75% Grass cover, Good, HSG A
11,234	91	Weighted Average
1,423		12.67% Pervious Area
9,811		87.33% Impervious Area

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

Summary for Subcatchment 3S: TO CB 3

Runoff = 0.52 cfs @ 12.09 hrs, Volume= 1,585 cf, Depth> 3.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.65"

Area (sf)	CN	Description
5,089	98	Paved parking, HSG A
1,148	39	>75% Grass cover, Good, HSG A
6,237	87	Weighted Average
1,148		18.41% Pervious Area
5,089		81.59% Impervious Area

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

Summary for Subcatchment 4S: TO CROSS PIPE

Runoff = 0.01 cfs @ 15.04 hrs, Volume= 103 cf, Depth> 0.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.65"

Area (sf)	CN	Description
1,460	98	Paved parking, HSG A
4,463	39	>75% Grass cover, Good, HSG A
14,745	30	Woods, Good, HSG A
20,668	37	Weighted Average
19,208		92.94% Pervious Area
1,460		7.06% Impervious Area

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

Summary for Subcatchment 5S: TO POND

Runoff = 0.87 cfs @ 12.10 hrs, Volume= 2,738 cf, Depth> 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.65"

Area (sf)	CN	Description
6,000	98	Roofs, HSG A
3,575	98	Roofs, HSG A
1,935	98	Paved parking, HSG A
18,111	39	>75% Grass cover, Good, HSG A
29,621	62	Weighted Average
18,111		61.14% Pervious Area
11,510		38.86% Impervious Area

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

Summary for Subcatchment 6S: C SOIL

Runoff = 3.06 cfs @ 12.10 hrs, Volume= 9,077 cf, Depth> 1.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.65"

Area (sf)	CN	Description
66,595	70	Woods, Good, HSG C
66,595		100.00% Pervious Area

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

Summary for Subcatchment E: TO WET

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10YR Rainfall=4.65"

Area (sf)	CN	Description
1,634	98	Paved parking, HSG A
4,498	39	>75% Grass cover, Good, HSG A
191,099	30	Woods, Good, HSG A
12,911	39	>75% Grass cover, Good, HSG A
5,556	39	>75% Grass cover, Good, HSG A
215,698	31	Weighted Average
214,064		99.24% Pervious Area
1,634		0.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	14	0.0200	0.91		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.08"
2.2	15	0.0200	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.08"
12.6	50	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.08"
15.0	900	0.0400	1.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
30.1	979	Total			

Summary for Reach 6R: (new Reach)

Inflow Area = 124,181 sf, 41.44% Impervious, Inflow Depth = 0.00" for 10YR event
Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 5.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.50' Flow Area= 18.8 sf, Capacity= 28.97 cfs

25.00' x 0.50' deep channel, n= 0.050
Side Slope Z-value= 25.0 '/' Top Width= 50.00'
Length= 600.0' Slope= 0.0100 '/'
Inlet Invert= 164.00', Outlet Invert= 158.00'

‡

Summary for Pond 1P: CB1

Inflow Area = 56,421 sf, 41.81% Impervious, Inflow Depth > 1.11" for 10YR event
Inflow = 1.65 cfs @ 12.10 hrs, Volume= 5,215 cf
Outflow = 1.65 cfs @ 12.10 hrs, Volume= 5,215 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.65 cfs @ 12.10 hrs, Volume= 5,215 cf

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 181.64' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	181.00'	**15.0" Round Culvert** L= 51.0' Ke= 0.500 Inlet / Outlet Invert= 181.00' / 180.49' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=1.64 cfs @ 12.10 hrs HW=181.64' TW=175.84' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 1.64 cfs @ 3.78 fps)

Summary for Pond 2P: CB2

Inflow Area = 73,892 sf, 52.09% Impervious, Inflow Depth > 1.63" for 10YR event
Inflow = 3.20 cfs @ 12.10 hrs, Volume= 10,022 cf
Outflow = 3.20 cfs @ 12.10 hrs, Volume= 10,022 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.20 cfs @ 12.10 hrs, Volume= 10,022 cf

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 175.84' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	175.00'	**18.0" Round Culvert** L= 105.0' Ke= 0.500 Inlet / Outlet Invert= 175.00' / 171.00' S= 0.0381 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=3.18 cfs @ 12.10 hrs HW=175.84' TW=169.69' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.18 cfs @ 3.12 fps)

Summary for Pond 3P: CB3

Inflow Area = 6,237 sf, 81.59% Impervious, Inflow Depth > 3.05" for 10YR event
Inflow = 0.52 cfs @ 12.09 hrs, Volume= 1,585 cf
Outflow = 0.52 cfs @ 12.09 hrs, Volume= 1,585 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.52 cfs @ 12.09 hrs, Volume= 1,585 cf

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 184.34' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	184.00'	**15.0" Round Culvert** L= 97.0' Ke= 0.500 Inlet / Outlet Invert= 184.00' / 182.50' S= 0.0155 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=0.51 cfs @ 12.09 hrs HW=184.33' TW=175.83' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.51 cfs @ 1.96 fps)

Summary for Pond 4P: CROSS PIPE

Inflow Area = 20,668 sf, 7.06% Impervious, Inflow Depth > 0.06" for 10YR event
Inflow = 0.01 cfs @ 15.04 hrs, Volume= 103 cf
Outflow = 0.01 cfs @ 15.09 hrs, Volume= 102 cf, Atten= 0%, Lag= 3.2 min
Primary = 0.01 cfs @ 15.09 hrs, Volume= 102 cf

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 176.54' @ 15.09 hrs Surf.Area= 58 sf Storage= 2 cf

Plug-Flow detention time= 6.9 min calculated for 102 cf (99% of inflow)
Center-of-Mass det. time= 3.7 min (986.5 - 982.9)

Volume	Invert	Avail.Storage	Storage Description
#1	176.50'	2,338 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
176.50	50	0	0
178.00	400	338	338
180.00	1,600	2,000	2,338

Device	Routing	Invert	Outlet Devices
#1	Primary	176.50'	**15.0" Round Culvert** L= 45.0' Ke= 0.500 Inlet / Outlet Invert= 176.50' / 176.00' S= 0.0111 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=0.01 cfs @ 15.09 hrs HW=176.54' TW=170.51' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 0.01 cfs @ 0.81 fps)

Summary for Pond 5P: DETENTION POND

Inflow Area = 124,181 sf, 41.44% Impervious, Inflow Depth > 1.24" for 10YR event
Inflow = 4.07 cfs @ 12.10 hrs, Volume= 12,862 cf
Outflow = 0.33 cfs @ 14.00 hrs, Volume= 10,126 cf, Atten= 92%, Lag= 114.2 min
Discarded = 0.33 cfs @ 14.00 hrs, Volume= 10,126 cf
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 170.55' @ 14.00 hrs Surf.Area= 4,765 sf Storage= 5,732 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 114.7 min (919.6 - 804.9)

Volume	Invert	Avail.Storage	Storage Description
#1	169.00'	13,845 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
169.00	2,440	0	0
170.00	4,150	3,295	3,295
172.00	6,400	10,550	13,845

Device	Routing	Invert	Outlet Devices
#1	Primary	167.00'	**18.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 167.00' / 164.00' S= 0.0750 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Discarded	169.00'	**3.000 in/hr Exfiltration over Surface area**
#3	Device 1	171.25'	**32.0" W x 42.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	170.70'	**16.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.33 cfs @ 14.00 hrs HW=170.55' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.33 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=169.00' TW=164.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.00 cfs of 9.51 cfs potential flow)
  ├**3=Orifice/Grate** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Link 1L: DESIGN NODE

Inflow Area = 406,474 sf, 13.06% Impervious, Inflow Depth > 0.27" for 10YR event
Inflow = 3.06 cfs @ 12.10 hrs, Volume= 9,077 cf
Primary = 3.06 cfs @ 12.10 hrs, Volume= 9,077 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 1S: TO CB 1 Runoff Area=56,421 sf 41.81% Impervious Runoff Depth>1.84"
Tc=6.0 min CN=62 Runoff=2.87 cfs 8,633 cf

Subcatchment 2S: TO CB 2 Runoff Area=11,234 sf 87.33% Impervious Runoff Depth>4.57"
Tc=6.0 min CN=91 Runoff=1.35 cfs 4,281 cf

Subcatchment 3S: TO CB 3 Runoff Area=6,237 sf 81.59% Impervious Runoff Depth>4.16"
Tc=6.0 min CN=87 Runoff=0.70 cfs 2,160 cf

Subcatchment 4S: TO CROSS PIPE Runoff Area=20,668 sf 7.06% Impervious Runoff Depth>0.26"
Tc=6.0 min CN=37 Runoff=0.04 cfs 440 cf

Subcatchment 5S: TO POND Runoff Area=29,621 sf 38.86% Impervious Runoff Depth>1.84"
Tc=6.0 min CN=62 Runoff=1.51 cfs 4,532 cf

Subcatchment 6S: C SOIL Runoff Area=66,595 sf 0.00% Impervious Runoff Depth>2.51"
Tc=6.0 min CN=70 Runoff=4.74 cfs 13,921 cf

Subcatchment E: TO WET Runoff Area=215,698 sf 0.76% Impervious Runoff Depth>0.06"
Flow Length=979' Tc=30.1 min CN=31 Runoff=0.05 cfs 1,000 cf

Reach 6R: (new Reach) Avg. Flow Depth=0.05' Max Vel=0.42 fps Inflow=0.80 cfs 4,038 cf
n=0.050 L=600.0' S=0.0100 '/' Capacity=28.97 cfs Outflow=0.60 cfs 4,017 cf

Pond 1P: CB1 Peak Elev=181.90' Inflow=2.87 cfs 8,633 cf
15.0" Round Culvert n=0.013 L=51.0' S=0.0100 '/' Outflow=2.87 cfs 8,633 cf

Pond 2P: CB2 Peak Elev=176.09' Inflow=4.92 cfs 15,075 cf
18.0" Round Culvert n=0.013 L=105.0' S=0.0381 '/' Outflow=4.92 cfs 15,075 cf

Pond 3P: CB3 Peak Elev=184.39' Inflow=0.70 cfs 2,160 cf
15.0" Round Culvert n=0.013 L=97.0' S=0.0155 '/' Outflow=0.70 cfs 2,160 cf

Pond 4P: CROSS PIPE Peak Elev=176.60' Storage=6 cf Inflow=0.04 cfs 440 cf
15.0" Round Culvert n=0.013 L=45.0' S=0.0111 '/' Outflow=0.04 cfs 437 cf

Pond 5P: DETENTION POND Peak Elev=171.03' Storage=8,149 cf Inflow=6.43 cfs 20,045 cf
Discarded=0.37 cfs 11,456 cf Primary=0.80 cfs 4,038 cf Outflow=1.17 cfs 15,493 cf

Link 1L: DESIGN NODE Inflow=4.74 cfs 18,939 cf
Primary=4.74 cfs 18,939 cf

Total Runoff Area = 406,474 sf Runoff Volume = 34,968 cf Average Runoff Depth = 1.03"
86.94% Pervious = 353,381 sf 13.06% Impervious = 53,093 sf

Summary for Subcatchment 1S: TO CB 1

Runoff = 2.87 cfs @ 12.10 hrs, Volume= 8,633 cf, Depth> 1.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR Rainfall=5.88"

Area (sf)	CN	Description
9,363	98	Paved parking, HSG A
11,529	39	>75% Grass cover, Good, HSG A
14,226	98	Paved parking, HSG A
8,380	39	>75% Grass cover, Good, HSG A
12,923	30	Woods, Good, HSG A
56,421	62	Weighted Average
32,832		58.19% Pervious Area
23,589		41.81% Impervious Area

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

Summary for Subcatchment 2S: TO CB 2

Runoff = 1.35 cfs @ 12.09 hrs, Volume= 4,281 cf, Depth> 4.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR Rainfall=5.88"

Area (sf)	CN	Description
9,811	98	Paved parking, HSG A
1,423	39	>75% Grass cover, Good, HSG A
11,234	91	Weighted Average
1,423		12.67% Pervious Area
9,811		87.33% Impervious Area

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

Summary for Subcatchment 3S: TO CB 3

Runoff = 0.70 cfs @ 12.09 hrs, Volume= 2,160 cf, Depth> 4.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR Rainfall=5.88"

Area (sf)	CN	Description
5,089	98	Paved parking, HSG A
1,148	39	>75% Grass cover, Good, HSG A
6,237	87	Weighted Average
1,148		18.41% Pervious Area
5,089		81.59% Impervious Area

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

Summary for Subcatchment 4S: TO CROSS PIPE

Runoff = 0.04 cfs @ 12.41 hrs, Volume= 440 cf, Depth> 0.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR Rainfall=5.88"

Area (sf)	CN	Description
1,460	98	Paved parking, HSG A
4,463	39	>75% Grass cover, Good, HSG A
14,745	30	Woods, Good, HSG A
20,668	37	Weighted Average
19,208		92.94% Pervious Area
1,460		7.06% Impervious Area

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

Summary for Subcatchment 5S: TO POND

Runoff = 1.51 cfs @ 12.10 hrs, Volume= 4,532 cf, Depth> 1.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR Rainfall=5.88"

Area (sf)	CN	Description
6,000	98	Roofs, HSG A
3,575	98	Roofs, HSG A
1,935	98	Paved parking, HSG A
18,111	39	>75% Grass cover, Good, HSG A
29,621	62	Weighted Average
18,111		61.14% Pervious Area
11,510		38.86% Impervious Area

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

Summary for Subcatchment 6S: C SOIL

Runoff = 4.74 cfs @ 12.10 hrs, Volume= 13,921 cf, Depth> 2.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR Rainfall=5.88"

Area (sf)	CN	Description
66,595	70	Woods, Good, HSG C
66,595		100.00% Pervious Area

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

Summary for Subcatchment E: TO WET

Runoff = 0.05 cfs @ 15.68 hrs, Volume= 1,000 cf, Depth> 0.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YR Rainfall=5.88"

Area (sf)	CN	Description
1,634	98	Paved parking, HSG A
4,498	39	>75% Grass cover, Good, HSG A
191,099	30	Woods, Good, HSG A
12,911	39	>75% Grass cover, Good, HSG A
5,556	39	>75% Grass cover, Good, HSG A
215,698	31	Weighted Average
214,064		99.24% Pervious Area
1,634		0.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	14	0.0200	0.91		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.08"
2.2	15	0.0200	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.08"
12.6	50	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.08"
15.0	900	0.0400	1.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
30.1	979	Total			

Summary for Reach 6R: (new Reach)

Inflow Area = 124,181 sf, 41.44% Impervious, Inflow Depth = 0.39" for 25YR event
Inflow = 0.80 cfs @ 12.60 hrs, Volume= 4,038 cf
Outflow = 0.60 cfs @ 13.04 hrs, Volume= 4,017 cf, Atten= 25%, Lag= 26.3 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.42 fps, Min. Travel Time= 24.1 min
Avg. Velocity = 0.19 fps, Avg. Travel Time= 51.5 min

Peak Storage= 869 cf @ 13.04 hrs
Average Depth at Peak Storage= 0.05' , Surface Width= 27.75'
Bank-Full Depth= 0.50' Flow Area= 18.8 sf, Capacity= 28.97 cfs

25.00' x 0.50' deep channel, n= 0.050
Side Slope Z-value= 25.0 '/' Top Width= 50.00'
Length= 600.0' Slope= 0.0100 '/'
Inlet Invert= 164.00', Outlet Invert= 158.00'

‡

Summary for Pond 1P: CB1

Inflow Area = 56,421 sf, 41.81% Impervious, Inflow Depth > 1.84" for 25YR event
Inflow = 2.87 cfs @ 12.10 hrs, Volume= 8,633 cf
Outflow = 2.87 cfs @ 12.10 hrs, Volume= 8,633 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.87 cfs @ 12.10 hrs, Volume= 8,633 cf

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 181.90' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	181.00'	**15.0" Round Culvert** L= 51.0' Ke= 0.500 Inlet / Outlet Invert= 181.00' / 180.49' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=2.87 cfs @ 12.10 hrs HW=181.90' TW=176.09' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 2.87 cfs @ 4.25 fps)

Summary for Pond 2P: CB2

Inflow Area = 73,892 sf, 52.09% Impervious, Inflow Depth > 2.45" for 25YR event
Inflow = 4.92 cfs @ 12.09 hrs, Volume= 15,075 cf
Outflow = 4.92 cfs @ 12.09 hrs, Volume= 15,075 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.92 cfs @ 12.09 hrs, Volume= 15,075 cf

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 176.09' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	175.00'	**18.0" Round Culvert** L= 105.0' Ke= 0.500 Inlet / Outlet Invert= 175.00' / 171.00' S= 0.0381 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=4.86 cfs @ 12.09 hrs HW=176.09' TW=170.14' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.86 cfs @ 3.55 fps)

Summary for Pond 3P: CB3

Inflow Area = 6,237 sf, 81.59% Impervious, Inflow Depth > 4.16" for 25YR event
Inflow = 0.70 cfs @ 12.09 hrs, Volume= 2,160 cf
Outflow = 0.70 cfs @ 12.09 hrs, Volume= 2,160 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.70 cfs @ 12.09 hrs, Volume= 2,160 cf

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 184.39' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	184.00'	**15.0" Round Culvert** L= 97.0' Ke= 0.500 Inlet / Outlet Invert= 184.00' / 182.50' S= 0.0155 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=0.69 cfs @ 12.09 hrs HW=184.39' TW=176.08' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.69 cfs @ 2.12 fps)

Summary for Pond 4P: CROSS PIPE

Inflow Area = 20,668 sf, 7.06% Impervious, Inflow Depth > 0.26" for 25YR event
Inflow = 0.04 cfs @ 12.41 hrs, Volume= 440 cf
Outflow = 0.04 cfs @ 12.44 hrs, Volume= 437 cf, Atten= 1%, Lag= 1.4 min
Primary = 0.04 cfs @ 12.44 hrs, Volume= 437 cf

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 176.60' @ 12.44 hrs Surf.Area= 72 sf Storage= 6 cf

Plug-Flow detention time= 3.5 min calculated for 437 cf (99% of inflow)
Center-of-Mass det. time= 2.0 min (911.8 - 909.8)

Volume	Invert	Avail.Storage	Storage Description
#1	176.50'	2,338 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
176.50	50	0	0
178.00	400	338	338
180.00	1,600	2,000	2,338

Device	Routing	Invert	Outlet Devices
#1	Primary	176.50'	**15.0" Round Culvert** L= 45.0' Ke= 0.500 Inlet / Outlet Invert= 176.50' / 176.00' S= 0.0111 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=0.04 cfs @ 12.44 hrs HW=176.60' TW=170.97' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 0.04 cfs @ 1.51 fps)

Summary for Pond 5P: DETENTION POND

Inflow Area = 124,181 sf, 41.44% Impervious, Inflow Depth > 1.94" for 25YR event
Inflow = 6.43 cfs @ 12.10 hrs, Volume= 20,045 cf
Outflow = 1.17 cfs @ 12.60 hrs, Volume= 15,493 cf, Atten= 82%, Lag= 30.5 min
Discarded = 0.37 cfs @ 12.60 hrs, Volume= 11,456 cf
Primary = 0.80 cfs @ 12.60 hrs, Volume= 4,038 cf

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 171.03' @ 12.60 hrs Surf.Area= 5,305 sf Storage= 8,149 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 82.1 min (881.3 - 799.2)

Volume	Invert	Avail.Storage	Storage Description
#1	169.00'	13,845 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
169.00	2,440	0	0
170.00	4,150	3,295	3,295
172.00	6,400	10,550	13,845

Device	Routing	Invert	Outlet Devices
#1	Primary	167.00'	**18.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 167.00' / 164.00' S= 0.0750 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Discarded	169.00'	**3.000 in/hr Exfiltration over Surface area**
#3	Device 1	171.25'	**32.0" W x 42.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	170.70'	**16.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.37 cfs @ 12.60 hrs HW=171.03' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.37 cfs)

Primary OutFlow Max=0.80 cfs @ 12.60 hrs HW=171.03' TW=164.03' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.80 cfs of 15.40 cfs potential flow)
  ├**3=Orifice/Grate** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Orifice Controls 0.80 cfs @ 1.83 fps)

Summary for Link 1L: DESIGN NODE

Inflow Area = 406,474 sf, 13.06% Impervious, Inflow Depth > 0.56" for 25YR event
Inflow = 4.74 cfs @ 12.10 hrs, Volume= 18,939 cf
Primary = 4.74 cfs @ 12.10 hrs, Volume= 18,939 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 1S: TO CB 1 Runoff Area=56,421 sf 41.81% Impervious Runoff Depth>2.60"
Tc=6.0 min CN=62 Runoff=4.13 cfs 12,216 cf

Subcatchment 2S: TO CB 2 Runoff Area=11,234 sf 87.33% Impervious Runoff Depth>5.63"
Tc=6.0 min CN=91 Runoff=1.65 cfs 5,275 cf

Subcatchment 3S: TO CB 3 Runoff Area=6,237 sf 81.59% Impervious Runoff Depth>5.21"
Tc=6.0 min CN=87 Runoff=0.87 cfs 2,706 cf

Subcatchment 4S: TO CROSS PIPE Runoff Area=20,668 sf 7.06% Impervious Runoff Depth>0.54"
Tc=6.0 min CN=37 Runoff=0.14 cfs 931 cf

Subcatchment 5S: TO POND Runoff Area=29,621 sf 38.86% Impervious Runoff Depth>2.60"
Tc=6.0 min CN=62 Runoff=2.17 cfs 6,413 cf

Subcatchment 6S: C SOIL Runoff Area=66,595 sf 0.00% Impervious Runoff Depth>3.39"
Tc=6.0 min CN=70 Runoff=6.40 cfs 18,803 cf

Subcatchment E: TO WET Runoff Area=215,698 sf 0.76% Impervious Runoff Depth>0.20"
Flow Length=979' Tc=30.1 min CN=31 Runoff=0.19 cfs 3,665 cf

Reach 6R: (new Reach) Avg. Flow Depth=0.11' Max Vel=0.63 fps Inflow=2.40 cfs 10,015 cf
n=0.050 L=600.0' S=0.0100 '/' Capacity=28.97 cfs Outflow=1.87 cfs 9,982 cf

Pond 1P: CB1 Peak Elev=182.15' Inflow=4.13 cfs 12,216 cf
15.0" Round Culvert n=0.013 L=51.0' S=0.0100 '/' Outflow=4.13 cfs 12,216 cf

Pond 2P: CB2 Peak Elev=176.35' Inflow=6.64 cfs 20,196 cf
18.0" Round Culvert n=0.013 L=105.0' S=0.0381 '/' Outflow=6.64 cfs 20,196 cf

Pond 3P: CB3 Peak Elev=184.44' Inflow=0.87 cfs 2,706 cf
15.0" Round Culvert n=0.013 L=97.0' S=0.0155 '/' Outflow=0.87 cfs 2,706 cf

Pond 4P: CROSS PIPE Peak Elev=176.67' Storage=12 cf Inflow=0.14 cfs 931 cf
15.0" Round Culvert n=0.013 L=45.0' S=0.0111 '/' Outflow=0.14 cfs 928 cf

Pond 5P: DETENTION POND Peak Elev=171.37' Storage=10,034 cf Inflow=8.85 cfs 27,537 cf
Discarded=0.40 cfs 12,181 cf Primary=2.40 cfs 10,015 cf Outflow=2.80 cfs 22,196 cf

Link 1L: DESIGN NODE Inflow=6.40 cfs 32,450 cf
Primary=6.40 cfs 32,450 cf

Total Runoff Area = 406,474 sf Runoff Volume = 50,008 cf Average Runoff Depth = 1.48"
86.94% Pervious = 353,381 sf 13.06% Impervious = 53,093 sf

Summary for Subcatchment 1S: TO CB 1

Runoff = 4.13 cfs @ 12.10 hrs, Volume= 12,216 cf, Depth> 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 YR Rainfall=7.03"

Area (sf)	CN	Description
9,363	98	Paved parking, HSG A
11,529	39	>75% Grass cover, Good, HSG A
14,226	98	Paved parking, HSG A
8,380	39	>75% Grass cover, Good, HSG A
12,923	30	Woods, Good, HSG A
56,421	62	Weighted Average
32,832		58.19% Pervious Area
23,589		41.81% Impervious Area

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

Summary for Subcatchment 2S: TO CB 2

Runoff = 1.65 cfs @ 12.09 hrs, Volume= 5,275 cf, Depth> 5.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 YR Rainfall=7.03"

Area (sf)	CN	Description
9,811	98	Paved parking, HSG A
1,423	39	>75% Grass cover, Good, HSG A
11,234	91	Weighted Average
1,423		12.67% Pervious Area
9,811		87.33% Impervious Area

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

Summary for Subcatchment 3S: TO CB 3

Runoff = 0.87 cfs @ 12.09 hrs, Volume= 2,706 cf, Depth> 5.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 YR Rainfall=7.03"

Area (sf)	CN	Description
5,089	98	Paved parking, HSG A
1,148	39	>75% Grass cover, Good, HSG A
6,237	87	Weighted Average
1,148		18.41% Pervious Area
5,089		81.59% Impervious Area

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

Summary for Subcatchment 4S: TO CROSS PIPE

Runoff = 0.14 cfs @ 12.30 hrs, Volume= 931 cf, Depth> 0.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 YR Rainfall=7.03"

Area (sf)	CN	Description
1,460	98	Paved parking, HSG A
4,463	39	>75% Grass cover, Good, HSG A
14,745	30	Woods, Good, HSG A
20,668	37	Weighted Average
19,208		92.94% Pervious Area
1,460		7.06% Impervious Area

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

Summary for Subcatchment 5S: TO POND

Runoff = 2.17 cfs @ 12.10 hrs, Volume= 6,413 cf, Depth> 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 YR Rainfall=7.03"

Area (sf)	CN	Description
6,000	98	Roofs, HSG A
3,575	98	Roofs, HSG A
1,935	98	Paved parking, HSG A
18,111	39	>75% Grass cover, Good, HSG A
29,621	62	Weighted Average
18,111		61.14% Pervious Area
11,510		38.86% Impervious Area

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

Summary for Subcatchment 6S: C SOIL

Runoff = 6.40 cfs @ 12.09 hrs, Volume= 18,803 cf, Depth> 3.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 YR Rainfall=7.03"

Area (sf)	CN	Description
66,595	70	Woods, Good, HSG C
66,595		100.00% Pervious Area

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

Summary for Subcatchment E: TO WET

Runoff = 0.19 cfs @ 13.89 hrs, Volume= 3,665 cf, Depth> 0.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 YR Rainfall=7.03"

Area (sf)	CN	Description
1,634	98	Paved parking, HSG A
4,498	39	>75% Grass cover, Good, HSG A
191,099	30	Woods, Good, HSG A
12,911	39	>75% Grass cover, Good, HSG A
5,556	39	>75% Grass cover, Good, HSG A
215,698	31	Weighted Average
214,064		99.24% Pervious Area
1,634		0.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	14	0.0200	0.91		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.08"
2.2	15	0.0200	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.08"
12.6	50	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.08"
15.0	900	0.0400	1.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
30.1	979	Total			

Summary for Reach 6R: (new Reach)

Inflow Area = 124,181 sf, 41.44% Impervious, Inflow Depth = 0.97" for 50 YR event
Inflow = 2.40 cfs @ 12.46 hrs, Volume= 10,015 cf
Outflow = 1.87 cfs @ 12.66 hrs, Volume= 9,982 cf, Atten= 22%, Lag= 12.5 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.63 fps, Min. Travel Time= 15.9 min
Avg. Velocity = 0.26 fps, Avg. Travel Time= 37.9 min

Peak Storage= 1,777 cf @ 12.66 hrs
Average Depth at Peak Storage= 0.11' , Surface Width= 30.35'
Bank-Full Depth= 0.50' Flow Area= 18.8 sf, Capacity= 28.97 cfs

25.00' x 0.50' deep channel, n= 0.050
Side Slope Z-value= 25.0 '/' Top Width= 50.00'
Length= 600.0' Slope= 0.0100 '/'
Inlet Invert= 164.00', Outlet Invert= 158.00'

‡

Summary for Pond 1P: CB1

Inflow Area = 56,421 sf, 41.81% Impervious, Inflow Depth > 2.60" for 50 YR event
Inflow = 4.13 cfs @ 12.10 hrs, Volume= 12,216 cf
Outflow = 4.13 cfs @ 12.10 hrs, Volume= 12,216 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.13 cfs @ 12.10 hrs, Volume= 12,216 cf

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 182.15' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	181.00'	**15.0" Round Culvert** L= 51.0' Ke= 0.500 Inlet / Outlet Invert= 181.00' / 180.49' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=4.10 cfs @ 12.10 hrs HW=182.14' TW=176.34' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 4.10 cfs @ 4.57 fps)

Summary for Pond 2P: CB2

Inflow Area = 73,892 sf, 52.09% Impervious, Inflow Depth > 3.28" for 50 YR event
Inflow = 6.64 cfs @ 12.09 hrs, Volume= 20,196 cf
Outflow = 6.64 cfs @ 12.09 hrs, Volume= 20,196 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.64 cfs @ 12.09 hrs, Volume= 20,196 cf

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 176.35' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	175.00'	**18.0" Round Culvert** L= 105.0' Ke= 0.500 Inlet / Outlet Invert= 175.00' / 171.00' S= 0.0381 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=6.54 cfs @ 12.09 hrs HW=176.34' TW=170.59' (Dynamic Tailwater)
1=Culvert (Inlet Controls 6.54 cfs @ 3.93 fps)

Summary for Pond 3P: CB3

Inflow Area = 6,237 sf, 81.59% Impervious, Inflow Depth > 5.21" for 50 YR event
Inflow = 0.87 cfs @ 12.09 hrs, Volume= 2,706 cf
Outflow = 0.87 cfs @ 12.09 hrs, Volume= 2,706 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.87 cfs @ 12.09 hrs, Volume= 2,706 cf

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 184.44' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	184.00'	**15.0" Round Culvert** L= 97.0' Ke= 0.500 Inlet / Outlet Invert= 184.00' / 182.50' S= 0.0155 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=0.85 cfs @ 12.09 hrs HW=184.43' TW=176.32' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.85 cfs @ 2.24 fps)

Summary for Pond 4P: CROSS PIPE

Inflow Area = 20,668 sf, 7.06% Impervious, Inflow Depth > 0.54" for 50 YR event
Inflow = 0.14 cfs @ 12.30 hrs, Volume= 931 cf
Outflow = 0.14 cfs @ 12.31 hrs, Volume= 928 cf, Atten= 0%, Lag= 0.9 min
Primary = 0.14 cfs @ 12.31 hrs, Volume= 928 cf

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 176.67' @ 12.31 hrs Surf.Area= 89 sf Storage= 12 cf

Plug-Flow detention time= 2.5 min calculated for 925 cf (99% of inflow)
Center-of-Mass det. time= 1.4 min (880.3 - 878.9)

Volume	Invert	Avail.Storage	Storage Description
#1	176.50'	2,338 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
176.50	50	0	0
178.00	400	338	338
180.00	1,600	2,000	2,338

Device	Routing	Invert	Outlet Devices
#1	Primary	176.50'	**15.0" Round Culvert** L= 45.0' Ke= 0.500 Inlet / Outlet Invert= 176.50' / 176.00' S= 0.0111 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=0.14 cfs @ 12.31 hrs HW=176.67' TW=171.30' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 0.14 cfs @ 2.10 fps)

Summary for Pond 5P: DETENTION POND

Inflow Area = 124,181 sf, 41.44% Impervious, Inflow Depth > 2.66" for 50 YR event
Inflow = 8.85 cfs @ 12.10 hrs, Volume= 27,537 cf
Outflow = 2.80 cfs @ 12.46 hrs, Volume= 22,196 cf, Atten= 68%, Lag= 21.6 min
Discarded = 0.40 cfs @ 12.46 hrs, Volume= 12,181 cf
Primary = 2.40 cfs @ 12.46 hrs, Volume= 10,015 cf

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 171.37' @ 12.46 hrs Surf.Area= 5,691 sf Storage= 10,034 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 56.8 min (851.5 - 794.7)

Volume	Invert	Avail.Storage	Storage Description
#1	169.00'	13,845 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
169.00	2,440	0	0
170.00	4,150	3,295	3,295
172.00	6,400	10,550	13,845

Device	Routing	Invert	Outlet Devices
#1	Primary	167.00'	**18.0" Round Culvert** L= 40.0' Ke= 0.500 Inlet / Outlet Invert= 167.00' / 164.00' S= 0.0750 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#2	Discarded	169.00'	**3.000 in/hr Exfiltration over Surface area**
#3	Device 1	171.25'	**32.0" W x 42.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	170.70'	**16.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.40 cfs @ 12.46 hrs HW=171.37' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 0.40 cfs)

Primary OutFlow Max=2.40 cfs @ 12.46 hrs HW=171.37' TW=164.09' (Dynamic Tailwater)
└**1=Culvert** (Passes 2.40 cfs of 16.19 cfs potential flow)
  ├**3=Orifice/Grate** (Orifice Controls 0.35 cfs @ 1.11 fps)
  └**4=Orifice/Grate** (Orifice Controls 2.04 cfs @ 3.07 fps)

Summary for Link 1L: DESIGN NODE

Inflow Area = 406,474 sf, 13.06% Impervious, Inflow Depth > 0.96" for 50 YR event
Inflow = 6.40 cfs @ 12.09 hrs, Volume= 32,450 cf
Primary = 6.40 cfs @ 12.09 hrs, Volume= 32,450 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Site Plan
2A Tactical, LLC
Map 251 Lot 63
Barrington NH

Operation and Maintenance Plan

1.0 Intent of this Plan:

The intent of this plan is to insure that all drainage systems designed, constructed, and approved be properly maintained such that there is no detrimental effects, including obstructions, erosion, redirected flow patterns, or any other adverse condition caused by stormwater runoff.

2.0 Plan Coordinator and Responsibilities:

Plan Coordinator contact:
2A Tactical LLC
99 Tolend Road
Barrington NH 03825

The Plan coordinator's duties include the following:

- Implement the Plan with the aid of support personnel;
- Oversee maintenance practices on the site;
- Conduct or provide for inspection and monitoring activities;
- Maintain records of maintenance activities; and
- Identify any deficiencies on the site and make sure they are corrected; and

To aid in the implementation of the plan, all personnel will ensure that all housekeeping and monitoring procedures are implemented and will ensure the integrity of the site drainage facilities.

3.0 Stormwater Management Controls

The following provides a list of recommendations and guidelines for managing the stormwater controls:

Landscaped Areas – Fertilizer Management

Function – Fertilizer management involves controlling the rate, timing and method of fertilizer application so that the nutrients are taken up by the plants thereby reducing the chance of polluting the surface and ground waters. Fertilizer management can be effective in reducing the amounts of phosphorus and nitrogen in runoff from landscaped areas, particularly lawns. Soil tests shall be conducted to determine fertilizer application rates.

Maintenance

- Have the soil tested by your landscaper or local Soil Conservation Service for nutrient requirements and follow the recommendations.
- Do not apply fertilizer to frozen ground.
- Clean up any fertilizer spills.
- Do not allow fertilizer to be broadcast into water bodies.

- When fertilizing a lawn, water thoroughly, but do not create a situation where water runs off the surface of the lawn.

Landscaped Areas – Litter Control

Function – Landscaped areas tend to filter debris and contaminates that may block drainage systems and pollute the surface and ground waters.

Maintenance

- Litter Control and lawn maintenance involves removing litter such as trash, leaves, lawn clippings, pet wastes, oil and chemicals from streets, parking lots, and lawns before materials are transported into surface waters.
- Litter control shall be implemented as part of the grounds maintenance program.

Deep Sump Catch basins & Drainage Pipes

Function – Culverts deep sump catch basis is to convey stormwater away from buildings, walkways, and parking areas and trap sediment within the deep sumps prior to entering the infiltration system.

Deep Sump catch basin
to be inspected after major storms and every 6 months, once after snow-melt and once following leaf -drop, for accumulation of sediment and debris within the sump.

Forebays
shall be inspected after major storms and every 6 months for accumulated sediment and debris. Grass and woody vegetation shall be removed from the forebay annually. Staff gage or other measuring device shall be installed to indicate the depth of the sediment.

Inlet and outlet rip rap swales
to be inspected after major storms and every 6 months for accumulated sediment and debris. Grass and woody vegetation shall be removed from the stone rip rap annually. Sediment shall be removed form the rip rap annually.

Infiltration Basins

Function – These basins are designed to store the water quality volume (WQV) from smaller rainfall events. They also attenuate the peak stormwater runoff from larger events. The sediment forebays preceding each basin are designed to capture sediment before it enters the infiltration basin, and therefore must be periodically inspected and cleared of sediment.

Maintenance

- Periodically mow embankments (one to three times annually)
- Inspect inlet and outlet structures after significant storm events and remove debris

- Annually inspect embankments, inlet/outlet structures and forebay
    - Remove woody vegetation from fill embankments
    - Repair any damaged facilities
    - Repair any erosion;
    - Fill rodent holes
    - Check for invasive species and eradicate if found
- Inspect sediment forebay twice annually and remove accumulated sediment as needed
- Inspect infiltration area twice annually and following a rainfall event exceeding 2.5 inches in a 24 hour period. If the basin is not draining within 72 hours of a rainfall event, then the condition of the basin should be assessed by a qualified professional.

De-Icing Chemical Use and Storage

Function – Salt and sand is used for de-icing of walkways, parking lots and drives. Care shall be taken to prevent the over-application of salt for melting ice. Care shall be used with sanding in order to minimize sediment build up in manholes.

Maintenance

- Proper storage of salt is critical. Salt is highly water-soluble. Contamination of wetlands and other sensitive areas can occur when salt is stored in open areas. Salt piles shall be covered at all times if not stored in a shed. Runoff from stockpiles shall be contained to keep the runoff from entering the drainage system.
- When parking lots and walkways are free of snow and ice, they shall be swept clean. Disposal shall be in a solid waste disposal facility.

Grass Lined Conveyance Swales / Infiltration Ditches

Function – These swales promote sedimentation, filtration and infiltration of stormwater runoff.

Maintenance

- Periodically mow embankments (one to three times annually). Do not cut shorter than 4 inches.
- Inspect annually for erosion, sediment accumulation, vegetation loss and invasive species. Remove any accumulated sediment or debris.
- Repair any eroded areas, remove invasive species and dead vegetation, reseed as needed
- Ensure stone ditch if free of debris and sediment

4.0 Safety

Keep safety considerations at the forefront of inspection procedures at all times. Likely hazards should be anticipated and avoided. Never enter a confined space (outlet structure, manhole, etc) without proper training or equipment. A confined space should never be entered without at least one additional person present.

5.0 Inspection and Maintenance Procedures

Visual inspections of all areas of the site will be performed as needed throughout the year, but no less than once in the spring after snow melt-off, once in the fall, and after the end of a storm with rainfall amounts greater than one (1.0) inches. The inspection will be conducted by the Plan coordinator or designated personnel. The inspection will verify that the site drainage as shown on the plan is in good condition, and that there are no erosion problems developing on the slopes or the drainage systems. Any required repairs will be initiated as soon as possible.

6.0 Record Keeping

An Inspection and Maintenance Report will be prepared for each inspection performed throughout the year, but no less than once in the spring after snow melt-off, once in the fall. A copy of the report form to be completed is provided herein. Completed forms will be maintained at the facility, or with the Plan Coordinator.

All record keeping required by this I&M Plan shall be maintained by the responsible parties and made available upon request.

Should ownership of the property be transferred, the new owner(s) shall assume responsibility for this Plan.

Inspection Report

General Information	
Facility Name:	**2A Tactical LLC.**
Location:	**Barrington, NH**
Date of Inspection	
Inspector's Name	

Overall Site Drainage Issues:

	Source	**Adequate?**	**Maintenance Required?**	**Corrective Action needed and notes:**
1	Are all slopes stable showing no signs of erosion?	☐Yes ☐No	☐Yes ☐No	
2	Are ditches, swales, culverts, inlets, and outlets flowing freely?	☐Yes ☐No	☐Yes ☐No	
3	Is there any sediment buildup in ditches, swales, or culverts?	☐Yes ☐No	☐Yes ☐No	
4	Are catch basin sumps clean of sediment buildup?	☐Yes ☐No	☐Yes ☐No	
5	Are detention basins functioning properly?	☐Yes ☐No	☐Yes ☐No	
6.	Underground infiltration basins functioning properly?	☐Yes ☐No	☐Yes ☐No	
7	Does the site drainage comply with the intent of the I&M Plan	☐Yes ☐No	☐Yes ☐No	

Describe any other issues requiring attention not described above:

_____

_____

_____

Inspection & Maintenance Plan
2A Tactical LLC.
Barrington, NH

_____

_____

Inspected By:_____ Date:_____

Deicing Log

Date Applied	Type of Deicing Material	Amount Applied

Inspection & Maintenance Plan
2A Tactical LLC.
Barrington, NH

Site Plan
2A Tactical, LLC
Map 251 Lot 63
Barrington NH

DRAINAGE AREA PLANS

STATE PLANE
NAD 83

1L
6
E
6R
5P
4P
4
3P
2
2P
5
3
1P
1

BUMFORD ROAD CLASS VI ROAD

ROUTE 125 – CALEF HIGHWAY

WATERSHED

TIME OF CONCENTRATION

SUBCATCHMENT LABEL

DN1 DESIGN NODE

CB OR POND

6R REACH

STATE OF NEW HAMPSHIRE
BERNARD J. TEMPEL
No. 15108
LICENSED
PROFESSIONAL ENGINEER
9/13/21

ENGINEERING DESIGN PROVIDED BY:
BERNIE TEMPEL, PE.
PO BOX 7
GILMANTON IW
NH, 03837
603-630-1008

REVISIONS

NO	DATE	DESCRIPTION	BY

GRAPHIC SCALE
10 20 0 20
SCALE: 1"=20'

N.H. LAND Consultants
SURVEYING • LAND PLANNING • REAL ESTATE
A Veteran Owned Company
683C FIRST NH TURNPIKE, NORTHWOOD, NH 03261 PH. 603-942-2220 WEBSITE: NHLANDCONSULTANTS.COM

POST DEVELOPMENT
DRAINAGE AREA PLAN
TAX MAP 251 LOT 63
2A TACTICAL, LLC
99 TOLAND ROAD, BARRINGTON, NH 03825
OWNED BY
STEVEN & PAMELA LENZI
TRS REV TRUST
304 YOUNG ROAD, BARRINGTON, NH 03825
BOOK 4502 PAGE 1000

STAFFORD CO.
JOB NO: 400.00
DATE: SEPTEMBER 14, 2021

POST
SHT. 1 of 1

STATE PLANE
NAD 83

1L

6

1

A1

IRON PIPE FOUND
2" I.P. 12"
LEANING WEST
SPOT AT BASE AND TOP

DHF

WATERSHED

TIME OF CONCENTRATION

SUBCATCHMENT LABEL

BARBED WIRE FOUND IN MAPLE STUMP

IRON ROD FOUND 1/2" UP 14"

BARBED WIRE FOUND IN MAPLE STUMP

BARBED WIRE FOUND IN 12" PINE

REBAR FOUND 3/4" 3" BELOW PAVEMENT

BENCHMARK SPIKE ELEV. 193.02'

BENCHMARK SPIKE ELEV. 191.37'

N 04°03'08" E 780.21'

BUMFORD ROAD CLASS VI ROAD

ROUTE 125 – CALEF HIGHWAY

ENGINEERING DESIGN PROVIDED BY:
BERNIE TEMPEL, PE.
PO BOX 7
GILMANTON IW
NH, 03837
603-630-1008

STATE OF NEW HAMPSHIRE
BERNARD J. TEMPLE
No. 15108
LICENSED
PROFESSIONAL ENGINEER
9/13/21

REVISIONS

NO	DATE	DESCRIPTION	BY

GRAPHIC SCALE
25 12.5 0 50
SCALE: 1"=50'

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PREDEVELOPMENT DRAINAGE AREA PLAN
TAX MAP 251 LOT 63
2A TACTICAL, LLC
99 TOLAND ROAD, BARRINGTON, NH 03825
OWNED BY
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BOOK 4502 PAGE 1000

STRAFFORD CO.
JOB NO: 400.00
DATE: SEPTEMBER 14, 2021

PRE
SHT. 1 of 1