Bay Colony Group, Inc.
Professional Civil Engineers & Land Surveyors

4 School Street, PO Box 9136
Foxborough, Massachusetts 02035
Telephone (508) 543-3939 • Fax (508) 543-8866
E-mail: mailbox@baycolonygroup.com

NOTICE OF INTENT
WETLANDS PROTECTION ACT
MASS G.L.C. 131, SECTION 40
Town of Foxborough Chapter 267
Wetlands Protection

2 Washington Street
Foxborough, MA

May, 2022

PREPARED FOR: Rockpoint Fund Acquisitions, LLC
3953 Maple Avenue, Suite 300
Dallas, TX 75219

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May 11, 2022

Mr. Robert W. Boette, Chairman
Foxborough Conservation Commission
40 South Street
Foxboro, MA 02035

RE: 2 Washington Street Foxborough, MA

Dear Mr. Boette,

On behalf of our client, Rockpoint Fund Acquisitions, LLC, we are submitting herewith a Notice of Intent pursuant to Chapter 131, S.40, Wetlands Protection Act (WPA) and Chapter 267 Wetlands Protection of the General Bylaws of the Town of Foxborough for the construction of a 224,750 sf warehouse, an access driveway, parking lots, drainage, and associated utilities that lie partially within the buffer zone to a bordering vegetated wetland.

Enclosed please find 8 copies of the Notice of Intent, which includes the site plan and 2 full copies of the storm water analysis prepared by this office. All abutting owners within 100' of the property have been notified about the proposed work by certified mail. A check in the amount of $550.00 based on the WPA fee of $1,050 and a check in the amount of $1,500 based on the local bylaw are enclosed.

The property consists of a 30.5 acre parcel of land that contains a restaurant/convention center and an outdoor entertainment center known as Funway. The land is bordered by commercial property to the north, northwest, and east and by residential properties to the south and southwest. A corridor of wetland associated with an unnamed intermittent stream extends from south to north through the easterly edge of the property. The wetland resource areas were flagged by Lauren Hastings of Pare Corporation in November, 2021 and the report was used by the Commission to review the wetland line in December, 2021. Bordering vegetated wetlands were found on the property and the flags were located by this office and placed on the plans along with the local bylaw 25' No-Disturb Zone (NDZ), and the WPA 100' Buffer Zone (BZ). The Commission issued an ORAD in December, 2021 confirming the wetland line and a copy of the ORAD is included in **APPENDIX B**.

The project site is a hillside that starts at Route One and rises to the south and southwest to a point where it changes grade and drains to the aforementioned wetland line. The site is highly developed from Route One to a point about 500' from the road where it transitions to scrub growth and eventually into a mixed forest. The site is formerly a farm and the vegetation is largely secondary growth. According to the NRCS, the upland soils on the site are a combination of Merrimac, Sudbury, Paxton, Urban and Walpole, which, except for Paxton, are class A and B soils that are suitable for infiltration of storm water. Soil

evaluations on the property confirm this analysis and the soil data is located in Appendix F of the Flood Impact Analysis in **APPENDIX C.**

The Project will include the demolition and removal of all of the existing buildings and improvements on the property and the construction of a 224,750 sf warehouse with vehicle and truck parking. The building will be served by underground electric, gas, municipal water and municipal sewer. Utilities will access the site from a driveway located on Route One near the property line with the Gaard Motel. Approximately 13,000 sf of alteration will take place within the BZ that is southeast of the proposed building. The alteration will include paving, curbing and grading within the truck dock/parking area. None of the proposed building is within the BZ. The improvements will be no closer than 39' from the BVW and the grading will be no closer than 30' from the BVW. No storm water runoff from impervious areas will be directed to the wetlands and no storm water structures are located within the BZ.

The site will be served by MWRA sewer that flows from the site to the Walpole municipal system on Route One. Storm water will be controlled by two separate storm water basins which will act as infiltration basins and none of them are within the BZ. The storm water impact report is included in **APPENDIX C.** The system will include deep sump catch basins, tree box filters, proprietary water quality structures, and infiltration basins. The system is designed to comply with the DEP Stormwater Standards and will include redundancy throughout the treatment train.

We have not finalized the construction sequence for this project. The Project will be built in one phase, and once the contractor is chosen, we will coordinate with the contractor on the construction schedule and update the SWPPP. At that point we will contact the Agent, and other Town Officials, to coordinate that aspect of the project. The general sequence of activities would be as follows:

- Cut trees, but no grubbing
- Install erosion control
- Stump & grub
- Demolition of structures and improvements
- Bring site to subgrade/construct walls
- Install drainage and utilities
- Construct building
- Pave base course
- Landscaping
- Pave top course

Sheet 6.1 of the site plan also includes a construction sequence that will be updated once the contractor has been chosen. We expect about 10,000 cy of gravel material to be exported to the site and the existing and proposed grades are shown on the site plans. Stockpiling will be limited to those areas outside of the 100' buffer zone and the Stormwater Pollution Prevention Plan notes such. If dewatering is necessary, then areas outside the buffer zone will be constructed to allow water to infiltrate back into the ground or sheet flow back to the wetlands after passing through stone filters.

Erosion control will be handled through the use of siltation socks w/construction fencing and silt sacks that will be placed prior to the start of construction and will be maintained until the project has been completed and ground cover has been reestablished (Sheet 6.1). In areas where sediment control is not

necessary we will use construction fencing to mark the limit of work. We have marked the location of the building.

Thank you for your consideration and please feel free to contact me should you have any questions or concerns that you would like addressed prior to the public hearing.

Very truly yours,

BAY COLONY GROUP, INC.

William R. Buckley, Jr., P.E.
Project Manager

encl.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

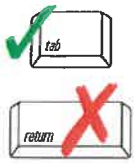
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40
Foxborough Wetlands Protection Bylaw, Ch. 267

(To be provided by MassDEP)

MassDEP File Number

Foxborough
Town

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A. General Information

1. **Project Location:**

2 Washington Street
a. Street Address

Foxborough
b. Town

02035
c. Zip Code

Latitude and Longitude:

42°-06'-06.80"
d. Latitude

71°-15'-04.40"
e. Longitude

001
f. Assessors Map/Plat Number

004/000
g. Parcel /Lot Number

2. **Applicant:**

Note:
Before completing this form consult your local Conservation Commission regarding any municipal bylaw or ordinance.

Ron
a. First Name

Hoyl
b. Last Name

Rockpoint Fund Acquisitions, LLC
c. Organization

3953 Maple Avenue Suite 300
d. Street Address

Dallas
e. City/Town

TX
f. State

75219
g. Zip Code

972.934.7430
h. Phone Number

i. Fax Number

ron@rockpointgroup.com
j. Email Address

3. **Property owner** (required if different from applicant): ☐ Check if more than one owner

a. First Name

b. Last Name

Margi, LLC
c. Organization

22 Constance Way
d. Street Address

North Attleboro
e. City/Town

MA
f. State

02760
g. Zip Code

508.668.2000
h. Phone Number

i. Fax Number

j. Email address

4. **Representative** (if any):

William
a. First Name

Buckley, Jr.
b. Last Name

Bay Colony Group, Inc.
c. Company

4 School Street
d. Street Address

Foxborough
e. City/Town

MA
f. State

02035
g. Zip Code

508.543.3939
h. Phone Number

508.543.8866
i. Fax Number

billbuckley@baycolonygroup.com
j. Email address

5. **Wetland Filing Fees Paid** *(to calculate fees, refer to attached NOI Wetland Fee Transmittal Form):*

$1,050.00	$500.00	$550.00	$1,500
a. State WPA Fee/***Total***	b. WPA Fee/***State's Share***	c. WPA Fee/***Town's Share***	d. Town Bylaw (Ch. 267) Fee

A. General Information *(continued)*

6. General Project Description:

Construction of a 224,750 sf warehouse with associated parking, utilities and drainage that lies partially within the buffer zone to a bordering vegetated wetland.

7a. Project Type Checklist: (Limited Project Types see Section A. 7b.)

1. ☐ Single Family Home
2. ☐ Residential Subdivision
3. ☒ Commercial/Industrial
4. ☐ Dock/Pier
5. ☐ Utilities
6. ☐ N/A - Coastal engineering Structure
7. ☐ Agriculture (e.g., cranberries, forestry)
8. ☐ Transportation
9. ☐ Other

7b. Is any portion of the proposed activity eligible to be treated as a limited project (including Ecological Restoration Limited Project) subject to 310 CMR 10.53 (inland)?

1. ☐ Yes ☒ No

If yes, describe which limited project applies to this project. (See 310 CMR 10.53 for a complete list and description of limited project types)

2. Limited Project Type

If the proposed activity is eligible to be treated as an Ecological Restoration Limited Project (310 CMR 10.53(4)), complete and attach Appendix A: Ecological Restoration Limited Project Checklist and Signed Certification.

8. Property recorded at the Registry of Deeds for:

a. County	b. Certificate # (if registered land)	c. Book	d. Page Number
Norfolk		33869	0381

B. Buffer Zone & Resource Area Impacts (temporary & permanent)

1. ☒ Buffer Zone Only – Check if the project is located only in the Buffer Zone of a Bordering Vegetated Wetland, or Inland Bank.
2. ☐ Inland Resource Areas (see 310 CMR 10.54-10.58).

Check all that apply below. Attach narrative and any supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

B. Buffer Zone & Resource Area Impacts (temporary & permanent) *(continued)*

For all projects affecting other Resource Areas, please attach a narrative explaining how the resource area was delineated.

Resource Area	Size of Proposed Alteration	*(if any)* Proposed Replacement
a. ☐ Bank	1. linear feet	2. linear feet
b. ☐ Bordering Vegetated Wetland	1. square feet	2. square feet
c. ☐ Land Under Waterbodies and Waterways	1. square feet 3. cubic yards dredged	2. square feet
d. ☐ Bordering Land Subject to Flooding	1. square feet 3. cubic feet of flood storage lost	2. square feet 4. cubic feet replaced
e. ☐ Isolated Land Subject to Flooding	1. square feet 2. cubic feet of flood storage lost	3. cubic feet replaced
f. ☐ Riverfront Area *(if checked, complete #1-6)*	1. Name of Waterway (if available)	

2. Width of Riverfront Area (check one):

   ☐ 25 ft. - Designated Densely Developed Areas only
   ☐ 100 ft. - New agricultural projects only
   ☐ 200 ft. - All other projects

3. Total area of Riverfront Area on the site of the proposed project: _____ square feet

4. Proposed alteration of the Riverfront Area:

   a. total square feet _____ b. square feet within 100 feet _____ c. square feet between 100 feet and 200 feet _____

5. Has an alternatives analysis been done and is it attached to this NOI? ☐ Yes ☐ No

6. Was the lot where the activity is proposed created prior to August 1, 1996? ☐ Yes ☐ No

3. ☐ Bylaw Resource Areas *(Foxborough Wetlands Protection Bylaw, Ch. 267; No Activity Zones)*

   a. ☐ 100 Foot Vernal Pool Adjacent Upland Resource Area

   b. ☐ 25 Foot No Activity Zone

4. ☐ Restoration/Enhancement - If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.2.b above, please enter the additional amount here.

   a. square feet of BVW _____

5. ☐ Project Involves Stream Crossings

   a. number of new stream crossings _____ b. number of replacement stream crossings _____

C. Other Applicable Standards and Requirements

☐ **This is a proposal for an Ecological Restoration Limited Project.** *If checked, skip Section C and complete Appendix A: Ecological Restoration Notice of Intent – Required Actions (310 CMR 10.11).*

Streamlined Massachusetts Endangered Species Act/Wetlands Protection Act Review

1. Is any portion of the proposed project located in **Estimated Habitat of Rare Wildlife** as indicated on the most recent Estimated Habitat Map of State-Listed Rare Wetland Wildlife published by the Natural Heritage and Endangered Species Program (NHESP)? *To view habitat maps, see the Massachusetts Natural Heritage Atlas or go to http://maps.massgis.state.ma.us/PRI_EST_HAB/viewer.htm.*

   a. ☐ Yes ☒ No

   2022
   b. Date of map

   If yes, include proof of mailing or hand delivery of NOI to:
   Natural Heritage and Endangered Species Program
   Division of Fisheries and Wildlife, 1 Rabbit Hill Road
   Westborough, MA 01581 - Phone: (508) 389-6360

   If *yes,* the project is also subject to Massachusetts Endangered Species Act (MESA) review (321 CMR 10.18). To qualify for a streamlined, 30-day, MESA/Wetlands Protection Act review, please complete Section C.1.c, and include requested materials with this Notice of Intent (NOI); ***OR*** complete Section C.1.f, if applicable. *If MESA supplemental information is not included with the NOI, by completing Section 1 of this form, the NHESP will require a separate MESA filing which may take up to 90 days to review (unless noted exceptions in Section 2 apply, see below).*

   c. Submit Supplemental Information for Endangered Species Review*

      1. ☐ Percentage/acreage of property to be altered:

         (a) within wetland Resource Area _____ percentage/acreage

         (b) outside Resource Area _____ percentage/acreage

      2. ☐ Assessor's Map or right-of-way plan of site

2. ☐ Project plans for entire project site, including wetland resource areas and areas outside of wetlands jurisdiction, showing existing and proposed conditions, existing and proposed tree/vegetation clearing line, and clearly demarcated limits of work **

   (a) ☐ Project description *(include description of impacts outside of wetland resource area & buffer zone)*

   (b) ☐ Photographs representative of the site

   (c) ☐ MESA filing fee - Make check payable to "Commonwealth of Massachusetts - NHESP" and ***mail to NHESP*** at above address (fee information available at https://www.mass.gov/regulatory-review)

   *Projects altering **10 or more acres** of land, also submit:*

   (d) ☐ Vegetation cover type map of site

   (e) ☐ Project plans showing Priority & Estimated Habitat boundaries

   (f) OR - see next page

* Some projects **not** in Estimated Habitat may be located in Priority Habitat (see http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/regulatory-review/) and require NHESP review. Priority Habitat includes habitat for state-listed plants and strictly upland species not protected by the Wetlands Protection Act.

** MESA projects may not be segmented (321 CMR 10.16). The applicant must disclose full development plans even if such plans are not required as part of the Notice of Intent process.

C. Other Applicable Standards and Requirements (continued)

(f) OR Check One of the Following

1. ☐ *Project is exempt from MESA review.*
   Attach applicant letter indicating which MESA exemption applies. (See 321 CMR 10.14, https://www.mass.gov/service-details/exemptions-from-review-for-projectsactivities-in-priority-habitat; the NOI must still be sent to NHESP if the project is within estimated habitat pursuant to 310 CMR 10.59.)
2. ☐ *Separate MESA review ongoing.* a. NHESP Tracking # b. Date submitted to NHESP
3. ☐ *Separate MESA review completed.*
   Include copy of NHESP "no Take" determination or valid Conservation and Management Permit with approved plan.

3. For coastal projects only: ☒ Not applicable in Foxborough

4. Is any portion of the proposed project within an Area of Critical Environmental Concern (ACEC)?

   a. ☐ Yes ☒ No If yes, provide name of ACEC.

   Canoe River Aquifer
   b. ACEC

5. Is any portion of the proposed project within an area designated as an Outstanding Resource Water (ORW) as designated in the Massachusetts Surface Water Quality Standards, 314 CMR 4.00?

   a. ☐ Yes ☒ No

6. Is any portion of the site subject to a Wetlands Restriction Order under the Inland Wetlands Restriction Act (M.G.L. c. 131, § 40A)?

   a. ☐ Yes ☒ No

7. Is this project subject to provisions of the MassDEP Stormwater Management Standards?

   a. ☒ **Yes.** Attach a copy of the Stormwater Report as required by the Stormwater Management Standards per 310 CMR 10.05(6)(k)-(q) and check if:

      1. ☐ Applying for Low Impact Development (LID) site design credits (as described in Stormwater Management Handbook Vol. 2, Chapter 3)
      2. ☒ A portion of the site constitutes redevelopment
      3. ☒ Proprietary BMPs are included in the Stormwater Management System.

   b. ☐ **No.** Check why the project is exempt:

      1. ☐ Single-family house
      2. ☐ Emergency road repair
      3. ☐ Small Residential Subdivision (less than or equal to 4 single-family houses or less than or equal to 4 units in multi-family housing project) with no discharge to Critical Areas.

8. ☐ **This is a proposed Ecological Restoration Limited Project**. *[If checked, skip Section D and complete Appendix A: Ecological Restoration NOI; Minimum Required Documents (310 CMR 10.12).]*

D. Additional Information

Applicants must include the following with this Notice of Intent (NOI). *See instructions for details.*

1. ☒ USGS or other map of the area (along with a narrative description, if necessary) containing sufficient information for the Conservation Commission and the Department to locate the site.
2. ☒ Plans identifying the location of proposed activities (including activities proposed to serve as a Bordering Vegetated Wetland [BVW] replication area or other mitigating measure) relative to the boundaries of each affected resource area.
3. ☐ Identify the method for BVW and other resource area boundary delineations (MassDEP BVW Field Data Form(s), Determination of Applicability, Order of Resource Area Delineation, etc.), and attach documentation of the methodology.
4. ☒ List the titles and dates for all plans and other materials submitted with this NOI.

Special Permit & Site Development Plan of #2 Washington Street Foxborough, MA	
a. Plan Title	
Bay Colony Group, Inc.	William Buckley Jr, #35813
b. Prepared By	c. Signed and Stamped by
May 8, 2022	varies
d. Final Revision Date	e. Scale
Storm Water Management Report	May, 2022
f. Additional Plan or Document Title	g. Date
h. Additional Plan or Document Title	i. Date

5. ☐ If more than one property owner, attach a list of property owners not listed on this form.
6. ☐ Attach proof of mailing for Natural Heritage and Endangered Species Program, if needed.
7. ☒ Notice of Intent Application checklist
8. ☒ Abutter Notification Form
9. ☐ Affidavit of Service Form
10. ☒ Attach Stormwater Report with *signed, stamped Stormwater Checklist (unless exempt).*

E. Fees

1. ☐ a. Fee Exempt: *No filing fee shall be assessed for projects of any town, county, or district of the Commonwealth, municipal housing authority, or the Massachusetts Bay Transportation Authority.*

   ☒ b. Applicants must submit the following information to confirm fee payment *(in addition to pages 1 and 2 of the attached NOI Wetland Fee Transmittal Form)*:

67457	5/6/2022
2. Check Number (town share of state fee [see A.5.c., page 1])	3. Check date (town share of state fee)
67458	5/6/2022
4. Check Number (Bylaw filing fee [see A.5.d, page 1])	5. Check date (Bylaw filing fee)
67455	5/6/2022
6. State Check Number (state share of state fee [see A.5.b.])	7. Check date (state share of state filing fee)
Rockpoint Group, LLC	
8. First Name of Payor on checks	9. Last Name of Payor on checks

F. Signatures and Submittal Requirements

I hereby certify under the penalties of perjury that the foregoing Notice of Intent and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge.

I understand that the Conservation Commission will place notification of this Notice in a local newspaper at the expense of the applicant in accordance with the wetlands regulations, 310 CMR 10.05(5)(a).

I hereby grant permission, to the Agent or member of the Conservation Commission and the Department of Environmental Protection, to enter and inspect the area subject to this Notice at reasonable hours to evaluate the wetland resource boundaries, if included with this application, subject to this Notice, and to require the submittal of any data deemed necessary by the Conservation Commission or Department for that evaluation.

I further certify under penalties of perjury that all abutters were notified of this application, pursuant to the requirements of M.G.L. c. 131, § 40. Notice must be made by Certificate of Mailing or in writing by hand delivery or certified mail (return receipt requested) to all abutters within 100 feet of the property line of the project location.

1. Signature of Applicant Ron J. Hoyl, VP of Rockpoint Fund Acquisitions, L.L.C. — 2. Date 5-6-22

3. Signature of Property Owner (if different) — 4. Date 05-05-2022

5. Signature of Representative (if any) — 6. Date 5/6/2022

Tax Collector's Release

The above referenced applicant is applying for a permit from the Conservation Commission and is in good standing with respect to any taxes, fees, assessments, betterments or other municipal charges as recorded with the Foxborough Treasurer's Office.

1. Signature of Tax Collector or Agent — 2. Date 5/11/22

F. Signatures and Submittal Requirements

Submittal Requirements *(please refer to NOI Filing Instructions, downloadable at http://www.foxboroughma.gov/Pages/FoxboroughMA_Conservation/Forms)*

For Foxborough Conservation Commission:

One original and seven (7) copies of this completed Notice of Intent (form 3), including supporting plans and documents *(listed at section D. "Additional Information")*, NOI Filing Check List, Abutter Notification, one copy of the NOI Wetland Fee Transmittal Form *(see following page; attached)*, and the two town fee payments (Bylaw filing fee and town share of State filing fee), by certified mail or hand delivery to:

Foxborough Conservation Commission
Town Hall, 40 South Street, Foxborough, MA 02035

For MassDEP:

One copy of this completed Notice of Intent (form 3), including supporting plans and documents *(listed at Section D)*, one copy of the NOI Wetland Fee Transmittal Form *(attached)*, and a ***copy*** of the state fee payment (for State share, see below) by certified mail or hand delivery to:

MassDEP Southeast Regional Office
20 Riverside Drive, Lakeville, MA 02347

State share of the filing fee (check or money order, payable to the *Commonwealth of Massachusetts)* and the NOI Wetland Fee Transmittal Form by certified mail or hand delivery to:

Department of Environmental Protection
Box 4062, Boston, MA 02211

Other:

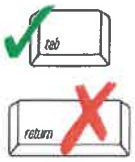
If the applicant has checked the "yes" box in any part of Section C, Item 3, above, refer to that section and the Instructions for additional submittal requirements. The original and copies must be sent simultaneously. Failure by the applicant to send copies in a timely manner may result in dismissal of the Notice of Intent.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

NOI Wetland Fee Transmittal Form

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40
Foxborough Wetlands Protection Bylaw, Chapter 267

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A. Applicant Information

1. Location of Project:

2 Washington Street	Foxborough
a. Street Address	b. City/Town

2. Applicant Mailing Address:

Ron	Hoyl
a. First Name	b. Last Name

Rockpoint Fund Acquistions, LLC
c. Organization

3953 Maple Ave	Dallas	TX	75219
d. Mailing Address	e. City/Town	f. State	g. Zip Code

972.934.7430		ron@rockpointgroup.com
h. Phone Number	i. Fax Number	j. Email Address

3. Property Owner *(if different from Applicant)*:

a. First Name	b. Last Name

Margi, LLC
c. Organization

22 Constance Way	North Attleboro	MA	02760
d. Mailing Address	e. City/Town	f. State	g. Zip Code

508.668.2000		
h. Phone Number	i. Fax Number	j. Email Address

To calculate filing fees, refer to the category fee list and examples in the instructions for filling out WPA Form 3 (Notice of Intent).

B. Fees - *Please see NOI Instructions before filling out worksheet.*

Fees should be calculated using the following process and the worksheet on the next page.

Refer to Conservation Commission's website to download the Town and State Filing Fee Schedules:
http://www.foxboroughma.gov/Pages/FoxboroughMA_Conservation/Forms

State Wetlands Protection Act (WPA) Filing Fee Instructions

Step 1/ Type of Activity: Describe each type of activity that will occur in a wetland resource area and/or buffer zone *(the area within 100 feet of a wetland, or 200 feet of a river).*

Step 2/ Number of Activities: Identify the number of each type of activity.

Step 3/ Individual Activity Fee:
Identify each activity fee from the six project categories listed in the instructions.

Step 4/ Subtotal Activity Fee: Multiply the number of activities (identified in Step 2) times the fee per category (identified in Step 3) to reach a subtotal fee amount.

Note: If any of these activities are in a Riverfront Area in addition to another Resource Area or the Buffer Zone, the fee per activity should be multiplied by 1.5 and then added to the subtotal amount.

Step 5/ Total State Project Fee:
Determine the total project fee by adding the subtotal amounts from Step 4.

Step 6a-c/ Fee Payments (State):
To calculate the state share of the fee, divide the total fee in half and subtract $12.50.
To calculate the town share of the fee, divide the total fee in half and add $12.50.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

NOI Wetland Fee Transmittal Form

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40
Foxborough Wetlands Protection Bylaw, Chapter 267

B. Fees (continued)

Town Bylaw Filing Fee Instructions

Step 1a/ Type of Activity:
Describe each type of activity that will occur in wetland resource area and buffer zone.

Step 2a/ Number of Activities: Identify the number of each type of activity.

Step 3a/ Individual Activity Fee: Identify each activity fee from the six project categories listed in the instructions.

Step 4a/ Subtotal Activity Fee: Multiply the number of activities (identified in Step 2a) times the fee per category (identified in Step 3a) to reach a subtotal fee amount. Note: If any of these activities are in a Riverfront Area in addition to another Resource Area or the Buffer Zone, the fee per activity should be multiplied by 1.5 and then added to the subtotal amount.

Step 5a/ Total Bylaw Project Fees:
Determine the total project fee by adding the subtotal amounts from Step 4a.

Step 6d/ Fee Payment (Bylaw): ***Insert Step 5a fee payment amount.***

Type of Activity	Number of Activities	Individual Activity Fee	Subtotal Activity Fee
State Filing Fees: *(Step 1)*	*(Step 2)*	*(Step 3)*	*(Step 4)*
3a - Site preparation	1	$1,050.00	$1,050.00
Total State Filing Fee: *(Step 5)*			
Bylaw Filing Fees: *(Step 1a)*	*(Step 2a)*	*(Step 3a)*	*(Step 4a)*
3a - Site preparation	1	$1,500.00	$1,500.00
Total Bylaw Filing Fee: *(Step 5a)*			
Filing Fee Payments: *(Step 6)*			
Total State Filing Fee:	*(insert the following amount on this NOI form page 1, Section A.5.a)*		$1,050.00 a. Total **State** Fee from Step 5
State's share of filing fee: *(Paid to State [Boston address])*	*(insert following amount on this NOI form page 1, Section A.5.b.)*		$500.00 b. 1/2 of (a), above, **less** $12.50
Town's share of filing fee: *(Paid to Town of Foxborough)*	*(insert following amount on this NOI form page 1, Section A.5.c.)*		$550.00 c. 1/2 of (a) above, **plus** $12.50
Bylaw Filing Fee: *(Paid to Town of Foxborough)*	*(insert following amount on this NOI form page 1, Section A.5.d.)*		$1,500 d. Total **Bylaw** Fee from Step 5a

See Submittal Requirements and Instructions on the next page.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

NOI Wetland Fee Transmittal Form

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40
Foxborough Wetlands Protection Bylaw, Chapter 267

See Submittal Requirements and Instructions on the next page.

C. Submittal Requirements

For additional instructions, please refer to the Submittal Instructions on the last page (page 7) of the attached NOI Form (above).

a. ***To Department of Environmental Protection:***

Complete pages 1 and 2 of this NOI Wetland Fee Transmittal Form and send with a check or money order for the **State share of the filing fee**, payable to the *Commonwealth of Massachusetts*.

Department of Environmental Protection
Box 4062
Boston, MA 02211

b. ***To the Foxborough Conservation Commission:***

Send the Notice of Intent or Abbreviated Notice of Intent; one **copy** of this form and the Town fee payments (**Bylaw fee and town share of State fee**), payable to the *Town of Foxborough*.

Foxborough Conservation Commission
40 South Street
Foxborough, MA 02035

c. ***To MassDEP Regional Office:***

Send a copy of the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and a **copy** of the state fee payment.

MassDEP, Southeast Regional Office
20 Riverside Drive
Lakeville, MA 02347

WARNING - THIS CHECK IS PROTECTED BY SPECIAL SECURITY FEATURES

Rockpoint Group, LLC
Master Disbursement Account
3953 Maple Ave. Suite 300
Dallas, TX 75219

Citibank 1-8/210

MEMO	CHECK DATE	CHECK NO	AMOUNT
	May 6, 2022	67455	$500.00

Pay: Five Hundred Dollars And 0 Cents

Pay to the order of: COMMONWEALTH OF MASSACHUSETTS

SECURITY FEATURES INCLUDE MICROPRINTING • VOID PANTOGRAPH • ENDORSEMENT BACKER • BROWNSTAIN CHEMICAL REACTANT

[redacted]

WARNING - THIS CHECK IS PROTECTED BY SPECIAL SECURITY FEATURES

Rockpoint Group, LLC
Master Disbursement Account
3953 Maple Ave. Suite 300
Dallas, TX 75219

Citibank 1-8/210

MEMO	CHECK DATE	CHECK NO	AMOUNT
	May 6, 2022	67457	$550.00

Pay: Five Hundred Fifty Dollars And 0 Cents

Pay to the order of: TOWN OF FOXBOROUGH

SECURITY FEATURES INCLUDE MICROPRINTING • VOID PANTOGRAPH • ENDORSEMENT BACKER • BROWNSTAIN CHEMICAL REACTANT

[redacted]

WARNING - THIS CHECK IS PROTECTED BY SPECIAL SECURITY FEATURES

Rockpoint Group, LLC
Master Disbursement Account
3953 Maple Ave. Suite 300
Dallas, TX 75219

Citibank 1-8/210

MEMO	CHECK DATE	CHECK NO	AMOUNT
	May 6, 2022	67458	$1,500.00

Pay: One Thousand Five Hundred Dollars And 0 Cents

Pay to the order of: TOWN OF FOXBOROUGH

SECURITY FEATURES INCLUDE MICROPRINTING • VOID PANTOGRAPH • ENDORSEMENT BACKER • BROWNSTAIN CHEMICAL REACTANT

[redacted]

NOTICE OF INTENT APPLICATION CHECKLIST

This checklist, which is referred to in the Conservation Commission's *Filing Instructions for Notices of Intent Under the Foxborough Wetlands Protection Bylaw, Chapter 267,* has been designed to efficiently assist the applicant and the Commission through the review process. It applies to all filings under the Foxborough Wetlands Protection Bylaw, Chapter 267 (unless otherwise specifically stated). Close adherence to this checklist and the referenced *Filing Instructions* is recommended.

All of the following information will be required, unless exempted in writing by the Commission. After completing each item below, please check the box next to the item and, when finished, **include a copy of the completed checklist in your NOI application package**.

INFORMATION TO BE INCLUDED IN NOTICE OF INTENT NARRATIVE

EXISTING CONDITIONS

- ☒ Description of topography, soils, and geology
- ☒ Description of vegetation types (upland or wetlands community types and plant species)
- ☒ USGS quadrangle map (most recent version), with site location circled (locus map)
- ☒ National Flood Insurance Program (NFIP) Flood Insurance Rate Map (FIRM), and associated Flood Profile Study if available, with site location circled

PROPOSED CONDITIONS

- ☒ Description of activities, construction sequencing and estimated timetable, including future phases
- ☒ Description of indirect and direct impacts, both temporary and permanent, on wetland resource areas
- ☒ Calculations of lot's impervious areas, comparing pre-construction to post construction conditions
- ☒ Volume of fill required, if applicable, and source of fill
- ☒ Description of soil erosion and sediment control plan, including monitoring and measures to be taken to prevent negative impacts to resource areas
- ☒ Detailed mitigation plan for activities in the buffer zone to prevent long term, indirect impacts to adjacent resource areas
- ☒ Description of storm water management plan, including existing and proposed drainage areas
- ☒ Description of wastewater management plan, if applicable
- ☐ Description of wetlands restoration plan, if proposed, including area to be restored with existing and proposed topography contours (at one-foot intervals), description of soils, stockpile areas, plantings (including Latin names of plants/seeds and source of materials [both plants and soils]), invasive species eradication and monitoring plan and a timetable of proposed work.

SITE VISIT REQUIREMENTS FOR REVIEW OF NOTICE OF INTENT

The following markings and flagging must be in place before the field inspection, where applicable. Failure to properly stake and mark the site may result in delays, non-review, or denial of a proposed project.

- ☒ Edges of wetlands must be flagged with numbered flags, as reflected on submitted project plans
- ☐ House number must be visible from the street, if work is proposed at a pre-existing house; if no house is on the property, the lot number must be posted and visible.
- ☐ Property boundaries must be staked with numbered stakes at all corners
- ☒ All proposed structures or additions, including decks, must be staked for identification purposes at all corners; stakes must be numbered and labeled, as reflected on submitted project plans
- ☐ Locations of septic tank, leaching field and wells (if in the buffer zone) must be staked and labeled

INFORMATION TO BE INCLUDED ON SITE PLANS

ALL PLANS

☒ Title Box: Include the date, name and address of proposed project; owner and/or applicant name; preparer's name; scale (1 inch = 30 feet or less); north arrow; assessor's map/parcel number

☒ Stamp/Signature: Plan to be prepared and stamped by a registered professional engineer (PE) or land surveyor, as appropriate. At least one original signed copy of each plan must be submitted

(Note: The professional who stamps the original plans must also stamp, sign and date revisions.)

☒ Locus Map: Include on a corner of plan's first page, at least 3" x 3" in size

☒ Topography: Contours at two-foot intervals or less; NAVD88 elevations (if available), or assumed datum and location of benchmark elevation

☒ Project Site: Include lot size(s) and property boundaries.

☒ Abutting Properties: Property owner names and property lines of abutting land parcels

☒ Watershed Areas: For projects that alter the stormwater runoff from the site, identify total watershed area in which site is located, all sub-watersheds on site, and on- and off-site discharge points

☒ Test Pits: Location, date and soil summaries of all soil borings and test pits on site; location, date and readings of groundwater level measurements on site

☒ Stone walls or other barriers located between the area of work and the area(s) subject to protection

☒ Easements: Location and type of easements, both on site and within 50 feet of property line

Resource Areas and Buffer Zones

☒ Wetland Resource Areas: Boundaries of wetland resource areas on or within 100 feet of the proposed project area (200 feet for perennial streams and rivers), with flow directions, if applicable

☒ Wetland Flags: Numbered flags/stakes; note date of flagging and name/firm of delineator/botanist

☐ Bank: Delineate the banks of streams, rivers, ponds and/or lakes

☒ 25 Foot No Activity Zone (Chapter 267)

☐ Bordering Land Subject to Flooding, including 100-year storm elevation (FEMA floodplain or highest observed or recorded elevation)

☐ Isolated Land Subject to Flooding, including highest observed or recorded water level

☐ Vernal Pools, (all) including highest observed or recorded water level

☐ Certified Vernal Pools: Boundary of 100 foot No Activity Zone (Chapter 267)

☐ High Water Level for all water bodies, from best available data (data source must be cited)

☐ Riverfront Area: Boundaries of 100 Foot Inner Riparian Area and 200 Foot Outer Riparian Area

☐ Mean Annual High Water Line (MAHWL) of any river

☒ 100 Foot Buffer Zone (100-foot radius from all wetland resources areas)

EXISTING CONDITIONS PLANS

☒ Existing Topography: Contours at two-foot intervals or less

☒ Above-Ground: All on-site above-ground structures, roadways, access ways, stone walls, fences

☒ Below-Ground: All on-site below-ground structures, including but not limited to utility lines, drainage structures, septic systems, cesspools, wells, storage tanks

PROPOSED CONDITIONS PLANS

☒ Proposed Topography: Contours at two-foot intervals or less; NAVD88 elevations or assumed datum

☒ Limit of Work: delineate all areas where vegetation or soil will be altered

☒ Erosion Controls: locations and type of temporary erosion controls, including installation details

☒ Stockpiles: locations of stockpiles

☒ Fill: Note the amount of fill required to be added or removed (in cubic yards and maximum thickness); pre- and post- development grades on all slopes

PROPOSED CONDITIONS PLANS (continued)

- ☒ Construction Equipment access routes and storage/parking areas during proposed work
- ☒ Construction Details, including cross-sections and elevations of drainage structures (including but not limited to catch basins, leaching basins, dry wells, swales, retention areas, ditches, etc.) and road crossings in wetland resource areas
- ☒ Above-Ground Alterations: All on-site structures, roadways, access ways, stone walls, fences, and all other physical alterations proposed in the buffer zone; location and elevation of lowest floor of all structures; identify roadway or surface material proposed
- ☒ Below-ground Alterations: All on-site below-ground alterations and structures in the buffer zone, including but not limited to utility lines, drainage structures, septic systems, cesspools, wells, tanks
- ☒ Drainage Patterns: Existing natural drainage patterns and proposed alterations
- ☐ Distance of proposed on-site leaching facility to wetlands or other resource areas
- ☐ Distance of proposed alteration to wetlands or other resource areas
- ☐ Wells: Location of all existing and proposed wells on property and within 200 feet of project on abutting properties, and minimum distance to all septic systems

DOCUMENT SUBMISSION DEADLINES

NOI Application:
All documentation (including plans, maps, tables, charts, reports, etc.) to be considered as part of an applicant's permit filing must be submitted to the Commission by the application deadline, as posted in the Conservation Office in Town Hall and on the Commission's website. Application forms, instructions and deadlines can all be downloaded on the Commission's website:
http://www.foxboroughma.gov/Pages/FoxboroughMA_Conservation/index

Continued Hearing Submissions:
All document and plan revisions must be received *by the Conservation Department* ***at least four business days before a scheduled (continued) hearing date****.*

Four days is the minimum time needed to allow the Conservation Commission and Conservation Manager to properly review and analyze new submissions. Documents that are not submitted at least four business days before the date of a continued hearing may be excluded from consideration during that hearing and held for discussion during a future Conservation Commission meeting.

NOTIFICATION TO ABUTTERS

Under the
Massachusetts Wetlands Protection Act &
Foxborough Wetlands and Groundwater Protection Bylaw (Article IX)

(This form must be completed and mailed, certified mail return receipt requested, to all abutters within 100 feet of the proposed project)

In accordance with the second paragraph of Massachusetts Wetlands Protection Act (G.L. Ch. 131, §40), and §10.05(4)(a) of 310 CMR 10.00, and the Foxborough Wetlands and Groundwater Protection Bylaw (Article IX) and regulations, you are hereby notified of a public hearing on the matter described below:

A. The applicant has filed a Notice of Intent with the Foxborough Conservation Commission seeking permission to alter an area subject to protection under the Wetlands Protection Act and the Foxborough Wetlands and Groundwater Protection Bylaw.

B. The name of the applicant is Rockpoint Fund Acquisitions, LLC

C. The address of the land where the activity is proposed is 2 Washington Street Foxborough.

D. The work proposed is construction of a warehouse, driveways, parking, drainage and utilities.

E. Copies of the Notice of Intent may be examined at the Conservation Commission's office, 40 South Street, Foxborough Town Hall, between 9 am and 4 pm, Monday through Thursday (please call first, to ensure that the Conservation Manager is in the office and not out on site visits).

For more information, please call: Bay Colony Group, Inc.
Check One: This is the ☐ applicant, ☒ applicant's representative, or ☐ other _____

F. Copies of the Notice of Intent may be obtained from either (check one) the ☐ applicant or the ☒ applicant's representative by calling 508.543.3939 from 8:00-5:00 on Monday through Friday.

G. Information regarding the date, time and place of the public hearing may be obtained from either (check one) the ☐ applicant or the ☒ applicant's representative by calling 508.543.3939 from 8:00-5:00 on Monday through Friday.

Conservation Commission meeting agendas may be viewed online at
http://www.foxboroughma.gov/Pages/FoxboroughMA_ConsAgendas/

Notice of the public hearing, including date, time and place, will be published at least five business days in advance in The Sun Chronicle and will be posted in the Town Hall and online at least 48 hours in advance.

Contact the Foxborough Conservation Commission for information about this application or the Foxborough Wetlands and Groundwater Protection Bylaw or the Department of Environmental Protection (DEP) Southeast Regional Office for more information about this application or the Wetlands Protection Act.

Conservation Commission:
508-543-1251
http://www.foxboroughma.gov/Pages/FoxboroughMA_Conservation/index

DEP, Southeast Regional Office (Lakeville):
508-946-2836

BOARD OF ASSESSORS
TOWN OF FOXBOROUGH
40 SOUTH STREET
FOXBOROUGH MASSACHUSETTS 02035

(508) 543-1215 Fax: (508) 543-6278

CERTIFICATION OF ABUTTERS

PROPERTY OWNER: MARGI, LLC

MAILING ADDESSS: 22 Constance Way, North Attleboro 02760

PROPERTY LOCATION: 2 Washington Street

ASSESSORS MAP/PARCEL: 001//004/000

APPLICANT: Bay Colony Group, Inc PHONE: 508-543-3939

AUTHORITY REQUESTING LIST: Planning Board

DATE SUBMITTED: 10/26/2021

LIST REQUESTED:____500 FT X 300 FT____100FT_ ABUTTER TO ABUTTER

I, [signature] _____, acting as a custodian of assessment records, do hereby certify that the attached documents contain true and complete information from the most recent tax list of the Town of Foxborough, Massachusetts.

I further state that these documents include the names and addresses of abutters to the abutters Map 001 Parcel 004 300ft.

Date: 10/26/21

BOARD OF ASSESSORS
FOXBOROUGH MASSACHUSETTS

Massachusetts General Law c. 40A, s.11, "The assessors maintaining any applicable tax list shall certify to the permit granting authority or special permit granting authority the names and addresses of parties in interest and such certification shall be conclusive for all purposes."

The Assessors Office will complete the abutters list within 7-10 business days. There is a $25.00 fee for an abutters list.

"The applicant is solely responsible for requesting the appropriate abutters list required by the applicable Mass General Law."

Abutting Properties for
2 WASHINGTON STREET
FOXBOROUGH, MA
001-004
(300 Feet)
10/26/2021
****

Location: 001-006
8 WASHINGTON STREET
Owner: SARIN RAVINDER K TR
8 WASHINGTON ST
FOXBORO, MA 02035

Location: 002-010
7 PERRY DRIVE
Owner: 1776 WASHINGTON STREET REALTY TR
MICHAEL R BERUBE JR TR
7 PERRY DR
FOXBOROUGH, MA 02035

Location: 002-011
3 PHELPS DRIVE
Owner: MATTHEWS KEVIN TR
C/O MASS AMIGOS
P O BOX 208
WAKEFIELD, MA 01880

Location: 002-009-BG0-00B
11 PERRY DRIVE #B
Owner: CHRISTMAN MARIANNE TR
16 COW HILL RD
SHARON, MA 02067

Location: 002-009-BG0-00C
11 PERRY DRIVE #C
Owner: CHRISTMAN KEVIN M & MARIANNE TR
16 COW HILL RD
SHARON, MA 02067

Location: 002-009-BG0-00D
11 PERRY DRIVE #D
Owner: HARDING DONALD H, JEANNE & J GREGORY
16 ARNOLD DR
MEDFIELD, MA 02052

Location: 002-009-BG0-00E
11 PERRY DRIVE #E
Owner: HARDING DONALD H, JEANNE & J GREGORY
16 ARNOLD DRIVE
MEDFIELD, MA 02052

Location: 002-009-BG0-00F
11 PERRY DRIVE #F
Owner: CHRISTMAN KEVIN M & MARIANNE TRS
16 COW HILL RD UNIT C
SHARON, MA 02067

Location: 002-009-BG0-00G
11 PERRY DRIVE #G
Owner: WALSH JAMES M & CATHERINE M TE
11 PERRY DRIVE UNIT G
FOXBOROUGH, MA 02035

Location: 005-036
PICKERING CIRCLE
Owner: MEADOWVIEW HOMEOWNERS REALTY TRUST
C/O GEORGE GEORGENES
5 TUCKER LANE
FOXBORO, MA 02035

Location: 005-041
20 MEADOWVIEW ROAD
Owner: KILLION JAMES & KATIE TE
20 MEADOWVIEW ROAD
FOXBOROUGH, MA 02035

Location: 005-042
22 MEADOWVIEW ROAD
Owner: PAOLINI ELIZABETH A
22 MEADOWVIEW ROAD
FOXBOROUGH, MA 02035

Location: 005-043
24 MEADOWVIEW ROAD
Owner: KELLY THOMAS M & NOREEN A
24 MEADOWVIEW RD
FOXBORO, MA 02035

Location: 005-044
26 MEADOWVIEW ROAD
Owner: CHAPLIN LISA M
26 MEADOWVIEW ROAD
FOXBOROUGH, MA 02035

Location: 005-045
28 MEADOWVIEW ROAD
Owner: OMALLEY NEIL & TAMARA TE
28 MEADOWVIEW RD
FOXBORO, MA 02035

Location: 001-007
18 WASHINGTON STREET
Owner: MASSACHUSETTS ASSOC OF REALTORS INC
333 WYMAN ST STE 200
WALTHAM, MA 02451

Abutting Properties for
2 WASHINGTON STREET
FOXBOROUGH, MA
001-004
(300 Feet)
10/26/2021
****

Location: 005-035
2 TUCKER LANE
Owner: COSCIA SABINO A
2 TUCKER LANE
FOXBORO, MA 02035

Location: 005-037
4 TUCKER LANE
Owner: PALUZZI MICHELE J
4 TUCKER LANE
FOXBORO, MA 02035

Location: 005-038
5 TUCKER LANE
Owner: GEORGENES GEORGE
A & MARIA TE
5 TUCKER LANE
FOXBOROUGH, MA 02035

Location: 005-039
3 TUCKER LANE
Owner: JACINTO PETER &
MARIE DICENZO TE
3 TUCKER LANE
FOXBOROUGH, MA 02035

Location: 005-040
1 TUCKER LANE
Owner: WENSTROM ALYSSA
M & ANDREW
1 TUCKER LANE
FOXBOROUGH, MA 02035

Location: 002-012
8 PHELPS DRIVE
Owner: GRADAM LLC
2250 PROVIDENCE HWY
WALPOLE, MA 02081

Location: 006-003
30 MEADOWVIEW ROAD
Owner: LAUMANN ROBERT P
30 MEADOWVIEW ROAD
FOXBOROUGH, MA 02035

Location: 006-004
32 MEADOWVIEW ROAD
Owner: GIUDICI JEFFREY D &
KRISTIN
32 MEADOWVIEW RD
FOXBORO, MA 02035

Location: 006-010
20 WILLIS LANE
Owner: DAVIS RICHARD J &
KAREN L TE
20 WILLIS LANE
FOXBOROUGH, MA 02035

Location: 002-009-BG0-00A
11 PERRY DRIVE #A
Owner: 11AB PERRY DRIVE
LLC
C/O JOHN MELLEN
11 PERRY DRIVE UNIT A
FOXBOROUGH, MA 02035

Town of Walpole Planning Board

Request for Abutters List
Site Plan Review

This is for Foxboro Planning Board

Explanation: Applicants are advised that they are responsible for acquiring the abutters list for this project from the Board of Assessors. Please use this form to make the request from the Board of Assessors to get this information. Applicant must then supply the items received from the Assessors to the Planning Board as part of the application.

Date: 11/10/2021

To: Town of Walpole Board of Assessors

I respectfully request an abutters list (locus 300 feet) for the Planning Board under their authority to grant Site Plan Review approval by virtue of the provisions of Section 13 of the Town of Walpole Zoning Bylaw.

Name of Applicant Bay Colony Group, Inc (Christine Leslie)_____

Address 4 School Street, Foxboro, MA 02035_____

Telephone (508) 543-3939____

Fax (508) 543-8866_____

E-Mail cleslie@baycolonygroup.com

Location of Property

2 Washington Street, Foxboro

Assessors Lot Number Map 1 Parcel 4

I understand that I shall pay a fee of $L50 per abutter to the Board of Assessors to assemble this list

Please note that the following items are included with this packet: Abutters Request Form
Abutters List
Two (2) Sets of Mailing Labels

The complete packet must be submitted to the Planning Board when making an application for a Site Plan Review public hearing.

Board of Assessors
John R. Fisher, Chair
Robert L. Bushway, Clerk
Richard J. Zaccaro, Member

TOWN OF WALPOLE
Commonwealth of Massachusetts
Phone (508) 660-7315 Fax (508) 906-3598

Town Hall
135 School Street
Walpole, MA 02081

November 15, 2021

I, Dennis J. Flis, Director of Assessing for the Board of Assessors in the Town of Walpole, hereby certify that the following list of residents are the current owners of all land requested for the property lines of 2 Washington Street, Foxboro, MA, as of January 1, 2021, for Fiscal Year 2022.

Dennis J. Flis
Director of Assessing

Attachments

53/ 37/ / /
GRADAM LLC
5 BRYANT CIR
MIDDLEBORO, MA 02346

53/ 41/ / /
TITANIUM GROUP LLC
500 TURNPIKE ST
CANTON, MA 02021

53/ 43/ / /
MAN JASON CY
55 WALLINGFORD ROAD
BRIGHTON, MA 02135

53/ 44/ / /
KCBT LLC
2265 ROUTE 1
WALPOLE, MA 02081

53/ 45/ / /
TYNAN RICHARD TRUSTEE FTF
REAL
3 STANDISH DRIVE
CANTON, MA 02021

FOXBORO

List of Documents

Previous Page – Letter to Conservation Commission

WPA Form 3 – Notice of Intent
- Wetland Fee Transmittal Form
- Copies of Checks
- Town of Foxborough Checklist

Form of Notification to Abutters

List of Abutters

Appendix A
- USGS Quadrangle Map Extract
- FEMA Flood Insurance Rate Map
- MassGIS Extract

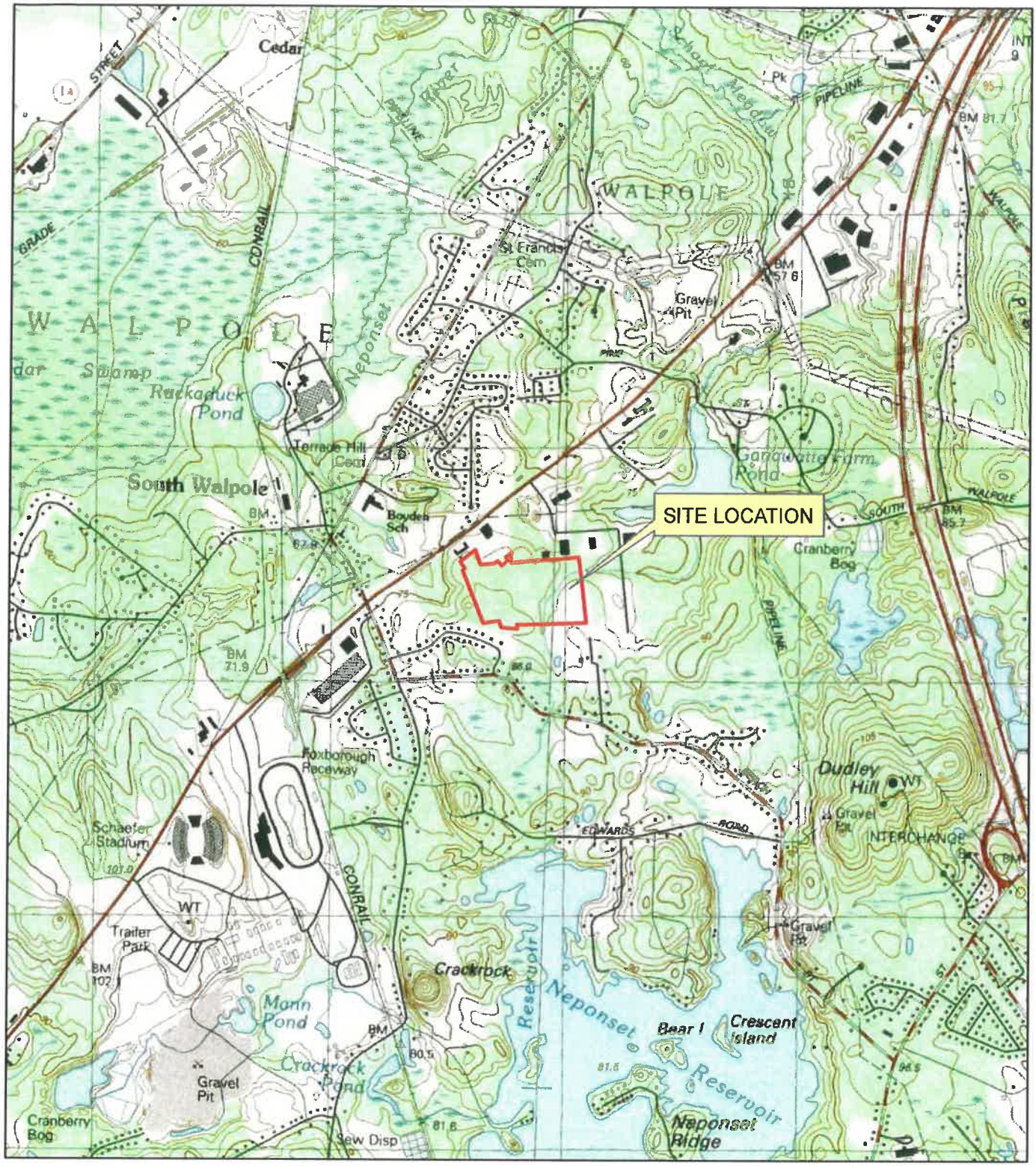
Appendix B
- Order of Resource Area Delineation Issued by the Foxborough Conservation Commission SE157-612

Appendix C
- Checklist for Stormwater Report
- Storm Water Report – May, 2022 (not included in all packets)

Attachments
- Special Permit and Site Development Plan of 2 Washington Street Foxborough, MA by Bay Colony Group, Inc. dated May 8, 2022

APPENDIX A

*USGS Quadrangle Map
*FEMA Flood Insurance Rate Map
* Rare Wetlands/Habitats/Wildlife Map



MASS GIS

SITE LOCATION MAP

SCALE: 1 " = 2,000 '

N
W E
S

8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
(401) 334-4100

10 LINCOLN ROAD, SUITE 210
FOXBORO, MA 02035
(508) 543-1755

PARE PROJECT No. 18170.30 OCTOBER 2021

FIGURE 1

2 WASHINGTON ST.
FOXBORO, MA

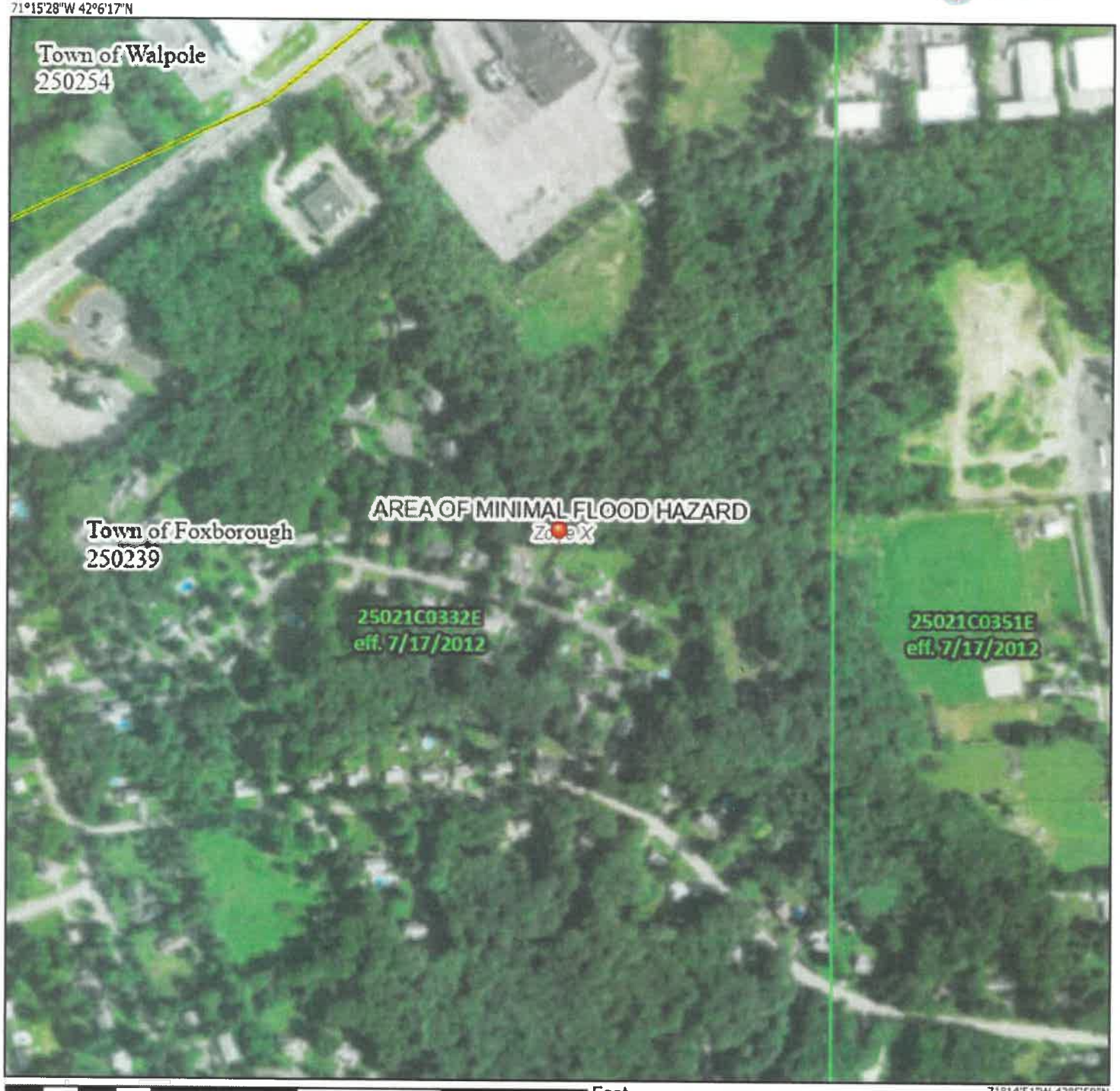
WETLAND DELINEATION REPORT

National Flood Hazard Layer FIRMette

FIGURE 3

FEMA

71°15'28"W 42°6'17"N



71°14'51"W 42°5'50"N

Legend

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

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

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

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

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

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

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

N

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

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/9/2021 at 11:08 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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

MASS GIS

ANNOTATED AERIAL PHOTOGRAPH

SCALE: 1 " = 300 '

N
W E
S

8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
(401) 334-4100

10 LINCOLN ROAD, SUITE 210
FOXBORO, MA 02035
(508) 543-1755

PARE PROJECT No. 18170.30 NOVEMBER 2021

FIGURE 2

2 WASHINGTON ST.
FOXBORO, MA

WETLAND DELINEATION REPORT

APPENDIX B
Order of Resource Area Delineation

Bk 40168 P161 #157389
12-16-2021 @ 10:45a

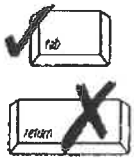
Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 4B – Order of Resource Area Delineation
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40
Foxborough Wetlands Protection Bylaw, Chapter 267

Provided by MassDEP:
157-612
MassDEP File Number

Foxborough
City/Town

A. General Information

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Note: Before completing this form consult your local Conservation Commission regarding any municipal bylaw or ordinance.

From: Foxborough
1. Conservation Commission

2. This Issuance is for (check one):

a. ☒ Order of Resource Area Delineation

b. ☐ Amended Order of Resource Area Delineation

3. Applicant:

Ron	Hoyl
a. First Name	b. Last Name
Rockpoint Fund Acquisitions, LLC	500 Boylston Street, Suite 2100
c. Organization	d. Mailing Address
Boston	MA / 02116
e. City/Town	f. State / g. Zip Code
617-892-9964	britter@rockpoint.com
h. Phone number	i. Email Address

4. Property Owner (if different from applicant):

a. First Name	b. Last Name
Margi, LLC	22 Constance Way
c. Organization	d. Mailing Address
N. Attleboro	MA / 02670
e. City/Town	f. State / g. Zip Code

5. Representative (if any):

William	Buckley, Jr.
a. First Name	b. Last Name
Bay Colony Group	4 School Street
c. Organization	d. Mailing Address
Foxborough	MA / 02035
e. City/Town	f. State / g. Zip Code

6. Project Location:

2 Washington Street	Foxborough	02035
a. Street Address	b. City/Town	c. Zip Code
001	004/000	
d. Assessors Map/Plat Number	e. Parcel/Lot Number	

Latitude and Longitude *(in degrees, minutes, seconds)*: 42°-06'-06.80" f. Latitude; 71°-15'-04.40" g. Longitude

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 4B – Order of Resource Area Delineation
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40
Foxborough Wetlands Protection Bylaw, Chapter 267

Provided by MassDEP:
157-612
MassDEP File Number

Foxborough
City/Town

A. General Information (cont.)

7. Dates: 11/15/2021 (a. Date ANRAD filed) | 12/13/2021 (b. Date Public Hearing Closed) | (c. Date of Issuance)

8. Title and Date (or Revised Date if applicable) of Final Plans and Other Documents:

2 Washington Street, Foxborough, MA Wetland Location Plan (a. Title)	11/10/2021 (b. Date)
William R. Buckley, Jr. Civil #35813 (c. Signed/stamped by)	1" = 80' (d. Scale)
ANRAD with attachments and 11/11/21 cover letter from B. Buckley (e. Title)	November, 2021 (f. Date)

B. Order of Delineation

1. The Conservation Commission has determined the following (check whichever is applicable):

a. ☒ **Accurate**: The boundaries described on the referenced plan(s) above and in the Abbreviated Notice of Resource Area Delineation are accurately drawn for the following resource area(s):

1. ☒ Bordering Vegetated Wetlands
2. ☒ Other resource area(s), specifically:

☐ a. Resource Area

☐ b. Resource Area

☒ Chapter 267 - 25 foot No Activity Zone
c. Resource Area

☐ Chapter 267 - 100 foot vernal pool No Activity Zone
d. Resource Area

b. ☐ **Modified**: The boundaries described on the plan(s) referenced above, as modified by the Conservation Commission from the plans contained in the Abbreviated Notice of Resource Area Delineation, are accurately drawn from the following resource area(s):

1. ☐ Bordering Vegetated Wetlands
2. ☐ Other resource area(s), specifically:

a.

c. ☐ **Inaccurate**: The boundaries described on the referenced plan(s) and in the Abbreviated Notice of Resource Area Delineation were found to be inaccurate and cannot be confirmed for the following resource area(s):

1. ☐ Bordering Vegetated Wetlands
2. ☐ Other resource area(s), specifically:

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
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Foxborough Wetlands Protection Bylaw, Chapter 267

Provided by MassDEP:
157-612
MassDEP File Number

Foxborough
City/Town

B. Order of Delineation (cont.)

3. ☐ The boundaries were determined to be inaccurate because:

C. Findings

This Order of Resource Area Delineation determines that the boundaries of those resource areas noted above, have been delineated and approved by the Commission and are binding as to all decisions rendered pursuant to the Massachusetts Wetlands Protection Act (M.G.L. c.131, § 40) and its regulations (310 CMR 10.00). This Order does not, however, determine the boundaries of any resource area or Buffer Zone to any resource area not specifically noted above, regardless of whether such boundaries are contained on the plans attached to this Order or to the Abbreviated Notice of Resource Area Delineation.

This Order must be signed by a majority of the Conservation Commission. The Order must be sent by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the following DEP Regional Office:

MassDEP Southeast Region Main Office
20 Riverside Drive
Lakeville, MA 02347

D. Appeals

State Appeal: The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate DEP Regional Office to issue a Superseding Order of Resource Area Delineation. When requested to issue a Superseding Order of Resource Area Delineation, the Department's review is limited to the objections to the resource area delineation(s) stated in the appeal request. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request for Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

Any appellants seeking to appeal the Department's Superseding Order of Resource Area Delineation will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order or Determination, or providing written information to the Department prior to issuance of a Superseding Order or Determination.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act, (M.G.L. c. 131, § 40) and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal bylaw or ordinance, and not on the Massachusetts Wetlands Protection Act or regulations, the Department of Environmental Protection has no appellate jurisdiction.

Bylaw Appeal: An appeal may be taken from a decision under the Bylaw in accordance with the provision of Massachusetts General Laws, Chapter 249.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 4B – Order of Resource Area Delineation
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40
Foxborough Wetlands Protection Bylaw, Chapter 267

Provided by MassDEP:
157-612
MassDEP File Number

Foxborough
City/Town

12/13/21
Date of Issuance

E. Signatures

Please indicate the number of members who will sign this form.

4
1. Number of Signers

Robert W. Boette, Chairman

Jeffrey Ambs

James Marsh, Vice Chairman

Rebecca Kelly

David D. Opatka, Clerk

Peter Atanasoff

Richard Golemme

12/13/2021
Date

This Order is valid for three years from the date of issuance.

If this Order constitutes an Amended Order of Resource Area Delineation, this Order does not extend the issuance date of the original Final Order, which expires on 12/14/2024 unless extended in writing by the issuing authority.

This Order is issued to the applicant, property owner (if different) and representative (if any) as follows:

2. ☑ By hand delivery on
12/15/21
a. Date

3. ☐ By certified mail, return receipt requested on
a. Date

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 4B – Order of Resource Area Delineation

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

eDEP Transaction Number

City/Town

Recording Information

Prior to commencement of work, this Order of Resource Area Delineation must be recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land subject to the Order. In the case of registered land, this Order shall also be noted on the Land Court Certificate of Title of the owner of the land subject to the Order of Resource Area Delineation. The recording information on this page shall be submitted to the Conservation Commission listed below.

Foxborough
Conservation Commission

Detach on dotted line, have stamped by the Registry of Deeds and submit to the Conservation Commission.

To:

Foxborough
Conservation Commission

Please be advised that the Order of Resource Area Delineation for the Project at:

2 Washington Street
Project Location

157-612
MassDEP File Number

Has been recorded at the Registry of Deeds of:

Norfolk
County

Book

Page

For: Margi, LLC
Property Owner

and has been noted in the chain of title of the affected property in:

33869
Book

381
Page

In accordance with the Order of Resource Area Delineation issued on:

12/15/2021
Date

If recorded land, the instrument number identifying this transaction is:

Instrument Number

If registered land, the document number identifying this transaction is:

Document Number

Signature of Applicant

APPENDIX C

Checklist for Stormwater Report

Storm Water Report (not included in all packets)

Stormwater Report

A Stormwater Report must be submitted with the permit application to document compliance with the Stormwater Management Standards. The Stormwater Report must be organized into sections that correspond to the categories listed in the Checklist (e.g., Project Type, LID Practices, Standard 1 etc.). As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[1]
- Operation and Maintenance Plan required by Standard 9
- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (attached) that certifies that the Stormwater Report contains all required submittals.[2]

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has

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[1] For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.

[2] The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

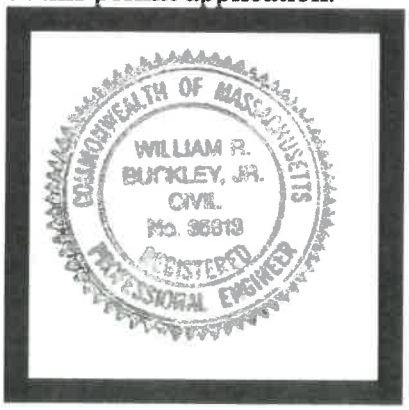
Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary to comprise a comprehensive Stormwater Report that addresses the ten Stormwater Standards. *Note:* Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.



Registered Professional Engineer Block and Signature

9/21/2021

Signature, Date

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

☑ New Development
☐ Redevelopment
☒ Mix of New Development and Redevelopment

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

☑ No disturbance to any Wetland Resource Areas
☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)
☐ Reduced Impervious Area (Redevelopment Only)
☐ Minimizing disturbance to existing trees and shrubs
☐ LID Site Design Credit Requested:
  - ☐ Credit 1
  - ☐ Credit 2
  - ☐ Credit 3

☐ Use of "country drainage" versus curb and gutter conveyance and pipe
☐ Bioretention Cells (includes Rain Gardens)
☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
☑ Treebox Filter
☐ Water Quality Swale
☐ Grass Channel
☐ Green Roof
☑ Other Separate roof runoff from other drainage

Standard 1: No New Untreated Discharges

☑ No new untreated discharges
☑ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
☑ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Standard 2: Peak Rate Attenuation

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.
☑ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm
☑ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

☑ Soil Analysis provided.
☑ Required Recharge Volume calculation provided
☐ Required Recharge volume reduced through use of the LID site Design Credits.
☑ Sizing the infiltration, BMPs is based on the following method: Circle the method used.
☐Static ☑Simple Dynamic ☐Dynamic Field[3]

☑ Runoff from all impervious areas at the site discharging to the infiltration BMP.
☐ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.
☑ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.
☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:
- ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
- ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
- ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☑ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.
☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.
☑ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.
☐ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;

[3] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☑ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☑ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☐ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☑ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☑ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

☑ The BMP is sized (and calculations provided) based on:

- ☑ The ½" or 1" Water Quality Volume or
- ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☑ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

☑ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.
☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.
☐ Critical areas and BMPs are identified in the Stormwater Report.

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

☐ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:
- ☐ Limited Project
- ☐ Small Residential Projects:
  5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☐ Redevelopment Project
- ☐ Redevelopment portion of mix of new and redevelopment.

☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.
☐ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☑ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☐ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☐ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☑ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☑ Name of the stormwater management system owners;
- ☑ Party responsible for operation and maintenance;
- ☑ Schedule for implementation of routine and non-routine maintenance tasks;
- ☑ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☑ Description and delineation of public safety features;
- ☑ Estimated operation and maintenance budget; and
- ☑ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

☑ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;
☐ An Illicit Discharge Compliance Statement is attached;
☑ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

Bay Colony Group, Inc.
Professional Civil Engineers & Land Surveyors

4 School Street, PO Box 9136
Foxborough, Massachusetts 02035
Telephone (508) 543-3939 • Fax (508) 543-8866
E-mail: mailbox@baycolonygroup.com

Storm Water Management Plan
"2 Washington Street"
Foxborough, MA

May, 2022

Prepared for:

Rockpoint Fund Acquisitions, LLC
3953 Maple Avenue
Suite 300
Dallas, TX 75219

Table of Contents:

1.0 Introduction

The 2 Washington Street Foxborough project (Project) involves the redevelopment of the property located at 2 Washington Street Foxborough, MA that currently contains a restaurant, function hall, and outdoor entertainment venue. The site is a 30.5+/- acre parcel of land located on the south side of Washington Street and is bordered to the northeast by an animal hospital that was originally a golf driving range, a motel and office building to the northwest, residential homes to the west and south, and warehouse and manufacturing buildings to the east and northeast. The Project involves the demolition and removal of the existing buildings, structures, and parking, and construction of a 224,750 sf warehouse located about 500' south of Route One.

According to the Foxborough Assessors records the facility was constructed in 1965 and has been constantly upgraded since that time. The last major upgrade involved the construction of the Funway outdoor recreation facility in 1997.

2.0 Existing Conditions

The project area lies on a hillside and terrace that is located between an intermittent stream and wetland that drains to Ganawatte Farm Pond and Route One. The site largely slopes toward Route One with small sections of the site flowing to the west, south, and east. The site contains an existing 56,000+/- sf function hall and restaurant and a 2.3+/- acre outdoor recreation facility. There are 510 parking spaces on the lot.

The NRCS has logged the soils in the upland portion of the site as largely Merrimac (A soil), Paxton, (B soil), Urban Land (B soil), and Udorthents, sandy (A soil). The wetland soils were logged as Walpole and Ridgebury **Appendix F.** The vegetation on the upland portion of the site is a mixed forest with stone walls and trails running throughout the site. BCG conducted soil evaluations in 1998 for the purpose of determining suitability for an on-site sewage disposal for the Funway facility **Appendix F**. That septic system is located in the area of Infiltration Basin 1 (Sheet 2.0 & Sheet 3.1) and those results were used for the design of Basin 1. Basin 2 is located in the area of the existing building and parking area and soil testing is not feasible at this time. For purposes of design, the soils in both areas were assumed to be SANDY LOAM with an infiltration rate of 1.02 inches per hour. We believe that this is conservative since the area where Basin 1 is to be located is located in an area of Merrimac soils (A soil) with a recorded percolation rate of 2 mpi, and all soils in the area of Basin 2 are either A or B soils such that we have assumed the URBAN soils are SANDY LOAM Class B soils. We have noted on the drawings that, once the site is demolished, that additional soil evaluations and laboratory textural analysis will take place to confirm the design assumptions (Sheet 5.1). Modifications to the design might be necessary at that time, but the amount of area available for storm water management make that a reasonable condition.

3.0 Flood Condition Analyses and Flood Control

The storm water management system will consist of a system to captures and treat the parking lot runoff before discharge into the proposed infiltration basins. As an LID element, a separate system will capture roof runoff from the proposed building and channel it to Infiltration Basin #1 without it mixing with the parking lot runoff, and tree box filters will be used where possible.

The current land uses are buildings, recreation improvements, woods, and paved parking areas. Proposed land uses include buildings, driveways, sidewalks, parking lots, landscape, and woods. The site drains generally toward Route One but there are a total of four separate design points for the existing condition: Route One, Wetland Line, SW Property Line and NW Property Line. Subarea EA drains to Route One through sheet flow and through a closed drain connected to the MassDOT drain in Route One. Subarea EB drains to the northwest property line. Subarea EC drains toward the southwest property line. Subarea ED drains toward the wetland line. The land uses for existing conditions are summarized in **Table 1a**. **Appendix A – 1 Existing Subareas**.

Table 1a – Summary of Existing Land Uses

Subarea	Total Area (acres)	Land use	Area (acres)
EA	15.43	Roofs, HSG B	1.37
		>75% grass cover, good, HSG A	0.13
		>75% grass cover, good, HSG B	0.75
		Paved parking, HSG A	0.14
		Paved parking, HSG B	5.65
		Paved parking, HSG C	2.1
		Woods/grass comb, fair, HSG A	2.46
		Woods/grass comb, fair, HSG B	0.02
		Woods/grass comb, fair, HSG C	2.81
EB	2.19	Woods, good, HSG A	1.12
		Woods, good, HSG C	1.07
EC	1.11	Woods, good, HSG A	1.11
ED	8.83	Woods, fair, HSG A	3.03
		Woods, fair, HSG B	5.32
		Woods, fair, HSG C	0.02
		Woods, fair, HSG D	0.46
Total:	27.56	Total:	27.56

As was previously described, the site generally drains toward Route One, and the developed condition mimics the existing condition in that there are four different study points: Route One, Wetland Line, SW Property Line, and NW Property Line **Table 1b & Appendix A –Developed Subareas**. Subarea DA-1 sheet flows to Route One and Subarea DA-2 drains to Basin 2 which has been designed to capture and infiltrate all events up to the 100-year storm. Subarea DB drains to Basin 1 which has been designed to capture and infiltrate all events up to the 100-year storm. Subarea DC sheet flows to

the NW property line and Subarea DD sheet flows to the SW property line. At all design points the developed condition rate of runoff is less than the existing condition.

Table 1b – Summary of Proposed Land Uses

Subarea	Total Area (acres)	Land use	Area (acres)
DA-1	5.10	>75% Grass cover, good, HSG A	0.04
		>75% Grass cover, good, HSG B	4.73
		>75% Grass cover, good, HSG C	0.12
		Paved parking, HSG B	0.21
DA-2	0.70	>75% Grass cover, good, HSG A	0.10
		>75% Grass cover, good, HSG B	0.60
DB	14.17	>75% Grass cover, good, HSG A	0.26
		>75% Grass cover, good, HSG B	0.94
		>75% Grass cover, good, HSG C	0.11
		Paved parking, HSG A	2.74
		Paved parking, HSG B	3.40
		Paved parking, HSG C	1.56
		Unconnected roofs, HSG A	1.08
		Unconnected roofs, HSG B	0.50
		Unconnected roofs, HSG C	3.58
DC	1.35	Woods, good, HSG A	0.72
		Woods, good, HSG C	0.63
DD	1.05	Woods, fair, HSG A	1.05
DE	5.19	Woods, fair, HSG A	2.00
		Woods, fair, HSG B	2.73
		Woods, fair, HSG D	0.46
Total:	27.56	Total:	27.56

The new parking areas will be served by a standard catch basin/drain manhole system that will discharge the runoff into the infiltration basins. In compliance with the Town of Foxborough standards we have integrated LID into the design by installing, where possible, tree box filters around the new catch basins that will act as water quality elements within the treatment train. In the trailer parking area it is not feasible to use tree box filters so a water quality structure will be used to treat the runoff prior to discharge into Basin 1. All runoff from the parking will be pretreated by either tree box filters or the water quality inlet, as well as deep sump catch basins with oil traps, which then discharge to the trunk drain into the infiltration basins. The roof drains will be captured through a separate drain system that will convey the roof runoff separately to Basin 1. This separate drain system eliminates the need to treat the runoff prior to discharge to the basin. The infiltration basin has been designed to capture and infiltrate all storms up to the 100-year event. This is necessary to eliminate any discharge to the MassDOT drain system. **Table 2 & Appendix A**

The closed drainage system was designed using the Rational Method with the capability of handling a 25-year storm event in accordance with the Foxborough standards. The schematic layout and calculation sheets are included in **Appendix D** of this report.

The pre- and post-developed conditions based on the land uses in **Tables 1a** and **1b** are summarized in **Table 2** and detailed calculations can be found in **Appendix A**.

Table 2: Summary of Peak Runoff (cfs) at the Study Points

Condition		2-year (cfs)	10-year (cfs)	100-year (cfs)
Existing Conditions	Route One	16.4	29.7	48.0
	Wetland	0.4	3.1	9.4
	SW Property Line	0.0	0.0	0.0
	NW Property Line	0.0	0.6	2.3
	Total	**16.8**	**33.4**	**59.7**
Developed Conditions	Route One	0.1	0.6	1.5
	Wetland	0.2	2.0	6.7
	SW Property Line	0.0	0.0	0.0
	NW Property Line	0.0	0.3	1.3
	Total	**0.3**	**2.9**	**9.5**

The 2-year, 10-year, and 100-year water elevations in the storm water basins are summarized in **Table 3**. The detailed flood routing calculations are attached in **Appendix A**. The infiltration rates used were those outlined in the RAWLs Table in the DEP Stormwater Management Standards for SANDY LOAM and were discussed in **Section 2.0 Existing Conditions**. Infiltration in this design is substantial and will satisfy the Required Recharge Volume and there is at least one foot of freeboard in the basins for the most extreme condition. An emergency outfall has been designed for each basin that consists of a rip-rap channel with a granite curb acting as a weir **Sheets 4.1 & 5.1**.

Table 3: Summary of Stormwater Basin Flood Elevations

Condition	2-year	10-year	100-year
Infiltration Basin #1 Elevation	260.1'	262.1'	264.4'
Infiltration Basin #1 Storage Volume	1.91 ac-ft	3.15 ac-ft	4.86 ac-ft
Infiltration Basin #2 Elevation	251.3'	252.3'	253.7'
Infiltration Basin #2 Storage Volume	0.07 ac-ft	0.29 ac-ft	0.68 ac-ft

4.0 Stormwater Management

The site is not located in a groundwater recharge zone (Zone I, II, III) nor a surface water protection zone, nor are there private drinking water wells around the project site. The DEP Stormwater Standards apply to this proposed project as outlined in the Foxborough Zoning Bylaws and the Foxborough Stormwater Regulations and the project design is based on the latest edition of these documents.

DEP STORMWATER MANAGEMENT STANDARDS

Standard #1: NO UNTREATED DISCHARGE OR EROSION TO WETLANDS

No untreated stormwater from the proposed project area will be discharged to resource areas. Runoff from all new pavement will be routed through some combination of tree box filters, water quality structures, deep sump catch basins equipped with "Snout" water quality elbows, then to manholes, and finally to the above-ground storm water basins. The outfalls have been designed to accept the maximum flow from the basin without causing erosion in the wetlands or soils.

Standard #2: PEAK RATE ATTENUATION

Stormwater controls have been designed for 2-year, 10-year, and 100-year storms according to both state and local regulations. The post-development peak discharge rates with flood control do not exceed pre-development rates on the site at the downgradient discharge points. See **Table 2 and Appendix A** for details.

Standard #3: STORMWATER RECHARGE

1) The proposed project work is located on a plot with hydrologic class A, B and C soils based on the NRCS soil map. The target depth factor for an A soil is 0.60 inches, for B soils is 0.35 inches and for C soils is 0.25 inches. Soil evaluations have been conducted in the area of Basin 1 where recharge is proposed and the soils were found to be SANDY LOAM. Testing has not been done in the area of Basin 2 since the building is still in operation but testing in that area and additional testing in Basin 1 will take place once demolition is completed. The basins will be modified if the soils are found to be different than assumed. Storm water recharge for the parking areas and buildingwill take place within the infiltration basins. The calculations for the recharge volumes are located in **Appendix B**.

2) The infiltration BMP that will be used will be the above-ground storm water basins, which have been design as a dry infiltration basin. The calculations for the recharge volumes are located in **Appendix B**.

3) Due to the use of the multi-stage treatment train, the actual TSS removal is 93%-97% and so the standard is met. **Table 4 & Appendix B**

4) Using the RAWLS rate for SANDY LOAM for the infiltration basins shows that the drawdown of the Required Recharge Volume will take 11 hours for Basin 1 and 1 hour for Basin 2. All events meet the required 72 hours dewatering standard **Appendix B**.

5) Capture area adjustment is not necessary since all of the infiltration will take place within the infiltration basins and 100% of the impervious area will be directed to the structure, which meets the 65% requirement.

6) Mounding analyses demonstrate that the ground water mounds formed will not breach the bottom of the infiltration basins. **Appendix B**

Standard # 4: WATER QUALITY

1) The required water quality volume is based on 8.52 acres of impervious area and 1.0 inch water quality depth, which yields a water quality volume of 0.70 acre-feet. The basins meet the required WQV as does the Cascade CS-8 water quality inlet **Appendix B**.

2) The BMPs used for the proposed project to enhance water quality include: tree box filters, water quality structures, deep sump catch basins, forebays, and an above ground infiltration basin. All of the runoff from the parking areas will go through some combination of tree box filters, water quality structures, and deep sump catch basins with water quality elbows to the infiltration basin. Runoff from the roof will be piped separately to the infiltration basin. The estimated overall TSS removal will be 93%-97%, which is greater than the 80% standard **Appendix B & Table 4.**

3) The infiltration basins are being used to fulfill the requirements of Standards 3 and 4 it must handle the larger of the water quality volumes. The required Water Quality Volume for Basin 1 is 0.668 ac-ft and the basin volume is 6.21 ac-ft. The Basin 2 WQV is 0.028 ac-ft and the basin has a storage volume of 1.09 ac-ft. Therefore, the standard is met. **Appendix B**

4) Tree box filters were sized using Filterra Quick Sizing Table **Appendix B**

5) The Phosphorous removal rate for the treatment trains ranges from 68% in the Cascade treatment train to 84% in the Tree Box Filter treatment train. Both trains meet the 60% P removal standard in the Foxborough Stormwater Regulations. **Appendix B**

Standard # 5: LAND USES WITH HIGHER POTENTIAL POLLUTION LOADS

The warehouse will consist of a typical commercial use which is considered to have a high potential pollutant load since it will generate more than 1,000 cars per day.

Therefore, prior to discharge to the infiltration BMP the runoff must achieve a TSS removal of 44%. All treatment trains achieve at least 62% TSS removal prior to discharge to the infiltration BMP. The BMPs also must treat 1.0 inch of runoff. All BMPs have been designed to that standard **Appendix B**.

Standard #6: CRITICAL AREAS

The site does not lie within critical areas.

Standard #7: REDEVELOPMENT

The proposed activity is a combination development/redevelopment project, but all standards for new development will be met.

Standard #8: CONSTRUCTION PERIOD CONTROLS

Silt sock barriers will be installed at the downgradient limit of work if within 100' of any wetland resource area before any excavation starts. A stone pad shall be spread at the entrance from the existing roadway to the project site to prevent mud from escaping the site during construction. Silt sacks will be used in the catch basins during construction.

A Draft Stormwater Pollution Prevention Plan has been developed in accordance with the EPA General Permit for Construction Activities. A final SWPPP will be prepared once the construction schedule is finalized and the contractors are chosen. A copy of the Draft SWPPP is included in **Appendix E**

Standard #9: OPERATION AND MAINTENANCE PLAN

See **Appendix C** for details.

Standard # 10: ILLICIT DISCHARGES TO DRAINAGE SYSTEM

I certify to the best of my professional knowledge, information and belief that there are no illicit discharges to the stormwater management system, including wastewater discharges and discharges of stormwater contaminated by contact with process wastes, raw materials, toxic pollutants, hazardous substances, oil, or grease. The proposed systems as shown on the referenced plans do not allow entry of any illicit discharges into the system and there are no connections between the stormwater and wastewater management systems.

Further, I certify that the stormwater management system as shown on the referenced plans will be maintained in accordance with the conditions of the Long Term Pollution Prevention Plan.

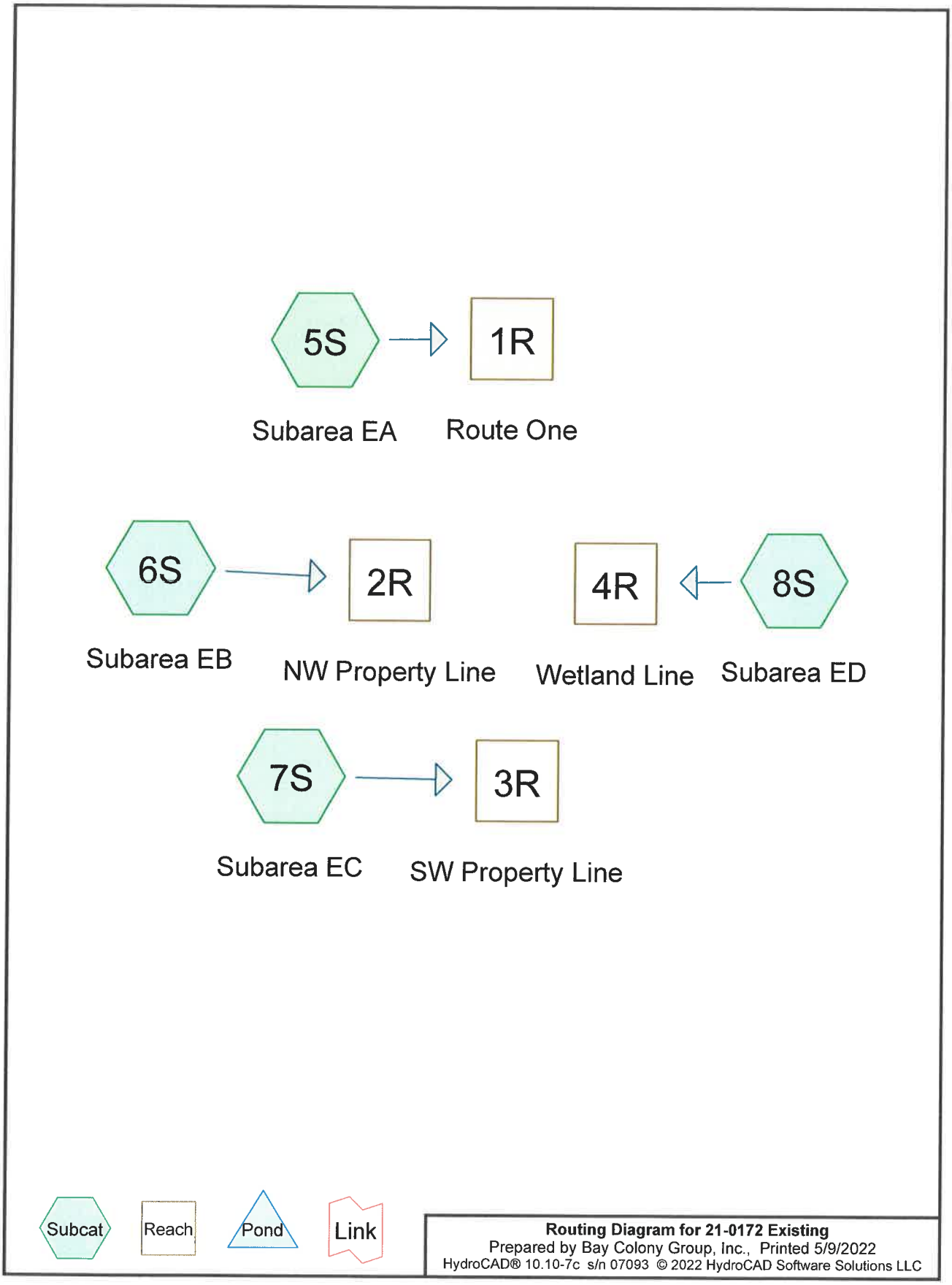
To be signed prior to construction
TBD

Date

APPENDIX A – Pre- and Post-DEVELOPMENT ANALYSIS AND INFILTRATION BASIN DESIGNS

TABLE OF CONTENTS

TABLE OF CONTENTS


5S
1R
Subarea EA
Route One
6S
2R
Subarea EB
NW Property Line
4R
8S
Wetland Line
Subarea ED
7S
3R
Subarea EC
SW Property Line
Subcat
Reach
Pond
Link
Routing Diagram for 21-0172 Existing
Prepared by Bay Colony Group, Inc., Printed 5/9/2022
HydroCAD® 10.10-7c s/n 07093 © 2022 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

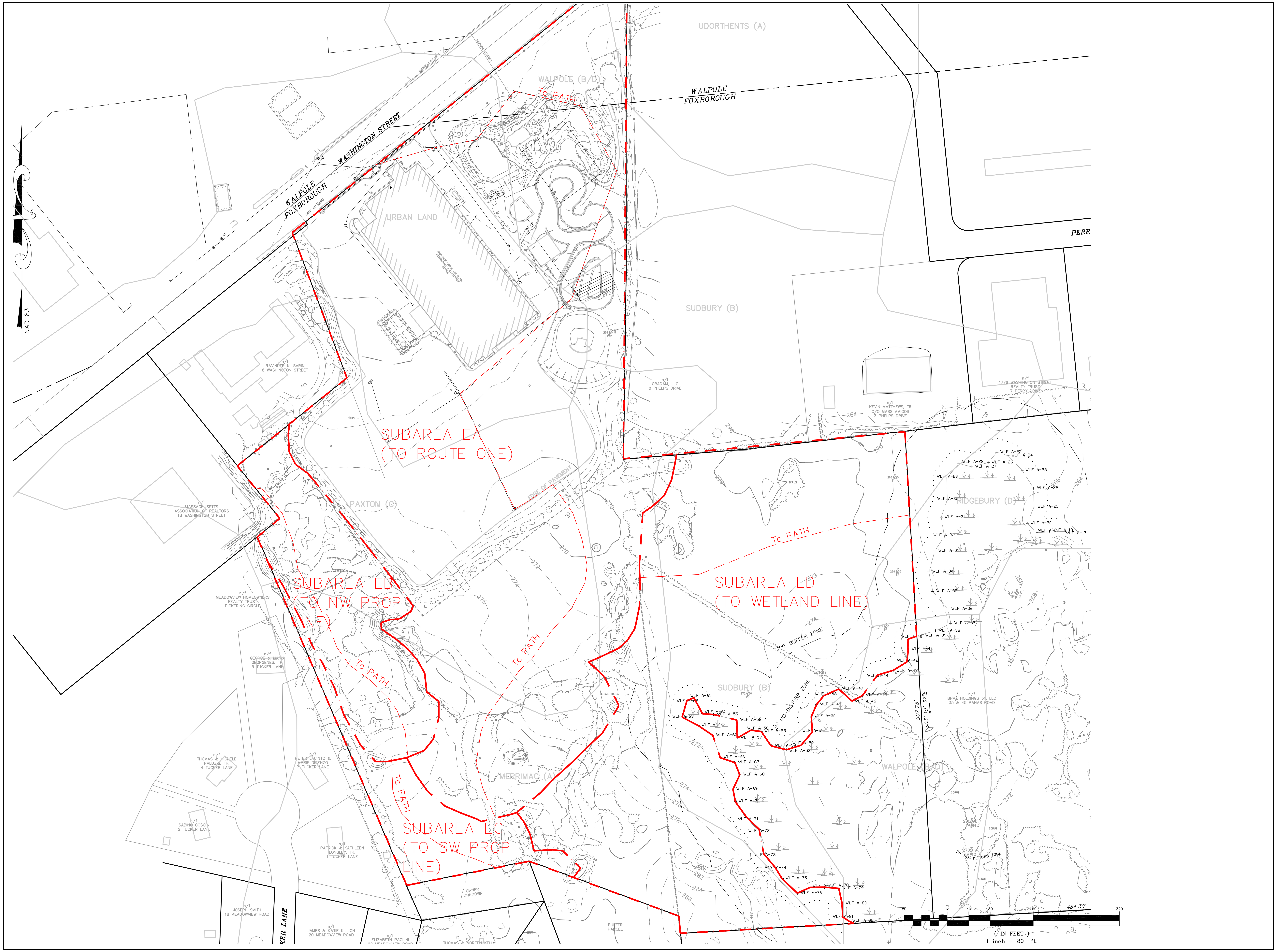
Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	Type III 24-hr		Default	24.00	1	3.20	2
2	10-Year	Type III 24-hr		Default	24.00	1	4.70	2
3	100-Year	Type III 24-hr		Default	24.00	1	6.70	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.13	39	>75% Grass cover, Good, HSG A (5S)
0.75	61	>75% Grass cover, Good, HSG B (5S)
0.14	98	Paved parking, HSG A (5S)
5.65	98	Paved parking, HSG B (5S)
2.10	98	Paved parking, HSG C (5S)
1.37	98	Roofs, HSG B (5S)
3.03	36	Woods, Fair, HSG A (8S)
5.32	60	Woods, Fair, HSG B (8S)
0.02	73	Woods, Fair, HSG C (8S)
0.46	79	Woods, Fair, HSG D (8S)
2.23	30	Woods, Good, HSG A (6S, 7S)
1.07	70	Woods, Good, HSG C (6S)
2.46	43	Woods/grass comb., Fair, HSG A (5S)
0.02	65	Woods/grass comb., Fair, HSG B (5S)
2.81	76	Woods/grass comb., Fair, HSG C (5S)
27.56	**68**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
7.99	HSG A	5S, 6S, 7S, 8S
13.11	HSG B	5S, 8S
6.00	HSG C	5S, 6S, 8S
0.46	HSG D	8S
0.00	Other	
27.56		**TOTAL AREA**



PROJECT:

2 Washington Street
Foxborough, MA
02035

OWNER:

Margi, LLC
22 Constance Way
N.Attleboro, MA
02760

PREPARED FOR:

Rockpoint Fund
Acquisitions, LLC
500 Boylston
Street
Boston, MA 02116

Bay Colony Group, Inc.
Professional Civil Engineers &
Professional Land Surveyors

FOUR SCHOOL STREET
P.O. BOX 9136
FOXBOROUGH, MA 02035
508-543-3939

REFERENCES:

STAMP

DRAWING TITLE

Existing
Subareas

SCALE: 1" = 80'

MARCH 22, 2022

21-0172B

SHEET NUMBER

EX

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
1	5S	0.00	0.00	230.0	0.0230	0.013	0.0	18.0	0.0
2	5S	0.00	0.00	530.0	0.0130	0.013	0.0	12.0	0.0
3	5S	0.00	0.00	600.0	0.0030	0.013	0.0	18.0	0.0

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

Subcatchment5S: Subarea EA Runoff Area=15.43 ac 60.01% Impervious Runoff Depth>1.60"
Flow Length=2,135' Tc=29.8 min CN=83 Runoff=16.4 cfs 2.056 af

Subcatchment6S: Subarea EB Runoff Area=2.19 ac 0.00% Impervious Runoff Depth>0.13"
Flow Length=570' Tc=17.1 min CN=50 Runoff=0.0 cfs 0.023 af

Subcatchment7S: Subarea EC Runoff Area=1.11 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=290' Tc=17.2 min CN=30 Runoff=0.0 cfs 0.000 af

Subcatchment8S: Subarea ED Runoff Area=8.83 ac 0.00% Impervious Runoff Depth>0.19"
Flow Length=530' Tc=28.6 min CN=53 Runoff=0.4 cfs 0.143 af

Reach 1R: Route One Inflow=16.4 cfs 2.056 af
Outflow=16.4 cfs 2.056 af

Reach 2R: NW Property Line Inflow=0.0 cfs 0.023 af
Outflow=0.0 cfs 0.023 af

Reach 3R: SW Property Line Inflow=0.0 cfs 0.000 af
Outflow=0.0 cfs 0.000 af

Reach 4R: Wetland Line Inflow=0.4 cfs 0.143 af
Outflow=0.4 cfs 0.143 af

Total Runoff Area = 27.56 ac Runoff Volume = 2.223 af Average Runoff Depth = 0.97"
66.40% Pervious = 18.30 ac 33.60% Impervious = 9.26 ac

Summary for Subcatchment 5S: Subarea EA

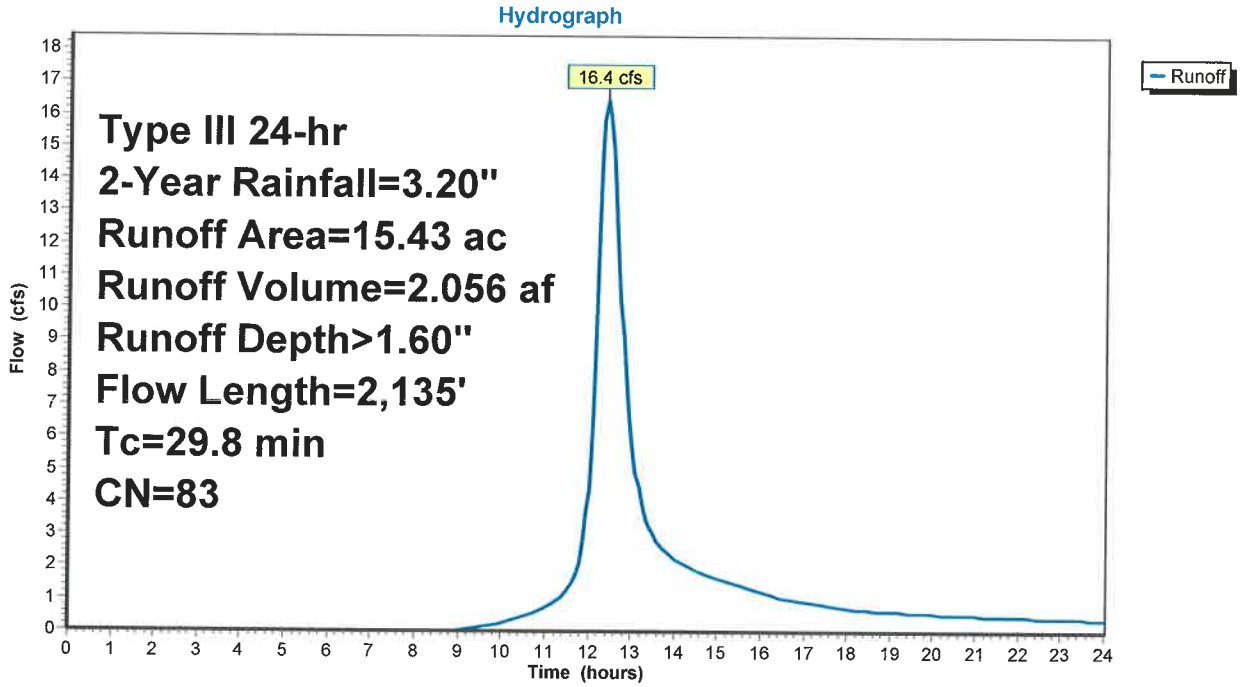
Runoff = 16.4 cfs @ 12.42 hrs, Volume= 2.056 af, Depth> 1.60"
Routed to Reach 1R : Route One

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

Area (ac)	CN	Description
1.37	98	Roofs, HSG B
0.13	39	>75% Grass cover, Good, HSG A
0.75	61	>75% Grass cover, Good, HSG B
0.14	98	Paved parking, HSG A
5.65	98	Paved parking, HSG B
2.10	98	Paved parking, HSG C
2.46	43	Woods/grass comb., Fair, HSG A
0.02	65	Woods/grass comb., Fair, HSG B
2.81	76	Woods/grass comb., Fair, HSG C
15.43	83	Weighted Average
6.17		39.99% Pervious Area
9.26		60.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	50	0.0260	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
12.8	645	0.0280	0.84		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	80	0.0090	1.93		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	230	0.0230	9.01	15.93	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
1.7	530	0.0130	5.17	4.06	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
3.1	600	0.0030	3.26	5.75	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
29.8	2,135	Total			

Subcatchment 5S: Subarea EA



Summary for Subcatchment 6S: Subarea EB

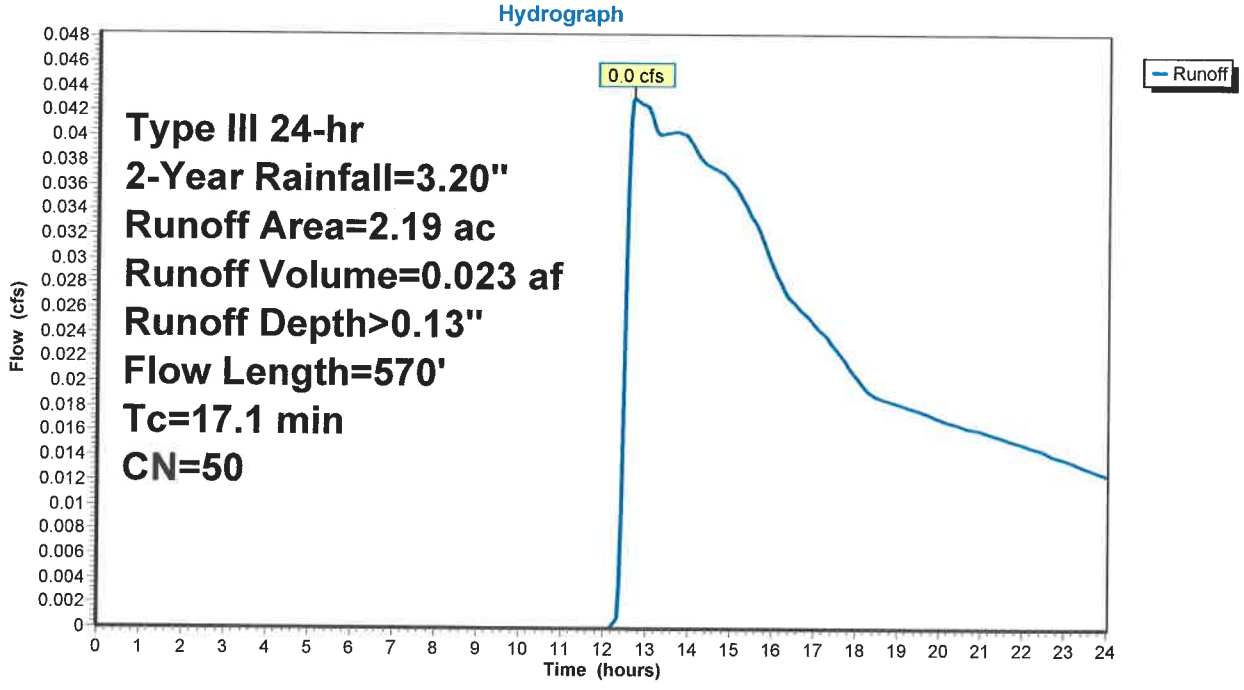
Runoff = 0.0 cfs @ 12.69 hrs, Volume= 0.023 af, Depth> 0.13"
Routed to Reach 2R : NW Property Line

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

Area (ac)	CN	Description
1.12	30	Woods, Good, HSG A
1.07	70	Woods, Good, HSG C
2.19	50	Weighted Average
2.19		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	50	0.0680	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
9.5	520	0.0330	0.91		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.1	570	Total			

Subcatchment 6S: Subarea EB



Summary for Subcatchment 7S: Subarea EC

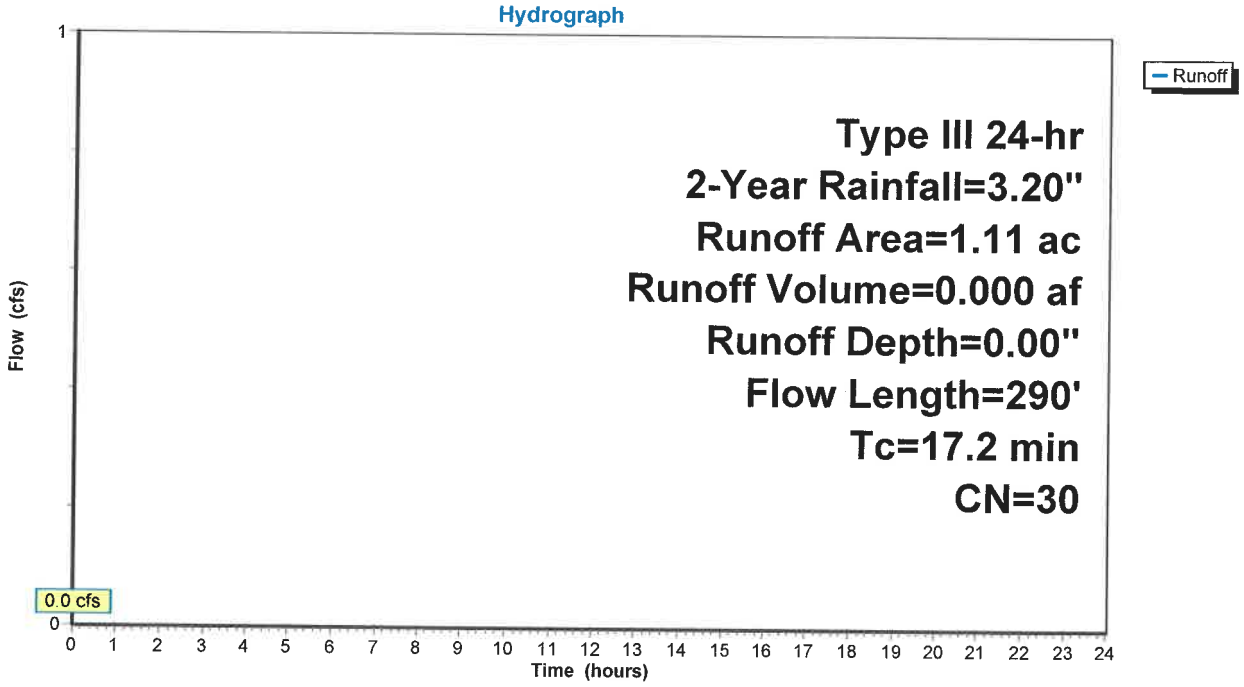
Runoff = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Reach 3R : SW Property Line

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

Area (ac)	CN	Description
1.11	30	Woods, Good, HSG A
1.11		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	50	0.0260	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
6.1	240	0.0170	0.65		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.2	290	Total			

Subcatchment 7S: Subarea EC



Summary for Subcatchment 8S: Subarea ED

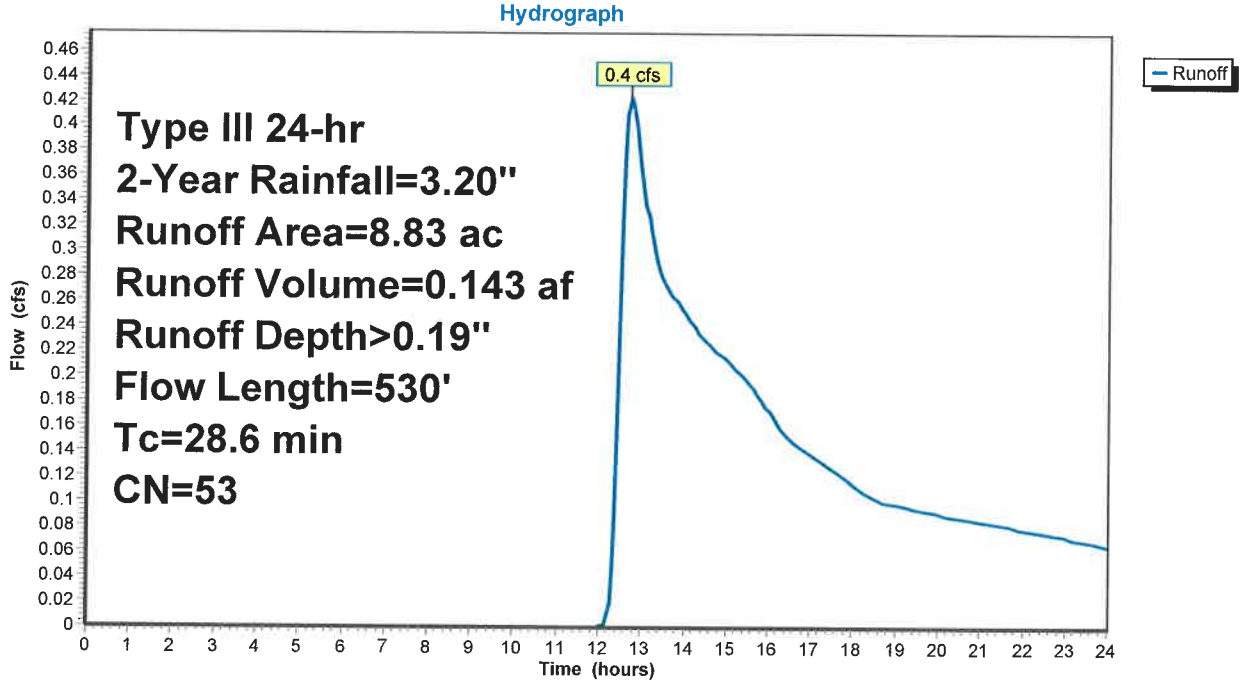
Runoff = 0.4 cfs @ 12.73 hrs, Volume= 0.143 af, Depth> 0.19"
Routed to Reach 4R : Wetland Line

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

Area (ac)	CN	Description
3.03	36	Woods, Fair, HSG A
5.32	60	Woods, Fair, HSG B
0.02	73	Woods, Fair, HSG C
0.46	79	Woods, Fair, HSG D
8.83	53	Weighted Average
8.83		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	50	0.0380	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
19.1	480	0.0070	0.42		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
28.6	530	Total			

Subcatchment 8S: Subarea ED

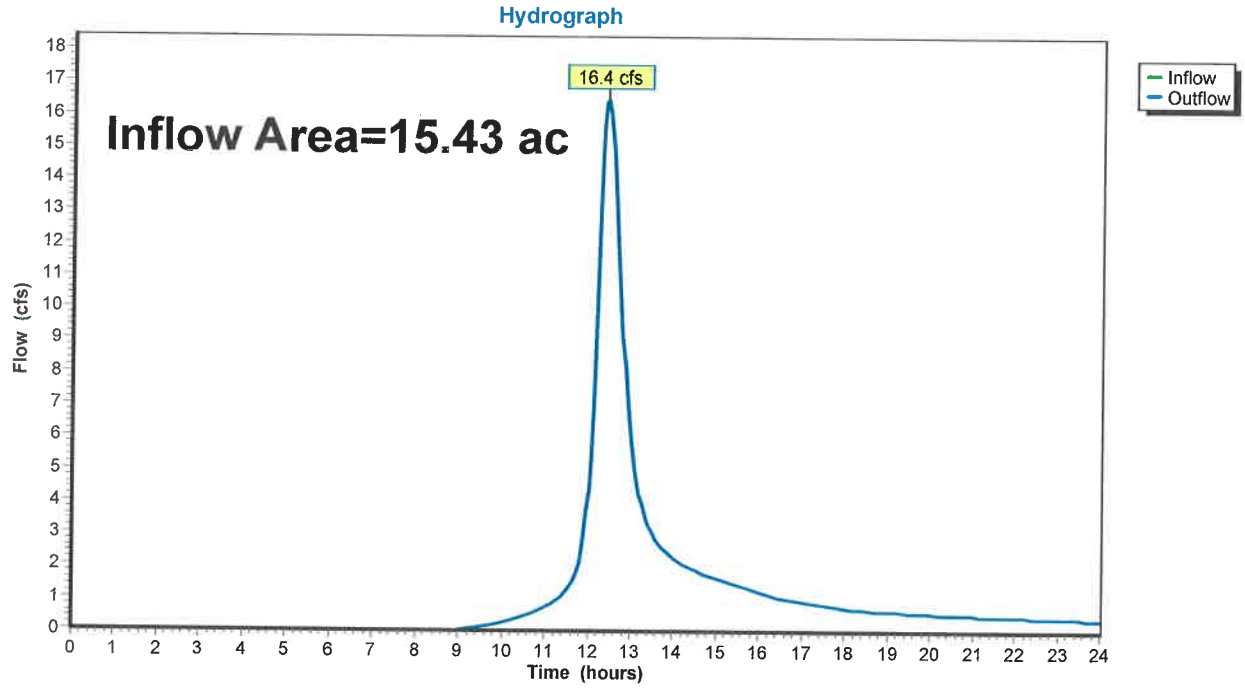


Summary for Reach 1R: Route One

Inflow Area = 15.43 ac, 60.01% Impervious, Inflow Depth > 1.60" for 2-Year event
Inflow = 16.4 cfs @ 12.42 hrs, Volume= 2.056 af
Outflow = 16.4 cfs @ 12.42 hrs, Volume= 2.056 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 1R: Route One

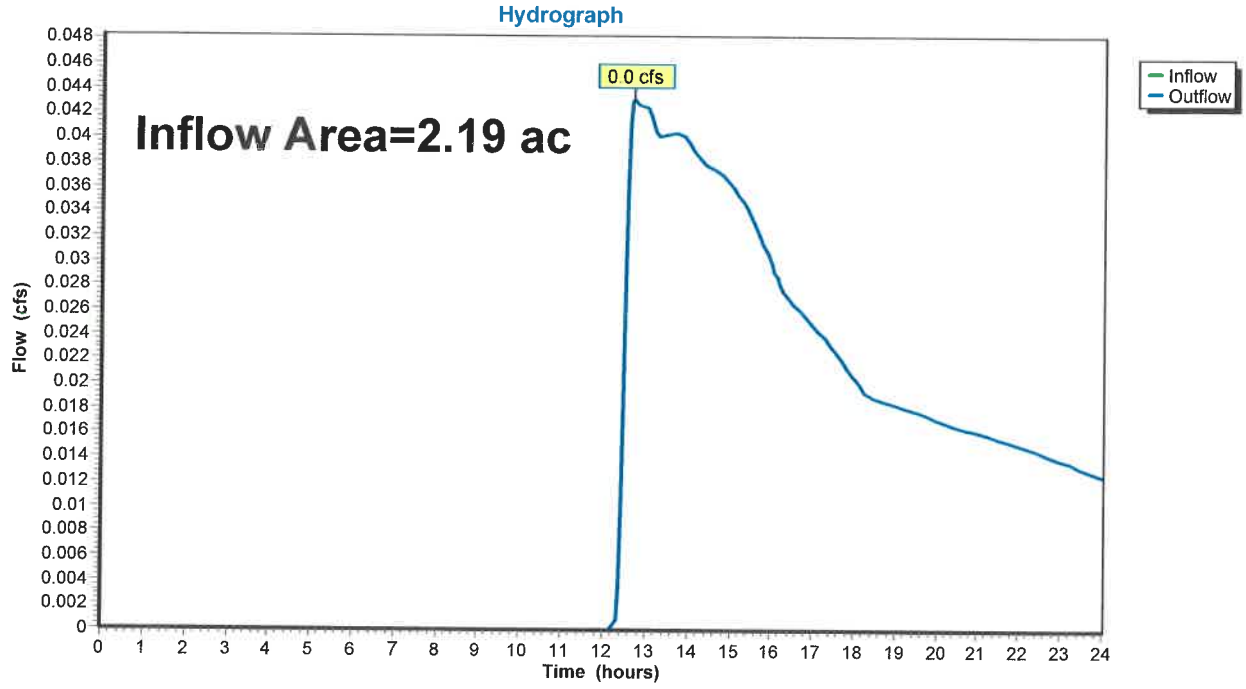


Summary for Reach 2R: NW Property Line

Inflow Area = 2.19 ac, 0.00% Impervious, Inflow Depth > 0.13" for 2-Year event
Inflow = 0.0 cfs @ 12.69 hrs, Volume= 0.023 af
Outflow = 0.0 cfs @ 12.69 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 2R: NW Property Line

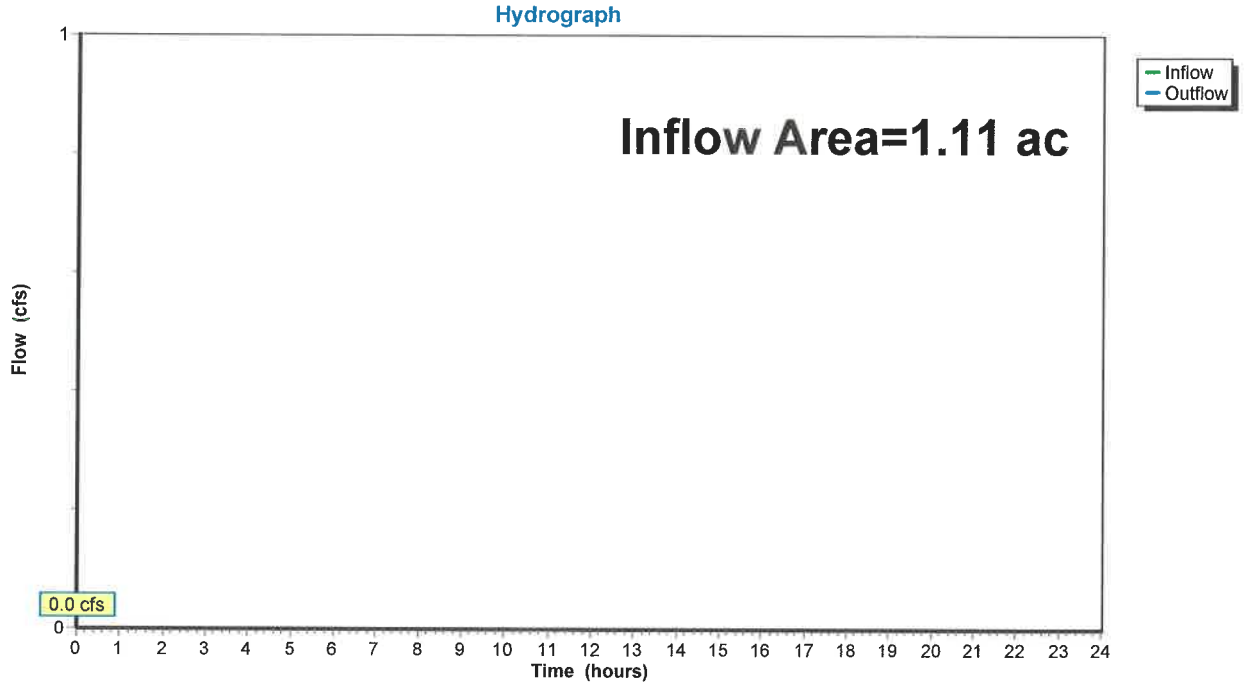


Summary for Reach 3R: SW Property Line

Inflow Area = 1.11 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 3R: SW Property Line

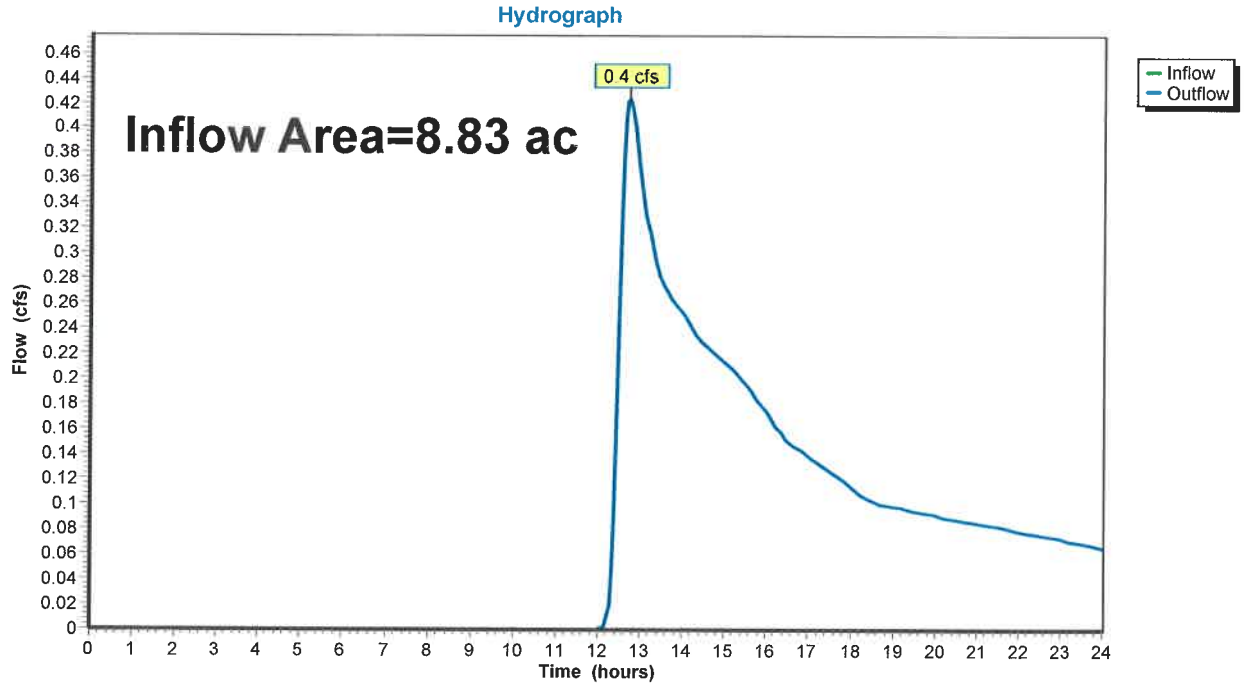


Summary for Reach 4R: Wetland Line

Inflow Area = 8.83 ac, 0.00% Impervious, Inflow Depth > 0.19" for 2-Year event
Inflow = 0.4 cfs @ 12.73 hrs, Volume= 0.143 af
Outflow = 0.4 cfs @ 12.73 hrs, Volume= 0.143 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 4R: Wetland Line



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

Subcatchment5S: Subarea EA Runoff Area=15.43 ac 60.01% Impervious Runoff Depth>2.89"
Flow Length=2,135' Tc=29.8 min CN=83 Runoff=29.7 cfs 3.713 af

Subcatchment6S: Subarea EB Runoff Area=2.19 ac 0.00% Impervious Runoff Depth>0.57"
Flow Length=570' Tc=17.1 min CN=50 Runoff=0.6 cfs 0.104 af

Subcatchment7S: Subarea EC Runoff Area=1.11 ac 0.00% Impervious Runoff Depth>0.00"
Flow Length=290' Tc=17.2 min CN=30 Runoff=0.0 cfs 0.000 af

Subcatchment8S: Subarea ED Runoff Area=8.83 ac 0.00% Impervious Runoff Depth>0.72"
Flow Length=530' Tc=28.6 min CN=53 Runoff=3.1 cfs 0.529 af

Reach 1R: Route One Inflow=29.7 cfs 3.713 af
Outflow=29.7 cfs 3.713 af

Reach 2R: NW Property Line Inflow=0.6 cfs 0.104 af
Outflow=0.6 cfs 0.104 af

Reach 3R: SW Property Line Inflow=0.0 cfs 0.000 af
Outflow=0.0 cfs 0.000 af

Reach 4R: Wetland Line Inflow=3.1 cfs 0.529 af
Outflow=3.1 cfs 0.529 af

Total Runoff Area = 27.56 ac Runoff Volume = 4.346 af Average Runoff Depth = 1.89"
66.40% Pervious = 18.30 ac 33.60% Impervious = 9.26 ac

Summary for Subcatchment 5S: Subarea EA

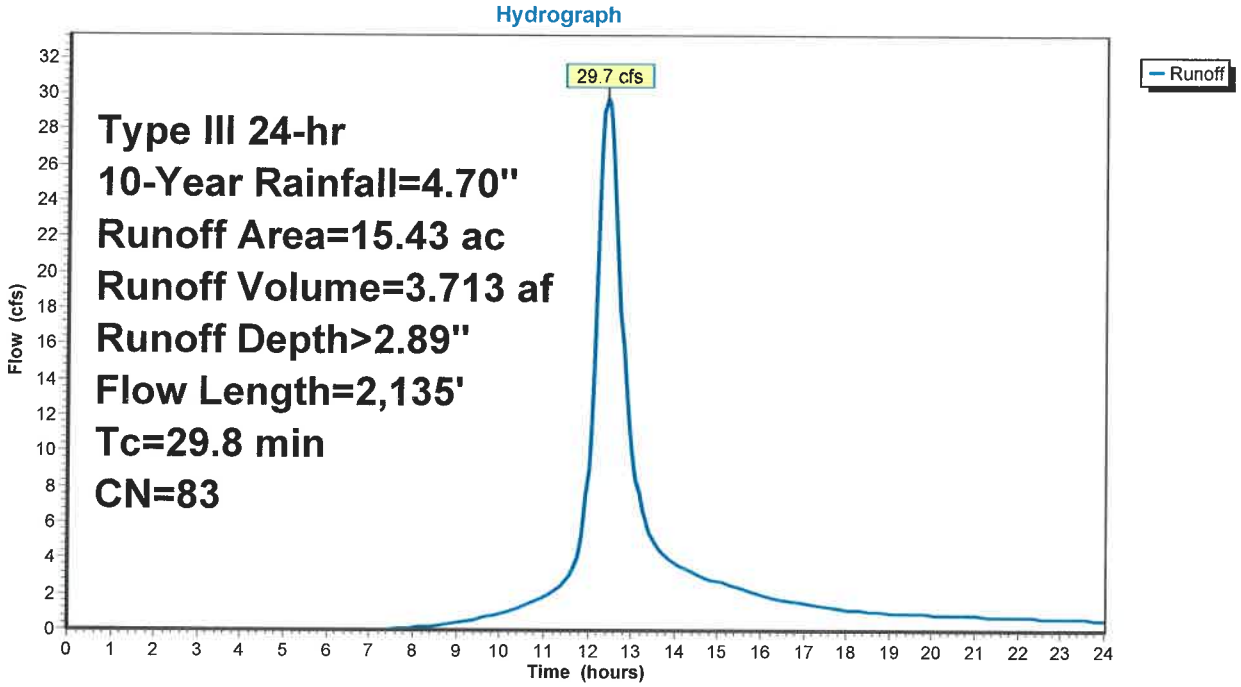
Runoff = 29.7 cfs @ 12.41 hrs, Volume= 3.713 af, Depth> 2.89"
Routed to Reach 1R : Route One

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

Area (ac)	CN	Description
1.37	98	Roofs, HSG B
0.13	39	>75% Grass cover, Good, HSG A
0.75	61	>75% Grass cover, Good, HSG B
0.14	98	Paved parking, HSG A
5.65	98	Paved parking, HSG B
2.10	98	Paved parking, HSG C
2.46	43	Woods/grass comb., Fair, HSG A
0.02	65	Woods/grass comb., Fair, HSG B
2.81	76	Woods/grass comb., Fair, HSG C
15.43	83	Weighted Average
6.17		39.99% Pervious Area
9.26		60.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	50	0.0260	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
12.8	645	0.0280	0.84		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	80	0.0090	1.93		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	230	0.0230	9.01	15.93	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
1.7	530	0.0130	5.17	4.06	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
3.1	600	0.0030	3.26	5.75	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
29.8	2,135	Total			

Subcatchment 5S: Subarea EA



Summary for Subcatchment 6S: Subarea EB

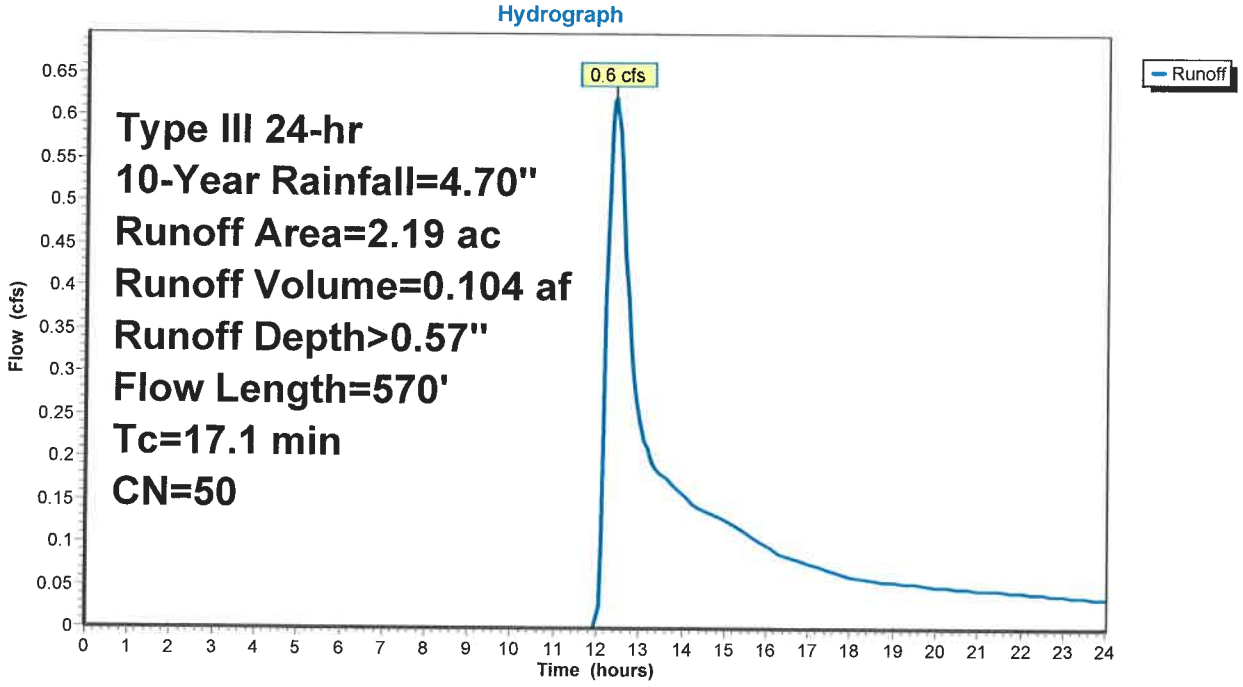
Runoff = 0.6 cfs @ 12.39 hrs, Volume= 0.104 af, Depth> 0.57"
Routed to Reach 2R : NW Property Line

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

Area (ac)	CN	Description
1.12	30	Woods, Good, HSG A
1.07	70	Woods, Good, HSG C
2.19	50	Weighted Average
2.19		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	50	0.0680	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
9.5	520	0.0330	0.91		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.1	570	Total			

Subcatchment 6S: Subarea EB



Summary for Subcatchment 7S: Subarea EC

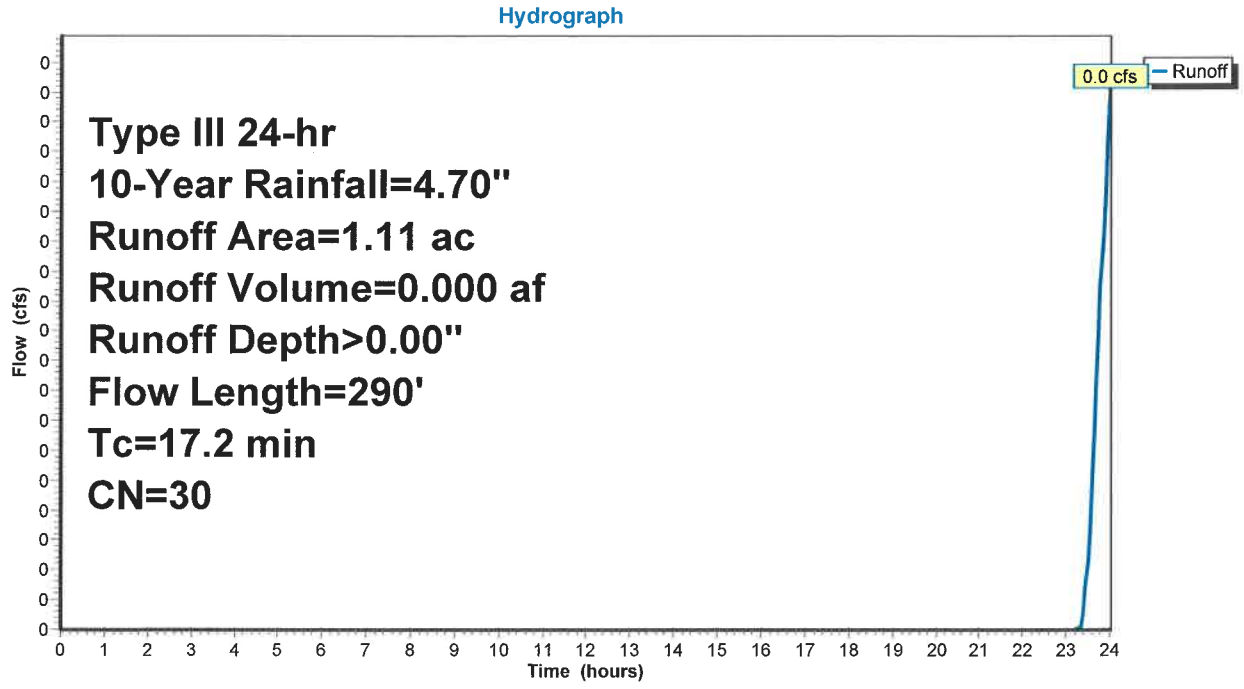
Runoff = 0.0 cfs @ 24.00 hrs, Volume= 0.000 af, Depth> 0.00"
Routed to Reach 3R : SW Property Line

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

Area (ac)	CN	Description
1.11	30	Woods, Good, HSG A
1.11		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	50	0.0260	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
6.1	240	0.0170	0.65		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.2	290	Total			

Subcatchment 7S: Subarea EC



Summary for Subcatchment 8S: Subarea ED

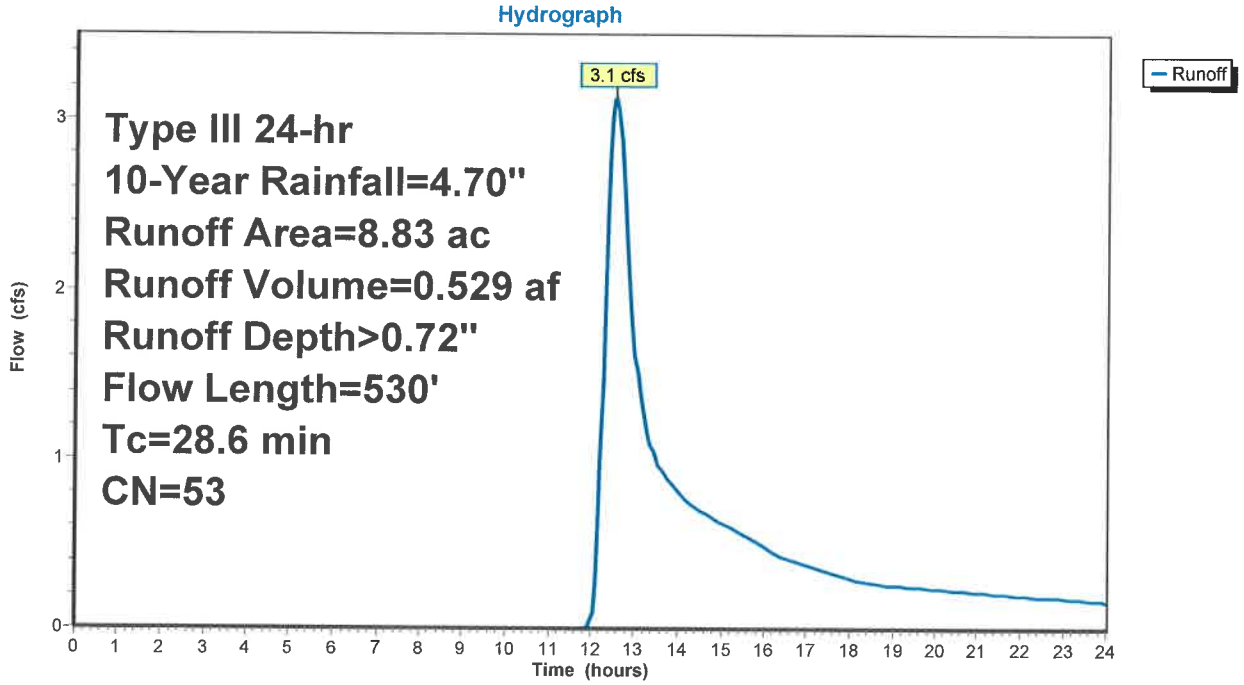
Runoff = 3.1 cfs @ 12.52 hrs, Volume= 0.529 af, Depth> 0.72"
Routed to Reach 4R : Wetland Line

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

Area (ac)	CN	Description
3.03	36	Woods, Fair, HSG A
5.32	60	Woods, Fair, HSG B
0.02	73	Woods, Fair, HSG C
0.46	79	Woods, Fair, HSG D
8.83	53	Weighted Average
8.83		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	50	0.0380	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
19.1	480	0.0070	0.42		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
28.6	530	Total			

Subcatchment 8S: Subarea ED

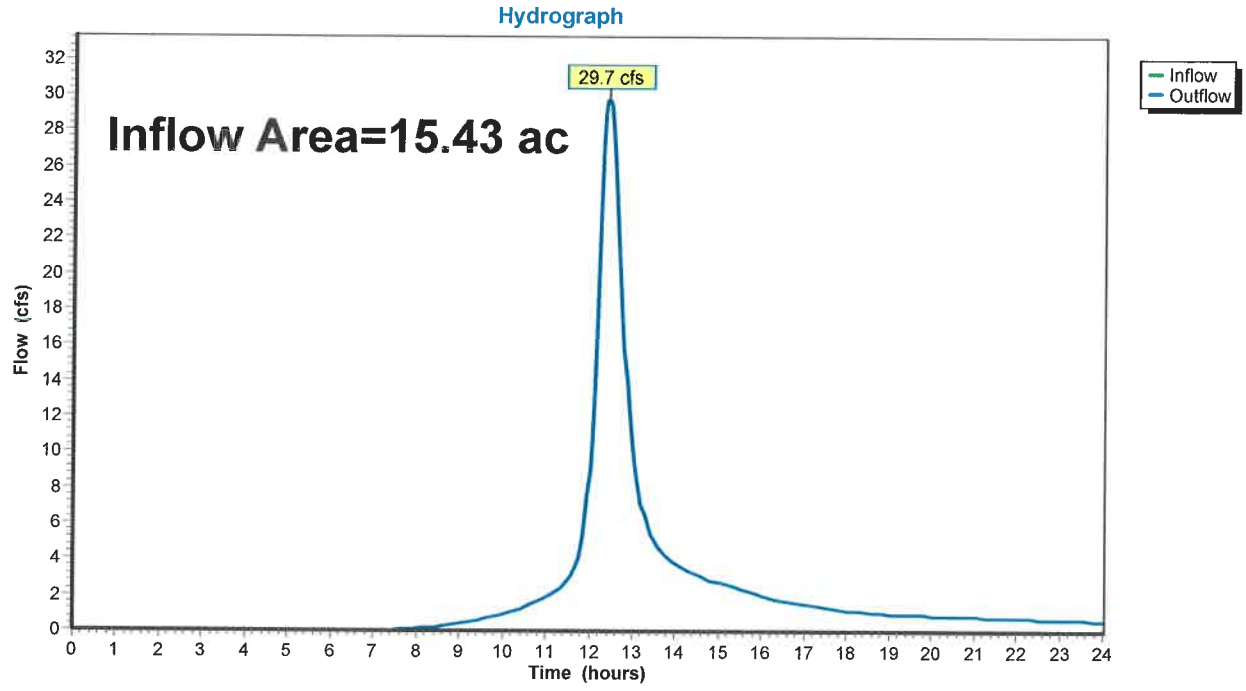


Summary for Reach 1R: Route One

Inflow Area = 15.43 ac, 60.01% Impervious, Inflow Depth > 2.89" for 10-Year event
Inflow = 29.7 cfs @ 12.41 hrs, Volume= 3.713 af
Outflow = 29.7 cfs @ 12.41 hrs, Volume= 3.713 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 1R: Route One

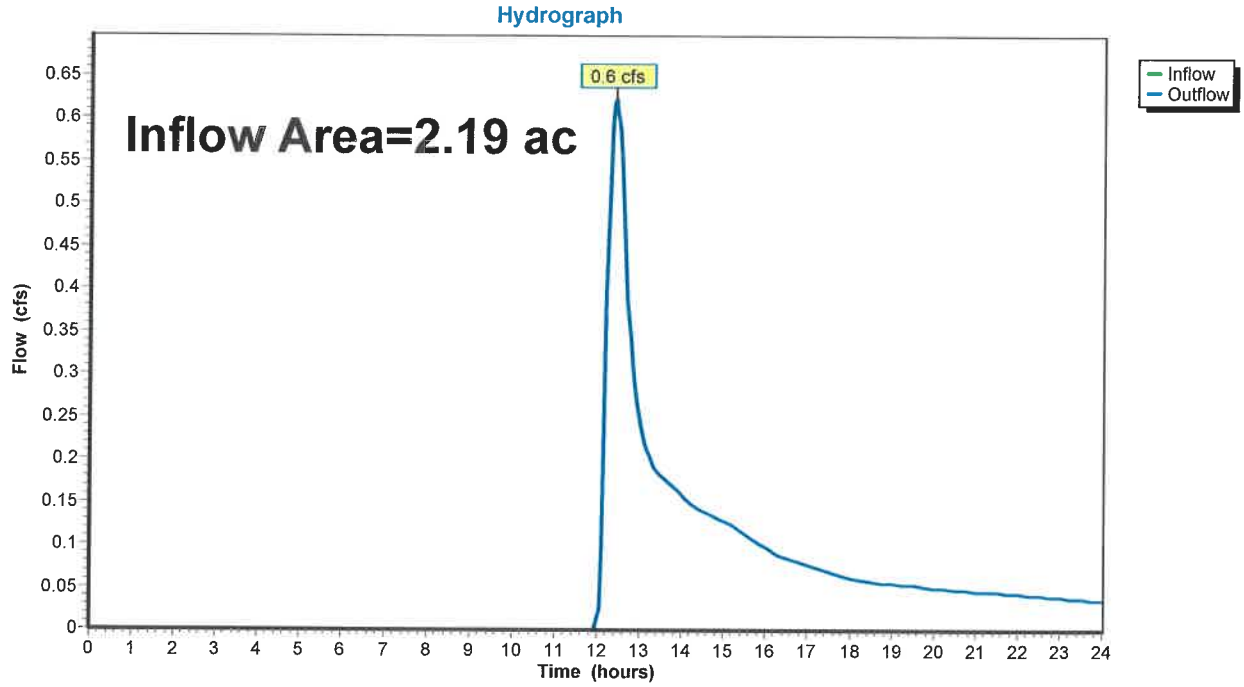


Summary for Reach 2R: NW Property Line

Inflow Area = 2.19 ac, 0.00% Impervious, Inflow Depth > 0.57" for 10-Year event
Inflow = 0.6 cfs @ 12.39 hrs, Volume= 0.104 af
Outflow = 0.6 cfs @ 12.39 hrs, Volume= 0.104 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 2R: NW Property Line



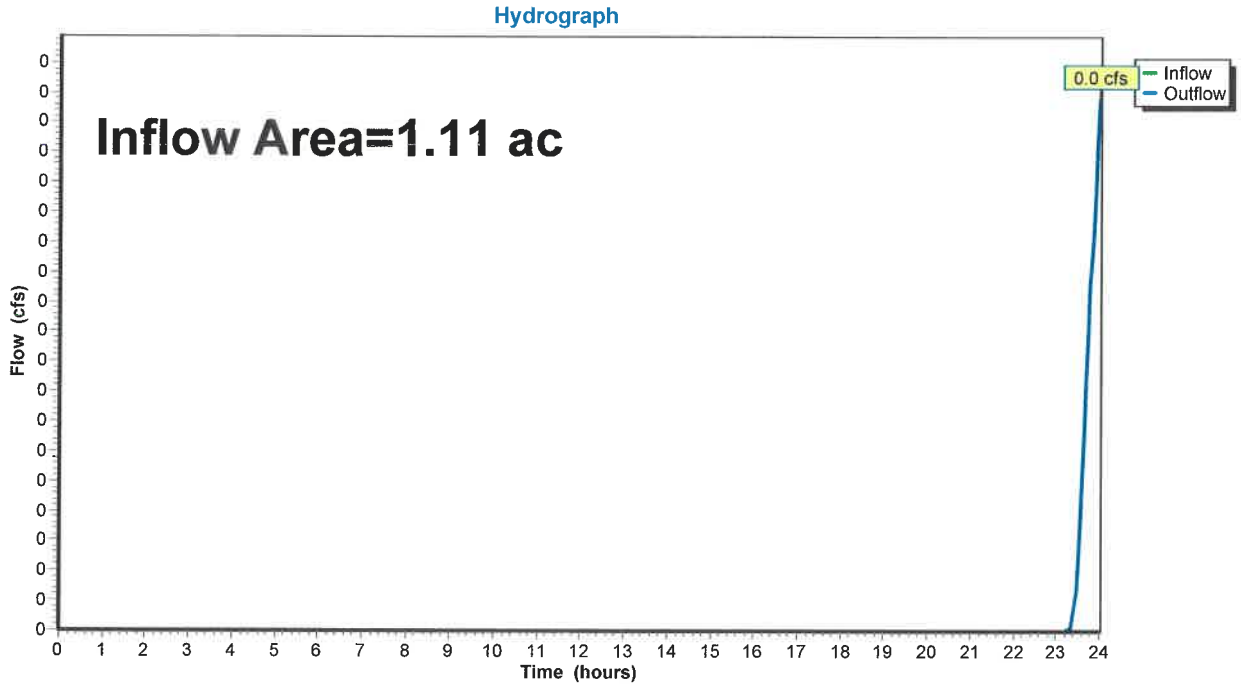
Summary for Reach 3R: SW Property Line

Inflow Area = 1.11 ac, 0.00% Impervious, Inflow Depth > 0.00" for 10-Year event
Inflow = 0.0 cfs @ 24.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 24.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 3R: SW Property Line

Hydrograph

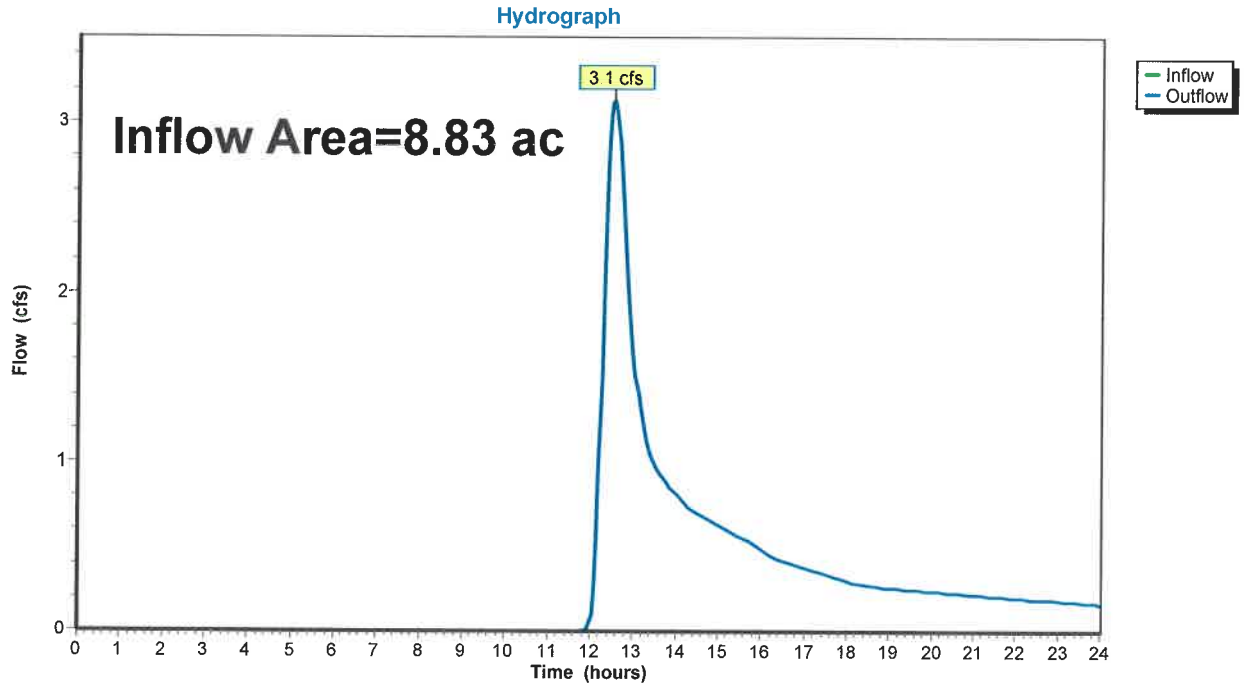


Summary for Reach 4R: Wetland Line

Inflow Area = 8.83 ac, 0.00% Impervious, Inflow Depth > 0.72" for 10-Year event
Inflow = 3.1 cfs @ 12.52 hrs, Volume= 0.529 af
Outflow = 3.1 cfs @ 12.52 hrs, Volume= 0.529 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 4R: Wetland Line



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

Subcatchment5S: Subarea EA Runoff Area=15.43 ac 60.01% Impervious Runoff Depth>4.72"
Flow Length=2,135' Tc=29.8 min CN=83 Runoff=48.0 cfs 6.071 af

Subcatchment6S: Subarea EB Runoff Area=2.19 ac 0.00% Impervious Runoff Depth>1.50"
Flow Length=570' Tc=17.1 min CN=50 Runoff=2.3 cfs 0.273 af

Subcatchment7S: Subarea EC Runoff Area=1.11 ac 0.00% Impervious Runoff Depth>0.16"
Flow Length=290' Tc=17.2 min CN=30 Runoff=0.0 cfs 0.015 af

Subcatchment8S: Subarea ED Runoff Area=8.83 ac 0.00% Impervious Runoff Depth>1.74"
Flow Length=530' Tc=28.6 min CN=53 Runoff=9.4 cfs 1.284 af

Reach 1R: Route One Inflow=48.0 cfs 6.071 af
Outflow=48.0 cfs 6.071 af

Reach 2R: NW Property Line Inflow=2.3 cfs 0.273 af
Outflow=2.3 cfs 0.273 af

Reach 3R: SW Property Line Inflow=0.0 cfs 0.015 af
Outflow=0.0 cfs 0.015 af

Reach 4R: Wetland Line Inflow=9.4 cfs 1.284 af
Outflow=9.4 cfs 1.284 af

Total Runoff Area = 27.56 ac Runoff Volume = 7.642 af Average Runoff Depth = 3.33"
66.40% Pervious = 18.30 ac 33.60% Impervious = 9.26 ac

Summary for Subcatchment 5S: Subarea EA

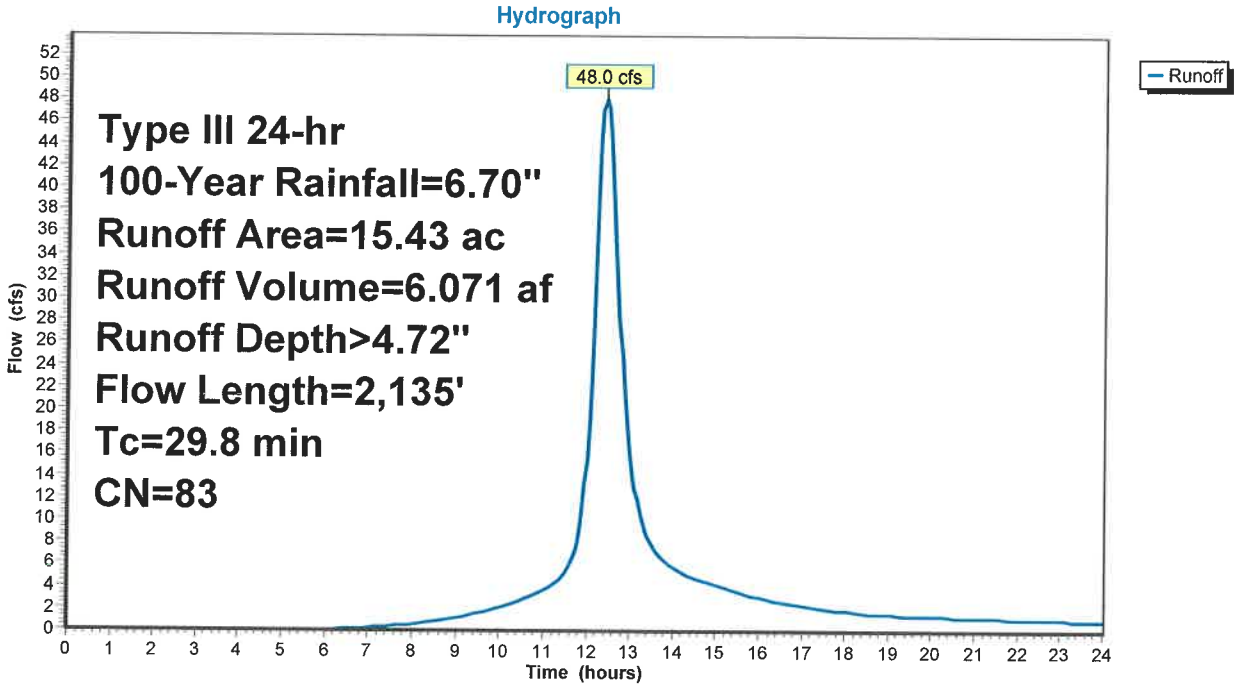
Runoff = 48.0 cfs @ 12.40 hrs, Volume= 6.071 af, Depth> 4.72"
Routed to Reach 1R : Route One

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.70"

Area (ac)	CN	Description
1.37	98	Roofs, HSG B
0.13	39	>75% Grass cover, Good, HSG A
0.75	61	>75% Grass cover, Good, HSG B
0.14	98	Paved parking, HSG A
5.65	98	Paved parking, HSG B
2.10	98	Paved parking, HSG C
2.46	43	Woods/grass comb., Fair, HSG A
0.02	65	Woods/grass comb., Fair, HSG B
2.81	76	Woods/grass comb., Fair, HSG C
15.43	83	Weighted Average
6.17		39.99% Pervious Area
9.26		60.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	50	0.0260	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
12.8	645	0.0280	0.84		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	80	0.0090	1.93		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.4	230	0.0230	9.01	15.93	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
1.7	530	0.0130	5.17	4.06	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
3.1	600	0.0030	3.26	5.75	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
29.8	2,135	Total			

Subcatchment 5S: Subarea EA



Summary for Subcatchment 6S: Subarea EB

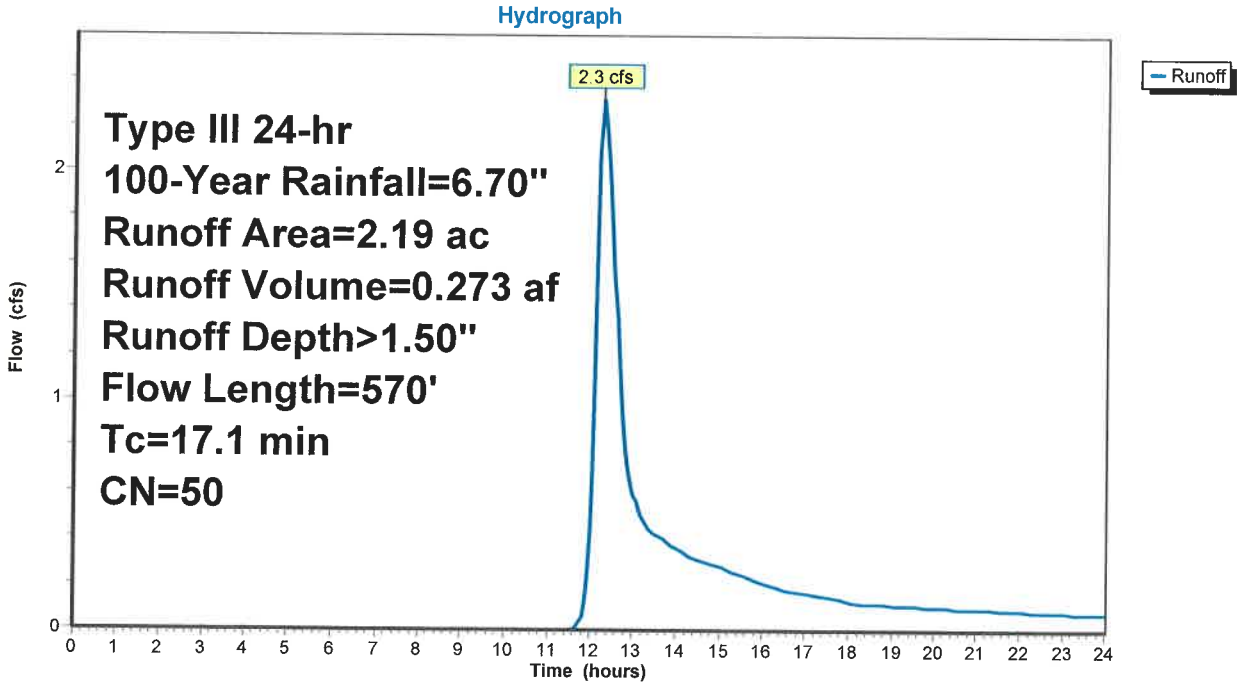
Runoff = 2.3 cfs @ 12.28 hrs, Volume= 0.273 af, Depth> 1.50"
Routed to Reach 2R : NW Property Line

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.70"

Area (ac)	CN	Description
1.12	30	Woods, Good, HSG A
1.07	70	Woods, Good, HSG C
2.19	50	Weighted Average
2.19		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	50	0.0680	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
9.5	520	0.0330	0.91		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.1	570	Total			

Subcatchment 6S: Subarea EB



Summary for Subcatchment 7S: Subarea EC

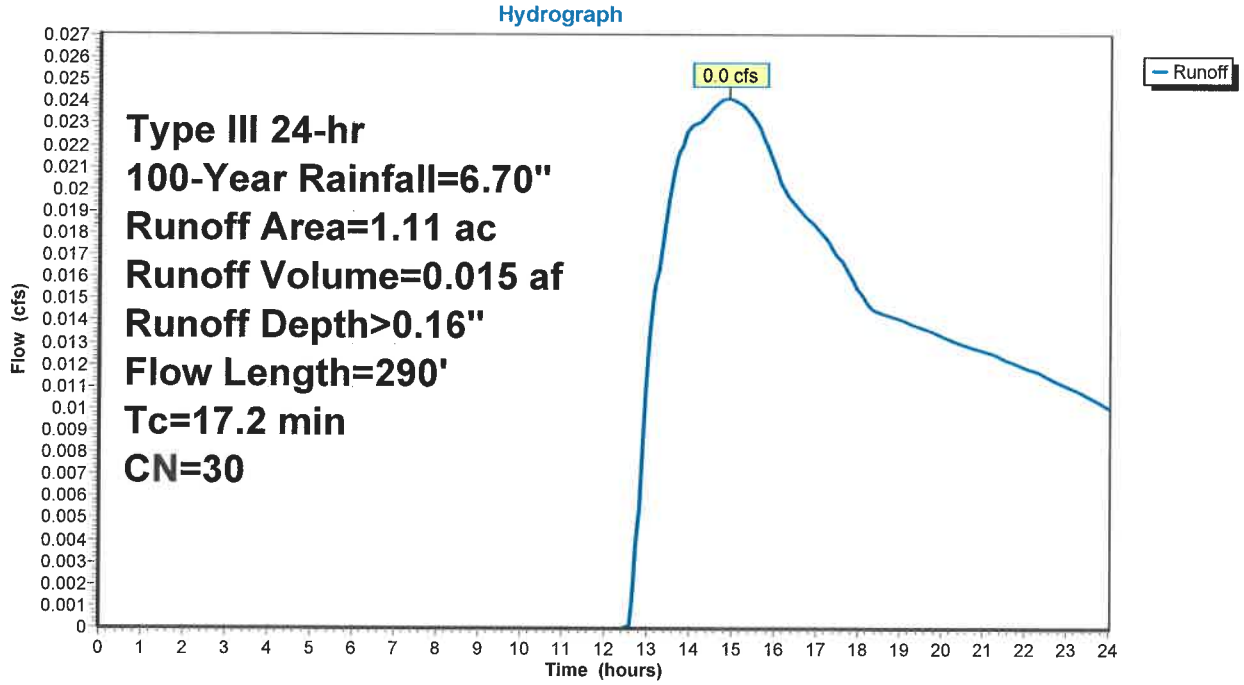
Runoff = 0.0 cfs @ 14.90 hrs, Volume= 0.015 af, Depth> 0.16"
Routed to Reach 3R : SW Property Line

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.70"

Area (ac)	CN	Description
1.11	30	Woods, Good, HSG A
1.11		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	50	0.0260	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
6.1	240	0.0170	0.65		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.2	290	Total			

Subcatchment 7S: Subarea EC



Summary for Subcatchment 8S: Subarea ED

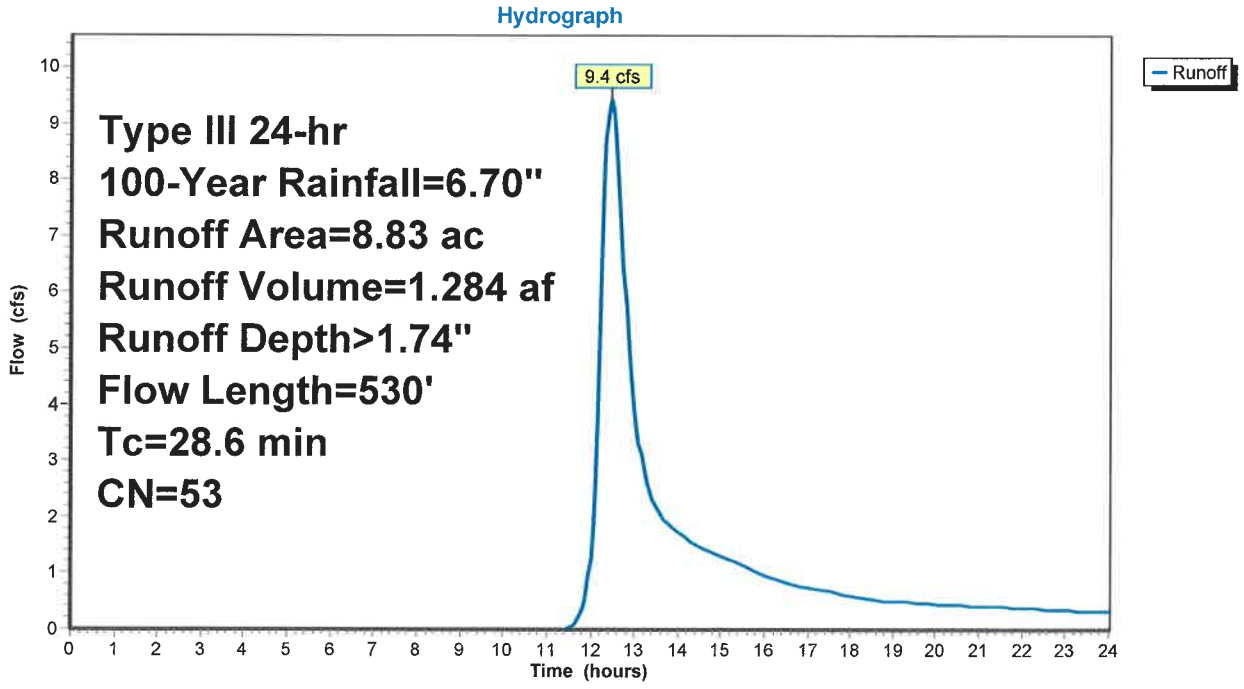
Runoff = 9.4 cfs @ 12.45 hrs, Volume= 1.284 af, Depth> 1.74"
Routed to Reach 4R : Wetland Line

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.70"

Area (ac)	CN	Description
3.03	36	Woods, Fair, HSG A
5.32	60	Woods, Fair, HSG B
0.02	73	Woods, Fair, HSG C
0.46	79	Woods, Fair, HSG D
8.83	53	Weighted Average
8.83		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	50	0.0380	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
19.1	480	0.0070	0.42		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
28.6	530	Total			

Subcatchment 8S: Subarea ED

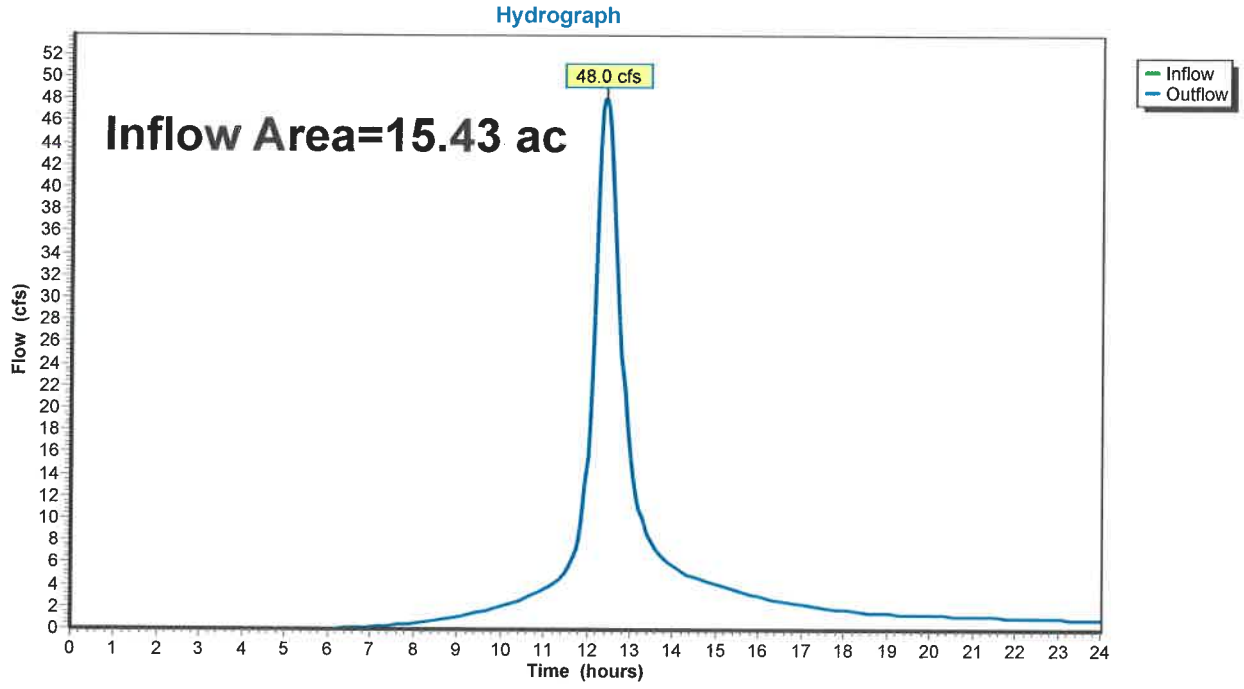


Summary for Reach 1R: Route One

Inflow Area = 15.43 ac, 60.01% Impervious, Inflow Depth > 4.72" for 100-Year event
Inflow = 48.0 cfs @ 12.40 hrs, Volume= 6.071 af
Outflow = 48.0 cfs @ 12.40 hrs, Volume= 6.071 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 1R: Route One

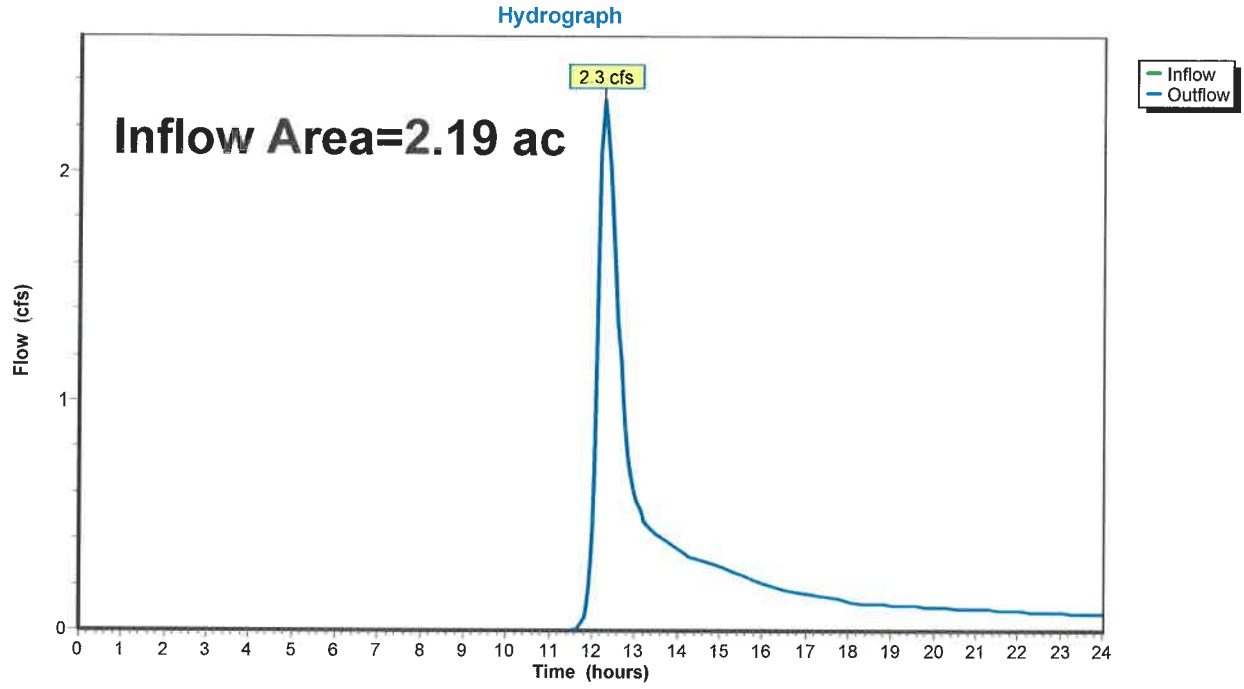


Summary for Reach 2R: NW Property Line

Inflow Area = 2.19 ac, 0.00% Impervious, Inflow Depth > 1.50" for 100-Year event
Inflow = 2.3 cfs @ 12.28 hrs, Volume= 0.273 af
Outflow = 2.3 cfs @ 12.28 hrs, Volume= 0.273 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 2R: NW Property Line

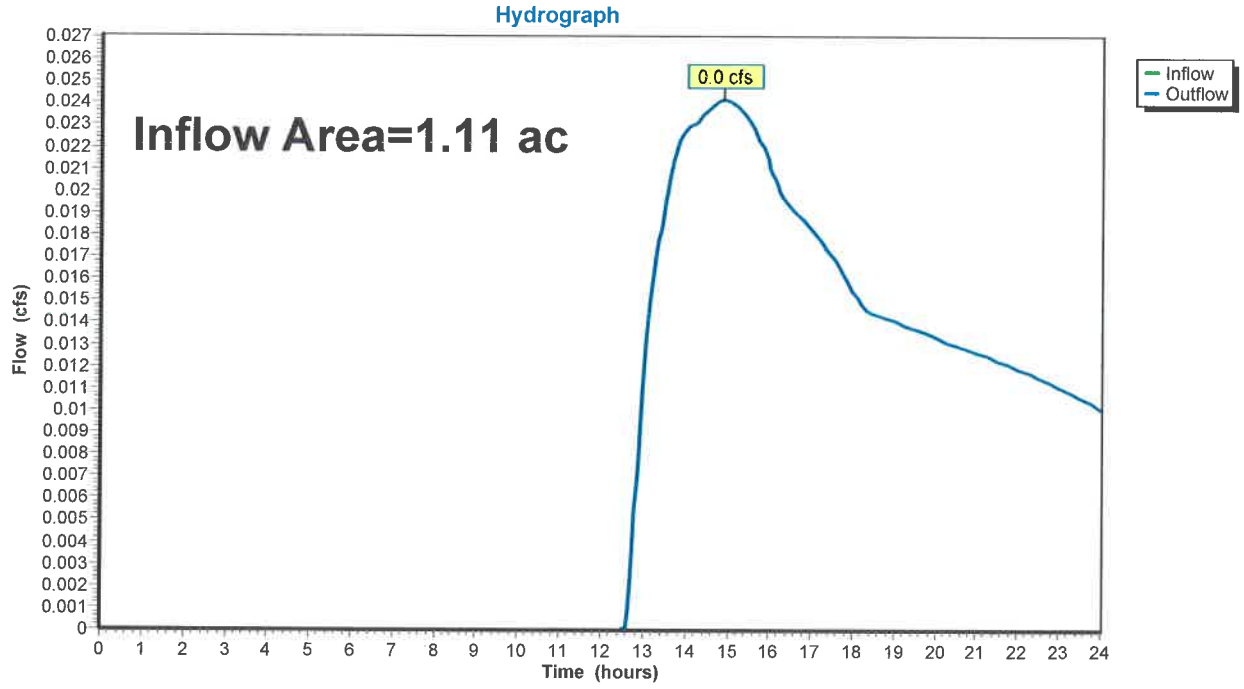


Summary for Reach 3R: SW Property Line

Inflow Area = 1.11 ac, 0.00% Impervious, Inflow Depth > 0.16" for 100-Year event
Inflow = 0.0 cfs @ 14.90 hrs, Volume= 0.015 af
Outflow = 0.0 cfs @ 14.90 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 3R: SW Property Line

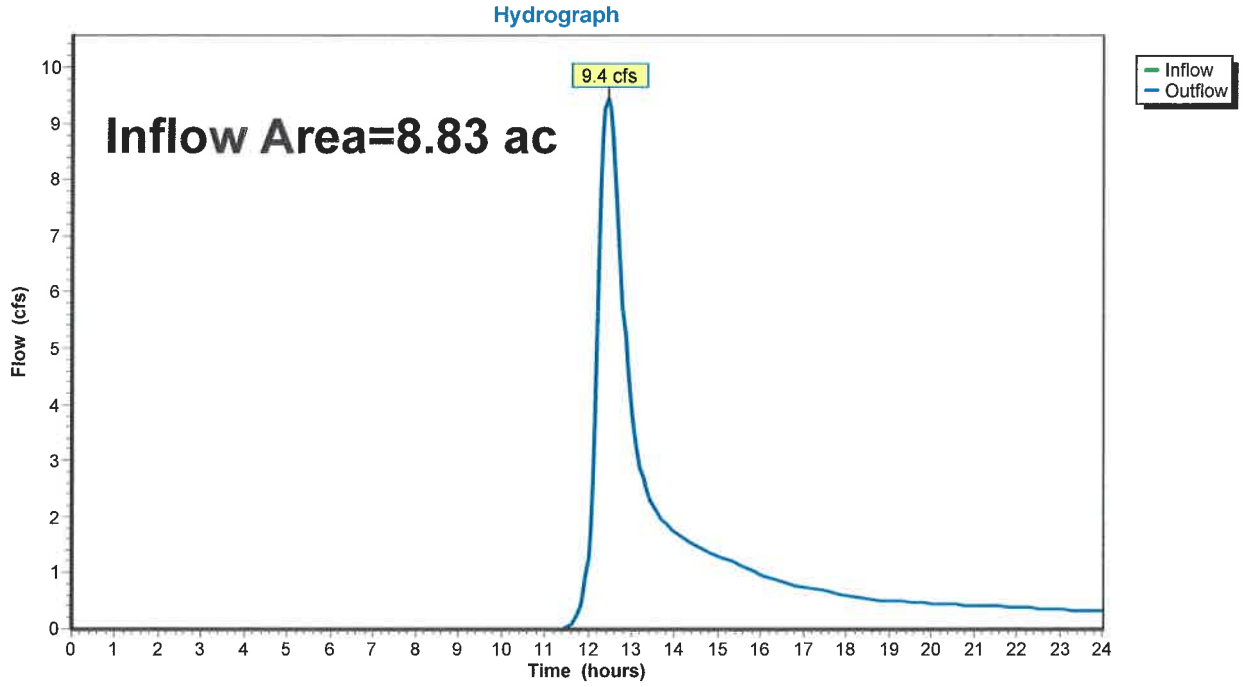


Summary for Reach 4R: Wetland Line

Inflow Area = 8.83 ac, 0.00% Impervious, Inflow Depth > 1.74" for 100-Year event
Inflow = 9.4 cfs @ 12.45 hrs, Volume= 1.284 af
Outflow = 9.4 cfs @ 12.45 hrs, Volume= 1.284 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 4R: Wetland Line



Events for Subcatchment 5S: Subarea EA

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year	3.20	16.4	2.056	1.60
10-Year	4.70	29.7	3.713	2.89
100-Year	**6.70**	**48.0**	**6.071**	**4.72**

Events for Subcatchment 6S: Subarea EB

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year	3.20	0.0	0.023	0.13
10-Year	4.70	0.6	0.104	0.57
100-Year	**6.70**	**2.3**	**0.273**	**1.50**

Events for Subcatchment 7S: Subarea EC

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year	3.20	0.0	0.000	0.00
10-Year	4.70	0.0	0.000	0.00
100-Year	**6.70**	**0.0**	**0.015**	**0.16**

Events for Subcatchment 8S: Subarea ED

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year	3.20	0.4	0.143	0.19
10-Year	4.70	3.1	0.529	0.72
100-Year	**6.70**	**9.4**	**1.284**	**1.74**

Events for Reach 1R: Route One

Event	Inflow (cfs)	Outflow (cfs)	Elevation (feet)	Storage (cubic-feet)
2-Year	16.4	16.4	**0.00**	**0**
10-Year	29.7	29.7	0.00	0
100-Year	**48.0**	**48.0**	0.00	0

Events for Reach 2R: NW Property Line

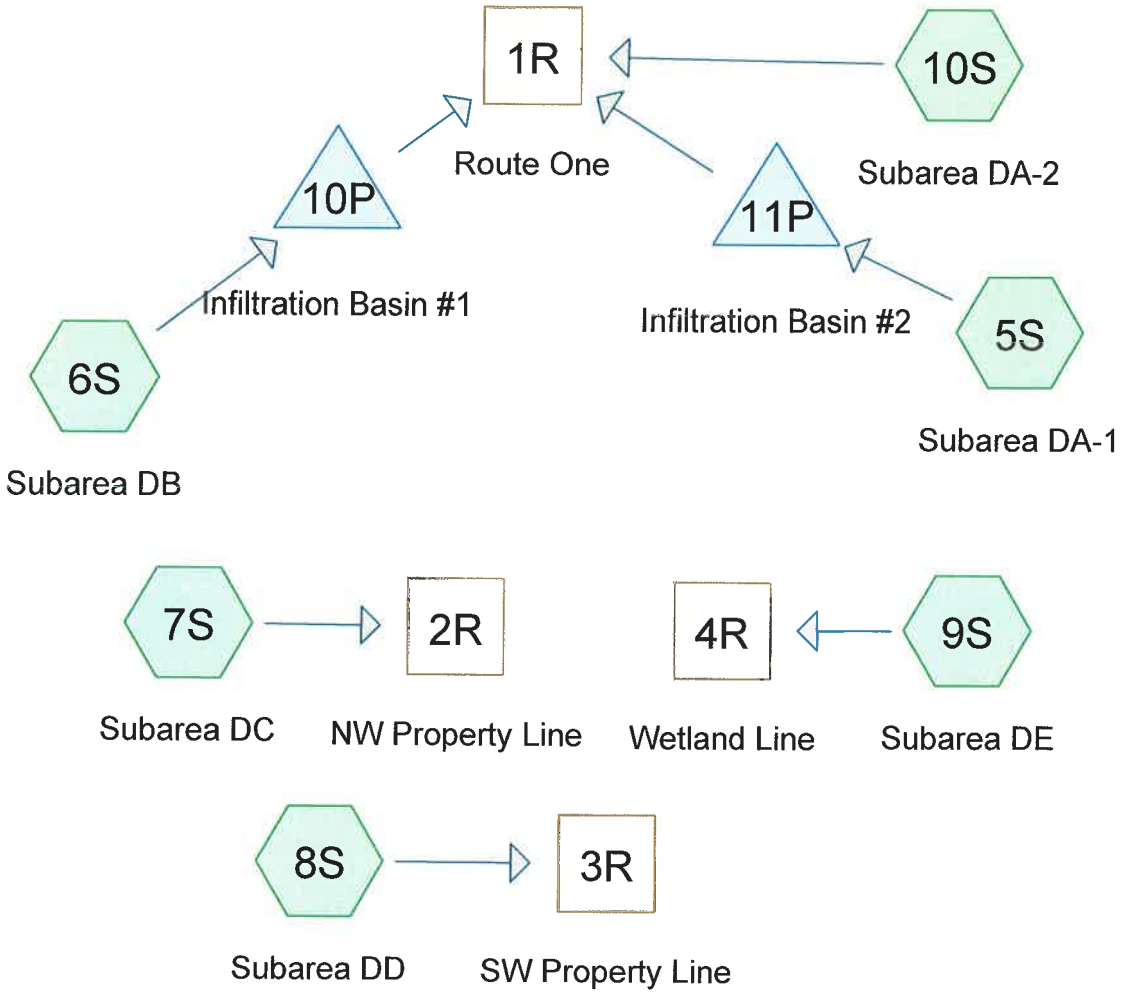
Event	Inflow (cfs)	Outflow (cfs)	Elevation (feet)	Storage (cubic-feet)
2-Year	0.0	0.0	**0.00**	**0**
10-Year	0.6	0.6	0.00	0
100-Year	**2.3**	**2.3**	0.00	0

Events for Reach 3R: SW Property Line

Event	Inflow (cfs)	Outflow (cfs)	Elevation (feet)	Storage (cubic-feet)
2-Year	0.0	0.0	**0.00**	**0**
10-Year	0.0	0.0	0.00	0
100-Year	**0.0**	**0.0**	0.00	0

Events for Reach 4R: Wetland Line

Event	Inflow (cfs)	Outflow (cfs)	Elevation (feet)	Storage (cubic-feet)
2-Year	0.4	0.4	**0.00**	**0**
10-Year	3.1	3.1	0.00	0
100-Year	**9.4**	**9.4**	0.00	0



Subcat Reach Pond Link

Routing Diagram for 21-0172 Developed
Prepared by Bay Colony Group, Inc., Printed 5/9/2022

Rainfall Events Listing (selected events)

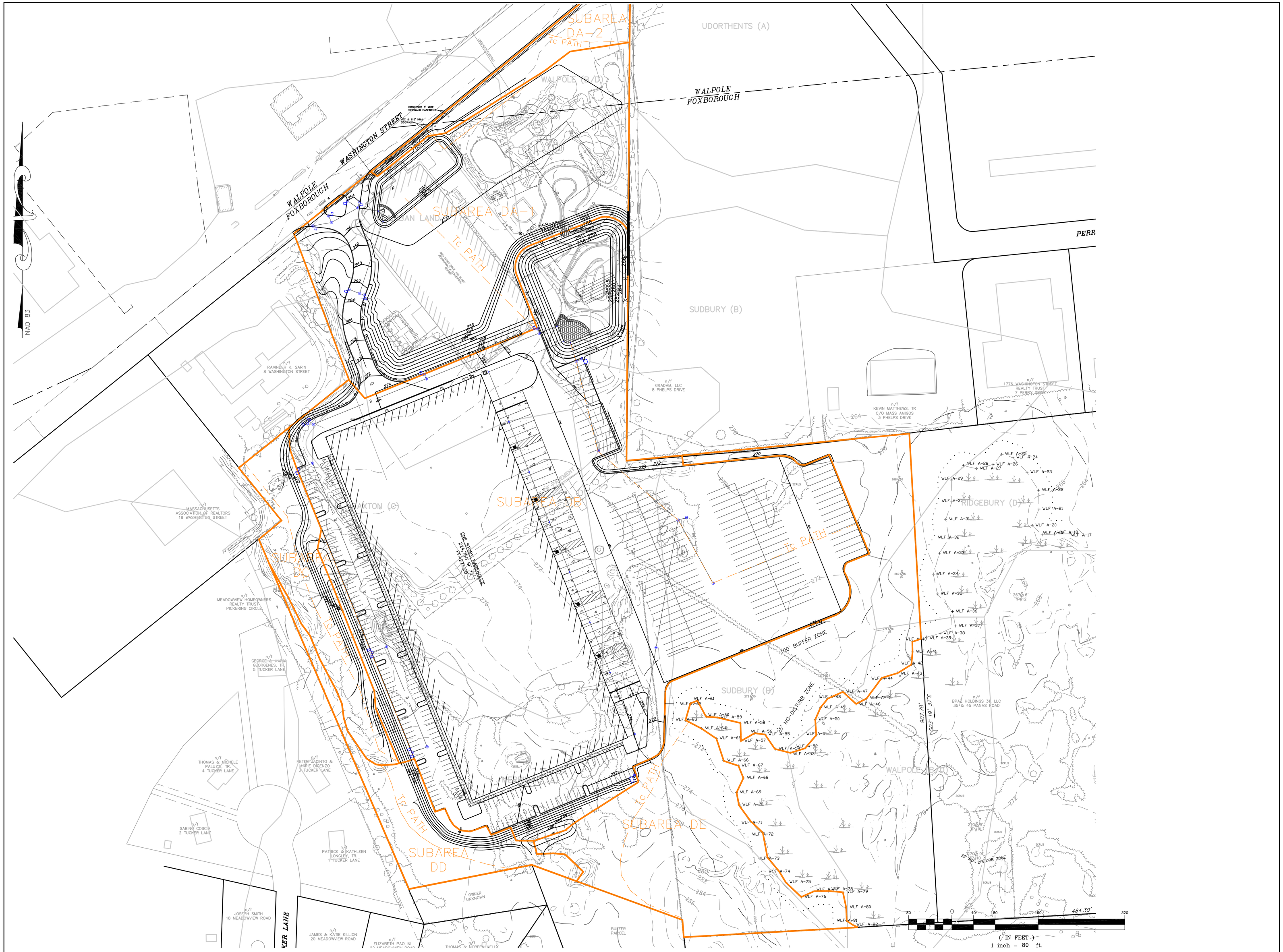
Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	Type III 24-hr		Default	24.00	1	3.20	2
2	10-Year	Type III 24-hr		Default	24.00	1	4.70	2
3	100-Year	Type III 24-hr		Default	24.00	1	6.70	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.40	39	>75% Grass cover, Good, HSG A (5S, 6S, 10S)
6.27	61	>75% Grass cover, Good, HSG B (5S, 6S, 10S)
0.23	74	>75% Grass cover, Good, HSG C (5S, 6S)
2.74	98	Paved parking, HSG A (6S)
3.61	98	Paved parking, HSG B (5S, 6S)
1.56	98	Paved parking, HSG C (6S)
1.08	98	Unconnected roofs, HSG A (6S)
0.50	98	Unconnected roofs, HSG B (6S)
3.58	98	Unconnected roofs, HSG C (6S)
2.00	36	Woods, Fair, HSG A (9S)
2.73	60	Woods, Fair, HSG B (9S)
0.46	79	Woods, Fair, HSG D (9S)
1.77	30	Woods, Good, HSG A (7S, 8S)
0.63	70	Woods, Good, HSG C (7S)
27.56	**75**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
7.99	HSG A	5S, 6S, 7S, 8S, 9S, 10S
13.11	HSG B	5S, 6S, 9S, 10S
6.00	HSG C	5S, 6S, 7S
0.46	HSG D	9S
0.00	Other	
27.56		**TOTAL AREA**



PROJECT:

2 Washington Street
Foxborough, MA
02035

OWNER:

Margi, LLC
22 Constance Way
N.Attleboro, MA
02760

PREPARED FOR:

Rockpoint Fund Acquisitions, LLC
500 Boylston Street
Boston, MA 02116

Bay Colony Group, Inc.
Professional Civil Engineers & Professional Land Surveyors

FOUR SCHOOL STREET
P.O. BOX 9136
FOXBOROUGH, MA 02035
508-543-3939

REFERENCES:

STAMP

DRAWING TITLE

Proposed Subareas

SCALE: 1" = 80'

MARCH 22, 2022	SHEET NUMBER
21-0172B	PR

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
1	6S	0.00	0.00	770.0	0.0100	0.013	0.0	12.0	0.0

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

Subcatchment5S: Subarea DA-1 Runoff Area=5.10 ac 4.12% Impervious Runoff Depth>0.52"
Flow Length=338' Tc=12.3 min CN=63 Runoff=1.8 cfs 0.220 af

Subcatchment6S: Subarea DB Runoff Area=14.17 ac 90.76% Impervious Runoff Depth>2.54"
Flow Length=820' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=39.6 cfs 3.002 af

Subcatchment7S: Subarea DC Runoff Area=1.35 ac 0.00% Impervious Runoff Depth>0.11"
Flow Length=628' Tc=19.2 min CN=49 Runoff=0.0 cfs 0.012 af

Subcatchment8S: Subarea DD Runoff Area=1.05 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=290' Tc=17.2 min CN=30 Runoff=0.0 cfs 0.000 af

Subcatchment9S: Subarea DE Runoff Area=5.19 ac 0.00% Impervious Runoff Depth>0.17"
Flow Length=457' Tc=15.2 min CN=52 Runoff=0.2 cfs 0.074 af

Subcatchment10S: Subarea DA-2 Runoff Area=0.70 ac 0.00% Impervious Runoff Depth>0.34"
Flow Length=154' Slope=0.0180 '/' Tc=10.3 min CN=58 Runoff=0.1 cfs 0.020 af

Reach 1R: Route One Inflow=0.1 cfs 0.020 af
Outflow=0.1 cfs 0.020 af

Reach 2R: NW Property Line Inflow=0.0 cfs 0.012 af
Outflow=0.0 cfs 0.012 af

Reach 3R: SW Property Line Inflow=0.0 cfs 0.000 af
Outflow=0.0 cfs 0.000 af

Reach 4R: Wetland Line Inflow=0.2 cfs 0.074 af
Outflow=0.2 cfs 0.074 af

Pond 10P: Infiltration Basin #1 Peak Elev=260.14' Storage=83,135 cf Inflow=39.6 cfs 3.002 af
Outflow=1.4 cfs 1.564 af

Pond 11P: Infiltration Basin #2 Peak Elev=251.34' Storage=3,205 cf Inflow=1.8 cfs 0.220 af
Outflow=0.3 cfs 0.217 af

Total Runoff Area = 27.56 ac Runoff Volume = 3.328 af Average Runoff Depth = 1.45"
52.58% Pervious = 14.49 ac 47.42% Impervious = 13.07 ac

Summary for Subcatchment 5S: Subarea DA-1

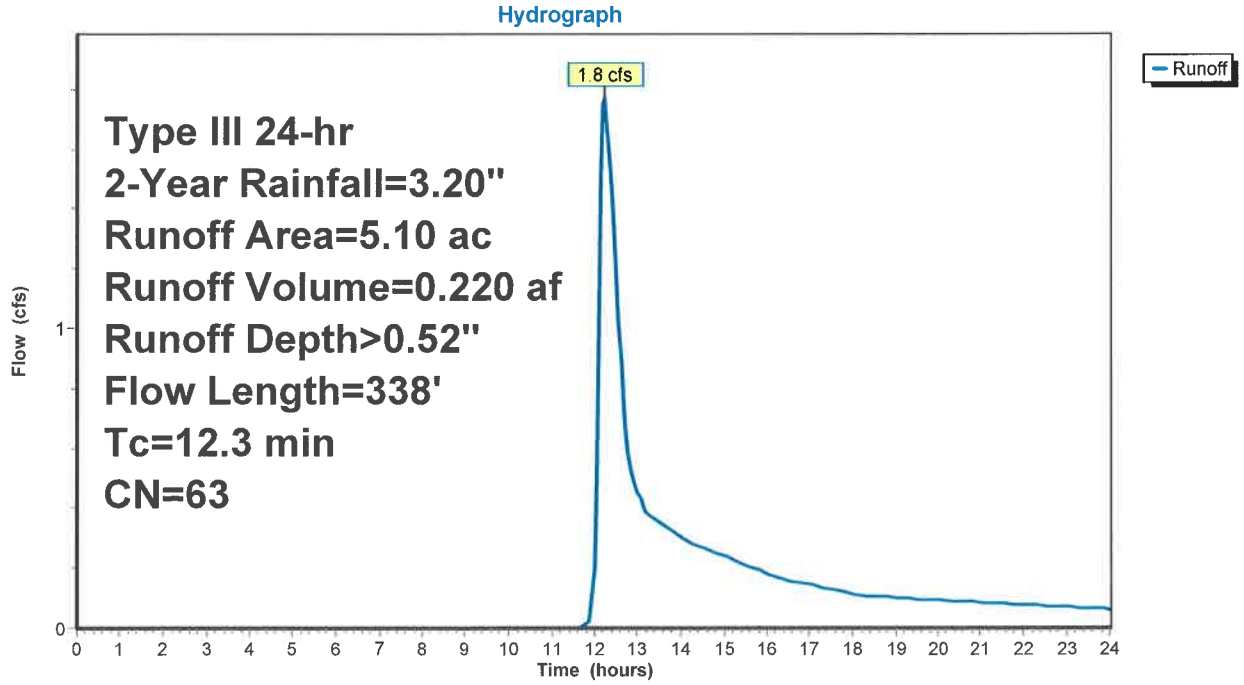
Runoff = 1.8 cfs @ 12.22 hrs, Volume= 0.220 af, Depth> 0.52"
Routed to Pond 11P : Infiltration Basin #2

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

Area (ac)	CN	Description
0.04	39	>75% Grass cover, Good, HSG A
4.73	61	>75% Grass cover, Good, HSG B
0.12	74	>75% Grass cover, Good, HSG C
0.21	98	Paved parking, HSG B
5.10	63	Weighted Average
4.89		95.88% Pervious Area
0.21		4.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	50	0.0300	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
5.3	288	0.0170	0.91		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
12.3	338	Total			

Subcatchment 5S: Subarea DA-1



Summary for Subcatchment 6S: Subarea DB

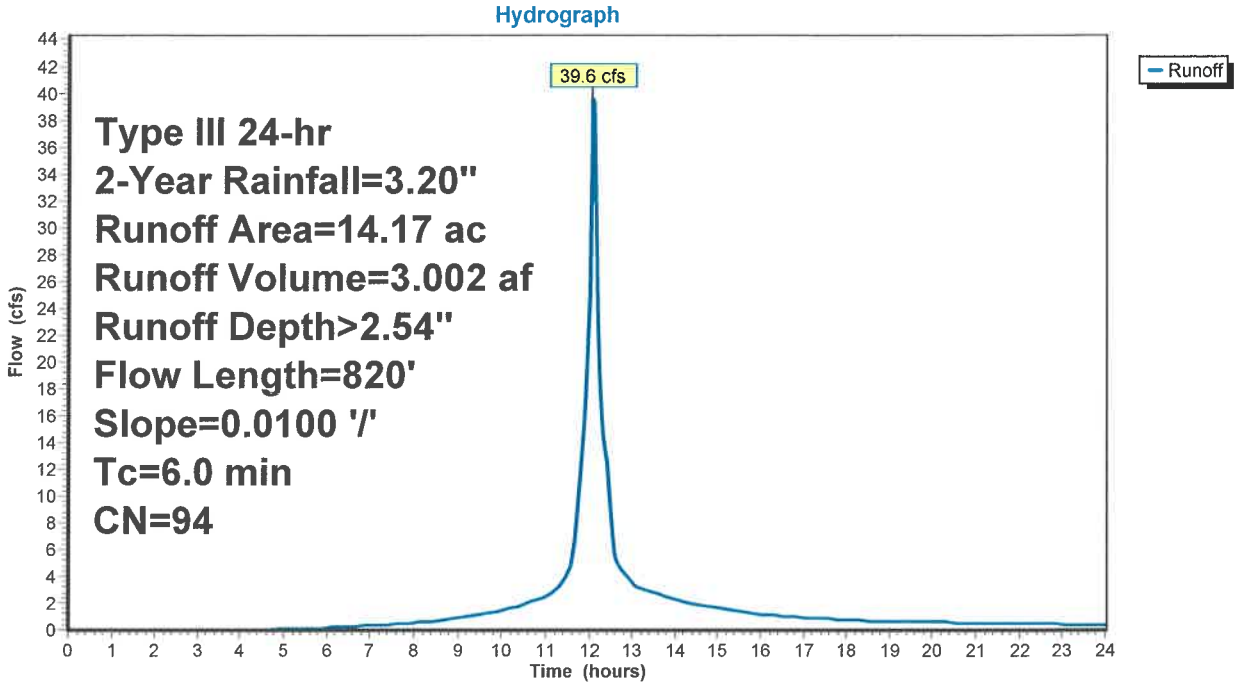
Runoff = 39.6 cfs @ 12.09 hrs, Volume= 3.002 af, Depth> 2.54"
Routed to Pond 10P : Infiltration Basin #1

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

Area (ac)	CN	Description
0.26	39	>75% Grass cover, Good, HSG A
0.94	61	>75% Grass cover, Good, HSG B
0.11	74	>75% Grass cover, Good, HSG C
2.74	98	Paved parking, HSG A
3.40	98	Paved parking, HSG B
1.56	98	Paved parking, HSG C
1.08	98	Unconnected roofs, HSG A
0.50	98	Unconnected roofs, HSG B
3.58	98	Unconnected roofs, HSG C
14.17	94	Weighted Average
1.31		9.24% Pervious Area
12.86		90.76% Impervious Area
5.16		40.12% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	50	0.0100	0.91		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.20"
2.8	770	0.0100	4.54	3.56	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
3.7	820	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 6S: Subarea DB



Summary for Subcatchment 7S: Subarea DC

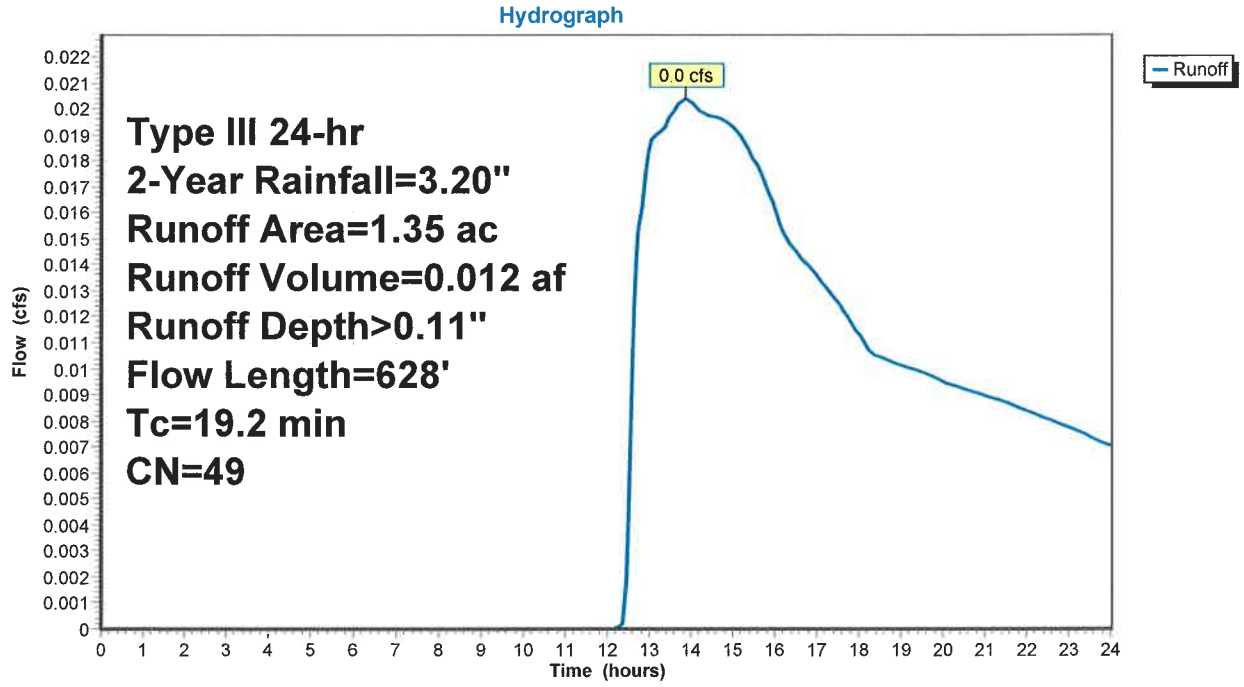
Runoff = 0.0 cfs @ 13.87 hrs, Volume= 0.012 af, Depth> 0.11"
Routed to Reach 2R : NW Property Line

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

Area (ac)	CN	Description
0.72	30	Woods, Good, HSG A
0.63	70	Woods, Good, HSG C
1.35	49	Weighted Average
1.35		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	50	0.0600	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
11.3	578	0.0290	0.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.2	628	Total			

Subcatchment 7S: Subarea DC



Summary for Subcatchment 8S: Subarea DD

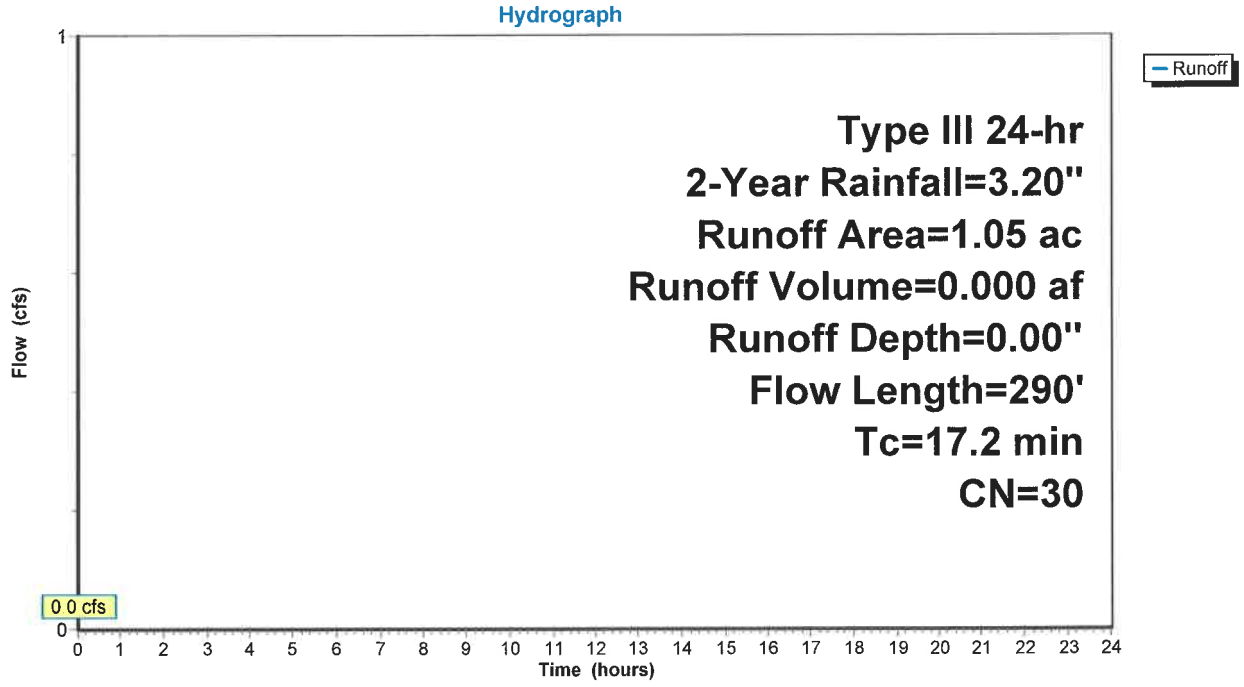
Runoff = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Reach 3R : SW Property Line

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

Area (ac)	CN	Description
1.05	30	Woods, Good, HSG A
1.05		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	50	0.0260	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
6.1	240	0.0170	0.65		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.2	290	Total			

Subcatchment 8S: Subarea DD



Summary for Subcatchment 9S: Subarea DE

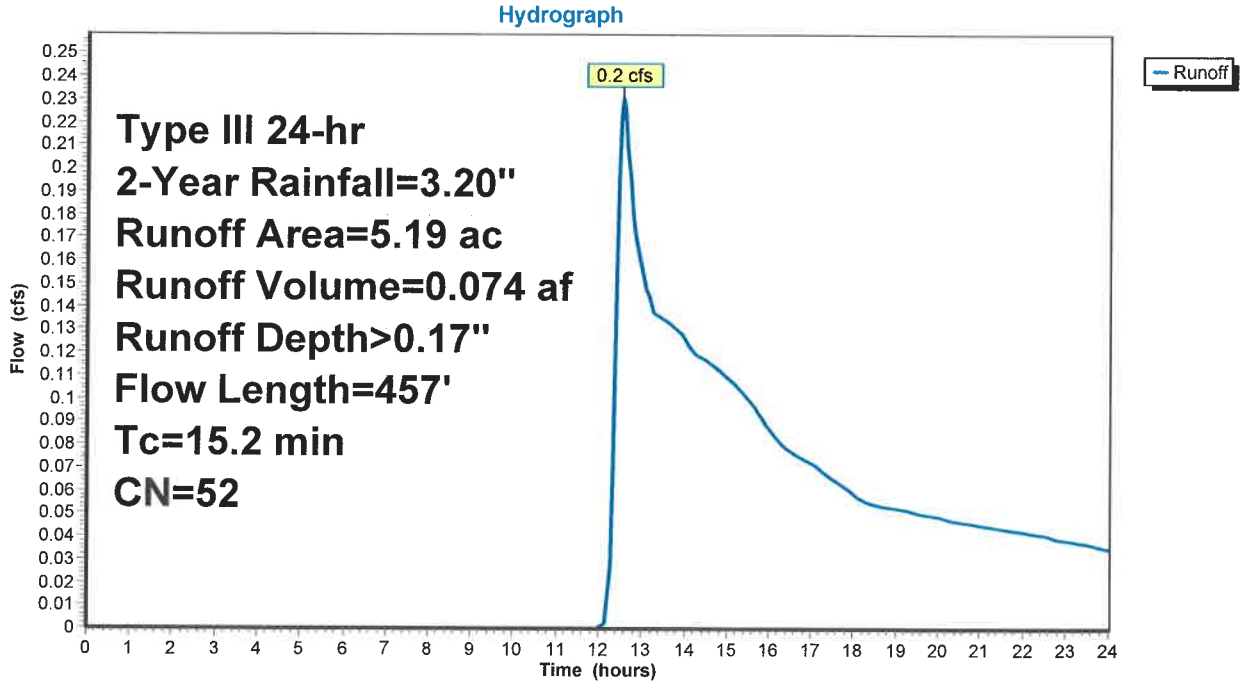
Runoff = 0.2 cfs @ 12.55 hrs, Volume= 0.074 af, Depth> 0.17"
Routed to Reach 4R : Wetland Line

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

Area (ac)	CN	Description
2.00	36	Woods, Fair, HSG A
2.73	60	Woods, Fair, HSG B
0.46	79	Woods, Fair, HSG D
5.19	52	Weighted Average
5.19		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	50	0.0720	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
7.8	407	0.0300	0.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.2	457	Total			

Subcatchment 9S: Subarea DE



Summary for Subcatchment 10S: Subarea DA-2

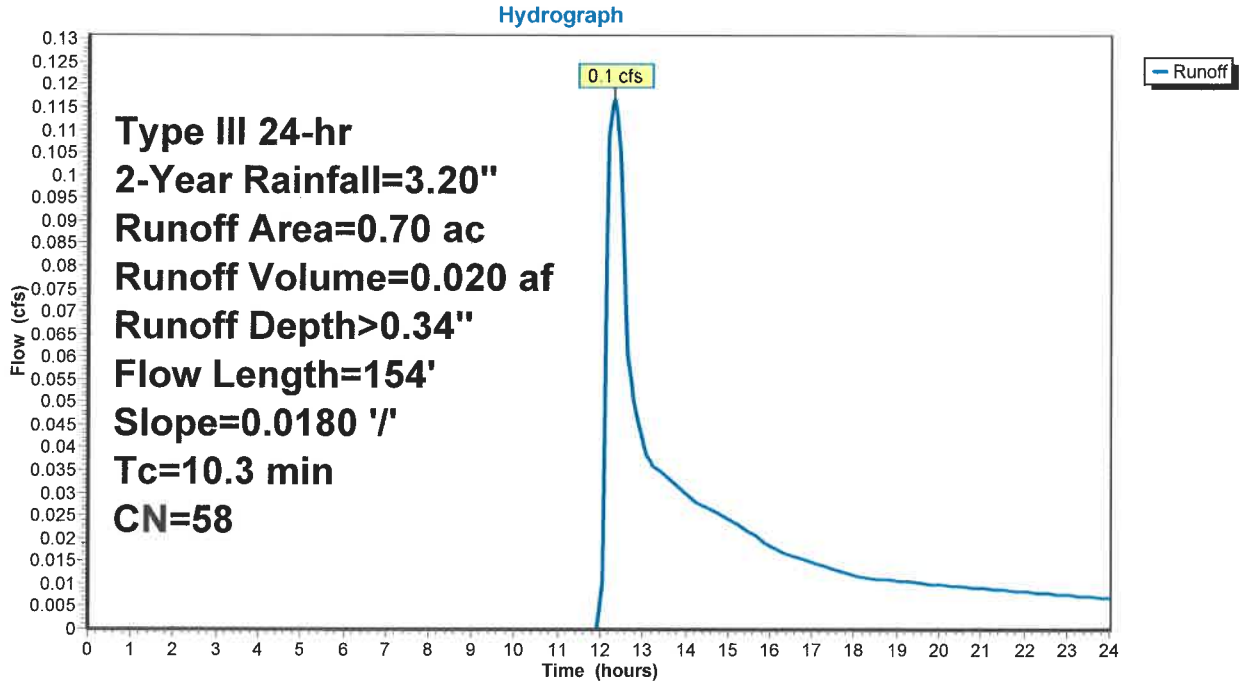
Runoff = 0.1 cfs @ 12.31 hrs, Volume= 0.020 af, Depth> 0.34"
Routed to Reach 1R : Route One

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

Area (ac)	CN	Description
0.10	39	>75% Grass cover, Good, HSG A
0.60	61	>75% Grass cover, Good, HSG B
0.70	58	Weighted Average
0.70		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0180	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
1.8	104	0.0180	0.94		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.3	154	Total			

Subcatchment 10S: Subarea DA-2

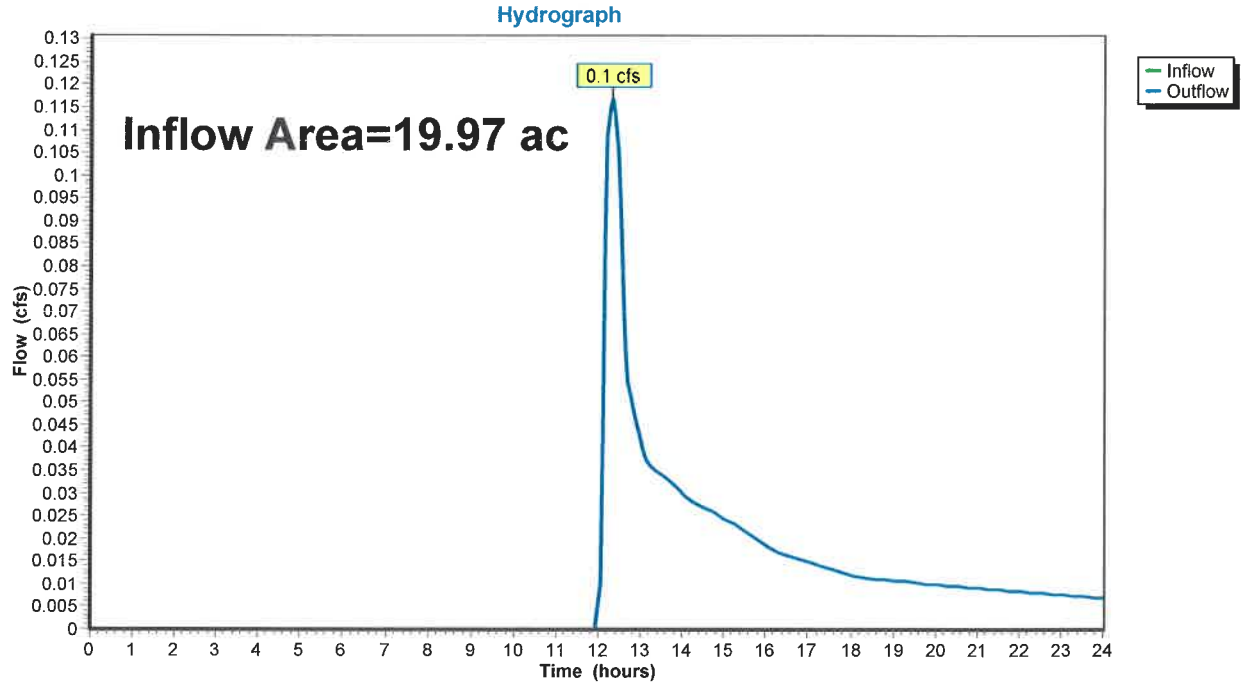


Summary for Reach 1R: Route One

Inflow Area = 19.97 ac, 65.45% Impervious, Inflow Depth > 0.01" for 2-Year event
Inflow = 0.1 cfs @ 12.31 hrs, Volume= 0.020 af
Outflow = 0.1 cfs @ 12.31 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 1R: Route One



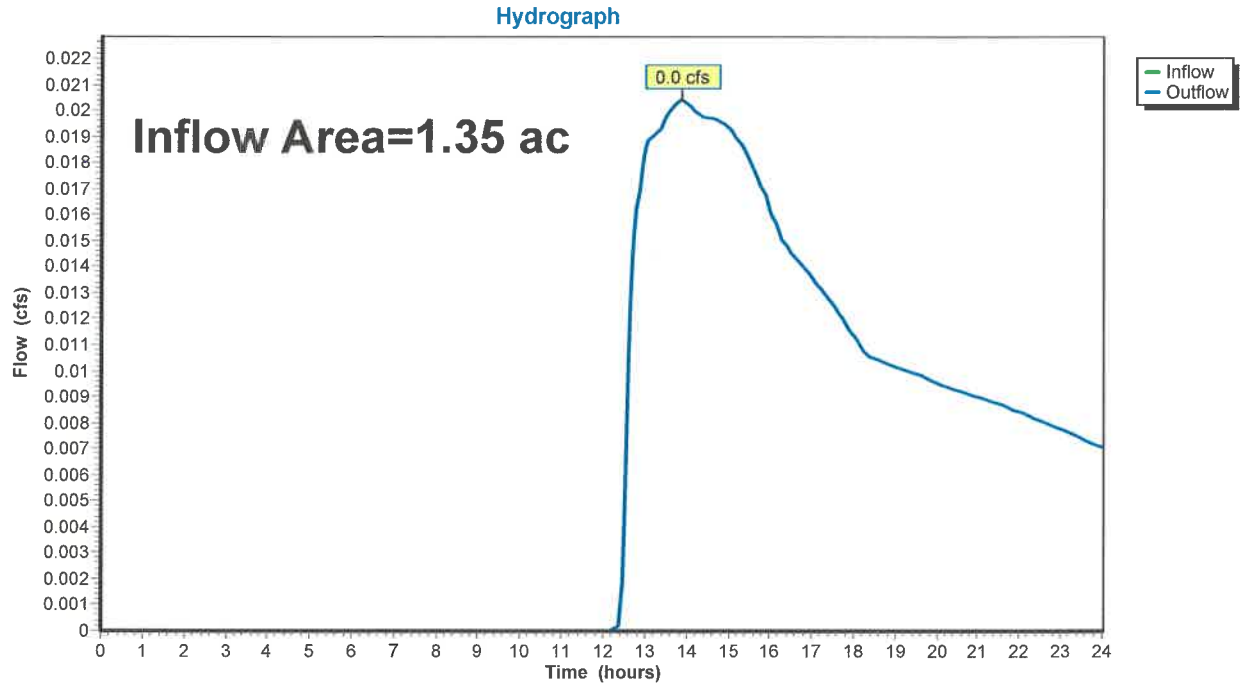
Summary for Reach 2R: NW Property Line

Inflow Area = 1.35 ac, 0.00% Impervious, Inflow Depth > 0.11" for 2-Year event
Inflow = 0.0 cfs @ 13.87 hrs, Volume= 0.012 af
Outflow = 0.0 cfs @ 13.87 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 2R: NW Property Line

Hydrograph

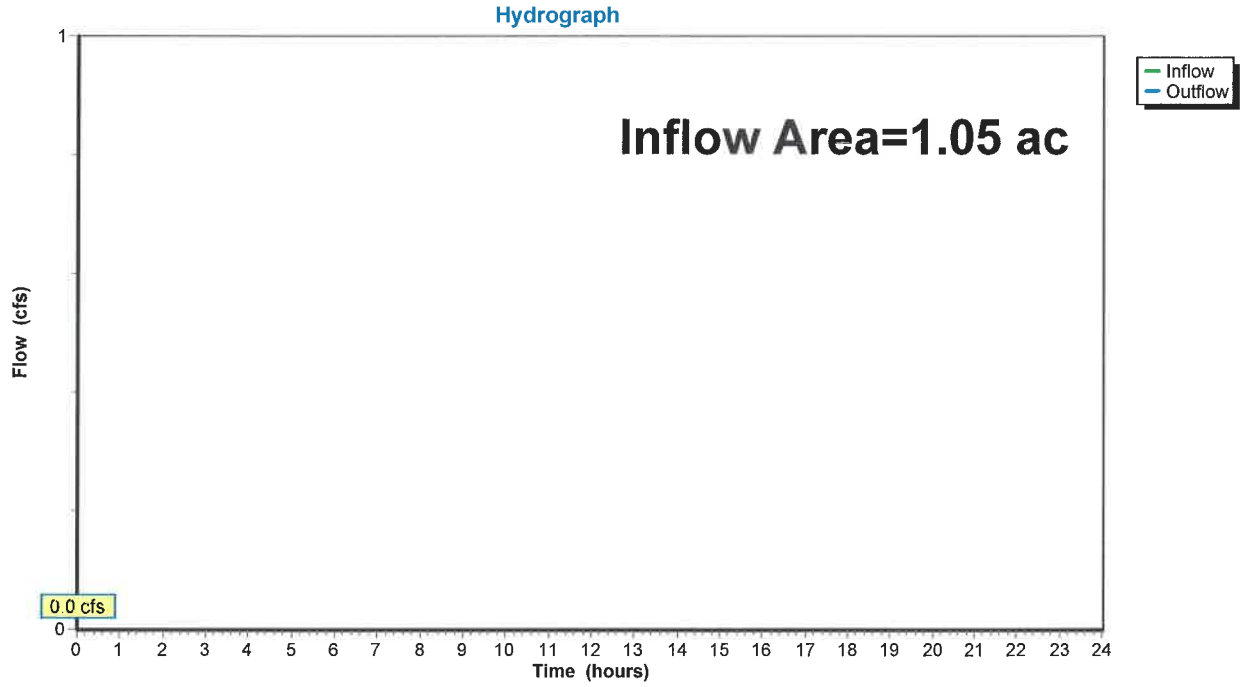


Summary for Reach 3R: SW Property Line

Inflow Area = 1.05 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Year event
Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 3R: SW Property Line

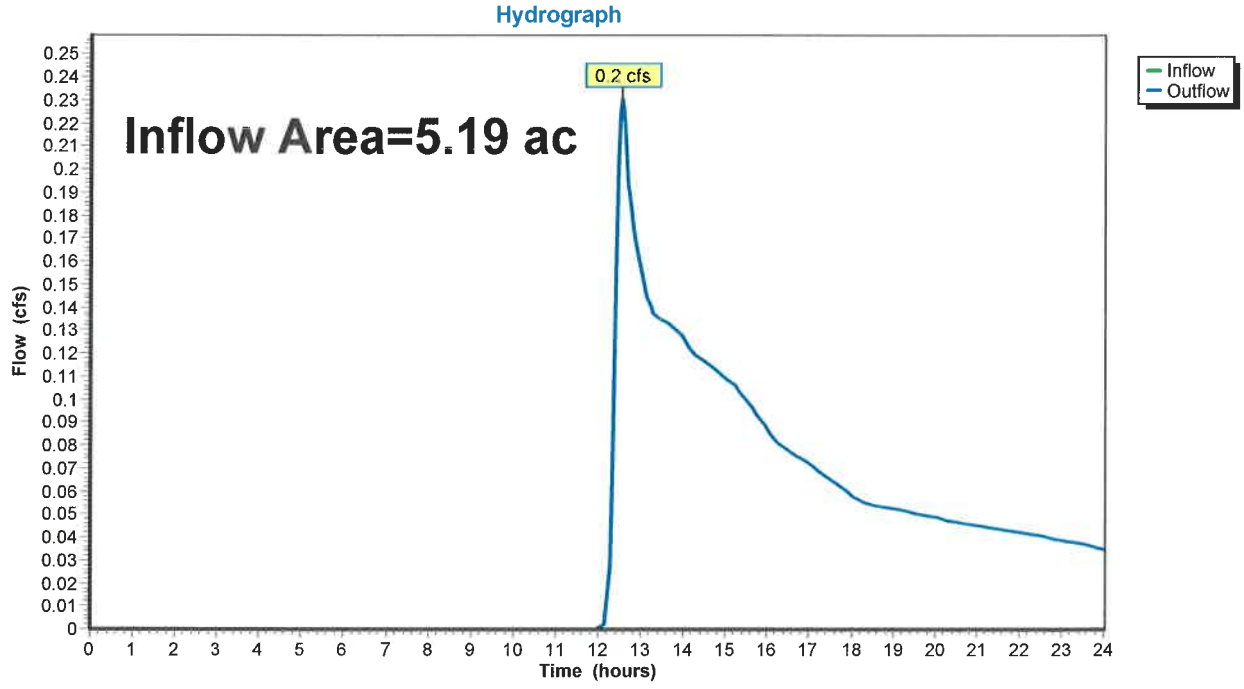


Summary for Reach 4R: Wetland Line

Inflow Area = 5.19 ac, 0.00% Impervious, Inflow Depth > 0.17" for 2-Year event
Inflow = 0.2 cfs @ 12.55 hrs, Volume= 0.074 af
Outflow = 0.2 cfs @ 12.55 hrs, Volume= 0.074 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 4R: Wetland Line



Summary for Pond 10P: Infiltration Basin #1

Inflow Area = 14.17 ac, 90.76% Impervious, Inflow Depth > 2.54" for 2-Year event
Inflow = 39.6 cfs @ 12.09 hrs, Volume= 3.002 af
Outflow = 1.4 cfs @ 15.50 hrs, Volume= 1.564 af, Atten= 96%, Lag= 204.6 min
Discarded = 1.4 cfs @ 15.50 hrs, Volume= 1.564 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 260.14' @ 15.50 hrs Surf.Area= 26,157 sf Storage= 83,135 cf

Plug-Flow detention time= 328.7 min calculated for 1.561 af (52% of inflow)
Center-of-Mass det. time= 218.3 min (1,005.0 - 786.7)

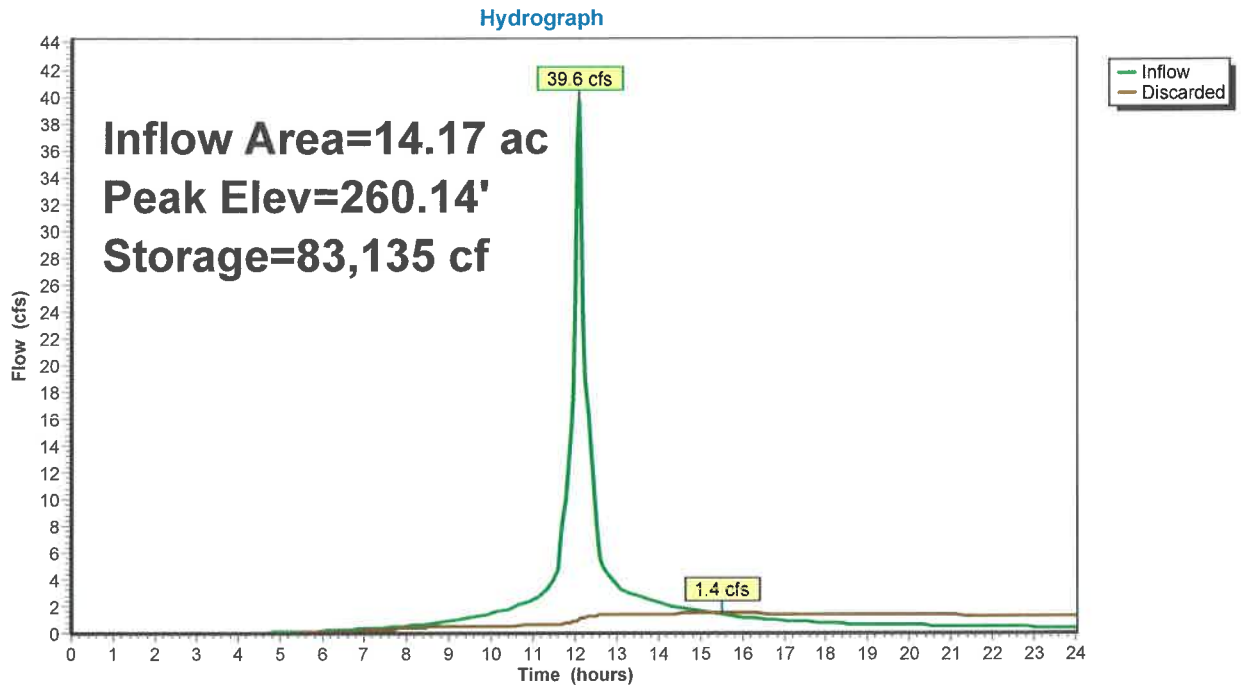
Volume	Invert	Avail.Storage	Storage Description
#1	256.50'	270,777 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
256.50	19,638	562.0	0	0	19,638
258.00	22,233	591.0	31,383	31,383	22,436
260.00	25,892	628.0	48,079	79,462	26,226
262.00	29,777	666.0	55,624	135,085	30,348
264.00	33,888	704.0	63,621	198,706	34,711
266.00	38,226	742.0	72,070	270,777	39,317

Device	Routing	Invert	Outlet Devices
#1	Discarded	256.50'	**1.020 in/hr Exfiltration over Wetted area** Conductivity to Groundwater Elevation = 254.20'

Discarded OutFlow Max=1.4 cfs @ 15.50 hrs HW=260.14' (Free Discharge)
↑**1=Exfiltration** (Controls 1.4 cfs)

Pond 10P: Infiltration Basin #1



Summary for Pond 11P: Infiltration Basin #2

Inflow Area = 5.10 ac, 4.12% Impervious, Inflow Depth > 0.52" for 2-Year event
Inflow = 1.8 cfs @ 12.22 hrs, Volume= 0.220 af
Outflow = 0.3 cfs @ 14.60 hrs, Volume= 0.217 af, Atten= 85%, Lag= 142.7 min
Discarded = 0.3 cfs @ 14.60 hrs, Volume= 0.217 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 251.34' @ 14.60 hrs Surf.Area= 9,553 sf Storage= 3,205 cf

Plug-Flow detention time= 136.3 min calculated for 0.217 af (99% of inflow)
Center-of-Mass det. time= 130.2 min (1,038.4 - 908.3)

Volume	Invert	Avail.Storage	Storage Description
#1	251.00'	47,350 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

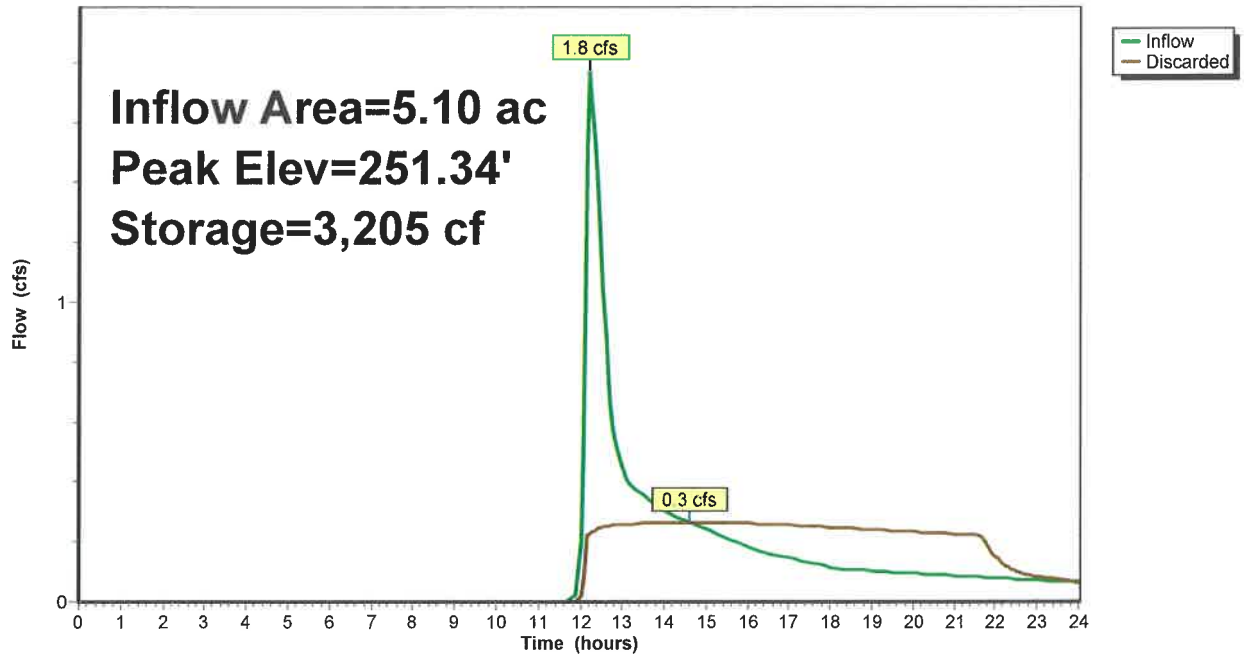
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
251.00	9,110	430.0	0	0	9,110
252.00	10,430	449.0	9,763	9,763	10,510
254.00	13,238	487.0	23,612	33,375	13,491
255.00	14,726	505.0	13,975	47,350	14,996

Device	Routing	Invert	Outlet Devices
#1	Discarded	251.00'	**1.020 in/hr Exfiltration over Wetted area** Conductivity to Groundwater Elevation = 249.00'

Discarded OutFlow Max=0.3 cfs @ 14.60 hrs HW=251.34' (Free Discharge)
↑**1=Exfiltration** (Controls 0.3 cfs)

Pond 11P: Infiltration Basin #2

Hydrograph



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

Subcatchment5S: Subarea DA-1 Runoff Area=5.10 ac 4.12% Impervious Runoff Depth>1.32"
Flow Length=338' Tc=12.3 min CN=63 Runoff=5.8 cfs 0.560 af

Subcatchment6S: Subarea DB Runoff Area=14.17 ac 90.76% Impervious Runoff Depth>4.01"
Flow Length=820' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=60.8 cfs 4.735 af

Subcatchment7S: Subarea DC Runoff Area=1.35 ac 0.00% Impervious Runoff Depth>0.52"
Flow Length=628' Tc=19.2 min CN=49 Runoff=0.3 cfs 0.059 af

Subcatchment8S: Subarea DD Runoff Area=1.05 ac 0.00% Impervious Runoff Depth>0.00"
Flow Length=290' Tc=17.2 min CN=30 Runoff=0.0 cfs 0.000 af

Subcatchment9S: Subarea DE Runoff Area=5.19 ac 0.00% Impervious Runoff Depth>0.67"
Flow Length=457' Tc=15.2 min CN=52 Runoff=2.0 cfs 0.290 af

Subcatchment10S: Subarea DA-2 Runoff Area=0.70 ac 0.00% Impervious Runoff Depth>1.00"
Flow Length=154' Slope=0.0180 '/' Tc=10.3 min CN=58 Runoff=0.6 cfs 0.059 af

Reach 1R: Route One Inflow=0.6 cfs 0.059 af
Outflow=0.6 cfs 0.059 af

Reach 2R: NW Property Line Inflow=0.3 cfs 0.059 af
Outflow=0.3 cfs 0.059 af

Reach 3R: SW Property Line Inflow=0.0 cfs 0.000 af
Outflow=0.0 cfs 0.000 af

Reach 4R: Wetland Line Inflow=2.0 cfs 0.290 af
Outflow=2.0 cfs 0.290 af

Pond 10P: Infiltration Basin #1 Peak Elev=262.07' Storage=137,252 cf Inflow=60.8 cfs 4.735 af
Outflow=2.0 cfs 2.212 af

Pond 11P: Infiltration Basin #2 Peak Elev=252.28' Storage=12,746 cf Inflow=5.8 cfs 0.560 af
Outflow=0.4 cfs 0.379 af

Total Runoff Area = 27.56 ac Runoff Volume = 5.702 af Average Runoff Depth = 2.48"
52.58% Pervious = 14.49 ac 47.42% Impervious = 13.07 ac

Summary for Subcatchment 5S: Subarea DA-1

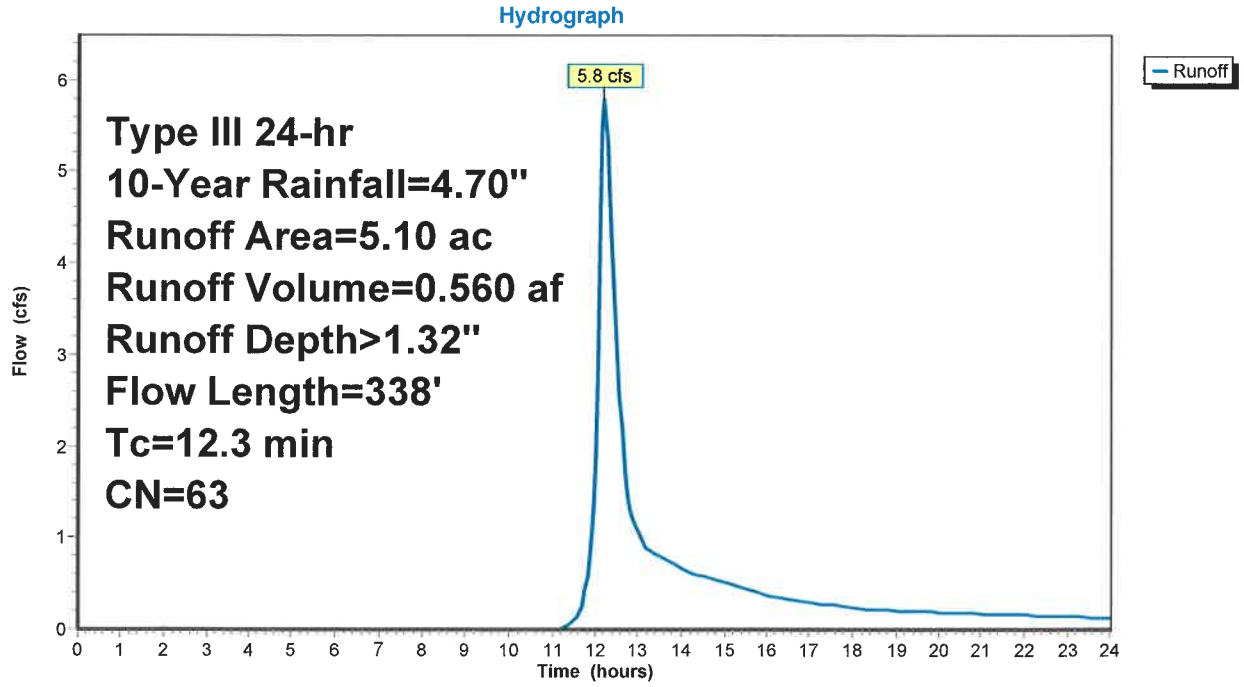
Runoff = 5.8 cfs @ 12.19 hrs, Volume= 0.560 af, Depth> 1.32"
Routed to Pond 11P : Infiltration Basin #2

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

Area (ac)	CN	Description
0.04	39	>75% Grass cover, Good, HSG A
4.73	61	>75% Grass cover, Good, HSG B
0.12	74	>75% Grass cover, Good, HSG C
0.21	98	Paved parking, HSG B
5.10	63	Weighted Average
4.89		95.88% Pervious Area
0.21		4.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	50	0.0300	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
5.3	288	0.0170	0.91		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
12.3	338	Total			

Subcatchment 5S: Subarea DA-1



Summary for Subcatchment 6S: Subarea DB

Runoff = 60.8 cfs @ 12.09 hrs, Volume= 4.735 af, Depth> 4.01"
Routed to Pond 10P : Infiltration Basin #1

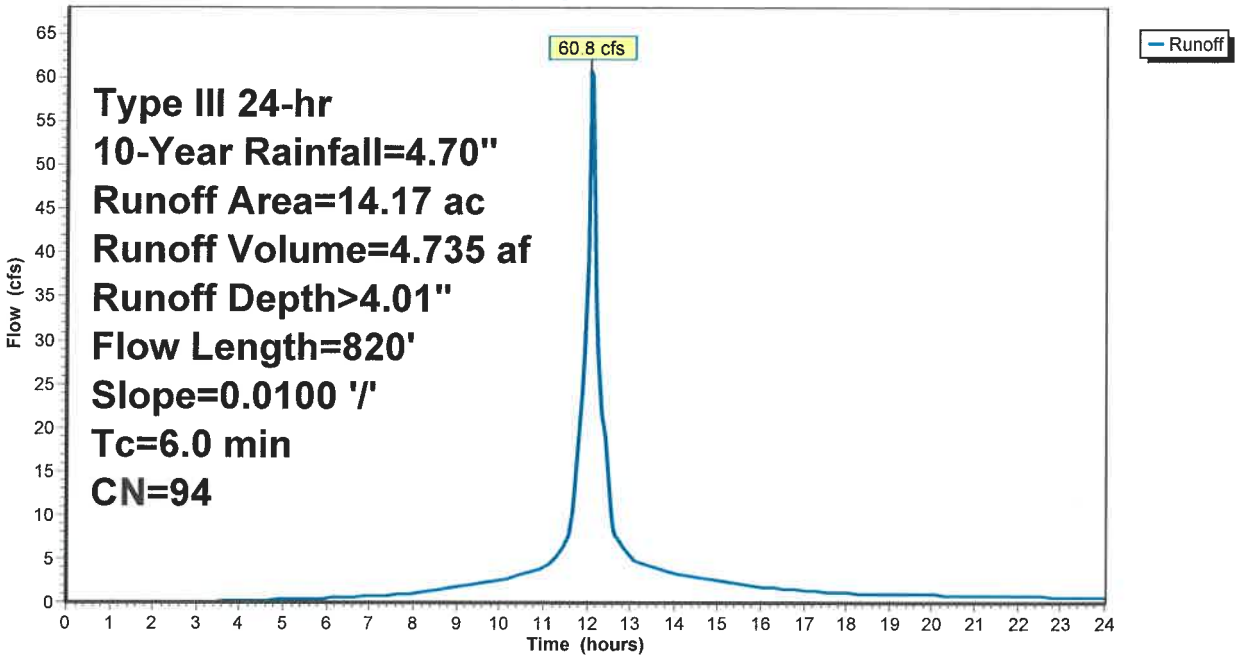
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.70"

Area (ac)	CN	Description
0.26	39	>75% Grass cover, Good, HSG A
0.94	61	>75% Grass cover, Good, HSG B
0.11	74	>75% Grass cover, Good, HSG C
2.74	98	Paved parking, HSG A
3.40	98	Paved parking, HSG B
1.56	98	Paved parking, HSG C
1.08	98	Unconnected roofs, HSG A
0.50	98	Unconnected roofs, HSG B
3.58	98	Unconnected roofs, HSG C
14.17	94	Weighted Average
1.31		9.24% Pervious Area
12.86		90.76% Impervious Area
5.16		40.12% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	50	0.0100	0.91		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.20"
2.8	770	0.0100	4.54	3.56	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
3.7	820	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 6S: Subarea DB

Hydrograph



Summary for Subcatchment 7S: Subarea DC

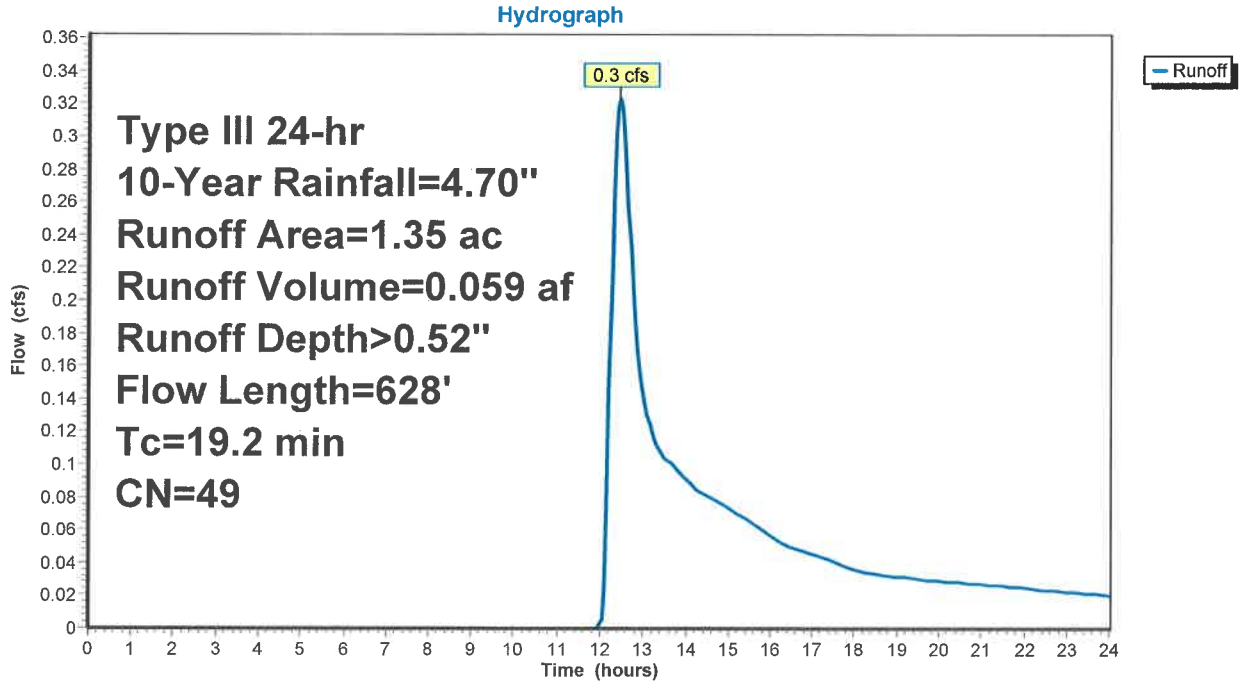
Runoff = 0.3 cfs @ 12.45 hrs, Volume= 0.059 af, Depth> 0.52"
Routed to Reach 2R : NW Property Line

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

Area (ac)	CN	Description
0.72	30	Woods, Good, HSG A
0.63	70	Woods, Good, HSG C
1.35	49	Weighted Average
1.35		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	50	0.0600	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
11.3	578	0.0290	0.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.2	628	Total			

Subcatchment 7S: Subarea DC



Summary for Subcatchment 8S: Subarea DD

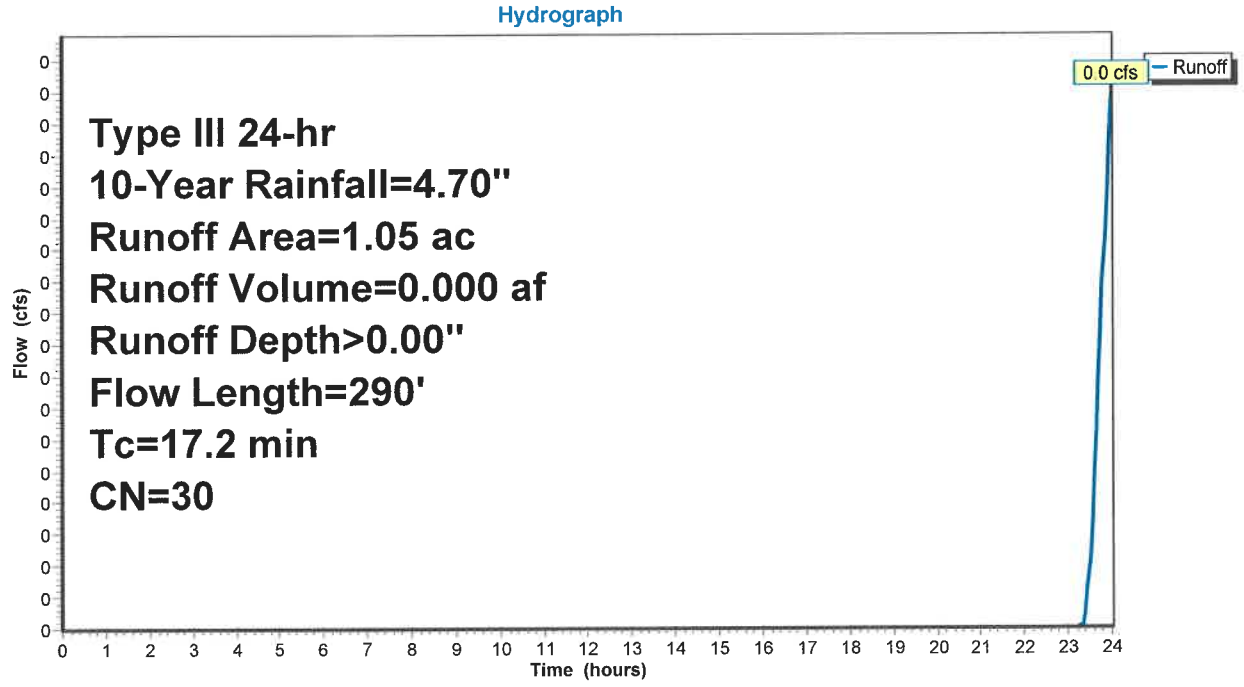
Runoff = 0.0 cfs @ 24.00 hrs, Volume= 0.000 af, Depth> 0.00"
Routed to Reach 3R : SW Property Line

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

Area (ac)	CN	Description
1.05	30	Woods, Good, HSG A
1.05		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	50	0.0260	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
6.1	240	0.0170	0.65		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.2	290	Total			

Subcatchment 8S: Subarea DD



Summary for Subcatchment 9S: Subarea DE

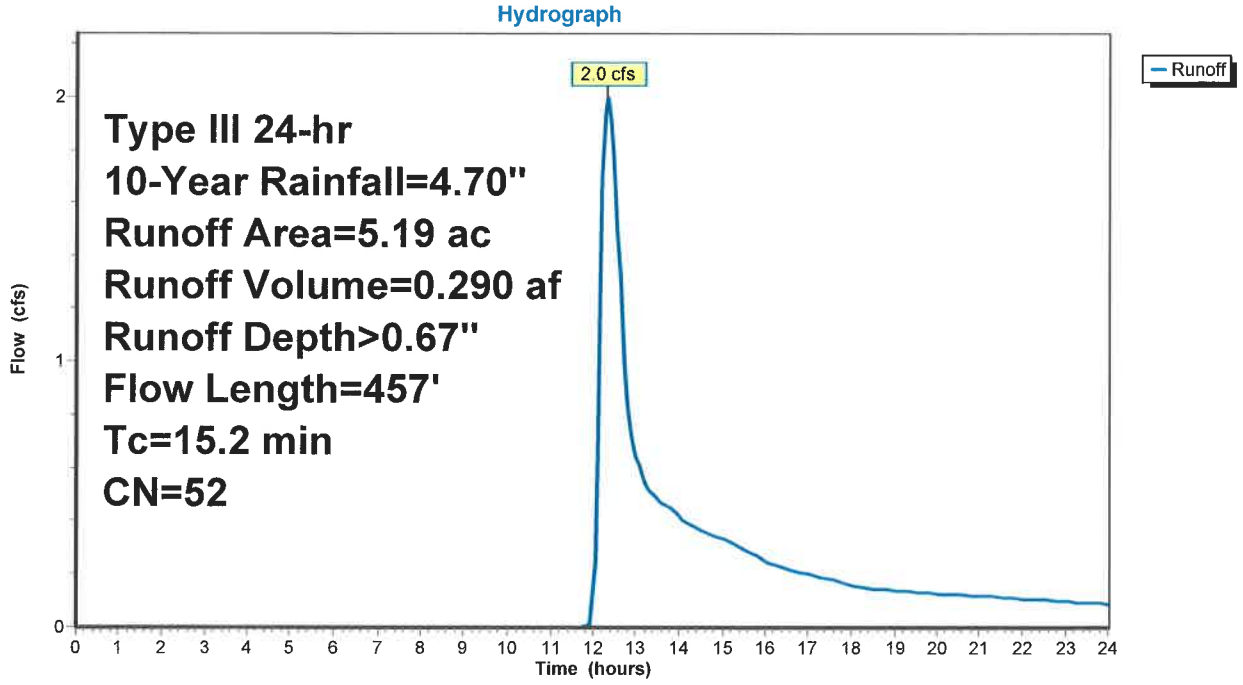
Runoff = 2.0 cfs @ 12.30 hrs, Volume= 0.290 af, Depth> 0.67"
Routed to Reach 4R : Wetland Line

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

Area (ac)	CN	Description
2.00	36	Woods, Fair, HSG A
2.73	60	Woods, Fair, HSG B
0.46	79	Woods, Fair, HSG D
5.19	52	Weighted Average
5.19		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	50	0.0720	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
7.8	407	0.0300	0.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.2	457	Total			

Subcatchment 9S: Subarea DE



Summary for Subcatchment 10S: Subarea DA-2

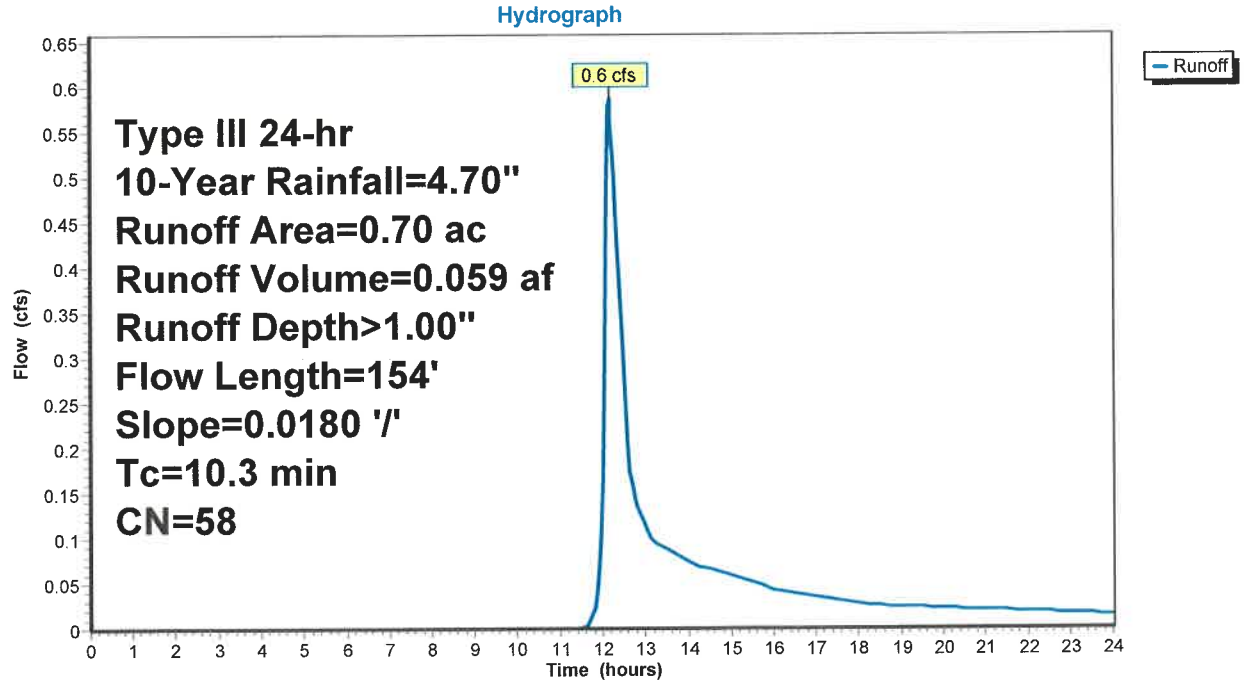
Runoff = 0.6 cfs @ 12.17 hrs, Volume= 0.059 af, Depth> 1.00"
Routed to Reach 1R : Route One

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

Area (ac)	CN	Description
0.10	39	>75% Grass cover, Good, HSG A
0.60	61	>75% Grass cover, Good, HSG B
0.70	58	Weighted Average
0.70		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0180	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
1.8	104	0.0180	0.94		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.3	154	Total			

Subcatchment 10S: Subarea DA-2

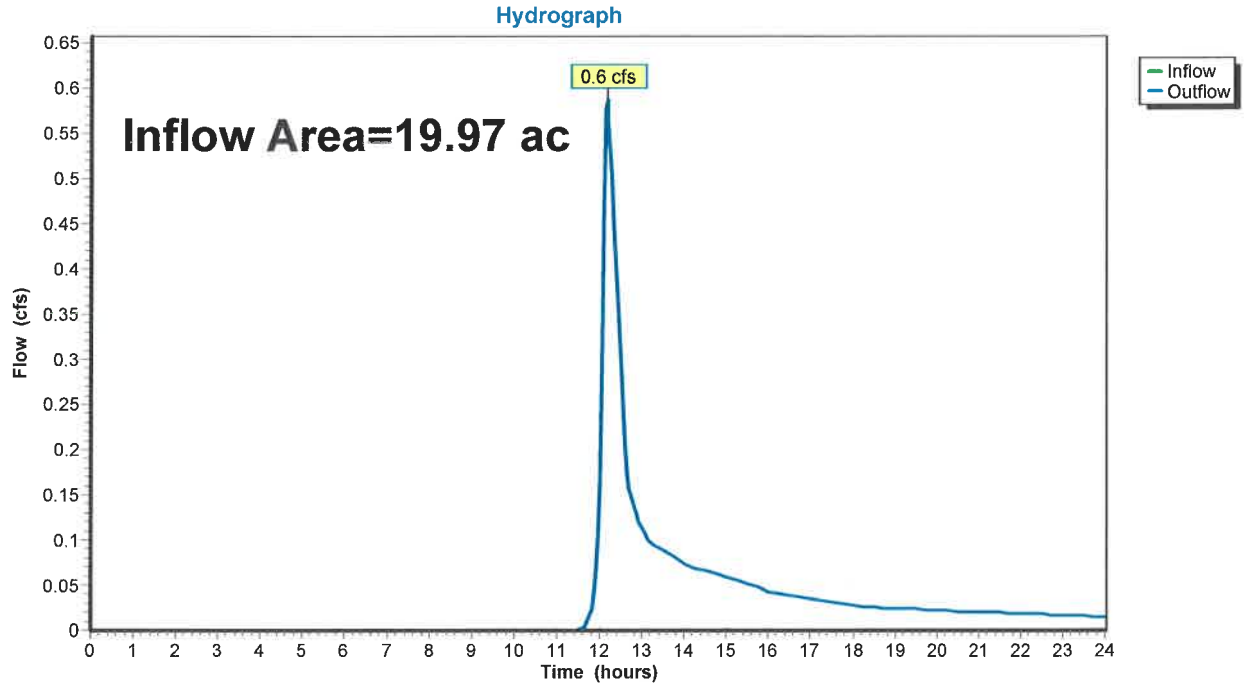


Summary for Reach 1R: Route One

Inflow Area = 19.97 ac, 65.45% Impervious, Inflow Depth > 0.04" for 10-Year event
Inflow = 0.6 cfs @ 12.17 hrs, Volume= 0.059 af
Outflow = 0.6 cfs @ 12.17 hrs, Volume= 0.059 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 1R: Route One

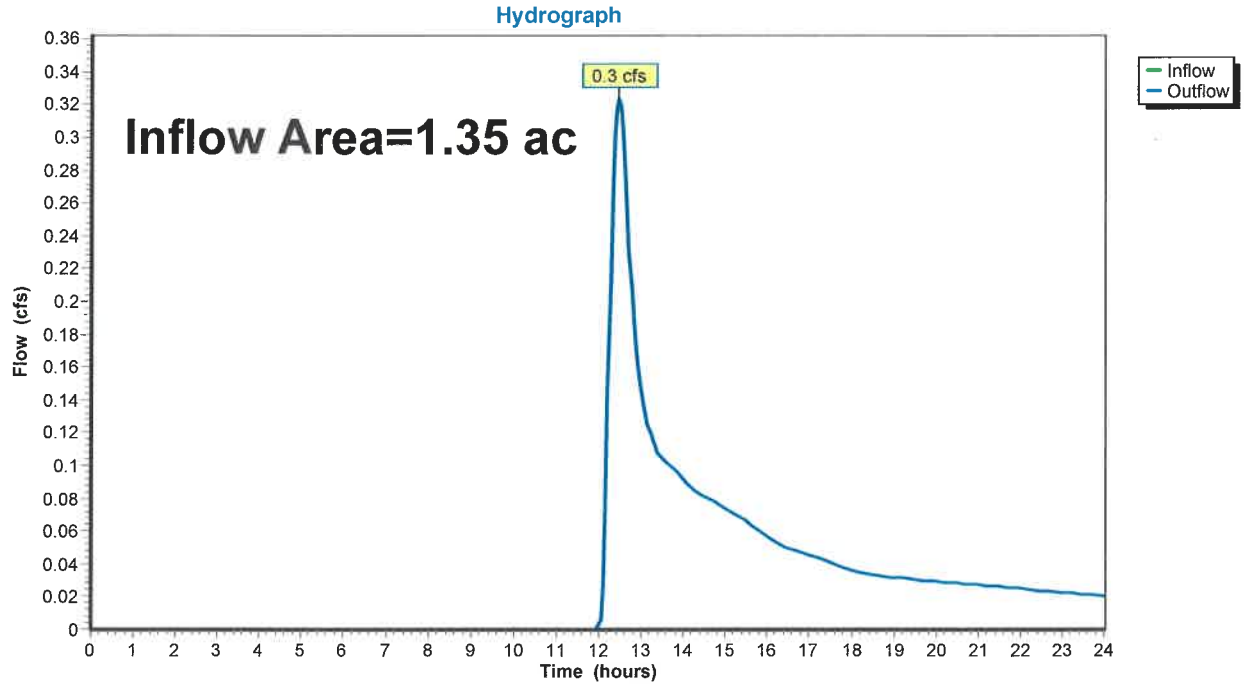


Summary for Reach 2R: NW Property Line

Inflow Area = 1.35 ac, 0.00% Impervious, Inflow Depth > 0.52" for 10-Year event
Inflow = 0.3 cfs @ 12.45 hrs, Volume= 0.059 af
Outflow = 0.3 cfs @ 12.45 hrs, Volume= 0.059 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 2R: NW Property Line

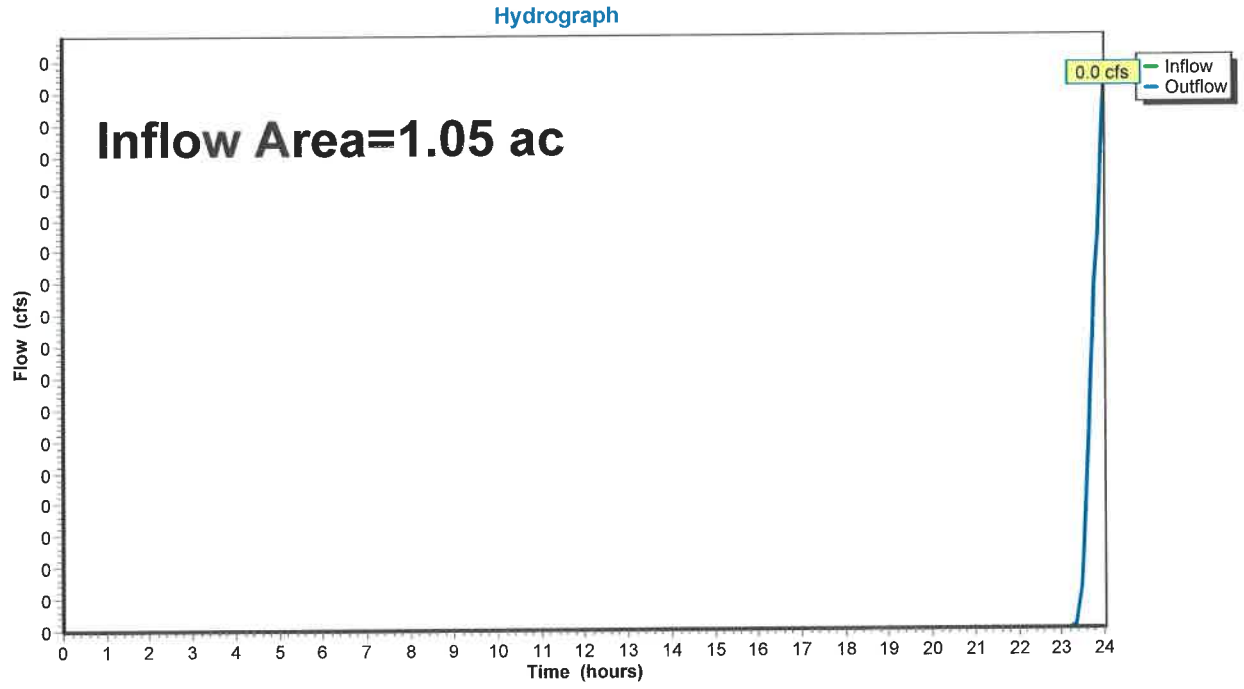


Summary for Reach 3R: SW Property Line

Inflow Area = 1.05 ac, 0.00% Impervious, Inflow Depth > 0.00" for 10-Year event
Inflow = 0.0 cfs @ 24.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 24.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 3R: SW Property Line

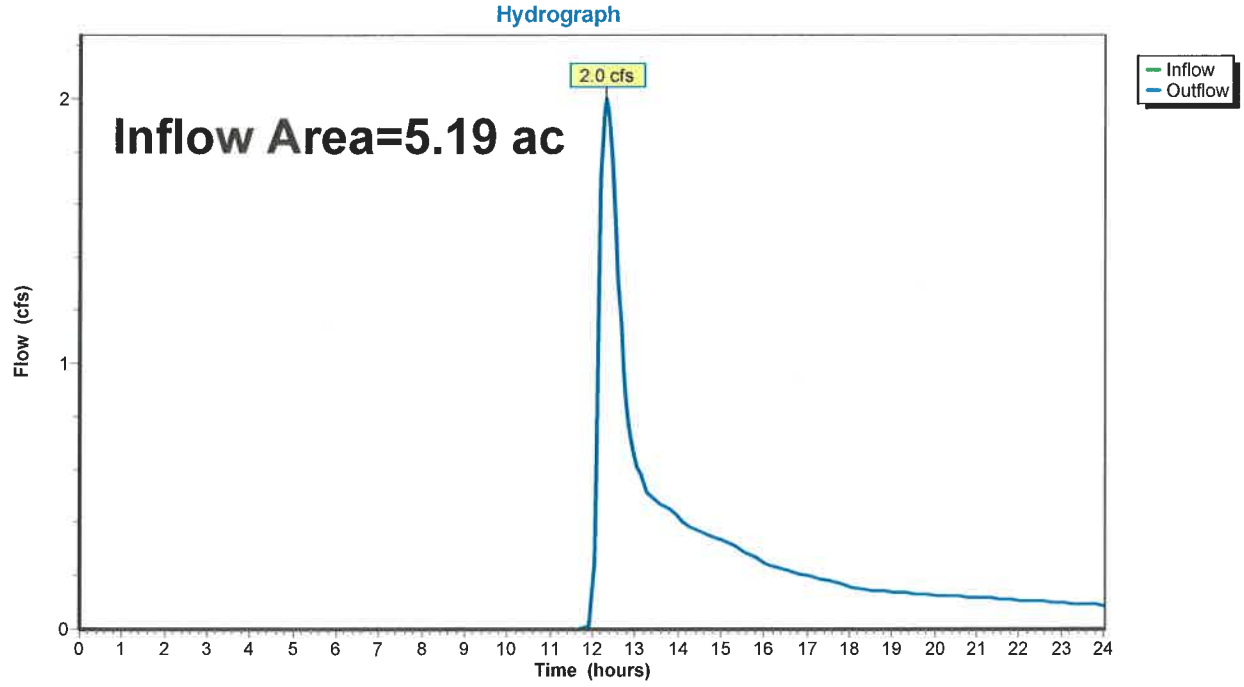


Summary for Reach 4R: Wetland Line

Inflow Area = 5.19 ac, 0.00% Impervious, Inflow Depth > 0.67" for 10-Year event
Inflow = 2.0 cfs @ 12.30 hrs, Volume= 0.290 af
Outflow = 2.0 cfs @ 12.30 hrs, Volume= 0.290 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 4R: Wetland Line



Summary for Pond 10P: Infiltration Basin #1

Inflow Area = 14.17 ac, 90.76% Impervious, Inflow Depth > 4.01" for 10-Year event
Inflow = 60.8 cfs @ 12.09 hrs, Volume= 4.735 af
Outflow = 2.0 cfs @ 15.69 hrs, Volume= 2.212 af, Atten= 97%, Lag= 215.9 min
Discarded = 2.0 cfs @ 15.69 hrs, Volume= 2.212 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 262.07' @ 15.69 hrs Surf.Area= 29,922 sf Storage= 137,252 cf

Plug-Flow detention time= 346.2 min calculated for 2.212 af (47% of inflow)
Center-of-Mass det. time= 224.6 min (999.4 - 774.8)

Volume	Invert	Avail.Storage	Storage Description
#1	256.50'	270,777 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

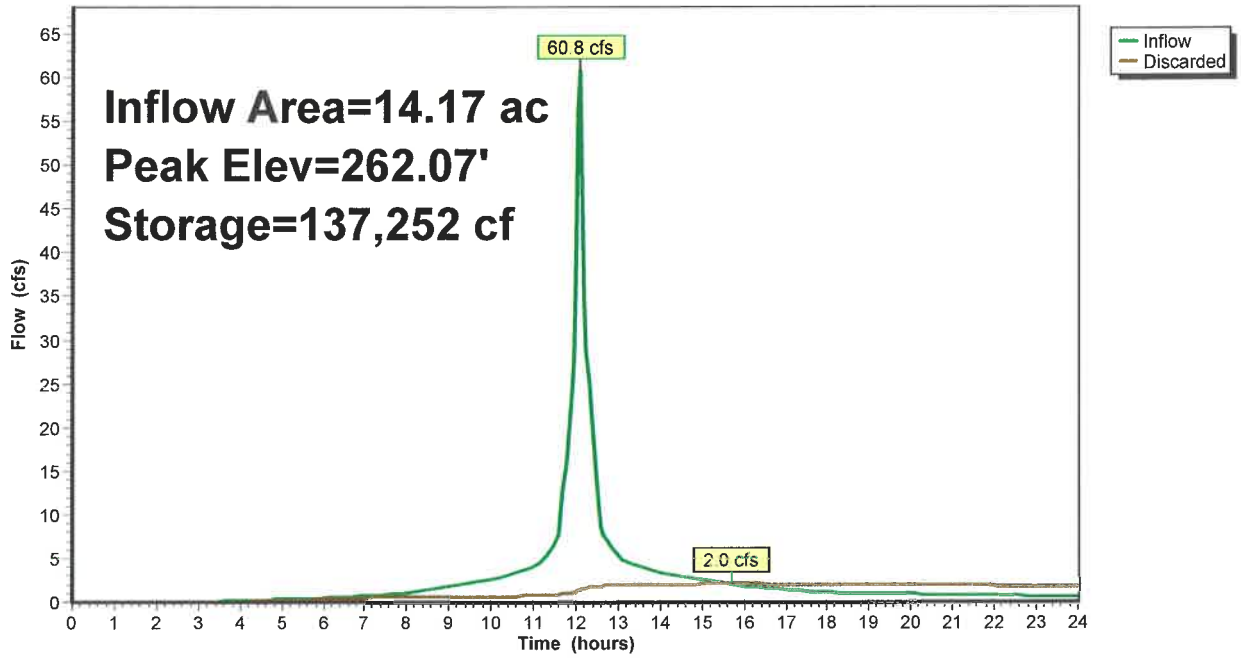
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
256.50	19,638	562.0	0	0	19,638
258.00	22,233	591.0	31,383	31,383	22,436
260.00	25,892	628.0	48,079	79,462	26,226
262.00	29,777	666.0	55,624	135,085	30,348
264.00	33,888	704.0	63,621	198,706	34,711
266.00	38,226	742.0	72,070	270,777	39,317

Device	Routing	Invert	Outlet Devices
#1	Discarded	256.50'	**1.020 in/hr Exfiltration over Wetted area** Conductivity to Groundwater Elevation = 254.20'

Discarded OutFlow Max=2.0 cfs @ 15.69 hrs HW=262.07' (Free Discharge)
↑**1=Exfiltration** (Controls 2.0 cfs)

Pond 10P: Infiltration Basin #1

Hydrograph



Summary for Pond 11P: Infiltration Basin #2

Inflow Area = 5.10 ac, 4.12% Impervious, Inflow Depth > 1.32" for 10-Year event
Inflow = 5.8 cfs @ 12.19 hrs, Volume= 0.560 af
Outflow = 0.4 cfs @ 15.82 hrs, Volume= 0.379 af, Atten= 93%, Lag= 217.8 min
Discarded = 0.4 cfs @ 15.82 hrs, Volume= 0.379 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 252.28' @ 15.82 hrs Surf.Area= 10,804 sf Storage= 12,746 cf

Plug-Flow detention time= 306.0 min calculated for 0.379 af (68% of inflow)
Center-of-Mass det. time= 196.7 min (1,071.5 - 874.8)

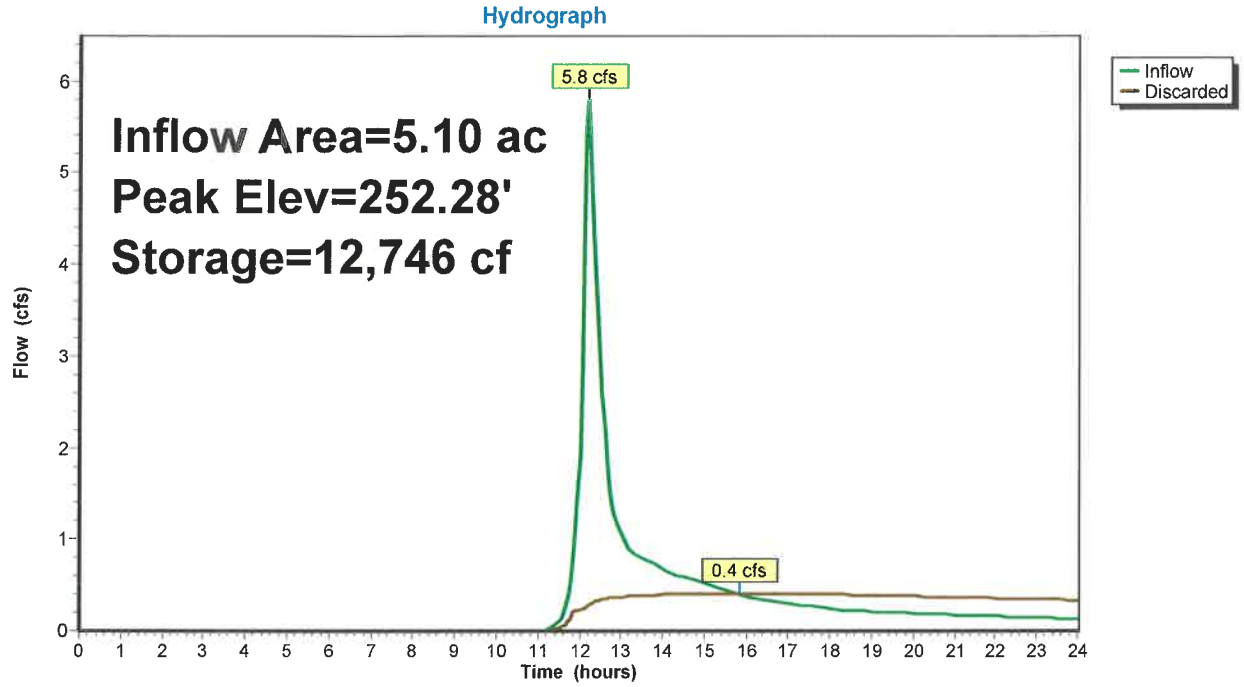
Volume	Invert	Avail.Storage	Storage Description
#1	251.00'	47,350 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
251.00	9,110	430.0	0	0	9,110
252.00	10,430	449.0	9,763	9,763	10,510
254.00	13,238	487.0	23,612	33,375	13,491
255.00	14,726	505.0	13,975	47,350	14,996

Device	Routing	Invert	Outlet Devices
#1	Discarded	251.00'	**1.020 in/hr Exfiltration over Wetted area** Conductivity to Groundwater Elevation = 249.00'

Discarded OutFlow Max=0.4 cfs @ 15.82 hrs HW=252.28' (Free Discharge)
↑**1=Exfiltration** (Controls 0.4 cfs)

Pond 11P: Infiltration Basin #2



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

Subcatchment5S: Subarea DA-1 Runoff Area=5.10 ac 4.12% Impervious Runoff Depth>2.67"
Flow Length=338' Tc=12.3 min CN=63 Runoff=12.6 cfs 1.135 af

Subcatchment6S: Subarea DB Runoff Area=14.17 ac 90.76% Impervious Runoff Depth>5.99"
Flow Length=820' Slope=0.0100 '/' Tc=6.0 min CN=94 Runoff=88.7 cfs 7.069 af

Subcatchment7S: Subarea DC Runoff Area=1.35 ac 0.00% Impervious Runoff Depth>1.41"
Flow Length=628' Tc=19.2 min CN=49 Runoff=1.3 cfs 0.159 af

Subcatchment8S: Subarea DD Runoff Area=1.05 ac 0.00% Impervious Runoff Depth>0.16"
Flow Length=290' Tc=17.2 min CN=30 Runoff=0.0 cfs 0.014 af

Subcatchment9S: Subarea DE Runoff Area=5.19 ac 0.00% Impervious Runoff Depth>1.67"
Flow Length=457' Tc=15.2 min CN=52 Runoff=6.7 cfs 0.720 af

Subcatchment10S: Subarea DA-2 Runoff Area=0.70 ac 0.00% Impervious Runoff Depth>2.20"
Flow Length=154' Slope=0.0180 '/' Tc=10.3 min CN=58 Runoff=1.5 cfs 0.128 af

Reach 1R: Route One Inflow=1.5 cfs 0.128 af
Outflow=1.5 cfs 0.128 af

Reach 2R: NW Property Line Inflow=1.3 cfs 0.159 af
Outflow=1.3 cfs 0.159 af

Reach 3R: SW Property Line Inflow=0.0 cfs 0.014 af
Outflow=0.0 cfs 0.014 af

Reach 4R: Wetland Line Inflow=6.7 cfs 0.720 af
Outflow=6.7 cfs 0.720 af

Pond 10P: Infiltration Basin #1 Peak Elev=264.38' Storage=211,796 cf Inflow=88.7 cfs 7.069 af
Outflow=2.7 cfs 3.027 af

Pond 11P: Infiltration Basin #2 Peak Elev=253.71' Storage=29,594 cf Inflow=12.6 cfs 1.135 af
Outflow=0.6 cfs 0.617 af

Total Runoff Area = 27.56 ac Runoff Volume = 9.226 af Average Runoff Depth = 4.02"
52.58% Pervious = 14.49 ac 47.42% Impervious = 13.07 ac

Summary for Subcatchment 5S: Subarea DA-1

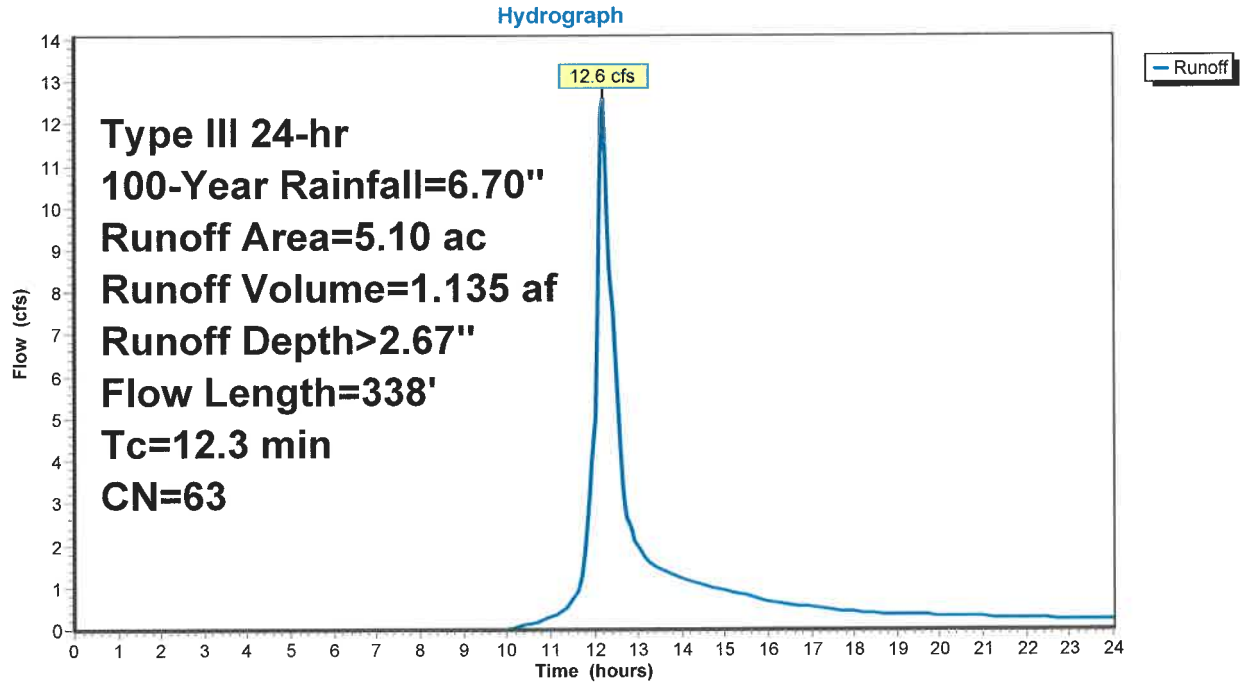
Runoff = 12.6 cfs @ 12.18 hrs, Volume= 1.135 af, Depth> 2.67"
Routed to Pond 11P : Infiltration Basin #2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.70"

Area (ac)	CN	Description
0.04	39	>75% Grass cover, Good, HSG A
4.73	61	>75% Grass cover, Good, HSG B
0.12	74	>75% Grass cover, Good, HSG C
0.21	98	Paved parking, HSG B
5.10	63	Weighted Average
4.89		95.88% Pervious Area
0.21		4.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0	50	0.0300	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
5.3	288	0.0170	0.91		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
12.3	338	Total			

Subcatchment 5S: Subarea DA-1



Summary for Subcatchment 6S: Subarea DB

Runoff = 88.7 cfs @ 12.09 hrs, Volume= 7.069 af, Depth> 5.99"
Routed to Pond 10P : Infiltration Basin #1

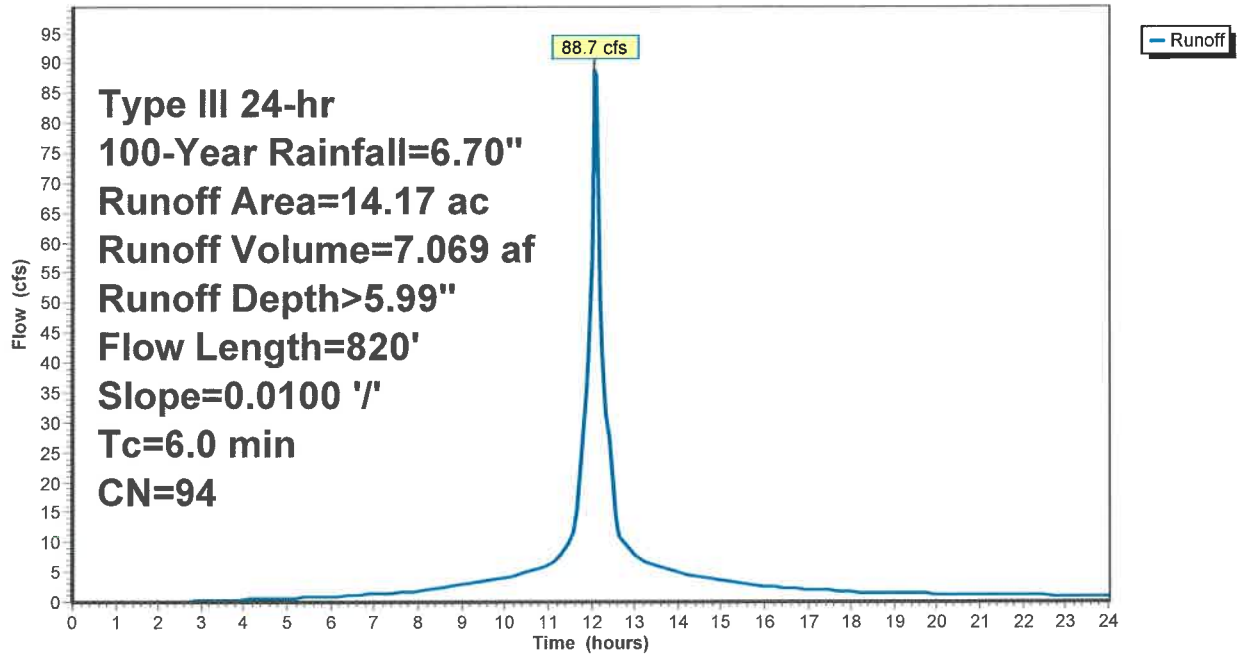
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.70"

Area (ac)	CN	Description
0.26	39	>75% Grass cover, Good, HSG A
0.94	61	>75% Grass cover, Good, HSG B
0.11	74	>75% Grass cover, Good, HSG C
2.74	98	Paved parking, HSG A
3.40	98	Paved parking, HSG B
1.56	98	Paved parking, HSG C
1.08	98	Unconnected roofs, HSG A
0.50	98	Unconnected roofs, HSG B
3.58	98	Unconnected roofs, HSG C
14.17	94	Weighted Average
1.31		9.24% Pervious Area
12.86		90.76% Impervious Area
5.16		40.12% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	50	0.0100	0.91		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.20"
2.8	770	0.0100	4.54	3.56	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
3.7	820	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 6S: Subarea DB

Hydrograph



Summary for Subcatchment 7S: Subarea DC

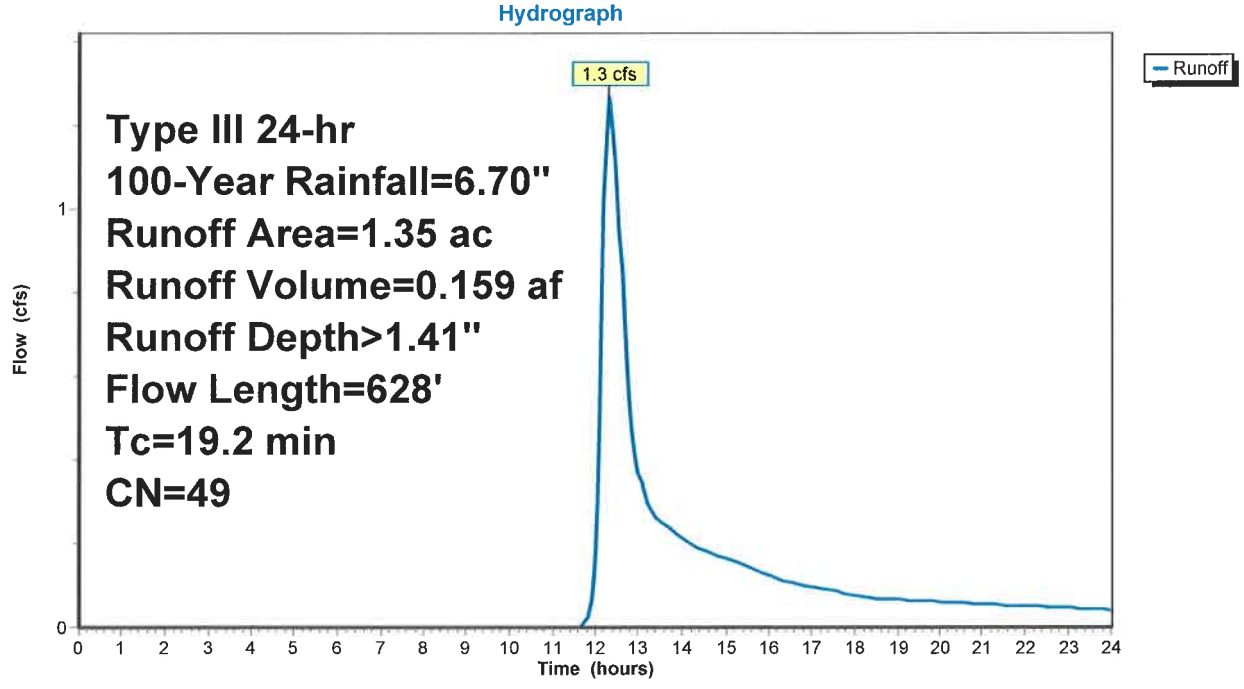
Runoff = 1.3 cfs @ 12.32 hrs, Volume= 0.159 af, Depth> 1.41"
Routed to Reach 2R : NW Property Line

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.70"

Area (ac)	CN	Description
0.72	30	Woods, Good, HSG A
0.63	70	Woods, Good, HSG C
1.35	49	Weighted Average
1.35		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	50	0.0600	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
11.3	578	0.0290	0.85		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.2	628	Total			

Subcatchment 7S: Subarea DC



Summary for Subcatchment 8S: Subarea DD

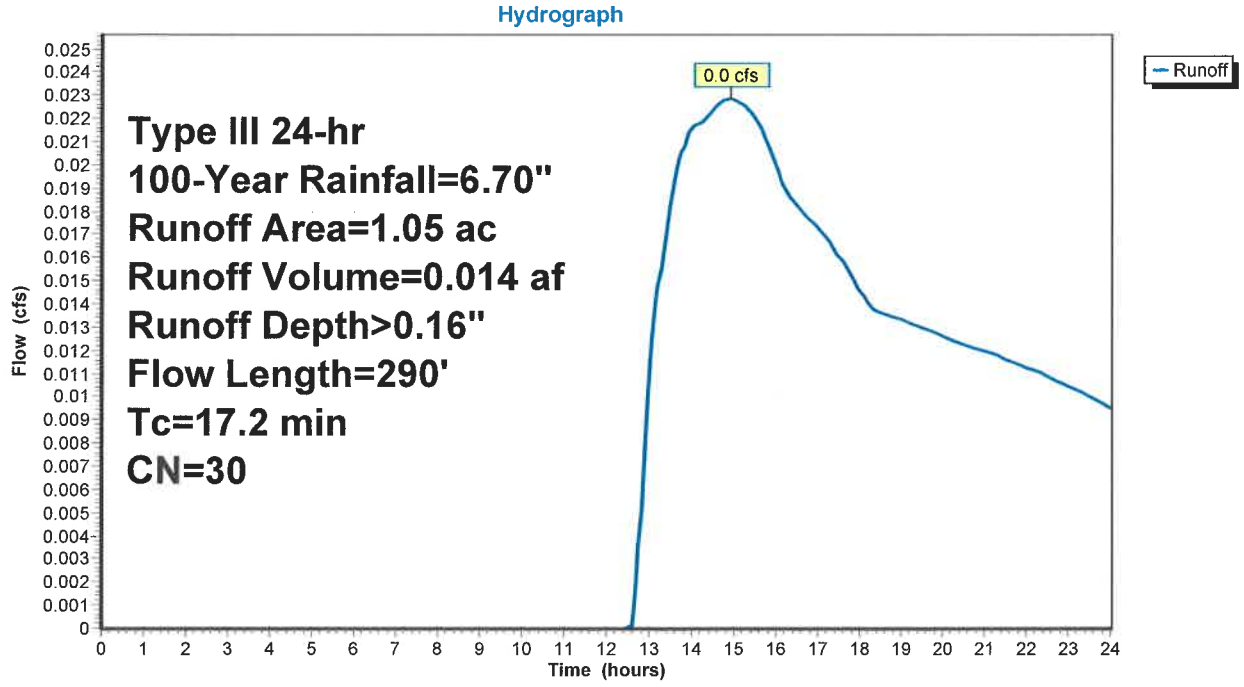
Runoff = 0.0 cfs @ 14.90 hrs, Volume= 0.014 af, Depth> 0.16"
Routed to Reach 3R : SW Property Line

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.70"

Area (ac)	CN	Description
1.05	30	Woods, Good, HSG A
1.05		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	50	0.0260	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
6.1	240	0.0170	0.65		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.2	290	Total			

Subcatchment 8S: Subarea DD



Summary for Subcatchment 9S: Subarea DE

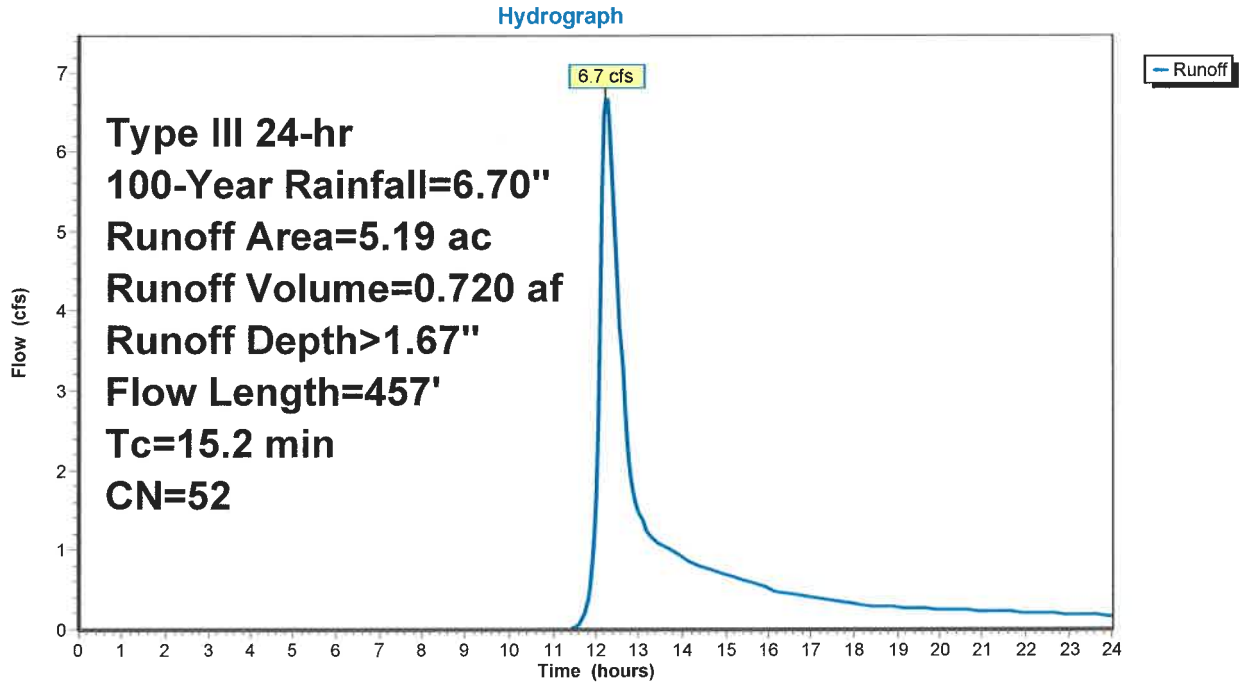
Runoff = 6.7 cfs @ 12.24 hrs, Volume= 0.720 af, Depth> 1.67"
Routed to Reach 4R : Wetland Line

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.70"

Area (ac)	CN	Description
2.00	36	Woods, Fair, HSG A
2.73	60	Woods, Fair, HSG B
0.46	79	Woods, Fair, HSG D
5.19	52	Weighted Average
5.19		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	50	0.0720	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
7.8	407	0.0300	0.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.2	457	Total			

Subcatchment 9S: Subarea DE



Summary for Subcatchment 10S: Subarea DA-2

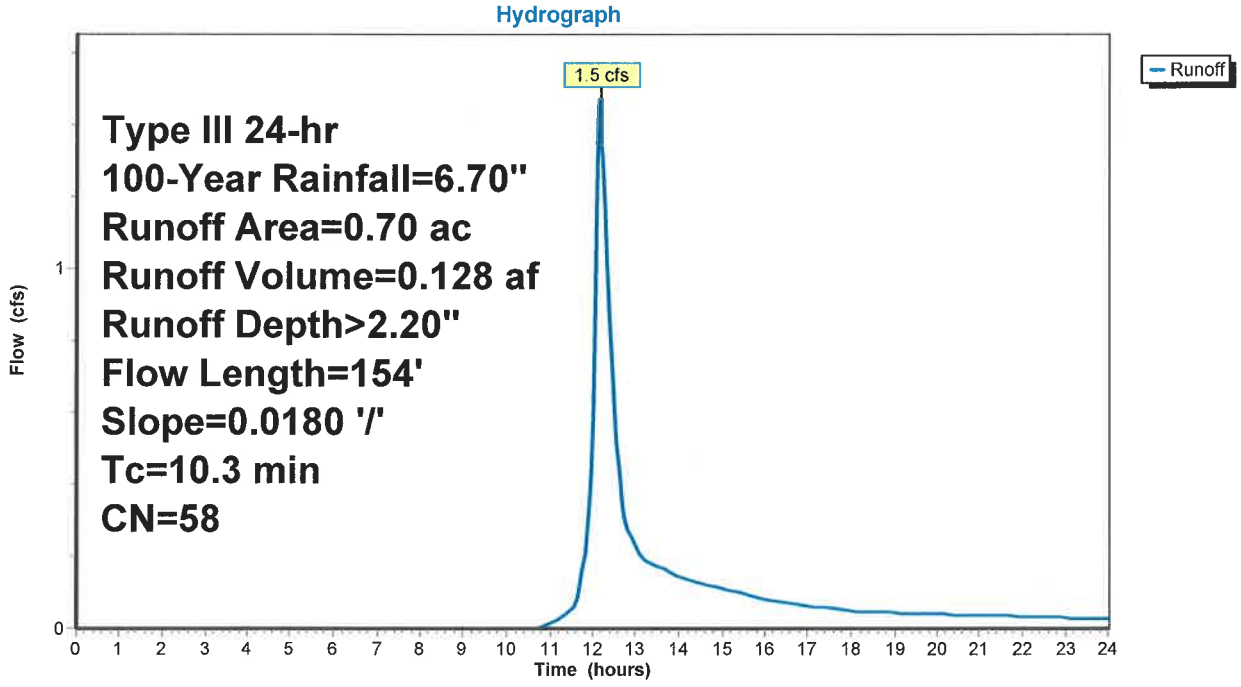
Runoff = 1.5 cfs @ 12.16 hrs, Volume= 0.128 af, Depth> 2.20"
Routed to Reach 1R : Route One

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=6.70"

Area (ac)	CN	Description
0.10	39	>75% Grass cover, Good, HSG A
0.60	61	>75% Grass cover, Good, HSG B
0.70	58	Weighted Average
0.70		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0180	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.20"
1.8	104	0.0180	0.94		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.3	154	Total			

Subcatchment 10S: Subarea DA-2

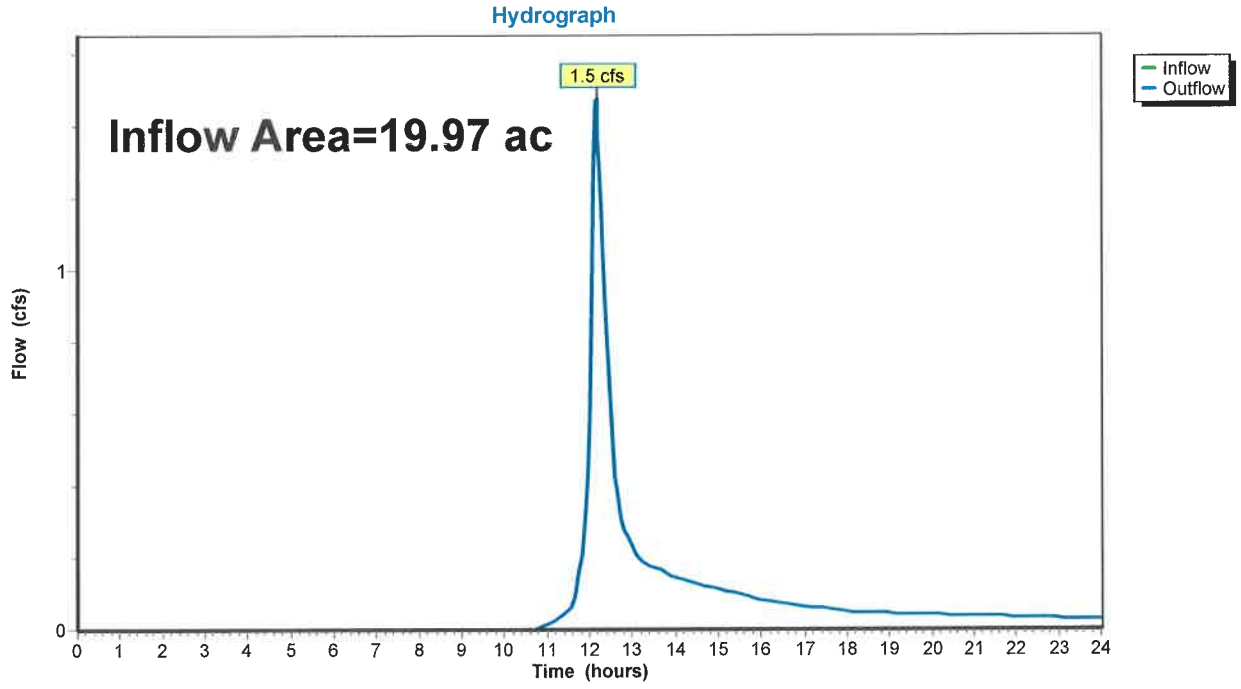


Summary for Reach 1R: Route One

Inflow Area = 19.97 ac, 65.45% Impervious, Inflow Depth > 0.08" for 100-Year event
Inflow = 1.5 cfs @ 12.16 hrs, Volume= 0.128 af
Outflow = 1.5 cfs @ 12.16 hrs, Volume= 0.128 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 1R: Route One

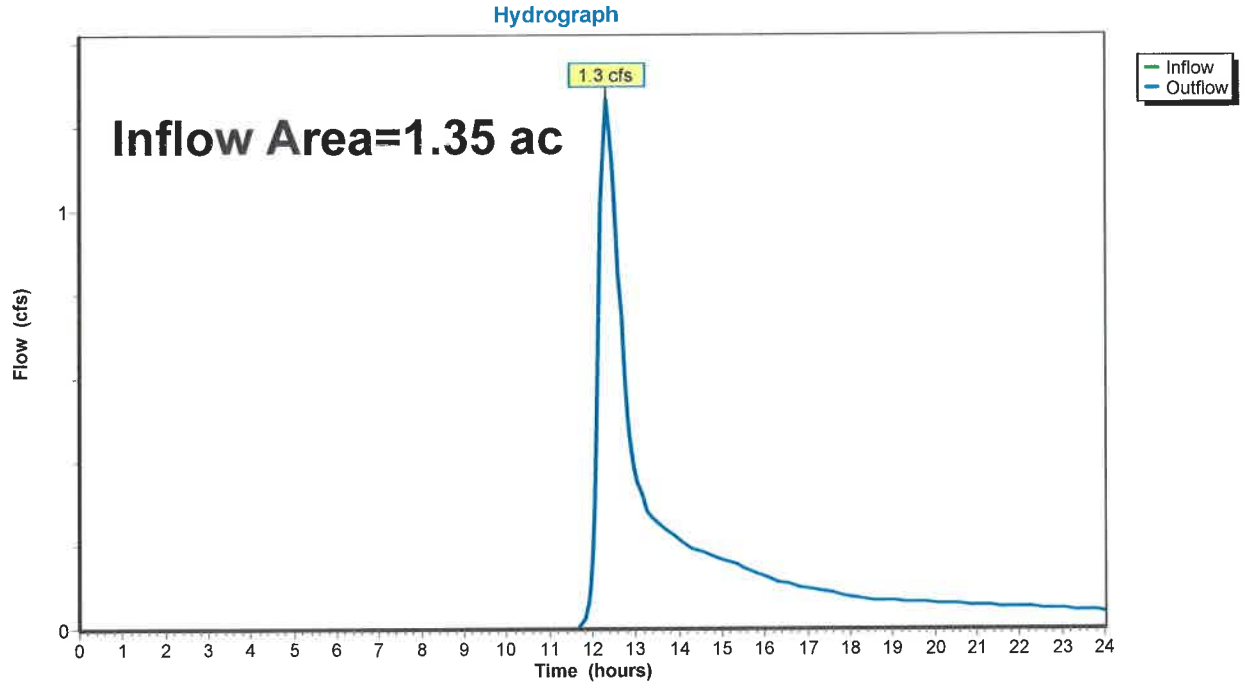


Summary for Reach 2R: NW Property Line

Inflow Area = 1.35 ac, 0.00% Impervious, Inflow Depth > 1.41" for 100-Year event
Inflow = 1.3 cfs @ 12.32 hrs, Volume= 0.159 af
Outflow = 1.3 cfs @ 12.32 hrs, Volume= 0.159 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 2R: NW Property Line

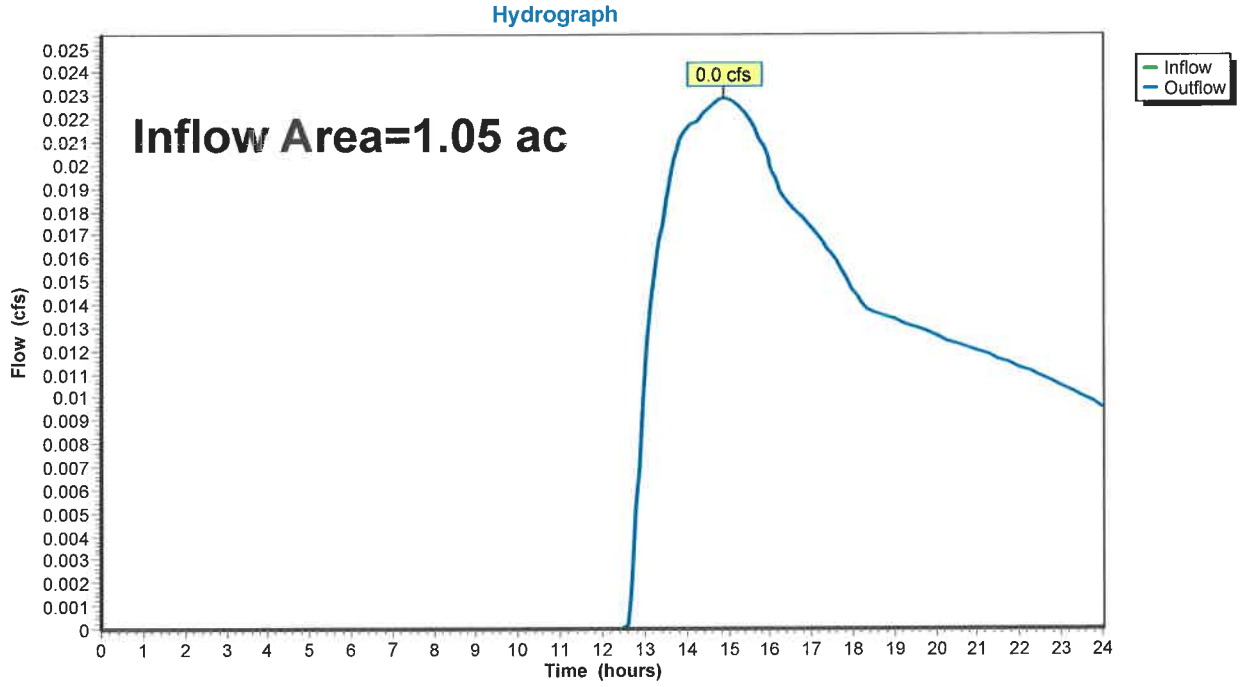


Summary for Reach 3R: SW Property Line

Inflow Area = 1.05 ac, 0.00% Impervious, Inflow Depth > 0.16" for 100-Year event
Inflow = 0.0 cfs @ 14.90 hrs, Volume= 0.014 af
Outflow = 0.0 cfs @ 14.90 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 3R: SW Property Line

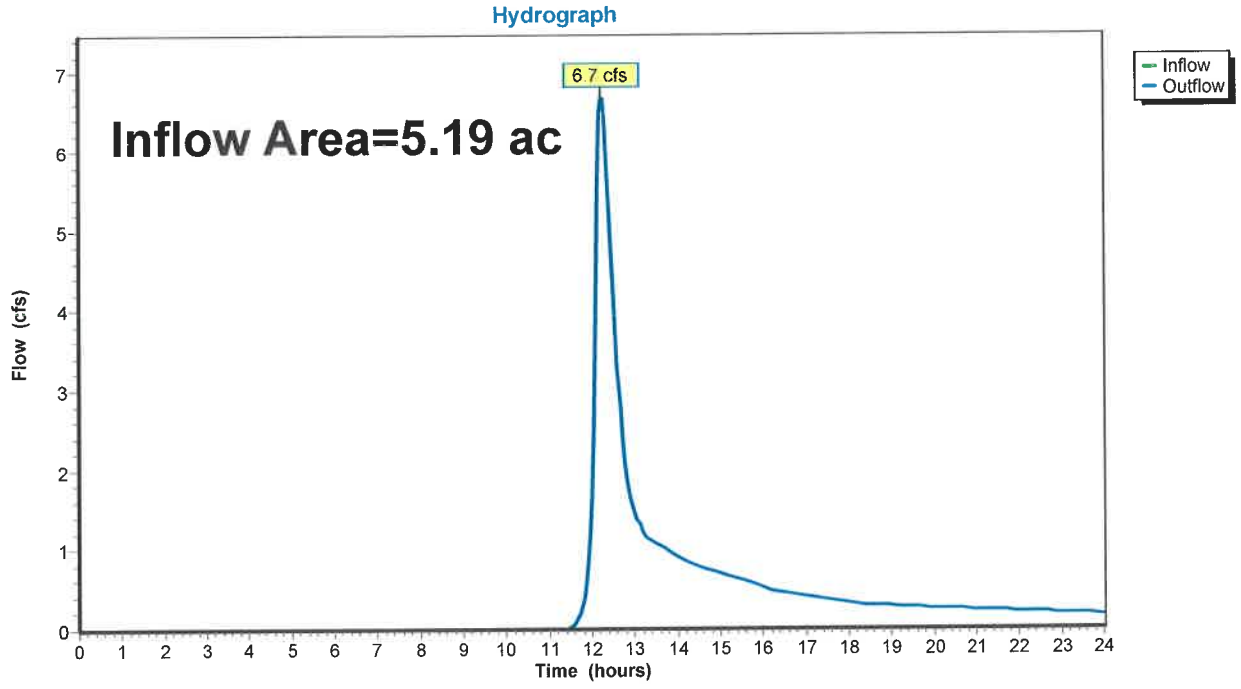


Summary for Reach 4R: Wetland Line

Inflow Area = 5.19 ac, 0.00% Impervious, Inflow Depth > 1.67" for 100-Year event
Inflow = 6.7 cfs @ 12.24 hrs, Volume= 0.720 af
Outflow = 6.7 cfs @ 12.24 hrs, Volume= 0.720 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Reach 4R: Wetland Line



Summary for Pond 10P: Infiltration Basin #1

Inflow Area = 14.17 ac, 90.76% Impervious, Inflow Depth > 5.99" for 100-Year event
Inflow = 88.7 cfs @ 12.09 hrs, Volume= 7.069 af
Outflow = 2.7 cfs @ 15.83 hrs, Volume= 3.027 af, Atten= 97%, Lag= 224.7 min
Discarded = 2.7 cfs @ 15.83 hrs, Volume= 3.027 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 264.38' @ 15.83 hrs Surf.Area= 34,696 sf Storage= 211,796 cf

Plug-Flow detention time= 365.9 min calculated for 3.027 af (43% of inflow)
Center-of-Mass det. time= 232.1 min (997.3 - 765.2)

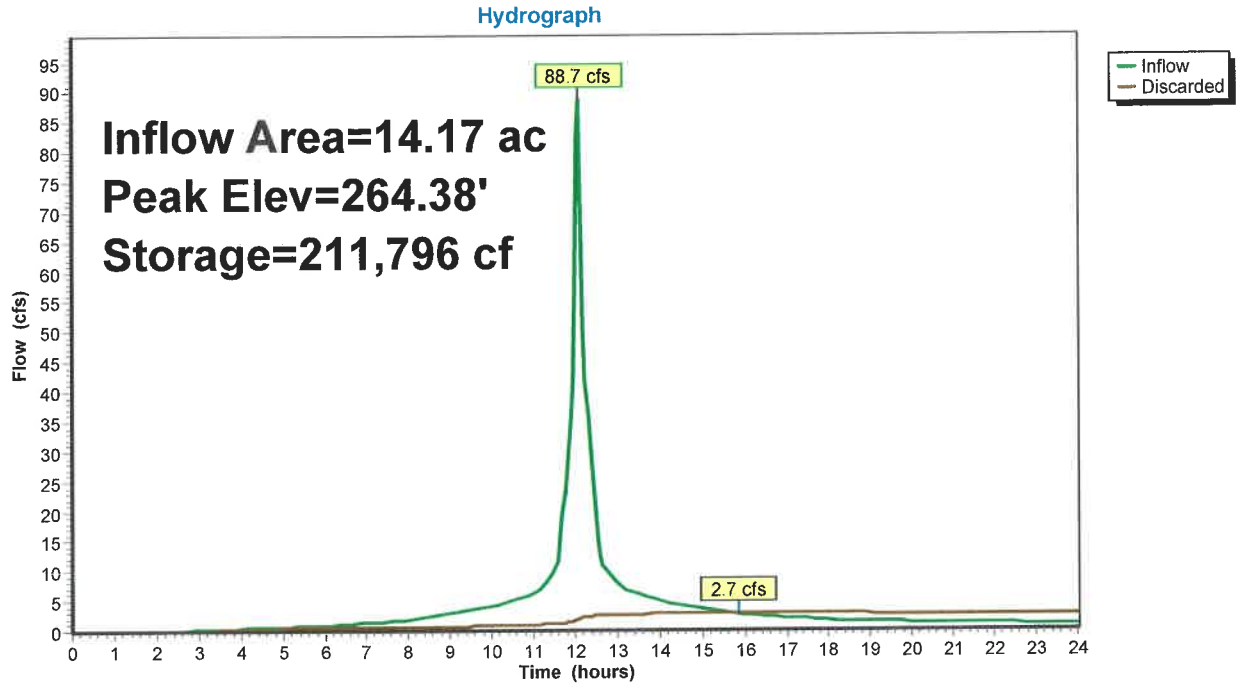
Volume	Invert	Avail.Storage	Storage Description
#1	256.50'	270,777 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
256.50	19,638	562.0	0	0	19,638
258.00	22,233	591.0	31,383	31,383	22,436
260.00	25,892	628.0	48,079	79,462	26,226
262.00	29,777	666.0	55,624	135,085	30,348
264.00	33,888	704.0	63,621	198,706	34,711
266.00	38,226	742.0	72,070	270,777	39,317

Device	Routing	Invert	Outlet Devices
#1	Discarded	256.50'	**1.020 in/hr Exfiltration over Wetted area** Conductivity to Groundwater Elevation = 254.20'

Discarded OutFlow Max=2.7 cfs @ 15.83 hrs HW=264.38' (Free Discharge)
↑**1=Exfiltration** (Controls 2.7 cfs)

Pond 10P: Infiltration Basin #1



Summary for Pond 11P: Infiltration Basin #2

Inflow Area = 5.10 ac, 4.12% Impervious, Inflow Depth > 2.67" for 100-Year event
Inflow = 12.6 cfs @ 12.18 hrs, Volume= 1.135 af
Outflow = 0.6 cfs @ 16.12 hrs, Volume= 0.617 af, Atten= 95%, Lag= 236.4 min
Discarded = 0.6 cfs @ 16.12 hrs, Volume= 0.617 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 253.71' @ 16.12 hrs Surf.Area= 12,810 sf Storage= 29,594 cf

Plug-Flow detention time= 332.7 min calculated for 0.617 af (54% of inflow)
Center-of-Mass det. time= 212.8 min (1,065.9 - 853.2)

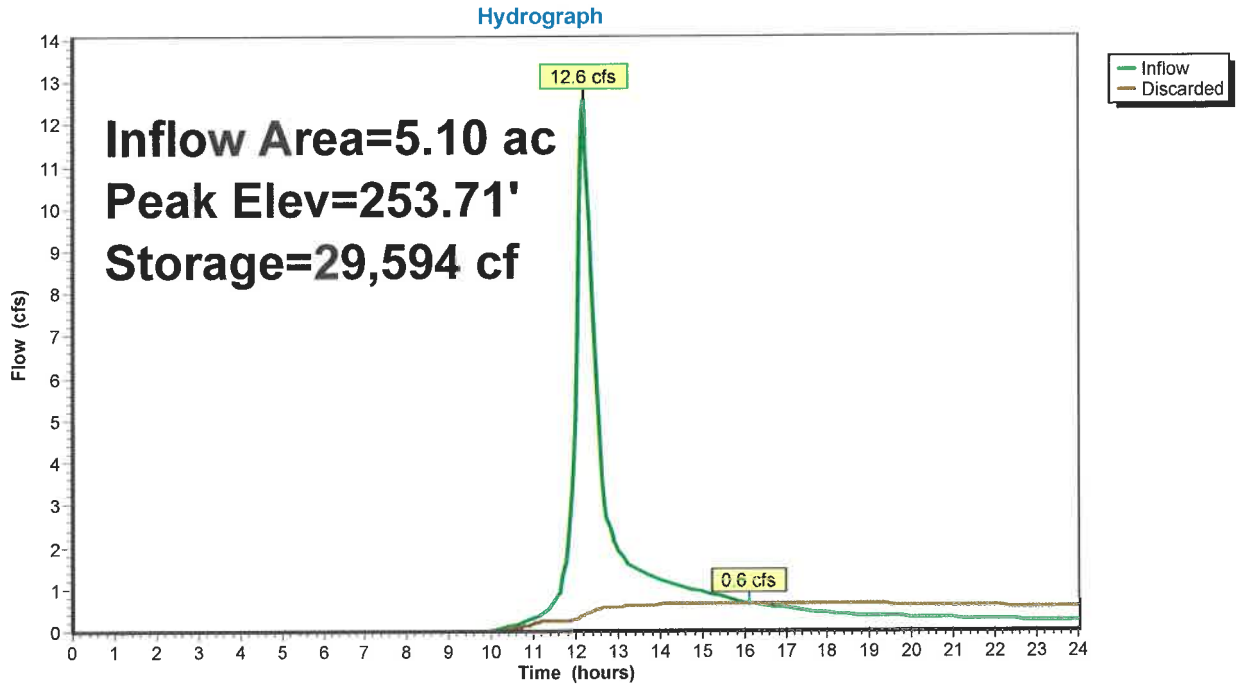
Volume	Invert	Avail.Storage	Storage Description
#1	251.00'	47,350 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
251.00	9,110	430.0	0	0	9,110
252.00	10,430	449.0	9,763	9,763	10,510
254.00	13,238	487.0	23,612	33,375	13,491
255.00	14,726	505.0	13,975	47,350	14,996

Device	Routing	Invert	Outlet Devices
#1	Discarded	251.00'	**1.020 in/hr Exfiltration over Wetted area** Conductivity to Groundwater Elevation = 249.00'

Discarded OutFlow Max=0.6 cfs @ 16.12 hrs HW=253.71' (Free Discharge)
↑**1=Exfiltration** (Controls 0.6 cfs)

Pond 11P: Infiltration Basin #2



Events for Subcatchment 5S: Subarea DA-1

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year	3.20	1.8	0.220	0.52
10-Year	4.70	5.8	0.560	1.32
100-Year	**6.70**	**12.6**	**1.135**	**2.67**

Events for Subcatchment 6S: Subarea DB

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year	3.20	39.6	3.002	2.54
10-Year	4.70	60.8	4.735	4.01
100-Year	**6.70**	**88.7**	**7.069**	**5.99**

Events for Subcatchment 7S: Subarea DC

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year	3.20	0.0	0.012	0.11
10-Year	4.70	0.3	0.059	0.52
100-Year	**6.70**	**1.3**	**0.159**	**1.41**

Events for Subcatchment 8S: Subarea DD

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year	3.20	0.0	0.000	0.00
10-Year	4.70	0.0	0.000	0.00
100-Year	**6.70**	**0.0**	**0.014**	**0.16**

Events for Subcatchment 9S: Subarea DE

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year	3.20	0.2	0.074	0.17
10-Year	4.70	2.0	0.290	0.67
100-Year	**6.70**	**6.7**	**0.720**	**1.67**

Events for Subcatchment 10S: Subarea DA-2

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
2-Year	3.20	0.1	0.020	0.34
10-Year	4.70	0.6	0.059	1.00
100-Year	**6.70**	**1.5**	**0.128**	**2.20**

Events for Reach 1R: Route One

Event	Inflow (cfs)	Outflow (cfs)	Elevation (feet)	Storage (cubic-feet)
2-Year	0.1	0.1	**0.00**	**0**
10-Year	0.6	0.6	0.00	0
100-Year	**1.5**	**1.5**	0.00	0

Events for Reach 2R: NW Property Line

Event	Inflow (cfs)	Outflow (cfs)	Elevation (feet)	Storage (cubic-feet)
2-Year	0.0	0.0	**0.00**	**0**
10-Year	0.3	0.3	0.00	0
100-Year	**1.3**	**1.3**	0.00	0

Events for Reach 3R: SW Property Line

Event	Inflow (cfs)	Outflow (cfs)	Elevation (feet)	Storage (cubic-feet)
2-Year	0.0	0.0	**0.00**	**0**
10-Year	0.0	0.0	0.00	0
100-Year	**0.0**	**0.0**	0.00	0

Events for Reach 4R: Wetland Line

Event	Inflow (cfs)	Outflow (cfs)	Elevation (feet)	Storage (cubic-feet)
2-Year	0.2	0.2	**0.00**	**0**
10-Year	2.0	2.0	0.00	0
100-Year	**6.7**	**6.7**	0.00	0

Events for Pond 10P: Infiltration Basin #1

Event	Inflow (cfs)	Discarded (cfs)	Elevation (feet)	Storage (cubic-feet)
2-Year	39.6	1.4	260.14	83,135
10-Year	60.8	2.0	262.07	137,252
100-Year	**88.7**	**2.7**	**264.38**	**211,796**

APPENDIX B – STORM WATER WORKSHEETS

Required Recharge Volume and Drawdown Worksheet
TSS & Phosphorous Removal Worksheet
Tree Box Filter Sizing Table
Cascade Separator Documentation
Apron Size Calculator
Mounding Analysis
DEP Stormwater Checklist

TSS Removal Worksheet

PROJECT LOCATION: **2 Washington Street Foxborough**
DATE: May, 2022
PROJECT NUMBER: 21-0172

Tree Box Filter Stream to Basin 1

Impervious Area =	2.22	acres
Runoff depth to be treated =	0.50	inches
Runoff volume to be treated =	0.0925	ac-ft

BMP	*TSS Removal Rate*	*Starting TSS Load*	*Amount Removed*	*Remaining Load*
Tree Box Filter	0.8	1.00	0.8	0.20
Deep Sump and Hooded CB	0.25	0.20	0.05	0.15
Infiltration Basin	0.8	0.15	0.12	0.03
TOTAL TSS REMOVED =				**97 %**

Tree Box Filter Stream to Basin 2

Impervious Area =	0.34	acres
Runoff depth to be treated =	0.50	inches
Runoff volume to be treated =	0.0142	ac-ft

BMP	*TSS Removal Rate*	*Starting TSS Load*	*Amount Removed*	*Remaining Load*
Tree Box Filter	0.8	1.00	0.8	0.20
Deep Sump and Hooded CB	0.25	0.20	0.05	0.15
Infiltration Basin	0.8	0.15	0.12	0.03
TOTAL TSS REMOVED =				**97 %**

Cascade Stream

Impervious Area =	5.79	acres
Runoff depth to be treated =	0.50	inches
Runoff volume to be treated =	0.2413	ac-ft

BMP	*TSS Removal Rate*	*Starting TSS Load*	*Amount Removed*	*Remaining Load*
Deep Sump and Hooded CB	0.25	1.00	0.25	0.75
Cascade CS-5	0.5	0.75	0.38	0.38
Infiltration Basin	0.8	0.38	0.30	0.08
TOTAL TSS REMOVED =				**93 %**

Phosphorous Removal (Tree Box filter stream to basins)

BMP	*P Removal Rate*	*Starting P Load*	*Amount Removed*	*Remaining Load*
Tree Box Filter	0.6	1.00	0.6	0.40
Infiltration Basin	0.6	0.40	0.24	0.16
TOTAL P REMOVED =				**84 %**

Phosphorous Removal (Cascade stream to Basin 1)

BMP	*P Removal Rate*	*Starting P Load*	*Amount Removed*	*Remaining Load*	
Cascade	0.2	1.00	0.2	0.80	VA DEP
Infiltration Basin	0.6	0.80	0.48	0.32	
TOTAL P REMOVED =				**68 %**	

filterra
Bioretention Systems

Table 1: Filterra® Quick Sizing Table (Northeast Region - v04)

Available Filterra® Box Sizes (feet)	Recommended Commercial Contributing Drainage Area (acres) where C = 0.85	Outlet Pipe
4x6 or 6x4	up to 0.32	4" SDR-35 PVC
4x8 or 8x4	0.33 to 0.42	4" SDR-35 PVC
Standard 6x6	0.43 to 0.47	4" SDR-35 PVC
6x8 or 8x6 or 4x12 or 12x4	0.48 to 0.64	4" SDR-35 PVC
6x10 or 10x6	0.65 to 0.79	6" SDR-35 PVC
6x12 or 12x6	0.80 to 0.95	6" SDR-35 PVC
7x13 or 13x7	0.96 to 1.20	6" SDR-35 PVC

Available Filterra® Box Sizes (feet)	Recommended Residential Contributing Drainage Area (acres) where C = 0.50	Outlet Pipe
4x6 or 6x4	up to 0.54	4" SDR-35 PVC
4x8 or 8x4	0.56 to 0.72	4" SDR-35 PVC
Standard 6x6	0.73 to 0.80	4" SDR-35 PVC
6x8 or 8x6 or 4x12 or 12x4	0.81 to 1.08	4" SDR-35 PVC
6x10 or 10x6	1.09 to 1.34	6" SDR-35 PVC
6x12 or 12x6	1.35 to 1.62	6" SDR-35 PVC
7x13 or 13x7	1.63 to 2.04	6" SDR-35 PVC

Notes:

1. All boxes are a standard 3.5 feet depth (INV to TC)
2. A standard SDR-35 PVC pipe coupling is cast into the wall for easy connection to discharge drain
3. Dimensions shown are internal. Please add 1' to each external dimensions (using 6" walls)
4. In line with TR55 data, for Commercial Developments a minimum (runoff coefficient) C factor of 0.85 is recommended. For Residential Developments, use of C factors less than 0.5 require individual site review by Filterra.
5. Please ask for Sizing Tables for other target treatment goals, e.g. 0.3 in/hr
6. This sizing table is valid for MA (treating 90% of annual runoff) and typical for the Northeast region.

Standard Method to Convert Required WQV to a Discharge Rate

PROJECT LOCATION:	2 Washington Street Foxborough	
DATE:	05/04/22	
PROJECT NUMBER:	21-0172	
Within or Near a Critical Area:	No	
WQV:	1.0	inch
Structure Location:	DMH#2	
Impervious Area =	0.009047	square miles
Runoff Curve Number - CN =	98	
Time of Concentration - Tc =	0.3	hrs
Unit Peak Discharge - qu =	593	csm/inch see Table in Figure 4
Computed Flow Rate (1.0" of Runoff) $Q_{1.0}$ =	5.4	cfs

MassDEP Standard Method to Convert Required Water Quality Volume to a Discharge Rate for Sizing Flow Based Manufactured Proprietary Stormwater Treatment Practices dated September 10,2013

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Nonpoint Pollution Control
Division of Water Quality
401-02B
Post Office Box 420
Trenton, New Jersey 08625-0420
609-633-7021 Fax: 609-777-0432
http://www.state.nj.us/dep/dwq/bnpc_home.htm

PHILIP D. MURPHY
Governor

SHEILA Y. OLIVER
Lt. Governor

CATHERINE R. MCCABE
Commissioner

May 18, 2020

Derek M. Berg
Director – Stormwater Regulatory Management - East
Contech Engineered Solutions LLC
71 US Route 1, Suite F
Scarborough, ME 04074

Re: MTD Lab Certification
Cascade Separator™
On-line Installation

TSS Removal Rate 50%

Dear Mr. Berg:

This revised certification letter supersedes the Department's prior certification dated October 1, 2019. This revision was completed to reflect Contech's enhanced fabrication capability to manufacture a smaller-size unit of its the Cascade Separator™ Manufactured Treatment Device (MTD), while still meeting the scaling methodology as agreed upon by the manufacturers' working group on September 19, 2016. Based on this modification, Table A-1 of the New Jersey Corporation for Advanced Technology (NJCAT) Verification report located at http://www.njcat.org/uploads/newDocs/NJCATTechnologyVerificationFinal.pdf has been revised to specify this smaller unit and associated maximum treatment flow rate. Table 1 below has been revised to reflect this same updated model size and flow rate.

The Stormwater Management rules under N.J.A.C. 7:8-5.5(b) and 5.7(c) allow the use of manufactured treatment devices (MTDs) for compliance with the design and performance standards at N.J.A.C. 7:8-5 if the pollutant removal rates have been verified by the New Jersey Corporation for Advanced Technology (NJCAT) and have been certified by the New Jersey Department of Environmental Protection (NJDEP). Contech Engineered Solutions, LLC (Contech) has requested an MTD Laboratory Certification for the Cascade Separator™ stormwater treatment system.

The project falls under the "Procedure for Obtaining Verification of a Stormwater Manufactured Treatment Device from New Jersey Corporation for Advance Technology" dated January 25,

2013. The applicable protocol is the "New Jersey Laboratory Testing Protocol to Assess Total Suspended Solids Removal by a Hydrodynamic Sedimentation Manufactured Treatment Device" dated January 25, 2013.

NJCAT verification documents submitted to the NJDEP indicate that the requirements of the aforementioned protocol have been met or exceeded. The NJCAT letter also included a recommended certification TSS removal rate and the required maintenance plan. The NJCAT Verification Report with the Verification Appendix (dated September 2019) for this device is published online at http://www.njcat.org/verification-process/technology-verification-database.html.

The NJDEP certifies the use of the Cascade Separator™ stormwater treatment system at a TSS removal rate of 50% when designed, operated, and maintained in accordance with the information provided in the Verification Appendix and the following conditions:

1. The maximum treatment flow rate (MTFR) for the manufactured treatment device (MTD) is calculated using the New Jersey Water Quality Design Storm (1.25 inches in 2 hrs) in N.J.A.C. 7:8-5.5.

2. The Cascade Separator™ shall be installed using the same configuration reviewed by NJCAT and shall be sized in accordance with the criteria specified in item 6 below.

3. This Cascade Separator™ cannot be used in series with another MTD or a media filter (such as a sand filter) to achieve an enhanced removal rate for total suspended solids (TSS) removal under N.J.A.C. 7:8-5.5.

4. Additional design criteria for MTDs can be found in Chapter 9.6 of the New Jersey Stormwater Best Management Practices (NJ Stormwater BMP) Manual, which can be found online at www.njstormwater.org.

5. The maintenance plan for a site using this device shall incorporate, at a minimum, the maintenance requirements for the Cascade Separator™. A copy of the maintenance plan is attached to this certification. However, it is recommended to review the maintenance website at https://www.conteches.com/Portals/0/Documents/Maintenance%20Guides/Cascade-Maintenance%20Guide.pdf?ver=2018-11-05-093254-300. for any changes to the maintenance requirements.

6. Sizing Requirement:

   The example below demonstrates the sizing procedure for the Cascade Separator™:

   Example: A 0.25-acre impervious site is to be treated to 50% TSS removal using a Cascade Separator™. The impervious site runoff (Q) based on the New Jersey Water Quality Design Storm was determined to be 0.79 cfs.

   Maximum Treatment Flow Rate (MTFR) Evaluation:

   The site runoff (Q) was based on the following:

time of concentration = 10 minutes
i = 3.2 in/hr (page 5-8, Fig. 5-3 of the NJ Stormwater BMP Manual)
c = 0.99 (runoff coefficient for impervious)
Q = ciA = 0.99 x 3.2 x 0.25 = 0.79 cfs

Given the site runoff is 0.79 cfs and based on Table A-1 below, the Cascade Separator™ Model CS-3 with an MTFR of 1.02 cfs would be the smallest model approved that could be used for this site to remove 50% of the TSS from the impervious area without exceeding the MTFR.

The sizing table corresponding to the available system models is noted below. Additional specifications regarding each model can be found in the Verification Appendix under Table A-1.

Table A-1 Cascade Separator™ Models and Associated MTFRs

Model	Manhole Diameter (ft)	MTFR (cfs)	50% Maximum Sediment Storage Area Volume (ft^3)
CS-3	3	1.02	5.3
CS-4	4	1.80	9.4
CS-5	5	2.81	14.7
CS-6	6	4.05	21.2
CS-8	8	7.20	37.7
CS-10	10	11.3	58.9
CS-12	12	16.2	84.8

A detailed maintenance plan is mandatory for any project with a stormwater BMP subject to the Stormwater Management rules under N.J.A.C. 7:8. The plan must include all of the items identified in the Maintenance requirements section of the Stormwater Management rules under N.J.A.C. 7:8-5.8. Such items include, but are not limited to, the list of inspection and maintenance equipment and tools, specific corrective and preventative maintenance tasks, indication of problems in the system, and training of maintenance personnel. Additional information can be found in Chapter 8: Maintenance and Retrofit of Stormwater Management Measures.

If you have any questions regarding the above information, please contact Brian Salvo of my office at (609) 633-7021.

Sincerely,

Gabriel Mahon

Gabriel Mahon, Chief
Bureau of Nonpoint Pollution Control

Attachment: Maintenance Plan

cc: Chron File
Richard Magee, NJCAT
Jim Murphy, NJDEP-BNPC
Vince Mazzei, NJDEP-DLUR
Brian Salvo, NJDEP-BNPC

PIPE OUTLET PROTECTION APRON DESIGN
And
d_{50} RIPRAP SIZING

				Outlet Name -	FES#1
PROJECT NAME :	2 Washington Street Foxborough				
PROJECT # :	21-0172				
BY :	WBJr			CHECKED BY :	
DATE :	5/6/2022	STORM:	25-yr	DATE :	

DOWMSTREAM CHANNEL (OR SPREADER) HYDRAULICS			
Culvert Diameter (Do) =	24	Inches	
Peak Discharge Required =	23.50	cfs	
Channel Bottom Width =	3.0	Feet	**(3 x Do) all cases**
Hydraulic Gradient =	0.00500	Feet/Feet	(Est from Apron Outlet Depth to Pipe Outlet Depth)
Left Side Slope =	3.0	:1(h:v)	
Right Side Slope =	3.0	:1(h:v)	
Depth of Flow* =	1.445	Feet	
Manning's "n" =	0.0432	Please refer to Figure 7-52 of HANDBOOK	
Area =	10.60	Square Feet	
Wetted Perimeter =	12.14	Feet	
Hydraulic Radius =	0.87	Feet	
Top Width =	11.67	Feet	
Velocity =	2.22	Feet/Second	
Peak Discharge Calculated =	23.56	cfs	Q calc should approx = Q required
Qcalc - Qrequired =	0.06	**Calculation OK**	

La AND W CALCULATIONS:

Culvert Diameter (Do) =	24.0	Inches
Tail Water Depth (TW)* =	1.45	Feet
Length of Apron (La) =	39	Feet
Width of Apron @ D.S End - (W) =	22	Feet
Width of D.S. Apron if Channel - (W) =	11.7	Feet

Assumes Channel Bottom at the Culvert Equals the Invert Outlet Elevation of the Pipe. If this is not the case, the calculations involving the Tailwater will have to be calculated by hand.

***If outletting to Flat Area use TW depth = 0.2 x Do**

ROCK RIPRAP SIZE

d_{50} = 0.47 Feet or 5.59 Inches

$d_{50} = (0.02 \times Q^{4/3})/(Tw \times Do)$

ROCK RIPRAP GRADATION (TABLE 7-24 OF NHDES HANDBOOK)

% of Weight Smaller Than The Given Size	Size of Stone in Inches		
100	----------	to	11.2
85	7.3	to	10.1
50	5.6	to	8.4
15	1.7	to	2.8

Minimum Rock Riprap Blanket Thickness = 16.8 Inches

Minimum Six inch Sand/Gravel Bedding or Geotextile Fabric Required Under All Rock Riprap

FORMULAS USED (Reference NHDES HANDBOOK, Pages 7-114, 7-115)

Manning's Uniform Channel Flow -	Q = (A x 1.486 x R^(2/3) x S^(1/2))/"n"
Length of Apron (La) TW< Do/2 -	La = (1.8 x Q/Do^1.5) + 7 x Do
Length of Apron (La) TW>= Do/2 -	La = 3.0 x Q/Do^1.5 + 7 x Do
Width of Apron @ D.S End TW < Do/2 -	W = 3 x Do + La
Width of Apron @ D.S End TW >= Do/2 -	W = 3 x Do + 0.4 x La
Width of D.S. Apron if in Channel -	Ch. BW +Sum of Side Slopes x Flow Depth
Width of Apron @ Culvert -	Wc = 3 x Do

PIPE OUTLET PROTECTION APRON DESIGN
And
d_{50} RIPRAP SIZING

Outlet Name - FES#2

PROJECT NAME : 2 Washington Street Foxborough
PROJECT # : 21-0172
BY : WBJr CHECKED BY :
DATE : 5/6/2022 STORM: 25-yr DATE :

DOWMSTREAM CHANNEL (OR SPREADER) HYDRAULICS			
Culvert Diameter (Do) =	24	Inches	
Peak Discharge Required =	19.40	cfs	
Channel Bottom Width =	3.0	Feet	**(3 x Do) all cases**
Hydraulic Gradient =	0.00500	Feet/Feet	(Est from Apron Outlet Depth to Pipe Outlet Depth)
Left Side Slope =	3.0	:1(h:v)	
Right Side Slope =	3.0	:1(h:v)	
Depth of Flow* =	1.300	Feet	
Manning's "n" =	0.0417	Please refer to Figure 7-52 of HANDBOOK	
Area =	8.97	Square Feet	
Wetted Perimeter =	11.22	Feet	
Hydraulic Radius =	0.80	Feet	
Top Width =	10.80	Feet	
Velocity =	2.17	Feet/Second	
Peak Discharge Calculated =	19.45	cfs	Q calc should approx = Q required
Qcalc - **Q**required =	0.05	**Calculation OK**	

La AND W CALCULATIONS:

Culvert Diameter (Do) =	24.0	Inches
Tail Water Depth (TW)* =	1.30	Feet
Length of Apron (La) =	35	Feet
Width of Apron @ D.S End - (W) =	20	Feet
Width of D.S. Apron if Channel - (W) =	10.8	Feet

Assumes Channel Bottom at the Culvert Equals the Invert Outlet Elevation of the Pipe. If this is not the case, the calculations involving the Tailwater will have to be calculated by hand.

***If outletting to Flat Area use TW depth = 0.2 x Do**

ROCK RIPRAP SIZE

d_{50} = 0.40 Feet or 4.81 Inches

$d_{50} = (0.02 \times Q^{4/3})/(Tw \times Do)$

ROCK RIPRAP GRADATION (TABLE 7-24 OF NHDES HANDBOOK)

% of Weight Smaller Than The Given Size	Size of Stone in Inches		
100	----------	to	9.6
85	6.3	to	8.7
50	4.8	to	7.2
15	1.4	to	2.4

Minimum Rock Riprap Blanket Thickness = 14.4 Inches
Minimum Six inch Sand/Gravel Bedding or Geotextile Fabric Required Under All Rock Riprap

FORMULAS USED (Reference NHDES HANDBOOK, Pages 7-114, 7-115)

Manning's Uniform Channel Flow - Q = (A x 1.486 x R^(2/3) x S^(1/2))/"n"
Length of Apron (La) TW< Do/2 - La = (1.8 x Q/Do^1.5) + 7 x Do
Length of Apron (La) TW>= Do/2 - La = 3.0 x Q/Do^1.5 + 7 x Do
Width of Apron @ D.S End TW < Do/2 - W = 3 x Do + La
Width of Apron @ D.S End TW >= Do/2 - W = 3 x Do + 0.4 x La
Width of D.S. Apron if in Channel - Ch. BW +Sum of Side Slopes x Flow Depth
Width of Apron @ Culvert - Wc = 3 x Do

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PIPE OUTLET PROTECTION APRON DESIGN
And
d_{50} RIPRAP SIZING

		Outlet Name -	FES#3
PROJECT NAME :	2 Washington Street Foxborough		
PROJECT # :	21-0172		
BY :	WBJr	CHECKED BY :	
DATE :	5/6/2022 STORM: 25-yr	DATE :	

DOWMSTREAM CHANNEL (OR SPREADER) HYDRAULICS

Culvert Diameter (Do) =	24	Inches	
Peak Discharge Required =	7.20	cfs	
Channel Bottom Width =	3.0	Feet	**(3 x Do) all cases**
Hydraulic Gradient =	0.00500	Feet/Feet	(Est from Apron Outlet Depth to Pipe Outlet Depth)
Left Side Slope =	3.0	:1(h:v)	
Right Side Slope =	3.0	:1(h:v)	
Depth of Flow* =	0.740	Feet	
Manning's "n" =	0.0354	Please refer to Figure 7-52 of HANDBOOK	
Area =	3.86	Square Feet	
Wetted Perimeter =	7.68	Feet	
Hydraulic Radius =	0.50	Feet	
Top Width =	7.44	Feet	
Velocity =	1.88	Feet/Second	
Peak Discharge Calculated =	7.25	cfs	Q calc should approx = Q required
Qcalc - Qrequired =	0.05	**Calculation OK**	

La AND W CALCULATIONS:

Culvert Diameter (Do) =	24.0	Inches
Tail Water Depth (TW)* =	0.74	Feet
Length of Apron (La) =	19	Feet
Width of Apron @ D.S End - (W) =	25	Feet
Width of D.S. Apron if Channel - (W) =	7.4	Feet

Assumes Channel Bottom at the Culvert Equals the Invert Outlet Elevation of the Pipe. If this is not the case, the calculations involving the Tailwater will have to be calculated by hand.

***If outletting to Flat Area use TW depth = 0.2 x Do**

ROCK RIPRAP SIZE

d_{50} = 0.19 Feet or 2.25 Inches

$d_{50} = (0.02 \times Q^{4/3})/(Tw \times Do)$

ROCK RIPRAP GRADATION (TABLE 7-24 OF NHDES HANDBOOK)

% of Weight Smaller Than The Given Size	Size of Stone in Inches		
100	----------	to	4.5
85	2.9	to	4.1
50	2.3	to	3.4
15	0.7	to	1.1

Minimum Rock Riprap Blanket Thickness = 6.8 Inches

Minimum Six inch Sand/Gravel Bedding or Geotextile Fabric Required Under All Rock Riprap

FORMULAS USED (Reference NHDES HANDBOOK, Pages 7-114, 7-115)

Manning's Uniform Channel Flow -	Q = (A x 1.486 x R^(2/3) x S^(1/2))/"n"
Length of Apron (La) TW< Do/2 -	La = (1.8 x Q/Do^1.5) + 7 x Do
Length of Apron (La) TW>= Do/2 -	La = 3.0 x Q/Do^1.5 + 7 x Do
Width of Apron @ D.S End TW < Do/2 -	W = 3 x Do + La
Width of Apron @ D.S End TW >= Do/2 -	W = 3 x Do + 0.4 x La
Width of D.S. Apron if in Channel -	Ch. BW +Sum of Side Slopes x Flow Depth
Width of Apron @ Culvert -	Wc = 3 x Do

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PIPE OUTLET PROTECTION APRON DESIGN
And
d_{50} RIPRAP SIZING

		Outlet Name -	FES#4
PROJECT NAME :	2 Washington Street Foxborough		
PROJECT # :	21-0172		
BY :	WBJr	CHECKED BY :	
DATE :	5/6/2022 STORM: 25-yr	DATE :	

DOWMSTREAM CHANNEL (OR SPREADER) HYDRAULICS

Culvert Diameter (Do) =	12	Inches	
Peak Discharge Required =	0.90	cfs	
Channel Bottom Width =	3.0	Feet	**(3 x Do) all cases**
Hydraulic Gradient =	0.00500	Feet/Feet	(Est from Apron Outlet Depth to Pipe Outlet Depth)
Left Side Slope =	3.0	:1(h:v)	
Right Side Side Slope =	3.0	:1(h:v)	
Depth of Flow* =	0.220	Feet	
Manning's "n" =	0.0329	Please refer to Figure 7-52 of HANDBOOK	
Area =	0.81	Square Feet	
Wetted Perimeter =	4.39	Feet	
Hydraulic Radius =	0.18	Feet	
Top Width =	4.32	Feet	
Velocity =	1.03	Feet/Second	
Peak Discharge Calculated =	0.83	cfs	Q calc should approx = Q required
Qcalc - Qrequired =	-0.07	**Calculation OK**	

La AND W CALCULATIONS:

Culvert Diameter (Do) =	12.0	Inches
Tail Water Depth (TW)* =	0.22	Feet
Length of Apron (La) =	9	Feet
Width of Apron @ D.S End - (W) =	12	Feet
Width of D.S. Apron if Channel - (W) =	4.3	Feet

Assumes Channel Bottom at the Culvert Equals the Invert Outlet Elevation of the Pipe. If this is not the case, the calculations involving the Tailwater will have to be calculated by hand.

***If outletting to Flat Area use TW depth = 0.2 x Do**

ROCK RIPRAP SIZE

$d_{50} = (0.02 \times Q^{4/3})/(Tw \times Do)$

d_{50} = 0.08 Feet or 0.95 Inches

ROCK RIPRAP GRADATION (TABLE 7-24 OF NHDES HANDBOOK)

% of Weight Smaller Than The Given Size	Size of Stone in Inches		
100	----------	to	1.9
85	1.2	to	1.7
50	0.9	to	1.4
15	0.3	to	0.5

Minimum Rock Riprap Blanket Thickness = 6.0 Inches

Minimum Six inch Sand/Gravel Bedding or Geotextile Fabric Required Under All Rock Riprap

FORMULAS USED (Reference NHDES HANDBOOK, Pages 7-114, 7-115)

Manning's Uniform Channel Flow -	Q = (A x 1.486 x R^(2/3) x S^(1/2))/"n"
Length of Apron (La) TW< Do/2 -	La = (1.8 x Q/Do^1.5) + 7 x Do
Length of Apron (La) TW>= Do/2 -	La = 3.0 x Q/Do^1.5 + 7 x Do
Width of Apron @ D.S End TW < Do/2 -	W = 3 x Do + La
Width of Apron @ D.S End TW >= Do/2 -	W = 3 x Do + 0.4 x La
Width of D.S. Apron if in Channel -	Ch. BW +Sum of Side Slopes x Flow Depth
Width of Apron @ Culvert -	Wc = 3 x Do

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PIPE OUTLET PROTECTION APRON DESIGN
And
d_{50} RIPRAP SIZING

		Outlet Name -	FES#5
PROJECT NAME :	2 Washington Street Foxborough		
PROJECT # :	21-0172		
BY :	WBJr	CHECKED BY :	
DATE :	5/6/2022	STORM: 25-yr	DATE :

DOWMSTREAM CHANNEL (OR SPREADER) HYDRAULICS

Culvert Diameter (Do) =	12	Inches	
Peak Discharge Required =	1.60	cfs	
Channel Bottom Width =	3.0	Feet	**(3 x Do) all cases**
Hydraulic Gradient =	0.00500	Feet/Feet	(Est from Apron Outlet Depth to Pipe Outlet Depth)
Left Side Slope =	3.0	:1(h:v)	
Right Side Slope =	3.0	:1(h:v)	
Depth of Flow* =	0.340	Feet	
Manning's "n" =	0.0340	Please refer to Figure 7-52 of HANDBOOK	
Area =	1.37	Square Feet	
Wetted Perimeter =	5.15	Feet	
Hydraulic Radius =	0.27	Feet	
Top Width =	5.04	Feet	
Velocity =	1.28	Feet/Second	
Peak Discharge Calculated =	1.74	cfs	Q calc should approx = Q required
Qcalc - Qrequired =	0.14	**Calculation OK**	

La AND W CALCULATIONS:

Culvert Diameter (Do) =	12.0	Inches
Tail Water Depth (TW)* =	0.34	Feet
Length of Apron (La) =	10	Feet
Width of Apron @ D.S End - (W) =	13	Feet
Width of D.S. Apron if Channel - (W) =	5.0	Feet

Assumes Channel Bottom at the Culvert Equals the Invert Outlet Elevation of the Pipe. If this is not the case, the calculations involving the Tailwater will have to be calculated by hand.

***If outletting to Flat Area use TW depth = 0.2 x Do**

ROCK RIPRAP SIZE

d_{50} = 0.11 Feet or 1.32 Inches

$d_{50} = (0.02 \times Q^{4/3})/(Tw \times Do)$

ROCK RIPRAP GRADATION (TABLE 7-24 OF NHDES HANDBOOK)

% of Weight Smaller Than The Given Size	Size of Stone in Inches		
100	----------	to	2.6
85	1.7	to	2.4
50	1.3	to	2.0
15	0.4	to	0.7

Minimum Rock Riprap Blanket Thickness = 6.0 Inches

Minimum Six inch Sand/Gravel Bedding or Geotextile Fabric Required Under All Rock Riprap

FORMULAS USED (Reference NHDES HANDBOOK, Pages 7-114, 7-115)

Manning's Uniform Channel Flow -	Q = (A x 1.486 x R^(2/3) x S^(1/2))/"n"
Length of Apron (La) TW< Do/2 -	La = (1.8 x Q/Do^1.5) + 7 x Do
Length of Apron (La) TW>= Do/2 -	La = 3.0 x Q/Do^1.5 + 7 x Do
Width of Apron @ D.S End TW < Do/2 -	W = 3 x Do + La
Width of Apron @ D.S End TW >= Do/2 -	W = 3 x Do + 0.4 x La
Width of D.S. Apron if in Channel -	Ch. BW +Sum of Side Slopes x Flow Depth
Width of Apron @ Culvert -	Wc = 3 x Do

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Mounding Analysis

PROJECT LOCATION:	**2 Washington Street Foxborough**
DATE:	4-May-22
PROJECT NUMBER:	21-0172

Infiltration Basin #1

Aquifer Properties:

Hydraulic Conductivity (K-ft/day):	2.04	RAWLS Rate for Sandy Loam
Specific Yield (Sy):	0.25	Medium gravel (USGS Water Supply Paper 1662-D)
Initial Saturated Thickness (ft):	20	Town-Wide Groudwater Protection Study Foxborough, MA April, 1989

Recharge Area Properties:

Required Recharge Volume (Rv-ft3):	17,938	
Depth to Estimated High Groundwater (ft):	254.20	
Bottom of Recharge System (ft):	256.50	Bottom basin el-256.5'
Bottom Area (ft2):	19,638	Bottom basin el-256.5'

Application Rate Calculation:

$$\frac{\text{Rv (ft3)}}{\text{Bottom Area (ft2)}}$$

$$\frac{17{,}938}{19{,}638} = 0.9 \text{ ft/day}$$

Length of Time to Generate Rv (days):	0.0833	assume Rv generated during a 2 hour period - see DEP Stormwater Handbook, Vol.3, Ch.1, p.20

Groundwater Mounding Solution by Hantush (1967)

Maximum Water Table Rise in Center of Recharge Area (ft)	0.3	See output run using AQTESOLV V4.50.002
Depth From Top of Mound to Bottom of Recharge Area (ft):	2.0	Mound does not breach bottom of system

Transient Water-Table Rise Beneath a Rectangular Recharge Area
Groundwater Mounding Solution by Hantush (1967)

Aquifer Properties:

Hydraulic conductivity, K = 2.04 ft/sec
Specific yield, Sy = 0.25
Initial saturated thickness, h(0) = 20 ft

Recharge Area Properties:

Recharge rate, w = 0.9 ft/sec
Simulation time, t = 1 sec
Time when recharge stops, t(0) = 0.0833 sec
X coordinate at center of recharge area, X = 0 ft
Y coordinate at center of recharge area, Y = 0 ft
Length in x direction, l = 160 ft
Length in y direction, a = 122.7 ft

Water-Table Rise at Center of Recharge Area:

t (sec)	h (ft)
0.1	0.29988
0.2	0.29988
0.3	0.29988
0.4	0.29988
0.5	0.29988
0.6	0.299878
0.7	0.29987
0.8	0.299848
0.9	0.2998
1	0.299712

Note: recovery begins after 0.0833 sec.

Mounding Analysis

Infiltration Basin #2

Aquifer Properties:

Hydraulic Conductivity (K-ft/day):	2.04	RAWLS Rate for Sandy Loam
Specific Yield (Sy):	0.25	Medium gravel (USGS Water Supply Paper 1662-D)
Initial Saturated Thickness (ft):	5	Town-Wide Groudwater Protection Study Foxborough, MA April, 1989

Recharge Area Properties:

Required Recharge Volume (Rv-ft3):	266	
Depth to Estimated High Groundwater (ft):	249.00	
Bottom of Recharge System (ft):	251.00	Bottom basin el-256.5'
Bottom Area (ft2):	9,110	Bottom basin el-256.5'

Application Rate Calculation:

$$\frac{\text{Rv (ft3)}}{\text{Bottom Area (ft2)}}$$

$$\frac{266}{9{,}110} = 0.0 \text{ ft/day}$$

Length of Time to Generate Rv (days):	0.0833	assume Rv generated during a 2 hour period - see DEP Stormwater Handbook, Vol.3, Ch.1, p.20

Groundwater Mounding Solution by Hantush (1967)

Maximum Water Table Rise in Center of Recharge Area (ft)	0.0	See output run using AQTESOLV V4.50.002
Depth From Top of Mound to Bottom of Recharge Area (ft):	2.0	Mound does not breach bottom of system

Transient Water-Table Rise Beneath a Rectangular Recharge Area
Groundwater Mounding Solution by Hantush (1967)

Aquifer Properties:

Hydraulic conductivity, K = 2.04 ft/sec
Specific yield, Sy = 0.25
Initial saturated thickness, h(0) = 20 ft

Recharge Area Properties:

Recharge rate, w = 0.04 ft/sec
Simulation time, t = 1 sec
Time when recharge stops, t(0) = 0.0833 sec
X coordinate at center of recharge area, X = 0 ft
Y coordinate at center of recharge area, Y = 0 ft
Length in x direction, l = 55 ft
Length in y direction, a = 165.6 ft

Water-Table Rise at Center of Recharge Area:

t (sec)	h (ft)
0.1	0.013328
0.2	0.0133253
0.3	0.013289
0.4	0.0131792
0.5	0.0129991
0.6	0.0127718
0.7	0.0125187
0.8	0.0122548
0.9	0.0119894
1	0.0117284

Note: recovery begins after 0.0833 sec.

Required Recharge Volume Worksheet

PROJECT LOCATION: **2 Washington Street Foxborough**
DATE: May, 2022
PROJECT NUMBER: 21-0172

Basin 1

SCS Soil Type Hydrologic Group	*Target Depth Factor (in)*	*Total Impervious Area (acre)*	*Required Volume to Recharge (ac-ft)*
HSG A - Building & Parking	0.60	3.82	0.1910
HSG B - Building & Parking	0.35	3.90	0.1138
HSG C - Building & Parking	0.25	5.14	0.1071
		TOTAL:	**0.4118**

Volume Recharged
Infiltration Basin #1 Volume before discharge 6.22 ac-ft

Drawdown RRV Within 72 hours

Soil Type:	Sandy Loam
RAWLS Rate (in/hr):	1.02
Infiltration Area (sf):	19,638
Drawdown Time (hours):	10.7

Sandy Loam
el. 256.5'

Basin 2

SCS Soil Type Hydrologic Group	*Target Depth Factor (in)*	*Total Impervious Area (acre)*	*Required Volume to Recharge (ac-ft)*
HSG B - Parking	0.35	0.21	0.0061
		TOTAL:	**0.0061**

Volume Recharged
Infiltration Basin #2 Volume before discharge 1.09 ac-ft

Drawdown RRV Within 72 hours

Soil Type:	Sandy Loam
RAWLS Rate (in/hr):	1.02
Infiltration Area (sf):	9,110
Drawdown Time (hours):	0.3

Sandy Loam
el. 251.0'

Stormwater Report

A Stormwater Report must be submitted with the permit application to document compliance with the Stormwater Management Standards. The Stormwater Report must be organized into sections that correspond to the categories listed in the Checklist (e.g., Project Type, LID Practices, Standard 1 etc.). As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[1]
- Operation and Maintenance Plan required by Standard 9
- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (attached) that certifies that the Stormwater Report contains all required submittals.[2]

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has

---

[1] For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.

[2] The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

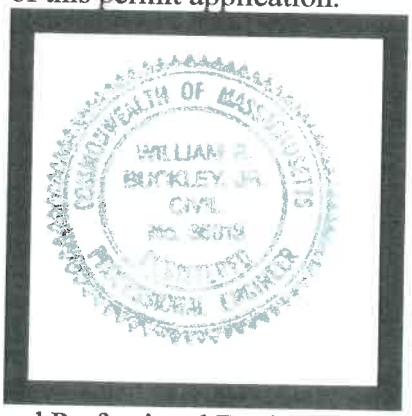
Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary to comprise a comprehensive Stormwater Report that addresses the ten Stormwater Standards. *Note:* Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.



Registered Professional Engineer Block and Signature

9/21/2021
Signature, Date

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

☑ New Development
☐ Redevelopment
☒ Mix of New Development and Redevelopment

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

☑ No disturbance to any Wetland Resource Areas
☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)
☐ Reduced Impervious Area (Redevelopment Only)
☐ Minimizing disturbance to existing trees and shrubs
☐ LID Site Design Credit Requested:
  - ☐ Credit 1
  - ☐ Credit 2
  - ☐ Credit 3

☐ Use of "country drainage" versus curb and gutter conveyance and pipe
☐ Bioretention Cells (includes Rain Gardens)
☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
☑ Treebox Filter
☐ Water Quality Swale
☐ Grass Channel
☐ Green Roof
☑ Other Separate roof runoff from other drainage

Standard 1: No New Untreated Discharges

☑ No new untreated discharges
☑ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
☑ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Standard 2: Peak Rate Attenuation

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.
☑ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm
☑ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

☑ Soil Analysis provided.
☑ Required Recharge Volume calculation provided
☐ Required Recharge volume reduced through use of the LID site Design Credits.
☑ Sizing the infiltration, BMPs is based on the following method: Circle the method used.
☐Static ☑Simple Dynamic ☐Dynamic Field[3]

☑ Runoff from all impervious areas at the site discharging to the infiltration BMP.
☐ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.
☑ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.
☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:
- ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
- ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
- ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☑ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.
☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.
☑ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.
☐ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:
- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;

[3] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☑ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☑ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☐ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☑ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☑ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

☑ The BMP is sized (and calculations provided) based on:

- ☑ The ½" or 1" Water Quality Volume or
- ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☑ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

☑ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.
☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.
☐ Critical areas and BMPs are identified in the Stormwater Report.

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

☐ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:
- ☐ Limited Project
- ☐ Small Residential Projects:
  5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☐ Redevelopment Project
- ☐ Redevelopment portion of mix of new and redevelopment.

☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.
☐ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☑ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☐ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☐ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☑ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☑ Name of the stormwater management system owners;
- ☑ Party responsible for operation and maintenance;
- ☑ Schedule for implementation of routine and non-routine maintenance tasks;
- ☑ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☑ Description and delineation of public safety features;
- ☑ Estimated operation and maintenance budget; and
- ☑ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

☑ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;
☐ An Illicit Discharge Compliance Statement is attached;
☑ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

APPENDIX C - Operation and Maintenance Plan and Long-Term Pollution Prevention Plan for Storm Water BMPs

Appendix C: OPERATION AND MAINTENANCE PLAN FOR STORMWATER BMPs

	During Construction	Post-construction
BMP Owner:	**Rockpoint Fund Acquisitions, LLC**	**Lot Owner**
Party of Plan Responsibility:	**Rockpoint Fund Acquisitions, LLC**	**Lot Owner**

References:

- Special Permit and Site Development Plan of "2 Washington Street Foxborough, MA" by Bay Colony Group, Inc.
- Stormwater Pollution Prevention Plan for Construction Activities – 2 Washington Street Foxborough, MA

Operation and Maintenance – During Construction

Item 1: During construction, weekly inspection of the crushed stone construction entrance pad and erosion control silt socks shall be conducted by a qualified staff member of the responsible party or an independent sediment and erosion control expert hired by the responsible party. Any displaced barriers shall be restored or repaired immediately. All barriers shall be installed a minimum 25 ft from the edge of the bordering vegetated wetlands and, where possible, a minimum 5 ft from the property line.

Item 2: The catch basins **within the project site** shall be set to base course grade so that they are functional throughout the project. They shall be inspected **before** and **after** rain storms, if the basins are filled with sediment to half of its depth, these basins shall be cleaned out with an orange peel bucket or some other means. Silt sacks shall be installed within the catch basins to ensure that siltation does not enter the catch basin. Any debris in basins shall be cleaned out. The driveways and parking areas will be swept as necessary.

Item 3: Do not install media or trees in tree box filters until the site has been stabilized. Do not allow unfiltered runoff to enter the storm water basin or it will clog. If it becomes clogged, it is the contractor's responsibility for restoring it.

Item 4: Inspect storm water basin after every major storm (1.0 inches in 24 hours) and, if necessary, take corrective action. At least twice a year, mow the buffer area, side slopes, and emergency spillway. Remove trash and debris at the same time

Item 5: Sediment basins shall be inspected after every storm and weekly. Clean out sediment when it reaches half of the depth of the basin. Scarify basement bottom after each clean out. Repair any damage to the sides and rip-rap outlet structure.

Operation and Maintenance – Post Construction

Item 1: The catch basins shall be inspected four times a year: beginning of summer, after leaf fall, before the arrival of hurricane season, and in the early or mid-spring after the snow melt and road sweeping. Any debris in basins should be cleaned out. The parking areas will be swept twice a year: once after leaf fall, the other in the spring after snow melt.

Item 2: Inspect the storm water basins at least once per year for the following:

- Signs of differential settlement
- Cracking
- Erosion
- Leakage in the embankments
- Tree growth on the embankments
- Condition of riprap
- Damage to the emergency spillway
- Emergence of invasive species

Item 3: Tree box filters shall be maintained in accordance with the following guidelines:

Inspect & remove trash – monthly
Reinstall mulch – annually
Remove dead vegetation – annually
Prune – annually
Replace entire media & all vegetation – as needed

Item 4: Contech Cascade Separator:
Inspect Cascade structure in accordance with the latest manufacturer's maintenance manual, which can be found at Contech Engineered Solutions Technical Guides (conteches.com)

Item 5: Estimated Operations and Maintenance Budget: The following is an estimate of the O&M Budget, post construction.

Inspections – infiltration basins, Cascade, catch basins (3 times per year): $420
Cleaning catch basins (4 times per year): $1,500
Mowing/cleaning basin (2 times per year): $320
Tree box filters: $600
Lot Sweeping (2 times per year): $800

Long Term Pollution Prevention Plan

Item 1 - Good housekeeping practices: The site is to be kept clean of trash and debris. No trash or uncovered materials is to be left outside.
Item 2 - Provisions for storing materials and waste products inside or under cover: All waste materials will be stored in enclosed dumpsters and removed by a licensed solid waste company. No waste products will be stored outside the facility unless in dumpsters.
Item 3 - Vehicle washing controls: Vehicles will not be washed on this site.
Item 4 - Requirements for routine inspections and maintenance of stormwater BMPs: Refer to the maintenance schedule provided in the Operation and Maintenance Plan – Post Construction. .
Item 5 - Spill prevention and response plans: A spill prevention and response plan will be developed and implemented by the building occupant. A draft plan is attached that may be modified once the tenant has been identified.
Item 6 - Provisions for maintenance of planters, gardens, parks and other landscaped areas: Owner will maintain surrounding landscaped area with the purpose of retaining the landscaped as designed.
Item 7 - Requirements for storage and use of fertilizers, herbicides, and pesticides: If present, fertilizers, herbicides and pesticides shall be stored in their appropriate containers within the building. They shall be handled and used in accordance with the manufacturer's recommendations. It is anticipated that a landscape contractor with have the responsibility of maintaining the property and these materials will be stored off site.
Item 8 - Pet waste management provisions: Pets will not be allowed on the site. If present for some reason, their owners will be responsible for removal of waste to trash receptacles.
Item 9 - Provisions for solid waste management: Solid waste material shall be placed in outdoor enclosed containers until emptied by licensed waste management company.
Item 10 - Snow disposal and plowing plans: A snow removal plan will be developed and implemented by the tenant and Owner. A draft plan is attached.
Item 11 - Winter Road Salt/or Sand Use and Storage restriction: See item above.
Item 12 - Sweeping schedules: See Operations and Maintenance Plan – Post Construction.
Item 13 - Training for staff or personnel involved with the implementing Long Term Pollution Prevention Plan: The facility Operations Manager will be responsible for training necessary staff or subcontractors to the implement the plan.
Item 14 - List of Emergency contacts for implementing Long-Term Pollution Prevention Plan: TBD

Oil Spill Prevention, Control and Countermeasure Plan

Project:	2 Washington Street Foxborough DEP File No. SE 157-xxxx
Location:	2 Washington Street - Foxborough, MA
Operator/Owner:	Rockpoint Fund Acquisitions LLC
Date:	May, 2022
Prepared by:	Bay Colony Group, Inc. 4 School Street Foxborough, MA 02035 508.543.3939 phone

Oil Spill Prevention, Control, and Countermeasure Plan: By Owner/Operator

There is no permanent fuel storage at the project site, but during construction activities the contractor may require temporary fuel storage at the site. In addition, this plan is designed to address minor releases from trucks or other vehicles parking or delivering at the site. The proposed Oil Spill Prevention, Control, and Countermeasure Plan shall meet the following specific requirements:

Spill Prevention:

- Fuel oil storage shall not be permitted at the site without approval by the Owner/Operator.
- Oil spill prevention shall be managed by the Contractor with Owner/Operator's approval.
- There shall be no discharge or spillage of fuel, oil, or any other pollutant from this project into adjacent wetland resource areas, or 100-foot Buffer Zone (hereinafter "buffer zone") associated with those resource areas.
- Any equipment used in any wetland resource area or buffer zone that uses fuel, oil, or hydraulic fluid shall be inspected daily for leakage
- Any equipment that uses fuel, oil, and/or hydraulic fluid shall be staffed at all times while operational within wetland resource areas or buffer zone.
- Equipment shall not be re-fueled within any buffer zones.
- An oil spill absorbent product shall be stored at the site, in case of a spill.
- Site manager shall be trained in spill response and the handling of mitigating absorptive materials

Spill Control and Countermeasure:

- Oil spill control in case of incident and countermeasures to contain and clean spills shall be managed by the Contractor/Owner. The Contractor shall contain, cleanup, and mitigate the effects of an oil spill
- In the event of a spill, the Contractor shall immediately stop the oil flow and shut off all ignition sources, followed by the containment, control, and mitigation of the spill.
- The Contractor shall notify the Owner/Operator of the spill immediately.
- Site Manager shall routinely inspect loading zone for minor releases and implement cleanup procedures.

Post Construction Snow Management Plan

Project:	Wrentham Business Center DEP File No. SE 157-xxxx
Location:	15 Commerce Boulevard - Wrentham, MA
Operator/Owner:	Rockpoint Fund Acquistions, LLC
Date:	May, 2022
Prepared by:	Bay Colony Group, Inc. 4 School Street Foxborough, MA 02035 508.543.3939 phone

Post Construction Snow Management By Owner/Operator

Snow will be managed by the Owner/Operator's maintenance staff and snow removal crews. The proposed snow management plan shall meet the following specific requirements:

- The Owner/Operator and maintenance staff conducting snow removal, snow plowing and deicing operations shall be made fully aware of the requirements of this Plan.
- Before winter begins, the property owner and maintenance staff shall review snow plowing, deicing, and stockpiling procedures.
- Snow must be stockpiled on paved surfaces that direct melted snow water to catch basins.
- Areas designated for stockpiling should be cleaned of any debris. Weather permitting, prior to April 1st, all sand and salt from winter application must be removed from the site.
- During typical snow plowing operations, snow shall be pushed to the designated areas, within the private site for stockpiling. Snow shall not be stockpiled on drainage system components.
- In severe conditions where snow cannot be stockpiled on site, the snow shall be removed from the stockpile locations on site and properly disposed of in accordance with the Department of Environmental Protection Snow Disposal Guidance No. BWR G2015-01.
- Deicing material and sand must be stored and contained in areas outside of the 100' buffer zone and that will not allow for their migration into wetland resource areas.

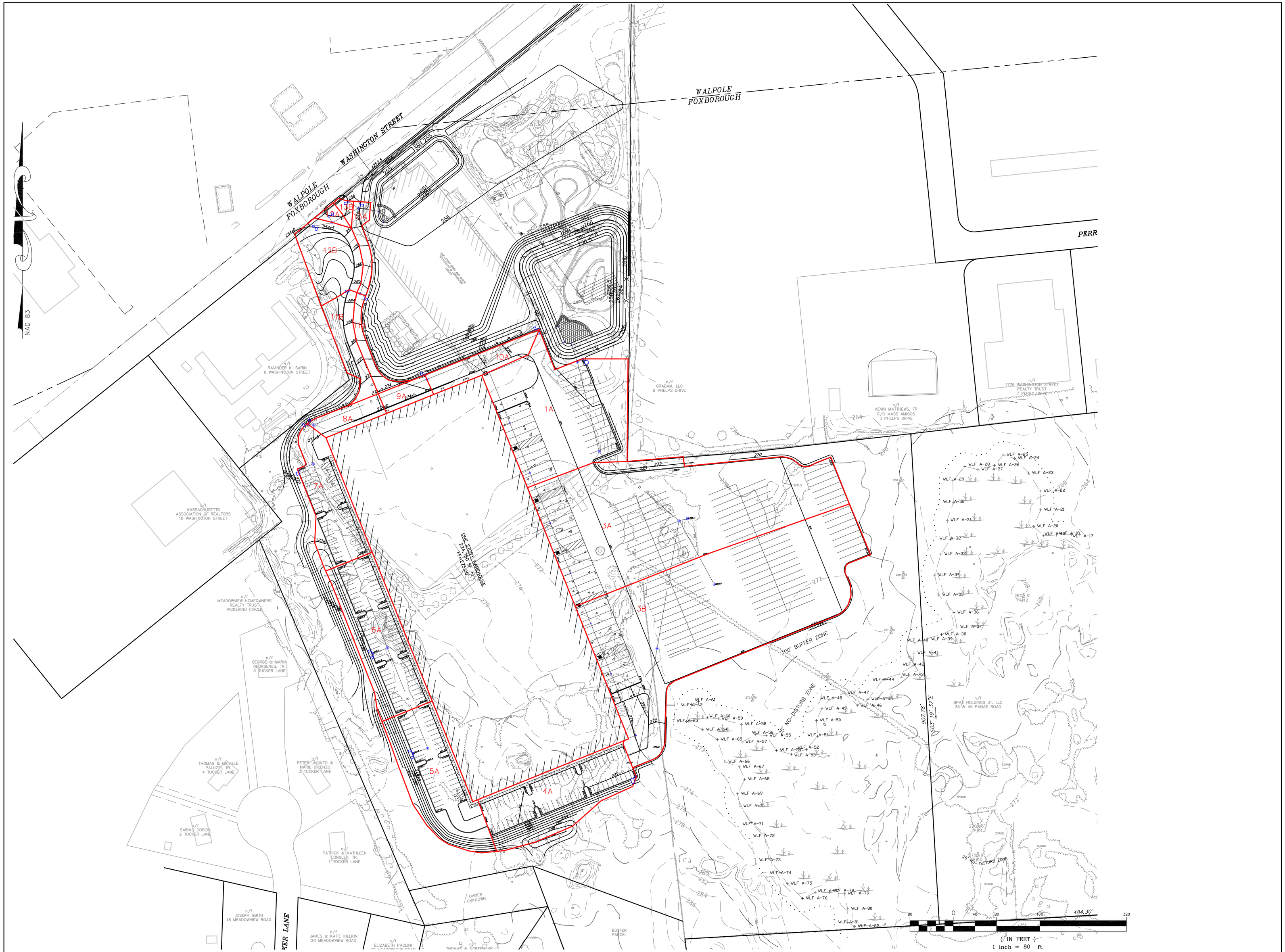
APPENDIX D - Closed Drainage System Design

Closed Drainage System Analysis
2 Washington Street Foxborough, MA

Upstream Node	Downstream Node	Section Size	Length (ft)	Constructed Slope (ft/ft)	Total Flow (cfs)	Capacity Free Flow (cfs)	Rational Coefficient	Average Velocity (ft/sec)	Upstream Ground Elevation (ft)	Upstream Invert Elevation (ft)	Upstream Structure Hydraulic Grade (ft)	Downstream Ground Elevation (ft)	Downstream Invert Elevation (ft)	Downstream Structure Hydraulic Grade (ft)
DMH#13	FES#5	12 inch	36	0.003	1.6	2.0	N/A	2.0	254.50	251.10	253.06	255.00	251.00	253.00
CB#13A	DMH#13	12 inch	12	0.008	0.3	3.5	0.8	0.4	254.00	251.20	253.07	254.50	251.10	253.07
CB#13B	DMH#13	12 inch	22	0.005	0.1	2.6	0.8	0.1	254.00	251.20	253.11	254.50	251.10	253.07
DMH#12	DMH#13	12 inch	55	0.004	1.3	2.3	N/A	1.7	254.40	251.30	253.18	254.50	251.10	253.07
CB#12A	DMH#12	12 inch	13	0.008	0.1	3.4	0.8	0.2	254.30	251.40	253.18	254.40	251.30	253.18
CB#12B	DMH#12	12 inch	48	0.004	1.3	2.5	0.8	1.6	254.00	251.50	253.26	254.40	251.30	253.18
DMH#11	FES#4	12 inch	139	0.054	0.9	9.0	N/A	7.2	263.00	258.50	258.89	255.00	251.00	253.00
CB#11A	DMH#11	12 inch	9	0.056	0.3	9.1	0.8	5.3	263.00	259.00	259.22	263.00	258.50	258.91
CB#11B	DMH#11	12 inch	20	0.025	0.6	6.1	0.8	4.9	263.00	259.00	259.32	263.00	258.50	258.91
DMH#10	FES#3	24 inch	34	0.032	7.2	44.1	N/A	2.3	269.00	257.60	263.03	266.00	256.50	263.00
DMH#9	DMH#10	24 inch	226	0.010	7.0	24.2	N/A	2.2	273.70	259.80	263.23	269.00	257.60	263.05
DMH#1	FES#1	24 inch	35	0.069	23.5	64.2	N/A	7.5	267.30	258.90	263.32	266.00	256.50	263.00
DMH#8	DMH#9	24 inch	225	0.010	6.8	24.2	N/A	6.6	272.90	262.00	263.38	273.70	259.80	263.27
DMH#7	DMH#8	18 inch	72	0.010	6.4	11.2	N/A	6.6	273.10	262.70	263.68	272.90	262.00	263.43
RDMH#8	FES#2	24 inch	147	0.031	19.4	42.9	0.8	6.2	274.50	261.00	263.92	266.00	256.50	263.00
CB#1A	DMH#1	12 inch	11	0.009	4.5	3.7	0.8	5.8	267.00	263.00	264.56	267.30	262.90	263.54
DMH#2	DMH#1	24 inch	171	0.009	19.8	23.7	N/A	6.3	269.40	260.50	264.65	267.30	258.90	263.54
RDMH#7	RDMH#8	24 inch	99	0.010	17.2	24.6	0.8	5.5	271.00	262.00	265.00	274.50	261.00	264.51
CB#10A	DMH#10	12 inch	9	0.011	0.7	4.1	0.8	3.9	269.00	265.00	265.35	269.00	264.90	263.05
RDMH#6	RDMH#7	24 inch	100	0.010	14.9	24.5	0.8	4.8	271.00	263.00	265.43	271.00	262.00	265.06
RDMH#5	RDMH#6	21 inch	100	0.010	12.6	17.2	0.8	5.2	271.00	264.00	266.01	271.00	263.00	265.47
DMH#3	DMH#2	24 inch	195	0.010	20.1	24.2	N/A	6.4	268.10	262.40	266.45	269.40	260.50	265.14
RDMH#4	RDMH#5	18 inch	100	0.010	10.2	11.4	0.8	5.8	271.00	265.00	266.87	271.00	264.00	266.06
CB#3A	DMH#3	18 inch	17	0.006	8.9	8.7	0.8	5.0	268.00	264.00	267.28	268.10	263.90	266.71
RDMH#3	RDMH#4	18 inch	100	0.010	7.7	11.4	0.8	6.9	271.00	266.00	267.38	271.00	265.00	266.95
DMH#4	DMH#3	12 inch	240	0.010	2.6	3.8	N/A	3.4	269.90	264.70	267.84	268.10	262.40	266.71
CB#3B	DMH#3	18 inch	134	0.012	10.1	12.4	0.8	5.7	268.00	264.00	267.93	268.10	262.40	266.71
CB#7A	DMH#7	12 inch	29	0.007	1.7	3.2	0.8	4.2	271.80	267.80	268.36	273.10	267.60	263.94
CB#8A	DMH#8	12 inch	11	0.009	0.5	3.7	0.8	3.2	272.50	268.50	268.79	272.90	268.40	263.43
CB#4A	DMH#4	12 inch	239	0.010	2.7	3.8	0.8	3.5	271.00	267.00	269.11	269.90	264.70	267.91
RDMH#2	RDMH#3	12 inch	101	0.010	5.2	3.8	0.8	6.7	271.00	267.00	269.29	271.00	266.00	267.43
CB#9A	DMH#9	12 inch	9	0.011	0.4	4.1	0.8	3.2	277.50	269.50	269.75	273.70	269.40	263.27
DMH#6	DMH#7	12 inch	366	0.010	4.9	3.8	N/A	6.3	273.10	266.30	269.94	273.10	262.70	263.94
DMH#5	DMH#6	12 inch	200	0.010	2.6	3.9	N/A	3.3	273.10	268.30	271.07	273.10	266.30	270.18
CB#6A	DMH#6	12 inch	29	0.007	2.5	3.2	0.8	3.2	272.00	268.00	271.12	273.10	267.80	270.18
CB#5A	DMH#5	12 inch	28	0.007	2.6	3.3	0.8	3.3	272.50	268.50	271.48	273.10	268.30	271.36
RDMH#1	RDMH#2	12 inch	123	0.033	2.6	7.0	0.8	8.2	274.00	271.00	271.69	271.00	267.00	269.54

Design Storm is 25-year event as shown on TP40 Boston, MA
Tailwater for Infiltration Basin 1 = 263.0' & Basin 2 =253.0' per Hydrocad 25-year storm.
Tc = 10 min
C=0.8

Bay Colony Group, Inc.
Four School Street
Foxborough, MA 02035



PROJECT:

2 Washington Street
Foxborough, MA
02035

OWNER:

Margi, LLC
22 Constance Way
N.Attleboro, MA
02760

PREPARED FOR:

Rockpoint Fund Acquisitions, LLC
500 Boylston Street
Boston, MA 02116

Bay Colony Group, Inc.
Professional Civil Engineers & Professional Land Surveyors

FOUR SCHOOL STREET
P.O. BOX 9136
FOXBOROUGH, MA 02035
508-543-3939

REFERENCES:

STAMP

DRAWING TITLE

Catch Basin Subareas

SCALE: 1" = 80'

MARCH 22, 2022	SHEET NUMBER
21-0172B	**CB**

APPENDIX E - DRAFT STORMWATER POLLUTION PREVENTION PLAN

Stormwater Pollution Prevention Plan (SWPPP)

For Construction Activities At:

2 Washington Street
Foxborough, MA
Telephone: TBD

SWPPP Prepared For:

Rockpoint Fund Acquisitions, LLC
3953 Maple Avenue, Suite 300
Dallas, TX 75219
972.934.7430

SWPPP Prepared By:

Bay Colony Group, Inc.
4 School Street
Foxborough, MA 02035
508.543.3939
508.543.8866 fax

SWPPP Preparation Date:

May, 2022

Estimated Project Dates:

Project Start Date: Fall, 2022
Project Completion Date: Fall, 2023

Contents

SECTION 1: CONTACT INFORMATION/RESPONSIBLE PARTIES

1.1 Operator(s) / Subcontractor(s)

Operator(s):

A. Rockpoint Fund Acquisitions, LLC
3953 Maple Avenue, Suite 300
Dallas, TX 75219
972.934.7430

General Contractor - TBD

Subcontractor(s):

Insert Company or Organization Name:
Insert Name:
Insert Address:
Insert City, State, Zip Code:
Insert Telephone Number:
Insert Fax/Email:
Insert area of control (if more than one operator at site):

[Repeat as necessary:]

Emergency 24-Hour Contact:

A. Insert name address, telephone number

1.2 Stormwater Team

Insert Role or Responsibility: **Project Manager**
Insert Position: **Project Manager**
Insert Name: **Name**
Insert Telephone Number: **number**
Insert Email: **email**

Insert Role or Responsibility:
Insert Position:
Insert Name:

Insert Telephone Number:
Insert Email:

Insert Role or Responsibility:
Insert Position:
Insert Name:
Insert Telephone Number:
Insert Email:

[Repeat as necessary.]

SECTION 2: SITE EVALUATION, ASSESSMENT, AND PLANNING

2.1 Project/Site Information

Project Name and Address

Project/Site Name: **2 Washington Street Foxborough, MA**
Project Street/Location: **2 Washington Street**
City: **Foxborough**
State: **MA**
ZIP Code: **02035**
County or Similar Subdivision: **Norfolk**

Project Latitude/Longitude

(Use **one** of three possible formats, and specify method)

Latitude:
1. **42 ° 06 ' 06.8" N** (degrees, minutes, seconds)
2. _ _ ° _ _ . _ _ ' N (degrees, minutes, decimal)
3. _ _ . _ _ _ _ ° N (decimal)

Longitude:
1. **71 ° 15 ' 04.4" W** (degrees, minutes, seconds)
2. _ _ ° _ _ . _ _ ' W (degrees, minutes, decimal)
3. _ _ . _ _ _ _ ° W (decimal)

Method for determining latitude/longitude:
☐ USGS topographic map (specify scale: _____) ☐ EPA Web site ☒ GPS
☐ Other (please specify): _____

Horizontal Reference Datum:
☐ NAD 27 ☒ NAD 83 or WGS 84 ☐ Unknown

If you used a U.S.G.S topographic map, what was the scale? _____

Additional Project Information

Is the project/site located on Indian country lands, or located on a property of religious or cultural significance to an Indian tribe? ☐ Yes ☒ No

If yes, provide the name of the Indian tribe associated with the area of Indian country (including the name of Indian reservation if applicable), or if not in Indian country, provide the name of the Indian tribe associated with the property: **N/A**

If you are conducting earth-disturbing activities in response to a public emergency, document the cause of the public emergency *(e.g., natural disaster, extreme flooding conditions)*, information substantiating its occurrence *(e.g., state disaster declaration)*, and a description of the construction necessary to reestablish effective public services: N/A

Are you applying for permit coverage as a "federal operator" as defined in Appendix A of the 2012 CGP? ☐ Yes ☒ No

2.2 *Discharge Information*

Does your project/site discharge stormwater into a Municipal Separate Storm Sewer System (MS4)? ☐ Yes ☒ No

Are there any surface waters that are located within 50 feet of your construction disturbances?
☐ Yes ☒ No

Table 1 – Names of Receiving Waters

Name(s) of the first surface water that receives stormwater directly from your site and/or from the MS4 (note: multiple rows provided where your site has more than one point of discharge that flows to different surface waters)
1. Ganawatte Farm Pond
2. Neponset River
3.
4.
5.
6.

Table 2 – Impaired Waters / TMDLs (Answer the following for each surface water listed in Table 1 above)

	Is this surface water listed as "impaired"?	If you answered yes, then answer the following:			
		What pollutant(s) are causing the impairment?	Has a TMDL been completed?	Title of the TMDL document	Pollutant(s) for which there is a TMDL
1.	☒ YES ☐ NO	**Multiple**	☐ YES ☒ NO	**Listed at Category 5 – Waters Requiring a TMDL**	
2.	☐ YES ☐ NO		☐ YES ☐ NO		
3.	☐ YES ☐ NO		☐ YES ☐ NO		
4.	☐ YES ☐ NO		☐ YES ☐ NO		
5.	☐ YES ☐ NO		☐ YES ☐ NO		
6.	☐ YES ☐ NO		☐ YES ☐ NO		

[Include additional rows as necessary.]

Describe the method(s) you used to determine whether or not your project/site discharges to an impaired water: Review of the MassDEP 2018/2020 Integrated List of Waters.

Table 3 – Tier 2, 2.5, or 3 Waters (Answer the following for each surface water listed in Table 1 above)

	Is this surface water designated as a Tier 2, Tier 2.5, or Tier 3 water? (see Appendix F)	If you answered yes, specify which Tier (2, 2.5, or 3) the surface water is designated as?
1.	☐ YES ☐ NO	INSERT "Tier 2", "Tier 2.5", or "Tier 3"
2.	☐ YES ☐ NO	INSERT "Tier 2", "Tier 2.5", or "Tier 3"
3.	☐ YES ☐ NO	INSERT "Tier 2", "Tier 2.5", or "Tier 3"
4.	☐ YES ☐ NO	INSERT "Tier 2", "Tier 2.5", or "Tier 3"
5.	☐ YES ☐ NO	INSERT "Tier 2", "Tier 2.5", or "Tier 3"

2.3 *Nature of the Construction Activity*

General Description of Project

Provide a general description of the construction project:

Construction of a 224,750 sf warehouse with associated utilities, parking areas, and storm water systems.

Size of Construction Project

What is the size of the property (in acres), the total area expected to be disturbed by the construction activities (in acres), and the maximum area expected to be disturbed at any one time?

INSERT SIZE OF PROPERTY – 30.5+/- acres

INSERT TOTAL AREA OF CONSTRUCTION DISTURBANCES – 21.0+/- acres

INSERT MAXIMUM AREA TO BE DISTURBED AT ANY ONE TIME – 21.0+/- acres

[Repeat as necessary for individual project phases.]

Construction Support Activities (only provide if applicable)

Describe any construction support activities for the project (e.g., concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, borrow areas)

INSERT DESCRIPTION OF CONSTRUCTION SUPPORT ACTIVITY

INSERT CONTACT INFORMATION FOR CONSTRUCTION SUPPORT ACTIVITY (Name, Telephone No., Email Address)

INSERT LOCATION INFORMATION FOR CONSTRUCTION SUPPORT ACTIVITY (Address and/or Latitude/Longitude)

[Repeat as necessary.]

2.4 *Sequence and Estimated Dates of Construction Activities*

Phase I

Clearing of existing building and Funway facility, installation of erosion controls, and grubbing of wooded areas, and storm water basins.

- INSERT ESTIMATED START AND END DATES OF CONSTRUCTION DISTURBANCES ASSOCIATED WITH THIS PHASE
- FOR EACH STORMWATER CONTROL, INSERT ESTIMATED DATE(s) OF INSTALLATION OF EACH STORMWATER CONTROL
- FOR AREAS OF THE SITE REQUIRED TO BE STABILIZED, INSERT ESTIMATED DATE(s) OF APPLICATION OF STABILIZATION MEASURES
- INSERT ESTIMATED DATE(s) WHEN STORMWATER CONTROLS WILL BE REMOVED

Phase II

Import and placement of material to bring building and parking to subbase elevation. Construction of storm water basins. Installation of drainage and water mains within site.

- INSERT ESTIMATED START AND END DATES OF CONSTRUCTION DISTURBANCES ASSOCIATED WITH THIS PHASE
- FOR EACH STORMWATER CONTROL, INSERT ESTIMATED DATE(s) OF INSTALLATION OF EACH STORMWATER CONTROL
- FOR AREAS OF THE SITE REQUIRED TO BE STABILIZED, INSERT ESTIMATED DATE(s) OF APPLICATION OF STABILIZATION MEASURES
- INSERT ESTIMATED DATE(s) WHEN STORMWATER CONTROLS WILL BE REMOVED

Phase III
Installation of base course of parking and construction of building.

- INSERT ESTIMATED START AND END DATES OF CONSTRUCTION DISTURBANCES ASSOCIATED WITH THIS PHASE
- FOR EACH STORMWATER CONTROL, INSERT ESTIMATED DATE(s) OF INSTALLATION OF EACH STORMWATER CONTROL
- FOR AREAS OF THE SITE REQUIRED TO BE STABILIZED, INSERT ESTIMATED DATE(s) OF APPLICATION OF STABILIZATION MEASURES
- INSERT ESTIMATED DATE(s) WHEN STORMWATER CONTROLS WILL BE REMOVED

Phase IV
Construct landscaping, finish building, place finished course of pavement. Remove storm water erosion controls.

- INSERT ESTIMATED START AND END DATES OF CONSTRUCTION DISTURBANCES ASSOCIATED WITH THIS PHASE
- FOR EACH STORMWATER CONTROL, INSERT ESTIMATED DATE(s) OF INSTALLATION OF EACH STORMWATER CONTROL
- FOR AREAS OF THE SITE REQUIRED TO BE STABILIZED, INSERT ESTIMATED DATE(s) OF APPLICATION OF STABILIZATION MEASURES
- INSERT ESTIMATED DATE(s) WHEN STORMWATER CONTROLS WILL BE REMOVED
-

[Repeat as needed.]

2.5 *Allowable Non-Stormwater Discharges*

List of Allowable Non-Stormwater Discharges Present at the Site

Type of Allowable Non-Stormwater Discharge	**Likely to be Present at Your Site?**
Discharges from emergency fire-fighting activities	☐ YES ☒ NO
Fire hydrant flushings	☒ YES ☐ NO
Landscape irrigation	☒ YES ☐ NO
Waters used to wash vehicles and equipment	☐ YES ☒ NO
Water used to control dust	☒ YES ☐ NO
Potable water including uncontaminated water line flushings	☒ YES ☐ NO
Routine external building wash down	☐ YES ☒ NO
Pavement wash waters	☐ YES ☒ NO
Uncontaminated air conditioning or compressor condensate	☒ YES ☐ NO

Uncontaminated, non-turbid discharges of ground water or spring water	☐ YES ☒ NO
Foundation or footing drains	☐ YES ☒ NO
Construction dewatering water	☒ YES ☐ NO

(Note: You are reminded of the requirement to identify the likely locations of these allowable non-stormwater discharges on your site map. See Section 2.6, below, of the SWPPP Template.)

2.6 *Site Maps*

See Site Development Plan of 2 Washington Street Foxborough by Bay Colony Group, Inc.

SECTION 3: DOCUMENTATION OF COMPLIANCE WITH OTHER FEDERAL REQUIREMENTS

3.1 Endangered Species Protection

Eligibility Criterion

Under which criterion listed in Appendix D are you eligible for coverage under this permit?

☒ **A** ☐ **B** ☐ **C** ☐ **D** ☐ **E**

For reference purposes, the eligibility criteria listed in Appendix D are as follows:

Criterion A. No federally-listed threatened or endangered species or their designated critical habitat(s) are likely to occur in your site's "action area" as defined in Appendix A of this permit.

Criterion B. The construction site's discharges and discharge-related activities were already addressed in another operator's valid certification of eligibility for your action area under eligibility Criterion A, C, D, E, or F and there is no reason to believe that federally-listed species or federally-designated critical habitat not considered in the prior certification may be present or located in the "action area". To certify your eligibility under this Criterion, there must be no lapse of NPDES permit coverage in the other operator's certification. By certifying eligibility under this Criterion, you agree to comply with any effluent limitations or conditions upon which the other operator's certification was based. You must include in your NOI the tracking number from the other operator's notification of authorization under this permit. If your certification is based on another operator's certification under Criterion C, you must provide EPA with the relevant supporting information required of existing dischargers in Criterion C in your NOI form.

Criterion C. Federally-listed threatened or endangered species or their designated critical habitat(s) are likely to occur in or near your site's "action area," and your site's discharges and discharge-related activities are not likely to adversely affect listed threatened or endangered species or critical habitat. This determination may include consideration of any stormwater controls and/or management practices you will adopt to ensure that your discharges and discharge-related activities are not likely to adversely affect listed species and critical habitat. To make this certification, you must include the following in your NOI: 1) any federally listed species and/or designated habitat located in your "action area"; and 2) the distance between your site and the listed species or designated critical habitat (in miles). You must also include a copy of your site map with your NOI.

Criterion D. Coordination between you and the Services has been concluded. The coordination must have addressed the effects of your site's discharges and discharge-related activities on federally-listed threatened or endangered species and federally-designated critical habitat, and must have resulted in a written concurrence from the relevant Service(s) that your site's discharges and discharge-related activities are not likely to adversely affect listed species or critical habitat. You must include copies of the correspondence between yourself and the Services in your SWPPP and your NOI.

Criterion E. Consultation between a Federal Agency and the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service under section 7 of the ESA has been concluded. The consultation must have addressed the effects of the construction site's discharges and discharge-related activities on federally-listed threatened or endangered species and federally-designated critical habitat. The result of this consultation must be either:

i. a biological opinion that concludes that the action in question (taking into account the effects of your site's discharges and discharge-related activities) is not likely to jeopardize the continued existence of listed species, nor the destruction or adverse modification of critical habitat; or

ii. written concurrence from the applicable Service(s) with a finding that the site's discharges and discharge-related activities are not likely to adversely affect federally-listed species or federally-designated habitat.

You must include copies of the correspondence between yourself and the Services in your SWPPP and your NOI.

Criterion F. Your construction activities are authorized through the issuance of a permit under section 10 of the ESA, and this authorization addresses the effects of the site's discharges and discharge-related activities on federally-listed species and federally-designated critical habitat. You must include copies of the correspondence between yourself and the Services in your SWPPP and your NOI.

Supporting Documentation

Provide documentation for the applicable eligibility criterion you select in Appendix D, as follows:

For criterion A, indicate the basis for your determination that no federally-listed threatened or endangered species or their designated critical habitat(s) are likely to occur in your site's action area (as defined in Appendix A of the permit). Check the applicable source of information you relied upon:

- ☐ Specific communication with staff of the U.S. Fish & Wildlife Service or National Marine Fisheries Service. INSERT DATE OF COMMUNICATION AND WHO YOU SPOKE WITH
- ☒ Publicly available species list. MASS GIS Website – NHESP Tabs
- ☐ Other source: INSERT SPECIFIC SOURCE

For criterion B, provide the Tracking Number from the other operator's notification of permit authorization: INSERT AUTHORIZATION TRACKING NUMBER FROM OTHER OPERATOR'S NOTIFICATION LETTER/EMAIL

Provide a brief summary of the basis used by the other operator for selecting criterion A, B, C, D, E, or F: INSERT TEXT HERE

For criterion C, provide the following information:

- INSERT LIST OF FEDERALLY-LISTED SPECIES OR FEDERALLY-DESIGNATED CRITICAL HABITAT LOCATED IN YOUR ACTION AREA
- INSERT DISTANCE BETWEEN YOUR SITE AND THE LISTED SPECIES OR CRITICAL HABITAT (in miles)

Also, provide a brief summary of the basis used for determining that your site's discharges and discharge-related activities are not likely to adversely affect listed species or critical habitat: INSERT TEXT HERE

For criterion D, E, or F, attach copies of any letters or other communication between you and the U.S. Fish & Wildlife Service or National Marine Fisheries Service concluding consultation or

coordination activities. INSERT COPIES OF LETTERS OR OTHER COMMUNICATIONS HERE

3.2 *Historic Preservation*

Appendix E, Step 1

Do you plan on installing any of the following stormwater controls at your site? Check all that apply below, and proceed to Appendix E, Step 2.

- ☐ Dike
- ☐ Berm
- ☒ Catch Basin
- ☒ Pond
- ☐ Stormwater Conveyance Channel (e.g., ditch, trench, perimeter drain, swale, etc.)
- ☒ Culvert
- ☐ Other type of ground-disturbing stormwater control: INSERT SPECIFIC TYPE OF STORMWATER CONTROL

(Note: If you will not be installing any ground-disturbing stormwater controls, no further documentation is required for Section 3.2 of the Template.)

Appendix E, Step 2

If you answered yes in Step 1, have prior surveys or evaluations conducted on the site already determined that historic properties do not exist, or that prior disturbances at the site have precluded the existence of historic properties? ☐ YES ☒ NO

- If yes, no further documentation is required for Section 3.2 of the Template.
- If no, proceed to Appendix E, Step 3.

Appendix E, Step 3

If you answered no in Step 2, have you determined that your installation of subsurface earth-disturbing stormwater controls will have no effect on historic properties? ☒ YES ☐ NO

If yes, provide documentation of the basis for your determination. **Reference to the Massachusetts Cultural Resources Information System shows no historical areas, buildings, burial grounds, objects or structures on or near the site.**

If no, proceed to Appendix E, Step 4.

Appendix E, Step 4

If you answered no in Step 3, did the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Office (THPO), or other tribal representative (whichever applies) respond to you within 15 calendar days to indicate whether the subsurface earth disturbances caused by the installation of stormwater controls affect historic properties? ☐ YES ☐ NO

If no, no further documentation is required for Section 3.2 of the Template.

If yes, describe the nature of their response:

☐ Written indication that adverse effects to historic properties from the installation of stormwater controls can be mitigated by agreed upon actions. INSERT COPIES OF LETTERS, EMAILS, OR OTHER COMMUNICATION BETWEEN YOU AND THE APPLICABLE SHPO, THPO, OR OTHER TRIBAL REPRESENTATIVE

☐ No agreement has been reached regarding measures to mitigate effects to historic properties from the installation of stormwater controls. INSERT COPIES OF LETTERS, EMAILS, OR OTHER COMMUNICATION BETWEEN YOU AND THE APPLICABLE SHPO, THPO, OR OTHER TRIBAL REPRESENTATIVE

☐ Other: INSERT COPIES OF LETTERS, EMAILS, OR OTHER COMMUNICATION BETWEEN YOU AND THE APPLICABLE SHPO, THPO, OR OTHER TRIBAL REPRESENTATIVE

3.3 *Safe Drinking Water Act Underground Injection Control Requirements*

Do you plan to install any of the following controls? Check all that apply below.

☒ Infiltration trenches (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system)

☐ Commercially manufactured pre-cast or pre-built proprietary subsurface detention vaults, chambers, or other devices designed to capture and infiltrate stormwater flow

☐ Drywells, seepage pits, or improved sinkholes (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system)

If yes, INSERT COPIES OF LETTERS, EMAILS, OR OTHER COMMUNICATION BETWEEN YOU AND THE STATE AGENCY OR EPA REGIONAL OFFICE - **no correspondence undertaken. Project is permitted under the MassDEP Stormwater Regulations which are enforced by the local Conservation Commission and Planning Board. A Notice of Intent will be filed and an Order of Conditions issued before the project can proceed.**

SECTION 4: EROSION AND SEDIMENT CONTROLS

4.1 Natural Buffers or Equivalent Sediment Controls

Buffer Compliance Alternatives

Are there any surface waters within 50 feet of your project's earth disturbances? ☐ YES ☒ NO

(Note: If no, no further documentation is required for the SWPPP Template.)

Check the compliance alternative that you have chosen:

☐ I will provide and maintain a 50-foot undisturbed natural buffer.

(Note (1): You must show the 50-foot boundary line of the natural buffer on your site map.)

(Note (2): You must show on your site map how all discharges from your construction disturbances through the natural buffer area will first be treated by the site's erosion and sediment controls. Also, show on the site map any velocity dissipation devices used to prevent erosion within the natural buffer area.)

☐ I will provide and maintain an undisturbed natural buffer that is less than 50 feet and is supplemented by additional erosion and sediment controls, which in combination achieves the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.

(Note (1): You must show the boundary line of the natural buffer on your site map.)

(Note (2): You must show on your site map how all discharges from your construction disturbances through the natural buffer area will first be treated by the site's erosion and sediment controls. Also, show on the site map any velocity dissipation devices used to prevent erosion within the natural buffer area.)

- INSERT WIDTH OF NATURAL BUFFER TO BE RETAINED
- INSERT EITHER ONE OF THE FOLLOWING:

  (1) THE ESTIMATED SEDIMENT REMOVAL FROM A 50-FOOT BUFFER USING APPLICABLE TABLES IN APP. G, ATTACHMENT 1. INCLUDE INFORMATION ABOUT THE BUFFER VEGETATION AND SOIL TYPE THAT PREDOMINATE AT YOUR SITE

  OR

  (2) IF YOU CONDUCTED A SITE-SPECIFIC CALCULATION FOR THE ESTIMATED SEDIMENT REMOVAL OF A 50-FOOT BUFFER, PROVIDE THE SPECIFIC REMOVAL EFFICIENCY, AND INFORMATION YOU RELIED UPON TO MAKE YOUR SITE-SPECIFIC CALCULATION.
- INSERT DESCRIPTION OF ADDITIONAL EROSION AND SEDIMENT CONTROLS TO BE USED IN COMBINATION WITH NATURAL BUFFER AREA
- INSERT THE FOLLOWING INFORMATION:
  - (1) SPECIFY THE MODEL OR OTHER TOOL USED TO ESTIMATE SEDIMENT LOAD REDUCTIONS FROM THE COMBINATION OF THE BUFFER AREA AND ADDITIONAL EROSION AND SEDIMENT CONTROLS INSTALLED AT YOUR SITE, AND
  - (2) INCLUDE THE RESULTS OF CALCULATIONS SHOWING THAT THE COMBINATION OF YOUR BUFFER AREA AND THE ADDITIONAL EROSION AND SEDIMENT CONTROLS INSTALLED AT YOUR SITE WILL MEET OR EXCEED THE SEDIMENT REMOVAL EFFICIENCY OF A 50-FOOT BUFFER

☐ It is infeasible to provide and maintain an undisturbed natural buffer of any size, therefore I will implement erosion and sediment controls that achieve the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.

- DESCRIPTION OF WHY IT IS NOT FEASIBLE
- INSERT EITHER ONE OF THE FOLLOWING:

  (1) THE ESTIMATED SEDIMENT REMOVAL FROM A 50-FOOT BUFFER USING APPLICABLE TABLES IN APP. G, ATTACHMENT 1. INCLUDE INFORMATION ABOUT THE BUFFER VEGETATION AND SOIL TYPE THAT PREDOMINATE AT YOUR SITE

  OR

  (2) IF YOU CONDUCTED A SITE-SPECIFIC CALCULATION FOR THE ESTIMATED SEDIMENT REMOVAL OF A 50-FOOT BUFFER, PROVIDE THE SPECIFIC REMOVAL EFFICIENCY, AND INFORMATION YOU RELIED UPON TO MAKE YOUR SITE-SPECIFIC CALCULATION.
- INSERT DESCRIPTION OF ADDITIONAL EROSION AND SEDIMENT CONTROLS TO BE USED IN COMBINATION WITH NATURAL BUFFER AREA
- INSERT THE FOLLOWING INFORMATION:
  - (1) SPECIFY THE MODEL OR OTHER TOOL USED TO ESTIMATE SEDIMENT LOAD REDUCTIONS FROM THE EROSION AND SEDIMENT CONTROLS INSTALLED AT YOUR SITE, AND
  - (2) INCLUDE THE RESULTS OF CALCULATIONS SHOWING THAT THE ADDITIONAL EROSION AND SEDIMENT CONTROLS INSTALLED AT YOUR SITE WILL MEET OR EXCEED THE SEDIMENT REMOVAL EFFICIENCY OF A 50-FOOT BUFFER

☐ I qualify for one of the exceptions in Part 2.1.2.1.e. (If you have checked this box, provide information on the applicable buffer exception that applies, below.)

Buffer Exceptions

Which of the following exceptions to the buffer requirements applies to your site?

☐ There is no discharge of stormwater to the surface water that is located 50 feet from my construction disturbances.

(Note: If this exception applies, no further documentation is required for Section 4.1 of the Template.)

☐ No natural buffer exists due to preexisting development disturbances that occurred prior to the initiation of planning for this project.

(Note (1): If this exception applies, no further documentation is required for Section 4.1 of the Template.)

(Note (2): Where some natural buffer exists but portions of the area within 50 feet of the surface water are occupied by preexisting development disturbances, you must still comply with the one of the CGP Part 2.1.2.1.a compliance alternatives.)

☐ For a "linear project" (defined in Appendix A), site constraints (e.g., limited right-of-way) make it infeasible for me to meet any of the CGP Part 2.1.2.1.a compliance alternatives. INCLUDE DOCUMENTATION HERE OF THE FOLLOWING: (1) WHY IT IS INFEASIBLE FOR YOU TO MEET ONE OF THE BUFFER COMPLIANCE ALTERNATIVES, AND (2) BUFFER WIDTH RETAINED AND/OR SUPPLEMENTAL EROSION AND SEDIMENT CONTROLS TO TREAT DISCHARGES TO THE SURFACE WATER

☐ The project qualifies as "small residential lot" construction (defined in Part 2.1.2.1.e.iv and in Appendix A).

For Alternative 1 (see Appendix G, Part G.2.3.2.a):

- INSERT WIDTH OF NATURAL BUFFER TO BE RETAINED
- INSERT APPLICABLE REQUIREMENTS BASED ON TABLE G-1
- INSERT DESCRIPTION OF HOW YOU WILL COMPLY WITH THESE REQUIREMENTS

For Alternative 2 (see Appendix G, Part G.2.3.2.b):

- INSERT (1) THE ASSIGNED RISK LEVEL BASED ON APPLICABLE TABLE IN APP. G, PART G.2.3.2.b, AND (2) THE PREDOMINANT SOIL TYPE AND AVERAGE SLOPE AT YOUR SITE
- INSERT APPLICABLE REQUIREMENTS BASED ON APP. G, TABLE G-7
- INSERT DESCRIPTION OF HOW YOU WILL COMPLY WITH THESE REQUIREMENTS

☐ Buffer disturbances are authorized under a CWA Section 404 permit. INSERT DESCRIPTION OF ANY EARTH DISTURBANCES THAT WILL OCCUR WITHIN THE BUFFER AREA

(Note (1): If this exception applies, no further documentation is required for Section 4.1 of the Template.)

(Note (2): This exception only applies to the limits of disturbance authorized under the Section 404 permit, and does not apply to any upland portion of the construction project.)

☐ Buffer disturbances will occur for the construction of a water-dependent structure or water access area (e.g., pier, boat ramp, and trail). INSERT DESCRIPTION OF ANY EARTH DISTURBANCES THAT WILL OCCUR WITHIN THE BUFFER AREA

(Note (1): If this exception applies, no further documentation is required for Section 4.1 of the Template.)

4.2 Perimeter Controls

General

- **The perimeter of the site where the proposed work is located within 100' of the wetlands will contain a silt sock barrier that will capture siltation and runoff.**

Specific Perimeter Controls

Perimeter Control # 1

Perimeter Control Description

- **Silt sock barrier**
- **See SWPPP Plan – Appendix A and Site Plan**

Installation

- INSERT APPROXIMATE DATE OF INSTALLATION

Maintenance Requirements

- **Weekly inspection and removal of sediment once it reaches at least ½ way up the barrier.**

[Repeat as needed for individual perimeter controls.]

4.3 Sediment Track-Out

General

- **Existing paved parking area and rip rap stabilized construction entrance.**

Specific Track-Out Controls

Track-Out Control # 1

Track-Out Control Description

- **Rip rap stabilized construction entrance at point where driveway meets existing Route One pavement**
- **See SWPPP Plan – Appendix A and Site Plan**

Installation

- INSERT APPROXIMATE DATE OF INSTALLATION

Maintenance Requirements

- **Monitor and maintain the Stabilized Construction Entrance shown on the SWPPP Plan to ensure that it is cleaned and functioning correctly to prevent tracking of sediment by construction that exit the Site.**
- **Where sediment has been tracked-out from the site onto the surface of off-site streets, other paved areas, and sidewalks, you must remove the deposited sediment by the end of the same work day in which the track-out occurs or by the end of the next work day if track-out occurs on a non-work day. You must remove the track-out by sweeping, shoveling, or vacuuming these surfaces, or by using other similarly effective means of sediment removal. Hosing or sweeping tracked-out sediment into any stormwater conveyance (unless it is connected to a sediment basin, sediment trap, or similarly effective control), storm drain inlet, or surface water.") is prohibited.**

[Repeat as needed for individual track-out controls.]

4.4 Stockpiled Sediment or Soil

General

- **Stockpiled Material will be at least 100' from any wetlands and will be encircled with a silt sock and construction fence in accordance with detail on Sheet 6.2**

Specific Stockpile Controls

Stockpile Control # 1

Stockpiled Sediment/Soil Control Description

- **Silt sock and construction fence will be placed around the perimeter of the stockpiled material.**
- **A tarp or mulch or temporary seeding may also be used to cover stockpiles.**
- **See SWPPP Plan – Appendix A and Site Plan**

Installation

- INSERT APPROXIMATE DATE OF INSTALLATION

Maintenance Requirements

- **Inspect barriers weekly or after a rain storm and remove sediment if it has reached ½ way up the barrier.**

[Repeat as needed for individual stockpile controls.]

4.5 Minimize Dust

General

- **A water truck will be used for dust control.**

Specific Dust Controls

Dust Control # 1
Dust Control Description

- **A water truck will be used for dust control.**

Installation

- **n/a**

Maintenance Requirements

- **n/a**

[Repeat as needed for individual dust controls.]

4.6 Minimize the Disturbance of Steep Slopes

General

- **There are no steep slopes on the project site.**

Specific Steep Slope Controls

Steep Slope Control # 1
Steep Slope Control Description

- INSERT DESCRIPTION OF STEEP SLOPE CONTROL TO BE INSTALLED
- INCLUDE COPIES OF DESIGN SPECIFICATIONS HERE

Installation

- INSERT APPROXIMATE DATE OF INSTALLATION

Maintenance Requirements

- INSERT MAINTENANCE REQUIREMENTS FOR THE STEEP SLOPE CONTROL

[Repeat as needed for individual steep slope controls.]

4.7 Topsoil

General

- **The existing topsoil will stripped and stockpiled on the site and reused in areas of the site where it is appropriate: lawns, road side slopes, storm water basin slopes, etc. The remainder will be removed from the site to locations TBD.**

Specific Topsoil Controls

Topsoil Control # 1

Topsoil Control Description

- **Topsoil will be stripped and stockpiled on the site and handled in accordance with the specifications of other stockpiles**
- **See Section 4.4**
- **See SWPP Plan – Appendix A**

Installation

- INSERT APPROXIMATE DATE OF INSTALLATION

Maintenance Requirements

- **Same as Section 4.4**

[Repeat as needed for individual topsoil controls.]

4.8 Soil Compaction

General

- **Areas of landscaping will be handled in accordance with local landscaping practice. Storm water basin construction will be handled in accordance with the guidance in the MA DEP Stormwater standards.**

Specific Soil Compaction Controls

Soil Compaction Control # 1

Soil Compaction Control Description

- **Storm water basin construction will be in accordance with MA DEP Stormwater standards.**
- **See definitive plans – Appendix A**

Installation

- INSERT APPROXIMATE DATE OF INSTALLATION

Maintenance Requirements

- **Storm water basins will be cleaned on an annual basis, or more if necessary.**
-

[Repeat as needed for individual soil compaction controls.]

4.9 Storm Drain Inlets

General

- **Storm drain inlets will be protected through the use of silt socks within drainage swales. Catch basins will protected by silt socks around the grates or with silt bags inserted in the structure.**

Specific Storm Drain Inlet Controls

Storm Drain Inlet Control # 1
Storm Drain Inlet Control Description

- **Silt socks in drainage swales**
- **See SWPPP Plan – Appendix A**

Installation

- INSERT APPROXIMATE DATE OF INSTALLATION

Maintenance Requirements

- **Clean, or remove and replace, the protection measures as sediment accumulates, the filter becomes clogged, and/or performance is compromised. Where there is evidence of sediment accumulation adjacent to the inlet protection measure, you must remove the deposited sediment by the end of the same work day in which it is found or by the end of the following work day if removal by the same work day is not feasible.**

Storm Drain Inlet Control # 2
Storm Drain Inlet Control Description

- **Silt socks around grates or silt sacks in catch basins**
- **See SWPPP Plan – Appendix A**

Installation

- INSERT APPROXIMATE DATE OF INSTALLATION

Maintenance Requirements

- **Clean, or remove and replace, the protection measures as sediment accumulates, the filter becomes clogged, and/or performance is compromised. Where there is evidence of sediment accumulation adjacent to the inlet protection measure, you must remove the deposited sediment by the end of the same work day in which it is found or by the end of the following work day if removal by the same work day is not feasible.**

[Repeat as needed for individual storm drain inlet controls.]

4.10 Constructed Stormwater Conveyance Channels

General

- **Rip rap devices will be used at all outlets.**

Specific Conveyance Channel Controls

Stormwater Conveyance Channel Control # 1
Stormwater Conveyance Channel Control Description

- **Rip rap outlet to drain outlet pipes**
- **See Town of Foxborough Construction Standards and Specifications and Site Plan**

Installation
- INSERT APPROXIMATE DATE OF INSTALLATION

Maintenance Requirements
- **Rip rap shall be inspected weekly and after every rainstorm. If erosion is taking place the stone shall be replenished.**

[Repeat as needed for individual stormwater conveyance channel controls.]

4.11 Sediment Basins

General
- **Sediment basins will be used as necessary during construction. Once construction is completed they will be revegetated as necessary to bring them in compliance with the permit.**

Specific Sediment Basin Controls

Sediment Basin Control # 1
Sediment Basin Control Description
- **Sediment basins will be used as necessary during construction. Once construction is completed they will be revegetated as necessary to bring them in compliance with the permit.**

Installation
- INSERT APPROXIMATE DATE OF INSTALLATION

Maintenance Requirements
- **Sediment basins will be inspected weekly and after every rain event greater than 0.5". Once the sediment in the forebay reaches 18" of depth the sediment will be removed.**
- **Once construction has stopped and the site is fully stabilized the basin will be revegetated as necessary to bring it into compliance with the definitive plans.**
  (Note: At a minimum, you must comply with following requirement in CGP Part 2.1.3.2.b: "Keep in effective operating condition and remove accumulated sediment to maintain at least ½ of the design capacity of the sediment basin at all times.")

[Repeat as needed for individual sediment basin controls.]

4.12 Chemical Treatment

Soil Types
List all the soil types (including soil types expected to be found in fill material) that are expected to be exposed during construction and that will be discharged to locations where chemicals will be applied:
None anticipated

Treatment Chemicals

List all treatment chemicals that will be used at the site and explain why these chemicals are suited to the soil characteristics: INSERT TEXT HERE

Describe the dosage of all treatment chemicals you will use at the site or the methodology you will use to determine dosage: INSERT TEXT HERE

Provide information from any applicable Material Safety Data Sheets (MSDS): INSERT TEXT HERE

Describe how each of the chemicals will stored: INSERT TEXT HERE

Include references to applicable state or local requirements affecting the use of treatment chemicals, and copies of applicable manufacturer's specifications regarding the use of your specific treatment chemicals and/or chemical treatment systems: INSERT TEXT HERE:

Special Controls for Cationic Treatment Chemicals (if applicable)
If you have been authorized by your applicable Regional Office to use cationic treatment chemicals, include the official EPA authorization letter or other communication, and identify the specific controls and implementation procedures you are required to implement to ensure that your use of cationic treatment chemicals will not lead to a violation of water quality standards: INSERT (1) ANY LETTERS OR OTHER DOCUMENTS SENT FROM THE EPA REGIONAL OFFICE CONCERNING YOUR USE OF CATIONIC TREATMENT CHEMICALS, AND (2) DESCRIPTION OF ANY SPECIFIC CONTROLS YOU ARE REQUIRED TO IMPLEMENT

Schematic Drawings of Stormwater Controls/Chemical Treatment Systems
Provide schematic drawings of any chemically-enhanced stormwater controls or chemical treatment systems to be used for application of treatment chemicals: INSERT TEXT HERE

Training
Describe the training that personnel who handle and apply chemicals have received prior to permit coverage, or will receive prior to the use of treatment chemicals: INSERT TEXT HERE

4.13 Dewatering Practices

General

- **Dewatering is not expected to be necessary**

Specific Dewatering Practices

Dewatering Practice # 1
Dewatering Practice Description

- **Installation of a sump pipe with trash pump in the area of the excavation**
- **Discharge will take place in the area designated on the SWPPP Plan, which will allow the water to infiltrate into the ground away from the wetlands.**

Installation

- INSERT APPROXIMATE DATE OF INSTALLATION

Maintenance Requirements

- **Water removed by dewatering will be discharged to an upland area at least 100' away from the wetlands. Create a stone sump if necessary to ameliorate velocity and to encourage infiltration. If necessary, use silt socks or hay bales to contain.**

[Repeat as needed for individual dewatering practices.]

4.14 Other Stormwater Controls

General

- INSERT GENERAL DESCRIPTION OF THE PROBLEM THIS CONTROL IS DESIGNED TO ADDRESS

Specific Stormwater Control Practices

Stormwater Control Practice # 1

Description

- INSERT DESCRIPTION OF PRACTICE TO BE INSTALLED
- IF APPLICABLE INCLUDE COPIES OF DESIGN SPECIFICATIONS HERE

Installation

- INSERT APPROXIMATE DATE OF INSTALLATION

Maintenance Requirements

- INSERT MAINTENANCE REQUIREMENTS FOR THE STORMWATER CONTROL PRACTICE

[Repeat as needed.]

4.15 Site Stabilization

Site Stabilization Practice (only use this if you are <u>not</u> located in an arid, semi-arid, or drought-stricken area)
☒ *Vegetative* ☐ *Non-Vegetative*
☒ *Temporary* ☐ *Permanent*

Description of Practice
- **Temporary stabilization of disturbed areas.**
- **No later than 14 days after initiation of soil stabilization measures the portion of the site in question will be planted with temporary cover using either standard seeding or hydroseeding.**
- **Seed mixture shall be based on the Massachusetts Conservation Guide Vol. II – Vegetated Practices in Site Development Table 1 – Seedings for Temporary Cover and is dependent on the time of year and the weather conditions.**

Installation
- INSERT APPROXIMATE DATE OF INSTALLATION
- INSERT APPROXIMATE COMPLETION DATE CONSISTENT WITH CGP PART 2.2.1.2

Maintenance Requirements
Seeded areas should be refertilized with ½ of the establishment amount in the second growing season and subsequently as needed.

[Repeat as needed for additional stabilization practices.]

Site Stabilization Practice (only use this if you are located in an arid, semi-arid, or drought-stricken area)
☒ *Vegetative* ☐ *Non-Vegetative*
☐ *Temporary* ☒ *Permanent*

Description of Practice
- **Permanent stabilization of disturbed areas.**
- **Final stabilization in areas to be vegetated will be done in accordance Section 2.2.2 of the general permit.**
- **Seed mixture shall be based on the Massachusetts Conservation Guide Vol. II – Vegetated Practices in Site Development Table 2 – Seed Mixtures for Permanent Cover and is dependent on the time of year and the weather conditions.**
-

Installation
- FOR VEGETATIVE STABILIZATION IN ARID OR SEMI-ARID AREAS, INDICATE THE BEGINNING AND ENDING DATES OF THE SEASONALLY DRY PERIOD AND DESCRIBE YOUR SITE CONDITIONS
- INSERT APPROXIMATE DATE OF INSTALLATION
- INSERT APPROXIMATE COMPLETION DATE CONSISTENT WITH CGP PART 2.2.1.3

Maintenance Requirements
Seeded areas should be refertilized with ½ of the establishment amount in the second growing season and subsequently as needed.

[Repeat as needed for additional stabilization practices.]

Site Stabilization Practice (only use this if uncontrollable circumstances have delayed the initiation or completion of stabilization)

(Note: You will not be able to include this information in your initial SWPPP. If you are affected by circumstances such as those described in CGP Part 2.2.1.3.b, you will need to modify your SWPPP to include this information.)

☐ *Vegetative* ☐ *Non-Vegetative*
☐ *Temporary* ☐ *Permanent*

Justification

- INSERT DESCRIPTION OF CIRCUMSTANCES THAT PREVENT YOU FROM MEETING THE DEADLINES REQUIRED IN CGP PARTS 2.2.1.1 AND/OR 2.2.1.2 AND THE SCHEDULE YOU WILL FOLLOW FOR INITIATING AND COMPLETING STABILIZATION

Description of Practice

- INSERT DESCRIPTION OF STABILIZATION PRACTICE TO BE INSTALLED
- NOTE HOW DESIGN WILL MEET REQUIREMENTS OF PART 2.2.2.1 OR 2.2.2.2, WHICHEVER APPLIES
- INCLUDE COPIES OF DESIGN SPECIFICATIONS HERE

Installation

- INSERT DATES OF INITIATION AND COMPLETION OF NON-VEGETATIVE STABILIZATION CONTROLS (must be completed within 14 days of the cessation of construction)

Maintenance Requirements
INSERT MAINTENANCE REQUIREMENTS FOR THE STABILIZATION PRACTICE

[Repeat as needed for additional stabilization practices.]

SECTION 5: POLLUTION PREVENTION STANDARDS

5.1 Potential Sources of Pollution

Construction Site Pollutants

Pollutant-Generating Activity	**Pollutants or Pollutant Constituents** (that could be discharged if exposed to stormwater)	**Location on Site** (or reference SWPPP site map where this is shown)
Fueling of vehicles	Gasoline or diesel	Only on paved surfaces, to include existing Commerce Boulevard

[Include additional rows as necessary.]

5.2 Spill Prevention and Response

Any spills of petroleum products will be cleaned using available sorbent material, to include sand, gravel, earth, or other dry clean up measures. If the spill is so large that it enters a catch basin then ensure that the basin is properly emptied so that the materials do not exit the structure. If necessary, contact the Wrentham Fire Department at 911 and direct them to the project site.

5.3 Fueling and Maintenance of Equipment or Vehicles

General

- **Fueling will only take place on pavement where spills can be readily cleaned-up. Ensure that adequate absorbent, spill clean-up materials are available on the site. If necessary, drip pans will be used under vehicles that leak. Those vehicles shall be removed from the site and repaired before being allowed to return. No storage of fuels or lubricants will take place on site. No maintenance will take place on site.**

Specific Pollution Prevention Practices

Pollution Prevention Practice # 1
Description

- **Fueling will only take place on pavement and adequate absorbent, spill clean-up materials will be available on site.**

Installation

- INSERT APPROXIMATE DATE OF INSTALLATION

Maintenance Requirements

- **Ensure that adequate materials are maintained on site.**

[Repeat as needed.]

5.4 Washing of Equipment and Vehicles

General

- **No washing of equipment or vehicles will be done on site.**

Specific Pollution Prevention Practices

Pollution Prevention Practice # 1
Description

- INSERT DESCRIPTION OF PRACTICE TO BE INSTALLED
- IF APPLICABLE INCLUDE COPIES OF DESIGN SPECIFICATIONS HERE

Installation

- INSERT APPROXIMATE DATE OF INSTALLATION

Maintenance Requirements
- INSERT MAINTENANCE REQUIREMENTS FOR THE POLLUTION PREVENTION PRACTICE

[Repeat as needed.]

5.5 Storage, Handling, and Disposal of Construction Products, Materials, and Wastes

5.5.1 Building Products

(Note: Examples include asphalt sealants, copper flashing, roofing materials, adhesives, concrete admixtures.)

General
- **Building products not designed to come in contact with rain will be stored under cover.**

Specific Pollution Prevention Practices

Pollution Prevention Practice # 1
Description
- **Building products not designed to come in contact with rain will be stored under cover.**

Installation
- INSERT APPROXIMATE DATE OF INSTALLATION

Maintenance Requirements
- INSERT MAINTENANCE REQUIREMENTS FOR THE POLLUTION PREVENTION PRACTICE

[Repeat as needed.]

5.5.2 Pesticides, Herbicides, Insecticides, Fertilizers, and Landscape Materials

General
- **Shall not be stored on site. Application shall be done at a rate and in amounts consistent with the manufacturer's specifications.**

Specific Pollution Prevention Practices

Pollution Prevention Practice # 1
Description
- **Application shall be done at a rate and in amounts consistent with the manufacturer's specifications.**
- **See manufacturer's specifications**

Installation
- INSERT APPROXIMATE DATE OF INSTALLATION

Maintenance Requirements
- INSERT MAINTENANCE REQUIREMENTS FOR THE POLLUTION PREVENTION PRACTICE

[Repeat as needed.]

5.5.3 Diesel Fuel, Oil, Hydraulic Fluids, Other Petroleum Products, and Other Chemicals

General

- **No fuels or petroleum products will be stored on site.**

Specific Pollution Prevention Practices

Pollution Prevention Practice # 1
Description

- INSERT DESCRIPTION OF PRACTICE TO BE INSTALLED
- IF APPLICABLE INCLUDE COPIES OF DESIGN SPECIFICATIONS HERE

Installation

- INSERT APPROXIMATE DATE OF INSTALLATION

Maintenance Requirements

- INSERT MAINTENANCE REQUIREMENTS FOR THE POLLUTION PREVENTION PRACTICE

[Repeat as needed.]

5.5.4 Hazardous or Toxic Waste

(Note: Examples include paints, solvents, petroleum-based products, wood preservatives, additives, curing compounds, acids.)

General

- INSERT GENERAL DESCRIPTION OF HOW YOU WILL COMPLY WITH CGP PART 2.3.3.3.d

Specific Pollution Prevention Practices

Pollution Prevention Practice # 1
Description

- INSERT DESCRIPTION OF PRACTICE TO BE INSTALLED
- IF APPLICABLE INCLUDE COPIES OF DESIGN SPECIFICATIONS HERE

Installation

- INSERT APPROXIMATE DATE OF INSTALLATION

Maintenance Requirements

- INSERT MAINTENANCE REQUIREMENTS FOR THE POLLUTION PREVENTION PRACTICE

[Repeat as needed.]

5.5.5 Construction and Domestic Waste

(Note: Examples include packaging materials, scrap construction materials, masonry products, timber, pipe and electrical cuttings, plastics, styrofoam, concrete, and other trash or building materials.)

General

- **Dumpsters will be used for waste from the commercial building construction.**

Specific Pollution Prevention Practices

Pollution Prevention Practice # 1
Description
- **Dumpsters will be used for materials waste for building construction. The location of the dumpsters will be determined on a case by case basis as the building is built.**
-

Installation
- INSERT APPROXIMATE DATE OF INSTALLATION

Maintenance Requirements
- **Remove from site when full.**

[Repeat as needed.]

5.5.6 Sanitary Waste

General
- **Porta-johns will be used on the site for human waste.**

Specific Pollution Prevention Practices

Pollution Prevention Practice # 1
Description
- **Porta-johns will be used on the site as necessary. The number of porta-johns will be based on the worker population. Typically, one will be sufficient.**

Installation
- **They will be used on the site from the start to the end of construction.**

Maintenance Requirements
- **Typical maintenance will involve pumping and cleaning once per week depending on the population size.**

[Repeat as needed.]

5.6 Washing of Applicators and Containers used for Paint, Concrete or Other Materials

General
- **Direct all washwater into leak proof containers designed so that no overflows can occur. Do not dump liquid wastes in storm sewers. Remove and dispose of hardened concrete in accordance with other solid wastes generated on site.**

Specific Pollution Prevention Practices

Pollution Prevention Practice # 1
Description
- INSERT DESCRIPTION OF PRACTICE TO BE INSTALLED
- IF APPLICABLE INCLUDE COPIES OF DESIGN SPECIFICATIONS HERE

Installation
- INSERT APPROXIMATE DATE OF INSTALLATION

Maintenance Requirements
- INSERT MAINTENANCE REQUIREMENTS FOR THE POLLUTION PREVENTION PRACTICE

[Repeat as needed.]

5.7 Fertilizers

General
- **Shall not be stored on site. Application shall be done at a rate and in amounts consistent with the manufacturer's specifications.**

Specific Pollution Prevention Practices

Pollution Prevention Practice # 1
Description
- **Application shall be done at a rate and in amounts consistent with the manufacturer's specifications.**

Installation
- INSERT APPROXIMATE DATE OF INSTALLATION

Maintenance Requirements
- INSERT MAINTENANCE REQUIREMENTS FOR THE POLLUTION PREVENTION PRACTICE

[Repeat as needed for individual fertilizer practices.]

5.8 Other Pollution Prevention Practices

General
- INSERT GENERAL DESCRIPTION OF THE PROBLEM THIS CONTROL IS DESIGNED TO ADDRESS

Specific Pollution Prevention Practices

Pollution Prevention Practice # 1
Description
- INSERT DESCRIPTION OF PRACTICE TO BE INSTALLED
- IF APPLICABLE INCLUDE COPIES OF DESIGN SPECIFICATIONS HERE

Installation
- INSERT APPROXIMATE DATE OF INSTALLATION

Maintenance Requirements
- INSERT MAINTENANCE REQUIREMENTS FOR THE POLLUTION PREVENTION PRACTICE

[Repeat as needed.]

SECTION 6: INSPECTION AND CORRECTIVE ACTION

6.1 Inspection Personnel and Procedures

Personnel Responsible for Inspections

INSERT NAMES OF PERSONNEL OR TYPES OF PERSONNEL WHO WILL BE CONDUCTING SITE INSPECTIONS HERE

Note: All personnel conducting inspections must be considered a "qualified person." CGP Part 4.1.1 clarifies that a "qualified person" is a person knowledgeable in the principles and practices of erosion and sediment controls and pollution prevention, who possesses the skills to assess conditions at the construction site that could impact stormwater quality, and the skills to assess the effectiveness of any stormwater controls selected and installed to meet the requirements of this permit.

Inspection Schedule

Specific Inspection Frequency

Inspections will take place once every 7 days or more often if a rain event greater then 0.25" has occurred.

Rain Gauge Location (if applicable)

SPECIFY LOCATION(S) OF RAIN GAUGE TO BE USED FOR DETERMINING WHETHER A RAIN EVENT OF 0.25 INCHES OR GREATER HAS OCCURRED (only applies to inspections conducted for Part 4.1.2.2, 4.1.3, or 4.1.4.2)

Reductions in Inspection Frequency (if applicable)

- For the reduction in inspections resulting from stabilization: SPECIFY (1) LOCATIONS WHERE STABILIZATION STEPS HAVE BEEN COMPLETED AND (2) DATE THAT THEY WERE COMPLETED (Note: It is likely that you will not be able to include this in your initial SWPPP. If you qualify for this reduction (see CGP Part 4.1.4.1), you will need to modify your SWPPP to include this information.)

- For the reduction in inspections in arid, semi-arid, or drought-stricken areas: INSERT BEGINNING AND ENDING DATES OF THE SEASONALLY-DEFINED ARID PERIOD FOR YOUR AREA OR THE VALID PERIOD OF DROUGHT

- For reduction in inspections due to frozen conditions: INSERT BEGINNING AND ENDING DATES OF FROZEN CONDITIONS ON YOUR SITE

Inspection Report Forms

See Appendix D

6.2 *Corrective Action*

Personnel Responsible for Corrective Actions

INSERT NAMES OF PERSONNEL OR TYPES OF PERSONNEL RESPONSIBLE FOR CORRECTIVE ACTIONS

Corrective Action Forms

See Appendix E

6.3 *Delegation of Authority*

Duly Authorized Representative(s) or Position(s):

Insert Company or Organization Name:
Insert Name:
Insert Position:
Insert Address:
Insert City, State, Zip Code:
Insert Telephone Number:
Insert Fax/Email:

SECTION 7: TRAINING

Table 7-1: Documentation for Completion of Training

Name	Date Training Completed
INSERT NAME OF PERSONNEL HERE	INSERT COMPLETION DATE HERE
INSERT NAME OF PERSONNEL HERE	INSERT COMPLETION DATE HERE
INSERT NAME OF PERSONNEL HERE	INSERT COMPLETION DATE HERE
INSERT NAME OF PERSONNEL HERE	INSERT COMPLETION DATE HERE
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INSERT NAME OF PERSONNEL HERE	INSERT COMPLETION DATE HERE
INSERT NAME OF PERSONNEL HERE	INSERT COMPLETION DATE HERE
INSERT NAME OF PERSONNEL HERE	INSERT COMPLETION DATE HERE

SECTION 8: CERTIFICATION AND NOTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: _____ Title: _____

Signature: _____ Date: _____

[Repeat as needed for multiple construction operators at the site.]

SWPPP APPENDICES

Attach the following documentation to the SWPPP:

Appendix A – Site Maps

Appendix B – Copy of 2017 CGP

Appendix C – NOI and EPA Authorization Email

Appendix D – Inspection Forms
- ***Stormwater Construction Site Inspection Report***
- ***Checklist for Catch Basin***
- ***Checklist for Tree Box Filter***
- ***Checklist for Infiltration Basin***
- ***Checklist for Cascade***

Appendix E – Corrective Action Form

Appendix F – SWPPP Amendment Log

Appendix G – Subcontractor Certifications/Agreements

Appendix H – Grading and Stabilization Activities Log

Appendix I – Training Log

Appendix J – Delegation of Authority

Appendix K – Endangered Species Documentation

Appendix L – Historic Preservation Documentation

Appendix A – Site Maps

INSERT SITE MAPS CONSISTENT WITH TEMPLATE SECTION 2.6

Appendix B – Copy of 2022 CGP

INSERT COPY OF 2022 CGP

Appendix C – Copy of NOI and EPA Authorization email

INSERT COPY OF NOI AND EPA'S AUTHORIZATION EMAIL PROVIDING COVERAGE UNDER THE CGP

Appendix D – Copy of Inspection Form

INSERT COPY OF ANY INSPECTION FORMS YOU WILL USE TO PREPARE INSPECTION REPORTS

Stormwater Construction Site Inspection Report

General Information			
Project Name	2 Washington Street Foxborough, MA		
NPDES Tracking No.		**Location**	2 Washington Street Foxborough, MA
Date of Inspection		**Start/End Time**	
Inspector's Name(s)			
Inspector's Title(s)			
Inspector's Contact Information			
Inspector's Qualifications			
Describe present phase of construction			
Type of Inspection: ❑ Regular ❑ Pre-storm event ❑ During storm event ❑ Post-storm event			
Weather Information			
Has there been a storm event since the last inspection? ❑Yes ❑No **If yes, provide:** Storm Start Date & Time: Storm Duration (hrs): Approximate Amount of Precipitation (in):			
Weather at time of this inspection? ❑ Clear ❑Cloudy ❑ Rain ❑ Sleet ❑ Fog ❑ Snowing ❑ High Winds ❑ Other: Temperature:			
Have any discharges occurred since the last inspection? ❑Yes ❑No **If yes, describe:**			
Are there any discharges at the time of inspection? ❑Yes ❑No **If yes, describe:**			

Site-specific BMPs

- *Number the structural and non-structural BMPs identified in your SWPPP on your site map and list them below (add as many BMPs as necessary). Carry a copy of the numbered site map with you during your inspections. This list will ensure that you are inspecting all required BMPs at your site.*
- *Describe corrective actions initiated, date completed, and note the person that completed the work in the Corrective Action Log.*

	BMP	BMP Installed?	BMP Maintenance Required?	Corrective Action Needed and Notes
1	Stabilized Construction Entrances	❑Yes ❑No	❑Yes ❑No	
2	Silt socks	❑Yes ❑No	❑Yes ❑No	
3	Silt sacks – Catch Basins	❑Yes ❑No	❑Yes ❑No	
4	Sediment Basins	❑Yes ❑No	❑Yes ❑No	
5	Soil Stabilization	❑Yes ❑No	❑Yes ❑No	
6	Material Piles	❑Yes ❑No	❑Yes ❑No	
7	General Housekeeping	❑Yes ❑No	❑Yes ❑No	
9		❑Yes ❑No	❑Yes ❑No	
10		❑Yes ❑No	❑Yes ❑No	
11		❑Yes ❑No	❑Yes ❑No	
12		❑Yes ❑No	❑Yes ❑No	

	BMP	BMP Installed?	BMP Maintenance Required?	Corrective Action Needed and Notes
13		❑Yes ❑No	❑Yes ❑No	
14		❑Yes ❑No	❑Yes ❑No	
15		❑Yes ❑No	❑Yes ❑No	
16		❑Yes ❑No	❑Yes ❑No	
17		❑Yes ❑No	❑Yes ❑No	
18		❑Yes ❑No	❑Yes ❑No	
19		❑Yes ❑No	❑Yes ❑No	
20		❑Yes ❑No	❑Yes ❑No	

Overall Site Issues

Below are some general site issues that should be assessed during inspections. Customize this list as needed for conditions and phases of construction. Use Project SWPPP (Sheets 6.1 & 6.2) for inspection.

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
5	Are all slopes and disturbed areas not actively being worked properly stabilized?	❑Yes ❑No	❑Yes ❑No	
2,3	Are wetlands and future infiltration basin area protected with barriers or similar BMPs?	❑Yes ❑No	❑Yes ❑No	
2,3	Are perimeter controls and sediment barriers adequately installed (keyed into substrate) and maintained?	❑Yes ❑No	❑Yes ❑No	
4	Are sediment basins functioning properly?	❑Yes ❑No	❑Yes ❑No	
3	Are storm drain inlets properly protected?	❑Yes ❑No	❑Yes ❑No	
1	Is the construction exit preventing sediment from being tracked into the street?	❑Yes ❑No	❑Yes ❑No	
7	Is trash/litter from work areas collected and placed in covered dumpsters?	❑Yes ❑No	❑Yes ❑No	
7	Are vehicle and equipment fueling, cleaning, and maintenance areas free of spills, leaks, or any other deleterious material?	❑Yes ❑No	❑Yes ❑No	

	BMP/activity	Implemented?	Maintenance Required?	Corrective Action Needed and Notes
6	Are material piles covered or seeded and surrounded by sediment control barrier?	❑Yes ❑No	❑Yes ❑No	
		❑Yes ❑No	❑Yes ❑No	
		❑Yes ❑No	❑Yes ❑No	
		❑Yes ❑No	❑Yes ❑No	

Non-Compliance

Describe any incidents of non-compliance not described above:

CERTIFICATION STATEMENT

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Print name and title: _____

Signature: _____ **Date:** _____

CHECKLIST FOR INSPECTION OF CATCH BASIN			
Location:			
Inspector:			
Date/Time:			
Weather:			
Date of Last Rainfall:			
Amount of Last Rainfall:			
Inspection Items:	**Satisfactory (S) or Unsatisfactory (U)**		**Comments/ Corrective Actions**
Damage to frame/cover	S	U	
Settlement of frame/cover	S	U	
Depth of sediment in basin	S	U	
Condition of water quality hood	S	U	
Condition of inlet from Tree Box Filter	S	U	
Corrective Action Needed			**Due Date**
1			
2			
3			
4			
5			

CHECKLIST FOR INSPECTION OF BIORETENTION SYSTEM/TREE BOX FILTERS			
Location:			
Inspector:			
Date/Time:			
Weather:			
Date of Last Rainfall:			
Amount of Last Rainfall:			
Inspection Items:	**Satisfactory (S) or Unsatisfactory (U)**		**Comments/ Corrective Actions**
Inspect and remove trash (monthly)	S	U	
Remove dead vegetation (annually)	S	U	
Prune vegetation (annually)	S	U	
Replace entire media & all vegetation (as needed)	S	U	
Structure has visible cracks	S	U	
Evidence of standing water 48 hrs after rainfall	S	U	
Corrective Action Needed			**Due Date**
1			
2			
3			
4			
5			

CHECKLIST FOR INSPECTION OF INFILTRATION BASIN

Location:	
Inspector:	
Date/Time:	
Weather:	
Date of Last Rainfall:	
Amount of Last Rainfall:	

Inspection Items:	Satisfactory (S) or Unsatisfactory (U)		Comments/ Corrective Actions
Signs of differential settlement	S	U	
Cracking	S	U	
Erosion	S	U	
Leakage in the embankments	S	U	
Tree growth on the embankments	S	U	
Condition of inlet rip rap	S	U	
Sediment in forebay	S	U	
Damage to forebay outlet	S	U	
Damage to emergency spillway	S	U	
Emergence of invasive species	S	U	
Evidence of standing water 72 hrs after rainfall	S	U	

Corrective Action Needed	Due Date
1	
2	
3	
4	
5	

CHECKLIST FOR INSPECTION OF CASCADE			
Location:			
Inspector:			
Date/Time:			
Weather:			
Date of Last Rainfall:			
Amount of Last Rainfall:			
Inspection Items:	**Satisfactory (S) or Unsatisfactory (U)**		**Comments/ Corrective Actions**
Blockage or obstruction in inlet chamber, flume, outlet	S	U	
Check for presence of hydrocarbons	S	U	
Depth of Sediment	S	U	
Other issue	S	U	
Corrective Action Needed			**Due Date**
1			
2			
3			
4			
5			

Note: Inspection and maintenance shall be in accordance with the most recent Cascades Inspection and Maintenance information which can be found at https://www.conteches.com/technical-guides/search?filter=W0ME2011K1. Inspector shall use that document during the inspection and follow the recomendations therein.

Appendix E – Copy of Corrective Action Form

INSERT COPY OF CORRECTIVE ACTION FORMS YOU WILL USE

Appendix F –SWPPP Amendment Log

No.	Description of the Amendment	Date of Amendment	Amendment Prepared by [Name(s) and Title]

Appendix G – *Sample* Subcontractor Certifications/Agreements

SUBCONTRACTOR CERTIFICATION
STORMWATER POLLUTION PREVENTION PLAN

Project Number: _____

Project Title: _____

Operator(s): _____

As a subcontractor, you are required to comply with the Stormwater Pollution Prevention Plan (SWPPP) for any work that you perform on-site. Any person or group who violates any condition of the SWPPP may be subject to substantial penalties or loss of contract. You are encouraged to advise each of your employees working on this project of the requirements of the SWPPP. A copy of the SWPPP is available for your review at the office trailer.

Each subcontractor engaged in activities at the construction site that could impact stormwater must be identified and sign the following certification statement:

I certify under the penalty of law that I have read and understand the terms and conditions of the SWPPP for the above designated project and agree to follow the practices described in the SWPPP.

This certification is hereby signed in reference to the above named project:

Company: _____

Address: _____

Telephone Number: _____

Type of construction service to be provided: _____

_____

_____

Signature: _____

Title: _____

Date: _____

Appendix H –Grading and Stabilization Activities Log

Date Grading Activity Initiated	Description of Grading Activity	Description of Stabilization Measure and Location	Date Grading Activity Ceased (Indicate Temporary or Permanent)	Date When Stabilization Measures Initiated

Appendix I –SWPPP Training Log

Stormwater Pollution Prevention Training Log

Project Name:

Project Location:

Instructor's Name(s):

Instructor's Title(s):

Course Location: _____ Date: _____

Course Length (hours): _____

Stormwater Training Topic: *(check as appropriate)*

- ❑ **Sediment and Erosion Controls**
- ❑ **Emergency Procedures**
- ❑ **Stabilization Controls**
- ❑ **Inspections/Corrective Actions**
- ❑ **Pollution Prevention Measures**

Specific Training Objective: _____

_____

Attendee Roster: *(attach additional pages as necessary)*

No.	Name of Attendee	Company
1		
2		
3		
4		
5		
6		
7		
8		

Appendix J –Delegation of Authority Form

Delegation of Authority

I, _____ (name), hereby designate the person or specifically described position below to be a duly authorized representative for the purpose of overseeing compliance with environmental requirements, including the Construction General Permit, at the _____ construction site. The designee is authorized to sign any reports, stormwater pollution prevention plans and all other documents required by the permit.

_____ (name of person or position)
_____ (company)
_____ (address)
_____ (city, state, zip)
_____ (phone)

By signing this authorization, I confirm that I meet the requirements to make such a designation as set forth in Appendix I of EPA's Construction General Permit (CGP), and that the designee above meets the definition of a "duly authorized representative" as set forth in Appendix I.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: _____

Company: _____

Title: _____

Signature: _____

Date: _____

Appendix K – Endangered Species Documentation

INSERT DOCUMENTATION CONSISTENT WITH SWPPP TEMPLATE SECTION 3.1

Appendix L – Historic Properties Documentation

INSERT DOCUMENTATION CONSISTENT WITH SWPPP TEMPLATE SECTION 3.2

APPENDIX F - SOILS DATA

Soil Evaluation Forms
Lab Results - Grain Size Analysis & USDA Soil Textural Classification (to be submitted)
NRCS Soil Report Extract

No. 21-0172 Date: 6.26.1998

Commonwealth of Massachusetts

Foxborough , Massachusetts

Soil Suitability Assessment for On-Site Sewage Disposal

Performed By: William Buckley Jr. Date: 6.26.1998

Witnessed By: George Young

Location Address or Lot #:	Owner's Name, Address, and , Telephone #:
2 Washington Street Foxborough, MA New Construction: ☐ Repair ☑	Red Snapper Realty Trust 2 Washington Street Foxborough, MA 02035 508.668.2003

Office Review

Published Soil Survey Available: No ☐ Yes ☑

Year Published 1989 Publication Scale 1:25,000 Soil Map Unit Sudbury

Drainage Class B Soil Limitations see soil report

Surficial Geology Report Available: No ☑ Yes ☐

Year Published _____ Publication Scale _____

Geologic Material (Map Unit) _____

Landform hillside

Flood Insurance Rate Map:

Above 500 year flood boundary No ☐ Yes ☑

Within 500 year flood boundary No ☑ Yes ☐

Within 100 year flood boundary No ☑ Yes ☐

Wetland Area:

National Wetland Inventory Map (map unit) _____

Wetlands Conservancy Program Map (map unit) _____

Current Water Resource Conditions (USGS): Month June 1998

Range: Above Normal ☑ Normal ☐ Below Normal ☐

Other References Reviewed: _____

Location Address or Lot No. 2 Washington Street Foxboroug

On-site Review

Deep Hole Number: 1 Date: 6.26.1998 Time: 0730 Weather: 60°/cloudy

Location (identify on site plan) see site plan

Land Use parking lot Slope (%) 5% Surface Stones none

Vegetation grass

Landform hillside

Position on landscape (sketch on back) see site plan

Distances from:

Open Water Body	>200'	Drainageway	>100'
Possible Wet Area	>100'	Property Line	25'+/-
Drinking Water Well	>100'	Other	

DEEP OBSERVATION HOLE LOG*

Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (Munsell)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
6"	Ap	SL	10YR3/3		
33"	Bw	SL	10YR6/6		
120"	C	SL	10YR7/4		gravelly, friable, 5% cobbles

*MINIMUM OF TWO HOLES REQUIRED AT EVERY DISPOSAL AREA

Parent Material (geologic) glacial till Depth to Bedrock:

Depth to Groundwater Standing Water in Hole: 120" Weeping from Pit Face: 108"

Estimated Seasonal High Groundwater: 108"

Location Address or Lot No. 2 Washington Street Foxboroug

On-site Review

Deep Hole Number: 2 Date: 6.26.1998 Time: 0730 Weather: 60°/cloudy

Location (identify on site plan) see site plan

Land Use parking lot Slope (%) 5% Surface Stones none

Vegetation grass

Landform hillside

Position on landscape (sketch on back) see site plan

Distances from:

Open Water Body >200' Drainageway >100'

Possible Wet Area >100' Property Line 25'

Drinking Water Well >100' Other

DEEP OBSERVATION HOLE LOG*

Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (Munsell)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
8"	Ap	SL	10YR3/3		
36"	Bw	SL	10YR6/6		
124"	C	SL	10YR7/4		gravelly, friable, 10% cobbles

*MINIMUM OF TWO HOLES REQUIRED AT EVERY DISPOSAL AREA

Parent Material (geologic) glacial till Depth to Bedrock:

Depth to Groundwater Standing Water in Hole: Weeping from Pit Face:

Estimated Seasonal High Groundwater: >124"

Location Address or Lot No. 2 Washington Street Foxborough, MA

Commonwealth of Massachusetts

Foxborough , Massachusetts

Percolation Test*		
Date: 6.26.1998	Time: 0730	
Observation Hole #	1	2
Depth of Perc	60"	60"
Start Pre-soak	0853	0920
End Pre-soak	0908	15 gallons in 10 min
Time at 12"	0908	
Time at 9"	0913	
Time at 6"	0918	
Time (9" – 6")	5	
Rate Min./Inch	2	2

* Minimum of 1 percolation test must be performed in both the primary area AND reserve area.

Site Passed ☑ Site Failed ☐

Performed By: William Buckley, Jr.

Witnessed By: George Young

Comments:

REPRODUCTION OF DEP APPROVED FORM DATED 12-07-95

Location Address or Lot No. 2 Washington Street Foxborough, MA

Determination for Seasonal High Water Table

Method Used:

- ☐ Depth observed standing in observation hole _____ inches
- ☑ Depth weeping from side of observation hole 108"-TP1 inches
- ☐ Depth to soil mottles _____ inches
- ☐ Ground water adjustment _____ feet

Index Well Number _____ Reading Date _____ Index well level _____

Adjustment factor _____ Adjusted groundwater level

Depth of Naturally Occurring Pervious Material

Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil absorption system? yes

If not, what is the depth of naturally occurring pervious material? _____

Certification

I certify that on April, 1996 (date) I have passed the soil evaluator examination approved by the Department of Environmental Protection and that the above analysis was performed by me consistent with the required training expertise and experience described in 310 CMR 15.017.

Signature _____ Date 6.26.1998

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 Norfolk and Suffolk Counties, Massachusetts

2 Washington Street
Foxborough, MA

May 9, 2022

Preface

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

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

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

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

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

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

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

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Contents

How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

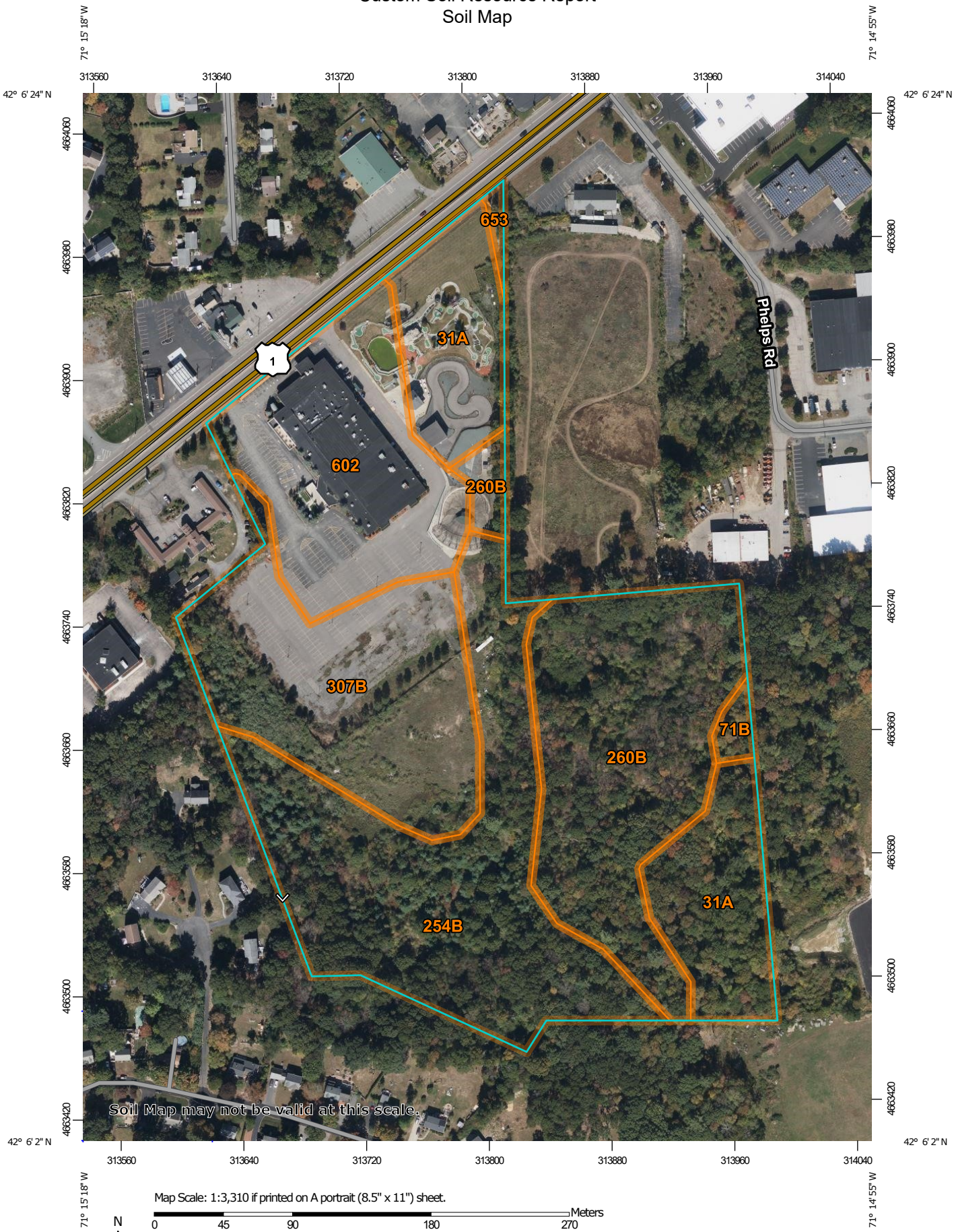
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree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

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

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

Soil Map

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



Map Scale: 1:3,310 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 45 90 180 270

Feet
0 150 300 600 900

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 1:25,000.

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: Norfolk and Suffolk Counties, Massachusetts
Survey Area Data: Version 17, Sep 3, 2021

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

Date(s) aerial images were photographed: Oct 4, 2020—Oct 19, 2020

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
31A	Walpole sandy loam, 0 to 3 percent slopes	4.8	15.3%
71B	Ridgebury fine sandy loam, 3 to 8 percent slopes, extremely stony	0.2	0.8%
254B	Merrimac fine sandy loam, 3 to 8 percent slopes	8.2	26.2%
260B	Sudbury fine sandy loam, 2 to 8 percent slopes	6.8	21.9%
307B	Paxton fine sandy loam, 0 to 8 percent slopes, extremely stony	5.9	18.9%
602	Urban land, 0 to 15 percent slopes	5.2	16.6%
653	Udorthents, sandy	0.1	0.4%
Totals for Area of Interest		**31.2**	**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.

Norfolk and Suffolk Counties, Massachusetts

31A—Walpole sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2svkl
Elevation: 0 to 1,020 feet
Mean annual precipitation: 36 to 71 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

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

Description of Walpole

Setting

Landform: Depressions, outwash plains, outwash terraces, depressions, deltas
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, dip, talf
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy glaciofluvial deposits derived from igneous, metamorphic and sedimentary rock

Typical profile

Oe - 0 to 1 inches: mucky peat
A - 1 to 7 inches: sandy loam
Bg - 7 to 21 inches: sandy loam
BC - 21 to 25 inches: gravelly sandy loam
C - 25 to 65 inches: very gravelly sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 to 4 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Ecological site: F144AY028MA - Wet Outwash
Hydric soil rating: Yes

Minor Components

Scarboro

Percent of map unit: 10 percent
Landform: Outwash plains, deltas, outwash terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Sudbury

Percent of map unit: 10 percent
Landform: Outwash plains, deltas, terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, dip
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

71B—Ridgebury fine sandy loam, 3 to 8 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2w69c
Elevation: 0 to 1,290 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Ridgebury, Extremely Stony

Setting

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

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 6 inches: fine sandy loam
Bw - 6 to 10 inches: sandy loam

Bg - 10 to 19 inches: gravelly sandy loam
Cd - 19 to 66 inches: gravelly sandy loam

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 15 to 35 inches to densic material
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.0 inches)

Interpretive groups

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

Minor Components

Woodbridge, extremely stony

Percent of map unit: 10 percent
Landform: Ground moraines, hills, drumlins
Landform position (two-dimensional): Summit, backslope, footslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Whitman, extremely stony

Percent of map unit: 8 percent
Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Paxton, extremely stony

Percent of map unit: 2 percent
Landform: Ground moraines, hills, drumlins
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Linear, convex
Hydric soil rating: No

254B—Merrimac fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2tyqs
Elevation: 0 to 1,290 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Merrimac

Setting

Landform: Outwash plains, outwash terraces, moraines, eskers, kames
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Crest, side slope, riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy glaciofluvial deposits derived from granite, schist, and gneiss over sandy and gravelly glaciofluvial deposits derived from granite, schist, and gneiss

Typical profile

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

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline (0.0 to 1.4 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F145XY008MA - Dry Outwash
Hydric soil rating: No

Minor Components

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

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

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

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

260B—Sudbury fine sandy loam, 2 to 8 percent slopes

Map Unit Setting
National map unit symbol: vky4
Elevation: 0 to 2,100 feet
Mean annual precipitation: 45 to 54 inches
Mean annual air temperature: 43 to 54 degrees F

Frost-free period: 145 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Sudbury

Setting

Landform: Outwash plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Friable coarse-loamy eolian deposits over loose sandy glaciofluvial deposits

Typical profile

H1 - 0 to 11 inches: sandy loam
H2 - 11 to 22 inches: sandy loam
H3 - 22 to 60 inches: gravelly coarse sand

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: 18 to 36 inches to strongly contrasting textural stratification
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F144AY027MA - Moist Sandy Outwash
Hydric soil rating: No

Minor Components

Walpole

Percent of map unit: 5 percent
Landform: Terraces
Hydric soil rating: Yes

Deerfield

Percent of map unit: 5 percent
Landform: Outwash plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave

Across-slope shape: Concave
Hydric soil rating: No

Merrimac

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

307B—Paxton fine sandy loam, 0 to 8 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2w675
Elevation: 0 to 1,580 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

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

Description of Paxton, Extremely Stony

Setting

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

Typical profile

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

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None

Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.7 inches)

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

Minor Components

Woodbridge, extremely stony
Percent of map unit: 10 percent
Landform: Hills, drumlins, ground moraines
Landform position (two-dimensional): Summit, backslope, footslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Charlton, extremely stony
Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Ridgebury, extremely stony
Percent of map unit: 4 percent
Landform: Drumlins, drainageways, depressions, ground moraines, hills
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

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

602—Urban land, 0 to 15 percent slopes

Map Unit Setting
National map unit symbol: vkyj
Mean annual precipitation: 32 to 50 inches

Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 120 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition
Urban land: 99 percent
Minor components: 1 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting
Parent material: Excavated and filled land

Minor Components

Rock outcrops
Percent of map unit: 1 percent
Hydric soil rating: Unranked

653—Udorthents, sandy

Map Unit Setting
National map unit symbol: vky8
Elevation: 0 to 3,000 feet
Mean annual precipitation: 45 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

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

Description of Udorthents

Setting
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Tread, riser
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Parent material: Excavated and filled sandy glaciofluvial deposits

Typical profile
H1 - 0 to 6 inches: variable
H2 - 6 to 60 inches: variable

Properties and qualities
Slope: 0 to 25 percent
Depth to restrictive feature: More than 80 inches

Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to very high (0.06 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Hydric soil rating: Unranked

Minor Components

Udorthents

Percent of map unit: 8 percent
Hydric soil rating: Unranked

Urban land

Percent of map unit: 5 percent
Hydric soil rating: Unranked

Swansea

Percent of map unit: 2 percent
Landform: Bogs
Hydric soil rating: Yes

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