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**Storm Water Management Report
Tanglewood Estates II
Symphony Drive Extension
Franklin, MA**



**December, 2025
Rev. February, 2026**

Prepared for:

Cypress Real Estate Development, LLC
3 Rothchild Drive
Foxborough, MA 02035

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Modification

The modification is as a result of comments received by the Town's professional consultant, BETA, through a memo dated January 26, 2026 and comments received from the Town Engineer, Micheal Maglio, in a letter dated December 30, 2025. The major change involved the hydrology computations by basing the computations off NOAA Atlas 14 instead of Technical Paper 40 required by the DEP Stormwater Standards. This resulted in a redesign of the detention basin by increasing its size. This document is not a stand-alone document and is meant to update and supplement the December 2025 submittal.

1.0 Introduction

The project involves the construction of a common driveway and two single-family homes on a 7.0 +/- acre parcel of land located beyond the end of the Symphony Drive cul-de-sac. The property is bordered by residential properties to the east, south and west and Town-owned land to the north. The property is located within the Rural Residential I Zoning District. **Figure 1** provides an extract from the USGS Franklin Quadrangle and shows the site locus.

Bay Colony Group, Inc. conducted a stormwater management study to ensure that the proposed project meets the stormwater standards outlined in the Town of Franklin Stormwater Management Bylaws and standard engineering practice. The project is not subject to the Massachusetts Stormwater Management Standards because the subdivision contains fewer than four lots, however, it will meet all applicable standards in accordance with the local Stormwater Management Bylaws. The scope of this study includes:

- Determining existing flood conditions and stormwater quality calculations and analysis;
- Developing proposed flood conditions and stormwater quality calculations and analysis;
- Designing a stormwater management system.

2.0 Existing Conditions

The site is located at the end of Symphony Drive and is listed as Assessor's Parcel No.218-020-00. The property is located on a hillside that generally slopes from west to east. The high point of the site is at approximately elevation 354 feet in the western portion of the property and slopes significantly to the east to approximately elevation 264 feet at the eastern property line. The property consists of an undeveloped wooded area. The site contains two Isolated Vegetated Wetlands (IVW) located in the eastern and western portions of the property.

The NRCS has mapped the soils on the site as Montauk fine sandy loam (**Appendix D**). Montauk soils are classified as Hydrologic Soil Group C. The wooded area on the site consists of a mixture of primary and secondary growth, including deciduous and coniferous trees. BCG conducted soil evaluations throughout the site to determine the general soil conditions, depth to groundwater and depth to refusal. The native soil identified at the proposed infiltration basin on Lot 2 is Loamy Sand. The RAWLS table provided in the DEP Stormwater Management Standards, Volume 3, Chapter 1 identifies an infiltration rate of 2.41 inches per hour for Loamy

Sand. Copies of the basin soil logs are included in **Appendix D** and the locations of the test pits are shown on the existing conditions plan **Sheet 2 & 2.1**.

3.0 Flood Condition Analyses and Flood Control

The stormwater management system will consist of roof drainage, driveway drainage (runoff collection, pretreatment, and conveyance) and flood control and treatment. This report focuses on the stormwater basin design and the Town of Franklin performance standards. The proposed system will comply with all applicable requirements and will improve existing conditions. The proposed design will achieve runoff control through a multi-phase system that includes a detention basin (Drainage Basin #1) located in the western portion of the property and an infiltration basin (Drainage Basin #2) located in the eastern portion of the property. The basins will capture, treat and control runoff from the roof and driveway areas. All runoff from the pavement will be pretreated by stone trenches and sediment forebays before discharging to the basins. The basins have been designed to accommodate the 100-year storm event with six inches of freeboard. The system ensures that the post-development rate of runoff is less than the pre-development condition.

The current land uses consist of woodland and grass areas. The proposed land uses include single-family homes, driveways, lawns and remaining woods. The land uses for existing and proposed conditions are summarized in **Tables 1a** and **1b**. One study line was selected to develop the existing and proposed condition models. For the existing conditions, the watershed is modeled as a single subarea. Subarea EA comprises the majority of the site and flows toward the eastern IVW. See the plan in **Appendix A – Existing Subareas**

Table 1a – Summary of Existing Land Uses

Subarea	Total Area (acre)	Land use	Area (acre)
EA	4.120	Woods, Good, HSG C	3.750
		>75% Grass cover, Good, HSG C	0.370
Total:	4.120		Total: 4.120

For proposed conditions, the watershed is divided into three separate subareas. Subarea PA represents the western portion of the site and drains to Drainage Basin #1. Subarea PB is located in the central portion of the site and drains to Drainage Basin #2. Subarea PC is located in the northern and eastern portion of the site and sheet flows to the IVW located in the eastern portion of the site. The proposed watershed area is larger than the existing watershed area due to changes in topography that direct more runoff toward the drainage system. See the plan in **Appendix A – Developed Subareas**

Table 1b – Summary of Proposed Land Uses

Subarea	Total Area (acre)	Land use	Area (acre)
PA	2.220	Roofs, HSG C	0.060
		Paved parking, HSG C	0.100
		>75% Grass cover, Good, HSG C	1.340
		Woods, Good, HSG C	0.720
PB	0.690	Roofs, HSG C	0.040
		Paved parking, HSG C	0.120
		>75% Grass cover, Good, HSG C	0.530
PC	1.380	Roofs, HSG C	0.040
		>75% Grass cover, Good, HSG C	0.760
		Woods, Good, HSG C	0.580
Total:	4.290	Total:	4.290

The runoff conditions derived from the land uses in **Tables 1a** and **1b** are summarized in **Table 2**. Detailed calculations are provided in **Appendix A**.

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

Condition		2-year (cfs)	2-year (af)	10-year (cfs)	10-year (af)	100-year (cfs)	100-year (af)
Existing Conditions	Isolated Wetland	3.0	0.318	7.8	0.761	16.8	1.599
Proposed Conditions	Isolated Wetland	1.5	0.125	3.7	0.415	14.8	1.190

The detailed storm routing calculations are attached in **Appendix A**.

4.0 Stormwater Management

The site is not located within a groundwater protection district (Zone II). There are no private drinking water wells in proximity to the project site. There are no critical areas down-gradient of the project site based on 314 CMR 4.00 (Massachusetts Surface Water Quality Standards). There are no certified vernal pools in the vicinity of the site.

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 a resource area. Runoff from all pavement will be discharged to stone trenches, then to sediment forebays and finally to the above-ground detention and infiltration basins. This treatment train will achieve a TSS removal rate of approximately 90%. The outfall has been designed to accept the 25-year storm flow from the basin without causing erosion in the wetlands or soils **Appendix B**.

Standard #2: PEAK RATE ATTENUATION

Stormwater controls have been designed for the 2-, 10-, and 100-year storms in accordance with local regulations. Peak discharge rates are evaluated at a design point, typically the lowest point of discharge along the downgradient property line (Massachusetts Stormwater Handbook, Vol. 1, Ch. 1, P.5). The design ensures that the post-development peak runoff rates do not exceed pre-development rates at any design point. Proponents must also evaluate the impact of peak discharges from the 100-year storm event. If this evaluation shows that increased off-site flooding will result from peak discharge from the storm then BMPs must also attenuate that discharge (Massachusetts Stormwater Handbook, Vol. 1, Ch. 1, P.5). In this case, the post-development peak rates for the 100-year event are less than the pre-development condition everywhere **Table 2**.

Standard #3: STORMWATER RECHARGE

- 1) The project area is located on soils mapped as Hydrologic Soil Group C based on the NRCS soil survey. The target recharge depth for C soils is 0.25 inches. Due to the site consisting of C and D soils, the Required Recharge Volume (RRV) must be infiltrated to the maximum extent practicable. The RAWLS rate for Loamy Sand is 2.41 inches per hour and this rate will be used for the recharge calculations **Appendix B**.
- 2) The infiltration BMP that will be used will be the above ground infiltration basin **Appendix B**.
- 3) Using the RAWLS rates for the basin, the analysis shows that the drawdown time for the Required Recharge Volume is 0.3 hours, which meets the required 72 hours dewatering standard **Appendix B**.
- 4) A capture area adjustment is not necessary since 100% of the impervious area will be directed to the above-ground stormwater basin, which meets the 65% standard
- 5) A mounding analysis is not required for Drainage Basin #1 because it is operating as a non-infiltrating BMP for the inflow and outflow analysis. A mounding analysis is necessary under Drainage Basin #2 per the DEP Stormwater standards since the vertical separation from the bottom of the basins and the estimated high ground water elevation is less than 4'. In accordance with the "Static" methodology, the RAWLS rate is used as the hydraulic conductivity and the mounding analysis assumes that the Required Recharge Volume is applied during a 2-hour period during the storm. The specific yield at the basins is based on the USDA Textural Analysis and USGS Water Supply Paper 1662-D **Appendix D**. The model used is the AQTESOLV V.4.50.002 program that uses the ground water mounding solution by Hantush (1967). The analysis found that the top of the mound is below the bottom of the basin. Therefore, the mound does not breach the bottom of the pond and will not impact the ability of the basin to drain within 72 hours as was previously discussed. **Appendix B**

Standard # 4: WATER QUALITY

- 1) The required water quality volume is based on 0.36 acres of impervious area and a 1.0-inch water quality depth, which yields a volume of 1,307 cubic feet or 0.0300 ac-ft. The Drainage Basin #2 can accommodate a volume of 9,714 cubic feet or 0.223 ac-ft prior to discharge **Appendix B.**
- 2) The BMPs used for the proposed project to improve water quality include: stone trenches, sediment forebays and stormwater basins. The estimated overall TSS removal is 90% **Appendix B.**
- 3) Since Drainage Basin #2 is being used to fulfill the requirements of Standards 3 and 4, it must handle the greater of the volumes. The basin provides a storage volume of 0.223 ac-ft below discharge. The required recharge volume is 0.0075 ac-ft and the water quality volume is 0.0300 ac-ft **Appendix B**

Standard # 5: LAND USES WITH HIGHER POTENTIAL POLLUTION LOADS

The site will consist of a typical residential property, which is not considered to have a high potential pollutant load. The site will be compatible with the surrounding environment, which is a residential area.

Standard #6: CRITICAL AREAS

According to 314 CMR 14.400 and MASS MAPPER the project site does not contain any critical resource areas

Standard #7: REDEVELOPMENT

The proposed activity is not a redevelopment project

Standard #8: CONSTRUCTION PERIOD CONTROLS

Silt sock barriers will be installed at the downgradient limit of work before any excavation starts. A stone pad shall be spread at the entrance from the existing shared entrance to the project site to prevent mud from escaping the site 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 **Sheet 7.**

Standard #9: OPERATION AND MAINTENANCE PLAN

Pre- and Post-Development Operation and Maintenance Plans have been developed for the project **Appendix C.**

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.

To be signed prior to construction
Owner

Date

**APPENDIX A – Pre- and Post-DEVELOPMENT ANALYSIS
AND STORM WATER POND DESIGNS**



POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aerials](#)

PF tabular

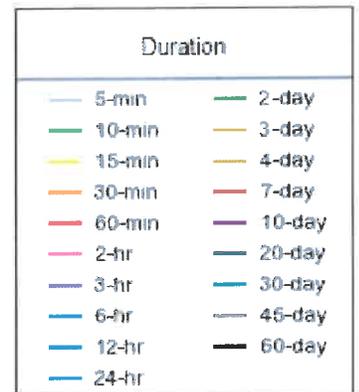
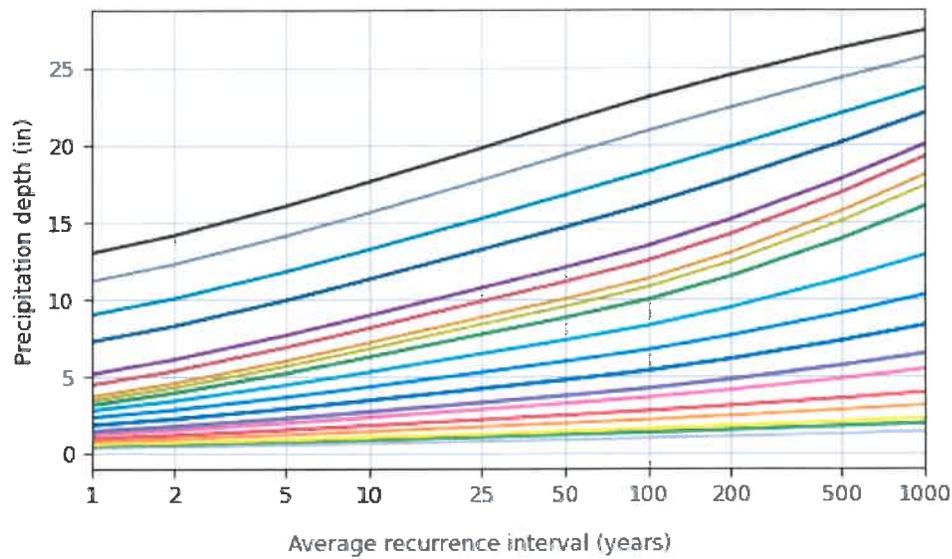
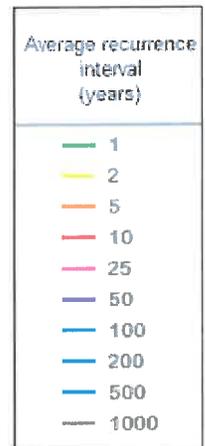
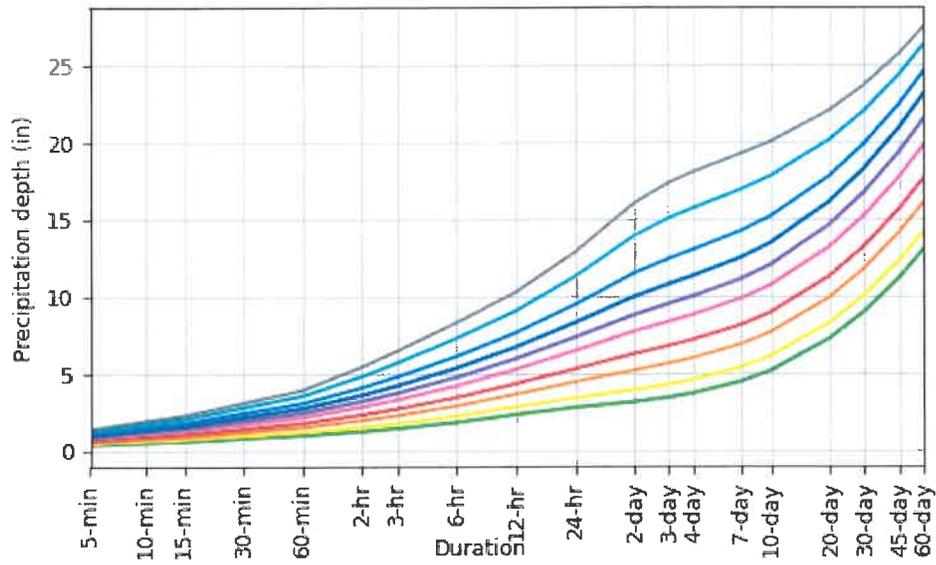
PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.324 (0.250-0.417)	0.393 (0.303-0.506)	0.506 (0.389-0.653)	0.600 (0.459-0.781)	0.730 (0.541-0.991)	0.827 (0.602-1.15)	0.929 (0.657-1.34)	1.04 (0.701-1.54)	1.20 (0.780-1.84)	1.34 (0.846-2.09)
10-min	0.459 (0.355-0.590)	0.557 (0.430-0.717)	0.717 (0.552-0.926)	0.851 (0.651-1.10)	1.03 (0.767-1.40)	1.17 (0.852-1.63)	1.32 (0.931-1.90)	1.48 (0.992-2.18)	1.71 (1.10-2.61)	1.89 (1.20-2.96)
15-min	0.540 (0.417-0.694)	0.656 (0.506-0.843)	0.845 (0.650-1.09)	1.00 (0.765-1.30)	1.22 (0.902-1.65)	1.38 (1.00-1.91)	1.55 (1.10-2.23)	1.74 (1.17-2.56)	2.01 (1.30-3.07)	2.23 (1.41-3.48)
30-min	0.740 (0.571-0.951)	0.899 (0.693-1.16)	1.16 (0.891-1.50)	1.37 (1.05-1.78)	1.67 (1.24-2.27)	1.89 (1.38-2.63)	2.13 (1.50-3.06)	2.39 (1.60-3.52)	2.76 (1.79-4.22)	3.06 (1.94-4.78)
60-min	0.940 (0.726-1.21)	1.14 (0.881-1.47)	1.47 (1.13-1.90)	1.75 (1.34-2.27)	2.12 (1.58-2.89)	2.41 (1.75-3.34)	2.71 (1.91-3.90)	3.04 (2.04-4.48)	3.51 (2.27-5.37)	3.89 (2.46-6.08)
2-hr	1.20 (0.936-1.54)	1.48 (1.14-1.88)	1.92 (1.48-2.46)	2.28 (1.76-2.95)	2.79 (2.09-3.78)	3.17 (2.32-4.40)	3.57 (2.56-5.17)	4.05 (2.73-5.95)	4.79 (3.11-7.28)	5.41 (3.43-8.39)
3-hr	1.39 (1.09-1.77)	1.71 (1.33-2.18)	2.23 (1.73-2.85)	2.66 (2.05-3.42)	3.25 (2.44-4.40)	3.69 (2.72-5.11)	4.16 (3.00-6.03)	4.75 (3.20-6.94)	5.64 (3.67-8.55)	6.42 (4.08-9.92)
6-hr	1.80 (1.41-2.27)	2.20 (1.72-2.78)	2.86 (2.23-3.63)	3.41 (2.64-4.35)	4.16 (3.14-5.59)	4.71 (3.50-6.50)	5.32 (3.86-7.67)	6.08 (4.11-8.82)	7.25 (4.72-10.9)	8.26 (5.27-12.7)
12-hr	2.29 (1.80-2.87)	2.79 (2.20-3.50)	3.61 (2.83-4.55)	4.29 (3.35-5.43)	5.22 (3.96-6.97)	5.92 (4.41-8.08)	6.67 (4.85-9.52)	7.59 (5.16-10.9)	9.02 (5.90-13.5)	10.2 (6.55-15.6)
24-hr	2.74 (2.18-3.42)	3.37 (2.67-4.20)	4.40 (3.48-5.51)	5.25 (4.13-6.61)	6.43 (4.91-8.52)	7.30 (5.47-9.92)	8.24 (6.03-11.7)	9.42 (6.43-13.5)	11.2 (7.38-16.7)	12.8 (8.23-19.4)
2-day	3.10 (2.48-3.84)	3.88 (3.10-4.81)	5.16 (4.10-6.41)	6.22 (4.91-7.78)	7.68 (5.90-10.1)	8.74 (6.61-11.9)	9.93 (7.34-14.1)	11.4 (7.83-16.3)	13.9 (9.12-20.4)	16.0 (10.3-24.0)
3-day	3.39 (2.71-4.17)	4.23 (3.38-5.22)	5.60 (4.47-6.94)	6.74 (5.35-8.40)	8.32 (6.41-10.9)	9.46 (7.17-12.8)	10.7 (7.96-15.2)	12.4 (8.49-17.5)	15.0 (9.89-22.0)	17.3 (11.2-25.9)
4-day	3.65 (2.94-4.49)	4.53 (3.63-5.57)	5.95 (4.76-7.34)	7.13 (5.67-8.86)	8.76 (6.77-11.5)	9.95 (7.55-13.4)	11.3 (8.37-15.9)	13.0 (8.91-18.3)	15.6 (10.3-22.9)	18.0 (11.6-26.9)
7-day	4.40 (3.56-5.38)	5.32 (4.29-6.51)	6.83 (5.48-8.38)	8.08 (6.45-9.96)	9.79 (7.59-12.7)	11.1 (8.40-14.7)	12.4 (9.22-17.3)	14.2 (9.78-19.9)	16.9 (11.2-24.5)	19.2 (12.4-28.4)
10-day	5.11 (4.14-6.22)	6.06 (4.90-7.39)	7.61 (6.14-9.31)	8.90 (7.13-10.9)	10.7 (8.28-13.8)	12.0 (9.12-15.8)	13.4 (9.92-18.5)	15.1 (10.5-21.1)	17.7 (11.8-25.7)	20.0 (13.0-29.5)
20-day	7.21 (5.88-8.72)	8.23 (6.70-9.96)	9.89 (8.02-12.0)	11.3 (9.08-13.8)	13.2 (10.2-16.8)	14.6 (11.1-19.0)	16.1 (11.8-21.7)	17.8 (12.4-24.6)	20.1 (13.4-28.8)	22.0 (14.3-32.3)
30-day	8.95 (7.32-10.8)	10.0 (8.18-12.1)	11.8 (9.57-14.2)	13.2 (10.7-16.0)	15.2 (11.8-19.2)	16.7 (12.7-21.5)	18.2 (13.4-24.3)	19.8 (13.9-27.3)	22.0 (14.7-31.4)	23.7 (15.4-34.5)
45-day	11.1 (9.14-13.3)	12.2 (10.0-14.7)	14.1 (11.5-16.9)	15.6 (12.6-18.9)	17.7 (13.8-22.1)	19.3 (14.7-24.6)	20.9 (15.3-27.5)	22.4 (15.7-30.7)	24.3 (16.3-34.5)	25.7 (16.8-37.3)
60-day	13.0 (10.7-15.5)	14.1 (11.6-16.9)	16.0 (13.1-19.2)	17.6 (14.3-21.2)	19.7 (15.4-24.6)	21.4 (16.3-27.2)	23.1 (16.8-30.1)	24.5 (17.2-33.4)	26.2 (17.7-37.1)	27.4 (17.9-39.7)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

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PF graphical

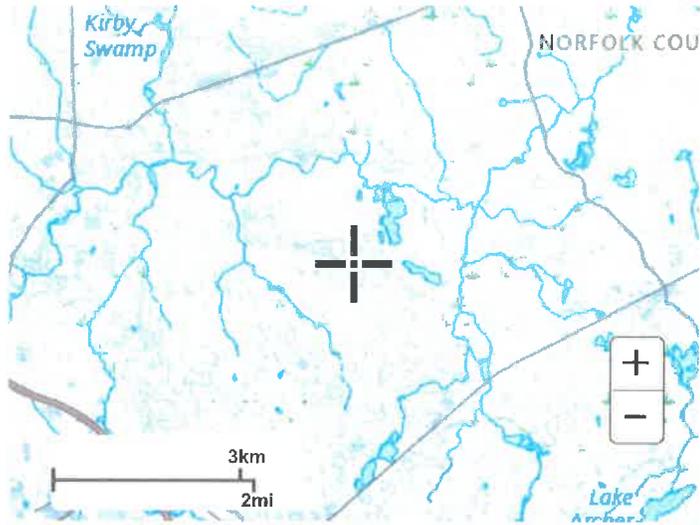
PDS-based depth-duration-frequency (DDF) curves
 Latitude: 42.1237°, Longitude: -71.3870°



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Maps & aerials

Small scale terrain



Large scale terrain



Large scale map



Large scale aerial



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[National Weather Service](#)
[National Water Center](#)
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Questions?: HDSC.Questions@noaa.gov

[Disclaimer](#)



PROJECT:
**Symphony Drive
 Extension**

**Franklin
 Massachusetts**

OWNER/APPLICANT:
**CYPRESS REAL
 ESTATE
 DEVELOPMENT LLC
 3 ROTHCHILD DRIVE
 FOXBOROUGH, MA
 02035**

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

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

STAMP

DRAWING TITLE

Existing
 Subarea

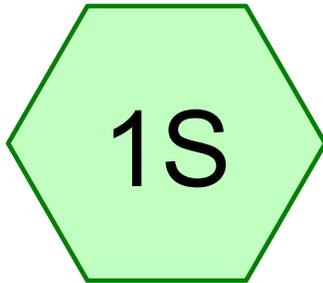
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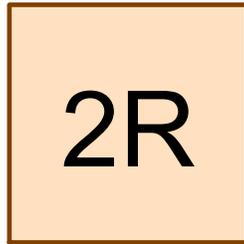
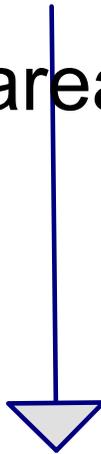
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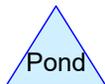
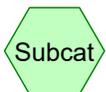
DATE	DESCRIPTION
2/10/2026	ADD SOIL OUTLINES



Subarea EA



Off site



25-0108-Ex V2

Prepared by Bay Colony Group, Inc.

Printed 2/13/2026

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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	3.37	2
2	10-Year	Type III 24-hr		Default	24.00	1	5.25	2
3	100-Year	Type III 24-hr		Default	24.00	1	8.24	2

25-0108-Ex V2

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.370	74	>75% Grass cover, Good, HSG C (1S)
3.750	70	Woods, Good, HSG C (1S)
4.120	70	TOTAL AREA

25-0108-Ex V2

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
4.120	HSG C	1S
0.000	HSG D	
0.000	Other	
4.120		TOTAL AREA

25-0108-Ex V2

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Symphony Drive Extension - Franklin
Type III 24-hr 2-Year Rainfall=3.37"

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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

Subcatchment 1S: Subarea EA

Runoff Area=4.120 ac 0.00% Impervious Runoff Depth>0.92"
Flow Length=648' Tc=15.6 min CN=70 Runoff=3.0 cfs 0.318 af

Reach 2R: Off site

Inflow=3.0 cfs 0.318 af
Outflow=3.0 cfs 0.318 af

Total Runoff Area = 4.120 ac Runoff Volume = 0.318 af Average Runoff Depth = 0.92"
100.00% Pervious = 4.120 ac 0.00% Impervious = 0.000 ac

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Summary for Subcatchment 1S: Subarea EA

Runoff = 3.0 cfs @ 12.24 hrs, Volume= 0.318 af, Depth> 0.92"
 Routed to Reach 2R : Off site

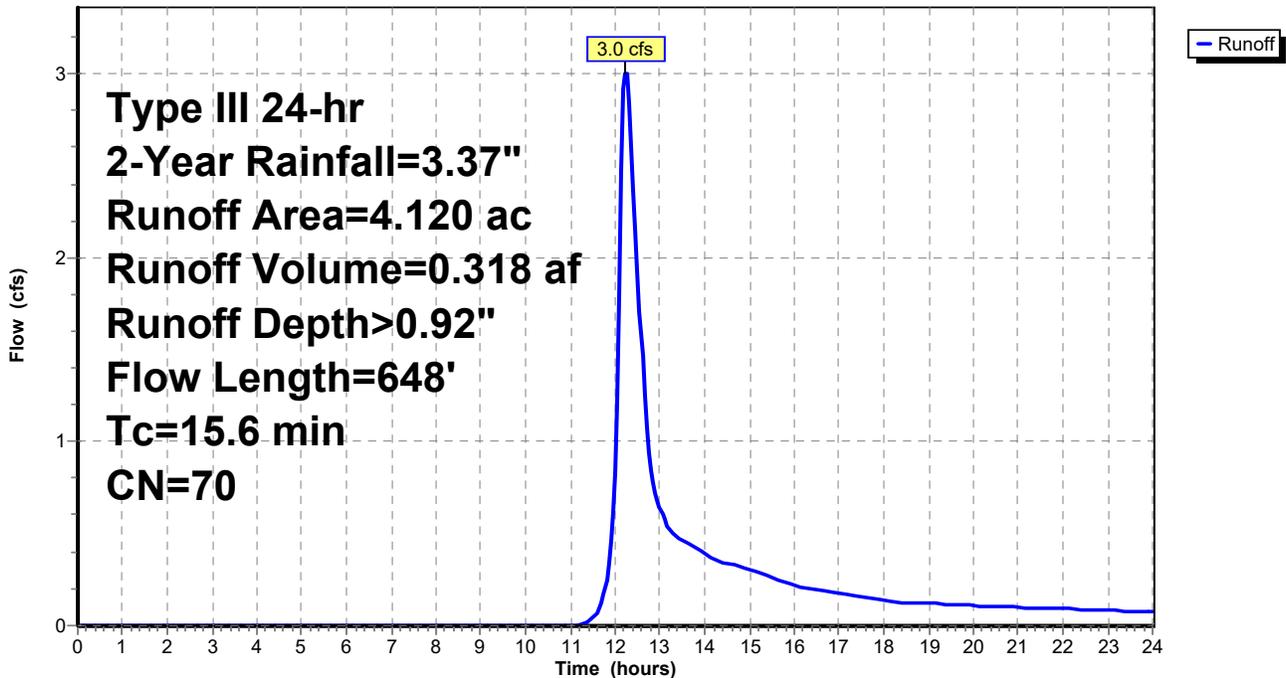
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2-Year Rainfall=3.37"

Area (ac)	CN	Description
3.750	70	Woods, Good, HSG C
0.370	74	>75% Grass cover, Good, HSG C
4.120	70	Weighted Average
4.120		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	50	0.0420	0.09		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
1.3	118	0.0920	1.52		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.7	223	0.1880	2.17		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
3.4	257	0.0650	1.27		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
15.6	648	Total			

Subcatchment 1S: Subarea EA

Hydrograph



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Summary for Reach 2R: Off site

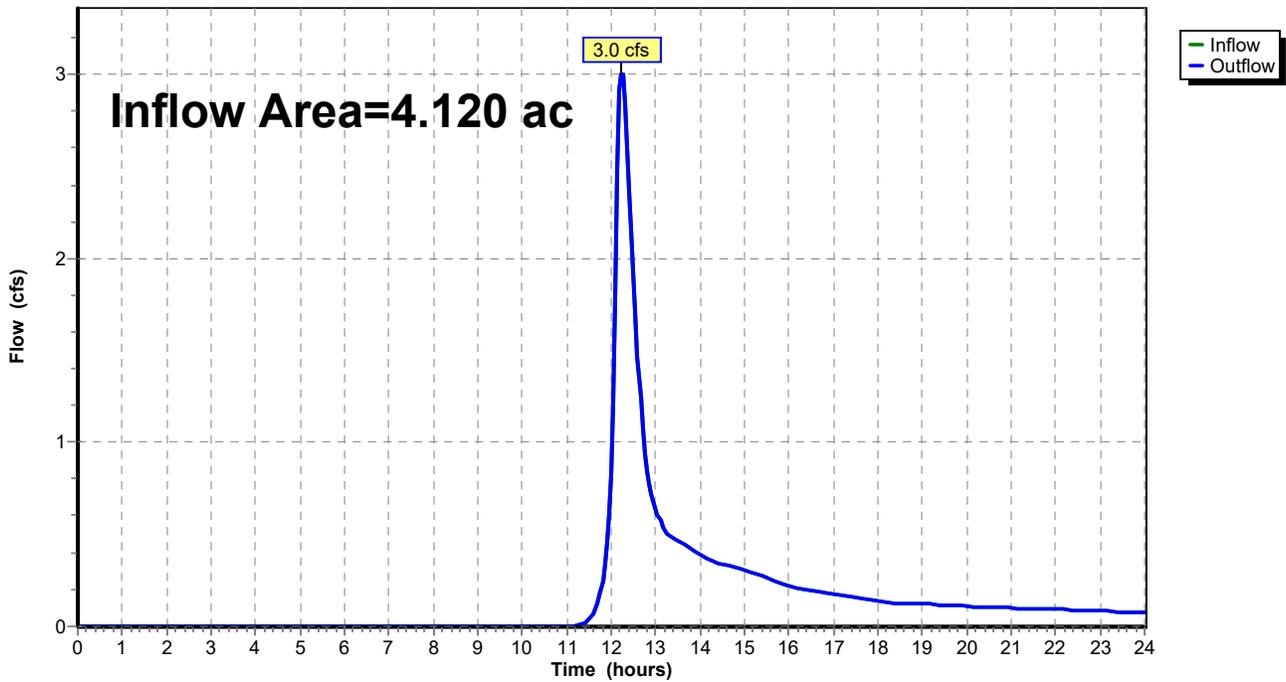
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 4.120 ac, 0.00% Impervious, Inflow Depth > 0.92" for 2-Year event
Inflow = 3.0 cfs @ 12.24 hrs, Volume= 0.318 af
Outflow = 3.0 cfs @ 12.24 hrs, Volume= 0.318 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: Off site

Hydrograph



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Symphony Drive Extension - Franklin
Type III 24-hr 10-Year Rainfall=5.25"

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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

Subcatchment 1S: Subarea EA

Runoff Area=4.120 ac 0.00% Impervious Runoff Depth>2.22"
Flow Length=648' Tc=15.6 min CN=70 Runoff=7.8 cfs 0.761 af

Reach 2R: Off site

Inflow=7.8 cfs 0.761 af
Outflow=7.8 cfs 0.761 af

Total Runoff Area = 4.120 ac Runoff Volume = 0.761 af Average Runoff Depth = 2.22"
100.00% Pervious = 4.120 ac 0.00% Impervious = 0.000 ac

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Summary for Subcatchment 1S: Subarea EA

Runoff = 7.8 cfs @ 12.22 hrs, Volume= 0.761 af, Depth> 2.22"
 Routed to Reach 2R : Off site

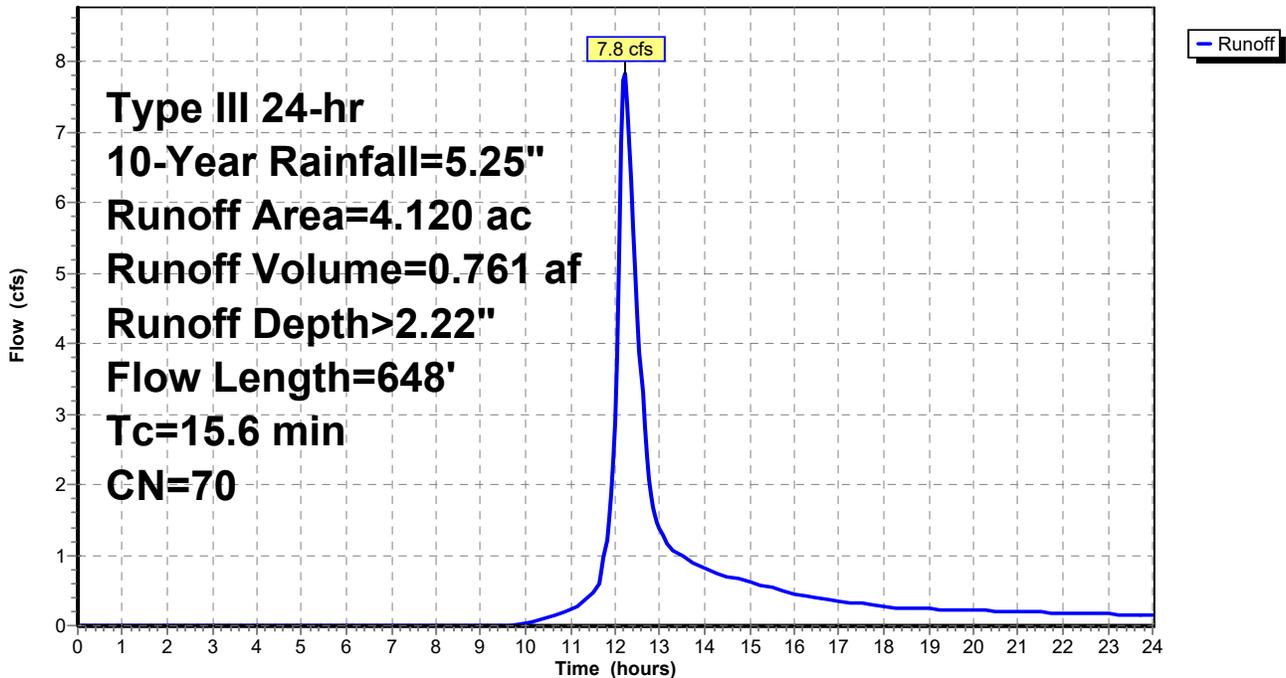
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-Year Rainfall=5.25"

Area (ac)	CN	Description
3.750	70	Woods, Good, HSG C
0.370	74	>75% Grass cover, Good, HSG C
4.120	70	Weighted Average
4.120		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	50	0.0420	0.09		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
1.3	118	0.0920	1.52		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.7	223	0.1880	2.17		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
3.4	257	0.0650	1.27		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
15.6	648	Total			

Subcatchment 1S: Subarea EA

Hydrograph



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Summary for Reach 2R: Off site

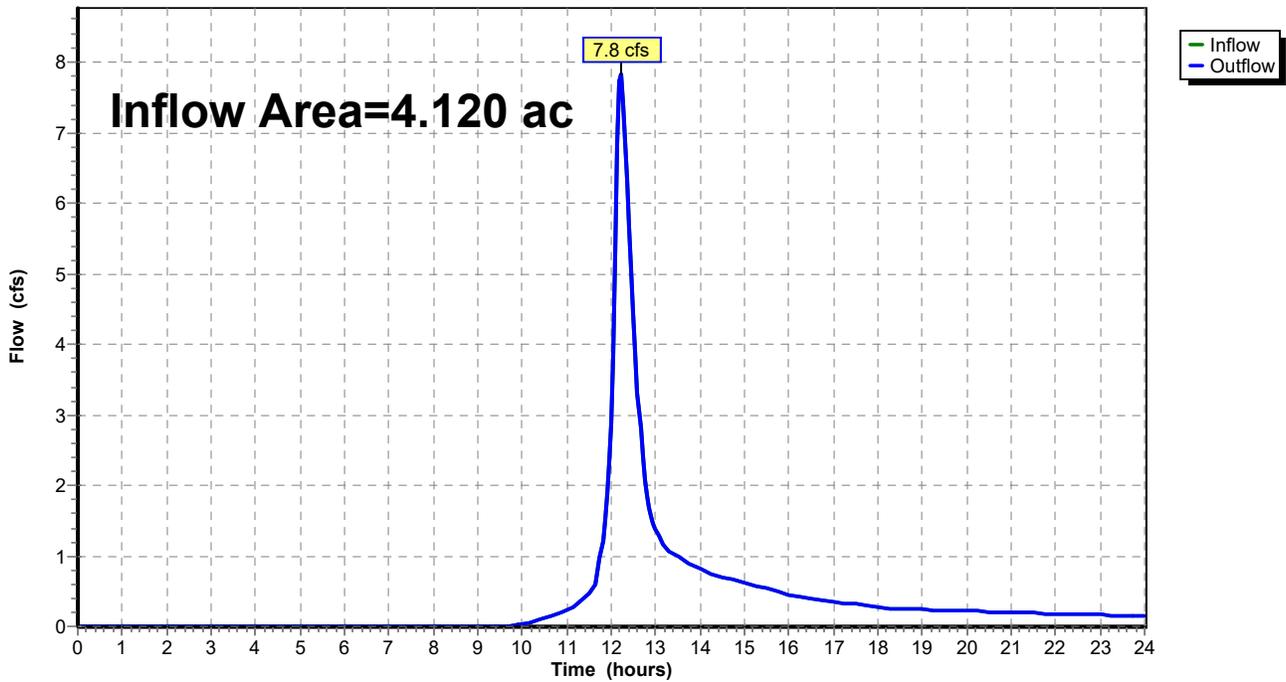
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 4.120 ac, 0.00% Impervious, Inflow Depth > 2.22" for 10-Year event
Inflow = 7.8 cfs @ 12.22 hrs, Volume= 0.761 af
Outflow = 7.8 cfs @ 12.22 hrs, Volume= 0.761 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: Off site

Hydrograph



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Symphony Drive Extension - Franklin
Type III 24-hr 100-Year Rainfall=8.24"

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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

Subcatchment 1S: Subarea EA

Runoff Area=4.120 ac 0.00% Impervious Runoff Depth>4.66"
Flow Length=648' Tc=15.6 min CN=70 Runoff=16.8 cfs 1.599 af

Reach 2R: Off site

Inflow=16.8 cfs 1.599 af
Outflow=16.8 cfs 1.599 af

Total Runoff Area = 4.120 ac Runoff Volume = 1.599 af Average Runoff Depth = 4.66"
100.00% Pervious = 4.120 ac 0.00% Impervious = 0.000 ac

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Summary for Subcatchment 1S: Subarea EA

Runoff = 16.8 cfs @ 12.22 hrs, Volume= 1.599 af, Depth> 4.66"
 Routed to Reach 2R : Off site

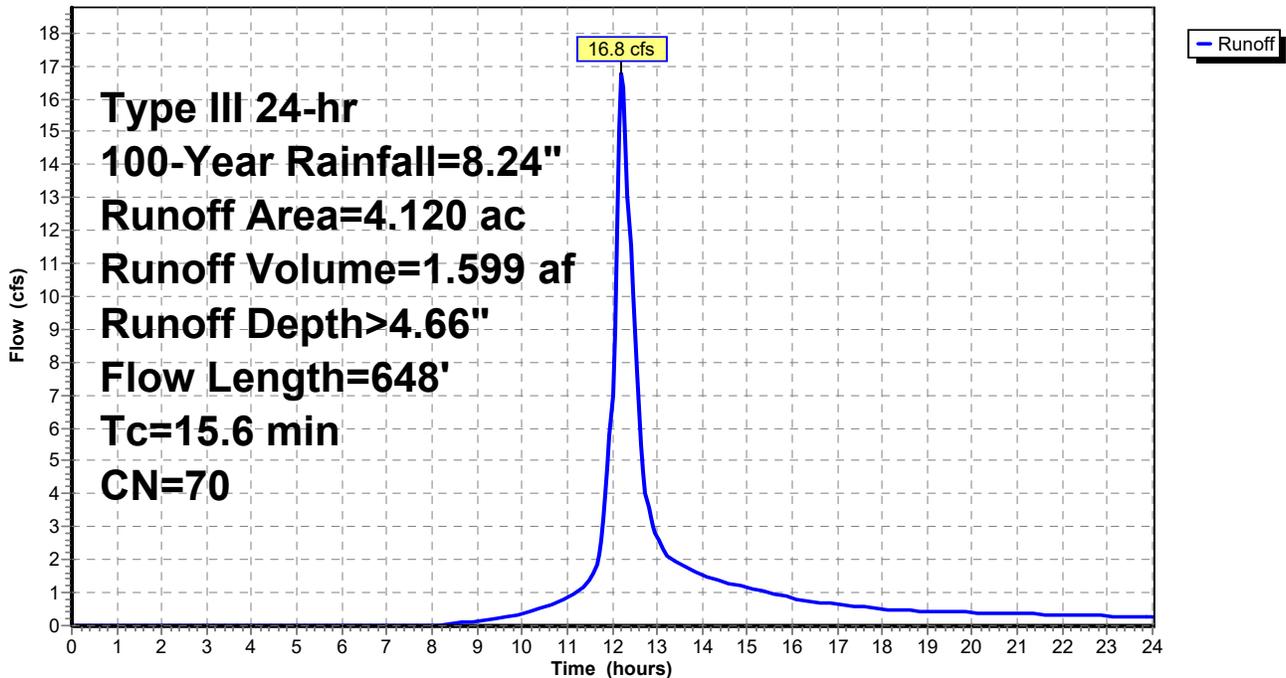
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type III 24-hr 100-Year Rainfall=8.24"

Area (ac)	CN	Description
3.750	70	Woods, Good, HSG C
0.370	74	>75% Grass cover, Good, HSG C
4.120	70	Weighted Average
4.120		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	50	0.0420	0.09		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
1.3	118	0.0920	1.52		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.7	223	0.1880	2.17		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
3.4	257	0.0650	1.27		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
15.6	648	Total			

Subcatchment 1S: Subarea EA

Hydrograph



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Summary for Reach 2R: Off site

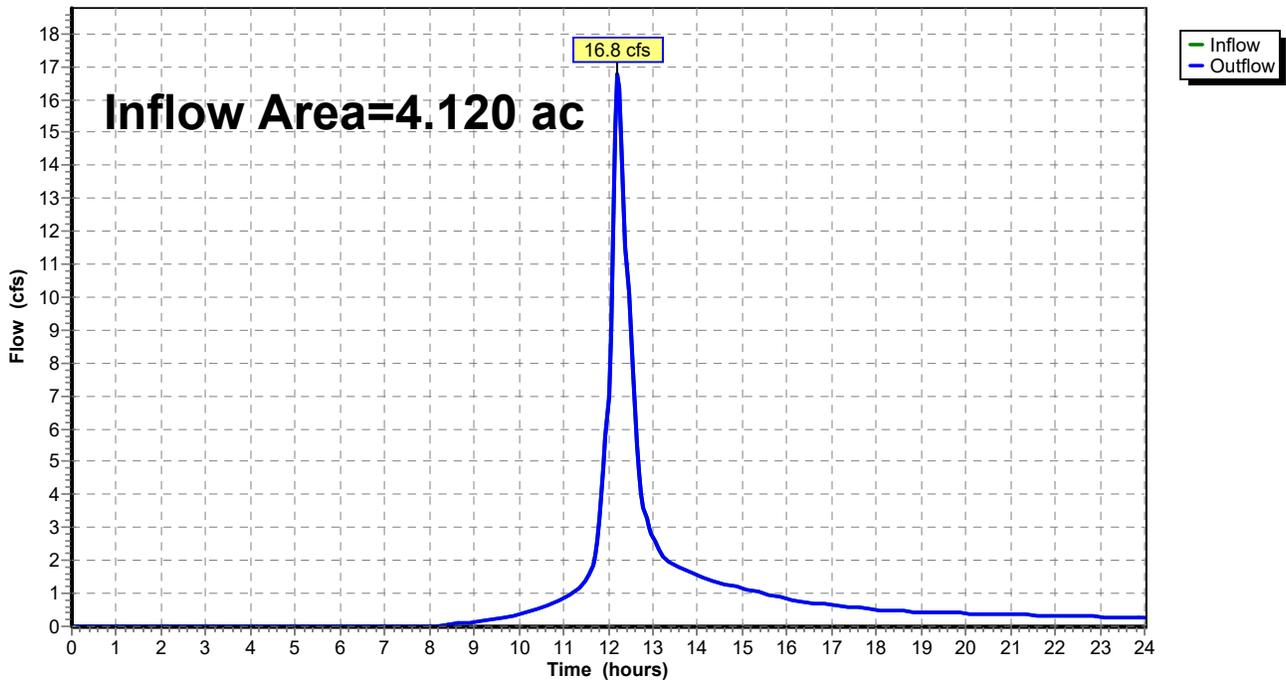
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 4.120 ac, 0.00% Impervious, Inflow Depth > 4.66" for 100-Year event
Inflow = 16.8 cfs @ 12.22 hrs, Volume= 1.599 af
Outflow = 16.8 cfs @ 12.22 hrs, Volume= 1.599 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: Off site

Hydrograph



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Symphony Drive Extension - Franklin

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PROJECT:

Symphony Drive Extension

Franklin
Massachusetts

OWNER/APPLICANT:

CYPRESS REAL
ESTATE
DEVELOPMENT LLC
3 ROTHCHILD DRIVE
FOXBOROUGH, MA
02035

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

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



STAMP

DRAWING TITLE

Proposed
Subarea

SCALE: 1" = 40'

DEC. 4, 2025 SHEET NUMBER

25-0108B

PR

DATE	DESCRIPTION
2/10/2026	ADD SOIL OUTLINES



Subarea PA



Subarea PB



Subarea PC



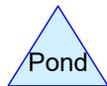
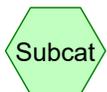
Detention Pond



Infiltration Pond



Isolated Wetland



Routing Diagram for 25-0108-Pr V2

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25-0108-Pr V2

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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	3.37	2
2	10-Year	Type III 24-hr		Default	24.00	1	5.25	2
3	100-Year	Type III 24-hr		Default	24.00	1	8.24	2

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.630	74	>75% Grass cover, Good, HSG C (1S, 2S, 3S)
0.220	98	Paved parking, HSG C (1S, 2S)
0.140	98	Roofs, HSG C (1S, 2S, 3S)
1.300	70	Woods, Good, HSG C (1S, 3S)
4.290	75	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
4.290	HSG C	1S, 2S, 3S
0.000	HSG D	
0.000	Other	
4.290		TOTAL AREA

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Symphony Drive Extension - Franklin
Type III 24-hr 2-Year Rainfall=3.37"

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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

Subcatchment 1S: Subarea PA

Runoff Area=2.220 ac 7.21% Impervious Runoff Depth>1.15"
Flow Length=276' Tc=7.5 min CN=74 Runoff=2.7 cfs 0.213 af

Subcatchment 2S: Subarea PB

Runoff Area=0.690 ac 23.19% Impervious Runoff Depth>1.53"
Flow Length=187' Tc=6.0 min CN=80 Runoff=1.2 cfs 0.088 af

Subcatchment 3S: Subarea PC

Runoff Area=1.380 ac 2.90% Impervious Runoff Depth>1.09"
Flow Length=379' Tc=8.0 min CN=73 Runoff=1.5 cfs 0.125 af

Reach 6R: Isolated Wetland

Inflow=1.5 cfs 0.125 af
Outflow=1.5 cfs 0.125 af

Pond 4P: Detention Pond

Peak Elev=302.65' Storage=0.041 af Inflow=2.7 cfs 0.213 af
18.0" Round Culvert n=0.012 L=5.0' S=0.0200 '/' Outflow=1.5 cfs 0.207 af

Pond 5P: Infiltration Pond

Peak Elev=290.90' Storage=0.107 af Inflow=2.2 cfs 0.295 af
Discarded=0.4 cfs 0.294 af Primary=0.0 cfs 0.000 af Outflow=0.4 cfs 0.294 af

Total Runoff Area = 4.290 ac Runoff Volume = 0.426 af Average Runoff Depth = 1.19"
91.61% Pervious = 3.930 ac 8.39% Impervious = 0.360 ac

25-0108-Pr V2

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Symphony Drive Extension - Franklin
Type III 24-hr 2-Year Rainfall=3.37"

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Summary for Subcatchment 1S: Subarea PA

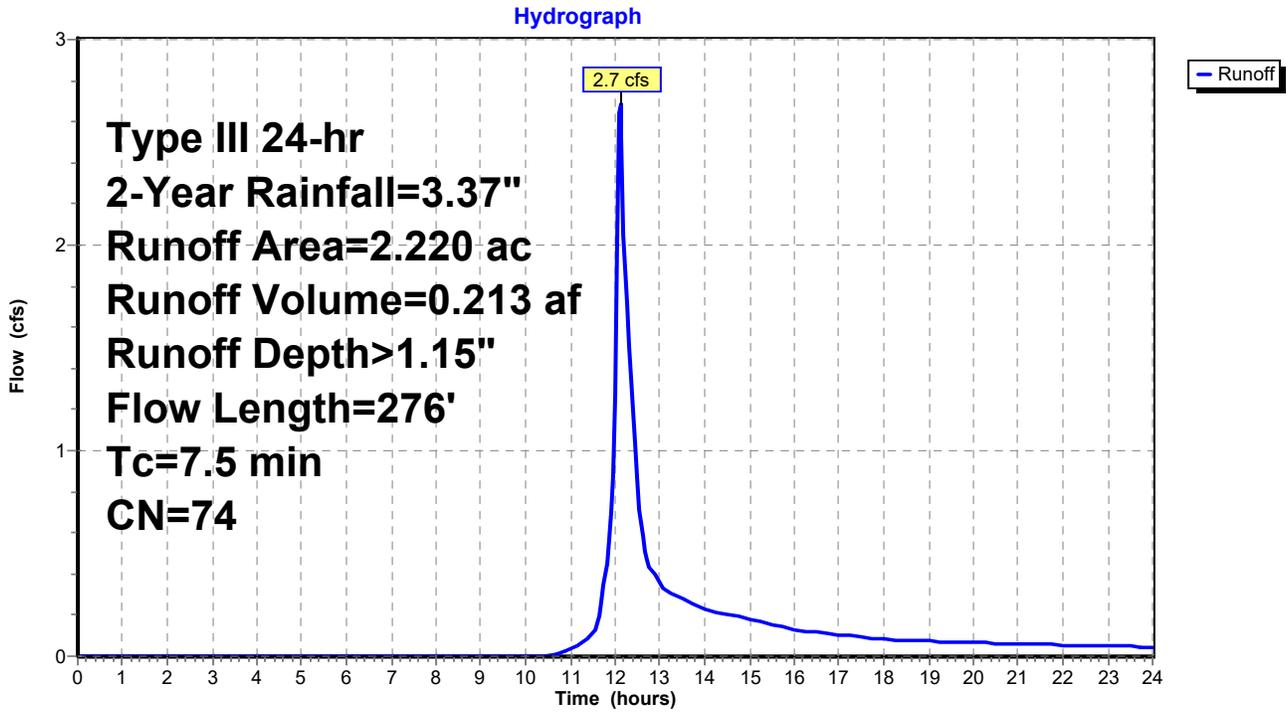
Runoff = 2.7 cfs @ 12.12 hrs, Volume= 0.213 af, Depth> 1.15"
Routed to Pond 4P : Detention Pond

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=3.37"

Area (ac)	CN	Description
0.060	98	Roofs, HSG C
0.100	98	Paved parking, HSG C
1.340	74	>75% Grass cover, Good, HSG C
0.720	70	Woods, Good, HSG C
2.220	74	Weighted Average
2.060		92.79% Pervious Area
0.160		7.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	50	0.1220	0.14		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
1.0	107	0.1210	1.74		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.5	119	0.2770	3.68		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
7.5	276	Total			

Subcatchment 1S: Subarea PA



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Symphony Drive Extension - Franklin
 Type III 24-hr 2-Year Rainfall=3.37"

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Summary for Subcatchment 2S: Subarea PB

Runoff = 1.2 cfs @ 12.10 hrs, Volume= 0.088 af, Depth> 1.53"
 Routed to Pond 5P : Infiltration Pond

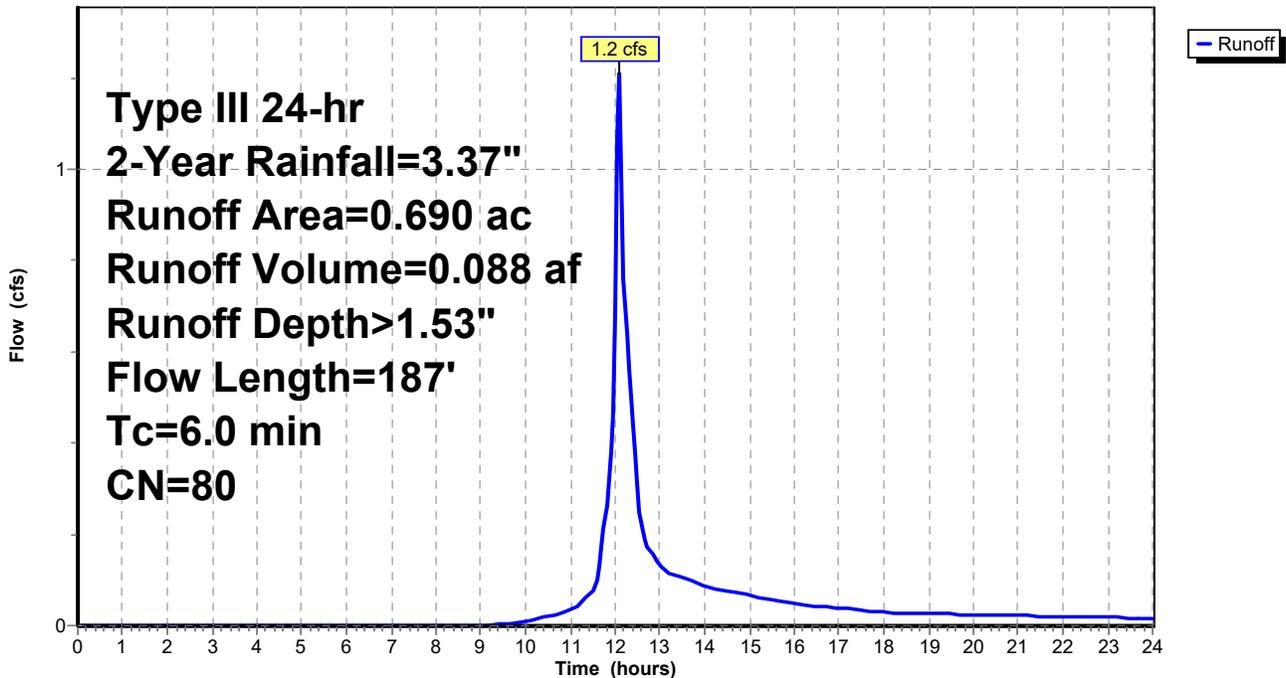
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2-Year Rainfall=3.37"

Area (ac)	CN	Description
0.040	98	Roofs, HSG C
0.120	98	Paved parking, HSG C
0.530	74	>75% Grass cover, Good, HSG C
0.690	80	Weighted Average
0.530		76.81% Pervious Area
0.160		23.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0200	1.20		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.5	85	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.3	52	0.1940	3.08		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.5	187	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 2S: Subarea PB

Hydrograph



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Symphony Drive Extension - Franklin
 Type III 24-hr 2-Year Rainfall=3.37"

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Summary for Subcatchment 3S: Subarea PC

Runoff = 1.5 cfs @ 12.12 hrs, Volume= 0.125 af, Depth> 1.09"
 Routed to Reach 6R : Isolated Wetland

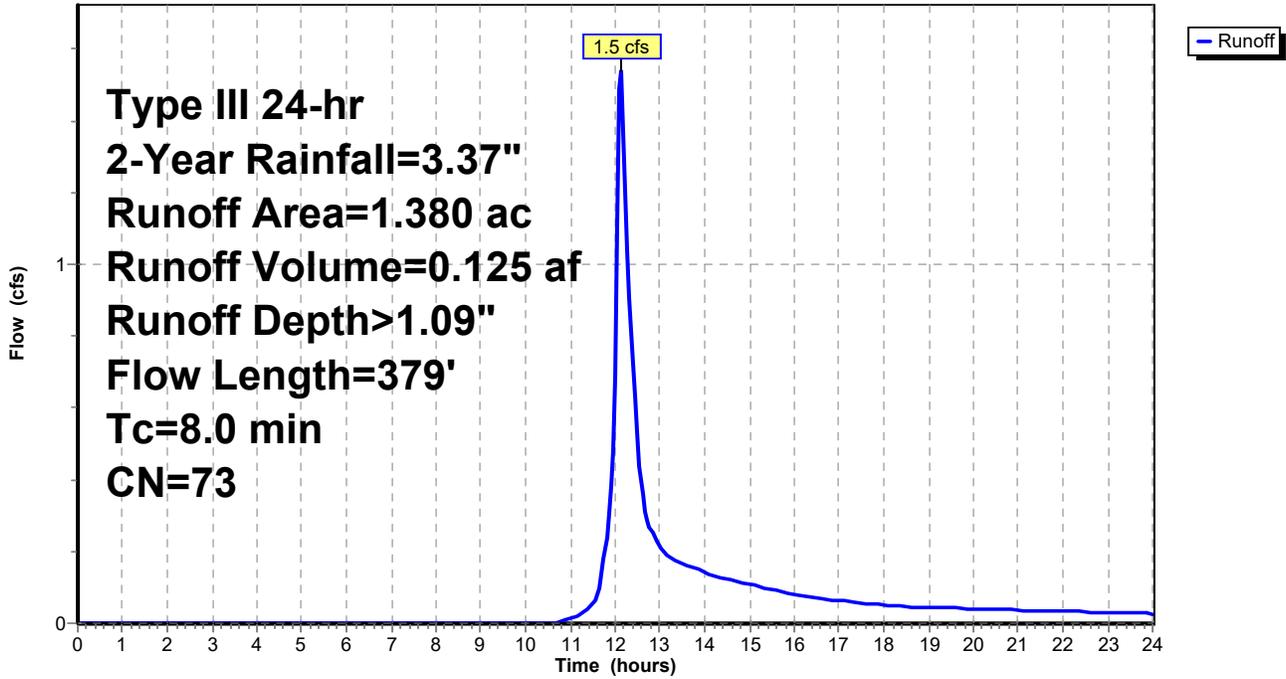
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2-Year Rainfall=3.37"

Area (ac)	CN	Description
0.040	98	Roofs, HSG C
0.760	74	>75% Grass cover, Good, HSG C
0.580	70	Woods, Good, HSG C
1.380	73	Weighted Average
1.340		97.10% Pervious Area
0.040		2.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	50	0.2220	0.18		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
0.9	110	0.1800	2.12		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.5	148	0.0540	1.63		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.9	71	0.0630	1.25		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
8.0	379	Total			

Subcatchment 3S: Subarea PC

Hydrograph



Summary for Reach 6R: Isolated Wetland

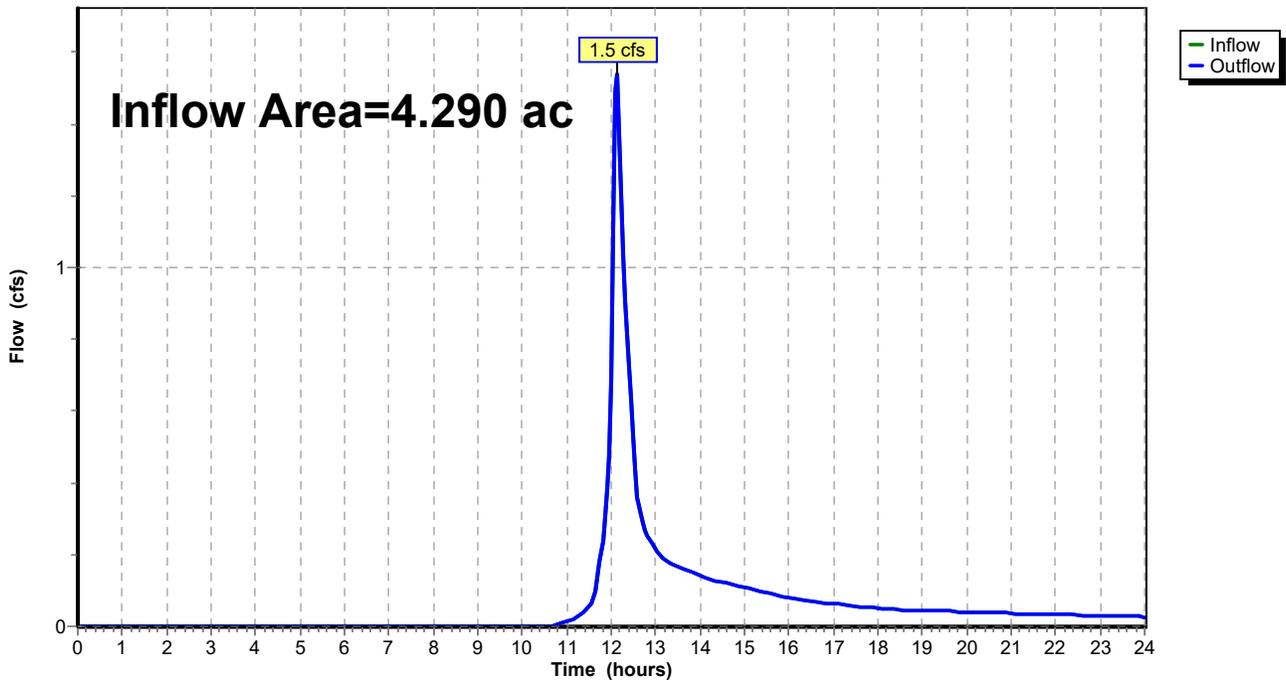
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 4.290 ac, 8.39% Impervious, Inflow Depth > 0.35" for 2-Year event
Inflow = 1.5 cfs @ 12.12 hrs, Volume= 0.125 af
Outflow = 1.5 cfs @ 12.12 hrs, Volume= 0.125 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 6R: Isolated Wetland

Hydrograph



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Summary for Pond 4P: Detention Pond

Inflow Area = 2.220 ac, 7.21% Impervious, Inflow Depth > 1.15" for 2-Year event
Inflow = 2.7 cfs @ 12.12 hrs, Volume= 0.213 af
Outflow = 1.5 cfs @ 12.30 hrs, Volume= 0.207 af, Atten= 43%, Lag= 10.9 min
Primary = 1.5 cfs @ 12.30 hrs, Volume= 0.207 af
Routed to Pond 5P : Infiltration Pond

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 302.65' @ 12.30 hrs Surf.Area= 0.068 ac Storage= 0.041 af

Plug-Flow detention time= 38.9 min calculated for 0.207 af (97% of inflow)
Center-of-Mass det. time= 23.7 min (883.1 - 859.4)

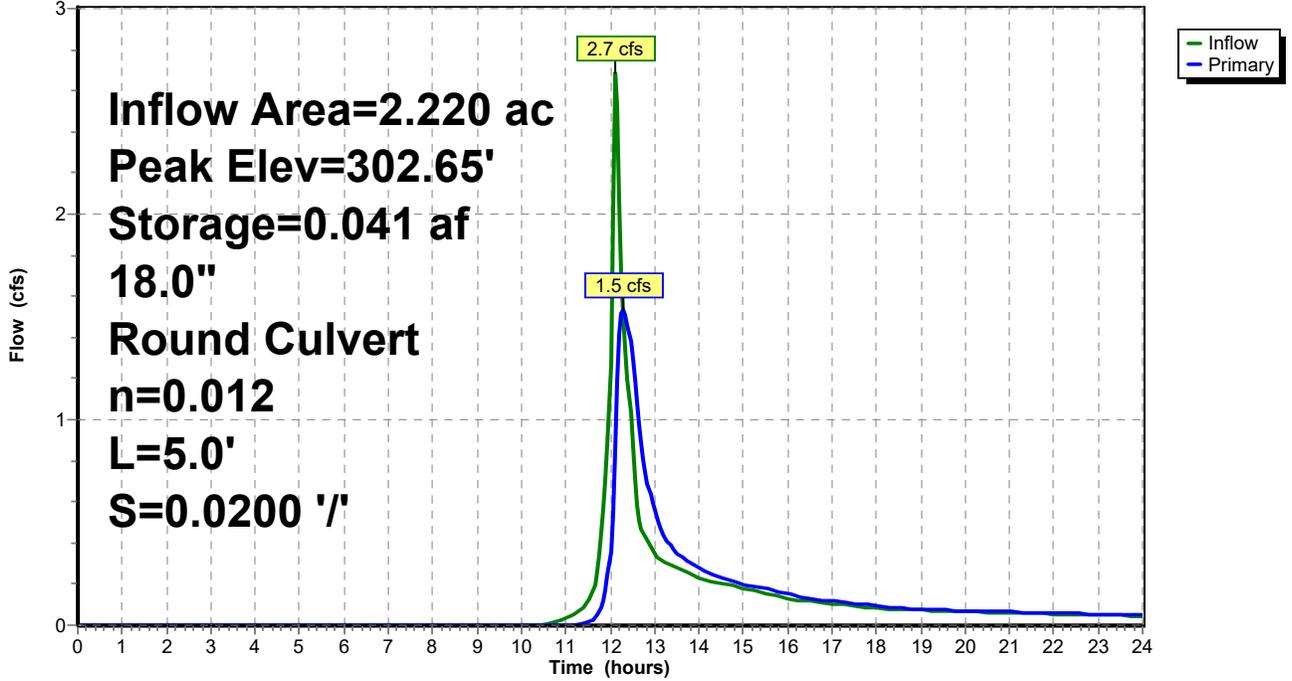
Volume	Invert	Avail.Storage	Storage Description		
#1	302.00'	0.199 af	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
302.00	0.058	224.0	0.000	0.000	0.058
304.00	0.092	265.0	0.149	0.149	0.096
304.50	0.111	284.0	0.051	0.199	0.116

Device	Routing	Invert	Outlet Devices
#1	Primary	302.00'	18.0" Round Culvert L= 5.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 302.00' / 301.90' S= 0.0200 ' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.5 cfs @ 12.30 hrs HW=302.65' (Free Discharge)
↑1=Culvert (Barrel Controls 1.5 cfs @ 3.05 fps)

Pond 4P: Detention Pond

Hydrograph



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Symphony Drive Extension - Franklin

Type III 24-hr 2-Year Rainfall=3.37"

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Stage-Area-Storage for Pond 4P: Detention Pond

Elevation (feet)	Surface (acres)	Storage (acre-feet)
302.00	0.058	0.000
302.05	0.059	0.003
302.10	0.060	0.006
302.15	0.060	0.009
302.20	0.061	0.012
302.25	0.062	0.015
302.30	0.063	0.018
302.35	0.063	0.021
302.40	0.064	0.024
302.45	0.065	0.028
302.50	0.066	0.031
302.55	0.067	0.034
302.60	0.067	0.038
302.65	0.068	0.041
302.70	0.069	0.044
302.75	0.070	0.048
302.80	0.071	0.051
302.85	0.071	0.055
302.90	0.072	0.059
302.95	0.073	0.062
303.00	0.074	0.066
303.05	0.075	0.070
303.10	0.076	0.073
303.15	0.077	0.077
303.20	0.077	0.081
303.25	0.078	0.085
303.30	0.079	0.089
303.35	0.080	0.093
303.40	0.081	0.097
303.45	0.082	0.101
303.50	0.083	0.105
303.55	0.084	0.109
303.60	0.085	0.113
303.65	0.085	0.118
303.70	0.086	0.122
303.75	0.087	0.126
303.80	0.088	0.131
303.85	0.089	0.135
303.90	0.090	0.140
303.95	0.091	0.144
304.00	0.092	0.149
304.05	0.094	0.153
304.10	0.096	0.158
304.15	0.098	0.163
304.20	0.099	0.168
304.25	0.101	0.173
304.30	0.103	0.178
304.35	0.105	0.183
304.40	0.107	0.188
304.45	0.109	0.194
304.50	0.111	0.199

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Symphony Drive Extension - Franklin
Type III 24-hr 2-Year Rainfall=3.37"

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Summary for Pond 5P: Infiltration Pond

Inflow Area = 2.910 ac, 11.00% Impervious, Inflow Depth > 1.22" for 2-Year event
 Inflow = 2.2 cfs @ 12.17 hrs, Volume= 0.295 af
 Outflow = 0.4 cfs @ 13.71 hrs, Volume= 0.294 af, Atten= 81%, Lag= 92.1 min
 Discarded = 0.4 cfs @ 13.71 hrs, Volume= 0.294 af
 Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Reach 6R : Isolated Wetland

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 290.90' @ 13.71 hrs Surf.Area= 0.128 ac Storage= 0.107 af

Plug-Flow detention time= 119.2 min calculated for 0.294 af (100% of inflow)
 Center-of-Mass det. time= 117.7 min (987.7 - 870.1)

Volume	Invert	Avail.Storage	Storage Description		
#1	290.00'	0.339 af	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
290.00	0.109	220.0	0.000	0.000	0.109
292.00	0.152	331.0	0.260	0.260	0.221
292.50	0.164	340.0	0.079	0.339	0.233

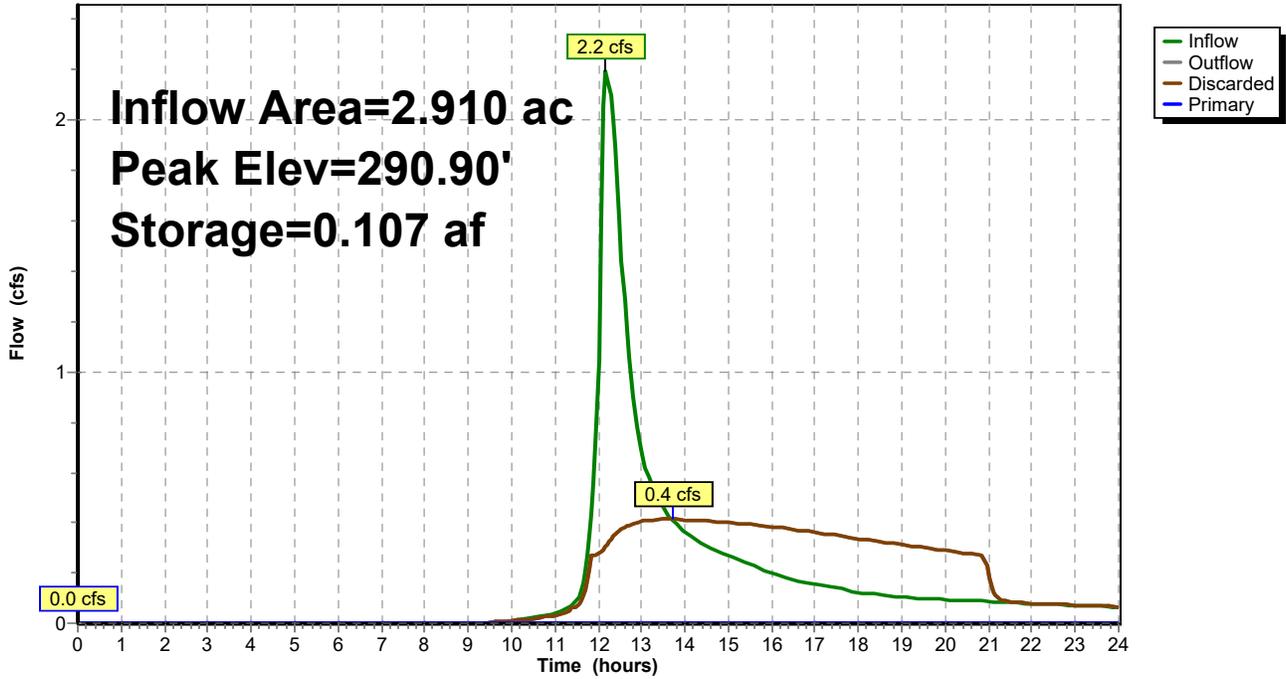
Device	Routing	Invert	Outlet Devices
#1	Discarded	290.00'	2.410 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 287.50'
#2	Primary	291.50'	10.0' long x 0.50' rise Sharp-Crested Rectangular Weir 2 End Contraction(s)

Discarded OutFlow Max=0.4 cfs @ 13.71 hrs HW=290.90' (Free Discharge)
 ↑1=Exfiltration (Controls 0.4 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=290.00' (Free Discharge)
 ↑2=Sharp-Crested Rectangular Weir (Controls 0.0 cfs)

Pond 5P: Infiltration Pond

Hydrograph



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Symphony Drive Extension - Franklin
Type III 24-hr 2-Year Rainfall=3.37"

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Stage-Area-Storage for Pond 5P: Infiltration Pond

Elevation (feet)	Surface (acres)	Storage (acre-feet)
290.00	0.109	0.000
290.05	0.110	0.005
290.10	0.111	0.011
290.15	0.112	0.017
290.20	0.113	0.022
290.25	0.114	0.028
290.30	0.115	0.034
290.35	0.116	0.039
290.40	0.117	0.045
290.45	0.118	0.051
290.50	0.119	0.057
290.55	0.120	0.063
290.60	0.121	0.069
290.65	0.122	0.075
290.70	0.123	0.081
290.75	0.124	0.087
290.80	0.125	0.094
290.85	0.126	0.100
290.90	0.127	0.106
290.95	0.129	0.113
291.00	0.130	0.119
291.05	0.131	0.126
291.10	0.132	0.132
291.15	0.133	0.139
291.20	0.134	0.146
291.25	0.135	0.152
291.30	0.136	0.159
291.35	0.137	0.166
291.40	0.138	0.173
291.45	0.139	0.180
291.50	0.141	0.187
291.55	0.142	0.194
291.60	0.143	0.201
291.65	0.144	0.208
291.70	0.145	0.215
291.75	0.146	0.223
291.80	0.147	0.230
291.85	0.149	0.237
291.90	0.150	0.245
291.95	0.151	0.252
292.00	0.152	0.260
292.05	0.153	0.267
292.10	0.154	0.275
292.15	0.156	0.283
292.20	0.157	0.291
292.25	0.158	0.299
292.30	0.159	0.306
292.35	0.160	0.314
292.40	0.162	0.323
292.45	0.163	0.331
292.50	0.164	0.339

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Symphony Drive Extension - Franklin
Type III 24-hr 10-Year Rainfall=5.25"

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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

Subcatchment 1S: Subarea PA

Runoff Area=2.220 ac 7.21% Impervious Runoff Depth>2.56"
Flow Length=276' Tc=7.5 min CN=74 Runoff=6.2 cfs 0.474 af

Subcatchment 2S: Subarea PB

Runoff Area=0.690 ac 23.19% Impervious Runoff Depth>3.11"
Flow Length=187' Tc=6.0 min CN=80 Runoff=2.5 cfs 0.179 af

Subcatchment 3S: Subarea PC

Runoff Area=1.380 ac 2.90% Impervious Runoff Depth>2.47"
Flow Length=379' Tc=8.0 min CN=73 Runoff=3.7 cfs 0.285 af

Reach 6R: Isolated Wetland

Inflow=3.7 cfs 0.415 af
Outflow=3.7 cfs 0.415 af

Pond 4P: Detention Pond

Peak Elev=303.18' Storage=0.080 af Inflow=6.2 cfs 0.474 af
18.0" Round Culvert n=0.012 L=5.0' S=0.0200 '/' Outflow=4.1 cfs 0.466 af

Pond 5P: Infiltration Pond

Peak Elev=291.68' Storage=0.212 af Inflow=5.7 cfs 0.645 af
Discarded=0.6 cfs 0.481 af Primary=2.4 cfs 0.130 af Outflow=2.9 cfs 0.611 af

Total Runoff Area = 4.290 ac Runoff Volume = 0.937 af Average Runoff Depth = 2.62"
91.61% Pervious = 3.930 ac 8.39% Impervious = 0.360 ac

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Symphony Drive Extension - Franklin
Type III 24-hr 10-Year Rainfall=5.25"

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Summary for Subcatchment 1S: Subarea PA

Runoff = 6.2 cfs @ 12.11 hrs, Volume= 0.474 af, Depth> 2.56"
Routed to Pond 4P : Detention Pond

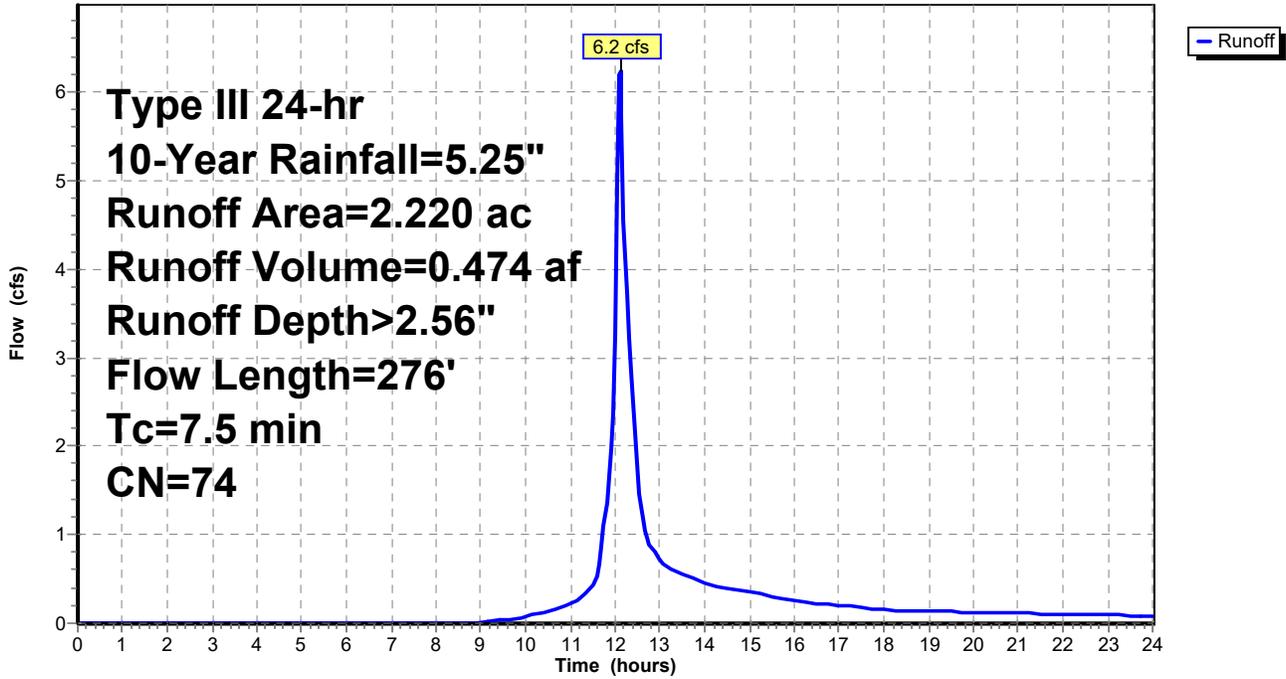
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.25"

Area (ac)	CN	Description
0.060	98	Roofs, HSG C
0.100	98	Paved parking, HSG C
1.340	74	>75% Grass cover, Good, HSG C
0.720	70	Woods, Good, HSG C
2.220	74	Weighted Average
2.060		92.79% Pervious Area
0.160		7.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	50	0.1220	0.14		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
1.0	107	0.1210	1.74		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.5	119	0.2770	3.68		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
7.5	276	Total			

Subcatchment 1S: Subarea PA

Hydrograph



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Symphony Drive Extension - Franklin

Type III 24-hr 10-Year Rainfall=5.25"

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Summary for Subcatchment 2S: Subarea PB

Runoff = 2.5 cfs @ 12.09 hrs, Volume= 0.179 af, Depth> 3.11"
 Routed to Pond 5P : Infiltration Pond

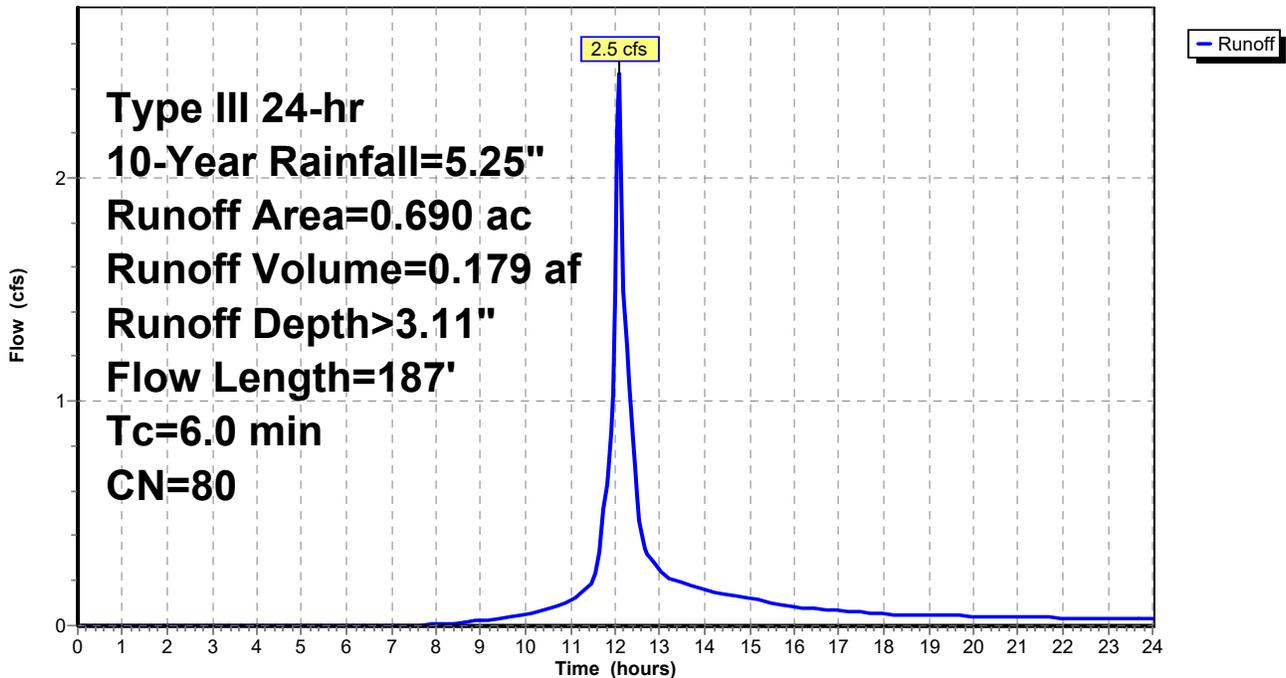
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-Year Rainfall=5.25"

Area (ac)	CN	Description
0.040	98	Roofs, HSG C
0.120	98	Paved parking, HSG C
0.530	74	>75% Grass cover, Good, HSG C
0.690	80	Weighted Average
0.530		76.81% Pervious Area
0.160		23.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0200	1.20		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.5	85	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.3	52	0.1940	3.08		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.5	187	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 2S: Subarea PB

Hydrograph



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Symphony Drive Extension - Franklin
 Type III 24-hr 10-Year Rainfall=5.25"

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Summary for Subcatchment 3S: Subarea PC

Runoff = 3.7 cfs @ 12.12 hrs, Volume= 0.285 af, Depth> 2.47"
 Routed to Reach 6R : Isolated Wetland

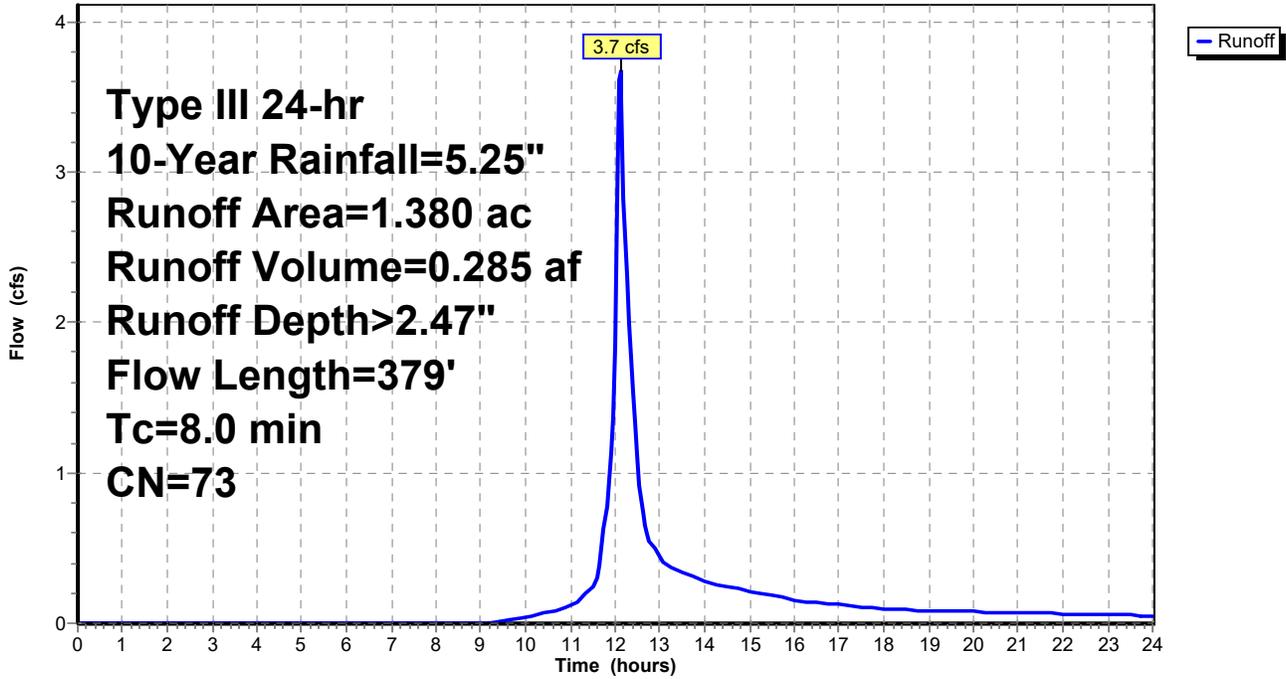
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-Year Rainfall=5.25"

Area (ac)	CN	Description
0.040	98	Roofs, HSG C
0.760	74	>75% Grass cover, Good, HSG C
0.580	70	Woods, Good, HSG C
1.380	73	Weighted Average
1.340		97.10% Pervious Area
0.040		2.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	50	0.2220	0.18		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
0.9	110	0.1800	2.12		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.5	148	0.0540	1.63		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.9	71	0.0630	1.25		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
8.0	379	Total			

Subcatchment 3S: Subarea PC

Hydrograph



Summary for Reach 6R: Isolated Wetland

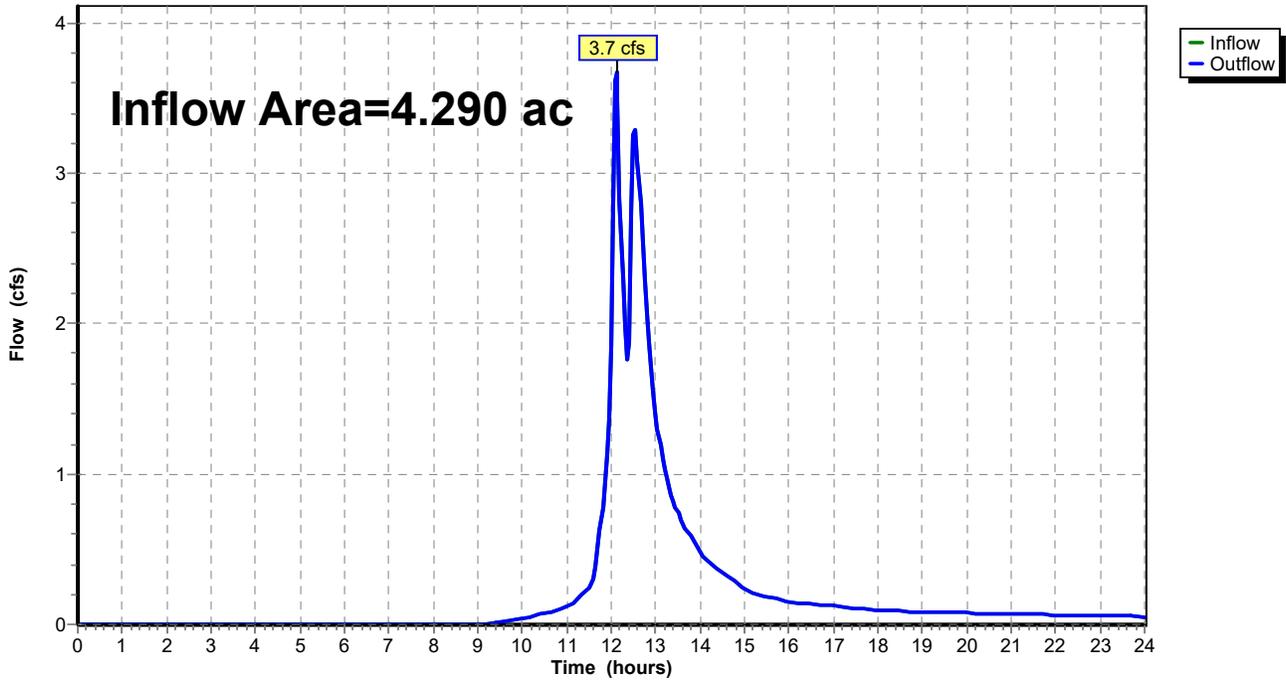
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 4.290 ac, 8.39% Impervious, Inflow Depth > 1.16" for 10-Year event
Inflow = 3.7 cfs @ 12.12 hrs, Volume= 0.415 af
Outflow = 3.7 cfs @ 12.12 hrs, Volume= 0.415 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 6R: Isolated Wetland

Hydrograph



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Summary for Pond 4P: Detention Pond

Inflow Area = 2.220 ac, 7.21% Impervious, Inflow Depth > 2.56" for 10-Year event
Inflow = 6.2 cfs @ 12.11 hrs, Volume= 0.474 af
Outflow = 4.1 cfs @ 12.23 hrs, Volume= 0.466 af, Atten= 34%, Lag= 7.0 min
Primary = 4.1 cfs @ 12.23 hrs, Volume= 0.466 af
Routed to Pond 5P : Infiltration Pond

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 303.18' @ 12.23 hrs Surf.Area= 0.077 ac Storage= 0.080 af

Plug-Flow detention time= 28.2 min calculated for 0.465 af (98% of inflow)
Center-of-Mass det. time= 18.5 min (854.2 - 835.7)

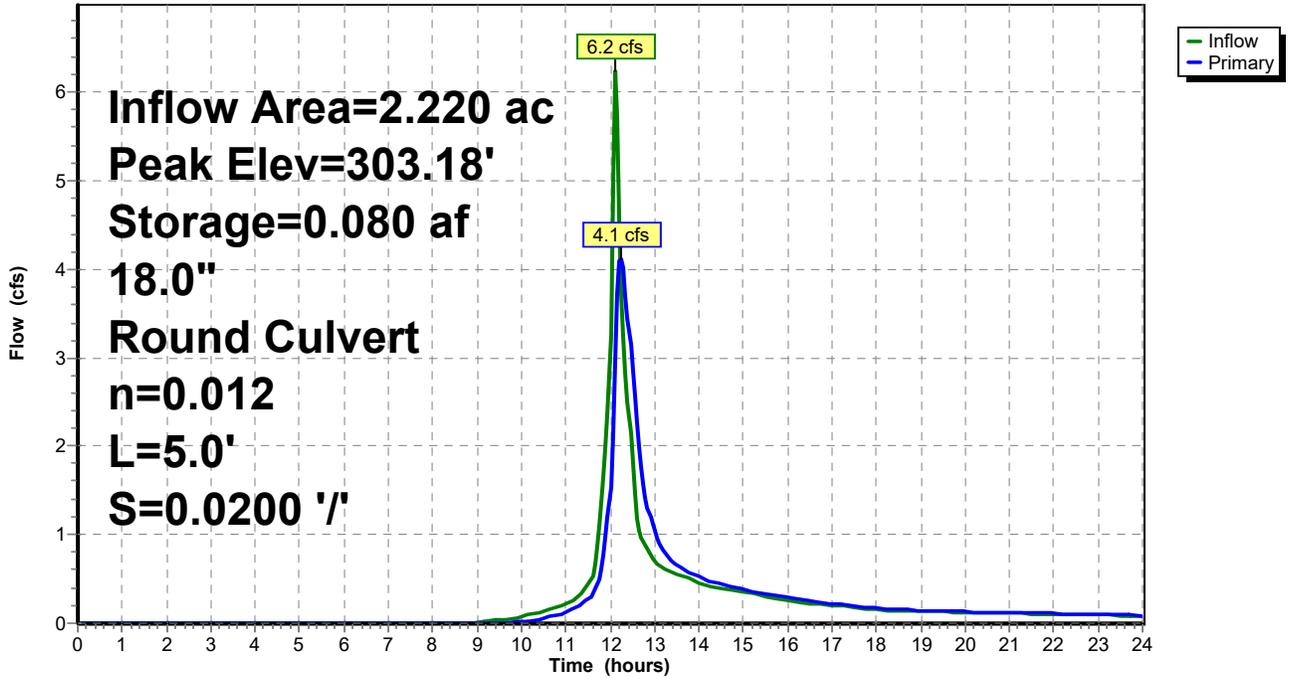
Volume	Invert	Avail.Storage	Storage Description		
#1	302.00'	0.199 af	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
302.00	0.058	224.0	0.000	0.000	0.058
304.00	0.092	265.0	0.149	0.149	0.096
304.50	0.111	284.0	0.051	0.199	0.116

Device	Routing	Invert	Outlet Devices
#1	Primary	302.00'	18.0" Round Culvert L= 5.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 302.00' / 301.90' S= 0.0200 ' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.1 cfs @ 12.23 hrs HW=303.18' (Free Discharge)
↑1=Culvert (Barrel Controls 4.1 cfs @ 3.79 fps)

Pond 4P: Detention Pond

Hydrograph



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Symphony Drive Extension - Franklin
Type III 24-hr 10-Year Rainfall=5.25"

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Stage-Area-Storage for Pond 4P: Detention Pond

Elevation (feet)	Surface (acres)	Storage (acre-feet)
302.00	0.058	0.000
302.05	0.059	0.003
302.10	0.060	0.006
302.15	0.060	0.009
302.20	0.061	0.012
302.25	0.062	0.015
302.30	0.063	0.018
302.35	0.063	0.021
302.40	0.064	0.024
302.45	0.065	0.028
302.50	0.066	0.031
302.55	0.067	0.034
302.60	0.067	0.038
302.65	0.068	0.041
302.70	0.069	0.044
302.75	0.070	0.048
302.80	0.071	0.051
302.85	0.071	0.055
302.90	0.072	0.059
302.95	0.073	0.062
303.00	0.074	0.066
303.05	0.075	0.070
303.10	0.076	0.073
303.15	0.077	0.077
303.20	0.077	0.081
303.25	0.078	0.085
303.30	0.079	0.089
303.35	0.080	0.093
303.40	0.081	0.097
303.45	0.082	0.101
303.50	0.083	0.105
303.55	0.084	0.109
303.60	0.085	0.113
303.65	0.085	0.118
303.70	0.086	0.122
303.75	0.087	0.126
303.80	0.088	0.131
303.85	0.089	0.135
303.90	0.090	0.140
303.95	0.091	0.144
304.00	0.092	0.149
304.05	0.094	0.153
304.10	0.096	0.158
304.15	0.098	0.163
304.20	0.099	0.168
304.25	0.101	0.173
304.30	0.103	0.178
304.35	0.105	0.183
304.40	0.107	0.188
304.45	0.109	0.194
304.50	0.111	0.199

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Summary for Pond 5P: Infiltration Pond

Inflow Area = 2.910 ac, 11.00% Impervious, Inflow Depth > 2.66" for 10-Year event
 Inflow = 5.7 cfs @ 12.16 hrs, Volume= 0.645 af
 Outflow = 2.9 cfs @ 12.57 hrs, Volume= 0.611 af, Atten= 49%, Lag= 24.5 min
 Discarded = 0.6 cfs @ 12.57 hrs, Volume= 0.481 af
 Primary = 2.4 cfs @ 12.57 hrs, Volume= 0.130 af
 Routed to Reach 6R : Isolated Wetland

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 291.68' @ 12.57 hrs Surf.Area= 0.145 ac Storage= 0.212 af

Plug-Flow detention time= 153.1 min calculated for 0.610 af (95% of inflow)
 Center-of-Mass det. time= 125.3 min (969.7 - 844.5)

Volume	Invert	Avail.Storage	Storage Description		
#1	290.00'	0.339 af	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
290.00	0.109	220.0	0.000	0.000	0.109
292.00	0.152	331.0	0.260	0.260	0.221
292.50	0.164	340.0	0.079	0.339	0.233

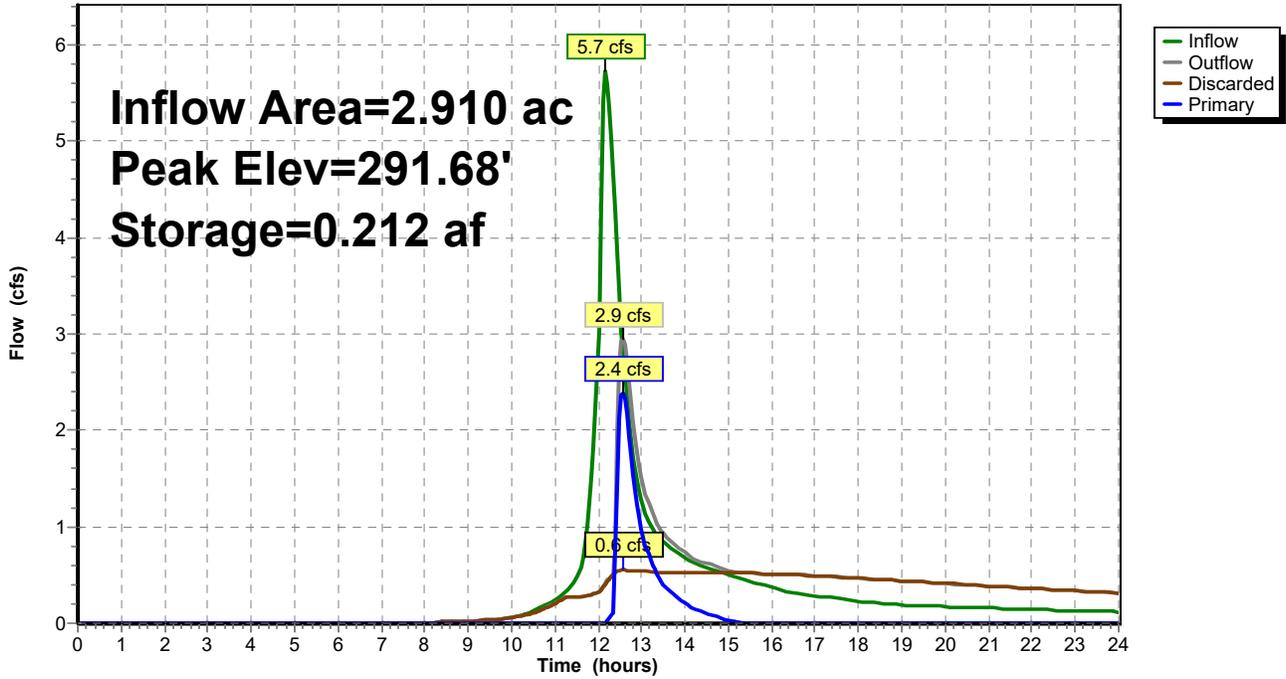
Device	Routing	Invert	Outlet Devices
#1	Discarded	290.00'	2.410 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 287.50'
#2	Primary	291.50'	10.0' long x 0.50' rise Sharp-Crested Rectangular Weir 2 End Contraction(s)

Discarded OutFlow Max=0.6 cfs @ 12.57 hrs HW=291.67' (Free Discharge)
 ↳1=Exfiltration (Controls 0.6 cfs)

Primary OutFlow Max=2.4 cfs @ 12.57 hrs HW=291.67' (Free Discharge)
 ↳2=Sharp-Crested Rectangular Weir (Weir Controls 2.4 cfs @ 1.36 fps)

Pond 5P: Infiltration Pond

Hydrograph



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Type III 24-hr 10-Year Rainfall=5.25"

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Stage-Area-Storage for Pond 5P: Infiltration Pond

Elevation (feet)	Surface (acres)	Storage (acre-feet)
290.00	0.109	0.000
290.05	0.110	0.005
290.10	0.111	0.011
290.15	0.112	0.017
290.20	0.113	0.022
290.25	0.114	0.028
290.30	0.115	0.034
290.35	0.116	0.039
290.40	0.117	0.045
290.45	0.118	0.051
290.50	0.119	0.057
290.55	0.120	0.063
290.60	0.121	0.069
290.65	0.122	0.075
290.70	0.123	0.081
290.75	0.124	0.087
290.80	0.125	0.094
290.85	0.126	0.100
290.90	0.127	0.106
290.95	0.129	0.113
291.00	0.130	0.119
291.05	0.131	0.126
291.10	0.132	0.132
291.15	0.133	0.139
291.20	0.134	0.146
291.25	0.135	0.152
291.30	0.136	0.159
291.35	0.137	0.166
291.40	0.138	0.173
291.45	0.139	0.180
291.50	0.141	0.187
291.55	0.142	0.194
291.60	0.143	0.201
291.65	0.144	0.208
291.70	0.145	0.215
291.75	0.146	0.223
291.80	0.147	0.230
291.85	0.149	0.237
291.90	0.150	0.245
291.95	0.151	0.252
292.00	0.152	0.260
292.05	0.153	0.267
292.10	0.154	0.275
292.15	0.156	0.283
292.20	0.157	0.291
292.25	0.158	0.299
292.30	0.159	0.306
292.35	0.160	0.314
292.40	0.162	0.323
292.45	0.163	0.331
292.50	0.164	0.339

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Symphony Drive Extension - Franklin
Type III 24-hr 100-Year Rainfall=8.24"

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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

Subcatchment 1S: Subarea PA

Runoff Area=2.220 ac 7.21% Impervious Runoff Depth>5.14"
Flow Length=276' Tc=7.5 min CN=74 Runoff=12.5 cfs 0.950 af

Subcatchment 2S: Subarea PB

Runoff Area=0.690 ac 23.19% Impervious Runoff Depth>5.85"
Flow Length=187' Tc=6.0 min CN=80 Runoff=4.5 cfs 0.336 af

Subcatchment 3S: Subarea PC

Runoff Area=1.380 ac 2.90% Impervious Runoff Depth>5.02"
Flow Length=379' Tc=8.0 min CN=73 Runoff=7.5 cfs 0.577 af

Reach 6R: Isolated Wetland

Inflow=14.8 cfs 1.190 af
Outflow=14.8 cfs 1.190 af

Pond 4P: Detention Pond

Peak Elev=303.96' Storage=0.145 af Inflow=12.5 cfs 0.950 af
18.0" Round Culvert n=0.012 L=5.0' S=0.0200 '/' Outflow=8.2 cfs 0.939 af

Pond 5P: Infiltration Pond

Peak Elev=291.95' Storage=0.252 af Inflow=11.4 cfs 1.276 af
Discarded=0.6 cfs 0.571 af Primary=9.7 cfs 0.613 af Outflow=10.3 cfs 1.184 af

Total Runoff Area = 4.290 ac Runoff Volume = 1.863 af Average Runoff Depth = 5.21"
91.61% Pervious = 3.930 ac 8.39% Impervious = 0.360 ac

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Symphony Drive Extension - Franklin
Type III 24-hr 100-Year Rainfall=8.24"

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Summary for Subcatchment 1S: Subarea PA

Runoff = 12.5 cfs @ 12.11 hrs, Volume= 0.950 af, Depth> 5.14"
Routed to Pond 4P : Detention Pond

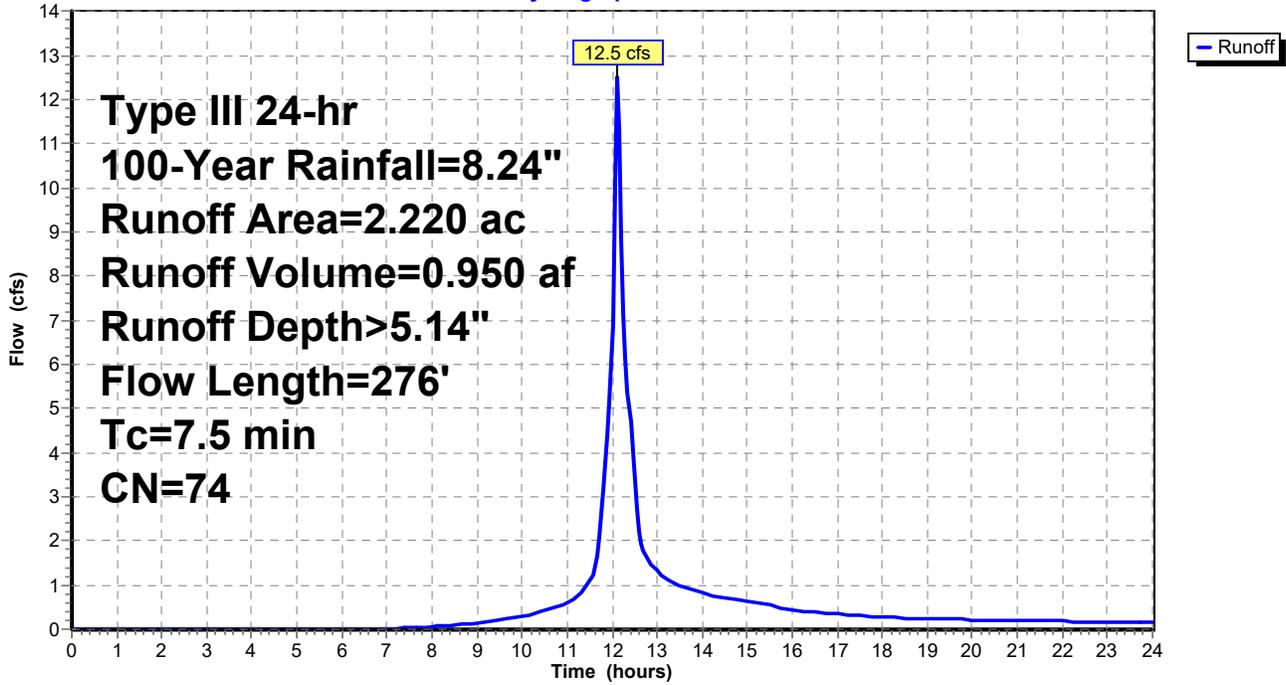
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.24"

Area (ac)	CN	Description
0.060	98	Roofs, HSG C
0.100	98	Paved parking, HSG C
1.340	74	>75% Grass cover, Good, HSG C
0.720	70	Woods, Good, HSG C
2.220	74	Weighted Average
2.060		92.79% Pervious Area
0.160		7.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	50	0.1220	0.14		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
1.0	107	0.1210	1.74		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
0.5	119	0.2770	3.68		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
7.5	276	Total			

Subcatchment 1S: Subarea PA

Hydrograph



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Summary for Subcatchment 2S: Subarea PB

Runoff = 4.5 cfs @ 12.09 hrs, Volume= 0.336 af, Depth> 5.85"
 Routed to Pond 5P : Infiltration Pond

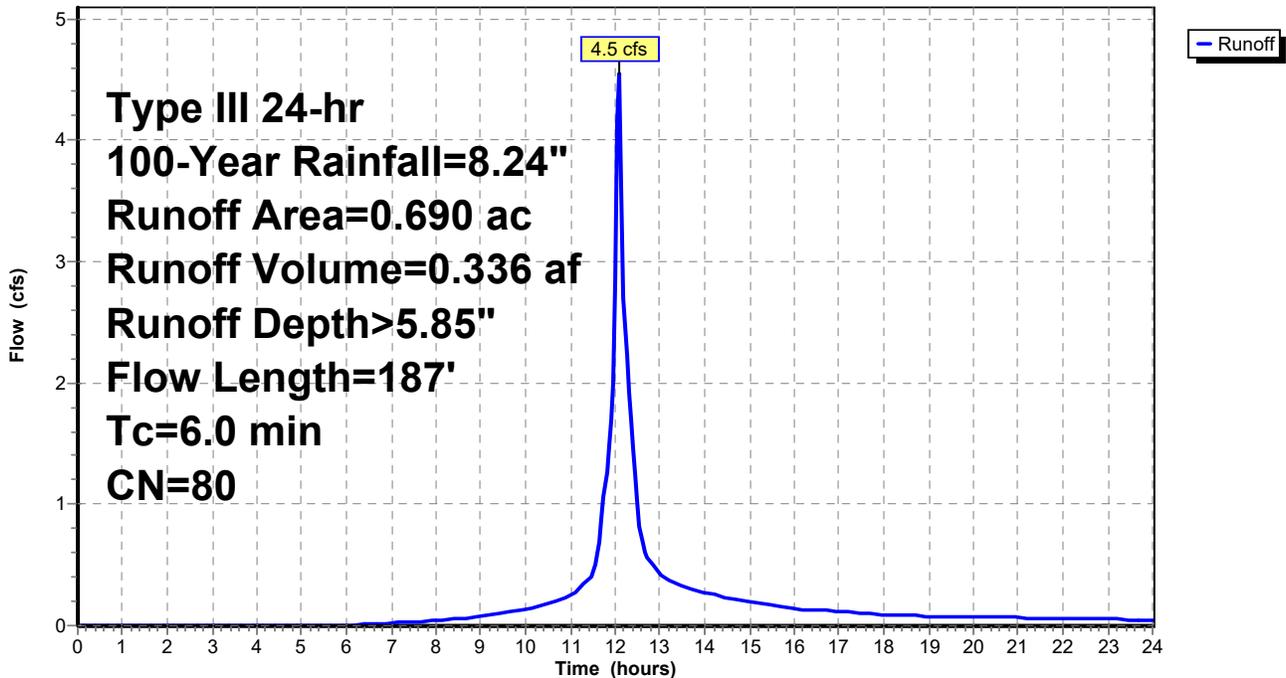
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type III 24-hr 100-Year Rainfall=8.24"

Area (ac)	CN	Description
0.040	98	Roofs, HSG C
0.120	98	Paved parking, HSG C
0.530	74	>75% Grass cover, Good, HSG C
0.690	80	Weighted Average
0.530		76.81% Pervious Area
0.160		23.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	50	0.0200	1.20		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.20"
0.5	85	0.0200	2.87		Shallow Concentrated Flow, Paved Kv= 20.3 fps
0.3	52	0.1940	3.08		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
1.5	187	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 2S: Subarea PB

Hydrograph



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Symphony Drive Extension - Franklin
 Type III 24-hr 100-Year Rainfall=8.24"

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Summary for Subcatchment 3S: Subarea PC

Runoff = 7.5 cfs @ 12.11 hrs, Volume= 0.577 af, Depth> 5.02"
 Routed to Reach 6R : Isolated Wetland

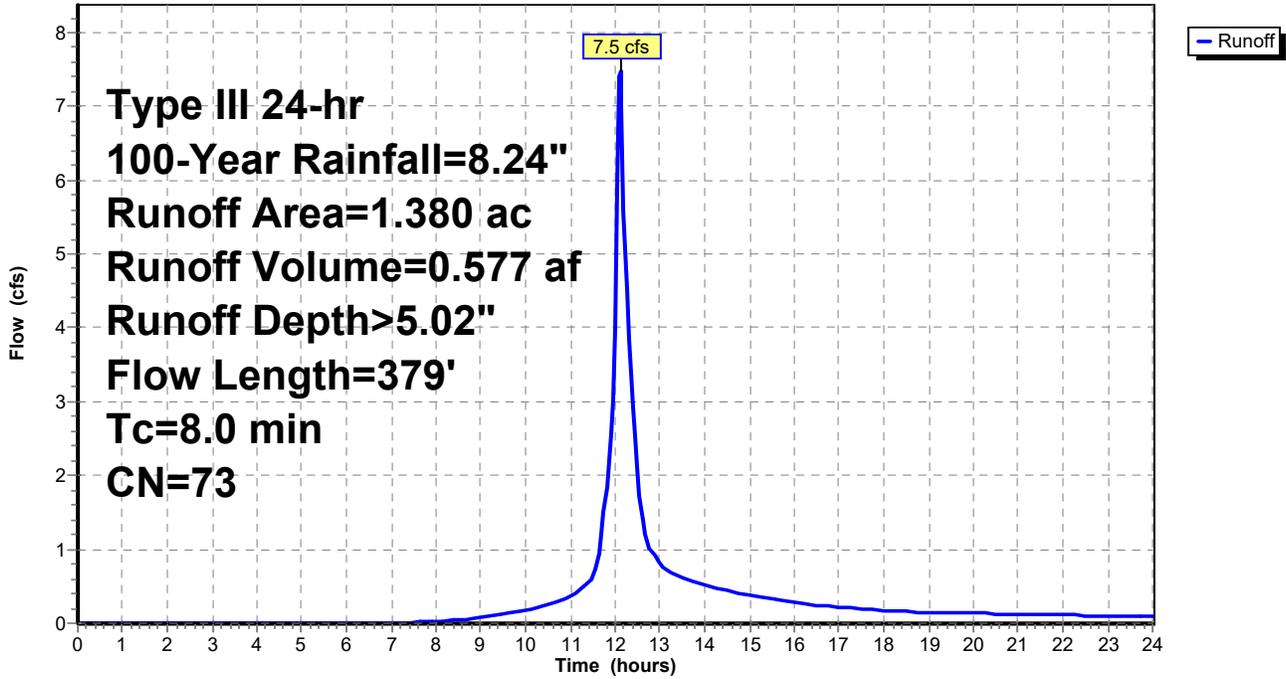
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Type III 24-hr 100-Year Rainfall=8.24"

Area (ac)	CN	Description
0.040	98	Roofs, HSG C
0.760	74	>75% Grass cover, Good, HSG C
0.580	70	Woods, Good, HSG C
1.380	73	Weighted Average
1.340		97.10% Pervious Area
0.040		2.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	50	0.2220	0.18		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.20"
0.9	110	0.1800	2.12		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
1.5	148	0.0540	1.63		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
0.9	71	0.0630	1.25		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
8.0	379	Total			

Subcatchment 3S: Subarea PC

Hydrograph



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Summary for Reach 6R: Isolated Wetland

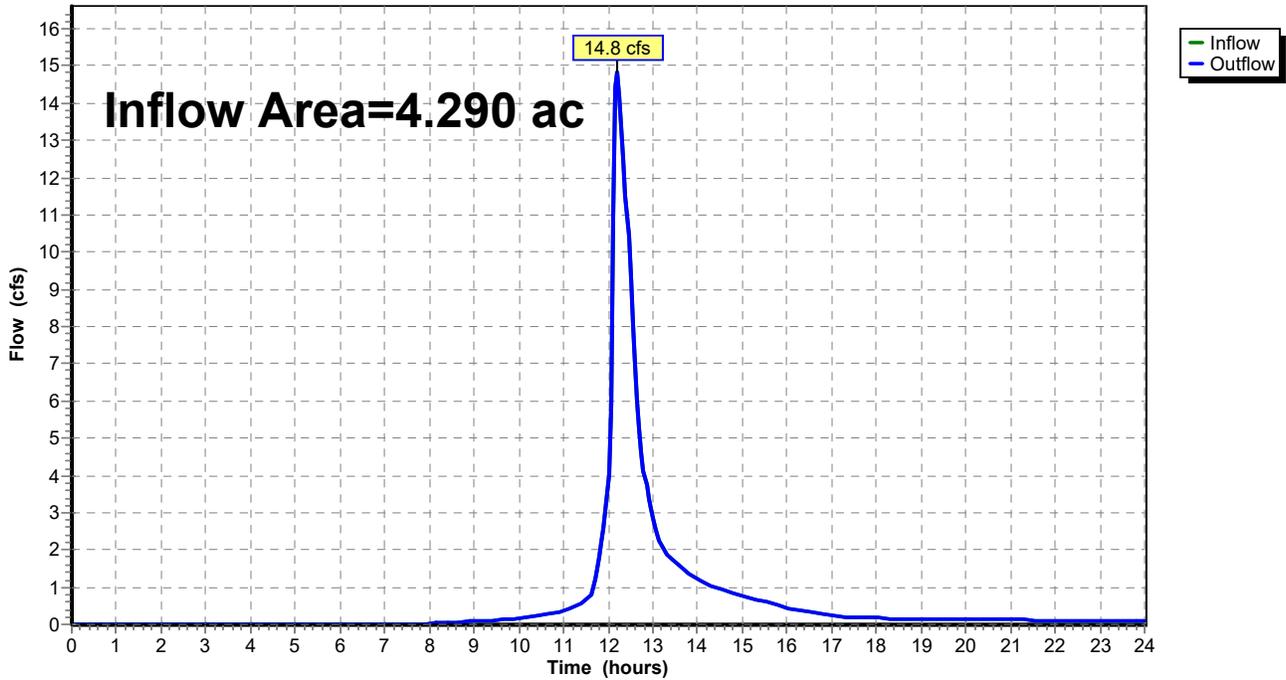
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 4.290 ac, 8.39% Impervious, Inflow Depth > 3.33" for 100-Year event
Inflow = 14.8 cfs @ 12.20 hrs, Volume= 1.190 af
Outflow = 14.8 cfs @ 12.20 hrs, Volume= 1.190 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 6R: Isolated Wetland

Hydrograph



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Summary for Pond 4P: Detention Pond

Inflow Area = 2.220 ac, 7.21% Impervious, Inflow Depth > 5.14" for 100-Year event
Inflow = 12.5 cfs @ 12.11 hrs, Volume= 0.950 af
Outflow = 8.2 cfs @ 12.22 hrs, Volume= 0.939 af, Atten= 35%, Lag= 6.9 min
Primary = 8.2 cfs @ 12.22 hrs, Volume= 0.939 af
Routed to Pond 5P : Infiltration Pond

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 303.96' @ 12.22 hrs Surf.Area= 0.091 ac Storage= 0.145 af

Plug-Flow detention time= 22.4 min calculated for 0.937 af (99% of inflow)
Center-of-Mass det. time= 15.7 min (831.5 - 815.8)

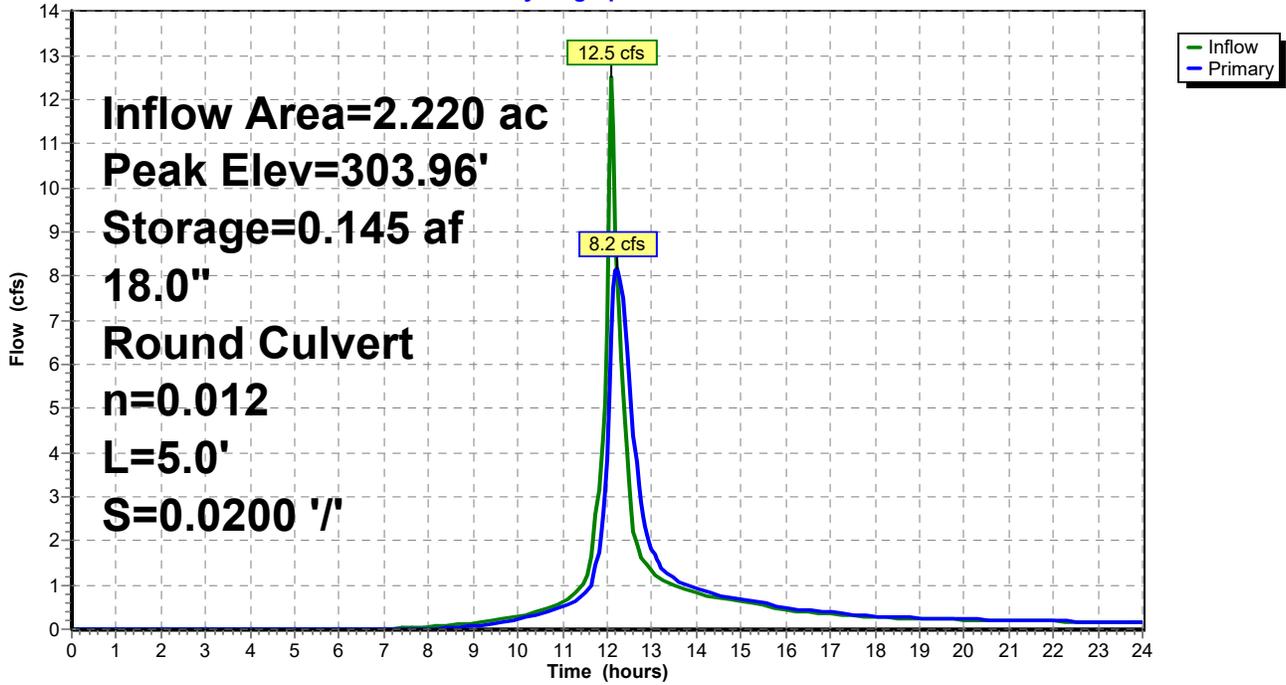
Volume	Invert	Avail.Storage	Storage Description		
#1	302.00'	0.199 af	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
302.00	0.058	224.0	0.000	0.000	0.058
304.00	0.092	265.0	0.149	0.149	0.096
304.50	0.111	284.0	0.051	0.199	0.116

Device	Routing	Invert	Outlet Devices
#1	Primary	302.00'	18.0" Round Culvert L= 5.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 302.00' / 301.90' S= 0.0200 ' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=8.1 cfs @ 12.22 hrs HW=303.95' (Free Discharge)
↑1=Culvert (Barrel Controls 8.1 cfs @ 4.62 fps)

Pond 4P: Detention Pond

Hydrograph



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Symphony Drive Extension - Franklin
Type III 24-hr 100-Year Rainfall=8.24"

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Stage-Area-Storage for Pond 4P: Detention Pond

Elevation (feet)	Surface (acres)	Storage (acre-feet)
302.00	0.058	0.000
302.05	0.059	0.003
302.10	0.060	0.006
302.15	0.060	0.009
302.20	0.061	0.012
302.25	0.062	0.015
302.30	0.063	0.018
302.35	0.063	0.021
302.40	0.064	0.024
302.45	0.065	0.028
302.50	0.066	0.031
302.55	0.067	0.034
302.60	0.067	0.038
302.65	0.068	0.041
302.70	0.069	0.044
302.75	0.070	0.048
302.80	0.071	0.051
302.85	0.071	0.055
302.90	0.072	0.059
302.95	0.073	0.062
303.00	0.074	0.066
303.05	0.075	0.070
303.10	0.076	0.073
303.15	0.077	0.077
303.20	0.077	0.081
303.25	0.078	0.085
303.30	0.079	0.089
303.35	0.080	0.093
303.40	0.081	0.097
303.45	0.082	0.101
303.50	0.083	0.105
303.55	0.084	0.109
303.60	0.085	0.113
303.65	0.085	0.118
303.70	0.086	0.122
303.75	0.087	0.126
303.80	0.088	0.131
303.85	0.089	0.135
303.90	0.090	0.140
303.95	0.091	0.144
304.00	0.092	0.149
304.05	0.094	0.153
304.10	0.096	0.158
304.15	0.098	0.163
304.20	0.099	0.168
304.25	0.101	0.173
304.30	0.103	0.178
304.35	0.105	0.183
304.40	0.107	0.188
304.45	0.109	0.194
304.50	0.111	0.199

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Summary for Pond 5P: Infiltration Pond

Inflow Area = 2.910 ac, 11.00% Impervious, Inflow Depth > 5.26" for 100-Year event
 Inflow = 11.4 cfs @ 12.14 hrs, Volume= 1.276 af
 Outflow = 10.3 cfs @ 12.26 hrs, Volume= 1.184 af, Atten= 9%, Lag= 7.5 min
 Discarded = 0.6 cfs @ 12.26 hrs, Volume= 0.571 af
 Primary = 9.7 cfs @ 12.26 hrs, Volume= 0.613 af
 Routed to Reach 6R : Isolated Wetland

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
 Peak Elev= 291.95' @ 12.26 hrs Surf.Area= 0.151 ac Storage= 0.252 af

Plug-Flow detention time= 95.4 min calculated for 1.184 af (93% of inflow)
 Center-of-Mass det. time= 58.8 min (882.3 - 823.5)

Volume	Invert	Avail.Storage	Storage Description			
#1	290.00'	0.339 af	Custom Stage Data (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)	
290.00	0.109	220.0	0.000	0.000	0.109	
292.00	0.152	331.0	0.260	0.260	0.221	
292.50	0.164	340.0	0.079	0.339	0.233	

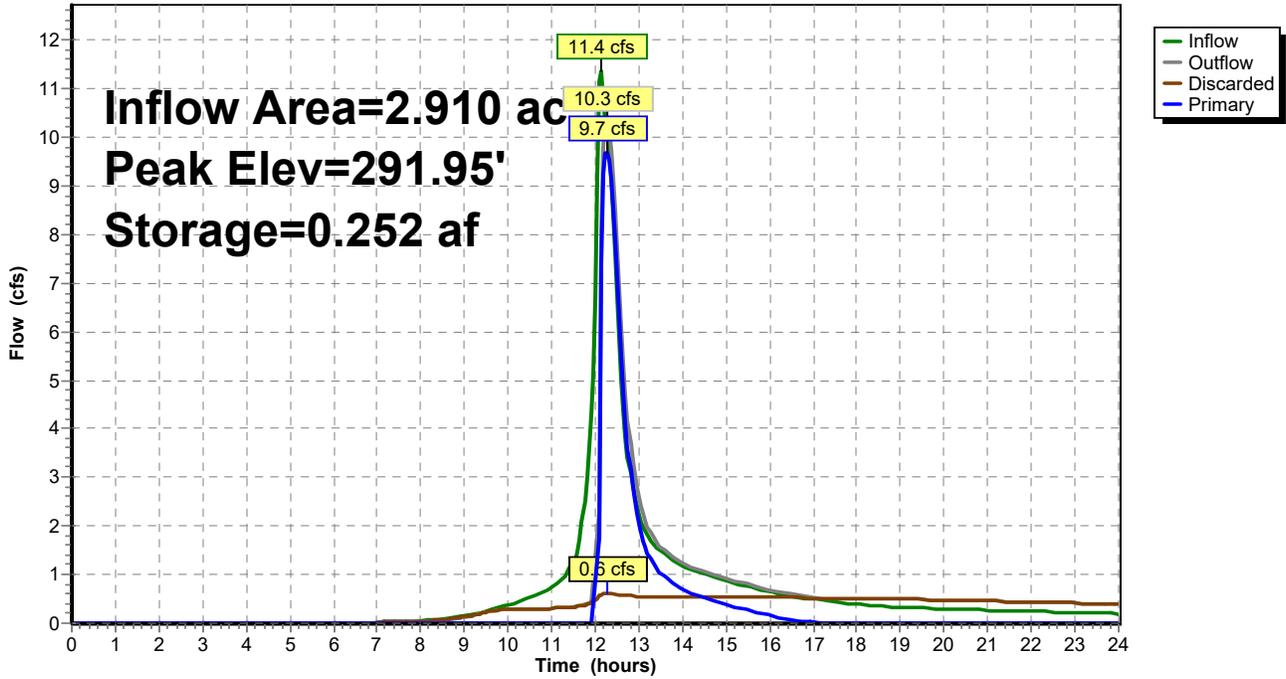
Device	Routing	Invert	Outlet Devices
#1	Discarded	290.00'	2.410 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 287.50'
#2	Primary	291.50'	10.0' long x 0.50' rise Sharp-Crested Rectangular Weir 2 End Contraction(s)

Discarded OutFlow Max=0.6 cfs @ 12.26 hrs HW=291.95' (Free Discharge)
 ↑1=Exfiltration (Controls 0.6 cfs)

Primary OutFlow Max=9.6 cfs @ 12.26 hrs HW=291.95' (Free Discharge)
 ↑2=Sharp-Crested Rectangular Weir (Weir Controls 9.6 cfs @ 2.18 fps)

Pond 5P: Infiltration Pond

Hydrograph



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Type III 24-hr 100-Year Rainfall=8.24"

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Stage-Area-Storage for Pond 5P: Infiltration Pond

Elevation (feet)	Surface (acres)	Storage (acre-feet)
290.00	0.109	0.000
290.05	0.110	0.005
290.10	0.111	0.011
290.15	0.112	0.017
290.20	0.113	0.022
290.25	0.114	0.028
290.30	0.115	0.034
290.35	0.116	0.039
290.40	0.117	0.045
290.45	0.118	0.051
290.50	0.119	0.057
290.55	0.120	0.063
290.60	0.121	0.069
290.65	0.122	0.075
290.70	0.123	0.081
290.75	0.124	0.087
290.80	0.125	0.094
290.85	0.126	0.100
290.90	0.127	0.106
290.95	0.129	0.113
291.00	0.130	0.119
291.05	0.131	0.126
291.10	0.132	0.132
291.15	0.133	0.139
291.20	0.134	0.146
291.25	0.135	0.152
291.30	0.136	0.159
291.35	0.137	0.166
291.40	0.138	0.173
291.45	0.139	0.180
291.50	0.141	0.187
291.55	0.142	0.194
291.60	0.143	0.201
291.65	0.144	0.208
291.70	0.145	0.215
291.75	0.146	0.223
291.80	0.147	0.230
291.85	0.149	0.237
291.90	0.150	0.245
291.95	0.151	0.252
292.00	0.152	0.260
292.05	0.153	0.267
292.10	0.154	0.275
292.15	0.156	0.283
292.20	0.157	0.291
292.25	0.158	0.299
292.30	0.159	0.306
292.35	0.160	0.314
292.40	0.162	0.323
292.45	0.163	0.331
292.50	0.164	0.339

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APPENDIX B – STORM WATER WORKSHEETS

Required Recharge Volume and Drawdown Worksheet (*Previously Submitted)
TSS Removal Worksheet (*Previously Submitted)
Checklist for Stormwater Report (*Previously Submitted)
Ground Water Mounding Summary Worksheet (*Previously Submitted)
Rip-Rap Calculations

PIPE OUTLET PROTECTION APRON DESIGN

And

d₅₀ RIPRAP SIZING

Outlet Name - **FES#2**

PROJECT NAME : **Symphony drive Extension**

PROJECT # : **25-0108**

BY : **CG** CHECKED BY : **WBJr**

DATE : **2/10/2026** STORM: **25-yr** DATE :

DOWNSTREAM CHANNEL (OR SPREADER) HYDRAULICS		
Culvert Diameter (Do) =	18	Inches
Peak Discharge Required =	5.90	cfs
Channel Bottom Width =	4.5	Feet (3 x Do) all cases
Hydraulic Gradient =	0.00100	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* =	0.840	Feet
Manning's "n" =	0.0335	Please refer to Figure 7-52 of HANDBOOK
Area =	5.90	Square Feet
Wetted Perimeter =	9.81	Feet
Hydraulic Radius =	0.60	Feet
Top Width =	9.54	Feet
Velocity =	1.00	Feet/Second
Peak Discharge Calculated =	5.90	cfs Q calc should approx = Q required
Qcalc - Qrequired =	0.00	Calculation OK

La AND W CALCULATIONS:

Culvert Diameter (Do) =	18.0	Inches	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.
Tail Water Depth (TW)* =	0.84	Feet	
Length of Apron (La) =	20	Feet	
Width of Apron @ D.S End - (W) =	13	Feet	
Width of D.S. Apron if Channel - (W) =	9.5	Feet	

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

ROCK RIPRAP SIZE

d₅₀ = **0.17** Feet or **2.03** Inches

d₅₀ = (0.02 x Q^{4/3})/(TW x Do)

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

% of Weight Smaller Than The Given Size	Size of Stone in Inches
100	----- to 4.1
85	2.6 to 3.7
50	2.0 to 3.0
15	0.6 to 1.0

Minimum Rock Riprap Blanket Thickness = **6.1** 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 - $Q = (A \times 1.486 \times R^{2/3} \times S^{1/2}) / n$
 Length of Apron (La) TW < Do/2 - $La = (1.8 \times Q / Do^{1.5}) + 7 \times Do$
 Length of Apron (La) TW >= Do/2 - $La = 3.0 \times Q / Do^{1.5} + 7 \times Do$
 Width of Apron @ D.S End TW < Do/2 - $W = 3 \times Do + La$
 Width of Apron @ D.S End TW >= Do/2 - $W = 3 \times Do + 0.4 \times La$
 Width of D.S. Apron if in Channel - $Ch. BW + \text{Sum of Side Slopes} \times \text{Flow Depth}$
 Width of Apron @ Culvert - $Wc = 3 \times Do$

PIPE OUTLET PROTECTION APRON DESIGN

And

d₅₀ RIPRAP SIZING

Outlet Name - **FES#4**

PROJECT NAME : **Symphony drive Extension**

PROJECT # : **25-0108**

BY : **CG** CHECKED BY : **WBJr**

DATE : **2/10/2026** STORM: **25-yr** DATE :

DOWNSTREAM CHANNEL (OR SPREADER) HYDRAULICS		
Culvert Diameter (Do) =	6	Inches
Peak Discharge Required =	8.00	cfs
Channel Bottom Width =	1.5	Feet (3 x Do) all cases
Hydraulic Gradient =	0.00100	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* =	1.272	Feet
Manning's "n" =	0.0315	Please refer to Figure 7-52 of HANDBOOK
Area =	6.76	Square Feet
Wetted Perimeter =	9.54	Feet
Hydraulic Radius =	0.71	Feet
Top Width =	9.13	Feet
Velocity =	1.18	Feet/Second
Peak Discharge Calculated =	8.01	cfs Q calc should approx = Q required
Qcalc - Qrequired =	0.01	Calculation OK

La AND W CALCULATIONS:		
Culvert Diameter (Do) =	18.0	Inches
Tail Water Depth (TW)* =	1.27	Feet
Length of Apron (La) =	24	Feet
Width of Apron @ D.S End - (W) =	14	Feet
Width of D.S. Apron if Channel - (W) =	9.1	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 =	0.17	Feet or 2.01 Inches
d ₅₀ = (0.02 x Q ^{4/3})/(TW x Do)		

ROCK RIPRAP GRADATION (TABLE 7-24 OF NHDES HANDBOOK)												
<table border="1"> <thead> <tr> <th>% of Weight Smaller Than The Given Size</th> <th>Size of Stone in Inches</th> </tr> </thead> <tbody> <tr> <td align="center">100</td> <td align="center">----- to 4.0</td> </tr> <tr> <td align="center">85</td> <td align="center">2.6 to 3.6</td> </tr> <tr> <td align="center">50</td> <td align="center">2.0 to 3.0</td> </tr> <tr> <td align="center">15</td> <td align="center">0.6 to 1.0</td> </tr> </tbody> </table>	% of Weight Smaller Than The Given Size	Size of Stone in Inches	100	----- to 4.0	85	2.6 to 3.6	50	2.0 to 3.0	15	0.6 to 1.0		
% of Weight Smaller Than The Given Size	Size of Stone in Inches											
100	----- to 4.0											
85	2.6 to 3.6											
50	2.0 to 3.0											
15	0.6 to 1.0											
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 - $Q = (A \times 1.486 \times R^{2/3} \times S^{1/2}) / n$
Length of Apron (La) TW < Do/2 - $La = (1.8 \times Q / Do^{1.5}) + 7 \times Do$
Length of Apron (La) TW >= Do/2 - $La = 3.0 \times Q / Do^{1.5} + 7 \times Do$
Width of Apron @ D.S End TW < Do/2 - $W = 3 \times Do + La$
Width of Apron @ D.S End TW >= Do/2 - $W = 3 \times Do + 0.4 \times La$
Width of D.S. Apron if in Channel - $Ch. BW + \text{Sum of Side Slopes} \times \text{Flow Depth}$
Width of Apron @ Culvert - $Wc = 3 \times Do$

**APPENDIX C - OPERATION AND MAINTENANCE PLAN
FOR STORM WATER BMPS**

Construction Period O & M Plan
Post-Construction O & M Plan

**Appendix C: LONG TERM OPERATION AND MAINTENANCE PLAN
FOR STORMWATER BMPs
Symphony Drive Extension Franklin, MA**

	During Construction	Post-construction
<i>BMP Owner:</i>	Owner	HOA
<i>Party of Plan Responsibility:</i>	Owner	HOA

References:

- Private Definitive Plan of Land of land in Franklin, MA Tanglewood Estates II Symphony Drive Extensions dated December 4, 2025 Rev. February 10, 2026
- Storm Water Report “Symphony Drive Extension” Franklin, MA dated December, 2025 Rev. February, 2026

Operation and Maintenance

Infiltration Basin: Once the infiltration systems are in use, inspect it after every major storm (3.2 inches in 24 hours) for the first few months to ensure it is functioning properly and if necessary, take corrective action. Note how long water remains standing in the basin after a storm; standing water within the basin 48 to 72 hours after a storm indicates that there is an issue. If the ponding is due to clogging, immediately address the reasons for the clogging (such as upland sediment erosion). If necessary, aerate the bottom or replace the top 6” with the same mixture used to create the basin. Thereafter, inspect the infiltration basin at least twice per year to ensure that it is dry. During the inspection mowing the basin is appropriate.

Sediment Forebays: Shall be inspected on the same schedule as the infiltration basins. Remove trash and silt from the basin and remove from the site.

Estimated Operations and Maintenance Budget

The following is an estimate of the O&M Budget, post construction.
Inspections (3 times per year): \$200

**CONSTRUCTION PERIOD MAINTENANCE PLAN
FOR STORMWATER BMPs
Symphony Drive Extension Franklin, MA**

References:

- Private Definitive Plan of Land of land in Franklin, MA Tanglewood Estates II Symphony Drive Extensions dated December 4, 2025 Rev. February 10, 2026
- Storm Water Report “Symphony Drive Extension” Franklin, MA dated December, 2025 Rev. February, 2026

Operation and Maintenance

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.

Item 2: During construction every effort will be made to ensure that silt does not enter the infiltration basins. Additional silt socks shall be used as necessary. If silt does enter the basin, then clean out the bottom of the basin. Do not install the bottom material in the basin until the entire site has been stabilized.

Item 3: During construction, the stone pad at the entrance to the project shall be inspected **weekly** and replenished if siltation is impeding the cleaning of truck tires. Any materials tracked into the roadway shall be swept up within a day.

Item 4: The location of sediment basins shall not be in areas of proposed storm water basins. The basins shall be inspected weekly to ensure that the banks are stable and that the only clean runoff is exiting the structure.

APPENDIX D – SOIL DATA

Soil Evaluation Forms
NRCS Soil Resource Report (*Previously Submitted)

No. 25-0108

Date: June 3, 2025

Commonwealth of Massachusetts
Franklin, Massachusetts

Soil Suitability Assessment for On-Site Sewage Disposal

Performed By: William Buckley, Jr. Date: June 3, 2025

Witnessed By: Steve Donatelli

Location Address or Lot #: Symphony Drive Extension Franklin, MA 02038 New Construction: <input checked="" type="checkbox"/> Repair <input type="checkbox"/>	Owner's Name, Address, and , Telephone #: Cypress Real Estate Development, LLC 3 Rothchild Drive Foxborough, MA 02035 781.223.1188
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Office Review

Published Soil Survey Available: No Yes
Year Published 1989 Publication Scale 1:25,000 Soil Map Unit Montauk FSL
Drainage Class C Soil Limitations Bedrock
Surficial Geology Report Available: No Yes
Year Published 1992 Publication Scale 1:250,000
Geologic Material (Map Unit) Thin Till
Landform Side slope

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, 2025

Range: Above Normal Normal Below Normal

Other References Reviewed: _____

Location Address or Lot No. Symphony Drive Extension

On-site Review

Deep Hole Number: 1 Date: 6/3/2025 Time: 0800 Weather: 60°/Sunny

Location (identify on site plan) See site plan

Land Use Vacant Slope (%) 10% Surface Stones Some

Vegetation Mixed Woods

Landform Side slope

Position on landscape (sketch on back) See site plan

Distances from:

Open Water Body	<u>>150'</u>	Drainageway	<u>>100'</u>
Possible Wet Area	<u>>100'</u>	Property Line	<u>25'+/-</u>
Drinking Water Well	<u>>100'</u>	Other	<u> </u>

DEEP OBSERVATION HOLE LOG*					
Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (Munsell)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
0" - 5"	A	SL	10YR3/2		Gravelly, Cobbly, Coarse
5" - 36"	B	SL	5YR4/6		
36" - 120"	C	LS	7.5YR5/4		

*MINIMUM OF TWO HOLES REQUIRED AT EVERY DISPOSAL AREA

Parent Material (geologic) Coarse-loamy over sandy lodgment till Depth to Bedrock:

Depth to Groundwater Standing Water in Hole: 80" Weeping from Pit Face: 32"

Estimated Seasonal High Groundwater: 32"

Location Address or Lot No. Symphony Drive Extension

On-site Review

Deep Hole Number: 2 Date: 6/3/2025 Time: 0830 Weather: 60°/Sunny

Location (identify on site plan) See site plan

Land Use Vacant Slope (%) 10% Surface Stones Some

Vegetation Mixed Woods

Landform Side slope

Position on landscape (sketch on back) See site plan

Distances from:

Open Water Body	<u>>150'</u>	Drainageway	<u>>100'</u>
Possible Wet Area	<u>>100'</u>	Property Line	<u>25'+/-</u>
Drinking Water Well	<u>>100'</u>	Other	<u> </u>

DEEP OBSERVATION HOLE LOG*

Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (Munsell)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
0" - 5"	A	SL	10YR3/2		
5" - 42"	B	SL	5YR4/6		
42" - 120"	C	LS	7.5YR5/4		Gravelly, Cobbly, Coarse

*MINIMUM OF TWO HOLES REQUIRED AT EVERY DISPOSAL AREA

Parent Material (geologic) Coarse-loamy over sandy lodgment till Depth to Bedrock:

Depth to Groundwater Standing Water in Hole: 80" Weeping from Pit Face: 36"

Estimated Seasonal High Groundwater: 36"

Location Address or Lot No. Symphony Drive Extension

On-site Review

Deep Hole Number: 3 Date: 6/3/2025 Time: 0900 Weather: 60°/Sunny

Location (identify on site plan) See site plan

Land Use Vacant Slope (%) 15% Surface Stones Some

Vegetation Mixed Woods

Landform Side slope

Position on landscape (sketch on back) See site plan

Distances from:

Open Water Body	<u>>150'</u>	Drainageway	<u>>100'</u>
Possible Wet Area	<u>>100'</u>	Property Line	<u>25'+/-</u>
Drinking Water Well	<u>>100'</u>	Other	<u> </u>

DEEP OBSERVATION HOLE LOG*					
Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (Munsell)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
0" - 6"	A	SL	10YR3/2		
6" - 35"	B	SL	10YR5/6		
35" - 66"	B2	SL	5YR4/6		

*MINIMUM OF TWO HOLES REQUIRED AT EVERY DISPOSAL AREA

Parent Material (geologic) Coarse-loamy over sandy lodgment till Depth to Bedrock: 66"

Depth to Groundwater Standing Water in Hole: Weeping from Pit Face:

Estimated Seasonal High Groundwater:

Location Address or Lot No. Symphony Drive Extension

On-site Review

Deep Hole Number: 4 Date: 6/3/2025 Time: 0930 Weather: 60°/Sunny

Location (identify on site plan) See site plan

Land Use Vacant Slope (%) 15% Surface Stones Some

Vegetation Mixed Woods

Landform Side slope

Position on landscape (sketch on back) See site plan

Distances from:

Open Water Body	<u>>150'</u>	Drainageway	<u>>100'</u>
Possible Wet Area	<u>>100'</u>	Property Line	<u>25'+/-</u>
Drinking Water Well	<u>>100'</u>	Other	<u> </u>

DEEP OBSERVATION HOLE LOG*					
Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (Munsell)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
0" - 6"	A	SL	10YR3/2		
6" - 36"	B	SL	10YR5/6		
36" - 60"	B2	SL	5YR4/6		

*MINIMUM OF TWO HOLES REQUIRED AT EVERY DISPOSAL AREA

Parent Material (geologic) Coarse-loamy over sandy lodgment till Depth to Bedrock: 60"

Depth to Groundwater Standing Water in Hole: Weeping from Pit Face:

Estimated Seasonal High Groundwater:

Location Address or Lot No. Symphony Drive Extension

On-site Review

Deep Hole Number: 5 Date: 6/3/2025 Time: 1000 Weather: 60°/Sunny

Location (identify on site plan) See site plan

Land Use Vacant Slope (%) 10% Surface Stones Some

Vegetation Mixed Woods

Landform Side slope

Position on landscape (sketch on back) See site plan

Distances from:

Open Water Body	<u>>150'</u>	Drainageway	<u>>100'</u>
Possible Wet Area	<u>>100'</u>	Property Line	<u>25'+/-</u>
Drinking Water Well	<u>>100'</u>	Other	<u> </u>

DEEP OBSERVATION HOLE LOG*					
Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (Munsell)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
0" - 6"	A	SL	10YR3/2		
6" - 36"	B	SL	10YR5/6		
36" - 62"	B2	SL	5YR4/6		

*MINIMUM OF TWO HOLES REQUIRED AT EVERY DISPOSAL AREA

Parent Material (geologic) Coarse-loamy over sandy lodgment till Depth to Bedrock: 62"

Depth to Groundwater Standing Water in Hole: Weeping from Pit Face:

Estimated Seasonal High Groundwater:

Location Address or Lot No. Symphony Drive Extension

On-site Review

Deep Hole Number: 6 Date: 6/3/2025 Time: 1030 Weather: 60°/Sunny

Location (identify on site plan) See site plan

Land Use Vacant Slope (%) 10% Surface Stones Some

Vegetation Mixed Woods

Landform Side slope

Position on landscape (sketch on back) See site plan

Distances from:

Open Water Body	<u>>150'</u>	Drainageway	<u>>100'</u>
Possible Wet Area	<u>>100'</u>	Property Line	<u>25'+/-</u>
Drinking Water Well	<u>>100'</u>	Other	<u> </u>

DEEP OBSERVATION HOLE LOG*					
Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (Munsell)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
0" - 6"	A	SL	10YR3/2		
6" - 24"	B	SL	5YR4/6		
24" - 60"	B2	SL	5YR3/4		
60" - 120"	C	LS	7.5YR5/4		Gravelly, Cobbly, Coarse

*MINIMUM OF TWO HOLES REQUIRED AT EVERY DISPOSAL AREA

Parent Material (geologic) Coarse-loamy over sandy lodgment till Depth to Bedrock:

Depth to Groundwater Standing Water in Hole: 80" Weeping from Pit Face: 29"

Estimated Seasonal High Groundwater: 29"

Location Address or Lot No. Symphony Drive Extension

On-site Review

Deep Hole Number: 7 Date: 6/3/2025 Time: 1100 Weather: 60°/Sunny

Location (identify on site plan) See site plan

Land Use Vacant Slope (%) 10% Surface Stones Some

Vegetation Mixed Woods

Landform Side slope

Position on landscape (sketch on back) See site plan

Distances from:

Open Water Body	<u>>150'</u>	Drainageway	<u>>100'</u>
Possible Wet Area	<u>>100'</u>	Property Line	<u>25'+/-</u>
Drinking Water Well	<u>>100'</u>	Other	<u> </u>

DEEP OBSERVATION HOLE LOG*

Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (Munsell)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
0" - 6"	A	SL	10YR3/2		
6" - 30"	B	SL	5YR4/6		
30" - 120"	C	LS	7.5YR5/4		Gravelly, Cobbly, Coarse

*MINIMUM OF TWO HOLES REQUIRED AT EVERY DISPOSAL AREA

Parent Material (geologic) Coarse-loamy over sandy lodgment till Depth to Bedrock:

Depth to Groundwater Standing Water in Hole: Weeping from Pit Face: 29"

Estimated Seasonal High Groundwater: 29"

No. 25-0108

Date: February 17, 2025

Commonwealth of Massachusetts
Franklin, Massachusetts

Soil Suitability Assessment for On-Site Sewage Disposal

Performed By: Cameron Gray

Date: February 17, 2025

Witnessed By: _____

Location Address or Lot #: Symphony Drive Extension Franklin, MA 02038 New Construction: <input checked="" type="checkbox"/> Repair <input type="checkbox"/>	Owner's Name, Address, and , Telephone #: Cypress Real Estate Development, LLC 3 Rothchild Drive Foxborough, MA 02035 781.223.1188
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Office Review

Published Soil Survey Available: No Yes
Year Published 1989 Publication Scale 1:25,000 Soil Map Unit Montauk FSL
Drainage Class C Soil Limitations Bedrock
Surficial Geology Report Available: No Yes
Year Published 1992 Publication Scale 1:250,000
Geologic Material (Map Unit) Thin till
Landform Side slope

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 February, 2026

Range: Above Normal Normal Below Normal

Other References Reviewed: _____

Location Address or Lot No. Symphony Drive Extension

On-site Review

Deep Hole Number: 8 Date: 2/17/2026 Time: 0930 Weather: 27°/Cloudy

Location (identify on site plan) See site plan

Land Use Vacant Slope (%) 10% Surface Stones Some

Vegetation Mixed Woods

Landform Side slope

Position on landscape (sketch on back) See site plan

Distances from:

Open Water Body	<u>>150'</u>	Drainageway	<u>>100'</u>
Possible Wet Area	<u>>100'</u>	Property Line	<u>25'+/-</u>
Drinking Water Well	<u>>100'</u>	Other	<u> </u>

DEEP OBSERVATION HOLE LOG*					
Depth from Surface (inches)	Soil Horizon	Soil Texture (USDA)	Soil Color (Munsell)	Soil Mottling	Other (Structure, Stones, Boulders, Consistency, % Gravel)
0" - 5"	A	SL	10YR3/2	66"	Gravelly, Cobbly, Coarse
5" - 36"	B	SL	5YR4/6		
36" - 120"	C	LS	7.5YR5/4		

*MINIMUM OF TWO HOLES REQUIRED AT EVERY DISPOSAL AREA

Parent Material (geologic) Coarse-loamy over sandy lodgment till Depth to Bedrock:

Depth to Groundwater Standing Water in Hole: 120" Weeping from Pit Face: 96"

Estimated Seasonal High Groundwater: 66"

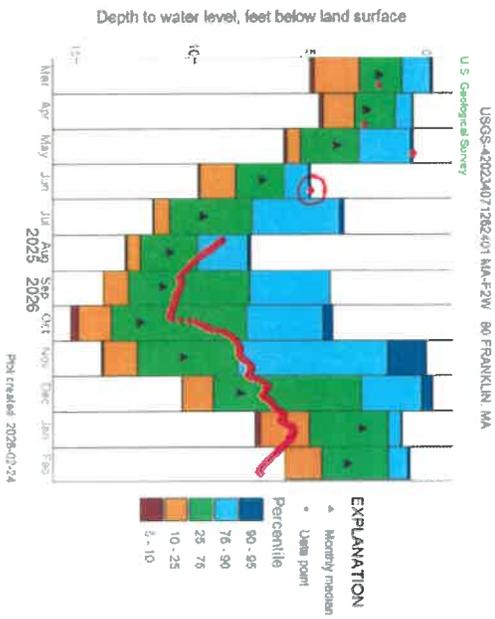
New England Water Science Center

Site Information

Site: USGS-420234071262401 MA-F2W 80 FRANKLIN, MA
 Location: Norfolk County, Massachusetts
 Hydrologic Unit: 01090010601
 Aquifer: Bedrock
 Site Type: GR, continuous, Climate Response Network: NA
 Land surface datum: 304.38 feet above NAVD88
 Depth of well: 800 feet
 Period of record: 2013 11.25 to 2026-02-23
 Lowest approved groundwater level: 15.25 feet on 2014-10-31
 Highest approved groundwater level: 0.21 feet on 2014-03-21

[View Data on Monitoring Location Page](#)

Groundwater Levels



100% of groundwater monitoring frequency and data are available