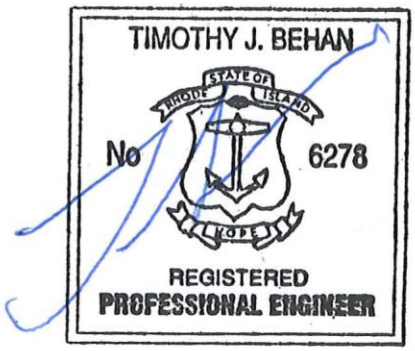
*Report for:*

# Stormwater BMP Narrative Report for
# AP 47-3 Lot 119-Proposed Sublot-D
# 523 South Road
# South Kingstown, Rhode Island
# Pre-Application Submittal

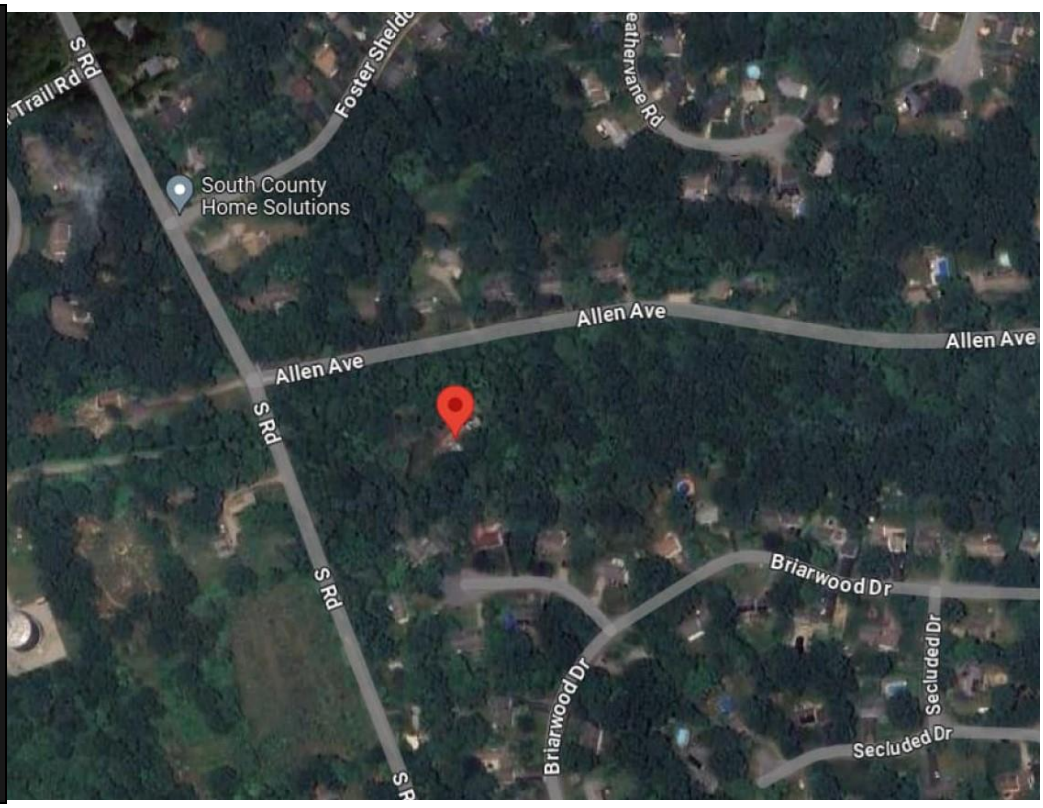



*Prepared for:*

**Atlas Land Surveying, LLC**
**91 Parkway Drive**
**Warwick, Rhode Island**

**July 2024** **CE&C #24052.00**

**REPORT**




**COMMONWEALTH ENGINEERS & CONSULTANTS, INC.**
400 SMITH STREET
RHODE ISLAND, 02908
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# Stormwater Narrative:

## 1.0 Introduction:

This report was prepared to document the stormwater best management practices (BMPs) proposed for the subject property located at 523 South Road, South Kingstown, Rhode Island (A.P. 47-3, Lot 119) for the proposed Sublot-D.

## 2.0 General Description/Purpose:

The applicant is proposing to subdivide the existing 3.95 acre lot into four (4) lots and construct a new single-family dwelling and associated items as detailed below on each of the three (3) new lots.

The project consists of the following major components:

- Installing sediment and erosion control devices;
- Construct a new single-family dwelling, existing OWTS connection, water line and utilities (electric/communication/cable);
- Construct a new asphalt driveway; and
- Construct stormwater BMPs for treatment of runoff generated from the proposed impervious surfaces.

## 3.0 Basis of Stormwater BMP Design:

BMP sizing and design is based on the *'State of Rhode Island Stormwater Management Guidance for Individual Single-Family Residential Lot Development'* guidance document prepared by the RIDEM/CRMC and the *Town of South Kingstown Soil Erosion, Runoff and Sediment Control Ordinance*. Note: due to site constraints the systems have been designed to the 'maximum extent possible' in accordance with these documents.

## 4.0 Stormwater BMP Design:

The seven (7) design steps detailed in this section were taken from the *'State of Rhode Island Stormwater Management Guidance for Individual Single-Family Residential Lot Development'* guidance document:

Step 1: Identify major impervious surfaces and areas ($ft^2$):

| | |
|---|---|
| Proposed Dwelling Roof: | Impervious Area = 1,836 $ft^2$ |
| Proposed new Driveway: | Impervious Area =1,614 $ft^2$ |

Step 2: Choose potential storm water management practice locations based on required regulatory setbacks. The depth to SHGWT is not required when the selected practice is a Qualifying Pervious

Area (QPA), vegetated swale, rain garden or permeable surface construction.

The stormwater management practices must meet the required minimum separation distances, or setbacks, listed in Table 1 below.

**Table 1**. Minimum Setback Distances for Rain Gardens, Infiltration Trenches, Dry Wells and Permeable Pavement Practices on Single-Family Residential Lots

| Landscape Feature | Required Setback (ft) for Infiltration Trenches and Dry Wells | Required Setback (ft) for Rain Gardens and Permeable Paving Practices |
|---|---|---|
| Public Drinking Water Supply Well – Drilled (rock), Driven, or Dug | 200 | 200 |
| Public Drinking Water Supply Well – Gravel Packed, Gravel Developed | 400 | 400 |
| Private Drinking Water Wells | 50 | 25 |
| Surface Water Drinking Water Supply Impoundment with Supply Intake | 100 | 100 |
| Tributaries that Discharge to the Surface Drinking Water Supply Impoundment | 50 | 50 |
| All Other Surface Waters | 50 | 50 |
| Up-gradient from Natural slopes > %15 | 25 | 25 |
| Down-gradient from Building Structures | 10 | 10 |
| Up-gradient from Building Structures | 10 | 10 |
| Onsite Wastewater Treatment Systems (OWTS) | 15 | 15 |
| Coastal features, coastal buffer zones, regulated freshwater wetlands | As applicable | As applicable |

The site has the following constraints:

1. buildings
2. onsite wastewater treatment systems

It is a challenge to meet all the above setbacks due to site constraints. The proposed BMPs have been designed to the 'maximum extent possible' in accordance with the *'State of Rhode Island Stormwater Management Guidance for Individual Single-Family Residential Lot Development'* using sound engineering judgement.

Step 3: Select appropriate storm water treatment practice(s) based on your site conditions and required elements for each practice. You may have to install more than one practice to meet your stormwater management requirements;

The checked box indicates which BMPs were selected:

| | Type of BMP | Justification |
|---|---|---|
| ☐ | Infiltration trench | (Proposed for Driveway) |
| ☒ | Drywell | (Proposed for Roof Runoff) |
| ☐ | Qualified pervious area | (not used) |

| | | |
|---|---|---|
| ☒ | Vegetated swale | (Proposed for Driveway and Lawn Area) |
| ☐ | Rain garden | (not used) |
| ☐ | Permeable surface | (not used) |

Step 4: Size the selected stormwater treatment practice(s) to meet the water quality volume (WQv) requirement using drainage area and soil texture information:

**BMP #1: (Underground Chambers for Roof Runoff)**

Selected BMP = underground chambers for roof runoff.

Sizing table is taken from the *'State of Rhode Island Stormwater Management Guidance for Individual Single-Family Residential Lot Development'* guidance document:

**Tables 10. and 11.** Sizing Guidance for Infiltration Trenches and Dry Wells

**Infiltration Trench / Dry Well Surface Area (square feet) in Sandy Soils (Sands, Loamy Sands and Sandy Loams)**

| Drainage Area (sq. ft.) | 6 in. deep | 12 in. deep | 18 in. deep | 24 in. deep | 30 in. deep | 36 in. deep | 48 in. deep |
|---|---|---|---|---|---|---|---|
| 100 | 24 | 16 | 12 | 10 | 8 | 7 | 5 |
| 200 | 48 | 32 | 24 | 19 | 16 | 14 | 11 |
| 300 | 72 | 48 | 36 | 29 | 24 | 21 | 16 |
| 400 | 96 | 64 | 48 | 39 | 32 | 28 | 21 |
| 500 | 119 | 80 | 60 | 48 | 40 | 34 | 27 |
| 600 | 143 | 96 | 72 | 58 | 48 | 41 | 32 |
| 700 | 167 | 112 | 84 | 67 | 56 | 48 | 38 |
| 800 | 191 | 128 | 96 | 77 | 64 | 55 | 43 |
| 900 | 215 | 144 | 108 | 87 | 72 | 62 | 48 |
| 1000 | 239 | 160 | 120 | 96 | 80 | 69 | 54 |

Infiltration Bed: Cultec chambers:

Total impervious surface area = 1,836ft$^2$

Use 10-Cultec C-100HD units in a bed of stone

Width of infiltration bed = 18.33 feet
Length of infiltration bed = 17.50 feet

Total storage provided = 0.008 acre-feet
Total storage required = 0.003 acre-feet

The impervious roof areas and the proposed infiltration bed were modeled in HydroCAD for the water quality storm of 1.2-inches, 1-Year and the 10-Year storms. The modeling shows no discharge from the infiltration system for the water quality storm, 1-Year and the 10-Year

storms, see attached HydroCAD report and table below.

**BMP #2: (Vegetated Swale for Driveway Lawn Runoff)**

Selected BMP = Vegetated Swale

Vegetated swales are open vegetated channels that are designed to capture and treat stormwater runoff. They are similar in concept and construction to a rain garden, except for their long, narrow shape and longitudinal slope. They are typically vegetated with grasses (see Appendix B, Section B.6 of the RI Stormwater Design and Installation Standards Manual for planting guidance). They may be used as a stand-alone stormwater management practice or as a conveyance to other practices.

Sizing a Vegetated Swale:

Determine the area (in square feet) of impervious surface that will drain to the swale. This is the drainage area. Use Table 5 below to choose a pre-calculated size for an 8-inch-deep swale based on the drainage area and soil texture. To do this, you may need to round up your drainage area size (don't round down to avoid under-sizing your swale). Remember that your swale should be at least 2 but less than 8 feet wide at the bottom, and the sides should have a slope no steeper than 3:1. The sizing recommendations below are based on sizing guidance in the University of Wisconsin Extension publication "Rain Gardens: a how to manual for homeowners," which can be accessed at www.dnr.state.wi.us/runoff/pdf/rg/rgmanual.pdf. Alternatively, use sizing information and equations in Chapter 5 of the RI Stormwater Design and Installation Standards Manual at www.dem.ri.gov/pubs/regs/regs/water/swmanual.pdf. Be sure to demonstrate which sizing method was used on your submitted application.

Sizing table is taken from the *'State of Rhode Island Stormwater Management Guidance for Individual Single-Family Residential Lot Development'* guidance document:

**Table 5.** Vegetated Swale Sizing Guidance

| Drainage Area (in square feet) | Bottom surface Area (in square feet) for an 8 in. deep swale | |
|---|---|---|
| | Sandy Soils* | Silty Soils* |
| 200 | 16 | 32 |
| 400 | 32 | 64 |
| 600 | 48 | 96 |
| 800 | 64 | 128 |
| 1000 | 80 | 160 |

*In lieu of a soil texture determination, use the calculated surface areas for silty soils

Vegetated Swale Calculation for Driveway:

Total impervious surface area = 1,614 $ft^2$

Use Silty Soil from Table 5: 160 $ft^2$/1000 $ft^2$ drainage area
Bottom Surface of 160 $ft^2$ per 1,000 $ft^2$ impervious area

Bottom Width of vegetated swale = 6.0 feet
Bottom Length of vegetated swale = 121.33 feet

Bottom Area Provided:728 $ft^2$
Bottom Area Required: ((1,614/1,000) X 160$ft^2$) = 258 $ft^2$

The impervious areas and the proposed vegetative swale were modeled in HydroCAD for the water quality storm of 1.2-inches. The modeling shows no discharge from the swale for the water quality storm, see attached HydroCAD report.

## 5.0 How potential wetland impacts have been avoided (pertaining to stormwater BMPs):

Post project water quality impacts will be mitigated by constructing BMPs for the dwelling and driveway, all of which were designed and constructed in accordance with the *'State of Rhode Island Stormwater Management Guidance for Individual Single-Family Residential Lot Development'* guidance document to the 'maximum extent possible'.

## 6.0 Town of South Kingstown Soil Erosion, Runoff and Sediment Control Ordinance

The Town of South Kingstown Soil Erosion, Runoff and Sediment Control Ordinance requires the post-development runoff rates do not exceed the pre-development rates for a 10-year storm. Additional storage for the 10-year storm has been added to the infiltration chambers and the vegetated swale. There is no increase in runoff rates for either the Water Quality Storm, 1-Year or the 10-Year Type III Storms, see attached HydroCAD Report.

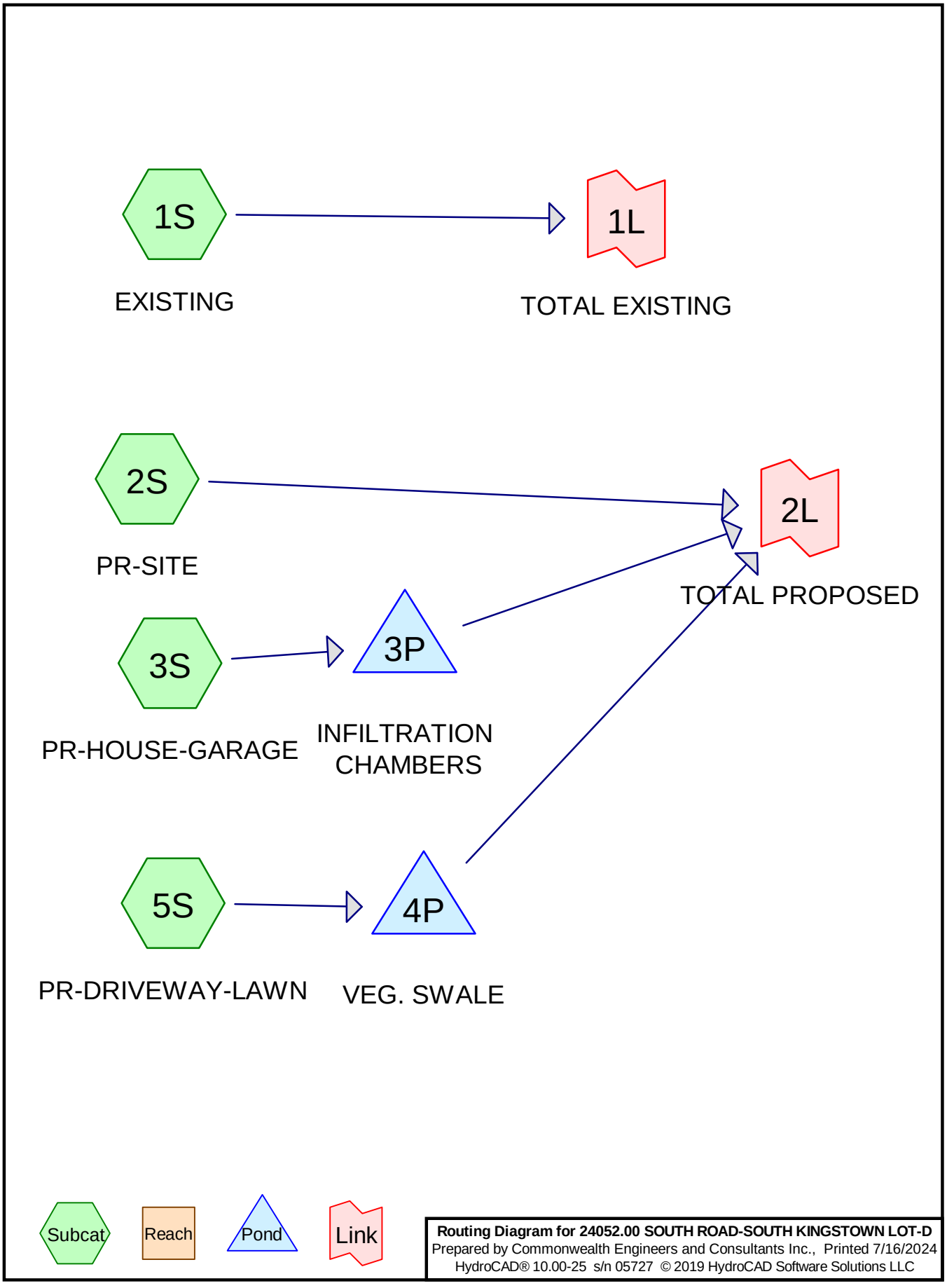
Table1: HydroCAD Modeling Summary

| | PRE-DEVELOPMENT | | POST-DEVELOPMENT | | REDUCTION | |
|---|---|---|---|---|---|---|
| | (CFS) | (ACRE FEET) | (CFS) | (ACRE FEET) | (CFS) | (ACRE FEET) |
| WATER QUALITY | 0 | 0 | 0 | 0 | 0 | 0 |
| 1-YEAR STORM | 0.03 | 0.012 | 0.02 | 0.007 | -0.01 | -0.005 |
| 10-YEAR STORM | 0.55 | 0.077 | 0.51 | 0.052 | -0.04 | -0.025 |

Appendix 1: HydroCAD Modeling Report for Water Quality, 1-Year and 10-year Storm Events

End of Report

HYDROCAD REPORTS




**Routing Diagram for 24052.00 SOUTH ROAD-SOUTH KINGSTOWN LOT-D**
Prepared by Commonwealth Engineers and Consultants Inc., Printed 7/16/2024
HydroCAD® 10.00-25 s/n 05727 © 2019 HydroCAD Software Solutions LLC

## Summary for Subcatchment 1S: EXISTING

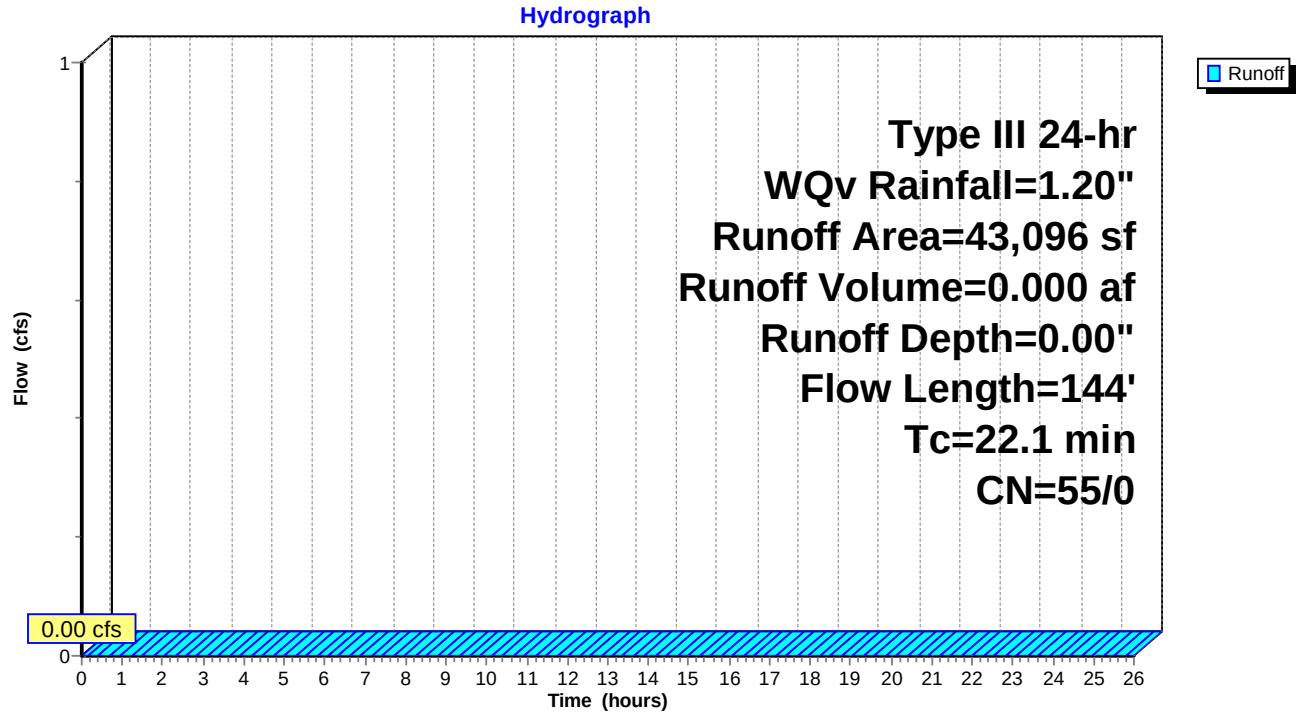
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-26.00 hrs, dt= 0.01 hrs
Type III 24-hr WQv Rainfall=1.20"

| Area (sf) | CN | Description |
|---|---|---|
| 43,096 | 55 | Woods, Good, HSG B |
| 43,096 | 55 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 21.1 | 100 | 0.0200 | 0.08 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30" |
| 1.0 | 44 | 0.0230 | 0.76 | | **Shallow Concentrated Flow,** Woodland Kv= 5.0 fps |
| 22.1 | 144 | Total | | | |

## Subcatchment 1S: EXISTING



## Summary for Subcatchment 2S: PR-SITE

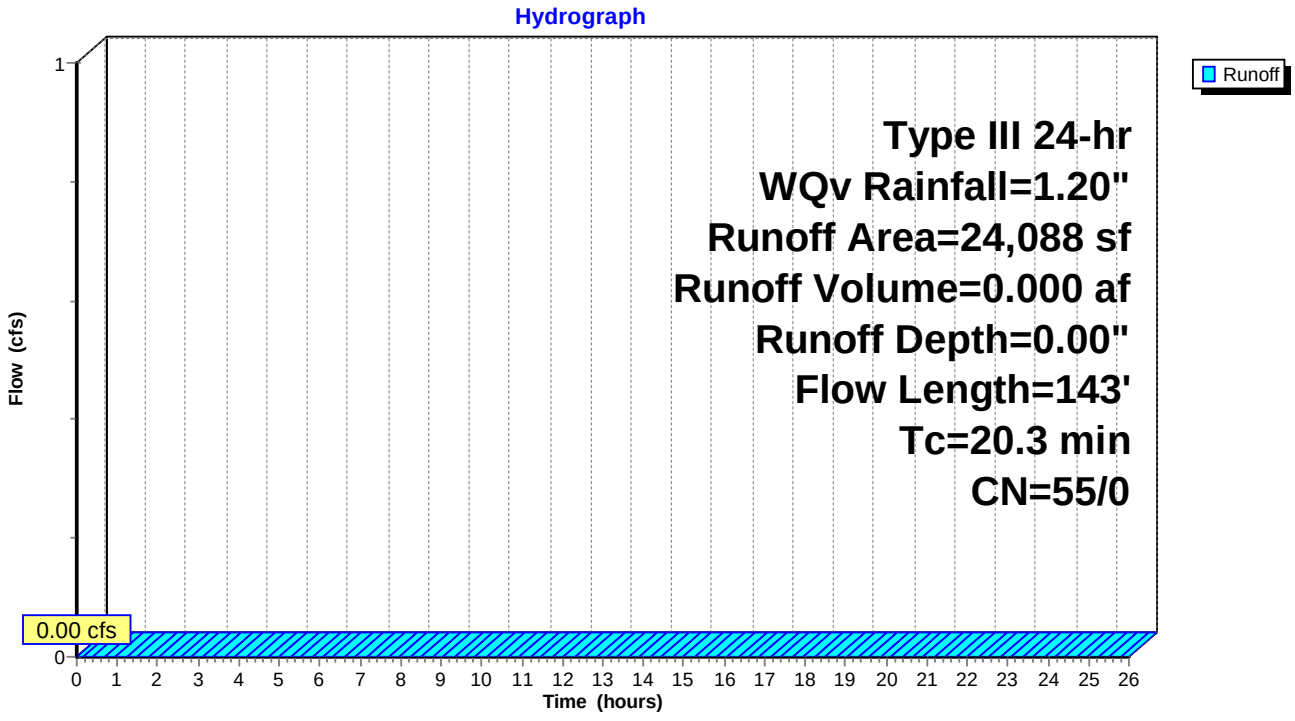
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-26.00 hrs, dt= 0.01 hrs
Type III 24-hr WQv Rainfall=1.20"

| Area (sf) | CN | Description |
|---|---|---|
| 1,736 | 61 | >75% Grass cover, Good, HSG B |
| 22,352 | 55 | Woods, Good, HSG B |
| 24,088 | 55 | Weighted Average |
| 24,088 | 55 | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 11.4 | 46 | 0.0200 | 0.07 | | **Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30" |
| 8.6 | 54 | 0.0200 | 0.10 | | **Sheet Flow,** Grass: Dense n= 0.240 P2= 3.30" |
| 0.3 | 43 | 0.0230 | 2.27 | | **Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps |
| 20.3 | 143 | Total | | | |

## Subcatchment 2S: PR-SITE



## Summary for Subcatchment 3S: PR-HOUSE-GARAGE

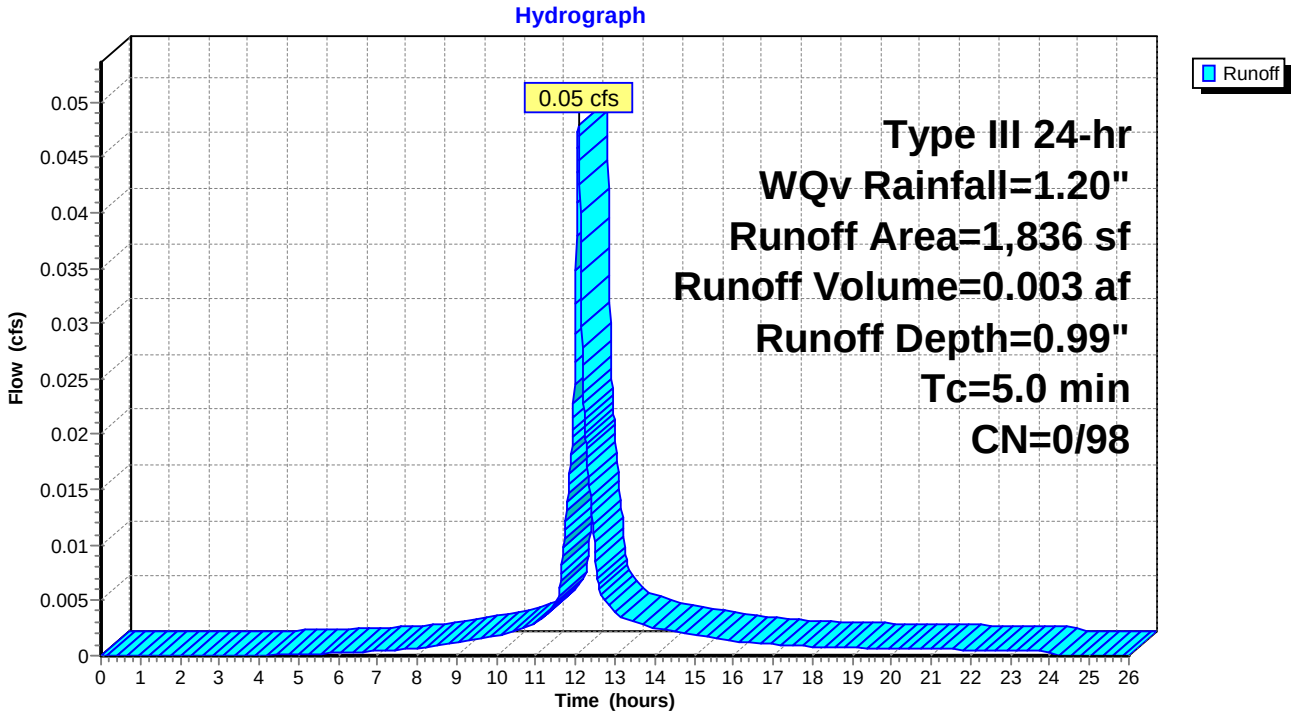
Runoff = 0.05 cfs @ 12.07 hrs, Volume= 0.003 af, Depth= 0.99"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-26.00 hrs, dt= 0.01 hrs
Type III 24-hr WQv Rainfall=1.20"

| Area (sf) | CN | Description |
|---|---|---|
| 1,836 | 98 | Roofs, HSG B |
| 1,836 | 98 | 100.00% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.0 | | | | | **Direct Entry, Minimum** |

### Subcatchment 3S: PR-HOUSE-GARAGE



## Summary for Subcatchment 5S: PR-DRIVEWAY-LAWN

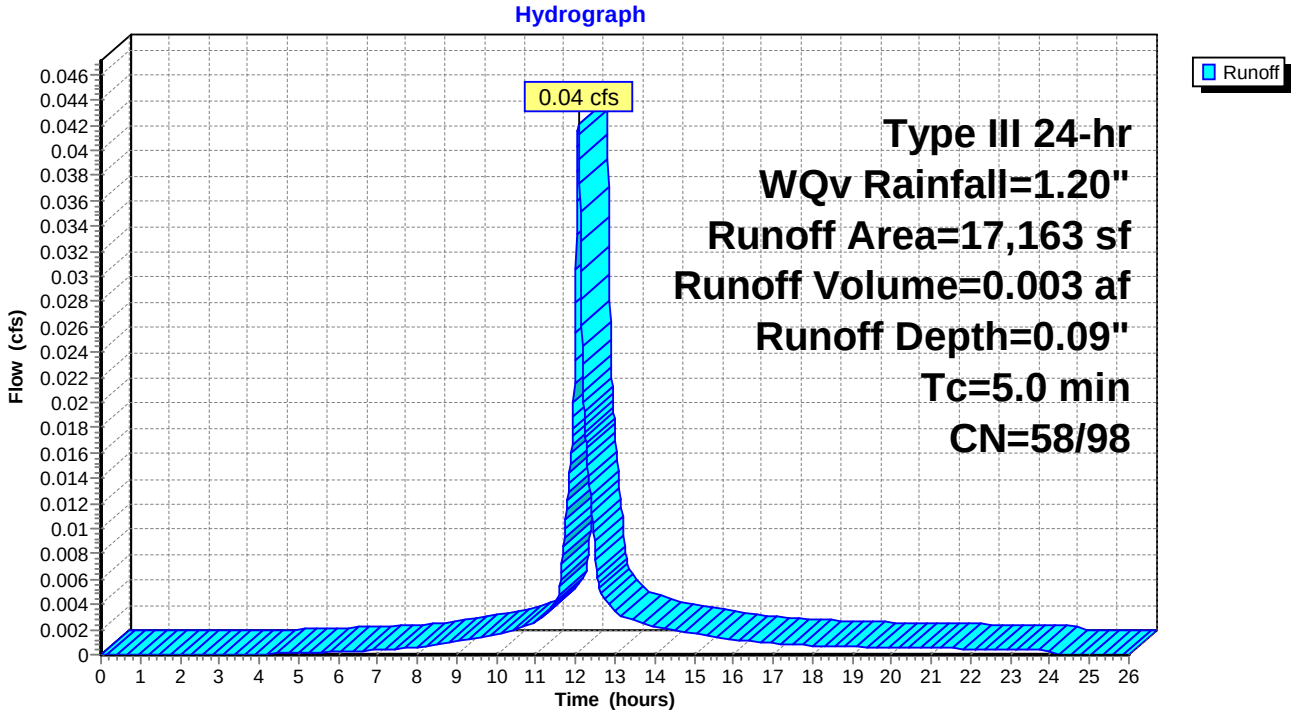
Runoff = 0.04 cfs @ 12.07 hrs, Volume= 0.003 af, Depth= 0.09"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-26.00 hrs, dt= 0.01 hrs
Type III 24-hr WQv Rainfall=1.20"

| Area (sf) | CN | Description |
|---|---|---|
| 1,614 | 98 | Paved parking, HSG B |
| 8,838 | 55 | Woods, Good, HSG B |
| 6,711 | 61 | >75% Grass cover, Good, HSG B |
| 17,163 | 61 | Weighted Average |
| 15,549 | 58 | 90.60% Pervious Area |
| 1,614 | 98 | 9.40% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|---|---|---|---|---|---|
| 5.0 | | | | | **Direct Entry,** |

## Subcatchment 5S: PR-DRIVEWAY-LAWN



## Summary for Pond 3P: INFILTRATION CHAMBERS

Inflow Area = 0.042 ac,100.00% Impervious, Inflow Depth = 0.99" for WQv event
Inflow = 0.05 cfs @ 12.07 hrs, Volume= 0.003 af
Outflow = 0.01 cfs @ 11.84 hrs, Volume= 0.003 af, Atten= 84%, Lag= 0.0 min
Discarded = 0.01 cfs @ 11.84 hrs, Volume= 0.003 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-26.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 80.39' @ 12.54 hrs Surf.Area= 0.007 ac Storage= 0.001 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 31.0 min ( 812.1 - 781.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1A | 80.00' | 0.005 af | **18.33'W x 17.50'L x 2.54'H Field A**<br>0.019 af Overall - 0.003 af Embedded = 0.015 af x 33.0% Voids |
| #2A | 81.00' | 0.003 af | **Cultec C-100HD** x 10 Inside #1<br>Effective Size= 32.1"W x 12.0"H => 1.86 sf x 7.50'L = 14.0 cf<br>Overall Size= 36.0"W x 12.5"H x 8.00'L with 0.50' Overlap<br>Row Length Adjustment= +0.50' x 1.86 sf x 5 rows |
| | | 0.008 af | Total Available Storage |

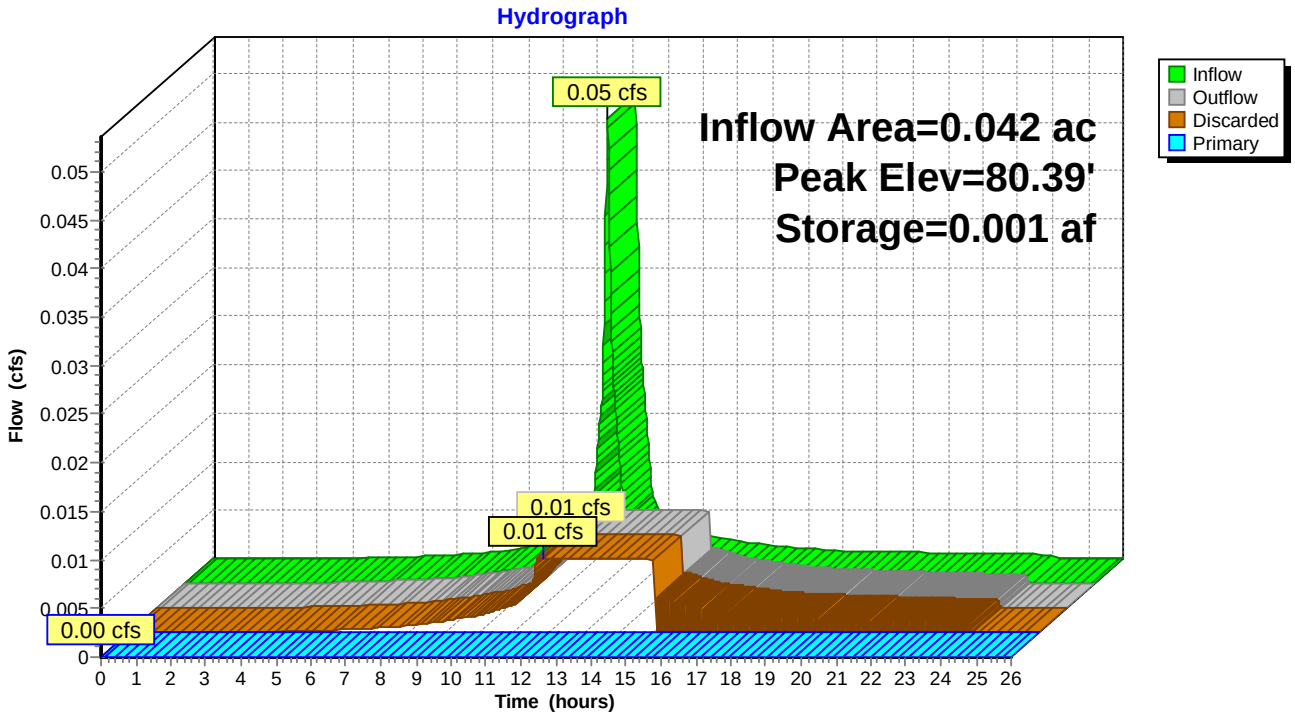
Storage Group A created with Chamber Wizard

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 80.00' | **1.020 in/hr Exfiltration over Surface area** |
| #2 | Primary | 82.50' | **8.0' long x 1.0' breadth Broad-Crested Rectangular Weir**<br>Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00<br>Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32 |

**Discarded OutFlow** Max=0.01 cfs @ 11.84 hrs HW=80.03' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.01 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=80.00' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Pond 3P: INFILTRATION CHAMBERS



## Summary for Pond 4P: VEG. SWALE

Inflow Area = 0.394 ac, 9.40% Impervious, Inflow Depth = 0.09" for WQv event
Inflow = 0.04 cfs @ 12.07 hrs, Volume= 0.003 af
Outflow = 0.02 cfs @ 12.25 hrs, Volume= 0.003 af, Atten= 58%, Lag= 10.8 min
Discarded = 0.02 cfs @ 12.25 hrs, Volume= 0.003 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-26.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 81.03' @ 12.25 hrs Surf.Area= 749 sf Storage= 19 cf

Plug-Flow detention time= 9.3 min calculated for 0.003 af (100% of inflow)
Center-of-Mass det. time= 9.3 min ( 790.4 - 781.1 )

| Volume | Invert | Avail.Storage | Storage Description |
|---|---|---|---|
| #1 | 81.00' | 670 cf | **Custom Stage Data (Prismatic)** Listed below (Recalc) |

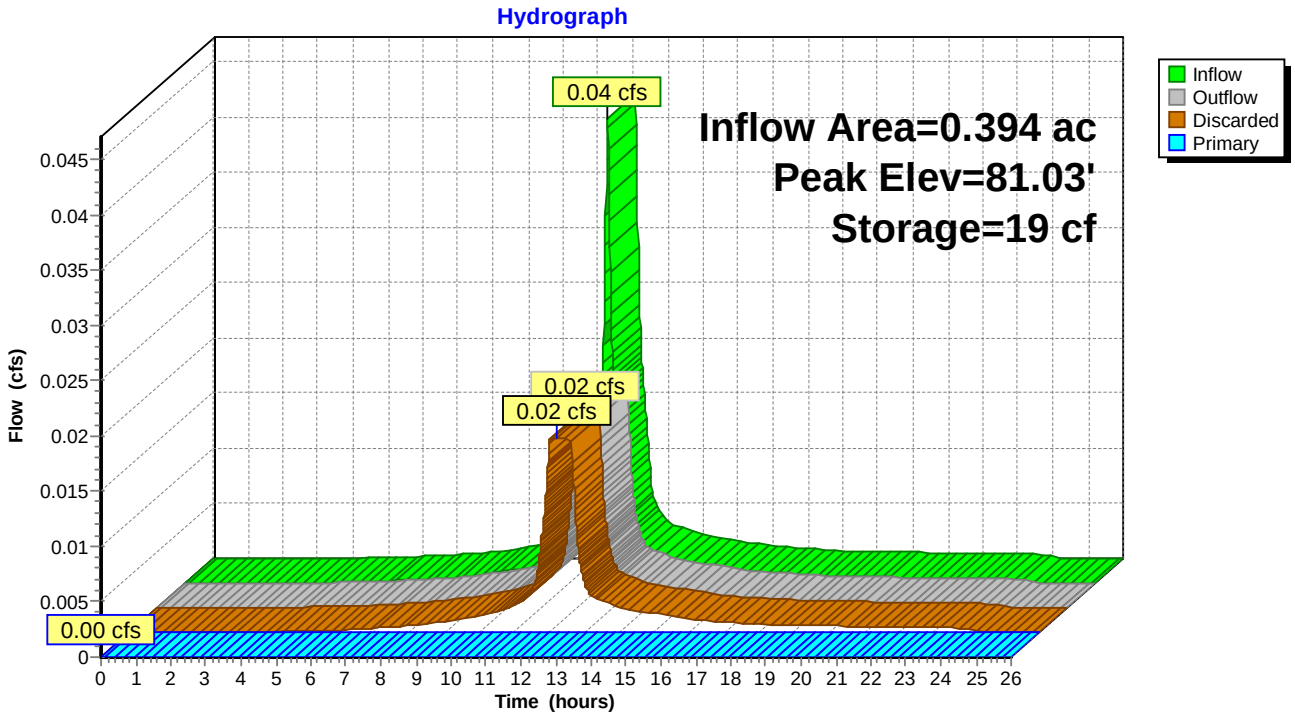
| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---|---|---|---|
| 81.00 | 728 | 0 | 0 |
| 81.67 | 1,271 | 670 | 670 |

| Device | Routing | Invert | Outlet Devices |
|---|---|---|---|
| #1 | Discarded | 81.00' | **1.020 in/hr Exfiltration over Surface area** Phase-In= 0.01' |
| #2 | Primary | 81.60' | **120.0' long x 0.5' breadth Broad-Crested Rectangular Weir** |
| | | | Head (feet) 0.20 0.40 0.60 0.80 1.00 |
| | | | Coef. (English) 2.80 2.92 3.08 3.30 3.32 |

**Discarded OutFlow** Max=0.02 cfs @ 12.25 hrs HW=81.03' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=81.00' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

## Pond 4P: VEG. SWALE

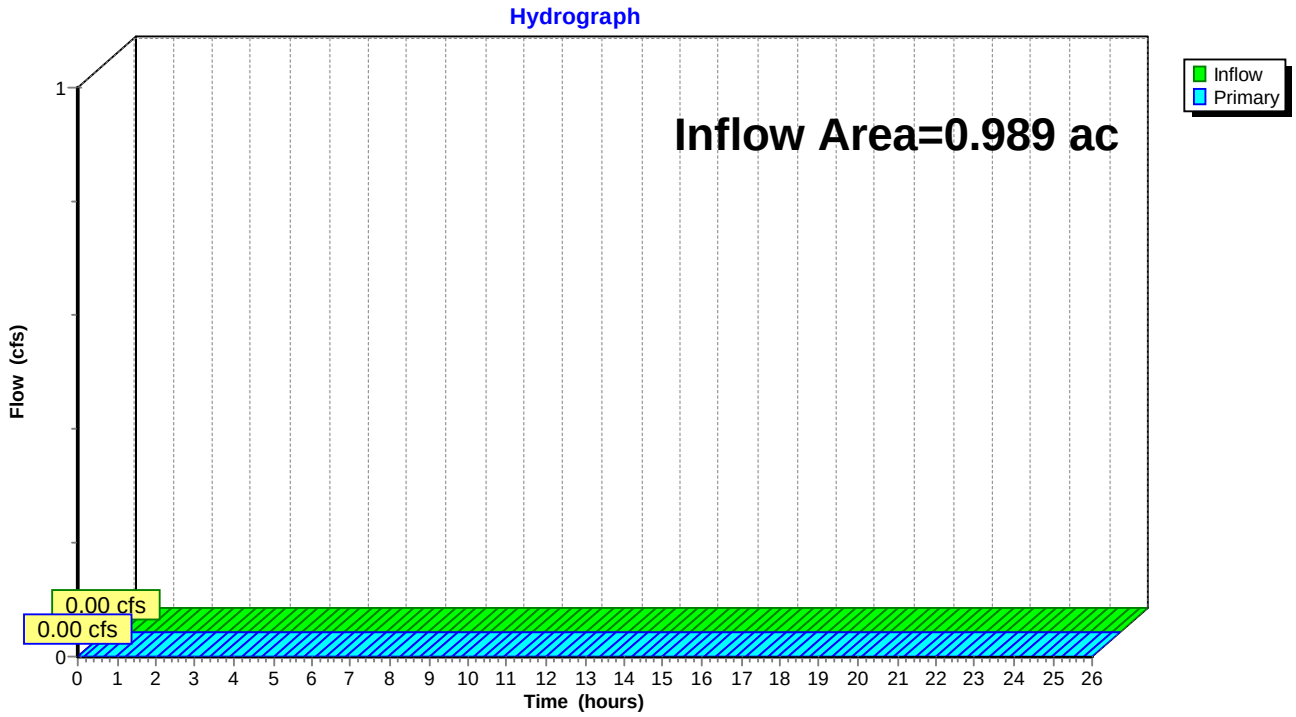


## Summary for Link 1L: TOTAL EXISTING

Inflow Area = 0.989 ac, 0.00% Impervious, Inflow Depth = 0.00" for WQv event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-26.00 hrs, dt= 0.01 hrs

## Link 1L: TOTAL EXISTING

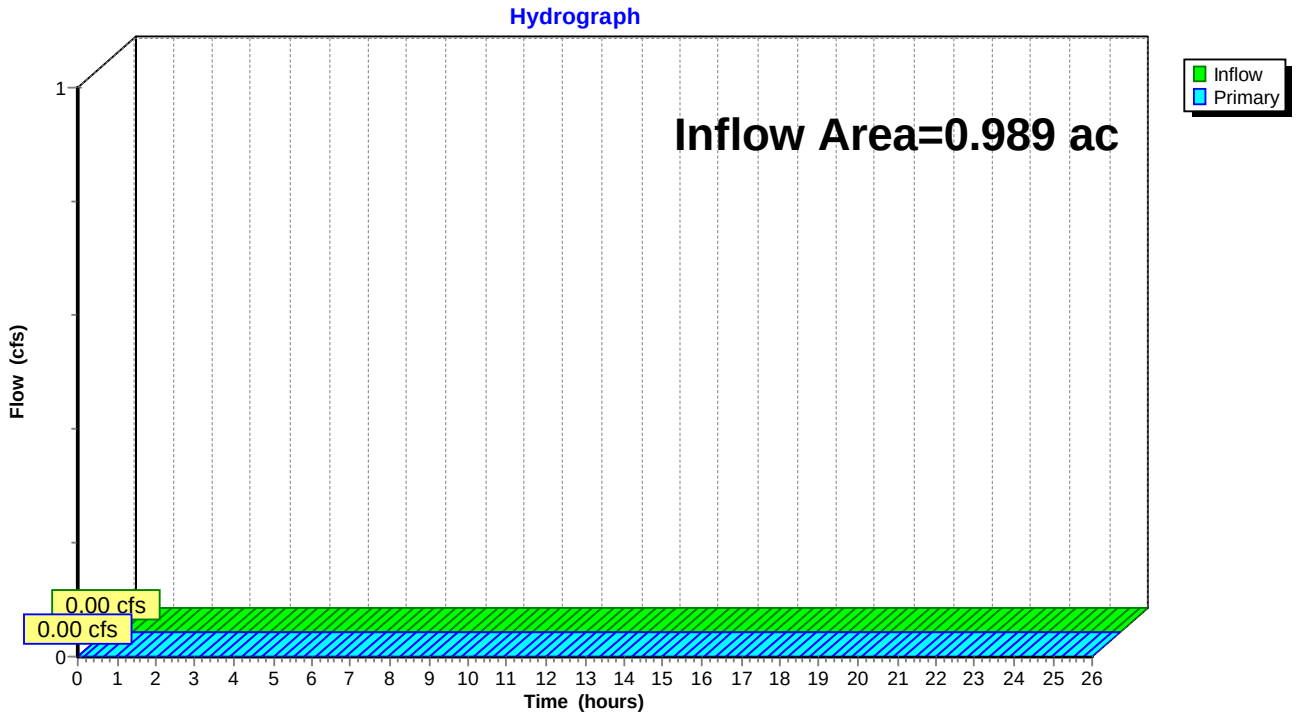


## Summary for Link 2L: TOTAL PROPOSED

Inflow Area = 0.989 ac, 8.01% Impervious, Inflow Depth = 0.00" for WQv event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-26.00 hrs, dt= 0.01 hrs

## Link 2L: TOTAL PROPOSED



Time span=0.00-26.00 hrs, dt=0.01 hrs, 2601 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment 1S: EXISTING** Runoff Area=43,096 sf 0.00% Impervious Runoff Depth=0.14"
Flow Length=144' Tc=22.1 min CN=55 Runoff=0.03 cfs 0.012 af

**Subcatchment 2S: PR-SITE** Runoff Area=24,088 sf 0.00% Impervious Runoff Depth=0.14"
Flow Length=143' Tc=20.3 min CN=55 Runoff=0.02 cfs 0.007 af

**Subcatchment 3S: PR-HOUSE-GARAGE** Runoff Area=1,836 sf 100.00% Impervious Runoff Depth=2.57"
Tc=5.0 min CN=98 Runoff=0.12 cfs 0.009 af

**Subcatchment 5S: PR-DRIVEWAY-LAWN** Runoff Area=17,163 sf 9.40% Impervious Runoff Depth=0.29"
Tc=5.0 min CN=61 Runoff=0.06 cfs 0.010 af

**Pond 3P: INFILTRATION CHAMBERS** Peak Elev=81.21' Storage=0.004 af Inflow=0.12 cfs 0.009 af
Discarded=0.01 cfs 0.009 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.009 af

**Pond 4P: VEG. SWALE** Peak Elev=81.09' Storage=67 cf Inflow=0.06 cfs 0.010 af
Discarded=0.02 cfs 0.010 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.010 af

**Link 1L: TOTAL EXISTING** Inflow=0.03 cfs 0.012 af
Primary=0.03 cfs 0.012 af

**Link 2L: TOTAL PROPOSED** Inflow=0.02 cfs 0.007 af
Primary=0.02 cfs 0.007 af

**Total Runoff Area = 1.978 ac Runoff Volume = 0.037 af Average Runoff Depth = 0.23"**
**96.00% Pervious = 1.899 ac 4.00% Impervious = 0.079 ac**

Time span=0.00-26.00 hrs, dt=0.01 hrs, 2601 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment 1S: EXISTING** Runoff Area=43,096 sf 0.00% Impervious Runoff Depth=0.93"
Flow Length=144' Tc=22.1 min CN=55 Runoff=0.55 cfs 0.077 af

**Subcatchment 2S: PR-SITE** Runoff Area=24,088 sf 0.00% Impervious Runoff Depth=0.93"
Flow Length=143' Tc=20.3 min CN=55 Runoff=0.32 cfs 0.043 af

**Subcatchment 3S: PR-HOUSE-GARAGE** Runoff Area=1,836 sf 100.00% Impervious Runoff Depth=4.66"
Tc=5.0 min CN=98 Runoff=0.21 cfs 0.016 af

**Subcatchment 5S: PR-DRIVEWAY-LAWN** Runoff Area=17,163 sf 9.40% Impervious Runoff Depth=1.31"
Tc=5.0 min CN=61 Runoff=0.57 cfs 0.043 af

**Pond 3P: INFILTRATION CHAMBERS** Peak Elev=82.50' Storage=0.008 af Inflow=0.21 cfs 0.016 af
Discarded=0.01 cfs 0.012 af Primary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.012 af

**Pond 4P: VEG. SWALE** Peak Elev=81.61' Storage=591 cf Inflow=0.57 cfs 0.043 af
Discarded=0.03 cfs 0.031 af Primary=0.20 cfs 0.009 af Outflow=0.22 cfs 0.040 af

**Link 1L: TOTAL EXISTING** Inflow=0.55 cfs 0.077 af
Primary=0.55 cfs 0.077 af

**Link 2L: TOTAL PROPOSED** Inflow=0.51 cfs 0.052 af
Primary=0.51 cfs 0.052 af

**Total Runoff Area = 1.978 ac Runoff Volume = 0.179 af Average Runoff Depth = 1.09"**
**96.00% Pervious = 1.899 ac 4.00% Impervious = 0.079 ac**