STORMWATER SITE PLANNING, ANALYSIS AND DESIGN REPORT

FOR

SIENA CONDOMINIUMS

A.P. 45, LOTS 10, 11, 12 & 13

MAIN STREET AND JURCZYK COURT

COVENTRY, RHODE ISLAND

OWNER

STEPHEN T. JURCZYK

PO BOX 434

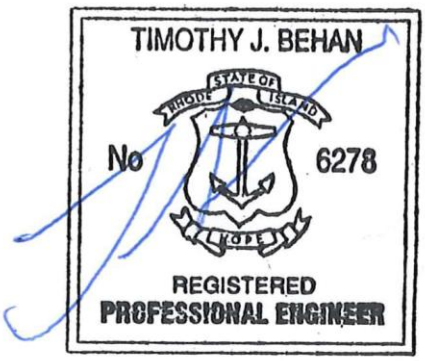
COVENTRY, RHODE ISLAND 02816

APPLICANT:

BOULDER HILL DEVELOPMENT, LLC

57 PINE RIDGE DRIVE

CRANSTON, RHODE ISLAND 02921



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INTRODUCTION

On behalf of Boulder Hill Development, LLC, Commonwealth Engineers & Consultants, Inc. (CEC) has prepared the following Rhode Island Department of Environmental Management (RIDEM) Stormwater Site Planning, Analysis and Design Report for the Siena Condominiums development located at Main Street and Jurczyk Court in Coventry, Rhode Island. This report has been prepared in accordance with the requirements of and guidance provided in the following:

- RIDEM Rules & Regulations for Governing the Administration and Enforcement of the Fresh Water Wetlands Act, issued 07/01/2022 (hereinafter referred to as the "FWW Regulations")
- Rhode Island Stormwater Design and Installation Standards Manual, issued March 2015 (hereinafter referred to as the "RISDISM"),
- RIPDES Construction General Permit, issued 09/01/2024,
- RISDISM Stormwater Management Checklist (hereinafter referred to as the "Checklist")

I-A - General Project Narrative

The following are a general description of the existing conditions on and near the subject parcel, and a detailed description of the proposed development within a portion of same.

General Description of Project: The applicant proposes to construct eight 1,924 sq. ft. duplex structures for a total of sixteen units on approximately 2.2 acres of land as a Comprehensive Permit. Primary access to the proposed development will be from Main Street and a second means of access will be provided from Ken Ray Drive. The access to Ken Ray Drive will require an easement from the Town of Coventry since a narrow strip of their land exists between subject property and the street right-of-way. The development will include private streets, a proposed mail and maintenance building and underground utilities.

Existing Property: The subject parcels are located the VCM (Village Main Street) District associated with Main Street (Route 117) on the east side of Coventry. The existing site includes Lots 10, 11, 12 & 13 in A.P. 45 and totals 2.2 acres (+/-) and contains five (5) existing buildings, two (2) sheds and a greenhouse that are in varying states of deterioration. All the existing structures will be removed and disposed of as part of this development.

Abutting Properties: The properties to the east and west are older small residential structures on small lots. The abutting property to the north is owned by the Town of Coventry and is developed as an athletics field complex. The proposed development is bounded to the south by Main Street (Route 117).

Natural Resources in the Area: There are no wetlands on the subject property, and all soils are upland soils. The South Branch Pawtuxet River is situated on the south side of Main Street behind the existing commercial and residential development on Main Street.

Flood Zones: The subject property is situated in "Zone X" (an area of minimal flooding) as defined by Federal Emergency Management Agency map #44003C0104H, effective date October 2, 2015.

Topography: The topography generally slopes from the north to the south at an approximate slope of 5 percent, refer to existing and proposed plan. The northern portion of the site is a local high point. From the northern property line, the ground slopes to the municipal sports field parking lot. The parcels are primarily lawn with some mixed hardwood specie trees at the perimeters of the lots.

Drainage Divides and Soils: The RIDEM GIS map web site indicates the project site is situated in the Pawtuxet River South branch drainage basin. The USDA soil map shows the site is primarily underlain with Narragansett Silt Loam (NaB) with Hinkley Loamy Sand (HkC) located to the south and Urban Land/Urban Land Complex (Ur, UD) to the north and to the southeast.

The test hole explorations found loam and subsoil at various depths over fine sand. Medium sand and fine gravel were located beneath the fine sand across the site. Ten (10) test holes excavated at the site ranged from 11-feet to 13-feet below ground surface. Groundwater was not encountered at any test hole locations.

Parking: Required number of parking spaces have been provided per the Town of Coventry Parking Regulation for the Proposed Residential Structures and roadway width has been provided to meet the fire marshal requirements, refer to the Proposed Site plan.

Stormwater Management System: Management of stormwater runoff from the proposed development has been designed in accordance with the Rhode Island "Stormwater Management Design and Installation Rules" (RISMDIR), latest revision, and supplemented with the Town's requirements. Generally, stormwater management and treatment are provided in multiple locations throughout the proposed development.

The stormwater management and treatment systems consist of eleven (11) areas of infiltration chambers (BMPs) across the site. The locations and details of the specific elements of the stormwater management systems are contained in the attached plans and calculations for each BMP design are included in Appendix D.

Wastewater Disposal System: The applicant is proposing to connect to the Town of Coventry public sewer system in Main Street.

Potable Water Source: The applicant is proposing to connect to the Kent County Water Authority water main located in Main Street.

Use of Pesticides, Herbicides & Fertilizers: It is not anticipated that pesticides or herbicides will be proposed for use as part of this construction project. Fertilizers will be used at conventional rates in the new landscape areas.

Erosion Control Practices: A detailed soil erosion and sedimentation control (SESC) plan sheet has been prepared in conformance with RI Stormwater Handbook requirements, and a written SESC plan has been prepared in accordance with the RISMDIR.

I-B – Proposed Stormwater Collection and Treatment system

Stormwater Modeling:

The existing and proposed conditions were modeled in HydroCAD, and the results are contained in Appendix A and Appendix B. The majority of the site, Sub-Area-1, flows to Design Point-1 (DP-1), located at the southern property line at Main Street. The area that contains the existing homes located between the site and main street was modeled Subarea-3, which discharges to Design Point-

3 (DP-3). The northeast corner of the Site discharges to the east as Subarea-2 to Design Point-2 (DP-2).

Stormwater System Design:

The stormwater collection and treatment systems were designed to meet the criteria set forth by RIDEM. The system features the following:

- The minimum standards for Groundwater Recharge, Water Quality Volume, Conveyance and Natural Channel Protection, Overbank Flood Protection, Construction Erosion and Sedimentation Control and Stormwater Management System Operation and Maintenance have been met as well as the additional standards listed in Chapter 3.

- The proposed design includes infiltration chambers. The infiltration systems are located a minimum of 4-feet above the estimated seasonal high groundwater. Detailed elevations for the infiltration chamber systems are provided in the construction details sheets of the construction plans.

- The proposed Units K, L, M, and N will have walkout basements. The remaining units will have basements with interior stair and bulkhead access.

- The impervious areas of the developed Site will drain to one of the eleven (11) BMPs designed to treat water quality volume. Seven (7) of these BMP's (infiltration chambers) will have Isolator Rows Plus for pretreatment. The larger storms will bypass the isolator rows. Four (4) of the infiltration chamber BMPs accept roof runoff only and do not require the isolator rows.

- Sediments are captured in the Isolator Row PLUS protecting the storage area of the adjacent stone from sediment accumulation. ADS geotextile fabric is placed between the stone and the Isolator Row PLUS chambers. The woven geotextile provides a media for stormwater filtration, a durable surface for maintenance, prevents scour of the underlying stone and remains intact during high pressure jetting.

  The Isolator Row PLUS is designed to capture the "first flush" runoff and offers the versatility to be sized on a volume basis or a flow-rate basis. An upstream manhole not only provides access to the Isolator Row PLUS but includes a high/low concept such that stormwater flow rates or volumes that exceed the capacity of the Isolator Row PLUS bypass through a manifold to the other chambers. This is achieved with an elevated bypass manifold. This creates a differential between the Isolator Row PLUS row of chambers and the manifold to the rest of the system, thus allowing for settlement time in the Isolator Row PLUS. After Stormwater flows through the Isolator Row PLUS and into the rest of the StormTech chamber system it is exfiltrated into the soils below.

- The attached HydroCAD analysis reports (Appendix A and B) show that the proposed condition discharge rates and volumes are less than the existing condition discharge rates and volumes, see summary table below.

TABLE 1: HYDROCAD MODELING SUMMARY TABLE								
EXISTING CONDITIONS STORMWATER SUMMARY								
	DP-1		DP-2		DP-3		TOTAL	
	(CFS)	(AC-FT)	(CFS)	(AC-FT)	(CFS)	(AC-FT)	(CFS)	(AC-FT)
WQ STORM	0.08	0.008	0.02	0.002	0.11	0.009	0.21	0.020
1-YEAR STORM	0.14	0.029	0.02	0.008	0.12	0.015	0.24	0.052
10-YEAR STORM	1.35	0.148	0.46	0.055	0.71	0.061	2.39	0.264
25-YEAR STORM	2.54	0.257	1.00	0.102	1.22	0.100	4.54	0.458
100-YEAR STORM	5.01	0.483	2.17	0.204	2.22	0.179	9.04	0.866

PROPOSED CONDITIONS STORMWATER SUMMARY								
	DP-1		DP-2		DP-3		TOTAL	
	(CFS)	(AC-FT)	(CFS)	(AC-FT)	(CFS)	(AC-FT)	(CFS)	(AC-FT)
WQ STORM	0.00	0.000	0.00	0.000	0.110	0.009	0.12	0.010
1-YEAR STORM	0.14	0.002	0.02	0.005	0.120	0.015	0.26	0.022
10-YEAR STORM	0.59	0.021	0.25	0.025	0.710	0.061	1.40	0.107
25-YEAR STORM	0.89	0.037	0.47	0.043	1.220	0.100	2.35	0.181
100-YEAR STORM	2.38	0.126	0.93	0.082	2.220	0.179	4.96	0.386

PROPOSED CONDITIONS STORMWATER REDUCTION SUMMARY								
	DP-1		DP-2		DP-3		TOTAL	
	(CFS)	(AC-FT)	(CFS)	(AC-FT)	(CFS)	(AC-FT)	(CFS)	(AC-FT)
WQ STORM	-0.08	-0.008	-0.02	-0.002	0.00	0.000	-0.09	-0.010
1-YEAR STORM	0.00	-0.027	0.00	-0.003	0.00	0.000	0.02	-0.030
10-YEAR STORM	-0.76	-0.127	-0.21	-0.030	0.00	0.000	-0.99	-0.157
25-YEAR STORM	-1.65	-0.220	-0.53	-0.059	0.00	0.000	-2.19	-0.277
100-YEAR STORM	-2.63	-0.357	-1.24	-0.122	0.00	0.000	-4.08	-0.480

Technical Justification Required for BMPs:

As several of the proposed BMPs do not meet all of the requirements listed in the "Rules", the following section will address each instance when the design is not in strict conformance with the rules, the associated/expected consequences that could occur if the Rule is not adhered to, and the reasoning behind the contention that associated/expected consequences have been ameliorated by the proposed BMP being designed to the maximum extent practicable.

BMP-2: Infiltration Chambers-Section 5.3: Stormwater Infiltration Practices

As shown in Table 5.2, the minimum Horizontal Setbacks from Infiltration Facilities for an infiltration facility must be 25-feet down gradient and 50-feet upgradient from structures. BMP-2 is located 15.6 feet side gradient from units M & N. The basement slab of Units M & N is above

the top of the BMP ponding elevation. BMP-2 is located 19.8-feet side gradient of Units O & P and the ponding elevation is greater than the basement slab elevation. A foundation drain, both interior and exterior, has been designed to prevent the BMP from impacting the basement of Units O & P.

BMP-4: Infiltration Chambers-Section 5.3: Stormwater Infiltration Practices
As shown in Table 5.2, the minimum Horizontal Setbacks from Infiltration Facilities for an infiltration facility must be 25-feet down gradient and 50-feet upgradient from structures. BMP-4 is located 9.0 feet side gradient from units O & P, and the ponding elevation is greater than the basement slab elevation by 0.50-feet. A foundation drain, both interior and exterior, has been designed to prevent the BMP from impacting the basement of Units O & P.

BMP-8A & 8B: Infiltration Chambers-Section 5.3: Stormwater Infiltration Practices
As shown in Table 5.2, the minimum Horizontal Setbacks from Infiltration Facilities for an infiltration facility must be 25-feet down gradient and 50-feet upgradient from structures. BMP-8A an 8B are located approximately 19-feet down gradient of Units A & B and Units C & D. The basement slabs and top of ponding elevations are equal. These BMPs are also upgradient of Units K & L and Units M & N by 36-feet and 38-feet, respectively. A foundation drain, both interior and exterior, has been designed to prevent the BMPs from impacting the basements of Units K & L and Units M & N, which also have walkout basements.

BMP-9A & 9B: Infiltration Chambers-Section 5.3: Stormwater Infiltration Practices
As shown in Table 5.2, the minimum Horizontal Setbacks from Infiltration Facilities for an infiltration facility must be 25-feet down gradient and 50-feet upgradient from structures. BMP-9A and 9B are located approximately 23-feet and 15-feet down gradient of Units G & H and Units I & J. The basement slabs for Units G & H are equal to the top of ponding in BMP-9A and the basement slab for I & J is lower than the top of ponding elevation. A foundation drain, both interior and exterior, has been designed to prevent the BMP-9B from impacting the basements of Units I & J. BMP-9A and 9B are located approximately 41.5-feet and 44.3-feet up gradient of Units O & P. A foundation drain, both interior and exterior, has been designed to prevent the BMPs from impacting the basements of Units O & P.

Conclusion

The stormwater collection and treatment systems meet the intent of the design criteria set forth by RIDEM. The system will protect the natural resources in the area by providing pollution protection and reduced peak flow rates and volumes.

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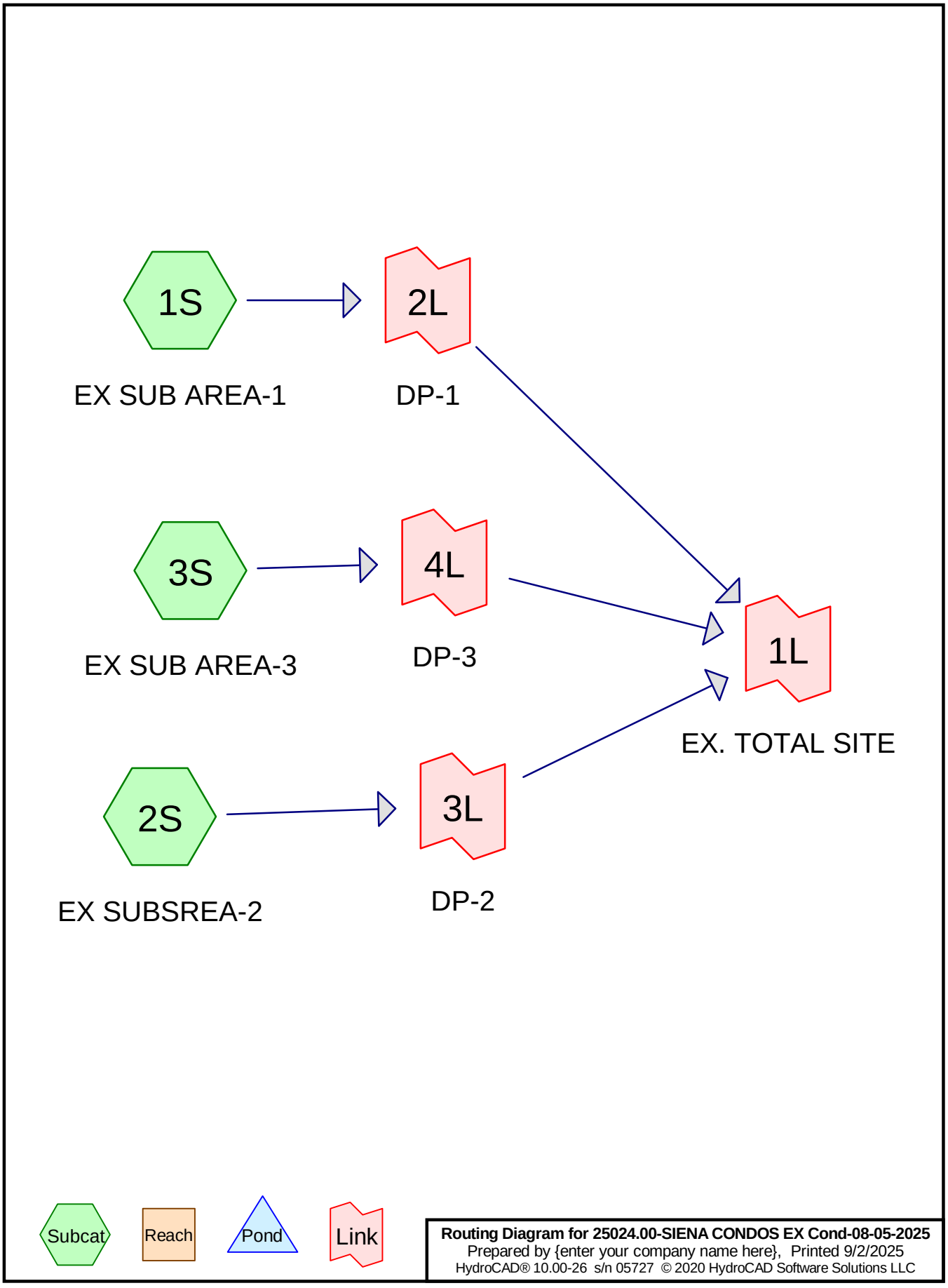
Appendix A

Existing Conditions HydroCAD Printouts



Routing Diagram for 25024.00-SIENA CONDOS EX Cond-08-05-2025
Prepared by {enter your company name here}, Printed 9/2/2025
HydroCAD® 10.00-26 s/n 05727 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment 1S: EX SUB AREA-1

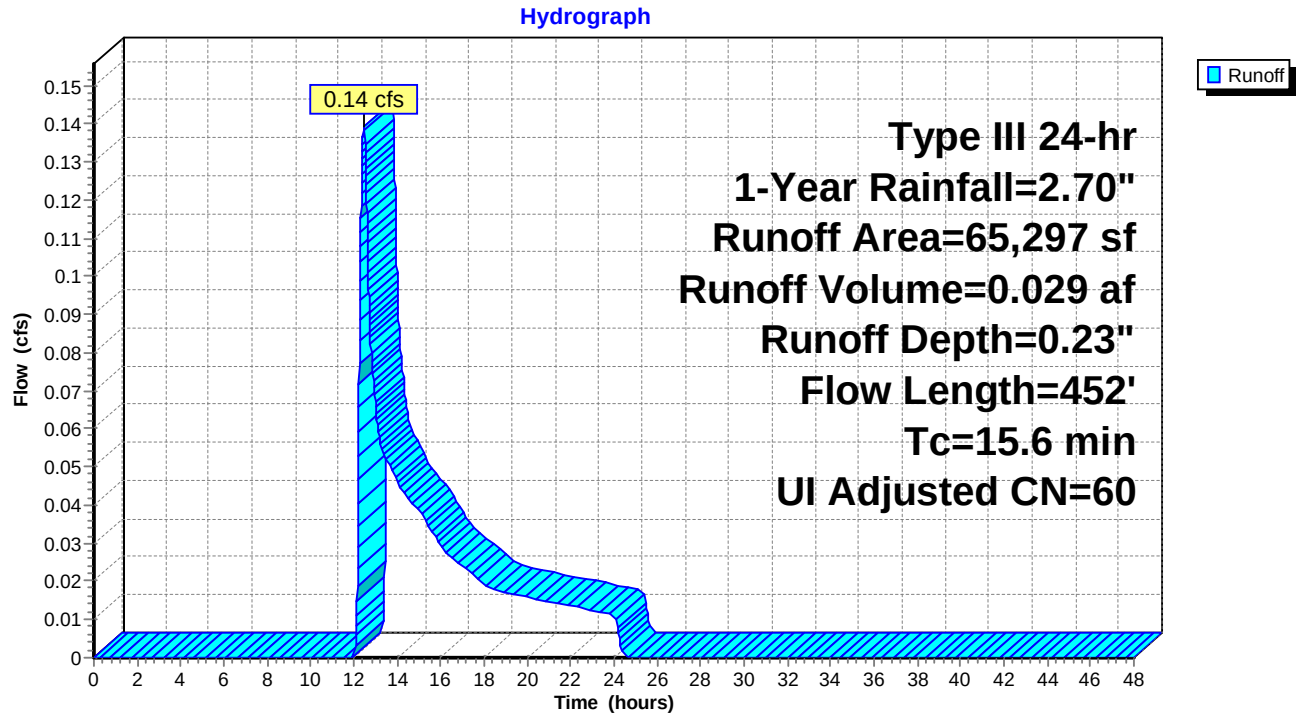
Runoff = 0.14 cfs @ 12.46 hrs, Volume= 0.029 af, Depth= 0.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.70"

Area (sf)	CN	Adj	Description
1,665	32		Woods/grass comb., Good, HSG A
4,373	98		Unconnected roofs, HSG B
28,687	58		Woods/grass comb., Good, HSG B
2,473	85		Gravel roads, HSG B
25,648	61		>75% Grass cover, Good, HSG B
2,451	39		>75% Grass cover, Good, HSG A
65,297	62	60	Weighted Average, UI Adjusted
60,924	59	59	93.30% Pervious Area
4,373	98	98	6.70% Impervious Area
4,373			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0600	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
2.0	352	0.0400	3.00		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
15.6	452	Total			

Subcatchment 1S: EX SUB AREA-1



Summary for Subcatchment 2S: EX SUBSREA-2

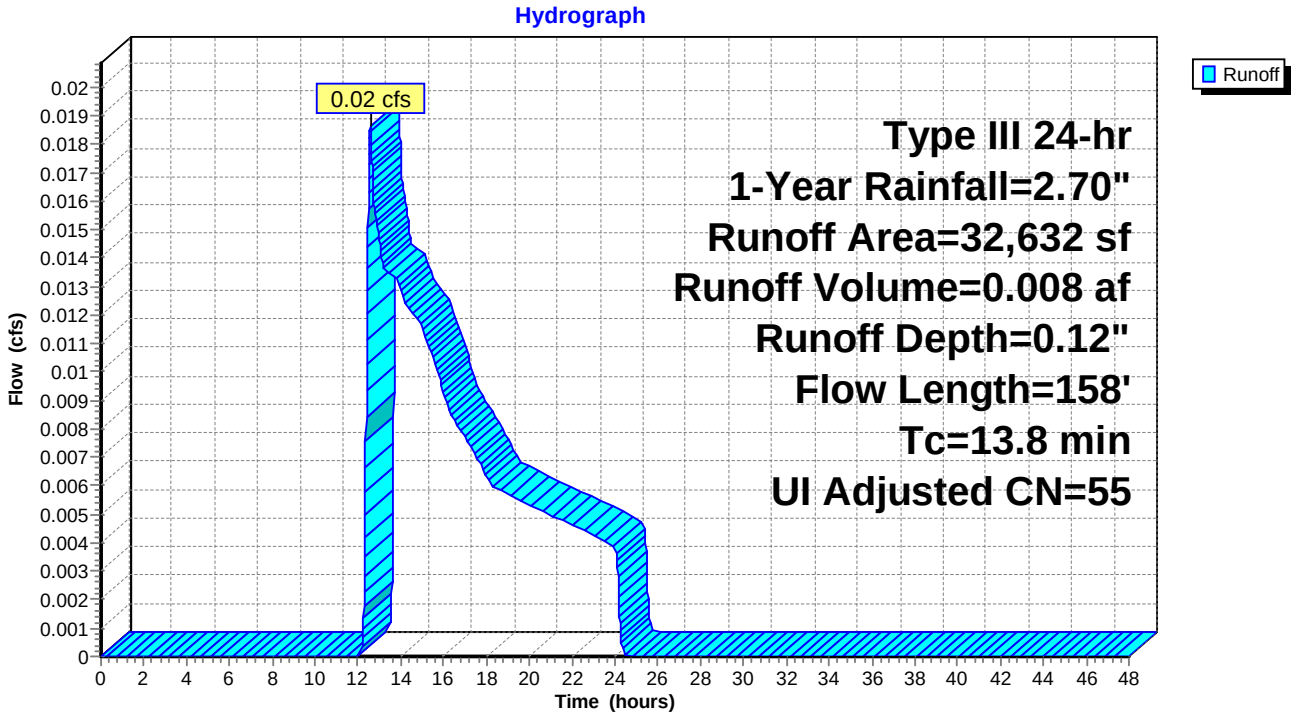
Runoff = 0.02 cfs @ 12.56 hrs, Volume= 0.008 af, Depth= 0.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.70"

Area (sf)	CN	Adj	Description
1,163	98		Unconnected roofs, HSG B
5,546	32		Woods/grass comb., Good, HSG A
650	85		Gravel roads, HSG B
25,273	58		Woods/grass comb., Good, HSG B
32,632	56	55	Weighted Average, UI Adjusted
31,469	54	54	96.44% Pervious Area
1,163	98	98	3.56% Impervious Area
1,163			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0600	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.30"
0.2	58	0.1030	4.81		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
13.8	158	Total			

Subcatchment 2S: EX SUBSREA-2



Summary for Subcatchment 3S: EX SUB AREA-3

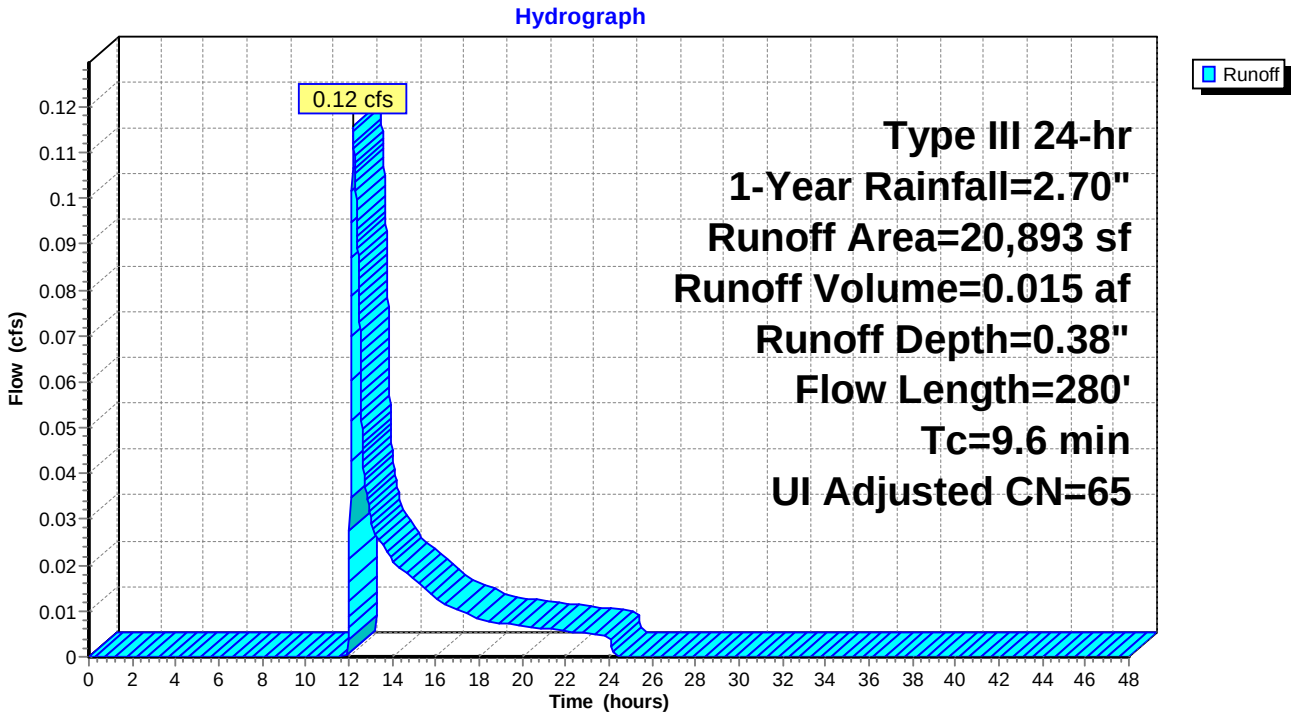
Runoff = 0.12 cfs @ 12.18 hrs, Volume= 0.015 af, Depth= 0.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.70"

Area (sf)	CN	Adj	Description
15,875	61		>75% Grass cover, Good, HSG B
5,018	98		Unconnected pavement, HSG B
20,893	70	65	Weighted Average, UI Adjusted
15,875	61	61	75.98% Pervious Area
5,018	98	98	24.02% Impervious Area
5,018			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	100	0.0800	0.21		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.30"
1.5	180	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.6	280	Total			

Subcatchment 3S: EX SUB AREA-3

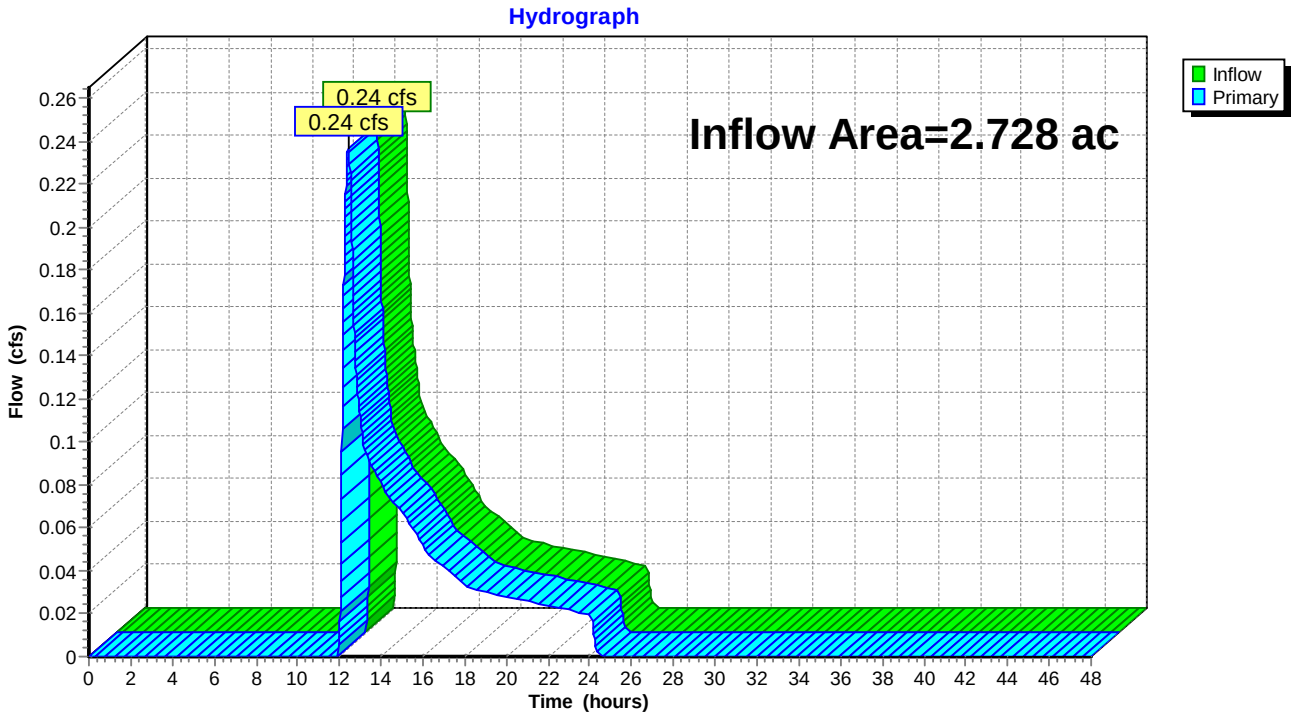


Summary for Link 1L: EX. TOTAL SITE

Inflow Area = 2.728 ac, 8.88% Impervious, Inflow Depth = 0.23" for 1-Year event
Inflow = 0.24 cfs @ 12.43 hrs, Volume= 0.052 af
Primary = 0.24 cfs @ 12.43 hrs, Volume= 0.052 af, Atten= 0%, Lag= 0.0 min

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

Link 1L: EX. TOTAL SITE

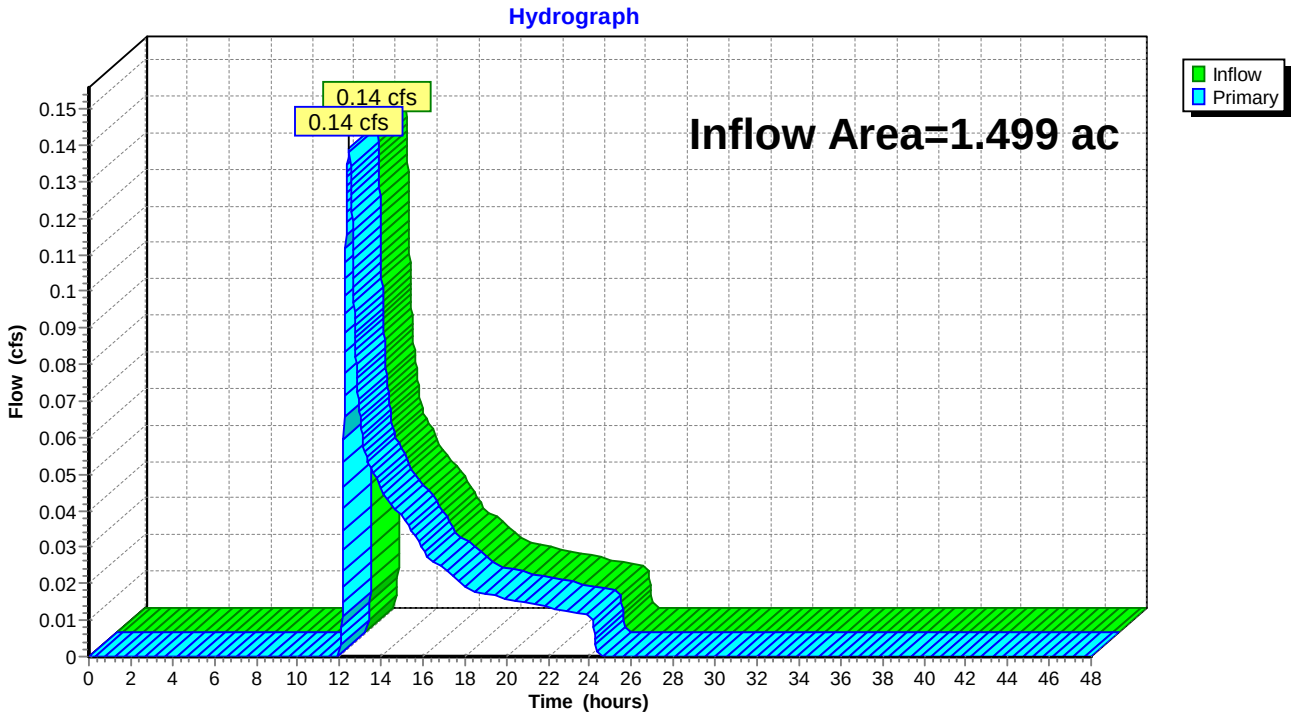


Summary for Link 2L: DP-1

Inflow Area = 1.499 ac, 6.70% Impervious, Inflow Depth = 0.23" for 1-Year event
Inflow = 0.14 cfs @ 12.46 hrs, Volume= 0.029 af
Primary = 0.14 cfs @ 12.46 hrs, Volume= 0.029 af, Atten= 0%, Lag= 0.0 min

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

Link 2L: DP-1

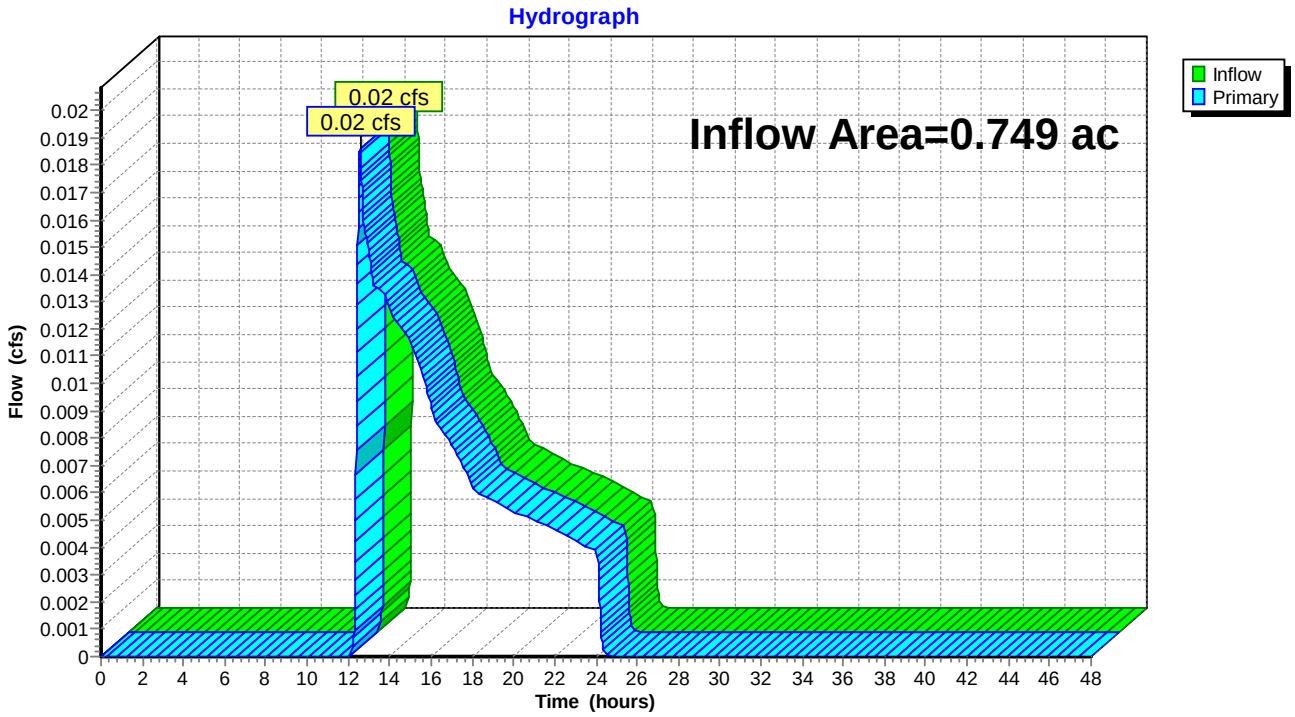


Summary for Link 3L: DP-2

Inflow Area = 0.749 ac, 3.56% Impervious, Inflow Depth = 0.12" for 1-Year event
Inflow = 0.02 cfs @ 12.56 hrs, Volume= 0.008 af
Primary = 0.02 cfs @ 12.56 hrs, Volume= 0.008 af, Atten= 0%, Lag= 0.0 min

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

Link 3L: DP-2

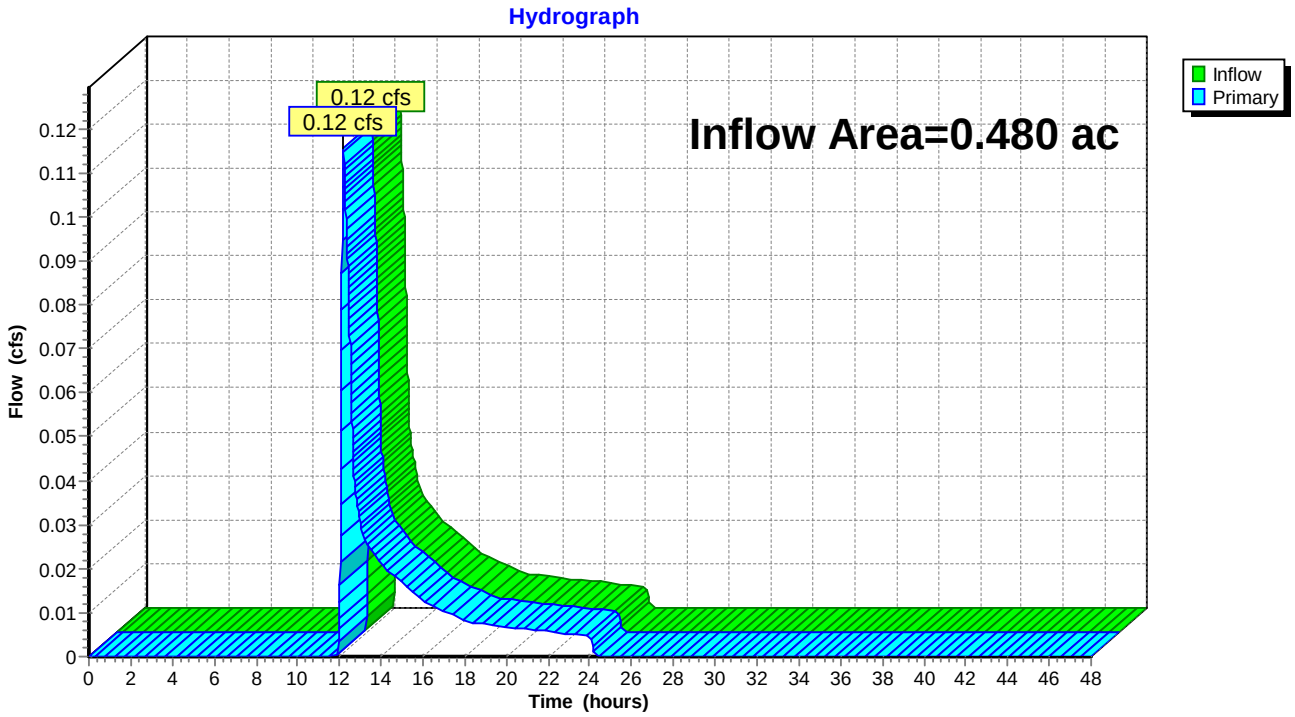


Summary for Link 4L: DP-3

Inflow Area = 0.480 ac, 24.02% Impervious, Inflow Depth = 0.38" for 1-Year event
Inflow = 0.12 cfs @ 12.18 hrs, Volume= 0.015 af
Primary = 0.12 cfs @ 12.18 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.0 min

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

Link 4L: DP-3



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

Subcatchment 1S: EX SUB AREA-1 Runoff Area=65,297 sf 6.70% Impervious Runoff Depth=1.19"
Flow Length=452' Tc=15.6 min UI Adjusted CN=60 Runoff=1.35 cfs 0.148 af

Subcatchment 2S: EX SUBSREA-2 Runoff Area=32,632 sf 3.56% Impervious Runoff Depth=0.88"
Flow Length=158' Tc=13.8 min UI Adjusted CN=55 Runoff=0.46 cfs 0.055 af

Subcatchment 3S: EX SUB AREA-3 Runoff Area=20,893 sf 24.02% Impervious Runoff Depth=1.52"
Flow Length=280' Tc=9.6 min UI Adjusted CN=65 Runoff=0.71 cfs 0.061 af

Link 1L: EX. TOTAL SITE Inflow=2.39 cfs 0.264 af
Primary=2.39 cfs 0.264 af

Link 2L: DP-1 Inflow=1.35 cfs 0.148 af
Primary=1.35 cfs 0.148 af

Link 3L: DP-2 Inflow=0.46 cfs 0.055 af
Primary=0.46 cfs 0.055 af

Link 4L: DP-3 Inflow=0.71 cfs 0.061 af
Primary=0.71 cfs 0.061 af

Total Runoff Area = 2.728 ac Runoff Volume = 0.264 af Average Runoff Depth = 1.16"
91.12% Pervious = 2.485 ac 8.88% Impervious = 0.242 ac

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

Subcatchment 1S: EX SUB AREA-1 Runoff Area=65,297 sf 6.70% Impervious Runoff Depth=2.05"
Flow Length=452' Tc=15.6 min UI Adjusted CN=60 Runoff=2.54 cfs 0.257 af

Subcatchment 2S: EX SUBSREA-2 Runoff Area=32,632 sf 3.56% Impervious Runoff Depth=1.63"
Flow Length=158' Tc=13.8 min UI Adjusted CN=55 Runoff=1.00 cfs 0.102 af

Subcatchment 3S: EX SUB AREA-3 Runoff Area=20,893 sf 24.02% Impervious Runoff Depth=2.50"
Flow Length=280' Tc=9.6 min UI Adjusted CN=65 Runoff=1.22 cfs 0.100 af

Link 1L: EX. TOTAL SITE Inflow=4.54 cfs 0.458 af
Primary=4.54 cfs 0.458 af

Link 2L: DP-1 Inflow=2.54 cfs 0.257 af
Primary=2.54 cfs 0.257 af

Link 3L: DP-2 Inflow=1.00 cfs 0.102 af
Primary=1.00 cfs 0.102 af

Link 4L: DP-3 Inflow=1.22 cfs 0.100 af
Primary=1.22 cfs 0.100 af

Total Runoff Area = 2.728 ac Runoff Volume = 0.458 af Average Runoff Depth = 2.02"
91.12% Pervious = 2.485 ac 8.88% Impervious = 0.242 ac

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

Subcatchment 1S: EX SUB AREA-1 Runoff Area=65,297 sf 6.70% Impervious Runoff Depth=3.87"
Flow Length=452' Tc=15.6 min UI Adjusted CN=60 Runoff=5.01 cfs 0.483 af

Subcatchment 2S: EX SUBSREA-2 Runoff Area=32,632 sf 3.56% Impervious Runoff Depth=3.27"
Flow Length=158' Tc=13.8 min UI Adjusted CN=55 Runoff=2.17 cfs 0.204 af

Subcatchment 3S: EX SUB AREA-3 Runoff Area=20,893 sf 24.02% Impervious Runoff Depth=4.47"
Flow Length=280' Tc=9.6 min UI Adjusted CN=65 Runoff=2.22 cfs 0.179 af

Link 1L: EX. TOTAL SITE Inflow=9.04 cfs 0.866 af
Primary=9.04 cfs 0.866 af

Link 2L: DP-1 Inflow=5.01 cfs 0.483 af
Primary=5.01 cfs 0.483 af

Link 3L: DP-2 Inflow=2.17 cfs 0.204 af
Primary=2.17 cfs 0.204 af

Link 4L: DP-3 Inflow=2.22 cfs 0.179 af
Primary=2.22 cfs 0.179 af

Total Runoff Area = 2.728 ac Runoff Volume = 0.866 af Average Runoff Depth = 3.81"
91.12% Pervious = 2.485 ac 8.88% Impervious = 0.242 ac

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: EX SUB AREA-1 Runoff Area=65,297 sf 6.70% Impervious Runoff Depth=0.07"
Flow Length=452' Tc=15.6 min CN=59/98 Runoff=0.08 cfs 0.008 af

Subcatchment 2S: EX SUBSREA-2 Runoff Area=32,632 sf 3.56% Impervious Runoff Depth=0.04"
Flow Length=158' Tc=13.8 min CN=54/98 Runoff=0.02 cfs 0.002 af

Subcatchment 3S: EX SUB AREA-3 Runoff Area=20,893 sf 24.02% Impervious Runoff Depth=0.24"
Flow Length=280' Tc=9.6 min CN=61/98 Runoff=0.11 cfs 0.009 af

Link 1L: EX. TOTAL SITE Inflow=0.21 cfs 0.020 af
Primary=0.21 cfs 0.020 af

Link 2L: DP-1 Inflow=0.08 cfs 0.008 af
Primary=0.08 cfs 0.008 af

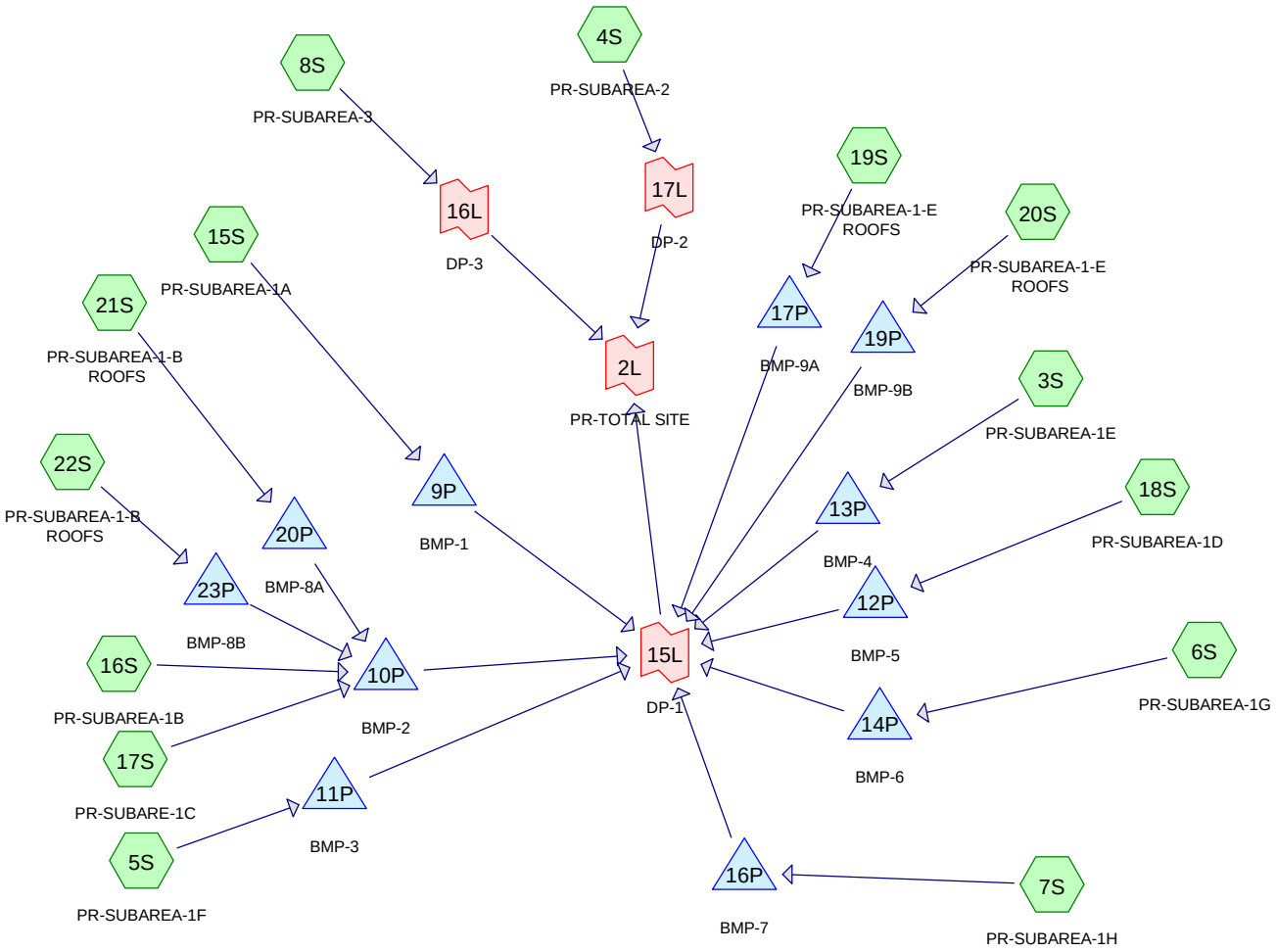
Link 3L: DP-2 Inflow=0.02 cfs 0.002 af
Primary=0.02 cfs 0.002 af

Link 4L: DP-3 Inflow=0.11 cfs 0.009 af
Primary=0.11 cfs 0.009 af

Total Runoff Area = 2.728 ac Runoff Volume = 0.020 af Average Runoff Depth = 0.09"
91.12% Pervious = 2.485 ac 8.88% Impervious = 0.242 ac

Appendix B

Proposed Conditions HydroCAD Printouts



Subcat Reach Pond Link

Routing Diagram for 25024.00-SIENA CONDOS PR COND-08-05-2025
Prepared by {enter your company name here}, Printed 9/2/2025
HydroCAD® 10.00-26 s/n 05727 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment 3S: PR-SUBAREA-1E

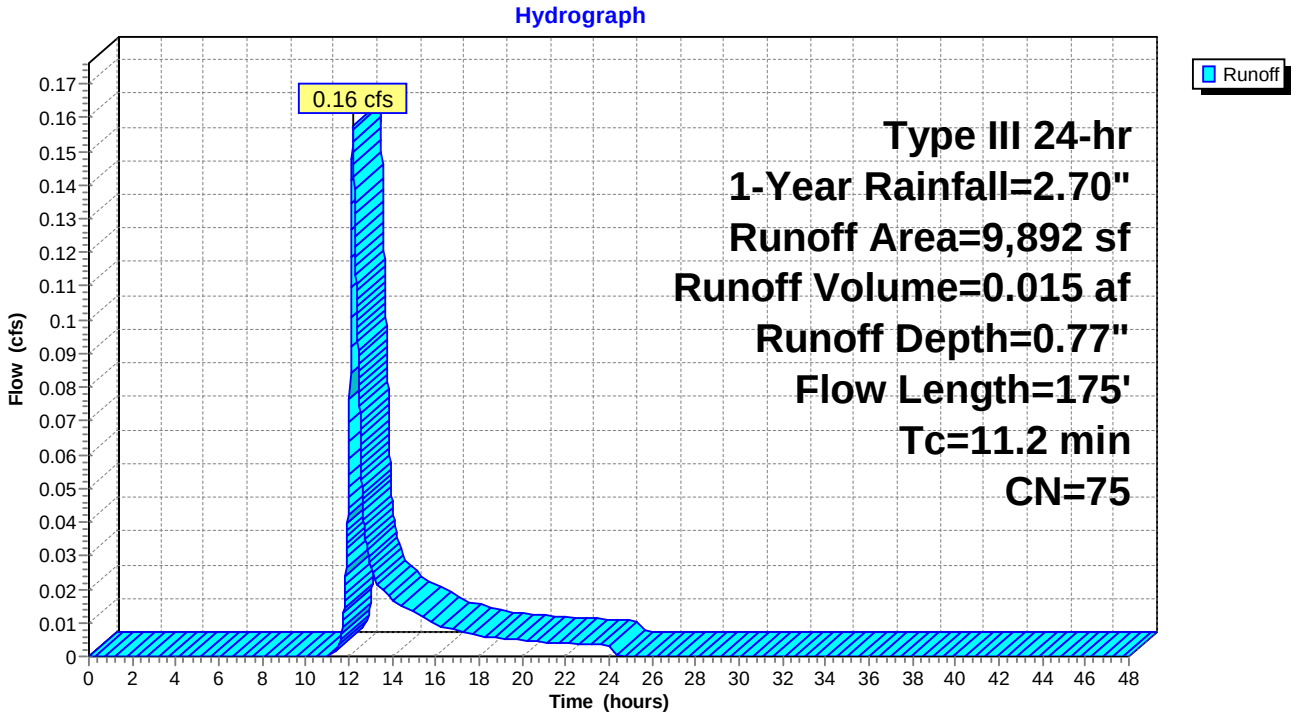
Runoff = 0.16 cfs @ 12.17 hrs, Volume= 0.015 af, Depth= 0.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.70"

Area (sf)	CN	Description
4,412	98	Paved parking, HSG B
1,226	39	>75% Grass cover, Good, HSG A
4,254	61	>75% Grass cover, Good, HSG B
9,892	75	Weighted Average
5,480	56	55.40% Pervious Area
4,412	98	44.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.5	36	0.0830	0.17		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.30"
7.0	64	0.0470	0.15		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.30"
0.7	75	0.0080	1.82		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
11.2	175	Total			

Subcatchment 3S: PR-SUBAREA-1E



Summary for Subcatchment 4S: PR-SUBAREA-2

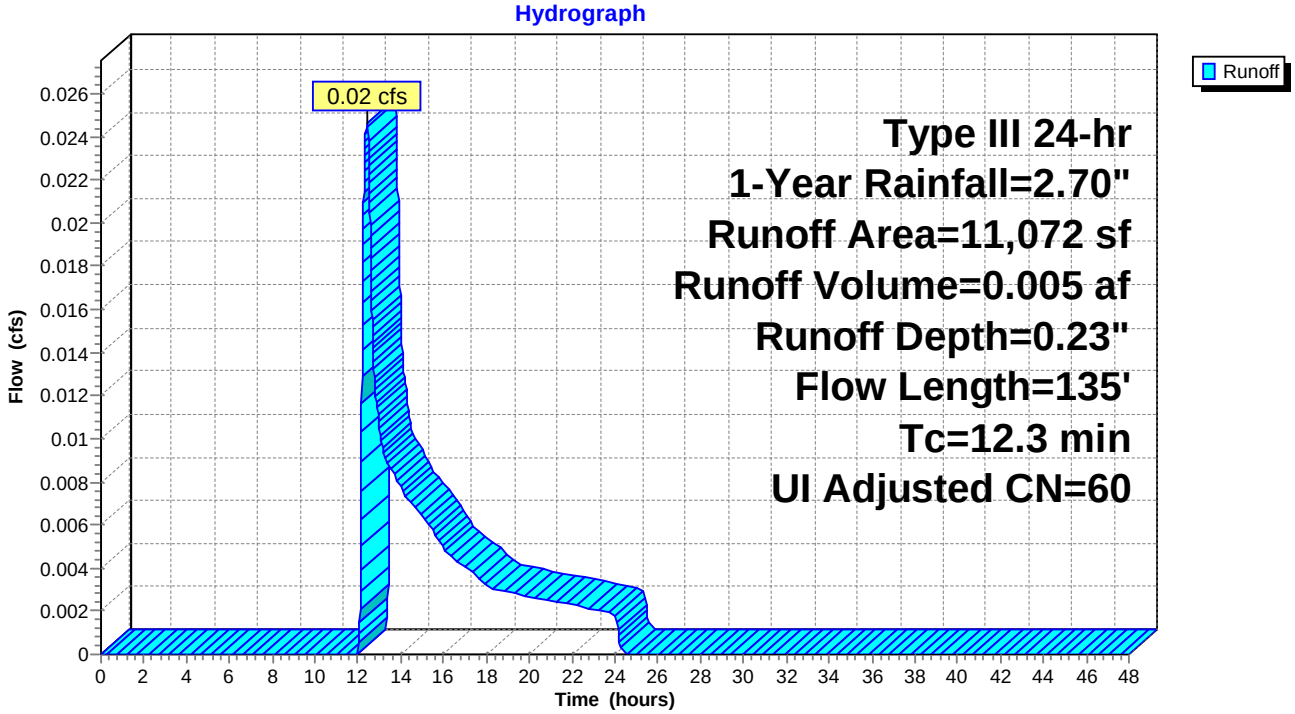
Runoff = 0.02 cfs @ 12.42 hrs, Volume= 0.005 af, Depth= 0.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.70"

Area (sf)	CN	Adj	Description
10,436	61		>75% Grass cover, Good, HSG B
160	98		Unconnected pavement, HSG B
476	39		>75% Grass cover, Good, HSG A
11,072	61	60	Weighted Average, UI Adjusted
10,912	60	60	98.55% Pervious Area
160	98	98	1.45% Impervious Area
160			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	40	0.0750	0.17		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.30"
8.2	60	0.0280	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.30"
0.1	35	0.1500	5.81		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
12.3	135	Total			

Subcatchment 4S: PR-SUBAREA-2



Summary for Subcatchment 5S: PR-SUBAREA-1F

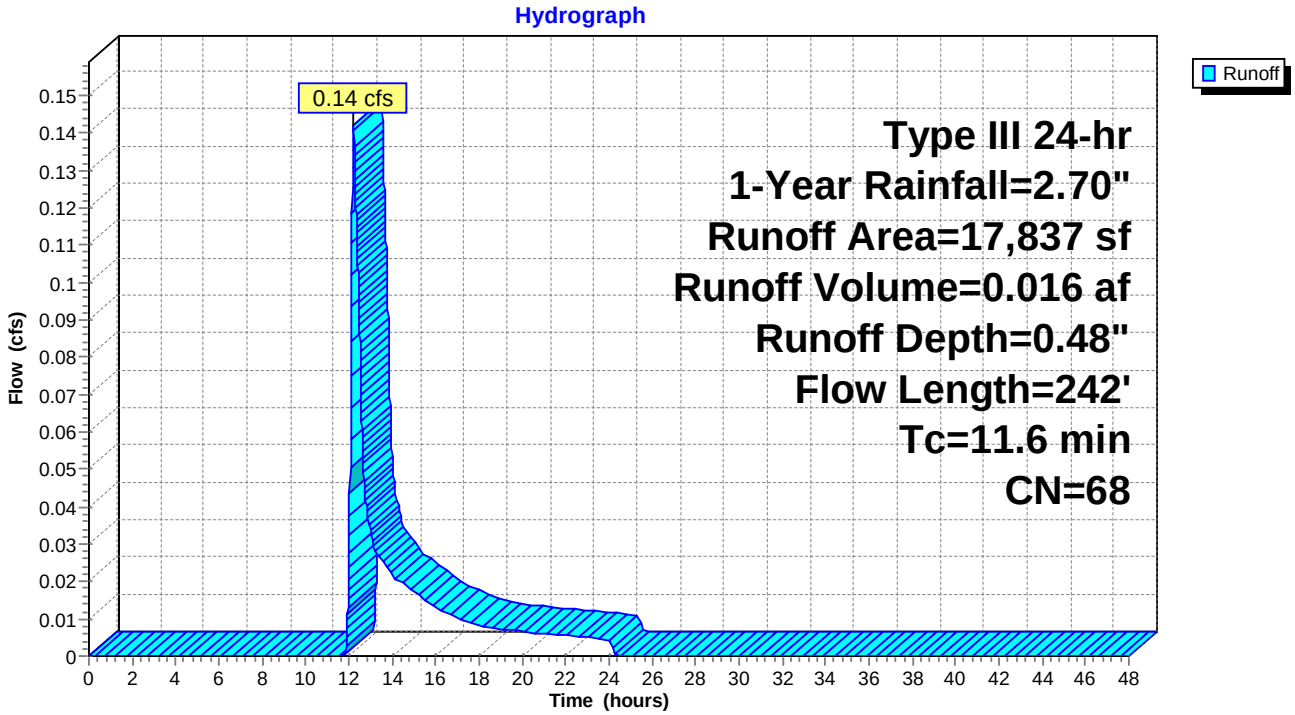
Runoff = 0.14 cfs @ 12.20 hrs, Volume= 0.016 af, Depth= 0.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.70"

Area (sf)	CN	Description
3,315	98	Paved parking, HSG B
14,522	61	>75% Grass cover, Good, HSG B
17,837	68	Weighted Average
14,522	61	81.42% Pervious Area
3,315	98	18.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	44	0.1140	0.20		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.30"
5.6	56	0.0625	0.17		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.30"
2.4	142	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.6	242	Total			

Subcatchment 5S: PR-SUBAREA-1F



Summary for Subcatchment 6S: PR-SUBAREA-1G

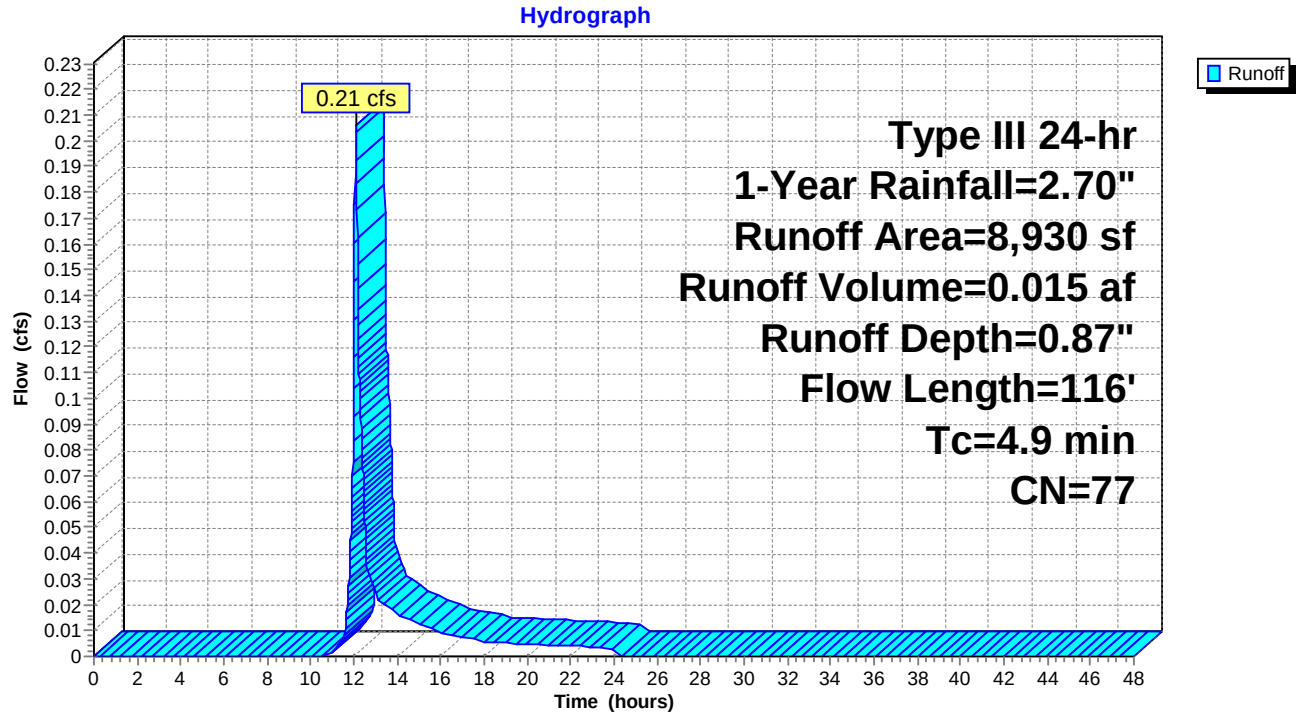
Runoff = 0.21 cfs @ 12.08 hrs, Volume= 0.015 af, Depth= 0.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.70"

Area (sf)	CN	Description
332	98	Unconnected roofs, HSG B
3,438	98	Paved parking, HSG B
5,160	61	>75% Grass cover, Good, HSG B
8,930	77	Weighted Average
5,160	61	57.78% Pervious Area
3,770	98	42.22% Impervious Area
332		8.81% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	57	0.1200	0.22		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.30"
0.4	43	0.0460	1.65		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.30"
0.1	16	0.0460	4.35		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.9	116	Total			

Subcatchment 6S: PR-SUBAREA-1G



Summary for Subcatchment 7S: PR-SUBAREA-1H

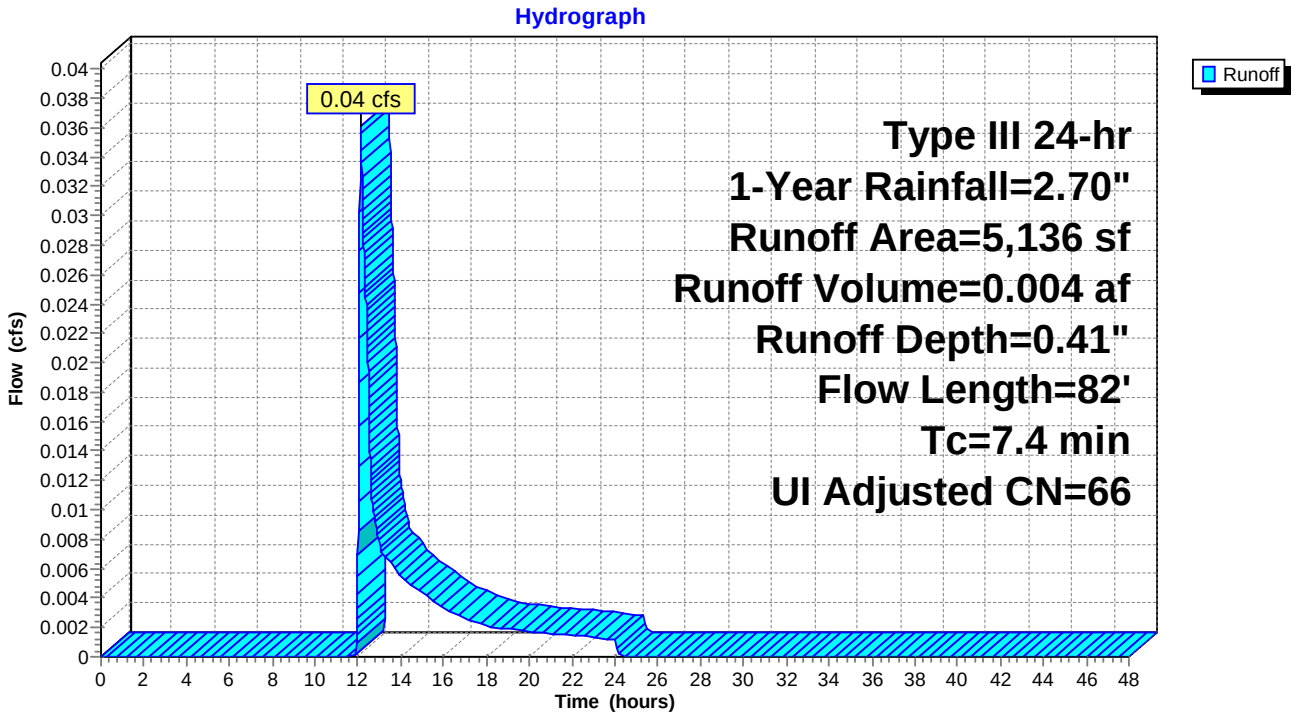
Runoff = 0.04 cfs @ 12.14 hrs, Volume= 0.004 af, Depth= 0.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.70"

Area (sf)	CN	Adj	Description
3,755	61		>75% Grass cover, Good, HSG B
1,381	98		Unconnected pavement, HSG B
5,136	71	66	Weighted Average, UI Adjusted
3,755	61	61	73.11% Pervious Area
1,381	98	98	26.89% Impervious Area
1,381			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3	57	0.0750	0.18		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.30"
2.1	25	0.1400	0.20		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.30"
7.4	82	Total			

Subcatchment 7S: PR-SUBAREA-1H



Summary for Subcatchment 8S: PR-SUBAREA-3

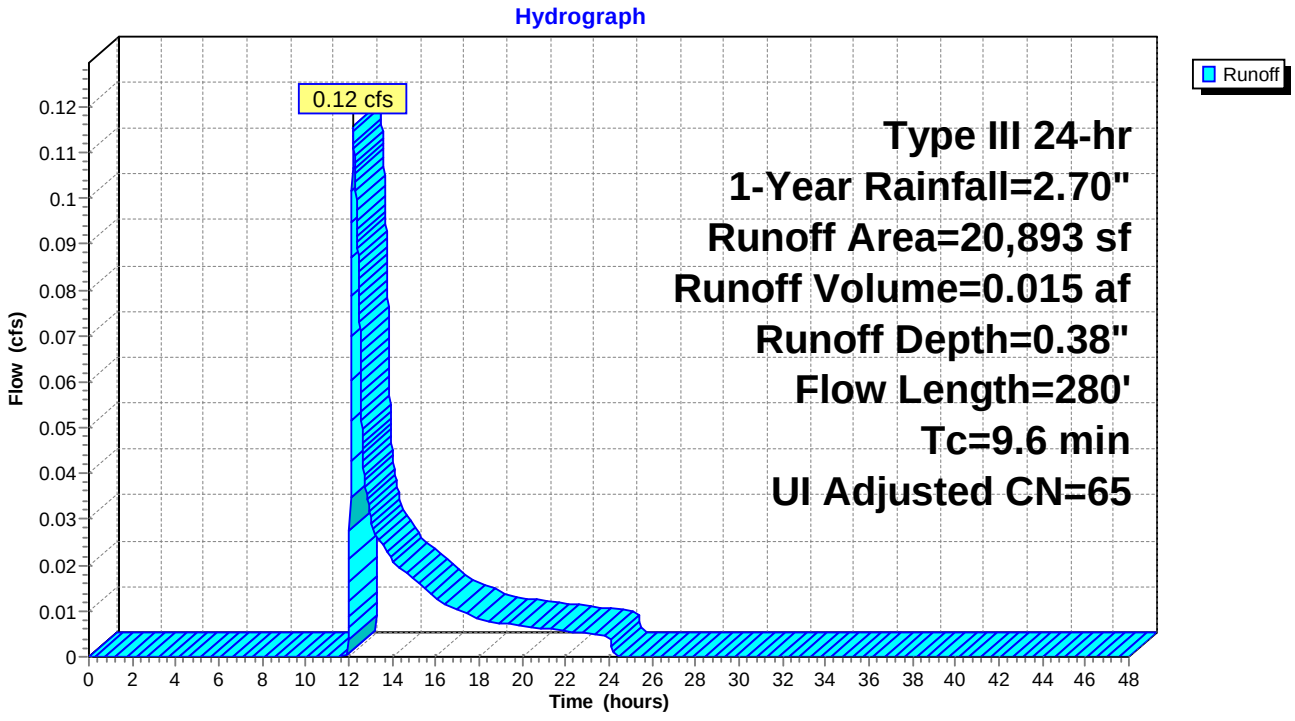
Runoff = 0.12 cfs @ 12.18 hrs, Volume= 0.015 af, Depth= 0.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.70"

Area (sf)	CN	Adj	Description
15,875	61		>75% Grass cover, Good, HSG B
5,018	98		Unconnected pavement, HSG B
20,893	70	65	Weighted Average, UI Adjusted
15,875	61	61	75.98% Pervious Area
5,018	98	98	24.02% Impervious Area
5,018			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	100	0.0800	0.21		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.30"
1.5	180	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.6	280	Total			

Subcatchment 8S: PR-SUBAREA-3



Summary for Subcatchment 15S: PR-SUBAREA-1A

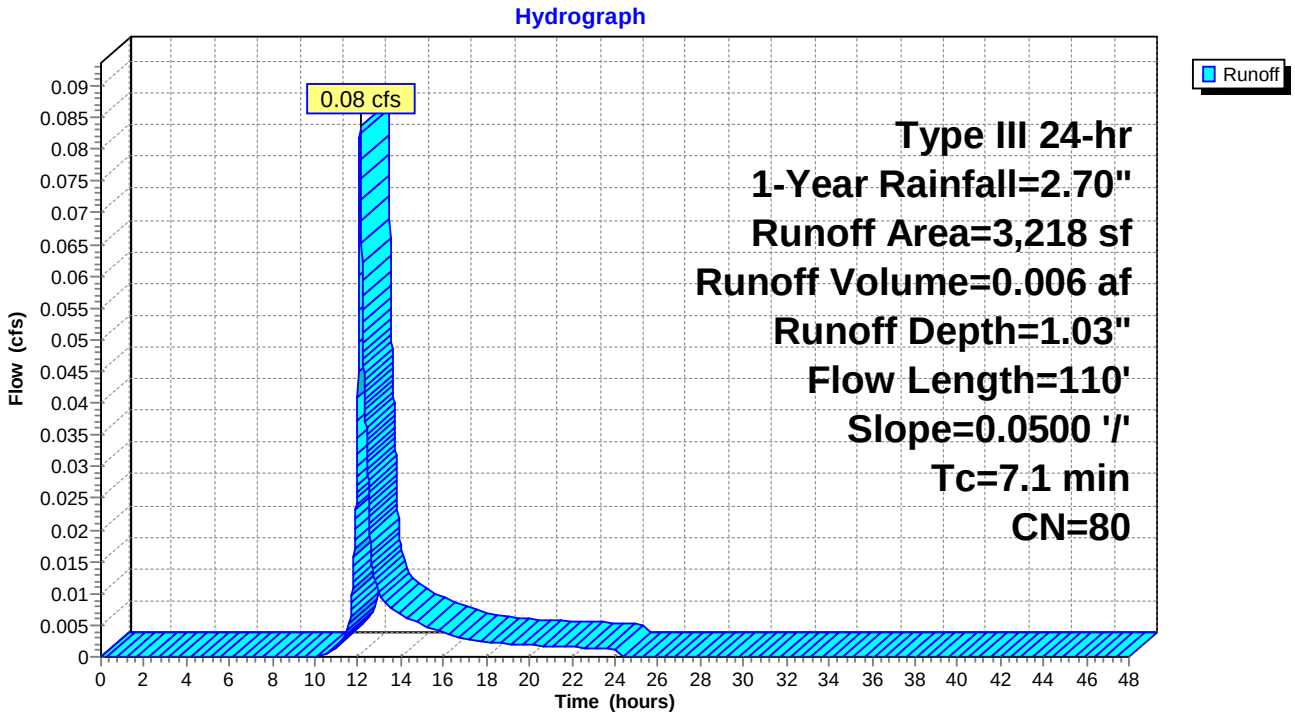
Runoff = 0.08 cfs @ 12.11 hrs, Volume= 0.006 af, Depth= 1.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.70"

Area (sf)	CN	Description
1,652	98	Unconnected pavement, HSG B
1,566	61	>75% Grass cover, Good, HSG B
3,218	80	Weighted Average
1,566	61	48.66% Pervious Area
1,652	98	51.34% Impervious Area
1,652		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	65	0.0500	0.16		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.30"
0.2	45	0.0500	4.54		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.1	110	Total			

Subcatchment 15S: PR-SUBAREA-1A



Summary for Subcatchment 16S: PR-SUBAREA-1B

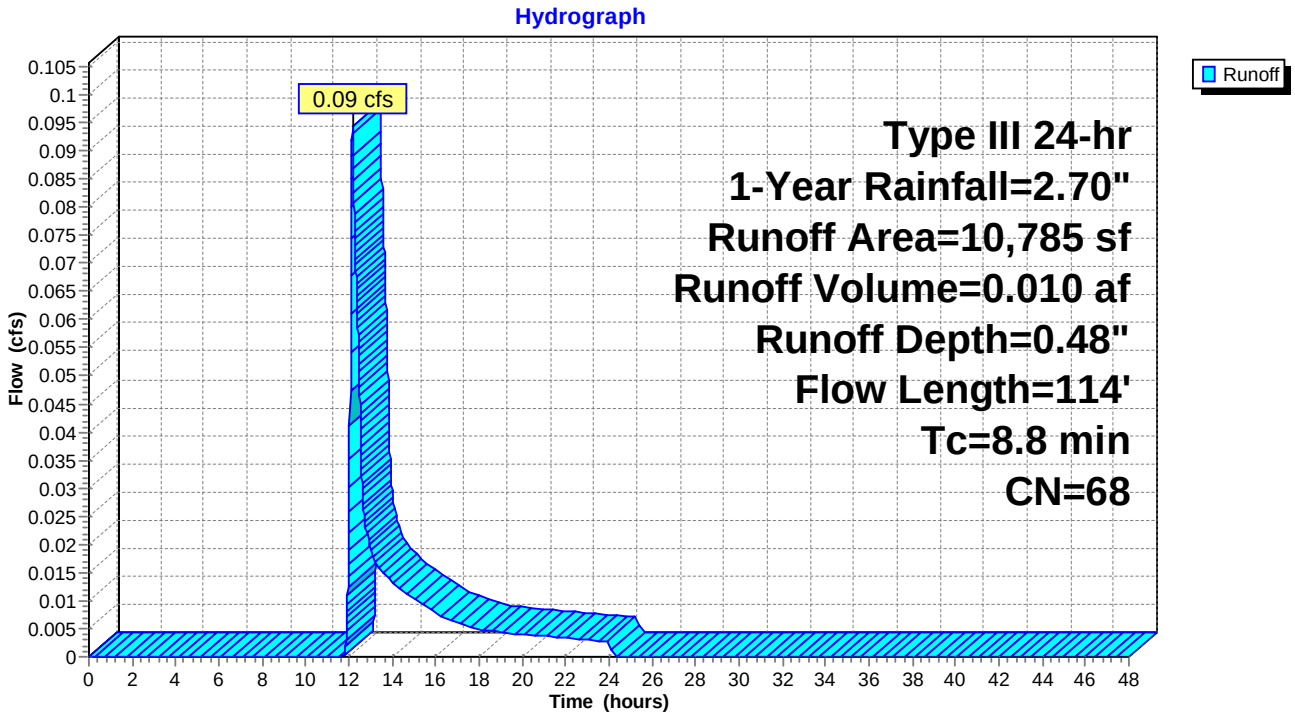
Runoff = 0.09 cfs @ 12.15 hrs, Volume= 0.010 af, Depth= 0.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.70"

Area (sf)	CN	Description
4,008	98	Paved parking, HSG B
3,552	39	>75% Grass cover, Good, HSG A
3,225	61	>75% Grass cover, Good, HSG B
10,785	68	Weighted Average
6,777	49	62.84% Pervious Area
4,008	98	37.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	94	0.0580	0.18		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.30"
0.1	20	0.0500	4.54		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
8.8	114	Total			

Subcatchment 16S: PR-SUBAREA-1B



Summary for Subcatchment 17S: PR-SUBARE-1C

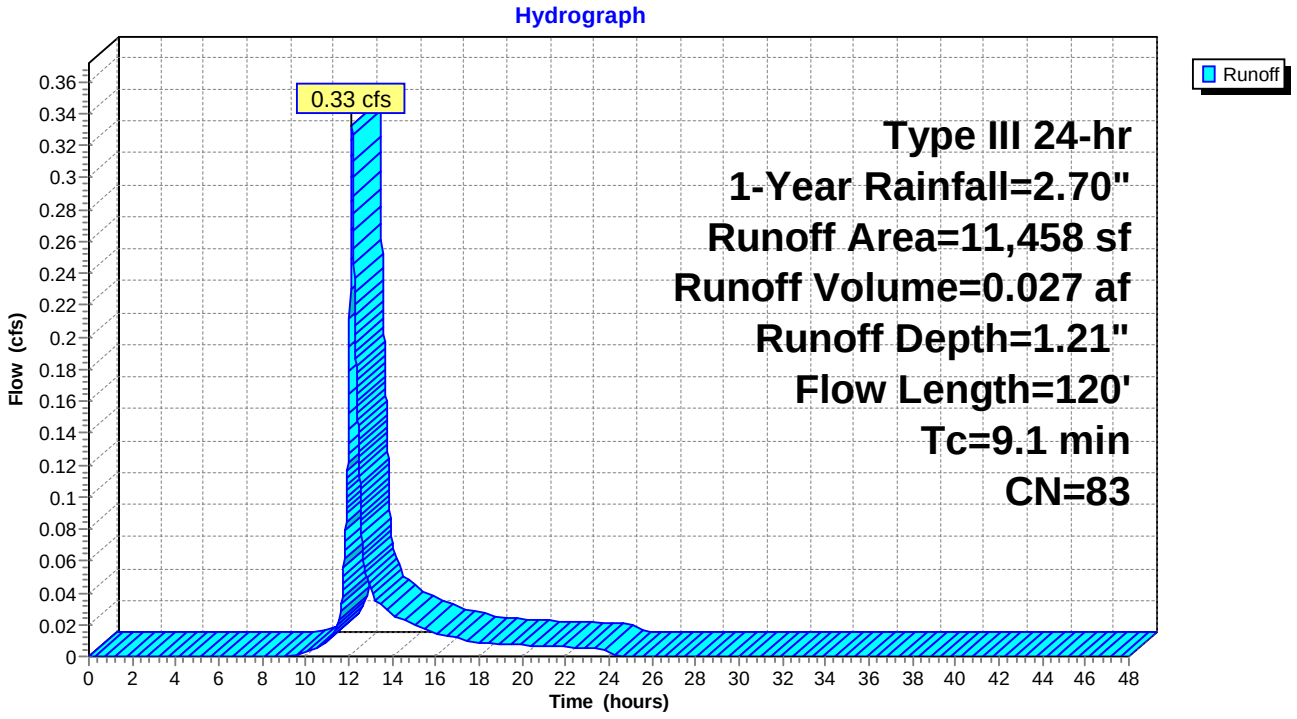
Runoff = 0.33 cfs @ 12.13 hrs, Volume= 0.027 af, Depth= 1.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.70"

Area (sf)	CN	Description
4,670	98	Roofs, HSG B
142	98	Roofs, HSG A
2,942	98	Paved parking, HSG B
1,660	39	>75% Grass cover, Good, HSG A
2,044	61	>75% Grass cover, Good, HSG B
11,458	83	Weighted Average
3,704	51	32.33% Pervious Area
7,754	98	67.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	98	0.0580	0.18		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.30"
0.1	22	0.0500	4.54		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
9.1	120	Total			

Subcatchment 17S: PR-SUBARE-1C



Summary for Subcatchment 18S: PR-SUBAREA-1D

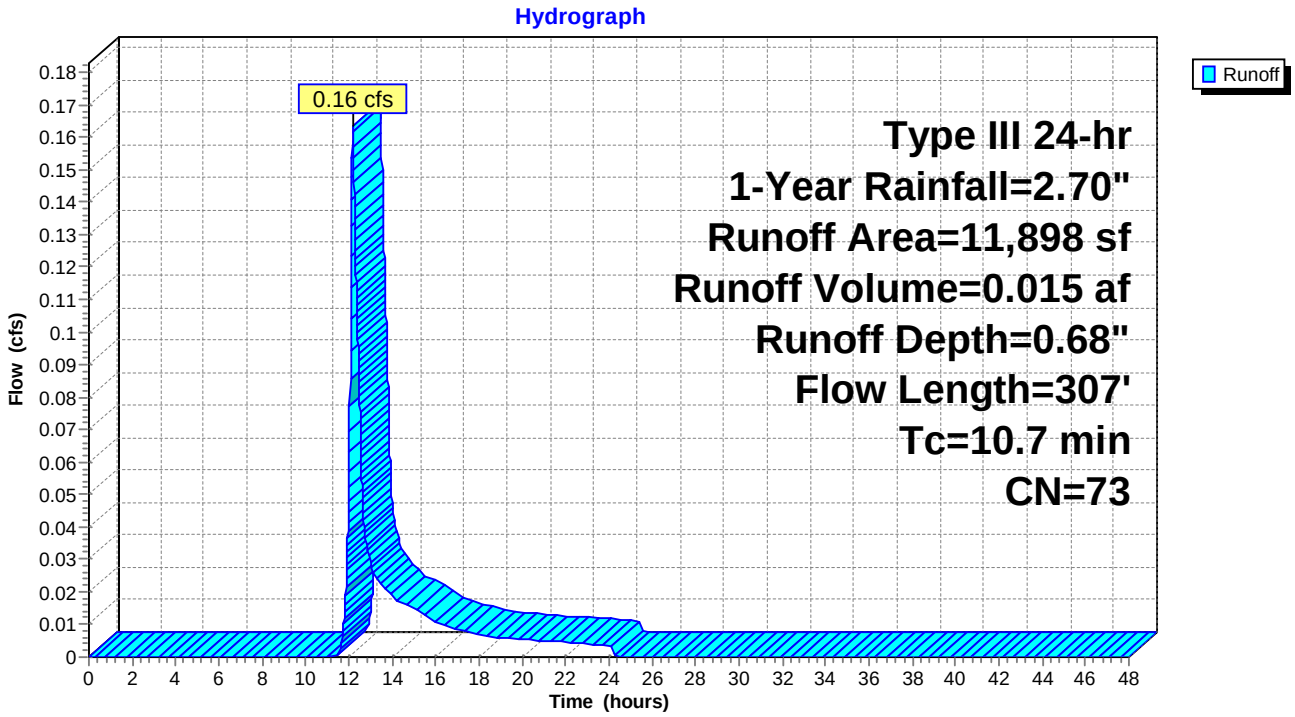
Runoff = 0.16 cfs @ 12.16 hrs, Volume= 0.015 af, Depth= 0.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.70"

Area (sf)	CN	Description
235	98	Roofs, HSG A
2,655	98	Roofs, HSG B
2,222	98	Paved parking, HSG B
2,300	39	>75% Grass cover, Good, HSG A
4,486	61	>75% Grass cover, Good, HSG B
11,898	73	Weighted Average
6,786	54	57.03% Pervious Area
5,112	98	42.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	22	0.0900	0.16		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.30"
7.5	71	0.0490	0.16		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.30"
0.4	78	0.0320	3.63		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	136	0.0480	4.45		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
10.7	307	Total			

Subcatchment 18S: PR-SUBAREA-1D



Summary for Subcatchment 19S: PR-SUBAREA-1-E ROOFS

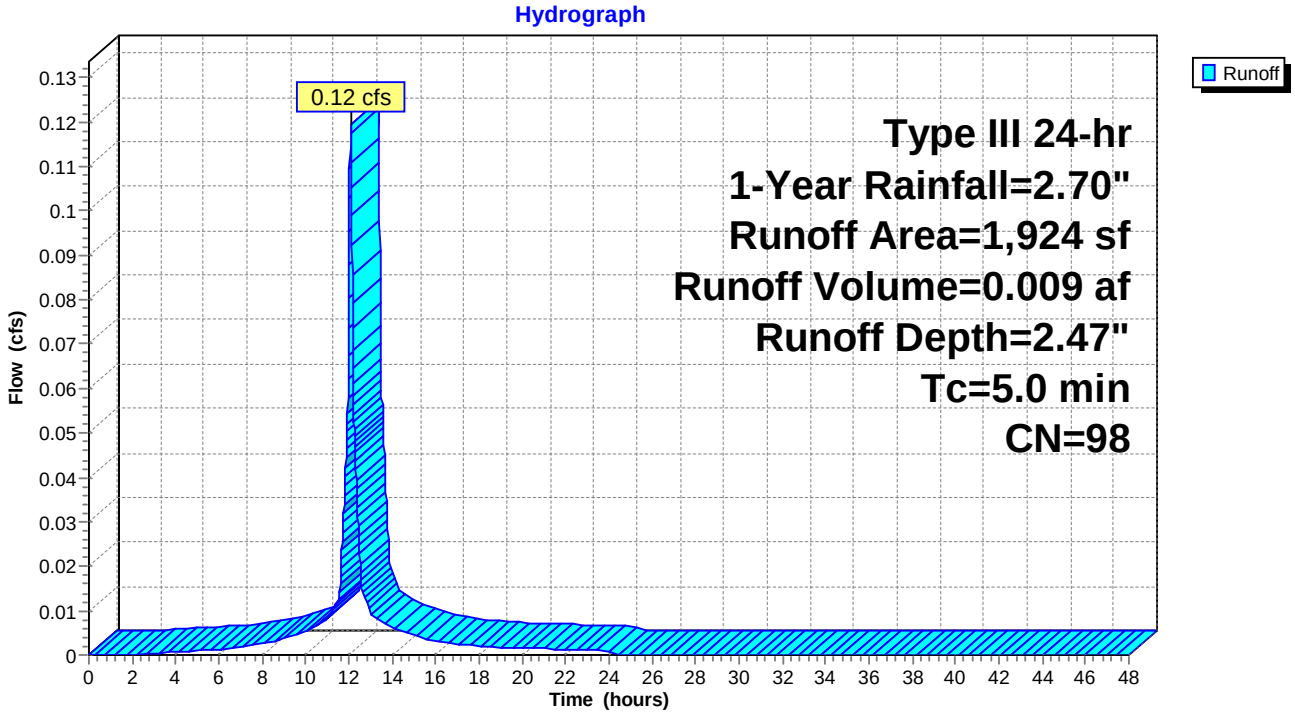
Runoff = 0.12 cfs @ 12.07 hrs, Volume= 0.009 af, Depth= 2.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.70"

Area (sf)	CN	Description
1,924	98	Unconnected roofs, HSG B
1,924	98	100.00% Impervious Area
1,924		100.00% Unconnected

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

Subcatchment 19S: PR-SUBAREA-1-E ROOFS



Summary for Subcatchment 20S: PR-SUBAREA-1-E ROOFS

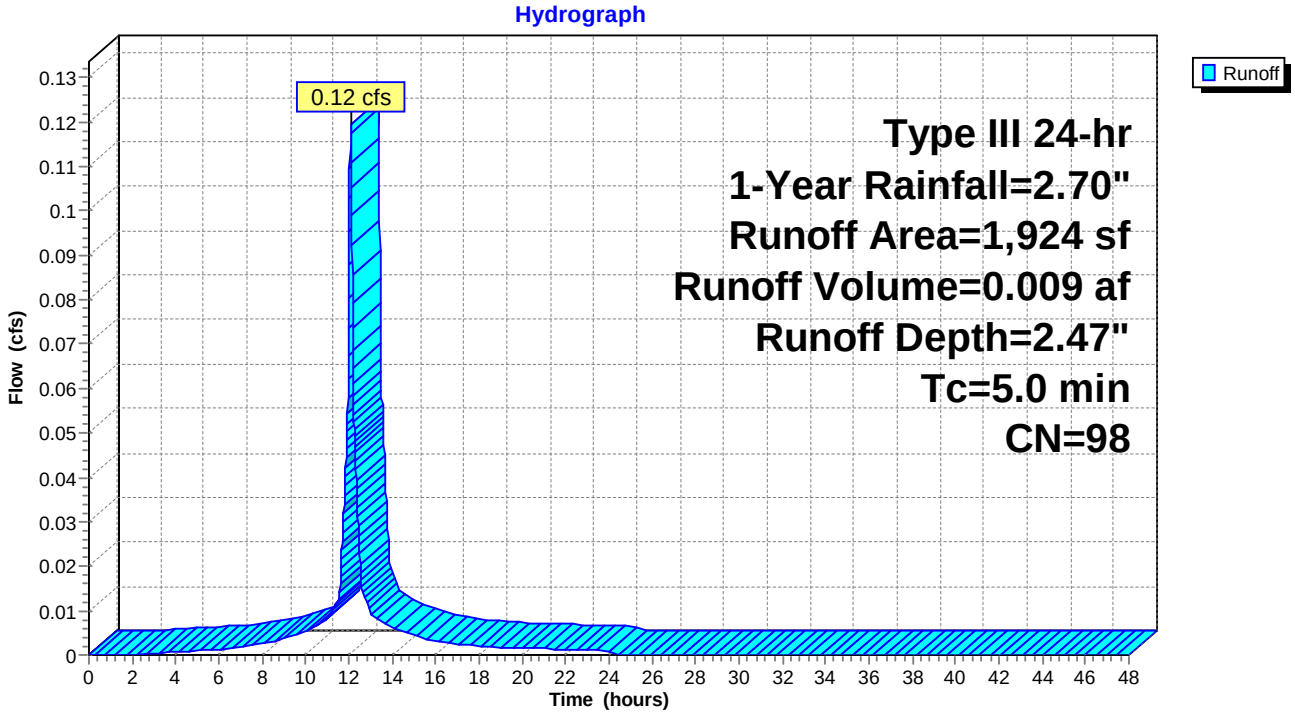
Runoff = 0.12 cfs @ 12.07 hrs, Volume= 0.009 af, Depth= 2.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.70"

Area (sf)	CN	Description
1,924	98	Unconnected roofs, HSG B
1,924	98	100.00% Impervious Area
1,924		100.00% Unconnected

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

Subcatchment 20S: PR-SUBAREA-1-E ROOFS



Summary for Subcatchment 21S: PR-SUBAREA-1-B ROOFS

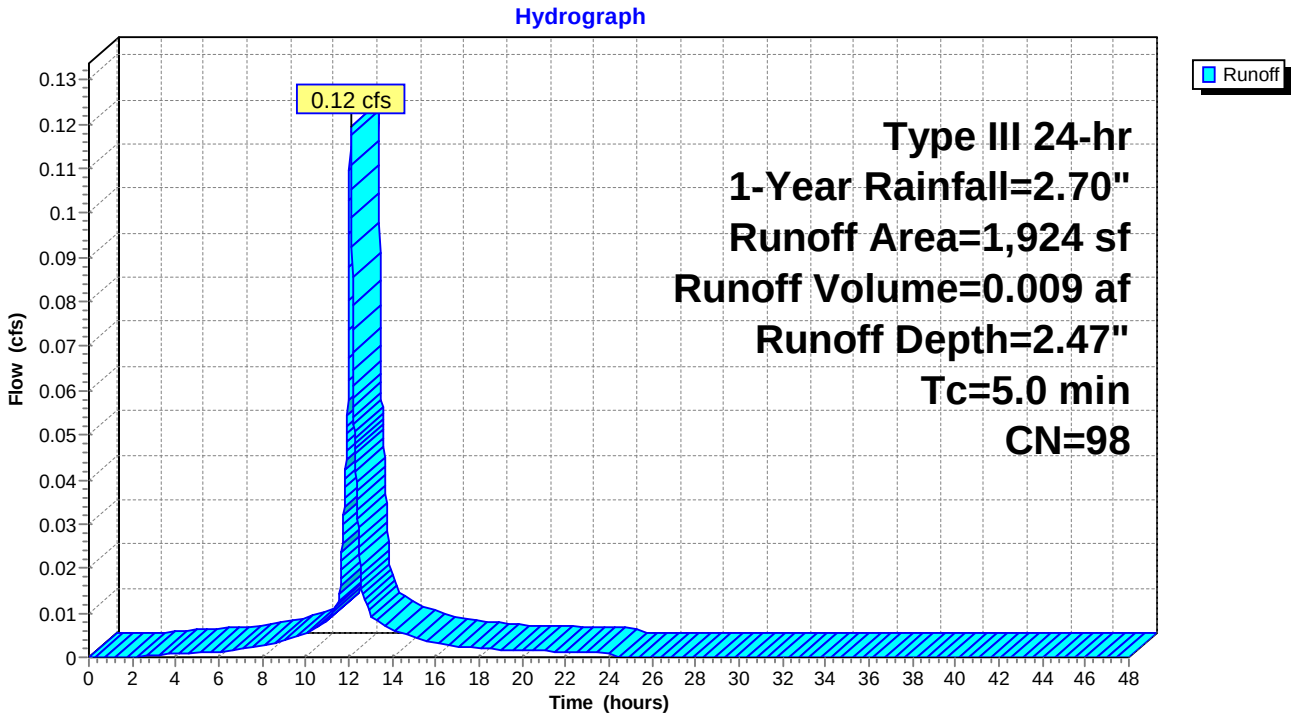
Runoff = 0.12 cfs @ 12.07 hrs, Volume= 0.009 af, Depth= 2.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.70"

Area (sf)	CN	Description
294	98	Unconnected roofs, HSG A
1,630	98	Unconnected roofs, HSG B
1,924	98	Weighted Average
1,924	98	100.00% Impervious Area
1,924		100.00% Unconnected

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

Subcatchment 21S: PR-SUBAREA-1-B ROOFS



Summary for Subcatchment 22S: PR-SUBAREA-1-B ROOFS

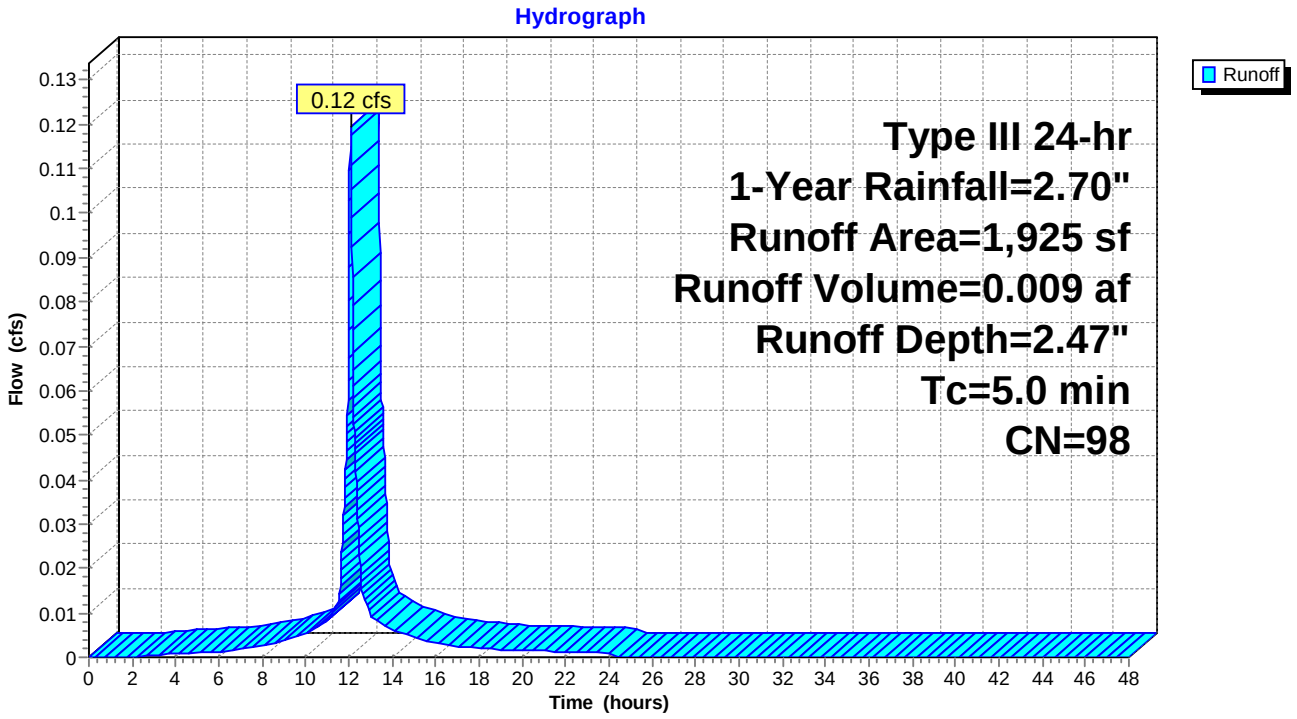
Runoff = 0.12 cfs @ 12.07 hrs, Volume= 0.009 af, Depth= 2.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.70"

Area (sf)	CN	Description
295	98	Unconnected roofs, HSG A
1,630	98	Unconnected roofs, HSG B
1,925	98	Weighted Average
1,925	98	100.00% Impervious Area
1,925		100.00% Unconnected

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

Subcatchment 22S: PR-SUBAREA-1-B ROOFS



Summary for Pond 9P: BMP-1

Inflow Area = 0.074 ac, 51.34% Impervious, Inflow Depth = 1.03" for 1-Year event
Inflow = 0.08 cfs @ 12.11 hrs, Volume= 0.006 af
Outflow = 0.02 cfs @ 12.00 hrs, Volume= 0.006 af, Atten= 76%, Lag= 0.0 min
Discarded = 0.02 cfs @ 12.00 hrs, Volume= 0.006 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 250.50' @ 12.55 hrs Surf.Area= 0.008 ac Storage= 0.001 af

Plug-Flow detention time= 17.0 min calculated for 0.006 af (100% of inflow)
Center-of-Mass det. time= 17.0 min (869.9 - 852.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	250.00'	0.007 af	**20.50'W x 17.86'L x 3.50'H Field A** 0.029 af Overall - 0.008 af Embedded = 0.021 af x 33.0% Voids
#2A	250.50'	0.008 af	**ADS_StormTech SC-740 +Cap** x 8 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 8 Chambers in 4 Rows
		0.015 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	250.00'	**2.410 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	253.40'	**2.5" x 2.5" Horiz. Orifice/Grate X 36.00** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.02 cfs @ 12.00 hrs HW=250.04' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=250.00' TW=0.00' (Dynamic Tailwater)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 9P: BMP-1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

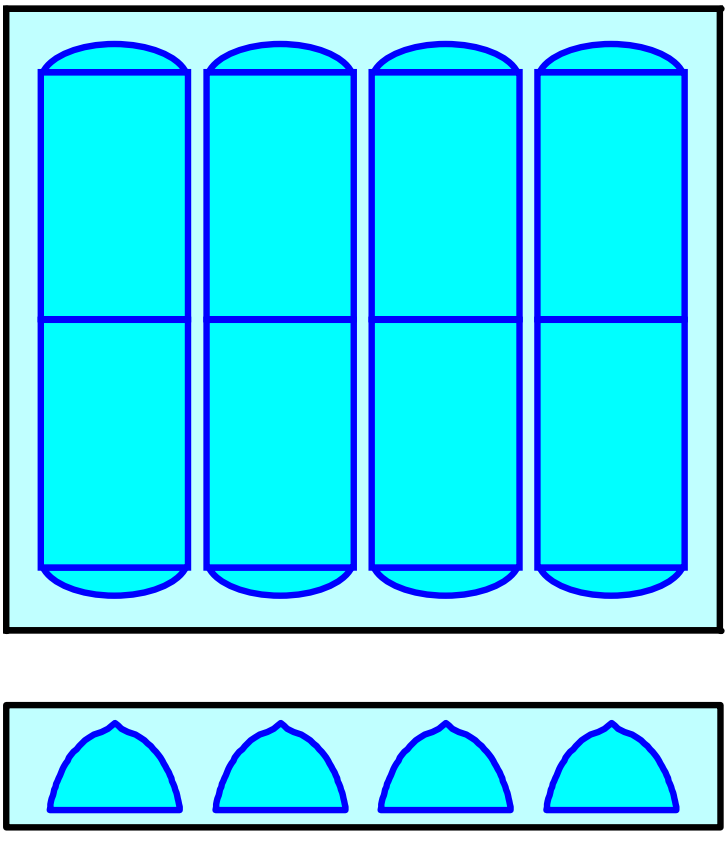
2 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 15.86' Row Length +12.0" End Stone x 2 = 17.86' Base Length
4 Rows x 51.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.50' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

8 Chambers x 45.9 cf = 367.5 cf Chamber Storage

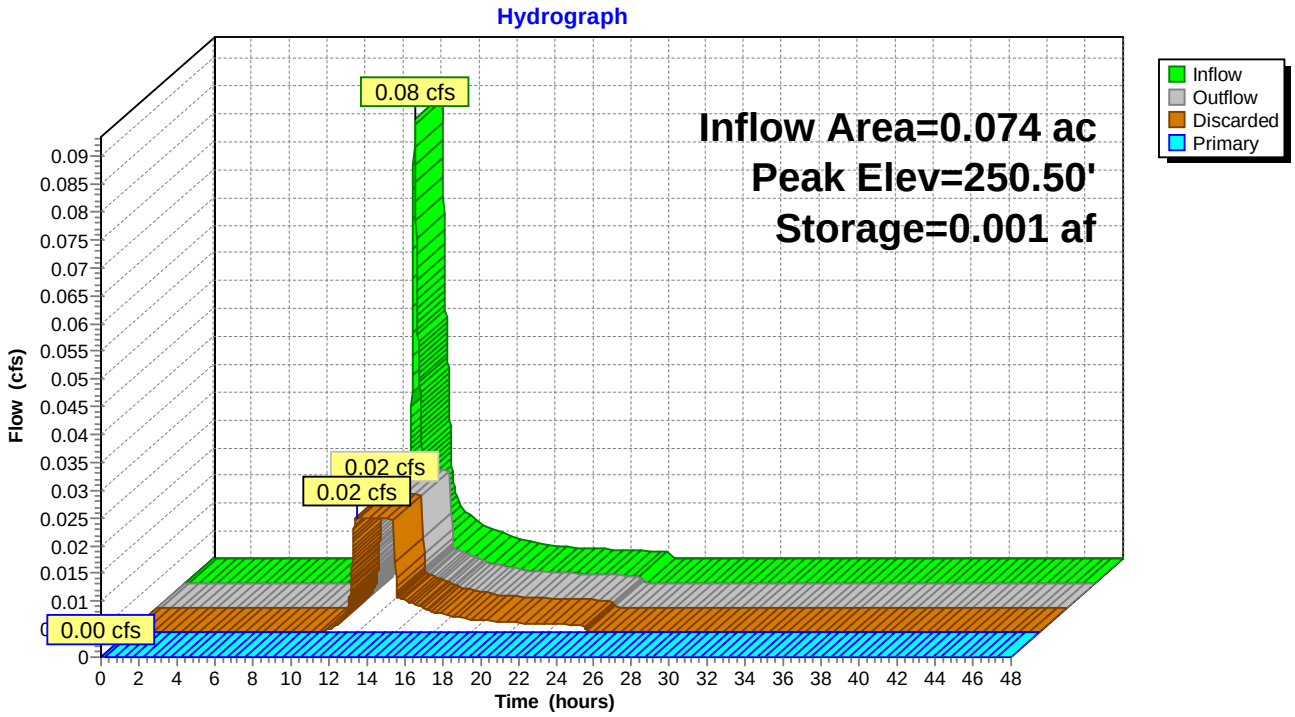
1,281.2 cf Field - 367.5 cf Chambers = 913.7 cf Stone x 33.0% Voids = 301.5 cf Stone Storage

Chamber Storage + Stone Storage = 669.0 cf = 0.015 af
Overall Storage Efficiency = 52.2%
Overall System Size = 17.86' x 20.50' x 3.50'

8 Chambers
47.5 cy Field
33.8 cy Stone



Pond 9P: BMP-1


Hydrograph
Inflow
Outflow
Discarded
Primary
0.08 cfs
0.02 cfs
0.02 cfs
0.00 cfs
Inflow Area=0.074 ac
Peak Elev=250.50'
Storage=0.001 af
Flow (cfs)
0 0.01 0.02 0.03 0.04 0.045 0.05 0.055 0.06 0.065 0.07 0.075 0.08 0.085 0.09
Time (hours)
0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Pond 10P: BMP-2

Inflow Area = 0.599 ac, 59.83% Impervious, Inflow Depth = 0.73" for 1-Year event
Inflow = 0.42 cfs @ 12.14 hrs, Volume= 0.036 af
Outflow = 0.36 cfs @ 12.17 hrs, Volume= 0.036 af, Atten= 16%, Lag= 2.0 min
Discarded = 0.36 cfs @ 12.17 hrs, Volume= 0.036 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 245.04' @ 12.21 hrs Surf.Area= 0.043 ac Storage= 0.001 af

Plug-Flow detention time= 0.4 min calculated for 0.036 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (860.1 - 859.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	245.00'	0.032 af	**34.75'W x 53.46'L x 3.50'H Field A** 0.149 af Overall - 0.052 af Embedded = 0.098 af x 33.0% Voids
#2A	245.50'	0.052 af	**ADS_StormTech SC-740 +Cap** x 49 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 49 Chambers in 7 Rows
		0.084 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	245.00'	**8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	248.45'	**2.5" x 2.5" Horiz. Orifice/Grate X 36.00** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.36 cfs @ 12.17 hrs HW=245.04' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.36 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=245.00' TW=0.00' (Dynamic Tailwater)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 10P: BMP-2 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

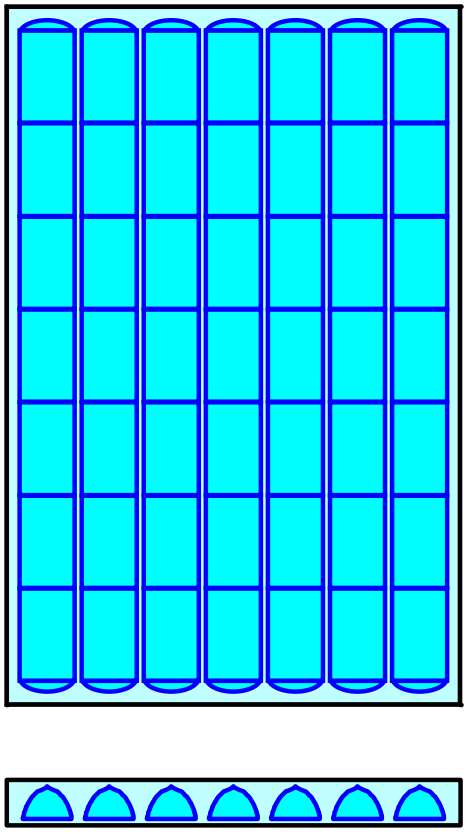
7 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 51.46' Row Length +12.0" End Stone x 2 = 53.46' Base Length
7 Rows x 51.0" Wide + 6.0" Spacing x 6 + 12.0" Side Stone x 2 = 34.75' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

49 Chambers x 45.9 cf = 2,251.1 cf Chamber Storage

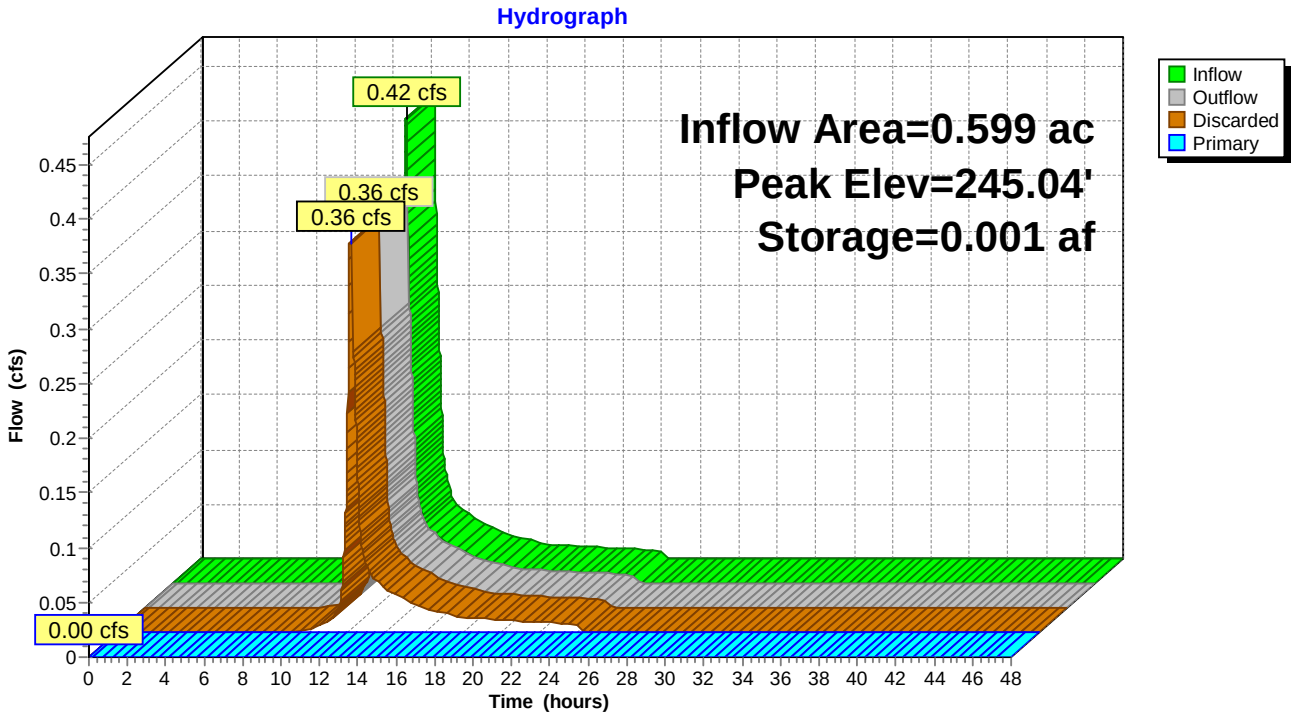
6,501.7 cf Field - 2,251.1 cf Chambers = 4,250.6 cf Stone x 33.0% Voids = 1,402.7 cf Stone Storage

Chamber Storage + Stone Storage = 3,653.8 cf = 0.084 af
Overall Storage Efficiency = 56.2%
Overall System Size = 53.46' x 34.75' x 3.50'

49 Chambers
240.8 cy Field
157.4 cy Stone



Pond 10P: BMP-2



Summary for Pond 11P: BMP-3

Inflow Area = 0.409 ac, 18.58% Impervious, Inflow Depth = 0.48" for 1-Year event
Inflow = 0.14 cfs @ 12.20 hrs, Volume= 0.016 af
Outflow = 0.14 cfs @ 12.20 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.3 min
Discarded = 0.14 cfs @ 12.20 hrs, Volume= 0.016 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 242.71' @ 12.20 hrs Surf.Area= 0.020 ac Storage= 0.000 af

Plug-Flow detention time= 0.3 min calculated for 0.016 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (904.4 - 904.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	242.70'	0.016 af	**49.00'W x 17.86'L x 3.50'H Field A** 0.070 af Overall - 0.021 af Embedded = 0.049 af x 33.0% Voids
#2A	243.20'	0.021 af	**ADS_StormTech SC-740 +Cap** x 20 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 20 Chambers in 10 Rows
		0.037 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	246.00'	**2.5" x 2.5" Horiz. Orifice/Grate X 36.00** C= 0.600 Limited to weir flow at low heads
#2	Discarded	242.70'	**8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.14 cfs @ 12.20 hrs HW=242.71' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=242.70' TW=0.00' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Controls 0.00 cfs)

Pond 11P: BMP-3 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

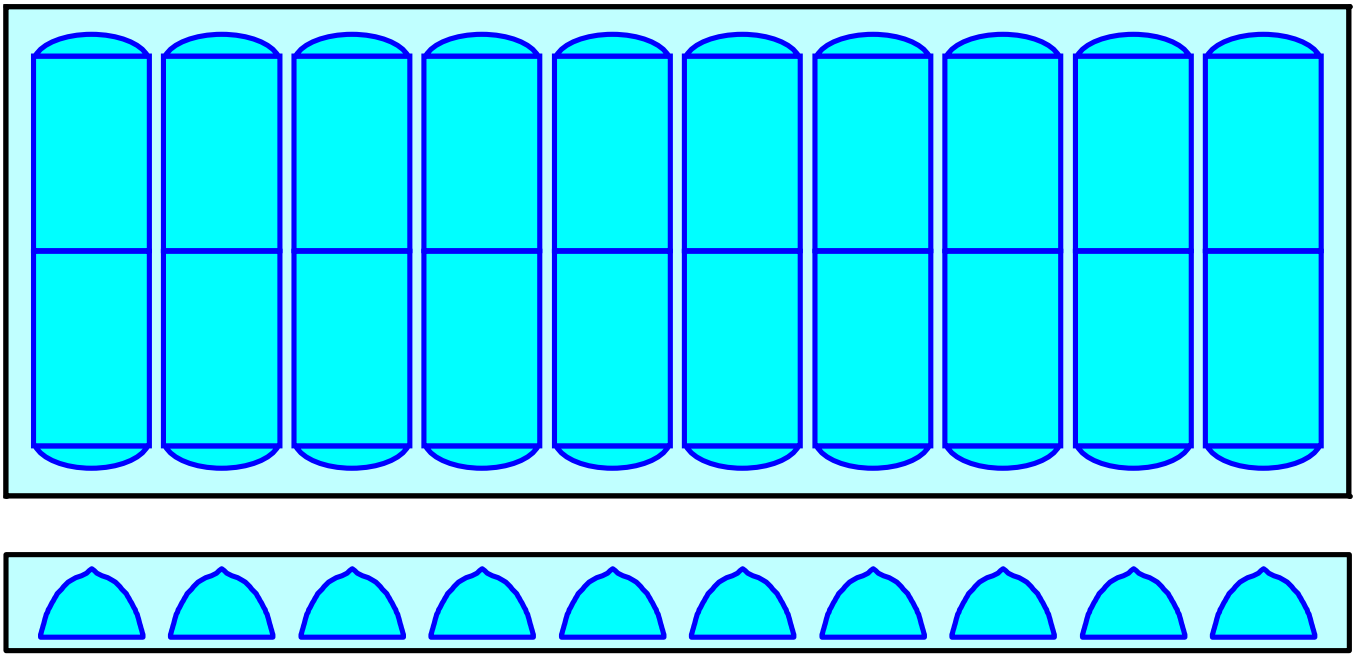
2 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 15.86' Row Length +12.0" End Stone x 2 = 17.86' Base Length
10 Rows x 51.0" Wide + 6.0" Spacing x 9 + 12.0" Side Stone x 2 = 49.00' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

20 Chambers x 45.9 cf = 918.8 cf Chamber Storage

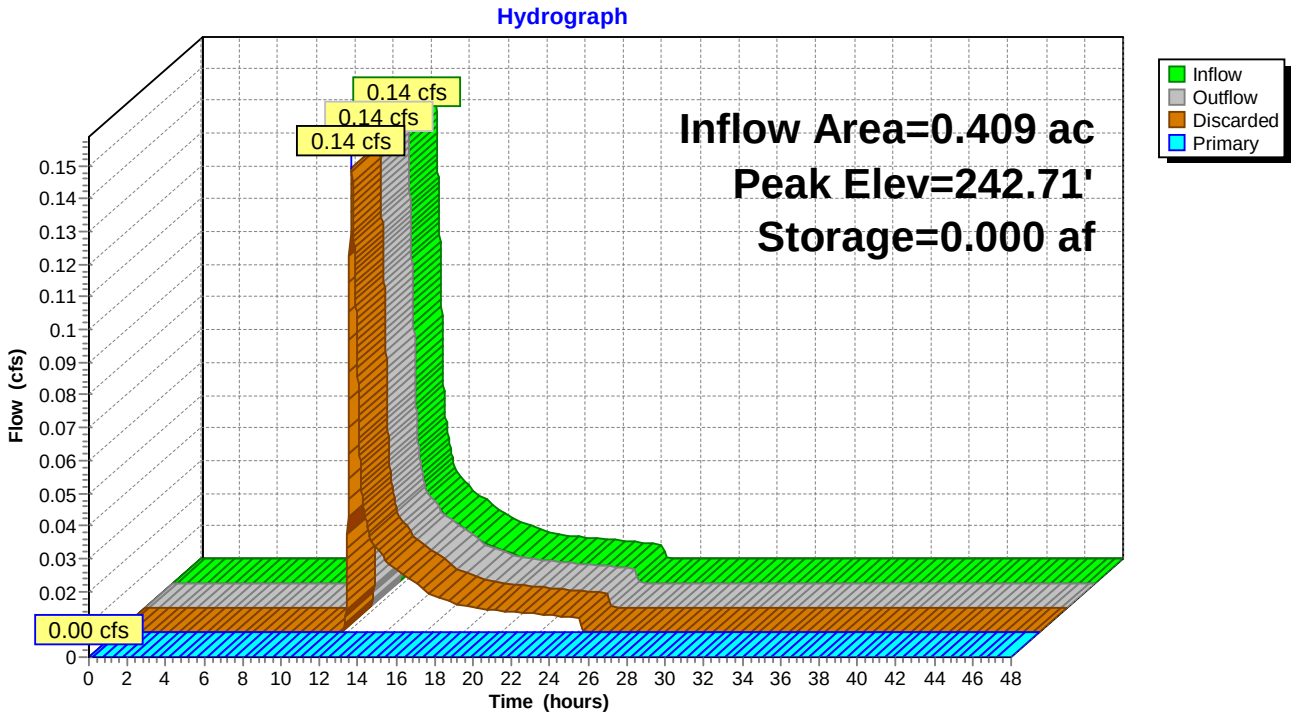
3,062.4 cf Field - 918.8 cf Chambers = 2,143.6 cf Stone x 33.0% Voids = 707.4 cf Stone Storage

Chamber Storage + Stone Storage = 1,626.2 cf = 0.037 af
Overall Storage Efficiency = 53.1%
Overall System Size = 17.86' x 49.00' x 3.50'

20 Chambers
113.4 cy Field
79.4 cy Stone



Pond 11P: BMP-3



Summary for Pond 12P: BMP-5

Inflow Area = 0.273 ac, 42.97% Impervious, Inflow Depth = 0.68" for 1-Year event
Inflow = 0.16 cfs @ 12.16 hrs, Volume= 0.015 af
Outflow = 0.16 cfs @ 12.17 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.4 min
Discarded = 0.16 cfs @ 12.17 hrs, Volume= 0.015 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 246.21' @ 12.17 hrs Surf.Area= 0.022 ac Storage= 0.000 af

Plug-Flow detention time= 0.3 min calculated for 0.015 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (882.1 - 881.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	246.20'	0.017 af	**20.50'W x 46.34'L x 3.50'H Field A** 0.076 af Overall - 0.025 af Embedded = 0.051 af x 33.0% Voids
#2A	246.70'	0.025 af	**ADS_StormTech SC-740 +Cap** x 24 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 24 Chambers in 4 Rows
		0.042 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	246.20'	**8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	249.60'	**2.5" x 2.5" Horiz. Orifice/Grate X 36.00** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.16 cfs @ 12.17 hrs HW=246.21' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.16 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=246.20' TW=0.00' (Dynamic Tailwater)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 12P: BMP-5 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

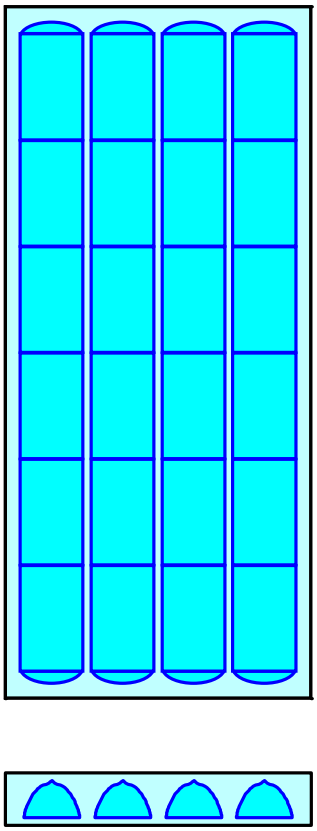
6 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 44.34' Row Length +12.0" End Stone x 2 = 46.34' Base Length
4 Rows x 51.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 20.50' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

24 Chambers x 45.9 cf = 1,102.6 cf Chamber Storage

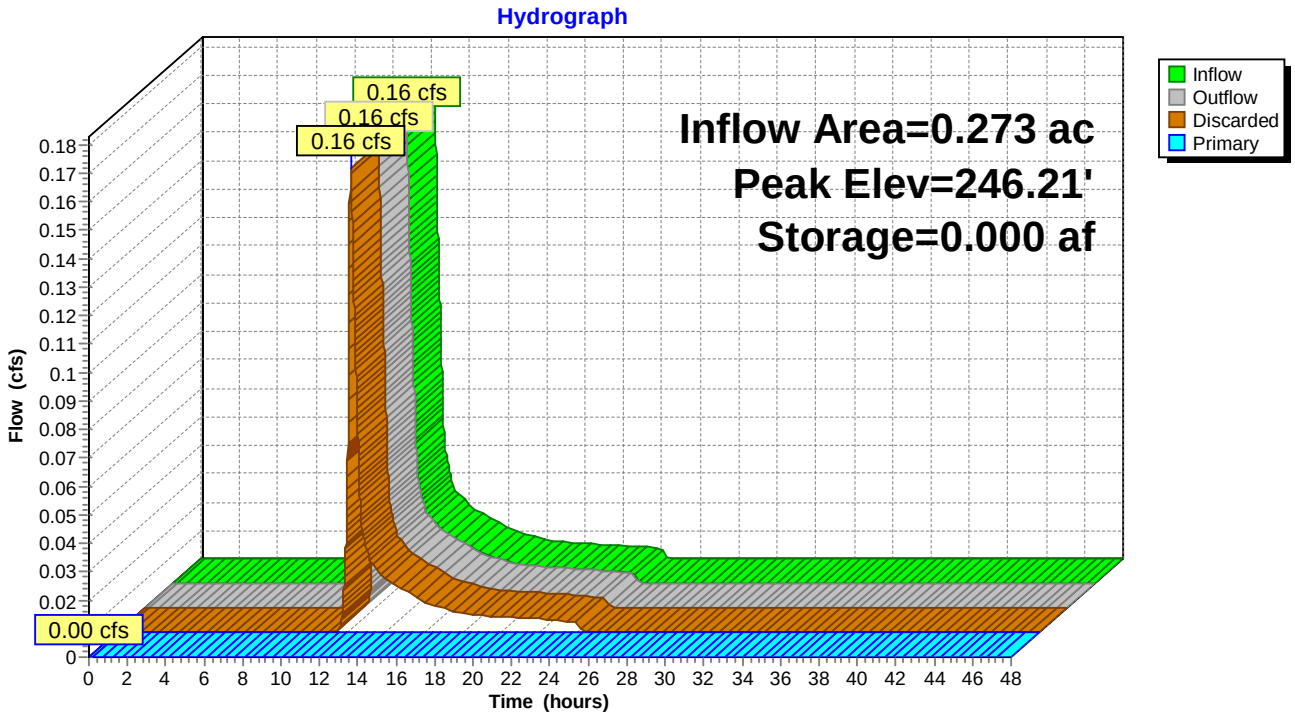
3,324.7 cf Field - 1,102.6 cf Chambers = 2,222.1 cf Stone x 33.0% Voids = 733.3 cf Stone Storage

Chamber Storage + Stone Storage = 1,835.9 cf = 0.042 af
Overall Storage Efficiency = 55.2%
Overall System Size = 46.34' x 20.50' x 3.50'

24 Chambers
123.1 cy Field
82.3 cy Stone



Pond 12P: BMP-5



Summary for Pond 13P: BMP-4

Inflow Area = 0.227 ac, 44.60% Impervious, Inflow Depth = 0.77" for 1-Year event
Inflow = 0.16 cfs @ 12.17 hrs, Volume= 0.015 af
Outflow = 0.16 cfs @ 12.18 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.6 min
Discarded = 0.16 cfs @ 12.18 hrs, Volume= 0.015 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 245.52' @ 12.18 hrs Surf.Area= 0.019 ac Storage= 0.000 af

Plug-Flow detention time= 0.6 min calculated for 0.015 af (100% of inflow)
Center-of-Mass det. time= 0.6 min (875.2 - 874.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	245.50'	0.015 af	**15.75'W x 53.46'L x 3.50'H Field A** 0.068 af Overall - 0.022 af Embedded = 0.046 af x 33.0% Voids
#2A	246.00'	0.022 af	**ADS_StormTech SC-740 +Cap** x 21 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 21 Chambers in 3 Rows
		0.037 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	248.90'	**2.5" x 2.5" Horiz. Orifice/Grate X 36.00** C= 0.600 Limited to weir flow at low heads
#2	Discarded	245.50'	**8.270 in/hr Exfiltration over Surface area** Phase-In= 0.02'

Discarded OutFlow Max=0.16 cfs @ 12.18 hrs HW=245.52' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.16 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=245.50' TW=0.00' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Controls 0.00 cfs)

Pond 13P: BMP-4 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

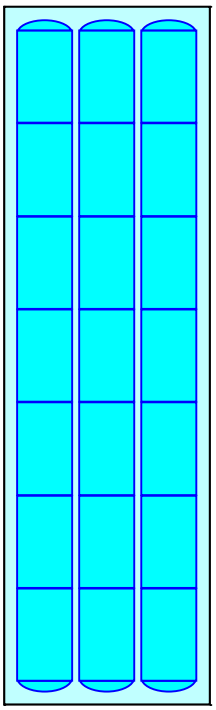
7 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 51.46' Row Length +12.0" End Stone x 2 = 53.46' Base Length
3 Rows x 51.0" Wide + 6.0" Spacing x 2 + 12.0" Side Stone x 2 = 15.75' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

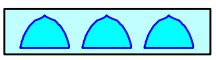
21 Chambers x 45.9 cf = 964.7 cf Chamber Storage

2,946.8 cf Field - 964.7 cf Chambers = 1,982.1 cf Stone x 33.0% Voids = 654.1 cf Stone Storage

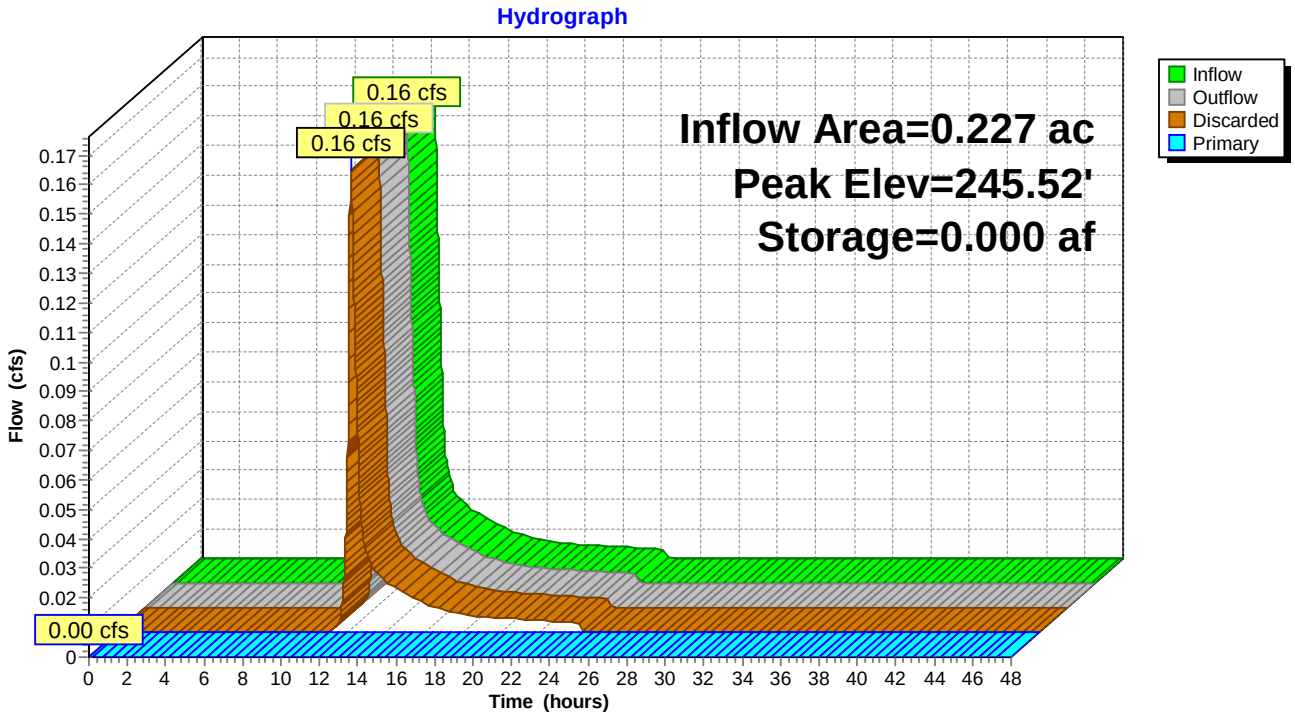
Chamber Storage + Stone Storage = 1,618.8 cf = 0.037 af
Overall Storage Efficiency = 54.9%
Overall System Size = 53.46' x 15.75' x 3.50'

21 Chambers
109.1 cy Field
73.4 cy Stone





Pond 13P: BMP-4



Summary for Pond 14P: BMP-6

Inflow Area = 0.205 ac, 42.22% Impervious, Inflow Depth = 0.87" for 1-Year event
Inflow = 0.21 cfs @ 12.08 hrs, Volume= 0.015 af
Outflow = 0.16 cfs @ 12.17 hrs, Volume= 0.015 af, Atten= 23%, Lag= 5.5 min
Discarded = 0.02 cfs @ 11.77 hrs, Volume= 0.013 af
Primary = 0.14 cfs @ 12.17 hrs, Volume= 0.002 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 238.76' @ 12.17 hrs Surf.Area= 0.003 ac Storage= 0.003 af

Plug-Flow detention time= 36.0 min calculated for 0.015 af (100% of inflow)
Center-of-Mass det. time= 35.9 min (897.5 - 861.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	236.50'	0.002 af	**11.50'W x 10.32'L x 2.33'H Field A** 0.006 af Overall - 0.001 af Embedded = 0.005 af x 33.0% Voids
#2A	237.00'	0.001 af	**ADS_StormTech SC-310 +Cap** x 3 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 3 Chambers in 3 Rows
		0.003 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	238.75'	**2.5" x 2.5" Horiz. Orifice/Grate X 36.00** C= 0.600 Limited to weir flow at low heads
#2	Discarded	236.50'	**8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.02 cfs @ 11.77 hrs HW=236.53' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.12 cfs @ 12.17 hrs HW=238.76' TW=0.00' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Weir Controls 0.12 cfs @ 0.35 fps)

Pond 14P: BMP-6 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-310 +Cap (ADS StormTech® SC-310 with cap length)
Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf
Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 6.0" Spacing = 40.0" C-C Row Spacing

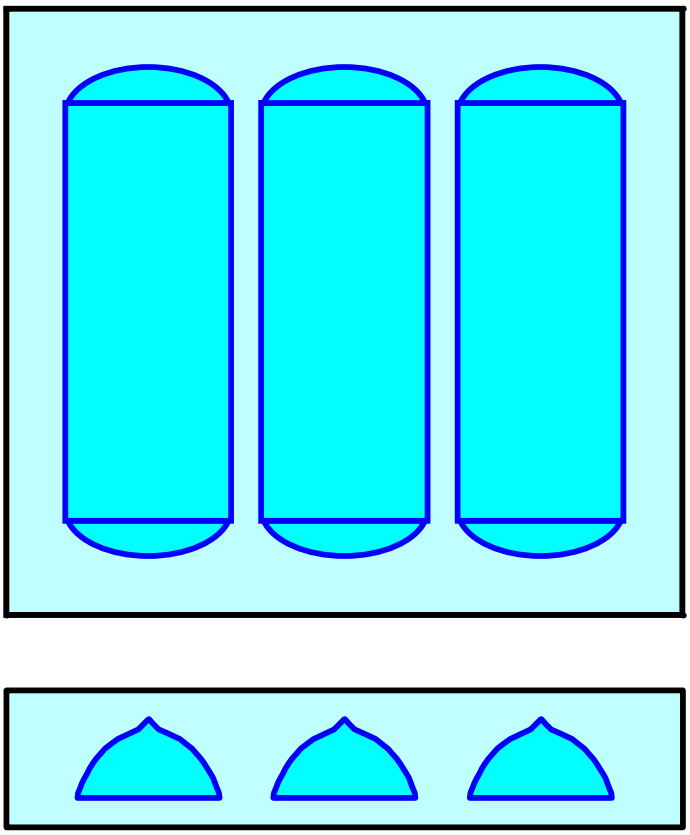
1 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 8.32' Row Length +12.0" End Stone x 2 = 10.32' Base Length
3 Rows x 34.0" Wide + 6.0" Spacing x 2 + 12.0" Side Stone x 2 = 11.50' Base Width
6.0" Base + 16.0" Chamber Height + 6.0" Cover = 2.33' Field Height

3 Chambers x 14.7 cf = 44.2 cf Chamber Storage

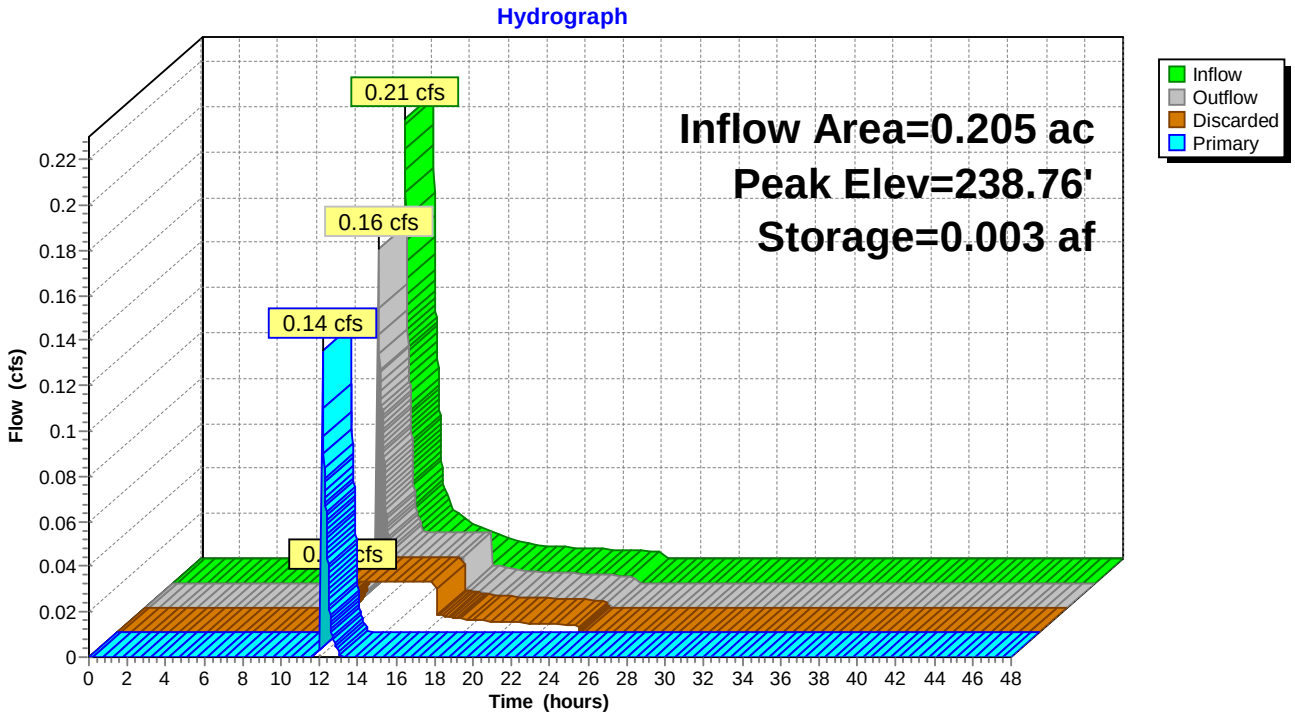
276.9 cf Field - 44.2 cf Chambers = 232.7 cf Stone x 33.0% Voids = 76.8 cf Stone Storage

Chamber Storage + Stone Storage = 121.0 cf = 0.003 af
Overall Storage Efficiency = 43.7%
Overall System Size = 10.32' x 11.50' x 2.33'

3 Chambers
10.3 cy Field
8.6 cy Stone



Pond 14P: BMP-6



Summary for Pond 16P: BMP-7

Inflow Area = 0.118 ac, 26.89% Impervious, Inflow Depth = 0.41" for 1-Year event
Inflow = 0.04 cfs @ 12.14 hrs, Volume= 0.004 af
Outflow = 0.04 cfs @ 12.14 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.3 min
Discarded = 0.04 cfs @ 12.14 hrs, Volume= 0.004 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 241.01' @ 12.14 hrs Surf.Area= 0.006 ac Storage= 0.000 af

Plug-Flow detention time= 0.3 min calculated for 0.004 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (910.6 - 910.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	241.00'	0.004 af	**11.50'W x 24.56'L x 2.33'H Field A** 0.015 af Overall - 0.003 af Embedded = 0.012 af x 33.0% Voids
#2A	241.50'	0.003 af	**ADS_StormTech SC-310 +Cap** x 9 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 9 Chambers in 3 Rows
		0.007 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	241.00'	**8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	243.25'	**2.5" x 2.5" Horiz. Orifice/Grate X 36.00** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.04 cfs @ 12.14 hrs HW=241.01' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.04 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=241.00' TW=0.00' (Dynamic Tailwater)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 16P: BMP-7 - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-310 +Cap (ADS StormTech® SC-310 with cap length)
Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf
Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 6.0" Spacing = 40.0" C-C Row Spacing

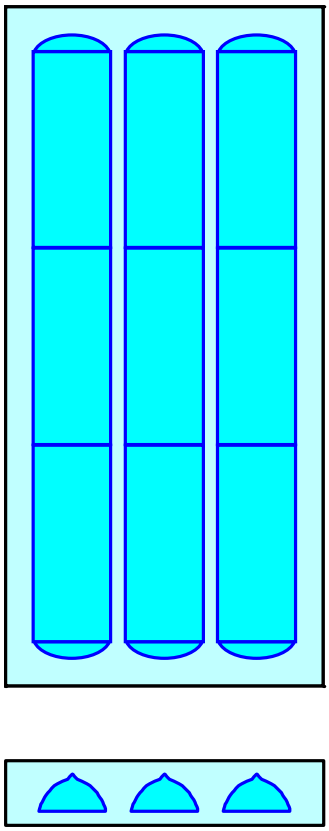
3 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 22.56' Row Length +12.0" End Stone x 2 = 24.56' Base Length
3 Rows x 34.0" Wide + 6.0" Spacing x 2 + 12.0" Side Stone x 2 = 11.50' Base Width
6.0" Base + 16.0" Chamber Height + 6.0" Cover = 2.33' Field Height

9 Chambers x 14.7 cf = 132.7 cf Chamber Storage

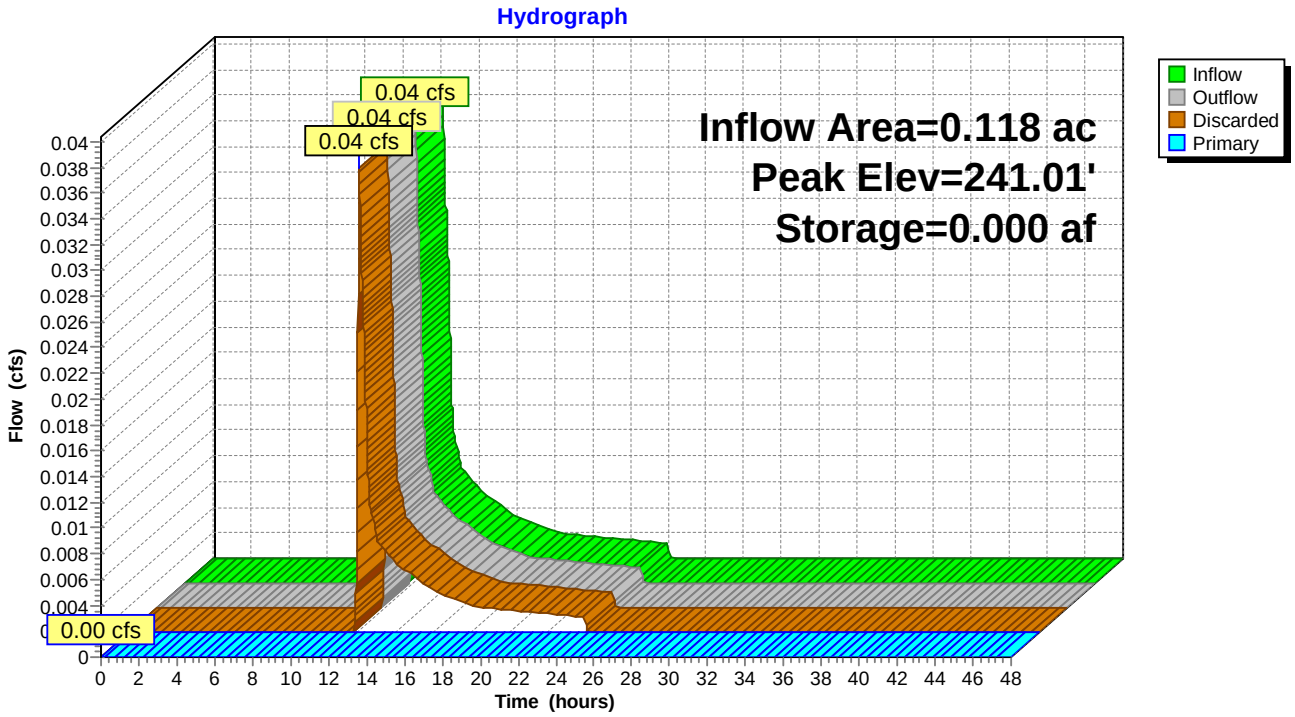
659.0 cf Field - 132.7 cf Chambers = 526.3 cf Stone x 33.0% Voids = 173.7 cf Stone Storage

Chamber Storage + Stone Storage = 306.4 cf = 0.007 af
Overall Storage Efficiency = 46.5%
Overall System Size = 24.56' x 11.50' x 2.33'

9 Chambers
24.4 cy Field
19.5 cy Stone



Pond 16P: BMP-7



Summary for Pond 17P: BMP-9A

Inflow Area = 0.044 ac,100.00% Impervious, Inflow Depth = 2.47" for 1-Year event
Inflow = 0.12 cfs @ 12.07 hrs, Volume= 0.009 af
Outflow = 0.05 cfs @ 12.00 hrs, Volume= 0.009 af, Atten= 57%, Lag= 0.0 min
Discarded = 0.05 cfs @ 12.00 hrs, Volume= 0.009 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 248.39' @ 12.23 hrs Surf.Area= 0.006 ac Storage= 0.001 af

Plug-Flow detention time= 2.5 min calculated for 0.009 af (100% of inflow)
Center-of-Mass det. time= 2.5 min (761.6 - 759.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	248.00'	0.005 af	**25.25'W x 10.74'L x 3.50'H Field A** 0.022 af Overall - 0.005 af Embedded = 0.017 af x 33.0% Voids
#2A	248.50'	0.005 af	**ADS_StormTech SC-740 +Cap** x 5 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 5 Chambers in 5 Rows
		0.011 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	248.00'	**8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.05 cfs @ 12.00 hrs HW=248.04' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.05 cfs)

Pond 17P: BMP-9A - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

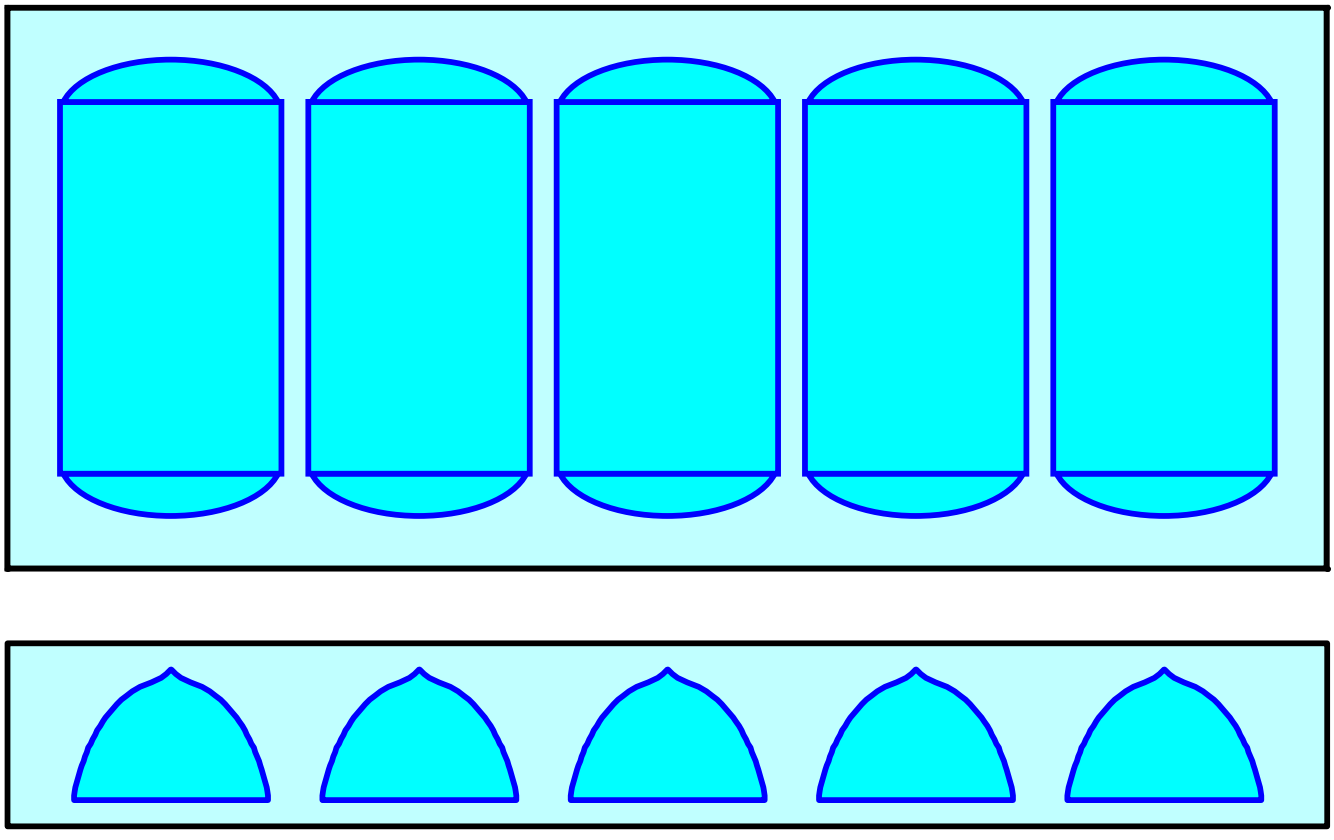
1 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 8.74' Row Length +12.0" End Stone x 2 = 10.74' Base Length
5 Rows x 51.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.25' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

5 Chambers x 45.9 cf = 229.7 cf Chamber Storage

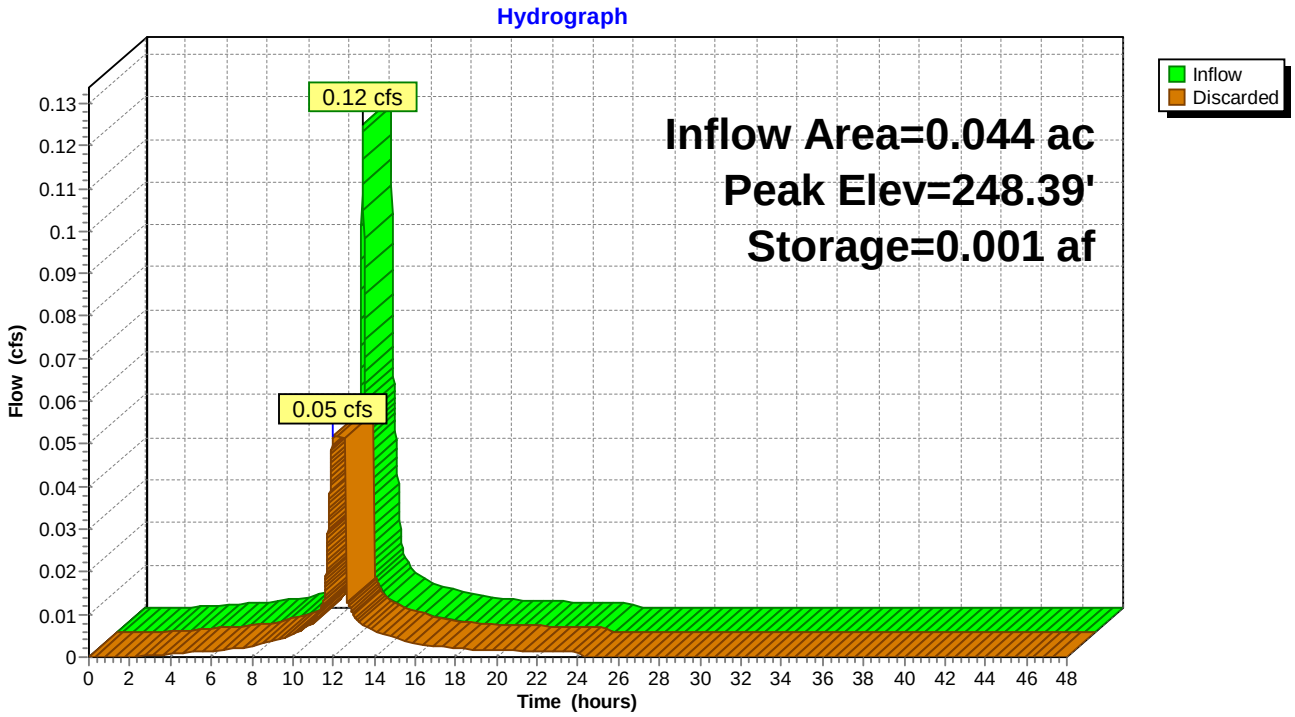
948.9 cf Field - 229.7 cf Chambers = 719.2 cf Stone x 33.0% Voids = 237.3 cf Stone Storage

Chamber Storage + Stone Storage = 467.0 cf = 0.011 af
Overall Storage Efficiency = 49.2%
Overall System Size = 10.74' x 25.25' x 3.50'

5 Chambers
35.1 cy Field
26.6 cy Stone



Pond 17P: BMP-9A



Summary for Pond 19P: BMP-9B

Inflow Area = 0.044 ac,100.00% Impervious, Inflow Depth = 2.47" for 1-Year event
Inflow = 0.12 cfs @ 12.07 hrs, Volume= 0.009 af
Outflow = 0.05 cfs @ 12.00 hrs, Volume= 0.009 af, Atten= 57%, Lag= 0.0 min
Discarded = 0.05 cfs @ 12.00 hrs, Volume= 0.009 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 248.89' @ 12.23 hrs Surf.Area= 0.006 ac Storage= 0.001 af

Plug-Flow detention time= 2.5 min calculated for 0.009 af (100% of inflow)
Center-of-Mass det. time= 2.5 min (761.6 - 759.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	248.50'	0.005 af	**25.25'W x 10.74'L x 3.50'H Field A** 0.022 af Overall - 0.005 af Embedded = 0.017 af x 33.0% Voids
#2A	249.00'	0.005 af	**ADS_StormTech SC-740 +Cap** x 5 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 5 Chambers in 5 Rows
		0.011 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	251.80'	**4.0' 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
#2	Discarded	248.50'	**8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.05 cfs @ 12.00 hrs HW=248.54' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=248.50' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 19P: BMP-9B - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

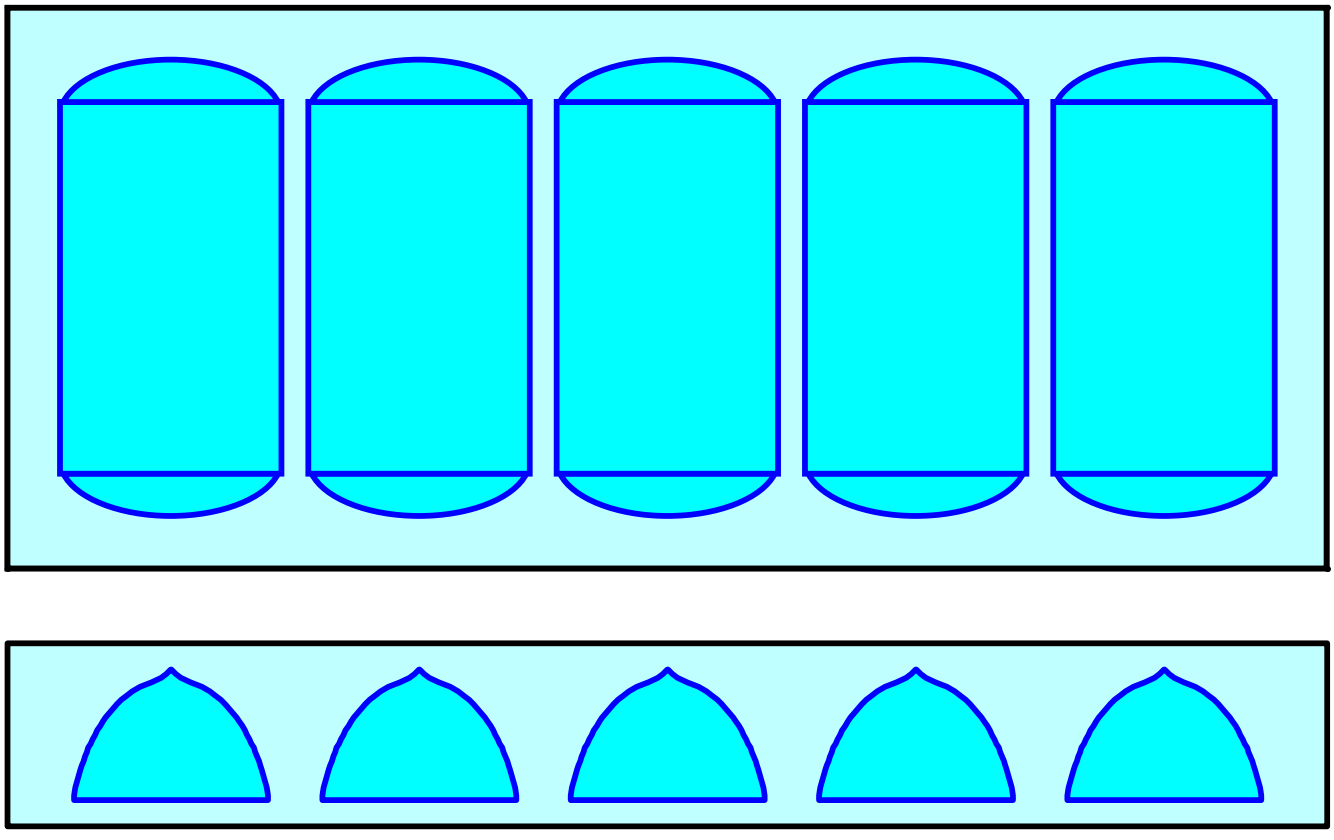
1 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 8.74' Row Length +12.0" End Stone x 2 = 10.74' Base Length
5 Rows x 51.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.25' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

5 Chambers x 45.9 cf = 229.7 cf Chamber Storage

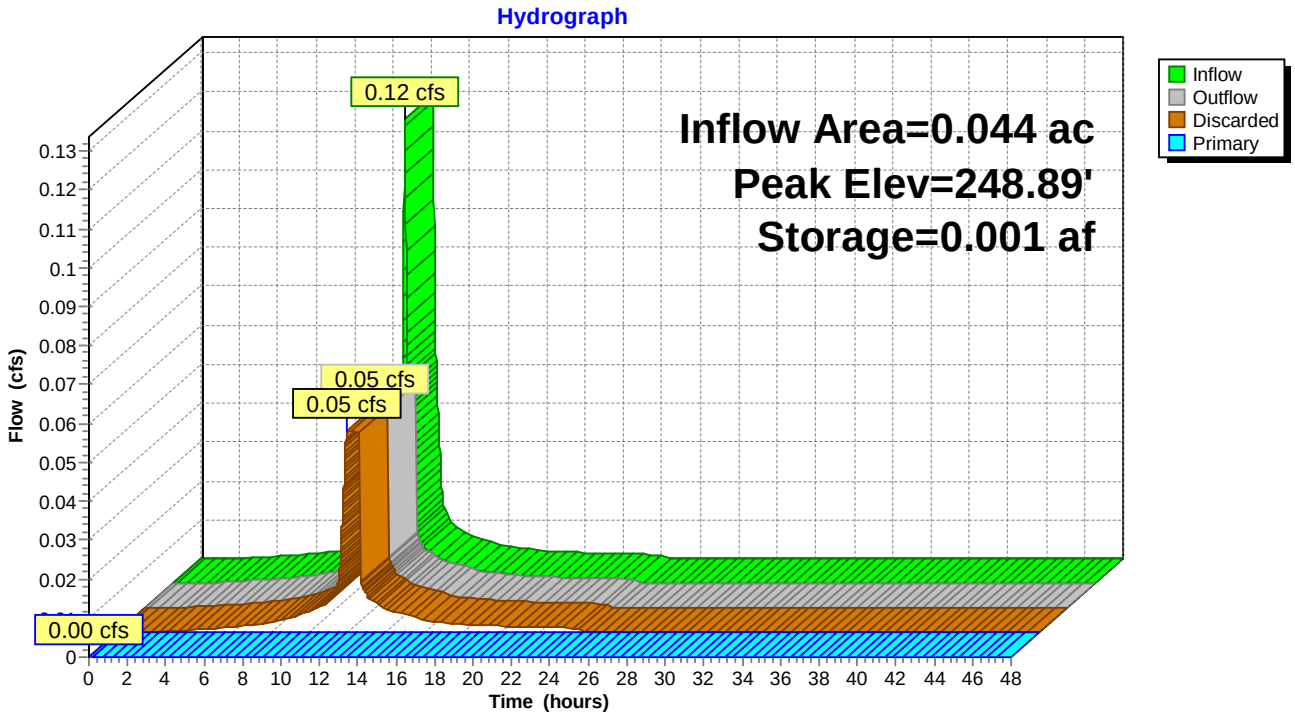
948.9 cf Field - 229.7 cf Chambers = 719.2 cf Stone x 33.0% Voids = 237.3 cf Stone Storage

Chamber Storage + Stone Storage = 467.0 cf = 0.011 af
Overall Storage Efficiency = 49.2%
Overall System Size = 10.74' x 25.25' x 3.50'

5 Chambers
35.1 cy Field
26.6 cy Stone



Pond 19P: BMP-9B



Summary for Pond 20P: BMP-8A

Inflow Area = 0.044 ac,100.00% Impervious, Inflow Depth = 2.47" for 1-Year event
Inflow = 0.12 cfs @ 12.07 hrs, Volume= 0.009 af
Outflow = 0.05 cfs @ 12.00 hrs, Volume= 0.009 af, Atten= 57%, Lag= 0.0 min
Discarded = 0.05 cfs @ 12.00 hrs, Volume= 0.009 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 250.39' @ 12.23 hrs Surf.Area= 0.006 ac Storage= 0.001 af

Plug-Flow detention time= 2.5 min calculated for 0.009 af (100% of inflow)
Center-of-Mass det. time= 2.5 min (761.6 - 759.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	250.00'	0.005 af	**25.25'W x 10.74'L x 3.50'H Field A** 0.022 af Overall - 0.005 af Embedded = 0.017 af x 33.0% Voids
#2A	250.50'	0.005 af	**ADS_StormTech SC-740 +Cap** x 5 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 5 Chambers in 5 Rows
		0.011 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	250.00'	**8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.05 cfs @ 12.00 hrs HW=250.04' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.05 cfs)

Pond 20P: BMP-8A - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

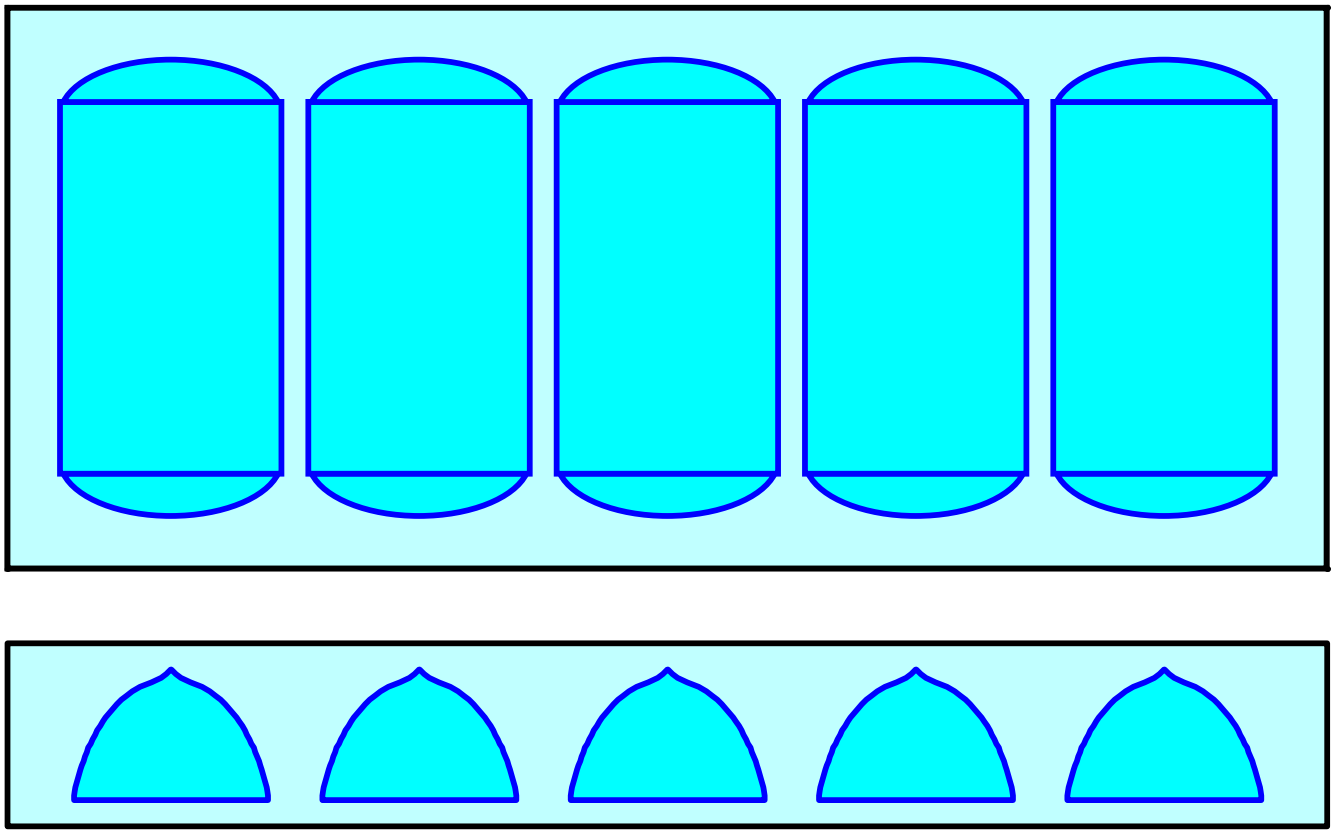
1 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 8.74' Row Length +12.0" End Stone x 2 = 10.74' Base Length
5 Rows x 51.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.25' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

5 Chambers x 45.9 cf = 229.7 cf Chamber Storage

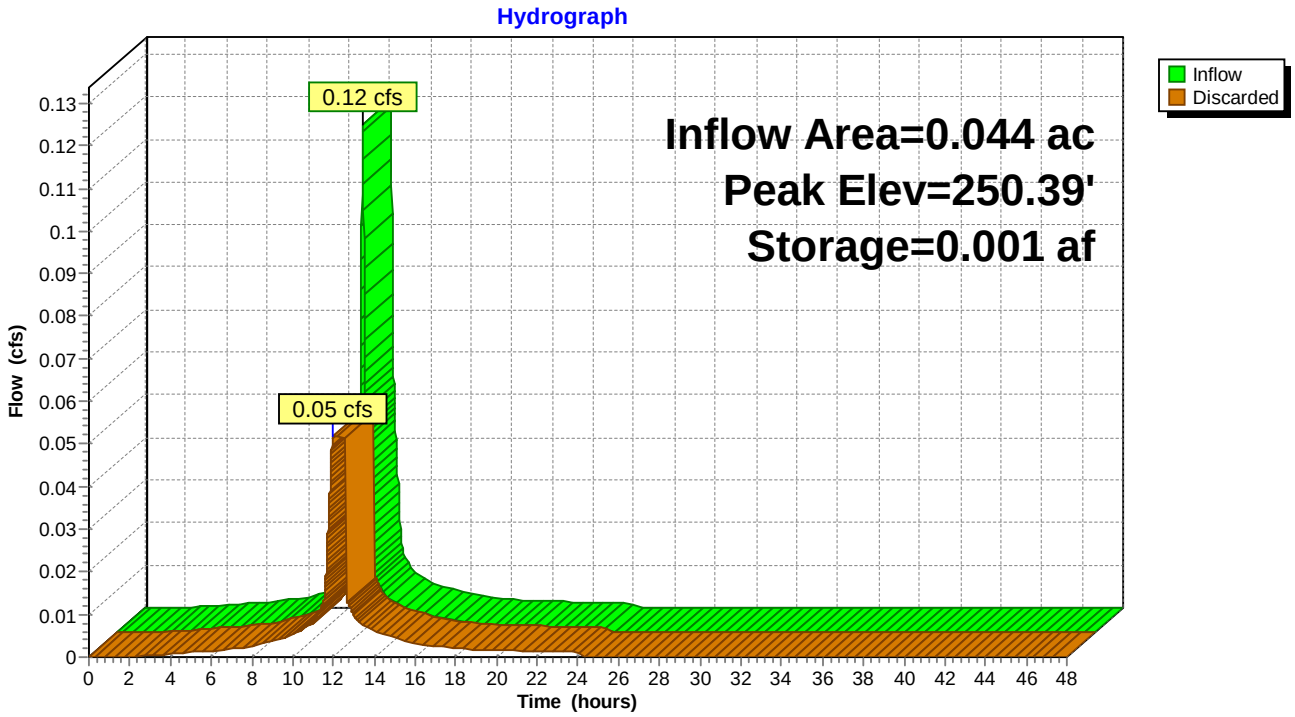
948.9 cf Field - 229.7 cf Chambers = 719.2 cf Stone x 33.0% Voids = 237.3 cf Stone Storage

Chamber Storage + Stone Storage = 467.0 cf = 0.011 af
Overall Storage Efficiency = 49.2%
Overall System Size = 10.74' x 25.25' x 3.50'

5 Chambers
35.1 cy Field
26.6 cy Stone



Pond 20P: BMP-8A



Summary for Pond 23P: BMP-8B

Inflow Area = 0.044 ac,100.00% Impervious, Inflow Depth = 2.47" for 1-Year event
Inflow = 0.12 cfs @ 12.07 hrs, Volume= 0.009 af
Outflow = 0.05 cfs @ 12.00 hrs, Volume= 0.009 af, Atten= 57%, Lag= 0.0 min
Discarded = 0.05 cfs @ 12.00 hrs, Volume= 0.009 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 250.39' @ 12.23 hrs Surf.Area= 0.006 ac Storage= 0.001 af

Plug-Flow detention time= 2.5 min calculated for 0.009 af (100% of inflow)
Center-of-Mass det. time= 2.5 min (761.7 - 759.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	250.00'	0.005 af	**25.25'W x 10.74'L x 3.50'H Field A** 0.022 af Overall - 0.005 af Embedded = 0.017 af x 33.0% Voids
#2A	250.50'	0.005 af	**ADS_StormTech SC-740 +Cap** x 5 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 5 Chambers in 5 Rows
		0.011 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	250.00'	**8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.05 cfs @ 12.00 hrs HW=250.04' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 0.05 cfs)

Pond 23P: BMP-8B - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)
Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf
Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

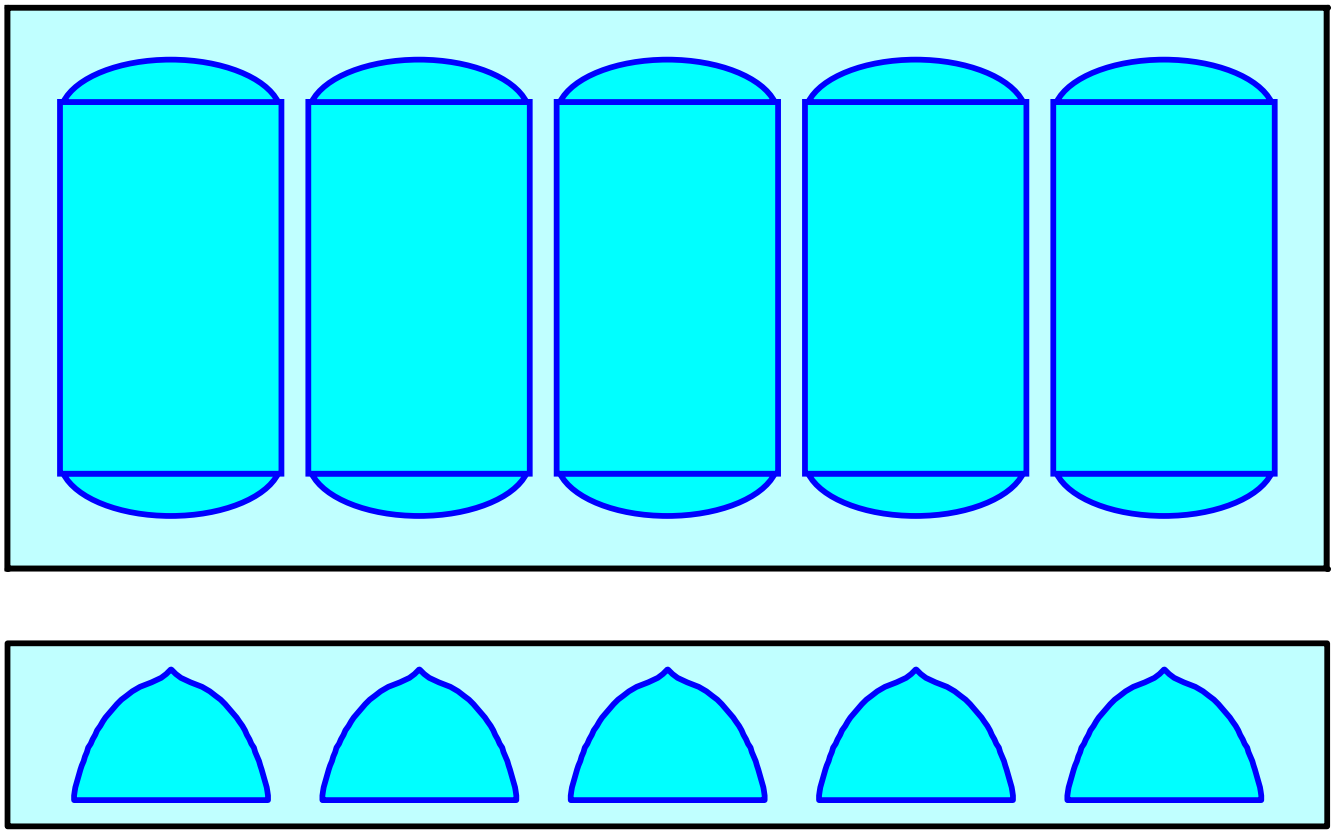
1 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 8.74' Row Length +12.0" End Stone x 2 = 10.74' Base Length
5 Rows x 51.0" Wide + 6.0" Spacing x 4 + 12.0" Side Stone x 2 = 25.25' Base Width
6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

5 Chambers x 45.9 cf = 229.7 cf Chamber Storage

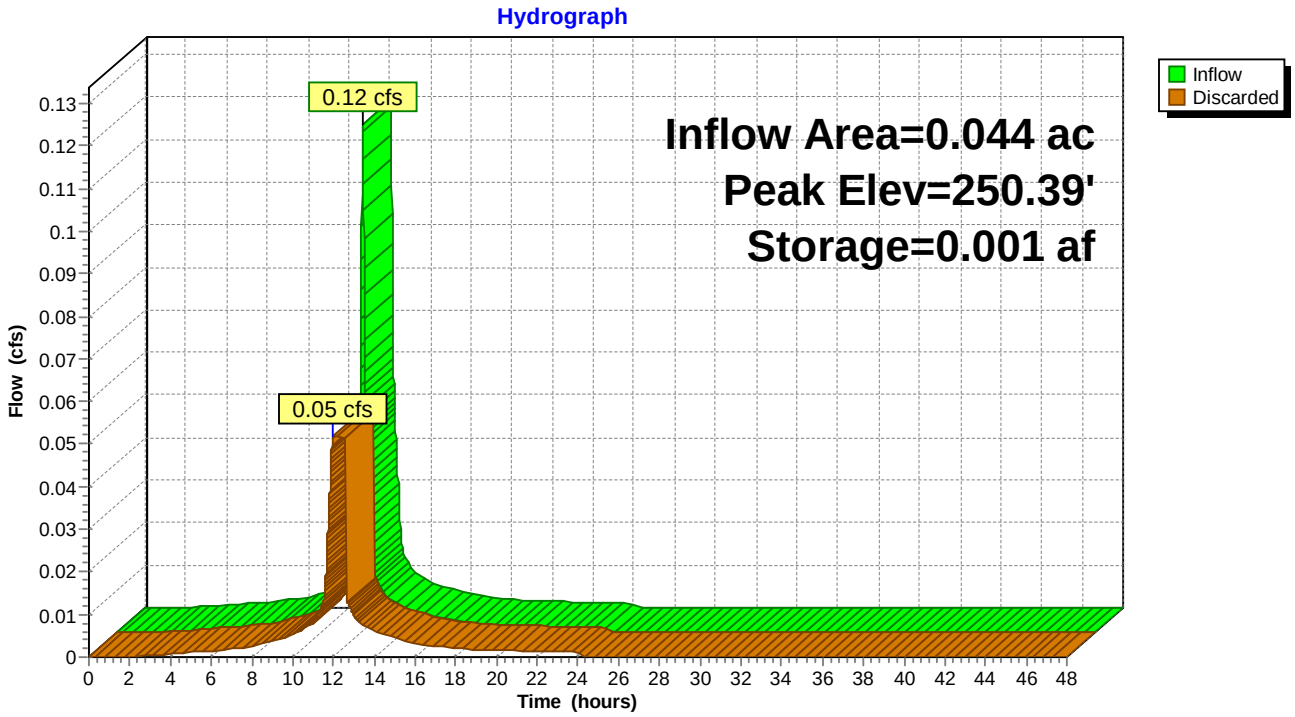
948.9 cf Field - 229.7 cf Chambers = 719.2 cf Stone x 33.0% Voids = 237.3 cf Stone Storage

Chamber Storage + Stone Storage = 467.0 cf = 0.011 af
Overall Storage Efficiency = 49.2%
Overall System Size = 10.74' x 25.25' x 3.50'

5 Chambers
35.1 cy Field
26.6 cy Stone



Pond 23P: BMP-8B

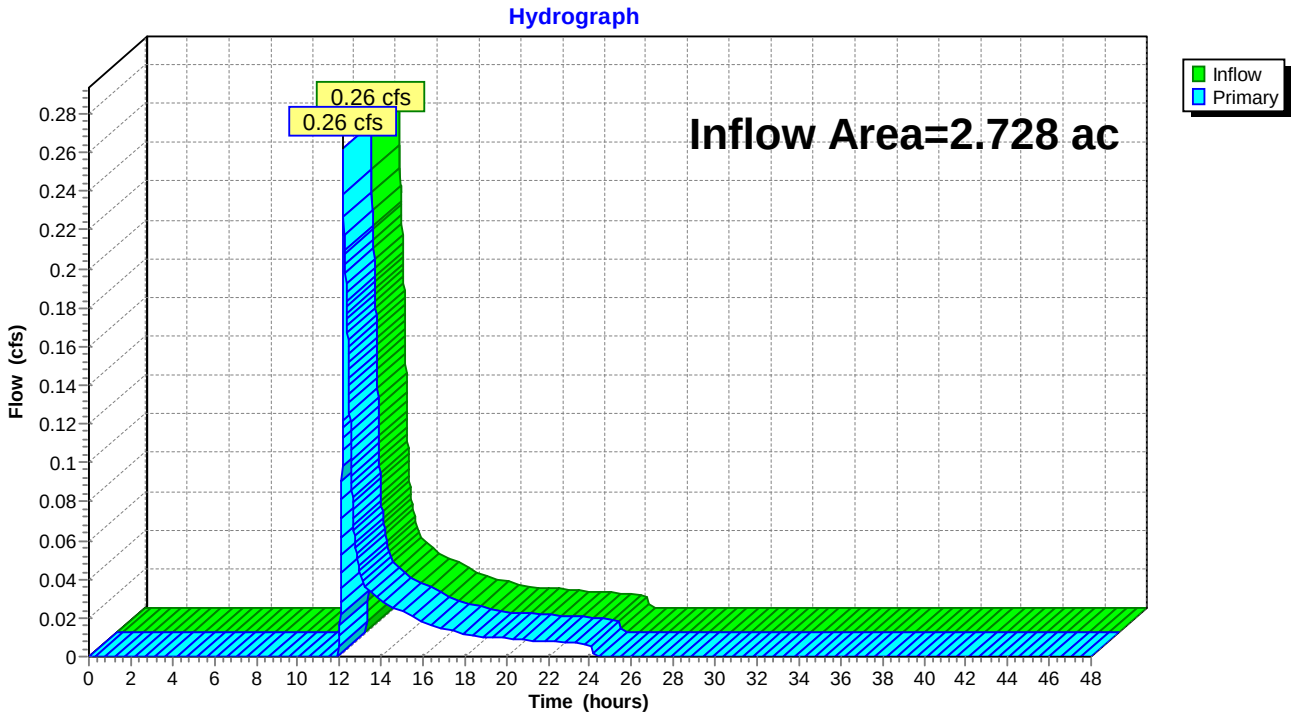


Summary for Link 2L: PR-TOTAL SITE

Inflow Area = 2.728 ac, 37.27% Impervious, Inflow Depth = 0.10" for 1-Year event
Inflow = 0.26 cfs @ 12.17 hrs, Volume= 0.022 af
Primary = 0.26 cfs @ 12.17 hrs, Volume= 0.022 af, Atten= 0%, Lag= 0.0 min

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

Link 2L: PR-TOTAL SITE

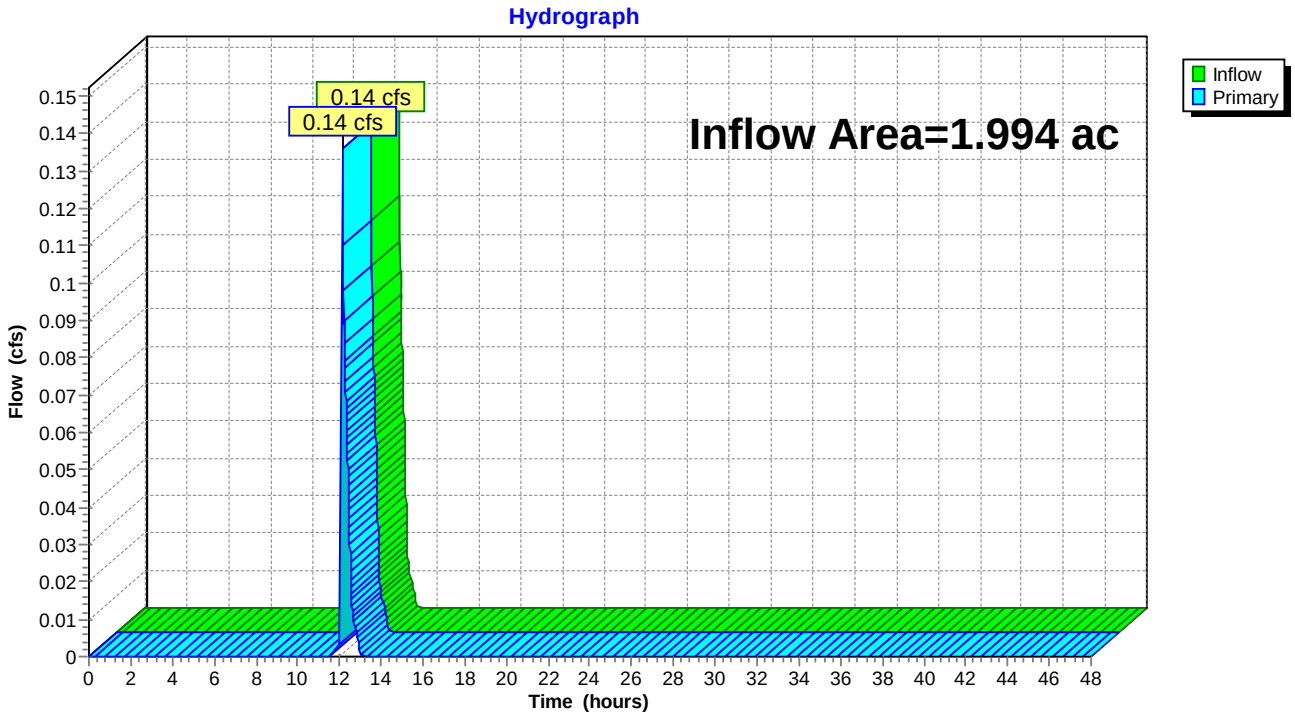


Summary for Link 15L: DP-1

Inflow Area = 1.994 ac, 45.02% Impervious, Inflow Depth = 0.01" for 1-Year event
Inflow = 0.14 cfs @ 12.17 hrs, Volume= 0.002 af
Primary = 0.14 cfs @ 12.17 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min

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

Link 15L: DP-1

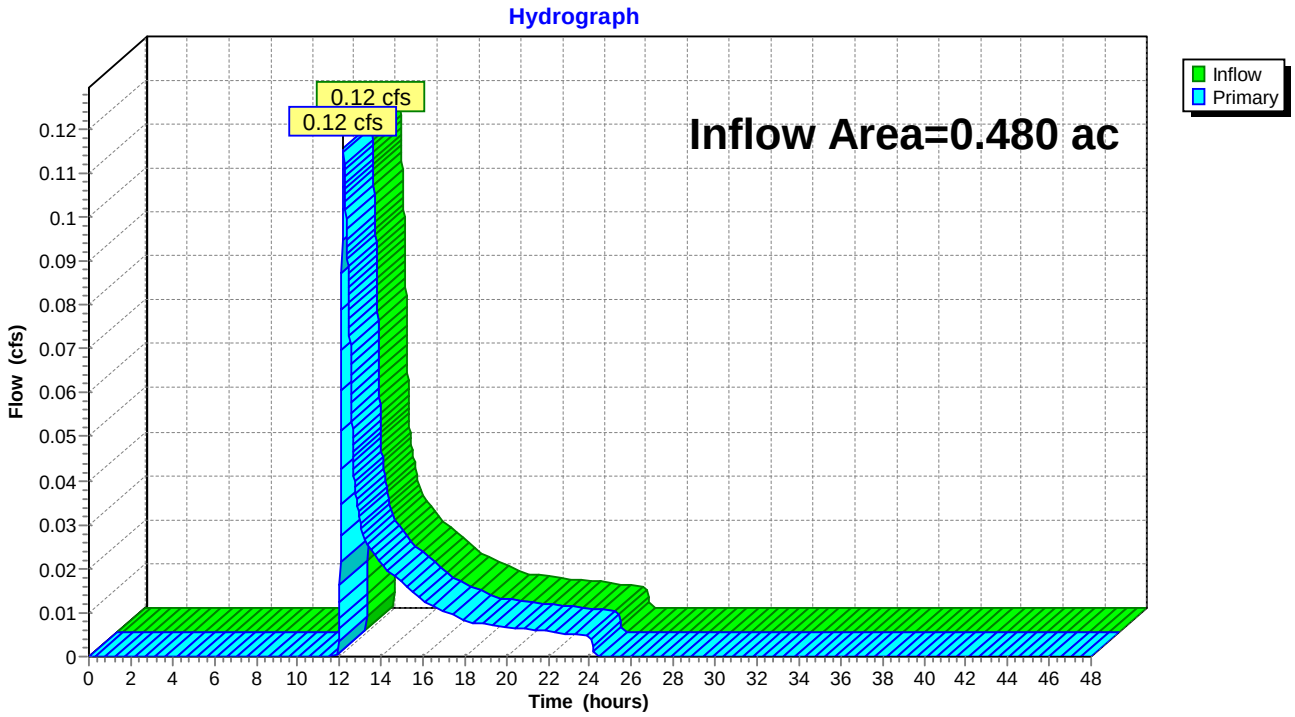


Summary for Link 16L: DP-3

Inflow Area = 0.480 ac, 24.02% Impervious, Inflow Depth = 0.38" for 1-Year event
Inflow = 0.12 cfs @ 12.18 hrs, Volume= 0.015 af
Primary = 0.12 cfs @ 12.18 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.0 min

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

Link 16L: DP-3

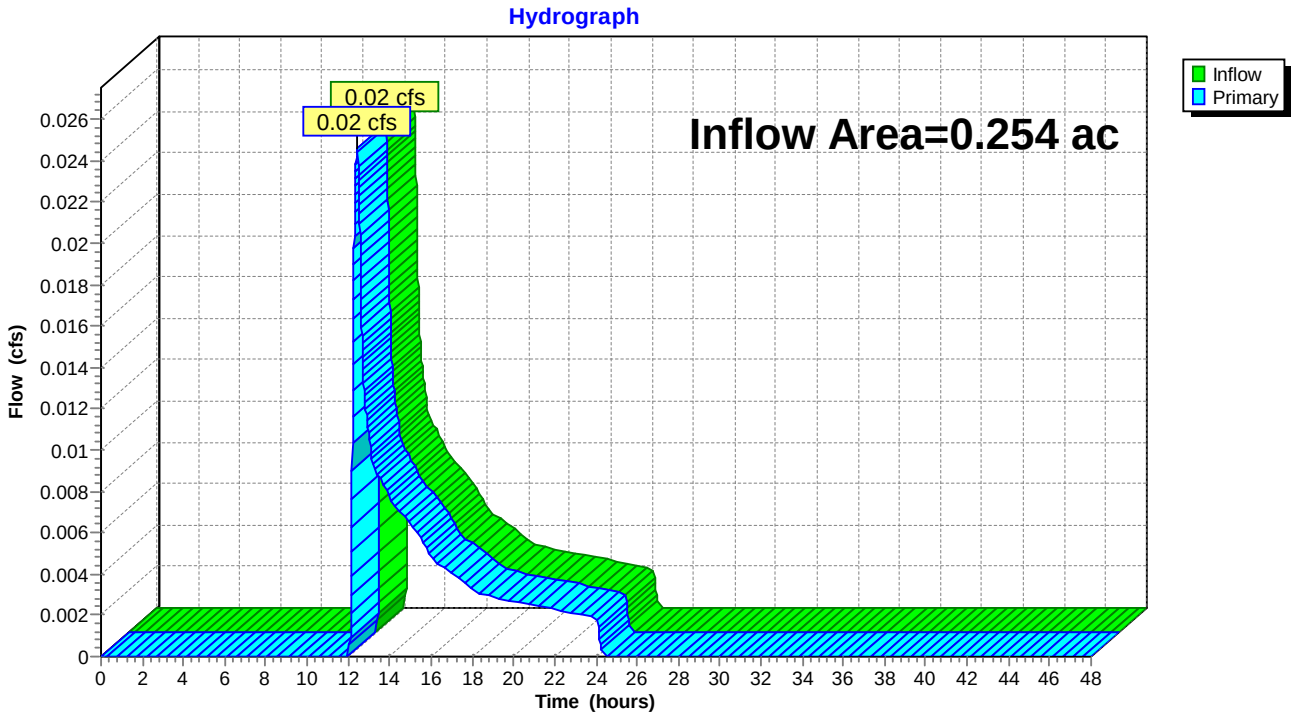


Summary for Link 17L: DP-2

Inflow Area = 0.254 ac, 1.45% Impervious, Inflow Depth = 0.23" for 1-Year event
Inflow = 0.02 cfs @ 12.42 hrs, Volume= 0.005 af
Primary = 0.02 cfs @ 12.42 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min

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

Link 17L: DP-2



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

Subcatchment 3S: PR-SUBAREA-1E Runoff Area=9,892 sf 44.60% Impervious Runoff Depth=2.29"
Flow Length=175' Tc=11.2 min CN=75 Runoff=0.51 cfs 0.043 af

Subcatchment 4S: PR-SUBAREA-2 Runoff Area=11,072 sf 1.45% Impervious Runoff Depth=1.19"
Flow Length=135' Tc=12.3 min UI Adjusted CN=60 Runoff=0.25 cfs 0.025 af

Subcatchment 5S: PR-SUBAREA-1F Runoff Area=17,837 sf 18.58% Impervious Runoff Depth=1.74"
Flow Length=242' Tc=11.6 min CN=68 Runoff=0.67 cfs 0.059 af

Subcatchment 6S: PR-SUBAREA-1G Runoff Area=8,930 sf 42.22% Impervious Runoff Depth=2.46"
Flow Length=116' Tc=4.9 min CN=77 Runoff=0.61 cfs 0.042 af

Subcatchment 7S: PR-SUBAREA-1H Runoff Area=5,136 sf 26.89% Impervious Runoff Depth=1.59"
Flow Length=82' Tc=7.4 min UI Adjusted CN=66 Runoff=0.20 cfs 0.016 af

Subcatchment 8S: PR-SUBAREA-3 Runoff Area=20,893 sf 24.02% Impervious Runoff Depth=1.52"
Flow Length=280' Tc=9.6 min UI Adjusted CN=65 Runoff=0.71 cfs 0.061 af

Subcatchment 15S: PR-SUBAREA-1A Runoff Area=3,218 sf 51.34% Impervious Runoff Depth=2.72"
Flow Length=110' Slope=0.0500 '/' Tc=7.1 min CN=80 Runoff=0.23 cfs 0.017 af

Subcatchment 16S: PR-SUBAREA-1B Runoff Area=10,785 sf 37.16% Impervious Runoff Depth=1.74"
Flow Length=114' Tc=8.8 min CN=68 Runoff=0.44 cfs 0.036 af

Subcatchment 17S: PR-SUBARE-1C Runoff Area=11,458 sf 67.67% Impervious Runoff Depth=2.99"
Flow Length=120' Tc=9.1 min CN=83 Runoff=0.83 cfs 0.066 af

Subcatchment 18S: PR-SUBAREA-1D Runoff Area=11,898 sf 42.97% Impervious Runoff Depth=2.12"
Flow Length=307' Tc=10.7 min CN=73 Runoff=0.57 cfs 0.048 af

Subcatchment 19S: PR-SUBAREA-1-E ROOFS Runoff Area=1,924 sf 100.00% Impervious Runoff Depth=4.56"
Tc=5.0 min CN=98 Runoff=0.21 cfs 0.017 af

Subcatchment 20S: PR-SUBAREA-1-E ROOFS Runoff Area=1,924 sf 100.00% Impervious Runoff Depth=4.56"
Tc=5.0 min CN=98 Runoff=0.21 cfs 0.017 af

Subcatchment 21S: PR-SUBAREA-1-B ROOFS Runoff Area=1,924 sf 100.00% Impervious Runoff Depth=4.56"
Tc=5.0 min CN=98 Runoff=0.21 cfs 0.017 af

Subcatchment 22S: PR-SUBAREA-1-B ROOFS Runoff Area=1,925 sf 100.00% Impervious Runoff Depth=4.56"
Tc=5.0 min CN=98 Runoff=0.21 cfs 0.017 af

Pond 9P: BMP-1 Peak Elev=251.37' Storage=0.007 af Inflow=0.23 cfs 0.017 af
Discarded=0.02 cfs 0.017 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.017 af

Pond 10P: BMP-2 Peak Elev=245.90' Storage=0.020 af Inflow=1.27 cfs 0.101 af
Discarded=0.36 cfs 0.101 af Primary=0.00 cfs 0.000 af Outflow=0.36 cfs 0.101 af

Pond 11P: BMP-3 Peak Elev=243.93' Storage=0.014 af Inflow=0.67 cfs 0.059 af
Discarded=0.17 cfs 0.059 af Primary=0.00 cfs 0.000 af Outflow=0.17 cfs 0.059 af

Pond 12P: BMP-5 Peak Elev=247.03' Storage=0.009 af Inflow=0.57 cfs 0.048 af
Discarded=0.18 cfs 0.048 af Primary=0.00 cfs 0.000 af Outflow=0.18 cfs 0.048 af

Pond 13P: BMP-4 Peak Elev=246.35' Storage=0.008 af Inflow=0.51 cfs 0.043 af
Discarded=0.16 cfs 0.043 af Primary=0.00 cfs 0.000 af Outflow=0.16 cfs 0.043 af

Pond 14P: BMP-6 Peak Elev=238.78' Storage=0.003 af Inflow=0.61 cfs 0.042 af
Discarded=0.02 cfs 0.021 af Primary=0.59 cfs 0.021 af Outflow=0.62 cfs 0.042 af

Pond 16P: BMP-7 Peak Elev=241.97' Storage=0.003 af Inflow=0.20 cfs 0.016 af
Discarded=0.05 cfs 0.016 af Primary=0.00 cfs 0.000 af Outflow=0.05 cfs 0.016 af

Pond 17P: BMP-9A Peak Elev=249.01' Storage=0.003 af Inflow=0.21 cfs 0.017 af
Outflow=0.05 cfs 0.017 af

Pond 19P: BMP-9B Peak Elev=249.51' Storage=0.003 af Inflow=0.21 cfs 0.017 af
Discarded=0.05 cfs 0.017 af Primary=0.00 cfs 0.000 af Outflow=0.05 cfs 0.017 af

Pond 20P: BMP-8A Peak Elev=251.01' Storage=0.003 af Inflow=0.21 cfs 0.017 af
Outflow=0.05 cfs 0.017 af

Pond 23P: BMP-8B Peak Elev=251.02' Storage=0.003 af Inflow=0.21 cfs 0.017 af
Outflow=0.05 cfs 0.017 af

Link 2L: PR-TOTAL SITE Inflow=1.40 cfs 0.107 af
Primary=1.40 cfs 0.107 af

Link 15L: DP-1 Inflow=0.59 cfs 0.021 af
Primary=0.59 cfs 0.021 af

Link 16L: DP-3 Inflow=0.71 cfs 0.061 af
Primary=0.71 cfs 0.061 af

Link 17L: DP-2 Inflow=0.25 cfs 0.025 af
Primary=0.25 cfs 0.025 af

Total Runoff Area = 2.728 ac Runoff Volume = 0.480 af Average Runoff Depth = 2.11"
62.73% Pervious = 1.711 ac 37.27% Impervious = 1.017 ac

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

Subcatchment 3S: PR-SUBAREA-1E Runoff Area=9,892 sf 44.60% Impervious Runoff Depth=3.45"
Flow Length=175' Tc=11.2 min CN=75 Runoff=0.77 cfs 0.065 af

Subcatchment 4S: PR-SUBAREA-2 Runoff Area=11,072 sf 1.45% Impervious Runoff Depth=2.05"
Flow Length=135' Tc=12.3 min UI Adjusted CN=60 Runoff=0.47 cfs 0.043 af

Subcatchment 5S: PR-SUBAREA-1F Runoff Area=17,837 sf 18.58% Impervious Runoff Depth=2.78"
Flow Length=242' Tc=11.6 min CN=68 Runoff=1.10 cfs 0.095 af

Subcatchment 6S: PR-SUBAREA-1G Runoff Area=8,930 sf 42.22% Impervious Runoff Depth=3.65"
Flow Length=116' Tc=4.9 min CN=77 Runoff=0.91 cfs 0.062 af

Subcatchment 7S: PR-SUBAREA-1H Runoff Area=5,136 sf 26.89% Impervious Runoff Depth=2.59"
Flow Length=82' Tc=7.4 min UI Adjusted CN=66 Runoff=0.34 cfs 0.025 af

Subcatchment 8S: PR-SUBAREA-3 Runoff Area=20,893 sf 24.02% Impervious Runoff Depth=2.50"
Flow Length=280' Tc=9.6 min UI Adjusted CN=65 Runoff=1.22 cfs 0.100 af

Subcatchment 15S: PR-SUBAREA-1A Runoff Area=3,218 sf 51.34% Impervious Runoff Depth=3.96"
Flow Length=110' Slope=0.0500 '/' Tc=7.1 min CN=80 Runoff=0.33 cfs 0.024 af

Subcatchment 16S: PR-SUBAREA-1B Runoff Area=10,785 sf 37.16% Impervious Runoff Depth=2.78"
Flow Length=114' Tc=8.8 min CN=68 Runoff=0.72 cfs 0.057 af

Subcatchment 17S: PR-SUBARE-1C Runoff Area=11,458 sf 67.67% Impervious Runoff Depth=4.28"
Flow Length=120' Tc=9.1 min CN=83 Runoff=1.17 cfs 0.094 af

Subcatchment 18S: PR-SUBAREA-1D Runoff Area=11,898 sf 42.97% Impervious Runoff Depth=3.26"
Flow Length=307' Tc=10.7 min CN=73 Runoff=0.89 cfs 0.074 af

Subcatchment 19S: PR-SUBAREA-1-E ROOFS Runoff Area=1,924 sf 100.00% Impervious Runoff Depth=5.96"
Tc=5.0 min CN=98 Runoff=0.28 cfs 0.022 af

Subcatchment 20S: PR-SUBAREA-1-E ROOFS Runoff Area=1,924 sf 100.00% Impervious Runoff Depth=5.96"
Tc=5.0 min CN=98 Runoff=0.28 cfs 0.022 af

Subcatchment 21S: PR-SUBAREA-1-B ROOFS Runoff Area=1,924 sf 100.00% Impervious Runoff Depth=5.96"
Tc=5.0 min CN=98 Runoff=0.28 cfs 0.022 af

Subcatchment 22S: PR-SUBAREA-1-B ROOFS Runoff Area=1,925 sf 100.00% Impervious Runoff Depth=5.96"
Tc=5.0 min CN=98 Runoff=0.28 cfs 0.022 af

Pond 9P: BMP-1 Peak Elev=252.23' Storage=0.011 af Inflow=0.33 cfs 0.024 af
Discarded=0.02 cfs 0.024 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.024 af

Pond 10P: BMP-2 Peak Elev=246.55' Storage=0.041 af Inflow=1.90 cfs 0.151 af
Discarded=0.36 cfs 0.151 af Primary=0.00 cfs 0.000 af Outflow=0.36 cfs 0.151 af

Pond 11P: BMP-3 Peak Elev=245.27' Storage=0.031 af Inflow=1.10 cfs 0.095 af
Discarded=0.17 cfs 0.095 af Primary=0.00 cfs 0.000 af Outflow=0.17 cfs 0.095 af

Pond 12P: BMP-5 Peak Elev=247.70' Storage=0.020 af Inflow=0.89 cfs 0.074 af
Discarded=0.18 cfs 0.074 af Primary=0.00 cfs 0.000 af Outflow=0.18 cfs 0.074 af

Pond 13P: BMP-4 Peak Elev=247.01' Storage=0.018 af Inflow=0.77 cfs 0.065 af
Discarded=0.16 cfs 0.065 af Primary=0.00 cfs 0.000 af Outflow=0.16 cfs 0.065 af

Pond 14P: BMP-6 Peak Elev=238.79' Storage=0.003 af Inflow=0.91 cfs 0.062 af
Discarded=0.02 cfs 0.026 af Primary=0.89 cfs 0.037 af Outflow=0.91 cfs 0.062 af

Pond 16P: BMP-7 Peak Elev=243.26' Storage=0.007 af Inflow=0.34 cfs 0.025 af
Discarded=0.05 cfs 0.025 af Primary=0.09 cfs 0.001 af Outflow=0.14 cfs 0.025 af

Pond 17P: BMP-9A Peak Elev=249.50' Storage=0.005 af Inflow=0.28 cfs 0.022 af
Outflow=0.05 cfs 0.022 af

Pond 19P: BMP-9B Peak Elev=250.00' Storage=0.005 af Inflow=0.28 cfs 0.022 af
Discarded=0.05 cfs 0.022 af Primary=0.00 cfs 0.000 af Outflow=0.05 cfs 0.022 af

Pond 20P: BMP-8A Peak Elev=251.50' Storage=0.005 af Inflow=0.28 cfs 0.022 af
Outflow=0.05 cfs 0.022 af

Pond 23P: BMP-8B Peak Elev=251.50' Storage=0.005 af Inflow=0.28 cfs 0.022 af
Outflow=0.05 cfs 0.022 af

Link 2L: PR-TOTAL SITE Inflow=2.35 cfs 0.181 af
Primary=2.35 cfs 0.181 af

Link 15L: DP-1 Inflow=0.89 cfs 0.037 af
Primary=0.89 cfs 0.037 af

Link 16L: DP-3 Inflow=1.22 cfs 0.100 af
Primary=1.22 cfs 0.100 af

Link 17L: DP-2 Inflow=0.47 cfs 0.043 af
Primary=0.47 cfs 0.043 af

Total Runoff Area = 2.728 ac Runoff Volume = 0.729 af Average Runoff Depth = 3.21"
62.73% Pervious = 1.711 ac 37.27% Impervious = 1.017 ac

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

Subcatchment 3S: PR-SUBAREA-1E Runoff Area=9,892 sf 44.60% Impervious Runoff Depth=5.68"
Flow Length=175' Tc=11.2 min CN=75 Runoff=1.27 cfs 0.107 af

Subcatchment 4S: PR-SUBAREA-2 Runoff Area=11,072 sf 1.45% Impervious Runoff Depth=3.87"
Flow Length=135' Tc=12.3 min UI Adjusted CN=60 Runoff=0.93 cfs 0.082 af

Subcatchment 5S: PR-SUBAREA-1F Runoff Area=17,837 sf 18.58% Impervious Runoff Depth=4.83"
Flow Length=242' Tc=11.6 min CN=68 Runoff=1.93 cfs 0.165 af

Subcatchment 6S: PR-SUBAREA-1G Runoff Area=8,930 sf 42.22% Impervious Runoff Depth=5.92"
Flow Length=116' Tc=4.9 min CN=77 Runoff=1.46 cfs 0.101 af

Subcatchment 7S: PR-SUBAREA-1H Runoff Area=5,136 sf 26.89% Impervious Runoff Depth=4.59"
Flow Length=82' Tc=7.4 min UI Adjusted CN=66 Runoff=0.60 cfs 0.045 af

Subcatchment 8S: PR-SUBAREA-3 Runoff Area=20,893 sf 24.02% Impervious Runoff Depth=4.47"
Flow Length=280' Tc=9.6 min UI Adjusted CN=65 Runoff=2.22 cfs 0.179 af

Subcatchment 15S: PR-SUBAREA-1A Runoff Area=3,218 sf 51.34% Impervious Runoff Depth=6.28"
Flow Length=110' Slope=0.0500 '/' Tc=7.1 min CN=80 Runoff=0.51 cfs 0.039 af

Subcatchment 16S: PR-SUBAREA-1B Runoff Area=10,785 sf 37.16% Impervious Runoff Depth=4.83"
Flow Length=114' Tc=8.8 min CN=68 Runoff=1.27 cfs 0.100 af

Subcatchment 17S: PR-SUBARE-1C Runoff Area=11,458 sf 67.67% Impervious Runoff Depth=6.65"
Flow Length=120' Tc=9.1 min CN=83 Runoff=1.79 cfs 0.146 af

Subcatchment 18S: PR-SUBAREA-1D Runoff Area=11,898 sf 42.97% Impervious Runoff Depth=5.43"
Flow Length=307' Tc=10.7 min CN=73 Runoff=1.48 cfs 0.124 af

Subcatchment 19S: PR-SUBAREA-1-E ROOFS Runoff Area=1,924 sf 100.00% Impervious Runoff Depth=8.46"
Tc=5.0 min CN=98 Runoff=0.39 cfs 0.031 af

Subcatchment 20S: PR-SUBAREA-1-E ROOFS Runoff Area=1,924 sf 100.00% Impervious Runoff Depth=8.46"
Tc=5.0 min CN=98 Runoff=0.39 cfs 0.031 af

Subcatchment 21S: PR-SUBAREA-1-B ROOFS Runoff Area=1,924 sf 100.00% Impervious Runoff Depth=8.46"
Tc=5.0 min CN=98 Runoff=0.39 cfs 0.031 af

Subcatchment 22S: PR-SUBAREA-1-B ROOFS Runoff Area=1,925 sf 100.00% Impervious Runoff Depth=8.46"
Tc=5.0 min CN=98 Runoff=0.39 cfs 0.031 af

Pond 9P: BMP-1 Peak Elev=253.42' Storage=0.015 af Inflow=0.51 cfs 0.039 af
Discarded=0.02 cfs 0.033 af Primary=0.23 cfs 0.006 af Outflow=0.25 cfs 0.039 af

Pond 10P: BMP-2 Peak Elev=248.47' Storage=0.083 af Inflow=3.06 cfs 0.245 af
Discarded=0.36 cfs 0.243 af Primary=0.23 cfs 0.003 af Outflow=0.59 cfs 0.245 af

Pond 11P: BMP-3 Peak Elev=246.06' Storage=0.036 af Inflow=1.93 cfs 0.165 af
Discarded=0.17 cfs 0.132 af Primary=1.48 cfs 0.033 af Outflow=1.65 cfs 0.165 af

Pond 12P: BMP-5 Peak Elev=249.62' Storage=0.042 af Inflow=1.48 cfs 0.124 af
Discarded=0.18 cfs 0.121 af Primary=0.22 cfs 0.002 af Outflow=0.40 cfs 0.124 af

Pond 13P: BMP-4 Peak Elev=248.91' Storage=0.037 af Inflow=1.27 cfs 0.107 af
Discarded=0.16 cfs 0.106 af Primary=0.11 cfs 0.001 af Outflow=0.27 cfs 0.107 af

Pond 14P: BMP-6 Peak Elev=238.81' Storage=0.003 af Inflow=1.46 cfs 0.101 af
Discarded=0.02 cfs 0.031 af Primary=1.44 cfs 0.070 af Outflow=1.46 cfs 0.101 af

Pond 16P: BMP-7 Peak Elev=243.29' Storage=0.007 af Inflow=0.60 cfs 0.045 af
Discarded=0.05 cfs 0.034 af Primary=0.74 cfs 0.011 af Outflow=0.79 cfs 0.045 af

Pond 17P: BMP-9A Peak Elev=250.56' Storage=0.009 af Inflow=0.39 cfs 0.031 af
Outflow=0.05 cfs 0.031 af

Pond 19P: BMP-9B Peak Elev=251.06' Storage=0.009 af Inflow=0.39 cfs 0.031 af
Discarded=0.05 cfs 0.031 af Primary=0.00 cfs 0.000 af Outflow=0.05 cfs 0.031 af

Pond 20P: BMP-8A Peak Elev=252.56' Storage=0.009 af Inflow=0.39 cfs 0.031 af
Outflow=0.05 cfs 0.031 af

Pond 23P: BMP-8B Peak Elev=252.56' Storage=0.009 af Inflow=0.39 cfs 0.031 af
Outflow=0.05 cfs 0.031 af

Link 2L: PR-TOTAL SITE Inflow=4.96 cfs 0.386 af
Primary=4.96 cfs 0.386 af

Link 15L: DP-1 Inflow=2.38 cfs 0.126 af
Primary=2.38 cfs 0.126 af

Link 16L: DP-3 Inflow=2.22 cfs 0.179 af
Primary=2.22 cfs 0.179 af

Link 17L: DP-2 Inflow=0.93 cfs 0.082 af
Primary=0.93 cfs 0.082 af

Total Runoff Area = 2.728 ac Runoff Volume = 1.211 af Average Runoff Depth = 5.33"
62.73% Pervious = 1.711 ac 37.27% Impervious = 1.017 ac

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 3S: PR-SUBAREA-1E Runoff Area=9,892 sf 44.60% Impervious Runoff Depth=0.44"
Flow Length=175' Tc=11.2 min CN=56/98 Runoff=0.09 cfs 0.008 af

Subcatchment 4S: PR-SUBAREA-2 Runoff Area=11,072 sf 1.45% Impervious Runoff Depth=0.01"
Flow Length=135' Tc=12.3 min CN=60/98 Runoff=0.00 cfs 0.000 af

Subcatchment 5S: PR-SUBAREA-1F Runoff Area=17,837 sf 18.58% Impervious Runoff Depth=0.18"
Flow Length=242' Tc=11.6 min CN=61/98 Runoff=0.07 cfs 0.006 af

Subcatchment 6S: PR-SUBAREA-1G Runoff Area=8,930 sf 42.22% Impervious Runoff Depth=0.42"
Flow Length=116' Tc=4.9 min CN=61/98 Runoff=0.10 cfs 0.007 af

Subcatchment 7S: PR-SUBAREA-1H Runoff Area=5,136 sf 26.89% Impervious Runoff Depth=0.27"
Flow Length=82' Tc=7.4 min CN=61/98 Runoff=0.03 cfs 0.003 af

Subcatchment 8S: PR-SUBAREA-3 Runoff Area=20,893 sf 24.02% Impervious Runoff Depth=0.24"
Flow Length=280' Tc=9.6 min CN=61/98 Runoff=0.11 cfs 0.009 af

Subcatchment 15S: PR-SUBAREA-1A Runoff Area=3,218 sf 51.34% Impervious Runoff Depth=0.51"
Flow Length=110' Slope=0.0500 '/' Tc=7.1 min CN=61/98 Runoff=0.04 cfs 0.003 af

Subcatchment 16S: PR-SUBAREA-1B Runoff Area=10,785 sf 37.16% Impervious Runoff Depth=0.37"
Flow Length=114' Tc=8.8 min CN=49/98 Runoff=0.09 cfs 0.008 af

Subcatchment 17S: PR-SUBARE-1C Runoff Area=11,458 sf 67.67% Impervious Runoff Depth=0.67"
Flow Length=120' Tc=9.1 min CN=51/98 Runoff=0.18 cfs 0.015 af

Subcatchment 18S: PR-SUBAREA-1D Runoff Area=11,898 sf 42.97% Impervious Runoff Depth=0.42"
Flow Length=307' Tc=10.7 min CN=54/98 Runoff=0.11 cfs 0.010 af

Subcatchment 19S: PR-SUBAREA-1-E ROOFS Runoff Area=1,924 sf 100.00% Impervious Runoff Depth=0.99"
Tc=5.0 min CN=0/98 Runoff=0.05 cfs 0.004 af

Subcatchment 20S: PR-SUBAREA-1-E ROOFS Runoff Area=1,924 sf 100.00% Impervious Runoff Depth=0.99"
Tc=5.0 min CN=0/98 Runoff=0.05 cfs 0.004 af

Subcatchment 21S: PR-SUBAREA-1-B ROOFS Runoff Area=1,924 sf 100.00% Impervious Runoff Depth=0.99"
Tc=5.0 min CN=0/98 Runoff=0.05 cfs 0.004 af

Subcatchment 22S: PR-SUBAREA-1-B ROOFS Runoff Area=1,925 sf 100.00% Impervious Runoff Depth=0.99"
Tc=5.0 min CN=0/98 Runoff=0.05 cfs 0.004 af

Pond 9P: BMP-1 Peak Elev=250.09' Storage=0.000 af Inflow=0.04 cfs 0.003 af
Discarded=0.02 cfs 0.003 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.003 af

Pond 10P: BMP-2 Peak Elev=245.01' Storage=0.000 af Inflow=0.27 cfs 0.022 af
Discarded=0.27 cfs 0.022 af Primary=0.00 cfs 0.000 af Outflow=0.27 cfs 0.022 af

Pond 11P: BMP-3 Peak Elev=242.70' Storage=0.000 af Inflow=0.07 cfs 0.006 af
Discarded=0.07 cfs 0.006 af Primary=0.00 cfs 0.000 af Outflow=0.07 cfs 0.006 af

Pond 12P: BMP-5 Peak Elev=246.21' Storage=0.000 af Inflow=0.11 cfs 0.010 af
Discarded=0.11 cfs 0.010 af Primary=0.00 cfs 0.000 af Outflow=0.11 cfs 0.010 af

Pond 13P: BMP-4 Peak Elev=245.51' Storage=0.000 af Inflow=0.09 cfs 0.008 af
Discarded=0.09 cfs 0.008 af Primary=0.00 cfs 0.000 af Outflow=0.09 cfs 0.008 af

Pond 14P: BMP-6 Peak Elev=237.63' Storage=0.001 af Inflow=0.10 cfs 0.007 af
Discarded=0.02 cfs 0.007 af Primary=0.00 cfs 0.000 af Outflow=0.02 cfs 0.007 af

Pond 16P: BMP-7 Peak Elev=241.01' Storage=0.000 af Inflow=0.03 cfs 0.003 af
Discarded=0.03 cfs 0.003 af Primary=0.00 cfs 0.000 af Outflow=0.03 cfs 0.003 af

Pond 17P: BMP-9A Peak Elev=248.01' Storage=0.000 af Inflow=0.05 cfs 0.004 af
Outflow=0.05 cfs 0.004 af

Pond 19P: BMP-9B Peak Elev=248.51' Storage=0.000 af Inflow=0.05 cfs 0.004 af
Discarded=0.05 cfs 0.004 af Primary=0.00 cfs 0.000 af Outflow=0.05 cfs 0.004 af

Pond 20P: BMP-8A Peak Elev=250.01' Storage=0.000 af Inflow=0.05 cfs 0.004 af
Outflow=0.05 cfs 0.004 af

Pond 23P: BMP-8B Peak Elev=250.01' Storage=0.000 af Inflow=0.05 cfs 0.004 af
Outflow=0.05 cfs 0.004 af

Link 2L: PR-TOTAL SITE Inflow=0.12 cfs 0.010 af
Primary=0.12 cfs 0.010 af

Link 15L: DP-1 Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Link 16L: DP-3 Inflow=0.11 cfs 0.009 af
Primary=0.11 cfs 0.009 af

Link 17L: DP-2 Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

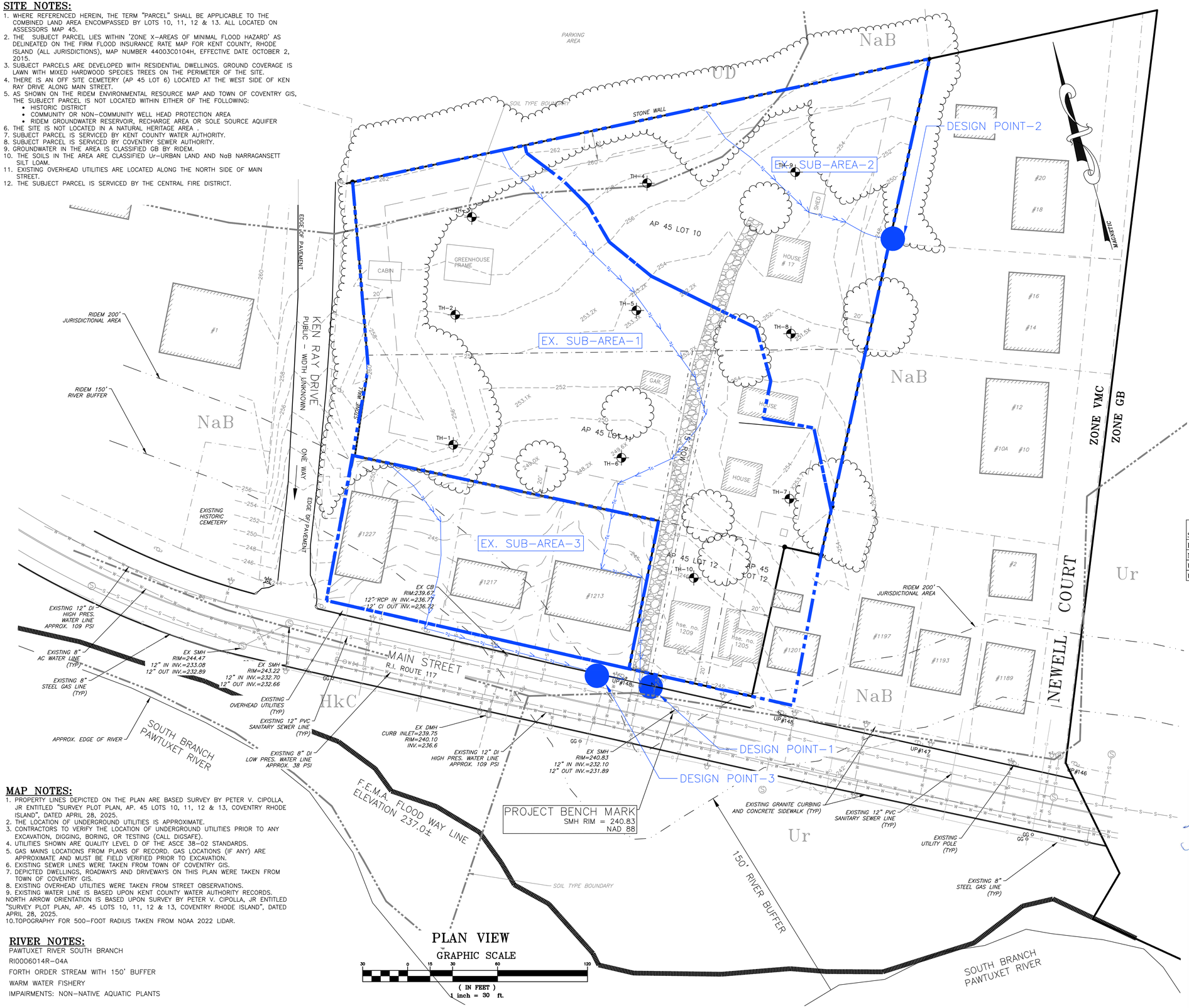
Total Runoff Area = 2.728 ac Runoff Volume = 0.083 af Average Runoff Depth = 0.37"
62.73% Pervious = 1.711 ac 37.27% Impervious = 1.017 ac

Appendix C

Existing and Proposed Watershed Maps

SITE NOTES:

1. WHERE REFERENCED HEREIN, THE TERM "PARCEL" SHALL BE APPLICABLE TO THE COMBINED LAND AREA ENCOMPASSED BY LOTS 10, 11, 12 & 13. ALL LOCATED ON ASSESSORS MAP 45.
2. THE SUBJECT PARCEL LIES WITHIN 'ZONE X–AREAS OF MINIMAL FLOOD HAZARD' AS DELINEATED ON THE FIRM FLOOD INSURANCE RATE MAP FOR KENT COUNTY, RHODE ISLAND (ALL JURISDICTIONS), MAP NUMBER 44003C0104H, EFFECTIVE DATE OCTOBER 2, 2015.
3. SUBJECT PARCELS ARE DEVELOPED WITH RESIDENTIAL DWELLINGS. GROUND COVERAGE IS LAWN WITH MIXED HARDWOOD SPECIES TREES ON THE PERIMETER OF THE SITE.
4. THERE IS AN OFF SITE CEMETERY (AP 45 LOT 6) LOCATED AT THE WEST SIDE OF KEN RAY DRIVE ALONG MAIN STREET.
5. AS SHOWN ON THE RIDEM ENVIRONMENTAL RESOURCE MAP AND TOWN OF COVENTRY GIS, THE SUBJECT PARCEL IS NOT LOCATED WITHIN EITHER OF THE FOLLOWING:
   - HISTORIC DISTRICT
   - COMMUNITY OR NON–COMMUNITY WELL HEAD PROTECTION AREA
   - RIDEM GROUNDWATER RESERVOIR, RECHARGE AREA OR SOLE SOURCE AQUIFER
6. THE SITE IS NOT LOCATED IN A NATURAL HERITAGE AREA .
7. SUBJECT PARCEL IS SERVICED BY KENT COUNTY WATER AUTHORITY.
8. SUBJECT PARCEL IS SERVICED BY COVENTRY SEWER AUTHORITY.
9. GROUNDWATER IN THE AREA IS CLASSIFIED GB BY RIDEM.
10. THE SOILS IN THE AREA ARE CLASSIFIED Ur–URBAN LAND AND NaB NARRAGANSETT SILT LOAM.
11. EXISTING OVERHEAD UTILITIES ARE LOCATED ALONG THE NORTH SIDE OF MAIN STREET.
12. THE SUBJECT PARCEL IS SERVICED BY THE CENTRAL FIRE DISTRICT.



MAP NOTES:

1. PROPERTY LINES DEPICTED ON THE PLAN ARE BASED SURVEY BY PETER V. CIPOLLA, JR ENTITLED "SURVEY PLOT PLAN, AP. 45 LOTS 10, 11, 12 & 13, COVENTRY RHODE ISLAND", DATED APRIL 28, 2025.
2. THE LOCATION OF UNDERGROUND UTILITIES IS APPROXIMATE.
3. CONTRACTORS TO VERIFY THE LOCATION OF UNDERGROUND UTILITIES PRIOR TO ANY EXCAVATION, DIGGING, BORING, OR TESTING (CALL DIGSAFE).
4. UTILITIES SHOWN ARE QUALITY LEVEL D OF THE ASCE 38–02 STANDARDS.
5. GAS MAINS LOCATIONS FROM PLANS OF RECORD. GAS LOCATIONS (IF ANY) ARE APPROXIMATE AND MUST BE FIELD VERIFIED PRIOR TO EXCAVATION.
6. EXISTING SEWER LINES WERE TAKEN FROM TOWN OF COVENTRY GIS.
7. DEPICTED DWELLINGS, ROADWAYS AND DRIVEWAYS ON THIS PLAN WERE TAKEN FROM TOWN OF COVENTRY GIS.
8. EXISTING OVERHEAD UTILITIES WERE TAKEN FROM STREET OBSERVATIONS.
9. EXISTING WATER LINE IS BASED UPON KENT COUNTY WATER AUTHORITY RECORDS.

NORTH ARROW ORIENTATION IS BASED UPON SURVEY BY PETER V. CIPOLLA, JR ENTITLED "SURVEY PLOT PLAN, AP. 45 LOTS 10, 11, 12 & 13, COVENTRY RHODE ISLAND", DATED APRIL 28, 2025.

10. TOPOGRAPHY FOR 500–FOOT RADIUS TAKEN FROM NOAA 2022 LIDAR.

RIVER NOTES:

PAWTUXET RIVER SOUTH BRANCH

RI0006014R–04A

FORTH ORDER STREAM WITH 150' BUFFER

WARM WATER FISHERY

IMPAIRMENTS: NON–NATIVE AQUATIC PLANTS

PLAN VIEW

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)

1 inch = 30 ft.

COMMONWEALTH ENGINEERS AND CONSULTING INC. TEST HOLE SUMMARY

OBSERVED BY TIM BEHAN, P.E.

LOCATION	TP-1	6/30/2025	LOCATION	TP-6	6/30/2025
SURFACE GRADE	256.0±	FEET	SURFACE GRADE	248.8±	FEET
0-6"	LOAM		0-10"	LOAM	
6-24"	SANDY LOAM SUBSOIL		10-30"	SANDY LOAM SUBSOIL	
24-60"	MED. SAND		30-72"	VERY FINE SAND	
60-144"	MED. SAND/FINE GRAVEL		72-144"	MED. SAND/FINE GRAVEL	
NO GW SEEPAGE, NO MOTTLING, NO LEDGE			NO GW SEEPAGE, NO MOTTLING, NO LEDGE		
LOCATION	TP-2	6/30/2025	LOCATION	TP-7	6/30/2025
SURFACE GRADE	256.0±	FEET	SURFACE GRADE	253.7±	FEET
0-6"	LOAM		0-6"	LOAM	
6-30"	SANDY LOAM SUBSOIL		6-24"	SANDY LOAM SUBSOIL/COBBLES	
30-78"	VERY FINE SAND		24-144"	LOAMY, GRAVELLY SAND, BOULDERS	
78-156"	MED. SAND/FINE GRAVEL		NO GW SEEPAGE, NO MOTTLING, NO LEDGE		
NO GW SEEPAGE, NO MOTTLING, NO LEDGE			LOCATION	TP-8	6/30/2025
LOCATION	TP-3	6/30/2025	SURFACE GRADE	252.0±	FEET
SURFACE GRADE	260.0±	FEET	0-6"	LOAM	
0-4"	LOAM		6-30"	SANDY LOAM SUBSOIL	
4-24"	SANDY LOAM SUBSOIL/COBBLES		30-72"	VERY FINE SAND	
24-144"	MED. SAND/FINE GRAVEL		72-132"	MED. SAND/FINE GRAVEL	
NO GW SEEPAGE, NO MOTTLING, NO LEDGE			NO GW SEEPAGE, NO MOTTLING, NO LEDGE		
LOCATION	TP-4	6/30/2025	LOCATION	TP-9	6/30/2025
SURFACE GRADE	257.5±	FEET	SURFACE GRADE	252.0±	FEET
0-6"	LOAM		0-6"	LOAM	
6-24"	SANDY LOAM SUBSOIL/COBBLES		6-30"	SANDY LOAM SUBSOIL	
24-144"	MED. SAND/FINE GRAVEL		30-78"	VERY FINE SAND	
NO GW SEEPAGE, NO MOTTLING, NO LEDGE			78-144"	MED. SAND/FINE GRAVEL	
LOCATION	TP-5	6/30/2025	NO GW SEEPAGE, NO MOTTLING, NO LEDGE		
SURFACE GRADE	253.7.0±	FEET	LOCATION	TP-10	6/30/2025
0-10"	LOAM		SURFACE GRADE	246.0±	FEET
10-30"	SANDY LOAM SUBSOIL		0-4"	LOAM	
30-72"	VERY FINE SAND		4-24"	SANDY LOAM SUBSOIL	
72-144"	MED. SAND/FINE GRAVEL		24-60"	VERY FINE SAND	
NO GW SEEPAGE, NO MOTTLING, NO LEDGE			60-144"	MED. SAND/FINE GRAVEL	
			NO GW SEEPAGE, NO MOTTLING, NO LEDGE		

SOIL TYPE NAME	SOIL DESCRIPTION	HYDROLOGIC SOIL GROUP
HkC	HINCKLEY LOAMY SAND, 8 TO 15 PERCENT SLOPES	A
NaB	NARRAGANSETT SILT LOAM, 3 TO 8 PERCENT SLOPES	B
UD	UDORTHENTS-URBAN LAND COMPLEX	A
Ur	URBAN LAND	A-D

OWNER:
STEPHEN T. JURCZYK
PO BOX 434
COVENTRY RI 02816
ATTORNEY REPRESENTING OWNER:
ROBERT COLAGIOVANNI, ESQ.
PHONE: (401)732–9300

APPLICANT:
BOULDER HILL DEVELOPMENT, LLC
PATRICK CZERWIEN, MANAGER
57 PINE RIDGE DRIVE
CRANSTON, RI 02921
PHONE: (401) 413–5648

LEGAL COUNCIL:
MR. THOMAS CRONIN ESQ.
NOLAN, BRUNERO, CRONIN & FERRARA LTD.
1070 MAIN STREET
COVENTRY, RI 02816–5707
PHONE: (401) 828–5800

DRAWING ISSUE:

- ☐ CONCEPT
- ☐ CUSTOMER APPROVAL
- ☒ PERMITTING
- ☐ CONSTRUCTION
- ☐ AS–BUILT
- ☐ OTHER:

ONLY PLANS ISSUED FOR CONSTRUCTION SHALL BE USED FOR CONSTRUCTION

TIMOTHY J. BEHAN
No. 6278
REGISTERED PROFESSIONAL ENGINEER
09/02/2025

REVISIONS

No.	DATE	DRWN	CHKD
1	07-29-25	SMA	TJB
2	07-31-25	SMA	TJB
3	09-02-25	SMA	TJB

COMMONWEALTH
ENGINEERS & CONSULTANTS, INC.
400 SMITH STREET
PROVIDENCE, RHODE ISLAND 02908
(401) 273–6600

PRELIMINARY PLAN APPLICATION
COMPREHENSIVE PERMIT
FOR
SIENA CONDOMINIUMS
A.P. 45 LOTS 10, 11, 12 & 13
MAIN STREET
COVENTRY, RHODE ISLAND

EXISTING WATERSHED MAP

SCALE: 1" = 30'		SHEET NO: 1 OF 2
DRAWN BY: SMA	DESIGN BY: SMA	CHECKED BY: TJB
DATE: MARCH 27, 2025		PROJECT NO.: 25024.00

LEGEND

- PARCEL PROPERTY LINE
- ADJACENT PROPERTY LINE
- EXISTING RIGHT OF WAY LINE
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- EXISTING GAS LINE
- EXISTING WATER LINE
- EXISTING SEWER LINE
- GAS VALVE BOX
- WATER VALVE BOX
- CURB STOP
- UP-297 UTILITY POLE AND NUMBER
- SMH EXISTING SEWER MANHOLE
- COM-MH EXISTING COMMUNICATIONS MANHOLE
- DMH DRAINAGE MANHOLE
- DI/CB CB CATCH BASIN OR DROP INLET
- X39.50 EXISTING SPOT GRADE
- 40 PROPOSED CONTOUR LINE
- X39.50 PROPOSED SPOT GRADE
- EXISTING GUARD RAIL
- PROPOSED WATER LINE
- PROPOSED SEWER LINE
- BUILDING SETBACK LINE
- FIRE HYDRANT
- MW MONITORING WELL
- EX. CHAIN LINK FENCE (HEIGHT VARIES)
- PROPOSED CHAIN LINK FENCE
- PERIMETER EROSION CONTROLS (COMPOST FILTER SOCK)
- TH-5 TEST HOLE LOCATION
- BWV BACKWATER VALVE
- CO CLEANOUT
- FD PROPOSED ROOF DRAIN
- RD PROPOSED FOUNDATION DRAIN

MAP NOTES:

1. PROPERTY LINES DEPICTED ON THE PLAN ARE BASED SURVEY BY PETER V. CIPOLLA, JR ENTITLED "SURVEY PLOT PLAN, AP. 45 LOTS 10, 11, 12 & 13, COVENTRY RHODE ISLAND", DATED APRIL 28, 2025.
2. THE LOCATION OF UNDERGROUND UTILITIES IS APPROXIMATE.
3. CONTRACTORS TO VERIFY THE LOCATION OF UNDERGROUND UTILITIES PRIOR TO ANY EXCAVATION, DIGGING, BORING, OR TESTING (CALL DIGSAFE).
4. UTILITIES SHOWN ARE QUALITY LEVEL D OF THE ASCE 38-02 STANDARDS.
5. GAS MAINS LOCATIONS FROM PLANS OF RECORD. GAS LOCATIONS (IF ANY) ARE APPROXIMATE AND MUST BE FIELD VERIFIED PRIOR TO EXCAVATION.
6. EXISTING SEWER LINES WERE TAKEN FROM TOWN OF COVENTRY GIS.
7. DEPICTED DWELLINGS, ROADWAYS AND DRIVEWAYS ON THIS PLAN WERE TAKEN FROM TOWN OF COVENTRY GIS.
8. EXISTING OVERHEAD UTILITIES WERE TAKEN FROM STREET OBSERVATIONS.
9. EXISTING WATER LINE IS BASED UPON KENT COUNTY WATER AUTHORITY RECORDS.

NORTH ARROW ORIENTATION IS BASED UPON SURVEY BY PETER V. CIPOLLA, JR ENTITLED "SURVEY PLOT PLAN, AP. 45 LOTS 10, 11, 12 & 13, COVENTRY RHODE ISLAND", DATED APRIL 28, 2025.

10. TOPOGRAPHY FOR 500-FOOT RADIUS TAKEN FROM NOAA 2022 LIDAR.

RIVER NOTES:

PAWTUXET RIVER SOUTH BRANCH
RI0006014R-04A
FORTH ORDER STREAM WITH 150' BUFFER
WARM WATER FISHERY
IMPAIRMENTS: NON-NATIVE AQUATIC PLANTS

PLAN VIEW
GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

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FOR
SIENA CONDOMINIUMS
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MAIN STREET
COVENTRY, RHODE ISLAND
PROPOSED WATERSHED MAP

SCALE: 1" = 30'		SHEET NO: 2 OF 2
DRAWN BY: SMA	DESIGN BY: SMA	CHECKED BY: TJB
DATE: MARCH 27, 2025		PROJECT NO.: 25024.00

Appendix D

Stormwater Worksheets and BMP Design Calculations

SIENA CONDOMINIUMS 8/4/2025

AP 45, LOTS 10, 11, 12 & 13

MAIN STREET

COVENTRY, RHODE ISLAND

TABLE 1: HYDROCAD MODELING SUMMARY TABLE								
EXISTING CONDITIONS STORMWATER SUMMARY								
	DP-1		DP-2		DP-3		TOTAL	
	(CFS)	(AC-FT)	(CFS)	(AC-FT)	(CFS)	(AC-FT)	(CFS)	(AC-FT)
WQ STORM	0.08	0.008	0.02	0.002	0.11	0.009	0.21	0.020
1-YEAR STORM	0.14	0.029	0.02	0.008	0.12	0.015	0.24	0.052
10-YEAR STORM	1.35	0.148	0.46	0.055	0.71	0.061	2.39	0.264
25-YEAR STORM	2.54	0.257	1.00	0.102	1.22	0.100	4.54	0.458
100-YEAR STORM	5.01	0.483	2.17	0.204	2.22	0.179	9.04	0.866

PROPOSED CONDITIONS STORMWATER SUMMARY								
	DP-1		DP-2		DP-3		TOTAL	
	(CFS)	(AC-FT)	(CFS)	(AC-FT)	(CFS)	(AC-FT)	(CFS)	(AC-FT)
WQ STORM	0.00	0.000	0.00	0.000	0.110	0.009	0.12	0.010
1-YEAR STORM	0.14	0.002	0.02	0.005	0.120	0.015	0.26	0.022
10-YEAR STORM	0.59	0.021	0.25	0.025	0.710	0.061	1.40	0.107
25-YEAR STORM	0.89	0.037	0.47	0.043	1.220	0.100	2.35	0.181
100-YEAR STORM	2.38	0.126	0.93	0.082	2.220	0.179	4.96	0.386

PROPOSED CONDITIONS STORMWATER REDUCTION SUMMARY								
	DP-1		DP-2		DP-3		TOTAL	
	(CFS)	(AC-FT)	(CFS)	(AC-FT)	(CFS)	(AC-FT)	(CFS)	(AC-FT)
WQ STORM	-0.08	-0.008	-0.02	-0.002	0.00	0.000	-0.09	-0.010
1-YEAR STORM	0.00	-0.027	0.00	-0.003	0.00	0.000	0.02	-0.030
10-YEAR STORM	-0.76	-0.127	-0.21	-0.030	0.00	0.000	-0.99	-0.157
25-YEAR STORM	-1.65	-0.220	-0.53	-0.059	0.00	0.000	-2.19	-0.277
100-YEAR STORM	-2.63	-0.357	-1.24	-0.122	0.00	0.000	-4.08	-0.480

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SIENA CONDOMINIUMS 8/27/2025
AP 45, LOTS 10, 11, 12 & 13
MAIN STREET
COVENTRY, RHODE ISLAND

MINIMUM STANDARD 2 GROUNDWATER RECHARGE (Rev)

Rev= (1") (F) (I)/12

Rev= GROUNDWATER RECHARGE VOLUME (AC-FT)
F= RECHARGE FACTOR
I = IMPERVIOUS AREA IN ACRES

TOTAL PROPOSED IMPERVIUOS AREA=	39,104	SF		
	0.898	ACRES		
PROPOSED IMPERVIOUS AREA-A SOILS	1,050	S.F		
	0.024	ACRES		
I = HSG TYPE A = 0.60				
Rev =	0.001	AC-FT		
PROPOSED IMPERVIOUS AREA-A SOILS	38,054	S.F		
	0.874	ACRES		
I = HSG TYPE B = 0.35				
Rev =	0.025	AC-FT		
TOTAL INFILTRATION REQUIRED=	0.027	AC-FT	1162.4	CF

INFILTRATION PROVIDED	BMP-1	0.003	AC-FT	
	BMP-2	0.022	AC-FT	
	BMP-3	0.006	AC-FT	
	BMP-4	0.008	AC-FT	
	BMP-5	0.010	AC-FT	
	BMP-6	0.007	AC-FT	
	BMP-7	0.003	AC-FT	
	BMP-8A	0.004	AC-FT	
	BMP-8B	0.004	AC-FT	
	BMP-9A	0.004	AC-FT	
	BMP-9B	0.004	AC-FT	
INFILTRATION PROVIDED=		0.075	AC-FT	3267.0 CF

VOLUME INFILTRATED GRAETER THAN VOLUME REQUIRED (0.075<0.027), SO OKAY

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SIENA CONDOMINIUMS — 8/27/2025
AP 45, LOTS 10, 11, 12 & 13
MAIN STREET
COVENTRY, RHODE ISLAND

MINIMUM STANDARD 3: WATER QUALITY VOLUME (WQv)

WQv= (1") (I)/12

WQv= WATER QUALITY VOLUME (AC-FT)
I = IMPERVIOUS AREA IN ACRES

PROPOSED ASPHALT AND ROOFS IMPERVIOUS AREA			39,104	S.F		
			0.898	ACRES		
	WQv =		0.075	AC-FT		
	TOTAL WATER QUALITY REQUIRED=		0.075	AC-FT		
INFILTRATION PROVIDED		BMP-1	0.003	AC-FT		
		BMP-2	0.022	AC-FT		
		BMP-3	0.006	AC-FT		
		BMP-4	0.008	AC-FT		
		BMP-5	0.010	AC-FT		
		BMP-6	0.007	AC-FT		
		BMP-7	0.003	AC-FT		
		BMP-8A	0.004	AC-FT		
		BMP-8B	0.004	AC-FT		
		BMP-9A	0.004	AC-FT		
		BMP-9B	0.004	AC-FT		
	INFILTRATION PROVIDED=		0.075	AC-FT	3267.0	CF
	INFILTRATION & TREATMENT PROVIDED=		0.075	AC-FT		
					VOLUME REQUIRED	0.075 AC-FT
VOLUME TREATED/INFILTRATED EQUAL TO VOLUME					TREATED/INFILTRATION	0.075 AC-FT

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SIENA CONDOMINIUMS 8/27/2025
AP 45, LOTS 10, 11, 12 & 13
MAIN STREET
COVENTRY, RHODE ISLAND

MINIMUM STANDARD 4: CHANNEL PROTECTION VOLUME (CPv)
COLD WATER FISHERY: NO
CPv= Vs= (0.65) (Vr)

CPv=Vs= CHANNEL PROTECTION VOLUME (AC-FT)
Vr = RUNOFF VOLUME FROM 1-YEAR, TYPE III STORM (AC-FT)

RUNOFF FROM 1-YEAR
TYPE III STORM (Vr) 0.143 (AC-FT)

CPv = 0.093 AC-FT
4,049 CF

TREATMENT PROVIDED	BMP-1	0.006	AC-FT
TREATMENT PROVIDED	BMP-2	0.036	AC-FT
TREATMENT PROVIDED	BMP-3	0.016	AC-FT
TREATMENT PROVIDED	BMP-4	0.015	AC-FT
TREATMENT PROVIDED	BMP-5	0.015	AC-FT
TREATMENT PROVIDED	BMP-6	0.015	AC-FT
TREATMENT PROVIDED	BMP-7	0.004	AC-FT
TREATMENT PROVIDED	BMP-8A	0.009	AC-FT
TREATMENT PROVIDED	BMP-8B	0.009	AC-FT
TREATMENT PROVIDED	BMP-9A	0.009	AC-FT
TREATMENT PROVIDED	BMP-9B	0.009	AC-FT

INFILTRATION PROVIDED= 0.143 AC-FT 1-YEAR STORM VOLUME INFILTRATED ON SITE
6229 CF

VOLUME INFILTRATED GRAETER THAN VOLUME REQUIRED (0.143>0.093)

MINIMUM STANDARD 5 : OVERBANK FLOOD PROTECTION
EVALUATED FOR TOTAL SITE
STORMWATER POST-DEVELOPMENT FLOW RATES (C.F.S.)

	10-YEAR			100-YEAR		
	Q_{10X}	Q_{10P}	Δ	Q_{100X}	Q_{100P}	Δ
	2.39	1.40	-0.99	9.04	4.96	-4.08
10-YEAR MITIGATION REQUIRED:				NO		
100-YEAR MITIGATION REQUIRED:				NO		

BMP-1 4 ROWS OF 2 ADS SC-740 INFILTRATION CHAMBERS
1-ISOLATOR ROW OF 2 CHAMBERS

12" OF STONE AROUND, 6" UNDER/OVER CHAMBERS
SYSTEM OUTSIDE DIMENSIONS 17.86' L X 20.50' W X 3.5' H

IMPERVIOUS AREA TREATED	0.038	ACRES
ISOLATOR CHAMBERS REQUIRED	1	1 FOR 0.24 ACRES
WQV FLOW RATE	0.04	CFS
ISOLATOR CHAMBERS REQUIRED	1	1 FOR 0.25 CFS
ISOLATOR CHAMBERS PROVIDED	2	

ITEM	ELEV.
MIN. TOP ASPHALT	254.80
MIN. BOT ASPHALT/TOP GRAVEL	254.50
BOT GRAVEL/TOP STONE	253.50
BOT STONE/TOP CHAMBER	253.00
BOT CHAMBER/TOP STONE	250.50
BOT STONE	250.00
SHGWT	246.00

BMP-2 7 ROWS OF 7 ADS SC-740 INFILTRATION CHAMBERS
1-ISOLATOR ROW OF 7 CHAMBERS

12" OF STONE AROUND, 6" UNDER/OVER CHAMBERS
SYSTEM OUTSIDE DIMENSIONS 53.46' L X 34.75' W X 3.5' H

IMPERVIOUS AREA TREATED	0.358	ACRES
ISOLATOR CHAMBERS REQUIRED	2	1 FOR 0.24 ACRES
WQV FLOW RATE	0.27	CFS
ISOLATOR CHAMBERS REQUIRED	1	1 FOR 0.25 CFS
ISOLATOR CHAMBERS PROVIDED	7	

ITEM	ELEV.
MIN. TOP ASPHALT	249.80
MIN. BOT ASPHALT/TOP GRAVEL	249.50
BOT GRAVEL/TOP STONE	248.50
BOT STONE/TOP CHAMBER	248.00
BOT CHAMBER/TOP STONE	245.50
BOT STONE	245.00
SHGWT	241.00

BMP-3 10 ROWS OF 2 ADS SC-740 INFILTRATION CHAMBERS
1-ISOLATOR ROW OF 2 CHAMBERS

12" OF STONE AROUND, 6" UNDER/OVER CHAMBERS
SYSTEM OUTSIDE DIMENSIONS 17.86' L X 49.00' W X 3.5' H

IMPERVIOUS AREA TREATED	0.076	ACRES
ISOLATOR CHAMBERS REQUIRED	1	1 FOR 0.24 ACRES
WQV FLOW RATE	0.07	CFS
ISOLATOR CHAMBERS REQUIRED	1	1 FOR 0.25 CFS
ISOLATOR CHAMBERS PROVIDED	2	

ITEM	ELEV.
TOP ASPHALT	247.50
BOT ASPHALT/TOP GRAVEL	247.20
BOT GRAVEL/TOP STONE	246.20
BOT STONE/TOP CHAMBER	245.70
BOT CHAMBER/TOP STONE	243.20
BOT STONE	242.70
SHGWT	238.50

BMP-4 3 ROWS OF 7 ADS SC-740 INFILTRATION CHAMBERS
1-ISOLATOR ROW OF 7 CHAMBERS

12" OF STONE AROUND, 6" UNDER/OVER CHAMBERS
SYSTEM OUTSIDE DIMENSIONS 53.46' L X 15.75' W X 3.5' H

IMPERVIOUS AREA TREATED	0.101	ACRES
ISOLATOR CHAMBERS REQUIRED	1	1 FOR 0.24 ACRES
WQV FLOW RATE	0.09	CFS
ISOLATOR CHAMBERS REQUIRED	1	1 FOR 0.25 CFS
ISOLATOR CHAMBERS PROVIDED	7	

ITEM	ELEV.
MIN. COVER	250.00
BOT ASPHALT/TOP GRAVEL	250.00
BOT GRAVEL/TOP STONE	249.00
BOT STONE/TOP CHAMBER	248.50
BOT CHAMBER/TOP STONE	246.00
BOT STONE	245.50
SHGWT	240.50

BMP-5 4 ROWS OF 6 ADS SC-740 INFILTRATION CHAMBERS
1-ISOLATOR ROW OF 6 CHAMBERS

12" OF STONE AROUND, 6" UNDER/OVER CHAMBERS
SYSTEM OUTSIDE DIMENSIONS 46.34' L X 20.50' W X 3.5' H

IMPERVIOUS AREA TREATED	0.117	ACRES
ISOLATOR CHAMBERS REQUIRED	1	1 FOR 0.24 ACRES
WQV FLOW RATE	0.12	CFS
ISOLATOR CHAMBERS REQUIRED	1	1 FOR 0.25 CFS
ISOLATOR CHAMBERS PROVIDED	6	

ITEM	ELEV.
TOP ASPHALT	250.50
BOT ASPHALT/TOP GRAVEL	250.20
BOT GRAVEL/TOP STONE	249.20
BOT STONE/TOP CHAMBER	248.70
BOT CHAMBER/TOP STONE	246.20
BOT STONE	245.70
SHGWT	241.70

BMP-6 3 ROWS OF 1 ADS SC-310 INFILTRATION CHAMBERS
1-ISOLATOR ROW OF 1 CHAMBERS

12" OF STONE AROUND, 6" UNDER/OVER CHAMBERS
SYSTEM OUTSIDE DIMENSIONS 10.32' L X 11.50' W X 2.33' H

IMPERVIOUS AREA TREATED	0.087	ACRES
ISOLATOR CHAMBERS REQUIRED	1	1 FOR 0.24 ACRES
WQV FLOW RATE	0.1	CFS
ISOLATOR CHAMBERS REQUIRED	1	1 FOR 0.25 CFS
ISOLATOR CHAMBERS PROVIDED	1	

ITEM	ELEV.
TOP ASPHALT	241.30
BOT ASPHALT/TOP GRAVEL	241.00
BOT GRAVEL/TOP STONE	240.00
BOT STONE/TOP CHAMBER	239.50
BOT CHAMBER/TOP STONE	237.00
BOT STONE	236.50
SHGWT	232.50

BMP-7 3 ROWS OF 3 ADS SC-310 INFILTRATION CHAMBERS
1-ISOLATOR ROW OF 3 CHAMBERS

12" OF STONE AROUND, 6" UNDER/OVER CHAMBERS
SYSTEM OUTSIDE DIMENSIONS 24.56' L X 11.50' W X 2.33' H

IMPERVIOUS AREA TREATED	0.032	ACRES
ISOLATOR CHAMBERS REQUIRED	1	1 FOR 0.24 ACRES
WQV FLOW RATE	0.03	CFS
ISOLATOR CHAMBERS REQUIRED	1	1 FOR 0.25 CFS
ISOLATOR CHAMBERS PROVIDED	3	

ITEM	ELEV.
TOP ASPHALT	244.63
BOT ASPHALT/TOP GRAVEL	244.33
BOT GRAVEL/TOP STONE	243.33
BOT STONE/TOP CHAMBER	242.83
BOT CHAMBER/TOP STONE	241.50
BOT STONE	241.00
SHGWT	237.00

BMP-8A & 8B 1 ROW OF 6 ADS SC-740 INFILTRATION CHAMBERS
ROOF RUNOFF ONLY

12" OF STONE AROUND, 6" UNDER/OVER CHAMBERS
SYSTEM OUTSIDE DIMENSIONS 10.75' L X 22.50' W X 3.50' H

IMPERVIOUS AREA TREATED	0.094	ACRES
ISOLATOR CHAMBERS REQUIRED	0	1 FOR 0.24 ACRES
WQV FLOW RATE	0.11	CFS
ISOLATOR CHAMBERS REQUIRED	0	1 FOR 0.25 CFS
ISOLATOR CHAMBERS PROVIDED	0	

ITEM	ELEV.
TOP ASPHALT	254.80
BOT ASPHALT/TOP GRAVEL	254.50
BOT GRAVEL/TOP STONE	253.50
BOT STONE/TOP CHAMBER	253.00
BOT CHAMBER/TOP STONE	250.50
BOT STONE	250.00
SHGWT	244.00

BMP-9 A — 1 ROW OF 6 ADS SC-740 INFILTRATION CHAMBERS
ROOF RUNOFF ONLY

12" OF STONE AROUND, 6" UNDER/OVER CHAMBERS
SYSTEM OUTSIDE DIMENSIONS 10.75' L X 22.50' W X 3.50' H

IMPERVIOUS AREA TREATED	0.094	ACRES
ISOLATOR CHAMBERS REQUIRED	0	1 FOR 0.24 ACRES
WQV FLOW RATE	0.11	CFS
ISOLATOR CHAMBERS REQUIRED	0	1 FOR 0.25 CFS
ISOLATOR CHAMBERS PROVIDED	0	

ITEM	ELEV.
TOP ASPHALT	252.80
BOT ASPHALT/TOP GRAVEL	252.50
BOT GRAVEL/TOP STONE	251.50
BOT STONE/TOP CHAMBER	251.00
BOT CHAMBER/TOP STONE	248.50
BOT STONE	248.00
SHGWT	242.00

BMP-9B — 1 ROW OF 6 ADS SC-740 INFILTRATION CHAMBERS
ROOF RUNOFF ONLY

12" OF STONE AROUND, 6" UNDER/OVER CHAMBERS
SYSTEM OUTSIDE DIMENSIONS 10.75' L X 22.50' W X 3.50' H

IMPERVIOUS AREA TREATED	0.094	ACRES
ISOLATOR CHAMBERS REQUIRED	0	1 FOR 0.24 ACRES
WQV FLOW RATE	0.11	CFS
ISOLATOR CHAMBERS REQUIRED	0	1 FOR 0.25 CFS
ISOLATOR CHAMBERS PROVIDED	0	

ITEM	ELEV.
TOP ASPHALT	253.30
BOT ASPHALT/TOP GRAVEL	253.00
BOT GRAVEL/TOP STONE	252.00
BOT STONE/TOP CHAMBER	251.50
BOT CHAMBER/TOP STONE	249.00
BOT STONE	248.50
SHGWT	242.00

Appendix E

Soil Boring Logs

COMMONWEALTH ENGINEERS AND CONSULTING INC. TEST HOLE SUMMARY

OBSERVED BY TIM BEHAN, P.E.

LOCATION	TP-1		6/30/2025
SURFACE GRADE	256.0±	FEET	
0-6"	LOAM		
6-24"	SANDY LOAM SUBSOIL		
24-60"	MED. SAND		
60-144"	MED. SAND/FINE GRAVEL		
NO GW SEEPAGE, NO MOTTLING, NO LEDGE			

LOCATION	TP-2		6/30/2025
SURFACE GRADE	256.0±	FEET	
0-6"	LOAM		
6-30"	SANDY LOAM SUBSOIL		
30-78"	VERY FINE SAND		
78-156"	MED. SAND/FINE GRAVEL		
NO GW SEEPAGE, NO MOTTLING, NO LEDGE			

LOCATION	TP-3		6/30/2025
SURFACE GRADE	260.0±	FEET	
0-4"	LOAM		
4-24"	SANDY LOAM SUBSOIL/COBBLES		
24-144"	MED. SAND/FINE GRAVEL		
NO GW SEEPAGE, NO MOTTLING, NO LEDGE			

LOCATION	TP-4		6/30/2025
SURFACE GRADE	257.5±	FEET	
0-6"	LOAM		
6-24"	SANDY LOAM SUBSOIL/COBBLES		
24-144"	MED. SAND/FINE GRAVEL		
NO GW SEEPAGE, NO MOTTLING, NO LEDGE			

LOCATION	TP-5		6/30/2025
SURFACE GRADE	253.7.0±	FEET	
0-10"	LOAM		
10-30"	SANDY LOAM SUBSOIL		
30-72"	VERY FINE SAND		
72-144"	MED. SAND/FINE GRAVEL		
NO GW SEEPAGE, NO MOTTLING, NO LEDGE			

LOCATION	TP-6		6/30/2025
SURFACE GRADE	248.8±	FEET	
0-10"	LOAM		
10-30"	SANDY LOAM SUBSOIL		
30-72"	VERY FINE SAND		
72-144"	MED. SAND/FINE GRAVEL		
NO GW SEEPAGE, NO MOTTLING, NO LEDGE			

LOCATION	TP-7		6/30/2025
SURFACE GRADE	253.7±	FEET	
0-6"	LOAM		
6-24"	SANDY LOAM SUBSOIL/COBBLES		
24-144"	LOAMY, GRAVELLY SAND, BOULDERS		
NO GW SEEPAGE, NO MOTTLING, NO LEDGE			

LOCATION	TP-8		6/30/2025
SURFACE GRADE	252.0±	FEET	
0-6"	LOAM		
6-30"	SANDY LOAM SUBSOIL		
30-72"	VERY FINE SAND		
72-132"	MED. SAND/FINE GRAVEL		
NO GW SEEPAGE, NO MOTTLING, NO LEDGE			

LOCATION	TP-9		6/30/2025
SURFACE GRADE	252.0±	FEET	
0-6"	LOAM		
6-30"	SANDY LOAM SUBSOIL		
30-78"	VERY FINE SAND		
78-144"	MED. SAND/FINE GRAVEL		
NO GW SEEPAGE, NO MOTTLING, NO LEDGE			

LOCATION	TP-10		6/30/2025
SURFACE GRADE	246.0±	FEET	
0-4"	LOAM		
4-24"	SANDY LOAM SUBSOIL		
24-60"	VERY FINE SAND		
60-144"	MED. SAND/FINE GRAVEL		
NO GW SEEPAGE, NO MOTTLING, NO LEDGE			

TEST PIT FIELD LOG

COMMONWEALTH ENGINNERS	PROJECT	TEST PIT NO.: TH-1
AND CONSULTANTS, INC.	DESRIPTION: SIENA CONDOS	FILE NO.: 25024.00
400 SMITH STRETET	MAIN STREET	DATE: 6/30/2025
PROVIDENCE, RI 02908	LOCATION: COVENTRY, RI	CHECKED BY: TJB

EXCAVATION EQUIPMENT

CEC ENGINEER: T. BEHAN, PE	MAKE: CAT	DATUM: NAVD88
WEATHER: CLOUDY, 60^{O}F	MODEL: 212 EXCAVATOR	GROUND ELEV.: 256.0+/-
CONTRACTOR: OWNER	CAPACITY: 0.5 CY	TIME STARTED: 8:00
OPERATOR: H. HARDING	REACH: 16 FT	TIME COMPLETED: 8:30

DEPTH (FEET)	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT	REMARKS
0.0-0.5'	LOAM	E		
.5'-2.0'	SANDY LOAM SUBSOIL	E		
2.0'-5.0'	MED. SAND	E		
5.0'-12.0'	MED. SAND/FINE GRAVEL	M		1,2,3
	GW >12.0 FEET BGS			

REMARKS:
1 NO GW SEEPAGE OBSERVED
2 NO MOTTLING OBSERVED
3 NO LEDGE OBSERVED

TEST PIT PLAN			BOULDERS		PROPORTIONS		EXCAVATION EFFORT	
DIMS.:	L: 10'		6"-18"	A	TRACE (TRC)	0-10%	EASY	E
	W: 6'		18"-36"	B	LITTLE (LI)	10%-20%	MODERATE	M
	VOLUME (CY):	~20	>36"	C	SOME (SO)	20-35%	DIFFICEULT:	D
					And	35%-50%	GROUND WATER TABLE	GWT
	NORTH	↑						

TEST PIT FIELD LOG

COMMONWEALTH ENGINNERS	PROJECT	TEST PIT NO.: TH-2
AND CONSULTANTS, INC.	DESRIPTION: SIENA CONDOS	FILE NO.: 25024.00
400 SMITH STRETET	MAIN STREET	DATE: 6/30/2025
PROVIDENCE, RI 02908	LOCATION: COVENTRY, RI	CHECKED BY: TJB

EXCAVATION EQUIPMENT

CEC ENGINEER: T. BEHAN, PE	MAKE: CAT	DATUM: NAVD88
WEATHER: CLOUDY, 60^{O}F	MODEL: 212 EXCAVATOR	GROUND ELEV.: 256.0+/-
CONTRACTOR: OWNER	CAPACITY: 0.5 CY	TIME STARTED: 8:30
OPERATOR: H. HARDING	REACH: 16 FT	TIME COMPLETED: 9:00

DEPTH (FEET)	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT	REMARKS
0.0-0.5'	LOAM	E		
.5'-2.5'	SANDY LOAM SUBSOIL	E		
2.5'-6.5'	VERY FINE SAND	E		
6.5'-13.0'	MED. SAND/FINE GRAVEL	M		1,2,3
	GW >13.0 FEET BGS			

REMARKS:
1 NO GW SEEPAGE OBSERVED
2 NO MOTTLING OBSERVED
3 NO LEDGE OBSERVED

TEST PIT PLAN			BOULDERS		PROPORTIONS		EXCAVATION EFFORT	
DIMS.:	L: 10'		6"-18"	A	TRACE (TRC)	0-10%	EASY	E
	W: 6'		18"-36"	B	LITTLE (LI)	10%-20%	MODERATE	M
	VOLUME (CY):	~20	>36"	C	SOME (SO)	20-35%	DIFFICEULT:	D
					And	35%-50%	GROUND WATER TABLE	GWT
	NORTH	↑						

TEST PIT FIELD LOG

COMMONWEALTH ENGINNERS	PROJECT	TEST PIT NO.: TH-3
AND CONSULTANTS, INC.	DESRIPTION: SIENA CONDOS	FILE NO.: 25024.00
400 SMITH STRETET	MAIN STREET	DATE: 6/30/2025
PROVIDENCE, RI 02908	LOCATION: COVENTRY, RI	CHECKED BY: TJB

EXCAVATION EQUIPMENT

CEC ENGINEER: T. BEHAN, PE	MAKE: CAT	DATUM: NAVD88
WEATHER: CLOUDY, 60^{O}F	MODEL: 212 EXCAVATOR	GROUND ELEV.: 260.0+/-
CONTRACTOR: OWNER	CAPACITY: 0.5 CY	TIME STARTED: 9:00
OPERATOR: H. HARDING	REACH: 16 FT	TIME COMPLETED: 9:30

DEPTH (FEET)	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT	REMARKS
0.0-0.33'	LOAM	E		
0.33'-2.0'	SANDY LOAM SUBSOIL/COBBLES	E		
2.0'-12.0'	MED SAND/FINE GRAVEL	E		1,2,3
	GW >12.0 FEET BGS			

REMARKS:
1 NO GW SEEPAGE OBSERVED
2 NO MOTTLING OBSERVED
3 NO LEDGE OBSERVED

TEST PIT PLAN		BOULDERS		PROPORTIONS		EXCAVATION EFFORT	
DIMS.:	L: 10'	6"-18"	A	TRACE (TRC)	0-10%	EASY	E
	W: 6'	18"-36"	B	LITTLE (LI)	10%-20%	MODERATE	M
	VOLUME (CY): ~20	>36"	C	SOME (SO)	20-35%	DIFFICEULT:	D
				And	35%-50%	GROUND WATER TABLE	GWT
	NORTH ↑						

TEST PIT FIELD LOG

COMMONWEALTH ENGINNERS	PROJECT	TEST PIT NO.: TH-4
AND CONSULTANTS, INC.	DESRIPTION: SIENA CONDOS	FILE NO.: 25024.00
400 SMITH STRETET	MAIN STREET	DATE: 6/30/2025
PROVIDENCE, RI 02908	LOCATION: COVENTRY, RI	CHECKED BY: TJB

EXCAVATION EQUIPMENT

CEC ENGINEER: T. BEHAN, PE	MAKE: CAT	DATUM: NAVD88
WEATHER: CLOUDY, 60^{O}F	MODEL: 212 EXCAVATOR	GROUND ELEV.: 257.5+/-
CONTRACTOR: OWNER	CAPACITY: 0.5 CY	TIME STARTED: 9:30
OPERATOR: H. HARDING	REACH: 16 FT	TIME COMPLETED: 10:00

DEPTH (FEET)	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT	REMARKS
0.0-0.5'	LOAM	E		
0.5'-2.0'	SANDY LOAM SUBSOIL/COBBLES	E		
2.0'-12.0'	MED SAND/FINE GRAVEL	M		1,2,3
	GW >12.0 FEET BGS			

REMARKS:
1 NO GW SEEPAGE OBSERVED
2 NO MOTTLING OBSERVED
3 NO LEDGE OBSERVED

TEST PIT PLAN		BOULDERS		PROPORTIONS		EXCAVATION EFFORT	
DIMS.:	L: 10'	6"-18"	A	TRACE (TRC)	0-10%	EASY	E
	W: 6'	18"-36"	B	LITTLE (LI)	10%-20%	MODERATE	M
	VOLUME (CY): ~20	>36"	C	SOME (SO)	20-35%	DIFFICEULT:	D
				And	35%-50%	GROUND WATER TABLE	GWT
	NORTH ↑						

TEST PIT FIELD LOG

COMMONWEALTH ENGINNERS	PROJECT	TEST PIT NO.: TH-5
AND CONSULTANTS, INC.	DESRIPTION: SIENA CONDOS	FILE NO.: 25024.00
400 SMITH STRETET	MAIN STREET	DATE: 6/30/2025
PROVIDENCE, RI 02908	LOCATION: COVENTRY, RI	CHECKED BY: TJB

EXCAVATION EQUIPMENT

CEC ENGINEER: T. BEHAN, PE	MAKE: CAT	DATUM: NAVD88
WEATHER: CLOUDY, 60^{O}F	MODEL: 212 EXCAVATOR	GROUND ELEV.: 253.7+/-
CONTRACTOR: OWNER	CAPACITY: 0.5 CY	TIME STARTED: 10:00
OPERATOR: H. HARDING	REACH: 16 FT	TIME COMPLETED: 10:30

DEPTH (FEET)	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT	REMARKS
0.0-0.83'	LOAM	E		
0.83'-2.5'	SANDY LOAM SUBSOIL	E		
2.5'-6.0'	VERY FINE SAND	E		
6.0'-12.0'	MED. SAND/FINE GRAVEL	M		1,2,3
	GW >12.0 FEET BGS			

REMARKS:
1 NO GW SEEPAGE OBSERVED
2 NO MOTTLING OBSERVED
3 NO LEDGE OBSERVED

TEST PIT PLAN			BOULDERS		PROPORTIONS		EXCAVATION EFFORT	
DIMS.:	L: 10'		6"-18"	A	TRACE (TRC)	0-10%	EASY	E
	W: 6'		18"-36"	B	LITTLE (LI)	10%-20%	MODERATE	M
	VOLUME (CY):	~20	>36"	C	SOME (SO)	20-35%	DIFFICEULT:	D
					And	35%-50%	GROUND WATER TABLE	GWT
	NORTH	↑						

TEST PIT FIELD LOG

COMMONWEALTH ENGINNERS	PROJECT	TEST PIT NO.: TH-6
AND CONSULTANTS, INC.	DESRIPTION: SIENA CONDOS	FILE NO.: 25024.00
400 SMITH STRETET	MAIN STREET	DATE: 6/30/2025
PROVIDENCE, RI 02908	LOCATION: COVENTRY, RI	CHECKED BY: TJB

EXCAVATION EQUIPMENT

CEC ENGINEER: T. BEHAN, PE	MAKE: CAT	DATUM: NAVD88
WEATHER: CLOUDY, 60^{O}F	MODEL: 212 EXCAVATOR	GROUND ELEV.: 248.8+/-
CONTRACTOR: OWNER	CAPACITY: 0.5 CY	TIME STARTED: 10:30
OPERATOR: H. HARDING	REACH: 16 FT	TIME COMPLETED: 11:00

DEPTH (FEET)	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT	REMARKS
0.0-0.83'	LOAM	E		
0.83'-2.5'	SANDY LOAM SUBSOIL	E		
2.5'-6.0'	VERY FINE SAND	E		
6.0'-12.0'	MED. SAND/FINE GRAVEL	M		1,2,3
	GW >12.0 FEET BGS			

REMARKS:
1 NO GW SEEPAGE OBSERVED
2 NO MOTTLING OBSERVED
3 NO LEDGE OBSERVED

TEST PIT PLAN		BOULDERS		PROPORTIONS		EXCAVATION EFFORT	
DIMS.:	L: 10'	6"-18"	A	TRACE (TRC)	0-10%	EASY	E
	W: 6'	18"-36"	B	LITTLE (LI)	10%-20%	MODERATE	M
	VOLUME (CY): ~20	>36"	C	SOME (SO)	20-35%	DIFFICEULT:	D
				And	35%-50%	GROUND WATER TABLE	GWT
	NORTH ↑						

TEST PIT FIELD LOG

COMMONWEALTH ENGINNERS	PROJECT	TEST PIT NO.: TH-7
AND CONSULTANTS, INC.	DESRIPTION: SIENA CONDOS	FILE NO.: 25024.00
400 SMITH STRETET	MAIN STREET	DATE: 6/30/2025
PROVIDENCE, RI 02908	LOCATION: COVENTRY, RI	CHECKED BY: TJB

EXCAVATION EQUIPMENT

CEC ENGINEER: T. BEHAN, PE	MAKE: CAT	DATUM: NAVD88
WEATHER: CLOUDY, 60^{O}F	MODEL: 212 EXCAVATOR	GROUND ELEV.: 253.7+/-
CONTRACTOR: OWNER	CAPACITY: 0.5 CY	TIME STARTED: 11:00
OPERATOR: H. HARDING	REACH: 16 FT	TIME COMPLETED: 11:30

DEPTH (FEET)	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT	REMARKS
0.0-0.5'	LOAM	E		
0.5'-2.0'	SANDY LOAM SUBSOIL/COBBLES	E		
2.0'-12.0'	LOAMY, GRAVELLY SAND, BOULDERS	E	A	1,2,3
	GW >12.0 FEET BGS			

REMARKS:
1 NO GW SEEPAGE OBSERVED
2 NO MOTTLING OBSERVED
3 NO LEDGE OBSERVED

TEST PIT PLAN		BOULDERS		PROPORTIONS		EXCAVATION EFFORT	
DIMS.:	L: 10'	6"-18"	A	TRACE (TRC)	0-10%	EASY	E
	W: 6'	18"-36"	B	LITTLE (LI)	10%-20%	MODERATE	M
	VOLUME (CY): ~20	>36"	C	SOME (SO)	20-35%	DIFFICEULT:	D
				And	35%-50%	GROUND WATER TABLE	GWT
	NORTH ↑						

TEST PIT FIELD LOG

COMMONWEALTH ENGINNERS	PROJECT	TEST PIT NO.: TH-8
AND CONSULTANTS, INC.	DESRIPTION: SIENA CONDOS	FILE NO.: 25024.00
400 SMITH STRETET	MAIN STREET	DATE: 6/30/2025
PROVIDENCE, RI 02908	LOCATION: COVENTRY, RI	CHECKED BY: TJB

EXCAVATION EQUIPMENT

CEC ENGINEER: T. BEHAN, PE	MAKE: CAT	DATUM: NAVD88
WEATHER: CLOUDY, 60^{O}F	MODEL: 212 EXCAVATOR	GROUND ELEV.: 252.0+/-
CONTRACTOR: OWNER	CAPACITY: 0.5 CY	TIME STARTED: 11:30
OPERATOR: H. HARDING	REACH: 16 FT	TIME COMPLETED: 12:00

DEPTH (FEET)	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT	REMARKS
0.0-0.5'	LOAM	E		
0.5'-2.5'	SANDY LOAM SUBSOIL	E		
2.5'-6.0'	VERY FINE SAND	E		
6.0'-11.0'	MED. SAND/FINE GRAVEL	E		1,2,3
	GW >11.0 FEET BGS			

REMARKS:
1 NO GW SEEPAGE OBSERVED
2 NO MOTTLING OBSERVED
3 NO LEDGE OBSERVED

TEST PIT PLAN			BOULDERS		PROPORTIONS		EXCAVATION EFFORT	
DIMS.:	L: 10'		6"-18"	A	TRACE (TRC)	0-10%	EASY	E
	W: 6'		18"-36"	B	LITTLE (LI)	10%-20%	MODERATE	M
	VOLUME (CY):	~20	>36"	C	SOME (SO)	20-35%	DIFFICEULT:	D
					And	35%-50%	GROUND WATER TABLE	GWT
	NORTH	↑						

TEST PIT FIELD LOG

COMMONWEALTH ENGINNERS	PROJECT	TEST PIT NO.: TH-9
AND CONSULTANTS, INC.	DESRIPTION: SIENA CONDOS	FILE NO.: 25024.00
400 SMITH STRETET	MAIN STREET	DATE: 6/30/2025
PROVIDENCE, RI 02908	LOCATION: COVENTRY, RI	CHECKED BY: TJB

EXCAVATION EQUIPMENT

CEC ENGINEER: T. BEHAN, PE	MAKE: CAT	DATUM: NAVD88
WEATHER: CLOUDY, 60^{O}F	MODEL: 212 EXCAVATOR	GROUND ELEV.: 252.0+/-
CONTRACTOR: OWNER	CAPACITY: 0.5 CY	TIME STARTED: 12:30
OPERATOR: H. HARDING	REACH: 16 FT	TIME COMPLETED: 1:00

DEPTH (FEET)	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT	REMARKS
0.0-0.5'	LOAM	E		
0.5'-2.5'	SANDY LOAM SUBSOIL	E		
2.5'-6.0'	VERY FINE SAND	E		
6.0'-12.0'	MED. SAND/FINE GRAVEL	E		1,2,3
	GW >12.0 FEET BGS			

REMARKS:
1 NO GW SEEPAGE OBSERVED
2 NO MOTTLING OBSERVED
3 NO LEDGE OBSERVED

TEST PIT PLAN		BOULDERS		PROPORTIONS		EXCAVATION EFFORT	
DIMS.:	L: 10'	6"-18"	A	TRACE (TRC)	0-10%	EASY	E
	W: 6'	18"-36"	B	LITTLE (LI)	10%-20%	MODERATE	M
	VOLUME (CY): ~20	>36"	C	SOME (SO)	20-35%	DIFFICEULT:	D
				And	35%-50%	GROUND WATER TABLE	GWT
	NORTH ↑						

TEST PIT FIELD LOG

COMMONWEALTH ENGINNERS	PROJECT	TEST PIT NO.: TH-10
AND CONSULTANTS, INC.	DESRIPTION: SIENA CONDOS	FILE NO.: 25024.00
400 SMITH STRETET	MAIN STREET	DATE: 6/30/2025
PROVIDENCE, RI 02908	LOCATION: COVENTRY, RI	CHECKED BY: TJB

EXCAVATION EQUIPMENT

CEC ENGINEER: T. BEHAN, PE	MAKE:	CAT	DATUM:	NAVD88
WEATHER: CLOUDY, 60^{O}F	MODEL:	212 EXCAVATOR	GROUND ELEV.:	246.0+/-
CONTRACTOR: OWNER	CAPACITY:	0.5 CY	TIME STARTED:	1:00
OPERATOR: H. HARDING	REACH:	16 FT	TIME COMPLETED:	1:30

DEPTH (FEET)	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT	REMARKS
0.0-0.33'	LOAM	E		
0.33'-2.0'	SANDY LOAM SUBSOIL	E		
2.0'-5.0'	VERY FINE SAND	E		
5.0'-12.0'	MED. SAND/FINE GRAVEL	E		1,2,3
	GW >12.0 FEET BGS			

REMARKS:
1 NO GW SEEPAGE OBSERVED
2 NO MOTTLING OBSERVED
3 NO LEDGE OBSERVED

TEST PIT PLAN		BOULDERS		PROPORTIONS		EXCAVATION EFFORT	
DIMS.:	L: 10'	6"-18"	A	TRACE (TRC)	0-10%	EASY	E
	W: 6'	18"-36"	B	LITTLE (LI)	10%-20%	MODERATE	M
	VOLUME (CY): ~20	>36"	C	SOME (SO)	20-35%	DIFFICEULT:	D
				And	35%-50%	GROUND WATER TABLE	GWT
	NORTH ↑						

SOIL TYPE NAME	SOIL DESCRIPTION	HYDROLOGIC SOIL GROUP
HkC	HINCKLEY LOAMY SAND, 8 TO 15 PERCENT SLOPES	A
NaB	NARRAGANSETT SILT LOAM, 3 TO 8 PERCENT SLOPES	B
UD	UDORTHENTS-URBAN LAND COMPLEX	A
Ur	URBAN LAND	A-D

AP 45 LOT 1
n/f
TOWN OF COVENTRY

SOIL TYPE BOUNDARY

STONE WALL

PATIO (TYP.)

TH-1 TH-2 TH-3 TH-4 TH-5 TH-6 TH-7 TH-8 TH-9 TH-10

SHED

HOUSE # 17

GREENHOUSE FRAME

CABIN

AP 45 LOT 10

AP 45 LOT 19.2
n/f
B. MALO
d.b. 2118 pg. 263

AP 45 LOT 11

AP 45 LOT 7
n/f
OLIVIERI
d.b. 1159 pg. 219

AP 45 LOT 8
n/f
RODRIGUES
d.b. 1962 pg. 456

AP 45 LOT 9
n/f
1213 - 1215 MAIN ST., LLC
d.b. 2125 pg. 128

AP 45 LOT 12

AP 45 LOT 7
n/f
YOUNG
d.b. 2145 pg. 1

AP 45 LOT 19.1
n/f
MATTI J, LLC
d.b. 2283 pg. 665

15' ROW

GAR.

HOUSE

hse. no. 1209

hse. no. 1205

#1227 #1217 #1213 #1201 #1197 #1193 #1189 #16 #14 #12 #10A #10 #2

EDGE OF PAVEMENT

KEN RAY DRIVE
PUBLIC - WIDTH UNKNOWN
ONE WAY

MAIN STREET
R.I. ROUTE 117

EX CB
RIM:239.67
12" RCP IN INV.=236.77
12" CI OUT INV.=236.72

EX SMH
RIM=243.22
INV.=232.70
INV.=232.66

EXISTING OVERHEAD UTILITIES

UP#148

RIDEM 200' JURISDICTIONAL AREA

NaB HkC UD

SITE NOTES:

1. WHERE REFERENCED HEREIN, THE TERM "PARCEL" SHALL BE APPLICABLE TO THE COMBINED LAND AREA ENCOMPASSED BY LOTS 10, 11, 12 & 13. ALL LOCATED ON ASSESSORS MAP 45.
2. THE SUBJECT PARCEL LIES WITHIN 'ZONE X–AREAS OF MINIMAL FLOOD HAZARD' AS DELINEATED ON THE FIRM FLOOD INSURANCE RATE MAP FOR KENT COUNTY, RHODE ISLAND (ALL JURISDICTIONS), MAP NUMBER 44003C0104H, EFFECTIVE DATE OCTOBER 2, 2015.
3. SUBJECT PARCELS ARE DEVELOPED WITH RESIDENTIAL DWELLINGS. GROUND COVERAGE IS LAWN WITH MIXED HARDWOOD SPECIES TREES ON THE PERIMETER OF THE SITE.
4. THERE IS AN OFF SITE CEMETERY (AP 45 LOT 6) LOCATED AT THE WEST SIDE OF KEN RAY DRIVE ALONG MAIN STREET.
5. AS SHOWN ON THE RIDEM ENVIRONMENTAL RESOURCE MAP AND TOWN OF COVENTRY GIS, THE SUBJECT PARCEL IS NOT LOCATED WITHIN EITHER OF THE FOLLOWING:
   - HISTORIC DISTRICT
   - COMMUNITY OR NON–COMMUNITY WELL HEAD PROTECTION AREA
   - RIDEM GROUNDWATER RESERVOIR, RECHARGE AREA OR SOLE SOURCE AQUIFER
6. THE SITE IS NOT LOCATED IN A NATURAL HERITAGE AREA .
7. SUBJECT PARCEL IS SERVICED BY KENT COUNTY WATER AUTHORITY.
8. SUBJECT PARCEL IS SERVICED BY COVENTRY SEWER AUTHORITY.
9. GROUNDWATER IN THE AREA IS CLASSIFIED GB BY RIDEM.
10. THE SOILS IN THE AREA ARE CLASSIFIED Ur–URBAN LAND AND NaB NARRAGANSETT SILT LOAM.
11. EXISTING OVERHEAD UTILITIES ARE LOCATED ALONG THE NORTH SIDE OF MAIN STREET.
12. THE SUBJECT PARCEL IS SERVICED BY THE CENTRAL FIRE DISTRICT.

PLAN VIEW

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

REDUCED SCALE DRAWING
ORIGINAL 20 SCALE PLOTS
AT 24" X 36"

OWNER:
STEPHEN T. JURCZYK
PO BOX 434
COVENTRY RI 02816
ATTORNEY REPRESENTING OWNER:
ROBERT COLAGIOVANNI, ESQ.
PHONE: (401)732-9300

APPLICANT:
BOULDER HILL DEVELOPMENT, LLC
PATRICK CZERWIEN, MANAGER
57 PINE RIDGE DRIVE
CRANSTON, RI 02921
PHONE: (401) 413-5648

LEGAL COUNCIL:
MR. THOMAS CRONIN ESQ.
NOLAN, BRUNERO, CRONIN & FERRARA LTD.
1070 MAIN STREET
COVENTRY, RI 02816-5707
PHONE: (401) 828-5800

DRAWING ISSUE:

- ☐ CONCEPT
- ☐ CUSTOMER APPROVAL
- ☒ PERMITTING
- ☐ CONSTRUCTION
- ☐ AS–BUILT
- ☐ OTHER:

ONLY PLANS ISSUED FOR CONSTRUCTION SHALL BE USED FOR CONSTRUCTION

REVISIONS

No.	DATE	DRWN	CHKD

COMMONWEALTH
ENGINEERS & CONSULTANTS, INC.
400 SMITH STREET
PROVIDENCE, RHODE ISLAND 02908
(401) 273-6600

PRELIMINARY PLAN APPLICATION
COMPREHENSIVE PERMIT
FOR
SIENA CONDOMINIUMS
A.P. 45 LOTS 10, 11, 12 & 13
MAIN STREET
COVENTRY, RHODE ISLAND

TESTHOLE LOCATION PLAN

SCALE: 1" = 20'		SHEET NO: 1 OF 1
DRAWN BY: SMA	DESIGN BY: SMA	CHECKED BY: TJB
DATE: JUNE 30, 2025		PROJECT NO.: 25024.00

Appendix F

Isolator ® Row Plus O&M Manual

StormTech®
Detention • Retention • Water Quality
An ADS company

Isolator® Row PLUS O&M Manual

THE MOST **ADVANCED** NAME IN WATER MANAGEMENT SOLUTIONS®

ADS®

THE ISOLATOR® ROW PLUS

INTRODUCTION

An important component of any Stormwater Pollution Prevention Plan is inspection and maintenance. The StormTech Isolator Row PLUS is a technique to inexpensively enhance Total Suspended Solids (TSS) and Total Phosphorus (TP) removal with easy access for inspection and maintenance.

THE ISOLATOR ROW PLUS

The Isolator Row PLUS is a row of StormTech chambers, either SC-160, SC-310, SC-310-3, SC-740, DC-780, MC-3500 or MC-4500 models, that is surrounded with filter fabric and connected to a closely located manhole for easy access. The fabric-wrapped chambers provide for settling and filtration of sediment as storm water rises in the Isolator Row PLUS and ultimately passes through the filter fabric. The open bottom chambers and perforated sidewalls (SC-310, SC- 310-3 and SC-740 models) allow storm water to flow both vertically and horizontally out of the chambers. Sediments are captured in the Isolator Row PLUS protecting the storage areas of the adjacent stone and chambers from sediment accumulation.

ADS geotextile fabric is placed between the stone and the Isolator Row PLUS chambers. The woven geotextile provides a media for stormwater filtration, a durable surface for maintenance, prevents scour of the underlying stone and remains intact during high pressure jetting. A non-woven fabric is placed over the chambers to provide a filter media for flows passing through the perforations in the sidewall of the chamber. The non-woven fabric is not required over the SC-160, DC-780, MC-3500 or MC-4500 models as these chambers do not have perforated side walls.

The Isolator Row PLUS is designed to capture the "first flush" runoff and offers the versatility to be sized on a volume basis or a flow-rate basis. An upstream manhole not only provides access to the Isolator Row PLUS but includes a high/low concept such that stormwater flow rates or volumes that exceed the capacity of the Isolator Row PLUS bypass through a manifold to the other chambers. This is achieved with either an elevated bypass manifold or a high-flow weir. This creates a differential between the Isolator Row PLUS row of chambers and the manifold to the rest of the system, thus allowing for settlement time in the Isolator Row PLUS. After Stormwater flows through the Isolator Row PLUS and into the rest of the StormTech chamber system it is either exfiltrated into the soils below or passed at a controlled rate through an outlet manifold and outlet control structure.

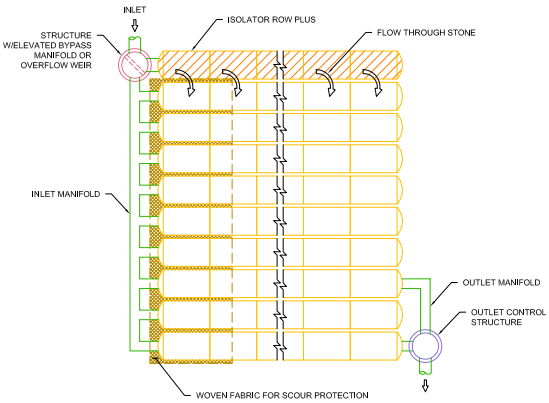
The Isolator Row FLAMP™ (patent pending) is a flared end ramp apparatus that is attached to the inlet pipe on the inside of the chamber end cap. The FLAMP provides a smooth transition from pipe invert to fabric bottom. It is configured to improve chamber function performance over time by enhancing outflow of solid debris that would otherwise collect at an end of the chamber. It also serves to improve the fluid and solid flow into the access pipe during maintenance and cleaning and to guide cleaning and inspection equipment back into the inlet pipe when complete.

The Isolator Row PLUS may be part of a treatment train system. The design of the treatment train and selection of pretreatment devices by the design engineer is often driven by regulatory requirements. Whether pretreatment is used or not, the Isolator Row PLUS is recommended by StormTech as an effective means to minimize maintenance requirements and maintenance costs.

Note: See the StormTech Design Manual for detailed information on designing inlets for a StormTech system, including the Isolator Row PLUS.

Looking down the Isolator Row PLUS from the manhole opening, ADS PLUS Fabric is shown between the chamber and stone base.

StormTech Isolator Row PLUS with Overflow Spillway (not to scale)



ISOLATOR ROW PLUS INSPECTION/MAINTENANCE

INSPECTION

The frequency of inspection and maintenance varies by location. A routine inspection schedule needs to be established for each individual location based upon site specific variables. The type of land use (i.e. industrial, commercial, residential), anticipated pollutant load, percent imperviousness, climate, etc. all play a critical role in determining the actual frequency of inspection and maintenance practices.

At a minimum, StormTech recommends annual inspections. Initially, the Isolator Row PLUS should be inspected every 6 months for the first year of operation. For subsequent years, the inspection should be adjusted based upon previous observation of sediment deposition.

The Isolator Row PLUS incorporates a combination of standard manhole(s) and strategically located inspection ports (as needed). The inspection ports allow for easy access to the system from the surface, eliminating the need to perform a confined space entry for inspection purposes.

If upon visual inspection it is found that sediment has accumulated, a stadia rod should be inserted to determine the depth of sediment. When the average depth of sediment exceeds 3 inches throughout the length of the Isolator Row PLUS, clean-out should be performed.

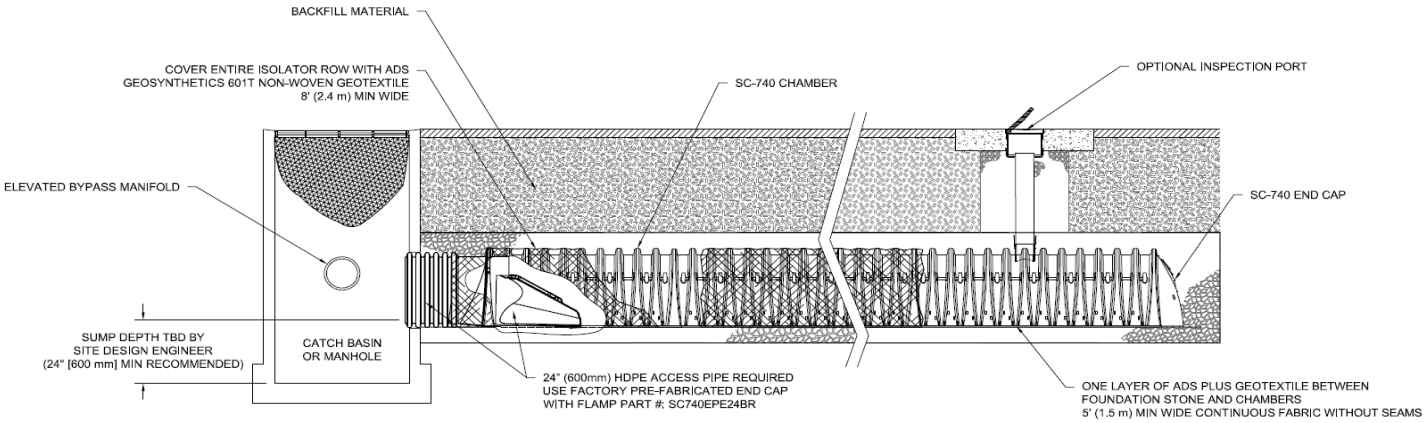
MAINTENANCE

The Isolator Row PLUS was designed to reduce the cost of periodic maintenance. By “isolating” sediments to just one row, costs are dramatically reduced by eliminating the need to clean out each row of the entire storage bed. If inspection indicates the potential need for maintenance, access is provided via a manhole(s) located on the end(s) of the row for cleanout. If entry into the manhole is required, please follow local and OSHA rules for a confined space entries.

Maintenance is accomplished with the JetVac process. The JetVac process utilizes a high pressure water nozzle to propel itself down the Isolator Row PLUS while scouring and suspending sediments. As the nozzle is retrieved, the captured pollutants are flushed back into the manhole for vacuuming. Most sewer and pipe maintenance companies have vacuum/JetVac combination vehicles. Selection of an appropriate JetVac nozzle will improve maintenance efficiency. Fixed nozzles designed for culverts or large diameter pipe cleaning are preferable. Rear facing jets with an effective spread of at least 45” are best. StormTech recommends a maximum nozzle pressure of 2000 psi be utilized during cleaning. Most JetVac reels have 400 feet of hose allowing maintenance of an Isolator Row PLUS up to 50 chambers long. **The JetVac process shall only be performed on StormTech Isolator Row PLUS that have ADS PLUS Fabric (as specified by StormTech) over their angular base stone.**

StormTech Isolator Row PLUS (not to scale)

Note: Non-woven fabric is only required over the inlet pipe connection into the end cap for SC-160LP, DC-780, MC-3500 and MC-4500 chamber models and is not required over the entire Isolator Row PLUS.



ISOLATOR ROW PLUS STEP BY STEP MAINTENANCE PROCEDURES

STEP 1

Inspect Isolator Row PLUS for sediment.

A) Inspection ports (if present)
   i. Remove lid from floor box frame
   ii. Remove cap from inspection riser
   iii. Using a flashlight and stadia rod,measure depth of sediment and record results on maintenance log.
   iv. If sediment is at or above 3 inch depth, proceed to Step 2. If not, proceed to Step 3.

B) All Isolator Row PLUS
   i. Remove cover from manhole at upstream end of Isolator Row PLUS
   ii. Using a flashlight, inspect down Isolator Row PLUS through outlet pipe
      1. Mirrors on poles or cameras may be used to avoid a confined space entry
      2. Follow OSHA regulations for confined space entry if entering manhole
   iii. If sediment is at or above the lower row of sidewall holes (approximately 3 inches), proceed to Step 2. If not, proceed to Step 3.

STEP 2

Clean out Isolator Row PLUS using the JetVac process.

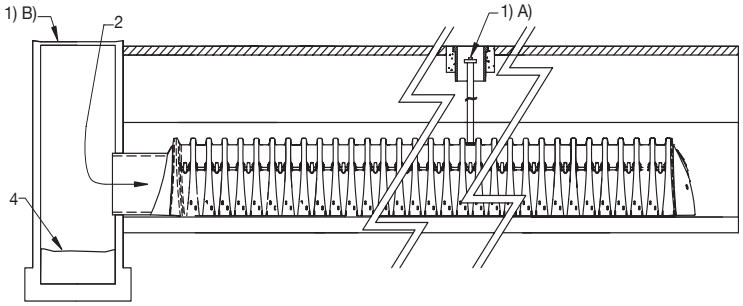
A) A fixed floor cleaning nozzle with rear facing nozzle spread of 45 inches or more is preferable
B) Apply multiple passes of JetVac until backflush water is clean
C) Vacuum manhole sump as required

STEP 3

Replace all caps, lids and covers, record observations and actions.

STEP 4

Inspect & clean catch basins and manholes upstream of the StormTech system.



SAMPLE MAINTENANCE LOG

Date	Stadia Rod Readings		Sediment Depth (1)–(2)	Observations/Actions	Inspector
	Fixed point to chamber bottom (1)	Fixed point to top of sediment (2)			
3/15/11	6.3 ft	none		New installation. Fixed point is CI frame at grade	DJM
9/24/11		6.2	0.1 ft	Some grit felt	SM
6/20/13		5.8	0.5 ft	Mucky feel, debris visible in manhole and in Isolator Row PLUS, maintenance due	NV
7/7/13	6.3 ft		0	System jetted and vacuumed	DJM

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StormTech Detention • Retention • Water Quality
An ADS company

Advanced Drainage Systems, Inc.
4640 Trueman Blvd., Hilliard, OH 43026
1-800-821-6710 www.ads-pipe.com

Appendix G

NRCS Soil Map

Custom Soil Resource Report
Soil Map

Map Scale: 1:1,730 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 25 50 100 150

Feet: 0 50 100 200 300

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