Addendum#1
Stormwater Management Report

Proposed 4 Story Apartment Building

501 Pond Street
Ashland, MA

Prepared By: Bruce Saluk & Associates, Inc.
Civil Engineering & Land Surveying
576 Boston Post Road East
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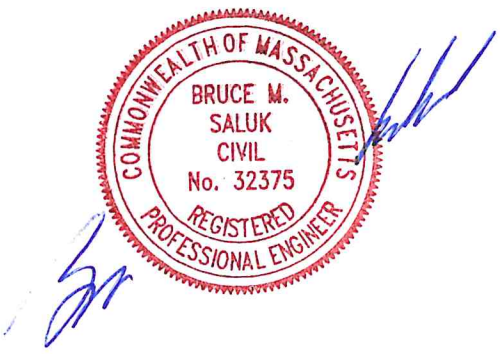

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337 Turnpike Rd, Suite 201
Southborough, MA 01772
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July 2022

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SECTION 1A: Addendum#1 Narrative & Summary

The plans have been revised to address Town and peer review comments. They also include some Landscape improvement modifications and the addition of a Rain Garden.

The south parking lot was increased in width to accommodate the standard (9'x18') parking spaces and wider 24' Parking aisle. The building was shifted to the north 4.5FT to make room for this change.

The pedestrian access to the south abutting commercial property now includes a stairway. A secondary wheelchair access is also provided at the west end of the south parking lot.

Plan modifications resulted in drainage changes, so the drainage area plans DA#2 & DA#3 in the back of the addendum have been updated. Also updated are the drainage calculations included in Appendices 'A', 'E' and 'F'.

The Long-Term Operation and Maintenance Plan in Appendix 'B' has been updated with maintenance requirements for the Yard Drains, Rain Garden and the Dog Park.

Other miscellaneous modifications to the plans are listed in the response to the peer review comments.

Table 4-1 below has been revised per the plan changes noted above. This table summarizes compliance with DEP Standard #2 for Post Development Peak Discharge Rates and provides a comparison for existing & proposed conditions.

TABLE 4-1(Revised 0725/22): EXISTING vs PROPOSED PEAK FLOW (CFS)

DESIGN POINT & RUNOFF CONDITION	**2 YR**	**10YR**	**25YR**	**100YR**
TOTAL SITE RUNOFF				
-EXISTING CONDITIONS	1.93	5.37	8.52	13.74
- PROPOSED CONDITIONS	1.31	5.26	7.60	12.93
% REDUCTION (TOTAL)	32%	2%	11%	6%

The flow values given in Table 4-1 were taken from the HYDROCAD calculations in Appendix "F" . Refer to Appendix 'F' for more information on runoff coverages, soils conditions, times of concentration, runoff rates, etc.

APPENDIX A
DEP Stormwater Management Standards

Documentation & Calculations for DEP Stormwater Management Policy Standards

This project will meet the Stormwater Management Standards. The proposed Best Management Practices (BMP's) will reduce and improve the water quality leaving the site. The following stormwater management standards pertain to the Massachusetts DEP Stormwater Policy.

Standard #1-Untreated Stormwater

This project was designed to not discharge untreated contaminated stormwater into, or cause erosion to wetlands or waters of the Commonwealth. The stormwater discharge treatment from the proposed project will exceed 80% TSS removal from runoff leaving the site. Refer to Standard #4 below where TSS removal calculations are provided. A small portion of the site is situated below the Water Quality system, but the overall TSS removal will exceed 80% for the site. The small area meets the criteria for De Minimus site discharge in Vol. 3, Chap. 1, page 34 of the Mass Stormwater Handbook.

Standard #2-Post Development Peak Discharge Rates

All performance requirements for this standard have been met. Refer to summary and conclusions in Section 3 of this report where runoff flow summaries for both predevelopment and proposed conditions are given.

Standard #3-Recharge to Groundwater

Full performance requirements for this standard have been met.
Calculations for runoff are based on hydrologic soil groups (HSG) "B" for the site runoff. The target depth factor calculating the required recharge volume in the Stormwater Management Policy (SMP) is as follows:

NRCS Soil Group	Target depth factor (F)
A	0.6-inch
B	0.35-inch
C	0.25-inch
D	0.1-inch

The proposed impervious area for the proposed development = 2.94 Ac.

The required ground water recharge for full build out is:

Rv= F (impervious area)
RV=required recharge volume
F=target depth factor
The factor for HSG "B" is 0.35-inch *@ 2.94 Ac.*

SITE RUNOFF Rv

Rv(DEP)= (0.35-inch) x (1FT/12inches) (2.94 Ac) (43,560 SF/Ac.)=3736 CF

The above Rv and WQF values will be met by the proposed chambers systems as follows:

PROPOSED RECHARGE VOLUME

The "Simple Dynamic Method" was used to determine the available storage volume:

Proposed system capacity calculation using the Simple Dynamic Method:

- Roof Infiltration Simple Dynamic Method.

The proposed method for recharge will be eight(8) chamber systems using Cultec chambers embedded in stone. The material dimensions and quantities are summarized below, as well included on the detail sheet.

CHAMBER SYSTEM SCHEDULE

Chamber System(CS)	Chamber Type	Quantity	No.of Rows	Stone Dimensions (FT)	Storage Below Pipe Invert(CF)
CS#1	R180HD	30	3	12'W x 68'L x 2.8'H	163
CS#2	R180HD	60	4	16'W x 99'L x 2.8'H	317
CS#3	R180HD	45	3	12'W x 99'L x 2.8'H	238
CS#4	R150XLHD	63	7	25'W x 85'L x 2.8'H	425
CS#5	R150XLHD	112	7	25'W x 167'L x 2.8'H	835
CS#6	R180HD	36	4	16'W x 61'L x 2.8'H	195
CS#7	R180HD	99	3	12'W x 212'L x 3.0'H	509
CS#8	C100HD	39	3	12'W x 110'L x 2.8'H	264
				Total retained Runoff Volume= 2946 CF	

The HYDROCAD calculations for the Simple Dynamic Method on the following pages include the recharge and storage capacities for the eight(8) chamber systems. The summary for these calculations is:

- Volume recharged over 2 HR period for 5 chamber systems……=3697 CF
- Volume of storage below pipe inverts in 5 chamber systems……= 2946 CF

Total Recharge Volume provided……= 6643 CF

TOTAL Recharge capacity provided =6643 CF > Rv(3736 CF required)

Check for BMP draw down time:

Roof DW draw down time =2.8 FT/0.689 FT/hr……= 4.1 hr. < 72hr

Standard #4 (Water Quality)

TSS removal will be met by using deep sump yard basins and 15 Water Quality proprietary treatment units by Contech. A long-term pollution prevention & Operation and Maintenance plan is included in Appendix "B" of this report.

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Vwq= DwqxAwq

Vwq= water quality volume (CF)
Dwq= water quality depth (inches)
Awq=On site Impervious area proposed (Ac.)

The required water quality volume is 1-INCH.
The design meets Standard #4 criteria for a 1-inch WQV.

Removal of TSS meets DEP Requirements. See proprietary TSS removal and calculation sheets for TSS removal and Excel spreadsheet included in the next pages.

TSS will be removed by the following means:

- Fifteen (15) Water Quality proprietary treatment units by Contech
- Eight(8) chamber systems

The TSS treatment system is designed to remove greater than 80% of the TSS from the catchment area.

The TSS efficiency values in the TSS calculations were taken from DEP SWMP, Volume 1, Chapter 1, Table 'TSS' (Revised 2008) and the TSS removal for the proprietary units were provided by Contech.

Refer to the following TSS removal calculations showing how TSS is removed from the stormwater

Standard #5 Land Uses with Higher Potential Pollutant Loads (LUHPPLs)

This project land use is not subject to higher pollution control requirements

Standard #6 (Protection of Critical Areas)

The project is not located near a Critical area.

Standard #7 (Redevelopment)

This site is not a redevelopment project.

Standard #8 (Erosion /Sediment Control)

This standard has been fully met. Refer to the "Construction Period Operation and Maintenance Plan" included in Appendix 'C'

Standard #9 (Operation & Maintenance Plan)

This standard has been fully met. Refer to the Long-Term Pollution Prevention & Operation and Maintenance Plan in Appendix "B"

Standard #10 (Illicit Discharge Compliance Statement)

This standard has been fully met. The applicant will submit an illicit discharge compliance statement prior to the discharge of any stormwater to post-development BMP's.

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TSS Removal Calculation Worksheet

Name: Proposed 4 Story Apartment

Proj. No.: 2874
Date:7/24/22
Location: Pond ST & Converse Way, Ashland, MA
Computed by: BMS

WQI's

#1 imperv. Area 0.19 Ac.	A BMP	B TSS Removal Rate (%)	C Starting TSS Load*	D Amount Removed (BxC)	E Remaining Load (C-D)
	WQI's	94	1.00	0.94	0.06
	DW	0	0.06	0.00	0.06
		0	0.06	0.00	0.06

Total TSS Removal = **94%**

Notes:
1) Starting TSS Load for first BMP= 1.00. TSS load for subsequent BMP's is equal to the Remaining Load (E) from the previous BMP.

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WQI's

TSS Removal Calculation Worksheet

Name: Pond ST & Converse Way

Proj. No.: 2874
Date: 7/24/22
Location: Pond ST & Converse Way, Ashland, MA
Computed by: BMS

3,5-7,12&TU#2 imperv. Area 0.77 Ac.	A BMP	B TSS Removal Rate (%)	C Starting TSS Load*	D Amount Removed (BxC)	E Remaining Load (C-D)
	WQI's	95	1.00	0.95	0.05
	DW	0	0.05	0.00	0.05
		0	0.05	0.00	0.05
			Total TSS Removal =	**95%**	

Notes:
1) Starting TSS Load for first BMP= 1.00. TSS load for subsequent BMP's is equal to the Remaining Load (E) from the previous BMP.

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TSS Removal Calculation Worksheet

Name: Pond ST & Converse Way

Proj. No.: 2874
Date: 7/24/22

Computed by: BMS

Location: Pond ST & Converse Way
Ashland, MA

WQI's

2,4&8-11 imperv. Area 0.70 Ac.

A BMP	B TSS Removal Rate (%)	C Starting TSS Load*	D Amount Removed (BxC)	E Remaining Load (C-D)
WQI's	96	1.00	0.96	0.04
DW	0	0.04	0.00	0.04
	0	0.04	0.00	0.04

Total TSS Removal = **96%**

Notes:
1) Starting TSS Load for first BMP= 1.00. TSS load for subsequent BMP's is equal to the Remaining Load (E) from the previous BMP.

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TSS Removal Calculation Worksheet

Name: Proposed 4 Story Apartment

Proj. No.: 2874
Date: 07/24/22
Location: Pond ST & Converse Way, Ashland, MA
Computed by: BMS

WQI'S

	A BMP	B TSS Removal Rate (%)	C Starting TSS Load*	D Amount Removed (BxC)	E Remaining Load (C-D)
YD's 1 & 2 & TU#1* imperv. Area 0.13Ac.	*YD*	25	1.00	0.25	0.75
	*TU#1**	95	0.75	0.71	0.04
	DW	0	0.04	0.00	0.04

Total TSS Removal = **96%**

Notes:

1) Starting TSS Load for first BMP= 1.00. TSS load for subsequent BMP's is equal to the Remaining Load (E) from the previous BMP.

* TU#1 runoff watershed characterics and TSS Treatment unit (Stormceptor Model# STA 450i) are the same as WQI #3 ; therefore the TSS removal provided and the WQF are are the same as WQI#3.

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TSS Removal Calculation Worksheet

Name: Proposed 4 Story Apartment

Proj. No.: 2874
Date: 7/24/22
Location: Pond ST & Converse Way, Ashland, MA
Computed by: BMS

Roof Area

imperv. Area 0.91 Ac.

A BMP	B TSS Removal Rate (%)	C Starting TSS Load*	D Amount Removed (BxC)	E Remaining Load (C-D)
ROOF RECHARGE	80	1.00	0.80	0.20

Total TSS Removal = **80%**

Notes:
*) Starting TSS Load for first BMP= 1.00. TSS load for subsequent BMP's is equal to the Remaining Load (E) from the previous BMP.

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TSS Removal Calculation Worksheet

Name: Proposed 4 Story Apartment
Proj. No.: 2874
Date: 7/24/22
Location: Pond ST & Converse Way
Ashland, MA
Computed by: BMS

TSS SUMMARY SHEET

Total impervious site area=2.94Ac.

Site TSS Removal : $\frac{[(94x0.19Ac)+(95x0.77Ac)+(96x0.83Ac)+(80x0.91Ac)+(0X0.23Ac.)]x100}{2.93\ Ac} = 83\%$

Project: Pond Street
Location: Ashland, MA
Prepared For: Bruce Saluk & Associates

Purpose: To calculate the water quality flow rate (WQF) over a given site area. In this situation the WQF is derived from the first 1" of runoff from the contributing impervious surface.

Reference: Massachusetts Dept. of Environmental Protection Wetlands Program / United States Department of Agriculture Natural Resources Conservation Service TR-55 Manual

Procedure: Determine unit peak discharge using Figure 1 or 2. Figure 2 is in tabular form so is preferred. Using the tc, read the unit peak discharge (qu) from Figure 1 or Table in Figure 2. qu is expressed in the following units: cfs/mi^2/watershed inches (csm/in).

Compute Q Rate using the following equation:

$$Q = (qu)\ (A)\ (WQV)$$

where:

Q = flow rate associated with first 1" of runoff
qu = the unit peak discharge, in csm/in.
A = impervious surface drainage area (in square miles)
WQV = water quality volume in watershed inches (1" in this case)

Structure Name	Impv. (acres)	A (miles^2)	t_c (min)	t_c (hr)	WQV (in)	qu (csm/in.)	Q (cfs)
WQI #1	0.19	0.0002969	6.0	0.100	1.00	774.00	0.23
WQI #2	0.09	0.0001406	6.0	0.100	1.00	774.00	0.11
WQI #3	0.13	0.0002031	6.0	0.100	1.00	774.00	0.16
WQI #4	0.10	0.0001563	6.0	0.100	1.00	774.00	0.12
WQI #5	0.15	0.0002344	6.0	0.100	1.00	774.00	0.18
WQI #6	0.13	0.0002031	6.0	0.100	1.00	774.00	0.16
WQI #7	0.12	0.0001875	6.0	0.100	1.00	774.00	0.15
WQI #8	0.10	0.0001563	6.0	0.100	1.00	774.00	0.12
WQI #9A	0.10	0.0001563	6.0	0.100	1.00	774.00	0.12
WQI #9B	0.11	0.0001719	6.0	0.100	1.00	774.00	0.13
WQI #10	0.09	0.0001406	6.0	0.100	1.00	774.00	0.11
WQI #11	0.11	0.0001719	6.0	0.100	1.00	774.00	0.13
WQI #12	0.12	0.0001875	6.0	0.100	1.00	774.00	0.15
TU #1	0.13	0.0002031	6.0	0.100	1.00	774.00	0.16
TU #2	0.12	0.0001875	6.0	0.100	1.00	774.00	0.15

Brief Stormceptor Sizing Report - WQI #1

Project Information & Location			
Project Name	Pond Street	**Project Number**	694516
City	Ashland	**State/ Province**	Massachusetts
Country	United States of America	**Date**	11/15/2021
Designer Information		**EOR Information (optional)**	
Name	Josh Stackhouse	**Name**	
Company	Contech Engineered Solutions	**Company**	
Phone #	207-219-9110	**Phone #**	
Email	joshua.stackhouse@conteches.com	**Email**	

Stormwater Treatment Recommendation
The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	WQI #1
Target TSS Removal (%)	80
TSS Removal (%) Provided	94
Recommended Stormceptor Model	STC 450i

The recommended Stormceptor Model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary	
Stormceptor Model	**% TSS Removal Provided**
STC 450i	94
STC 900	97
STC 1200	97
STC 1800	97
STC 2400	98
STC 3600	98
STC 4800	99
STC 6000	99
STC 7200	99
STC 11000	99
STC 13000	99
STC 16000	100

Sizing Details

Drainage Area

Total Area (acres)	0.19
Imperviousness %	100.0

Rainfall

Station Name	BOSTON WSFO AP
State/Province	Massachusetts
Station ID #	0770
Years of Records	58
Latitude	42°21'38"N
Longitude	71°0'38"W

Water Quality Objective

TSS Removal (%)	80.0
Runoff Volume Capture (%)	
Oil Spill Capture Volume (Gal)	
Peak Conveyed Flow Rate (CFS)	
Water Quality Flow Rate (CFS)	

Up Stream Storage

Storage (ac-ft)	Discharge (cfs)
0.000	0.000

Up Stream Flow Diversion

Max. Flow to Stormceptor (cfs)	

Particle Size Distribution (PSD)
The selected PSD defines TSS removal

OK-110

Particle Diameter (microns)	Distribution %	Specific Gravity
1.0	0.0	2.65
53.0	3.0	2.65
75.0	15.0	2.65
88.0	25.0	2.65
106.0	41.0	2.65
125.0	15.0	2.65
150.0	1.0	2.65
212.0	0.0	2.65

Notes

• Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules.
• Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed.
• For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

For Stormceptor Specifications and Drawings Please Visit:
https://www.conteches.com/technical-guides/search?filter=1WBC0O5EYX

Brief Stormceptor Sizing Report - WQI #2

Project Information & Location			
Project Name	Pond Street	**Project Number**	694516
City	Ashland	**State/ Province**	Massachusetts
Country	United States of America	**Date**	11/15/2021
Designer Information		**EOR Information (optional)**	
Name	Josh Stackhouse	**Name**	
Company	Contech Engineered Solutions	**Company**	
Phone #	207-219-9110	**Phone #**	
Email	joshua.stackhouse@conteches.com	**Email**	

Stormwater Treatment Recommendation
The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	WQI #2
Target TSS Removal (%)	80
TSS Removal (%) Provided	96
Recommended Stormceptor Model	STC 450i

The recommended Stormceptor Model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary	
Stormceptor Model	**% TSS Removal Provided**
STC 450i	96
STC 900	98
STC 1200	98
STC 1800	98
STC 2400	99
STC 3600	99
STC 4800	99
STC 6000	99
STC 7200	100
STC 11000	100
STC 13000	100
STC 16000	100

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Sizing Details

Drainage Area

Total Area (acres)	0.09
Imperviousness %	100.0

Rainfall

Station Name	BOSTON WSFO AP
State/Province	Massachusetts
Station ID #	0770
Years of Records	58
Latitude	42°21'38"N
Longitude	71°0'38"W

Water Quality Objective

TSS Removal (%)	80.0
Runoff Volume Capture (%)	
Oil Spill Capture Volume (Gal)	
Peak Conveyed Flow Rate (CFS)	
Water Quality Flow Rate (CFS)	

Up Stream Storage

Storage (ac-ft)	Discharge (cfs)
0.000	0.000

Up Stream Flow Diversion

Max. Flow to Stormceptor (cfs)	

Particle Size Distribution (PSD)
The selected PSD defines TSS removal

OK-110

Particle Diameter (microns)	Distribution %	Specific Gravity
1.0	0.0	2.65
53.0	3.0	2.65
75.0	15.0	2.65
88.0	25.0	2.65
106.0	41.0	2.65
125.0	15.0	2.65
150.0	1.0	2.65
212.0	0.0	2.65

Notes

• Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules.
• Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed.
• For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

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Brief Stormceptor Sizing Report - WQI #3

Project Information & Location			
Project Name	Pond Street	**Project Number**	694516
City	Ashland	**State/ Province**	Massachusetts
Country	United States of America	**Date**	11/15/2021
Designer Information		**EOR Information (optional)**	
Name	Josh Stackhouse	**Name**	
Company	Contech Engineered Solutions	**Company**	
Phone #	207-219-9110	**Phone #**	
Email	joshua.stackhouse@conteches.com	**Email**	

Stormwater Treatment Recommendation
The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	WQI #3
Target TSS Removal (%)	80
TSS Removal (%) Provided	95
Recommended Stormceptor Model	STC 450i

The recommended Stormceptor Model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary	
Stormceptor Model	**% TSS Removal Provided**
STC 450i	95
STC 900	97
STC 1200	98
STC 1800	98
STC 2400	98
STC 3600	99
STC 4800	99
STC 6000	99
STC 7200	99
STC 11000	100
STC 13000	100
STC 16000	100

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Sizing Details

Drainage Area

Total Area (acres)	0.13
Imperviousness %	100.0

Rainfall

Station Name	BOSTON WSFO AP
State/Province	Massachusetts
Station ID #	0770
Years of Records	58
Latitude	42°21'38"N
Longitude	71°0'38"W

Water Quality Objective

TSS Removal (%)	80.0
Runoff Volume Capture (%)	
Oil Spill Capture Volume (Gal)	
Peak Conveyed Flow Rate (CFS)	
Water Quality Flow Rate (CFS)	

Up Stream Storage

Storage (ac-ft)	Discharge (cfs)
0.000	0.000

Up Stream Flow Diversion

Max. Flow to Stormceptor (cfs)	

Particle Size Distribution (PSD)
The selected PSD defines TSS removal

OK-110

Particle Diameter (microns)	Distribution %	Specific Gravity
1.0	0.0	2.65
53.0	3.0	2.65
75.0	15.0	2.65
88.0	25.0	2.65
106.0	41.0	2.65
125.0	15.0	2.65
150.0	1.0	2.65
212.0	0.0	2.65

Notes

• Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules.
• Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed.
• For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

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Brief Stormceptor Sizing Report - WQI #4

Project Information & Location			
Project Name	Pond Street	**Project Number**	694516
City	Ashland	**State/ Province**	Massachusetts
Country	United States of America	**Date**	11/15/2021
Designer Information		**EOR Information (optional)**	
Name	Josh Stackhouse	**Name**	
Company	Contech Engineered Solutions	**Company**	
Phone #	207-219-9110	**Phone #**	
Email	joshua.stackhouse@conteches.com	**Email**	

Stormwater Treatment Recommendation
The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	WQI #4
Target TSS Removal (%)	80
TSS Removal (%) Provided	96
Recommended Stormceptor Model	STC 450i

The recommended Stormceptor Model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary	
Stormceptor Model	**% TSS Removal Provided**
STC 450i	96
STC 900	98
STC 1200	98
STC 1800	98
STC 2400	99
STC 3600	99
STC 4800	99
STC 6000	99
STC 7200	99
STC 11000	100
STC 13000	100
STC 16000	100

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Sizing Details

Drainage Area

Total Area (acres)	0.10
Imperviousness %	100.0

Rainfall

Station Name	BOSTON WSFO AP
State/Province	Massachusetts
Station ID #	0770
Years of Records	58
Latitude	42°21'38"N
Longitude	71°0'38"W

Water Quality Objective

TSS Removal (%)	80.0
Runoff Volume Capture (%)	
Oil Spill Capture Volume (Gal)	
Peak Conveyed Flow Rate (CFS)	
Water Quality Flow Rate (CFS)	

Up Stream Storage

Storage (ac-ft)	Discharge (cfs)
0.000	0.000

Up Stream Flow Diversion

Max. Flow to Stormceptor (cfs)	

Particle Size Distribution (PSD)
The selected PSD defines TSS removal

OK-110

Particle Diameter (microns)	Distribution %	Specific Gravity
1.0	0.0	2.65
53.0	3.0	2.65
75.0	15.0	2.65
88.0	25.0	2.65
106.0	41.0	2.65
125.0	15.0	2.65
150.0	1.0	2.65
212.0	0.0	2.65

Notes

• Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules.
• Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed.
• For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

For Stormceptor Specifications and Drawings Please Visit:
https://www.conteches.com/technical-guides/search?filter=1WBC0O5EYX

Brief Stormceptor Sizing Report - WQI #5

Project Information & Location			
Project Name	Pond Street	**Project Number**	694516
City	Ashland	**State/ Province**	Massachusetts
Country	United States of America	**Date**	11/15/2021
Designer Information		**EOR Information (optional)**	
Name	Josh Stackhouse	**Name**	
Company	Contech Engineered Solutions	**Company**	
Phone #	207-219-9110	**Phone #**	
Email	joshua.stackhouse@conteches.com	**Email**	

Stormwater Treatment Recommendation
The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	WQI #5
Target TSS Removal (%)	80
TSS Removal (%) Provided	95
Recommended Stormceptor Model	STC 450i

The recommended Stormceptor Model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary	
Stormceptor Model	**% TSS Removal Provided**
STC 450i	95
STC 900	97
STC 1200	97
STC 1800	98
STC 2400	98
STC 3600	99
STC 4800	99
STC 6000	99
STC 7200	99
STC 11000	100
STC 13000	100
STC 16000	100

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Sizing Details

Drainage Area

Total Area (acres)	0.15
Imperviousness %	100.0

Rainfall

Station Name	BOSTON WSFO AP
State/Province	Massachusetts
Station ID #	0770
Years of Records	58
Latitude	42°21'38"N
Longitude	71°0'38"W

Water Quality Objective

TSS Removal (%)	80.0
Runoff Volume Capture (%)	
Oil Spill Capture Volume (Gal)	
Peak Conveyed Flow Rate (CFS)	
Water Quality Flow Rate (CFS)	

Up Stream Storage

Storage (ac-ft)	Discharge (cfs)
0.000	0.000

Up Stream Flow Diversion

Max. Flow to Stormceptor (cfs)	

Particle Size Distribution (PSD)
The selected PSD defines TSS removal

OK-110

Particle Diameter (microns)	Distribution %	Specific Gravity
1.0	0.0	2.65
53.0	3.0	2.65
75.0	15.0	2.65
88.0	25.0	2.65
106.0	41.0	2.65
125.0	15.0	2.65
150.0	1.0	2.65
212.0	0.0	2.65

Notes

• Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules.
• Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed.
• For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

For Stormceptor Specifications and Drawings Please Visit:
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Brief Stormceptor Sizing Report - WQI #6

Project Information & Location			
Project Name	Pond Street	**Project Number**	694516
City	Ashland	**State/ Province**	Massachusetts
Country	United States of America	**Date**	11/15/2021
Designer Information		**EOR Information (optional)**	
Name	Josh Stackhouse	**Name**	
Company	Contech Engineered Solutions	**Company**	
Phone #	207-219-9110	**Phone #**	
Email	joshua.stackhouse@conteches.com	**Email**	

Stormwater Treatment Recommendation
The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	WQI #6
Target TSS Removal (%)	80
TSS Removal (%) Provided	95
Recommended Stormceptor Model	STC 450i

The recommended Stormceptor Model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary	
Stormceptor Model	**% TSS Removal Provided**
STC 450i	95
STC 900	97
STC 1200	98
STC 1800	98
STC 2400	98
STC 3600	99
STC 4800	99
STC 6000	99
STC 7200	99
STC 11000	100
STC 13000	100
STC 16000	100

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Sizing Details

Drainage Area

Total Area (acres)	0.13
Imperviousness %	100.0

Rainfall

Station Name	BOSTON WSFO AP
State/Province	Massachusetts
Station ID #	0770
Years of Records	58
Latitude	42°21'38"N
Longitude	71°0'38"W

Water Quality Objective

TSS Removal (%)	80.0
Runoff Volume Capture (%)	
Oil Spill Capture Volume (Gal)	
Peak Conveyed Flow Rate (CFS)	
Water Quality Flow Rate (CFS)	

Up Stream Storage

Storage (ac-ft)	Discharge (cfs)
0.000	0.000

Up Stream Flow Diversion

Max. Flow to Stormceptor (cfs)	

Particle Size Distribution (PSD)
The selected PSD defines TSS removal

OK-110

Particle Diameter (microns)	Distribution %	Specific Gravity
1.0	0.0	2.65
53.0	3.0	2.65
75.0	15.0	2.65
88.0	25.0	2.65
106.0	41.0	2.65
125.0	15.0	2.65
150.0	1.0	2.65
212.0	0.0	2.65

Notes

• Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules.
• Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed.
• For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

For Stormceptor Specifications and Drawings Please Visit:
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Brief Stormceptor Sizing Report - WQI #7

Project Information & Location			
Project Name	Pond Street	**Project Number**	694516
City	Ashland	**State/ Province**	Massachusetts
Country	United States of America	**Date**	11/15/2021
Designer Information		**EOR Information (optional)**	
Name	Josh Stackhouse	**Name**	
Company	Contech Engineered Solutions	**Company**	
Phone #	207-219-9110	**Phone #**	
Email	joshua.stackhouse@conteches.com	**Email**	

Stormwater Treatment Recommendation
The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	WQI #7
Target TSS Removal (%)	80
TSS Removal (%) Provided	95
Recommended Stormceptor Model	STC 450i

The recommended Stormceptor Model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary	
Stormceptor Model	**% TSS Removal Provided**
STC 450i	95
STC 900	98
STC 1200	98
STC 1800	98
STC 2400	99
STC 3600	99
STC 4800	99
STC 6000	99
STC 7200	99
STC 11000	100
STC 13000	100
STC 16000	100

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Sizing Details

Drainage Area	
Total Area (acres)	0.12
Imperviousness %	100.0

Rainfall	
Station Name	BOSTON WSFO AP
State/Province	Massachusetts
Station ID #	0770
Years of Records	58
Latitude	42°21'38"N
Longitude	71°0'38"W

Water Quality Objective	
TSS Removal (%)	80.0
Runoff Volume Capture (%)	
Oil Spill Capture Volume (Gal)	
Peak Conveyed Flow Rate (CFS)	
Water Quality Flow Rate (CFS)	

Up Stream Storage	
Storage (ac-ft)	Discharge (cfs)
0.000	0.000

Up Stream Flow Diversion	
Max. Flow to Stormceptor (cfs)	

Particle Size Distribution (PSD)
The selected PSD defines TSS removal

OK-110

Particle Diameter (microns)	Distribution %	Specific Gravity
1.0	0.0	2.65
53.0	3.0	2.65
75.0	15.0	2.65
88.0	25.0	2.65
106.0	41.0	2.65
125.0	15.0	2.65
150.0	1.0	2.65
212.0	0.0	2.65

Notes

• Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules.
• Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed.
• For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

For Stormceptor Specifications and Drawings Please Visit:
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Brief Stormceptor Sizing Report - WQI #8

Project Information & Location			
Project Name	Pond Street	**Project Number**	694516
City	Ashland	**State/ Province**	Massachusetts
Country	United States of America	**Date**	11/15/2021
Designer Information		**EOR Information (optional)**	
Name	Josh Stackhouse	**Name**	
Company	Contech Engineered Solutions	**Company**	
Phone #	207-219-9110	**Phone #**	
Email	joshua.stackhouse@conteches.com	**Email**	

Stormwater Treatment Recommendation
The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	WQI #8
Target TSS Removal (%)	80
TSS Removal (%) Provided	96
Recommended Stormceptor Model	STC 450i

The recommended Stormceptor Model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary	
Stormceptor Model	**% TSS Removal Provided**
STC 450i	96
STC 900	98
STC 1200	98
STC 1800	98
STC 2400	99
STC 3600	99
STC 4800	99
STC 6000	99
STC 7200	99
STC 11000	100
STC 13000	100
STC 16000	100

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Sizing Details

Drainage Area

Total Area (acres)	0.10
Imperviousness %	100.0

Rainfall

Station Name	BOSTON WSFO AP
State/Province	Massachusetts
Station ID #	0770
Years of Records	58
Latitude	42°21'38"N
Longitude	71°0'38"W

Water Quality Objective

TSS Removal (%)	80.0
Runoff Volume Capture (%)	
Oil Spill Capture Volume (Gal)	
Peak Conveyed Flow Rate (CFS)	
Water Quality Flow Rate (CFS)	

Up Stream Storage

Storage (ac-ft)	Discharge (cfs)
0.000	0.000

Up Stream Flow Diversion

Max. Flow to Stormceptor (cfs)	

Particle Size Distribution (PSD)
The selected PSD defines TSS removal

OK-110

Particle Diameter (microns)	Distribution %	Specific Gravity
1.0	0.0	2.65
53.0	3.0	2.65
75.0	15.0	2.65
88.0	25.0	2.65
106.0	41.0	2.65
125.0	15.0	2.65
150.0	1.0	2.65
212.0	0.0	2.65

Notes

• Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules.
• Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed.
• For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

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Brief Stormceptor Sizing Report - WQI #9A

Project Information & Location			
Project Name	Pond Street	**Project Number**	694516
City	Ashland	**State/ Province**	Massachusetts
Country	United States of America	**Date**	11/15/2021
Designer Information		**EOR Information (optional)**	
Name	Josh Stackhouse	**Name**	
Company	Contech Engineered Solutions	**Company**	
Phone #	207-219-9110	**Phone #**	
Email	joshua.stackhouse@conteches.com	**Email**	

Stormwater Treatment Recommendation
The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	WQI #9A
Target TSS Removal (%)	80
TSS Removal (%) Provided	96
Recommended Stormceptor Model	STC 450i

The recommended Stormceptor Model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary	
Stormceptor Model	**% TSS Removal Provided**
STC 450i	96
STC 900	98
STC 1200	98
STC 1800	98
STC 2400	99
STC 3600	99
STC 4800	99
STC 6000	99
STC 7200	99
STC 11000	100
STC 13000	100
STC 16000	100

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Sizing Details

Drainage Area

Total Area (acres)	0.10
Imperviousness %	100.0

Rainfall

Station Name	BOSTON WSFO AP
State/Province	Massachusetts
Station ID #	0770
Years of Records	58
Latitude	42°21'38"N
Longitude	71°0'38"W

Water Quality Objective

TSS Removal (%)	80.0
Runoff Volume Capture (%)	
Oil Spill Capture Volume (Gal)	
Peak Conveyed Flow Rate (CFS)	
Water Quality Flow Rate (CFS)	

Up Stream Storage

Storage (ac-ft)	Discharge (cfs)
0.000	0.000

Up Stream Flow Diversion

Max. Flow to Stormceptor (cfs)	

Particle Size Distribution (PSD)
The selected PSD defines TSS removal

OK-110

Particle Diameter (microns)	Distribution %	Specific Gravity
1.0	0.0	2.65
53.0	3.0	2.65
75.0	15.0	2.65
88.0	25.0	2.65
106.0	41.0	2.65
125.0	15.0	2.65
150.0	1.0	2.65
212.0	0.0	2.65

Notes

• Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules.
• Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed.
• For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

For Stormceptor Specifications and Drawings Please Visit:
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Brief Stormceptor Sizing Report - WQI #9B

Project Information & Location			
Project Name	Pond Street	**Project Number**	694516
City	Ashland	**State/ Province**	Massachusetts
Country	United States of America	**Date**	11/15/2021
Designer Information		**EOR Information (optional)**	
Name	Josh Stackhouse	**Name**	
Company	Contech Engineered Solutions	**Company**	
Phone #	207-219-9110	**Phone #**	
Email	joshua.stackhouse@conteches.com	**Email**	

Stormwater Treatment Recommendation
The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	WQI #9B
Target TSS Removal (%)	80
TSS Removal (%) Provided	96
Recommended Stormceptor Model	STC 450i

The recommended Stormceptor Model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary	
Stormceptor Model	**% TSS Removal Provided**
STC 450i	96
STC 900	98
STC 1200	98
STC 1800	98
STC 2400	99
STC 3600	99
STC 4800	99
STC 6000	99
STC 7200	99
STC 11000	100
STC 13000	100
STC 16000	100

Sizing Details

Drainage Area

Total Area (acres)	0.11
Imperviousness %	100.0

Rainfall

Station Name	BOSTON WSFO AP
State/Province	Massachusetts
Station ID #	0770
Years of Records	58
Latitude	42°21'38"N
Longitude	71°0'38"W

Water Quality Objective

TSS Removal (%)	80.0
Runoff Volume Capture (%)	
Oil Spill Capture Volume (Gal)	
Peak Conveyed Flow Rate (CFS)	
Water Quality Flow Rate (CFS)	

Up Stream Storage

Storage (ac-ft)	Discharge (cfs)
0.000	0.000

Up Stream Flow Diversion

Max. Flow to Stormceptor (cfs)	

Particle Size Distribution (PSD)
The selected PSD defines TSS removal

OK-110

Particle Diameter (microns)	Distribution %	Specific Gravity
1.0	0.0	2.65
53.0	3.0	2.65
75.0	15.0	2.65
88.0	25.0	2.65
106.0	41.0	2.65
125.0	15.0	2.65
150.0	1.0	2.65
212.0	0.0	2.65

Notes

• Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules.
• Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed.
• For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

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Brief Stormceptor Sizing Report - WQI #10

Project Information & Location			
Project Name	Pond Street	**Project Number**	694516
City	Ashland	**State/ Province**	Massachusetts
Country	United States of America	**Date**	11/15/2021
Designer Information		**EOR Information (optional)**	
Name	Josh Stackhouse	**Name**	
Company	Contech Engineered Solutions	**Company**	
Phone #	207-219-9110	**Phone #**	
Email	joshua.stackhouse@conteches.com	**Email**	

Stormwater Treatment Recommendation
The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	WQI #10
Target TSS Removal (%)	80
TSS Removal (%) Provided	96
Recommended Stormceptor Model	STC 450i

The recommended Stormceptor Model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary	
Stormceptor Model	**% TSS Removal Provided**
STC 450i	96
STC 900	98
STC 1200	98
STC 1800	98
STC 2400	99
STC 3600	99
STC 4800	99
STC 6000	99
STC 7200	100
STC 11000	100
STC 13000	100
STC 16000	100

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Sizing Details

Drainage Area

Total Area (acres)	0.09
Imperviousness %	100.0

Rainfall

Station Name	BOSTON WSFO AP
State/Province	Massachusetts
Station ID #	0770
Years of Records	58
Latitude	42°21'38"N
Longitude	71°0'38"W

Water Quality Objective

TSS Removal (%)	80.0
Runoff Volume Capture (%)	
Oil Spill Capture Volume (Gal)	
Peak Conveyed Flow Rate (CFS)	
Water Quality Flow Rate (CFS)	

Up Stream Storage

Storage (ac-ft)	Discharge (cfs)
0.000	0.000

Up Stream Flow Diversion

Max. Flow to Stormceptor (cfs)	

Particle Size Distribution (PSD)
The selected PSD defines TSS removal

OK-110

Particle Diameter (microns)	Distribution %	Specific Gravity
1.0	0.0	2.65
53.0	3.0	2.65
75.0	15.0	2.65
88.0	25.0	2.65
106.0	41.0	2.65
125.0	15.0	2.65
150.0	1.0	2.65
212.0	0.0	2.65

Notes

• Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules.
• Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed.
• For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

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Brief Stormceptor Sizing Report - WQI #11

Project Information & Location			
Project Name	Pond Street	**Project Number**	694516
City	Ashland	**State/ Province**	Massachusetts
Country	United States of America	**Date**	11/15/2021
Designer Information		**EOR Information (optional)**	
Name	Josh Stackhouse	**Name**	
Company	Contech Engineered Solutions	**Company**	
Phone #	207-219-9110	**Phone #**	
Email	joshua.stackhouse@conteches.com	**Email**	

Stormwater Treatment Recommendation
The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	WQI #11
Target TSS Removal (%)	80
TSS Removal (%) Provided	96
Recommended Stormceptor Model	STC 450i

The recommended Stormceptor Model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary	
Stormceptor Model	**% TSS Removal Provided**
STC 450i	96
STC 900	98
STC 1200	98
STC 1800	98
STC 2400	99
STC 3600	99
STC 4800	99
STC 6000	99
STC 7200	99
STC 11000	100
STC 13000	100
STC 16000	100

Sizing Details

Drainage Area

Total Area (acres)	0.11
Imperviousness %	100.0

Rainfall

Station Name	BOSTON WSFO AP
State/Province	Massachusetts
Station ID #	0770
Years of Records	58
Latitude	42°21'38"N
Longitude	71°0'38"W

Water Quality Objective

TSS Removal (%)	80.0
Runoff Volume Capture (%)	
Oil Spill Capture Volume (Gal)	
Peak Conveyed Flow Rate (CFS)	
Water Quality Flow Rate (CFS)	

Up Stream Storage

Storage (ac-ft)	Discharge (cfs)
0.000	0.000

Up Stream Flow Diversion

Max. Flow to Stormceptor (cfs)	

Particle Size Distribution (PSD)
The selected PSD defines TSS removal

OK-110

Particle Diameter (microns)	Distribution %	Specific Gravity
1.0	0.0	2.65
53.0	3.0	2.65
75.0	15.0	2.65
88.0	25.0	2.65
106.0	41.0	2.65
125.0	15.0	2.65
150.0	1.0	2.65
212.0	0.0	2.65

Notes

• Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules.
• Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed.
• For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

For Stormceptor Specifications and Drawings Please Visit:
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Brief Stormceptor Sizing Report - WQI #12

Project Information & Location			
Project Name	Pond Street	**Project Number**	694516
City	Ashland	**State/ Province**	Massachusetts
Country	United States of America	**Date**	11/15/2021
Designer Information		**EOR Information (optional)**	
Name	Josh Stackhouse	**Name**	
Company	Contech Engineered Solutions	**Company**	
Phone #	207-219-9110	**Phone #**	
Email	joshua.stackhouse@conteches.com	**Email**	

Stormwater Treatment Recommendation
The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	WQI #12
Target TSS Removal (%)	80
TSS Removal (%) Provided	95
Recommended Stormceptor Model	STC 450i

The recommended Stormceptor Model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary	
Stormceptor Model	**% TSS Removal Provided**
STC 450i	95
STC 900	98
STC 1200	98
STC 1800	98
STC 2400	99
STC 3600	99
STC 4800	99
STC 6000	99
STC 7200	99
STC 11000	100
STC 13000	100
STC 16000	100

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Sizing Details

Drainage Area	
Total Area (acres)	0.12
Imperviousness %	100.0

Rainfall	
Station Name	BOSTON WSFO AP
State/Province	Massachusetts
Station ID #	0770
Years of Records	58
Latitude	42°21'38"N
Longitude	71°0'38"W

Water Quality Objective	
TSS Removal (%)	80.0
Runoff Volume Capture (%)	
Oil Spill Capture Volume (Gal)	
Peak Conveyed Flow Rate (CFS)	
Water Quality Flow Rate (CFS)	

Up Stream Storage	
Storage (ac-ft)	Discharge (cfs)
0.000	0.000

Up Stream Flow Diversion	
Max. Flow to Stormceptor (cfs)	

Particle Size Distribution (PSD)
The selected PSD defines TSS removal

OK-110

Particle Diameter (microns)	Distribution %	Specific Gravity
1.0	0.0	2.65
53.0	3.0	2.65
75.0	15.0	2.65
88.0	25.0	2.65
106.0	41.0	2.65
125.0	15.0	2.65
150.0	1.0	2.65
212.0	0.0	2.65

Notes

• Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules.
• Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed.
• For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

For Stormceptor Specifications and Drawings Please Visit:
https://www.conteches.com/technical-guides/search?filter=1WBC0O5EYX

Brief Stormceptor Sizing Report - TU #1

Project Information & Location			
Project Name	Pond Street	**Project Number**	694516
City	Ashland	**State/ Province**	Massachusetts
Country	United States of America	**Date**	11/15/2021
Designer Information		**EOR Information (optional)**	
Name	Josh Stackhouse	**Name**	
Company	Contech Engineered Solutions	**Company**	
Phone #	207-219-9110	**Phone #**	
Email	joshua.stackhouse@conteches.com	**Email**	

Stormwater Treatment Recommendation
The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	TU #1
Target TSS Removal (%)	80
TSS Removal (%) Provided	95
Recommended Stormceptor Model	STC 450i

The recommended Stormceptor Model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary	
Stormceptor Model	**% TSS Removal Provided**
STC 450i	95
STC 900	97
STC 1200	98
STC 1800	98
STC 2400	98
STC 3600	99
STC 4800	99
STC 6000	99
STC 7200	99
STC 11000	100
STC 13000	100
STC 16000	100

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Sizing Details

Drainage Area

Total Area (acres)	0.13
Imperviousness %	100.0

Rainfall

Station Name	BOSTON WSFO AP
State/Province	Massachusetts
Station ID #	0770
Years of Records	58
Latitude	42°21'38"N
Longitude	71°0'38"W

Water Quality Objective

TSS Removal (%)	80.0
Runoff Volume Capture (%)	
Oil Spill Capture Volume (Gal)	
Peak Conveyed Flow Rate (CFS)	
Water Quality Flow Rate (CFS)	

Up Stream Storage

Storage (ac-ft)	Discharge (cfs)
0.000	0.000

Up Stream Flow Diversion

Max. Flow to Stormceptor (cfs)	

Particle Size Distribution (PSD)
The selected PSD defines TSS removal

OK-110

Particle Diameter (microns)	Distribution %	Specific Gravity
1.0	0.0	2.65
53.0	3.0	2.65
75.0	15.0	2.65
88.0	25.0	2.65
106.0	41.0	2.65
125.0	15.0	2.65
150.0	1.0	2.65
212.0	0.0	2.65

Notes

• Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules.
• Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed.
• For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

For Stormceptor Specifications and Drawings Please Visit:
https://www.conteches.com/technical-guides/search?filter=1WBC0O5EYX

Brief Stormceptor Sizing Report - TU #2

Project Information & Location			
Project Name	501 Pond Street	**Project Number**	694516
City	Ashland	**State/ Province**	Massachusetts
Country	United States of America	**Date**	7/25/2022
Designer Information		**EOR Information (optional)**	
Name	Dave Adams	**Name**	
Company	Contech Engineered Solutions	**Company**	Bruce Saluk & Associates
Phone #	207-885-6191	**Phone #**	
Email	dave.adams@conteches.com	**Email**	

Stormwater Treatment Recommendation
The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	TU #2
Target TSS Removal (%)	80
TSS Removal (%) Provided	95
Recommended Stormceptor Model	STC 450i

The recommended Stormceptor Model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary	
Stormceptor Model	**% TSS Removal Provided**
STC 450i	95
STC 900	98
STC 1200	98
STC 1800	98
STC 2400	99
STC 3600	99
STC 4800	99
STC 6000	99
STC 7200	99
STC 11000	100
STC 13000	100
STC 16000	100

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Sizing Details

Drainage Area

Total Area (acres)	0.12
Imperviousness %	100.0

Rainfall

Station Name	BOSTON WSFO AP
State/Province	Massachusetts
Station ID #	0770
Years of Records	58
Latitude	42°21'38"N
Longitude	71°0'38"W

Water Quality Objective

TSS Removal (%)	80.0
Runoff Volume Capture (%)	
Oil Spill Capture Volume (Gal)	
Peak Conveyed Flow Rate (CFS)	
Water Quality Flow Rate (CFS)	

Up Stream Storage

Storage (ac-ft)	Discharge (cfs)
0.000	0.000

Up Stream Flow Diversion

Max. Flow to Stormceptor (cfs)	0.00000

Particle Size Distribution (PSD)
The selected PSD defines TSS removal

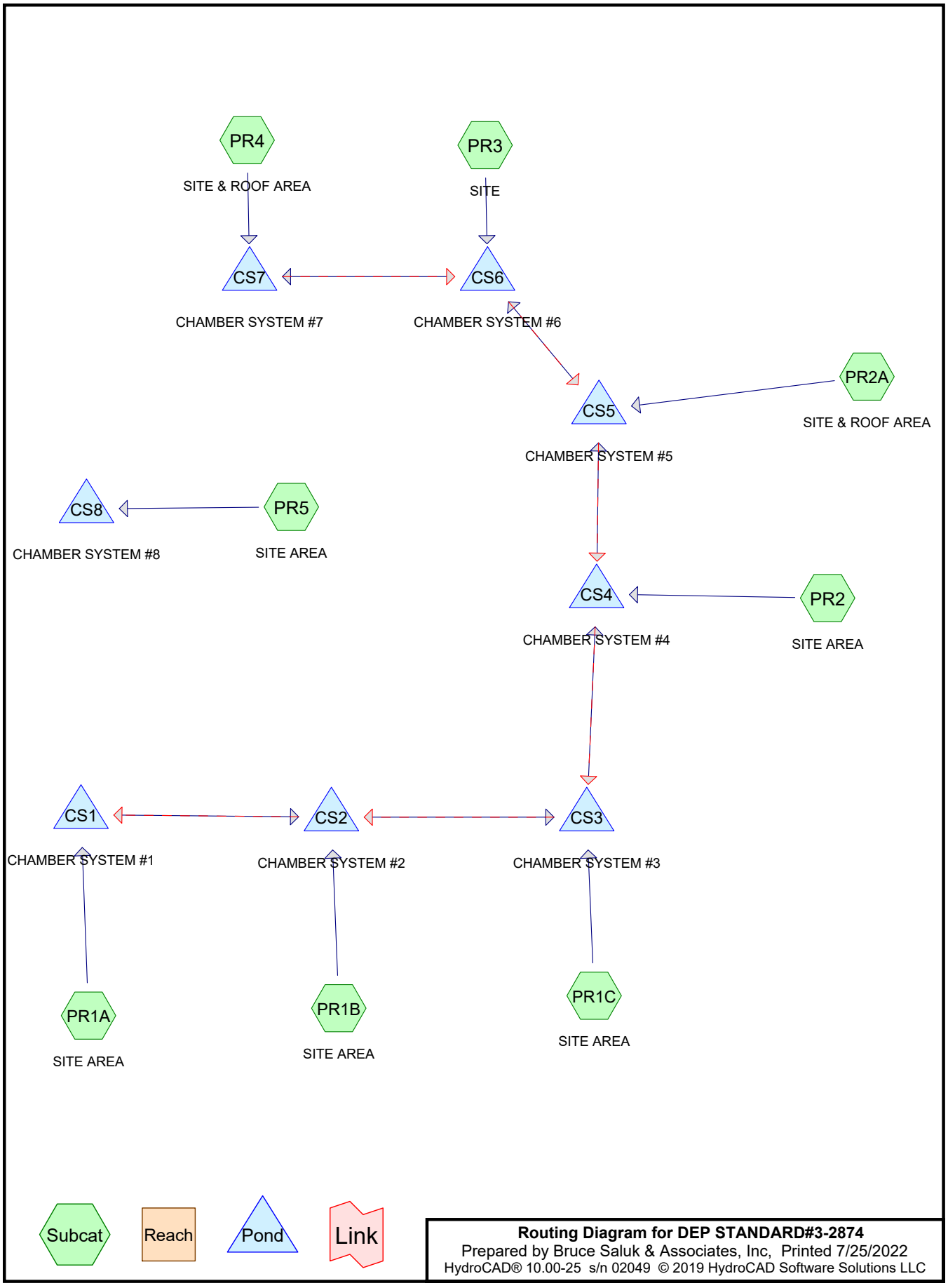
OK-110

Particle Diameter (microns)	Distribution %	Specific Gravity
1.0	0.0	2.65
53.0	3.0	2.65
75.0	15.0	2.65
88.0	25.0	2.65
106.0	41.0	2.65
125.0	15.0	2.65
150.0	1.0	2.65
212.0	0.0	2.65

Notes

• Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules.
• Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed.
• For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

For Stormceptor Specifications and Drawings Please Visit:
https://www.conteches.com/technical-guides/search?filter=1WBC0O5EYX



Routing Diagram for DEP STANDARD#3-2874
Prepared by Bruce Saluk & Associates, Inc, Printed 7/25/2022

Summary for Subcatchment PR1A: SITE AREA

Runoff = 0.04 cfs @ 12.09 hrs, Volume= 68 cf, Depth> 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Type III 24-hr STD #3 Rainfall=1.32"

	Area (ac)	CN	Description
*	0.090	98	Impervious Area
	0.060	61	>75% Grass cover, Good, HSG B
	0.150	83	Weighted Average
	0.060		40.00% Pervious Area
	0.090		60.00% Impervious Area

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

Summary for Subcatchment PR1B: SITE AREA

Runoff = 0.12 cfs @ 12.09 hrs, Volume= 192 cf, Depth> 0.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Type III 24-hr STD #3 Rainfall=1.32"

	Area (ac)	CN	Description
*	0.210	98	Impervious Area
	0.110	61	>75% Grass cover, Good, HSG B
	0.320	85	Weighted Average
	0.110		34.38% Pervious Area
	0.210		65.63% Impervious Area

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

Summary for Subcatchment PR1C: SITE AREA

Runoff = 0.05 cfs @ 12.09 hrs, Volume= 84 cf, Depth> 0.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Type III 24-hr STD #3 Rainfall=1.32"

	Area (ac)	CN	Description
*	0.100	98	Impervious Area
	0.060	61	>75% Grass cover, Good, HSG B
	0.160	84	Weighted Average
	0.060		37.50% Pervious Area
	0.100		62.50% Impervious Area

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

Summary for Subcatchment PR2: SITE AREA

Runoff = 0.21 cfs @ 12.08 hrs, Volume= 349 cf, Depth> 0.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Type III 24-hr STD #3 Rainfall=1.32"

	Area (ac)	CN	Description
*	0.250	98	Impervious Area
	0.070	61	>75% Grass cover, Good, HSG B
	0.320	90	Weighted Average
	0.070		21.87% Pervious Area
	0.250		78.13% Impervious Area

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

Summary for Subcatchment PR2A: SITE & ROOF AREA

Runoff = 0.95 cfs @ 12.07 hrs, Volume= 1,647 cf, Depth> 0.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Type III 24-hr STD #3 Rainfall=1.32"

	Area (ac)	CN	Description
*	0.250	98	Impervious Area
	0.050	61	>75% Grass cover, Good, HSG B
*	0.560	98	Roof
	0.860	96	Weighted Average
	0.050		5.81% Pervious Area
	0.810		94.19% Impervious Area

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

Summary for Subcatchment PR3: SITE

Runoff = 0.02 cfs @ 12.28 hrs, Volume= 42 cf, Depth> 0.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Type III 24-hr STD #3 Rainfall=1.32"

	Area (ac)	CN	Description
*	0.130	98	Impervious Area
	0.200	61	>75% Grass cover, Good, HSG B
	0.330	76	Weighted Average
	0.200		60.61% Pervious Area
	0.130		39.39% Impervious Area

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

Summary for Subcatchment PR4: SITE & ROOF AREA

Runoff = 0.59 cfs @ 12.08 hrs, Volume= 980 cf, Depth> 0.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Type III 24-hr STD #3 Rainfall=1.32"

	Area (ac)	CN	Description
*	0.410	98	Impervious Area
	0.240	61	>75% Grass cover, Good, HSG B
*	0.350	98	Roof
	1.000	89	Weighted Average
	0.240		24.00% Pervious Area
	0.760		76.00% Impervious Area

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

Summary for Subcatchment PR5: SITE AREA

Runoff = 0.20 cfs @ 12.08 hrs, Volume= 339 cf, Depth> 0.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Type III 24-hr STD #3 Rainfall=1.32"

	Area (ac)	CN	Description
*	0.230	98	Impervious Area
	0.050	61	>75% Grass cover, Good, HSG B
	0.280	91	Weighted Average
	0.050		17.86% Pervious Area
	0.230		82.14% Impervious Area

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

Summary for Pond CS1: CHAMBER SYSTEM #1

Inflow	=	0.04 cfs @	12.09 hrs, Volume=	68 cf	
Outflow	=	0.16 cfs @	11.60 hrs, Volume=	399 cf,	Atten= 0%, Lag= 0.0 min
Discarded	=	0.16 cfs @	11.60 hrs, Volume=	399 cf	
Primary	=	0.00 cfs @	11.00 hrs, Volume=	0 cf	

Routing by Sim-Route method w/Net Flows, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Peak Elev= 254.60' @ 12.10 hrs Surf.Area= 816 sf Storage= 2 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.6 min (738.0 - 737.4)

Volume	Invert	Avail.Storage	Storage Description
#1	254.60'	648 cf	**12.00'W x 68.00'L x 2.80'H Prismatoid** 2,285 cf Overall - 665 cf Embedded = 1,619 cf x 40.0% Voids
#2	255.10'	663 cf	**Cultec R-180** x 30 Inside #1 Effective Size= 33.6"W x 20.0"H => 3.44 sf x 6.33'L = 21.8 cf Overall Size= 36.0"W x 20.5"H x 7.33'L with 1.00' Overlap Row Length Adjustment= +1.00' x 3.44 sf x 3 rows
#3	255.10'	2 cf	**Cultec HVLV FC-24** x 4 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 4 Chambers in 3 Rows
#4	255.10'	57 cf	**12.0" Round Pipe Storage** x 3 -Impervious L= 24.0' S= 0.0200 '/'
#5	255.10'	14 cf	**10.0" Round Pipe Storage**-Impervious L= 25.0' S= 0.0200 '/'
#6	255.50'	63 cf	**4.00'D x 5.00'H Vertical Cone/Cylinder**-Impervious
		1,446 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	254.60'	**8.270 in/hr Exfiltration over Horizontal area**
#2	Primary	255.10'	**12.0" Vert. Orifice/Grate X 2.00** C= 0.600
#3	Primary	258.60'	**2.0" x 2.0" Horiz. Orifice/Grate X 6.00 columns** X 6 rows C= 0.600 in 24.0" x 24.0" Grate (25% open area) Limited to weir flow at low heads

Discarded OutFlow Max=0.16 cfs @ 11.60 hrs HW=254.60' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.16 cfs)

Primary OutFlow Max=0.00 cfs @ 11.00 hrs HW=254.60' TW=254.60' (Dynamic Tailwater)
├**2=Orifice/Grate** (Controls 0.00 cfs)
└**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond CS2: CHAMBER SYSTEM #2

Inflow	=	0.12 cfs @	12.09 hrs,	Volume=	192 cf
Outflow	=	0.12 cfs @	12.09 hrs,	Volume=	192 cf, Atten= 0%, Lag= 0.3 min
Discarded	=	0.12 cfs @	12.09 hrs,	Volume=	192 cf
Primary	=	0.00 cfs @	11.00 hrs,	Volume=	0 cf
Secondary	=	0.00 cfs @	11.00 hrs,	Volume=	0 cf

Routing by Sim-Route method w/Net Flows, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Peak Elev= 254.60' @ 12.09 hrs Surf.Area= 1,584 sf Storage= 2 cf

Plug-Flow detention time= 0.3 min calculated for 191 cf (100% of inflow)
Center-of-Mass det. time= 0.4 min (735.6 - 735.2)

Volume	Invert	Avail.Storage	Storage Description
#1	254.60'	1,244 cf	**16.00'W x 99.00'L x 2.80'H Prismatoid** 4,435 cf Overall - 1,324 cf Embedded = 3,111 cf x 40.0% Voids
#2	255.10'	1,320 cf	**Cultec R-180** x 60 Inside #1 Effective Size= 33.6"W x 20.0"H => 3.44 sf x 6.33'L = 21.8 cf Overall Size= 36.0"W x 20.5"H x 7.33'L with 1.00' Overlap Row Length Adjustment= +1.00' x 3.44 sf x 4 rows
#3	255.10'	4 cf	**Cultec HVLV FC-24** x 9 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 9 Chambers in 4 Rows
#4	255.10'	57 cf	**12.0" Round Pipe Storage** x 3 -Impervious L= 24.0' S= 0.0200 '/'
#5	255.10'	38 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder**-Impervious
#6	255.10'	85 cf	**12.0" Round Pipe Storage**-Impervious L= 108.0' S= 0.0200 '/'
		2,748 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600
#2	Discarded	254.60'	**8.270 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#3	Secondary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Discarded OutFlow Max=0.12 cfs @ 12.09 hrs HW=254.60' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.12 cfs)

Primary OutFlow Max=0.00 cfs @ 11.00 hrs HW=254.60' TW=254.60' (Dynamic Tailwater)
↑**1=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 11.00 hrs HW=254.60' TW=254.60' (Dynamic Tailwater)
↑**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond CS3: CHAMBER SYSTEM #3

Inflow	=	0.05 cfs @	12.09 hrs, Volume=	84 cf
Outflow	=	0.05 cfs @	12.09 hrs, Volume=	84 cf, Atten= 0%, Lag= 0.3 min
Discarded	=	0.05 cfs @	12.09 hrs, Volume=	84 cf
Primary	=	0.00 cfs @	11.00 hrs, Volume=	0 cf
Secondary	=	0.00 cfs @	11.00 hrs, Volume=	0 cf

Routing by Sim-Route method w/Net Flows, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Peak Elev= 254.60' @ 12.09 hrs Surf.Area= 1,188 sf Storage= 1 cf

Plug-Flow detention time= 0.3 min calculated for 83 cf (100% of inflow)
Center-of-Mass det. time= 0.4 min (736.7 - 736.3)

Volume	Invert	Avail.Storage	Storage Description
#1	254.60'	933 cf	**12.00'W x 99.00'L x 2.80'H Prismatoid** 3,326 cf Overall - 993 cf Embedded = 2,334 cf x 40.0% Voids
#2	255.10'	990 cf	**Cultec R-180** x 45 Inside #1 Effective Size= 33.6"W x 20.0"H => 3.44 sf x 6.33'L = 21.8 cf Overall Size= 36.0"W x 20.5"H x 7.33'L with 1.00' Overlap Row Length Adjustment= +1.00' x 3.44 sf x 3 rows
#3	255.10'	3 cf	**Cultec HVLV FC-24** x 6 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 6 Chambers in 3 Rows
#4	255.10'	57 cf	**12.0" Round Pipe Storage** x 3 -Impervious L= 24.0' S= 0.0200 '/'
#5	255.10'	151 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder** x 4 -Impervious
#6	255.10'	5 cf	**10.0" Round Pipe Storage**-Impervious L= 10.0' S= 0.0200 '/'
		2,139 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600
#2	Discarded	254.60'	**8.270 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#3	Secondary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Discarded OutFlow Max=0.05 cfs @ 12.09 hrs HW=254.60' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=0.00 cfs @ 11.00 hrs HW=254.60' TW=254.60' (Dynamic Tailwater)
↑**1=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 11.00 hrs HW=254.60' TW=254.60' (Dynamic Tailwater)
↑**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond CS4: CHAMBER SYSTEM #4

Inflow	=	0.21 cfs @	12.08 hrs,	Volume=	349 cf
Outflow	=	0.21 cfs @	12.08 hrs,	Volume=	349 cf, Atten= 0%, Lag= 0.3 min
Discarded	=	0.21 cfs @	12.08 hrs,	Volume=	349 cf
Primary	=	0.00 cfs @	11.00 hrs,	Volume=	0 cf
Secondary	=	0.00 cfs @	11.00 hrs,	Volume=	0 cf

Routing by Sim-Route method w/Net Flows, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Peak Elev= 254.61' @ 12.08 hrs Surf.Area= 2,125 sf Storage= 4 cf

Plug-Flow detention time= 0.3 min calculated for 347 cf (100% of inflow)
Center-of-Mass det. time= 0.4 min (730.2 - 729.8)

Volume	Invert	Avail.Storage	Storage Description
#1	254.60'	1,763 cf	**25.00'W x 85.00'L x 2.80'H Prismatoid** 5,950 cf Overall - 1,543 cf Embedded = 4,407 cf x 40.0% Voids
#2	255.10'	1,534 cf	**Cultec R-150XLHD** x 56 Inside #1 Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap Row Length Adjustment= +0.75' x 2.65 sf x 7 rows
#3	255.10'	8 cf	**Cultec R-150XLHD-FC-24** x 18 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 18 Chambers in 7 Rows
#4	255.10'	82 cf	**10.0" Round Pipe Storage**-Impervious L= 150.0' S= 0.0200 '/'
#5	255.10'	151 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder** x 4 -Impervious
		3,538 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	255.10'	**12.0" Vert. Orifice/Grate X 5.00** C= 0.600
#2	Discarded	254.60'	**8.270 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#3	Secondary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Discarded OutFlow Max=0.21 cfs @ 12.08 hrs HW=254.61' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.21 cfs)

Primary OutFlow Max=0.00 cfs @ 11.00 hrs HW=254.60' TW=254.60' (Dynamic Tailwater)
↑**1=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 11.00 hrs HW=254.60' TW=254.60' (Dynamic Tailwater)
↑**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond CS5: CHAMBER SYSTEM #5

Inflow	=	0.95 cfs @	12.07 hrs,	Volume=	1,644 cf
Outflow	=	0.80 cfs @	12.04 hrs,	Volume=	1,645 cf, Atten= 16%, Lag= 0.0 min
Discarded	=	0.80 cfs @	12.04 hrs,	Volume=	1,645 cf
Primary	=	0.00 cfs @	11.00 hrs,	Volume=	0 cf
Secondary	=	0.00 cfs @	11.00 hrs,	Volume=	0 cf

Routing by Sim-Route method w/Net Flows, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Peak Elev= 254.63' @ 12.13 hrs Surf.Area= 4,175 sf Storage= 50 cf

Plug-Flow detention time= 0.5 min calculated for 1,637 cf (100% of inflow)
Center-of-Mass det. time= 0.5 min (725.9 - 725.4)

Volume	Invert	Avail.Storage	Storage Description
#1	254.60'	3,450 cf	**25.00'W x 167.00'L x 2.80'H Prismatoid** 11,690 cf Overall - 3,066 cf Embedded = 8,624 cf x 40.0% Voids
#2	255.10'	3,055 cf	**Cultec R-150XLHD** x 112 Inside #1 Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap Row Length Adjustment= +0.75' x 2.65 sf x 7 rows
#3	255.10'	11 cf	**Cultec R-150XLHD-FC-24** x 24 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 24 Chambers in 7 Rows
#4	255.10'	82 cf	**10.0" Round Pipe Storage**-Impervious L= 150.0' S= 0.0200 '/'
#5	255.10'	151 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder** x 4 -Impervious
		6,748 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600
#2	Discarded	254.60'	**8.270 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#3	Secondary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Discarded OutFlow Max=0.80 cfs @ 12.04 hrs HW=254.61' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.80 cfs)

Primary OutFlow Max=0.00 cfs @ 11.00 hrs HW=254.60' TW=254.60' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 11.00 hrs HW=254.60' TW=254.60' (Dynamic Tailwater)
↑—**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond CS6: CHAMBER SYSTEM #6

Inflow	=	0.02 cfs @	12.28 hrs, Volume=	42 cf
Outflow	=	0.02 cfs @	12.28 hrs, Volume=	42 cf, Atten= 0%, Lag= 0.3 min
Discarded	=	0.02 cfs @	12.28 hrs, Volume=	42 cf
Primary	=	0.00 cfs @	11.00 hrs, Volume=	0 cf
Secondary	=	0.00 cfs @	11.00 hrs, Volume=	0 cf

Routing by Sim-Route method w/Net Flows, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Peak Elev= 254.60' @ 12.28 hrs Surf.Area= 976 sf Storage= 0 cf

Plug-Flow detention time= 0.3 min calculated for 42 cf (100% of inflow)
Center-of-Mass det. time= 0.4 min (746.5 - 746.1)

Volume	Invert	Avail.Storage	Storage Description
#1	254.60'	772 cf	**16.00'W x 61.00'L x 2.80'H Prismatoid** 2,733 cf Overall - 802 cf Embedded = 1,931 cf x 40.0% Voids
#2	255.10'	798 cf	**Cultec R-180** x 36 Inside #1 Effective Size= 33.6"W x 20.0"H => 3.44 sf x 6.33'L = 21.8 cf Overall Size= 36.0"W x 20.5"H x 7.33'L with 1.00' Overlap Row Length Adjustment= +1.00' x 3.44 sf x 4 rows
#3	255.10'	4 cf	**Cultec HVLV FC-24** x 9 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 9 Chambers in 4 Rows
#4	255.10'	47 cf	**12.0" Round Pipe Storage**-Impervious L= 60.0' S= 0.0200 '/'
#5	255.10'	38 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder**-Impervious
		1,659 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600
#2	Discarded	254.60'	**8.270 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#3	Secondary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Discarded OutFlow Max=0.02 cfs @ 12.28 hrs HW=254.60' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.00 cfs @ 11.00 hrs HW=254.60' TW=253.30' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 11.00 hrs HW=254.60' TW=254.60' (Dynamic Tailwater)
↑—**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond CS7: CHAMBER SYSTEM #7

Inflow	=	0.59 cfs @	12.08 hrs, Volume=	978 cf
Outflow	=	0.49 cfs @	12.05 hrs, Volume=	979 cf, Atten= 17%, Lag= 0.0 min
Discarded	=	0.49 cfs @	12.05 hrs, Volume=	979 cf
Primary	=	0.00 cfs @	11.00 hrs, Volume=	0 cf
Secondary	=	0.00 cfs @	11.00 hrs, Volume=	0 cf

Routing by Sim-Route method w/Net Flows, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Peak Elev= 253.33' @ 12.14 hrs Surf.Area= 2,544 sf Storage= 33 cf

Plug-Flow detention time= 0.5 min calculated for 974 cf (100% of inflow)
Center-of-Mass det. time= 0.5 min (731.2 - 730.6)

Volume	Invert	Avail.Storage	Storage Description
#1	253.30'	2,185 cf	**12.00'W x 212.00'L x 3.00'H Prismatoid** 7,632 cf Overall - 2,169 cf Embedded = 5,463 cf x 40.0% Voids
#2	253.80'	2,166 cf	**Cultec R-180** x 99 Inside #1 Effective Size= 33.6"W x 20.0"H => 3.44 sf x 6.33'L = 21.8 cf Overall Size= 36.0"W x 20.5"H x 7.33'L with 1.00' Overlap Row Length Adjustment= +1.00' x 3.44 sf x 3 rows
#3	253.80'	4 cf	**Cultec HVLV FC-24** x 8 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 8 Chambers in 3 Rows
#4	253.80'	24 cf	**12.0" Round Pipe Storage**-Impervious L= 30.0' S= 0.0200 '/'
#5	253.80'	75 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder** x 2 -Impervious
#6	253.80'	74 cf	**10.0" Round Pipe Storage**-Impervious L= 135.0' S= 0.0200 '/'
		4,527 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	253.25'	**18.0" Round RCP_Round 18"** L= 47.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 253.25' / 249.30' S= 0.0840 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.77 sf
#2	Device 1	253.80'	**12.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	255.60'	**4.2' long x 1.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 2.2' Crest Height
#4	Device 2	253.55'	**18.0" Vert. Orifice/Grate** C= 0.600
#5	Device 4	253.80'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600
#6	Discarded	253.30'	**8.270 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#7	Secondary	253.80'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Discarded OutFlow Max=0.49 cfs @ 12.05 hrs HW=253.31' (Free Discharge)
└**6=Exfiltration** (Exfiltration Controls 0.49 cfs)

Primary OutFlow Max=0.00 cfs @ 11.00 hrs HW=253.30' (Free Discharge)
└**1=RCP_Round 18"** (Passes 0.00 cfs of 0.01 cfs potential flow)
  └**2=Orifice/Grate** (Controls 0.00 cfs)
    └**4=Orifice/Grate** (Controls 0.00 cfs)
      └**5=Orifice/Grate** (Controls 0.00 cfs)
  └**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 11.00 hrs HW=253.30' TW=254.60' (Dynamic Tailwater)
└**7=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond CS8: CHAMBER SYSTEM #8

Inflow Area = 12,197 sf, 82.14% Impervious, Inflow Depth > 0.33" for STD #3 event
Inflow = 0.20 cfs @ 12.08 hrs, Volume= 338 cf
Outflow = 0.20 cfs @ 12.08 hrs, Volume= 338 cf, Atten= 0%, Lag= 0.3 min
Discarded = 0.20 cfs @ 12.08 hrs, Volume= 338 cf
Primary = 0.00 cfs @ 11.00 hrs, Volume= 0 cf

Routing by Sim-Route method w/Net Flows, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Peak Elev= 254.11' @ 12.08 hrs Surf.Area= 1,320 sf Storage= 4 cf

Plug-Flow detention time= 0.3 min calculated for 337 cf (100% of inflow)
Center-of-Mass det. time= 0.4 min (729.3 - 729.0)

Volume	Invert	Avail.Storage	Storage Description
#1	254.10'	890 cf	**12.00'W x 110.00'L x 2.10'H Prismatoid** 2,772 cf Overall - 548 cf Embedded = 2,224 cf x 40.0% Voids
#2	254.60'	547 cf	**Cultec C-100HD** x 39 Inside #1 Effective Size= 32.1"W x 12.0"H => 1.86 sf x 7.50'L = 14.0 cf Overall Size= 36.0"W x 12.5"H x 8.00'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.86 sf x 3 rows
#3	254.60'	0 cf	**Cultec C-100-SFCx2** x 4 Inside #1 Effective Size= 10.1"W x 7.6"H => 0.29 sf x 0.33'L = 0.1 cf Overall Size= 12.0"W x 7.6"H x 1.64'L with 1.31' Overlap 4 Chambers in 3 Rows
#4	254.60'	28 cf	**8.0" Round Pipe Storage**-Impervious L= 80.0' S= 0.0100 '/'
#5	254.60'	75 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder** x 2 -Impervious
		1,541 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	254.50'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Discarded	254.10'	**8.270 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'

Discarded OutFlow Max=0.20 cfs @ 12.08 hrs HW=254.11' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.20 cfs)

Primary OutFlow Max=0.00 cfs @ 11.00 hrs HW=254.10' (Free Discharge)
↑—**1=Orifice/Grate** (Controls 0.00 cfs)

APPENDIX B:

Long Term Pollution Prevention, Operation and Maintenance Plan

LONG TERM POLLUTION PREVENTION, OPERATION AND MAINTENANCE PLAN

STANDARDS 4-6 & 9

For

4-Story Mixed Use Building

- Pond St & Converse Way, Ashland MA-

Revised 7/23/22

The following items are intended as a guideline for continued maintenance of the storm drain system after construction. There may be other measures that should be applied to certain drainage appurtenances not mentioned herein. Therefore, the current owner, followed by the future owners of the Stormwater system should be updating this plan on an as needed basis.

Responsible Party for the Operation, Maintenance & Financing repairs

Initially, and until the Project site is turned over to another ownership, the responsible party will be:

The responsible party is the property owner.

Trask Inc.
337 Turnpike RD, Suite 201
Southborough, MA
Contact: Ben Stevens Tel: 508-485-0077

Inspection and Maintenance Requirements

The responsible party shall retain and pay for inspectional services by a designated person that is qualified and approved to perform such inspectional services. Training for individual(s) involved with implementing the Long-term Pollution Prevention Plan shall be provided by the responsible party. Said party shall also pay the maintenance and repair cost. After each inspection, the inspector shall complete the inspection report forms. These reports shall be kept for future review by Federal, State or Local authorities. The frequency of the inspections shall be as updated to the amended DEP Stormwater Management Regulations, and, in the case of the subsurface Water Quality Structures, according to the O & M schedules recommended by those Manufacturers.

The estimated annual operation & Maintenance Budget for the Stormwater system is $2000. The entity providing maintenance services shall follow confined space entry procedures in accordance with OSHA requirements.

The inspection and maintenance outlined below shall be followed and submitted by the inspector to the owner and the designated Municipal Department.

Erosion
Significant erosion along slopes shall be protected with engineered soil reinforcement, jute mesh, ground cover and/or erosion control, as approved.

Water Quality Structures
There are thirteen(13) TSS removal structures proposed and designated on the drainage plans. These Water quality structures are Stormceptor STC 450i units manufactured by Contech shall be inspected twice per year(spring & fall). The inlet grates shall be inspected and cleaned four(4) times per year. Following the first year, inspection sequence shall be performed as recommended by the inspector, but not less than once per year. The inlet grates shall be inspected and cleaned four(4) times/yr.. Removal of sediment shall be required when the sediment reaches 75% of the capacity of the sump. Measurements shall be taken at each inspection and recorded in the Inspection & Maintenance log. Removal of the sediment from the sump area and disposal shall be in accordance with local, State and Federal regulations. Sediment removal shall be performed by a certified CDS unit maintenance provider using a Vac Truck, or equal. The procedures and Inspection & maintenance shall follow the manual entitled *" STORMCEPTOR STC 450 i Inspection & Maintenance Guide"*, by Contech at wwww.conteches.com

Site Drain – Subsurface Chamber Systems
Inspection and maintenance of the chamber systems shall be in accordance with the proprietary guidelines, as follows:

Inspection and maintenance of the chamber system shall be in accordance with the proprietary guidelines entitled *" Contactor & Recharger Stormwater Chamber- operation and maintenance guidelines."* *www.cultec.com* Access to the subsurface chambers shall be from the inspection ports provided. If inspection shows that any of the chamber systems are not fully draining within 72 hours following a storm event, the responsible party shall retain a qualified engineer to assess the reason for infiltration failure and to recommend corrective action for restoring the infiltration rate. The responsible party shall implement corrective action based on this evaluation.

Bi-annual inspection of the chamber system shall be from the inspection port provided.

Outlet Control Structures
There is one(1) outlet control structure for Chamber system shown on the drainage plans. This structure should be inspected once per year and cleaned of debris at the outlet orifice.

Yard Drain
In accordance with DEP Stormwater Manual, yard drains shall be inspected 4 times per year and cleaned of debris when the depth of sediment reaches 2FT(50 % of the sump depth). Disposal shall comply with local, State and Federal regulations.

Snow removal, Deicing Treatment & Storage Operations

Snow disposal, if required, shall be in accordance with Mass DEP Guideline No. BRPG01-01 requirements. Salt application shall be minimal and shall only be used where necessary. The use of sodium Chloride (NaCl) is prohibited. Storage of Roadway deicing salt shall be offsite. Snow quantities in excess of the onsite storage capacity shall be removed from the site by the snow removal contractor.

Good House Keeping Practices & Illicit Discharge Prevention

Inspections of the entire site and shall identify and report to the owner any erosion, pollution, and accumulation of any unsuitable material on the site. The inspector shall note and report any sign of an illicit discharge on the property. The owner shall assign qualified workers to fulfill recommendations by the inspector for cleanup and illicit discharge elimination.

All hazardous waste materials discovered will be disposed of in the manner specified by local and state regulation. The owner will be responsible for seeing that these procedures are followed.

Pavement Sweeping

Pavement shall be swept every spring at the frequency required to remove sand and other debris.

Accidental Spill Containment

The drainage system provides sufficient capacity to isolate and contain a large spill within the stormwater system for an accidental spill. The company providing the cleanup services for the spill shall follow public safety practices and cordon off the spill containment work zone for the protection of the public. Regardless of the size, spills of toxic or hazardous material will be reported to the appropriate State or local government agency. The inspector shall report all inspections and make recommendations to the owner for actions and maintenance deemed necessary by the inspector.

The above recommendations are applicable to project completion with 100% established vegetative cover and are not intended for construction progress measures.

Storage of Materials and Waste

Long term storage of waste or trash that is harmful to the groundwater and wetland resources is prohibited. Such waste shall be immediately removed from the property by a licensed contractor. Weekly garbage removal shall be by a commercial trash removal company.

Vehicle Washing Control

Vehicle washing on this property is prohibited. Vehicle washing shall be at commercial car washing facility that already has environmental controls in place.

Fertilizers, Herbicides, Pesticides and Fungicides

It is recommended that the common application of fertilizers, herbicides, pesticides and fungicides be restricted, and only used on a limited basis in the approved application zone as follows: Chemical additives applied to the ground cover and plants within 20 FT of the Wetlands are prohibited. Application for such chemicals shall only be used on a limited basis beyond said Wetland setback zone.
Use of chemicals in these areas shall be applied in a manner that prevents the chemical from being washed down gradient of the application zone, e.g., fertilizer shall be worked into the soil to prevent washout. Storage of these chemicals shall be in the product containers in a safe dry enclosure, such as a locked shed, or offsite landscape company's storage facility.

Dog Park Maintenance

Weekly maintenance shall include trash and dog poop removal. Weekly restocking of poop bags and inspection of entire dog park for miscellaneous cleanup.

Rain Garden Maintenance

The Garden is not designed to recharge collected water into the ground. Its function is to filter water back into the drain system where it is once again treated before being recharged into the ground at one of the subsurface chamber systems. Therefore, it is important that the rain garden is properly maintained to allow filtration as designed.

Below is a maintenance schedule to be followed.

RAIN GARDEN MAINTENANCE SCHEDULE		
Activity	**Time of Year**	**Frequency**
Inspect & remove trash	Year round	Monthly
Mulch	Spring	Annually
Remove dead vegetation	Fall or Spring	Annually
Replace dead vegetation	Spring	Annually
Prune	Spring or Fall	Annually
Replace entire media & all vegetation	Late Spring / Early Summer	As Needed*
**Paying careful attention to pretreatment and operation & maintenance can extend the life of the soil media.*		

INSPECTION REPORT No.____
For
4-Story Apartment Building
-501 Pond ST, Ashland MA-

INSPECTION DATE:

INSPECTOR:

INSPECTION DATE:
INSPECTOR:

1) **Water Quality Inlet Grates(Contech Stormceptor STC 450i)**

The inspector shall refer to the narrative on previous pages.

COMMENTS & RECOMMENDATIONS:
_____
_____
_____
_____
_____
_____
_____
_____

MEASUREMENTS:
_____

SIGNS OF ILLICIT DISCHARGES: YES NO
CLEANING REQUIRED: YES NO
DEPTH OF SEDIMENT_____
DATE CLEANED: _____
PERFORMED BY: _____

2) EROSION

The inspector shall refer to the narrative on previous pages.

COMMENTS & RECOMMENDATIONS:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

MEASUREMENTS:

_____

SIGNS OF EROSION: YES NO
MAINTENANCE REQUIRED: YES NO
DATE MAINTAINED: _____
PERFORMED BY: _____

3) WATER QUALITY STRUCTURES:

The inspector shall refer to the narrative on previous pages.
The procedures and Inspection & maintenance shall follow the manual entitled " Stormceptor STC Inspection & Maintenance Guide," by Contech at wwww.conteches.com
Inspection frequency shall be 2 times per year for the first 2 years following construction, then no less than once per year thereafter, or as recommended by the manufacturer, whichever occurs more often.

COMMENTS & RECOMMENDATIONS: _____
_____
_____
_____
_____
_____
_____

OBSERVATIONS: _____

CLEANING REQUIRED: YES NO
DATE CLEANED: _____

PERFORMED BY: _____

4) SUBSURFACE RECHARGE CHAMBERS

Refer to narrative on page the previous pages.
Inspection frequency: twice per year

REFER TO THE GUIDELINES REFERENCE ON PAGE 2 FOR INSPECTION & MAINTENANCE.

COMMENTS & RECOMMENDATIONS:

_____
_____
_____
_____
_____
_____
_____

MEASUREMENTS: _____

INSPECTION PORTS ARE ACCESSIBLE:	YES	NO
CLEANING REQUIRED:	YES	NO
WATER IN THE CHAMBER IS PRESENT	YES	NO
DID THE CHAMBERS FULLY DRAIN? WITHIN 72 HRS SINCE THE LAST STORM	YES	NO

MAINTENANCE REQUIRED: _____

PERFORMED BY: _____

INSPECTION DATE:

INSPECTOR:

5) **YARD DRAINS**

The inspector shall refer to the narrative on the previous pages.

COMMENTS & RECOMMENDATIONS:

_____
_____
_____
_____

MEASUREMENTS: _____

SIGNS OF ILLICIT DISCHARGES: YES NO
CLEANING REQUIRED: YES NO
DEPTH OF SEDIMENT:_____
DATE CLEANED: _____
PERFORMED BY: _____

6) GOOD HOUSE KEEPING & PREVENTION OF ILLICIT DISCHARGES:

The inspector shall refer to the narrative on previous pages.

COMMENTS & RECOMMENDATIONS:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

MEASUREMENTS: _____

SIGNS OF ILLICIT DISCHARGE: YES NO
CLEANING REQUIRED: YES NO
DATE MAINTAINED: _____

PERFORMED BY: _____

7) PAVEMENT SWEEPING:

The inspector shall refer to the narrative on previous pages.

COMMENTS & RECOMMENDATIONS:

_____
_____
_____
_____
_____
_____
_____
_____

MEASUREMENTS: _____

SWEEPING REQUIRED: YES NO
DATE SWEPT: _____

PERFORMED BY: _____

8) DOG PARK MAINTENANCE
Refer to narrative on the previous pages.
Inspection frequency: weekly

REFER TO THE GUIDELINES REFERENCE ON PREVIOUS PAGE FOR INSPECTION & MAINTENANCE.

COMMENTS & RECOMMENDATIONS:
_____
_____
_____
_____
_____
_____

MEASUREMENTS: _____

RESTOCK BAGS: YES NO
DOG PARK INSPECTED : YES NO
ADDITIONAL CLEANUP REQUIRED YES NO

MAINTENANCE REQUIRED: _____

PERFORMED BY: _____

9) RAIN GARDEN MAINTENANCE
Refer to narrative on the previous pages.
Inspection frequency: Monthly and annually (Refer to the schedule in the Rain Garden narrative on the previous pages).

REFER TO THE GUIDELINES REFERENCE ON PREVIOUS PAGE FOR INSPECTION & MAINTENANCE.

COMMENTS & RECOMMENDATIONS:
_____
_____
_____
_____
_____
_____

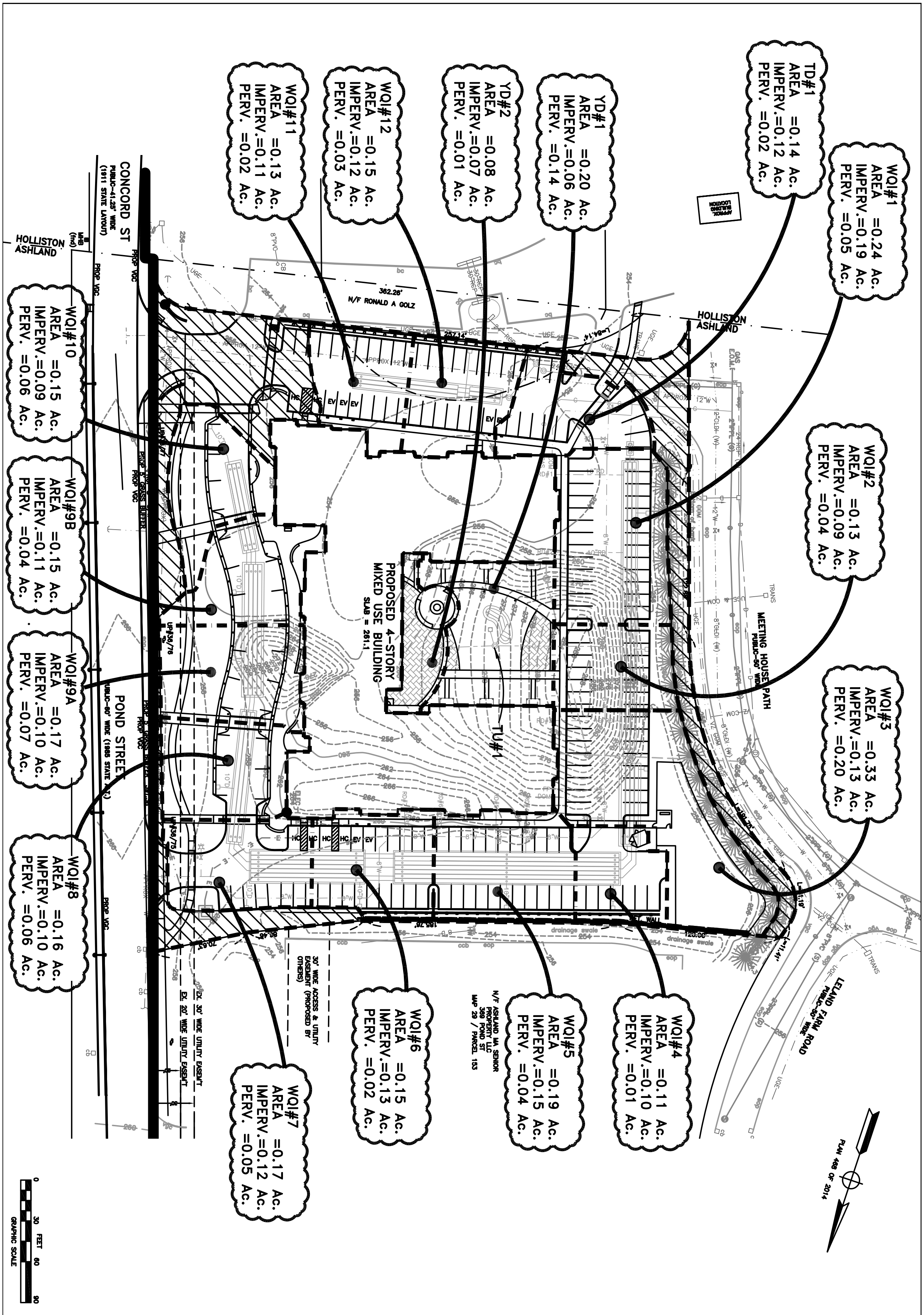
MEASUREMENTS: _____

TRASH NEEDS TO BE REMOVED:	YES	NO
DEAD VEGETATION REMOVAL REQUIRED :	YES	NO
VEGEATATION REPLACEMENT REQUIRED:	YES	NO
PRUNING REQUIRED:	YES	NO
MULCH REQUIRED:	YES	NO
MEDIA REPLACEMENT REQUIRED:	YES	NO
ADDITIONAL CLEANUP REQUIRED:	YES	NO

MAINTENANCE REQUIRED: _____

PERFORMED BY: _____

APPENDIX E:
Drainage Collection System Calculations



PROPOSED DRAINAGE SUBAREAS

POND STREET
ASHLAND ,MA

DEVELOPER:
TRASK INC
337 TURNPIKE ROAD, SUITE 201
SOUTHBOROUGH, MA 01772

DATE: NOVEMBER 6, 2021

PREPARED BY:
BRUCE SALUK & ASSOC., INC.
CIVIL ENGINEERING & LAND SURVEYING
576 BOSTON POST ROAD EAST
MARLBOROUGH, MA 01752
TEL: 508-485-1662
FAX: 508-481-9929

NO.	DATE	REVISION	
2	7/21/22	REVISION	PH
1	4/26/22	REVISION	BMS

DA3

2874C1.dwg

Bruce Saluk & Associates, Inc.
Civil Engineering & Land Surveying
576 Boston Post Road East
Marlborough, Massachusetts 01752
ph (508) 485-1662
fax (508) 481-9929
email Bruce@salukassoc.com

Storm Drainage Computations

Name: 4-Story Mixed Use Building
Ashland, MA
Location: Pond ST & Converse Way

Proj. No.: 2874
Date: 7/23/2022
Computed by: BMS

Design Parameters:
25 Year Storm*

RUNOFF										DESIGN									
LOCATION		AREA	C	C x A	SUM	FLOW TIME (MIN)		i	Q	PIPE ASBUILT			CAPACITY		PROFILE				
FROM	TO	(AC.)			or C x A	PIPE	CONC TIME		cfs	PIPE TYPE	PIPE SIZE	SLOPE (ft/ft)	Q full cfs	V full ft/s	LENGTH	FALL	RIM UPPER	INV UPPER	INV LOWER
WQI#1	CS#7	0.24	0.75	0.18	0.18	0.01	5.00	6	1.1	HDPE	10	0.029	4.4	8.0	7	0.20	257.60	254.00	253.80
WQI#2	CS#7	0.13	0.68	0.09	0.09	0.01	5.00	6	0.5	HDPE	10	0.0286	4.4	8.0	7	0.20	257.60	254.00	253.80
WQI#3	CS#6	0.33	0.48	0.16	0.16	0.16	5.00	6	0.9	HDPE	10	0.0250	4.1	7.5	4	0.10	257.80	255.20	255.10
WQI#4	CS#5	0.11	0.84	0.09	0.09	0.04	5.00	6	0.6	HDPE	10	0.0250	4.1	7.5	16	0.40	258.50	255.50	255.10
WQI#5	CS#5	0.19	0.75	0.14	0.14	0.04	5.00	6	0.9	HDPE	10	0.0250	4.1	7.5	16	0.40	258.50	255.50	255.10
WQI#6	CS#4	0.15	0.81	0.12	0.12	0.04	5.00	6	0.7	HDPE	10	0.0250	4.1	7.5	16	0.40	258.50	255.50	255.10
WQI#7	CS#4	0.17	0.69	0.12	0.12	0.05	5.00	6	0.7	HDPE	10	0.0200	3.7	6.7	20	0.40	258.50	255.50	255.10
WQI#8	CS#3	0.16	0.64	0.10	0.10	0.03	5.00	6	0.6	HDPE	10	0.027	4.2	7.8	15	0.40	259.40	255.50	255.10
WQI#9A	CS#2	0.17	0.61	0.10	0.10	0.02	5.00	6	0.6	HDPE	10	0.0250	4.1	7.5	8	0.20	259.50	255.30	255.10
WQI#9B	CS#2	0.15	0.71	0.11	0.11	0.02	5.00	6	0.6	HDPE	10	0.0250	4.1	7.5	8	0.20	259.50	255.30	255.10
WQI#10	CS#1	0.15	0.62	0.09	0.09	0.08	5.00	6	0.6	HDPE	10	0.017	3.4	6.2	29	0.50	258.60	255.60	255.10
WQI#11	CS#8	0.13	0.79	0.10	0.10	0.12	5.00	6	0.6	HDPE	8	0.013	1.6	4.6	32	0.40	257.50	255.00	254.60
WQI#12	CS#8	0.15	0.80	0.12	0.12	0.12	5.00	6	0.7	HDPE	8	0.013	1.6	4.6	32	0.40	257.50	255.00	254.60
YD#2	TU#1	0.08	0.81	0.07	0.07	0.14	5.00	6	0.4	HDPE	10	0.010	2.6	4.7	41	0.41	258.80	255.37	254.96

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Storm Drainage Computations

Name: 4-Story Mixed Use Building
Ashland, MA
Location: Pond ST & Converse Way

Proj. No.: 2874
Date: 7/23/2022
Computed by: BMS

Design Parameters:
25 Year Storm*

RUNOFF										DESIGN									
LOCATION		AREA	C	C x A	SUM	FLOW TIME (MIN)		i		PIPE ASBUILT			CAPACITY		PROFILE				
FROM	TO	(AC.)			or C x A	PIPE	CONC TIME		Q cfs	PIPE TYPE	PIPE SIZE	SLOPE (ft/ft)	Q full cfs	V full ft/s	LENGTH	FALL	RIM UPPER	INV UPPER	INV LOWER
YD#1	TU#1	0.20	0.41	0.08	0.08	0.02	5.00	6	0.5	HDPE	10	0.020	3.7	6.7	9	0.18	257.50	255.14	254.96
TU#1	CS#7	0.28	-------	0.15	0.15	0.32	5.00	6	0.9	HDPE	10	0.010	2.6	4.7	92	0.92	259.00	254.72	253.80
RC#1	CS#7	0.11	0.90	0.10	0.10	0.12	5.00	6	0.6	HDPE	10	0.020	3.7	6.7	50	1.00	NA	254.80	253.80
RC#2	CS#7	0.12	0.90	0.11	0.11	0.12	5.00	6	0.7	HDPE	10	0.020	3.7	6.7	50	1.00	NA	254.80	253.80
RC#3	CS#7	0.12	0.90	0.11	0.11	0.12	5.00	6	0.7	HDPE	10	0.020	3.7	6.7	50	1.00	NA	254.80	253.80
RC#4	CS#5	0.14	0.90	0.13	0.13	0.07	5.00	6	0.8	HDPE	10	0.020	3.7	6.7	30	0.60	NA	255.70	255.10
RC#5	CS#5	0.14	0.90	0.13	0.13	0.08	5.00	6	0.8	HDPE	10	0.020	3.7	6.7	32	0.64	NA	255.74	255.10
RC#6	CS#5	0.14	0.90	0.13	0.13	0.08	5.00	6	0.8	HDPE	10	0.020	3.7	6.7	32	0.64	NA	255.74	255.10
RC#7	CS#5	0.14	0.90	0.13	0.13	0.08	5.00	6	0.8	HDPE	10	0.020	3.7	6.7	32	0.64	NA	255.74	255.10
TD#1	TU#2	0.14	0.64	0.09	0.09	0.04	5.00	6	0.5	HDPE	8	0.0500	3.2	9.1	20	1.00	255.63	254.63	253.63
TU#2	DMH2	0.14	0.64	0.09	0.09	0.01	5.00	6	0.5	HDPE	8	0.0300	2.5	7.1	3	0.09	257.33	253.38	253.29

* Intensity (i) - Duration - Frequency Curve for Boston, MA

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Subject:	4 Story Apartment Building
Job No.	2874
Computed By:	BMS
Checked By:	
Date:	7/23/2022

Table #1

Drainage Subareas & Runoff Coefficients

SUBAREA (system component)	Pervious Area, As (C=0.20)	Impervious Area, Ap (C=0.90)	(Asx0.20)+ (Apx0.90)	Total Tributary Area (acres)	WEIGHTED "C"
WQI#1	0.05	0.19	0.18	0.24	0.75
WQI#2	0.04	0.09	0.09	0.13	0.68
WQI#3	0.20	0.13	0.16	0.33	0.48
WQI#4	0.01	0.10	0.09	0.11	0.84
WQI#5	0.04	0.15	0.14	0.19	0.75
WQI#6	0.02	0.13	0.12	0.15	0.81
WQI#7	0.05	0.12	0.12	0.17	0.69
WQI#8	0.06	0.10	0.10	0.16	0.64
WQI#9A	0.07	0.10	0.10	0.17	0.61
WQI9B	0.04	0.11	0.11	0.15	0.71
WQI#10	0.06	0.09	0.09	0.15	0.62
WQI#11	0.02	0.11	0.10	0.13	0.79
WQI#12	0.03	0.12	0.12	0.15	0.80
YD#1	0.14	0.06	0.082	0.20	0.41
YD#2	0.01	0.07	0.065	0.08	0.81
TD#1	0.02	0.12	0.112	0.14	0.80

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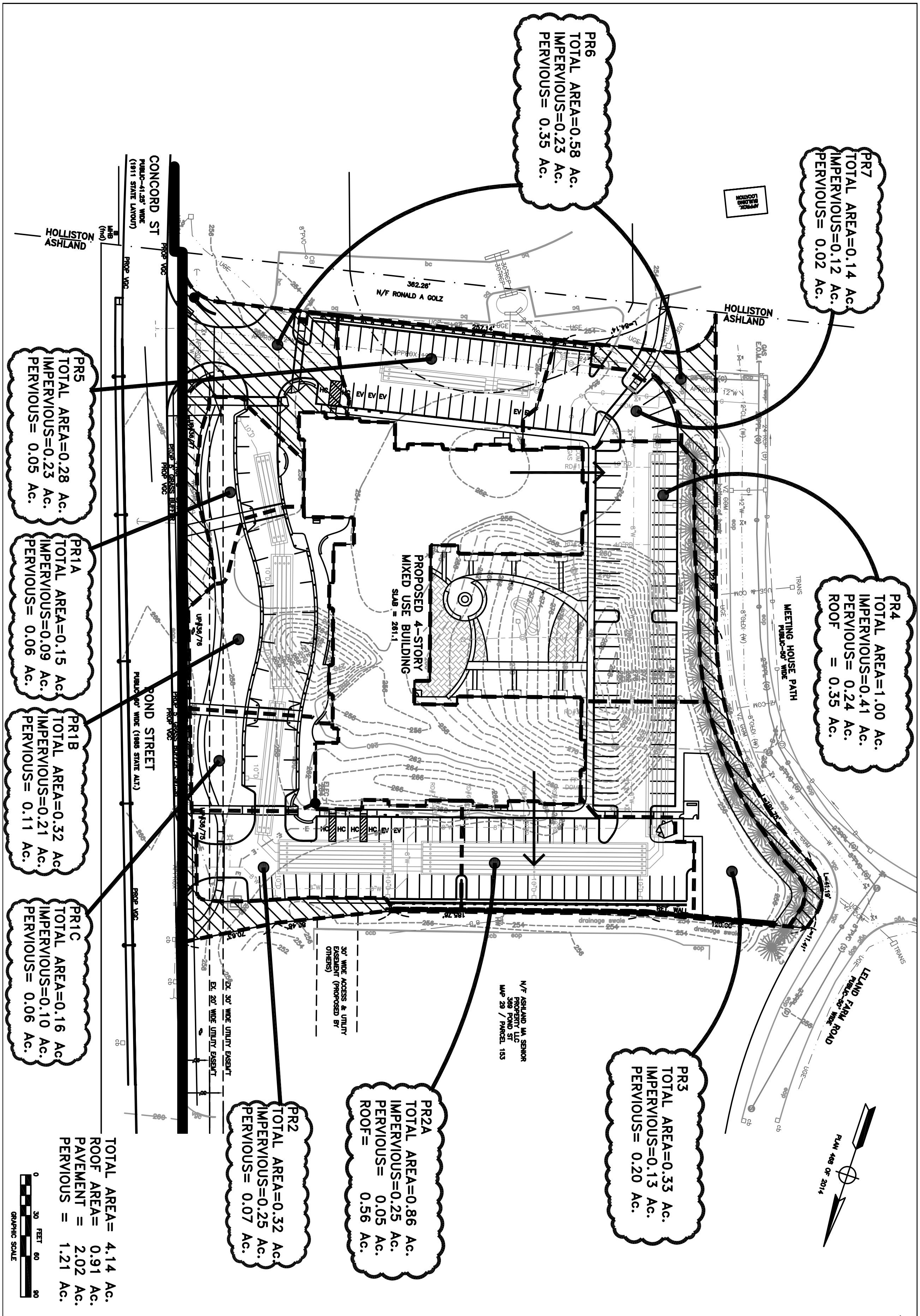
Subject:	4 Story Apartment Building
Job No.	2874
Computed By:	BMS
Checked By:	
Date:	5/22/2022

Table #1A

Roof Drainage Subareas & Runoff Coefficients

SUBAREA (system component)	Pervious Area, As (C=0.20)	Impervious Area, Ap (C=0.90)	(Asx0.20)+ (Apx0.90)	Total Tributary Area (acres)	WEIGHTED "C"
RC#1	0.00	0.11	0.10	0.11	0.90
RC#2	0.00	0.12	0.11	0.12	0.90
RC#3	0.00	0.12	0.11	0.12	0.90
RC#4	0.00	0.14	0.13	0.14	0.90
RC#5	0.00	0.14	0.13	0.14	0.90
RC#6	0.00	0.14	0.13	0.14	0.90
RC#7	0	0.14	0.13	0.14	0.90

APPENDIX F:
Hydrologic Calculations for Peak Runoff Rates
-Proposed Conditions-



DEVELOPER:	DRAINAGE SUBAREAS	PREPARED BY:
TRASK INC 337 TURNPIKE ROAD, SUITE 201 SOUTHBOROUGH, MA 01772	POND STREET ASHLAND ,MA	BRUCE SALUK & ASSOC., INC. CIVIL ENGINEERING & LAND SURVEYING 576 BOSTON POST ROAD EAST MARLBOROUGH, MA 01752 TEL: 508-485-1662 FAX: 508-481-9929
DATE: NOVEMBER 6, 2021		

NO.	DATE	REVISION	BY
3	7/21/22	REVISIONS	BMS
2	5/16/22	REVISIONS	BMS
1	4/30/22	REVISION	BMS

DA2

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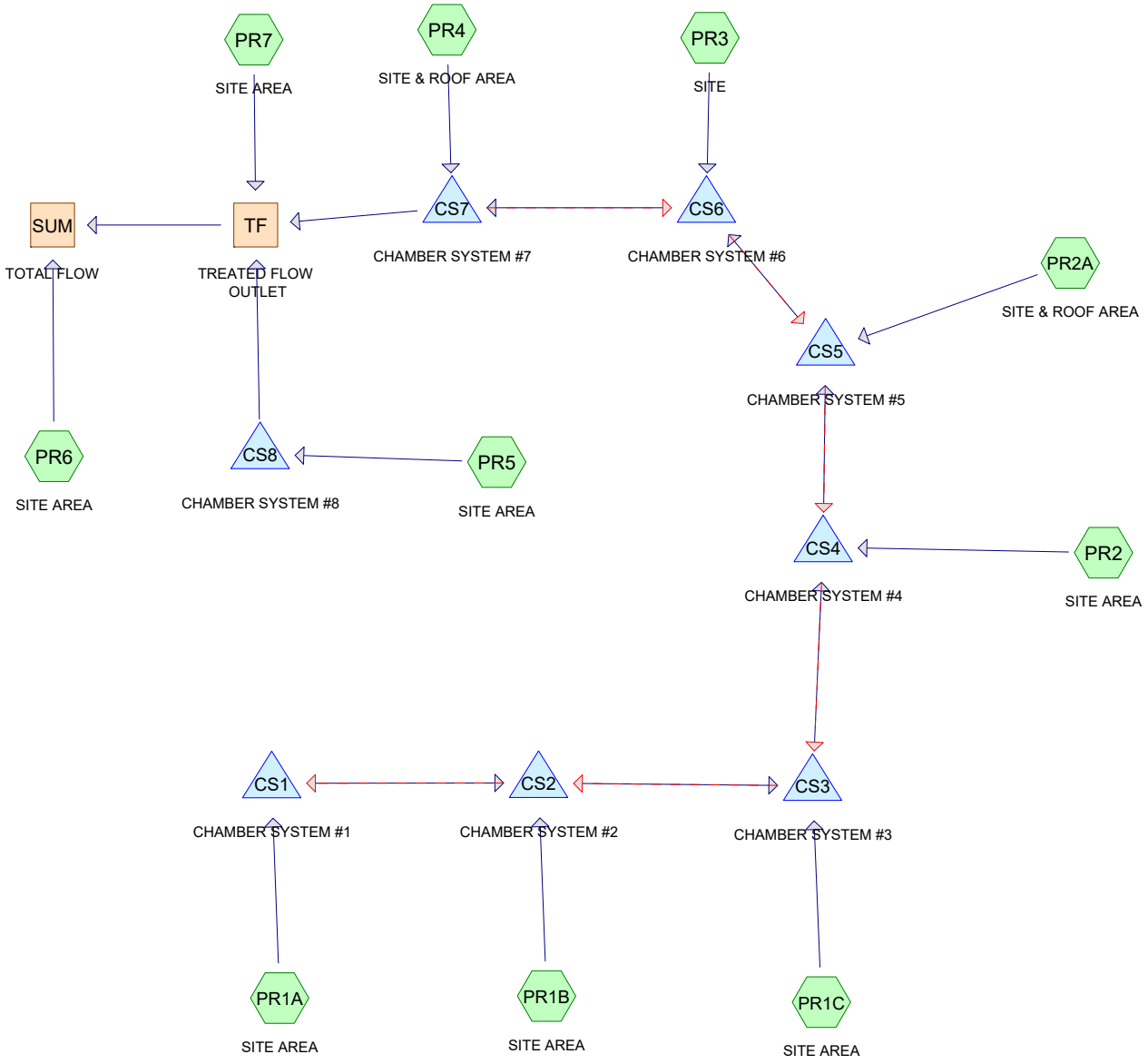
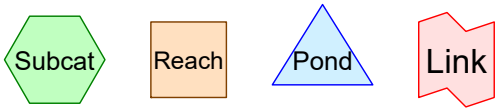




Routing Diagram for Proposed Conditions-2874
Prepared by Bruce Saluk & Associates, Inc, Printed 7/25/2022

Summary for Subcatchment PR1A: SITE AREA

Runoff = 0.29 cfs @ 12.08 hrs, Volume= 876 cf, Depth= 1.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2YR Rainfall=3.20"

	Area (ac)	CN	Description
*	0.090	98	Impervious Area
	0.060	61	>75% Grass cover, Good, HSG B
	0.150	83	Weighted Average
	0.060		40.00% Pervious Area
	0.090		60.00% Impervious Area

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

Summary for Subcatchment PR1B: SITE AREA

Runoff = 0.68 cfs @ 12.08 hrs, Volume= 2,042 cf, Depth= 1.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2YR Rainfall=3.20"

	Area (ac)	CN	Description
*	0.210	98	Impervious Area
	0.110	61	>75% Grass cover, Good, HSG B
	0.320	85	Weighted Average
	0.110		34.38% Pervious Area
	0.210		65.63% Impervious Area

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

Summary for Subcatchment PR1C: SITE AREA

Runoff = 0.33 cfs @ 12.08 hrs, Volume= 977 cf, Depth= 1.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2YR Rainfall=3.20"

	Area (ac)	CN	Description
*	0.100	98	Impervious Area
	0.060	61	>75% Grass cover, Good, HSG B
	0.160	84	Weighted Average
	0.060		37.50% Pervious Area
	0.100		62.50% Impervious Area

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

Summary for Subcatchment PR2: SITE AREA

Runoff = 0.83 cfs @ 12.07 hrs, Volume= 2,519 cf, Depth= 2.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2YR Rainfall=3.20"

	Area (ac)	CN	Description
*	0.250	98	Impervious Area
	0.070	61	>75% Grass cover, Good, HSG B
	0.320	90	Weighted Average
	0.070		21.88% Pervious Area
	0.250		78.13% Impervious Area

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

Summary for Subcatchment PR2A: SITE & ROOF AREA

Runoff = 2.67 cfs @ 12.07 hrs, Volume= 8,582 cf, Depth= 2.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2YR Rainfall=3.20"

	Area (ac)	CN	Description
*	0.250	98	Impervious Area
	0.050	61	>75% Grass cover, Good, HSG B
*	0.560	98	Roof
	0.860	96	Weighted Average
	0.050		5.81% Pervious Area
	0.810		94.19% Impervious Area

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

Summary for Subcatchment PR3: SITE

Runoff = 0.45 cfs @ 12.08 hrs, Volume= 1,380 cf, Depth= 1.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2YR Rainfall=3.20"

	Area (ac)	CN	Description
*	0.130	98	Impervious Area
	0.200	61	>75% Grass cover, Good, HSG B
	0.330	76	Weighted Average
	0.200		60.61% Pervious Area
	0.130		39.39% Impervious Area

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

Summary for Subcatchment PR4: SITE & ROOF AREA

Runoff = 2.51 cfs @ 12.07 hrs, Volume= 7,556 cf, Depth= 2.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2YR Rainfall=3.20"

	Area (ac)	CN	Description
*	0.410	98	Impervious Area
	0.240	61	>75% Grass cover, Good, HSG B
*	0.350	98	Roof
	1.000	89	Weighted Average
	0.240		24.00% Pervious Area
	0.760		76.00% Impervious Area

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

Summary for Subcatchment PR5: SITE AREA

Runoff = 0.76 cfs @ 12.07 hrs, Volume= 2,295 cf, Depth= 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2YR Rainfall=3.20"

	Area (ac)	CN	Description
*	0.230	98	Impervious Area
	0.050	61	>75% Grass cover, Good, HSG B
	0.280	91	Weighted Average
	0.050		17.86% Pervious Area
	0.230		82.14% Impervious Area

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

Summary for Subcatchment PR6: SITE AREA

Runoff = 0.78 cfs @ 12.08 hrs, Volume= 2,425 cf, Depth= 1.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2YR Rainfall=3.20"

	Area (ac)	CN	Description
*	0.230	98	Impervious Area
	0.350	61	>75% Grass cover, Good, HSG B
	0.580	76	Weighted Average
	0.350		60.34% Pervious Area
	0.230		39.66% Impervious Area

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

Summary for Subcatchment PR7: SITE AREA

Runoff = 0.40 cfs @ 12.07 hrs, Volume= 1,243 cf, Depth= 2.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2YR Rainfall=3.20"

	Area (ac)	CN	Description
*	0.120	98	Impervious Area
	0.020	61	>75% Grass cover, Good, HSG B
	0.140	93	Weighted Average
	0.020		14.29% Pervious Area
	0.120		85.71% Impervious Area

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

Summary for Reach SUM: TOTAL FLOW

Inflow = 1.31 cfs @ 12.12 hrs, Volume= 4,726 cf
Outflow = 1.31 cfs @ 12.13 hrs, Volume= 4,726 cf, Atten= 0%, Lag= 0.6 min

Routing by Sim-Route method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Reach TF: TREATED FLOW OUTLET

Inflow	=	0.84 cfs @	12.24 hrs, Volume=	2,300 cf
Outflow	=	0.84 cfs @	12.25 hrs, Volume=	2,300 cf, Atten= 0%, Lag= 0.6 min

Routing by Sim-Route method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Pond CS1: CHAMBER SYSTEM #1

Inflow	=	0.29 cfs @	12.08 hrs, Volume=	876 cf
Outflow	=	0.16 cfs @	8.50 hrs, Volume=	4,611 cf, Atten= 47%, Lag= 0.0 min
Discarded	=	0.16 cfs @	8.50 hrs, Volume=	4,611 cf
Primary	=	0.00 cfs @	0.00 hrs, Volume=	0 cf

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 254.78' @ 12.21 hrs Surf.Area= 816 sf Storage= 58 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 142.2 min (974.2 - 832.0)

Volume	Invert	Avail.Storage	Storage Description
#1	254.60'	648 cf	**12.00'W x 68.00'L x 2.80'H Prismatoid** 2,285 cf Overall - 665 cf Embedded = 1,619 cf x 40.0% Voids
#2	255.10'	663 cf	**Cultec R-180** x 30 Inside #1 Effective Size= 33.6"W x 20.0"H => 3.44 sf x 6.33'L = 21.8 cf Overall Size= 36.0"W x 20.5"H x 7.33'L with 1.00' Overlap Row Length Adjustment= +1.00' x 3.44 sf x 3 rows
#3	255.10'	2 cf	**Cultec HVLV FC-24** x 4 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 4 Chambers in 3 Rows
#4	255.10'	57 cf	**12.0" Round Pipe Storage** x 3 -Impervious L= 24.0' S= 0.0200 '/'
#5	255.10'	14 cf	**10.0" Round Pipe Storage**-Impervious L= 25.0' S= 0.0200 '/'
#6	255.50'	63 cf	**4.00'D x 5.00'H Vertical Cone/Cylinder**-Impervious
		1,446 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	254.60'	**8.270 in/hr Exfiltration over Horizontal area**
#2	Primary	255.10'	**12.0" Vert. Orifice/Grate X 2.00** C= 0.600
#3	Primary	258.60'	**2.0" x 2.0" Horiz. Orifice/Grate X 6.00 columns** X 6 rows C= 0.600 in 24.0" x 24.0" Grate (25% open area) Limited to weir flow at low heads

Discarded OutFlow Max=0.16 cfs @ 8.50 hrs HW=254.60' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.16 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=254.60' TW=254.60' (Dynamic Tailwater)
├**2=Orifice/Grate** (Controls 0.00 cfs)
└**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond CS2: CHAMBER SYSTEM #2

Inflow	=	0.68 cfs @	12.08 hrs, Volume=	2,042 cf	
Outflow	=	0.30 cfs @	11.97 hrs, Volume=	2,042 cf,	Atten= 56%, Lag= 0.0 min
Discarded	=	0.30 cfs @	11.97 hrs, Volume=	2,042 cf	
Primary	=	0.00 cfs @	0.00 hrs, Volume=	0 cf	
Secondary	=	0.00 cfs @	0.00 hrs, Volume=	0 cf	

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 254.91' @ 12.27 hrs Surf.Area= 1,584 sf Storage= 196 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 2.8 min (828.0 - 825.2)

Volume	Invert	Avail.Storage	Storage Description
#1	254.60'	1,244 cf	**16.00'W x 99.00'L x 2.80'H Prismatoid** 4,435 cf Overall - 1,324 cf Embedded = 3,111 cf x 40.0% Voids
#2	255.10'	1,320 cf	**Cultec R-180** x 60 Inside #1 Effective Size= 33.6"W x 20.0"H => 3.44 sf x 6.33'L = 21.8 cf Overall Size= 36.0"W x 20.5"H x 7.33'L with 1.00' Overlap Row Length Adjustment= +1.00' x 3.44 sf x 4 rows
#3	255.10'	4 cf	**Cultec HVLV FC-24** x 9 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 9 Chambers in 4 Rows
#4	255.10'	57 cf	**12.0" Round Pipe Storage** x 3 -Impervious L= 24.0' S= 0.0200 '/'
#5	255.10'	38 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder**-Impervious
#6	255.10'	85 cf	**12.0" Round Pipe Storage**-Impervious L= 108.0' S= 0.0200 '/'
		2,748 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600
#2	Discarded	254.60'	**8.270 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#3	Secondary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Discarded OutFlow Max=0.30 cfs @ 11.97 hrs HW=254.61' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.30 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=254.60' TW=254.60' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=254.60' TW=254.60' (Dynamic Tailwater)
↑—**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond CS3: CHAMBER SYSTEM #3

Inflow	=	0.33 cfs @	12.08 hrs, Volume=	977 cf	
Outflow	=	0.23 cfs @	12.02 hrs, Volume=	977 cf,	Atten= 30%, Lag= 0.0 min
Discarded	=	0.23 cfs @	12.02 hrs, Volume=	977 cf	
Primary	=	0.00 cfs @	0.00 hrs, Volume=	0 cf	
Secondary	=	0.00 cfs @	0.00 hrs, Volume=	0 cf	

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 254.68' @ 12.16 hrs Surf.Area= 1,188 sf Storage= 36 cf

Plug-Flow detention time= 0.7 min calculated for 977 cf (100% of inflow)
Center-of-Mass det. time= 0.7 min (829.3 - 828.6)

Volume	Invert	Avail.Storage	Storage Description
#1	254.60'	933 cf	**12.00'W x 99.00'L x 2.80'H Prismatoid** 3,326 cf Overall - 993 cf Embedded = 2,334 cf x 40.0% Voids
#2	255.10'	990 cf	**Cultec R-180** x 45 Inside #1 Effective Size= 33.6"W x 20.0"H => 3.44 sf x 6.33'L = 21.8 cf Overall Size= 36.0"W x 20.5"H x 7.33'L with 1.00' Overlap Row Length Adjustment= +1.00' x 3.44 sf x 3 rows
#3	255.10'	3 cf	**Cultec HVLV FC-24** x 6 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 6 Chambers in 3 Rows
#4	255.10'	57 cf	**12.0" Round Pipe Storage** x 3 -Impervious L= 24.0' S= 0.0200 '/'
#5	255.10'	151 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder** x 4 -Impervious
#6	255.10'	5 cf	**10.0" Round Pipe Storage**-Impervious L= 10.0' S= 0.0200 '/'
		2,139 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600
#2	Discarded	254.60'	**8.270 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#3	Secondary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Discarded OutFlow Max=0.23 cfs @ 12.02 hrs HW=254.61' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=254.60' TW=254.60' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=254.60' TW=254.60' (Dynamic Tailwater)
↑—**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond CS4: CHAMBER SYSTEM #4

Inflow	=	0.83 cfs @	12.07 hrs,	Volume=	2,654 cf
Outflow	=	0.41 cfs @	11.98 hrs,	Volume=	2,654 cf, Atten= 51%, Lag= 0.0 min
Discarded	=	0.41 cfs @	11.98 hrs,	Volume=	2,654 cf
Primary	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf
Secondary	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 254.90' @ 12.35 hrs Surf.Area= 2,125 sf Storage= 256 cf

Plug-Flow detention time= 2.9 min calculated for 2,653 cf (100% of inflow)
Center-of-Mass det. time= 2.9 min (805.5 - 802.6)

Volume	Invert	Avail.Storage	Storage Description
#1	254.60'	1,763 cf	**25.00'W x 85.00'L x 2.80'H Prismatoid** 5,950 cf Overall - 1,543 cf Embedded = 4,407 cf x 40.0% Voids
#2	255.10'	1,534 cf	**Cultec R-150XLHD** x 56 Inside #1 Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap Row Length Adjustment= +0.75' x 2.65 sf x 7 rows
#3	255.10'	8 cf	**Cultec R-150XLHD-FC-24** x 18 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 18 Chambers in 7 Rows
#4	255.10'	82 cf	**10.0" Round Pipe Storage**-Impervious L= 150.0' S= 0.0200 '/'
#5	255.10'	151 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder** x 4 -Impervious
		3,538 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	255.10'	**12.0" Vert. Orifice/Grate X 5.00** C= 0.600
#2	Discarded	254.60'	**8.270 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#3	Secondary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Discarded OutFlow Max=0.41 cfs @ 11.98 hrs HW=254.61' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.41 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=254.60' TW=254.60' (Dynamic Tailwater)
↑**1=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=254.60' TW=254.60' (Dynamic Tailwater)
↑**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond CS5: CHAMBER SYSTEM #5

Inflow	=	2.67 cfs @	12.07 hrs,	Volume=	8,582 cf
Outflow	=	1.07 cfs @	12.27 hrs,	Volume=	8,583 cf, Atten= 60%, Lag= 12.0 min
Discarded	=	0.80 cfs @	11.81 hrs,	Volume=	8,323 cf
Primary	=	0.14 cfs @	12.27 hrs,	Volume=	125 cf
Secondary	=	0.14 cfs @	12.27 hrs,	Volume=	135 cf

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 255.20' @ 12.27 hrs Surf.Area= 4,175 sf Storage= 1,183 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 5.8 min (778.9 - 773.1)

Volume	Invert	Avail.Storage	Storage Description
#1	254.60'	3,450 cf	**25.00'W x 167.00'L x 2.80'H Prismatoid** 11,690 cf Overall - 3,066 cf Embedded = 8,624 cf x 40.0% Voids
#2	255.10'	3,055 cf	**Cultec R-150XLHD** x 112 Inside #1 Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap Row Length Adjustment= +0.75' x 2.65 sf x 7 rows
#3	255.10'	11 cf	**Cultec R-150XLHD-FC-24** x 24 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 24 Chambers in 7 Rows
#4	255.10'	82 cf	**10.0" Round Pipe Storage**-Impervious L= 150.0' S= 0.0200 '/'
#5	255.10'	151 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder** x 4 -Impervious
		6,748 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600
#2	Discarded	254.60'	**8.270 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#3	Secondary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Discarded OutFlow Max=0.80 cfs @ 11.81 hrs HW=254.61' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.80 cfs)

Primary OutFlow Max=0.14 cfs @ 12.27 hrs HW=255.20' TW=255.09' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 0.14 cfs @ 1.08 fps)

Secondary OutFlow Max=0.14 cfs @ 12.27 hrs HW=255.20' TW=254.89' (Dynamic Tailwater)
↑—**3=Orifice/Grate** (Orifice Controls 0.14 cfs @ 1.08 fps)

Summary for Pond CS6: CHAMBER SYSTEM #6

Inflow	=	0.45 cfs @	12.08 hrs,	Volume=	1,505 cf
Outflow	=	0.23 cfs @	12.41 hrs,	Volume=	1,505 cf, Atten= 49%, Lag= 19.8 min
Discarded	=	0.19 cfs @	11.98 hrs,	Volume=	1,482 cf
Primary	=	0.04 cfs @	12.41 hrs,	Volume=	24 cf
Secondary	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 255.16' @ 12.41 hrs Surf.Area= 976 sf Storage= 240 cf

Plug-Flow detention time= 5.8 min calculated for 1,505 cf (100% of inflow)
Center-of-Mass det. time= 5.8 min (850.8 - 845.0)

Volume	Invert	Avail.Storage	Storage Description
#1	254.60'	772 cf	**16.00'W x 61.00'L x 2.80'H Prismatoid** 2,733 cf Overall - 802 cf Embedded = 1,931 cf x 40.0% Voids
#2	255.10'	798 cf	**Cultec R-180** x 36 Inside #1 Effective Size= 33.6"W x 20.0"H => 3.44 sf x 6.33'L = 21.8 cf Overall Size= 36.0"W x 20.5"H x 7.33'L with 1.00' Overlap Row Length Adjustment= +1.00' x 3.44 sf x 4 rows
#3	255.10'	4 cf	**Cultec HVLV FC-24** x 9 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 9 Chambers in 4 Rows
#4	255.10'	47 cf	**12.0" Round Pipe Storage**-Impervious L= 60.0' S= 0.0200 '/'
#5	255.10'	38 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder**-Impervious
		1,659 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600
#2	Discarded	254.60'	**8.270 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#3	Secondary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Discarded OutFlow Max=0.19 cfs @ 11.98 hrs HW=254.61' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=0.04 cfs @ 12.41 hrs HW=255.16' TW=254.16' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 0.04 cfs @ 0.80 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=254.60' TW=254.60' (Dynamic Tailwater)
↑—**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond CS7: CHAMBER SYSTEM #7

Inflow	=	2.51 cfs @	12.07 hrs, Volume=	7,580 cf	
Outflow	=	1.09 cfs @	12.26 hrs, Volume=	7,580 cf,	Atten= 56%, Lag= 11.2 min
Discarded	=	0.49 cfs @	11.73 hrs, Volume=	6,581 cf	
Primary	=	0.61 cfs @	12.26 hrs, Volume=	999 cf	
Secondary	=	0.00 cfs @	0.00 hrs, Volume=	0 cf	

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 254.19' @ 12.26 hrs Surf.Area= 2,544 sf Storage= 1,319 cf

Plug-Flow detention time= 9.5 min calculated for 7,577 cf (100% of inflow)
Center-of-Mass det. time= 9.5 min (819.4 - 809.9)

Volume	Invert	Avail.Storage	Storage Description
#1	253.30'	2,185 cf	**12.00'W x 212.00'L x 3.00'H Prismatoid** 7,632 cf Overall - 2,169 cf Embedded = 5,463 cf x 40.0% Voids
#2	253.80'	2,166 cf	**Cultec R-180** x 99 Inside #1 Effective Size= 33.6"W x 20.0"H => 3.44 sf x 6.33'L = 21.8 cf Overall Size= 36.0"W x 20.5"H x 7.33'L with 1.00' Overlap Row Length Adjustment= +1.00' x 3.44 sf x 3 rows
#3	253.80'	4 cf	**Cultec HVLV FC-24** x 8 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 8 Chambers in 3 Rows
#4	253.80'	24 cf	**12.0" Round Pipe Storage**-Impervious L= 30.0' S= 0.0200 '/'
#5	253.80'	75 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder** x 2 -Impervious
#6	253.80'	74 cf	**10.0" Round Pipe Storage**-Impervious L= 135.0' S= 0.0200 '/'
		4,527 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	253.25'	**18.0" Round RCP_Round 18"** L= 47.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 253.25' / 249.30' S= 0.0840 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.77 sf
#2	Device 1	253.80'	**12.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	255.60'	**4.2' long x 1.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 2.2' Crest Height
#4	Device 2	253.55'	**18.0" Vert. Orifice/Grate** C= 0.600
#5	Device 4	253.80'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600
#6	Discarded	253.30'	**8.270 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#7	Secondary	253.80'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Discarded OutFlow Max=0.49 cfs @ 11.73 hrs HW=253.31' (Free Discharge)
└**6=Exfiltration** (Exfiltration Controls 0.49 cfs)

Primary OutFlow Max=0.61 cfs @ 12.26 hrs HW=254.19' TW=0.00' (Dynamic Tailwater)
└**1=RCP_Round 18"** (Passes 0.61 cfs of 3.86 cfs potential flow)
  └**2=Orifice/Grate** (Orifice Controls 0.61 cfs @ 2.13 fps)
    └**4=Orifice/Grate** (Passes 0.61 cfs of 1.97 cfs potential flow)
      └**5=Orifice/Grate** (Passes 0.61 cfs of 1.82 cfs potential flow)
  └**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=253.30' TW=254.60' (Dynamic Tailwater)
└**7=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond CS8: CHAMBER SYSTEM #8

Inflow Area = 12,197 sf, 82.14% Impervious, Inflow Depth = 2.26" for 2YR event
Inflow = 0.76 cfs @ 12.07 hrs, Volume= 2,295 cf
Outflow = 0.31 cfs @ 12.28 hrs, Volume= 2,296 cf, Atten= 59%, Lag= 12.2 min
Discarded = 0.25 cfs @ 11.88 hrs, Volume= 2,238 cf
Primary = 0.06 cfs @ 12.28 hrs, Volume= 58 cf

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 254.63' @ 12.28 hrs Surf.Area= 1,320 sf Storage= 294 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 4.7 min (806.3 - 801.5)

Volume	Invert	Avail.Storage	Storage Description
#1	254.10'	890 cf	**12.00'W x 110.00'L x 2.10'H Prismatoid** 2,772 cf Overall - 548 cf Embedded = 2,224 cf x 40.0% Voids
#2	254.60'	547 cf	**Cultec C-100HD** x 39 Inside #1 Effective Size= 32.1"W x 12.0"H => 1.86 sf x 7.50'L = 14.0 cf Overall Size= 36.0"W x 12.5"H x 8.00'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.86 sf x 3 rows
#3	254.60'	0 cf	**Cultec C-100-SFCx2** x 4 Inside #1 Effective Size= 10.1"W x 7.6"H => 0.29 sf x 0.33'L = 0.1 cf Overall Size= 12.0"W x 7.6"H x 1.64'L with 1.31' Overlap 4 Chambers in 3 Rows
#4	254.60'	28 cf	**8.0" Round Pipe Storage**-Impervious L= 80.0' S= 0.0100 '/'
#5	254.60'	75 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder** x 2 -Impervious
		1,541 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	254.50'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Discarded	254.10'	**8.270 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'

Discarded OutFlow Max=0.25 cfs @ 11.88 hrs HW=254.11' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.25 cfs)

Primary OutFlow Max=0.06 cfs @ 12.28 hrs HW=254.63' TW=0.00' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 0.06 cfs @ 1.22 fps)

Summary for Subcatchment PR1A: SITE AREA

Runoff = 0.50 cfs @ 12.07 hrs, Volume= 1,484 cf, Depth= 2.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10YR Rainfall=4.50"

	Area (ac)	CN	Description
*	0.090	98	Impervious Area
	0.060	61	>75% Grass cover, Good, HSG B
	0.150	83	Weighted Average
	0.060		40.00% Pervious Area
	0.090		60.00% Impervious Area

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

Summary for Subcatchment PR1B: SITE AREA

Runoff = 1.12 cfs @ 12.07 hrs, Volume= 3,379 cf, Depth= 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10YR Rainfall=4.50"

	Area (ac)	CN	Description
*	0.210	98	Impervious Area
	0.110	61	>75% Grass cover, Good, HSG B
	0.320	85	Weighted Average
	0.110		34.38% Pervious Area
	0.210		65.63% Impervious Area

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

Summary for Subcatchment PR1C: SITE AREA

Runoff = 0.55 cfs @ 12.07 hrs, Volume= 1,636 cf, Depth= 2.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10YR Rainfall=4.50"

	Area (ac)	CN	Description
*	0.100	98	Impervious Area
	0.060	61	>75% Grass cover, Good, HSG B
	0.160	84	Weighted Average
	0.060		37.50% Pervious Area
	0.100		62.50% Impervious Area

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

Summary for Subcatchment PR2: SITE AREA

Runoff = 1.28 cfs @ 12.07 hrs, Volume= 3,945 cf, Depth= 3.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10YR Rainfall=4.50"

	Area (ac)	CN	Description
*	0.250	98	Impervious Area
	0.070	61	>75% Grass cover, Good, HSG B
	0.320	90	Weighted Average
	0.070		21.88% Pervious Area
	0.250		78.13% Impervious Area

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

Summary for Subcatchment PR2A: SITE & ROOF AREA

Runoff = 3.84 cfs @ 12.07 hrs, Volume= 12,599 cf, Depth= 4.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10YR Rainfall=4.50"

	Area (ac)	CN	Description
*	0.250	98	Impervious Area
	0.050	61	>75% Grass cover, Good, HSG B
*	0.560	98	Roof
	0.860	96	Weighted Average
	0.050		5.81% Pervious Area
	0.810		94.19% Impervious Area

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

Summary for Subcatchment PR3: SITE

Runoff = 0.85 cfs @ 12.08 hrs, Volume= 2,551 cf, Depth= 2.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10YR Rainfall=4.50"

	Area (ac)	CN	Description
*	0.130	98	Impervious Area
	0.200	61	>75% Grass cover, Good, HSG B
	0.330	76	Weighted Average
	0.200		60.61% Pervious Area
	0.130		39.39% Impervious Area

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

Summary for Subcatchment PR4: SITE & ROOF AREA

Runoff = 3.91 cfs @ 12.07 hrs, Volume= 11,961 cf, Depth= 3.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10YR Rainfall=4.50"

	Area (ac)	CN	Description
*	0.410	98	Impervious Area
	0.240	61	>75% Grass cover, Good, HSG B
*	0.350	98	Roof
	1.000	89	Weighted Average
	0.240		24.00% Pervious Area
	0.760		76.00% Impervious Area

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

Summary for Subcatchment PR5: SITE AREA

Runoff = 1.15 cfs @ 12.07 hrs, Volume= 3,555 cf, Depth= 3.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10YR Rainfall=4.50"

	Area (ac)	CN	Description
*	0.230	98	Impervious Area
	0.050	61	>75% Grass cover, Good, HSG B
	0.280	91	Weighted Average
	0.050		17.86% Pervious Area
	0.230		82.14% Impervious Area

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

Summary for Subcatchment PR6: SITE AREA

Runoff = 1.49 cfs @ 12.08 hrs, Volume= 4,484 cf, Depth= 2.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10YR Rainfall=4.50"

	Area (ac)	CN	Description
*	0.230	98	Impervious Area
	0.350	61	>75% Grass cover, Good, HSG B
	0.580	76	Weighted Average
	0.350		60.34% Pervious Area
	0.230		39.66% Impervious Area

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

Summary for Subcatchment PR7: SITE AREA

Runoff = 0.60 cfs @ 12.07 hrs, Volume= 1,884 cf, Depth= 3.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10YR Rainfall=4.50"

	Area (ac)	CN	Description
*	0.120	98	Impervious Area
	0.020	61	>75% Grass cover, Good, HSG B
	0.140	93	Weighted Average
	0.020		14.29% Pervious Area
	0.120		85.71% Impervious Area

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

Summary for Reach SUM: TOTAL FLOW

Inflow = 5.26 cfs @ 12.14 hrs, Volume= 26,228 cf
Outflow = 5.26 cfs @ 12.15 hrs, Volume= 26,228 cf, Atten= 0%, Lag= 0.6 min

Routing by Sim-Route method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Reach TF: TREATED FLOW OUTLET

Inflow	=	4.35 cfs @	12.23 hrs,	Volume=	21,744 cf
Outflow	=	4.35 cfs @	12.24 hrs,	Volume=	21,744 cf, Atten= 0%, Lag= 0.6 min

Routing by Sim-Route method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Pond CS1: CHAMBER SYSTEM #1

Inflow	=	2.98 cfs @	12.37 hrs,	Volume=	2,687 cf
Outflow	=	2.34 cfs @	12.39 hrs,	Volume=	2,515 cf, Atten= 22%, Lag= 1.3 min
Discarded	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf
Primary	=	2.34 cfs @	12.39 hrs,	Volume=	2,515 cf

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 255.79' @ 12.39 hrs Surf.Area= 816 sf Storage= 635 cf

Plug-Flow detention time= 59.3 min calculated for 2,730 cf (94% of inflow)
Center-of-Mass det. time= 31.2 min (818.9 - 784.6)

Volume	Invert	Avail.Storage	Storage Description
#1	254.60'	648 cf	**12.00'W x 68.00'L x 2.80'H Prismatoid** 2,285 cf Overall - 665 cf Embedded = 1,619 cf x 40.0% Voids
#2	255.10'	663 cf	**Cultec R-180** x 30 Inside #1 Effective Size= 33.6"W x 20.0"H => 3.44 sf x 6.33'L = 21.8 cf Overall Size= 36.0"W x 20.5"H x 7.33'L with 1.00' Overlap Row Length Adjustment= +1.00' x 3.44 sf x 3 rows
#3	255.10'	2 cf	**Cultec HVLV FC-24** x 4 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 4 Chambers in 3 Rows
#4	255.10'	57 cf	**12.0" Round Pipe Storage** x 3 -Impervious L= 24.0' S= 0.0200 '/'
#5	255.10'	14 cf	**10.0" Round Pipe Storage**-Impervious L= 25.0' S= 0.0200 '/'
#6	255.50'	63 cf	**4.00'D x 5.00'H Vertical Cone/Cylinder**-Impervious
		1,446 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	254.60'	**8.270 in/hr Exfiltration X 0.00 over Horizontal area**
#2	Primary	255.10'	**12.0" Vert. Orifice/Grate X 2.00** C= 0.600
#3	Primary	258.60'	**2.0" x 2.0" Horiz. Orifice/Grate X 6.00 columns** X 6 rows C= 0.600 in 24.0" x 24.0" Grate (25% open area) Limited to weir flow at low heads

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=254.60' (Free Discharge)
└**1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=2.01 cfs @ 12.39 hrs HW=255.76' TW=255.61' (Dynamic Tailwater)
├**2=Orifice/Grate** (Orifice Controls 2.01 cfs @ 1.83 fps)
└**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond CS2: CHAMBER SYSTEM #2

Inflow	=	5.21 cfs @	12.39 hrs, Volume=	7,112 cf	
Outflow	=	6.88 cfs @	12.37 hrs, Volume=	6,778 cf,	Atten= 0%, Lag= 0.0 min
Discarded	=	0.00 cfs @	0.00 hrs, Volume=	0 cf	
Primary	=	4.08 cfs @	12.37 hrs, Volume=	5,575 cf	
Secondary	=	2.81 cfs @	12.37 hrs, Volume=	1,202 cf	

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 255.80' @ 12.37 hrs Surf.Area= 1,584 sf Storage= 1,224 cf

Plug-Flow detention time= 53.0 min calculated for 6,778 cf (95% of inflow)
Center-of-Mass det. time= 26.7 min (829.1 - 802.4)

Volume	Invert	Avail.Storage	Storage Description
#1	254.60'	1,244 cf	**16.00'W x 99.00'L x 2.80'H Prismatoid** 4,435 cf Overall - 1,324 cf Embedded = 3,111 cf x 40.0% Voids
#2	255.10'	1,320 cf	**Cultec R-180** x 60 Inside #1 Effective Size= 33.6"W x 20.0"H => 3.44 sf x 6.33'L = 21.8 cf Overall Size= 36.0"W x 20.5"H x 7.33'L with 1.00' Overlap Row Length Adjustment= +1.00' x 3.44 sf x 4 rows
#3	255.10'	4 cf	**Cultec HVLV FC-24** x 9 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 9 Chambers in 4 Rows
#4	255.10'	57 cf	**12.0" Round Pipe Storage** x 3 -Impervious L= 24.0' S= 0.0200 '/'
#5	255.10'	38 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder**-Impervious
#6	255.10'	85 cf	**12.0" Round Pipe Storage**-Impervious L= 108.0' S= 0.0200 '/'
		2,748 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600
#2	Discarded	254.60'	**8.270 in/hr Exfiltration X 0.00 over Horizontal area** Phase-In= 0.01'
#3	Secondary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=254.60' (Free Discharge)
↑└**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=3.54 cfs @ 12.37 hrs HW=255.77' TW=255.58' (Dynamic Tailwater)
↑└**1=Orifice/Grate** (Orifice Controls 3.54 cfs @ 2.11 fps)

Secondary OutFlow Max=3.39 cfs @ 12.37 hrs HW=255.79' TW=255.62' (Dynamic Tailwater)
↑└**3=Orifice/Grate** (Orifice Controls 3.39 cfs @ 1.96 fps)

Summary for Pond CS3: CHAMBER SYSTEM #3

Inflow	=	6.22 cfs @	12.37 hrs, Volume=	8,182 cf	
Outflow	=	7.79 cfs @	12.31 hrs, Volume=	7,932 cf,	Atten= 0%, Lag= 0.0 min
Discarded	=	0.00 cfs @	0.00 hrs, Volume=	0 cf	
Primary	=	4.51 cfs @	12.31 hrs, Volume=	6,714 cf	
Secondary	=	3.28 cfs @	12.31 hrs, Volume=	1,218 cf	

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 255.86' @ 12.31 hrs Surf.Area= 1,188 sf Storage= 1,010 cf

Plug-Flow detention time= 35.2 min calculated for 8,086 cf (97% of inflow)
Center-of-Mass det. time= 16.2 min (844.4 - 827.8)

Volume	Invert	Avail.Storage	Storage Description
#1	254.60'	933 cf	**12.00'W x 99.00'L x 2.80'H Prismatoid** 3,326 cf Overall - 993 cf Embedded = 2,334 cf x 40.0% Voids
#2	255.10'	990 cf	**Cultec R-180** x 45 Inside #1 Effective Size= 33.6"W x 20.0"H => 3.44 sf x 6.33'L = 21.8 cf Overall Size= 36.0"W x 20.5"H x 7.33'L with 1.00' Overlap Row Length Adjustment= +1.00' x 3.44 sf x 3 rows
#3	255.10'	3 cf	**Cultec HVLV FC-24** x 6 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 6 Chambers in 3 Rows
#4	255.10'	57 cf	**12.0" Round Pipe Storage** x 3 -Impervious L= 24.0' S= 0.0200 '/'
#5	255.10'	151 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder** x 4 -Impervious
#6	255.10'	5 cf	**10.0" Round Pipe Storage**-Impervious L= 10.0' S= 0.0200 '/'
		2,139 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600
#2	Discarded	254.60'	**8.270 in/hr Exfiltration X 0.00 over Horizontal area** Phase-In= 0.01'
#3	Secondary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=254.60' (Free Discharge)
↑**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=4.68 cfs @ 12.31 hrs HW=255.84' TW=255.57' (Dynamic Tailwater)
↑**1=Orifice/Grate** (Orifice Controls 4.68 cfs @ 2.51 fps)

Secondary OutFlow Max=4.62 cfs @ 12.31 hrs HW=255.85' TW=255.60' (Dynamic Tailwater)
↑**3=Orifice/Grate** (Orifice Controls 4.62 cfs @ 2.42 fps)

Summary for Pond CS4: CHAMBER SYSTEM #4

Inflow	=	5.77 cfs @	12.31 hrs, Volume=	11,020 cf	
Outflow	=	5.73 cfs @	12.29 hrs, Volume=	10,579 cf,	Atten= 1%, Lag= 0.0 min
Discarded	=	0.00 cfs @	0.00 hrs, Volume=	0 cf	
Primary	=	4.51 cfs @	12.36 hrs, Volume=	9,608 cf	
Secondary	=	2.09 cfs @	12.33 hrs, Volume=	971 cf	

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 255.73' @ 12.36 hrs Surf.Area= 2,125 sf Storage= 1,512 cf

Plug-Flow detention time= 47.0 min calculated for 10,756 cf (96% of inflow)
Center-of-Mass det. time= 22.7 min (856.9 - 833.7)

Volume	Invert	Avail.Storage	Storage Description
#1	254.60'	1,763 cf	**25.00'W x 85.00'L x 2.80'H Prismatoid** 5,950 cf Overall - 1,543 cf Embedded = 4,407 cf x 40.0% Voids
#2	255.10'	1,534 cf	**Cultec R-150XLHD** x 56 Inside #1 Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap Row Length Adjustment= +0.75' x 2.65 sf x 7 rows
#3	255.10'	8 cf	**Cultec R-150XLHD-FC-24** x 18 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 18 Chambers in 7 Rows
#4	255.10'	82 cf	**10.0" Round Pipe Storage**-Impervious L= 150.0' S= 0.0200 '/'
#5	255.10'	151 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder** x 4 -Impervious
		3,538 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	255.10'	**12.0" Vert. Orifice/Grate X 5.00** C= 0.600
#2	Discarded	254.60'	**8.270 in/hr Exfiltration X 0.00 over Horizontal area** Phase-In= 0.01'
#3	Secondary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=254.60' (Free Discharge)
↑└**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=4.24 cfs @ 12.36 hrs HW=255.71' TW=255.59' (Dynamic Tailwater)
↑└**1=Orifice/Grate** (Orifice Controls 4.24 cfs @ 1.68 fps)

Secondary OutFlow Max=2.01 cfs @ 12.33 hrs HW=255.67' TW=255.58' (Dynamic Tailwater)
↑└**3=Orifice/Grate** (Orifice Controls 2.01 cfs @ 1.44 fps)

Summary for Pond CS5: CHAMBER SYSTEM #5

Inflow	=	5.70 cfs @	12.36 hrs,	Volume=	22,207 cf
Outflow	=	4.11 cfs @	12.39 hrs,	Volume=	22,207 cf, Atten= 28%, Lag= 1.6 min
Discarded	=	0.80 cfs @	11.67 hrs,	Volume=	16,678 cf
Primary	=	2.29 cfs @	12.38 hrs,	Volume=	5,168 cf
Secondary	=	1.35 cfs @	12.39 hrs,	Volume=	361 cf

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 255.64' @ 12.27 hrs Surf.Area= 4,175 sf Storage= 2,638 cf

Plug-Flow detention time= 10.0 min calculated for 22,536 cf (100% of inflow)
Center-of-Mass det. time= 10.0 min (819.5 - 809.3)

Volume	Invert	Avail.Storage	Storage Description
#1	254.60'	3,450 cf	**25.00'W x 167.00'L x 2.80'H Prismatoid** 11,690 cf Overall - 3,066 cf Embedded = 8,624 cf x 40.0% Voids
#2	255.10'	3,055 cf	**Cultec R-150XLHD** x 112 Inside #1 Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap Row Length Adjustment= +0.75' x 2.65 sf x 7 rows
#3	255.10'	11 cf	**Cultec R-150XLHD-FC-24** x 24 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 24 Chambers in 7 Rows
#4	255.10'	82 cf	**10.0" Round Pipe Storage**-Impervious L= 150.0' S= 0.0200 '/'
#5	255.10'	151 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder** x 4 -Impervious
		6,748 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600
#2	Discarded	254.60'	**8.270 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#3	Secondary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Discarded OutFlow Max=0.80 cfs @ 11.67 hrs HW=254.61' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.80 cfs)

Primary OutFlow Max=2.21 cfs @ 12.38 hrs HW=255.63' TW=255.50' (Dynamic Tailwater)
↑**1=Orifice/Grate** (Orifice Controls 2.21 cfs @ 1.73 fps)

Secondary OutFlow Max=0.00 cfs @ 12.28 hrs HW=255.62' TW=255.64' (Dynamic Tailwater)
↑**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond CS6: CHAMBER SYSTEM #6

Inflow	=	2.66 cfs @	12.27 hrs,	Volume=	7,719 cf
Outflow	=	2.42 cfs @	12.28 hrs,	Volume=	7,719 cf, Atten= 9%, Lag= 0.8 min
Discarded	=	0.19 cfs @	11.81 hrs,	Volume=	2,616 cf
Primary	=	2.23 cfs @	12.28 hrs,	Volume=	5,103 cf
Secondary	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 255.54' @ 12.28 hrs Surf.Area= 976 sf Storage= 539 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 5.4 min (785.9 - 780.5)

Volume	Invert	Avail.Storage	Storage Description
#1	254.60'	772 cf	**16.00'W x 61.00'L x 2.80'H Prismatoid** 2,733 cf Overall - 802 cf Embedded = 1,931 cf x 40.0% Voids
#2	255.10'	798 cf	**Cultec R-180** x 36 Inside #1 Effective Size= 33.6"W x 20.0"H => 3.44 sf x 6.33'L = 21.8 cf Overall Size= 36.0"W x 20.5"H x 7.33'L with 1.00' Overlap Row Length Adjustment= +1.00' x 3.44 sf x 4 rows
#3	255.10'	4 cf	**Cultec HVLV FC-24** x 9 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 9 Chambers in 4 Rows
#4	255.10'	47 cf	**12.0" Round Pipe Storage**-Impervious L= 60.0' S= 0.0200 '/'
#5	255.10'	38 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder**-Impervious
		1,659 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600
#2	Discarded	254.60'	**8.270 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#3	Secondary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Discarded OutFlow Max=0.19 cfs @ 11.81 hrs HW=254.61' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=2.20 cfs @ 12.28 hrs HW=255.53' TW=255.12' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 2.20 cfs @ 2.24 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=254.60' TW=254.60' (Dynamic Tailwater)
↑—**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond CS7: CHAMBER SYSTEM #7

Inflow	=	4.99 cfs @	12.11 hrs, Volume=	17,064 cf	
Outflow	=	3.46 cfs @	12.33 hrs, Volume=	16,518 cf,	Atten= 31%, Lag= 13.4 min
Discarded	=	0.00 cfs @	0.00 hrs, Volume=	0 cf	
Primary	=	3.46 cfs @	12.33 hrs, Volume=	16,518 cf	
Secondary	=	0.00 cfs @	0.00 hrs, Volume=	0 cf	

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 255.14' @ 12.33 hrs Surf.Area= 2,544 sf Storage= 3,137 cf

Plug-Flow detention time= 50.4 min calculated for 16,513 cf (97% of inflow)
Center-of-Mass det. time= 32.3 min (815.8 - 783.5)

Volume	Invert	Avail.Storage	Storage Description
#1	253.30'	2,185 cf	**12.00'W x 212.00'L x 3.00'H Prismatoid** 7,632 cf Overall - 2,169 cf Embedded = 5,463 cf x 40.0% Voids
#2	253.80'	2,166 cf	**Cultec R-180** x 99 Inside #1 Effective Size= 33.6"W x 20.0"H => 3.44 sf x 6.33'L = 21.8 cf Overall Size= 36.0"W x 20.5"H x 7.33'L with 1.00' Overlap Row Length Adjustment= +1.00' x 3.44 sf x 3 rows
#3	253.80'	4 cf	**Cultec HVLV FC-24** x 8 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 8 Chambers in 3 Rows
#4	253.80'	24 cf	**12.0" Round Pipe Storage**-Impervious L= 30.0' S= 0.0200 '/'
#5	253.80'	75 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder** x 2 -Impervious
#6	253.80'	74 cf	**10.0" Round Pipe Storage**-Impervious L= 135.0' S= 0.0200 '/'
		4,527 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	253.25'	**18.0" Round RCP_Round 18"** L= 47.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 253.25' / 249.30' S= 0.0840 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.77 sf
#2	Device 1	253.80'	**12.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	255.60'	**4.2' long x 1.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 2.2' Crest Height
#4	Device 2	253.55'	**18.0" Vert. Orifice/Grate** C= 0.600
#5	Device 4	253.80'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600
#6	Discarded	253.30'	**8.270 in/hr Exfiltration X 0.00 over Horizontal area** Phase-In= 0.01'
#7	Secondary	253.80'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=253.30' (Free Discharge)
└**6=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=3.46 cfs @ 12.33 hrs HW=255.13' TW=0.00' (Dynamic Tailwater)
└**1=RCP_Round 18"** (Passes 3.46 cfs of 9.06 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 3.46 cfs @ 4.40 fps)
  │ └**4=Orifice/Grate** (Passes 3.46 cfs of 7.77 cfs potential flow)
  │ └**5=Orifice/Grate** (Passes 3.46 cfs of 10.37 cfs potential flow)
  └**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=253.30' TW=254.60' (Dynamic Tailwater)
└**7=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond CS8: CHAMBER SYSTEM #8

Inflow Area = 12,197 sf, 82.14% Impervious, Inflow Depth = 3.50" for 10YR event
Inflow = 1.15 cfs @ 12.07 hrs, Volume= 3,555 cf
Outflow = 0.81 cfs @ 12.15 hrs, Volume= 3,341 cf, Atten= 29%, Lag= 4.6 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.81 cfs @ 12.15 hrs, Volume= 3,341 cf

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 255.07' @ 12.15 hrs Surf.Area= 1,320 sf Storage= 728 cf

Plug-Flow detention time= 70.7 min calculated for 3,340 cf (94% of inflow)
Center-of-Mass det. time= 38.1 min (827.5 - 789.4)

Volume	Invert	Avail.Storage	Storage Description
#1	254.10'	890 cf	**12.00'W x 110.00'L x 2.10'H Prismatoid** 2,772 cf Overall - 548 cf Embedded = 2,224 cf x 40.0% Voids
#2	254.60'	547 cf	**Cultec C-100HD** x 39 Inside #1 Effective Size= 32.1"W x 12.0"H => 1.86 sf x 7.50'L = 14.0 cf Overall Size= 36.0"W x 12.5"H x 8.00'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.86 sf x 3 rows
#3	254.60'	0 cf	**Cultec C-100-SFCx2** x 4 Inside #1 Effective Size= 10.1"W x 7.6"H => 0.29 sf x 0.33'L = 0.1 cf Overall Size= 12.0"W x 7.6"H x 1.64'L with 1.31' Overlap 4 Chambers in 3 Rows
#4	254.60'	28 cf	**8.0" Round Pipe Storage**-Impervious L= 80.0' S= 0.0100 '/'
#5	254.60'	75 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder** x 2 -Impervious
		1,541 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	254.50'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Discarded	254.10'	**8.270 in/hr Exfiltration X 0.00 over Horizontal area** Phase-In= 0.01'

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=254.10' (Free Discharge)
↑**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=0.81 cfs @ 12.15 hrs HW=255.07' TW=0.00' (Dynamic Tailwater)
↑**1=Orifice/Grate** (Orifice Controls 0.81 cfs @ 2.56 fps)

Summary for Subcatchment PR1A: SITE AREA

Runoff = 0.66 cfs @ 12.07 hrs, Volume= 1,976 cf, Depth= 3.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25YR Rainfall=5.50"

	Area (ac)	CN	Description
*	0.090	98	Impervious Area
	0.060	61	>75% Grass cover, Good, HSG B
	0.150	83	Weighted Average
	0.060		40.00% Pervious Area
	0.090		60.00% Impervious Area

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

Summary for Subcatchment PR1B: SITE AREA

Runoff = 1.47 cfs @ 12.07 hrs, Volume= 4,452 cf, Depth= 3.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25YR Rainfall=5.50"

	Area (ac)	CN	Description
*	0.210	98	Impervious Area
	0.110	61	>75% Grass cover, Good, HSG B
	0.320	85	Weighted Average
	0.110		34.38% Pervious Area
	0.210		65.63% Impervious Area

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

Summary for Subcatchment PR1C: SITE AREA

Runoff = 0.72 cfs @ 12.07 hrs, Volume= 2,167 cf, Depth= 3.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25YR Rainfall=5.50"

	Area (ac)	CN	Description
*	0.100	98	Impervious Area
	0.060	61	>75% Grass cover, Good, HSG B
	0.160	84	Weighted Average
	0.060		37.50% Pervious Area
	0.100		62.50% Impervious Area

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

Summary for Subcatchment PR2: SITE AREA

Runoff = 1.62 cfs @ 12.07 hrs, Volume= 5,064 cf, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25YR Rainfall=5.50"

	Area (ac)	CN	Description
*	0.250	98	Impervious Area
	0.070	61	>75% Grass cover, Good, HSG B
	0.320	90	Weighted Average
	0.070		21.88% Pervious Area
	0.250		78.13% Impervious Area

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

Summary for Subcatchment PR2A: SITE & ROOF AREA

Runoff = 4.73 cfs @ 12.07 hrs, Volume= 15,702 cf, Depth= 5.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25YR Rainfall=5.50"

	Area (ac)	CN	Description
*	0.250	98	Impervious Area
	0.050	61	>75% Grass cover, Good, HSG B
*	0.560	98	Roof
	0.860	96	Weighted Average
	0.050		5.81% Pervious Area
	0.810		94.19% Impervious Area

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

Summary for Subcatchment PR3: SITE

Runoff = 1.18 cfs @ 12.08 hrs, Volume= 3,537 cf, Depth= 2.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25YR Rainfall=5.50"

	Area (ac)	CN	Description
*	0.130	98	Impervious Area
	0.200	61	>75% Grass cover, Good, HSG B
	0.330	76	Weighted Average
	0.200		60.61% Pervious Area
	0.130		39.39% Impervious Area

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

Summary for Subcatchment PR4: SITE & ROOF AREA

Runoff = 4.99 cfs @ 12.07 hrs, Volume= 15,436 cf, Depth= 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25YR Rainfall=5.50"

	Area (ac)	CN	Description
*	0.410	98	Impervious Area
	0.240	61	>75% Grass cover, Good, HSG B
*	0.350	98	Roof
	1.000	89	Weighted Average
	0.240		24.00% Pervious Area
	0.760		76.00% Impervious Area

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

Summary for Subcatchment PR5: SITE AREA

Runoff = 1.45 cfs @ 12.07 hrs, Volume= 4,542 cf, Depth= 4.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25YR Rainfall=5.50"

	Area (ac)	CN	Description
*	0.230	98	Impervious Area
	0.050	61	>75% Grass cover, Good, HSG B
	0.280	91	Weighted Average
	0.050		17.86% Pervious Area
	0.230		82.14% Impervious Area

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

Summary for Subcatchment PR6: SITE AREA

Runoff = 2.08 cfs @ 12.08 hrs, Volume= 6,217 cf, Depth= 2.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25YR Rainfall=5.50"

	Area (ac)	CN	Description
*	0.230	98	Impervious Area
	0.350	61	>75% Grass cover, Good, HSG B
	0.580	76	Weighted Average
	0.350		60.34% Pervious Area
	0.230		39.66% Impervious Area

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

Summary for Subcatchment PR7: SITE AREA

Runoff = 0.74 cfs @ 12.07 hrs, Volume= 2,383 cf, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25YR Rainfall=5.50"

	Area (ac)	CN	Description
*	0.120	98	Impervious Area
	0.020	61	>75% Grass cover, Good, HSG B
	0.140	93	Weighted Average
	0.020		14.29% Pervious Area
	0.120		85.71% Impervious Area

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

Summary for Reach SUM: TOTAL FLOW

Inflow = 7.60 cfs @ 12.18 hrs, Volume= 36,697 cf
Outflow = 7.60 cfs @ 12.19 hrs, Volume= 36,697 cf, Atten= 0%, Lag= 0.6 min

Routing by Sim-Route method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Reach TF: TREATED FLOW OUTLET

Inflow	=	6.59 cfs @	12.27 hrs, Volume=	30,480 cf
Outflow	=	6.59 cfs @	12.28 hrs, Volume=	30,480 cf, Atten= 0%, Lag= 0.6 min

Routing by Sim-Route method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Pond CS1: CHAMBER SYSTEM #1

Inflow	=	5.66 cfs @	12.35 hrs, Volume=	5,098 cf
Outflow	=	4.41 cfs @	12.41 hrs, Volume=	4,926 cf, Atten= 22%, Lag= 3.7 min
Discarded	=	0.00 cfs @	0.00 hrs, Volume=	0 cf
Primary	=	4.41 cfs @	12.41 hrs, Volume=	4,926 cf

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 256.11' @ 12.33 hrs Surf.Area= 816 sf Storage= 852 cf

Plug-Flow detention time= 37.0 min calculated for 5,226 cf (97% of inflow)
Center-of-Mass det. time= 20.8 min (792.9 - 770.7)

Volume	Invert	Avail.Storage	Storage Description
#1	254.60'	648 cf	**12.00'W x 68.00'L x 2.80'H Prismatoid** 2,285 cf Overall - 665 cf Embedded = 1,619 cf x 40.0% Voids
#2	255.10'	663 cf	**Cultec R-180** x 30 Inside #1 Effective Size= 33.6"W x 20.0"H => 3.44 sf x 6.33'L = 21.8 cf Overall Size= 36.0"W x 20.5"H x 7.33'L with 1.00' Overlap Row Length Adjustment= +1.00' x 3.44 sf x 3 rows
#3	255.10'	2 cf	**Cultec HVLV FC-24** x 4 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 4 Chambers in 3 Rows
#4	255.10'	57 cf	**12.0" Round Pipe Storage** x 3 -Impervious L= 24.0' S= 0.0200 '/'
#5	255.10'	14 cf	**10.0" Round Pipe Storage**-Impervious L= 25.0' S= 0.0200 '/'
#6	255.50'	63 cf	**4.00'D x 5.00'H Vertical Cone/Cylinder**-Impervious
		1,446 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	254.60'	**8.270 in/hr Exfiltration X 0.00 over Horizontal area**
#2	Primary	255.10'	**12.0" Vert. Orifice/Grate X 2.00** C= 0.600
#3	Primary	258.60'	**2.0" x 2.0" Horiz. Orifice/Grate X 6.00 columns** X 6 rows C= 0.600 in 24.0" x 24.0" Grate (25% open area) Limited to weir flow at low heads

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=254.60' (Free Discharge)
└**1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=3.68 cfs @ 12.41 hrs HW=256.04' TW=255.80' (Dynamic Tailwater)
├**2=Orifice/Grate** (Orifice Controls 3.68 cfs @ 2.39 fps)
└**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond CS2: CHAMBER SYSTEM #2

Inflow	=	11.67 cfs @	12.33 hrs,	Volume=	13,187 cf
Outflow	=	13.31 cfs @	12.39 hrs,	Volume=	12,852 cf, Atten= 0%, Lag= 3.5 min
Discarded	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf
Primary	=	7.89 cfs @	12.39 hrs,	Volume=	9,730 cf
Secondary	=	5.43 cfs @	12.35 hrs,	Volume=	3,122 cf

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 256.14' @ 12.35 hrs Surf.Area= 1,584 sf Storage= 1,657 cf

Plug-Flow detention time= 32.3 min calculated for 12,852 cf (97% of inflow)
Center-of-Mass det. time= 17.4 min (800.4 - 783.0)

Volume	Invert	Avail.Storage	Storage Description
#1	254.60'	1,244 cf	**16.00'W x 99.00'L x 2.80'H Prismatoid** 4,435 cf Overall - 1,324 cf Embedded = 3,111 cf x 40.0% Voids
#2	255.10'	1,320 cf	**Cultec R-180** x 60 Inside #1 Effective Size= 33.6"W x 20.0"H => 3.44 sf x 6.33'L = 21.8 cf Overall Size= 36.0"W x 20.5"H x 7.33'L with 1.00' Overlap Row Length Adjustment= +1.00' x 3.44 sf x 4 rows
#3	255.10'	4 cf	**Cultec HVLV FC-24** x 9 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 9 Chambers in 4 Rows
#4	255.10'	57 cf	**12.0" Round Pipe Storage** x 3 -Impervious L= 24.0' S= 0.0200 '/'
#5	255.10'	38 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder**-Impervious
#6	255.10'	85 cf	**12.0" Round Pipe Storage**-Impervious L= 108.0' S= 0.0200 '/'
		2,748 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600
#2	Discarded	254.60'	**8.270 in/hr Exfiltration X 0.00 over Horizontal area** Phase-In= 0.01'
#3	Secondary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=254.60' (Free Discharge)
↑**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=7.59 cfs @ 12.39 hrs HW=256.10' TW=255.66' (Dynamic Tailwater)
↑**1=Orifice/Grate** (Orifice Controls 7.59 cfs @ 3.22 fps)

Secondary OutFlow Max=6.65 cfs @ 12.35 hrs HW=256.11' TW=255.77' (Dynamic Tailwater)
↑**3=Orifice/Grate** (Orifice Controls 6.65 cfs @ 2.82 fps)

Summary for Pond CS3: CHAMBER SYSTEM #3

Inflow	=	13.47 cfs @	12.39 hrs,	Volume=	15,174 cf
Outflow	=	15.23 cfs @	12.29 hrs,	Volume=	14,924 cf, Atten= 0%, Lag= 0.0 min
Discarded	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf
Primary	=	8.46 cfs @	12.29 hrs,	Volume=	11,115 cf
Secondary	=	6.98 cfs @	12.33 hrs,	Volume=	3,808 cf

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 256.32' @ 12.29 hrs Surf.Area= 1,188 sf Storage= 1,447 cf

Plug-Flow detention time= 21.0 min calculated for 15,329 cf (98% of inflow)
Center-of-Mass det. time= 10.4 min (810.6 - 799.9)

Volume	Invert	Avail.Storage	Storage Description
#1	254.60'	933 cf	**12.00'W x 99.00'L x 2.80'H Prismatoid** 3,326 cf Overall - 993 cf Embedded = 2,334 cf x 40.0% Voids
#2	255.10'	990 cf	**Cultec R-180** x 45 Inside #1 Effective Size= 33.6"W x 20.0"H => 3.44 sf x 6.33'L = 21.8 cf Overall Size= 36.0"W x 20.5"H x 7.33'L with 1.00' Overlap Row Length Adjustment= +1.00' x 3.44 sf x 3 rows
#3	255.10'	3 cf	**Cultec HVLV FC-24** x 6 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 6 Chambers in 3 Rows
#4	255.10'	57 cf	**12.0" Round Pipe Storage** x 3 -Impervious L= 24.0' S= 0.0200 '/'
#5	255.10'	151 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder** x 4 -Impervious
#6	255.10'	5 cf	**10.0" Round Pipe Storage**-Impervious L= 10.0' S= 0.0200 '/'
		2,139 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600
#2	Discarded	254.60'	**8.270 in/hr Exfiltration X 0.00 over Horizontal area** Phase-In= 0.01'
#3	Secondary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=254.60' (Free Discharge)
└**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=8.46 cfs @ 12.29 hrs HW=256.28' TW=255.73' (Dynamic Tailwater)
└**1=Orifice/Grate** (Orifice Controls 8.46 cfs @ 3.59 fps)

Secondary OutFlow Max=7.83 cfs @ 12.33 hrs HW=256.18' TW=255.70' (Dynamic Tailwater)
└**3=Orifice/Grate** (Orifice Controls 7.83 cfs @ 3.32 fps)

Summary for Pond CS4: CHAMBER SYSTEM #4

Inflow	=	12.76 cfs @	12.29 hrs,	Volume=	18,033 cf
Outflow	=	13.30 cfs @	12.27 hrs,	Volume=	17,591 cf, Atten= 0%, Lag= 0.0 min
Discarded	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf
Primary	=	9.00 cfs @	12.23 hrs,	Volume=	14,315 cf
Secondary	=	5.42 cfs @	12.35 hrs,	Volume=	3,277 cf

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 256.06' @ 12.23 hrs Surf.Area= 2,125 sf Storage= 2,042 cf

Plug-Flow detention time= 31.4 min calculated for 18,172 cf (98% of inflow)
Center-of-Mass det. time= 16.1 min (827.1 - 810.3)

Volume	Invert	Avail.Storage	Storage Description
#1	254.60'	1,763 cf	**25.00'W x 85.00'L x 2.80'H Prismatoid** 5,950 cf Overall - 1,543 cf Embedded = 4,407 cf x 40.0% Voids
#2	255.10'	1,534 cf	**Cultec R-150XLHD** x 56 Inside #1 Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap Row Length Adjustment= +0.75' x 2.65 sf x 7 rows
#3	255.10'	8 cf	**Cultec R-150XLHD-FC-24** x 18 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 18 Chambers in 7 Rows
#4	255.10'	82 cf	**10.0" Round Pipe Storage**-Impervious L= 150.0' S= 0.0200 '/'
#5	255.10'	151 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder** x 4 -Impervious
		3,538 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	255.10'	**12.0" Vert. Orifice/Grate X 5.00** C= 0.600
#2	Discarded	254.60'	**8.270 in/hr Exfiltration X 0.00 over Horizontal area** Phase-In= 0.01'
#3	Secondary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=254.60' (Free Discharge)
↑└**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=9.13 cfs @ 12.23 hrs HW=256.05' TW=255.80' (Dynamic Tailwater)
↑└**1=Orifice/Grate** (Orifice Controls 9.13 cfs @ 2.37 fps)

Secondary OutFlow Max=4.55 cfs @ 12.35 hrs HW=255.92' TW=255.71' (Dynamic Tailwater)
↑└**3=Orifice/Grate** (Orifice Controls 4.55 cfs @ 2.19 fps)

Summary for Pond CS5: CHAMBER SYSTEM #5

Inflow	=	11.08 cfs @	12.23 hrs,	Volume=	30,181 cf
Outflow	=	8.99 cfs @	12.25 hrs,	Volume=	30,181 cf, Atten= 19%, Lag= 1.1 min
Discarded	=	0.80 cfs @	11.57 hrs,	Volume=	19,634 cf
Primary	=	6.44 cfs @	12.28 hrs,	Volume=	8,694 cf
Secondary	=	3.68 cfs @	12.29 hrs,	Volume=	1,853 cf

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 255.97' @ 12.28 hrs Surf.Area= 4,175 sf Storage= 3,678 cf

Plug-Flow detention time= 10.0 min calculated for 31,168 cf (100% of inflow)
Center-of-Mass det. time= 10.0 min (810.7 - 800.4)

Volume	Invert	Avail.Storage	Storage Description
#1	254.60'	3,450 cf	**25.00'W x 167.00'L x 2.80'H Prismatoid** 11,690 cf Overall - 3,066 cf Embedded = 8,624 cf x 40.0% Voids
#2	255.10'	3,055 cf	**Cultec R-150XLHD** x 112 Inside #1 Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap Row Length Adjustment= +0.75' x 2.65 sf x 7 rows
#3	255.10'	11 cf	**Cultec R-150XLHD-FC-24** x 24 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 24 Chambers in 7 Rows
#4	255.10'	82 cf	**10.0" Round Pipe Storage**-Impervious L= 150.0' S= 0.0200 '/'
#5	255.10'	151 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder** x 4 -Impervious
		6,748 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600
#2	Discarded	254.60'	**8.270 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#3	Secondary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Discarded OutFlow Max=0.80 cfs @ 11.57 hrs HW=254.61' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.80 cfs)

Primary OutFlow Max=5.75 cfs @ 12.28 hrs HW=255.96' TW=255.65' (Dynamic Tailwater)
↑**1=Orifice/Grate** (Orifice Controls 5.75 cfs @ 2.67 fps)

Secondary OutFlow Max=2.16 cfs @ 12.29 hrs HW=255.88' TW=255.83' (Dynamic Tailwater)
↑**3=Orifice/Grate** (Orifice Controls 2.16 cfs @ 1.10 fps)

Summary for Pond CS6: CHAMBER SYSTEM #6

Inflow	=	9.62 cfs @	12.28 hrs,	Volume=	12,381 cf
Outflow	=	8.33 cfs @	12.26 hrs,	Volume=	12,381 cf, Atten= 13%, Lag= 0.0 min
Discarded	=	0.19 cfs @	11.71 hrs,	Volume=	3,186 cf
Primary	=	7.78 cfs @	12.33 hrs,	Volume=	9,030 cf
Secondary	=	2.17 cfs @	12.26 hrs,	Volume=	165 cf

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 256.07' @ 12.33 hrs Surf.Area= 976 sf Storage= 950 cf

Plug-Flow detention time= 4.6 min calculated for 12,856 cf (100% of inflow)
Center-of-Mass det. time= 4.6 min (780.7 - 775.9)

Volume	Invert	Avail.Storage	Storage Description
#1	254.60'	772 cf	**16.00'W x 61.00'L x 2.80'H Prismatoid** 2,733 cf Overall - 802 cf Embedded = 1,931 cf x 40.0% Voids
#2	255.10'	798 cf	**Cultec R-180** x 36 Inside #1 Effective Size= 33.6"W x 20.0"H => 3.44 sf x 6.33'L = 21.8 cf Overall Size= 36.0"W x 20.5"H x 7.33'L with 1.00' Overlap Row Length Adjustment= +1.00' x 3.44 sf x 4 rows
#3	255.10'	4 cf	**Cultec HVLV FC-24** x 9 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 9 Chambers in 4 Rows
#4	255.10'	47 cf	**12.0" Round Pipe Storage**-Impervious L= 60.0' S= 0.0200 '/'
#5	255.10'	38 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder**-Impervious
		1,659 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600
#2	Discarded	254.60'	**8.270 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#3	Secondary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Discarded OutFlow Max=0.19 cfs @ 11.71 hrs HW=254.61' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=7.37 cfs @ 12.33 hrs HW=256.02' TW=255.51' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 7.37 cfs @ 3.26 fps)

Secondary OutFlow Max=4.87 cfs @ 12.33 hrs HW=256.07' TW=255.88' (Dynamic Tailwater)
↑—**3=Orifice/Grate** (Orifice Controls 4.87 cfs @ 2.08 fps)

Summary for Pond CS7: CHAMBER SYSTEM #7

Inflow	=	9.50 cfs @	12.33 hrs, Volume=	24,466 cf	
Outflow	=	7.25 cfs @	12.28 hrs, Volume=	23,919 cf,	Atten= 24%, Lag= 0.0 min
Discarded	=	0.00 cfs @	0.00 hrs, Volume=	0 cf	
Primary	=	5.45 cfs @	12.27 hrs, Volume=	23,769 cf	
Secondary	=	2.69 cfs @	12.28 hrs, Volume=	150 cf	

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 255.76' @ 12.27 hrs Surf.Area= 2,544 sf Storage= 3,920 cf

Plug-Flow detention time= 40.8 min calculated for 23,964 cf (98% of inflow)
Center-of-Mass det. time= 27.6 min (804.5 - 776.9)

Volume	Invert	Avail.Storage	Storage Description
#1	253.30'	2,185 cf	**12.00'W x 212.00'L x 3.00'H Prismatoid** 7,632 cf Overall - 2,169 cf Embedded = 5,463 cf x 40.0% Voids
#2	253.80'	2,166 cf	**Cultec R-180** x 99 Inside #1 Effective Size= 33.6"W x 20.0"H => 3.44 sf x 6.33'L = 21.8 cf Overall Size= 36.0"W x 20.5"H x 7.33'L with 1.00' Overlap Row Length Adjustment= +1.00' x 3.44 sf x 3 rows
#3	253.80'	4 cf	**Cultec HVLV FC-24** x 8 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 8 Chambers in 3 Rows
#4	253.80'	24 cf	**12.0" Round Pipe Storage**-Impervious L= 30.0' S= 0.0200 '/'
#5	253.80'	75 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder** x 2 -Impervious
#6	253.80'	74 cf	**10.0" Round Pipe Storage**-Impervious L= 135.0' S= 0.0200 '/'
		4,527 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	253.25'	**18.0" Round RCP_Round 18"** L= 47.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 253.25' / 249.30' S= 0.0840 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.77 sf
#2	Device 1	253.80'	**12.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	255.60'	**4.2' long x 1.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 2.2' Crest Height
#4	Device 2	253.55'	**18.0" Vert. Orifice/Grate** C= 0.600
#5	Device 4	253.80'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600
#6	Discarded	253.30'	**8.270 in/hr Exfiltration X 0.00 over Horizontal area** Phase-In= 0.01'
#7	Secondary	253.80'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=253.30' (Free Discharge)
└**6=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=5.45 cfs @ 12.27 hrs HW=255.76' TW=0.00' (Dynamic Tailwater)
└**1=RCP_Round 18"** (Passes 5.45 cfs of 11.29 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 4.57 cfs @ 5.82 fps)
  │ └**4=Orifice/Grate** (Passes 4.57 cfs of 10.28 cfs potential flow)
  │ └**5=Orifice/Grate** (Passes 4.57 cfs of 13.71 cfs potential flow)
  └**3=Sharp-Crested Rectangular Weir** (Weir Controls 0.88 cfs @ 1.32 fps)

Secondary OutFlow Max=2.30 cfs @ 12.28 hrs HW=255.64' TW=255.60' (Dynamic Tailwater)
└**7=Orifice/Grate** (Orifice Controls 2.30 cfs @ 0.97 fps)

Summary for Pond CS8: CHAMBER SYSTEM #8

Inflow Area = 12,197 sf, 82.14% Impervious, Inflow Depth = 4.47" for 25YR event
Inflow = 1.45 cfs @ 12.07 hrs, Volume= 4,542 cf
Outflow = 1.00 cfs @ 12.15 hrs, Volume= 4,328 cf, Atten= 31%, Lag= 4.8 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 1.00 cfs @ 12.15 hrs, Volume= 4,328 cf

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 255.19' @ 12.15 hrs Surf.Area= 1,320 sf Storage= 841 cf

Plug-Flow detention time= 61.6 min calculated for 4,328 cf (95% of inflow)
Center-of-Mass det. time= 34.8 min (817.6 - 782.8)

Volume	Invert	Avail.Storage	Storage Description
#1	254.10'	890 cf	**12.00'W x 110.00'L x 2.10'H Prismatoid** 2,772 cf Overall - 548 cf Embedded = 2,224 cf x 40.0% Voids
#2	254.60'	547 cf	**Cultec C-100HD** x 39 Inside #1 Effective Size= 32.1"W x 12.0"H => 1.86 sf x 7.50'L = 14.0 cf Overall Size= 36.0"W x 12.5"H x 8.00'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.86 sf x 3 rows
#3	254.60'	0 cf	**Cultec C-100-SFCx2** x 4 Inside #1 Effective Size= 10.1"W x 7.6"H => 0.29 sf x 0.33'L = 0.1 cf Overall Size= 12.0"W x 7.6"H x 1.64'L with 1.31' Overlap 4 Chambers in 3 Rows
#4	254.60'	28 cf	**8.0" Round Pipe Storage**-Impervious L= 80.0' S= 0.0100 '/'
#5	254.60'	75 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder** x 2 -Impervious
		1,541 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	254.50'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Discarded	254.10'	**8.270 in/hr Exfiltration X 0.00 over Horizontal area** Phase-In= 0.01'

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=254.10' (Free Discharge)
↑**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=1.00 cfs @ 12.15 hrs HW=255.19' TW=0.00' (Dynamic Tailwater)
↑**1=Orifice/Grate** (Orifice Controls 1.00 cfs @ 2.86 fps)

Summary for Subcatchment PR1A: SITE AREA

Runoff = 0.90 cfs @ 12.07 hrs, Volume= 2,738 cf, Depth= 5.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100YR Rainfall=7.00"

	Area (ac)	CN	Description
*	0.090	98	Impervious Area
	0.060	61	>75% Grass cover, Good, HSG B
	0.150	83	Weighted Average
	0.060		40.00% Pervious Area
	0.090		60.00% Impervious Area

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

Summary for Subcatchment PR1B: SITE AREA

Runoff = 1.99 cfs @ 12.07 hrs, Volume= 6,101 cf, Depth= 5.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100YR Rainfall=7.00"

	Area (ac)	CN	Description
*	0.210	98	Impervious Area
	0.110	61	>75% Grass cover, Good, HSG B
	0.320	85	Weighted Average
	0.110		34.38% Pervious Area
	0.210		65.63% Impervious Area

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

Summary for Subcatchment PR1C: SITE AREA

Runoff = 0.98 cfs @ 12.07 hrs, Volume= 2,985 cf, Depth= 5.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100YR Rainfall=7.00"

	Area (ac)	CN	Description
*	0.100	98	Impervious Area
	0.060	61	>75% Grass cover, Good, HSG B
	0.160	84	Weighted Average
	0.060		37.50% Pervious Area
	0.100		62.50% Impervious Area

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

Summary for Subcatchment PR2: SITE AREA

Runoff = 2.14 cfs @ 12.07 hrs, Volume= 6,764 cf, Depth= 5.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100YR Rainfall=7.00"

	Area (ac)	CN	Description
*	0.250	98	Impervious Area
	0.070	61	>75% Grass cover, Good, HSG B
	0.320	90	Weighted Average
	0.070		21.88% Pervious Area
	0.250		78.13% Impervious Area

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

Summary for Subcatchment PR2A: SITE & ROOF AREA

Runoff = 6.06 cfs @ 12.07 hrs, Volume= 20,366 cf, Depth= 6.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100YR Rainfall=7.00"

	Area (ac)	CN	Description
*	0.250	98	Impervious Area
	0.050	61	>75% Grass cover, Good, HSG B
*	0.560	98	Roof
	0.860	96	Weighted Average
	0.050		5.81% Pervious Area
	0.810		94.19% Impervious Area

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

Summary for Subcatchment PR3: SITE

Runoff = 1.70 cfs @ 12.07 hrs, Volume= 5,100 cf, Depth= 4.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100YR Rainfall=7.00"

	Area (ac)	CN	Description
*	0.130	98	Impervious Area
	0.200	61	>75% Grass cover, Good, HSG B
	0.330	76	Weighted Average
	0.200		60.61% Pervious Area
	0.130		39.39% Impervious Area

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

Summary for Subcatchment PR4: SITE & ROOF AREA

Runoff = 6.59 cfs @ 12.07 hrs, Volume= 20,720 cf, Depth= 5.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100YR Rainfall=7.00"

	Area (ac)	CN	Description
*	0.410	98	Impervious Area
	0.240	61	>75% Grass cover, Good, HSG B
*	0.350	98	Roof
	1.000	89	Weighted Average
	0.240		24.00% Pervious Area
	0.760		76.00% Impervious Area

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

Summary for Subcatchment PR5: SITE AREA

Runoff = 1.89 cfs @ 12.07 hrs, Volume= 6,036 cf, Depth= 5.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100YR Rainfall=7.00"

	Area (ac)	CN	Description
*	0.230	98	Impervious Area
	0.050	61	>75% Grass cover, Good, HSG B
	0.280	91	Weighted Average
	0.050		17.86% Pervious Area
	0.230		82.14% Impervious Area

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

Summary for Subcatchment PR6: SITE AREA

Runoff = 3.00 cfs @ 12.07 hrs, Volume= 8,963 cf, Depth= 4.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100YR Rainfall=7.00"

	Area (ac)	CN	Description
*	0.230	98	Impervious Area
	0.350	61	>75% Grass cover, Good, HSG B
	0.580	76	Weighted Average
	0.350		60.34% Pervious Area
	0.230		39.66% Impervious Area

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

Summary for Subcatchment PR7: SITE AREA

Runoff = 0.96 cfs @ 12.07 hrs, Volume= 3,136 cf, Depth= 6.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100YR Rainfall=7.00"

	Area (ac)	CN	Description
*	0.120	98	Impervious Area
	0.020	61	>75% Grass cover, Good, HSG B
	0.140	93	Weighted Average
	0.020		14.29% Pervious Area
	0.120		85.71% Impervious Area

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

Summary for Reach SUM: TOTAL FLOW

Inflow = 12.93 cfs @ 12.17 hrs, Volume= 53,064 cf
Outflow = 12.93 cfs @ 12.18 hrs, Volume= 53,064 cf, Atten= 0%, Lag= 0.6 min

Routing by Sim-Route method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Reach TF: TREATED FLOW OUTLET

Inflow	=	11.13 cfs @	12.16 hrs,	Volume=	44,101 cf
Outflow	=	11.13 cfs @	12.17 hrs,	Volume=	44,101 cf, Atten= 0%, Lag= 0.6 min

Routing by Sim-Route method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Summary for Pond CS1: CHAMBER SYSTEM #1

Inflow	=	8.90 cfs @	12.27 hrs,	Volume=	9,777 cf
Outflow	=	7.79 cfs @	12.29 hrs,	Volume=	9,605 cf, Atten= 12%, Lag= 1.3 min
Discarded	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf
Primary	=	7.79 cfs @	12.29 hrs,	Volume=	9,605 cf

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 257.19' @ 12.29 hrs Surf.Area= 816 sf Storage= 1,337 cf

Plug-Flow detention time= 24.3 min calculated for 9,922 cf (98% of inflow)
Center-of-Mass det. time= 15.0 min (778.5 - 763.0)

Volume	Invert	Avail.Storage	Storage Description
#1	254.60'	648 cf	**12.00'W x 68.00'L x 2.80'H Prismatoid** 2,285 cf Overall - 665 cf Embedded = 1,619 cf x 40.0% Voids
#2	255.10'	663 cf	**Cultec R-180** x 30 Inside #1 Effective Size= 33.6"W x 20.0"H => 3.44 sf x 6.33'L = 21.8 cf Overall Size= 36.0"W x 20.5"H x 7.33'L with 1.00' Overlap Row Length Adjustment= +1.00' x 3.44 sf x 3 rows
#3	255.10'	2 cf	**Cultec HVLV FC-24** x 4 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 4 Chambers in 3 Rows
#4	255.10'	57 cf	**12.0" Round Pipe Storage** x 3 -Impervious L= 24.0' S= 0.0200 '/'
#5	255.10'	14 cf	**10.0" Round Pipe Storage**-Impervious L= 25.0' S= 0.0200 '/'
#6	255.50'	63 cf	**4.00'D x 5.00'H Vertical Cone/Cylinder**-Impervious
		1,446 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	254.60'	**8.270 in/hr Exfiltration X 0.00 over Horizontal area**
#2	Primary	255.10'	**12.0" Vert. Orifice/Grate X 2.00** C= 0.600
#3	Primary	258.60'	**2.0" x 2.0" Horiz. Orifice/Grate X 6.00 columns** X 6 rows C= 0.600 in 24.0" x 24.0" Grate (25% open area) Limited to weir flow at low heads

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=254.60' (Free Discharge)
└**1=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=6.90 cfs @ 12.29 hrs HW=256.97' TW=256.14' (Dynamic Tailwater)
├**2=Orifice/Grate** (Orifice Controls 6.90 cfs @ 4.39 fps)
└**3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond CS2: CHAMBER SYSTEM #2

Inflow	=	21.78 cfs @	12.25 hrs,	Volume=	24,345 cf
Outflow	=	20.64 cfs @	12.27 hrs,	Volume=	24,011 cf, Atten= 5%, Lag= 1.2 min
Discarded	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf
Primary	=	12.15 cfs @	12.27 hrs,	Volume=	16,971 cf
Secondary	=	8.53 cfs @	12.27 hrs,	Volume=	7,039 cf

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 257.05' @ 12.27 hrs Surf.Area= 1,584 sf Storage= 2,486 cf

Plug-Flow detention time= 20.6 min calculated for 24,003 cf (99% of inflow)
Center-of-Mass det. time= 12.2 min (784.0 - 771.8)

Volume	Invert	Avail.Storage	Storage Description
#1	254.60'	1,244 cf	**16.00'W x 99.00'L x 2.80'H Prismatoid** 4,435 cf Overall - 1,324 cf Embedded = 3,111 cf x 40.0% Voids
#2	255.10'	1,320 cf	**Cultec R-180** x 60 Inside #1 Effective Size= 33.6"W x 20.0"H => 3.44 sf x 6.33'L = 21.8 cf Overall Size= 36.0"W x 20.5"H x 7.33'L with 1.00' Overlap Row Length Adjustment= +1.00' x 3.44 sf x 4 rows
#3	255.10'	4 cf	**Cultec HVLV FC-24** x 9 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 9 Chambers in 4 Rows
#4	255.10'	57 cf	**12.0" Round Pipe Storage** x 3 -Impervious L= 24.0' S= 0.0200 '/'
#5	255.10'	38 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder**-Impervious
#6	255.10'	85 cf	**12.0" Round Pipe Storage**-Impervious L= 108.0' S= 0.0200 '/'
		2,748 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600
#2	Discarded	254.60'	**8.270 in/hr Exfiltration X 0.00 over Horizontal area** Phase-In= 0.01'
#3	Secondary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=254.60' (Free Discharge)
↑└**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=10.47 cfs @ 12.27 hrs HW=256.85' TW=256.00' (Dynamic Tailwater)
↑└**1=Orifice/Grate** (Orifice Controls 10.47 cfs @ 4.44 fps)

Secondary OutFlow Max=9.52 cfs @ 12.27 hrs HW=256.93' TW=256.23' (Dynamic Tailwater)
↑└**3=Orifice/Grate** (Orifice Controls 9.52 cfs @ 4.04 fps)

Summary for Pond CS3: CHAMBER SYSTEM #3

Inflow	=	20.89 cfs @	12.27 hrs,	Volume=	27,390 cf
Outflow	=	27.76 cfs @	12.25 hrs,	Volume=	27,139 cf, Atten= 0%, Lag= 0.0 min
Discarded	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf
Primary	=	14.33 cfs @	12.25 hrs,	Volume=	18,500 cf
Secondary	=	13.44 cfs @	12.25 hrs,	Volume=	8,640 cf

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 257.63' @ 12.25 hrs Surf.Area= 1,188 sf Storage= 2,115 cf

Plug-Flow detention time= 13.9 min calculated for 27,392 cf (99% of inflow)
Center-of-Mass det. time= 7.7 min (792.0 - 784.2)

Volume	Invert	Avail.Storage	Storage Description
#1	254.60'	933 cf	**12.00'W x 99.00'L x 2.80'H Prismatoid** 3,326 cf Overall - 993 cf Embedded = 2,334 cf x 40.0% Voids
#2	255.10'	990 cf	**Cultec R-180** x 45 Inside #1 Effective Size= 33.6"W x 20.0"H => 3.44 sf x 6.33'L = 21.8 cf Overall Size= 36.0"W x 20.5"H x 7.33'L with 1.00' Overlap Row Length Adjustment= +1.00' x 3.44 sf x 3 rows
#3	255.10'	3 cf	**Cultec HVLV FC-24** x 6 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 6 Chambers in 3 Rows
#4	255.10'	57 cf	**12.0" Round Pipe Storage** x 3 -Impervious L= 24.0' S= 0.0200 '/'
#5	255.10'	151 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder** x 4 -Impervious
#6	255.10'	5 cf	**10.0" Round Pipe Storage**-Impervious L= 10.0' S= 0.0200 '/'
		2,139 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600
#2	Discarded	254.60'	**8.270 in/hr Exfiltration X 0.00 over Horizontal area** Phase-In= 0.01'
#3	Secondary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=254.60' (Free Discharge)
↑└**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=14.30 cfs @ 12.25 hrs HW=257.53' TW=255.94' (Dynamic Tailwater)
↑└**1=Orifice/Grate** (Orifice Controls 14.30 cfs @ 6.07 fps)

Secondary OutFlow Max=14.23 cfs @ 12.25 hrs HW=257.52' TW=255.94' (Dynamic Tailwater)
↑└**3=Orifice/Grate** (Orifice Controls 14.23 cfs @ 6.04 fps)

Summary for Pond CS4: CHAMBER SYSTEM #4

Inflow	=	21.45 cfs @	12.25 hrs, Volume=	30,743 cf	
Outflow	=	20.97 cfs @	12.46 hrs, Volume=	30,300 cf,	Atten= 2%, Lag= 12.6 min
Discarded	=	0.00 cfs @	0.00 hrs, Volume=	0 cf	
Primary	=	13.88 cfs @	12.42 hrs, Volume=	22,867 cf	
Secondary	=	9.08 cfs @	12.15 hrs, Volume=	7,433 cf	

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 256.79' @ 12.42 hrs Surf.Area= 2,125 sf Storage= 2,904 cf

Plug-Flow detention time= 21.3 min calculated for 31,154 cf (99% of inflow)
Center-of-Mass det. time= 12.0 min (805.6 - 793.2)

Volume	Invert	Avail.Storage	Storage Description
#1	254.60'	1,763 cf	**25.00'W x 85.00'L x 2.80'H Prismatoid** 5,950 cf Overall - 1,543 cf Embedded = 4,407 cf x 40.0% Voids
#2	255.10'	1,534 cf	**Cultec R-150XLHD** x 56 Inside #1 Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap Row Length Adjustment= +0.75' x 2.65 sf x 7 rows
#3	255.10'	8 cf	**Cultec R-150XLHD-FC-24** x 18 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 18 Chambers in 7 Rows
#4	255.10'	82 cf	**10.0" Round Pipe Storage**-Impervious L= 150.0' S= 0.0200 '/'
#5	255.10'	151 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder** x 4 -Impervious
		3,538 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	255.10'	**12.0" Vert. Orifice/Grate X 5.00** C= 0.600
#2	Discarded	254.60'	**8.270 in/hr Exfiltration X 0.00 over Horizontal area** Phase-In= 0.01'
#3	Secondary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=254.60' (Free Discharge)
↑└**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=14.28 cfs @ 12.42 hrs HW=256.70' TW=256.13' (Dynamic Tailwater)
↑└**1=Orifice/Grate** (Orifice Controls 14.28 cfs @ 3.64 fps)

Secondary OutFlow Max=7.89 cfs @ 12.15 hrs HW=256.36' TW=255.88' (Dynamic Tailwater)
↑└**3=Orifice/Grate** (Orifice Controls 7.89 cfs @ 3.35 fps)

Summary for Pond CS5: CHAMBER SYSTEM #5

Inflow	=	22.78 cfs @	12.15 hrs,	Volume=	44,574 cf
Outflow	=	16.14 cfs @	12.25 hrs,	Volume=	44,574 cf, Atten= 29%, Lag= 5.9 min
Discarded	=	0.80 cfs @	11.21 hrs,	Volume=	23,900 cf
Primary	=	10.03 cfs @	12.40 hrs,	Volume=	15,195 cf
Secondary	=	6.52 cfs @	12.17 hrs,	Volume=	5,479 cf

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 256.46' @ 12.40 hrs Surf.Area= 4,175 sf Storage= 5,007 cf

Plug-Flow detention time= 9.6 min calculated for 46,174 cf (100% of inflow)
Center-of-Mass det. time= 9.6 min (799.9 - 790.0)

Volume	Invert	Avail.Storage	Storage Description
#1	254.60'	3,450 cf	**25.00'W x 167.00'L x 2.80'H Prismatoid** 11,690 cf Overall - 3,066 cf Embedded = 8,624 cf x 40.0% Voids
#2	255.10'	3,055 cf	**Cultec R-150XLHD** x 112 Inside #1 Effective Size= 29.8"W x 18.0"H => 2.65 sf x 10.25'L = 27.2 cf Overall Size= 33.0"W x 18.5"H x 11.00'L with 0.75' Overlap Row Length Adjustment= +0.75' x 2.65 sf x 7 rows
#3	255.10'	11 cf	**Cultec R-150XLHD-FC-24** x 24 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 24 Chambers in 7 Rows
#4	255.10'	82 cf	**10.0" Round Pipe Storage**-Impervious L= 150.0' S= 0.0200 '/'
#5	255.10'	151 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder** x 4 -Impervious
		6,748 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600
#2	Discarded	254.60'	**8.270 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#3	Secondary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Discarded OutFlow Max=0.80 cfs @ 11.21 hrs HW=254.61' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 0.80 cfs)

Primary OutFlow Max=7.29 cfs @ 12.40 hrs HW=256.39' TW=255.98' (Dynamic Tailwater)
↑**1=Orifice/Grate** (Orifice Controls 7.29 cfs @ 3.09 fps)

Secondary OutFlow Max=4.58 cfs @ 12.17 hrs HW=256.25' TW=256.09' (Dynamic Tailwater)
↑**3=Orifice/Grate** (Orifice Controls 4.58 cfs @ 1.94 fps)

Summary for Pond CS6: CHAMBER SYSTEM #6

Inflow	=	13.78 cfs @	12.17 hrs,	Volume=	21,047 cf
Outflow	=	16.98 cfs @	12.15 hrs,	Volume=	21,047 cf, Atten= 0%, Lag= 0.0 min
Discarded	=	0.19 cfs @	11.62 hrs,	Volume=	3,984 cf
Primary	=	11.00 cfs @	12.22 hrs,	Volume=	15,722 cf
Secondary	=	7.41 cfs @	12.15 hrs,	Volume=	1,341 cf

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 256.72' @ 12.22 hrs Surf.Area= 976 sf Storage= 1,368 cf

Plug-Flow detention time= 3.9 min calculated for 21,979 cf (100% of inflow)
Center-of-Mass det. time= 3.9 min (776.3 - 772.2)

Volume	Invert	Avail.Storage	Storage Description
#1	254.60'	772 cf	**16.00'W x 61.00'L x 2.80'H Prismatoid** 2,733 cf Overall - 802 cf Embedded = 1,931 cf x 40.0% Voids
#2	255.10'	798 cf	**Cultec R-180** x 36 Inside #1 Effective Size= 33.6"W x 20.0"H => 3.44 sf x 6.33'L = 21.8 cf Overall Size= 36.0"W x 20.5"H x 7.33'L with 1.00' Overlap Row Length Adjustment= +1.00' x 3.44 sf x 4 rows
#3	255.10'	4 cf	**Cultec HVLV FC-24** x 9 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 9 Chambers in 4 Rows
#4	255.10'	47 cf	**12.0" Round Pipe Storage**-Impervious L= 60.0' S= 0.0200 '/'
#5	255.10'	38 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder**-Impervious
		1,659 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600
#2	Discarded	254.60'	**8.270 in/hr Exfiltration over Horizontal area** Phase-In= 0.01'
#3	Secondary	255.10'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Discarded OutFlow Max=0.19 cfs @ 11.62 hrs HW=254.61' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.19 cfs)

Primary OutFlow Max=10.50 cfs @ 12.22 hrs HW=256.54' TW=255.69' (Dynamic Tailwater)
↑—**1=Orifice/Grate** (Orifice Controls 10.50 cfs @ 4.45 fps)

Secondary OutFlow Max=8.35 cfs @ 12.15 hrs HW=256.54' TW=256.00' (Dynamic Tailwater)
↑—**3=Orifice/Grate** (Orifice Controls 8.35 cfs @ 3.55 fps)

Summary for Pond CS7: CHAMBER SYSTEM #7

Inflow	=	13.81 cfs @	12.15 hrs, Volume=	36,442 cf	
Outflow	=	11.32 cfs @	12.17 hrs, Volume=	35,895 cf,	Atten= 18%, Lag= 1.0 min
Discarded	=	0.00 cfs @	0.00 hrs, Volume=	0 cf	
Primary	=	9.34 cfs @	12.20 hrs, Volume=	35,143 cf	
Secondary	=	4.14 cfs @	12.17 hrs, Volume=	752 cf	

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 256.06' @ 12.20 hrs Surf.Area= 2,544 sf Storage= 4,243 cf

Plug-Flow detention time= 31.4 min calculated for 36,418 cf (98% of inflow)
Center-of-Mass det. time= 22.5 min (794.6 - 771.7)

Volume	Invert	Avail.Storage	Storage Description
#1	253.30'	2,185 cf	**12.00'W x 212.00'L x 3.00'H Prismatoid** 7,632 cf Overall - 2,169 cf Embedded = 5,463 cf x 40.0% Voids
#2	253.80'	2,166 cf	**Cultec R-180** x 99 Inside #1 Effective Size= 33.6"W x 20.0"H => 3.44 sf x 6.33'L = 21.8 cf Overall Size= 36.0"W x 20.5"H x 7.33'L with 1.00' Overlap Row Length Adjustment= +1.00' x 3.44 sf x 3 rows
#3	253.80'	4 cf	**Cultec HVLV FC-24** x 8 Inside #1 Effective Size= 15.3"W x 12.0"H => 0.91 sf x 0.50'L = 0.5 cf Overall Size= 16.0"W x 12.0"H x 2.02'L with 1.52' Overlap 8 Chambers in 3 Rows
#4	253.80'	24 cf	**12.0" Round Pipe Storage**-Impervious L= 30.0' S= 0.0200 '/'
#5	253.80'	75 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder** x 2 -Impervious
#6	253.80'	74 cf	**10.0" Round Pipe Storage**-Impervious L= 135.0' S= 0.0200 '/'
		4,527 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	253.25'	**18.0" Round RCP_Round 18"** L= 47.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 253.25' / 249.30' S= 0.0840 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.77 sf
#2	Device 1	253.80'	**12.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	255.60'	**4.2' long x 1.50' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s) 2.2' Crest Height
#4	Device 2	253.55'	**18.0" Vert. Orifice/Grate** C= 0.600
#5	Device 4	253.80'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600
#6	Discarded	253.30'	**8.270 in/hr Exfiltration X 0.00 over Horizontal area** Phase-In= 0.01'
#7	Secondary	253.80'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=253.30' (Free Discharge)
└**6=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=9.20 cfs @ 12.20 hrs HW=256.05' TW=0.00' (Dynamic Tailwater)
└**1=RCP_Round 18"** (Passes 9.20 cfs of 12.19 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 5.01 cfs @ 6.37 fps)
  │ └**4=Orifice/Grate** (Passes 5.01 cfs of 11.26 cfs potential flow)
  │ └**5=Orifice/Grate** (Passes 5.01 cfs of 15.02 cfs potential flow)
  └**3=Sharp-Crested Rectangular Weir** (Weir Controls 4.19 cfs @ 2.25 fps)

Secondary OutFlow Max=3.42 cfs @ 12.17 hrs HW=255.88' TW=255.79' (Dynamic Tailwater)
└**7=Orifice/Grate** (Orifice Controls 3.42 cfs @ 1.45 fps)

Summary for Pond CS8: CHAMBER SYSTEM #8

Inflow Area = 12,197 sf, 82.14% Impervious, Inflow Depth = 5.94" for 100YR event
Inflow = 1.89 cfs @ 12.07 hrs, Volume= 6,036 cf
Outflow = 1.25 cfs @ 12.16 hrs, Volume= 5,822 cf, Atten= 34%, Lag= 5.1 min
Discarded = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 1.25 cfs @ 12.16 hrs, Volume= 5,822 cf

Routing by Sim-Route method w/Net Flows, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 255.39' @ 12.16 hrs Surf.Area= 1,320 sf Storage= 1,022 cf

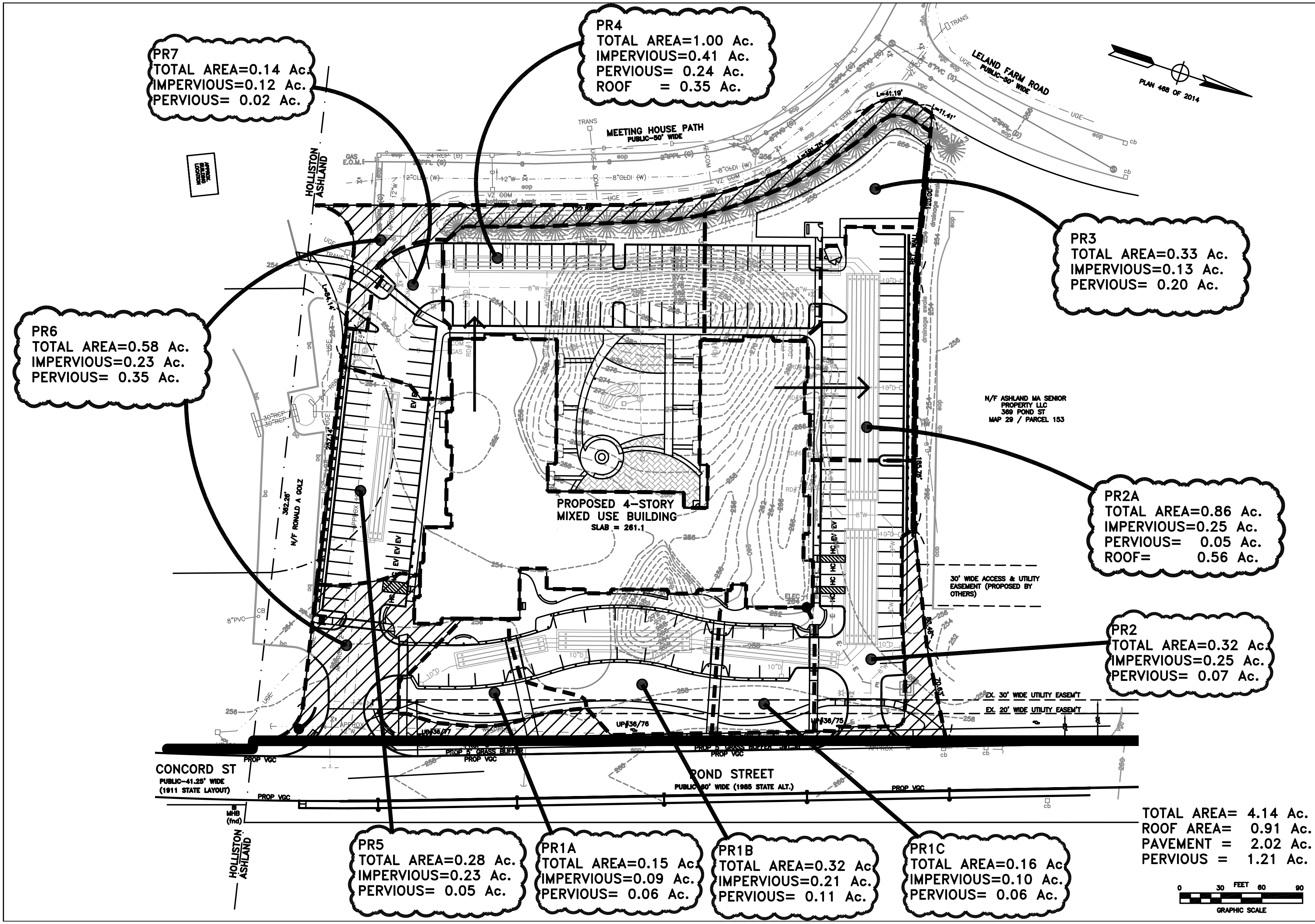
Plug-Flow detention time= 52.4 min calculated for 5,820 cf (96% of inflow)
Center-of-Mass det. time= 31.5 min (806.9 - 775.5)

Volume	Invert	Avail.Storage	Storage Description
#1	254.10'	890 cf	**12.00'W x 110.00'L x 2.10'H Prismatoid** 2,772 cf Overall - 548 cf Embedded = 2,224 cf x 40.0% Voids
#2	254.60'	547 cf	**Cultec C-100HD** x 39 Inside #1 Effective Size= 32.1"W x 12.0"H => 1.86 sf x 7.50'L = 14.0 cf Overall Size= 36.0"W x 12.5"H x 8.00'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.86 sf x 3 rows
#3	254.60'	0 cf	**Cultec C-100-SFCx2** x 4 Inside #1 Effective Size= 10.1"W x 7.6"H => 0.29 sf x 0.33'L = 0.1 cf Overall Size= 12.0"W x 7.6"H x 1.64'L with 1.31' Overlap 4 Chambers in 3 Rows
#4	254.60'	28 cf	**8.0" Round Pipe Storage**-Impervious L= 80.0' S= 0.0100 '/'
#5	254.60'	75 cf	**4.00'D x 3.00'H Vertical Cone/Cylinder** x 2 -Impervious
		1,541 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	254.50'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Discarded	254.10'	**8.270 in/hr Exfiltration X 0.00 over Horizontal area** Phase-In= 0.01'

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=254.10' (Free Discharge)
↑**2=Exfiltration** (Controls 0.00 cfs)

Primary OutFlow Max=1.25 cfs @ 12.16 hrs HW=255.39' TW=0.00' (Dynamic Tailwater)
↑**1=Orifice/Grate** (Orifice Controls 1.25 cfs @ 3.59 fps)



NO.	DATE	REVISION	BY
3	7/23/22	REVISIONS	BMS
2	5/18/22	REVISIONS	BMS
1	4/30/22	REVISION	BMS

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DRAINAGE SUBAREAS

POND STREET
ASHLAND ,MA

DEVELOPER:
TRASK INC
337 TURNPIKE ROAD, SUITE 201
SOUTHBOROUGH, MA 01772

DATE: NOVEMBER 6, 2021

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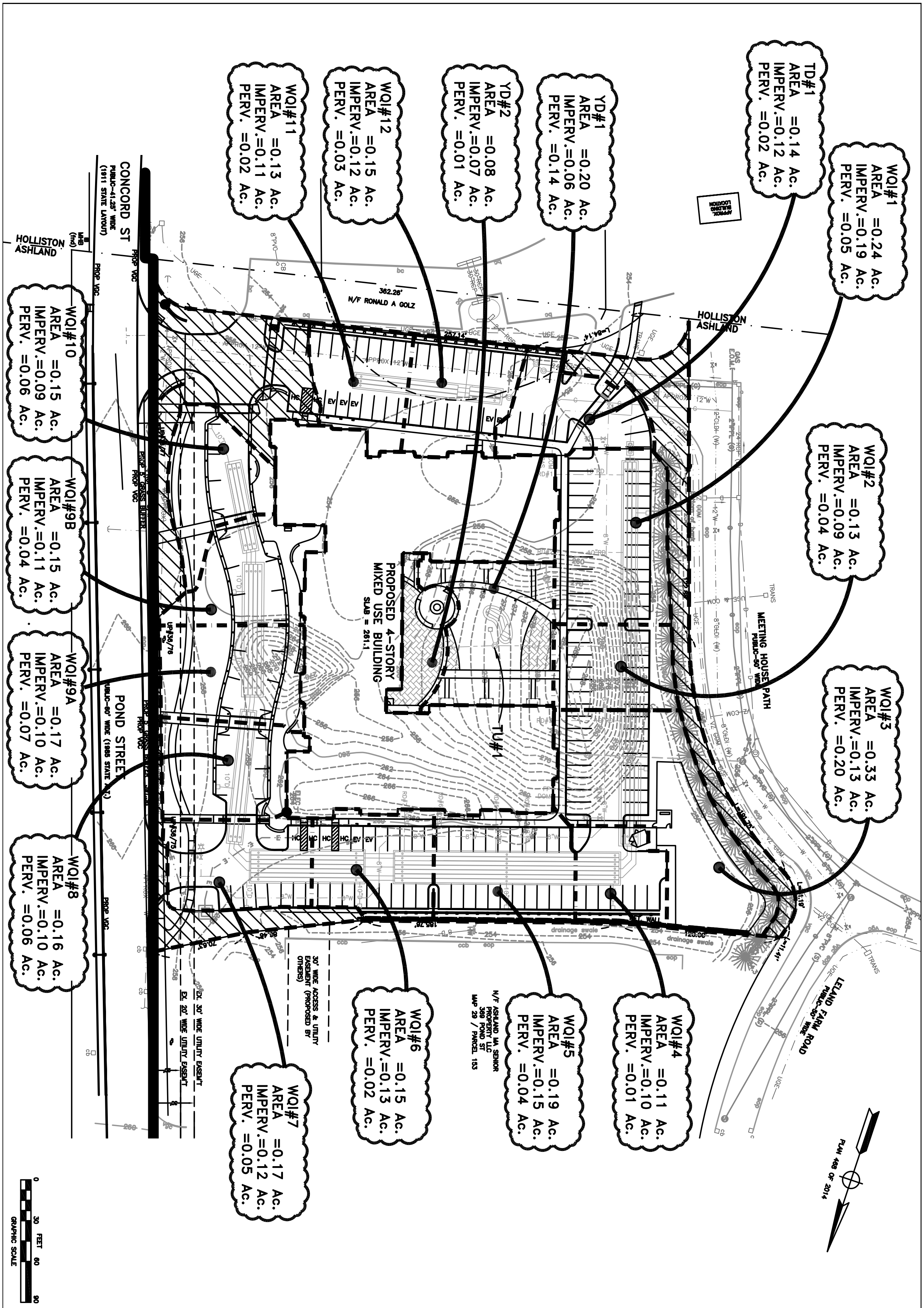

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DEVELOPER:
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DATE: NOVEMBER 6, 2021

PROPOSED DRAINAGE SUBAREAS

POND STREET
ASHLAND ,MA

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NO.	DATE	REVISION	
2	7/21/22	REVISION	PH
1	4/26/22	REVISION	BMS