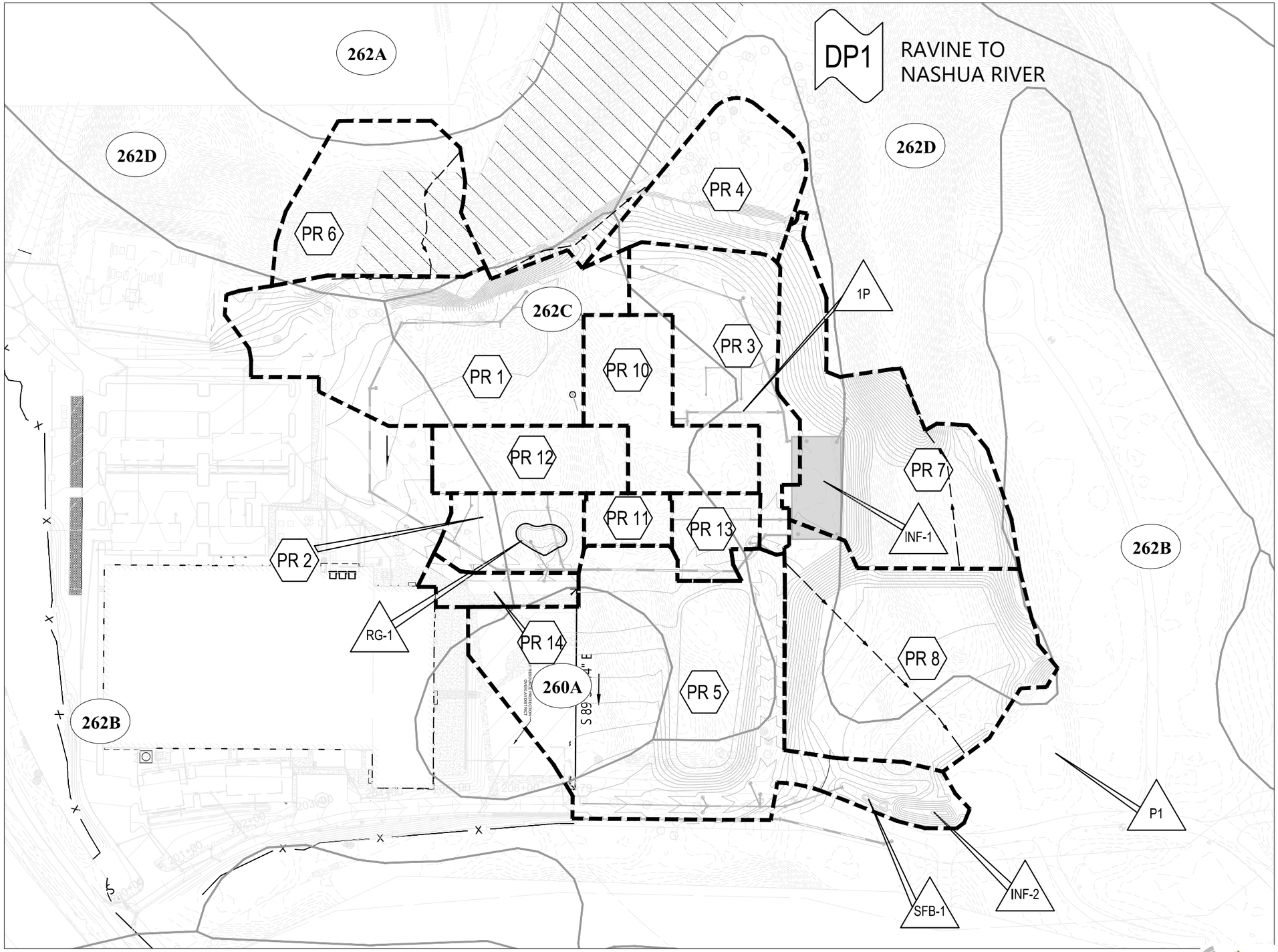


Legend

SYMBOLS

- DESIGN POINT
- DRAINAGE AREA DESIGNATION
- POND

LINETYPES

- DRAINAGE AREA BOUNDARY
- TIME OF CONCENTRATION FLOW LINE
- SOIL TYPE BOUNDARY

SCS SOIL CLASSIFICATIONS

- 260A — SOIL GROUP B; SUDBURY FINE SANDY LOAM, 0 TO 3 PERCENT SLOPES
- 262A — SOIL GROUP A; QUONSET LOAMY SAND, 0 TO 3 PERCENT SLOPES
- 262C — SOIL GROUP A; QUONSET LOAMY SAND, 8 TO 15 PERCENT SLOPES
- 262D — SOIL GROUP A; QUONSET LOAMY SAND, 15 TO 25 PERCENT SLOPES

0 75 150 Feet

Proposed Drainage Conditions
CFS Campus Building 2
111 Hospital Road
Devens, MA

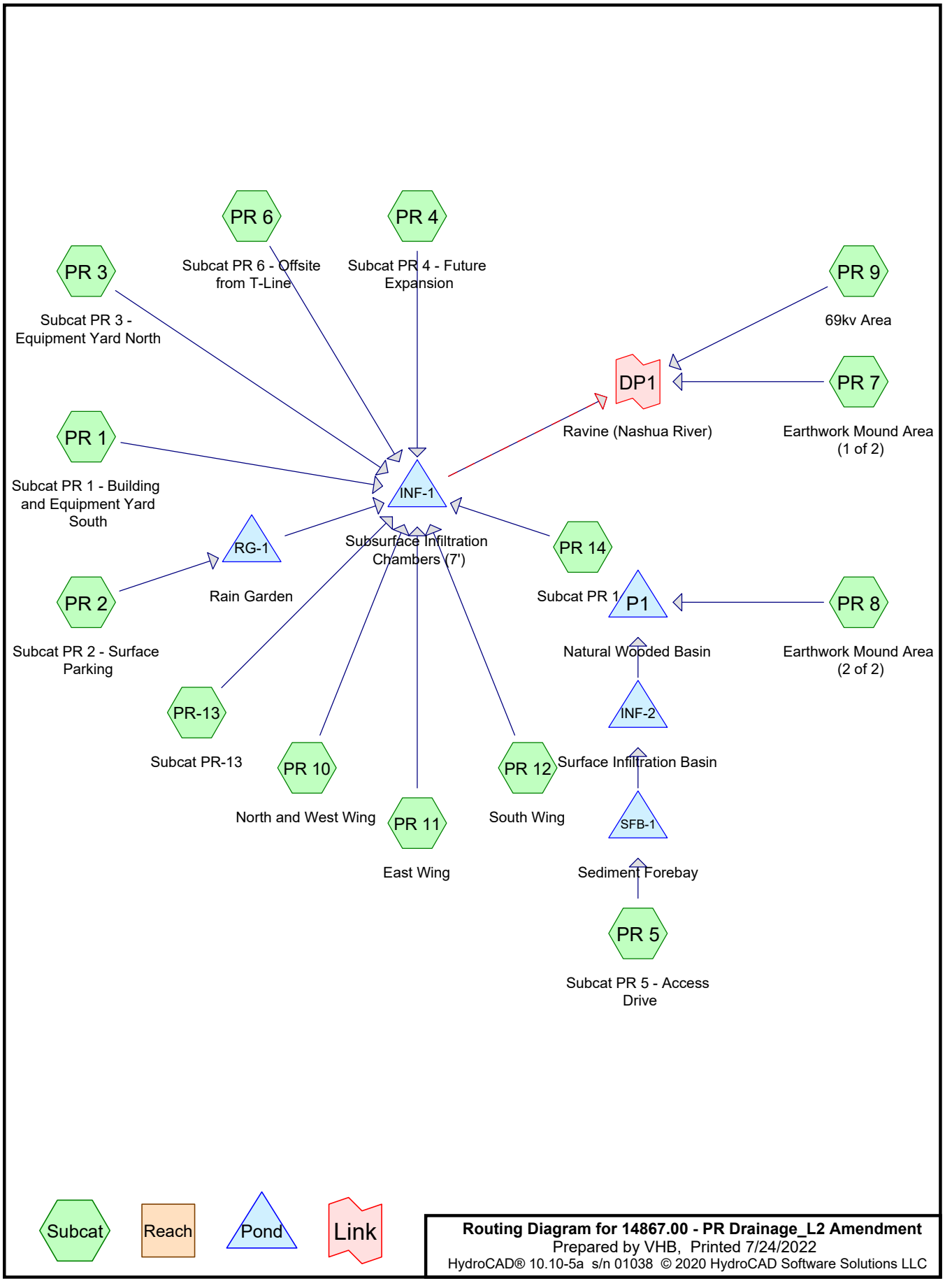
Figure 2A

July 25, 2022

Computations

Project:	CFS-2	Project #	14867
Location:	111 Hospital Road, Devens MA	Sheet	
Calculated by:	JRB	Date:	7/25/2022
Checked by:		Date:	
Title	Water Quality Volumes		

Rain Garden RG-1			
stone diaphragm (forebay) area	102	sf	
depth	1.5	ft	
void ratio	40%		
impervious area to RG-1	3,790	sf	
forbay treatment depth req	0.1	in	
forbay vol req	32	cf	
stone diaphragm (forebay) volume provided	61	cf	OK
WQ depth	1.0	in	
WQV required	316	cf	
WQV provided	1,096	cf	OK
Subsurface Infiltration System INF-1			
impervious area to INF-1	271,816	sf	
WQ depth	1.0	in	
WQV required	22,651	cf	
WQV provided	74,001	cf	OK
Surface Basin INF-2			
impervious area to INF-2	35,458	sf	
forbay treatment depth req	0.1	in	
forbay vol req	295	cf	
stone diaphragm (forebay) volume provided	299	cf	OK
WQ depth	1.0	in	
WQV required	2,955	cf	
WQV provided	3,380	cf	OK



Routing Diagram for 14867.00 - PR Drainage_L2 Amendment
Prepared by VHB, Printed 7/24/2022
HydroCAD® 10.10-5a s/n 01038 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment PR 1: Subcat PR 1 - Building and Equipment Yard South

Runoff = 5.3 cfs @ 12.07 hrs, Volume= 0.418 af, Depth= 2.30"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.13"

Area (sf)	CN	Description
15,745	39	>75% Grass cover, Good, HSG A
5,527	96	Gravel surface, HSG A
62,341	98	Paved parking, HSG A
11,581	98	Roofs, HSG A
95,194	88	Weighted Average
21,272	54	22.35% Pervious Area
73,922	98	77.65% Impervious Area

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

Summary for Subcatchment PR 10: North and West Wing

Runoff = 3.0 cfs @ 12.07 hrs, Volume= 0.228 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.13"

Area (sf)	CN	Description
41,048	98	Roofs, HSG A
41,048	98	100.00% Impervious Area

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

Summary for Subcatchment PR 11: East Wing

Runoff = 0.7 cfs @ 12.07 hrs, Volume= 0.056 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.13"

Area (ac)	CN	Description
0.232	98	Roofs, HSG A
0.232	98	100.00% Impervious Area

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

Summary for Subcatchment PR 12: South Wing

Runoff = 2.1 cfs @ 12.07 hrs, Volume= 0.161 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.13"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
28,996	98	Roofs, HSG A
28,996	98	Weighted Average
28,996	98	100.00% Impervious Area

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

Summary for Subcatchment PR 14: Subcat PR 14

Runoff = 0.6 cfs @ 12.07 hrs, Volume= 0.048 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.13"

Area (ac)	CN	Description
0.067	39	>75% Grass cover, Good, HSG A
0.006	61	>75% Grass cover, Good, HSG B
0.175	98	Paved parking, HSG A
0.025	98	Paved parking, HSG B
0.273	83	Weighted Average
0.074	41	26.91% Pervious Area
0.200	98	73.09% Impervious Area

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

Summary for Subcatchment PR 2: Subcat PR 2 - Surface Parking

Runoff = 0.4 cfs @ 12.07 hrs, Volume= 0.034 af, Depth= 0.75"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.13"

Area (ac)	CN	Description
0.407	39	>75% Grass cover, Good, HSG A
0.087	98	Paved parking, HSG A
0.056	98	Water Surface, HSG A
0.550	54	Weighted Average
0.407	39	74.07% Pervious Area
0.143	98	25.93% Impervious Area

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

Summary for Subcatchment PR 3: Subcat PR 3 - Equipment Yard North

Runoff = 3.5 cfs @ 12.07 hrs, Volume= 0.266 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.13"

Area (ac)	CN	Description
0.000	39	>75% Grass cover, Good, HSG A
0.848	98	Paved parking, HSG A
0.256	98	Roofs, HSG A
1.104	98	Weighted Average
0.000	39	0.00% Pervious Area
1.104	98	100.00% Impervious Area

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

Summary for Subcatchment PR 4: Subcat PR 4 - Future Expansion

Runoff = 2.6 cfs @ 12.07 hrs, Volume= 0.199 af, Depth= 2.38"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.13"

Area (ac)	CN	Description
0.178	39	>75% Grass cover, Good, HSG A
0.278	98	Paved parking, HSG A
0.545	98	Roofs, HSG A
1.001	88	Weighted Average
0.178	39	17.76% Pervious Area
0.823	98	82.24% Impervious Area

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

Summary for Subcatchment PR 5: Subcat PR 5 - Access Drive

Runoff = 3.5 cfs @ 12.07 hrs, Volume= 0.283 af, Depth= 0.84"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.13"

Area (ac)	CN	Description
1.818	39	>75% Grass cover, Good, HSG A
1.097	61	>75% Grass cover, Good, HSG B
0.924	98	Paved parking, HSG A
0.184	98	Paved parking, HSG B
4.024	61	Weighted Average
2.916	47	72.46% Pervious Area
1.108	98	27.54% Impervious Area

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

Summary for Subcatchment PR 6: Subcat PR 6 - Offsite from T-Line

Runoff = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.13"

Area (ac)	CN	Description
0.347	39	>75% Grass cover, Good, HSG A
1.315	30	Woods, Good, HSG A
1.662	32	Weighted Average
1.662	32	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.1	50	0.0420	0.05		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.13"
0.1	50	0.2600	8.21		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	110	0.2600	8.21		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.9	145	0.0280	2.69		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
17.3	355	Total			

Summary for Subcatchment PR 7: Earthwork Mound Area (1 of 2)

Runoff = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.13"

Area (ac)	CN	Description
2.016	30	Meadow, non-grazed, HSG A
2.016	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	50	0.0050	0.08		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.13"
5.4	160	0.0050	0.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	100	0.5000	4.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.6	310	Total			

Summary for Subcatchment PR 8: Earthwork Mound Area (2 of 2)

Runoff = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.13"

Area (ac)	CN	Description
2.405	30	Meadow, non-grazed, HSG A
2.405	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	25	0.0100	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.13"
1.1	25	0.3300	0.39		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.13"
0.1	31	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.2	290	0.0125	0.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	15	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.8	386	Total			

Summary for Subcatchment PR 9: 69kv Area

Runoff = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.13"

Area (sf)	CN	Description
26,571	30	Meadow, non-grazed, HSG A
26,571	30	100.00% Pervious Area

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

Summary for Subcatchment PR-13: Subcat PR-13

Runoff = 0.8 cfs @ 12.07 hrs, Volume= 0.058 af, Depth= 2.05"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 YR Rainfall=3.13"

Area (ac)	CN	Description
0.099	39	>75% Grass cover, Good, HSG A
0.241	98	Paved parking, HSG A
0.340	81	Weighted Average
0.099	39	29.08% Pervious Area
0.241	98	70.92% Impervious Area

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

Summary for Pond INF-1: Subsurface Infiltration Chambers (7')

Inflow Area = 8.955 ac, 67.53% Impervious, Inflow Depth = 1.92" for 2 YR event
Inflow = 18.6 cfs @ 12.07 hrs, Volume= 1.434 af
Outflow = 2.1 cfs @ 11.72 hrs, Volume= 1.434 af, Atten= 89%, Lag= 0.0 min
Discarded = 2.1 cfs @ 11.72 hrs, Volume= 1.434 af
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 273.00' @ 12.65 hrs Surf.Area= 0.253 ac Storage= 0.440 af

Plug-Flow detention time= 56.4 min calculated for 1.434 af (100% of inflow)
Center-of-Mass det. time= 56.4 min (813.6 - 757.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	270.00'	0.101 af	**72.67'W x 151.88'L x 9.00'H Field A** 2.280 af Overall - 2.027 af Embedded = 0.253 af x 40.0% Voids
#2A	271.00'	1.583 af	**StormTrap ST2 DoubleTrap 7-0** x 63 Inside #1 Inside= 101.7"W x 84.0"H => 53.54 sf x 15.40'L = 824.3 cf Outside= 101.7"W x 96.0"H => 67.83 sf x 15.40'L = 1,044.4 cf 63 Chambers in 7 Rows 59.35' x 138.56' Core + 6.66' Border = 72.67' x 151.88' System
#3	278.50'	0.002 af	**4.00'D x 6.00'H Outlet Manhole Riser** Impervious
		1.686 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	270.00'	**8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	280.00'	**18.0" Round Culvert** L= 65.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 280.00' / 279.50' S= 0.0077 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.77 sf

Discarded OutFlow Max=2.1 cfs @ 11.72 hrs HW=270.15' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 2.1 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=270.00' TW=0.00' (Dynamic Tailwater)
↑—**2=Culvert** (Controls 0.0 cfs)

Summary for Pond INF-2: Surface Infiltration Basin

Inflow Area = 4.024 ac, 27.54% Impervious, Inflow Depth = 0.82" for 2 YR event
Inflow = 3.5 cfs @ 12.08 hrs, Volume= 0.276 af
Outflow = 1.8 cfs @ 12.20 hrs, Volume= 0.276 af, Atten= 49%, Lag= 7.5 min
Discarded = 0.4 cfs @ 12.20 hrs, Volume= 0.247 af
Primary = 1.4 cfs @ 12.20 hrs, Volume= 0.029 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 262.59' @ 12.20 hrs Surf.Area= 2,044 sf Storage= 3,353 cf

Plug-Flow detention time= 68.4 min calculated for 0.276 af (100% of inflow)
Center-of-Mass det. time= 68.4 min (855.5 - 787.1)

Volume	Invert	Avail.Storage	Storage Description
#1	260.00'	4,252 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
260.00	618	160.0	0	0	618
261.00	1,126	178.0	859	859	1,131
262.00	1,691	198.0	1,399	2,258	1,758
263.00	2,312	216.0	1,993	4,252	2,386

Device	Routing	Invert	Outlet Devices
#1	Discarded	260.00'	**8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	262.50'	**20.0' long x 20.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.4 cfs @ 12.20 hrs HW=262.59' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.4 cfs)

Primary OutFlow Max=1.4 cfs @ 12.20 hrs HW=262.59' TW=260.07' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Weir Controls 1.4 cfs @ 0.79 fps)

Summary for Pond P1: Natural Wooded Basin

Inflow Area = 6.429 ac, 17.24% Impervious, Inflow Depth = 0.05" for 2 YR event
Inflow = 1.4 cfs @ 12.20 hrs, Volume= 0.029 af
Outflow = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 260.34' @ 12.83 hrs Surf.Area= 4,862 sf Storage= 1,253 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	260.00'	30,434 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
260.00	2,530	330.0	0	0	2,530
261.00	11,367	519.0	6,420	6,420	15,306
262.00	18,290	712.0	14,692	21,112	34,222
262.50	19,000	725.0	9,322	30,434	35,752

Summary for Pond RG-1: Rain Garden

Inflow Area = 0.550 ac, 25.93% Impervious, Inflow Depth = 0.75" for 2 YR event
Inflow = 0.4 cfs @ 12.07 hrs, Volume= 0.034 af
Outflow = 0.3 cfs @ 12.17 hrs, Volume= 0.034 af, Atten= 44%, Lag= 6.2 min
Discarded = 0.3 cfs @ 12.17 hrs, Volume= 0.034 af
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 281.07' @ 12.17 hrs Surf.Area= 1,320 sf Storage= 92 cf

Plug-Flow detention time= 1.7 min calculated for 0.034 af (100% of inflow)
Center-of-Mass det. time= 1.7 min (757.6 - 755.9)

Volume	Invert	Avail.Storage	Storage Description
#1	281.00'	3,562 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
281.00	1,289	155.0	0	0	1,289
283.00	2,323	191.0	3,562	3,562	2,339

Device	Routing	Invert	Outlet Devices
#1	Device 2	281.75'	**Nyloplast Dome Grate 8-in X 2.00**
#2	Primary	277.50'	**6.0" Round Culvert** L= 62.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 277.50' / 277.20' S= 0.0048 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#3	Discarded	281.00'	**8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.3 cfs @ 12.17 hrs HW=281.07' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.3 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=281.00' TW=270.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 0.0 cfs of 1.2 cfs potential flow)
└**1=Nyloplast Dome Grate 8-in** (Controls 0.0 cfs)

Summary for Pond SFB-1: Sediment Forebay

Inflow Area = 4.024 ac, 27.54% Impervious, Inflow Depth = 0.84" for 2 YR event
Inflow = 3.5 cfs @ 12.07 hrs, Volume= 0.283 af
Outflow = 3.5 cfs @ 12.08 hrs, Volume= 0.276 af, Atten= 0%, Lag= 0.4 min
Primary = 3.5 cfs @ 12.08 hrs, Volume= 0.276 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 264.81' @ 12.08 hrs Surf.Area= 417 sf Storage= 419 cf

Plug-Flow detention time= 29.4 min calculated for 0.276 af (98% of inflow)
Center-of-Mass det. time= 14.1 min (787.1 - 773.0)

Volume	Invert	Avail.Storage	Storage Description
#1	263.00'	814 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
263.00	50	27.0	0	0	50
264.00	266	89.0	144	144	625
265.00	457	102.0	357	501	845
265.50	810	146.0	313	814	1,715

Device	Routing	Invert	Outlet Devices
#1	Primary	264.50'	**8.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64

2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=3.5 cfs @ 12.08 hrs HW=264.81' TW=262.16' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 3.5 cfs @ 1.39 fps)

Summary for Link DP1: Ravine (Nashua River)

Inflow Area = 11.581 ac, 52.21% Impervious, Inflow Depth = 0.00" for 2 YR event
Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Subcatchment PR 1: Subcat PR 1 - Building and Equipment Yard South

Runoff = 8.6 cfs @ 12.07 hrs, Volume= 0.677 af, Depth= 3.72"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.79"

Area (sf)	CN	Description
15,745	39	>75% Grass cover, Good, HSG A
5,527	96	Gravel surface, HSG A
62,341	98	Paved parking, HSG A
11,581	98	Roofs, HSG A
95,194	88	Weighted Average
21,272	54	22.35% Pervious Area
73,922	98	77.65% Impervious Area

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

Summary for Subcatchment PR 10: North and West Wing

Runoff = 4.6 cfs @ 12.07 hrs, Volume= 0.358 af, Depth= 4.55"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.79"

Area (sf)	CN	Description
41,048	98	Roofs, HSG A
41,048	98	100.00% Impervious Area

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

Summary for Subcatchment PR 11: East Wing

Runoff = 1.1 cfs @ 12.07 hrs, Volume= 0.088 af, Depth= 4.55"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.79"

Area (ac)	CN	Description
0.232	98	Roofs, HSG A
0.232	98	100.00% Impervious Area

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

Summary for Subcatchment PR 12: South Wing

Runoff = 3.2 cfs @ 12.07 hrs, Volume= 0.253 af, Depth= 4.55"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.79"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
28,996	98	Roofs, HSG A
28,996	98	Weighted Average
28,996	98	100.00% Impervious Area

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

Summary for Subcatchment PR 14: Subcat PR 14

Runoff = 1.0 cfs @ 12.07 hrs, Volume= 0.077 af, Depth= 3.39"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.79"

Area (ac)	CN	Description
0.067	39	>75% Grass cover, Good, HSG A
0.006	61	>75% Grass cover, Good, HSG B
0.175	98	Paved parking, HSG A
0.025	98	Paved parking, HSG B
0.273	83	Weighted Average
0.074	41	26.91% Pervious Area
0.200	98	73.09% Impervious Area

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

Summary for Subcatchment PR 2: Subcat PR 2 - Surface Parking

Runoff = 0.7 cfs @ 12.07 hrs, Volume= 0.060 af, Depth= 1.30"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.79"

Area (ac)	CN	Description
0.407	39	>75% Grass cover, Good, HSG A
0.087	98	Paved parking, HSG A
0.056	98	Water Surface, HSG A
0.550	54	Weighted Average
0.407	39	74.07% Pervious Area
0.143	98	25.93% Impervious Area

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

Summary for Subcatchment PR 3: Subcat PR 3 - Equipment Yard North

Runoff = 5.4 cfs @ 12.07 hrs, Volume= 0.419 af, Depth= 4.55"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.79"

Area (ac)	CN	Description
0.000	39	>75% Grass cover, Good, HSG A
0.848	98	Paved parking, HSG A
0.256	98	Roofs, HSG A
1.104	98	Weighted Average
0.000	39	0.00% Pervious Area
1.104	98	100.00% Impervious Area

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

Summary for Subcatchment PR 4: Subcat PR 4 - Future Expansion

Runoff = 4.0 cfs @ 12.07 hrs, Volume= 0.315 af, Depth= 3.77"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.79"

Area (ac)	CN	Description
0.178	39	>75% Grass cover, Good, HSG A
0.278	98	Paved parking, HSG A
0.545	98	Roofs, HSG A
1.001	88	Weighted Average
0.178	39	17.76% Pervious Area
0.823	98	82.24% Impervious Area

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

Summary for Subcatchment PR 5: Subcat PR 5 - Access Drive

Runoff = 5.8 cfs @ 12.08 hrs, Volume= 0.534 af, Depth= 1.59"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.79"

Area (ac)	CN	Description
1.818	39	>75% Grass cover, Good, HSG A
1.097	61	>75% Grass cover, Good, HSG B
0.924	98	Paved parking, HSG A
0.184	98	Paved parking, HSG B
4.024	61	Weighted Average
2.916	47	72.46% Pervious Area
1.108	98	27.54% Impervious Area

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

Summary for Subcatchment PR 6: Subcat PR 6 - Offsite from T-Line

Runoff = 0.0 cfs @ 22.47 hrs, Volume= 0.002 af, Depth= 0.01"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.79"

Area (ac)	CN	Description
0.347	39	>75% Grass cover, Good, HSG A
1.315	30	Woods, Good, HSG A
1.662	32	Weighted Average
1.662	32	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.1	50	0.0420	0.05		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.13"
0.1	50	0.2600	8.21		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	110	0.2600	8.21		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.9	145	0.0280	2.69		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
17.3	355	Total			

Summary for Subcatchment PR 7: Earthwork Mound Area (1 of 2)

Runoff = 0.0 cfs @ 24.04 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.79"

Area (ac)	CN	Description
2.016	30	Meadow, non-grazed, HSG A
2.016	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	50	0.0050	0.08		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.13"
5.4	160	0.0050	0.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	100	0.5000	4.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.6	310	Total			

Summary for Subcatchment PR 8: Earthwork Mound Area (2 of 2)

Runoff = 0.0 cfs @ 24.03 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.79"

Area (ac)	CN	Description
2.405	30	Meadow, non-grazed, HSG A
2.405	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	25	0.0100	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.13"
1.1	25	0.3300	0.39		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.13"
0.1	31	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.2	290	0.0125	0.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	15	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.8	386	Total			

Summary for Subcatchment PR 9: 69kv Area

Runoff = 0.0 cfs @ 24.01 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.79"

Area (sf)	CN	Description
26,571	30	Meadow, non-grazed, HSG A
26,571	30	100.00% Pervious Area

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

Summary for Subcatchment PR-13: Subcat PR-13

Runoff = 1.2 cfs @ 12.07 hrs, Volume= 0.093 af, Depth= 3.28"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.79"

Area (ac)	CN	Description
0.099	39	>75% Grass cover, Good, HSG A
0.241	98	Paved parking, HSG A
0.340	81	Weighted Average
0.099	39	29.08% Pervious Area
0.241	98	70.92% Impervious Area

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

Summary for Pond INF-1: Subsurface Infiltration Chambers (7')

Inflow Area = 8.955 ac, 67.53% Impervious, Inflow Depth = 3.06" for 10 YR event
Inflow = 29.0 cfs @ 12.07 hrs, Volume= 2.281 af
Outflow = 2.1 cfs @ 11.47 hrs, Volume= 2.281 af, Atten= 93%, Lag= 0.0 min
Discarded = 2.1 cfs @ 11.47 hrs, Volume= 2.281 af
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 274.74' @ 13.13 hrs Surf.Area= 0.253 ac Storage= 0.835 af

Plug-Flow detention time= 124.8 min calculated for 2.280 af (100% of inflow)
Center-of-Mass det. time= 124.8 min (875.9 - 751.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	270.00'	0.101 af	**72.67'W x 151.88'L x 9.00'H Field A** 2.280 af Overall - 2.027 af Embedded = 0.253 af x 40.0% Voids
#2A	271.00'	1.583 af	**StormTrap ST2 DoubleTrap 7-0** x 63 Inside #1 Inside= 101.7"W x 84.0"H => 53.54 sf x 15.40'L = 824.3 cf Outside= 101.7"W x 96.0"H => 67.83 sf x 15.40'L = 1,044.4 cf 63 Chambers in 7 Rows 59.35' x 138.56' Core + 6.66' Border = 72.67' x 151.88' System
#3	278.50'	0.002 af	**4.00'D x 6.00'H Outlet Manhole Riser** Impervious
		1.686 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	270.00'	**8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	280.00'	**18.0" Round Culvert** L= 65.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 280.00' / 279.50' S= 0.0077 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.77 sf

Discarded OutFlow Max=2.1 cfs @ 11.47 hrs HW=270.15' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 2.1 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=270.00' TW=0.00' (Dynamic Tailwater)
↑—**2=Culvert** (Controls 0.0 cfs)

Summary for Pond INF-2: Surface Infiltration Basin

Inflow Area = 4.024 ac, 27.54% Impervious, Inflow Depth = 1.57" for 10 YR event
Inflow = 5.8 cfs @ 12.08 hrs, Volume= 0.527 af
Outflow = 5.6 cfs @ 12.10 hrs, Volume= 0.527 af, Atten= 2%, Lag= 1.0 min
Discarded = 0.4 cfs @ 12.10 hrs, Volume= 0.370 af
Primary = 5.2 cfs @ 12.10 hrs, Volume= 0.157 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 262.71' @ 12.10 hrs Surf.Area= 2,123 sf Storage= 3,613 cf

Plug-Flow detention time= 65.1 min calculated for 0.527 af (100% of inflow)
Center-of-Mass det. time= 65.0 min (862.2 - 797.2)

Volume	Invert	Avail.Storage	Storage Description
#1	260.00'	4,252 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
260.00	618	160.0	0	0	618
261.00	1,126	178.0	859	859	1,131
262.00	1,691	198.0	1,399	2,258	1,758
263.00	2,312	216.0	1,993	4,252	2,386

Device	Routing	Invert	Outlet Devices
#1	Discarded	260.00'	**8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	262.50'	**20.0' long x 20.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.4 cfs @ 12.10 hrs HW=262.71' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.4 cfs)

Primary OutFlow Max=5.2 cfs @ 12.10 hrs HW=262.71' TW=260.37' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Weir Controls 5.2 cfs @ 1.23 fps)

Summary for Pond P1: Natural Wooded Basin

Inflow Area = 6.429 ac, 17.24% Impervious, Inflow Depth = 0.29" for 10 YR event
Inflow = 5.2 cfs @ 12.10 hrs, Volume= 0.157 af
Outflow = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 261.04' @ 24.68 hrs Surf.Area= 11,585 sf Storage= 6,829 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	260.00'	30,434 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
260.00	2,530	330.0	0	0	2,530
261.00	11,367	519.0	6,420	6,420	15,306
262.00	18,290	712.0	14,692	21,112	34,222
262.50	19,000	725.0	9,322	30,434	35,752

Summary for Pond RG-1: Rain Garden

Inflow Area = 0.550 ac, 25.93% Impervious, Inflow Depth = 1.30" for 10 YR event
Inflow = 0.7 cfs @ 12.07 hrs, Volume= 0.060 af
Outflow = 0.3 cfs @ 12.28 hrs, Volume= 0.060 af, Atten= 62%, Lag= 12.6 min
Discarded = 0.3 cfs @ 12.28 hrs, Volume= 0.060 af
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 281.20' @ 12.28 hrs Surf.Area= 1,378 sf Storage= 266 cf

Plug-Flow detention time= 4.1 min calculated for 0.060 af (100% of inflow)
Center-of-Mass det. time= 4.1 min (777.2 - 773.1)

Volume	Invert	Avail.Storage	Storage Description
#1	281.00'	3,562 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
281.00	1,289	155.0	0	0	1,289
283.00	2,323	191.0	3,562	3,562	2,339

Device	Routing	Invert	Outlet Devices
#1	Device 2	281.75'	**Nyloplast Dome Grate 8-in X 2.00**
#2	Primary	277.50'	**6.0" Round Culvert** L= 62.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 277.50' / 277.20' S= 0.0048 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#3	Discarded	281.00'	**8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.3 cfs @ 12.28 hrs HW=281.20' (Free Discharge)
↑—**3=Exfiltration** (Exfiltration Controls 0.3 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=281.00' TW=270.00' (Dynamic Tailwater)
↑—**2=Culvert** (Passes 0.0 cfs of 1.2 cfs potential flow)
↑—**1=Nyloplast Dome Grate 8-in** (Controls 0.0 cfs)

Summary for Pond SFB-1: Sediment Forebay

Inflow Area = 4.024 ac, 27.54% Impervious, Inflow Depth = 1.59" for 10 YR event
Inflow = 5.8 cfs @ 12.08 hrs, Volume= 0.534 af
Outflow = 5.8 cfs @ 12.08 hrs, Volume= 0.527 af, Atten= 0%, Lag= 0.3 min
Primary = 5.8 cfs @ 12.08 hrs, Volume= 0.527 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 264.93' @ 12.08 hrs Surf.Area= 442 sf Storage= 469 cf

Plug-Flow detention time= 17.2 min calculated for 0.527 af (99% of inflow)
Center-of-Mass det. time= 9.0 min (797.2 - 788.2)

Volume	Invert	Avail.Storage	Storage Description
#1	263.00'	814 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
263.00	50	27.0	0	0	50
264.00	266	89.0	144	144	625
265.00	457	102.0	357	501	845
265.50	810	146.0	313	814	1,715

Device	Routing	Invert	Outlet Devices
#1	Primary	264.50'	**8.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64

2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=5.7 cfs @ 12.08 hrs HW=264.93' TW=262.71' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 5.7 cfs @ 1.68 fps)

Summary for Link DP1: Ravine (Nashua River)

Inflow Area = 11.581 ac, 52.21% Impervious, Inflow Depth = 0.00" for 10 YR event
Inflow = 0.0 cfs @ 24.01 hrs, Volume= 0.000 af
Primary = 0.0 cfs @ 24.01 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Subcatchment PR 1: Subcat PR 1 - Building and Equipment Yard South

Runoff = 10.7 cfs @ 12.07 hrs, Volume= 0.846 af, Depth= 4.64"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 YR Rainfall=5.83"

Area (sf)	CN	Description
15,745	39	>75% Grass cover, Good, HSG A
5,527	96	Gravel surface, HSG A
62,341	98	Paved parking, HSG A
11,581	98	Roofs, HSG A
95,194	88	Weighted Average
21,272	54	22.35% Pervious Area
73,922	98	77.65% Impervious Area

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

Summary for Subcatchment PR 10: North and West Wing

Runoff = 5.6 cfs @ 12.07 hrs, Volume= 0.439 af, Depth= 5.59"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 YR Rainfall=5.83"

Area (sf)	CN	Description
41,048	98	Roofs, HSG A
41,048	98	100.00% Impervious Area

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

Summary for Subcatchment PR 11: East Wing

Runoff = 1.4 cfs @ 12.07 hrs, Volume= 0.108 af, Depth= 5.59"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 YR Rainfall=5.83"

Area (ac)	CN	Description
0.232	98	Roofs, HSG A
0.232	98	100.00% Impervious Area

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

Summary for Subcatchment PR 12: South Wing

Runoff = 3.9 cfs @ 12.07 hrs, Volume= 0.310 af, Depth= 5.59"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 YR Rainfall=5.83"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
28,996	98	Roofs, HSG A
28,996	98	Weighted Average
28,996	98	100.00% Impervious Area

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

Summary for Subcatchment PR 14: Subcat PR 14

Runoff = 1.2 cfs @ 12.07 hrs, Volume= 0.096 af, Depth= 4.22"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 YR Rainfall=5.83"

Area (ac)	CN	Description
0.067	39	>75% Grass cover, Good, HSG A
0.006	61	>75% Grass cover, Good, HSG B
0.175	98	Paved parking, HSG A
0.025	98	Paved parking, HSG B
0.273	83	Weighted Average
0.074	41	26.91% Pervious Area
0.200	98	73.09% Impervious Area

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

Summary for Subcatchment PR 2: Subcat PR 2 - Surface Parking

Runoff = 0.8 cfs @ 12.07 hrs, Volume= 0.080 af, Depth= 1.74"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 YR Rainfall=5.83"

Area (ac)	CN	Description
0.407	39	>75% Grass cover, Good, HSG A
0.087	98	Paved parking, HSG A
0.056	98	Water Surface, HSG A
0.550	54	Weighted Average
0.407	39	74.07% Pervious Area
0.143	98	25.93% Impervious Area

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

Summary for Subcatchment PR 3: Subcat PR 3 - Equipment Yard North

Runoff = 6.5 cfs @ 12.07 hrs, Volume= 0.514 af, Depth= 5.59"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 YR Rainfall=5.83"

Area (ac)	CN	Description
0.000	39	>75% Grass cover, Good, HSG A
0.848	98	Paved parking, HSG A
0.256	98	Roofs, HSG A
1.104	98	Weighted Average
0.000	39	0.00% Pervious Area
1.104	98	100.00% Impervious Area

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

Summary for Subcatchment PR 4: Subcat PR 4 - Future Expansion

Runoff = 4.9 cfs @ 12.07 hrs, Volume= 0.389 af, Depth= 4.67"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 YR Rainfall=5.83"

Area (ac)	CN	Description
0.178	39	>75% Grass cover, Good, HSG A
0.278	98	Paved parking, HSG A
0.545	98	Roofs, HSG A
1.001	88	Weighted Average
0.178	39	17.76% Pervious Area
0.823	98	82.24% Impervious Area

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

Summary for Subcatchment PR 5: Subcat PR 5 - Access Drive

Runoff = 8.4 cfs @ 12.08 hrs, Volume= 0.725 af, Depth= 2.16"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 YR Rainfall=5.83"

Area (ac)	CN	Description
1.818	39	>75% Grass cover, Good, HSG A
1.097	61	>75% Grass cover, Good, HSG B
0.924	98	Paved parking, HSG A
0.184	98	Paved parking, HSG B
4.024	61	Weighted Average
2.916	47	72.46% Pervious Area
1.108	98	27.54% Impervious Area

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

Summary for Subcatchment PR 6: Subcat PR 6 - Offsite from T-Line

Runoff = 0.0 cfs @ 15.17 hrs, Volume= 0.015 af, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 YR Rainfall=5.83"

Area (ac)	CN	Description
0.347	39	>75% Grass cover, Good, HSG A
1.315	30	Woods, Good, HSG A
1.662	32	Weighted Average
1.662	32	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.1	50	0.0420	0.05		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.13"
0.1	50	0.2600	8.21		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	110	0.2600	8.21		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.9	145	0.0280	2.69		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
17.3	355	Total			

Summary for Subcatchment PR 7: Earthwork Mound Area (1 of 2)

Runoff = 0.0 cfs @ 16.90 hrs, Volume= 0.009 af, Depth= 0.06"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 YR Rainfall=5.83"

Area (ac)	CN	Description
2.016	30	Meadow, non-grazed, HSG A
2.016	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	50	0.0050	0.08		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.13"
5.4	160	0.0050	0.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	100	0.5000	4.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.6	310	Total			

Summary for Subcatchment PR 8: Earthwork Mound Area (2 of 2)

Runoff = 0.0 cfs @ 16.82 hrs, Volume= 0.011 af, Depth= 0.06"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 YR Rainfall=5.83"

Area (ac)	CN	Description
2.405	30	Meadow, non-grazed, HSG A
2.405	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	25	0.0100	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.13"
1.1	25	0.3300	0.39		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.13"
0.1	31	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.2	290	0.0125	0.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	15	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.8	386	Total			

Summary for Subcatchment PR 9: 69kv Area

Runoff = 0.0 cfs @ 16.73 hrs, Volume= 0.003 af, Depth= 0.06"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 YR Rainfall=5.83"

Area (sf)	CN	Description
26,571	30	Meadow, non-grazed, HSG A
26,571	30	100.00% Pervious Area

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

Summary for Subcatchment PR-13: Subcat PR-13

Runoff = 1.4 cfs @ 12.07 hrs, Volume= 0.116 af, Depth= 4.08"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 YR Rainfall=5.83"

Area (ac)	CN	Description
0.099	39	>75% Grass cover, Good, HSG A
0.241	98	Paved parking, HSG A
0.340	81	Weighted Average
0.099	39	29.08% Pervious Area
0.241	98	70.92% Impervious Area

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

Summary for Pond INF-1: Subsurface Infiltration Chambers (7')

Inflow Area = 8.955 ac, 67.53% Impervious, Inflow Depth = 3.80" for 25 YR event
Inflow = 35.6 cfs @ 12.07 hrs, Volume= 2.833 af
Outflow = 2.1 cfs @ 11.21 hrs, Volume= 2.833 af, Atten= 94%, Lag= 0.0 min
Discarded = 2.1 cfs @ 11.21 hrs, Volume= 2.833 af
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 276.04' @ 13.71 hrs Surf.Area= 0.253 ac Storage= 1.128 af

Plug-Flow detention time= 180.1 min calculated for 2.833 af (100% of inflow)
Center-of-Mass det. time= 180.0 min (930.1 - 750.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	270.00'	0.101 af	**72.67'W x 151.88'L x 9.00'H Field A** 2.280 af Overall - 2.027 af Embedded = 0.253 af x 40.0% Voids
#2A	271.00'	1.583 af	**StormTrap ST2 DoubleTrap 7-0** x 63 Inside #1 Inside= 101.7"W x 84.0"H => 53.54 sf x 15.40'L = 824.3 cf Outside= 101.7"W x 96.0"H => 67.83 sf x 15.40'L = 1,044.4 cf 63 Chambers in 7 Rows 59.35' x 138.56' Core + 6.66' Border = 72.67' x 151.88' System
#3	278.50'	0.002 af	**4.00'D x 6.00'H Outlet Manhole Riser** Impervious
		1.686 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	270.00'	**8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	280.00'	**18.0" Round Culvert** L= 65.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 280.00' / 279.50' S= 0.0077 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.77 sf

Discarded OutFlow Max=2.1 cfs @ 11.21 hrs HW=270.15' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 2.1 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=270.00' TW=0.00' (Dynamic Tailwater)
↑—**2=Culvert** (Controls 0.0 cfs)

Summary for Pond INF-2: Surface Infiltration Basin

Inflow Area = 4.024 ac, 27.54% Impervious, Inflow Depth = 2.14" for 25 YR event
Inflow = 8.4 cfs @ 12.08 hrs, Volume= 0.719 af
Outflow = 8.3 cfs @ 12.10 hrs, Volume= 0.719 af, Atten= 2%, Lag= 0.9 min
Discarded = 0.4 cfs @ 12.10 hrs, Volume= 0.430 af
Primary = 7.8 cfs @ 12.10 hrs, Volume= 0.288 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 262.78' @ 12.10 hrs Surf.Area= 2,165 sf Storage= 3,753 cf

Plug-Flow detention time= 59.5 min calculated for 0.718 af (100% of inflow)
Center-of-Mass det. time= 59.5 min (858.8 - 799.3)

Volume	Invert	Avail.Storage	Storage Description
#1	260.00'	4,252 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
260.00	618	160.0	0	0	618
261.00	1,126	178.0	859	859	1,131
262.00	1,691	198.0	1,399	2,258	1,758
263.00	2,312	216.0	1,993	4,252	2,386

Device	Routing	Invert	Outlet Devices
#1	Discarded	260.00'	**8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	262.50'	**20.0' long x 20.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.4 cfs @ 12.10 hrs HW=262.78' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.4 cfs)

Primary OutFlow Max=7.8 cfs @ 12.10 hrs HW=262.78' TW=260.64' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Weir Controls 7.8 cfs @ 1.41 fps)

Summary for Pond P1: Natural Wooded Basin

Inflow Area = 6.429 ac, 17.24% Impervious, Inflow Depth = 0.56" for 25 YR event
Inflow = 7.8 cfs @ 12.10 hrs, Volume= 0.300 af
Outflow = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 261.51' @ 24.69 hrs Surf.Area= 14,693 sf Storage= 13,047 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	260.00'	30,434 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
260.00	2,530	330.0	0	0	2,530
261.00	11,367	519.0	6,420	6,420	15,306
262.00	18,290	712.0	14,692	21,112	34,222
262.50	19,000	725.0	9,322	30,434	35,752

Summary for Pond RG-1: Rain Garden

Inflow Area = 0.550 ac, 25.93% Impervious, Inflow Depth = 1.74" for 25 YR event
Inflow = 0.8 cfs @ 12.07 hrs, Volume= 0.080 af
Outflow = 0.3 cfs @ 12.42 hrs, Volume= 0.080 af, Atten= 67%, Lag= 20.7 min
Discarded = 0.3 cfs @ 12.42 hrs, Volume= 0.080 af
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 281.34' @ 12.42 hrs Surf.Area= 1,442 sf Storage= 459 cf

Plug-Flow detention time= 7.1 min calculated for 0.080 af (100% of inflow)
Center-of-Mass det. time= 7.1 min (789.0 - 781.9)

Volume	Invert	Avail.Storage	Storage Description
#1	281.00'	3,562 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
281.00	1,289	155.0	0	0	1,289
283.00	2,323	191.0	3,562	3,562	2,339

Device	Routing	Invert	Outlet Devices
#1	Device 2	281.75'	**Nyloplast Dome Grate 8-in X 2.00**
#2	Primary	277.50'	**6.0" Round Culvert** L= 62.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 277.50' / 277.20' S= 0.0048 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#3	Discarded	281.00'	**8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.3 cfs @ 12.42 hrs HW=281.34' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.3 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=281.00' TW=270.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 0.0 cfs of 1.2 cfs potential flow)
└**1=Nyloplast Dome Grate 8-in** (Controls 0.0 cfs)

Summary for Pond SFB-1: Sediment Forebay

Inflow Area = 4.024 ac, 27.54% Impervious, Inflow Depth = 2.16" for 25 YR event
Inflow = 8.4 cfs @ 12.08 hrs, Volume= 0.725 af
Outflow = 8.4 cfs @ 12.08 hrs, Volume= 0.719 af, Atten= 0%, Lag= 0.3 min
Primary = 8.4 cfs @ 12.08 hrs, Volume= 0.719 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 265.04' @ 12.08 hrs Surf.Area= 481 sf Storage= 519 cf

Plug-Flow detention time= 13.1 min calculated for 0.718 af (99% of inflow)
Center-of-Mass det. time= 7.1 min (799.3 - 792.2)

Volume	Invert	Avail.Storage	Storage Description
#1	263.00'	814 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
263.00	50	27.0	0	0	50
264.00	266	89.0	144	144	625
265.00	457	102.0	357	501	845
265.50	810	146.0	313	814	1,715

Device	Routing	Invert	Outlet Devices
#1	Primary	264.50'	**8.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64

2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=8.4 cfs @ 12.08 hrs HW=265.04' TW=262.77' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 8.4 cfs @ 1.95 fps)

Summary for Link DP1: Ravine (Nashua River)

Inflow Area = 11.581 ac, 52.21% Impervious, Inflow Depth = 0.01" for 25 YR event
Inflow = 0.0 cfs @ 16.83 hrs, Volume= 0.012 af
Primary = 0.0 cfs @ 16.83 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Subcatchment PR 1: Subcat PR 1 - Building and Equipment Yard South

Runoff = 14.1 cfs @ 12.07 hrs, Volume= 1.111 af, Depth= 6.10"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 YR Rainfall=7.43"

Area (sf)	CN	Description
15,745	39	>75% Grass cover, Good, HSG A
5,527	96	Gravel surface, HSG A
62,341	98	Paved parking, HSG A
11,581	98	Roofs, HSG A
95,194	88	Weighted Average
21,272	54	22.35% Pervious Area
73,922	98	77.65% Impervious Area

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

Summary for Subcatchment PR 10: North and West Wing

Runoff = 7.1 cfs @ 12.07 hrs, Volume= 0.565 af, Depth= 7.19"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 YR Rainfall=7.43"

Area (sf)	CN	Description
41,048	98	Roofs, HSG A
41,048	98	100.00% Impervious Area

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

Summary for Subcatchment PR 11: East Wing

Runoff = 1.8 cfs @ 12.07 hrs, Volume= 0.139 af, Depth= 7.19"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 YR Rainfall=7.43"

Area (ac)	CN	Description
0.232	98	Roofs, HSG A
0.232	98	100.00% Impervious Area

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

Summary for Subcatchment PR 12: South Wing

Runoff = 5.0 cfs @ 12.07 hrs, Volume= 0.399 af, Depth= 7.19"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 YR Rainfall=7.43"

Area (sf)	CN	Description
0	98	Paved parking, HSG A
28,996	98	Roofs, HSG A
28,996	98	Weighted Average
28,996	98	100.00% Impervious Area

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

Summary for Subcatchment PR 14: Subcat PR 14

Runoff = 1.6 cfs @ 12.07 hrs, Volume= 0.126 af, Depth= 5.55"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 YR Rainfall=7.43"

Area (ac)	CN	Description
0.067	39	>75% Grass cover, Good, HSG A
0.006	61	>75% Grass cover, Good, HSG B
0.175	98	Paved parking, HSG A
0.025	98	Paved parking, HSG B
0.273	83	Weighted Average
0.074	41	26.91% Pervious Area
0.200	98	73.09% Impervious Area

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

Summary for Subcatchment PR 2: Subcat PR 2 - Surface Parking

Runoff = 1.3 cfs @ 12.08 hrs, Volume= 0.117 af, Depth= 2.55"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 YR Rainfall=7.43"

Area (ac)	CN	Description
0.407	39	>75% Grass cover, Good, HSG A
0.087	98	Paved parking, HSG A
0.056	98	Water Surface, HSG A
0.550	54	Weighted Average
0.407	39	74.07% Pervious Area
0.143	98	25.93% Impervious Area

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

Summary for Subcatchment PR 3: Subcat PR 3 - Equipment Yard North

Runoff = 8.3 cfs @ 12.07 hrs, Volume= 0.661 af, Depth= 7.19"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 YR Rainfall=7.43"

Area (ac)	CN	Description
0.000	39	>75% Grass cover, Good, HSG A
0.848	98	Paved parking, HSG A
0.256	98	Roofs, HSG A
1.104	98	Weighted Average
0.000	39	0.00% Pervious Area
1.104	98	100.00% Impervious Area

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

Summary for Subcatchment PR 4: Subcat PR 4 - Future Expansion

Runoff = 6.3 cfs @ 12.07 hrs, Volume= 0.507 af, Depth= 6.08"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 YR Rainfall=7.43"

Area (ac)	CN	Description
0.178	39	>75% Grass cover, Good, HSG A
0.278	98	Paved parking, HSG A
0.545	98	Roofs, HSG A
1.001	88	Weighted Average
0.178	39	17.76% Pervious Area
0.823	98	82.24% Impervious Area

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

Summary for Subcatchment PR 5: Subcat PR 5 - Access Drive

Runoff = 13.1 cfs @ 12.08 hrs, Volume= 1.059 af, Depth= 3.16"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 YR Rainfall=7.43"

Area (ac)	CN	Description
1.818	39	>75% Grass cover, Good, HSG A
1.097	61	>75% Grass cover, Good, HSG B
0.924	98	Paved parking, HSG A
0.184	98	Paved parking, HSG B
4.024	61	Weighted Average
2.916	47	72.46% Pervious Area
1.108	98	27.54% Impervious Area

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

Summary for Subcatchment PR 6: Subcat PR 6 - Offsite from T-Line

Runoff = 0.2 cfs @ 12.57 hrs, Volume= 0.057 af, Depth= 0.41"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 YR Rainfall=7.43"

Area (ac)	CN	Description
0.347	39	>75% Grass cover, Good, HSG A
1.315	30	Woods, Good, HSG A
1.662	32	Weighted Average
1.662	32	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.1	50	0.0420	0.05		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 3.13"
0.1	50	0.2600	8.21		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	110	0.2600	8.21		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.9	145	0.0280	2.69		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
17.3	355	Total			

Summary for Subcatchment PR 7: Earthwork Mound Area (1 of 2)

Runoff = 0.1 cfs @ 12.66 hrs, Volume= 0.049 af, Depth= 0.29"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 YR Rainfall=7.43"

Area (ac)	CN	Description
2.016	30	Meadow, non-grazed, HSG A
2.016	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	50	0.0050	0.08		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.13"
5.4	160	0.0050	0.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	100	0.5000	4.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
15.6	310	Total			

Summary for Subcatchment PR 8: Earthwork Mound Area (2 of 2)

Runoff = 0.1 cfs @ 12.57 hrs, Volume= 0.059 af, Depth= 0.29"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 YR Rainfall=7.43"

Area (ac)	CN	Description
2.405	30	Meadow, non-grazed, HSG A
2.405	30	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	25	0.0100	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.13"
1.1	25	0.3300	0.39		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.13"
0.1	31	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.2	290	0.0125	0.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	15	0.3300	4.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.8	386	Total			

Summary for Subcatchment PR 9: 69kv Area

Runoff = 0.0 cfs @ 12.46 hrs, Volume= 0.015 af, Depth= 0.29"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 YR Rainfall=7.43"

Area (sf)	CN	Description
26,571	30	Meadow, non-grazed, HSG A
26,571	30	100.00% Pervious Area

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

Summary for Subcatchment PR-13: Subcat PR-13

Runoff = 1.9 cfs @ 12.07 hrs, Volume= 0.152 af, Depth= 5.37"

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 100 YR Rainfall=7.43"

Area (ac)	CN	Description
0.099	39	>75% Grass cover, Good, HSG A
0.241	98	Paved parking, HSG A
0.340	81	Weighted Average
0.099	39	29.08% Pervious Area
0.241	98	70.92% Impervious Area

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

Summary for Pond INF-1: Subsurface Infiltration Chambers (7')

Inflow Area = 8.955 ac, 67.53% Impervious, Inflow Depth = 4.98" for 100 YR event
Inflow = 46.1 cfs @ 12.07 hrs, Volume= 3.717 af
Outflow = 2.1 cfs @ 10.62 hrs, Volume= 3.717 af, Atten= 95%, Lag= 0.0 min
Discarded = 2.1 cfs @ 10.62 hrs, Volume= 3.717 af
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 278.41' @ 14.60 hrs Surf.Area= 0.253 ac Storage= 1.663 af

Plug-Flow detention time= 281.9 min calculated for 3.717 af (100% of inflow)
Center-of-Mass det. time= 281.9 min (1,031.5 - 749.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	270.00'	0.101 af	**72.67'W x 151.88'L x 9.00'H Field A** 2.280 af Overall - 2.027 af Embedded = 0.253 af x 40.0% Voids
#2A	271.00'	1.583 af	**StormTrap ST2 DoubleTrap 7-0** x 63 Inside #1 Inside= 101.7"W x 84.0"H => 53.54 sf x 15.40'L = 824.3 cf Outside= 101.7"W x 96.0"H => 67.83 sf x 15.40'L = 1,044.4 cf 63 Chambers in 7 Rows 59.35' x 138.56' Core + 6.66' Border = 72.67' x 151.88' System
#3	278.50'	0.002 af	**4.00'D x 6.00'H Outlet Manhole Riser** Impervious
		1.686 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	270.00'	**8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	280.00'	**18.0" Round Culvert** L= 65.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 280.00' / 279.50' S= 0.0077 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.77 sf

Discarded OutFlow Max=2.1 cfs @ 10.62 hrs HW=270.15' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 2.1 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=270.00' TW=0.00' (Dynamic Tailwater)
↑—**2=Culvert** (Controls 0.0 cfs)

Summary for Pond INF-2: Surface Infiltration Basin

Inflow Area = 4.024 ac, 27.54% Impervious, Inflow Depth = 3.14" for 100 YR event
Inflow = 13.1 cfs @ 12.08 hrs, Volume= 1.053 af
Outflow = 12.9 cfs @ 12.10 hrs, Volume= 1.053 af, Atten= 1%, Lag= 0.8 min
Discarded = 0.4 cfs @ 12.10 hrs, Volume= 0.508 af
Primary = 12.5 cfs @ 12.10 hrs, Volume= 0.545 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 262.88' @ 12.10 hrs Surf.Area= 2,230 sf Storage= 3,972 cf

Plug-Flow detention time= 51.9 min calculated for 1.052 af (100% of inflow)
Center-of-Mass det. time= 51.9 min (852.0 - 800.1)

Volume	Invert	Avail.Storage	Storage Description
#1	260.00'	4,252 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
260.00	618	160.0	0	0	618
261.00	1,126	178.0	859	859	1,131
262.00	1,691	198.0	1,399	2,258	1,758
263.00	2,312	216.0	1,993	4,252	2,386

Device	Routing	Invert	Outlet Devices
#1	Discarded	260.00'	**8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	262.50'	**20.0' long x 20.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.4 cfs @ 12.10 hrs HW=262.88' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.4 cfs)

Primary OutFlow Max=12.5 cfs @ 12.10 hrs HW=262.88' TW=261.01' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Weir Controls 12.5 cfs @ 1.66 fps)

Summary for Pond P1: Natural Wooded Basin

Inflow Area = 6.429 ac, 17.24% Impervious, Inflow Depth = 1.13" for 100 YR event
Inflow = 12.5 cfs @ 12.10 hrs, Volume= 0.603 af
Outflow = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 262.28' @ 24.69 hrs Surf.Area= 18,685 sf Storage= 26,278 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	260.00'	30,434 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
260.00	2,530	330.0	0	0	2,530
261.00	11,367	519.0	6,420	6,420	15,306
262.00	18,290	712.0	14,692	21,112	34,222
262.50	19,000	725.0	9,322	30,434	35,752

Summary for Pond RG-1: Rain Garden

Inflow Area = 0.550 ac, 25.93% Impervious, Inflow Depth = 2.55" for 100 YR event
Inflow = 1.3 cfs @ 12.08 hrs, Volume= 0.117 af
Outflow = 0.3 cfs @ 12.51 hrs, Volume= 0.117 af, Atten= 76%, Lag= 25.8 min
Discarded = 0.3 cfs @ 12.51 hrs, Volume= 0.117 af
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 281.67' @ 12.51 hrs Surf.Area= 1,602 sf Storage= 969 cf

Plug-Flow detention time= 16.3 min calculated for 0.117 af (100% of inflow)
Center-of-Mass det. time= 16.3 min (805.9 - 789.6)

Volume	Invert	Avail.Storage	Storage Description
#1	281.00'	3,562 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
281.00	1,289	155.0	0	0	1,289
283.00	2,323	191.0	3,562	3,562	2,339

Device	Routing	Invert	Outlet Devices
#1	Device 2	281.75'	**Nyloplast Dome Grate 8-in X 2.00**
#2	Primary	277.50'	**6.0" Round Culvert** L= 62.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 277.50' / 277.20' S= 0.0048 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#3	Discarded	281.00'	**8.270 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.3 cfs @ 12.51 hrs HW=281.67' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.3 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=281.00' TW=270.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 0.0 cfs of 1.2 cfs potential flow)
└**1=Nyloplast Dome Grate 8-in** (Controls 0.0 cfs)

Summary for Pond SFB-1: Sediment Forebay

Inflow Area = 4.024 ac, 27.54% Impervious, Inflow Depth = 3.16" for 100 YR event
Inflow = 13.1 cfs @ 12.08 hrs, Volume= 1.059 af
Outflow = 13.1 cfs @ 12.08 hrs, Volume= 1.053 af, Atten= 0%, Lag= 0.4 min
Primary = 13.1 cfs @ 12.08 hrs, Volume= 1.053 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 265.22' @ 12.08 hrs Surf.Area= 598 sf Storage= 615 cf

Plug-Flow detention time= 9.4 min calculated for 1.052 af (99% of inflow)
Center-of-Mass det. time= 5.2 min (800.1 - 794.9)

Volume	Invert	Avail.Storage	Storage Description
#1	263.00'	814 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
263.00	50	27.0	0	0	50
264.00	266	89.0	144	144	625
265.00	457	102.0	357	501	845
265.50	810	146.0	313	814	1,715

Device	Routing	Invert	Outlet Devices
#1	Primary	264.50'	**8.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64

2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=13.1 cfs @ 12.08 hrs HW=265.22' TW=262.87' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 13.1 cfs @ 2.28 fps)

Summary for Link DP1: Ravine (Nashua River)

Inflow Area = 11.581 ac, 52.21% Impervious, Inflow Depth = 0.07" for 100 YR event
Inflow = 0.1 cfs @ 12.67 hrs, Volume= 0.064 af
Primary = 0.1 cfs @ 12.67 hrs, Volume= 0.064 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs