

DRAINAGE REPORT

Prepared for

PROPOSED MULTI-FAMILY DEVELOPMENT LOUISE BERRY DRIVE BROOKLYN, CT

August 2020

Prepared for

Shane Pollock

Prepared by

Killingly Engineering Associates
Civil Engineering & Surveying



Normand Thibeault Jr., P.E.
CT License #22834

Introduction

Shane Pollock has submitted a proposal to the Town of Brooklyn to construct a 51-unit condominium development with access from Louise Berry Drive in Brooklyn. The project will require construction of a 1000-foot-long paved roadway with a cul-de-sac turnaround, and public water and sewer. The proposal is the second version of the project, the first of which proposed 100-units. The current design results in a significant reduction from the amount of impervious surface that was originally proposed.

Summary

According to the USDA-SCS Soil Survey, the area of disturbance consists of Canton and Charlton fine sandy loams and wetlands consist of Ridgebury, Leicester and Whitman Soils. A walk of the property appears to verify that these descriptions are accurate. These soils are associated with hydrologic soil groups B and D. The site sheet flow primarily to the south to a linear wetlands system and west to areas off site. To the greatest degree possible, the drainage patterns will be preserved.

The bulk of the drainage from developed areas will be collected in a closed stormwater collection system consisting of catch basins and HDPE pipe and will be conveyed to a proposed stormwater basin at the southwestern portion of the property. Overland runoff from newly landscaped and grassed areas will be collected in a swale at the toe of fill slopes and also conveyed to the stormwater basin. Discharge from the basin will be directed back toward the wetlands that flows off the property at the southwestern boundary.

The calculations utilized HydroCAD® Stormwater Modeling System, a computer model, to analyze pre-and post-development drainage conditions, and to aid in the design of the stormwater detention system. The model used the Soil Conservation Service TR-20 method with a Type III 24-hour rainfall to calculate the runoff. The 2 through 100-year frequency storms were analyzed to evaluate peak runoff for pre-and post-construction conditions. Table 1 summarizes our findings:

Table 1. Existing & Proposed Peak Flows to

Design Storm	Depth (in)	Existing peak	Proposed peak	Difference
2-Year	3.37	2.52 CFS	3.17 CFS	+0.65 CFS
5-Year	4.28	5.48 CFS	6.31 CFS	+0.83 CFS
10-Year	5.04	10.87 CFS	10.20 CFS	-0.67 CFS
25-Year	6.08	17.63 CFS	15.22 CFS	-2.41 CFS
50-Year	6.85	23.03 CFS	19.85 CFS	-3.18 CFS
100-Year	7.68	29.20 CFS	33.12 CFS	+3.92 CFS

Installation of the proposed stormwater basin will reduce peak runoff rates from the site for most storms. The slight increases for the 2-year and 5-year storms are minimal and will be discharged to the wetlands system and stream that flows south and west, under Wauregan road, and ultimately to Creamery Brook. Based upon the channelized topography that the wetlands follow, it is our opinion that the slight increases in peak runoff rates for selected storms will detrimentally impact downstream properties.

In addition to addressing pre and post construction peak runoff rates from the property to the wetlands and adjacent property, the design considers stormwater treatment and water quality for the project. Wherever possible, overland sheet flow is encouraged, catch basins will be constructed with 4ø sediment sumps, the final catch basin prior to discharge to the stormwater basin will be retrofitted with a hooded outlet, and the detention/water quality basin accounts for Water Quality Volume (WQV) in accordance with the parameters set forth in the 2004 CTDEEP Stormwater Quality Guidelines. Following are computation for the storwater basin and the WQV provided.

Basin Water Quality Volume (WQV)

$$WQV = (1.0) (R)(A)/12$$

$$R = 0.05 + 0.009(I) \quad I = \% \text{ Impervious} = 48.33\% \text{ (Stormwater System Drainage Area)}$$

$$R = 0.05 + 0.009(48.33) = 0.485$$

$$A = 4.781 \text{ acres}$$

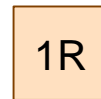
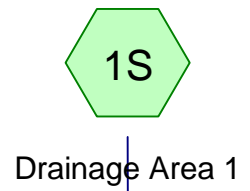
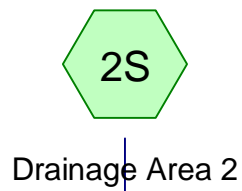
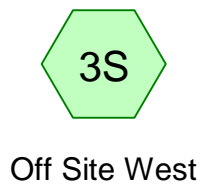
$$WQV = (1.0) (0.485) (4.781)/12 = 0.193 \text{ ac-ft}$$

$$8417 \text{ c.f.}$$

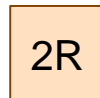
Basin forebay + outlet side of basin provides 8,336 c.f.

HYDROCAD CALCULATIONS

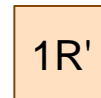
EXISTING CONDITIONS



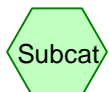
Wetland Swale



Peak off Site



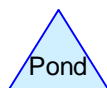
Wetland Swale



Subcat



Reach



Pond



Link

Routing Diagram for Existing Conditions

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
11.986	55	Woods, Good, HSG B (1S, 2S, 3S)
2.348	77	Woods, Good, HSG D - Wetlands (1S, 2S)
14.334	59	TOTAL AREA

Existing Conditions

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

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area 1

Runoff Area=3.314 ac 0.00% Impervious Runoff Depth>0.45"
Flow Length=270' Slope=0.1110 '/' Tc=5.6 min CN=61 Runoff=1.37 cfs 0.125 af

Subcatchment 2S: Drainage Area 2

Runoff Area=7.387 ac 0.00% Impervious Runoff Depth>0.38"
Flow Length=600' Slope=0.1240 '/' Tc=10.6 min CN=59 Runoff=1.90 cfs 0.235 af

Subcatchment 3S: Off Site West

Runoff Area=3.633 ac 0.00% Impervious Runoff Depth>0.26"
Flow Length=564' Slope=0.1250 '/' Tc=11.2 min CN=55 Runoff=0.48 cfs 0.078 af

Reach 1R: Wetland Swale

Avg. Flow Depth=0.07' Max Vel=1.02 fps Inflow=1.37 cfs 0.125 af
n=0.050 L=240.0' S=0.0667 '/' Capacity=1,610.63 cfs Outflow=1.17 cfs 0.124 af

Reach 1R': Wetland Swale

Avg. Flow Depth=0.06' Max Vel=4.59 fps Inflow=1.17 cfs 0.124 af
n=0.013 L=145.0' S=0.1241 '/' Capacity=2,590.64 cfs Outflow=1.16 cfs 0.124 af

Reach 2R: Peak off Site

Avg. Flow Depth=0.14' Max Vel=1.19 fps Inflow=3.01 cfs 0.359 af
n=0.050 L=640.0' S=0.0375 '/' Capacity=789.38 cfs Outflow=2.52 cfs 0.351 af

Total Runoff Area = 14.334 ac Runoff Volume = 0.437 af Average Runoff Depth = 0.37"
100.00% Pervious = 14.334 ac 0.00% Impervious = 0.000 ac

Existing Conditions

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Summary for Subcatchment 1S: Drainage Area 1

Runoff = 1.37 cfs @ 12.12 hrs, Volume= 0.125 af, Depth> 0.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.37"

Area (ac)	CN	Description
* 0.930	77	Woods, Good, HSG D - Wetlands
2.384	55	Woods, Good, HSG B
3.314	61	Weighted Average
3.314		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	270	0.1110	0.80		Lag/CN Method, Tc 1

Summary for Subcatchment 2S: Drainage Area 2

Runoff = 1.90 cfs @ 12.22 hrs, Volume= 0.235 af, Depth> 0.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.37"

Area (ac)	CN	Description
* 1.418	77	Woods, Good, HSG D - Wetlands
5.969	55	Woods, Good, HSG B
7.387	59	Weighted Average
7.387		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	600	0.1240	0.94		Lag/CN Method, Tc-2

Summary for Subcatchment 3S: Off Site West

Runoff = 0.48 cfs @ 12.38 hrs, Volume= 0.078 af, Depth> 0.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.37"

Area (ac)	CN	Description
3.633	55	Woods, Good, HSG B
3.633		100.00% Pervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	564	0.1250	0.84		Lag/CN Method, Tc-3

Summary for Reach 1R: Wetland Swale

Inflow Area = 3.314 ac, 0.00% Impervious, Inflow Depth > 0.45" for 2-year event
Inflow = 1.37 cfs @ 12.12 hrs, Volume= 0.125 af
Outflow = 1.17 cfs @ 12.25 hrs, Volume= 0.124 af, Atten= 15%, Lag= 8.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.02 fps, Min. Travel Time= 3.9 min
Avg. Velocity = 0.55 fps, Avg. Travel Time= 7.3 min

Peak Storage= 283 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.07'
Bank-Full Depth= 2.00' Flow Area= 173.3 sf, Capacity= 1,610.63 cfs

130.00' x 2.00' deep Parabolic Channel, n= 0.050 Scattered brush, heavy weeds
Length= 240.0' Slope= 0.0667 '/'
Inlet Invert= 296.00', Outlet Invert= 280.00'



Summary for Reach 1R': Wetland Swale

Inflow Area = 3.314 ac, 0.00% Impervious, Inflow Depth > 0.45" for 2-year event
Inflow = 1.17 cfs @ 12.25 hrs, Volume= 0.124 af
Outflow = 1.16 cfs @ 12.27 hrs, Volume= 0.124 af, Atten= 1%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.59 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 2.60 fps, Avg. Travel Time= 0.9 min

Peak Storage= 37 cf @ 12.26 hrs
Average Depth at Peak Storage= 0.06'
Bank-Full Depth= 2.00' Flow Area= 53.3 sf, Capacity= 2,590.64 cfs

40.00' x 2.00' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 145.0' Slope= 0.1241 '/'
Inlet Invert= 280.00', Outlet Invert= 262.00'

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Summary for Reach 2R: Peak off Site

Inflow Area = 10.701 ac, 0.00% Impervious, Inflow Depth > 0.40" for 2-year event
Inflow = 3.01 cfs @ 12.26 hrs, Volume= 0.359 af
Outflow = 2.52 cfs @ 12.57 hrs, Volume= 0.351 af, Atten= 16%, Lag= 18.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.19 fps, Min. Travel Time= 9.0 min

Avg. Velocity = 0.70 fps, Avg. Travel Time= 15.3 min

Peak Storage= 1,357 cf @ 12.42 hrs

Average Depth at Peak Storage= 0.14'

Bank-Full Depth= 2.00' Flow Area= 113.3 sf, Capacity= 789.38 cfs

85.00' x 2.00' deep Parabolic Channel, n= 0.050 Scattered brush, heavy weeds

Length= 640.0' Slope= 0.0375 '/'

Inlet Invert= 262.00', Outlet Invert= 238.00'



Existing Conditions

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Type III 24-hr 5-year Rainfall=4.28"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area 1

Runoff Area=3.314 ac 0.00% Impervious Runoff Depth>0.86"
Flow Length=270' Slope=0.1110 '/' Tc=5.6 min CN=61 Runoff=3.17 cfs 0.237 af

Subcatchment 2S: Drainage Area 2

Runoff Area=7.387 ac 0.00% Impervious Runoff Depth>0.75"
Flow Length=600' Slope=0.1240 '/' Tc=10.6 min CN=59 Runoff=4.92 cfs 0.465 af

Subcatchment 3S: Off Site West

Runoff Area=3.633 ac 0.00% Impervious Runoff Depth>0.57"
Flow Length=564' Slope=0.1250 '/' Tc=11.2 min CN=55 Runoff=1.53 cfs 0.171 af

Reach 1R: Wetland Swale

Avg. Flow Depth=0.11' Max Vel=1.33 fps Inflow=3.17 cfs 0.237 af
n=0.050 L=240.0' S=0.0667 '/' Capacity=1,610.63 cfs Outflow=2.90 cfs 0.236 af

Reach 1R': Wetland Swale

Avg. Flow Depth=0.09' Max Vel=6.06 fps Inflow=2.90 cfs 0.236 af
n=0.013 L=145.0' S=0.1241 '/' Capacity=2,590.64 cfs Outflow=2.87 cfs 0.236 af

Reach 2R: Peak off Site

Avg. Flow Depth=0.22' Max Vel=1.59 fps Inflow=7.74 cfs 0.700 af
n=0.050 L=640.0' S=0.0375 '/' Capacity=789.38 cfs Outflow=6.48 cfs 0.690 af

Total Runoff Area = 14.334 ac Runoff Volume = 0.873 af Average Runoff Depth = 0.73"
100.00% Pervious = 14.334 ac 0.00% Impervious = 0.000 ac

Existing Conditions

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Type III 24-hr 5-year Rainfall=4.28"
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Summary for Subcatchment 1S: Drainage Area 1

Runoff = 3.17 cfs @ 12.10 hrs, Volume= 0.237 af, Depth> 0.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-year Rainfall=4.28"

Area (ac)	CN	Description
* 0.930	77	Woods, Good, HSG D - Wetlands
2.384	55	Woods, Good, HSG B
3.314	61	Weighted Average
3.314		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	270	0.1110	0.80		Lag/CN Method, Tc 1

Summary for Subcatchment 2S: Drainage Area 2

Runoff = 4.92 cfs @ 12.18 hrs, Volume= 0.465 af, Depth> 0.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-year Rainfall=4.28"

Area (ac)	CN	Description
* 1.418	77	Woods, Good, HSG D - Wetlands
5.969	55	Woods, Good, HSG B
7.387	59	Weighted Average
7.387		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	600	0.1240	0.94		Lag/CN Method, Tc-2

Summary for Subcatchment 3S: Off Site West

Runoff = 1.53 cfs @ 12.21 hrs, Volume= 0.171 af, Depth> 0.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-year Rainfall=4.28"

Area (ac)	CN	Description
3.633	55	Woods, Good, HSG B
3.633		100.00% Pervious Area

Existing Conditions

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	564	0.1250	0.84		Lag/CN Method, Tc-3

Summary for Reach 1R: Wetland Swale

Inflow Area = 3.314 ac, 0.00% Impervious, Inflow Depth > 0.86" for 5-year event
Inflow = 3.17 cfs @ 12.10 hrs, Volume= 0.237 af
Outflow = 2.90 cfs @ 12.20 hrs, Volume= 0.236 af, Atten= 9%, Lag= 5.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.33 fps, Min. Travel Time= 3.0 min
Avg. Velocity= 0.64 fps, Avg. Travel Time= 6.2 min

Peak Storage= 521 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.11'
Bank-Full Depth= 2.00' Flow Area= 173.3 sf, Capacity= 1,610.63 cfs

130.00' x 2.00' deep Parabolic Channel, n= 0.050 Scattered brush, heavy weeds
Length= 240.0' Slope= 0.0667 '/'
Inlet Invert= 296.00', Outlet Invert= 280.00'



Summary for Reach 1R': Wetland Swale

Inflow Area = 3.314 ac, 0.00% Impervious, Inflow Depth > 0.85" for 5-year event
Inflow = 2.90 cfs @ 12.20 hrs, Volume= 0.236 af
Outflow = 2.87 cfs @ 12.21 hrs, Volume= 0.236 af, Atten= 1%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.06 fps, Min. Travel Time= 0.4 min
Avg. Velocity= 2.94 fps, Avg. Travel Time= 0.8 min

Peak Storage= 70 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.09'
Bank-Full Depth= 2.00' Flow Area= 53.3 sf, Capacity= 2,590.64 cfs

40.00' x 2.00' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 145.0' Slope= 0.1241 '/'
Inlet Invert= 280.00', Outlet Invert= 262.00'

Existing Conditions

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Summary for Reach 2R: Peak off Site

Inflow Area = 10.701 ac, 0.00% Impervious, Inflow Depth > 0.79" for 5-year event
Inflow = 7.74 cfs @ 12.19 hrs, Volume= 0.700 af
Outflow = 6.48 cfs @ 12.41 hrs, Volume= 0.690 af, Atten= 16%, Lag= 12.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.59 fps, Min. Travel Time= 6.7 min

Avg. Velocity = 0.82 fps, Avg. Travel Time= 13.0 min

Peak Storage= 2,615 cf @ 12.29 hrs

Average Depth at Peak Storage= 0.22'

Bank-Full Depth= 2.00' Flow Area= 113.3 sf, Capacity= 789.38 cfs

85.00' x 2.00' deep Parabolic Channel, n= 0.050 Scattered brush, heavy weeds

Length= 640.0' Slope= 0.0375 '/'

Inlet Invert= 262.00', Outlet Invert= 238.00'



Existing Conditions

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Type III 24-hr 10-year Rainfall=5.04"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area 1

Runoff Area=3.314 ac 0.00% Impervious Runoff Depth>1.26"
Flow Length=270' Slope=0.1110 '/' Tc=5.6 min CN=61 Runoff=4.92 cfs 0.348 af

Subcatchment 2S: Drainage Area 2

Runoff Area=7.387 ac 0.00% Impervious Runoff Depth>1.13"
Flow Length=600' Slope=0.1240 '/' Tc=10.6 min CN=59 Runoff=8.13 cfs 0.696 af

Subcatchment 3S: Off Site West

Runoff Area=3.633 ac 0.00% Impervious Runoff Depth>0.89"
Flow Length=564' Slope=0.1250 '/' Tc=11.2 min CN=55 Runoff=2.81 cfs 0.269 af

Reach 1R: Wetland Swale

Avg. Flow Depth=0.13' Max Vel=1.53 fps Inflow=4.92 cfs 0.348 af
n=0.050 L=240.0' S=0.0667 '/' Capacity=1,610.63 cfs Outflow=4.49 cfs 0.347 af

Reach 1R': Wetland Swale

Avg. Flow Depth=0.11' Max Vel=6.89 fps Inflow=4.49 cfs 0.347 af
n=0.013 L=145.0' S=0.1241 '/' Capacity=2,590.64 cfs Outflow=4.46 cfs 0.346 af

Reach 2R: Peak off Site

Avg. Flow Depth=0.28' Max Vel=1.87 fps Inflow=12.42 cfs 1.042 af
n=0.050 L=640.0' S=0.0375 '/' Capacity=789.38 cfs Outflow=10.87 cfs 1.030 af

Total Runoff Area = 14.334 ac Runoff Volume = 1.313 af Average Runoff Depth = 1.10"
100.00% Pervious = 14.334 ac 0.00% Impervious = 0.000 ac

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Summary for Subcatchment 1S: Drainage Area 1

Runoff = 4.92 cfs @ 12.10 hrs, Volume= 0.348 af, Depth> 1.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.04"

Area (ac)	CN	Description
* 0.930	77	Woods, Good, HSG D - Wetlands
2.384	55	Woods, Good, HSG B
3.314	61	Weighted Average
3.314		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	270	0.1110	0.80		Lag/CN Method, Tc 1

Summary for Subcatchment 2S: Drainage Area 2

Runoff = 8.13 cfs @ 12.17 hrs, Volume= 0.696 af, Depth> 1.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.04"

Area (ac)	CN	Description
* 1.418	77	Woods, Good, HSG D - Wetlands
5.969	55	Woods, Good, HSG B
7.387	59	Weighted Average
7.387		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	600	0.1240	0.94		Lag/CN Method, Tc-2

Summary for Subcatchment 3S: Off Site West

Runoff = 2.81 cfs @ 12.19 hrs, Volume= 0.269 af, Depth> 0.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.04"

Area (ac)	CN	Description
3.633	55	Woods, Good, HSG B
3.633		100.00% Pervious Area

Existing Conditions

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Type III 24-hr 10-year Rainfall=5.04"
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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	564	0.1250	0.84		Lag/CN Method, Tc-3

Summary for Reach 1R: Wetland Swale

Inflow Area = 3.314 ac, 0.00% Impervious, Inflow Depth > 1.26" for 10-year event
Inflow = 4.92 cfs @ 12.10 hrs, Volume= 0.348 af
Outflow = 4.49 cfs @ 12.18 hrs, Volume= 0.347 af, Atten= 9%, Lag= 4.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.53 fps, Min. Travel Time= 2.6 min
Avg. Velocity= 0.70 fps, Avg. Travel Time= 5.7 min

Peak Storage= 714 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 2.00' Flow Area= 173.3 sf, Capacity= 1,610.63 cfs

130.00' x 2.00' deep Parabolic Channel, n= 0.050 Scattered brush, heavy weeds
Length= 240.0' Slope= 0.0667 '/'
Inlet Invert= 296.00', Outlet Invert= 280.00'



Summary for Reach 1R': Wetland Swale

Inflow Area = 3.314 ac, 0.00% Impervious, Inflow Depth > 1.26" for 10-year event
Inflow = 4.49 cfs @ 12.18 hrs, Volume= 0.347 af
Outflow = 4.46 cfs @ 12.19 hrs, Volume= 0.346 af, Atten= 1%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.89 fps, Min. Travel Time= 0.4 min
Avg. Velocity= 3.21 fps, Avg. Travel Time= 0.8 min

Peak Storage= 94 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.11'
Bank-Full Depth= 2.00' Flow Area= 53.3 sf, Capacity= 2,590.64 cfs

40.00' x 2.00' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 145.0' Slope= 0.1241 '/'
Inlet Invert= 280.00', Outlet Invert= 262.00'

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Type III 24-hr 10-year Rainfall=5.04"

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Summary for Reach 2R: Peak off Site

Inflow Area = 10.701 ac, 0.00% Impervious, Inflow Depth > 1.17" for 10-year event
Inflow = 12.42 cfs @ 12.18 hrs, Volume= 1.042 af
Outflow = 10.87 cfs @ 12.35 hrs, Volume= 1.030 af, Atten= 12%, Lag= 10.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.87 fps, Min. Travel Time= 5.7 min

Avg. Velocity = 0.89 fps, Avg. Travel Time= 12.0 min

Peak Storage= 3,743 cf @ 12.25 hrs

Average Depth at Peak Storage= 0.28'

Bank-Full Depth= 2.00' Flow Area= 113.3 sf, Capacity= 789.38 cfs

85.00' x 2.00' deep Parabolic Channel, n= 0.050 Scattered brush, heavy weeds

Length= 640.0' Slope= 0.0375 '/'

Inlet Invert= 262.00', Outlet Invert= 238.00'



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Type III 24-hr 25-year Rainfall=6.08"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area 1

Runoff Area=3.314 ac 0.00% Impervious Runoff Depth>1.88"
Flow Length=270' Slope=0.1110 '/' Tc=5.6 min CN=61 Runoff=7.60 cfs 0.520 af

Subcatchment 2S: Drainage Area 2

Runoff Area=7.387 ac 0.00% Impervious Runoff Depth>1.72"
Flow Length=600' Slope=0.1240 '/' Tc=10.6 min CN=59 Runoff=13.01 cfs 1.057 af

Subcatchment 3S: Off Site West

Runoff Area=3.633 ac 0.00% Impervious Runoff Depth>1.41"
Flow Length=564' Slope=0.1250 '/' Tc=11.2 min CN=55 Runoff=4.88 cfs 0.426 af

Reach 1R: Wetland Swale

Avg. Flow Depth=0.16' Max Vel=1.75 fps Inflow=7.60 cfs 0.520 af
n=0.050 L=240.0' S=0.0667 '/' Capacity=1,610.63 cfs Outflow=7.07 cfs 0.518 af

Reach 1R': Wetland Swale

Avg. Flow Depth=0.13' Max Vel=7.91 fps Inflow=7.07 cfs 0.518 af
n=0.013 L=145.0' S=0.1241 '/' Capacity=2,590.64 cfs Outflow=6.97 cfs 0.517 af

Reach 2R: Peak off Site

Avg. Flow Depth=0.35' Max Vel=2.16 fps Inflow=19.96 cfs 1.574 af
n=0.050 L=640.0' S=0.0375 '/' Capacity=789.38 cfs Outflow=17.63 cfs 1.559 af

Total Runoff Area = 14.334 ac Runoff Volume = 2.003 af Average Runoff Depth = 1.68"
100.00% Pervious = 14.334 ac 0.00% Impervious = 0.000 ac

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Summary for Subcatchment 1S: Drainage Area 1

Runoff = 7.60 cfs @ 12.09 hrs, Volume= 0.520 af, Depth> 1.88"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.08"

Area (ac)	CN	Description
* 0.930	77	Woods, Good, HSG D - Wetlands
2.384	55	Woods, Good, HSG B
3.314	61	Weighted Average
3.314		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	270	0.1110	0.80		Lag/CN Method, Tc 1

Summary for Subcatchment 2S: Drainage Area 2

Runoff = 13.01 cfs @ 12.16 hrs, Volume= 1.057 af, Depth> 1.72"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.08"

Area (ac)	CN	Description
* 1.418	77	Woods, Good, HSG D - Wetlands
5.969	55	Woods, Good, HSG B
7.387	59	Weighted Average
7.387		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	600	0.1240	0.94		Lag/CN Method, Tc-2

Summary for Subcatchment 3S: Off Site West

Runoff = 4.88 cfs @ 12.18 hrs, Volume= 0.426 af, Depth> 1.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.08"

Area (ac)	CN	Description
3.633	55	Woods, Good, HSG B
3.633		100.00% Pervious Area

Existing Conditions

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	564	0.1250	0.84		Lag/CN Method, Tc-3

Summary for Reach 1R: Wetland Swale

Inflow Area = 3.314 ac, 0.00% Impervious, Inflow Depth > 1.88" for 25-year event
Inflow = 7.60 cfs @ 12.09 hrs, Volume= 0.520 af
Outflow = 7.07 cfs @ 12.16 hrs, Volume= 0.518 af, Atten= 7%, Lag= 4.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.75 fps, Min. Travel Time= 2.3 min
Avg. Velocity = 0.76 fps, Avg. Travel Time= 5.3 min

Peak Storage= 985 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.16'
Bank-Full Depth= 2.00' Flow Area= 173.3 sf, Capacity= 1,610.63 cfs

130.00' x 2.00' deep Parabolic Channel, n= 0.050 Scattered brush, heavy weeds
Length= 240.0' Slope= 0.0667 '/'
Inlet Invert= 296.00', Outlet Invert= 280.00'



Summary for Reach 1R': Wetland Swale

Inflow Area = 3.314 ac, 0.00% Impervious, Inflow Depth > 1.87" for 25-year event
Inflow = 7.07 cfs @ 12.16 hrs, Volume= 0.518 af
Outflow = 6.97 cfs @ 12.17 hrs, Volume= 0.517 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 7.91 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 3.49 fps, Avg. Travel Time= 0.7 min

Peak Storage= 129 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 2.00' Flow Area= 53.3 sf, Capacity= 2,590.64 cfs

40.00' x 2.00' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 145.0' Slope= 0.1241 '/'
Inlet Invert= 280.00', Outlet Invert= 262.00'

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Summary for Reach 2R: Peak off Site

Inflow Area = 10.701 ac, 0.00% Impervious, Inflow Depth > 1.77" for 25-year event
Inflow = 19.96 cfs @ 12.17 hrs, Volume= 1.574 af
Outflow = 17.63 cfs @ 12.31 hrs, Volume= 1.559 af, Atten= 12%, Lag= 8.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.16 fps, Min. Travel Time= 4.9 min

Avg. Velocity = 0.97 fps, Avg. Travel Time= 11.0 min

Peak Storage= 5,237 cf @ 12.23 hrs

Average Depth at Peak Storage= 0.35'

Bank-Full Depth= 2.00' Flow Area= 113.3 sf, Capacity= 789.38 cfs

85.00' x 2.00' deep Parabolic Channel, n= 0.050 Scattered brush, heavy weeds

Length= 640.0' Slope= 0.0375 '/'

Inlet Invert= 262.00', Outlet Invert= 238.00'



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Type III 24-hr 50-year Rainfall=6.85"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area 1

Runoff Area=3.314 ac 0.00% Impervious Runoff Depth>2.38"
Flow Length=270' Slope=0.1110 '/' Tc=5.6 min CN=61 Runoff=9.74 cfs 0.658 af

Subcatchment 2S: Drainage Area 2

Runoff Area=7.387 ac 0.00% Impervious Runoff Depth>2.19"
Flow Length=600' Slope=0.1240 '/' Tc=10.6 min CN=59 Runoff=16.95 cfs 1.351 af

Subcatchment 3S: Off Site West

Runoff Area=3.633 ac 0.00% Impervious Runoff Depth>1.84"
Flow Length=564' Slope=0.1250 '/' Tc=11.2 min CN=55 Runoff=6.67 cfs 0.557 af

Reach 1R: Wetland Swale

Avg. Flow Depth=0.19' Max Vel=1.90 fps Inflow=9.74 cfs 0.658 af
n=0.050 L=240.0' S=0.0667 '/' Capacity=1,610.63 cfs Outflow=9.08 cfs 0.655 af

Reach 1R': Wetland Swale

Avg. Flow Depth=0.15' Max Vel=8.56 fps Inflow=9.08 cfs 0.655 af
n=0.013 L=145.0' S=0.1241 '/' Capacity=2,590.64 cfs Outflow=8.97 cfs 0.655 af

Reach 2R: Peak off Site

Avg. Flow Depth=0.40' Max Vel=2.36 fps Inflow=25.91 cfs 2.006 af
n=0.050 L=640.0' S=0.0375 '/' Capacity=789.38 cfs Outflow=23.03 cfs 1.989 af

Total Runoff Area = 14.334 ac Runoff Volume = 2.565 af Average Runoff Depth = 2.15"
100.00% Pervious = 14.334 ac 0.00% Impervious = 0.000 ac

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Summary for Subcatchment 1S: Drainage Area 1

Runoff = 9.74 cfs @ 12.09 hrs, Volume= 0.658 af, Depth> 2.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=6.85"

Area (ac)	CN	Description
* 0.930	77	Woods, Good, HSG D - Wetlands
2.384	55	Woods, Good, HSG B
3.314	61	Weighted Average
3.314		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	270	0.1110	0.80		Lag/CN Method, Tc 1

Summary for Subcatchment 2S: Drainage Area 2

Runoff = 16.95 cfs @ 12.16 hrs, Volume= 1.351 af, Depth> 2.19"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=6.85"

Area (ac)	CN	Description
* 1.418	77	Woods, Good, HSG D - Wetlands
5.969	55	Woods, Good, HSG B
7.387	59	Weighted Average
7.387		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	600	0.1240	0.94		Lag/CN Method, Tc-2

Summary for Subcatchment 3S: Off Site West

Runoff = 6.67 cfs @ 12.17 hrs, Volume= 0.557 af, Depth> 1.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=6.85"

Area (ac)	CN	Description
3.633	55	Woods, Good, HSG B
3.633		100.00% Pervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	564	0.1250	0.84		Lag/CN Method, Tc-3

Summary for Reach 1R: Wetland Swale

Inflow Area = 3.314 ac, 0.00% Impervious, Inflow Depth > 2.38" for 50-year event
Inflow = 9.74 cfs @ 12.09 hrs, Volume= 0.658 af
Outflow = 9.08 cfs @ 12.16 hrs, Volume= 0.655 af, Atten= 7%, Lag= 3.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.90 fps, Min. Travel Time= 2.1 min
Avg. Velocity= 0.79 fps, Avg. Travel Time= 5.0 min

Peak Storage= 1,176 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 2.00' Flow Area= 173.3 sf, Capacity= 1,610.63 cfs

130.00' x 2.00' deep Parabolic Channel, n= 0.050 Scattered brush, heavy weeds
Length= 240.0' Slope= 0.0667 '/'
Inlet Invert= 296.00', Outlet Invert= 280.00'



Summary for Reach 1R': Wetland Swale

Inflow Area = 3.314 ac, 0.00% Impervious, Inflow Depth > 2.37" for 50-year event
Inflow = 9.08 cfs @ 12.16 hrs, Volume= 0.655 af
Outflow = 8.97 cfs @ 12.16 hrs, Volume= 0.655 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.56 fps, Min. Travel Time= 0.3 min
Avg. Velocity= 3.66 fps, Avg. Travel Time= 0.7 min

Peak Storage= 154 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 2.00' Flow Area= 53.3 sf, Capacity= 2,590.64 cfs

40.00' x 2.00' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 145.0' Slope= 0.1241 '/'
Inlet Invert= 280.00', Outlet Invert= 262.00'

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Summary for Reach 2R: Peak off Site

Inflow Area = 10.701 ac, 0.00% Impervious, Inflow Depth > 2.25" for 50-year event
Inflow = 25.91 cfs @ 12.16 hrs, Volume= 2.006 af
Outflow = 23.03 cfs @ 12.30 hrs, Volume= 1.989 af, Atten= 11%, Lag= 8.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.36 fps, Min. Travel Time= 4.5 min

Avg. Velocity= 1.02 fps, Avg. Travel Time= 10.5 min

Peak Storage= 6,367 cf @ 12.22 hrs

Average Depth at Peak Storage= 0.40'

Bank-Full Depth= 2.00' Flow Area= 113.3 sf, Capacity= 789.38 cfs

85.00' x 2.00' deep Parabolic Channel, n= 0.050 Scattered brush, heavy weeds

Length= 640.0' Slope= 0.0375 '/'

Inlet Invert= 262.00', Outlet Invert= 238.00'



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Type III 24-hr 100-year Rainfall=7.68"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area 1

Runoff Area=3.314 ac 0.00% Impervious Runoff Depth>2.95"

Flow Length=270' Slope=0.1110 '/' Tc=5.6 min CN=61 Runoff=12.15 cfs 0.815 af

Subcatchment 2S: Drainage Area 2

Runoff Area=7.387 ac 0.00% Impervious Runoff Depth>2.74"

Flow Length=600' Slope=0.1240 '/' Tc=10.6 min CN=59 Runoff=21.44 cfs 1.688 af

Subcatchment 3S: Off Site West

Runoff Area=3.633 ac 0.00% Impervious Runoff Depth>2.34"

Flow Length=564' Slope=0.1250 '/' Tc=11.2 min CN=55 Runoff=8.67 cfs 0.708 af

Reach 1R: Wetland Swale

Avg. Flow Depth=0.21' Max Vel=2.04 fps Inflow=12.15 cfs 0.815 af

n=0.050 L=240.0' S=0.0667 '/' Capacity=1,610.63 cfs Outflow=11.35 cfs 0.813 af

Reach 1R': Wetland Swale

Avg. Flow Depth=0.16' Max Vel=9.17 fps Inflow=11.35 cfs 0.813 af

n=0.013 L=145.0' S=0.1241 '/' Capacity=2,590.64 cfs Outflow=11.23 cfs 0.812 af

Reach 2R: Peak off Site

Avg. Flow Depth=0.44' Max Vel=2.54 fps Inflow=32.66 cfs 2.500 af

n=0.050 L=640.0' S=0.0375 '/' Capacity=789.38 cfs Outflow=29.21 cfs 2.481 af

Total Runoff Area = 14.334 ac Runoff Volume = 3.211 af Average Runoff Depth = 2.69"

100.00% Pervious = 14.334 ac 0.00% Impervious = 0.000 ac

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Summary for Subcatchment 1S: Drainage Area 1

Runoff = 12.15 cfs @ 12.09 hrs, Volume= 0.815 af, Depth> 2.95"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.68"

Area (ac)	CN	Description
* 0.930	77	Woods, Good, HSG D - Wetlands
2.384	55	Woods, Good, HSG B
3.314	61	Weighted Average
3.314		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	270	0.1110	0.80		Lag/CN Method, Tc 1

Summary for Subcatchment 2S: Drainage Area 2

Runoff = 21.44 cfs @ 12.16 hrs, Volume= 1.688 af, Depth> 2.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.68"

Area (ac)	CN	Description
* 1.418	77	Woods, Good, HSG D - Wetlands
5.969	55	Woods, Good, HSG B
7.387	59	Weighted Average
7.387		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	600	0.1240	0.94		Lag/CN Method, Tc-2

Summary for Subcatchment 3S: Off Site West

Runoff = 8.67 cfs @ 12.17 hrs, Volume= 0.708 af, Depth> 2.34"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.68"

Area (ac)	CN	Description
3.633	55	Woods, Good, HSG B
3.633		100.00% Pervious Area

Existing Conditions

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	564	0.1250	0.84		Lag/CN Method, Tc-3

Summary for Reach 1R: Wetland Swale

Inflow Area = 3.314 ac, 0.00% Impervious, Inflow Depth > 2.95" for 100-year event
Inflow = 12.15 cfs @ 12.09 hrs, Volume= 0.815 af
Outflow = 11.35 cfs @ 12.15 hrs, Volume= 0.813 af, Atten= 7%, Lag= 3.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.04 fps, Min. Travel Time= 2.0 min
Avg. Velocity= 0.83 fps, Avg. Travel Time= 4.8 min

Peak Storage= 1,378 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 2.00' Flow Area= 173.3 sf, Capacity= 1,610.63 cfs

130.00' x 2.00' deep Parabolic Channel, n= 0.050 Scattered brush, heavy weeds
Length= 240.0' Slope= 0.0667 '/'
Inlet Invert= 296.00', Outlet Invert= 280.00'



Summary for Reach 1R': Wetland Swale

Inflow Area = 3.314 ac, 0.00% Impervious, Inflow Depth > 2.94" for 100-year event
Inflow = 11.35 cfs @ 12.15 hrs, Volume= 0.813 af
Outflow = 11.23 cfs @ 12.16 hrs, Volume= 0.812 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 9.17 fps, Min. Travel Time= 0.3 min
Avg. Velocity= 3.82 fps, Avg. Travel Time= 0.6 min

Peak Storage= 180 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.16'
Bank-Full Depth= 2.00' Flow Area= 53.3 sf, Capacity= 2,590.64 cfs

40.00' x 2.00' deep Parabolic Channel, n= 0.013 Asphalt, smooth
Length= 145.0' Slope= 0.1241 '/'
Inlet Invert= 280.00', Outlet Invert= 262.00'

Existing Conditions

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Type III 24-hr 100-year Rainfall=7.68"

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Summary for Reach 2R: Peak off Site

Inflow Area = 10.701 ac, 0.00% Impervious, Inflow Depth > 2.80" for 100-year event
Inflow = 32.66 cfs @ 12.16 hrs, Volume= 2.500 af
Outflow = 29.21 cfs @ 12.28 hrs, Volume= 2.481 af, Atten= 11%, Lag= 7.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.54 fps, Min. Travel Time= 4.2 min

Avg. Velocity= 1.07 fps, Avg. Travel Time= 10.0 min

Peak Storage= 7,527 cf @ 12.21 hrs

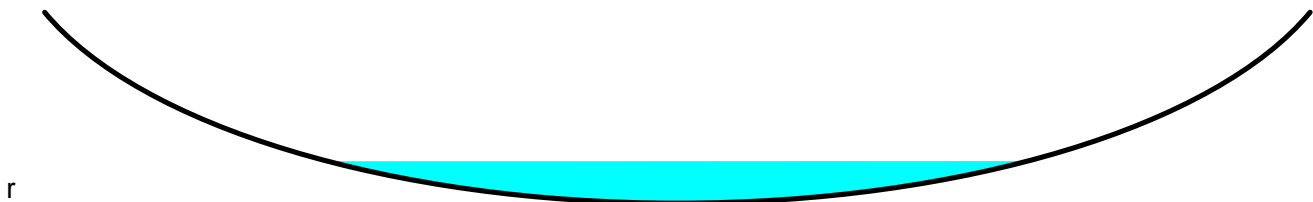
Average Depth at Peak Storage= 0.44'

Bank-Full Depth= 2.00' Flow Area= 113.3 sf, Capacity= 789.38 cfs

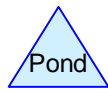
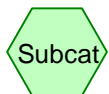
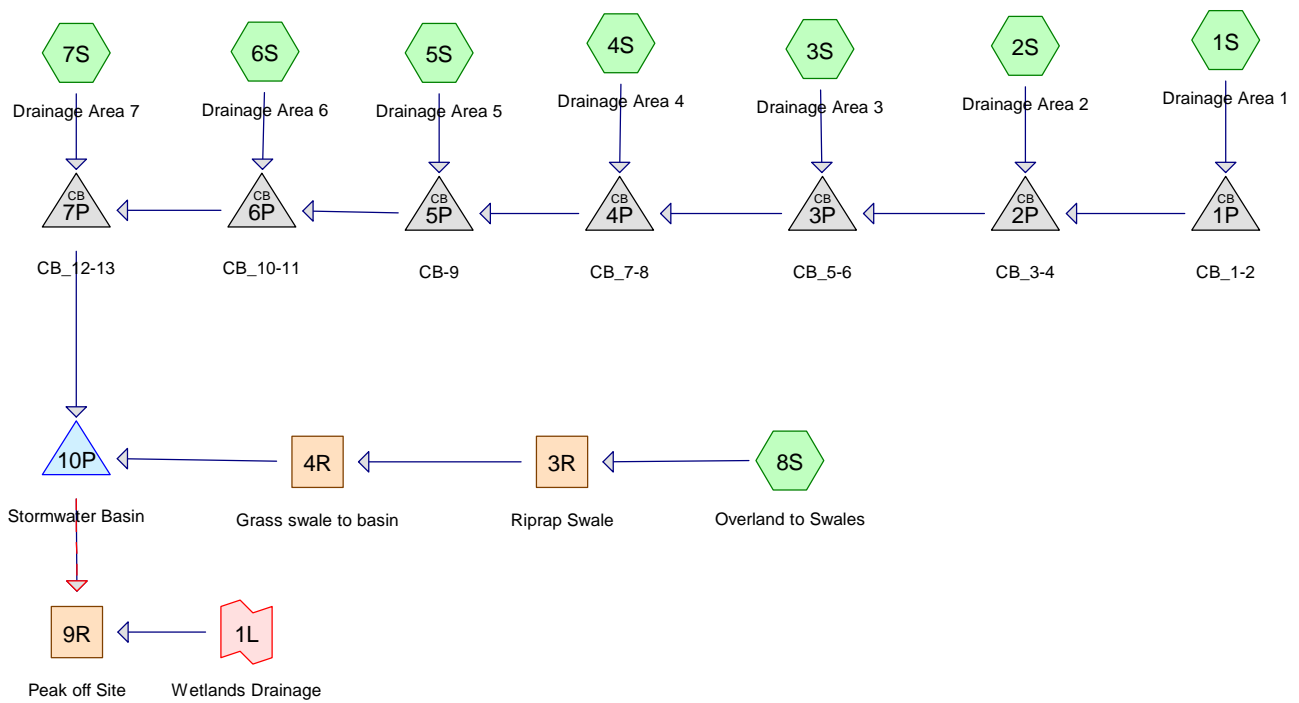
85.00' x 2.00' deep Parabolic Channel, n= 0.050 Scattered brush, heavy weeds

Length= 640.0' Slope= 0.0375 '/'

Inlet Invert= 262.00', Outlet Invert= 238.00'



PROPOSED CONDITIONS



Routing Diagram for Proposed Conditions
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.784	39	>75% Grass cover, Good, HSG A (4S, 5S)
0.523	55	Woods, Good, HSG B (4S, 6S)
0.887	58	>75% Grass cover, Good, HSG B (8S)
1.002	61	>75% Grass cover, Good, HSG B (1S, 3S, 6S)
0.161	74	>75% Grass cover, Good, HSG B/D (2S, 7S)
0.739	98	Paved parking & roof HSG A (4S)
0.095	98	Paved parking, HSG B (1S)
0.219	98	Paved parking/roof (3S)
0.309	98	Paved surfaces & roof (5S)
0.483	98	Pavement/Roofs, HSG B (6S)
0.282	98	Roof & Pavement (7S)
0.184	98	Roof/pavement (2S)
5.668	72	TOTAL AREA

Proposed Conditions

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Type III 24-hr 2-year Rainfall=3.37"
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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area 1	Runoff Area=8,570 sf 48.07% Impervious Runoff Depth>1.35"
Flow Length=111'	Slope=0.0710 '/' Tc=9.1 min CN=79 Runoff=0.29 cfs 0.022 af
Subcatchment 2S: Drainage Area 2	Runoff Area=14,320 sf 56.10% Impervious Runoff Depth>1.94"
Flow Length=125'	Slope=0.0100 '/' Tc=1.0 min CN=87 Runoff=0.88 cfs 0.053 af
Subcatchment 3S: Drainage Area 3	Runoff Area=25,738 sf 37.02% Impervious Runoff Depth>1.11"
Flow Length=265'	Tc=5.7 min CN=75 Runoff=0.80 cfs 0.055 af
Subcatchment 4S: Drainage Area 4	Runoff Area=71,700 sf 44.91% Impervious Runoff Depth>0.84"
Flow Length=130'	Slope=0.0100 '/' Tc=1.9 min CN=70 Runoff=1.82 cfs 0.116 af
Subcatchment 5S: Drainage Area 5	Runoff Area=27,597 sf 48.74% Impervious Runoff Depth>0.75"
Flow Length=180'	Slope=0.0500 '/' Tc=1.3 min CN=68 Runoff=0.60 cfs 0.039 af
Subcatchment 6S: Drainage Area 6	Runoff Area=47,315 sf 44.44% Impervious Runoff Depth>1.23"
Flow Length=180'	Slope=0.0500 '/' Tc=3.9 min CN=77 Runoff=1.75 cfs 0.111 af
Subcatchment 7S: Drainage Area 7	Runoff Area=13,011 sf 94.50% Impervious Runoff Depth>2.84"
Flow Length=175'	Slope=0.0580 '/' Tc=1.2 min CN=97 Runoff=1.07 cfs 0.071 af
Subcatchment 8S: Overland to Swales	Runoff Area=38,644 sf 0.00% Impervious Runoff Depth>0.35"
Flow Length=130'	Slope=0.1240 '/' Tc=8.3 min CN=58 Runoff=0.20 cfs 0.026 af
Reach 3R: Riprap Swale	Avg. Flow Depth=0.04' Max Vel=1.19 fps Inflow=0.20 cfs 0.026 af
	n=0.045 L=210.0' S=0.0952 '/' Capacity=48.58 cfs Outflow=0.20 cfs 0.026 af
Reach 4R: Grass swale to basin	Avg. Flow Depth=0.04' Max Vel=1.09 fps Inflow=0.20 cfs 0.026 af
	n=0.035 L=205.0' S=0.0439 '/' Capacity=42.41 cfs Outflow=0.19 cfs 0.025 af
Reach 9R: Peak off Site	Inflow=3.17 cfs 0.626 af
	Outflow=3.17 cfs 0.626 af
Pond 1P: CB_1-2	Peak Elev=311.75' Inflow=0.29 cfs 0.022 af
	15.0" Round Culvert n=0.012 L=128.7' S=0.0975 '/' Outflow=0.29 cfs 0.022 af
Pond 2P: CB_3-4	Peak Elev=299.33' Inflow=1.03 cfs 0.075 af
	15.0" Round Culvert n=0.012 L=131.1' S=0.0934 '/' Outflow=1.03 cfs 0.075 af
Pond 3P: CB_5-6	Peak Elev=287.14' Inflow=1.72 cfs 0.130 af
	15.0" Round Culvert n=0.012 L=168.9' S=0.0823 '/' Outflow=1.72 cfs 0.130 af
Pond 4P: CB_7-8	Peak Elev=273.49' Inflow=3.53 cfs 0.245 af
	15.0" Round Culvert n=0.012 L=128.2' S=0.0686 '/' Outflow=3.53 cfs 0.245 af
Pond 5P: CB-9	Peak Elev=264.71' Inflow=4.13 cfs 0.285 af
	15.0" Round Culvert n=0.012 L=100.6' S=0.1044 '/' Outflow=4.13 cfs 0.285 af

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

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Pond 6P: CB_10-11

Peak Elev=254.23' Inflow=5.85 cfs 0.396 af
18.0" Round Culvert n=0.012 L=172.0' S=0.0459 '/ Outflow=5.85 cfs 0.396 af

Pond 7P: CB_12-13

Peak Elev=246.38' Inflow=6.82 cfs 0.467 af
18.0" Round Culvert n=0.012 L=36.0' S=0.0278 '/ Outflow=6.82 cfs 0.467 af

Pond 10P: Stormwater Basin

Peak Elev=243.58' Storage=10,261 cf Inflow=6.82 cfs 0.492 af
Primary=0.94 cfs 0.350 af Secondary=0.00 cfs 0.000 af Outflow=0.94 cfs 0.350 af

Link 1L:

2-year Outflow Imported from Proposed Wetlands Drainage~Reach 2R.hce Inflow=2.24 cfs 0.276 af
Area= 5.540 ac 1.13% Imperv. Primary=2.24 cfs 0.276 af

Total Runoff Area = 5.668 ac Runoff Volume = 0.493 af Average Runoff Depth = 1.04"
59.23% Pervious = 3.357 ac 40.77% Impervious = 2.311 ac

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Summary for Subcatchment 1S: Drainage Area 1

Runoff = 0.29 cfs @ 12.14 hrs, Volume= 0.022 af, Depth> 1.35"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.37"

Area (sf)	CN	Description
4,120	98	Paved parking, HSG B
4,450	61	>75% Grass cover, Good, HSG B
8,570	79	Weighted Average
4,450		51.93% Pervious Area
4,120		48.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	111	0.0710	0.20		Sheet Flow, Tc-1 Grass: Dense n= 0.240 P2= 3.37"

Summary for Subcatchment 2S: Drainage Area 2

Runoff = 0.88 cfs @ 12.02 hrs, Volume= 0.053 af, Depth> 1.94"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.37"

Area (sf)	CN	Description
* 6,287	74	>75% Grass cover, Good, HSG B/D
* 8,033	98	Roof/pavement
14,320	87	Weighted Average
6,287		43.90% Pervious Area
8,033		56.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	125	0.0100	2.03		Shallow Concentrated Flow, Tc-2 Paved Kv= 20.3 fps

Summary for Subcatchment 3S: Drainage Area 3

Runoff = 0.80 cfs @ 12.10 hrs, Volume= 0.055 af, Depth> 1.11"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
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Area (sf)	CN	Description
* 9,529	98	Paved parking/roof
16,209	61	>75% Grass cover, Good, HSG B
25,738	75	Weighted Average
16,209		62.98% Pervious Area
9,529		37.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	105	0.1100	0.35		Sheet Flow, Tc-4a Grass: Short n= 0.150 P2= 3.37"
0.7	160	0.0310	3.57		Shallow Concentrated Flow, Tc-4b Paved Kv= 20.3 fps
5.7	265	Total			

Summary for Subcatchment 4S: Drainage Area 4

Runoff = 1.82 cfs @ 12.05 hrs, Volume= 0.116 af, Depth> 0.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2-year Rainfall=3.37"

Area (sf)	CN	Description
* 32,200	98	Paved parking & roof HSG A
20,000	39	>75% Grass cover, Good, HSG A
19,500	55	Woods, Good, HSG B
71,700	70	Weighted Average
39,500		55.09% Pervious Area
32,200		44.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	130	0.0100	1.13		Sheet Flow, Tc-3 Smooth surfaces n= 0.011 P2= 3.37"

Summary for Subcatchment 5S: Drainage Area 5

Runoff = 0.60 cfs @ 12.04 hrs, Volume= 0.039 af, Depth> 0.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2-year Rainfall=3.37"

Area (sf)	CN	Description
* 13,450	98	Paved surfaces & roof
14,147	39	>75% Grass cover, Good, HSG A
27,597	68	Weighted Average
14,147		51.26% Pervious Area
13,450		48.74% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	180	0.0500	2.29		Sheet Flow, Tc-5 Smooth surfaces n= 0.011 P2= 3.37"

Summary for Subcatchment 6S: Drainage Area 6

Runoff = 1.75 cfs @ 12.06 hrs, Volume= 0.111 af, Depth> 1.23"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2-year Rainfall=3.37"

Area (sf)	CN	Description
* 21,025	98	Pavement/Roofs, HSG B
22,990	61	>75% Grass cover, Good, HSG B
3,300	55	Woods, Good, HSG B
47,315	77	Weighted Average
26,290		55.56% Pervious Area
21,025		44.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	180	0.0500	0.76		Lag/CN Method, Tc-6

Summary for Subcatchment 7S: Drainage Area 7

Runoff = 1.07 cfs @ 12.02 hrs, Volume= 0.071 af, Depth> 2.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2-year Rainfall=3.37"

Area (sf)	CN	Description
* 12,295	98	Roof & Pavement
* 716	74	>75% Grass cover, Good, HSG B/D
13,011	97	Weighted Average
716		5.50% Pervious Area
12,295		94.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	175	0.0580	2.42		Sheet Flow, Tc-7 Smooth surfaces n= 0.011 P2= 3.37"

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Summary for Subcatchment 8S: Overland to Swales

Runoff = 0.20 cfs @ 12.19 hrs, Volume= 0.026 af, Depth> 0.35"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-year Rainfall=3.37"

Area (sf)	CN	Description
* 38,644	58	>75% Grass cover, Good, HSG B
38,644		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	130	0.1240	0.26		Sheet Flow, Tc=8 Grass: Dense n= 0.240 P2= 3.37"

Summary for Reach 3R: Riprap Swale

Inflow Area = 0.887 ac, 0.00% Impervious, Inflow Depth > 0.35" for 2-year event
Inflow = 0.20 cfs @ 12.19 hrs, Volume= 0.026 af
Outflow = 0.20 cfs @ 12.30 hrs, Volume= 0.026 af, Atten= 2%, Lag= 6.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.19 fps, Min. Travel Time= 2.9 min
Avg. Velocity= 0.60 fps, Avg. Travel Time= 5.8 min

Peak Storage= 35 cf @ 12.25 hrs
Average Depth at Peak Storage= 0.04'
Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 48.58 cfs

4.00' x 1.00' deep channel, n= 0.045
Side Slope Z-value= 2.0 '/' Top Width= 8.00'
Length= 210.0' Slope= 0.0952 '/'
Inlet Invert= 276.00', Outlet Invert= 256.00'



Summary for Reach 4R: Grass swale to basin

Inflow Area = 0.887 ac, 0.00% Impervious, Inflow Depth > 0.35" for 2-year event
Inflow = 0.20 cfs @ 12.30 hrs, Volume= 0.026 af
Outflow = 0.19 cfs @ 12.41 hrs, Volume= 0.025 af, Atten= 2%, Lag= 6.6 min

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Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.09 fps, Min. Travel Time= 3.1 min
Avg. Velocity = 0.55 fps, Avg. Travel Time= 6.2 min

Peak Storage= 36 cf @ 12.36 hrs
Average Depth at Peak Storage= 0.04'
Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 42.41 cfs

4.00' x 1.00' deep channel, n= 0.035
Side Slope Z-value= 2.0 '/' Top Width= 8.00'
Length= 205.0' Slope= 0.0439 '/'
Inlet Invert= 256.00', Outlet Invert= 247.00'



Summary for Reach 9R: Peak off Site

Inflow Area = 11.208 ac, 21.17% Impervious, Inflow Depth > 0.67" for 2-year event
Inflow = 3.17 cfs @ 12.60 hrs, Volume= 0.626 af
Outflow = 3.17 cfs @ 12.60 hrs, Volume= 0.626 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 1P: CB_1-2

Inflow Area = 0.197 ac, 48.07% Impervious, Inflow Depth > 1.35" for 2-year event
Inflow = 0.29 cfs @ 12.14 hrs, Volume= 0.022 af
Outflow = 0.29 cfs @ 12.14 hrs, Volume= 0.022 af, Atten= 0%, Lag= 0.0 min
Primary = 0.29 cfs @ 12.14 hrs, Volume= 0.022 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 311.75' @ 12.14 hrs
Flood Elev= 316.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	311.50'	15.0" Round Culvert L= 128.7' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 311.50' / 298.95' S= 0.0975 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.29 cfs @ 12.14 hrs HW=311.75' (Free Discharge)
↑ **1=Culvert** (Inlet Controls 0.29 cfs @ 1.69 fps)

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Summary for Pond 2P: CB_3-4

Inflow Area = 0.525 ac, 53.09% Impervious, Inflow Depth > 1.72" for 2-year event
Inflow = 1.03 cfs @ 12.03 hrs, Volume= 0.075 af
Outflow = 1.03 cfs @ 12.03 hrs, Volume= 0.075 af, Atten= 0%, Lag= 0.0 min
Primary = 1.03 cfs @ 12.03 hrs, Volume= 0.075 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 299.33' @ 12.03 hrs
Flood Elev= 303.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	298.85'	15.0" Round Culvert L= 131.1' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 298.85' / 286.60' S= 0.0934 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.00 cfs @ 12.03 hrs HW=299.32' (Free Discharge)
↑**1=Culvert** (Inlet Controls 1.00 cfs @ 2.35 fps)

Summary for Pond 3P: CB_5-6

Inflow Area = 1.116 ac, 44.59% Impervious, Inflow Depth > 1.40" for 2-year event
Inflow = 1.72 cfs @ 12.06 hrs, Volume= 0.130 af
Outflow = 1.72 cfs @ 12.06 hrs, Volume= 0.130 af, Atten= 0%, Lag= 0.0 min
Primary = 1.72 cfs @ 12.06 hrs, Volume= 0.130 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 287.14' @ 12.06 hrs
Flood Elev= 291.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	286.50'	15.0" Round Culvert L= 168.9' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 286.50' / 272.60' S= 0.0823 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.69 cfs @ 12.06 hrs HW=287.13' (Free Discharge)
↑**1=Culvert** (Inlet Controls 1.69 cfs @ 2.71 fps)

Summary for Pond 4P: CB_7-8

Inflow Area = 2.762 ac, 44.78% Impervious, Inflow Depth > 1.07" for 2-year event
Inflow = 3.53 cfs @ 12.05 hrs, Volume= 0.245 af
Outflow = 3.53 cfs @ 12.05 hrs, Volume= 0.245 af, Atten= 0%, Lag= 0.0 min
Primary = 3.53 cfs @ 12.05 hrs, Volume= 0.245 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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Peak Elev= 273.49' @ 12.05 hrs
Flood Elev= 277.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	272.50'	15.0" Round Culvert L= 128.2' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 272.50' / 263.70' S= 0.0686 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=3.53 cfs @ 12.05 hrs HW=273.49' (Free Discharge)
↑**1=Culvert** (Inlet Controls 3.53 cfs @ 3.39 fps)

Summary for Pond 5P: CB-9

Inflow Area = 3.396 ac, 45.52% Impervious, Inflow Depth > 1.01" for 2-year event
Inflow = 4.13 cfs @ 12.05 hrs, Volume= 0.285 af
Outflow = 4.13 cfs @ 12.05 hrs, Volume= 0.285 af, Atten= 0%, Lag= 0.0 min
Primary = 4.13 cfs @ 12.05 hrs, Volume= 0.285 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 264.71' @ 12.05 hrs
Flood Elev= 267.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	263.60'	15.0" Round Culvert L= 100.6' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 263.60' / 253.10' S= 0.1044 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=4.10 cfs @ 12.05 hrs HW=264.70' (Free Discharge)
↑**1=Culvert** (Inlet Controls 4.10 cfs @ 3.58 fps)

Summary for Pond 6P: CB_10-11

Inflow Area = 4.482 ac, 45.26% Impervious, Inflow Depth > 1.06" for 2-year event
Inflow = 5.85 cfs @ 12.05 hrs, Volume= 0.396 af
Outflow = 5.85 cfs @ 12.05 hrs, Volume= 0.396 af, Atten= 0%, Lag= 0.0 min
Primary = 5.85 cfs @ 12.05 hrs, Volume= 0.396 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 254.23' @ 12.05 hrs
Flood Elev= 259.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	253.00'	18.0" Round Culvert L= 172.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 253.00' / 245.10' S= 0.0459 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

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Primary OutFlow Max=5.79 cfs @ 12.05 hrs HW=254.22' (Free Discharge)

↑**1=Culvert** (Inlet Controls 5.79 cfs @ 3.76 fps)

Summary for Pond 7P: CB_12-13

Inflow Area = 4.781 ac, 48.33% Impervious, Inflow Depth > 1.17" for 2-year event
Inflow = 6.82 cfs @ 12.05 hrs, Volume= 0.467 af
Outflow = 6.82 cfs @ 12.05 hrs, Volume= 0.467 af, Atten= 0%, Lag= 0.0 min
Primary = 6.82 cfs @ 12.05 hrs, Volume= 0.467 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 246.38' @ 12.05 hrs

Flood Elev= 249.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	245.00'	18.0" Round Culvert L= 36.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 245.00' / 244.00' S= 0.0278 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=6.79 cfs @ 12.05 hrs HW=246.38' (Free Discharge)

↑**1=Culvert** (Inlet Controls 6.79 cfs @ 4.00 fps)

Summary for Pond 10P: Stormwater Basin

Inflow Area = 5.668 ac, 40.77% Impervious, Inflow Depth > 1.04" for 2-year event
Inflow = 6.82 cfs @ 12.05 hrs, Volume= 0.492 af
Outflow = 0.94 cfs @ 12.85 hrs, Volume= 0.350 af, Atten= 86%, Lag= 48.0 min
Primary = 0.94 cfs @ 12.85 hrs, Volume= 0.350 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 243.58' @ 12.85 hrs Surf.Area= 7,346 sf Storage= 10,261 cf

Plug-Flow detention time= 173.5 min calculated for 0.350 af (71% of inflow)

Center-of-Mass det. time= 102.2 min (906.0 - 803.8)

Volume	Invert	Avail.Storage	Storage Description
#1	242.00'	31,370 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.00	5,655	0	0
244.00	7,798	13,453	13,453
245.00	8,950	8,374	21,827
246.00	10,135	9,543	31,370

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Device	Routing	Invert	Outlet Devices
#1	Primary	242.50'	15.0" Round Culvert L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	242.50'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	243.00'	6.0" Vert. Orifice/Grate C= 0.600
#4	Device 1	244.00'	10.0" Vert. Orifice/Grate C= 0.600
#5	Device 1	246.00'	36.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#6	Secondary	247.00'	18.0' long x 2.0' 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 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=0.94 cfs @ 12.85 hrs HW=243.58' (Free Discharge)

↑ **1=Culvert** (Passes 0.94 cfs of 3.33 cfs potential flow)
↑ **2=Orifice/Grate** (Orifice Controls 0.40 cfs @ 4.60 fps)
↑ **3=Orifice/Grate** (Orifice Controls 0.54 cfs @ 2.76 fps)
↑ **4=Orifice/Grate** (Controls 0.00 cfs)
↑ **5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=242.00' (Free Discharge)

↑ **6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link 1L: Wetlands Drainage

Inflow Area = 5.540 ac, 1.13% Impervious, Inflow Depth > 0.60" for 2-year event
Inflow = 2.24 cfs @ 12.59 hrs, Volume= 0.276 af
Primary = 2.24 cfs @ 12.59 hrs, Volume= 0.276 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

2-year Outflow Imported from Proposed Wetlands Drainage~Reach 2R.hce

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area 1	Runoff Area=8,570 sf 48.07% Impervious Runoff Depth>2.03"
Flow Length=111'	Slope=0.0710 '/ Tc=9.1 min CN=79 Runoff=0.44 cfs 0.033 af
Subcatchment 2S: Drainage Area 2	Runoff Area=14,320 sf 56.10% Impervious Runoff Depth>2.72"
Flow Length=125'	Slope=0.0100 '/ Tc=1.0 min CN=87 Runoff=1.23 cfs 0.074 af
Subcatchment 3S: Drainage Area 3	Runoff Area=25,738 sf 37.02% Impervious Runoff Depth>1.73"
Flow Length=265'	Tc=5.7 min CN=75 Runoff=1.27 cfs 0.085 af
Subcatchment 4S: Drainage Area 4	Runoff Area=71,700 sf 44.91% Impervious Runoff Depth>1.39"
Flow Length=130'	Slope=0.0100 '/ Tc=1.9 min CN=70 Runoff=3.11 cfs 0.190 af
Subcatchment 5S: Drainage Area 5	Runoff Area=27,597 sf 48.74% Impervious Runoff Depth>1.26"
Flow Length=180'	Slope=0.0500 '/ Tc=1.3 min CN=68 Runoff=1.07 cfs 0.067 af
Subcatchment 6S: Drainage Area 6	Runoff Area=47,315 sf 44.44% Impervious Runoff Depth>1.88"
Flow Length=180'	Slope=0.0500 '/ Tc=3.9 min CN=77 Runoff=2.71 cfs 0.170 af
Subcatchment 7S: Drainage Area 7	Runoff Area=13,011 sf 94.50% Impervious Runoff Depth>3.67"
Flow Length=175'	Slope=0.0580 '/ Tc=1.2 min CN=97 Runoff=1.36 cfs 0.091 af
Subcatchment 8S: Overland to Swales	Runoff Area=38,644 sf 0.00% Impervious Runoff Depth>0.70"
Flow Length=130'	Slope=0.1240 '/ Tc=8.3 min CN=58 Runoff=0.58 cfs 0.052 af
Reach 3R: Riprap Swale	Avg. Flow Depth=0.08' Max Vel=1.77 fps Inflow=0.58 cfs 0.052 af
	n=0.045 L=210.0' S=0.0952 '/ Capacity=48.58 cfs Outflow=0.56 cfs 0.052 af
Reach 4R: Grass swale to basin	Avg. Flow Depth=0.08' Max Vel=1.61 fps Inflow=0.56 cfs 0.052 af
	n=0.035 L=205.0' S=0.0439 '/ Capacity=42.41 cfs Outflow=0.53 cfs 0.051 af
Reach 9R: Peak off Site	Inflow=6.31 cfs 1.092 af
	Outflow=6.31 cfs 1.092 af
Pond 1P: CB_1-2	Peak Elev=311.81' Inflow=0.44 cfs 0.033 af
15.0" Round Culvert	n=0.012 L=128.7' S=0.0975 '/ Outflow=0.44 cfs 0.033 af
Pond 2P: CB_3-4	Peak Elev=299.43' Inflow=1.46 cfs 0.108 af
15.0" Round Culvert	n=0.012 L=131.1' S=0.0934 '/ Outflow=1.46 cfs 0.108 af
Pond 3P: CB_5-6	Peak Elev=287.31' Inflow=2.57 cfs 0.193 af
15.0" Round Culvert	n=0.012 L=168.9' S=0.0823 '/ Outflow=2.57 cfs 0.193 af
Pond 4P: CB_7-8	Peak Elev=274.04' Inflow=5.66 cfs 0.383 af
15.0" Round Culvert	n=0.012 L=128.2' S=0.0686 '/ Outflow=5.66 cfs 0.383 af
Pond 5P: CB-9	Peak Elev=265.51' Inflow=6.71 cfs 0.450 af
15.0" Round Culvert	n=0.012 L=100.6' S=0.1044 '/ Outflow=6.71 cfs 0.450 af

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Pond 6P: CB_10-11

Peak Elev=254.96' Inflow=9.37 cfs 0.620 af
18.0" Round Culvert n=0.012 L=172.0' S=0.0459 '/ Outflow=9.37 cfs 0.620 af

Pond 7P: CB_12-13

Peak Elev=247.31' Inflow=10.62 cfs 0.711 af
18.0" Round Culvert n=0.012 L=36.0' S=0.0278 '/ Outflow=10.62 cfs 0.711 af

Pond 10P: Stormwater Basin

Peak Elev=244.28' Storage=15,674 cf Inflow=10.65 cfs 0.762 af
Primary=1.78 cfs 0.604 af Secondary=0.00 cfs 0.000 af Outflow=1.78 cfs 0.604 af

Link 1L:

5-year Outflow Imported from Proposed Wetlands Drainage~Reach 2R.hce Inflow=4.58 cfs 0.488 af
Area= 5.540 ac 1.13% Imperv. Primary=4.58 cfs 0.488 af

Total Runoff Area = 5.668 ac Runoff Volume = 0.763 af Average Runoff Depth = 1.62"
59.23% Pervious = 3.357 ac 40.77% Impervious = 2.311 ac

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Summary for Subcatchment 1S: Drainage Area 1

Runoff = 0.44 cfs @ 12.13 hrs, Volume= 0.033 af, Depth> 2.03"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-year Rainfall=4.27"

Area (sf)	CN	Description
4,120	98	Paved parking, HSG B
4,450	61	>75% Grass cover, Good, HSG B
8,570	79	Weighted Average
4,450		51.93% Pervious Area
4,120		48.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	111	0.0710	0.20		Sheet Flow, Tc-1 Grass: Dense n= 0.240 P2= 3.37"

Summary for Subcatchment 2S: Drainage Area 2

Runoff = 1.23 cfs @ 12.02 hrs, Volume= 0.074 af, Depth> 2.72"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-year Rainfall=4.27"

Area (sf)	CN	Description
* 6,287	74	>75% Grass cover, Good, HSG B/D
* 8,033	98	Roof/pavement
14,320	87	Weighted Average
6,287		43.90% Pervious Area
8,033		56.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	125	0.0100	2.03		Shallow Concentrated Flow, Tc-2 Paved Kv= 20.3 fps

Summary for Subcatchment 3S: Drainage Area 3

Runoff = 1.27 cfs @ 12.09 hrs, Volume= 0.085 af, Depth> 1.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-year Rainfall=4.27"

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Area (sf)	CN	Description
* 9,529	98	Paved parking/roof
16,209	61	>75% Grass cover, Good, HSG B
25,738	75	Weighted Average
16,209		62.98% Pervious Area
9,529		37.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	105	0.1100	0.35		Sheet Flow, Tc-4a Grass: Short n= 0.150 P2= 3.37"
0.7	160	0.0310	3.57		Shallow Concentrated Flow, Tc-4b Paved Kv= 20.3 fps
5.7	265	Total			

Summary for Subcatchment 4S: Drainage Area 4

Runoff = 3.11 cfs @ 12.04 hrs, Volume= 0.190 af, Depth> 1.39"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 5-year Rainfall=4.27"

Area (sf)	CN	Description
* 32,200	98	Paved parking & roof HSG A
20,000	39	>75% Grass cover, Good, HSG A
19,500	55	Woods, Good, HSG B
71,700	70	Weighted Average
39,500		55.09% Pervious Area
32,200		44.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	130	0.0100	1.13		Sheet Flow, Tc-3 Smooth surfaces n= 0.011 P2= 3.37"

Summary for Subcatchment 5S: Drainage Area 5

Runoff = 1.07 cfs @ 12.03 hrs, Volume= 0.067 af, Depth> 1.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 5-year Rainfall=4.27"

Area (sf)	CN	Description
* 13,450	98	Paved surfaces & roof
14,147	39	>75% Grass cover, Good, HSG A
27,597	68	Weighted Average
14,147		51.26% Pervious Area
13,450		48.74% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	180	0.0500	2.29		Sheet Flow, Tc-5 Smooth surfaces n= 0.011 P2= 3.37"

Summary for Subcatchment 6S: Drainage Area 6

Runoff = 2.71 cfs @ 12.06 hrs, Volume= 0.170 af, Depth> 1.88"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 5-year Rainfall=4.27"

Area (sf)	CN	Description
* 21,025	98	Pavement/Roofs, HSG B
22,990	61	>75% Grass cover, Good, HSG B
3,300	55	Woods, Good, HSG B
47,315	77	Weighted Average
26,290		55.56% Pervious Area
21,025		44.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	180	0.0500	0.76		Lag/CN Method, Tc-6

Summary for Subcatchment 7S: Drainage Area 7

Runoff = 1.36 cfs @ 12.02 hrs, Volume= 0.091 af, Depth> 3.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 5-year Rainfall=4.27"

Area (sf)	CN	Description
* 12,295	98	Roof & Pavement
* 716	74	>75% Grass cover, Good, HSG B/D
13,011	97	Weighted Average
716		5.50% Pervious Area
12,295		94.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	175	0.0580	2.42		Sheet Flow, Tc-7 Smooth surfaces n= 0.011 P2= 3.37"

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Summary for Subcatchment 8S: Overland to Swales

Runoff = 0.58 cfs @ 12.15 hrs, Volume= 0.052 af, Depth> 0.70"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-year Rainfall=4.27"

Area (sf)	CN	Description
* 38,644	58	>75% Grass cover, Good, HSG B
38,644		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	130	0.1240	0.26		Sheet Flow, Tc=8 Grass: Dense n= 0.240 P2= 3.37"

Summary for Reach 3R: Riprap Swale

Inflow Area = 0.887 ac, 0.00% Impervious, Inflow Depth > 0.70" for 5-year event
Inflow = 0.58 cfs @ 12.15 hrs, Volume= 0.052 af
Outflow = 0.56 cfs @ 12.21 hrs, Volume= 0.052 af, Atten= 3%, Lag= 3.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.77 fps, Min. Travel Time= 2.0 min
Avg. Velocity= 0.75 fps, Avg. Travel Time= 4.7 min

Peak Storage= 67 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 48.58 cfs

4.00' x 1.00' deep channel, n= 0.045
Side Slope Z-value= 2.0 ' Top Width= 8.00'
Length= 210.0' Slope= 0.0952 '
Inlet Invert= 276.00', Outlet Invert= 256.00'



Summary for Reach 4R: Grass swale to basin

Inflow Area = 0.887 ac, 0.00% Impervious, Inflow Depth > 0.70" for 5-year event
Inflow = 0.56 cfs @ 12.21 hrs, Volume= 0.052 af
Outflow = 0.53 cfs @ 12.28 hrs, Volume= 0.051 af, Atten= 5%, Lag= 4.0 min

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Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.61 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 0.69 fps, Avg. Travel Time= 4.9 min

Peak Storage= 69 cf @ 12.24 hrs
Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 42.41 cfs

4.00' x 1.00' deep channel, n= 0.035
Side Slope Z-value= 2.0 '/' Top Width= 8.00'
Length= 205.0' Slope= 0.0439 '/'
Inlet Invert= 256.00', Outlet Invert= 247.00'



Summary for Reach 9R: Peak off Site

Inflow Area = 11.208 ac, 21.17% Impervious, Inflow Depth > 1.17" for 5-year event
Inflow = 6.31 cfs @ 12.50 hrs, Volume= 1.092 af
Outflow = 6.31 cfs @ 12.50 hrs, Volume= 1.092 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 1P: CB_1-2

Inflow Area = 0.197 ac, 48.07% Impervious, Inflow Depth > 2.03" for 5-year event
Inflow = 0.44 cfs @ 12.13 hrs, Volume= 0.033 af
Outflow = 0.44 cfs @ 12.13 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.0 min
Primary = 0.44 cfs @ 12.13 hrs, Volume= 0.033 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 311.81' @ 12.13 hrs
Flood Elev= 316.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	311.50'	15.0" Round Culvert L= 128.7' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 311.50' / 298.95' S= 0.0975 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.43 cfs @ 12.13 hrs HW=311.80' (Free Discharge)
↑ **1=Culvert** (Inlet Controls 0.43 cfs @ 1.88 fps)

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Summary for Pond 2P: CB_3-4

Inflow Area = 0.525 ac, 53.09% Impervious, Inflow Depth > 2.46" for 5-year event
Inflow = 1.46 cfs @ 12.03 hrs, Volume= 0.108 af
Outflow = 1.46 cfs @ 12.03 hrs, Volume= 0.108 af, Atten= 0%, Lag= 0.0 min
Primary = 1.46 cfs @ 12.03 hrs, Volume= 0.108 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 299.43' @ 12.03 hrs
Flood Elev= 303.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	298.85'	15.0" Round Culvert L= 131.1' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 298.85' / 286.60' S= 0.0934 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.42 cfs @ 12.03 hrs HW=299.42' (Free Discharge)
↑**1=Culvert** (Inlet Controls 1.42 cfs @ 2.58 fps)

Summary for Pond 3P: CB_5-6

Inflow Area = 1.116 ac, 44.59% Impervious, Inflow Depth > 2.07" for 5-year event
Inflow = 2.57 cfs @ 12.06 hrs, Volume= 0.193 af
Outflow = 2.57 cfs @ 12.06 hrs, Volume= 0.193 af, Atten= 0%, Lag= 0.0 min
Primary = 2.57 cfs @ 12.06 hrs, Volume= 0.193 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 287.31' @ 12.06 hrs
Flood Elev= 291.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	286.50'	15.0" Round Culvert L= 168.9' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 286.50' / 272.60' S= 0.0823 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=2.52 cfs @ 12.06 hrs HW=287.30' (Free Discharge)
↑**1=Culvert** (Inlet Controls 2.52 cfs @ 3.04 fps)

Summary for Pond 4P: CB_7-8

Inflow Area = 2.762 ac, 44.78% Impervious, Inflow Depth > 1.66" for 5-year event
Inflow = 5.66 cfs @ 12.05 hrs, Volume= 0.383 af
Outflow = 5.66 cfs @ 12.05 hrs, Volume= 0.383 af, Atten= 0%, Lag= 0.0 min
Primary = 5.66 cfs @ 12.05 hrs, Volume= 0.383 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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Peak Elev= 274.04' @ 12.05 hrs
Flood Elev= 277.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	272.50'	15.0" Round Culvert L= 128.2' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 272.50' / 263.70' S= 0.0686 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=5.62 cfs @ 12.05 hrs HW=274.03' (Free Discharge)
↑**1=Culvert** (Inlet Controls 5.62 cfs @ 4.58 fps)

Summary for Pond 5P: CB-9

Inflow Area = 3.396 ac, 45.52% Impervious, Inflow Depth > 1.59" for 5-year event
Inflow = 6.71 cfs @ 12.05 hrs, Volume= 0.450 af
Outflow = 6.71 cfs @ 12.05 hrs, Volume= 0.450 af, Atten= 0%, Lag= 0.0 min
Primary = 6.71 cfs @ 12.05 hrs, Volume= 0.450 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 265.51' @ 12.05 hrs
Flood Elev= 267.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	263.60'	15.0" Round Culvert L= 100.6' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 263.60' / 253.10' S= 0.1044 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=6.62 cfs @ 12.05 hrs HW=265.48' (Free Discharge)
↑**1=Culvert** (Inlet Controls 6.62 cfs @ 5.39 fps)

Summary for Pond 6P: CB_10-11

Inflow Area = 4.482 ac, 45.26% Impervious, Inflow Depth > 1.66" for 5-year event
Inflow = 9.37 cfs @ 12.05 hrs, Volume= 0.620 af
Outflow = 9.37 cfs @ 12.05 hrs, Volume= 0.620 af, Atten= 0%, Lag= 0.0 min
Primary = 9.37 cfs @ 12.05 hrs, Volume= 0.620 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 254.96' @ 12.05 hrs
Flood Elev= 259.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	253.00'	18.0" Round Culvert L= 172.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 253.00' / 245.10' S= 0.0459 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

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Primary OutFlow Max=9.36 cfs @ 12.05 hrs HW=254.96' (Free Discharge)

↑**1=Culvert** (Inlet Controls 9.36 cfs @ 5.30 fps)

Summary for Pond 7P: CB_12-13

Inflow Area = 4.781 ac, 48.33% Impervious, Inflow Depth > 1.78" for 5-year event
Inflow = 10.62 cfs @ 12.05 hrs, Volume= 0.711 af
Outflow = 10.62 cfs @ 12.05 hrs, Volume= 0.711 af, Atten= 0%, Lag= 0.0 min
Primary = 10.62 cfs @ 12.05 hrs, Volume= 0.711 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 247.31' @ 12.05 hrs

Flood Elev= 249.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	245.00'	18.0" Round Culvert L= 36.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 245.00' / 244.00' S= 0.0278 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=10.51 cfs @ 12.05 hrs HW=247.28' (Free Discharge)

↑**1=Culvert** (Inlet Controls 10.51 cfs @ 5.95 fps)

Summary for Pond 10P: Stormwater Basin

Inflow Area = 5.668 ac, 40.77% Impervious, Inflow Depth > 1.61" for 5-year event
Inflow = 10.65 cfs @ 12.05 hrs, Volume= 0.762 af
Outflow = 1.78 cfs @ 12.63 hrs, Volume= 0.604 af, Atten= 83%, Lag= 35.2 min
Primary = 1.78 cfs @ 12.63 hrs, Volume= 0.604 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 244.28' @ 12.63 hrs Surf.Area= 8,120 sf Storage= 15,674 cf

Plug-Flow detention time= 154.1 min calculated for 0.604 af (79% of inflow)

Center-of-Mass det. time= 97.4 min (894.3 - 796.9)

Volume	Invert	Avail.Storage	Storage Description
#1	242.00'	31,370 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.00	5,655	0	0
244.00	7,798	13,453	13,453
245.00	8,950	8,374	21,827
246.00	10,135	9,543	31,370

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Device	Routing	Invert	Outlet Devices
#1	Primary	242.50'	15.0" Round Culvert L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	242.50'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	243.00'	6.0" Vert. Orifice/Grate C= 0.600
#4	Device 1	244.00'	10.0" Vert. Orifice/Grate C= 0.600
#5	Device 1	246.00'	36.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#6	Secondary	247.00'	18.0' long x 2.0' 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 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=1.78 cfs @ 12.63 hrs HW=244.28' (Free Discharge)

↑ **1=Culvert** (Passes 1.78 cfs of 5.35 cfs potential flow)
↑ **2=Orifice/Grate** (Orifice Controls 0.53 cfs @ 6.11 fps)
↑ **3=Orifice/Grate** (Orifice Controls 0.96 cfs @ 4.88 fps)
↑ **4=Orifice/Grate** (Orifice Controls 0.29 cfs @ 1.80 fps)
↑ **5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=242.00' (Free Discharge)

↑ **6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link 1L: Wetlands Drainage

Inflow Area = 5.540 ac, 1.13% Impervious, Inflow Depth > 1.06" for 5-year event
Inflow = 4.58 cfs @ 12.49 hrs, Volume= 0.488 af
Primary = 4.58 cfs @ 12.49 hrs, Volume= 0.488 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

5-year Outflow Imported from Proposed Wetlands Drainage~Reach 2R.hce

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area 1 Runoff Area=8,570 sf 48.07% Impervious Runoff Depth>2.63"
Flow Length=111' Slope=0.0710 '/' Tc=9.1 min CN=79 Runoff=0.57 cfs 0.043 af

Subcatchment 2S: Drainage Area 2 Runoff Area=14,320 sf 56.10% Impervious Runoff Depth>3.38"
Flow Length=125' Slope=0.0100 '/' Tc=1.0 min CN=87 Runoff=1.51 cfs 0.093 af

Subcatchment 3S: Drainage Area 3 Runoff Area=25,738 sf 37.02% Impervious Runoff Depth>2.29"
Flow Length=265' Tc=5.7 min CN=75 Runoff=1.68 cfs 0.113 af

Subcatchment 4S: Drainage Area 4 Runoff Area=71,700 sf 44.91% Impervious Runoff Depth>1.89"
Flow Length=130' Slope=0.0100 '/' Tc=1.9 min CN=70 Runoff=4.29 cfs 0.260 af

Subcatchment 5S: Drainage Area 5 Runoff Area=27,597 sf 48.74% Impervious Runoff Depth>1.74"
Flow Length=180' Slope=0.0500 '/' Tc=1.3 min CN=68 Runoff=1.50 cfs 0.092 af

Subcatchment 6S: Drainage Area 6 Runoff Area=47,315 sf 44.44% Impervious Runoff Depth>2.46"
Flow Length=180' Slope=0.0500 '/' Tc=3.9 min CN=77 Runoff=3.54 cfs 0.222 af

Subcatchment 7S: Drainage Area 7 Runoff Area=13,011 sf 94.50% Impervious Runoff Depth>4.36"
Flow Length=175' Slope=0.0580 '/' Tc=1.2 min CN=97 Runoff=1.61 cfs 0.109 af

Subcatchment 8S: Overland to Swales Runoff Area=38,644 sf 0.00% Impervious Runoff Depth>1.06"
Flow Length=130' Slope=0.1240 '/' Tc=8.3 min CN=58 Runoff=0.96 cfs 0.078 af

Reach 3R: Riprap Swale Avg. Flow Depth=0.10' Max Vel=2.17 fps Inflow=0.96 cfs 0.078 af
n=0.045 L=210.0' S=0.0952 '/' Capacity=48.58 cfs Outflow=0.92 cfs 0.078 af

Reach 4R: Grass swale to basin Avg. Flow Depth=0.11' Max Vel=1.96 fps Inflow=0.92 cfs 0.078 af
n=0.035 L=205.0' S=0.0439 '/' Capacity=42.41 cfs Outflow=0.89 cfs 0.078 af

Reach 9R: Peak off Site Inflow=10.20 cfs 1.532 af
Outflow=10.20 cfs 1.532 af

Pond 1P: CB_1-2 Peak Elev=311.85' Inflow=0.57 cfs 0.043 af
15.0" Round Culvert n=0.012 L=128.7' S=0.0975 '/' Outflow=0.57 cfs 0.043 af

Pond 2P: CB_3-4 Peak Elev=299.52' Inflow=1.84 cfs 0.136 af
15.0" Round Culvert n=0.012 L=131.1' S=0.0934 '/' Outflow=1.84 cfs 0.136 af

Pond 3P: CB_5-6 Peak Elev=287.45' Inflow=3.31 cfs 0.248 af
15.0" Round Culvert n=0.012 L=168.9' S=0.0823 '/' Outflow=3.31 cfs 0.248 af

Pond 4P: CB_7-8 Peak Elev=274.76' Inflow=7.56 cfs 0.508 af
15.0" Round Culvert n=0.012 L=128.2' S=0.0686 '/' Outflow=7.56 cfs 0.508 af

Pond 5P: CB-9 Peak Elev=266.56' Inflow=9.04 cfs 0.600 af
15.0" Round Culvert n=0.012 L=100.6' S=0.1044 '/' Outflow=9.04 cfs 0.600 af

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Pond 6P: CB_10-11

Peak Elev=255.92' Inflow=12.52 cfs 0.822 af
18.0" Round Culvert n=0.012 L=172.0' S=0.0459 '/' Outflow=12.52 cfs 0.822 af

Pond 7P: CB_12-13

Peak Elev=248.45' Inflow=13.99 cfs 0.931 af
18.0" Round Culvert n=0.012 L=36.0' S=0.0278 '/' Outflow=13.99 cfs 0.931 af

Pond 10P: Stormwater Basin

Peak Elev=244.77' Storage=19,756 cf Inflow=14.21 cfs 1.009 af
Primary=3.33 cfs 0.840 af Secondary=0.00 cfs 0.000 af Outflow=3.33 cfs 0.840 af

Link 1L:

10-year Outflow Imported from Proposed Wetlands Drainage~Reach 2R.hce Inflow=6.89 cfs 0.691 af
Area= 5.540 ac 1.13% Imperv. Primary=6.89 cfs 0.691 af

Total Runoff Area = 5.668 ac Runoff Volume = 1.009 af Average Runoff Depth = 2.14"
59.23% Pervious = 3.357 ac 40.77% Impervious = 2.311 ac

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Summary for Subcatchment 1S: Drainage Area 1

Runoff = 0.57 cfs @ 12.13 hrs, Volume= 0.043 af, Depth> 2.63"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-year Rainfall=5.02"

Area (sf)	CN	Description
4,120	98	Paved parking, HSG B
4,450	61	>75% Grass cover, Good, HSG B
8,570	79	Weighted Average
4,450		51.93% Pervious Area
4,120		48.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	111	0.0710	0.20		Sheet Flow, Tc-1 Grass: Dense n= 0.240 P2= 3.37"

Summary for Subcatchment 2S: Drainage Area 2

Runoff = 1.51 cfs @ 12.01 hrs, Volume= 0.093 af, Depth> 3.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-year Rainfall=5.02"

Area (sf)	CN	Description
* 6,287	74	>75% Grass cover, Good, HSG B/D
* 8,033	98	Roof/pavement
14,320	87	Weighted Average
6,287		43.90% Pervious Area
8,033		56.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	125	0.0100	2.03		Shallow Concentrated Flow, Tc-2 Paved Kv= 20.3 fps

Summary for Subcatchment 3S: Drainage Area 3

Runoff = 1.68 cfs @ 12.09 hrs, Volume= 0.113 af, Depth> 2.29"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-year Rainfall=5.02"

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Area (sf)	CN	Description
* 9,529	98	Paved parking/roof
16,209	61	>75% Grass cover, Good, HSG B
25,738	75	Weighted Average
16,209		62.98% Pervious Area
9,529		37.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	105	0.1100	0.35		Sheet Flow, Tc-4a Grass: Short n= 0.150 P2= 3.37"
0.7	160	0.0310	3.57		Shallow Concentrated Flow, Tc-4b Paved Kv= 20.3 fps
5.7	265	Total			

Summary for Subcatchment 4S: Drainage Area 4

Runoff = 4.29 cfs @ 12.04 hrs, Volume= 0.260 af, Depth> 1.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-year Rainfall=5.02"

Area (sf)	CN	Description
* 32,200	98	Paved parking & roof HSG A
20,000	39	>75% Grass cover, Good, HSG A
19,500	55	Woods, Good, HSG B
71,700	70	Weighted Average
39,500		55.09% Pervious Area
32,200		44.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	130	0.0100	1.13		Sheet Flow, Tc-3 Smooth surfaces n= 0.011 P2= 3.37"

Summary for Subcatchment 5S: Drainage Area 5

Runoff = 1.50 cfs @ 12.03 hrs, Volume= 0.092 af, Depth> 1.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-year Rainfall=5.02"

Area (sf)	CN	Description
* 13,450	98	Paved surfaces & roof
14,147	39	>75% Grass cover, Good, HSG A
27,597	68	Weighted Average
14,147		51.26% Pervious Area
13,450		48.74% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	180	0.0500	2.29		Sheet Flow, Tc-5 Smooth surfaces n= 0.011 P2= 3.37"

Summary for Subcatchment 6S: Drainage Area 6

Runoff = 3.54 cfs @ 12.06 hrs, Volume= 0.222 af, Depth> 2.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-year Rainfall=5.02"

Area (sf)	CN	Description
* 21,025	98	Pavement/Roofs, HSG B
22,990	61	>75% Grass cover, Good, HSG B
3,300	55	Woods, Good, HSG B
47,315	77	Weighted Average
26,290		55.56% Pervious Area
21,025		44.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	180	0.0500	0.76		Lag/CN Method, Tc-6

Summary for Subcatchment 7S: Drainage Area 7

Runoff = 1.61 cfs @ 12.02 hrs, Volume= 0.109 af, Depth> 4.36"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-year Rainfall=5.02"

Area (sf)	CN	Description
* 12,295	98	Roof & Pavement
* 716	74	>75% Grass cover, Good, HSG B/D
13,011	97	Weighted Average
716		5.50% Pervious Area
12,295		94.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	175	0.0580	2.42		Sheet Flow, Tc-7 Smooth surfaces n= 0.011 P2= 3.37"

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Summary for Subcatchment 8S: Overland to Swales

Runoff = 0.96 cfs @ 12.14 hrs, Volume= 0.078 af, Depth> 1.06"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-year Rainfall=5.02"

Area (sf)	CN	Description
* 38,644	58	>75% Grass cover, Good, HSG B
38,644		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	130	0.1240	0.26		Sheet Flow, Tc=8 Grass: Dense n= 0.240 P2= 3.37"

Summary for Reach 3R: Riprap Swale

Inflow Area = 0.887 ac, 0.00% Impervious, Inflow Depth > 1.06" for 10-year event
Inflow = 0.96 cfs @ 12.14 hrs, Volume= 0.078 af
Outflow = 0.92 cfs @ 12.19 hrs, Volume= 0.078 af, Atten= 4%, Lag= 3.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.17 fps, Min. Travel Time= 1.6 min
Avg. Velocity= 0.86 fps, Avg. Travel Time= 4.1 min

Peak Storage= 92 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 48.58 cfs

4.00' x 1.00' deep channel, n= 0.045
Side Slope Z-value= 2.0 '/' Top Width= 8.00'
Length= 210.0' Slope= 0.0952 '/'
Inlet Invert= 276.00', Outlet Invert= 256.00'



Summary for Reach 4R: Grass swale to basin

Inflow Area = 0.887 ac, 0.00% Impervious, Inflow Depth > 1.05" for 10-year event
Inflow = 0.92 cfs @ 12.19 hrs, Volume= 0.078 af
Outflow = 0.89 cfs @ 12.25 hrs, Volume= 0.078 af, Atten= 3%, Lag= 3.3 min

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Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.96 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 0.79 fps, Avg. Travel Time= 4.3 min

Peak Storage= 96 cf @ 12.21 hrs
Average Depth at Peak Storage= 0.11'
Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 42.41 cfs

4.00' x 1.00' deep channel, n= 0.035
Side Slope Z-value= 2.0 '/' Top Width= 8.00'
Length= 205.0' Slope= 0.0439 '/'
Inlet Invert= 256.00', Outlet Invert= 247.00'



Summary for Reach 9R: Peak off Site

Inflow Area = 11.208 ac, 21.17% Impervious, Inflow Depth > 1.64" for 10-year event
Inflow = 10.20 cfs @ 12.45 hrs, Volume= 1.532 af
Outflow = 10.20 cfs @ 12.45 hrs, Volume= 1.532 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 1P: CB_1-2

Inflow Area = 0.197 ac, 48.07% Impervious, Inflow Depth > 2.63" for 10-year event
Inflow = 0.57 cfs @ 12.13 hrs, Volume= 0.043 af
Outflow = 0.57 cfs @ 12.13 hrs, Volume= 0.043 af, Atten= 0%, Lag= 0.0 min
Primary = 0.57 cfs @ 12.13 hrs, Volume= 0.043 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 311.85' @ 12.13 hrs
Flood Elev= 316.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	311.50'	15.0" Round Culvert L= 128.7' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 311.50' / 298.95' S= 0.0975 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.56 cfs @ 12.13 hrs HW=311.85' (Free Discharge)
↑ **1=Culvert** (Inlet Controls 0.56 cfs @ 2.01 fps)

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Summary for Pond 2P: CB_3-4

Inflow Area = 0.525 ac, 53.09% Impervious, Inflow Depth > 3.10" for 10-year event
Inflow = 1.84 cfs @ 12.02 hrs, Volume= 0.136 af
Outflow = 1.84 cfs @ 12.02 hrs, Volume= 0.136 af, Atten= 0%, Lag= 0.0 min
Primary = 1.84 cfs @ 12.02 hrs, Volume= 0.136 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 299.52' @ 12.02 hrs
Flood Elev= 303.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	298.85'	15.0" Round Culvert L= 131.1' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 298.85' / 286.60' S= 0.0934 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.77 cfs @ 12.02 hrs HW=299.50' (Free Discharge)
↑**1=Culvert** (Inlet Controls 1.77 cfs @ 2.75 fps)

Summary for Pond 3P: CB_5-6

Inflow Area = 1.116 ac, 44.59% Impervious, Inflow Depth > 2.67" for 10-year event
Inflow = 3.31 cfs @ 12.06 hrs, Volume= 0.248 af
Outflow = 3.31 cfs @ 12.06 hrs, Volume= 0.248 af, Atten= 0%, Lag= 0.0 min
Primary = 3.31 cfs @ 12.06 hrs, Volume= 0.248 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 287.45' @ 12.06 hrs
Flood Elev= 291.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	286.50'	15.0" Round Culvert L= 168.9' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 286.50' / 272.60' S= 0.0823 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=3.25 cfs @ 12.06 hrs HW=287.44' (Free Discharge)
↑**1=Culvert** (Inlet Controls 3.25 cfs @ 3.30 fps)

Summary for Pond 4P: CB_7-8

Inflow Area = 2.762 ac, 44.78% Impervious, Inflow Depth > 2.21" for 10-year event
Inflow = 7.56 cfs @ 12.05 hrs, Volume= 0.508 af
Outflow = 7.56 cfs @ 12.05 hrs, Volume= 0.508 af, Atten= 0%, Lag= 0.0 min
Primary = 7.56 cfs @ 12.05 hrs, Volume= 0.508 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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Peak Elev= 274.76' @ 12.05 hrs
Flood Elev= 277.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	272.50'	15.0" Round Culvert L= 128.2' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 272.50' / 263.70' S= 0.0686 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=7.48 cfs @ 12.05 hrs HW=274.73' (Free Discharge)
↑**1=Culvert** (Inlet Controls 7.48 cfs @ 6.09 fps)

Summary for Pond 5P: CB-9

Inflow Area = 3.396 ac, 45.52% Impervious, Inflow Depth > 2.12" for 10-year event
Inflow = 9.04 cfs @ 12.04 hrs, Volume= 0.600 af
Outflow = 9.04 cfs @ 12.04 hrs, Volume= 0.600 af, Atten= 0%, Lag= 0.0 min
Primary = 9.04 cfs @ 12.04 hrs, Volume= 0.600 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 266.56' @ 12.04 hrs
Flood Elev= 267.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	263.60'	15.0" Round Culvert L= 100.6' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 263.60' / 253.10' S= 0.1044 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=8.87 cfs @ 12.04 hrs HW=266.48' (Free Discharge)
↑**1=Culvert** (Inlet Controls 8.87 cfs @ 7.23 fps)

Summary for Pond 6P: CB_10-11

Inflow Area = 4.482 ac, 45.26% Impervious, Inflow Depth > 2.20" for 10-year event
Inflow = 12.52 cfs @ 12.05 hrs, Volume= 0.822 af
Outflow = 12.52 cfs @ 12.05 hrs, Volume= 0.822 af, Atten= 0%, Lag= 0.0 min
Primary = 12.52 cfs @ 12.05 hrs, Volume= 0.822 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 255.92' @ 12.05 hrs
Flood Elev= 259.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	253.00'	18.0" Round Culvert L= 172.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 253.00' / 245.10' S= 0.0459 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

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Primary OutFlow Max=12.48 cfs @ 12.05 hrs HW=255.90' (Free Discharge)

↑**1=Culvert** (Inlet Controls 12.48 cfs @ 7.06 fps)

Summary for Pond 7P: CB_12-13

Inflow Area = 4.781 ac, 48.33% Impervious, Inflow Depth > 2.34" for 10-year event
Inflow = 13.99 cfs @ 12.05 hrs, Volume= 0.931 af
Outflow = 13.99 cfs @ 12.05 hrs, Volume= 0.931 af, Atten= 0%, Lag= 0.0 min
Primary = 13.99 cfs @ 12.05 hrs, Volume= 0.931 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 248.45' @ 12.05 hrs

Flood Elev= 249.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	245.00'	18.0" Round Culvert L= 36.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 245.00' / 244.00' S= 0.0278 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=13.82 cfs @ 12.05 hrs HW=248.39' (Free Discharge)

↑**1=Culvert** (Inlet Controls 13.82 cfs @ 7.82 fps)

Summary for Pond 10P: Stormwater Basin

Inflow Area = 5.668 ac, 40.77% Impervious, Inflow Depth > 2.14" for 10-year event
Inflow = 14.21 cfs @ 12.05 hrs, Volume= 1.009 af
Outflow = 3.33 cfs @ 12.50 hrs, Volume= 0.840 af, Atten= 77%, Lag= 27.0 min
Primary = 3.33 cfs @ 12.50 hrs, Volume= 0.840 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 244.77' @ 12.50 hrs Surf.Area= 8,679 sf Storage= 19,756 cf

Plug-Flow detention time= 136.4 min calculated for 0.840 af (83% of inflow)

Center-of-Mass det. time= 87.9 min (880.1 - 792.2)

Volume	Invert	Avail.Storage	Storage Description
#1	242.00'	31,370 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.00	5,655	0	0
244.00	7,798	13,453	13,453
245.00	8,950	8,374	21,827
246.00	10,135	9,543	31,370

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Device	Routing	Invert	Outlet Devices
#1	Primary	242.50'	15.0" Round Culvert L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	242.50'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	243.00'	6.0" Vert. Orifice/Grate C= 0.600
#4	Device 1	244.00'	10.0" Vert. Orifice/Grate C= 0.600
#5	Device 1	246.00'	36.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#6	Secondary	247.00'	18.0' long x 2.0' 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 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=3.33 cfs @ 12.50 hrs HW=244.76' (Free Discharge)

↑ **1=Culvert** (Passes 3.33 cfs of 6.49 cfs potential flow)
↑ **2=Orifice/Grate** (Orifice Controls 0.61 cfs @ 6.97 fps)
↑ **3=Orifice/Grate** (Orifice Controls 1.16 cfs @ 5.93 fps)
↑ **4=Orifice/Grate** (Orifice Controls 1.56 cfs @ 2.98 fps)
↑ **5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=242.00' (Free Discharge)

↑ **6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link 1L: Wetlands Drainage

Inflow Area = 5.540 ac, 1.13% Impervious, Inflow Depth > 1.50" for 10-year event
Inflow = 6.89 cfs @ 12.44 hrs, Volume= 0.691 af
Primary = 6.89 cfs @ 12.44 hrs, Volume= 0.691 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

10-year Outflow Imported from Proposed Wetlands Drainage~Reach 2R.hce

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area 1 Runoff Area=8,570 sf 48.07% Impervious Runoff Depth>3.48"
Flow Length=111' Slope=0.0710 '/' Tc=9.1 min CN=79 Runoff=0.76 cfs 0.057 af

Subcatchment 2S: Drainage Area 2 Runoff Area=14,320 sf 56.10% Impervious Runoff Depth>4.32"
Flow Length=125' Slope=0.0100 '/' Tc=1.0 min CN=87 Runoff=1.90 cfs 0.118 af

Subcatchment 3S: Drainage Area 3 Runoff Area=25,738 sf 37.02% Impervious Runoff Depth>3.10"
Flow Length=265' Tc=5.7 min CN=75 Runoff=2.27 cfs 0.153 af

Subcatchment 4S: Drainage Area 4 Runoff Area=71,700 sf 44.91% Impervious Runoff Depth>2.64"
Flow Length=130' Slope=0.0100 '/' Tc=1.9 min CN=70 Runoff=6.01 cfs 0.362 af

Subcatchment 5S: Drainage Area 5 Runoff Area=27,597 sf 48.74% Impervious Runoff Depth>2.46"
Flow Length=180' Slope=0.0500 '/' Tc=1.3 min CN=68 Runoff=2.14 cfs 0.130 af

Subcatchment 6S: Drainage Area 6 Runoff Area=47,315 sf 44.44% Impervious Runoff Depth>3.29"
Flow Length=180' Slope=0.0500 '/' Tc=3.9 min CN=77 Runoff=4.73 cfs 0.298 af

Subcatchment 7S: Drainage Area 7 Runoff Area=13,011 sf 94.50% Impervious Runoff Depth>5.30"
Flow Length=175' Slope=0.0580 '/' Tc=1.2 min CN=97 Runoff=1.95 cfs 0.132 af

Subcatchment 8S: Overland to Swales Runoff Area=38,644 sf 0.00% Impervious Runoff Depth>1.62"
Flow Length=130' Slope=0.1240 '/' Tc=8.3 min CN=58 Runoff=1.55 cfs 0.120 af

Reach 3R: Riprap Swale Avg. Flow Depth=0.14' Max Vel=2.60 fps Inflow=1.55 cfs 0.120 af
n=0.045 L=210.0' S=0.0952 '/' Capacity=48.58 cfs Outflow=1.51 cfs 0.120 af

Reach 4R: Grass swale to basin Avg. Flow Depth=0.15' Max Vel=2.35 fps Inflow=1.51 cfs 0.120 af
n=0.035 L=205.0' S=0.0439 '/' Capacity=42.41 cfs Outflow=1.46 cfs 0.119 af

Reach 9R: Peak off Site Inflow=15.22 cfs 2.188 af
Outflow=15.22 cfs 2.188 af

Pond 1P: CB_1-2 Peak Elev=311.91' Inflow=0.76 cfs 0.057 af
15.0" Round Culvert n=0.012 L=128.7' S=0.0975 '/' Outflow=0.76 cfs 0.057 af

Pond 2P: CB_3-4 Peak Elev=299.62' Inflow=2.35 cfs 0.175 af
15.0" Round Culvert n=0.012 L=131.1' S=0.0934 '/' Outflow=2.35 cfs 0.175 af

Pond 3P: CB_5-6 Peak Elev=287.66' Inflow=4.35 cfs 0.328 af
15.0" Round Culvert n=0.012 L=168.9' S=0.0823 '/' Outflow=4.35 cfs 0.328 af

Pond 4P: CB_7-8 Peak Elev=276.16' Inflow=10.29 cfs 0.690 af
15.0" Round Culvert n=0.012 L=128.2' S=0.0686 '/' Outflow=10.29 cfs 0.690 af

Pond 5P: CB-9 Peak Elev=268.62' Inflow=12.40 cfs 0.820 af
15.0" Round Culvert n=0.012 L=100.6' S=0.1044 '/' Outflow=12.40 cfs 0.820 af

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Pond 6P: CB_10-11

Peak Elev=257.76' Inflow=17.04 cfs 1.118 af
18.0" Round Culvert n=0.012 L=172.0' S=0.0459 '/' Outflow=17.04 cfs 1.118 af

Pond 7P: CB_12-13

Peak Elev=250.64' Inflow=18.83 cfs 1.250 af
18.0" Round Culvert n=0.012 L=36.0' S=0.0278 '/' Outflow=18.83 cfs 1.250 af

Pond 10P: Stormwater Basin

Peak Elev=245.45' Storage=26,015 cf Inflow=19.35 cfs 1.369 af
Primary=4.78 cfs 1.188 af Secondary=0.00 cfs 0.000 af Outflow=4.78 cfs 1.188 af

Link 1L:

25-year Outflow Imported from Proposed Wetlands Drainage~Reach 2R.hce Inflow=10.47 cfs 1.000 af
Area= 5.540 ac 1.13% Imperv. Primary=10.47 cfs 1.000 af

Total Runoff Area = 5.668 ac Runoff Volume = 1.370 af Average Runoff Depth = 2.90"
59.23% Pervious = 3.357 ac 40.77% Impervious = 2.311 ac

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Summary for Subcatchment 1S: Drainage Area 1

Runoff = 0.76 cfs @ 12.13 hrs, Volume= 0.057 af, Depth> 3.48"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-year Rainfall=6.05"

Area (sf)	CN	Description
4,120	98	Paved parking, HSG B
4,450	61	>75% Grass cover, Good, HSG B
8,570	79	Weighted Average
4,450		51.93% Pervious Area
4,120		48.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	111	0.0710	0.20		Sheet Flow, Tc-1 Grass: Dense n= 0.240 P2= 3.37"

Summary for Subcatchment 2S: Drainage Area 2

Runoff = 1.90 cfs @ 12.01 hrs, Volume= 0.118 af, Depth> 4.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-year Rainfall=6.05"

Area (sf)	CN	Description
* 6,287	74	>75% Grass cover, Good, HSG B/D
* 8,033	98	Roof/pavement
14,320	87	Weighted Average
6,287		43.90% Pervious Area
8,033		56.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	125	0.0100	2.03		Shallow Concentrated Flow, Tc-2 Paved Kv= 20.3 fps

Summary for Subcatchment 3S: Drainage Area 3

Runoff = 2.27 cfs @ 12.09 hrs, Volume= 0.153 af, Depth> 3.10"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-year Rainfall=6.05"

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	Area (sf)	CN	Description
*	9,529	98	Paved parking/roof
	16,209	61	>75% Grass cover, Good, HSG B
	25,738	75	Weighted Average
	16,209		62.98% Pervious Area
	9,529		37.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	105	0.1100	0.35		Sheet Flow, Tc-4a Grass: Short n= 0.150 P2= 3.37"
0.7	160	0.0310	3.57		Shallow Concentrated Flow, Tc-4b Paved Kv= 20.3 fps
5.7	265	Total			

Summary for Subcatchment 4S: Drainage Area 4

Runoff = 6.01 cfs @ 12.04 hrs, Volume= 0.362 af, Depth> 2.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.05"

	Area (sf)	CN	Description
*	32,200	98	Paved parking & roof HSG A
	20,000	39	>75% Grass cover, Good, HSG A
	19,500	55	Woods, Good, HSG B
	71,700	70	Weighted Average
	39,500		55.09% Pervious Area
	32,200		44.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	130	0.0100	1.13		Sheet Flow, Tc-3 Smooth surfaces n= 0.011 P2= 3.37"

Summary for Subcatchment 5S: Drainage Area 5

Runoff = 2.14 cfs @ 12.03 hrs, Volume= 0.130 af, Depth> 2.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.05"

	Area (sf)	CN	Description
*	13,450	98	Paved surfaces & roof
	14,147	39	>75% Grass cover, Good, HSG A
	27,597	68	Weighted Average
	14,147		51.26% Pervious Area
	13,450		48.74% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	180	0.0500	2.29		Sheet Flow, Tc-5 Smooth surfaces n= 0.011 P2= 3.37"

Summary for Subcatchment 6S: Drainage Area 6

Runoff = 4.73 cfs @ 12.06 hrs, Volume= 0.298 af, Depth> 3.29"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-year Rainfall=6.05"

Area (sf)	CN	Description
* 21,025	98	Pavement/Roofs, HSG B
22,990	61	>75% Grass cover, Good, HSG B
3,300	55	Woods, Good, HSG B
47,315	77	Weighted Average
26,290		55.56% Pervious Area
21,025		44.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	180	0.0500	0.76		Lag/CN Method, Tc-6

Summary for Subcatchment 7S: Drainage Area 7

Runoff = 1.95 cfs @ 12.02 hrs, Volume= 0.132 af, Depth> 5.30"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-year Rainfall=6.05"

Area (sf)	CN	Description
* 12,295	98	Roof & Pavement
* 716	74	>75% Grass cover, Good, HSG B/D
13,011	97	Weighted Average
716		5.50% Pervious Area
12,295		94.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	175	0.0580	2.42		Sheet Flow, Tc-7 Smooth surfaces n= 0.011 P2= 3.37"

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Summary for Subcatchment 8S: Overland to Swales

Runoff = 1.55 cfs @ 12.13 hrs, Volume= 0.120 af, Depth> 1.62"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-year Rainfall=6.05"

Area (sf)	CN	Description
* 38,644	58	>75% Grass cover, Good, HSG B
38,644		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	130	0.1240	0.26		Sheet Flow, Tc=8 Grass: Dense n= 0.240 P2= 3.37"

Summary for Reach 3R: Riprap Swale

Inflow Area = 0.887 ac, 0.00% Impervious, Inflow Depth > 1.62" for 25-year event
Inflow = 1.55 cfs @ 12.13 hrs, Volume= 0.120 af
Outflow = 1.51 cfs @ 12.17 hrs, Volume= 0.120 af, Atten= 3%, Lag= 2.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.60 fps, Min. Travel Time= 1.3 min
Avg. Velocity= 0.96 fps, Avg. Travel Time= 3.6 min

Peak Storage= 125 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 48.58 cfs

4.00' x 1.00' deep channel, n= 0.045
Side Slope Z-value= 2.0 '/' Top Width= 8.00'
Length= 210.0' Slope= 0.0952 '/'
Inlet Invert= 276.00', Outlet Invert= 256.00'



Summary for Reach 4R: Grass swale to basin

Inflow Area = 0.887 ac, 0.00% Impervious, Inflow Depth > 1.62" for 25-year event
Inflow = 1.51 cfs @ 12.17 hrs, Volume= 0.120 af
Outflow = 1.46 cfs @ 12.22 hrs, Volume= 0.119 af, Atten= 3%, Lag= 2.8 min

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Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.35 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 0.88 fps, Avg. Travel Time= 3.9 min

Peak Storage= 130 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 42.41 cfs

4.00' x 1.00' deep channel, n= 0.035
Side Slope Z-value= 2.0 '/' Top Width= 8.00'
Length= 205.0' Slope= 0.0439 '/'
Inlet Invert= 256.00', Outlet Invert= 247.00'



Summary for Reach 9R: Peak off Site

Inflow Area = 11.208 ac, 21.17% Impervious, Inflow Depth > 2.34" for 25-year event
Inflow = 15.22 cfs @ 12.41 hrs, Volume= 2.188 af
Outflow = 15.22 cfs @ 12.41 hrs, Volume= 2.188 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 1P: CB_1-2

Inflow Area = 0.197 ac, 48.07% Impervious, Inflow Depth > 3.48" for 25-year event
Inflow = 0.76 cfs @ 12.13 hrs, Volume= 0.057 af
Outflow = 0.76 cfs @ 12.13 hrs, Volume= 0.057 af, Atten= 0%, Lag= 0.0 min
Primary = 0.76 cfs @ 12.13 hrs, Volume= 0.057 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 311.91' @ 12.13 hrs
Flood Elev= 316.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	311.50'	15.0" Round Culvert L= 128.7' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 311.50' / 298.95' S= 0.0975 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.74 cfs @ 12.13 hrs HW=311.90' (Free Discharge)
↑ **1=Culvert** (Inlet Controls 0.74 cfs @ 2.16 fps)

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Summary for Pond 2P: CB_3-4

Inflow Area = 0.525 ac, 53.09% Impervious, Inflow Depth > 4.00" for 25-year event
Inflow = 2.35 cfs @ 12.02 hrs, Volume= 0.175 af
Outflow = 2.35 cfs @ 12.02 hrs, Volume= 0.175 af, Atten= 0%, Lag= 0.0 min
Primary = 2.35 cfs @ 12.02 hrs, Volume= 0.175 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 299.62' @ 12.02 hrs
Flood Elev= 303.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	298.85'	15.0" Round Culvert L= 131.1' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 298.85' / 286.60' S= 0.0934 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=2.26 cfs @ 12.02 hrs HW=299.60' (Free Discharge)
↑**1=Culvert** (Inlet Controls 2.26 cfs @ 2.95 fps)

Summary for Pond 3P: CB_5-6

Inflow Area = 1.116 ac, 44.59% Impervious, Inflow Depth > 3.53" for 25-year event
Inflow = 4.35 cfs @ 12.06 hrs, Volume= 0.328 af
Outflow = 4.35 cfs @ 12.06 hrs, Volume= 0.328 af, Atten= 0%, Lag= 0.0 min
Primary = 4.35 cfs @ 12.06 hrs, Volume= 0.328 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 287.66' @ 12.06 hrs
Flood Elev= 291.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	286.50'	15.0" Round Culvert L= 168.9' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 286.50' / 272.60' S= 0.0823 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=4.28 cfs @ 12.06 hrs HW=287.64' (Free Discharge)
↑**1=Culvert** (Inlet Controls 4.28 cfs @ 3.64 fps)

Summary for Pond 4P: CB_7-8

Inflow Area = 2.762 ac, 44.78% Impervious, Inflow Depth > 3.00" for 25-year event
Inflow = 10.29 cfs @ 12.04 hrs, Volume= 0.690 af
Outflow = 10.29 cfs @ 12.04 hrs, Volume= 0.690 af, Atten= 0%, Lag= 0.0 min
Primary = 10.29 cfs @ 12.04 hrs, Volume= 0.690 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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Peak Elev= 276.16' @ 12.05 hrs
Flood Elev= 277.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	272.50'	15.0" Round Culvert L= 128.2' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 272.50' / 263.70' S= 0.0686 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=10.15 cfs @ 12.04 hrs HW=276.07' (Free Discharge)
↑**1=Culvert** (Inlet Controls 10.15 cfs @ 8.27 fps)

Summary for Pond 5P: CB-9

Inflow Area = 3.396 ac, 45.52% Impervious, Inflow Depth > 2.90" for 25-year event
Inflow = 12.40 cfs @ 12.04 hrs, Volume= 0.820 af
Outflow = 12.40 cfs @ 12.04 hrs, Volume= 0.820 af, Atten= 0%, Lag= 0.0 min
Primary = 12.40 cfs @ 12.04 hrs, Volume= 0.820 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 268.62' @ 12.04 hrs
Flood Elev= 267.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	263.60'	15.0" Round Culvert L= 100.6' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 263.60' / 253.10' S= 0.1044 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=12.13 cfs @ 12.04 hrs HW=268.44' (Free Discharge)
↑**1=Culvert** (Inlet Controls 12.13 cfs @ 9.88 fps)

Summary for Pond 6P: CB_10-11

Inflow Area = 4.482 ac, 45.26% Impervious, Inflow Depth > 2.99" for 25-year event
Inflow = 17.04 cfs @ 12.05 hrs, Volume= 1.118 af
Outflow = 17.04 cfs @ 12.05 hrs, Volume= 1.118 af, Atten= 0%, Lag= 0.0 min
Primary = 17.04 cfs @ 12.05 hrs, Volume= 1.118 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 257.76' @ 12.05 hrs
Flood Elev= 259.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	253.00'	18.0" Round Culvert L= 172.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 253.00' / 245.10' S= 0.0459 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

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Primary OutFlow Max=16.91 cfs @ 12.05 hrs HW=257.70' (Free Discharge)

↑**1=Culvert** (Inlet Controls 16.91 cfs @ 9.57 fps)

Summary for Pond 7P: CB_12-13

Inflow Area = 4.781 ac, 48.33% Impervious, Inflow Depth > 3.14" for 25-year event
Inflow = 18.83 cfs @ 12.04 hrs, Volume= 1.250 af
Outflow = 18.83 cfs @ 12.04 hrs, Volume= 1.250 af, Atten= 0%, Lag= 0.0 min
Primary = 18.83 cfs @ 12.04 hrs, Volume= 1.250 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 250.64' @ 12.05 hrs

Flood Elev= 249.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	245.00'	18.0" Round Culvert L= 36.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 245.00' / 244.00' S= 0.0278 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=18.54 cfs @ 12.04 hrs HW=250.50' (Free Discharge)

↑**1=Culvert** (Inlet Controls 18.54 cfs @ 10.49 fps)

Summary for Pond 10P: Stormwater Basin

Inflow Area = 5.668 ac, 40.77% Impervious, Inflow Depth > 2.90" for 25-year event
Inflow = 19.35 cfs @ 12.05 hrs, Volume= 1.369 af
Outflow = 4.78 cfs @ 12.48 hrs, Volume= 1.188 af, Atten= 75%, Lag= 25.7 min
Primary = 4.78 cfs @ 12.48 hrs, Volume= 1.188 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 245.45' @ 12.48 hrs Surf.Area= 9,488 sf Storage= 26,015 cf

Plug-Flow detention time= 121.4 min calculated for 1.188 af (87% of inflow)

Center-of-Mass det. time= 80.4 min (867.2 - 786.8)

Volume	Invert	Avail.Storage	Storage Description
#1	242.00'	31,370 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.00	5,655	0	0
244.00	7,798	13,453	13,453
245.00	8,950	8,374	21,827
246.00	10,135	9,543	31,370

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Device	Routing	Invert	Outlet Devices
#1	Primary	242.50'	15.0" Round Culvert L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	242.50'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	243.00'	6.0" Vert. Orifice/Grate C= 0.600
#4	Device 1	244.00'	10.0" Vert. Orifice/Grate C= 0.600
#5	Device 1	246.00'	36.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#6	Secondary	247.00'	18.0' long x 2.0' 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 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=4.78 cfs @ 12.48 hrs HW=245.45' (Free Discharge)

↑ **1=Culvert** (Passes 4.78 cfs of 7.83 cfs potential flow)
↑ **2=Orifice/Grate** (Orifice Controls 0.70 cfs @ 8.04 fps)
↑ **3=Orifice/Grate** (Orifice Controls 1.40 cfs @ 7.15 fps)
↑ **4=Orifice/Grate** (Orifice Controls 2.67 cfs @ 4.90 fps)
↑ **5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=242.00' (Free Discharge)

↑ **6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link 1L: Wetlands Drainage

Inflow Area = 5.540 ac, 1.13% Impervious, Inflow Depth > 2.17" for 25-year event
Inflow = 10.47 cfs @ 12.40 hrs, Volume= 1.000 af
Primary = 10.47 cfs @ 12.40 hrs, Volume= 1.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

25-year Outflow Imported from Proposed Wetlands Drainage~Reach 2R.hce

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area 1 Runoff Area=8,570 sf 48.07% Impervious Runoff Depth>4.17"
Flow Length=111' Slope=0.0710 '/' Tc=9.1 min CN=79 Runoff=0.90 cfs 0.068 af

Subcatchment 2S: Drainage Area 2 Runoff Area=14,320 sf 56.10% Impervious Runoff Depth>5.05"
Flow Length=125' Slope=0.0100 '/' Tc=1.0 min CN=87 Runoff=2.21 cfs 0.138 af

Subcatchment 3S: Drainage Area 3 Runoff Area=25,738 sf 37.02% Impervious Runoff Depth>3.76"
Flow Length=265' Tc=5.7 min CN=75 Runoff=2.74 cfs 0.185 af

Subcatchment 4S: Drainage Area 4 Runoff Area=71,700 sf 44.91% Impervious Runoff Depth>3.25"
Flow Length=130' Slope=0.0100 '/' Tc=1.9 min CN=70 Runoff=7.39 cfs 0.446 af

Subcatchment 5S: Drainage Area 5 Runoff Area=27,597 sf 48.74% Impervious Runoff Depth>3.05"
Flow Length=180' Slope=0.0500 '/' Tc=1.3 min CN=68 Runoff=2.66 cfs 0.161 af

Subcatchment 6S: Drainage Area 6 Runoff Area=47,315 sf 44.44% Impervious Runoff Depth>3.97"
Flow Length=180' Slope=0.0500 '/' Tc=3.9 min CN=77 Runoff=5.67 cfs 0.359 af

Subcatchment 7S: Drainage Area 7 Runoff Area=13,011 sf 94.50% Impervious Runoff Depth>6.03"
Flow Length=175' Slope=0.0580 '/' Tc=1.2 min CN=97 Runoff=2.21 cfs 0.150 af

Subcatchment 8S: Overland to Swales Runoff Area=38,644 sf 0.00% Impervious Runoff Depth>2.11"
Flow Length=130' Slope=0.1240 '/' Tc=8.3 min CN=58 Runoff=2.06 cfs 0.156 af

Reach 3R: Riprap Swale Avg. Flow Depth=0.17' Max Vel=2.89 fps Inflow=2.06 cfs 0.156 af
n=0.045 L=210.0' S=0.0952 '/' Capacity=48.58 cfs Outflow=2.01 cfs 0.155 af

Reach 4R: Grass swale to basin Avg. Flow Depth=0.17' Max Vel=2.60 fps Inflow=2.01 cfs 0.155 af
n=0.035 L=205.0' S=0.0439 '/' Capacity=42.41 cfs Outflow=1.94 cfs 0.155 af

Reach 9R: Peak off Site Inflow=19.85 cfs 2.729 af
Outflow=19.85 cfs 2.729 af

Pond 1P: CB_1-2 Peak Elev=311.95' Inflow=0.90 cfs 0.068 af
15.0" Round Culvert n=0.012 L=128.7' S=0.0975 '/' Outflow=0.90 cfs 0.068 af

Pond 2P: CB_3-4 Peak Elev=299.69' Inflow=2.74 cfs 0.207 af
15.0" Round Culvert n=0.012 L=131.1' S=0.0934 '/' Outflow=2.74 cfs 0.207 af

Pond 3P: CB_5-6 Peak Elev=287.89' Inflow=5.18 cfs 0.392 af
15.0" Round Culvert n=0.012 L=168.9' S=0.0823 '/' Outflow=5.18 cfs 0.392 af

Pond 4P: CB_7-8 Peak Elev=277.58' Inflow=12.48 cfs 0.838 af
15.0" Round Culvert n=0.012 L=128.2' S=0.0686 '/' Outflow=12.48 cfs 0.838 af

Pond 5P: CB-9 Peak Elev=270.74' Inflow=15.10 cfs 0.999 af
15.0" Round Culvert n=0.012 L=100.6' S=0.1044 '/' Outflow=15.10 cfs 0.999 af

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Pond 6P: CB_10-11

Peak Elev=259.64' Inflow=20.65 cfs 1.358 af
18.0" Round Culvert n=0.012 L=172.0' S=0.0459 '/ Outflow=20.65 cfs 1.358 af

Pond 7P: CB_12-13

Peak Elev=252.85' Inflow=22.69 cfs 1.508 af
18.0" Round Culvert n=0.012 L=36.0' S=0.0278 '/ Outflow=22.69 cfs 1.508 af

Pond 10P: Stormwater Basin

Peak Elev=246.12' Storage=31,370 cf Inflow=23.48 cfs 1.663 af
Primary=7.14 cfs 1.471 af Secondary=0.00 cfs 0.000 af Outflow=7.14 cfs 1.471 af

Link 1L:

50-year Outflow Imported from Proposed Wetlands Drainage~Reach 2R.hce Inflow=13.34 cfs 1.257 af
Area= 5.540 ac 1.13% Imperv. Primary=13.34 cfs 1.257 af

Total Runoff Area = 5.668 ac Runoff Volume = 1.664 af Average Runoff Depth = 3.52"
59.23% Pervious = 3.357 ac 40.77% Impervious = 2.311 ac

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Summary for Subcatchment 1S: Drainage Area 1

Runoff = 0.90 cfs @ 12.13 hrs, Volume= 0.068 af, Depth> 4.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 50-year Rainfall=6.85"

Area (sf)	CN	Description
4,120	98	Paved parking, HSG B
4,450	61	>75% Grass cover, Good, HSG B
8,570	79	Weighted Average
4,450		51.93% Pervious Area
4,120		48.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	111	0.0710	0.20		Sheet Flow, Tc-1 Grass: Dense n= 0.240 P2= 3.37"

Summary for Subcatchment 2S: Drainage Area 2

Runoff = 2.21 cfs @ 12.01 hrs, Volume= 0.138 af, Depth> 5.05"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 50-year Rainfall=6.85"

Area (sf)	CN	Description
* 6,287	74	>75% Grass cover, Good, HSG B/D
* 8,033	98	Roof/pavement
14,320	87	Weighted Average
6,287		43.90% Pervious Area
8,033		56.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	125	0.0100	2.03		Shallow Concentrated Flow, Tc-2 Paved Kv= 20.3 fps

Summary for Subcatchment 3S: Drainage Area 3

Runoff = 2.74 cfs @ 12.09 hrs, Volume= 0.185 af, Depth> 3.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 50-year Rainfall=6.85"

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	Area (sf)	CN	Description
*	9,529	98	Paved parking/roof
	16,209	61	>75% Grass cover, Good, HSG B
	25,738	75	Weighted Average
	16,209		62.98% Pervious Area
	9,529		37.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	105	0.1100	0.35		Sheet Flow, Tc-4a Grass: Short n= 0.150 P2= 3.37"
0.7	160	0.0310	3.57		Shallow Concentrated Flow, Tc-4b Paved Kv= 20.3 fps
5.7	265	Total			

Summary for Subcatchment 4S: Drainage Area 4

Runoff = 7.39 cfs @ 12.04 hrs, Volume= 0.446 af, Depth> 3.25"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 50-year Rainfall=6.85"

	Area (sf)	CN	Description
*	32,200	98	Paved parking & roof HSG A
	20,000	39	>75% Grass cover, Good, HSG A
	19,500	55	Woods, Good, HSG B
	71,700	70	Weighted Average
	39,500		55.09% Pervious Area
	32,200		44.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	130	0.0100	1.13		Sheet Flow, Tc-3 Smooth surfaces n= 0.011 P2= 3.37"

Summary for Subcatchment 5S: Drainage Area 5

Runoff = 2.66 cfs @ 12.03 hrs, Volume= 0.161 af, Depth> 3.05"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 50-year Rainfall=6.85"

	Area (sf)	CN	Description
*	13,450	98	Paved surfaces & roof
	14,147	39	>75% Grass cover, Good, HSG A
	27,597	68	Weighted Average
	14,147		51.26% Pervious Area
	13,450		48.74% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	180	0.0500	2.29		Sheet Flow, Tc-5 Smooth surfaces n= 0.011 P2= 3.37"

Summary for Subcatchment 6S: Drainage Area 6

Runoff = 5.67 cfs @ 12.06 hrs, Volume= 0.359 af, Depth> 3.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 50-year Rainfall=6.85"

Area (sf)	CN	Description
* 21,025	98	Pavement/Roofs, HSG B
22,990	61	>75% Grass cover, Good, HSG B
3,300	55	Woods, Good, HSG B
47,315	77	Weighted Average
26,290		55.56% Pervious Area
21,025		44.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	180	0.0500	0.76		Lag/CN Method, Tc-6

Summary for Subcatchment 7S: Drainage Area 7

Runoff = 2.21 cfs @ 12.02 hrs, Volume= 0.150 af, Depth> 6.03"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 50-year Rainfall=6.85"

Area (sf)	CN	Description
* 12,295	98	Roof & Pavement
* 716	74	>75% Grass cover, Good, HSG B/D
13,011	97	Weighted Average
716		5.50% Pervious Area
12,295		94.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	175	0.0580	2.42		Sheet Flow, Tc-7 Smooth surfaces n= 0.011 P2= 3.37"

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Summary for Subcatchment 8S: Overland to Swales

Runoff = 2.06 cfs @ 12.13 hrs, Volume= 0.156 af, Depth> 2.11"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-year Rainfall=6.85"

Area (sf)	CN	Description
* 38,644	58	>75% Grass cover, Good, HSG B
38,644		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	130	0.1240	0.26		Sheet Flow, Tc=8 Grass: Dense n= 0.240 P2= 3.37"

Summary for Reach 3R: Riprap Swale

Inflow Area = 0.887 ac, 0.00% Impervious, Inflow Depth > 2.11" for 50-year event
Inflow = 2.06 cfs @ 12.13 hrs, Volume= 0.156 af
Outflow = 2.01 cfs @ 12.17 hrs, Volume= 0.155 af, Atten= 3%, Lag= 2.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.89 fps, Min. Travel Time= 1.2 min
Avg. Velocity= 1.03 fps, Avg. Travel Time= 3.4 min

Peak Storage= 150 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.17'
Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 48.58 cfs

4.00' x 1.00' deep channel, n= 0.045
Side Slope Z-value= 2.0 '/' Top Width= 8.00'
Length= 210.0' Slope= 0.0952 '/'
Inlet Invert= 276.00', Outlet Invert= 256.00'



Summary for Reach 4R: Grass swale to basin

Inflow Area = 0.887 ac, 0.00% Impervious, Inflow Depth > 2.10" for 50-year event
Inflow = 2.01 cfs @ 12.17 hrs, Volume= 0.155 af
Outflow = 1.94 cfs @ 12.21 hrs, Volume= 0.155 af, Atten= 3%, Lag= 2.5 min

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Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.60 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 0.95 fps, Avg. Travel Time= 3.6 min

Peak Storage= 155 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.17'
Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 42.41 cfs

4.00' x 1.00' deep channel, n= 0.035
Side Slope Z-value= 2.0 '/' Top Width= 8.00'
Length= 205.0' Slope= 0.0439 '/'
Inlet Invert= 256.00', Outlet Invert= 247.00'



Summary for Reach 9R: Peak off Site

Inflow Area = 11.208 ac, 21.17% Impervious, Inflow Depth > 2.92" for 50-year event
Inflow = 19.85 cfs @ 12.44 hrs, Volume= 2.729 af
Outflow = 19.85 cfs @ 12.44 hrs, Volume= 2.729 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 1P: CB_1-2

Inflow Area = 0.197 ac, 48.07% Impervious, Inflow Depth > 4.17" for 50-year event
Inflow = 0.90 cfs @ 12.13 hrs, Volume= 0.068 af
Outflow = 0.90 cfs @ 12.13 hrs, Volume= 0.068 af, Atten= 0%, Lag= 0.0 min
Primary = 0.90 cfs @ 12.13 hrs, Volume= 0.068 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 311.95' @ 12.13 hrs
Flood Elev= 316.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	311.50'	15.0" Round Culvert L= 128.7' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 311.50' / 298.95' S= 0.0975 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.88 cfs @ 12.13 hrs HW=311.94' (Free Discharge)
↑ **1=Culvert** (Inlet Controls 0.88 cfs @ 2.26 fps)

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Summary for Pond 2P: CB_3-4

Inflow Area = 0.525 ac, 53.09% Impervious, Inflow Depth > 4.72" for 50-year event
Inflow = 2.74 cfs @ 12.02 hrs, Volume= 0.207 af
Outflow = 2.74 cfs @ 12.02 hrs, Volume= 0.207 af, Atten= 0%, Lag= 0.0 min
Primary = 2.74 cfs @ 12.02 hrs, Volume= 0.207 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 299.69' @ 12.02 hrs
Flood Elev= 303.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	298.85'	15.0" Round Culvert L= 131.1' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 298.85' / 286.60' S= 0.0934 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=2.64 cfs @ 12.02 hrs HW=299.67' (Free Discharge)
↑**1=Culvert** (Inlet Controls 2.64 cfs @ 3.09 fps)

Summary for Pond 3P: CB_5-6

Inflow Area = 1.116 ac, 44.59% Impervious, Inflow Depth > 4.21" for 50-year event
Inflow = 5.18 cfs @ 12.06 hrs, Volume= 0.392 af
Outflow = 5.18 cfs @ 12.06 hrs, Volume= 0.392 af, Atten= 0%, Lag= 0.0 min
Primary = 5.18 cfs @ 12.06 hrs, Volume= 0.392 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 287.89' @ 12.06 hrs
Flood Elev= 291.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	286.50'	15.0" Round Culvert L= 168.9' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 286.50' / 272.60' S= 0.0823 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=5.08 cfs @ 12.06 hrs HW=287.87' (Free Discharge)
↑**1=Culvert** (Inlet Controls 5.08 cfs @ 4.14 fps)

Summary for Pond 4P: CB_7-8

Inflow Area = 2.762 ac, 44.78% Impervious, Inflow Depth > 3.64" for 50-year event
Inflow = 12.48 cfs @ 12.04 hrs, Volume= 0.838 af
Outflow = 12.48 cfs @ 12.04 hrs, Volume= 0.838 af, Atten= 0%, Lag= 0.0 min
Primary = 12.48 cfs @ 12.04 hrs, Volume= 0.838 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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Peak Elev= 277.58' @ 12.04 hrs
Flood Elev= 277.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	272.50'	15.0" Round Culvert L= 128.2' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 272.50' / 263.70' S= 0.0686 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=12.28 cfs @ 12.04 hrs HW=277.45' (Free Discharge)
↑**1=Culvert** (Inlet Controls 12.28 cfs @ 10.01 fps)

Summary for Pond 5P: CB-9

Inflow Area = 3.396 ac, 45.52% Impervious, Inflow Depth > 3.53" for 50-year event
Inflow = 15.10 cfs @ 12.04 hrs, Volume= 0.999 af
Outflow = 15.10 cfs @ 12.04 hrs, Volume= 0.999 af, Atten= 0%, Lag= 0.0 min
Primary = 15.10 cfs @ 12.04 hrs, Volume= 0.999 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 270.74' @ 12.04 hrs
Flood Elev= 267.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	263.60'	15.0" Round Culvert L= 100.6' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 263.60' / 253.10' S= 0.1044 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=14.74 cfs @ 12.04 hrs HW=270.45' (Free Discharge)
↑**1=Culvert** (Inlet Controls 14.74 cfs @ 12.01 fps)

Summary for Pond 6P: CB_10-11

Inflow Area = 4.482 ac, 45.26% Impervious, Inflow Depth > 3.64" for 50-year event
Inflow = 20.65 cfs @ 12.05 hrs, Volume= 1.358 af
Outflow = 20.65 cfs @ 12.05 hrs, Volume= 1.358 af, Atten= 0%, Lag= 0.0 min
Primary = 20.65 cfs @ 12.05 hrs, Volume= 1.358 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 259.64' @ 12.05 hrs
Flood Elev= 259.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	253.00'	18.0" Round Culvert L= 172.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 253.00' / 245.10' S= 0.0459 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

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Primary OutFlow Max=20.45 cfs @ 12.05 hrs HW=259.52' (Free Discharge)

↑**1=Culvert** (Inlet Controls 20.45 cfs @ 11.57 fps)

Summary for Pond 7P: CB_12-13

Inflow Area = 4.781 ac, 48.33% Impervious, Inflow Depth > 3.79" for 50-year event
Inflow = 22.69 cfs @ 12.04 hrs, Volume= 1.508 af
Outflow = 22.69 cfs @ 12.04 hrs, Volume= 1.508 af, Atten= 0%, Lag= 0.0 min
Primary = 22.69 cfs @ 12.04 hrs, Volume= 1.508 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 252.85' @ 12.04 hrs

Flood Elev= 249.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	245.00'	18.0" Round Culvert L= 36.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 245.00' / 244.00' S= 0.0278 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=22.30 cfs @ 12.04 hrs HW=252.62' (Free Discharge)

↑**1=Culvert** (Inlet Controls 22.30 cfs @ 12.62 fps)

Summary for Pond 10P: Stormwater Basin

Inflow Area = 5.668 ac, 40.77% Impervious, Inflow Depth > 3.52" for 50-year event
Inflow = 23.48 cfs @ 12.05 hrs, Volume= 1.663 af
Outflow = 7.14 cfs @ 12.45 hrs, Volume= 1.471 af, Atten= 70%, Lag= 24.2 min
Primary = 7.14 cfs @ 12.45 hrs, Volume= 1.471 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 246.12' @ 12.45 hrs Surf.Area= 10,135 sf Storage= 31,370 cf

Plug-Flow detention time= 114.5 min calculated for 1.466 af (88% of inflow)

Center-of-Mass det. time= 78.1 min (861.3 - 783.2)

Volume	Invert	Avail.Storage	Storage Description
#1	242.00'	31,370 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.00	5,655	0	0
244.00	7,798	13,453	13,453
245.00	8,950	8,374	21,827
246.00	10,135	9,543	31,370

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Device	Routing	Invert	Outlet Devices
#1	Primary	242.50'	15.0" Round Culvert L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	242.50'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	243.00'	6.0" Vert. Orifice/Grate C= 0.600
#4	Device 1	244.00'	10.0" Vert. Orifice/Grate C= 0.600
#5	Device 1	246.00'	36.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#6	Secondary	247.00'	18.0' long x 2.0' 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 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=7.12 cfs @ 12.45 hrs HW=246.12' (Free Discharge)

↑ **1=Culvert** (Passes 7.12 cfs of 8.94 cfs potential flow)
↑ **2=Orifice/Grate** (Orifice Controls 0.78 cfs @ 8.95 fps)
↑ **3=Orifice/Grate** (Orifice Controls 1.60 cfs @ 8.16 fps)
↑ **4=Orifice/Grate** (Orifice Controls 3.43 cfs @ 6.29 fps)
↑ **5=Orifice/Grate** (Weir Controls 1.31 cfs @ 1.14 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=242.00' (Free Discharge)

↑ **6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link 1L: Wetlands Drainage

Inflow Area = 5.540 ac, 1.13% Impervious, Inflow Depth > 2.72" for 50-year event
Inflow = 13.34 cfs @ 12.39 hrs, Volume= 1.257 af
Primary = 13.34 cfs @ 12.39 hrs, Volume= 1.257 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

50-year Outflow Imported from Proposed Wetlands Drainage~Reach 2R.hce

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Drainage Area 1	Runoff Area=8,570 sf 48.07% Impervious Runoff Depth>4.86"
Flow Length=111'	Slope=0.0710 '/ Tc=9.1 min CN=79 Runoff=1.04 cfs 0.080 af
Subcatchment 2S: Drainage Area 2	Runoff Area=14,320 sf 56.10% Impervious Runoff Depth>5.77"
Flow Length=125'	Slope=0.0100 '/ Tc=1.0 min CN=87 Runoff=2.51 cfs 0.158 af
Subcatchment 3S: Drainage Area 3	Runoff Area=25,738 sf 37.02% Impervious Runoff Depth>4.42"
Flow Length=265'	Tc=5.7 min CN=75 Runoff=3.21 cfs 0.218 af
Subcatchment 4S: Drainage Area 4	Runoff Area=71,700 sf 44.91% Impervious Runoff Depth>3.88"
Flow Length=130'	Slope=0.0100 '/ Tc=1.9 min CN=70 Runoff=8.80 cfs 0.532 af
Subcatchment 5S: Drainage Area 5	Runoff Area=27,597 sf 48.74% Impervious Runoff Depth>3.66"
Flow Length=180'	Slope=0.0500 '/ Tc=1.3 min CN=68 Runoff=3.21 cfs 0.193 af
Subcatchment 6S: Drainage Area 6	Runoff Area=47,315 sf 44.44% Impervious Runoff Depth>4.64"
Flow Length=180'	Slope=0.0500 '/ Tc=3.9 min CN=77 Runoff=6.60 cfs 0.420 af
Subcatchment 7S: Drainage Area 7	Runoff Area=13,011 sf 94.50% Impervious Runoff Depth>6.75"
Flow Length=175'	Slope=0.0580 '/ Tc=1.2 min CN=97 Runoff=2.47 cfs 0.168 af
Subcatchment 8S: Overland to Swales	Runoff Area=38,644 sf 0.00% Impervious Runoff Depth>2.62"
Flow Length=130'	Slope=0.1240 '/ Tc=8.3 min CN=58 Runoff=2.59 cfs 0.193 af
Reach 3R: Riprap Swale	Avg. Flow Depth=0.19' Max Vel=3.14 fps Inflow=2.59 cfs 0.193 af
	n=0.045 L=210.0' S=0.0952 '/ Capacity=48.58 cfs Outflow=2.53 cfs 0.193 af
Reach 4R: Grass swale to basin	Avg. Flow Depth=0.20' Max Vel=2.82 fps Inflow=2.53 cfs 0.193 af
	n=0.035 L=205.0' S=0.0439 '/ Capacity=42.41 cfs Outflow=2.44 cfs 0.192 af
Reach 9R: Peak off Site	Inflow=33.12 cfs 3.284 af
	Outflow=33.12 cfs 3.284 af
Pond 1P: CB_1-2	Peak Elev=311.98' Inflow=1.04 cfs 0.080 af
	15.0" Round Culvert n=0.012 L=128.7' S=0.0975 '/ Outflow=1.04 cfs 0.080 af
Pond 2P: CB_3-4	Peak Elev=299.76' Inflow=3.13 cfs 0.238 af
	15.0" Round Culvert n=0.012 L=131.1' S=0.0934 '/ Outflow=3.13 cfs 0.238 af
Pond 3P: CB_5-6	Peak Elev=288.15' Inflow=6.00 cfs 0.455 af
	15.0" Round Culvert n=0.012 L=168.9' S=0.0823 '/ Outflow=6.00 cfs 0.455 af
Pond 4P: CB_7-8	Peak Elev=279.29' Inflow=14.68 cfs 0.987 af
	15.0" Round Culvert n=0.012 L=128.2' S=0.0686 '/ Outflow=14.68 cfs 0.987 af
Pond 5P: CB-9	Peak Elev=273.28' Inflow=17.81 cfs 1.181 af
	15.0" Round Culvert n=0.012 L=100.6' S=0.1044 '/ Outflow=17.81 cfs 1.181 af

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Pond 6P: CB_10-11

Peak Elev=261.89' Inflow=24.28 cfs 1.601 af
18.0" Round Culvert n=0.012 L=172.0' S=0.0459 '/' Outflow=24.28 cfs 1.601 af

Pond 7P: CB_12-13

Peak Elev=255.48' Inflow=26.56 cfs 1.769 af
18.0" Round Culvert n=0.012 L=36.0' S=0.0278 '/' Outflow=26.56 cfs 1.769 af

Pond 10P: Stormwater Basin

Peak Elev=247.38' Storage=31,370 cf Inflow=27.64 cfs 1.962 af
Primary=10.72 cfs 1.677 af Secondary=10.94 cfs 0.082 af Outflow=21.67 cfs 1.760 af

Link 1L:

100-year Outflow Imported from Proposed Wetlands Drainage~Reach 2R.hce Inflow=16.37 cfs 1.524 af
Area= 5.540 ac 1.13% Imperv. Primary=16.37 cfs 1.524 af

Total Runoff Area = 5.668 ac Runoff Volume = 1.963 af Average Runoff Depth = 4.16"
59.23% Pervious = 3.357 ac 40.77% Impervious = 2.311 ac

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Summary for Subcatchment 1S: Drainage Area 1

Runoff = 1.04 cfs @ 12.13 hrs, Volume= 0.080 af, Depth> 4.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 100-year Rainfall=7.64"

Area (sf)	CN	Description
4,120	98	Paved parking, HSG B
4,450	61	>75% Grass cover, Good, HSG B
8,570	79	Weighted Average
4,450		51.93% Pervious Area
4,120		48.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	111	0.0710	0.20		Sheet Flow, Tc-1 Grass: Dense n= 0.240 P2= 3.37"

Summary for Subcatchment 2S: Drainage Area 2

Runoff = 2.51 cfs @ 12.01 hrs, Volume= 0.158 af, Depth> 5.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 100-year Rainfall=7.64"

Area (sf)	CN	Description
* 6,287	74	>75% Grass cover, Good, HSG B/D
* 8,033	98	Roof/pavement
14,320	87	Weighted Average
6,287		43.90% Pervious Area
8,033		56.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	125	0.0100	2.03		Shallow Concentrated Flow, Tc-2 Paved Kv= 20.3 fps

Summary for Subcatchment 3S: Drainage Area 3

Runoff = 3.21 cfs @ 12.09 hrs, Volume= 0.218 af, Depth> 4.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 100-year Rainfall=7.64"

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Area (sf)	CN	Description
* 9,529	98	Paved parking/roof
16,209	61	>75% Grass cover, Good, HSG B
25,738	75	Weighted Average
16,209		62.98% Pervious Area
9,529		37.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	105	0.1100	0.35		Sheet Flow, Tc-4a Grass: Short n= 0.150 P2= 3.37"
0.7	160	0.0310	3.57		Shallow Concentrated Flow, Tc-4b Paved Kv= 20.3 fps
5.7	265	Total			

Summary for Subcatchment 4S: Drainage Area 4

Runoff = 8.80 cfs @ 12.04 hrs, Volume= 0.532 af, Depth> 3.88"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 100-year Rainfall=7.64"

Area (sf)	CN	Description
* 32,200	98	Paved parking & roof HSG A
20,000	39	>75% Grass cover, Good, HSG A
19,500	55	Woods, Good, HSG B
71,700	70	Weighted Average
39,500		55.09% Pervious Area
32,200		44.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	130	0.0100	1.13		Sheet Flow, Tc-3 Smooth surfaces n= 0.011 P2= 3.37"

Summary for Subcatchment 5S: Drainage Area 5

Runoff = 3.21 cfs @ 12.02 hrs, Volume= 0.193 af, Depth> 3.66"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 100-year Rainfall=7.64"

Area (sf)	CN	Description
* 13,450	98	Paved surfaces & roof
14,147	39	>75% Grass cover, Good, HSG A
27,597	68	Weighted Average
14,147		51.26% Pervious Area
13,450		48.74% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	180	0.0500	2.29		Sheet Flow, Tc-5 Smooth surfaces n= 0.011 P2= 3.37"

Summary for Subcatchment 6S: Drainage Area 6

Runoff = 6.60 cfs @ 12.06 hrs, Volume= 0.420 af, Depth> 4.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 100-year Rainfall=7.64"

Area (sf)	CN	Description
* 21,025	98	Pavement/Roofs, HSG B
22,990	61	>75% Grass cover, Good, HSG B
3,300	55	Woods, Good, HSG B
47,315	77	Weighted Average
26,290		55.56% Pervious Area
21,025		44.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	180	0.0500	0.76		Lag/CN Method, Tc-6

Summary for Subcatchment 7S: Drainage Area 7

Runoff = 2.47 cfs @ 12.02 hrs, Volume= 0.168 af, Depth> 6.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 100-year Rainfall=7.64"

Area (sf)	CN	Description
* 12,295	98	Roof & Pavement
* 716	74	>75% Grass cover, Good, HSG B/D
13,011	97	Weighted Average
716		5.50% Pervious Area
12,295		94.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	175	0.0580	2.42		Sheet Flow, Tc-7 Smooth surfaces n= 0.011 P2= 3.37"

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Summary for Subcatchment 8S: Overland to Swales

Runoff = 2.59 cfs @ 12.13 hrs, Volume= 0.193 af, Depth> 2.62"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-year Rainfall=7.64"

Area (sf)	CN	Description
* 38,644	58	>75% Grass cover, Good, HSG B
38,644		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	130	0.1240	0.26		Sheet Flow, Tc=8 Grass: Dense n= 0.240 P2= 3.37"

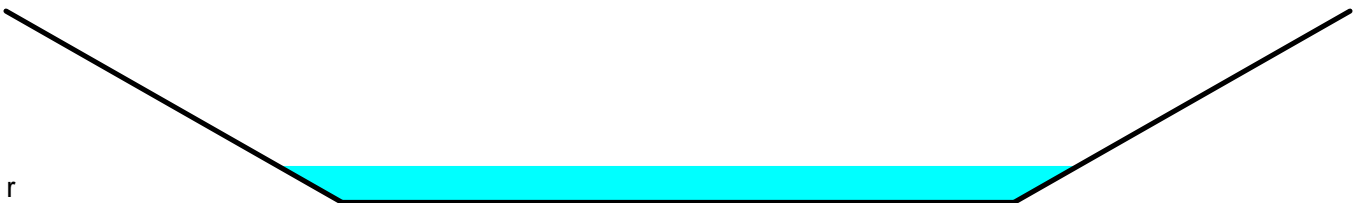
Summary for Reach 3R: Riprap Swale

Inflow Area = 0.887 ac, 0.00% Impervious, Inflow Depth > 2.62" for 100-year event
Inflow = 2.59 cfs @ 12.13 hrs, Volume= 0.193 af
Outflow = 2.53 cfs @ 12.16 hrs, Volume= 0.193 af, Atten= 2%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.14 fps, Min. Travel Time= 1.1 min
Avg. Velocity= 1.10 fps, Avg. Travel Time= 3.2 min

Peak Storage= 174 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 48.58 cfs

4.00' x 1.00' deep channel, n= 0.045
Side Slope Z-value= 2.0 '/' Top Width= 8.00'
Length= 210.0' Slope= 0.0952 '/'
Inlet Invert= 276.00', Outlet Invert= 256.00'



Summary for Reach 4R: Grass swale to basin

Inflow Area = 0.887 ac, 0.00% Impervious, Inflow Depth > 2.61" for 100-year event
Inflow = 2.53 cfs @ 12.16 hrs, Volume= 0.193 af
Outflow = 2.44 cfs @ 12.20 hrs, Volume= 0.192 af, Atten= 3%, Lag= 2.3 min

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Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.82 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 1.01 fps, Avg. Travel Time= 3.4 min

Peak Storage= 180 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 42.41 cfs

4.00' x 1.00' deep channel, n= 0.035
Side Slope Z-value= 2.0 '/' Top Width= 8.00'
Length= 205.0' Slope= 0.0439 '/'
Inlet Invert= 256.00', Outlet Invert= 247.00'



Summary for Reach 9R: Peak off Site

Inflow Area = 11.208 ac, 21.17% Impervious, Inflow Depth > 3.52" for 100-year event
Inflow = 33.12 cfs @ 12.30 hrs, Volume= 3.284 af
Outflow = 33.12 cfs @ 12.30 hrs, Volume= 3.284 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 1P: CB_1-2

Inflow Area = 0.197 ac, 48.07% Impervious, Inflow Depth > 4.86" for 100-year event
Inflow = 1.04 cfs @ 12.13 hrs, Volume= 0.080 af
Outflow = 1.04 cfs @ 12.13 hrs, Volume= 0.080 af, Atten= 0%, Lag= 0.0 min
Primary = 1.04 cfs @ 12.13 hrs, Volume= 0.080 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 311.98' @ 12.13 hrs
Flood Elev= 316.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	311.50'	15.0" Round Culvert L= 128.7' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 311.50' / 298.95' S= 0.0975 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.02 cfs @ 12.13 hrs HW=311.98' (Free Discharge)
↑ **1=Culvert** (Inlet Controls 1.02 cfs @ 2.36 fps)

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Summary for Pond 2P: CB_3-4

Inflow Area = 0.525 ac, 53.09% Impervious, Inflow Depth > 5.43" for 100-year event
Inflow = 3.13 cfs @ 12.02 hrs, Volume= 0.238 af
Outflow = 3.13 cfs @ 12.02 hrs, Volume= 0.238 af, Atten= 0%, Lag= 0.0 min
Primary = 3.13 cfs @ 12.02 hrs, Volume= 0.238 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 299.76' @ 12.02 hrs
Flood Elev= 303.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	298.85'	15.0" Round Culvert L= 131.1' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 298.85' / 286.60' S= 0.0934 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=3.01 cfs @ 12.02 hrs HW=299.74' (Free Discharge)
↑**1=Culvert** (Inlet Controls 3.01 cfs @ 3.22 fps)

Summary for Pond 3P: CB_5-6

Inflow Area = 1.116 ac, 44.59% Impervious, Inflow Depth > 4.90" for 100-year event
Inflow = 6.00 cfs @ 12.06 hrs, Volume= 0.455 af
Outflow = 6.00 cfs @ 12.06 hrs, Volume= 0.455 af, Atten= 0%, Lag= 0.0 min
Primary = 6.00 cfs @ 12.06 hrs, Volume= 0.455 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 288.15' @ 12.06 hrs
Flood Elev= 291.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	286.50'	15.0" Round Culvert L= 168.9' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 286.50' / 272.60' S= 0.0823 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=5.89 cfs @ 12.06 hrs HW=288.12' (Free Discharge)
↑**1=Culvert** (Inlet Controls 5.89 cfs @ 4.80 fps)

Summary for Pond 4P: CB_7-8

Inflow Area = 2.762 ac, 44.78% Impervious, Inflow Depth > 4.29" for 100-year event
Inflow = 14.68 cfs @ 12.04 hrs, Volume= 0.987 af
Outflow = 14.68 cfs @ 12.04 hrs, Volume= 0.987 af, Atten= 0%, Lag= 0.0 min
Primary = 14.68 cfs @ 12.04 hrs, Volume= 0.987 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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Peak Elev= 279.29' @ 12.04 hrs
Flood Elev= 277.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	272.50'	15.0" Round Culvert L= 128.2' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 272.50' / 263.70' S= 0.0686 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=14.42 cfs @ 12.04 hrs HW=279.08' (Free Discharge)
↑**1=Culvert** (Inlet Controls 14.42 cfs @ 11.75 fps)

Summary for Pond 5P: CB-9

Inflow Area = 3.396 ac, 45.52% Impervious, Inflow Depth > 4.17" for 100-year event
Inflow = 17.81 cfs @ 12.04 hrs, Volume= 1.181 af
Outflow = 17.81 cfs @ 12.04 hrs, Volume= 1.181 af, Atten= 0%, Lag= 0.0 min
Primary = 17.81 cfs @ 12.04 hrs, Volume= 1.181 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 273.28' @ 12.04 hrs
Flood Elev= 267.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	263.60'	15.0" Round Culvert L= 100.6' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 263.60' / 253.10' S= 0.1044 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=17.37 cfs @ 12.04 hrs HW=272.86' (Free Discharge)
↑**1=Culvert** (Inlet Controls 17.37 cfs @ 14.15 fps)

Summary for Pond 6P: CB_10-11

Inflow Area = 4.482 ac, 45.26% Impervious, Inflow Depth > 4.29" for 100-year event
Inflow = 24.28 cfs @ 12.05 hrs, Volume= 1.601 af
Outflow = 24.28 cfs @ 12.05 hrs, Volume= 1.601 af, Atten= 0%, Lag= 0.0 min
Primary = 24.28 cfs @ 12.05 hrs, Volume= 1.601 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 261.89' @ 12.05 hrs
Flood Elev= 259.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	253.00'	18.0" Round Culvert L= 172.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 253.00' / 245.10' S= 0.0459 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

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Primary OutFlow Max=23.99 cfs @ 12.05 hrs HW=261.70' (Free Discharge)

↑**1=Culvert** (Inlet Controls 23.99 cfs @ 13.58 fps)

Summary for Pond 7P: CB_12-13

Inflow Area = 4.781 ac, 48.33% Impervious, Inflow Depth > 4.44" for 100-year event
Inflow = 26.56 cfs @ 12.04 hrs, Volume= 1.769 af
Outflow = 26.56 cfs @ 12.04 hrs, Volume= 1.769 af, Atten= 0%, Lag= 0.0 min
Primary = 26.56 cfs @ 12.04 hrs, Volume= 1.769 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 255.48' @ 12.04 hrs

Flood Elev= 249.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	245.00'	18.0" Round Culvert L= 36.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 245.00' / 244.00' S= 0.0278 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=26.07 cfs @ 12.04 hrs HW=255.14' (Free Discharge)

↑**1=Culvert** (Inlet Controls 26.07 cfs @ 14.75 fps)

Summary for Pond 10P: Stormwater Basin

Inflow Area = 5.668 ac, 40.77% Impervious, Inflow Depth > 4.15" for 100-year event
Inflow = 27.64 cfs @ 12.05 hrs, Volume= 1.962 af
Outflow = 21.67 cfs @ 12.20 hrs, Volume= 1.760 af, Atten= 22%, Lag= 9.3 min
Primary = 10.72 cfs @ 12.20 hrs, Volume= 1.677 af
Secondary = 10.94 cfs @ 12.20 hrs, Volume= 0.082 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 247.38' @ 12.20 hrs Surf.Area= 10,135 sf Storage= 31,370 cf

Plug-Flow detention time= 104.4 min calculated for 1.760 af (90% of inflow)

Center-of-Mass det. time= 70.5 min (850.6 - 780.1)

Volume	Invert	Avail.Storage	Storage Description
#1	242.00'	31,370 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
242.00	5,655	0	0
244.00	7,798	13,453	13,453
245.00	8,950	8,374	21,827
246.00	10,135	9,543	31,370

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Device	Routing	Invert	Outlet Devices
#1	Primary	242.50'	15.0" Round Culvert L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 242.50' / 242.00' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	242.50'	4.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	243.00'	6.0" Vert. Orifice/Grate C= 0.600
#4	Device 1	244.00'	10.0" Vert. Orifice/Grate C= 0.600
#5	Device 1	246.00'	36.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#6	Secondary	247.00'	18.0' long x 2.0' 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 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Primary OutFlow Max=10.72 cfs @ 12.20 hrs HW=247.38' (Free Discharge)

- ↑ **1=Culvert** (Barrel Controls 10.72 cfs @ 8.73 fps)
- ↑ **2=Orifice/Grate** (Passes < 0.91 cfs potential flow)
- ↑ **3=Orifice/Grate** (Passes < 1.92 cfs potential flow)
- ↑ **4=Orifice/Grate** (Passes < 4.52 cfs potential flow)
- ↑ **5=Orifice/Grate** (Passes < 39.97 cfs potential flow)

Secondary OutFlow Max=10.92 cfs @ 12.20 hrs HW=247.38' (Free Discharge)

- ↑ **6=Broad-Crested Rectangular Weir** (Weir Controls 10.92 cfs @ 1.60 fps)

Summary for Link 1L: Wetlands Drainage

Inflow Area = 5.540 ac, 1.13% Impervious, Inflow Depth > 3.30" for 100-year event
Inflow = 16.37 cfs @ 12.37 hrs, Volume= 1.524 af
Primary = 16.37 cfs @ 12.37 hrs, Volume= 1.524 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

100-year Outflow Imported from Proposed Wetlands Drainage~Reach 2R.hce

SUPPORTING DOCUMENTATION

**NOAA Point Precipitation Estimates
Web Soil Survey**



NOAA Atlas 14, Volume 10, Version 3
Location name: Brooklyn, Connecticut, USA*
Latitude: 41.7828°, Longitude: -71.937°
Elevation: 322.73 ft**
 * source: ESRI Maps
 ** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

[PF_tabular](#) | [PF_graphical](#) | [Maps & aerals](#)

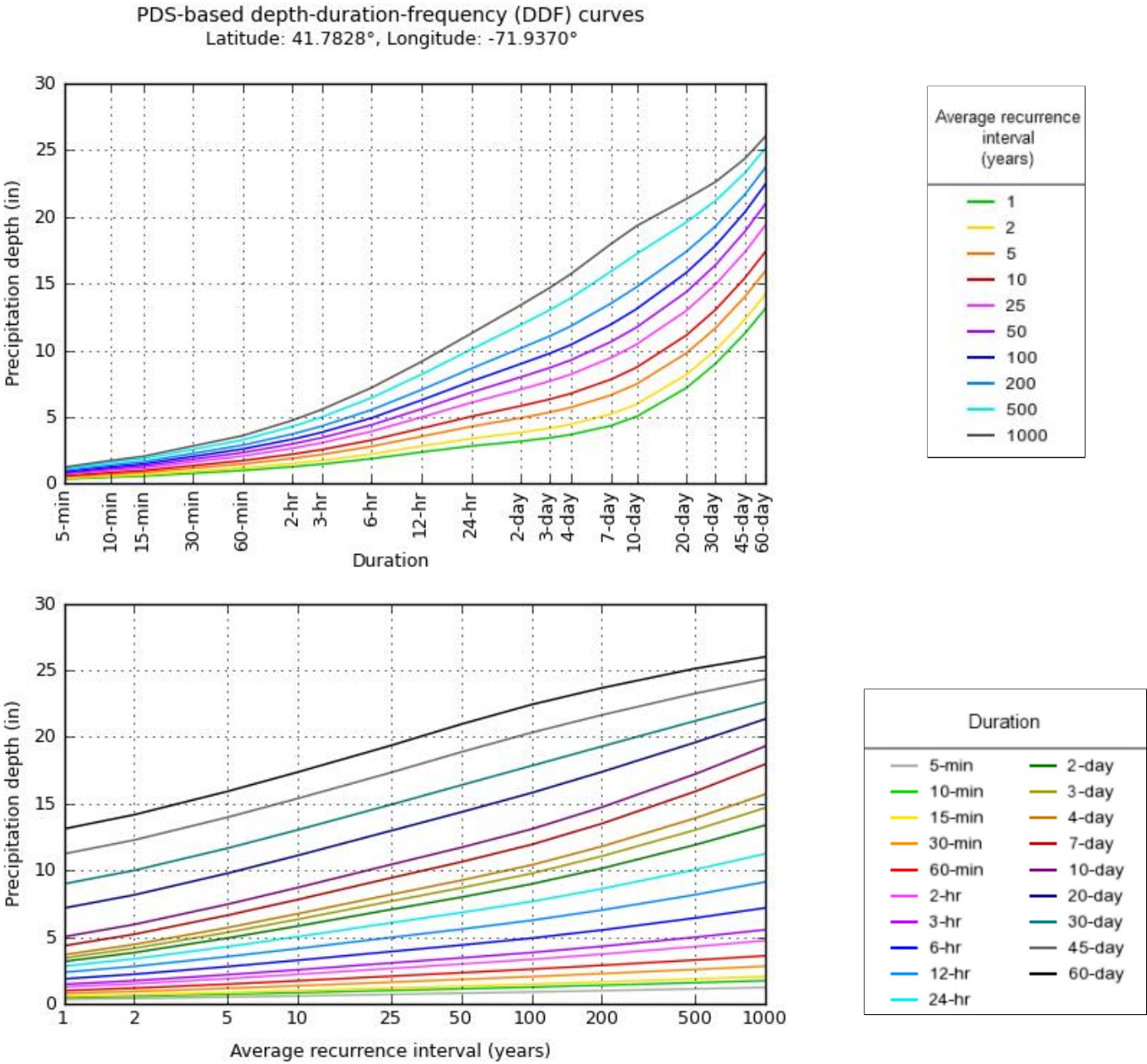
PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.337 (0.256-0.442)	0.400 (0.304-0.525)	0.503 (0.381-0.662)	0.587 (0.443-0.777)	0.704 (0.515-0.965)	0.793 (0.569-1.11)	0.884 (0.618-1.27)	0.982 (0.658-1.45)	1.12 (0.723-1.70)	1.23 (0.775-1.89)
10-min	0.477 (0.363-0.626)	0.566 (0.430-0.743)	0.711 (0.539-0.937)	0.831 (0.627-1.10)	0.997 (0.730-1.37)	1.12 (0.807-1.57)	1.25 (0.876-1.80)	1.39 (0.932-2.05)	1.58 (1.02-2.40)	1.74 (1.10-2.68)
15-min	0.562 (0.427-0.737)	0.666 (0.506-0.875)	0.836 (0.634-1.10)	0.978 (0.738-1.30)	1.17 (0.859-1.61)	1.32 (0.949-1.84)	1.47 (1.03-2.12)	1.64 (1.10-2.41)	1.86 (1.21-2.83)	2.04 (1.29-3.15)
30-min	0.775 (0.590-1.02)	0.919 (0.699-1.21)	1.16 (0.875-1.52)	1.35 (1.02-1.79)	1.62 (1.19-2.22)	1.82 (1.31-2.54)	2.03 (1.42-2.92)	2.26 (1.51-3.33)	2.57 (1.66-3.90)	2.82 (1.78-4.35)
60-min	0.988 (0.752-1.30)	1.17 (0.891-1.54)	1.47 (1.12-1.94)	1.72 (1.30-2.28)	2.07 (1.51-2.83)	2.33 (1.67-3.25)	2.59 (1.81-3.73)	2.88 (1.93-4.24)	3.28 (2.12-4.97)	3.59 (2.28-5.55)
2-hr	1.26 (0.966-1.65)	1.50 (1.15-1.96)	1.89 (1.44-2.47)	2.21 (1.67-2.91)	2.65 (1.95-3.62)	2.98 (2.15-4.15)	3.32 (2.35-4.78)	3.72 (2.49-5.44)	4.28 (2.78-6.45)	4.74 (3.01-7.28)
3-hr	1.46 (1.12-1.90)	1.73 (1.33-2.26)	2.18 (1.66-2.85)	2.55 (1.93-3.35)	3.06 (2.26-4.17)	3.44 (2.50-4.78)	3.84 (2.72-5.52)	4.31 (2.90-6.28)	4.99 (3.24-7.49)	5.55 (3.53-8.49)
6-hr	1.87 (1.44-2.42)	2.22 (1.70-2.88)	2.79 (2.13-3.63)	3.26 (2.49-4.26)	3.91 (2.90-5.32)	4.40 (3.21-6.10)	4.92 (3.51-7.05)	5.53 (3.73-8.02)	6.43 (4.19-9.60)	7.19 (4.58-10.9)
12-hr	2.36 (1.82-3.05)	2.81 (2.17-3.63)	3.53 (2.72-4.58)	4.14 (3.17-5.39)	4.97 (3.70-6.72)	5.59 (4.09-7.71)	6.25 (4.47-8.91)	7.03 (4.76-10.1)	8.17 (5.34-12.1)	9.14 (5.85-13.8)
24-hr	2.82 (2.19-3.62)	3.37 (2.61-4.34)	4.28 (3.30-5.52)	5.03 (3.87-6.52)	6.06 (4.54-8.16)	6.84 (5.03-9.38)	7.66 (5.50-10.9)	8.62 (5.86-12.4)	10.1 (6.59-14.8)	11.3 (7.22-16.9)
2-day	3.17 (2.47-4.06)	3.84 (2.99-4.92)	4.92 (3.82-6.33)	5.83 (4.50-7.52)	7.07 (5.31-9.48)	7.99 (5.90-10.9)	8.98 (6.48-12.7)	10.2 (6.92-14.5)	11.9 (7.83-17.4)	13.4 (8.62-19.9)
3-day	3.44 (2.68-4.39)	4.16 (3.25-5.32)	5.35 (4.16-6.85)	6.33 (4.90-8.14)	7.68 (5.79-10.3)	8.69 (6.44-11.8)	9.77 (7.08-13.8)	11.1 (7.55-15.7)	13.0 (8.58-19.0)	14.7 (9.48-21.8)
4-day	3.67 (2.88-4.68)	4.45 (3.47-5.67)	5.71 (4.45-7.30)	6.75 (5.23-8.67)	8.19 (6.18-10.9)	9.25 (6.87-12.6)	10.4 (7.56-14.7)	11.8 (8.06-16.7)	13.9 (9.17-20.2)	15.7 (10.1-23.2)
7-day	4.34 (3.41-5.52)	5.21 (4.09-6.62)	6.63 (5.19-8.45)	7.81 (6.08-9.99)	9.43 (7.15-12.5)	10.6 (7.92-14.4)	11.9 (8.70-16.7)	13.5 (9.26-19.0)	15.9 (10.5-23.0)	18.0 (11.6-26.4)
10-day	5.02 (3.95-6.36)	5.95 (4.68-7.54)	7.46 (5.84-9.48)	8.71 (6.79-11.1)	10.4 (7.92-13.8)	11.7 (8.74-15.8)	13.1 (9.54-18.3)	14.7 (10.1-20.7)	17.2 (11.4-24.8)	19.3 (12.5-28.3)
20-day	7.17 (5.67-9.05)	8.16 (6.45-10.3)	9.78 (7.70-12.4)	11.1 (8.71-14.1)	13.0 (9.85-17.0)	14.4 (10.7-19.1)	15.8 (11.4-21.6)	17.4 (12.0-24.2)	19.6 (13.0-28.0)	21.3 (13.9-31.0)
30-day	8.99 (7.12-11.3)	10.0 (7.92-12.6)	11.7 (9.20-14.7)	13.0 (10.2-16.5)	14.9 (11.3-19.4)	16.4 (12.2-21.6)	17.8 (12.8-24.1)	19.3 (13.4-26.8)	21.2 (14.2-30.2)	22.6 (14.7-32.8)
45-day	11.2 (8.93-14.1)	12.3 (9.74-15.4)	14.0 (11.1-17.6)	15.4 (12.1-19.5)	17.3 (13.2-22.4)	18.9 (14.0-24.7)	20.3 (14.6-27.1)	21.7 (15.1-29.9)	23.3 (15.6-33.0)	24.3 (15.9-35.1)
60-day	13.1 (10.4-16.4)	14.2 (11.3-17.8)	15.9 (12.6-20.0)	17.4 (13.7-21.9)	19.4 (14.7-24.9)	21.0 (15.6-27.3)	22.4 (16.1-29.8)	23.7 (16.5-32.6)	25.1 (16.9-35.5)	26.0 (17.0-37.4)

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

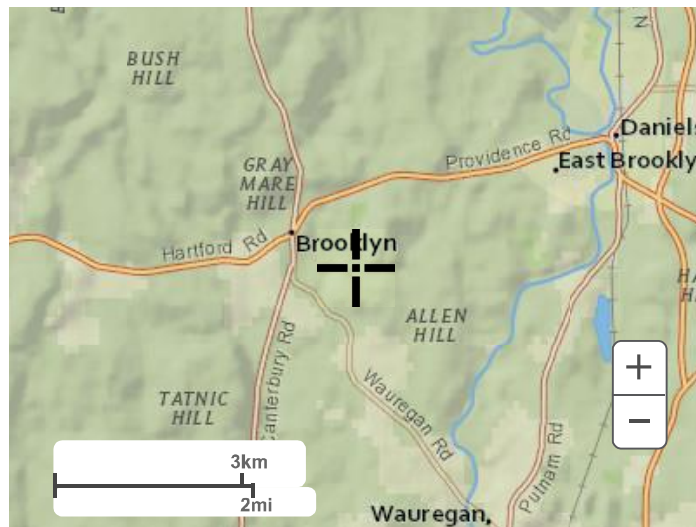
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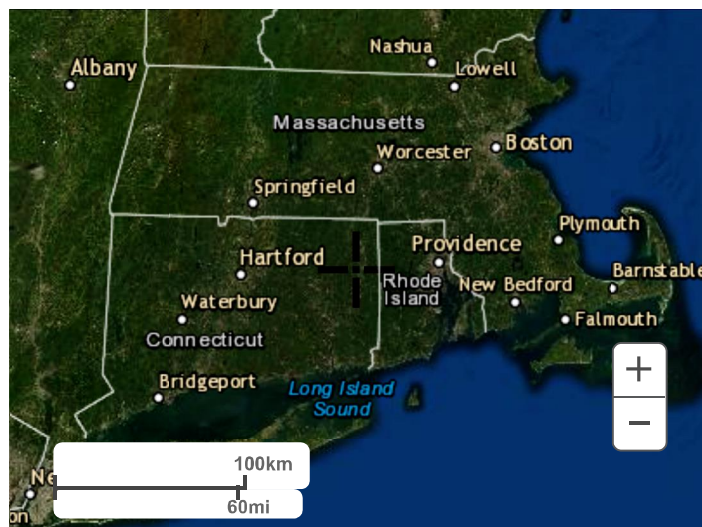
PF graphical



Maps & aerials

Small scale terrain

**Large scale terrain****Large scale map****Large scale aerial**



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Soil Map—State of Connecticut (Louise Berry Drive)



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut

Survey Area Data: Version 20, Jun 9, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 14, 2011—Aug 27, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend


Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
3	Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony	3.1	27.8%
34B	Merrimac fine sandy loam, 3 to 8 percent slopes	0.0	0.4%
60B	Canton and Charlton fine sandy loams, 3 to 8 percent slopes	4.7	42.9%
61C	Canton and Charlton fine sandy loams, 8 to 15 percent slopes, very stony	2.9	26.0%
62D	Canton and Charlton fine sandy loams, 15 to 35 percent slopes, extremely stony	0.1	0.7%
701B	Ninigret fine sandy loam, 3 to 8 percent slopes	0.2	2.2%
Totals for Area of Interest		11.0	100.0%

Hydrologic Soil Group—State of Connecticut (Louise Berry Drive)



MAP LEGEND

Area of Interest (AOI)









 Area of Interest (AOI)

Soils

Soil Rating Polygons





 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines


 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points




 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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Soil Survey Area: State of Connecticut
Survey Area Data: Version 20, Jun 9, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

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Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
3	Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony	D	3.1	27.8%
34B	Merrimac fine sandy loam, 3 to 8 percent slopes	A	0.0	0.4%
60B	Canton and Charlton fine sandy loams, 3 to 8 percent slopes	B	4.7	42.9%
61C	Canton and Charlton fine sandy loams, 8 to 15 percent slopes, very stony	B	2.9	26.0%
62D	Canton and Charlton fine sandy loams, 15 to 35 percent slopes, extremely stony	B	0.1	0.7%
701B	Ninigret fine sandy loam, 3 to 8 percent slopes	C	0.2	2.2%
Totals for Area of Interest			11.0	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

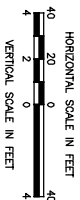
Component Percent Cutoff: None Specified


Tie-break Rule: Higher

SUPPORTING DOCUMENTATION

**NOAA Point Precipitation Estimates
Web Soil Survey**

[illegible]



	
<p align="center"> Killingly Engineering Associates <i>Civil Engineering & Surveying</i> </p>	
<p align="center"> 114 Western Road P.O. Box 127 Killingly, CT 06241 (860) 779-7299 www.killinglyengineering.com </p>	
DATE: 4/23/2020	DRAWN: DME
SCALE: 1" = 40'	DESIGN: NET
SHEET: 5 OF 9	CHK BY: ---
DWG. No. CLIENT FILE	JOB No. 20014

PROPOSED DRAINAGE AREAS	
PREPARED FOR	
SHANE POLLOCK	
LOUISE BERRY DRIVE BROOKLYN, CONNECTICUT	
DATE	DESCRIPTION
REVISIONS	