DRAINAGE REPORT

Murphy's Farm
Dracut, MA 01826
Map 22 / Lot 53 &
Map 39 / Block 53 / Lots 1-24

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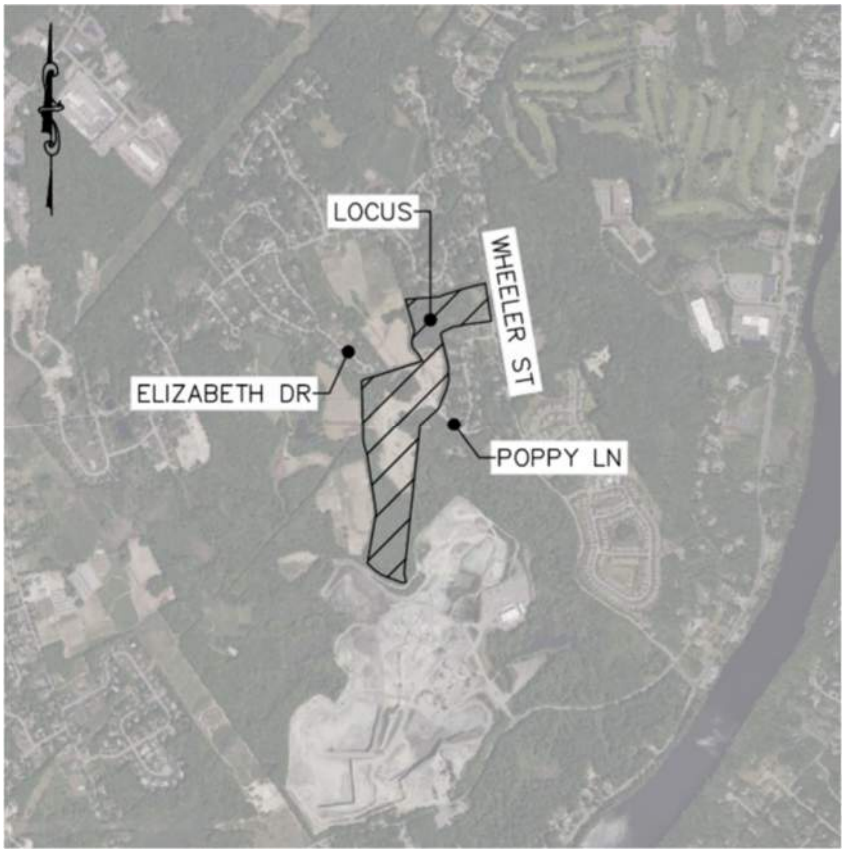


APPLICANT:

The Homes at Murphy's Farm, LLC
18 Cassimere Street
Andover, MA 01810

SUBMITTED TO:

Town of Dracut
11 Spring Park Ave.
Dracut, MA 01826

ISSUED:

April 22, 2024

REVISED:

OCTOBER 4, 2024

CDCI FILE #: 23-10524

DRAINAGE REPORT

TAB 1

DRAINAGE REPORT

Murphy's Farm
Dracut, MA

PROJECT DESCRIPTION

The applicant proposes to develop Murphy's Farm (Map 22, Lot 53 & Map 39, Block 53, Lots 1-24) in Dracut, MA into a 40B development consisting of 63 Multi-Family Dwellings containing a total of 268 units, as well as two accessory buildings. The project consists of constructing ±4,400-FT of new roadway along with associated infrastructure including driveways, landscaping, snow storage, parks, drainage facilities, and utilities. The project plans illustrate the proposal in detail including zoning, easements, construction details, roadway profile and provisions for utilities. Drainage will be collected and routed through a series of best management practices sized to address the MADEP Stormwater Management Standards as well as the local stormwater regulations.

SITE DESCRIPTION

The total area of the project site is approximately 33.30-AC and is located within the Residential-1 (R-1) zoning district. The site is located on the easterly side of Dracut, between Poppy Lane and Elizabeth Drive. A portion of the property has frontage on Wheeler Street in Methuen, MA. On-site resource areas include bordering vegetated wetlands (BVW), and vernal pools, both with associated setbacks. Elevations vary, ranging from approximately 114-FT along the frontage of Wheeler Street to a high of approximately 178-FT near Elizabeth Drive, at the boundary shared with 489 Wheeler Road. The resource areas were delineated by Norse Environmental Services in August 2015, and an ORAD was issued on January 26, 2016.

According to the Natural Resource Conservation Service Soil Survey for Essex County, Massachusetts, the on-site soils beyond the limit of the wetlands consist of the following soil types:

- Wareham Loamy Fine Sand Hydraulic Soil Group (HSG) A/D
- Swansea Muck, HSG B/D
- Freetown Muck, HSG B/D
- Hinkley Loamy San, HSG A
- Merrimac Fine Sandy Loam, HSG A
- Windsor Loamy Sand, HSG A
- Deerfield Loamy Fine Sand, HSG A
- Canton Fine Sandy Loam, HSG B
- Pits, gravel, Unranked
- Pits, quarry, Unranked
- Udorthents, Unranked

For the purposes of drainage calculations, portions of the Swansea Muck, Freetown Muck, Pits, and Udorthents map units were considered to be an HSG-A soil due to surrounding mapped soils, wetland delineation, and test pit results. Test pits were conducted by this office in December of 2023 and April of 2024 to determine soil texture and estimated seasonal high groundwater elevations. Test pit logs are provided under Tab 5 of this report. Finally, according to the Flood Insurance Rate Map for Essex County, Massachusetts Maps 25017C0163E and 25017C0161E, no part of this site is located within the 100-year base flood elevation.

SURFACE DRAINAGE

Pre-Development Condition

The pre-development condition consists of eight (8) watershed areas contributing to seven (7) design points.
Design Point #1 (DP-1) receives runoff from EWA-1 and consists of overland flow through the northern wetland complex and into a culvert running across Wheeler Street. Design Point #3 (DP-3) receives runoff from EWA-3 and consists of overland flow directed off-site, towards #48 Rinzee Road. Design Point #4

(DP-4) receives runoff from EWA-4 and consists of overland flow directed towards Poppy Lane. Design Point #5 (DP-5) receives runoff from EWA-5A and EWA-5B and consists of overland flow directed towards the Wetland Series 'A'. Runoff from EWA-5A first ponds in Wetland Series 'J' prior to flowing through a culvert that discharges to Wetland Series 'A'. Design Point #6 (DP-6) receives runoff from EWA-6 and consists of overland flow directed towards Wetland Series 'B' and 'C'. Design Point #7 (DP-7) receives runoff from EWA-7 and consists of overland flow directed towards #4 Poppy Lane. Design Point #8 (DP-8) receives runoff from EWA-8 and consists of overland flow directed towards series 'D' and 'E' wetland complex. Contributing areas to the Design Points are detailed in the following Table 1.

TABLE 1: EXISTING WATERSHED DESIGN POINT DETAILS

DESIGN POINT	AREA NAME	AREA (Acres)	Tc (min.)	CN
DP-1	EWA-1	5.11	13.7	37
DP-3	EWA-3	2.74	10.2	30
DP-4	EWA-4	2.77	28.1	30
DP-5	EWA-5A	1.14	14.9	30
	EWA-5B	10.52	19.5	33
DP-6	EWA-6	2.34	16.2	30
DP-7	EWA-7	3.96	14.3	30
DP-8	EWA-8	6.76	24.8	30

Post-Development Condition

The proposed project includes the construction of 63 Multi-Family Dwellings containing a total of 268 units, as well as three accessory buildings. Other components include construction of a new ±4,400-FT roadway along with landscaping, snow storage, parks, drainage, utilities, and associated appurtenances. Drainage will be collected and routed through a series of best management practices sized to address the MADEP Stormwater Management Standards. Impervious area will include bituminous concrete pavement and rooftop areas, and totals 11.63-AC.

The post-development condition consists of nineteen (19) watershed areas discharging to eight (8) design points. DP-1 receives overland flow from PWA-1. DP-3 receives overland flow from PWA-3. DP-4 receives overland flow from PWA-4. DP-5 receives overland flow from PWA-5A, PWA-5E, and PWA-5D, as well as discharge from two infiltration basins (PWA-5F, PWA-5C, PWA-5B) and one detention basin (PWA-5G). Runoff from PWA-5B, PWA-5C, PWA-5D, PWA-5E, and PWA-5F are first routed through wetland series 'J', which acts as a pond before discharging to wetland series 'A' through an existing culvert. The existing culvert will be upgraded to an 18" RCP in accordance with MassDOT design guidelines. DP-6 receives overland flow from PWA-6A as well as overflow runoff from a subsurface infiltration system (PWA-6B). This system has been designed to wholly infiltrate the runoff from PWA-6B. DP-7 receives overland flow from PWA-7A. Runoff from PWA-7B and PWA-7C is fully stored and infiltrated within the proposed infiltration trenches. DP-8 receives overland flow from PWA-8C as well as discharge from one infiltration basin (PWA-8B) and one detention basin (PWA-8A). Runoff from PWA-8D is fully stored and infiltrated within the proposed infiltration trench.

The design points are summarized in Table 2 below.

TABLE 1: PROPOSED WATERSHED DESIGN POINT DETAILS

DESIGN POINT	AREA NAME	AREA (Acres)	Tc (min.)	CN
DP-1	PWA-1	4.46	18.3	37
DP-3	PWA-3	0.28	9.2	34
DP-4	PWA-4	0.31	6.0	37
DP-5	PWA-5A	0.39	6.0	34
	PWA-5B	0.47	8.7	80
	PWA-5C	7.17	7.4	71
	PWA-5D	2.26	14.5	36
	PWA-5E	1.78	9.6	37
	PWA-5F	1.48	25.9	54
	PWA-5G	0.65	6.0	66
DP-6	PWA-6A	1.17	14.5	33
	PWA-6B	5.20	6.0	77
DP-7	PWA-7A	0.72	9.2	35
	PWA-7B	0.31	6.0	39
	PWA-7C	0.37	6.0	39
DP-8	PWA-8A	1.82	9.4	34
	PWA-8B	4.82	7.3	82
	PWA-8C	1.35	8.5	34
	PWA-8D	0.33	6.0	39

Peak Discharge Comparison

As illustrated in the following tables, the impact of the proposed improvements has been mitigated through the use of best management practices including porous pavement, infiltration basins, detention basins, and infiltration trenches for up to and including the 100-year, 24-hour storm event.

Design Point #1

	2-YR (3.12-IN)	10-YR (4.90-IN)	25-YR (6.02-IN)	100-YR (7.73-IN)
Pre-Development	0.0	0.1	0.5	2.2
Post-Development	0.0	0.1	0.4	1.8

Design Point #3

	2-YR (3.12-IN)	10-YR (4.90-IN)	25-YR (6.02-IN)	100-YR (7.73-IN)
Pre-Development	0.0	0.0	0.0	0.2
Post-Development	0.0	0.0	0.0	0.1

Design Point #4

	2-YR (3.12-IN)	10-YR (4.90-IN)	25-YR (6.02-IN)	100-YR (7.73-IN)
Pre-Development	0.0	0.0	0.0	0.2
Post-Development	0.0	0.0	0.0	0.2

DRAINAGE REPORT

Murphy's Farm
Dracut, MA

Design Point #5

	2-YR (3.12-IN)	10-YR (4.90-IN)	25-YR (6.02-IN)	100-YR (7.73-IN)
Pre-Development	0.0	0.0	0.2	0.9
Post-Development	0.0	0.0	0.2	0.8

Design Point #6

	2-YR (3.12-IN)	10-YR (4.90-IN)	25-YR (6.02-IN)	100-YR (7.73-IN)
Pre-Development	0.0	0.0	0.0	0.2
Post-Development	0.0	0.0	0.0	0.2

Design Point #7

	2-YR (3.12-IN)	10-YR (4.90-IN)	25-YR (6.02-IN)	100-YR (7.73-IN)
Pre-Development	0.0	0.0	0.0	0.3
Post-Development	0.0	0.0	0.0	0.2

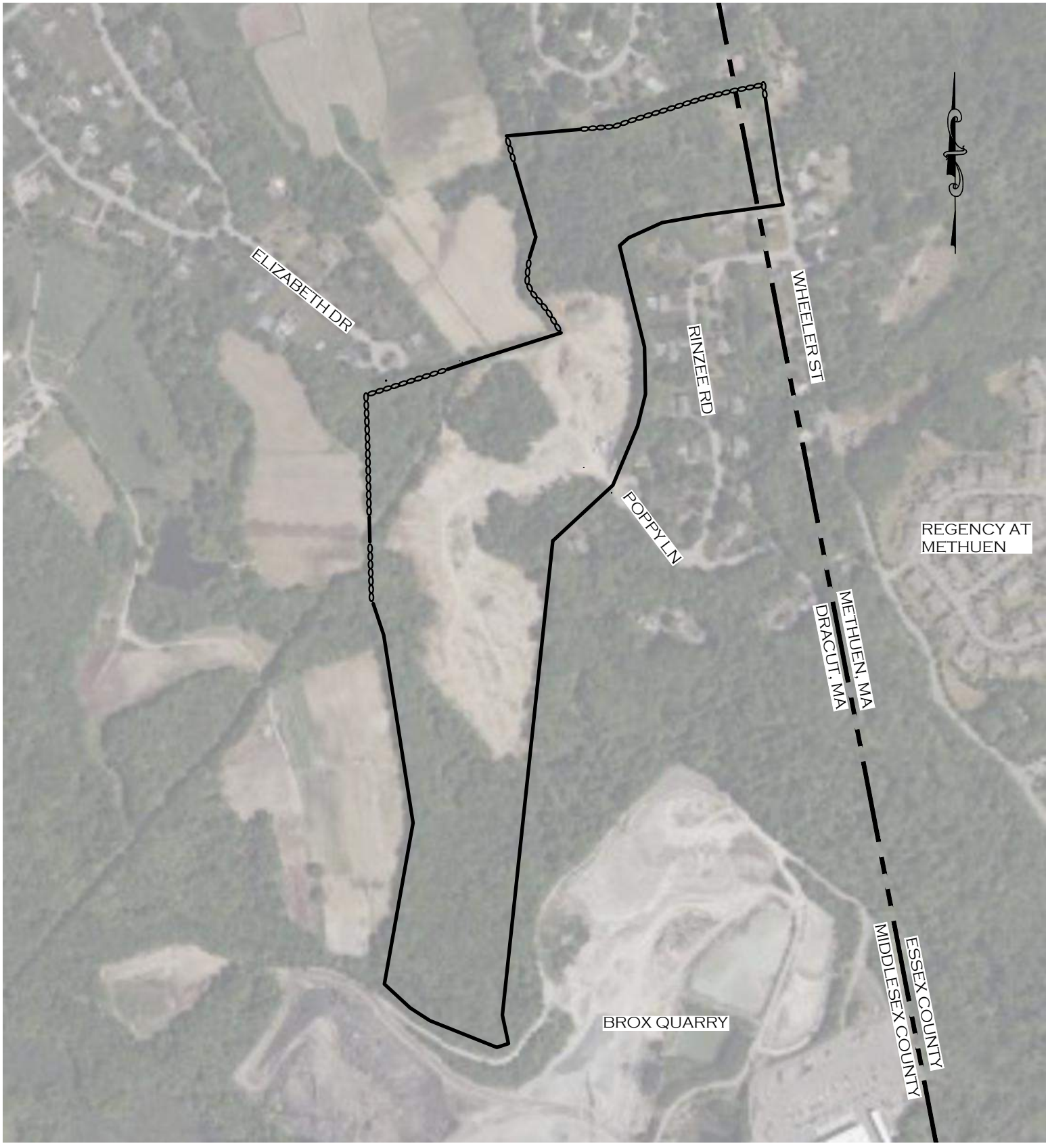
Design Point #8

	2-YR (3.12-IN)	10-YR (4.90-IN)	25-YR (6.02-IN)	100-YR (7.73-IN)
Pre-Development	0.0	0.0	0.1	0.4
Post-Development	0.0	0.0	0.1	0.4

METHODOLOGY

Drainage calculations were performed using the computer program HydroCAD by HydroCAD Software Solutions, LLC based upon Technical Release 20 (TR-20), developed by the NRCS. Drainage calculations were prepared for the 2-YR, 10-YR, 25-YR, and 100-YR Type III 24-hour storm events. Rainfall data corresponds with NOAA Atlas 14. Curve numbers were generated using the information provided in TR-55 and the SCS Soils Survey.

TAB 2



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PROJECT:
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18 CASSIMERE STREET
ANDOVER, MA 01810

PREPARED FOR:
MURPHY'S FARM
DRACUT, MA 01826

FIGURE 1: ORTHO

PREPARED BY: TJS
SCALE: 1"=500'
CDCI FILE #: 23-10524
DATE: MARCH 29, 2024

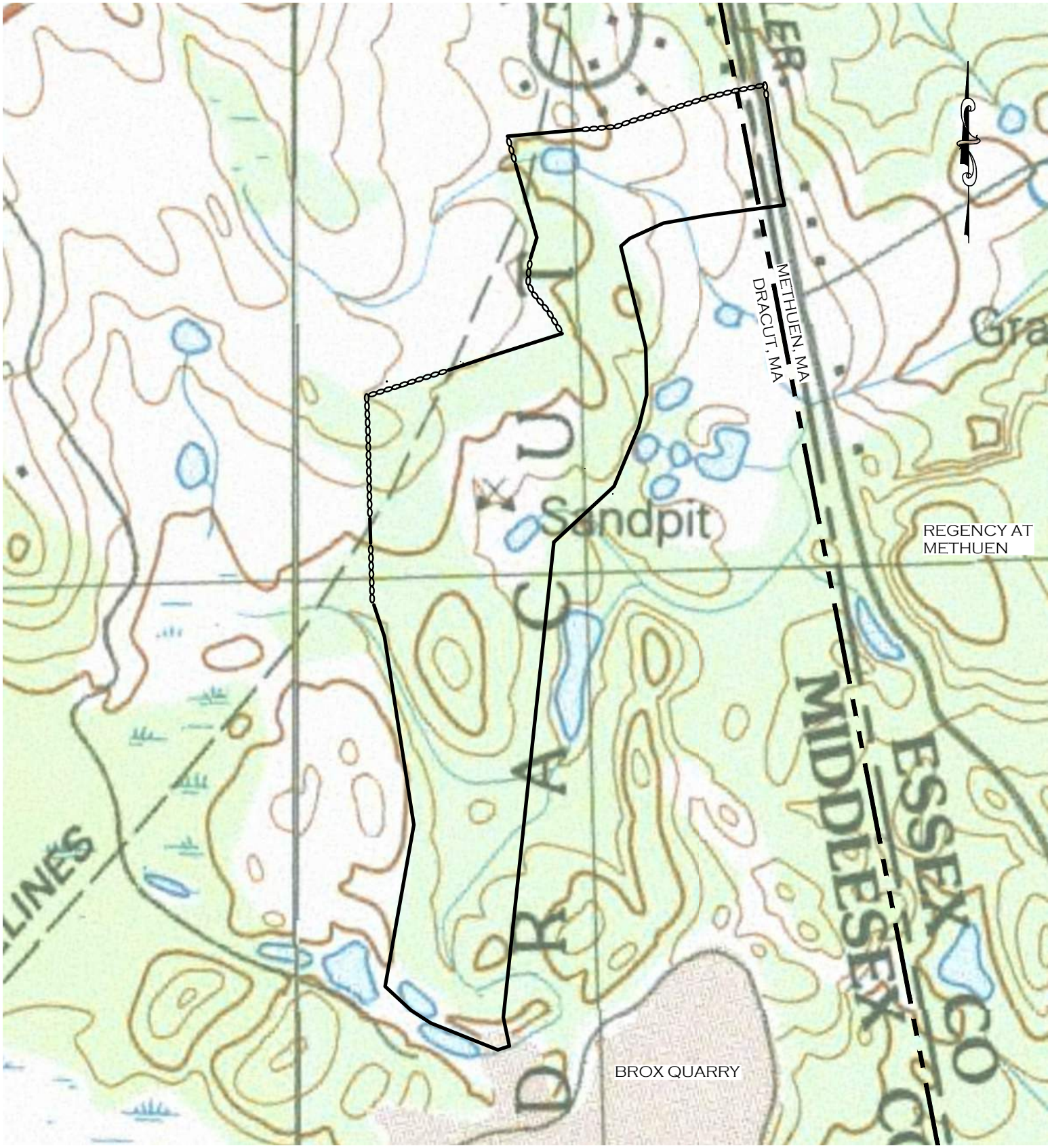

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FIGURE 2: USGS

PREPARED BY: TJS
SCALE: 1"=500'
CDCI FILE #: 23-10524
DATE: MARCH 29, 2024

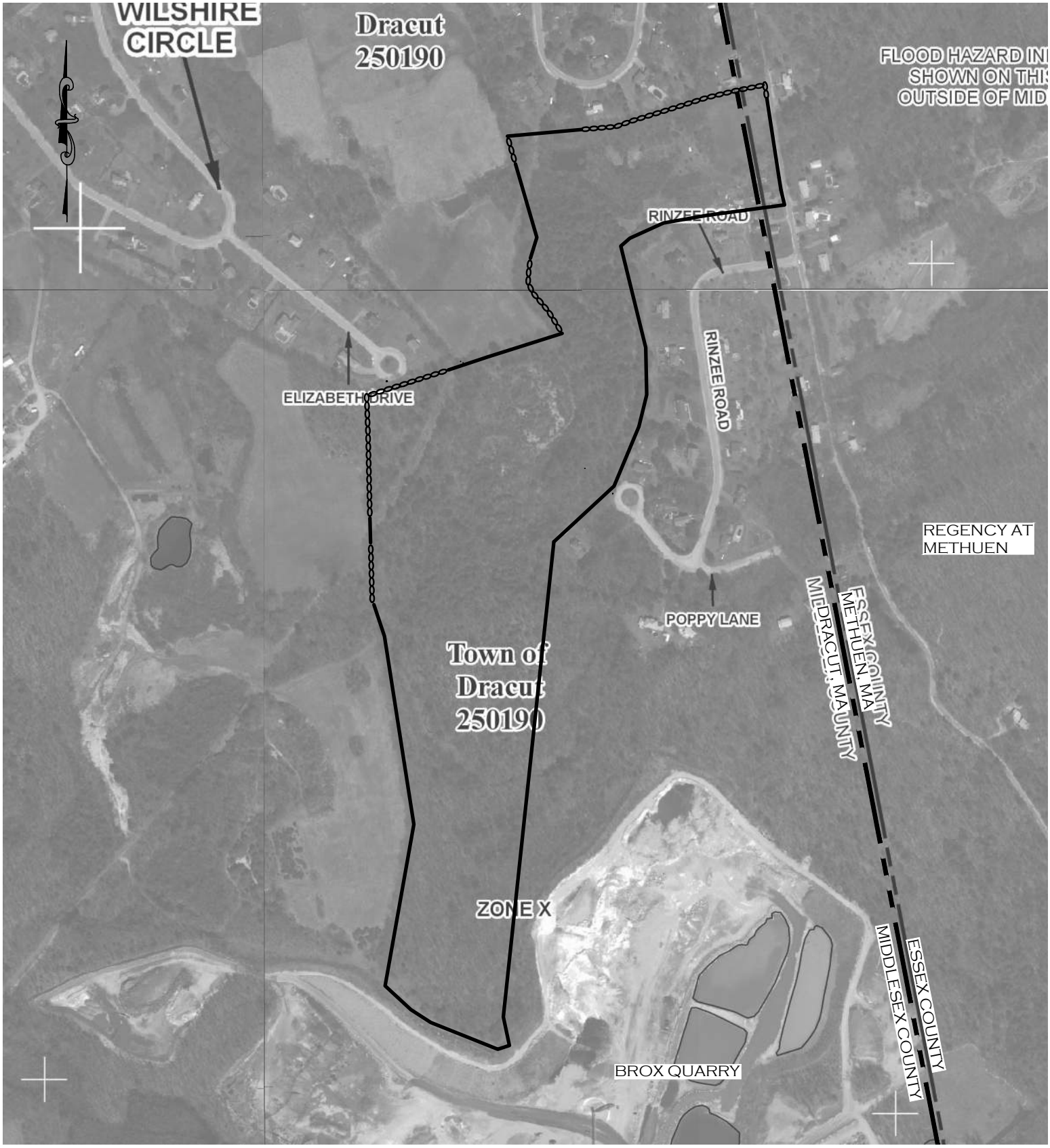

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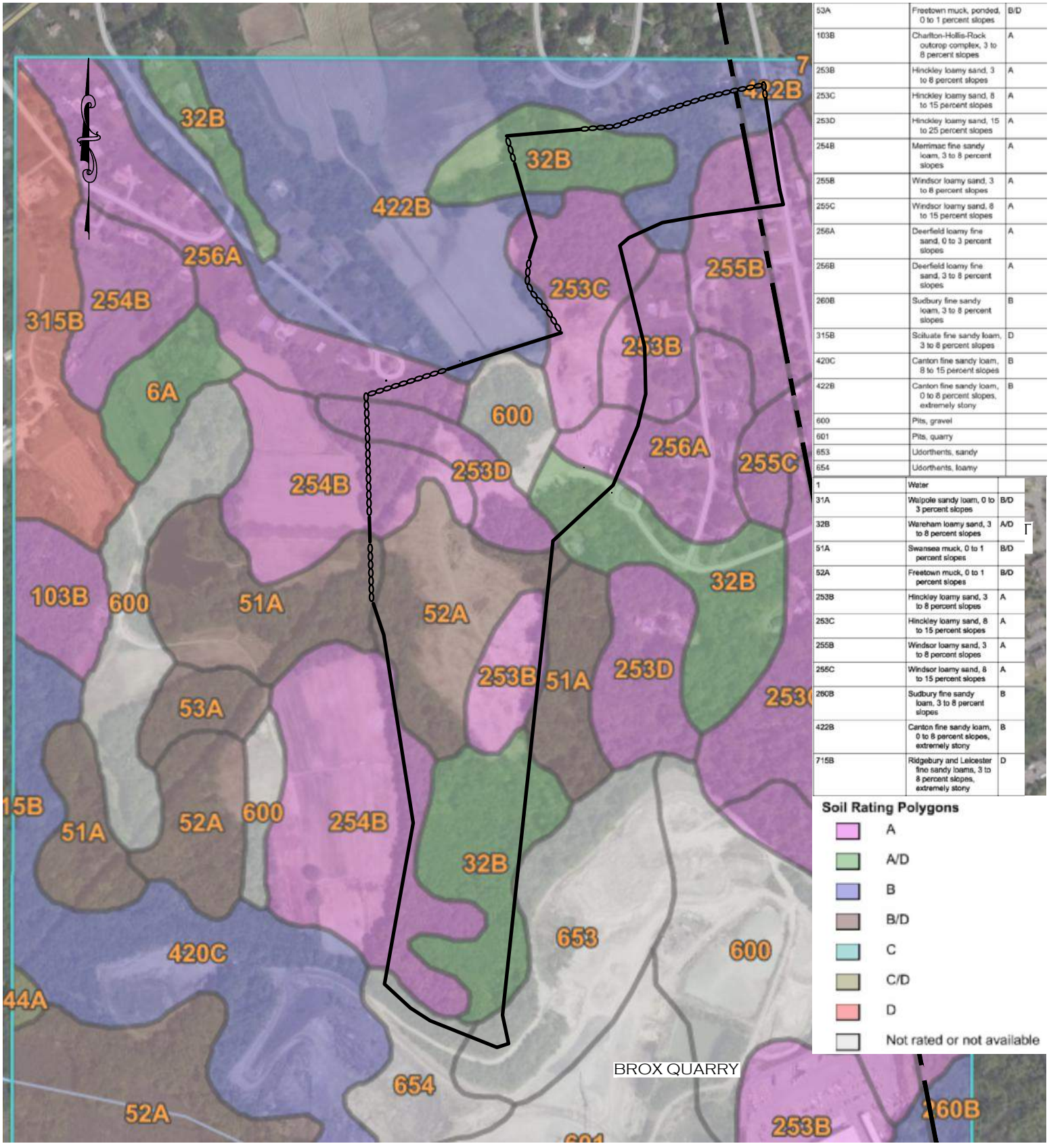
FIGURE 3: FEMA

PREPARED BY: TJS
SCALE: 1"=500'
CDCI FILE #: 23-10524
DATE: MARCH 29, 2024



53A	Freetown muck, ponded, 0 to 1 percent slopes	B/D
103B	Charlton-Hollis-Rock outcrop complex, 3 to 8 percent slopes	A
253B	Hinckley loamy sand, 3 to 8 percent slopes	A
253C	Hinckley loamy sand, 8 to 15 percent slopes	A
253D	Hinckley loamy sand, 15 to 25 percent slopes	A
254B	Merrimac fine sandy loam, 3 to 8 percent slopes	A
255B	Windsor loamy sand, 3 to 8 percent slopes	A
255C	Windsor loamy sand, 8 to 15 percent slopes	A
256A	Deerfield loamy fine sand, 0 to 3 percent slopes	A
256B	Deerfield loamy fine sand, 3 to 8 percent slopes	A
260B	Sudbury fine sandy loam, 3 to 8 percent slopes	B
315B	Scituate fine sandy loam, 3 to 8 percent slopes	D
420C	Canton fine sandy loam, 8 to 15 percent slopes	B
422B	Canton fine sandy loam, 0 to 8 percent slopes, extremely stony	B
600	Pits, gravel	
601	Pits, quarry	
653	Udorthents, sandy	
654	Udorthents, loamy	
1	Water	
31A	Walpole sandy loam, 0 to 3 percent slopes	B/D
32B	Wareham loamy sand, 3 to 8 percent slopes	A/D
51A	Swansea muck, 0 to 1 percent slopes	B/D
52A	Freetown muck, 0 to 1 percent slopes	B/D
253B	Hinckley loamy sand, 3 to 8 percent slopes	A
253C	Hinckley loamy sand, 8 to 15 percent slopes	A
255B	Windsor loamy sand, 3 to 8 percent slopes	A
255C	Windsor loamy sand, 8 to 15 percent slopes	A
260B	Sudbury fine sandy loam, 3 to 8 percent slopes	B
422B	Canton fine sandy loam, 0 to 8 percent slopes, extremely stony	B
715B	Ridgebury and Leicester fine sandy loams, 3 to 8 percent slopes, extremely stony	D

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FIGURE 4: SOILS

PREPARED BY: TJS
SCALE: 1"=500'
CDCI FILE #: 23-10524
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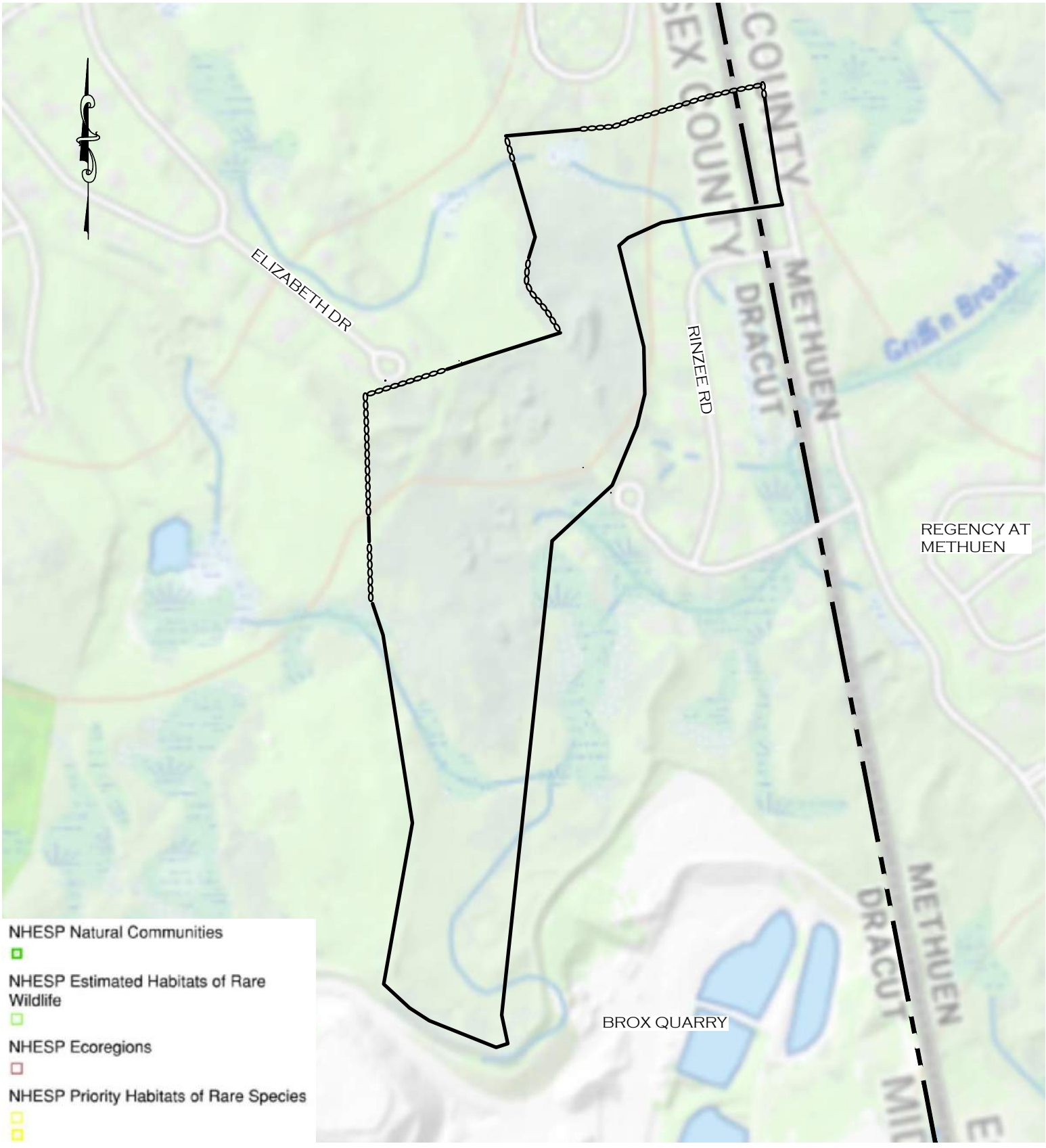

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FIGURE 5: NHESP

PREPARED BY: TJS
SCALE: 1"=500'
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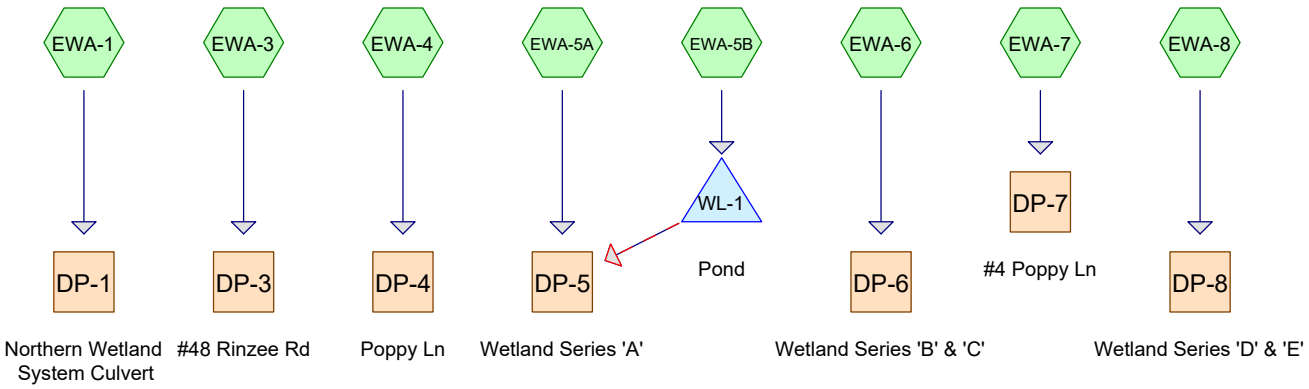
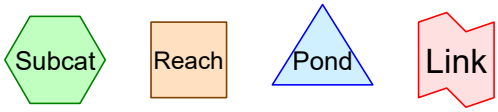
TAB 3





Routing Diagram for 23-10524 - Pre - R1
Prepared by Civil Design Consultants, Inc, Printed 10/2/2024

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.50	39	>75% Grass cover, Good, HSG A (EWA-1, EWA-5B)
0.50	61	>75% Grass cover, Good, HSG B (EWA-1, EWA-5B)
32.07	30	Woods, Good, HSG A (EWA-1, EWA-3, EWA-4, EWA-5A, EWA-5B, EWA-6, EWA-7, EWA-8)
1.27	55	Woods, Good, HSG B (EWA-1, EWA-5B)
35.34	**32**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
33.57	HSG A	EWA-1, EWA-3, EWA-4, EWA-5A, EWA-5B, EWA-6, EWA-7, EWA-8
1.77	HSG B	EWA-1, EWA-5B
0.00	HSG C	
0.00	HSG D	
0.00	Other	
35.34		**TOTAL AREA**

Time span=5.00-32.00 hrs, dt=0.05 hrs, 541 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentEWA-1: Runoff Area=5.11 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=400' Tc=13.7 min CN=37 Runoff=0.0 cfs 0.000 af

SubcatchmentEWA-3: Runoff Area=2.74 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=300' Tc=10.2 min CN=30 Runoff=0.0 cfs 0.000 af

SubcatchmentEWA-4: Runoff Area=2.77 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=788' Tc=28.1 min CN=30 Runoff=0.0 cfs 0.000 af

SubcatchmentEWA-5A: Runoff Area=1.14 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=323' Tc=14.9 min CN=30 Runoff=0.0 cfs 0.000 af

SubcatchmentEWA-5B: Runoff Area=10.52 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=715' Tc=19.5 min CN=33 Runoff=0.0 cfs 0.000 af

SubcatchmentEWA-6: Runoff Area=2.34 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=611' Tc=16.2 min CN=30 Runoff=0.0 cfs 0.000 af

SubcatchmentEWA-7: Runoff Area=3.96 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=456' Tc=14.3 min CN=30 Runoff=0.0 cfs 0.000 af

SubcatchmentEWA-8: Runoff Area=6.76 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=320' Slope=0.0100 '/' Tc=24.8 min CN=30 Runoff=0.0 cfs 0.000 af

Reach DP-1: Northern Wetland System Culvert Inflow=0.0 cfs 0.000 af
Outflow=0.0 cfs 0.000 af

Reach DP-3: #48 Rinzee Rd Inflow=0.0 cfs 0.000 af
Outflow=0.0 cfs 0.000 af

Reach DP-4: Poppy Ln Inflow=0.0 cfs 0.000 af
Outflow=0.0 cfs 0.000 af

Reach DP-5: Wetland Series 'A' Inflow=0.0 cfs 0.000 af
Outflow=0.0 cfs 0.000 af

Reach DP-6: Wetland Series 'B' & 'C' Inflow=0.0 cfs 0.000 af
Outflow=0.0 cfs 0.000 af

Reach DP-7: #4 Poppy Ln Inflow=0.0 cfs 0.000 af
Outflow=0.0 cfs 0.000 af

Reach DP-8: Wetland Series 'D' & 'E' Inflow=0.0 cfs 0.000 af
Outflow=0.0 cfs 0.000 af

Pond WL-1: Pond Peak Elev=136.00' Storage=0 cf Inflow=0.0 cfs 0.000 af
Primary=0.0 cfs 0.000 af Secondary=0.0 cfs 0.000 af Outflow=0.0 cfs 0.000 af

Total Runoff Area = 35.34 ac Runoff Volume = 0.000 af Average Runoff Depth = 0.00"
100.00% Pervious = 35.34 ac 0.00% Impervious = 0.00 ac

Summary for Subcatchment EWA-1:

[45] Hint: Runoff=Zero

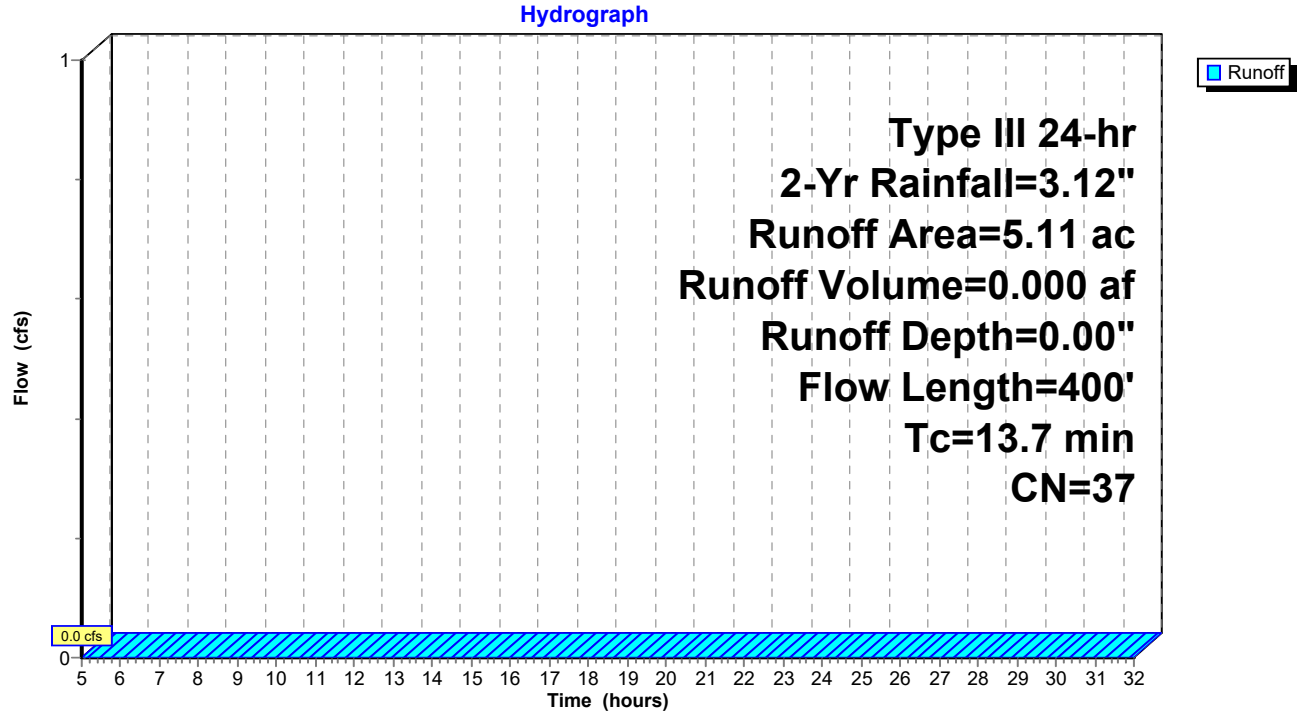
Runoff = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Reach DP-1 : Northern Wetland System Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Rainfall=3.12"

Area (ac)	CN	Description
0.34	61	>75% Grass cover, Good, HSG B
0.52	39	>75% Grass cover, Good, HSG A
3.49	30	Woods, Good, HSG A
0.76	55	Woods, Good, HSG B
5.11	37	Weighted Average
5.11		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	50	0.0650	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
6.2	350	0.0350	0.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.7	400	Total			

Subcatchment EWA-1:



Summary for Subcatchment EWA-3:

[45] Hint: Runoff=Zero

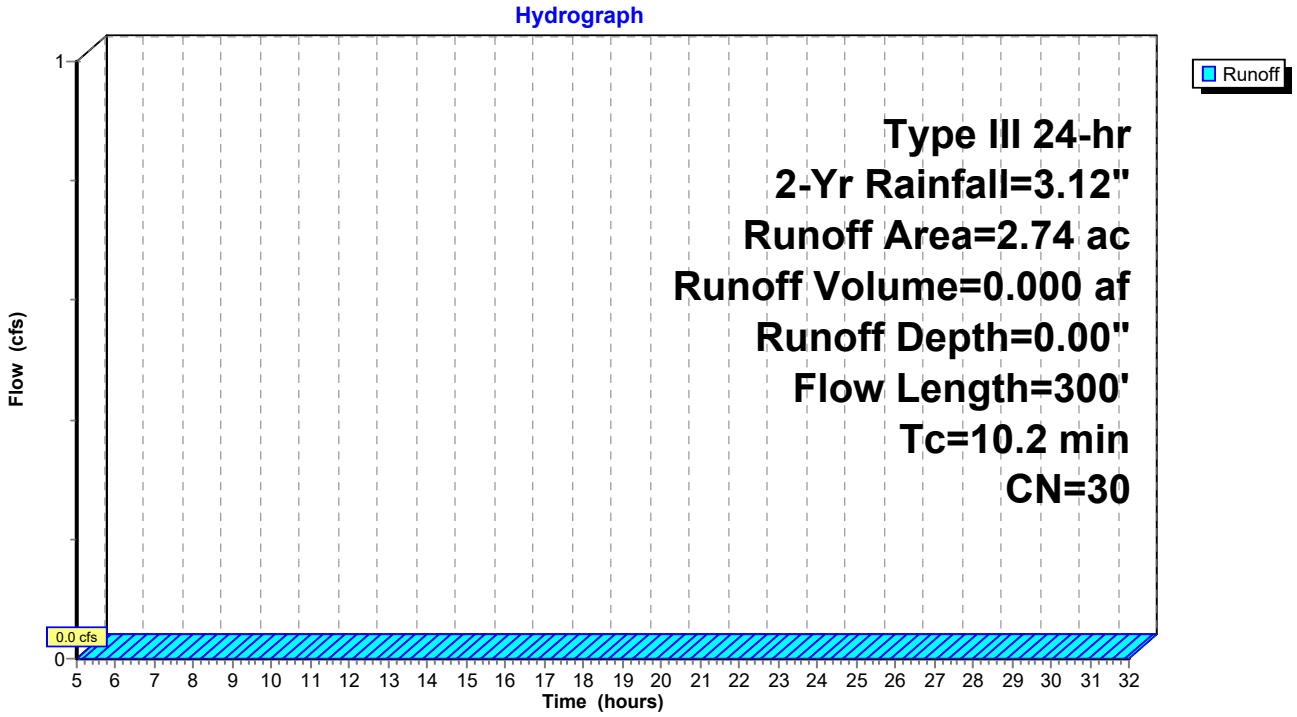
Runoff = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Reach DP-3 : #48 Rinzee Rd

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Rainfall=3.12"

Area (ac)	CN	Description
2.74	30	Woods, Good, HSG A
2.74		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	50	0.1000	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
3.9	250	0.0450	1.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.2	300	Total			

Subcatchment EWA-3:



Summary for Subcatchment EWA-4:

[45] Hint: Runoff=Zero

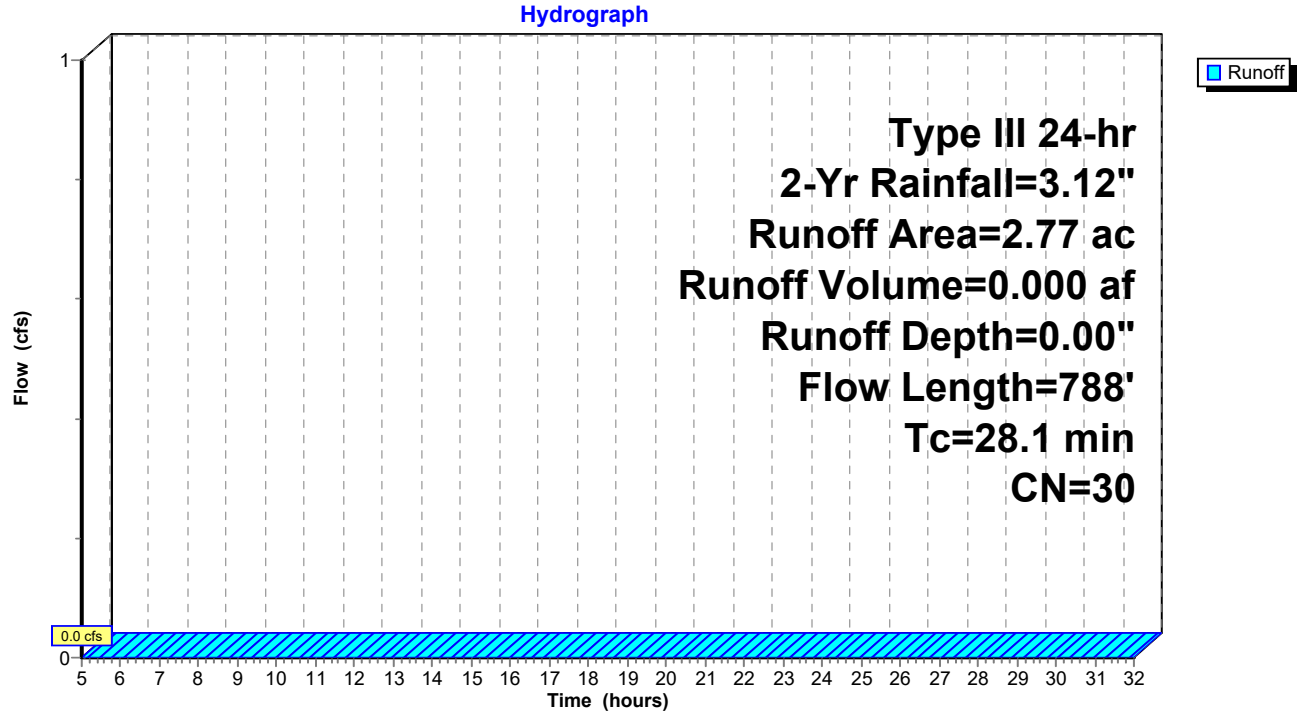
Runoff = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Reach DP-4 : Poppy Ln

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Rainfall=3.12"

Area (ac)	CN	Description
2.77	30	Woods, Good, HSG A
2.77		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	50	0.0600	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
4.5	250	0.0350	0.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.8	276	0.0072	0.42		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.1	212	0.0190	0.69		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
28.1	788	Total			

Subcatchment EWA-4:



Summary for Subcatchment EWA-5A:

[45] Hint: Runoff=Zero

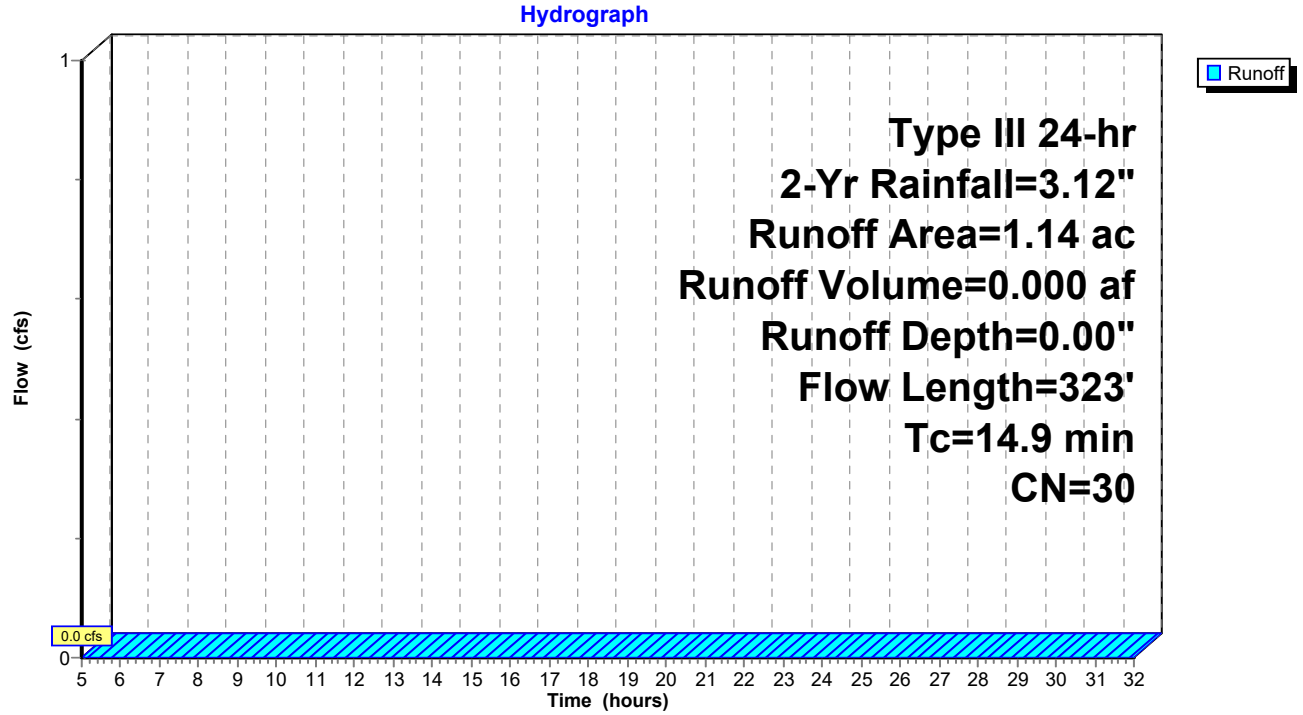
Runoff = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Reach DP-5 : Wetland Series 'A'

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Rainfall=3.12"

Area (ac)	CN	Description
1.14	30	Woods, Good, HSG A
1.14		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	50	0.0330	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
3.4	146	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	127	0.0620	1.24		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.9	323	Total			

Subcatchment EWA-5A:



Summary for Subcatchment EWA-5B:

[45] Hint: Runoff=Zero

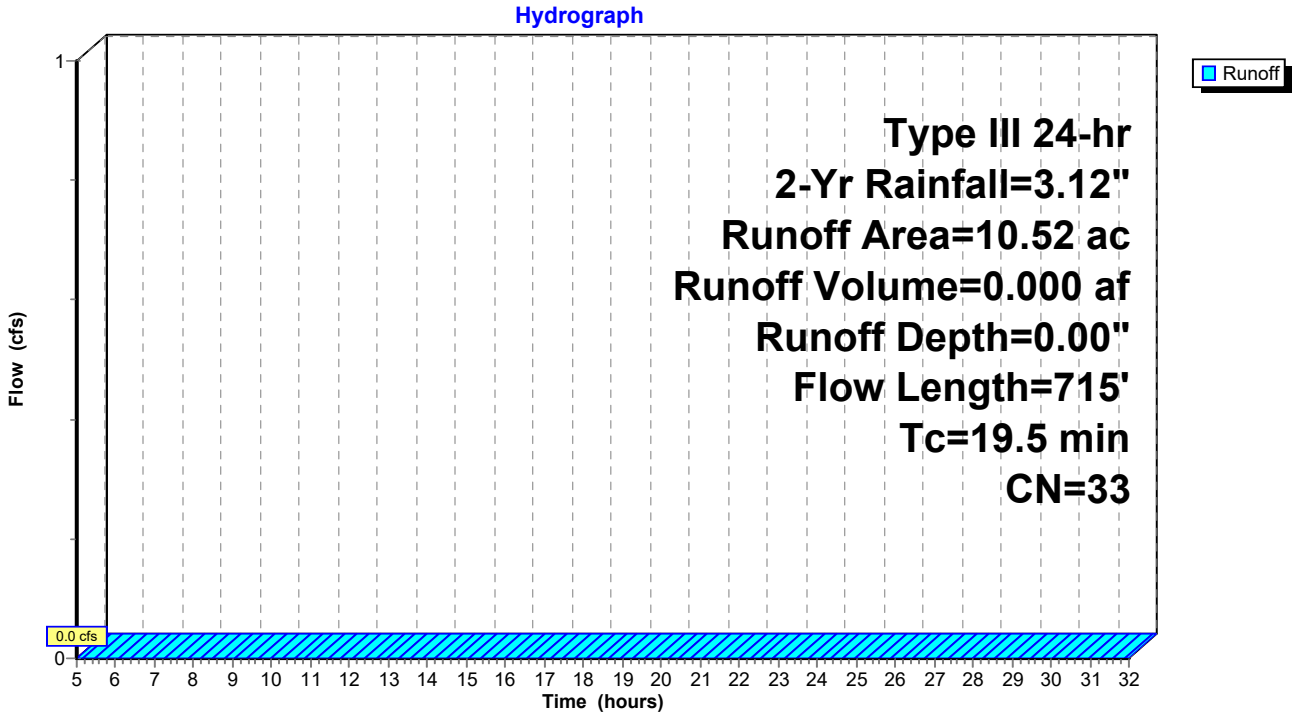
Runoff = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond WL-1 : Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Rainfall=3.12"

Area (ac)	CN	Description
8.87	30	Woods, Good, HSG A
0.51	55	Woods, Good, HSG B
0.98	39	>75% Grass cover, Good, HSG A
0.16	61	>75% Grass cover, Good, HSG B
10.52	33	Weighted Average
10.52		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	50	0.1000	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
5.2	251	0.0260	0.81		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.1	76	0.0520	1.14		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.1	168	0.0120	0.55		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.8	170	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.5	715	Total			

Subcatchment EWA-5B:



Summary for Subcatchment EWA-6:

[45] Hint: Runoff=Zero

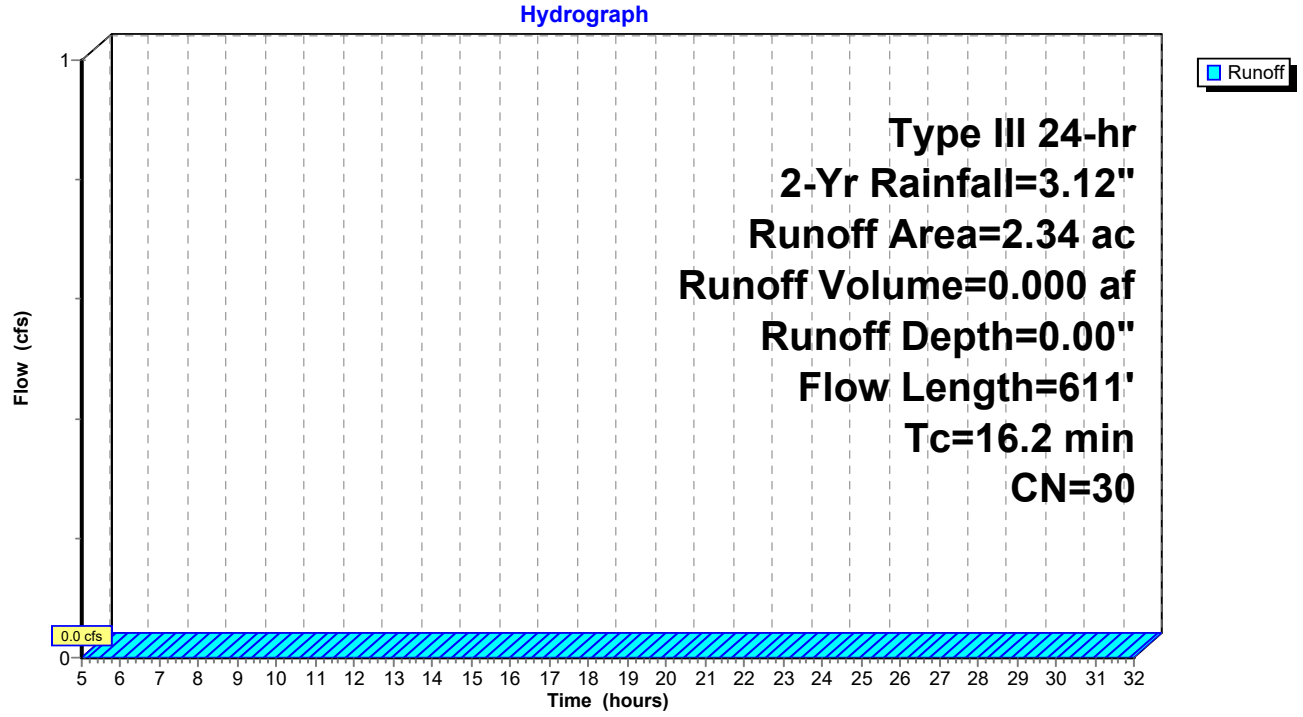
Runoff = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Reach DP-6 : Wetland Series 'B' & 'C'

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Rainfall=3.12"

Area (ac)	CN	Description
2.34	30	Woods, Good, HSG A
2.34		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	50	0.0800	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
5.8	282	0.0260	0.81		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.8	204	0.0590	1.21		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	75	0.1300	1.80		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
16.2	611	Total			

Subcatchment EWA-6:



Summary for Subcatchment EWA-7:

[45] Hint: Runoff=Zero

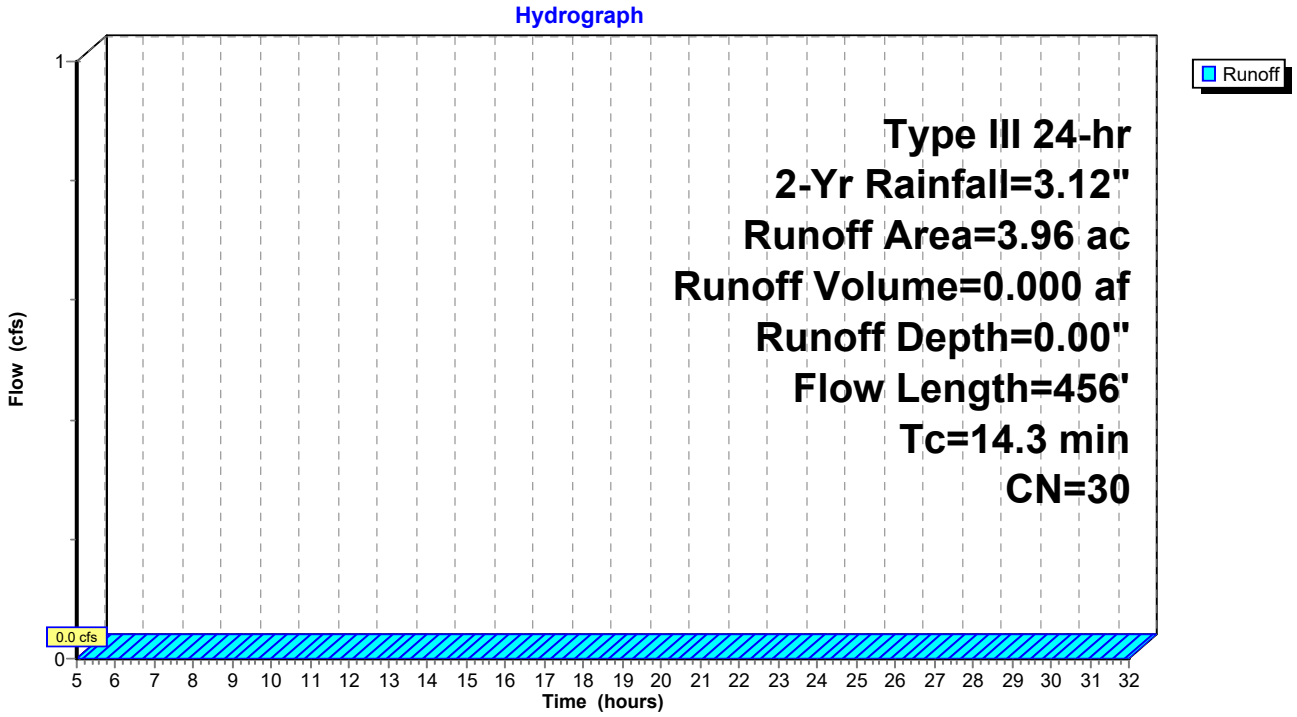
Runoff = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Reach DP-7 : #4 Poppy Ln

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Rainfall=3.12"

Area (ac)	CN	Description
3.96	30	Woods, Good, HSG A
3.96		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	50	0.0600	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
6.6	406	0.0420	1.02		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.3	456	Total			

Subcatchment EWA-7:



Summary for Subcatchment EWA-8:

[45] Hint: Runoff=Zero

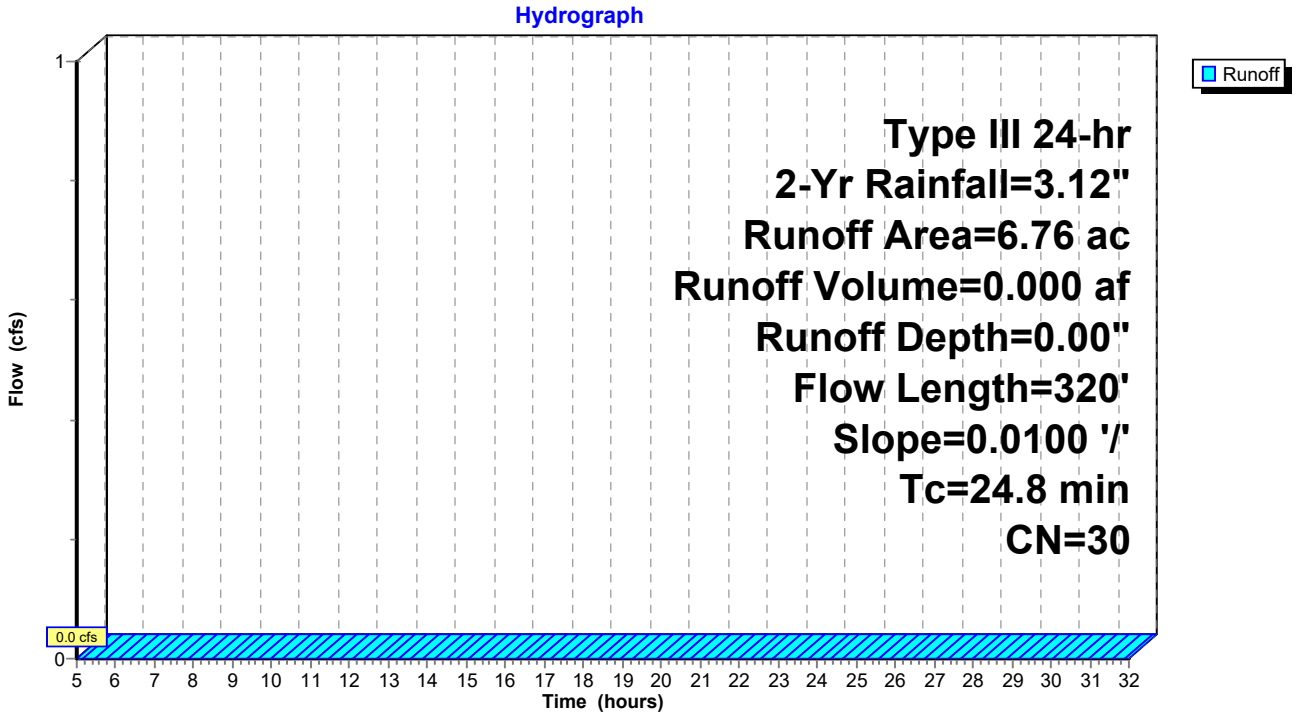
Runoff = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Reach DP-8 : Wetland Series 'D' & 'E'

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Rainfall=3.12"

Area (ac)	CN	Description
6.76	30	Woods, Good, HSG A
6.76		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.8	50	0.0100	0.05		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
9.0	270	0.0100	0.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
24.8	320	Total			

Subcatchment EWA-8:



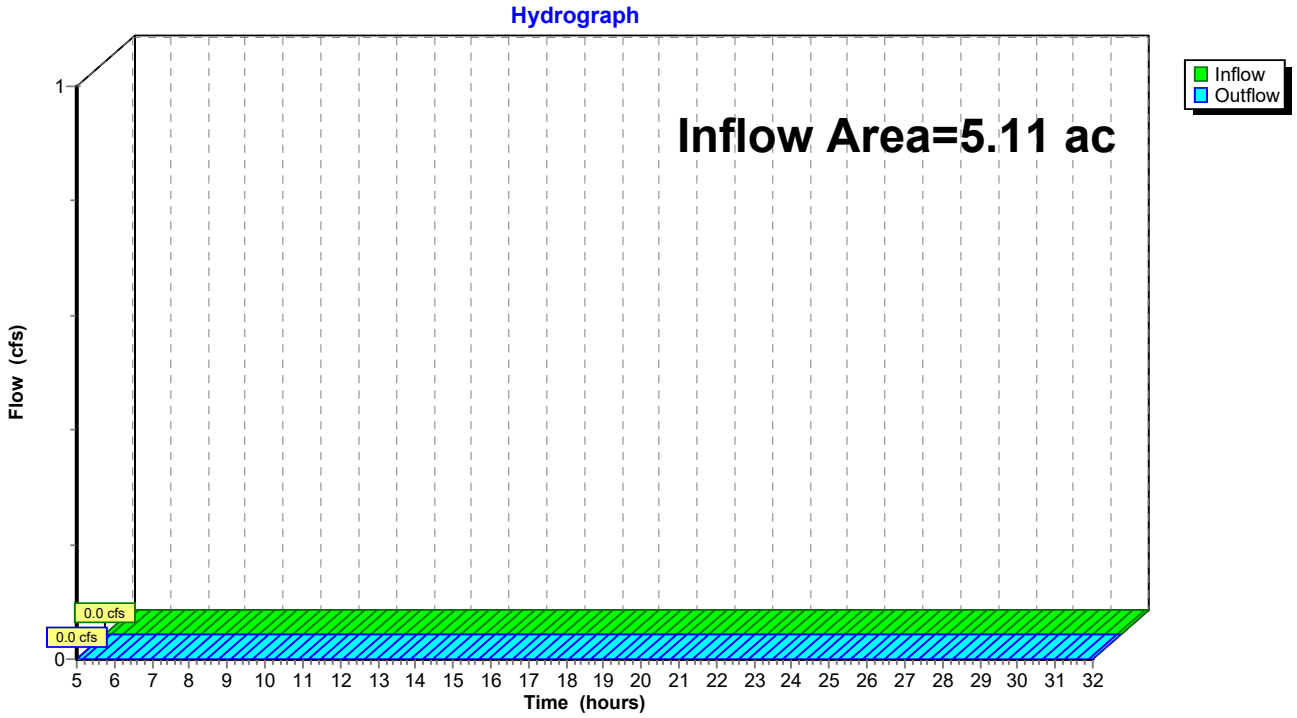
Summary for Reach DP-1: Northern Wetland System Culvert

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 5.11 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Yr event
Inflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Reach DP-1: Northern Wetland System Culvert



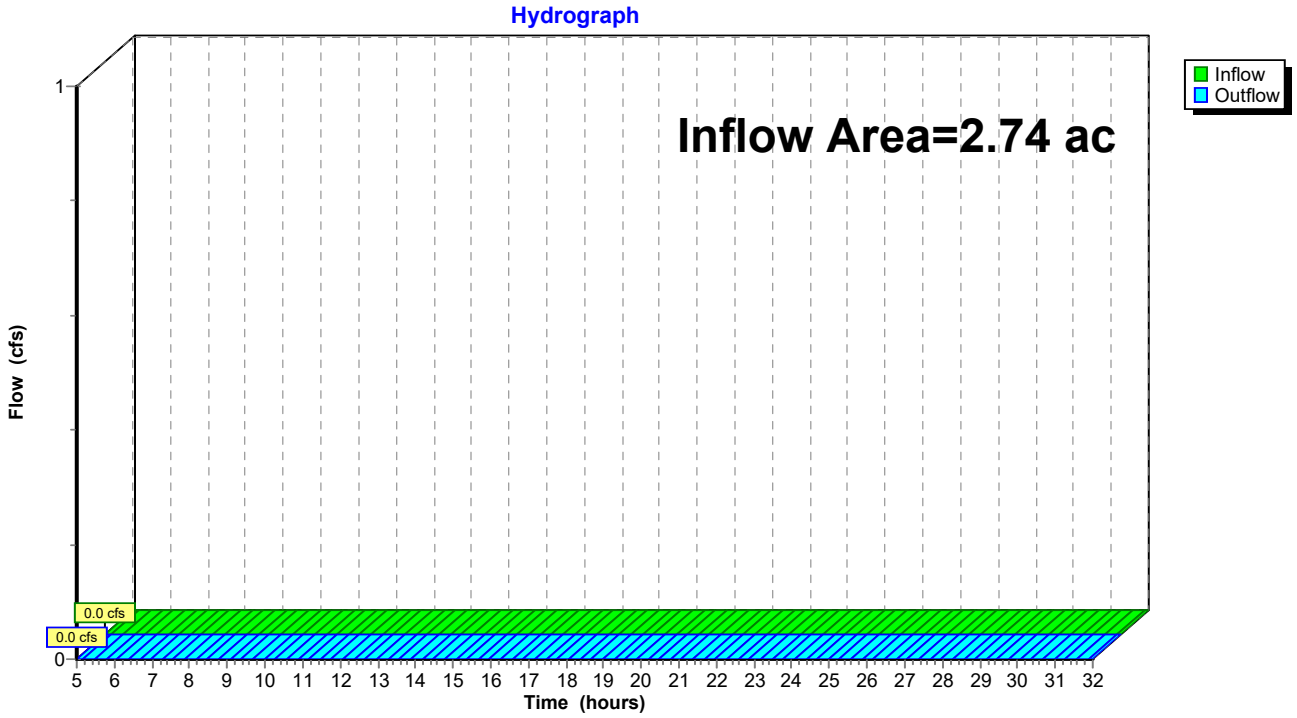
Summary for Reach DP-3: #48 Rinzee Rd

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 2.74 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Yr event
Inflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Reach DP-3: #48 Rinzee Rd



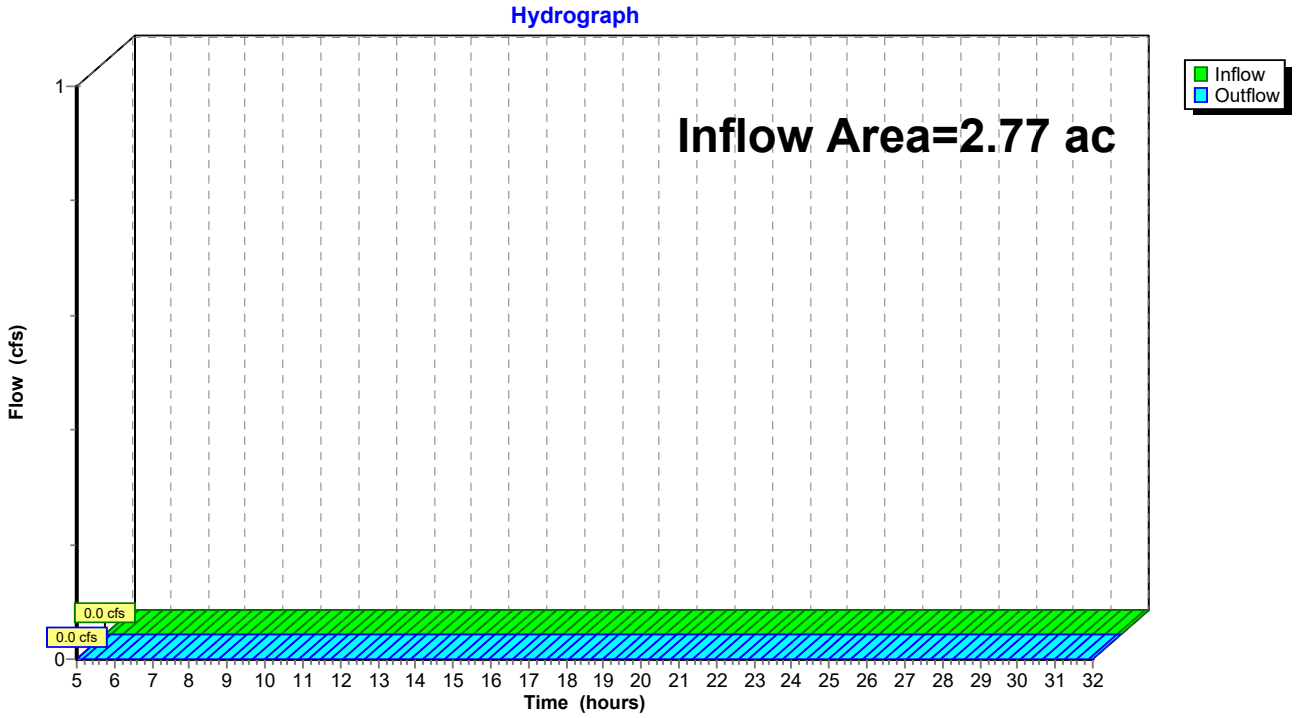
Summary for Reach DP-4: Poppy Ln

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 2.77 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Yr event
Inflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Reach DP-4: Poppy Ln



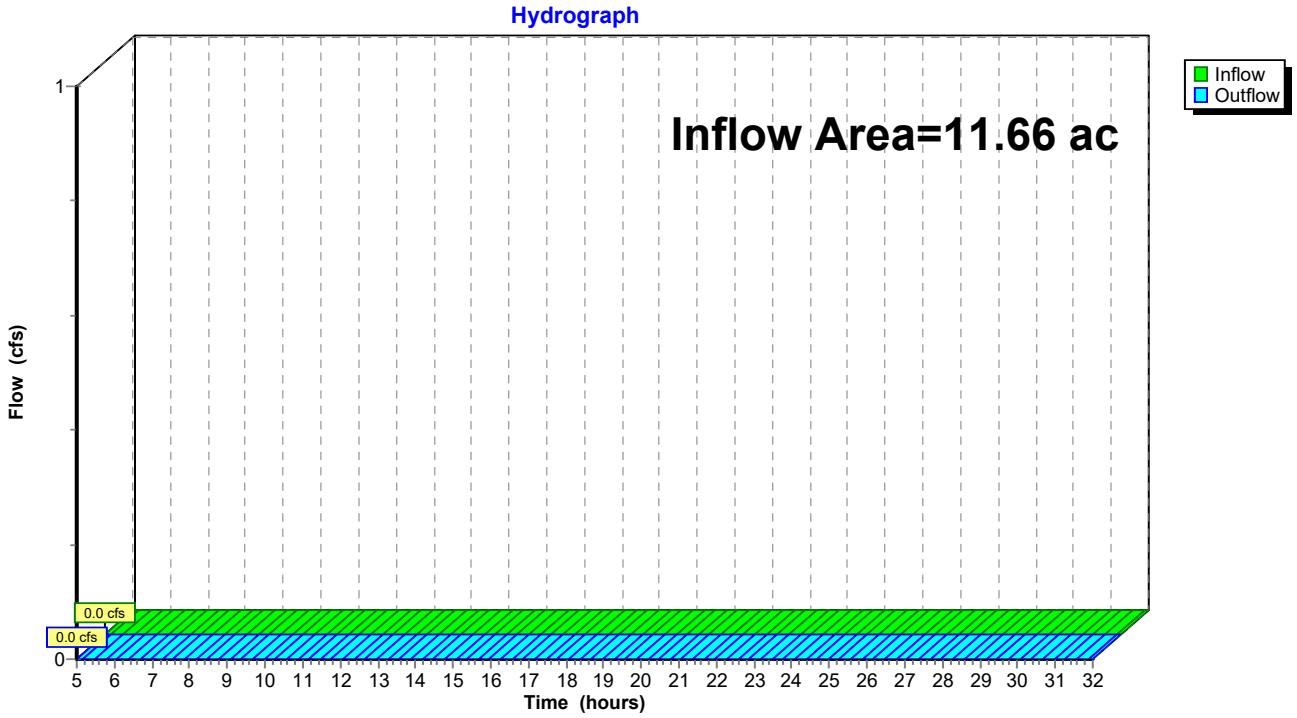
Summary for Reach DP-5: Wetland Series 'A'

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 11.66 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Yr event
Inflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Reach DP-5: Wetland Series 'A'



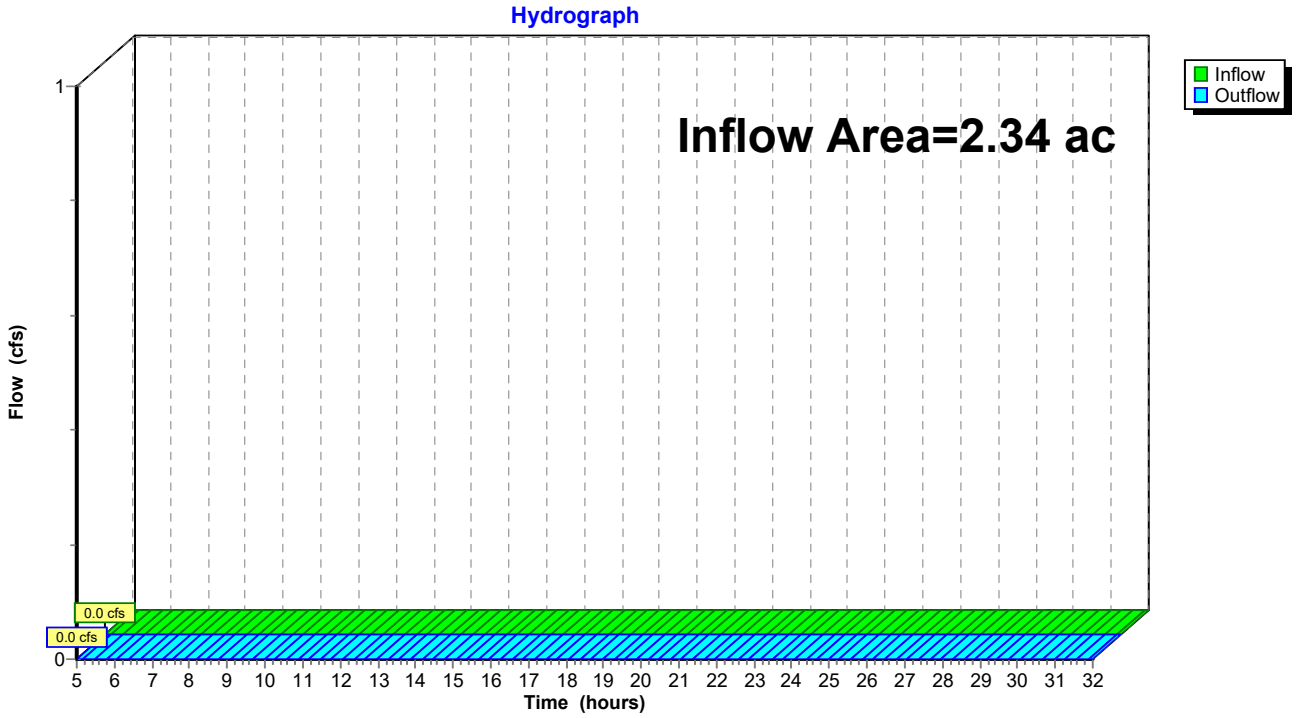
Summary for Reach DP-6: Wetland Series 'B' & 'C'

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 2.34 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Yr event
Inflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Reach DP-6: Wetland Series 'B' & 'C'



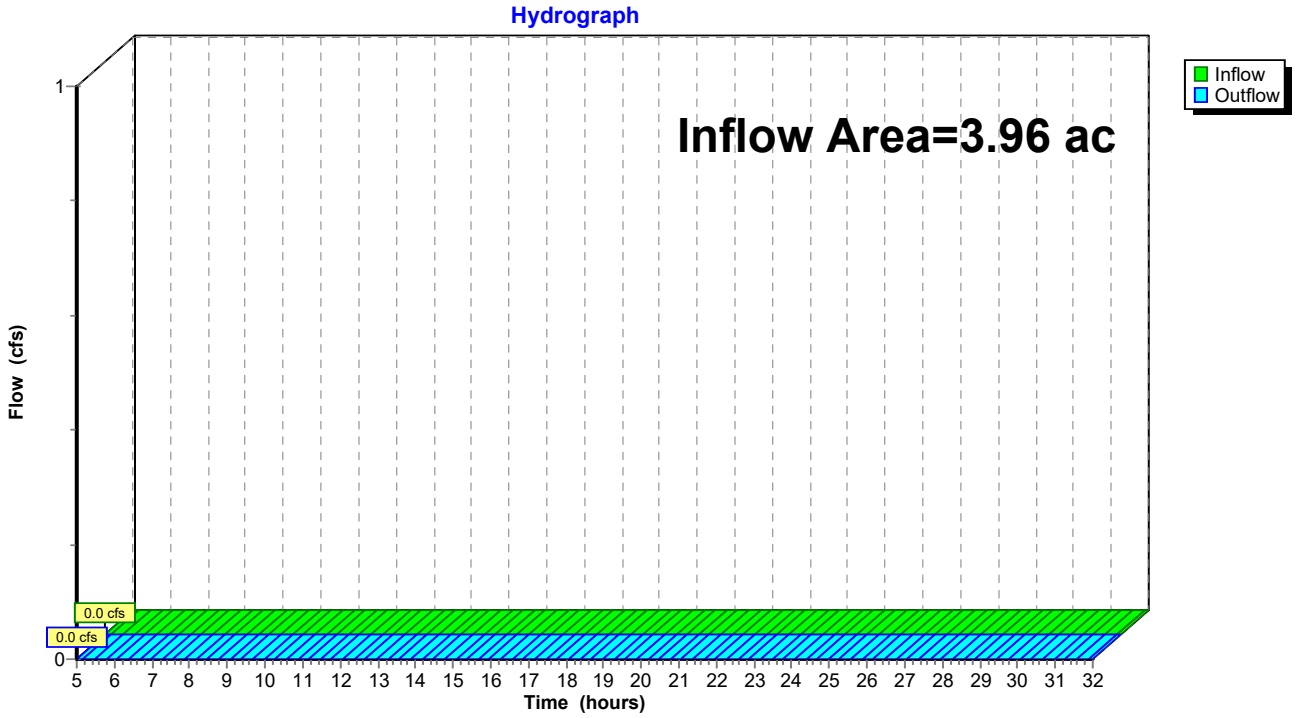
Summary for Reach DP-7: #4 Poppy Ln

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.96 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Yr event
Inflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Reach DP-7: #4 Poppy Ln



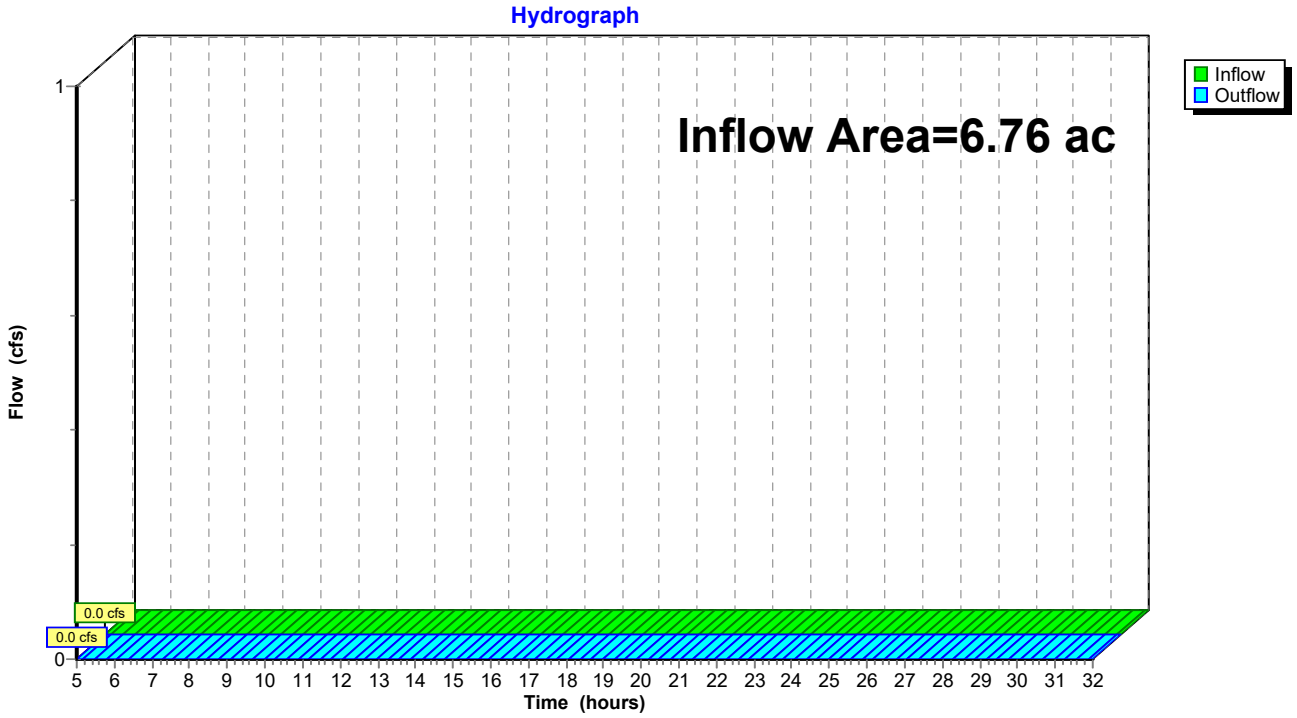
Summary for Reach DP-8: Wetland Series 'D' & 'E'

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 6.76 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Yr event
Inflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Reach DP-8: Wetland Series 'D' & 'E'



Summary for Pond WL-1: Pond

Inflow Area = 10.52 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Yr event
Inflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach DP-5 : Wetland Series 'A'
Secondary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach DP-5 : Wetland Series 'A'

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 136.00' @ 5.00 hrs Surf.Area= 219 sf Storage= 0 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	127,590 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

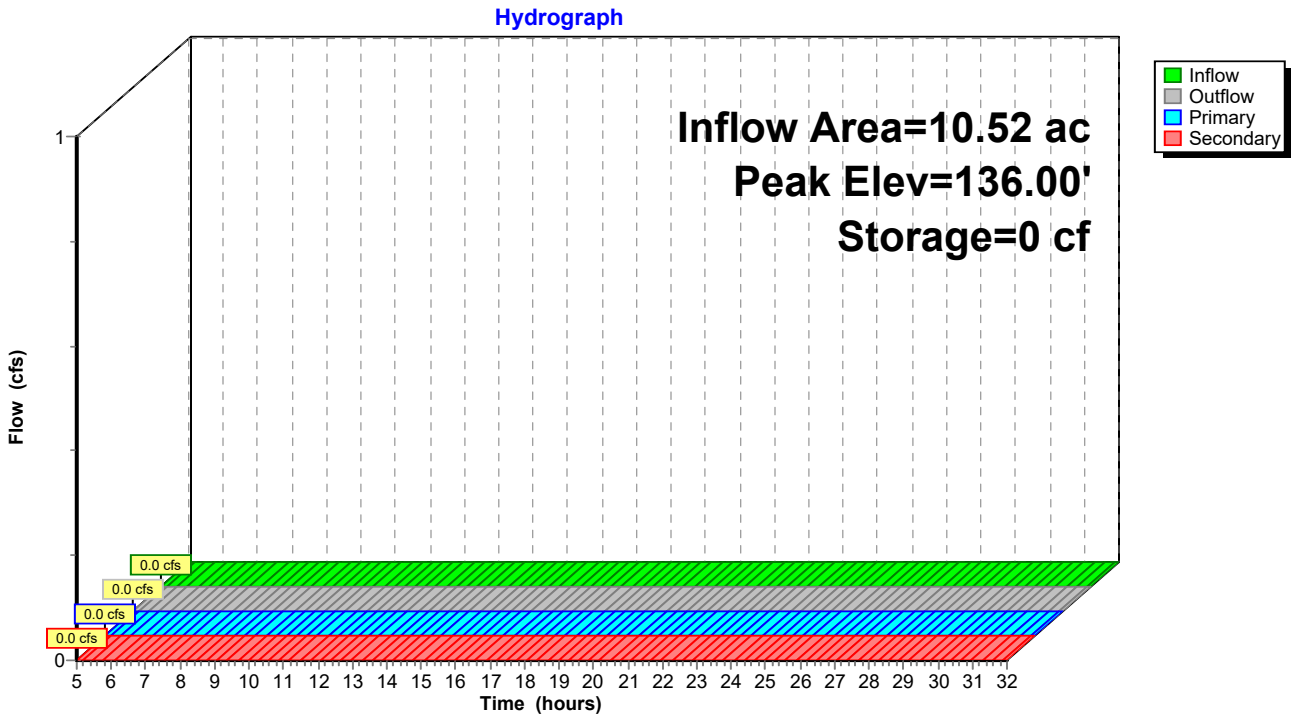
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
136.00	219	0	0
138.00	6,965	7,184	7,184
140.00	25,165	32,130	39,314
141.00	41,218	33,192	72,506
142.00	68,950	55,084	127,590

Device	Routing	Invert	Outlet Devices
#1	Primary	137.05'	**12.0" Round Culvert** L= 145.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 137.05' / 136.05' S= 0.0069 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Secondary	141.05'	**155.0' long x 35.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.0 cfs @ 5.00 hrs HW=136.00' (Free Discharge)
└**1=Culvert** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 5.00 hrs HW=136.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond WL-1: Pond



Summary for Subcatchment EWA-1:

Runoff = 0.1 cfs @ 14.82 hrs, Volume= 0.051 af, Depth= 0.12"
Routed to Reach DP-1 : Northern Wetland System Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=4.90"

Area (ac)	CN	Description
0.34	61	>75% Grass cover, Good, HSG B
0.52	39	>75% Grass cover, Good, HSG A
3.49	30	Woods, Good, HSG A
0.76	55	Woods, Good, HSG B
5.11	37	Weighted Average
5.11		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	50	0.0650	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
6.2	350	0.0350	0.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.7	400	Total			

Summary for Subcatchment EWA-3:

Runoff = 0.0 cfs @ 24.00 hrs, Volume= 0.001 af, Depth= 0.00"
Routed to Reach DP-3 : #48 Rinzee Rd

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=4.90"

Area (ac)	CN	Description
2.74	30	Woods, Good, HSG A
2.74		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	50	0.1000	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
3.9	250	0.0450	1.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.2	300	Total			

Summary for Subcatchment EWA-4:

Runoff = 0.0 cfs @ 24.04 hrs, Volume= 0.001 af, Depth= 0.00"
Routed to Reach DP-4 : Poppy Ln

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=4.90"

Area (ac)	CN	Description
2.77	30	Woods, Good, HSG A
2.77		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	50	0.0600	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
4.5	250	0.0350	0.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.8	276	0.0072	0.42		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.1	212	0.0190	0.69		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
28.1	788	Total			

Summary for Subcatchment EWA-5A:

Runoff = 0.0 cfs @ 23.99 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Reach DP-5 : Wetland Series 'A'

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=4.90"

Area (ac)	CN	Description
1.14	30	Woods, Good, HSG A
1.14		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	50	0.0330	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
3.4	146	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	127	0.0620	1.24		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.9	323	Total			

Summary for Subcatchment EWA-5B:

Runoff = 0.0 cfs @ 17.38 hrs, Volume= 0.029 af, Depth= 0.03"
Routed to Pond WL-1 : Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=4.90"

Area (ac)	CN	Description
8.87	30	Woods, Good, HSG A
0.51	55	Woods, Good, HSG B
0.98	39	>75% Grass cover, Good, HSG A
0.16	61	>75% Grass cover, Good, HSG B
10.52	33	Weighted Average
10.52		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	50	0.1000	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
5.2	251	0.0260	0.81		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.1	76	0.0520	1.14		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.1	168	0.0120	0.55		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.8	170	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.5	715	Total			

Summary for Subcatchment EWA-6:

Runoff = 0.0 cfs @ 23.99 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Reach DP-6 : Wetland Series 'B' & 'C'

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=4.90"

Area (ac)	CN	Description
2.34	30	Woods, Good, HSG A
2.34		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	50	0.0800	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
5.8	282	0.0260	0.81		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.8	204	0.0590	1.21		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	75	0.1300	1.80		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
16.2	611	Total			

Summary for Subcatchment EWA-7:

Runoff = 0.0 cfs @ 23.99 hrs, Volume= 0.001 af, Depth= 0.00"
Routed to Reach DP-7 : #4 Poppy Ln

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=4.90"

Area (ac)	CN	Description
3.96	30	Woods, Good, HSG A
3.96		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	50	0.0600	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
6.6	406	0.0420	1.02		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.3	456	Total			

Summary for Subcatchment EWA-8:

Runoff = 0.0 cfs @ 24.03 hrs, Volume= 0.001 af, Depth= 0.00"
Routed to Reach DP-8 : Wetland Series 'D' & 'E'

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=4.90"

Area (ac)	CN	Description
6.76	30	Woods, Good, HSG A
6.76		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.8	50	0.0100	0.05		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
9.0	270	0.0100	0.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
24.8	320	Total			

Summary for Reach DP-1: Northern Wetland System Culvert

Inflow Area = 5.11 ac, 0.00% Impervious, Inflow Depth = 0.12" for 10-Yr event
Inflow = 0.1 cfs @ 14.82 hrs, Volume= 0.051 af
Outflow = 0.1 cfs @ 14.82 hrs, Volume= 0.051 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-3: #48 Rinzee Rd

Inflow Area = 2.74 ac, 0.00% Impervious, Inflow Depth = 0.00" for 10-Yr event
Inflow = 0.0 cfs @ 24.00 hrs, Volume= 0.001 af
Outflow = 0.0 cfs @ 24.00 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-4: Poppy Ln

Inflow Area = 2.77 ac, 0.00% Impervious, Inflow Depth = 0.00" for 10-Yr event
Inflow = 0.0 cfs @ 24.04 hrs, Volume= 0.001 af
Outflow = 0.0 cfs @ 24.04 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-5: Wetland Series 'A'

Inflow Area = 11.66 ac, 0.00% Impervious, Inflow Depth = 0.00" for 10-Yr event
Inflow = 0.0 cfs @ 23.99 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 23.99 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-6: Wetland Series 'B' & 'C'

Inflow Area = 2.34 ac, 0.00% Impervious, Inflow Depth = 0.00" for 10-Yr event
Inflow = 0.0 cfs @ 23.99 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 23.99 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-7: #4 Poppy Ln

Inflow Area = 3.96 ac, 0.00% Impervious, Inflow Depth = 0.00" for 10-Yr event
Inflow = 0.0 cfs @ 23.99 hrs, Volume= 0.001 af
Outflow = 0.0 cfs @ 23.99 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-8: Wetland Series 'D' & 'E'

Inflow Area = 6.76 ac, 0.00% Impervious, Inflow Depth = 0.00" for 10-Yr event
Inflow = 0.0 cfs @ 24.03 hrs, Volume= 0.001 af
Outflow = 0.0 cfs @ 24.03 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Pond WL-1: Pond

Inflow Area = 10.52 ac, 0.00% Impervious, Inflow Depth = 0.03" for 10-Yr event
Inflow = 0.0 cfs @ 17.38 hrs, Volume= 0.029 af
Outflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach DP-5 : Wetland Series 'A'
Secondary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach DP-5 : Wetland Series 'A'

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 136.81' @ 25.15 hrs Surf.Area= 2,937 sf Storage= 1,271 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	127,590 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
136.00	219	0	0
138.00	6,965	7,184	7,184
140.00	25,165	32,130	39,314
141.00	41,218	33,192	72,506
142.00	68,950	55,084	127,590

Device	Routing	Invert	Outlet Devices
#1	Primary	137.05'	**12.0" Round Culvert** L= 145.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 137.05' / 136.05' S= 0.0069 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Secondary	141.05'	**155.0' long x 35.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.0 cfs @ 5.00 hrs HW=136.00' (Free Discharge)
└**1=Culvert** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 5.00 hrs HW=136.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir**(Controls 0.0 cfs)

Summary for Subcatchment EWA-1:

Runoff = 0.5 cfs @ 12.51 hrs, Volume= 0.148 af, Depth= 0.35"
Routed to Reach DP-1 : Northern Wetland System Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Yr Rainfall=6.02"

Area (ac)	CN	Description
0.34	61	>75% Grass cover, Good, HSG B
0.52	39	>75% Grass cover, Good, HSG A
3.49	30	Woods, Good, HSG A
0.76	55	Woods, Good, HSG B
5.11	37	Weighted Average
5.11		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	50	0.0650	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
6.2	350	0.0350	0.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.7	400	Total			

Summary for Subcatchment EWA-3:

Runoff = 0.0 cfs @ 15.53 hrs, Volume= 0.017 af, Depth= 0.07"
Routed to Reach DP-3 : #48 Rinzee Rd

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Yr Rainfall=6.02"

Area (ac)	CN	Description
2.74	30	Woods, Good, HSG A
2.74		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	50	0.1000	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
3.9	250	0.0450	1.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.2	300	Total			

Summary for Subcatchment EWA-4:

Runoff = 0.0 cfs @ 15.82 hrs, Volume= 0.017 af, Depth= 0.07"
Routed to Reach DP-4 : Poppy Ln

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Yr Rainfall=6.02"

Area (ac)	CN	Description
2.77	30	Woods, Good, HSG A
2.77		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	50	0.0600	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
4.5	250	0.0350	0.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.8	276	0.0072	0.42		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.1	212	0.0190	0.69		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
28.1	788	Total			

Summary for Subcatchment EWA-5A:

Runoff = 0.0 cfs @ 15.61 hrs, Volume= 0.007 af, Depth= 0.07"
Routed to Reach DP-5 : Wetland Series 'A'

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Yr Rainfall=6.02"

Area (ac)	CN	Description
1.14	30	Woods, Good, HSG A
1.14		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	50	0.0330	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
3.4	146	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	127	0.0620	1.24		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.9	323	Total			

Summary for Subcatchment EWA-5B:

Runoff = 0.2 cfs @ 14.72 hrs, Volume= 0.151 af, Depth= 0.17"
Routed to Pond WL-1 : Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Yr Rainfall=6.02"

Area (ac)	CN	Description
8.87	30	Woods, Good, HSG A
0.51	55	Woods, Good, HSG B
0.98	39	>75% Grass cover, Good, HSG A
0.16	61	>75% Grass cover, Good, HSG B
10.52	33	Weighted Average
10.52		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	50	0.1000	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
5.2	251	0.0260	0.81		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.1	76	0.0520	1.14		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.1	168	0.0120	0.55		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.8	170	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.5	715	Total			

Summary for Subcatchment EWA-6:

Runoff = 0.0 cfs @ 15.63 hrs, Volume= 0.014 af, Depth= 0.07"
Routed to Reach DP-6 : Wetland Series 'B' & 'C'

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Yr Rainfall=6.02"

Area (ac)	CN	Description
2.34	30	Woods, Good, HSG A
2.34		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	50	0.0800	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
5.8	282	0.0260	0.81		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.8	204	0.0590	1.21		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	75	0.1300	1.80		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
16.2	611	Total			

Summary for Subcatchment EWA-7:

Runoff = 0.0 cfs @ 15.60 hrs, Volume= 0.024 af, Depth= 0.07"
Routed to Reach DP-7 : #4 Poppy Ln

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Yr Rainfall=6.02"

Area (ac)	CN	Description
3.96	30	Woods, Good, HSG A
3.96		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	50	0.0600	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
6.6	406	0.0420	1.02		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.3	456	Total			

Summary for Subcatchment EWA-8:

Runoff = 0.1 cfs @ 15.77 hrs, Volume= 0.042 af, Depth= 0.07"
Routed to Reach DP-8 : Wetland Series 'D' & 'E'

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Yr Rainfall=6.02"

Area (ac)	CN	Description
6.76	30	Woods, Good, HSG A
6.76		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.8	50	0.0100	0.05		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
9.0	270	0.0100	0.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
24.8	320	Total			

Summary for Reach DP-1: Northern Wetland System Culvert

Inflow Area = 5.11 ac, 0.00% Impervious, Inflow Depth = 0.35" for 25-Yr event
Inflow = 0.5 cfs @ 12.51 hrs, Volume= 0.148 af
Outflow = 0.5 cfs @ 12.51 hrs, Volume= 0.148 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-3: #48 Rinzee Rd

Inflow Area = 2.74 ac, 0.00% Impervious, Inflow Depth = 0.07" for 25-Yr event
Inflow = 0.0 cfs @ 15.53 hrs, Volume= 0.017 af
Outflow = 0.0 cfs @ 15.53 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-4: Poppy Ln

Inflow Area = 2.77 ac, 0.00% Impervious, Inflow Depth = 0.07" for 25-Yr event
Inflow = 0.0 cfs @ 15.82 hrs, Volume= 0.017 af
Outflow = 0.0 cfs @ 15.82 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-5: Wetland Series 'A'

Inflow Area = 11.66 ac, 0.00% Impervious, Inflow Depth > 0.11" for 25-Yr event
Inflow = 0.2 cfs @ 17.74 hrs, Volume= 0.108 af
Outflow = 0.2 cfs @ 17.74 hrs, Volume= 0.108 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-6: Wetland Series 'B' & 'C'

Inflow Area = 2.34 ac, 0.00% Impervious, Inflow Depth = 0.07" for 25-Yr event
Inflow = 0.0 cfs @ 15.63 hrs, Volume= 0.014 af
Outflow = 0.0 cfs @ 15.63 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-7: #4 Poppy Ln

Inflow Area = 3.96 ac, 0.00% Impervious, Inflow Depth = 0.07" for 25-Yr event
Inflow = 0.0 cfs @ 15.60 hrs, Volume= 0.024 af
Outflow = 0.0 cfs @ 15.60 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-8: Wetland Series 'D' & 'E'

Inflow Area = 6.76 ac, 0.00% Impervious, Inflow Depth = 0.07" for 25-Yr event
Inflow = 0.1 cfs @ 15.77 hrs, Volume= 0.042 af
Outflow = 0.1 cfs @ 15.77 hrs, Volume= 0.042 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Pond WL-1: Pond

Inflow Area = 10.52 ac, 0.00% Impervious, Inflow Depth = 0.17" for 25-Yr event
Inflow = 0.2 cfs @ 14.72 hrs, Volume= 0.151 af
Outflow = 0.2 cfs @ 17.77 hrs, Volume= 0.101 af, Atten= 36%, Lag= 183.3 min
Primary = 0.2 cfs @ 17.77 hrs, Volume= 0.101 af
Routed to Reach DP-5 : Wetland Series 'A'
Secondary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach DP-5 : Wetland Series 'A'

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 137.25' @ 17.77 hrs Surf.Area= 4,445 sf Storage= 2,921 cf

Plug-Flow detention time= 306.2 min calculated for 0.100 af (66% of inflow)
Center-of-Mass det. time= 189.2 min (1,241.7 - 1,052.4)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	127,590 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
136.00	219	0	0
138.00	6,965	7,184	7,184
140.00	25,165	32,130	39,314
141.00	41,218	33,192	72,506
142.00	68,950	55,084	127,590

Device	Routing	Invert	Outlet Devices
#1	Primary	137.05'	**12.0" Round Culvert** L= 145.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 137.05' / 136.05' S= 0.0069 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Secondary	141.05'	**155.0' long x 35.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.2 cfs @ 17.77 hrs HW=137.25' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.2 cfs @ 1.35 fps)

Secondary OutFlow Max=0.0 cfs @ 5.00 hrs HW=136.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Subcatchment EWA-1:

Runoff = 2.2 cfs @ 12.35 hrs, Volume= 0.373 af, Depth= 0.88"
Routed to Reach DP-1 : Northern Wetland System Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Rainfall=7.73"

Area (ac)	CN	Description
0.34	61	>75% Grass cover, Good, HSG B
0.52	39	>75% Grass cover, Good, HSG A
3.49	30	Woods, Good, HSG A
0.76	55	Woods, Good, HSG B
5.11	37	Weighted Average
5.11		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5	50	0.0650	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
6.2	350	0.0350	0.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
13.7	400	Total			

Summary for Subcatchment EWA-3:

Runoff = 0.2 cfs @ 12.51 hrs, Volume= 0.081 af, Depth= 0.36"
Routed to Reach DP-3 : #48 Rinzee Rd

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Rainfall=7.73"

Area (ac)	CN	Description
2.74	30	Woods, Good, HSG A
2.74		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	50	0.1000	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
3.9	250	0.0450	1.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.2	300	Total			

Summary for Subcatchment EWA-4:

Runoff = 0.2 cfs @ 12.87 hrs, Volume= 0.082 af, Depth= 0.36"
Routed to Reach DP-4 : Poppy Ln

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Rainfall=7.73"

Area (ac)	CN	Description
2.77	30	Woods, Good, HSG A
2.77		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	50	0.0600	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
4.5	250	0.0350	0.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.8	276	0.0072	0.42		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.1	212	0.0190	0.69		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
28.1	788	Total			

Summary for Subcatchment EWA-5A:

Runoff = 0.1 cfs @ 12.59 hrs, Volume= 0.034 af, Depth= 0.36"
Routed to Reach DP-5 : Wetland Series 'A'

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Rainfall=7.73"

Area (ac)	CN	Description
1.14	30	Woods, Good, HSG A
1.14		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	50	0.0330	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
3.4	146	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	127	0.0620	1.24		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.9	323	Total			

Summary for Subcatchment EWA-5B:

Runoff = 1.9 cfs @ 12.55 hrs, Volume= 0.492 af, Depth= 0.56"
Routed to Pond WL-1 : Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Rainfall=7.73"

Area (ac)	CN	Description
8.87	30	Woods, Good, HSG A
0.51	55	Woods, Good, HSG B
0.98	39	>75% Grass cover, Good, HSG A
0.16	61	>75% Grass cover, Good, HSG B
10.52	33	Weighted Average
10.52		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	50	0.1000	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
5.2	251	0.0260	0.81		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.1	76	0.0520	1.14		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.1	168	0.0120	0.55		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.8	170	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.5	715	Total			

Summary for Subcatchment EWA-6:

Runoff = 0.2 cfs @ 12.61 hrs, Volume= 0.069 af, Depth= 0.36"
Routed to Reach DP-6 : Wetland Series 'B' & 'C'

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Rainfall=7.73"

Area (ac)	CN	Description
2.34	30	Woods, Good, HSG A
2.34		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	50	0.0800	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
5.8	282	0.0260	0.81		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.8	204	0.0590	1.21		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.7	75	0.1300	1.80		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
16.2	611	Total			

Summary for Subcatchment EWA-7:

Runoff = 0.3 cfs @ 12.57 hrs, Volume= 0.117 af, Depth= 0.36"
Routed to Reach DP-7 : #4 Poppy Ln

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Rainfall=7.73"

Area (ac)	CN	Description
3.96	30	Woods, Good, HSG A
3.96		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	50	0.0600	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
6.6	406	0.0420	1.02		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.3	456	Total			

Summary for Subcatchment EWA-8:

Runoff = 0.4 cfs @ 12.78 hrs, Volume= 0.200 af, Depth= 0.36"
Routed to Reach DP-8 : Wetland Series 'D' & 'E'

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Rainfall=7.73"

Area (ac)	CN	Description
6.76	30	Woods, Good, HSG A
6.76		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.8	50	0.0100	0.05		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
9.0	270	0.0100	0.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
24.8	320	Total			

Summary for Reach DP-1: Northern Wetland System Culvert

Inflow Area = 5.11 ac, 0.00% Impervious, Inflow Depth = 0.88" for 100-Yr event
Inflow = 2.2 cfs @ 12.35 hrs, Volume= 0.373 af
Outflow = 2.2 cfs @ 12.35 hrs, Volume= 0.373 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-3: #48 Rinzee Rd

Inflow Area = 2.74 ac, 0.00% Impervious, Inflow Depth = 0.36" for 100-Yr event
Inflow = 0.2 cfs @ 12.51 hrs, Volume= 0.081 af
Outflow = 0.2 cfs @ 12.51 hrs, Volume= 0.081 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-4: Poppy Ln

Inflow Area = 2.77 ac, 0.00% Impervious, Inflow Depth = 0.36" for 100-Yr event
Inflow = 0.2 cfs @ 12.87 hrs, Volume= 0.082 af
Outflow = 0.2 cfs @ 12.87 hrs, Volume= 0.082 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-5: Wetland Series 'A'

Inflow Area = 11.66 ac, 0.00% Impervious, Inflow Depth > 0.49" for 100-Yr event
Inflow = 0.9 cfs @ 13.91 hrs, Volume= 0.475 af
Outflow = 0.9 cfs @ 13.91 hrs, Volume= 0.475 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-6: Wetland Series 'B' & 'C'

Inflow Area = 2.34 ac, 0.00% Impervious, Inflow Depth = 0.36" for 100-Yr event
Inflow = 0.2 cfs @ 12.61 hrs, Volume= 0.069 af
Outflow = 0.2 cfs @ 12.61 hrs, Volume= 0.069 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-7: #4 Poppy Ln

Inflow Area = 3.96 ac, 0.00% Impervious, Inflow Depth = 0.36" for 100-Yr event
Inflow = 0.3 cfs @ 12.57 hrs, Volume= 0.117 af
Outflow = 0.3 cfs @ 12.57 hrs, Volume= 0.117 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-8: Wetland Series 'D' & 'E'

Inflow Area = 6.76 ac, 0.00% Impervious, Inflow Depth = 0.36" for 100-Yr event
Inflow = 0.4 cfs @ 12.78 hrs, Volume= 0.200 af
Outflow = 0.4 cfs @ 12.78 hrs, Volume= 0.200 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Pond WL-1: Pond

Inflow Area = 10.52 ac, 0.00% Impervious, Inflow Depth = 0.56" for 100-Yr event
Inflow = 1.9 cfs @ 12.55 hrs, Volume= 0.492 af
Outflow = 0.8 cfs @ 13.93 hrs, Volume= 0.442 af, Atten= 57%, Lag= 82.8 min
Primary = 0.8 cfs @ 13.93 hrs, Volume= 0.442 af
Routed to Reach DP-5 : Wetland Series 'A'
Secondary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach DP-5 : Wetland Series 'A'

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 137.55' @ 13.93 hrs Surf.Area= 5,442 sf Storage= 4,382 cf

Plug-Flow detention time= 125.6 min calculated for 0.441 af (90% of inflow)
Center-of-Mass det. time= 80.5 min (1,054.2 - 973.7)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	127,590 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

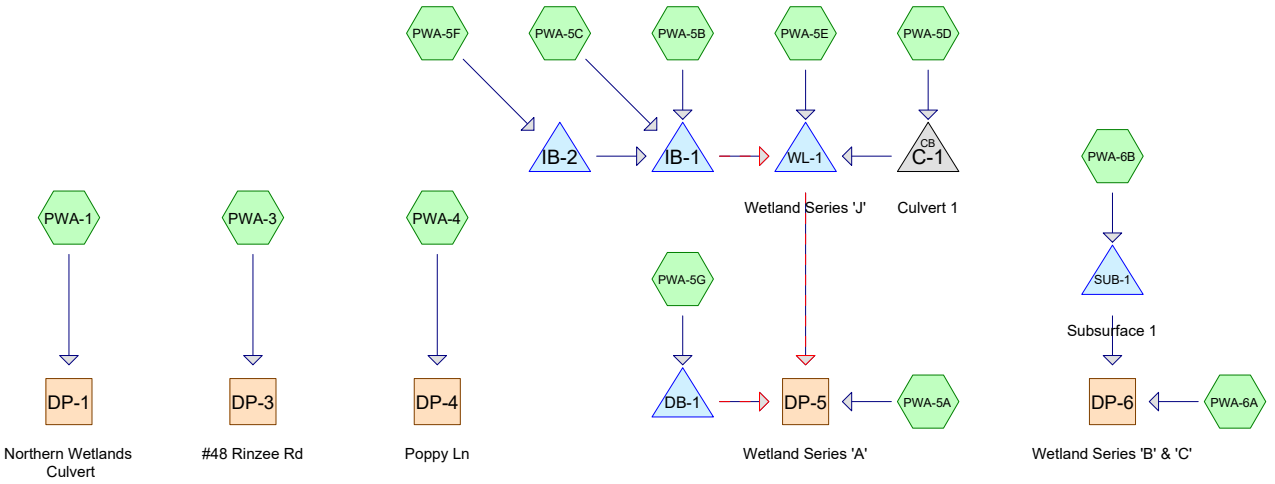
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
136.00	219	0	0
138.00	6,965	7,184	7,184
140.00	25,165	32,130	39,314
141.00	41,218	33,192	72,506
142.00	68,950	55,084	127,590

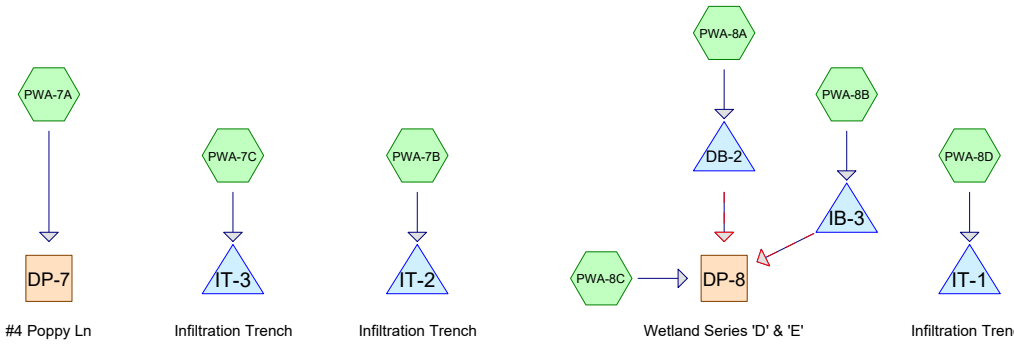
Device	Routing	Invert	Outlet Devices
#1	Primary	137.05'	**12.0" Round Culvert** L= 145.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 137.05' / 136.05' S= 0.0069 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Secondary	141.05'	**155.0' long x 35.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

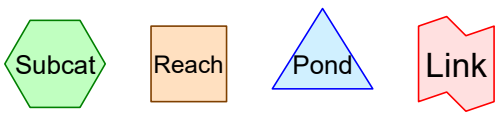
Primary OutFlow Max=0.8 cfs @ 13.93 hrs HW=137.55' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.8 cfs @ 2.12 fps)

Secondary OutFlow Max=0.0 cfs @ 5.00 hrs HW=136.00' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

TAB 4







Routing Diagram for 23-10524 - Post - R3 For Plotting
Prepared by Civil Design Consultants, Inc, Printed 10/2/2024

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
13.62	39	>75% Grass cover, Good, HSG A (PWA-1, PWA-3, PWA-4, PWA-5A, PWA-5B, PWA-5C, PWA-5D, PWA-5E, PWA-5F, PWA-5G, PWA-6A, PWA-6B, PWA-7A, PWA-7B, PWA-7C, PWA-8A, PWA-8B, PWA-8C, PWA-8D)
0.80	61	>75% Grass cover, Good, HSG B (PWA-1, PWA-5C, PWA-5D, PWA-5E)
3.04	98	Paved parking, HSG A (PWA-5B, PWA-5C, PWA-5F, PWA-5G)
4.23	98	Paved roads w/curbs & sewers, HSG A (PWA-6B, PWA-8B)
4.25	98	Roofs, HSG A (PWA-5B, PWA-5C, PWA-5F, PWA-6B, PWA-8B)
0.11	98	Roofs, HSG B (PWA-5C)
8.43	30	Woods, Good, HSG A (PWA-1, PWA-3, PWA-4, PWA-5A, PWA-5C, PWA-5D, PWA-5E, PWA-5F, PWA-6A, PWA-7A, PWA-8A, PWA-8C)
0.86	55	Woods, Good, HSG B (PWA-1, PWA-5C, PWA-5E)
35.34	**57**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
33.57	HSG A	PWA-1, PWA-3, PWA-4, PWA-5A, PWA-5B, PWA-5C, PWA-5D, PWA-5E, PWA-5F, PWA-5G, PWA-6A, PWA-6B, PWA-7A, PWA-7B, PWA-7C, PWA-8A, PWA-8B, PWA-8C, PWA-8D
1.77	HSG B	PWA-1, PWA-5C, PWA-5D, PWA-5E
0.00	HSG C	
0.00	HSG D	
0.00	Other	
35.34		**TOTAL AREA**

Time span=5.00-32.00 hrs, dt=0.05 hrs, 541 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentPWA-1: Runoff Area=4.46 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=397' Tc=18.3 min CN=37 Runoff=0.0 cfs 0.000 af

SubcatchmentPWA-3: Runoff Area=0.28 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=80' Slope=0.1000 '/' Tc=9.2 min CN=34 Runoff=0.0 cfs 0.000 af

SubcatchmentPWA-4: Runoff Area=0.31 ac 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=37 Runoff=0.0 cfs 0.000 af

SubcatchmentPWA-5A: Runoff Area=0.39 ac 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=34 Runoff=0.0 cfs 0.000 af

SubcatchmentPWA-5B: Runoff Area=0.47 ac 70.21% Impervious Runoff Depth=1.34"
Flow Length=705' Tc=8.7 min CN=80 Runoff=0.7 cfs 0.053 af

SubcatchmentPWA-5C: Runoff Area=7.17 ac 53.00% Impervious Runoff Depth=0.83"
Tc=7.4 min CN=71 Runoff=5.9 cfs 0.496 af

SubcatchmentPWA-5D: Runoff Area=2.26 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=394' Tc=14.5 min CN=36 Runoff=0.0 cfs 0.000 af

SubcatchmentPWA-5E: Runoff Area=1.78 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=230' Tc=9.6 min CN=37 Runoff=0.0 cfs 0.000 af

SubcatchmentPWA-5F: Runoff Area=1.48 ac 25.68% Impervious Runoff Depth=0.20"
Flow Length=1,000' Tc=25.9 min CN=54 Runoff=0.1 cfs 0.025 af

SubcatchmentPWA-5G: Runoff Area=0.65 ac 46.15% Impervious Runoff Depth=0.60"
Tc=6.0 min CN=66 Runoff=0.4 cfs 0.033 af

SubcatchmentPWA-6A: Runoff Area=1.17 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=176' Tc=14.5 min CN=33 Runoff=0.0 cfs 0.000 af

SubcatchmentPWA-6B: Runoff Area=5.20 ac 64.23% Impervious Runoff Depth=1.15"
Tc=6.0 min CN=77 Runoff=6.7 cfs 0.500 af

SubcatchmentPWA-7A: Runoff Area=0.72 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=80' Slope=0.1000 '/' Tc=9.2 min CN=35 Runoff=0.0 cfs 0.000 af

SubcatchmentPWA-7B: Runoff Area=0.31 ac 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=39 Runoff=0.0 cfs 0.000 af

SubcatchmentPWA-7C: Runoff Area=0.37 ac 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=39 Runoff=0.0 cfs 0.000 af

SubcatchmentPWA-8A: Runoff Area=1.82 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=330' Tc=9.4 min CN=34 Runoff=0.0 cfs 0.000 af

Subcatchment PWA-8B: Runoff Area=4.82 ac 72.20% Impervious Runoff Depth=1.47"
Tc=7.3 min CN=82 Runoff=7.8 cfs 0.592 af

Subcatchment PWA-8C: Runoff Area=1.35 ac 0.00% Impervious Runoff Depth=0.00"
Flow Length=100' Tc=8.5 min CN=34 Runoff=0.0 cfs 0.000 af

Subcatchment PWA-8D: Runoff Area=0.33 ac 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=39 Runoff=0.0 cfs 0.000 af

Reach DP-1: Northern Wetlands Culvert Inflow=0.0 cfs 0.000 af
Outflow=0.0 cfs 0.000 af

Reach DP-3: #48 Rinzee Rd Inflow=0.0 cfs 0.000 af
Outflow=0.0 cfs 0.000 af

Reach DP-4: Poppy Ln Inflow=0.0 cfs 0.000 af
Outflow=0.0 cfs 0.000 af

Reach DP-5: Wetland Series 'A' Inflow=0.0 cfs 0.031 af
Outflow=0.0 cfs 0.031 af

Reach DP-6: Wetland Series 'B' & 'C' Inflow=0.0 cfs 0.000 af
Outflow=0.0 cfs 0.000 af

Reach DP-7: #4 Poppy Ln Inflow=0.0 cfs 0.000 af
Outflow=0.0 cfs 0.000 af

Reach DP-8: Wetland Series 'D' & 'E' Inflow=0.0 cfs 0.001 af
Outflow=0.0 cfs 0.001 af

Pond C-1: Culvert 1 Peak Elev=166.00' Inflow=0.0 cfs 0.000 af
12.0" Round Culvert n=0.013 L=50.0' S=0.0050 '/' Outflow=0.0 cfs 0.000 af

Pond DB-1: Peak Elev=132.38' Storage=704 cf Inflow=0.4 cfs 0.033 af
Primary=0.0 cfs 0.031 af Secondary=0.0 cfs 0.000 af Outflow=0.0 cfs 0.031 af

Pond DB-2: Peak Elev=146.00' Storage=0 cf Inflow=0.0 cfs 0.000 af
Primary=0.0 cfs 0.000 af Secondary=0.0 cfs 0.000 af Outflow=0.0 cfs 0.000 af

Pond IB-1: Peak Elev=138.50' Storage=7,863 cf Inflow=6.6 cfs 0.549 af
Discarded=0.9 cfs 0.549 af Primary=0.0 cfs 0.000 af Secondary=0.0 cfs 0.000 af Outflow=0.9 cfs 0.549 af

Pond IB-2: Peak Elev=138.00' Storage=12 cf Inflow=0.1 cfs 0.025 af
Discarded=0.1 cfs 0.025 af Primary=0.0 cfs 0.000 af Outflow=0.1 cfs 0.025 af

Pond IB-3: Peak Elev=136.78' Storage=9,663 cf Inflow=7.8 cfs 0.592 af
Discarded=1.2 cfs 0.591 af Primary=0.0 cfs 0.001 af Secondary=0.0 cfs 0.000 af Outflow=1.2 cfs 0.592 af

Pond IT-1: Infiltration Trench Peak Elev=144.00' Storage=0 cf Inflow=0.0 cfs 0.000 af
Outflow=0.0 cfs 0.000 af

Pond IT-2: Infiltration Trench Peak Elev=134.00' Storage=0 cf Inflow=0.0 cfs 0.000 af
Outflow=0.0 cfs 0.000 af

Pond IT-3: Infiltration Trench Peak Elev=136.00' Storage=0 cf Inflow=0.0 cfs 0.000 af
Outflow=0.0 cfs 0.000 af

Pond SUB-1: Subsurface 1 Peak Elev=138.91' Storage=4,360 cf Inflow=6.7 cfs 0.500 af
Discarded=1.9 cfs 0.500 af Primary=0.0 cfs 0.000 af Outflow=1.9 cfs 0.500 af

Pond WL-1: Wetland Series 'J' Peak Elev=136.00' Storage=0 cf Inflow=0.0 cfs 0.000 af
Primary=0.0 cfs 0.000 af Secondary=0.0 cfs 0.000 af Outflow=0.0 cfs 0.000 af

Total Runoff Area = 35.34 ac Runoff Volume = 1.699 af Average Runoff Depth = 0.58"
67.09% Pervious = 23.71 ac 32.91% Impervious = 11.63 ac

Summary for Subcatchment PWA-1:

[45] Hint: Runoff=Zero

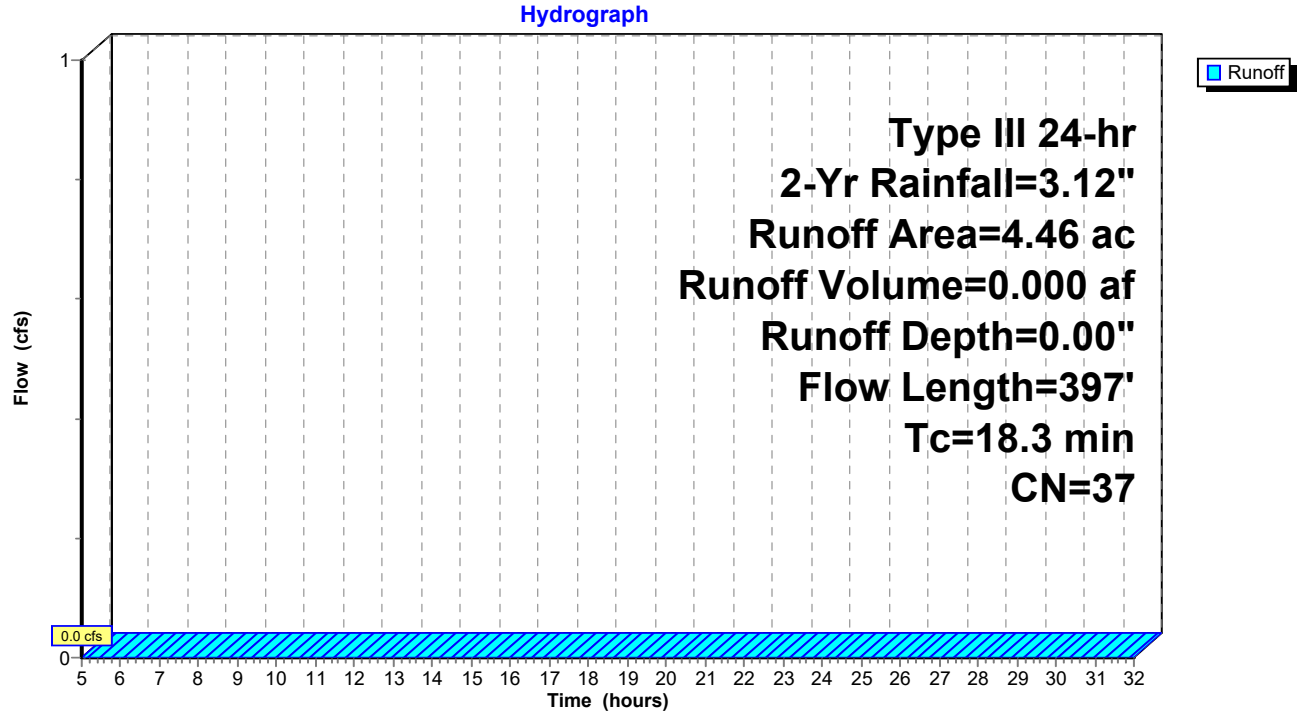
Runoff = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Reach DP-1 : Northern Wetlands Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Rainfall=3.12"

Area (ac)	CN	Description
0.29	61	>75% Grass cover, Good, HSG B
0.55	39	>75% Grass cover, Good, HSG A
2.97	30	Woods, Good, HSG A
0.65	55	Woods, Good, HSG B
4.46	37	Weighted Average
4.46		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	100	0.0650	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
5.3	297	0.0350	0.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
18.3	397	Total			

Subcatchment PWA-1:



Summary for Subcatchment PWA-3:

[45] Hint: Runoff=Zero

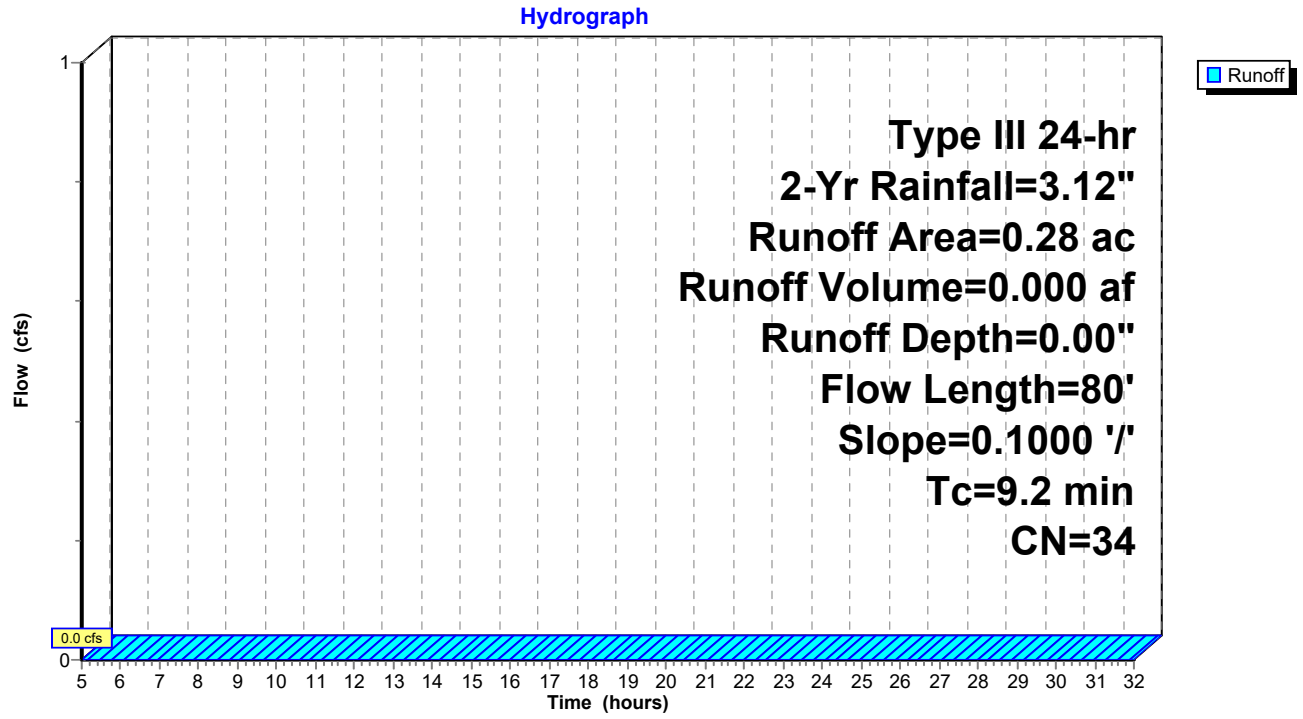
Runoff = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Reach DP-3 : #48 Rinzee Rd

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Rainfall=3.12"

Area (ac)	CN	Description
0.11	39	>75% Grass cover, Good, HSG A
0.17	30	Woods, Good, HSG A
0.28	34	Weighted Average
0.28		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	80	0.1000	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"

Subcatchment PWA-3:



Summary for Subcatchment PWA-4:

[45] Hint: Runoff=Zero

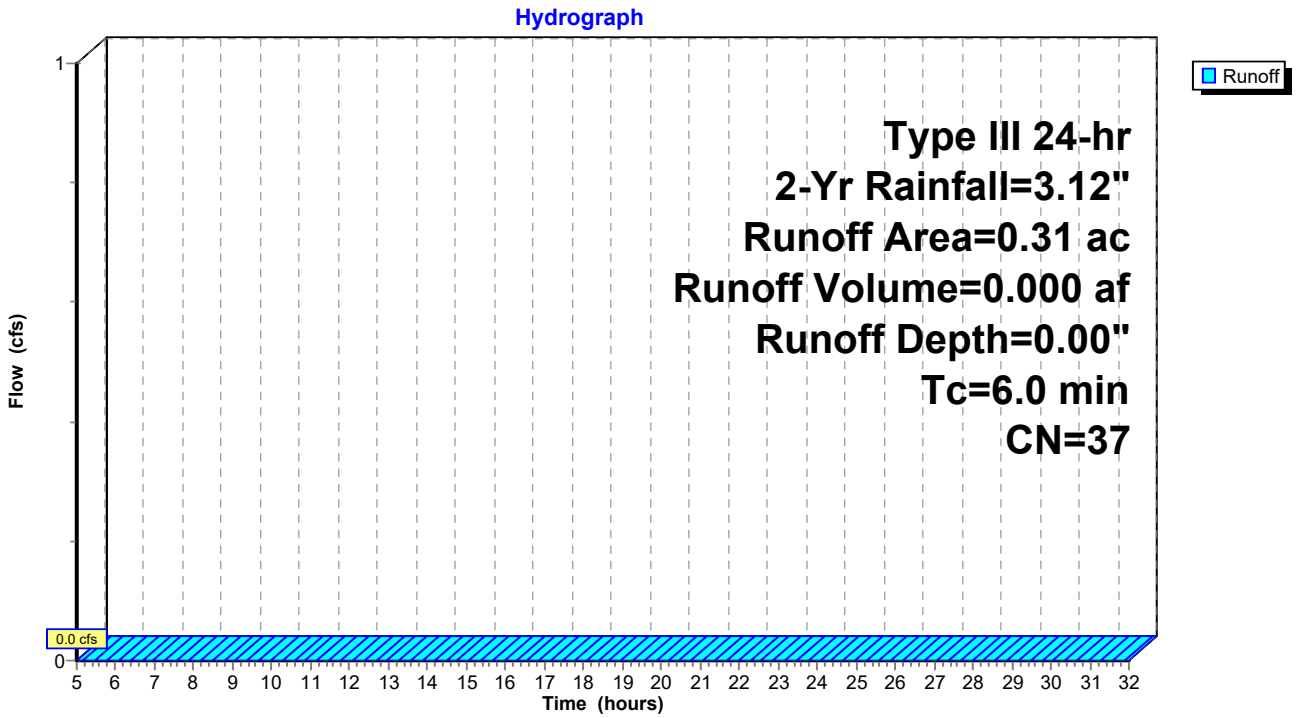
Runoff = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Reach DP-4 : Poppy Ln

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Rainfall=3.12"

Area (ac)	CN	Description
0.23	39	>75% Grass cover, Good, HSG A
0.08	30	Woods, Good, HSG A
0.31	37	Weighted Average
0.31		100.00% Pervious Area

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

Subcatchment PWA-4:



Summary for Subcatchment PWA-5A:

[45] Hint: Runoff=Zero

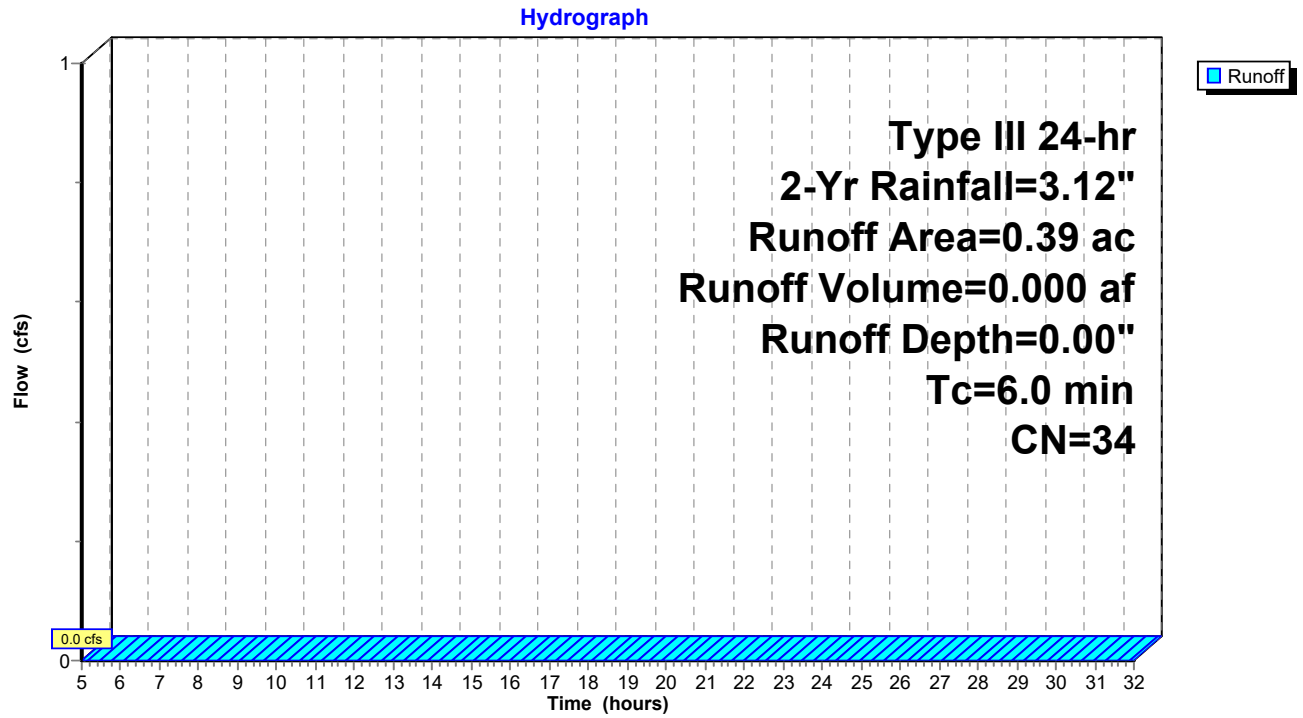
Runoff = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Reach DP-5 : Wetland Series 'A'

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Rainfall=3.12"

Area (ac)	CN	Description
0.20	30	Woods, Good, HSG A
0.19	39	>75% Grass cover, Good, HSG A
0.39	34	Weighted Average
0.39		100.00% Pervious Area

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

Subcatchment PWA-5A:



Summary for Subcatchment PWA-5B:

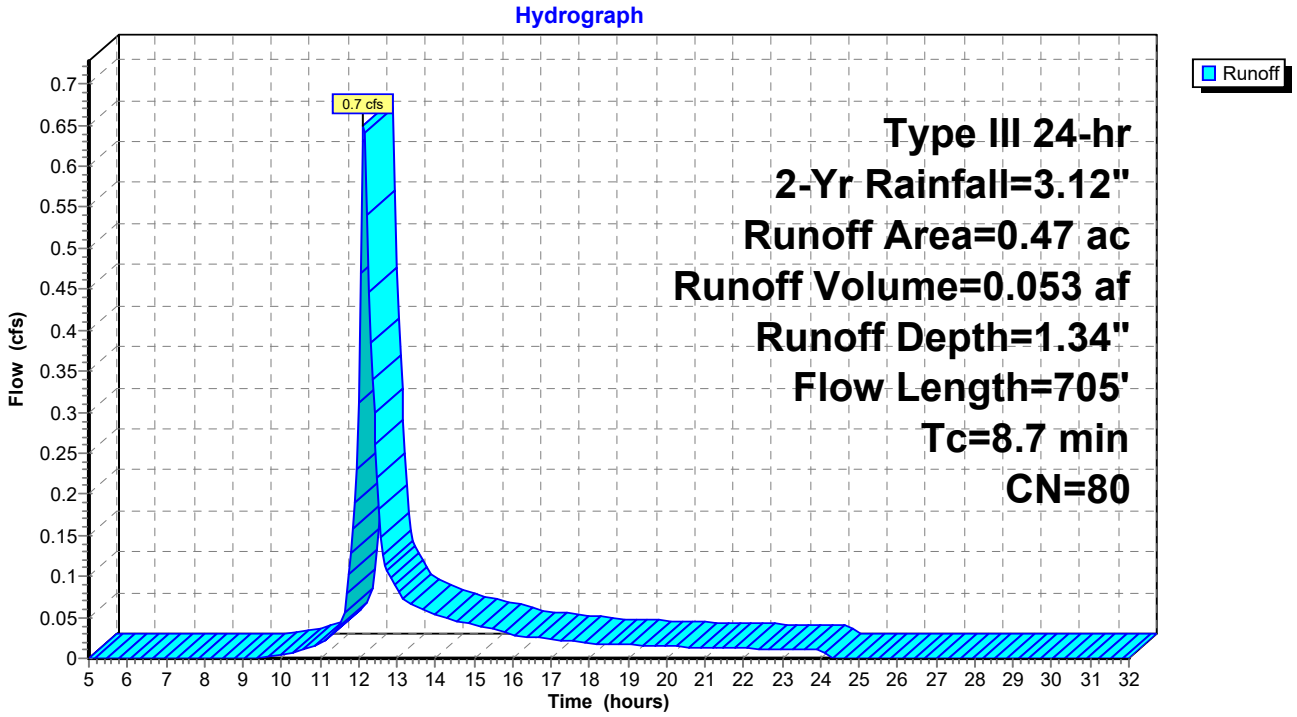
Runoff = 0.7 cfs @ 12.13 hrs, Volume= 0.053 af, Depth= 1.34"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Rainfall=3.12"

Area (ac)	CN	Description
0.14	39	>75% Grass cover, Good, HSG A
0.09	98	Roofs, HSG A
0.24	98	Paved parking, HSG A
0.47	80	Weighted Average
0.14		29.79% Pervious Area
0.33		70.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.0360	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.40"
0.3	60	0.0400	3.00		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.1	265	0.0750	4.11		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
3.0	330	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
8.7	705	Total			

Subcatchment PWA-5B:



Summary for Subcatchment PWA-5C:

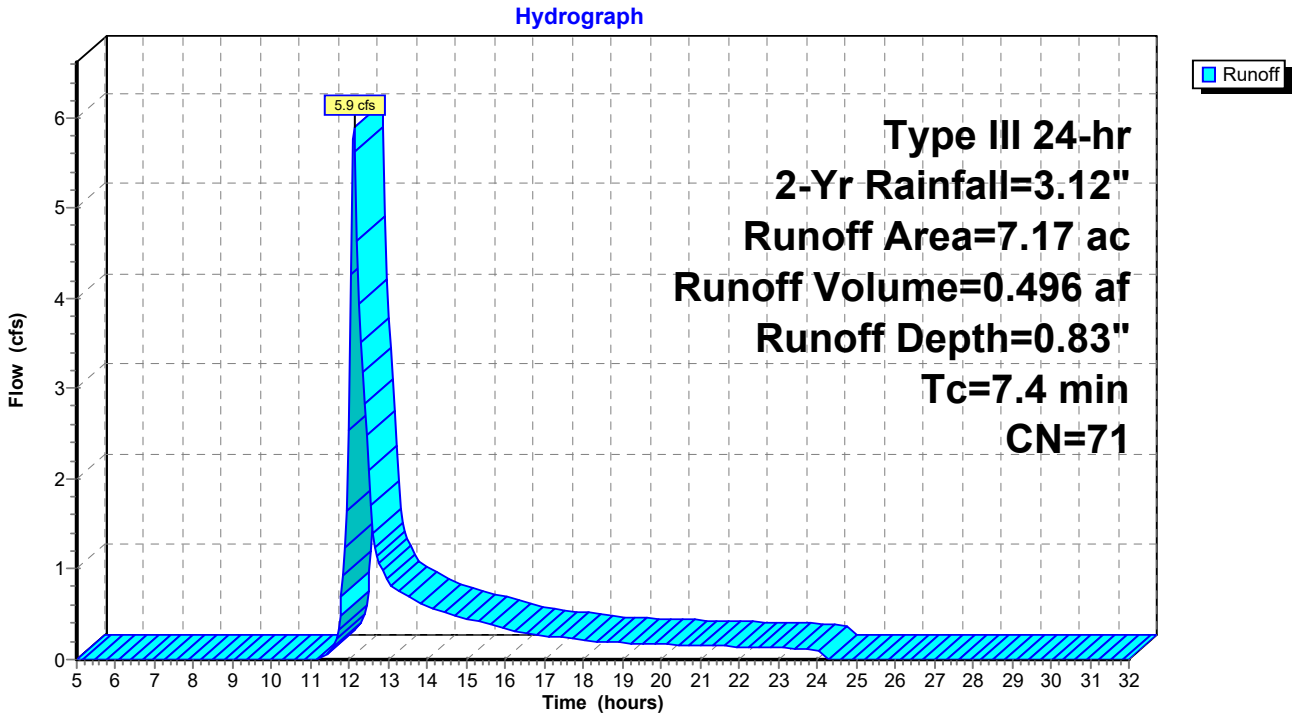
Runoff = 5.9 cfs @ 12.12 hrs, Volume= 0.496 af, Depth= 0.83"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Rainfall=3.12"

Area (ac)	CN	Description
2.71	39	>75% Grass cover, Good, HSG A
0.31	61	>75% Grass cover, Good, HSG B
0.22	30	Woods, Good, HSG A
0.13	55	Woods, Good, HSG B
1.23	98	Roofs, HSG A
0.11	98	Roofs, HSG B
2.46	98	Paved parking, HSG A
7.17	71	Weighted Average
3.37		47.00% Pervious Area
3.80		53.00% Impervious Area

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

Subcatchment PWA-5C:



Summary for Subcatchment PWA-5D:

[45] Hint: Runoff=Zero

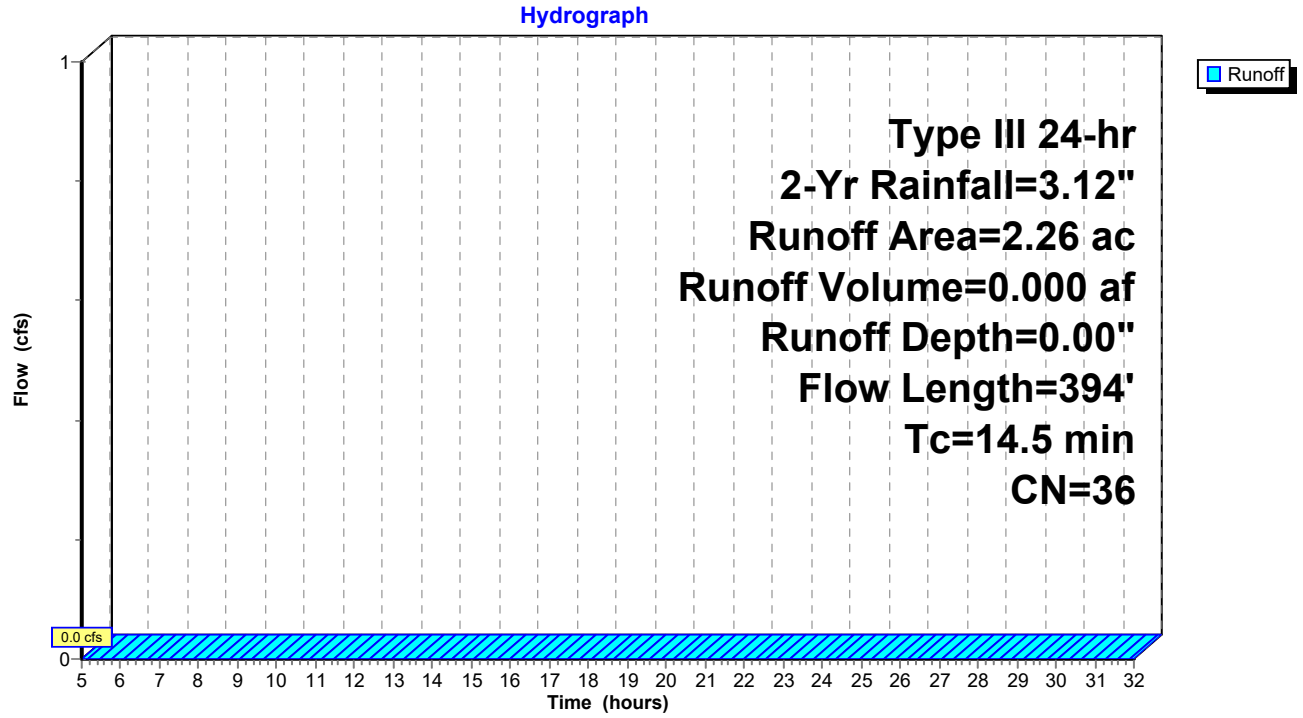
Runoff = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond C-1 : Culvert 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Rainfall=3.12"

Area (ac)	CN	Description
0.89	39	>75% Grass cover, Good, HSG A
0.16	61	>75% Grass cover, Good, HSG B
1.21	30	Woods, Good, HSG A
2.26	36	Weighted Average
2.26		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	69	0.1000	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
4.7	225	0.0260	0.81		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	100	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
14.5	394	Total			

Subcatchment PWA-5D:



Summary for Subcatchment PWA-5E:

[45] Hint: Runoff=Zero

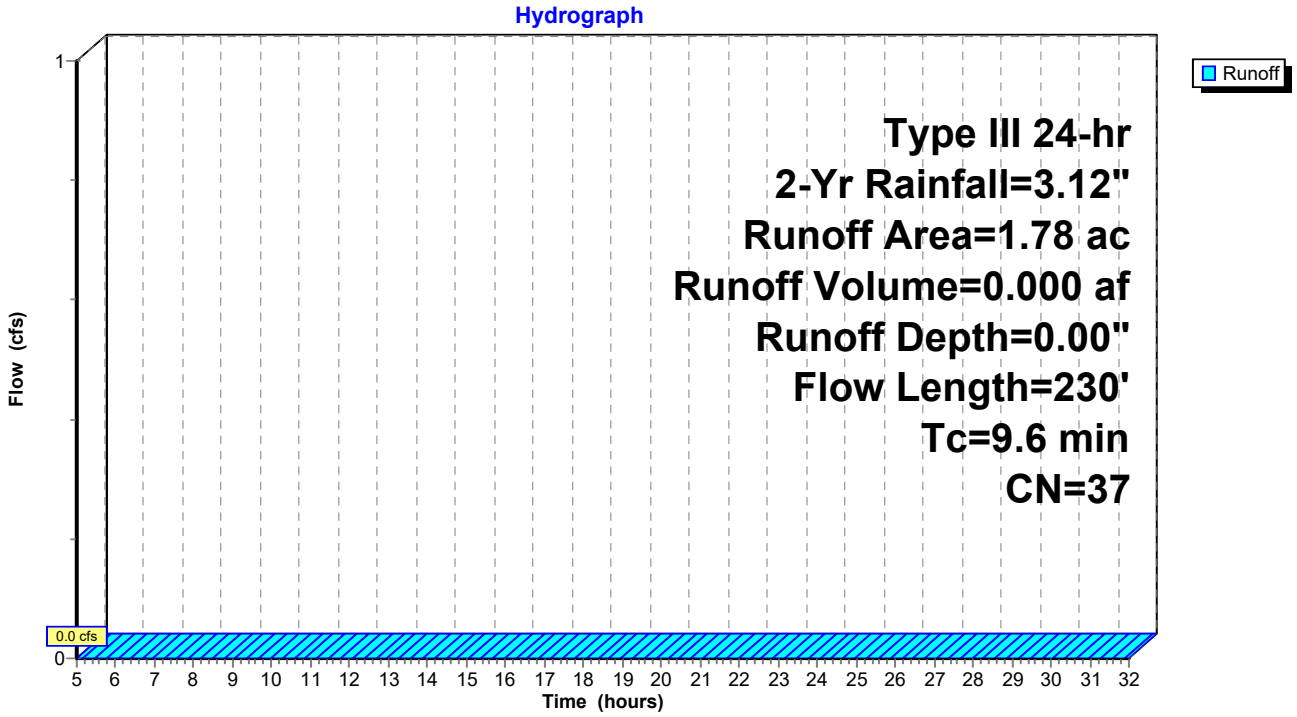
Runoff = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond WL-1 : Wetland Series 'J'

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Rainfall=3.12"

Area (ac)	CN	Description
0.97	39	>75% Grass cover, Good, HSG A
0.04	61	>75% Grass cover, Good, HSG B
0.69	30	Woods, Good, HSG A
0.08	55	Woods, Good, HSG B
1.78	37	Weighted Average
1.78		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	50	0.0100	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.40"
0.3	30	0.0600	1.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.9	110	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	40	0.3700	4.26		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.6	230	Total			

Subcatchment PWA-5E:



Summary for Subcatchment PWA-5F:

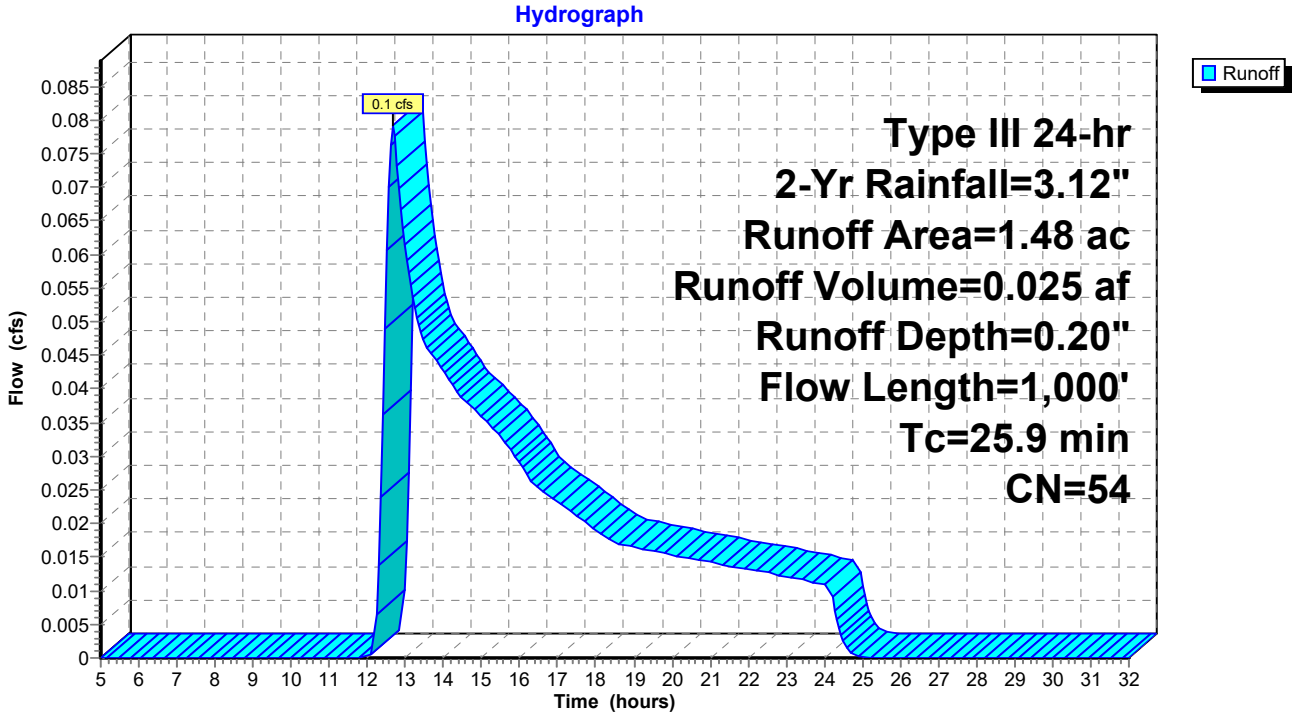
Runoff = 0.1 cfs @ 12.67 hrs, Volume= 0.025 af, Depth= 0.20"
Routed to Pond IB-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Rainfall=3.12"

Area (ac)	CN	Description
0.02	30	Woods, Good, HSG A
1.08	39	>75% Grass cover, Good, HSG A
0.34	98	Roofs, HSG A
0.04	98	Paved parking, HSG A
1.48	54	Weighted Average
1.10		74.32% Pervious Area
0.38		25.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	100	0.0200	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.40"
16.4	900	0.0170	0.91		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
25.9	1,000	Total			

Subcatchment PWA-5F:



Summary for Subcatchment PWA-5G:

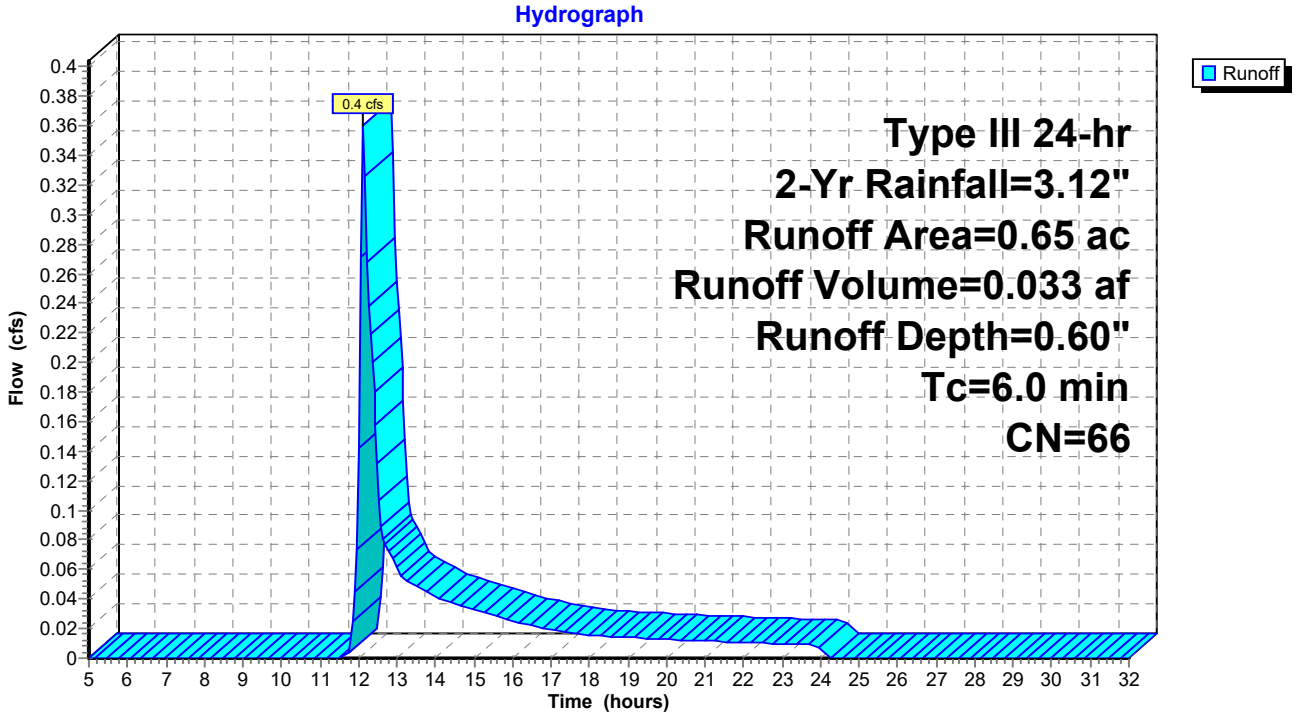
Runoff = 0.4 cfs @ 12.11 hrs, Volume= 0.033 af, Depth= 0.60"
Routed to Pond DB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Rainfall=3.12"

Area (ac)	CN	Description
0.35	39	>75% Grass cover, Good, HSG A
0.30	98	Paved parking, HSG A
0.65	66	Weighted Average
0.35		53.85% Pervious Area
0.30		46.15% Impervious Area

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

Subcatchment PWA-5G:



Summary for Subcatchment PWA-6A:

[45] Hint: Runoff=Zero

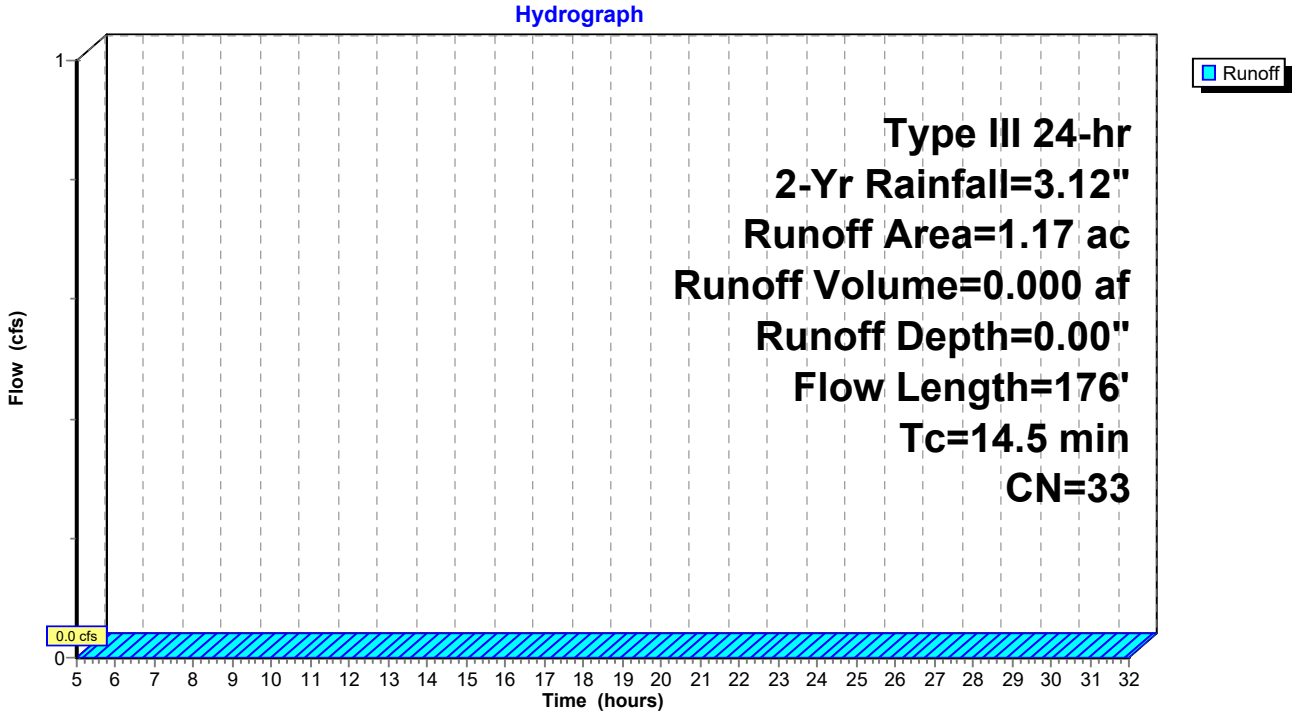
Runoff = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Reach DP-6 : Wetland Series 'B' & 'C'

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Rainfall=3.12"

Area (ac)	CN	Description
0.44	39	>75% Grass cover, Good, HSG A
0.73	30	Woods, Good, HSG A
1.17	33	Weighted Average
1.17		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	100	0.0600	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
1.1	76	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.5	176	Total			

Subcatchment PWA-6A:



Summary for Subcatchment PWA-6B:

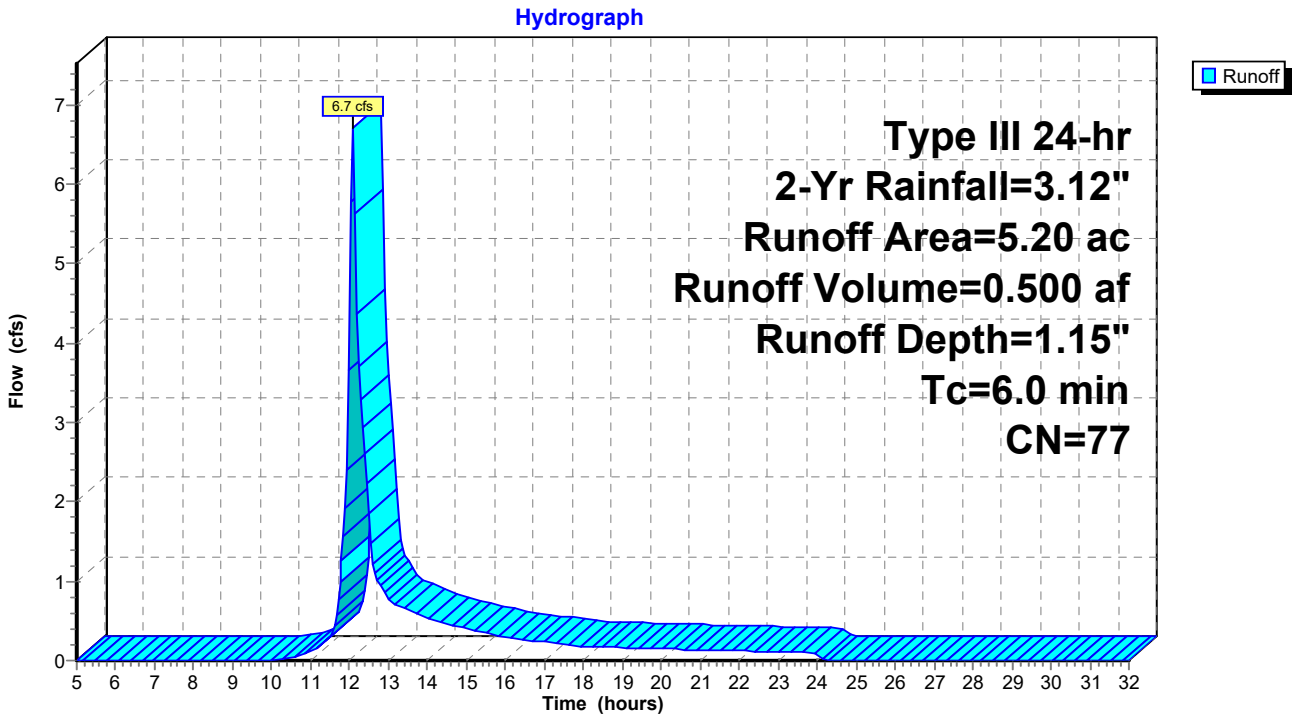
Runoff = 6.7 cfs @ 12.10 hrs, Volume= 0.500 af, Depth= 1.15"
Routed to Pond SUB-1 : Subsurface 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Rainfall=3.12"

Area (ac)	CN	Description
1.86	39	>75% Grass cover, Good, HSG A
1.16	98	Roofs, HSG A
2.18	98	Paved roads w/curbs & sewers, HSG A
5.20	77	Weighted Average
1.86		35.77% Pervious Area
3.34		64.23% Impervious Area

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

Subcatchment PWA-6B:



Summary for Subcatchment PWA-7A:

[45] Hint: Runoff=Zero

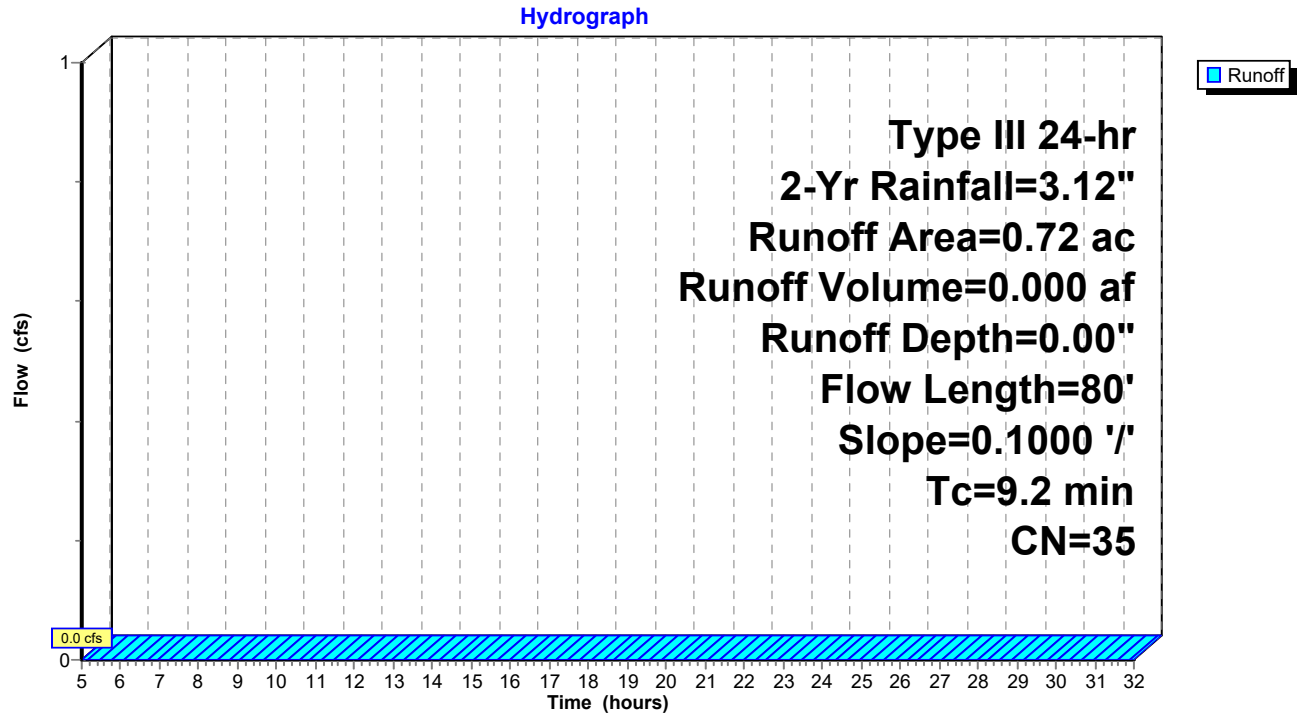
Runoff = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Reach DP-7 : #4 Poppy Ln

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Rainfall=3.12"

Area (ac)	CN	Description
0.34	30	Woods, Good, HSG A
0.38	39	>75% Grass cover, Good, HSG A
0.72	35	Weighted Average
0.72		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	80	0.1000	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"

Subcatchment PWA-7A:



Summary for Subcatchment PWA-7B:

[45] Hint: Runoff=Zero

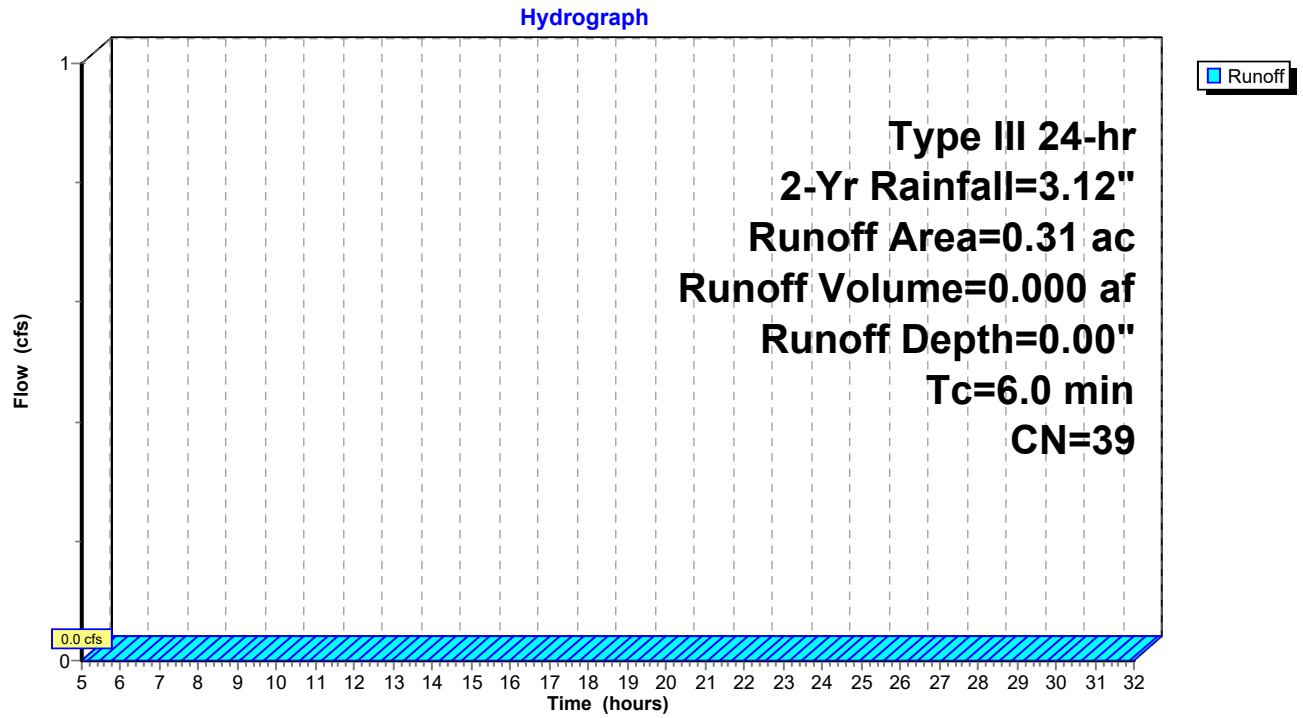
Runoff = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond IT-2 : Infiltration Trench

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Rainfall=3.12"

Area (ac)	CN	Description
0.00	30	Woods, Good, HSG A
0.31	39	>75% Grass cover, Good, HSG A
0.31	39	Weighted Average
0.31		100.00% Pervious Area

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

Subcatchment PWA-7B:



Summary for Subcatchment PWA-7C:

[45] Hint: Runoff=Zero

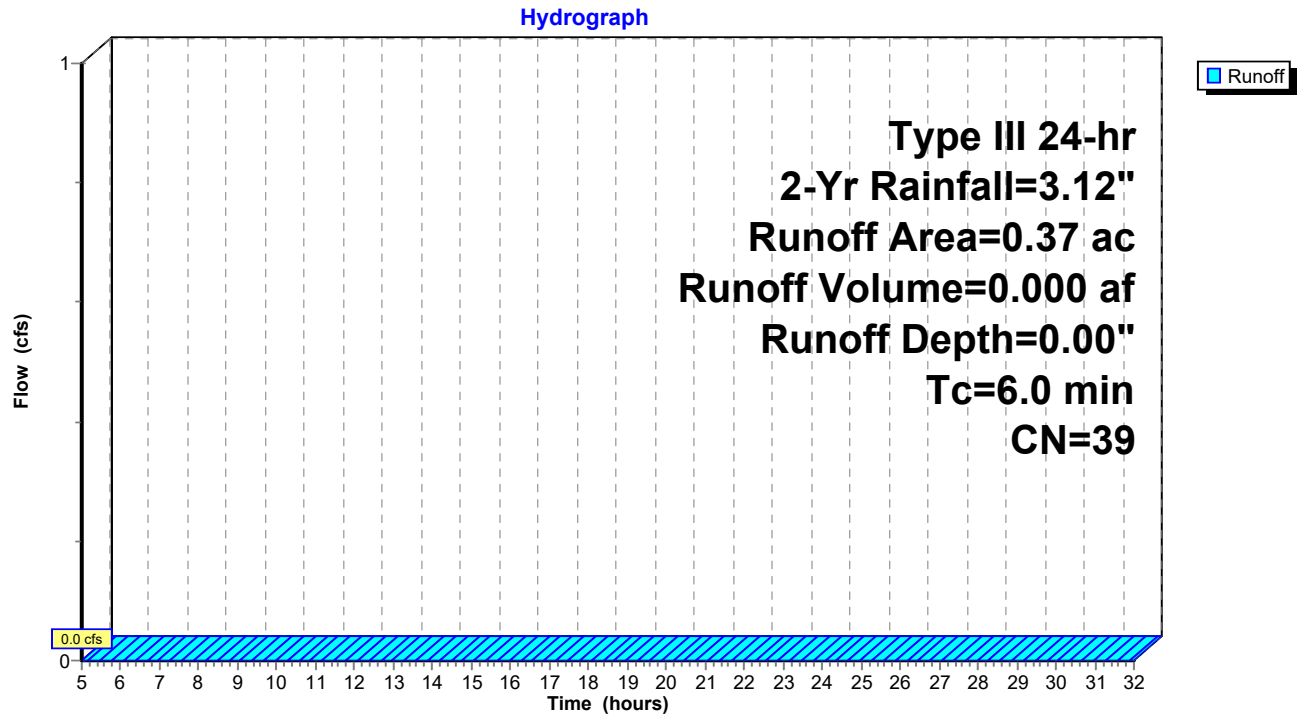
Runoff = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond IT-3 : Infiltration Trench

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Rainfall=3.12"

Area (ac)	CN	Description
0.00	30	Woods, Good, HSG A
0.37	39	>75% Grass cover, Good, HSG A
0.37	39	Weighted Average
0.37		100.00% Pervious Area

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

Subcatchment PWA-7C:



Summary for Subcatchment PWA-8A:

[45] Hint: Runoff=Zero

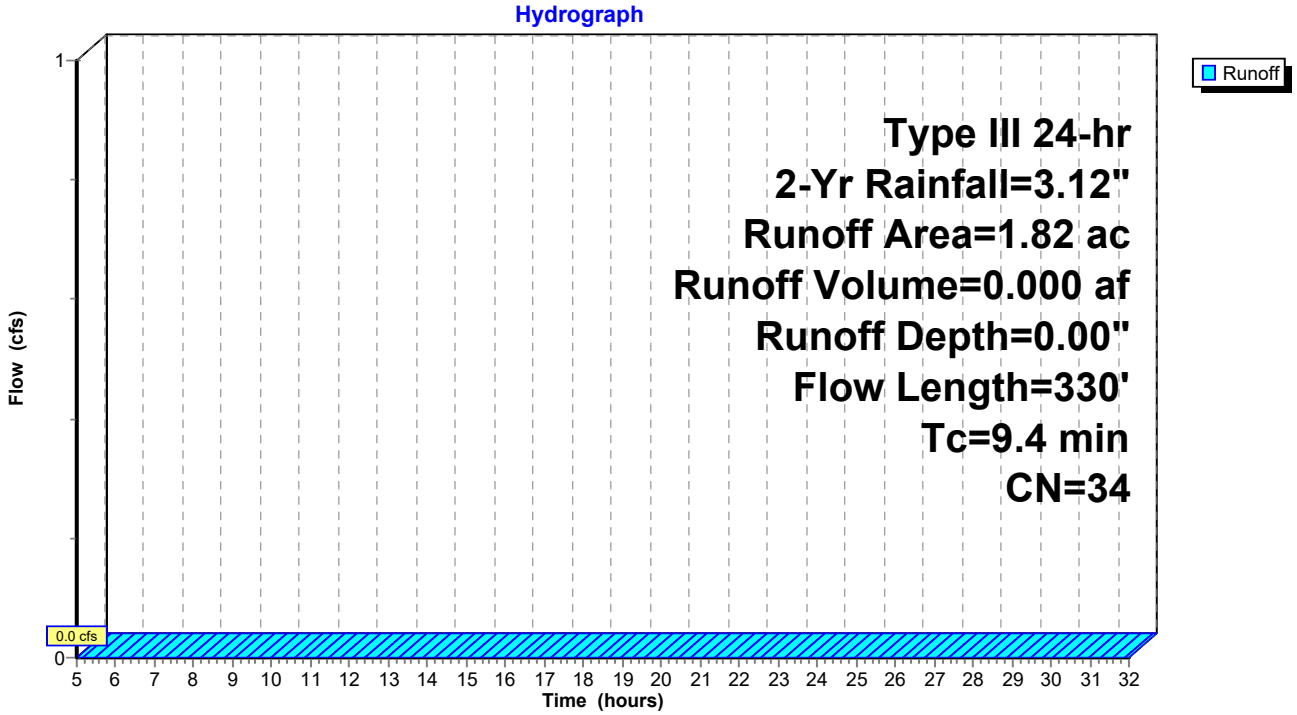
Runoff = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond DB-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Rainfall=3.12"

Area (ac)	CN	Description
1.01	30	Woods, Good, HSG A
0.81	39	>75% Grass cover, Good, HSG A
1.82	34	Weighted Average
1.82		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	50	0.1600	0.16		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
4.2	280	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.4	330	Total			

Subcatchment PWA-8A:



Summary for Subcatchment PWA-8B:

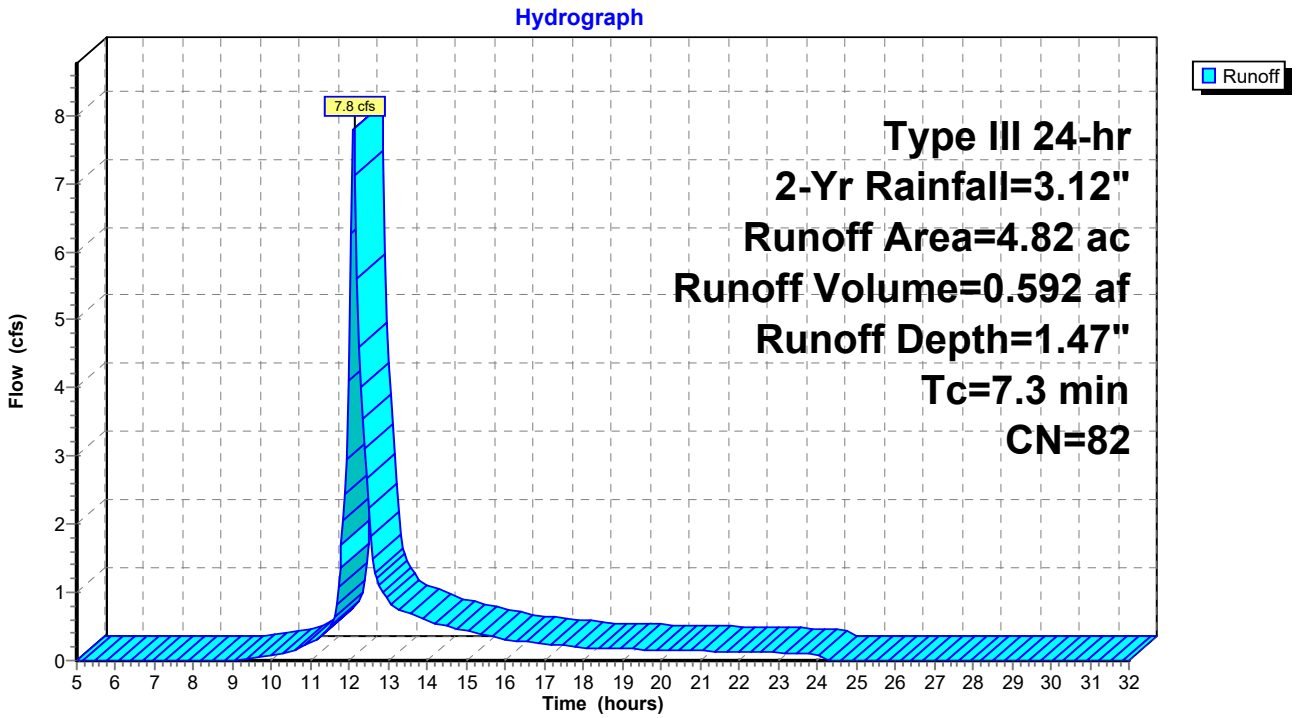
Runoff = 7.8 cfs @ 12.11 hrs, Volume= 0.592 af, Depth= 1.47"
Routed to Pond IB-3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Rainfall=3.12"

Area (ac)	CN	Description
1.34	39	>75% Grass cover, Good, HSG A
1.43	98	Roofs, HSG A
2.05	98	Paved roads w/curbs & sewers, HSG A
4.82	82	Weighted Average
1.34		27.80% Pervious Area
3.48		72.20% Impervious Area

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

Subcatchment PWA-8B:



Summary for Subcatchment PWA-8C:

[45] Hint: Runoff=Zero

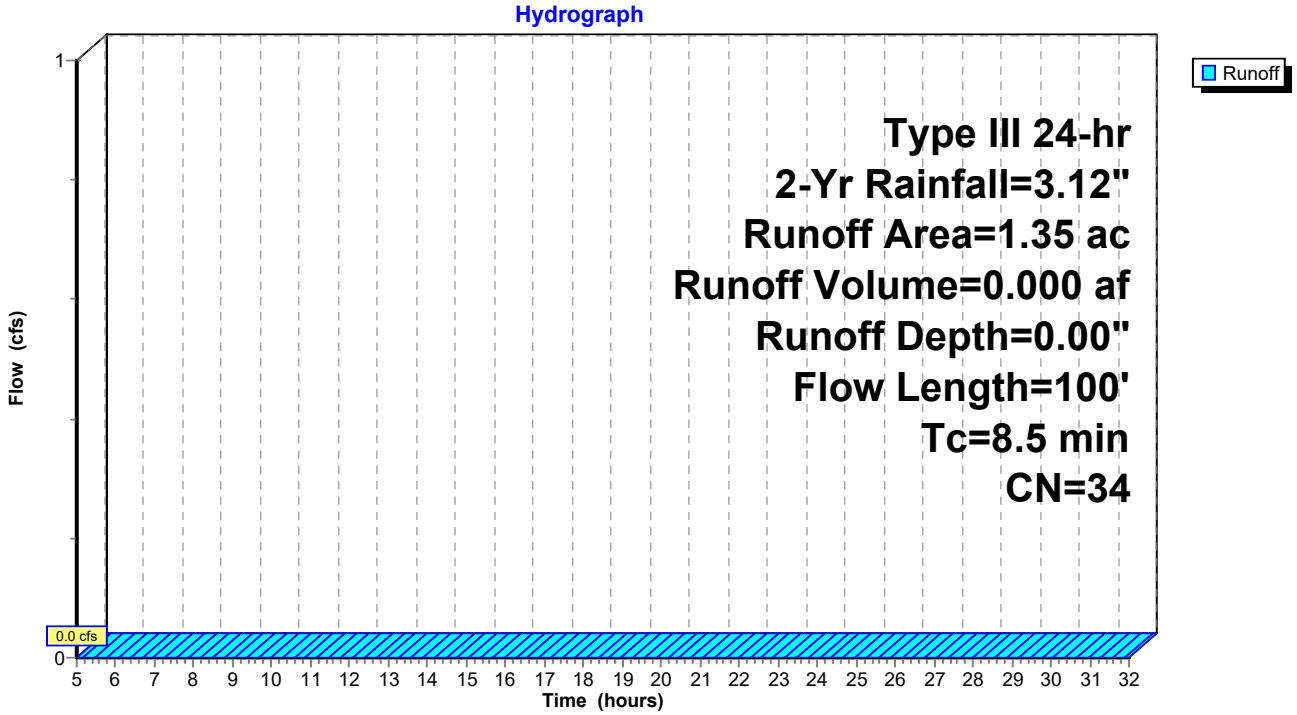
Runoff = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Reach DP-8 : Wetland Series 'D' & 'E'

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Rainfall=3.12"

Area (ac)	CN	Description
0.79	30	Woods, Good, HSG A
0.56	39	>75% Grass cover, Good, HSG A
1.35	34	Weighted Average
1.35		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	50	0.0200	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.40"
0.5	50	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.5	100	Total			

Subcatchment PWA-8C:



Summary for Subcatchment PWA-8D:

[45] Hint: Runoff=Zero

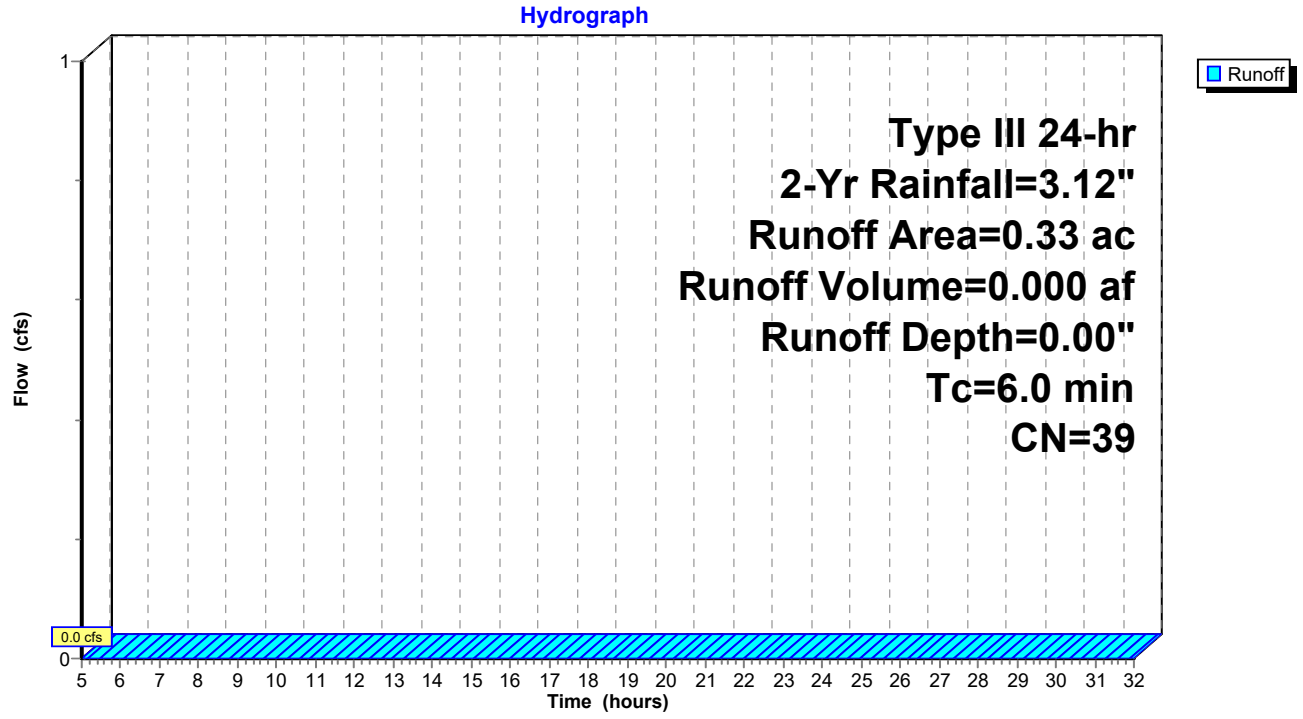
Runoff = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond IT-1 : Infiltration Trench

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Yr Rainfall=3.12"

Area (ac)	CN	Description
0.33	39	>75% Grass cover, Good, HSG A
0.33		100.00% Pervious Area

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

Subcatchment PWA-8D:



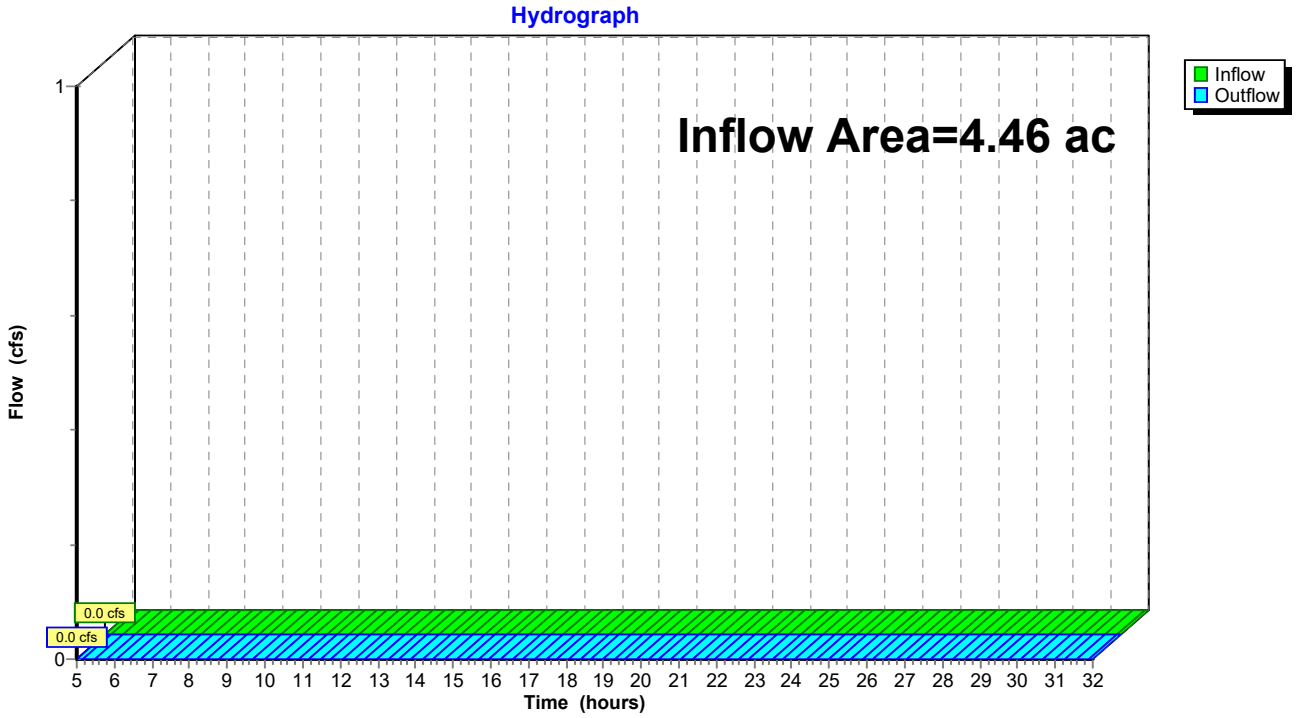
Summary for Reach DP-1: Northern Wetlands Culvert

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 4.46 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Yr event
Inflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Reach DP-1: Northern Wetlands Culvert



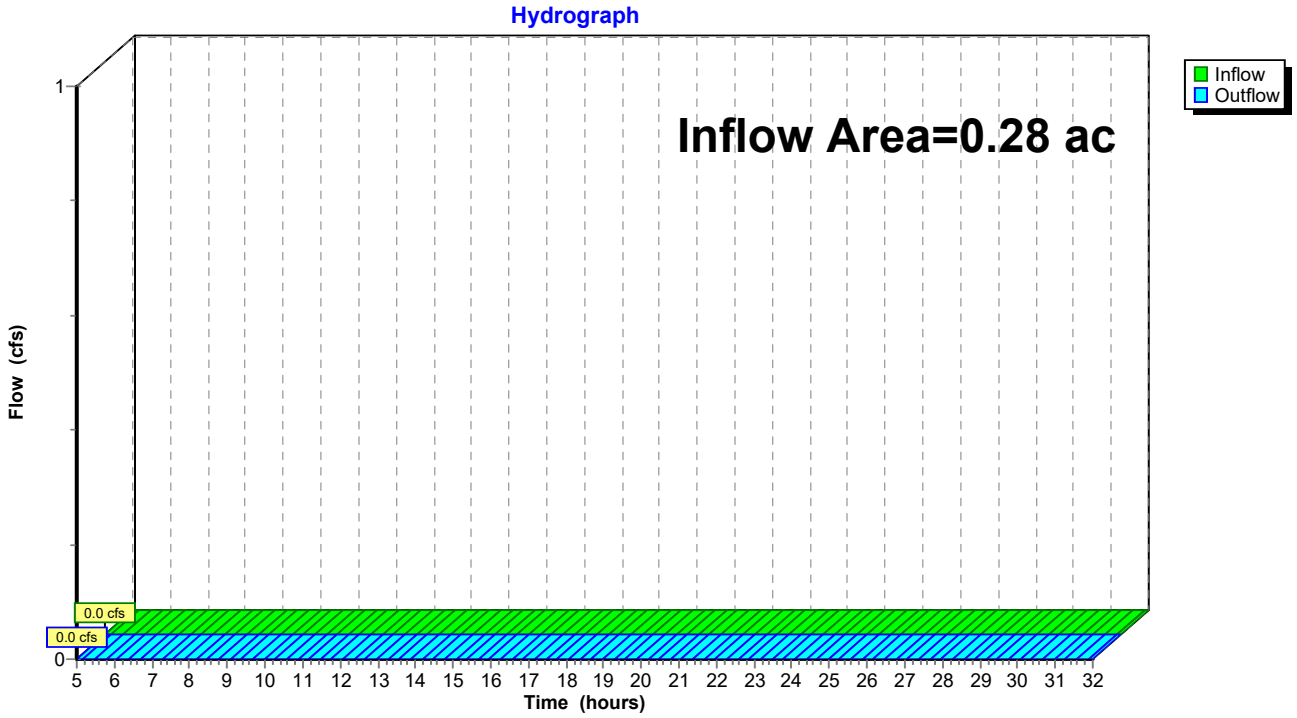
Summary for Reach DP-3: #48 Rinzee Rd

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.28 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Yr event
Inflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Reach DP-3: #48 Rinzee Rd



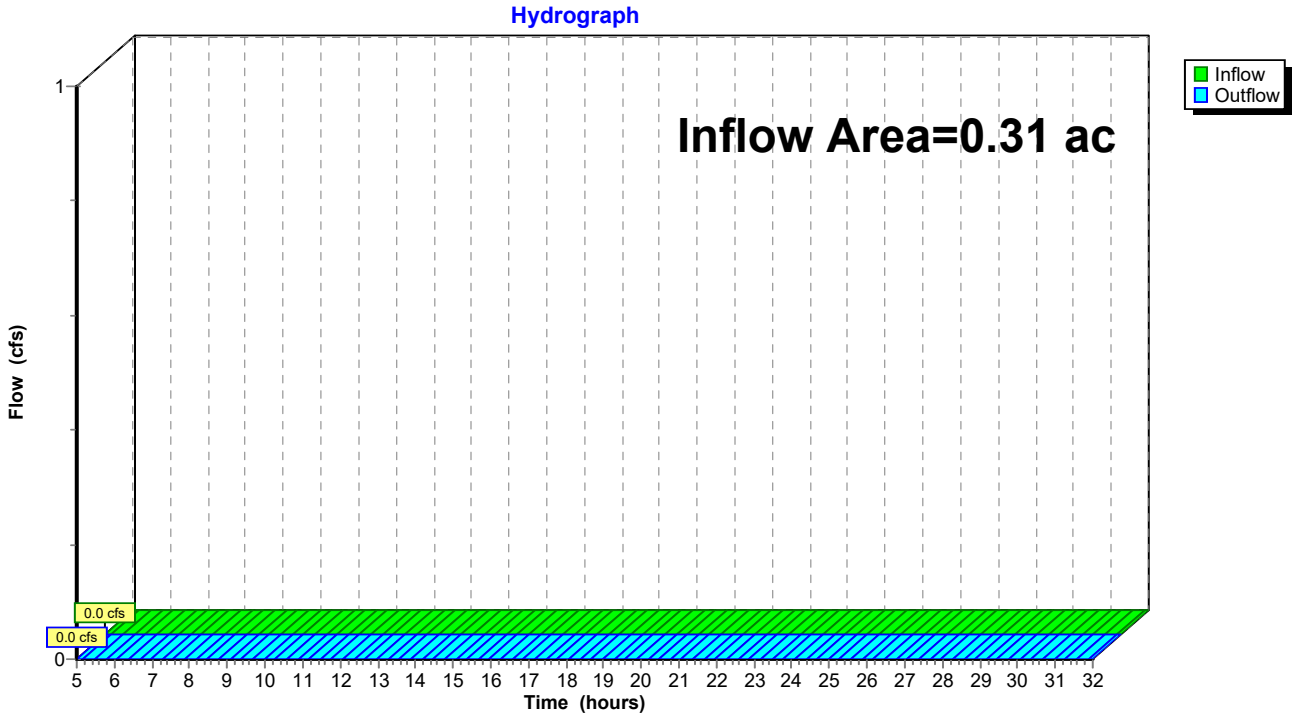
Summary for Reach DP-4: Poppy Ln

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.31 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Yr event
Inflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Reach DP-4: Poppy Ln



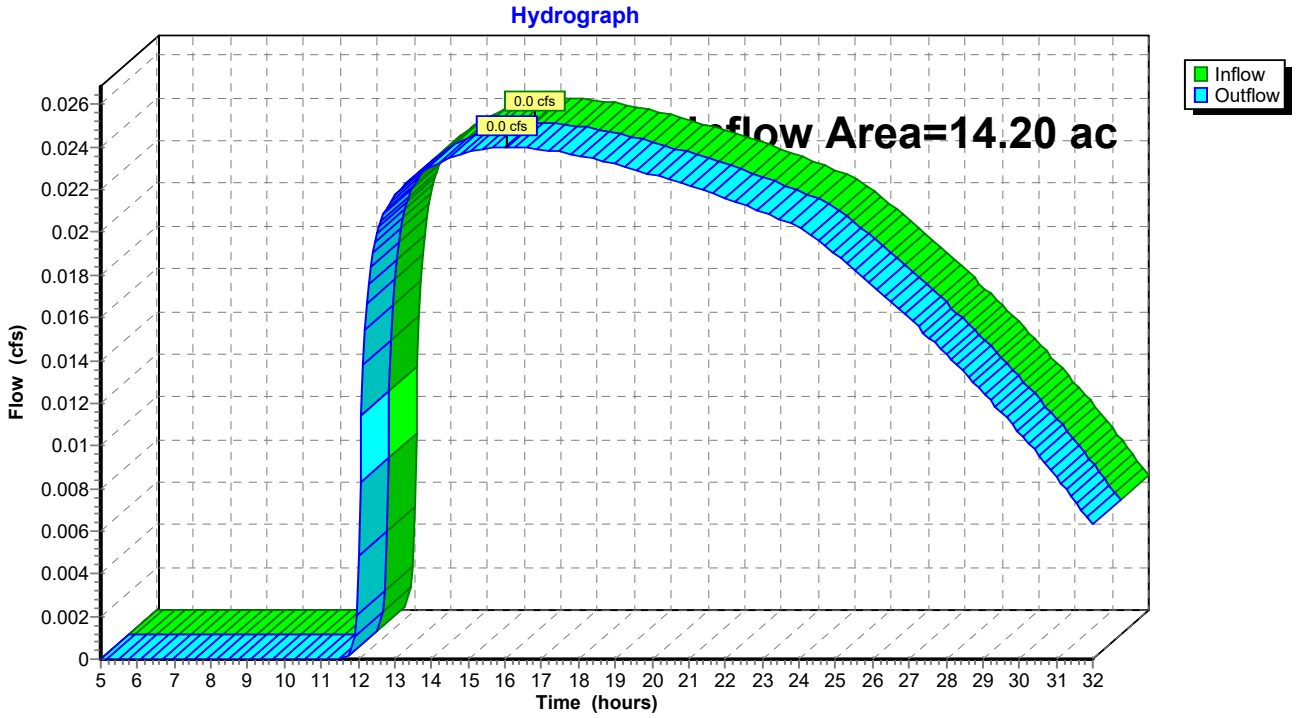
Summary for Reach DP-5: Wetland Series 'A'

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 14.20 ac, 33.87% Impervious, Inflow Depth > 0.03" for 2-Yr event
Inflow = 0.0 cfs @ 16.04 hrs, Volume= 0.031 af
Outflow = 0.0 cfs @ 16.04 hrs, Volume= 0.031 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Reach DP-5: Wetland Series 'A'



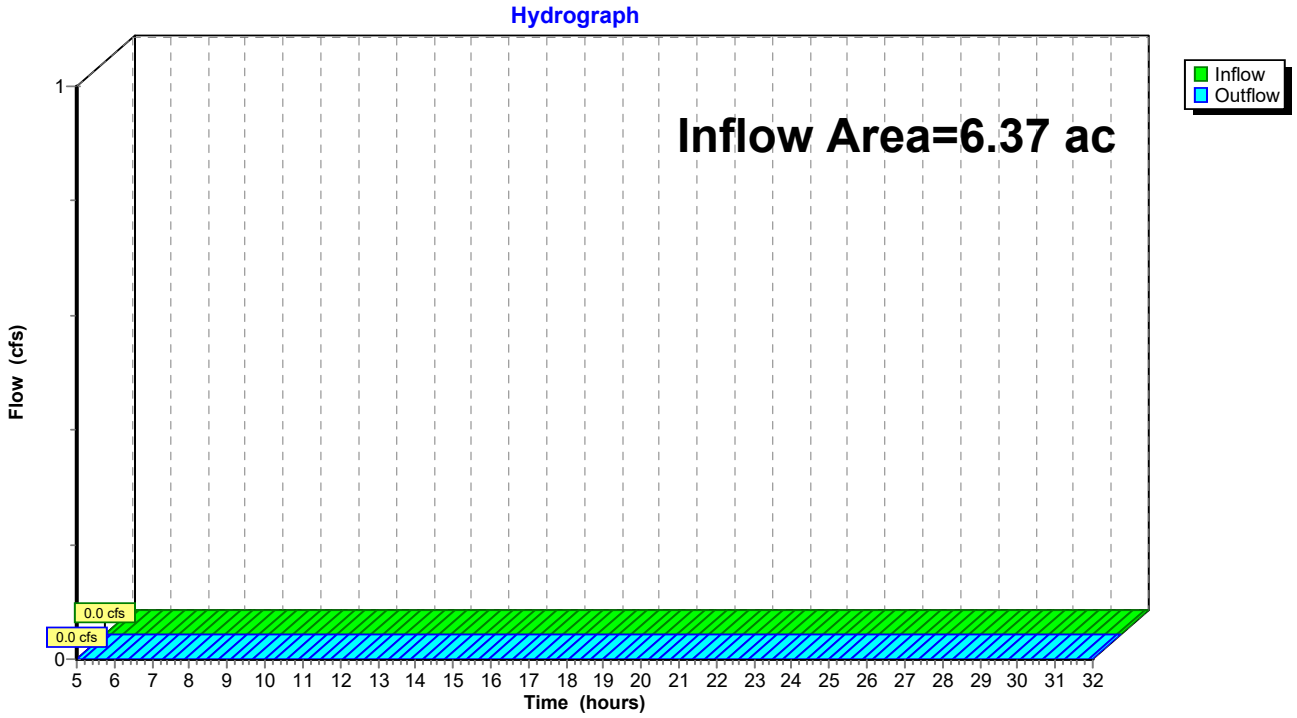
Summary for Reach DP-6: Wetland Series 'B' & 'C'

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 6.37 ac, 52.43% Impervious, Inflow Depth = 0.00" for 2-Yr event
Inflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Reach DP-6: Wetland Series 'B' & 'C'



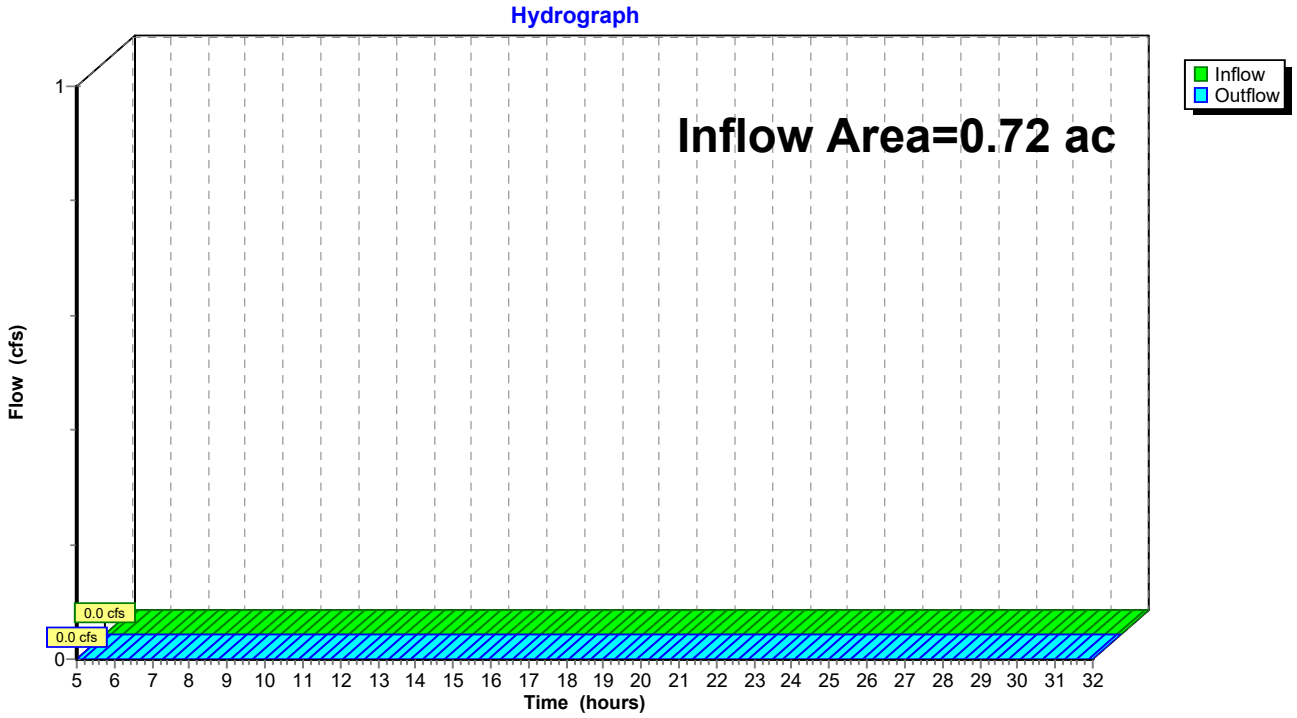
Summary for Reach DP-7: #4 Poppy Ln

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.72 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Yr event
Inflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Reach DP-7: #4 Poppy Ln



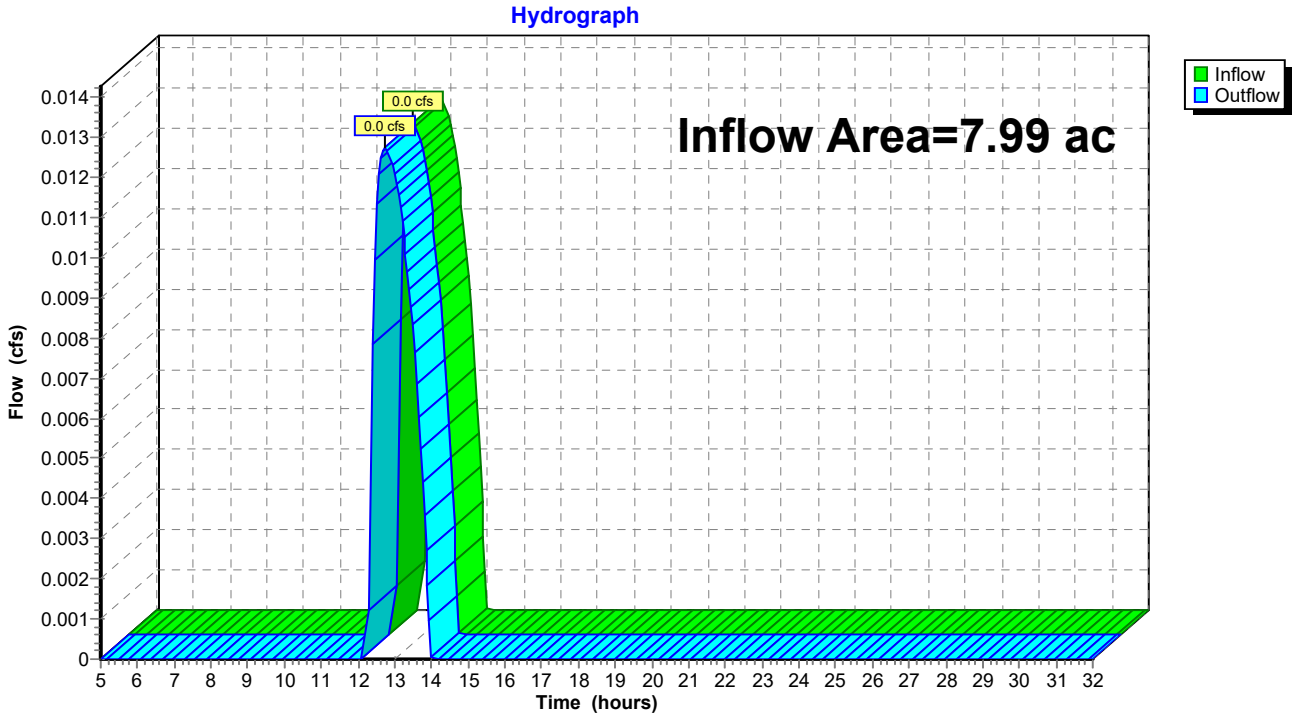
Summary for Reach DP-8: Wetland Series 'D' & 'E'

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 7.99 ac, 43.55% Impervious, Inflow Depth = 0.00" for 2-Yr event
Inflow = 0.0 cfs @ 12.72 hrs, Volume= 0.001 af
Outflow = 0.0 cfs @ 12.72 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Reach DP-8: Wetland Series 'D' & 'E'



Summary for Pond C-1: Culvert 1

[57] Hint: Peaked at 166.00' (Flood elevation advised)

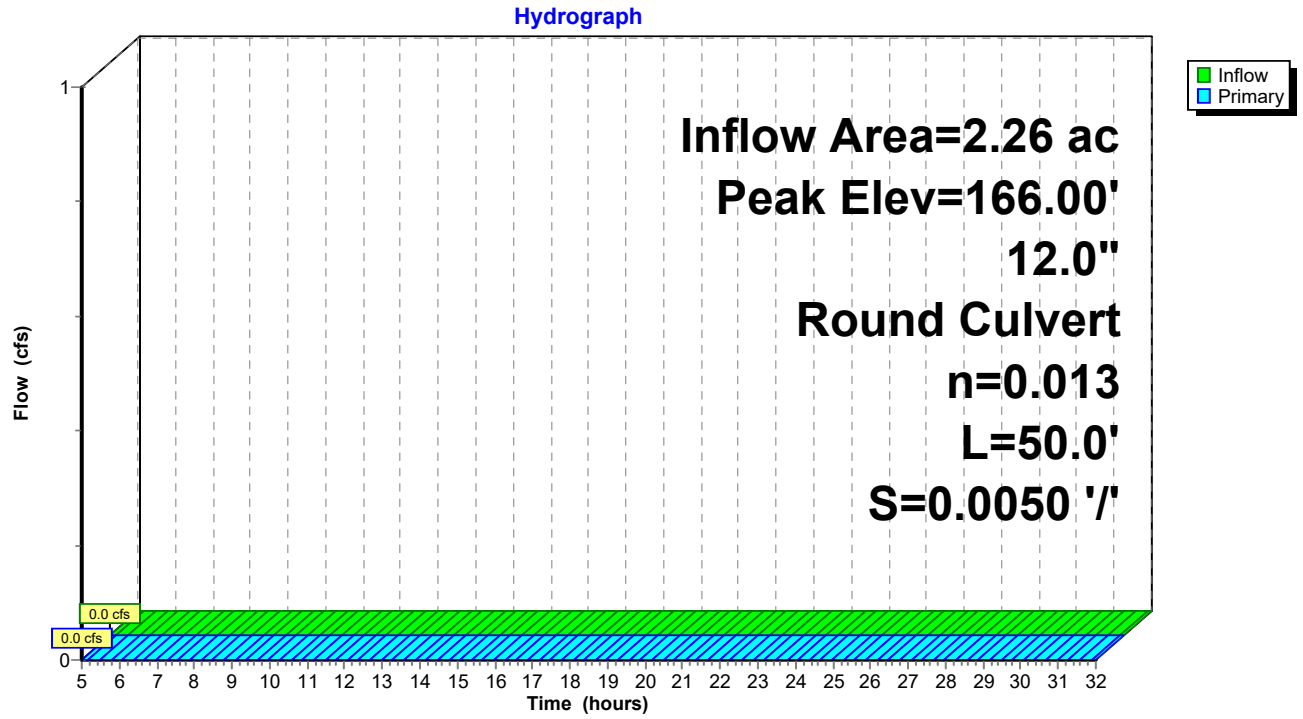
Inflow Area = 2.26 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Yr event
Inflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond WL-1 : Wetland Series 'J'

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 166.00' @ 5.00 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	166.00'	**12.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 166.00' / 165.75' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 5.00 hrs HW=166.00' (Free Discharge)
1=Culvert (Controls 0.0 cfs)

Pond C-1: Culvert 1



Summary for Pond DB-1:

Inflow Area = 0.65 ac, 46.15% Impervious, Inflow Depth = 0.60" for 2-Yr event
Inflow = 0.4 cfs @ 12.11 hrs, Volume= 0.033 af
Outflow = 0.0 cfs @ 16.04 hrs, Volume= 0.031 af, Atten= 93%, Lag= 235.4 min
Primary = 0.0 cfs @ 16.04 hrs, Volume= 0.031 af
Routed to Reach DP-5 : Wetland Series 'A'
Secondary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach DP-5 : Wetland Series 'A'

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 132.38' @ 16.04 hrs Surf.Area= 1,162 sf Storage= 704 cf

Plug-Flow detention time= 369.8 min calculated for 0.031 af (96% of inflow)
Center-of-Mass det. time= 350.9 min (1,244.4 - 893.5)

Volume	Invert	Avail.Storage	Storage Description
#1	131.50'	11,510 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

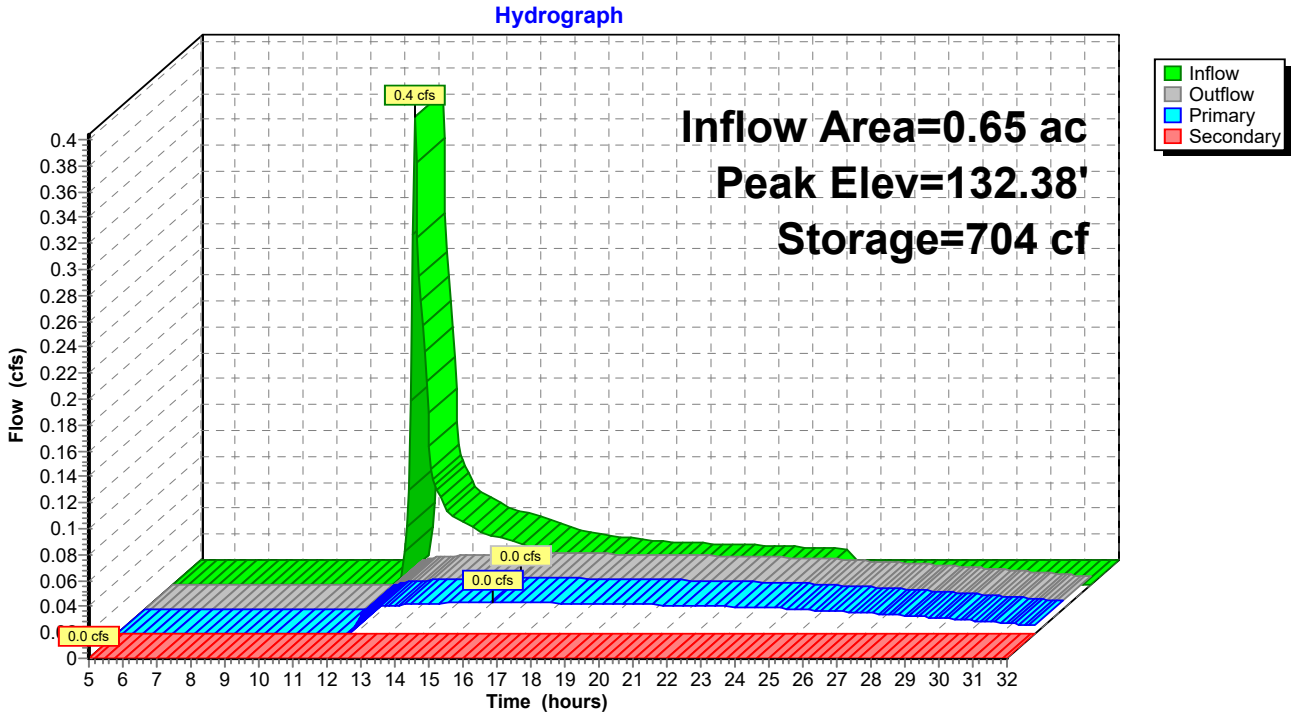
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
131.50	484	0	0
132.00	834	330	330
134.00	2,581	3,415	3,745
136.00	5,184	7,765	11,510

Device	Routing	Invert	Outlet Devices
#1	Primary	130.50'	**8.0" Round Culvert** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 130.50' / 130.37' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	131.50'	**1.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	134.90'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	135.00'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.0 cfs @ 16.04 hrs HW=132.38' (Free Discharge)
└**1=Culvert** (Passes 0.0 cfs of 1.6 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.0 cfs @ 4.40 fps)
└**3=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 5.00 hrs HW=131.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond DB-1:


Hydrograph
Inflow Area=0.65 ac
Peak Elev=132.38'
Storage=704 cf
Inflow
Outflow
Primary
Secondary
0.4 cfs
0.0 cfs
0.0 cfs
0.0 cfs
Flow (cfs)
Time (hours)

Summary for Pond DB-2:

Inflow Area = 1.82 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Yr event
Inflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach DP-8 : Wetland Series 'D' & 'E'
Secondary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach DP-8 : Wetland Series 'D' & 'E'

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 146.00' @ 5.00 hrs Surf.Area= 3,633 sf Storage= 0 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	146.00'	9,074 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

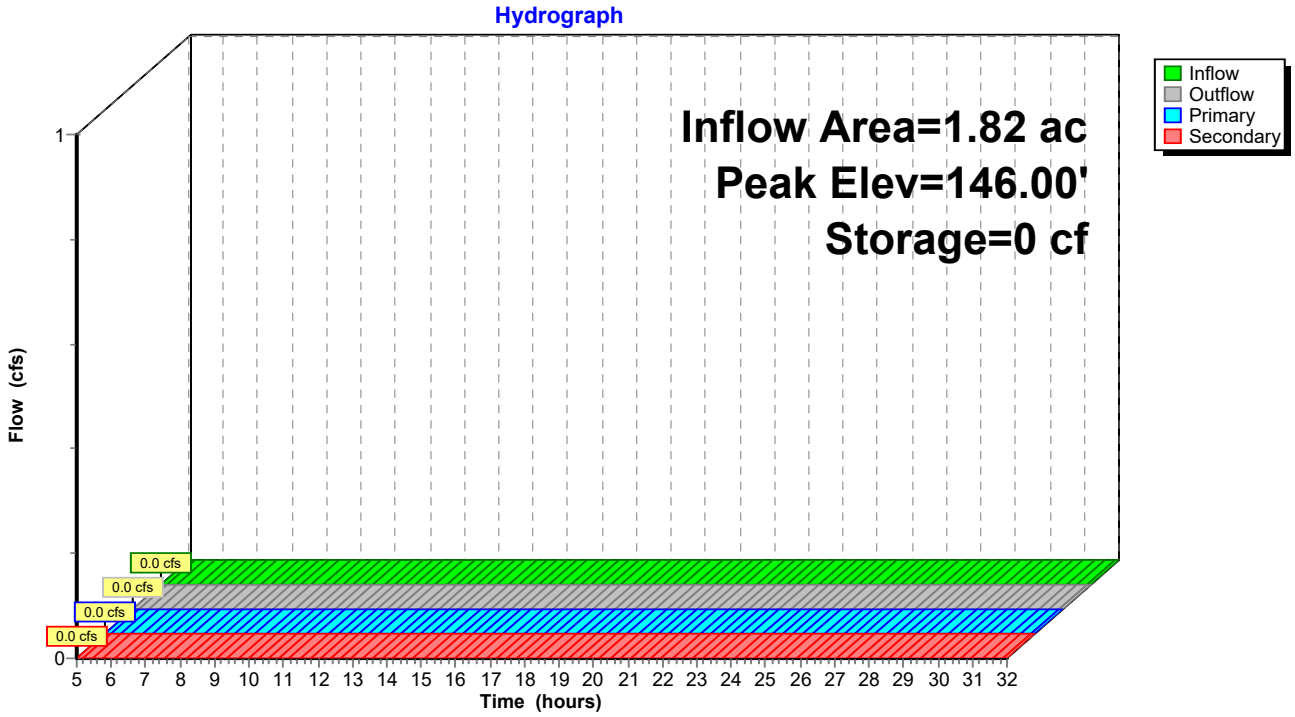
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
146.00	3,633	0	0
148.00	5,441	9,074	9,074

Device	Routing	Invert	Outlet Devices
#1	Primary	145.00'	**12.0" Round Culvert** L= 28.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 145.00' / 144.86' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	146.50'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	146.90'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	147.00'	**10.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=0.0 cfs @ 5.00 hrs HW=146.00' (Free Discharge)
└**1=Culvert** (Passes 0.0 cfs of 2.1 cfs potential flow)
├**2=Orifice/Grate** (Controls 0.0 cfs)
└**3=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 5.00 hrs HW=146.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond DB-2:


Hydrograph
Inflow Area=1.82 ac
Peak Elev=146.00'
Storage=0 cf
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)
0.0 cfs
0.0 cfs
0.0 cfs
0.0 cfs
0
1
5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32

Summary for Pond IB-1:

[79] Warning: Submerged Pond IB-2 Primary device # 2 OUTLET by 0.50'

Inflow Area = 9.12 ac, 49.45% Impervious, Inflow Depth = 0.72" for 2-Yr event
Inflow = 6.6 cfs @ 12.12 hrs, Volume= 0.549 af
Outflow = 0.9 cfs @ 13.07 hrs, Volume= 0.549 af, Atten= 86%, Lag= 56.7 min
Discarded = 0.9 cfs @ 13.07 hrs, Volume= 0.549 af
Primary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond WL-1 : Wetland Series 'J'
Secondary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond WL-1 : Wetland Series 'J'

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 138.50' @ 13.07 hrs Surf.Area= 16,117 sf Storage= 7,863 cf

Plug-Flow detention time= 81.2 min calculated for 0.548 af (100% of inflow)
Center-of-Mass det. time= 81.1 min (953.7 - 872.6)

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	96,787 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	15,335	0	0
140.00	18,465	33,800	33,800
142.00	21,820	40,285	74,085
143.00	23,583	22,702	96,787

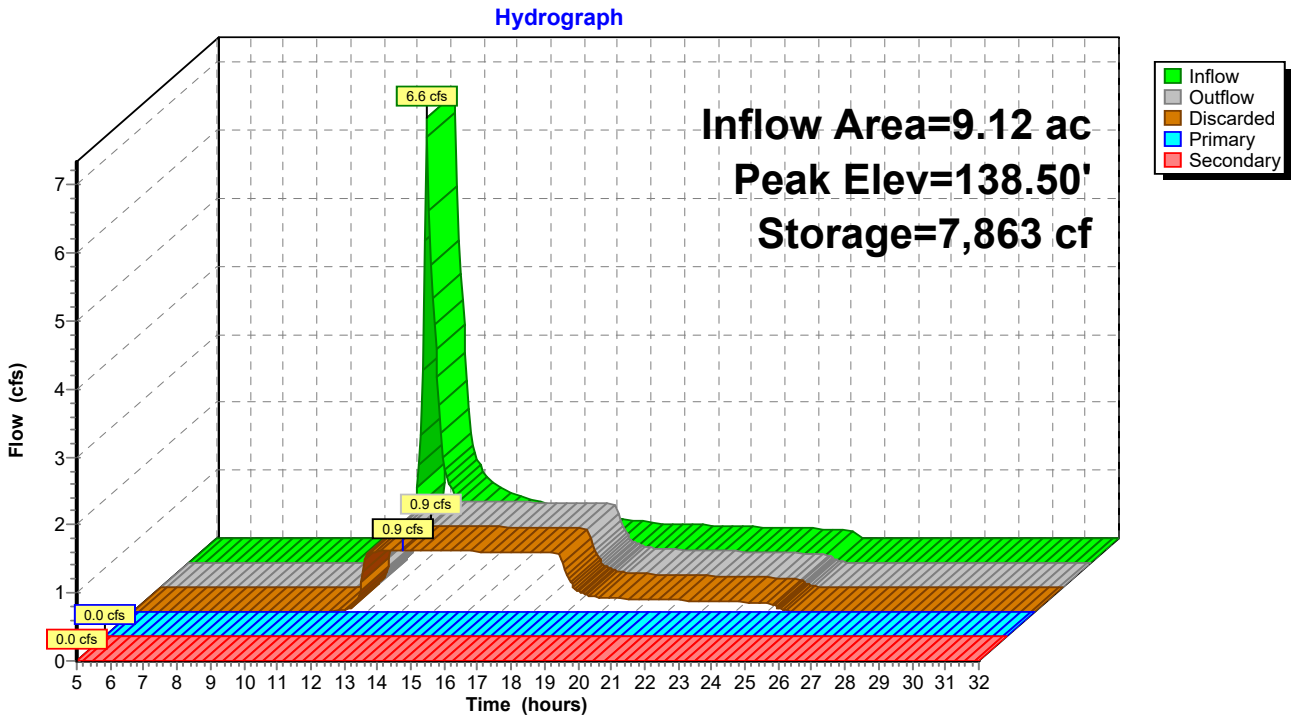
Device	Routing	Invert	Outlet Devices
#1	Discarded	138.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	138.00'	**12.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 138.00' / 137.50' S= 0.0071 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	138.60'	**0.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	141.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 2	141.90'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Secondary	142.00'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.9 cfs @ 13.07 hrs HW=138.50' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.9 cfs)

Primary OutFlow Max=0.0 cfs @ 5.00 hrs HW=138.00' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)
  └**3=Orifice/Grate** (Controls 0.0 cfs)
  └**4=Orifice/Grate** (Controls 0.0 cfs)
  └**5=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 5.00 hrs HW=138.00' (Free Discharge)
└**6=Broad-Crested Rectangular Weir**(Controls 0.0 cfs)

Pond IB-1:



Summary for Pond IB-2:

Inflow Area = 1.48 ac, 25.68% Impervious, Inflow Depth = 0.20" for 2-Yr event
Inflow = 0.1 cfs @ 12.67 hrs, Volume= 0.025 af
Outflow = 0.1 cfs @ 12.72 hrs, Volume= 0.025 af, Atten= 1%, Lag= 2.9 min
Discarded = 0.1 cfs @ 12.72 hrs, Volume= 0.025 af
Primary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond IB-1 :

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 138.00' @ 12.72 hrs Surf.Area= 4,091 sf Storage= 12 cf

Plug-Flow detention time= 2.6 min calculated for 0.025 af (100% of inflow)
Center-of-Mass det. time= 2.6 min (991.4 - 988.8)

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	17,048 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

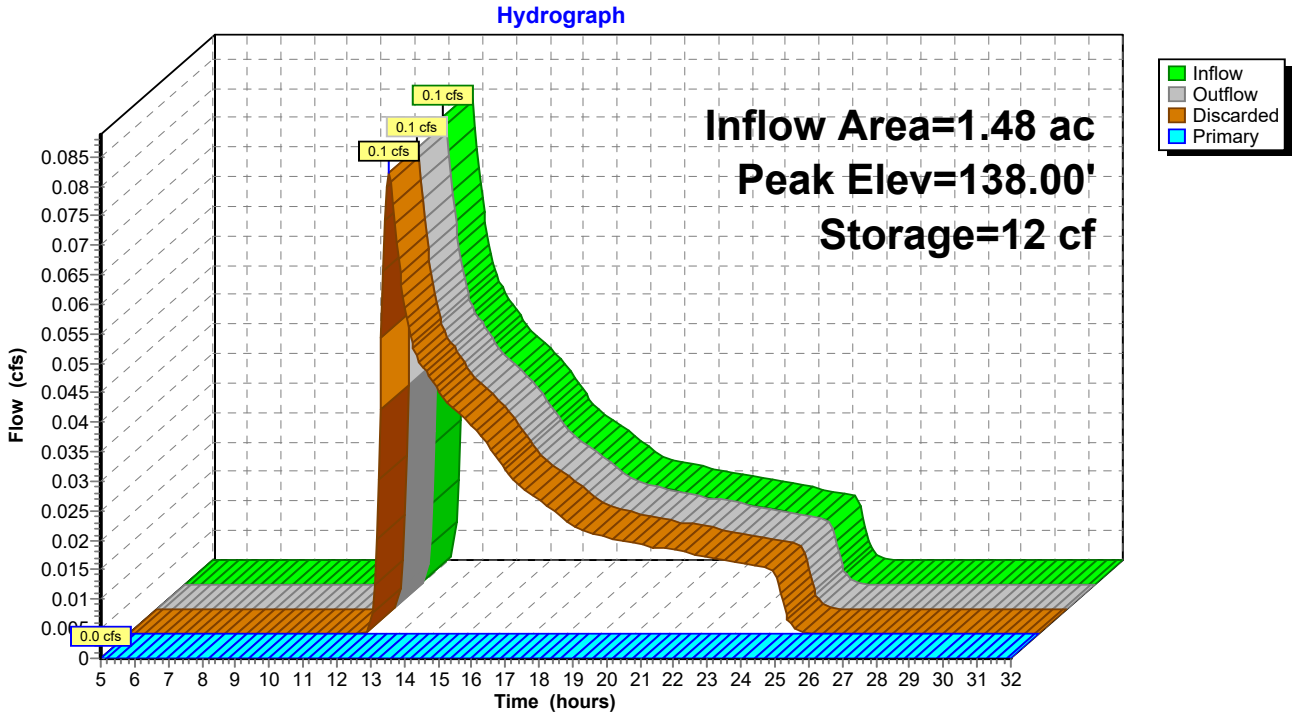
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	4,088	0	0
140.00	5,917	10,005	10,005
141.00	8,168	7,043	17,048

Device	Routing	Invert	Outlet Devices
#1	Discarded	138.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	139.00'	**12.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 139.00' / 138.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.8 cfs @ 12.72 hrs HW=138.00' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.8 cfs)

Primary OutFlow Max=0.0 cfs @ 5.00 hrs HW=138.00' (Free Discharge)
↑—**2=Culvert** (Controls 0.0 cfs)

Pond IB-2:


Hydrograph
Inflow Area=1.48 ac
Peak Elev=138.00'
Storage=12 cf
Inflow
Outflow
Discarded
Primary
0.1 cfs
0.1 cfs
0.1 cfs
0.0 cfs
Flow (cfs)
Time (hours)

Summary for Pond IB-3:

Inflow Area = 4.82 ac, 72.20% Impervious, Inflow Depth = 1.47" for 2-Yr event
Inflow = 7.8 cfs @ 12.11 hrs, Volume= 0.592 af
Outflow = 1.2 cfs @ 12.72 hrs, Volume= 0.592 af, Atten= 85%, Lag= 36.8 min
Discarded = 1.2 cfs @ 12.72 hrs, Volume= 0.591 af
Primary = 0.0 cfs @ 12.72 hrs, Volume= 0.001 af
Routed to Reach DP-8 : Wetland Series 'D' & 'E'
Secondary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach DP-8 : Wetland Series 'D' & 'E'

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 136.78' @ 12.72 hrs Surf.Area= 6,045 sf Storage= 9,663 cf

Plug-Flow detention time= 89.9 min calculated for 0.591 af (100% of inflow)
Center-of-Mass det. time= 89.7 min (928.4 - 838.7)

Volume	Invert	Avail.Storage	Storage Description
#1	134.00'	68,109 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
134.00	1,109	0	0
136.00	4,463	5,572	5,572
138.00	8,526	12,989	18,561
140.00	12,412	20,938	39,499
142.00	16,198	28,610	68,109

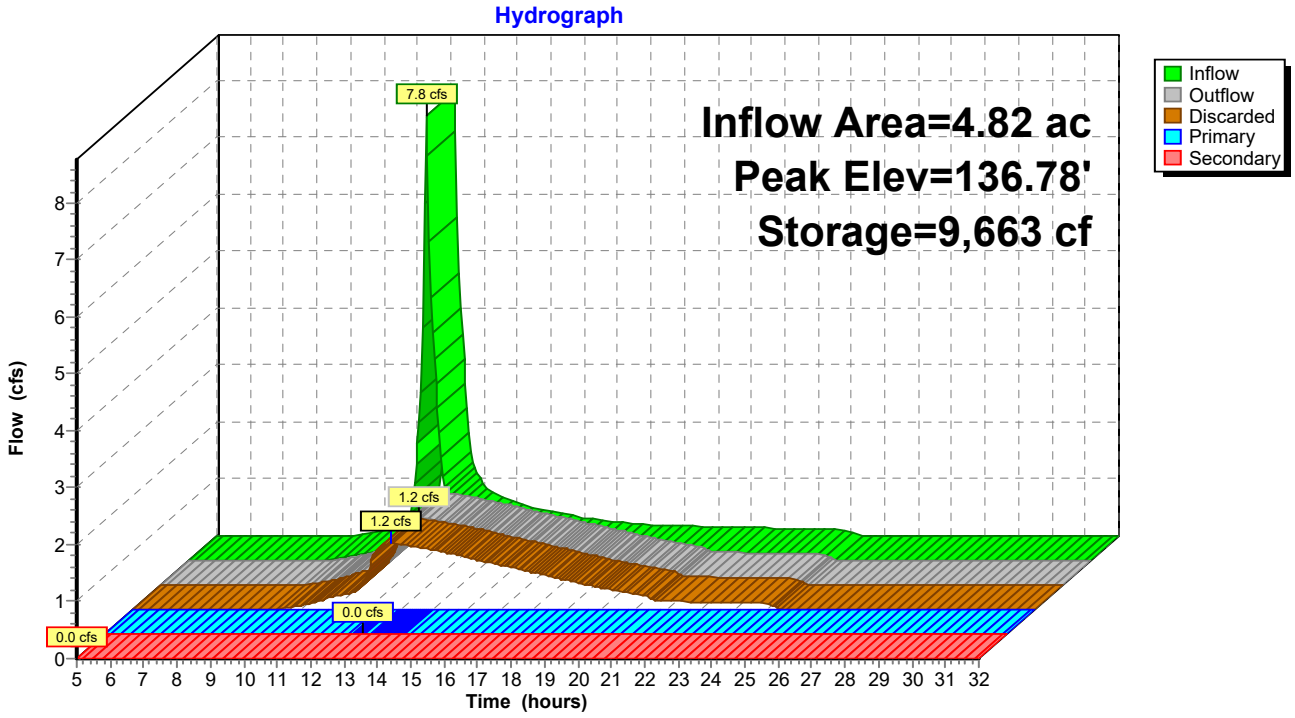
Device	Routing	Invert	Outlet Devices
#1	Discarded	134.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	134.00'	**15.0" Round Culvert** L= 49.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 134.00' / 133.76' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#3	Device 2	136.50'	**1.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	140.80'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	141.00'	**10.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=1.2 cfs @ 12.72 hrs HW=136.78' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 1.2 cfs)

Primary OutFlow Max=0.0 cfs @ 12.72 hrs HW=136.78' (Free Discharge)
└**2=Culvert** (Passes 0.0 cfs of 8.1 cfs potential flow)
└**3=Orifice/Grate** (Orifice Controls 0.0 cfs @ 2.34 fps)
└**4=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 5.00 hrs HW=134.00' (Free Discharge)
└**5=Broad-Crested Rectangular Weir**(Controls 0.0 cfs)

Pond IB-3:



Summary for Pond IT-1: Infiltration Trench

Inflow Area = 0.33 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Yr event
Inflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 144.00' @ 5.00 hrs Surf.Area= 654 sf Storage= 0 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1A	144.00'	400 cf	**2.04'W x 320.17'L x 2.04'H Field A** 1,335 cf Overall - 335 cf Embedded = 1,000 cf x 40.0% Voids
#2A	144.50'	259 cf	**ADS N-12 12"** x 16 Inside #1 Inside= 12.2"W x 12.2"H => 0.81 sf x 20.00'L = 16.2 cf Outside= 14.5"W x 14.5"H => 1.05 sf x 20.00'L = 20.9 cf
		659 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	144.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.0 cfs @ 5.00 hrs HW=144.00' (Free Discharge)
↑**1=Exfiltration** (Passes 0.0 cfs of 0.1 cfs potential flow)

Pond IT-1: Infiltration Trench - Chamber Wizard Field A

Chamber Model = ADS N-12 12" (ADS N-12® Pipe)
Inside= 12.2"W x 12.2"H => 0.81 sf x 20.00'L = 16.2 cf
Outside= 14.5"W x 14.5"H => 1.05 sf x 20.00'L = 20.9 cf

16 Chambers/Row x 20.00' Long = 320.00' Row Length +1.0" End Stone x 2 = 320.17' Base Length
1 Rows x 14.5" Wide + 5.0" Side Stone x 2 = 2.04' Base Width
6.0" Stone Base + 14.5" Chamber Height + 4.0" Stone Cover = 2.04' Field Height

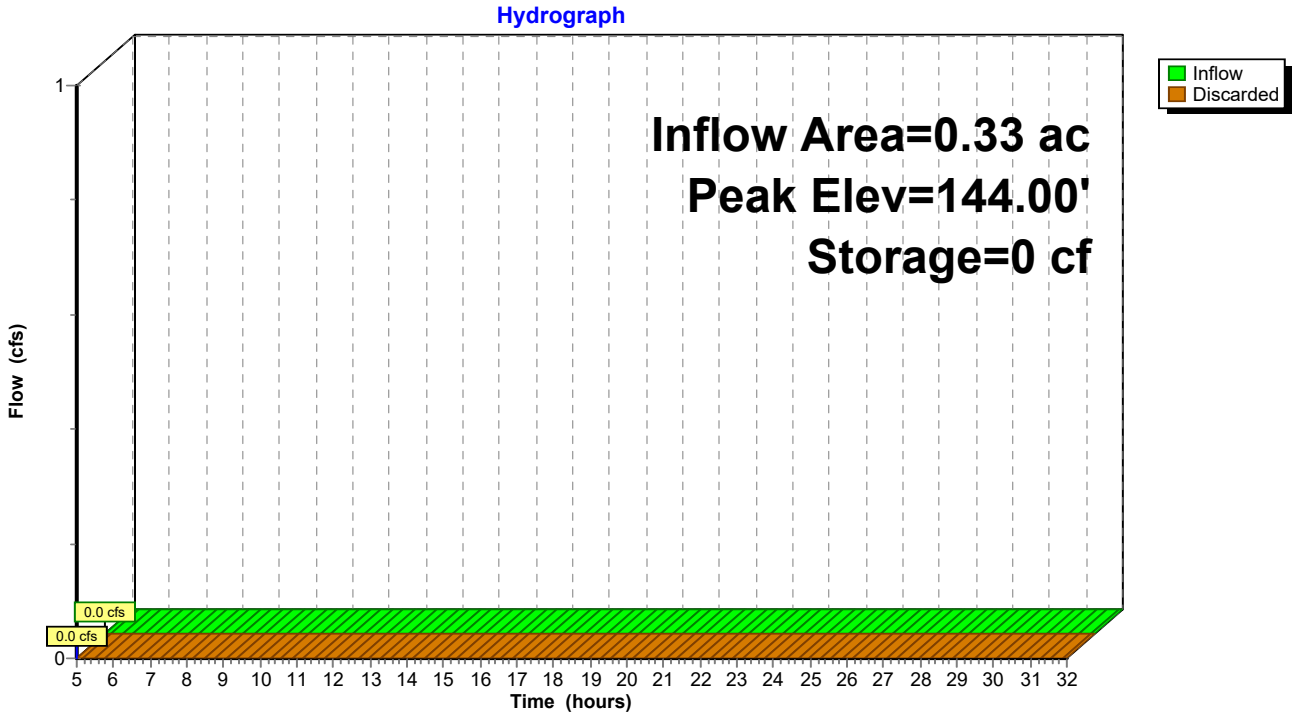
16 Chambers x 16.2 cf = 259.2 cf Chamber Storage
16 Chambers x 20.9 cf = 335.0 cf Displacement

1,335.3 cf Field - 335.0 cf Chambers = 1,000.3 cf Stone x 40.0% Voids = 400.1 cf Stone Storage

Chamber Storage + Stone Storage = 659.3 cf = 0.015 af
Overall Storage Efficiency = 49.4%
Overall System Size = 320.17' x 2.04' x 2.04'

16 Chambers
49.5 cy Field
37.0 cy Stone

Pond IT-1: Infiltration Trench



Summary for Pond IT-2: Infiltration Trench

Inflow Area = 0.31 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Yr event
Inflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 134.00' @ 5.00 hrs Surf.Area= 450 sf Storage= 0 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1A	134.00'	275 cf	**2.04'W x 220.17'L x 2.04'H Field A** 918 cf Overall - 230 cf Embedded = 688 cf x 40.0% Voids
#2A	134.50'	178 cf	**ADS N-12 12"** x 11 Inside #1 Inside= 12.2"W x 12.2"H => 0.81 sf x 20.00'L = 16.2 cf Outside= 14.5"W x 14.5"H => 1.05 sf x 20.00'L = 20.9 cf
		453 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	134.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.0 cfs @ 5.00 hrs HW=134.00' (Free Discharge)
1=Exfiltration (Passes 0.0 cfs of 0.1 cfs potential flow)

Pond IT-2: Infiltration Trench - Chamber Wizard Field A

Chamber Model = ADS N-12 12" (ADS N-12® Pipe)
Inside= 12.2"W x 12.2"H => 0.81 sf x 20.00'L = 16.2 cf
Outside= 14.5"W x 14.5"H => 1.05 sf x 20.00'L = 20.9 cf

11 Chambers/Row x 20.00' Long = 220.00' Row Length +1.0" End Stone x 2 = 220.17' Base Length
1 Rows x 14.5" Wide + 5.0" Side Stone x 2 = 2.04' Base Width
6.0" Stone Base + 14.5" Chamber Height + 4.0" Stone Cover = 2.04' Field Height

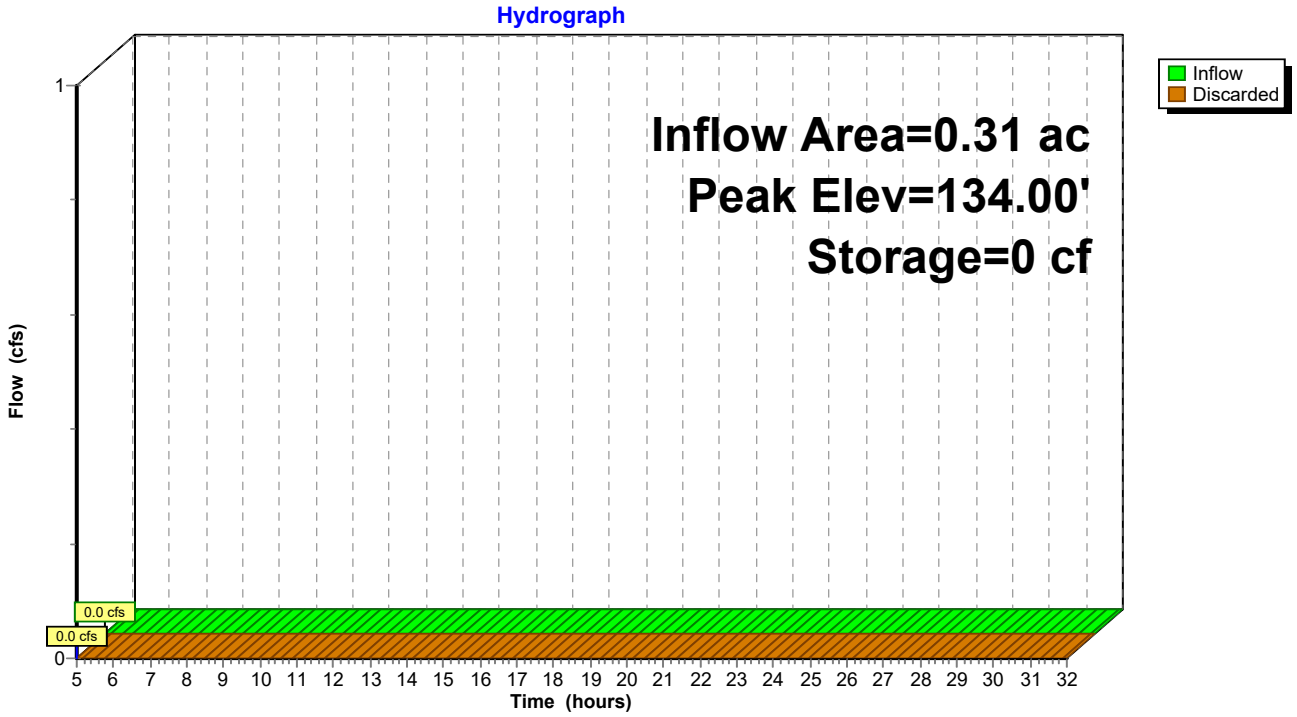
11 Chambers x 16.2 cf = 178.2 cf Chamber Storage
11 Chambers x 20.9 cf = 230.3 cf Displacement

918.2 cf Field - 230.3 cf Chambers = 687.9 cf Stone x 40.0% Voids = 275.2 cf Stone Storage

Chamber Storage + Stone Storage = 453.4 cf = 0.010 af
Overall Storage Efficiency = 49.4%
Overall System Size = 220.17' x 2.04' x 2.04'

11 Chambers
34.0 cy Field
25.5 cy Stone

Pond IT-2: Infiltration Trench



Summary for Pond IT-3: Infiltration Trench

Inflow Area = 0.37 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-Yr event
Inflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Discarded = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 136.00' @ 5.00 hrs Surf.Area= 899 sf Storage= 0 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1A	136.00'	550 cf	**2.04'W x 440.17'L x 2.04'H Field A** 1,836 cf Overall - 461 cf Embedded = 1,375 cf x 40.0% Voids
#2A	136.50'	356 cf	**ADS N-12 12"** x 22 Inside #1 Inside= 12.2"W x 12.2"H => 0.81 sf x 20.00'L = 16.2 cf Outside= 14.5"W x 14.5"H => 1.05 sf x 20.00'L = 20.9 cf
		906 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	136.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.0 cfs @ 5.00 hrs HW=136.00' (Free Discharge)
↑**1=Exfiltration** (Passes 0.0 cfs of 0.2 cfs potential flow)

Pond IT-3: Infiltration Trench - Chamber Wizard Field A

Chamber Model = ADS N-12 12" (ADS N-12® Pipe)
Inside= 12.2"W x 12.2"H => 0.81 sf x 20.00'L = 16.2 cf
Outside= 14.5"W x 14.5"H => 1.05 sf x 20.00'L = 20.9 cf

22 Chambers/Row x 20.00' Long = 440.00' Row Length +1.0" End Stone x 2 = 440.17' Base Length
1 Rows x 14.5" Wide + 5.0" Side Stone x 2 = 2.04' Base Width
6.0" Stone Base + 14.5" Chamber Height + 4.0" Stone Cover = 2.04' Field Height

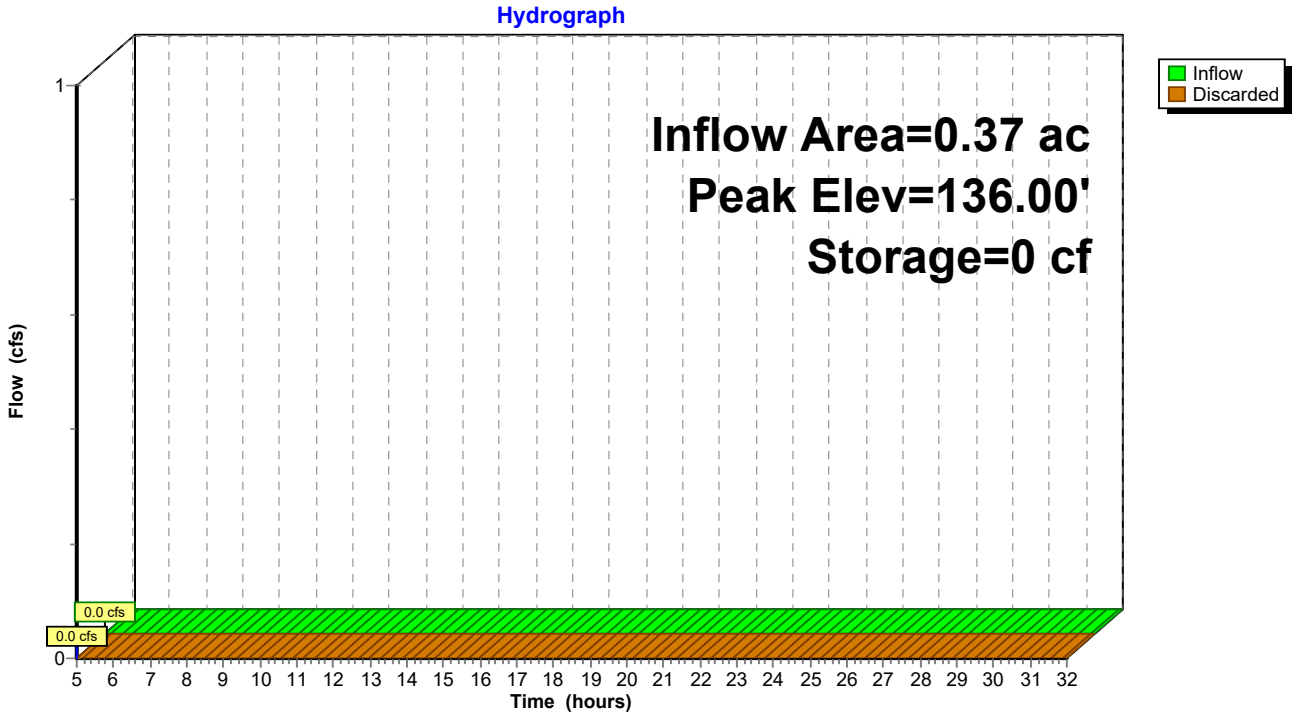
22 Chambers x 16.2 cf = 356.4 cf Chamber Storage
22 Chambers x 20.9 cf = 460.6 cf Displacement

1,835.8 cf Field - 460.6 cf Chambers = 1,375.2 cf Stone x 40.0% Voids = 550.1 cf Stone Storage

Chamber Storage + Stone Storage = 906.5 cf = 0.021 af
Overall Storage Efficiency = 49.4%
Overall System Size = 440.17' x 2.04' x 2.04'

22 Chambers
68.0 cy Field
50.9 cy Stone

Pond IT-3: Infiltration Trench



Summary for Pond SUB-1: Subsurface 1

Inflow Area = 5.20 ac, 64.23% Impervious, Inflow Depth = 1.15" for 2-Yr event
Inflow = 6.7 cfs @ 12.10 hrs, Volume= 0.500 af
Outflow = 1.9 cfs @ 11.95 hrs, Volume= 0.500 af, Atten= 72%, Lag= 0.0 min
Discarded = 1.9 cfs @ 11.95 hrs, Volume= 0.500 af
Primary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach DP-6 : Wetland Series 'B' & 'C'

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 138.91' @ 12.49 hrs Surf.Area= 9,886 sf Storage= 4,360 cf

Plug-Flow detention time= 13.7 min calculated for 0.500 af (100% of inflow)
Center-of-Mass det. time= 13.7 min (867.5 - 853.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	138.00'	15,637 cf	**64.83'W x 152.48'L x 6.75'H Field A** 66,731 cf Overall - 27,638 cf Embedded = 39,093 cf x 40.0% Voids
#2A	138.75'	27,638 cf	**ADS_StormTech MC-7200 +Cap** x 154 Inside #1 Effective Size= 91.2"W x 60.0"H => 26.68 sf x 6.59'L = 175.9 cf Overall Size= 100.0"W x 60.0"H x 6.95'L with 0.36' Overlap 154 Chambers in 7 Rows Cap Storage= 39.5 cf x 2 x 7 rows = 553.0 cf
		43,275 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	138.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	138.00'	**12.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 138.00' / 137.40' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	144.70'	**4.0' long x 2.00' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Discarded OutFlow Max=1.9 cfs @ 11.95 hrs HW=138.09' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 1.9 cfs)

Primary OutFlow Max=0.0 cfs @ 5.00 hrs HW=138.00' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)
└**3=Sharp-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond SUB-1: Subsurface 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTechMC-7200 +Cap (ADS StormTech®MC-7200 with cap volume)
Effective Size= 91.2"W x 60.0"H => 26.68 sf x 6.59'L = 175.9 cf
Overall Size= 100.0"W x 60.0"H x 6.95'L with 0.36' Overlap
Cap Storage= 39.5 cf x 2 x 7 rows = 553.0 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

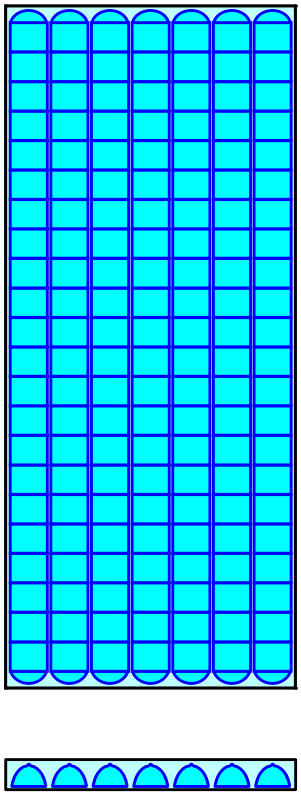
22 Chambers/Row x 6.59' Long +2.73' Cap Length x 2 = 150.48' Row Length +12.0" End Stone x 2 = 152.48' Base Length
7 Rows x 100.0" Wide + 9.0" Spacing x 6 + 12.0" Side Stone x 2 = 64.83' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

154 Chambers x 175.9 cf + 39.5 cf Cap Volume x 2 x 7 Rows = 27,637.8 cf Chamber Storage

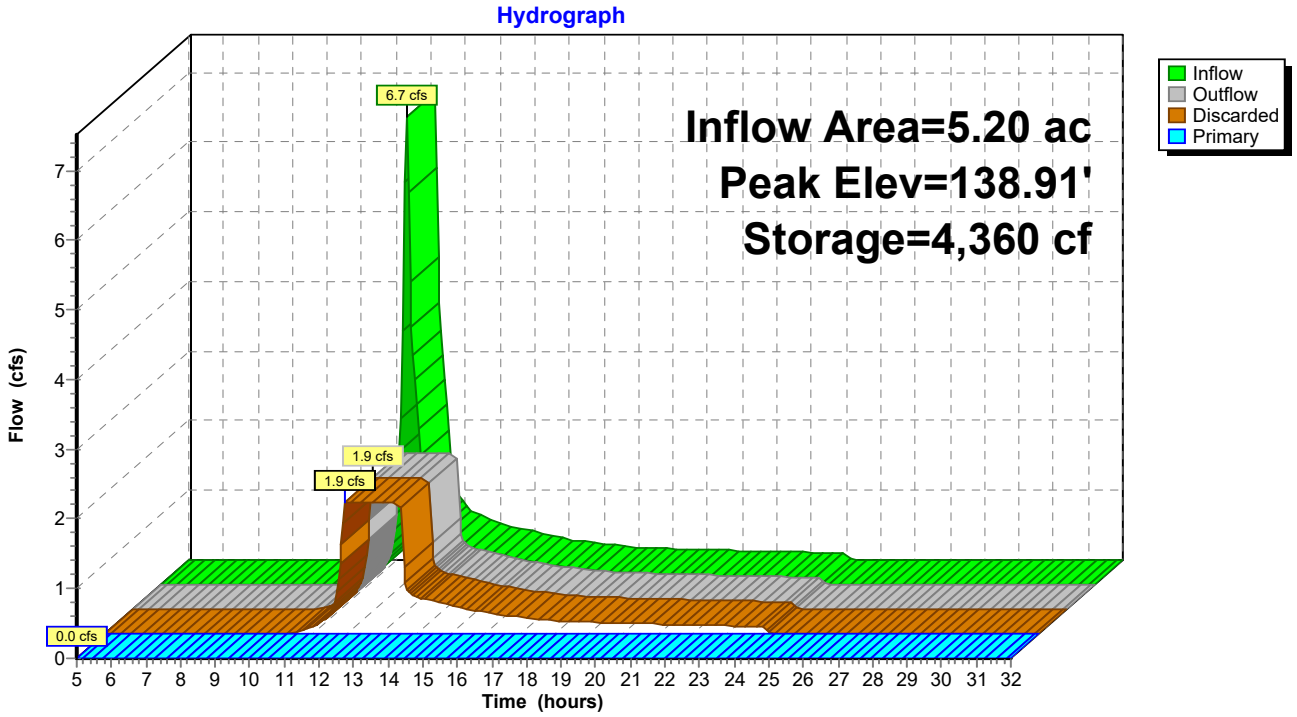
66,730.5 cf Field - 27,637.8 cf Chambers = 39,092.7 cf Stone x 40.0% Voids = 15,637.1 cf Stone Storage

Chamber Storage + Stone Storage = 43,274.9 cf = 0.993 af
Overall Storage Efficiency = 64.9%
Overall System Size = 152.48' x 64.83' x 6.75'

154 Chambers
2,471.5 cy Field
1,447.9 cy Stone



Pond SUB-1: Subsurface 1



Summary for Pond WL-1: Wetland Series 'J'

Inflow Area = 13.16 ac, 34.27% Impervious, Inflow Depth = 0.00" for 2-Yr event
Inflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach DP-5 : Wetland Series 'A'
Secondary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach DP-5 : Wetland Series 'A'

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 136.00' @ 5.00 hrs Surf.Area= 219 sf Storage= 0 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	127,590 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

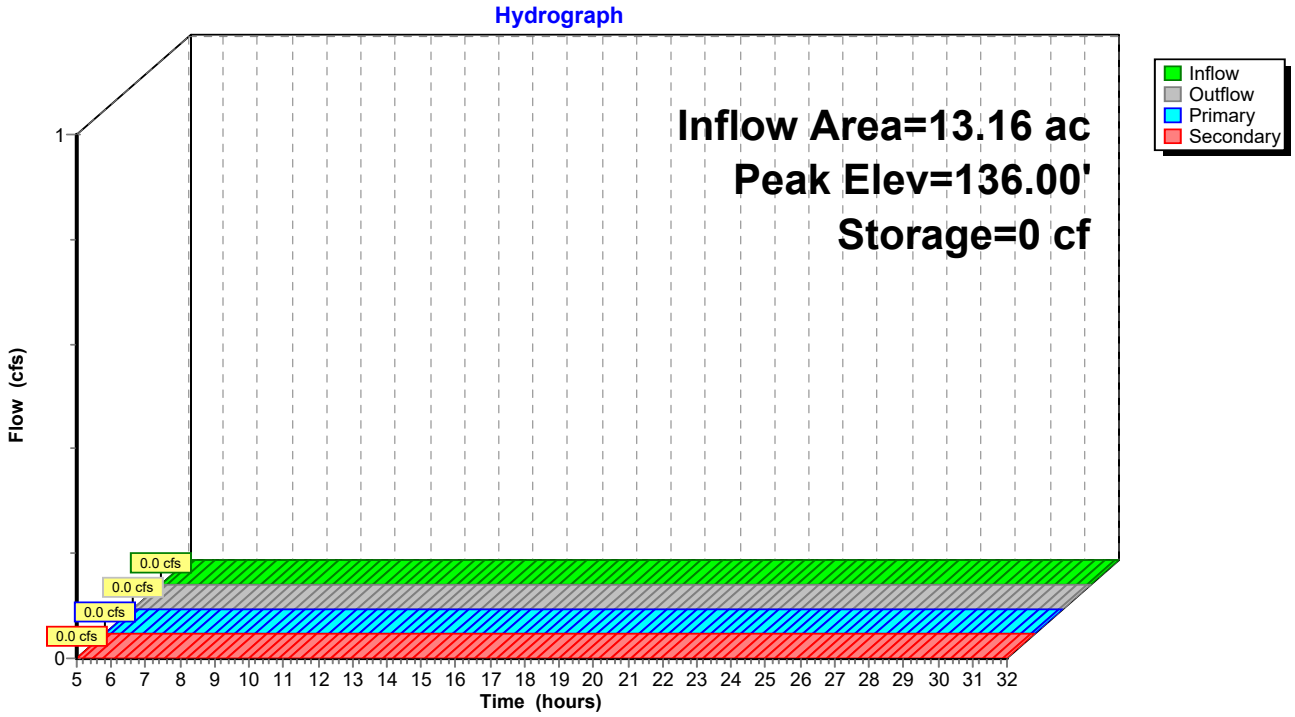
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
136.00	219	0	0
138.00	6,965	7,184	7,184
140.00	25,165	32,130	39,314
141.00	41,218	33,192	72,506
142.00	68,950	55,084	127,590

Device	Routing	Invert	Outlet Devices
#1	Primary	137.05'	**18.0" Round Culvert** L= 145.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 137.05' / 136.05' S= 0.0069 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf
#2	Secondary	141.05'	**155.0' long x 35.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.0 cfs @ 5.00 hrs HW=136.00' (Free Discharge)
1=Culvert (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 5.00 hrs HW=136.00' (Free Discharge)
2=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Pond WL-1: Wetland Series 'J'



Summary for Subcatchment PWA-1:

Runoff = 0.1 cfs @ 14.89 hrs, Volume= 0.045 af, Depth= 0.12"
Routed to Reach DP-1 : Northern Wetlands Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=4.90"

Area (ac)	CN	Description
0.29	61	>75% Grass cover, Good, HSG B
0.55	39	>75% Grass cover, Good, HSG A
2.97	30	Woods, Good, HSG A
0.65	55	Woods, Good, HSG B
4.46	37	Weighted Average
4.46		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	100	0.0650	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
5.3	297	0.0350	0.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
18.3	397	Total			

Summary for Subcatchment PWA-3:

Runoff = 0.0 cfs @ 15.71 hrs, Volume= 0.001 af, Depth= 0.05"
Routed to Reach DP-3 : #48 Rinzee Rd

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=4.90"

Area (ac)	CN	Description
0.11	39	>75% Grass cover, Good, HSG A
0.17	30	Woods, Good, HSG A
0.28	34	Weighted Average
0.28		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	80	0.1000	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"

Summary for Subcatchment PWA-4:

Runoff = 0.0 cfs @ 14.71 hrs, Volume= 0.003 af, Depth= 0.12"
Routed to Reach DP-4 : Poppy Ln

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=4.90"

Area (ac)	CN	Description
0.23	39	>75% Grass cover, Good, HSG A
0.08	30	Woods, Good, HSG A
0.31	37	Weighted Average
0.31		100.00% Pervious Area

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

Summary for Subcatchment PWA-5A:

Runoff = 0.0 cfs @ 15.65 hrs, Volume= 0.002 af, Depth= 0.05"
Routed to Reach DP-5 : Wetland Series 'A'

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=4.90"

Area (ac)	CN	Description
0.20	30	Woods, Good, HSG A
0.19	39	>75% Grass cover, Good, HSG A
0.39	34	Weighted Average
0.39		100.00% Pervious Area

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

Summary for Subcatchment PWA-5B:

Runoff = 1.4 cfs @ 12.12 hrs, Volume= 0.110 af, Depth= 2.81"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=4.90"

Area (ac)	CN	Description
0.14	39	>75% Grass cover, Good, HSG A
0.09	98	Roofs, HSG A
0.24	98	Paved parking, HSG A
0.47	80	Weighted Average
0.14		29.79% Pervious Area
0.33		70.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.0360	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.40"
0.3	60	0.0400	3.00		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.1	265	0.0750	4.11		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
3.0	330	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
8.7	705	Total			

Summary for Subcatchment PWA-5C:

Runoff = 15.9 cfs @ 12.11 hrs, Volume= 1.220 af, Depth= 2.04"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=4.90"

Area (ac)	CN	Description
2.71	39	>75% Grass cover, Good, HSG A
0.31	61	>75% Grass cover, Good, HSG B
0.22	30	Woods, Good, HSG A
0.13	55	Woods, Good, HSG B
1.23	98	Roofs, HSG A
0.11	98	Roofs, HSG B
2.46	98	Paved parking, HSG A
7.17	71	Weighted Average
3.37		47.00% Pervious Area
3.80		53.00% Impervious Area

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

Summary for Subcatchment PWA-5D:

Runoff = 0.0 cfs @ 15.13 hrs, Volume= 0.018 af, Depth= 0.09"
Routed to Pond C-1 : Culvert 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=4.90"

Area (ac)	CN	Description
0.89	39	>75% Grass cover, Good, HSG A
0.16	61	>75% Grass cover, Good, HSG B
1.21	30	Woods, Good, HSG A
2.26	36	Weighted Average
2.26		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	69	0.1000	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
4.7	225	0.0260	0.81		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	100	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
14.5	394	Total			

Summary for Subcatchment PWA-5E:

Runoff = 0.0 cfs @ 14.76 hrs, Volume= 0.018 af, Depth= 0.12"
Routed to Pond WL-1 : Wetland Series 'J'

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=4.90"

Area (ac)	CN	Description
0.97	39	>75% Grass cover, Good, HSG A
0.04	61	>75% Grass cover, Good, HSG B
0.69	30	Woods, Good, HSG A
0.08	55	Woods, Good, HSG B
1.78	37	Weighted Average
1.78		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	50	0.0100	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.40"
0.3	30	0.0600	1.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.9	110	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	40	0.3700	4.26		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.6	230	Total			

Summary for Subcatchment PWA-5F:

Runoff = 0.7 cfs @ 12.46 hrs, Volume= 0.108 af, Depth= 0.87"
Routed to Pond IB-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=4.90"

Area (ac)	CN	Description
0.02	30	Woods, Good, HSG A
1.08	39	>75% Grass cover, Good, HSG A
0.34	98	Roofs, HSG A
0.04	98	Paved parking, HSG A
1.48	54	Weighted Average
1.10		74.32% Pervious Area
0.38		25.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	100	0.0200	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.40"
16.4	900	0.0170	0.91		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
25.9	1,000	Total			

Summary for Subcatchment PWA-5G:

Runoff = 1.2 cfs @ 12.10 hrs, Volume= 0.090 af, Depth= 1.66"
Routed to Pond DB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=4.90"

Area (ac)	CN	Description
0.35	39	>75% Grass cover, Good, HSG A
0.30	98	Paved parking, HSG A
0.65	66	Weighted Average
0.35		53.85% Pervious Area
0.30		46.15% Impervious Area

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

Summary for Subcatchment PWA-6A:

Runoff = 0.0 cfs @ 17.30 hrs, Volume= 0.003 af, Depth= 0.03"
Routed to Reach DP-6 : Wetland Series 'B' & 'C'

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=4.90"

Area (ac)	CN	Description
0.44	39	>75% Grass cover, Good, HSG A
0.73	30	Woods, Good, HSG A
1.17	33	Weighted Average
1.17		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	100	0.0600	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
1.1	76	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.5	176	Total			

Summary for Subcatchment PWA-6B:

Runoff = 15.2 cfs @ 12.09 hrs, Volume= 1.100 af, Depth= 2.54"
Routed to Pond SUB-1 : Subsurface 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=4.90"

Area (ac)	CN	Description
1.86	39	>75% Grass cover, Good, HSG A
1.16	98	Roofs, HSG A
2.18	98	Paved roads w/curbs & sewers, HSG A
5.20	77	Weighted Average
1.86		35.77% Pervious Area
3.34		64.23% Impervious Area

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

Summary for Subcatchment PWA-7A:

Runoff = 0.0 cfs @ 15.34 hrs, Volume= 0.004 af, Depth= 0.07"
Routed to Reach DP-7 : #4 Poppy Ln

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=4.90"

Area (ac)	CN	Description
0.34	30	Woods, Good, HSG A
0.38	39	>75% Grass cover, Good, HSG A
0.72	35	Weighted Average
0.72		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	80	0.1000	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"

Summary for Subcatchment PWA-7B:

Runoff = 0.0 cfs @ 12.50 hrs, Volume= 0.005 af, Depth= 0.18"
Routed to Pond IT-2 : Infiltration Trench

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=4.90"

Area (ac)	CN	Description
0.00	30	Woods, Good, HSG A
0.31	39	>75% Grass cover, Good, HSG A
0.31	39	Weighted Average
0.31		100.00% Pervious Area

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

Summary for Subcatchment PWA-7C:

Runoff = 0.0 cfs @ 12.50 hrs, Volume= 0.006 af, Depth= 0.18"
Routed to Pond IT-3 : Infiltration Trench

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=4.90"

Area (ac)	CN	Description
0.00	30	Woods, Good, HSG A
0.37	39	>75% Grass cover, Good, HSG A
0.37	39	Weighted Average
0.37		100.00% Pervious Area

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

Summary for Subcatchment PWA-8A:

Runoff = 0.0 cfs @ 15.71 hrs, Volume= 0.008 af, Depth= 0.05"
Routed to Pond DB-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=4.90"

Area (ac)	CN	Description
1.01	30	Woods, Good, HSG A
0.81	39	>75% Grass cover, Good, HSG A
1.82	34	Weighted Average
1.82		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	50	0.1600	0.16		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
4.2	280	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.4	330	Total			

Summary for Subcatchment PWA-8B:

Runoff = 15.9 cfs @ 12.11 hrs, Volume= 1.201 af, Depth= 2.99"
Routed to Pond IB-3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=4.90"

Area (ac)	CN	Description
1.34	39	>75% Grass cover, Good, HSG A
1.43	98	Roofs, HSG A
2.05	98	Paved roads w/curbs & sewers, HSG A
4.82	82	Weighted Average
1.34		27.80% Pervious Area
3.48		72.20% Impervious Area

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

Summary for Subcatchment PWA-8C:

Runoff = 0.0 cfs @ 15.69 hrs, Volume= 0.006 af, Depth= 0.05"
Routed to Reach DP-8 : Wetland Series 'D' & 'E'

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=4.90"

Area (ac)	CN	Description
0.79	30	Woods, Good, HSG A
0.56	39	>75% Grass cover, Good, HSG A
1.35	34	Weighted Average
1.35		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	50	0.0200	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.40"
0.5	50	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.5	100	Total			

Summary for Subcatchment PWA-8D:

Runoff = 0.0 cfs @ 12.50 hrs, Volume= 0.005 af, Depth= 0.18"
Routed to Pond IT-1 : Infiltration Trench

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Yr Rainfall=4.90"

Area (ac)	CN	Description
0.33	39	>75% Grass cover, Good, HSG A
0.33		100.00% Pervious Area

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

Summary for Reach DP-1: Northern Wetlands Culvert

Inflow Area = 4.46 ac, 0.00% Impervious, Inflow Depth = 0.12" for 10-Yr event
Inflow = 0.1 cfs @ 14.89 hrs, Volume= 0.045 af
Outflow = 0.1 cfs @ 14.89 hrs, Volume= 0.045 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-3: #48 Rinzee Rd

Inflow Area = 0.28 ac, 0.00% Impervious, Inflow Depth = 0.05" for 10-Yr event
Inflow = 0.0 cfs @ 15.71 hrs, Volume= 0.001 af
Outflow = 0.0 cfs @ 15.71 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-4: Poppy Ln

Inflow Area = 0.31 ac, 0.00% Impervious, Inflow Depth = 0.12" for 10-Yr event
Inflow = 0.0 cfs @ 14.71 hrs, Volume= 0.003 af
Outflow = 0.0 cfs @ 14.71 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-5: Wetland Series 'A'

Inflow Area = 14.20 ac, 33.87% Impervious, Inflow Depth > 0.05" for 10-Yr event
Inflow = 0.0 cfs @ 16.98 hrs, Volume= 0.060 af
Outflow = 0.0 cfs @ 16.98 hrs, Volume= 0.060 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-6: Wetland Series 'B' & 'C'

Inflow Area = 6.37 ac, 52.43% Impervious, Inflow Depth = 0.01" for 10-Yr event
Inflow = 0.0 cfs @ 17.30 hrs, Volume= 0.003 af
Outflow = 0.0 cfs @ 17.30 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-7: #4 Poppy Ln

Inflow Area = 0.72 ac, 0.00% Impervious, Inflow Depth = 0.07" for 10-Yr event
Inflow = 0.0 cfs @ 15.34 hrs, Volume= 0.004 af
Outflow = 0.0 cfs @ 15.34 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-8: Wetland Series 'D' & 'E'

Inflow Area = 7.99 ac, 43.55% Impervious, Inflow Depth = 0.03" for 10-Yr event
Inflow = 0.0 cfs @ 14.79 hrs, Volume= 0.019 af
Outflow = 0.0 cfs @ 14.79 hrs, Volume= 0.019 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Pond C-1: Culvert 1

Inflow Area = 2.26 ac, 0.00% Impervious, Inflow Depth = 0.09" for 10-Yr event
Inflow = 0.0 cfs @ 15.13 hrs, Volume= 0.018 af
Outflow = 0.0 cfs @ 15.13 hrs, Volume= 0.018 af, Atten= 0%, Lag= 0.0 min
Primary = 0.0 cfs @ 15.13 hrs, Volume= 0.018 af
Routed to Pond WL-1 : Wetland Series 'J'

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Peak Elev= 166.10' @ 15.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	166.00'	**12.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 166.00' / 165.75' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 15.13 hrs HW=166.10' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 0.0 cfs @ 1.06 fps)

Summary for Pond DB-1:

Inflow Area = 0.65 ac, 46.15% Impervious, Inflow Depth = 1.66" for 10-Yr event
Inflow = 1.2 cfs @ 12.10 hrs, Volume= 0.090 af
Outflow = 0.0 cfs @ 17.74 hrs, Volume= 0.058 af, Atten= 97%, Lag= 338.3 min
Primary = 0.0 cfs @ 17.74 hrs, Volume= 0.058 af
Routed to Reach DP-5 : Wetland Series 'A'
Secondary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach DP-5 : Wetland Series 'A'

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 133.50' @ 17.74 hrs Surf.Area= 2,148 sf Storage= 2,571 cf

Plug-Flow detention time= 557.0 min calculated for 0.058 af (64% of inflow)
Center-of-Mass det. time= 445.0 min (1,304.4 - 859.4)

Volume	Invert	Avail.Storage	Storage Description
#1	131.50'	11,510 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
131.50	484	0	0
132.00	834	330	330
134.00	2,581	3,415	3,745
136.00	5,184	7,765	11,510

Device	Routing	Invert	Outlet Devices
#1	Primary	130.50'	**8.0" Round Culvert** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 130.50' / 130.37' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	131.50'	**1.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	134.90'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	135.00'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.0 cfs @ 17.74 hrs HW=133.50' (Free Discharge)
└**1=Culvert** (Passes 0.0 cfs of 2.2 cfs potential flow)
  └**2=Orifice/Grate** (Orifice Controls 0.0 cfs @ 6.74 fps)
  └**3=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 5.00 hrs HW=131.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond DB-2:

Inflow Area = 1.82 ac, 0.00% Impervious, Inflow Depth = 0.05" for 10-Yr event
Inflow = 0.0 cfs @ 15.71 hrs, Volume= 0.008 af
Outflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach DP-8 : Wetland Series 'D' & 'E'
Secondary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach DP-8 : Wetland Series 'D' & 'E'

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 146.09' @ 24.55 hrs Surf.Area= 3,715 sf Storage= 335 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	146.00'	9,074 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
146.00	3,633	0	0
148.00	5,441	9,074	9,074

Device	Routing	Invert	Outlet Devices
#1	Primary	145.00'	**12.0" Round Culvert** L= 28.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 145.00' / 144.86' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	146.50'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	146.90'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	147.00'	**10.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=0.0 cfs @ 5.00 hrs HW=146.00' (Free Discharge)
└─**1=Culvert** (Passes 0.0 cfs of 2.1 cfs potential flow)
  ├─**2=Orifice/Grate** (Controls 0.0 cfs)
  └─**3=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 5.00 hrs HW=146.00' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond IB-1:

Inflow Area = 9.12 ac, 49.45% Impervious, Inflow Depth = 1.75" for 10-Yr event
Inflow = 17.3 cfs @ 12.11 hrs, Volume= 1.330 af
Outflow = 1.0 cfs @ 15.05 hrs, Volume= 1.330 af, Atten= 94%, Lag= 176.3 min
Discarded = 1.0 cfs @ 15.05 hrs, Volume= 1.319 af
Primary = 0.0 cfs @ 15.05 hrs, Volume= 0.011 af
Routed to Pond WL-1 : Wetland Series 'J'
Secondary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond WL-1 : Wetland Series 'J'

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 139.74' @ 15.05 hrs Surf.Area= 18,051 sf Storage= 28,972 cf

Plug-Flow detention time= 308.1 min calculated for 1.327 af (100% of inflow)
Center-of-Mass det. time= 308.0 min (1,153.6 - 845.6)

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	96,787 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	15,335	0	0
140.00	18,465	33,800	33,800
142.00	21,820	40,285	74,085
143.00	23,583	22,702	96,787

Device	Routing	Invert	Outlet Devices
#1	Discarded	138.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	138.00'	**12.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 138.00' / 137.50' S= 0.0071 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	138.60'	**0.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	141.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 2	141.90'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Secondary	142.00'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=1.0 cfs @ 15.05 hrs HW=139.74' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 1.0 cfs)

Primary OutFlow Max=0.0 cfs @ 15.05 hrs HW=139.74' (Free Discharge)
└**2=Culvert** (Passes 0.0 cfs of 3.3 cfs potential flow)
  ├**3=Orifice/Grate** (Orifice Controls 0.0 cfs @ 5.06 fps)
  ├**4=Orifice/Grate** (Controls 0.0 cfs)
  └**5=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 5.00 hrs HW=138.00' (Free Discharge)
└**6=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond IB-2:

Inflow Area = 1.48 ac, 25.68% Impervious, Inflow Depth = 0.87" for 10-Yr event
Inflow = 0.7 cfs @ 12.46 hrs, Volume= 0.108 af
Outflow = 0.7 cfs @ 12.50 hrs, Volume= 0.108 af, Atten= 1%, Lag= 2.9 min
Discarded = 0.7 cfs @ 12.50 hrs, Volume= 0.108 af
Primary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond IB-1 :

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 138.03' @ 12.50 hrs Surf.Area= 4,112 sf Storage= 108 cf

Plug-Flow detention time= 2.6 min calculated for 0.108 af (100% of inflow)
Center-of-Mass det. time= 2.6 min (919.7 - 917.1)

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	17,048 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	4,088	0	0
140.00	5,917	10,005	10,005
141.00	8,168	7,043	17,048

Device	Routing	Invert	Outlet Devices
#1	Discarded	138.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	139.00'	**12.0" Round Culvert**
			L= 100.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 139.00' / 138.00' S= 0.0100 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.8 cfs @ 12.50 hrs HW=138.03' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.8 cfs)

Primary OutFlow Max=0.0 cfs @ 5.00 hrs HW=138.00' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)

Summary for Pond IB-3:

Inflow Area = 4.82 ac, 72.20% Impervious, Inflow Depth = 2.99" for 10-Yr event
Inflow = 15.9 cfs @ 12.11 hrs, Volume= 1.201 af
Outflow = 1.8 cfs @ 12.90 hrs, Volume= 1.201 af, Atten= 88%, Lag= 47.5 min
Discarded = 1.8 cfs @ 12.90 hrs, Volume= 1.187 af
Primary = 0.0 cfs @ 12.90 hrs, Volume= 0.014 af
Routed to Reach DP-8 : Wetland Series 'D' & 'E'
Secondary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach DP-8 : Wetland Series 'D' & 'E'

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 138.45' @ 12.90 hrs Surf.Area= 9,409 sf Storage= 22,635 cf

Plug-Flow detention time= 141.9 min calculated for 1.201 af (100% of inflow)
Center-of-Mass det. time= 141.8 min (960.1 - 818.3)

Volume	Invert	Avail.Storage	Storage Description
#1	134.00'	68,109 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
134.00	1,109	0	0
136.00	4,463	5,572	5,572
138.00	8,526	12,989	18,561
140.00	12,412	20,938	39,499
142.00	16,198	28,610	68,109

Device	Routing	Invert	Outlet Devices
#1	Discarded	134.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	134.00'	**15.0" Round Culvert** L= 49.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 134.00' / 133.76' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#3	Device 2	136.50'	**1.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	140.80'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	141.00'	**10.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=1.8 cfs @ 12.90 hrs HW=138.45' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 1.8 cfs)

Primary OutFlow Max=0.0 cfs @ 12.90 hrs HW=138.45' (Free Discharge)
└**2=Culvert** (Passes 0.0 cfs of 11.2 cfs potential flow)
  ├**3=Orifice/Grate** (Orifice Controls 0.0 cfs @ 6.66 fps)
  └**4=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 5.00 hrs HW=134.00' (Free Discharge)
└**5=Broad-Crested Rectangular Weir**(Controls 0.0 cfs)

Summary for Pond IT-1: Infiltration Trench

Inflow Area = 0.33 ac, 0.00% Impervious, Inflow Depth = 0.18" for 10-Yr event
Inflow = 0.0 cfs @ 12.50 hrs, Volume= 0.005 af
Outflow = 0.0 cfs @ 12.51 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.7 min
Discarded = 0.0 cfs @ 12.51 hrs, Volume= 0.005 af

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 144.00' @ 12.51 hrs Surf.Area= 654 sf Storage= 0 cf

Plug-Flow detention time= 0.7 min calculated for 0.005 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (1,018.4 - 1,017.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	144.00'	400 cf	**2.04'W x 320.17'L x 2.04'H Field A** 1,335 cf Overall - 335 cf Embedded = 1,000 cf x 40.0% Voids
#2A	144.50'	259 cf	**ADS N-12 12"** x 16 Inside #1 Inside= 12.2"W x 12.2"H => 0.81 sf x 20.00'L = 16.2 cf Outside= 14.5"W x 14.5"H => 1.05 sf x 20.00'L = 20.9 cf
		659 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	144.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.1 cfs @ 12.51 hrs HW=144.00' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.1 cfs)

Summary for Pond IT-2: Infiltration Trench

Inflow Area = 0.31 ac, 0.00% Impervious, Inflow Depth = 0.18" for 10-Yr event
Inflow = 0.0 cfs @ 12.50 hrs, Volume= 0.005 af
Outflow = 0.0 cfs @ 12.51 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.7 min
Discarded = 0.0 cfs @ 12.51 hrs, Volume= 0.005 af

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Peak Elev= 134.00' @ 12.51 hrs Surf.Area= 450 sf Storage= 0 cf

Plug-Flow detention time= 0.7 min calculated for 0.005 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (1,018.4 - 1,017.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	134.00'	275 cf	**2.04'W x 220.17'L x 2.04'H Field A** 918 cf Overall - 230 cf Embedded = 688 cf x 40.0% Voids
#2A	134.50'	178 cf	**ADS N-12 12"** x 11 Inside #1 Inside= 12.2"W x 12.2"H => 0.81 sf x 20.00'L = 16.2 cf Outside= 14.5"W x 14.5"H => 1.05 sf x 20.00'L = 20.9 cf
		453 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	134.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.1 cfs @ 12.51 hrs HW=134.00' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.1 cfs)

Summary for Pond IT-3: Infiltration Trench

Inflow Area = 0.37 ac, 0.00% Impervious, Inflow Depth = 0.18" for 10-Yr event
Inflow = 0.0 cfs @ 12.50 hrs, Volume= 0.006 af
Outflow = 0.0 cfs @ 12.51 hrs, Volume= 0.006 af, Atten= 0%, Lag= 0.7 min
Discarded = 0.0 cfs @ 12.51 hrs, Volume= 0.006 af

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 136.00' @ 12.51 hrs Surf.Area= 899 sf Storage= 0 cf

Plug-Flow detention time= 0.7 min calculated for 0.006 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (1,018.4 - 1,017.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	136.00'	550 cf	**2.04'W x 440.17'L x 2.04'H Field A** 1,836 cf Overall - 461 cf Embedded = 1,375 cf x 40.0% Voids
#2A	136.50'	356 cf	**ADS N-12 12"** x 22 Inside #1 Inside= 12.2"W x 12.2"H => 0.81 sf x 20.00'L = 16.2 cf Outside= 14.5"W x 14.5"H => 1.05 sf x 20.00'L = 20.9 cf
		906 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	136.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.2 cfs @ 12.51 hrs HW=136.00' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.2 cfs)

Summary for Pond SUB-1: Subsurface 1

Inflow Area = 5.20 ac, 64.23% Impervious, Inflow Depth = 2.54" for 10-Yr event
Inflow = 15.2 cfs @ 12.09 hrs, Volume= 1.100 af
Outflow = 1.9 cfs @ 11.75 hrs, Volume= 1.100 af, Atten= 88%, Lag= 0.0 min
Discarded = 1.9 cfs @ 11.75 hrs, Volume= 1.100 af
Primary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach DP-6 : Wetland Series 'B' & 'C'

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 140.31' @ 12.82 hrs Surf.Area= 9,886 sf Storage= 16,183 cf

Plug-Flow detention time= 66.6 min calculated for 1.098 af (100% of inflow)
Center-of-Mass det. time= 66.4 min (897.1 - 830.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	138.00'	15,637 cf	**64.83'W x 152.48'L x 6.75'H Field A** 66,731 cf Overall - 27,638 cf Embedded = 39,093 cf x 40.0% Voids
#2A	138.75'	27,638 cf	**ADS_StormTech MC-7200 +Cap** x 154 Inside #1 Effective Size= 91.2"W x 60.0"H => 26.68 sf x 6.59'L = 175.9 cf Overall Size= 100.0"W x 60.0"H x 6.95'L with 0.36' Overlap 154 Chambers in 7 Rows Cap Storage= 39.5 cf x 2 x 7 rows = 553.0 cf
		43,275 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	138.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	138.00'	**12.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 138.00' / 137.40' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	144.70'	**4.0' long x 2.00' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Discarded OutFlow Max=1.9 cfs @ 11.75 hrs HW=138.12' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 1.9 cfs)

Primary OutFlow Max=0.0 cfs @ 5.00 hrs HW=138.00' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)
└**3=Sharp-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond WL-1: Wetland Series 'J'

Inflow Area = 13.16 ac, 34.27% Impervious, Inflow Depth = 0.04" for 10-Yr event
Inflow = 0.1 cfs @ 14.95 hrs, Volume= 0.047 af
Outflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach DP-5 : Wetland Series 'A'
Secondary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach DP-5 : Wetland Series 'A'

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 137.03' @ 24.85 hrs Surf.Area= 3,707 sf Storage= 2,030 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	127,590 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
136.00	219	0	0
138.00	6,965	7,184	7,184
140.00	25,165	32,130	39,314
141.00	41,218	33,192	72,506
142.00	68,950	55,084	127,590

Device	Routing	Invert	Outlet Devices
#1	Primary	137.05'	**18.0" Round Culvert** L= 145.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 137.05' / 136.05' S= 0.0069 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf
#2	Secondary	141.05'	**155.0' long x 35.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.0 cfs @ 5.00 hrs HW=136.00' (Free Discharge)
↑—**1=Culvert** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 5.00 hrs HW=136.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Subcatchment PWA-1:

Runoff = 0.4 cfs @ 12.58 hrs, Volume= 0.129 af, Depth= 0.35"
Routed to Reach DP-1 : Northern Wetlands Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Yr Rainfall=6.02"

Area (ac)	CN	Description
0.29	61	>75% Grass cover, Good, HSG B
0.55	39	>75% Grass cover, Good, HSG A
2.97	30	Woods, Good, HSG A
0.65	55	Woods, Good, HSG B
4.46	37	Weighted Average
4.46		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	100	0.0650	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
5.3	297	0.0350	0.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
18.3	397	Total			

Summary for Subcatchment PWA-3:

Runoff = 0.0 cfs @ 13.68 hrs, Volume= 0.005 af, Depth= 0.21"
Routed to Reach DP-3 : #48 Rinzee Rd

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Yr Rainfall=6.02"

Area (ac)	CN	Description
0.11	39	>75% Grass cover, Good, HSG A
0.17	30	Woods, Good, HSG A
0.28	34	Weighted Average
0.28		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	80	0.1000	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"

Summary for Subcatchment PWA-4:

Runoff = 0.0 cfs @ 12.40 hrs, Volume= 0.009 af, Depth= 0.35"
Routed to Reach DP-4 : Poppy Ln

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Yr Rainfall=6.02"

Area (ac)	CN	Description
0.23	39	>75% Grass cover, Good, HSG A
0.08	30	Woods, Good, HSG A
0.31	37	Weighted Average
0.31		100.00% Pervious Area

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

Summary for Subcatchment PWA-5A:

Runoff = 0.0 cfs @ 13.63 hrs, Volume= 0.007 af, Depth= 0.21"
Routed to Reach DP-5 : Wetland Series 'A'

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Yr Rainfall=6.02"

Area (ac)	CN	Description
0.20	30	Woods, Good, HSG A
0.19	39	>75% Grass cover, Good, HSG A
0.39	34	Weighted Average
0.39		100.00% Pervious Area

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

Summary for Subcatchment PWA-5B:

Runoff = 1.9 cfs @ 12.12 hrs, Volume= 0.149 af, Depth= 3.80"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Yr Rainfall=6.02"

Area (ac)	CN	Description
0.14	39	>75% Grass cover, Good, HSG A
0.09	98	Roofs, HSG A
0.24	98	Paved parking, HSG A
0.47	80	Weighted Average
0.14		29.79% Pervious Area
0.33		70.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.0360	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.40"
0.3	60	0.0400	3.00		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.1	265	0.0750	4.11		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
3.0	330	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
8.7	705	Total			

Summary for Subcatchment PWA-5C:

Runoff = 23.0 cfs @ 12.11 hrs, Volume= 1.742 af, Depth= 2.91"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Yr Rainfall=6.02"

Area (ac)	CN	Description
2.71	39	>75% Grass cover, Good, HSG A
0.31	61	>75% Grass cover, Good, HSG B
0.22	30	Woods, Good, HSG A
0.13	55	Woods, Good, HSG B
1.23	98	Roofs, HSG A
0.11	98	Roofs, HSG B
2.46	98	Paved parking, HSG A
7.17	71	Weighted Average
3.37		47.00% Pervious Area
3.80		53.00% Impervious Area

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

Summary for Subcatchment PWA-5D:

Runoff = 0.2 cfs @ 12.56 hrs, Volume= 0.057 af, Depth= 0.30"
Routed to Pond C-1 : Culvert 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Yr Rainfall=6.02"

Area (ac)	CN	Description
0.89	39	>75% Grass cover, Good, HSG A
0.16	61	>75% Grass cover, Good, HSG B
1.21	30	Woods, Good, HSG A
2.26	36	Weighted Average
2.26		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	69	0.1000	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
4.7	225	0.0260	0.81		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	100	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
14.5	394	Total			

Summary for Subcatchment PWA-5E:

Runoff = 0.2 cfs @ 12.45 hrs, Volume= 0.052 af, Depth= 0.35"
Routed to Pond WL-1 : Wetland Series 'J'

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Yr Rainfall=6.02"

Area (ac)	CN	Description
0.97	39	>75% Grass cover, Good, HSG A
0.04	61	>75% Grass cover, Good, HSG B
0.69	30	Woods, Good, HSG A
0.08	55	Woods, Good, HSG B
1.78	37	Weighted Average
1.78		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	50	0.0100	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.40"
0.3	30	0.0600	1.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.9	110	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	40	0.3700	4.26		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.6	230	Total			

Summary for Subcatchment PWA-5F:

Runoff = 1.3 cfs @ 12.42 hrs, Volume= 0.179 af, Depth= 1.45"
Routed to Pond IB-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Yr Rainfall=6.02"

Area (ac)	CN	Description
0.02	30	Woods, Good, HSG A
1.08	39	>75% Grass cover, Good, HSG A
0.34	98	Roofs, HSG A
0.04	98	Paved parking, HSG A
1.48	54	Weighted Average
1.10		74.32% Pervious Area
0.38		25.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	100	0.0200	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.40"
16.4	900	0.0170	0.91		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
25.9	1,000	Total			

Summary for Subcatchment PWA-5G:

Runoff = 1.8 cfs @ 12.10 hrs, Volume= 0.133 af, Depth= 2.46"
Routed to Pond DB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Yr Rainfall=6.02"

Area (ac)	CN	Description
0.35	39	>75% Grass cover, Good, HSG A
0.30	98	Paved parking, HSG A
0.65	66	Weighted Average
0.35		53.85% Pervious Area
0.30		46.15% Impervious Area

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

Summary for Subcatchment PWA-6A:

Runoff = 0.0 cfs @ 14.67 hrs, Volume= 0.017 af, Depth= 0.17"
Routed to Reach DP-6 : Wetland Series 'B' & 'C'

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Yr Rainfall=6.02"

Area (ac)	CN	Description
0.44	39	>75% Grass cover, Good, HSG A
0.73	30	Woods, Good, HSG A
1.17	33	Weighted Average
1.17		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	100	0.0600	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
1.1	76	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.5	176	Total			

Summary for Subcatchment PWA-6B:

Runoff = 20.9 cfs @ 12.09 hrs, Volume= 1.515 af, Depth= 3.50"
Routed to Pond SUB-1 : Subsurface 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Yr Rainfall=6.02"

Area (ac)	CN	Description
1.86	39	>75% Grass cover, Good, HSG A
1.16	98	Roofs, HSG A
2.18	98	Paved roads w/curbs & sewers, HSG A
5.20	77	Weighted Average
1.86		35.77% Pervious Area
3.34		64.23% Impervious Area

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

Summary for Subcatchment PWA-7A:

Runoff = 0.0 cfs @ 12.51 hrs, Volume= 0.015 af, Depth= 0.25"
Routed to Reach DP-7 : #4 Poppy Ln

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Yr Rainfall=6.02"

Area (ac)	CN	Description
0.34	30	Woods, Good, HSG A
0.38	39	>75% Grass cover, Good, HSG A
0.72	35	Weighted Average
0.72		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	80	0.1000	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"

Summary for Subcatchment PWA-7B:

Runoff = 0.1 cfs @ 12.34 hrs, Volume= 0.012 af, Depth= 0.45"
Routed to Pond IT-2 : Infiltration Trench

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Yr Rainfall=6.02"

Area (ac)	CN	Description
0.00	30	Woods, Good, HSG A
0.31	39	>75% Grass cover, Good, HSG A
0.31	39	Weighted Average
0.31		100.00% Pervious Area

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

Summary for Subcatchment PWA-7C:

Runoff = 0.1 cfs @ 12.34 hrs, Volume= 0.014 af, Depth= 0.45"
Routed to Pond IT-3 : Infiltration Trench

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Yr Rainfall=6.02"

Area (ac)	CN	Description
0.00	30	Woods, Good, HSG A
0.37	39	>75% Grass cover, Good, HSG A
0.37	39	Weighted Average
0.37		100.00% Pervious Area

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

Summary for Subcatchment PWA-8A:

Runoff = 0.1 cfs @ 13.68 hrs, Volume= 0.032 af, Depth= 0.21"
Routed to Pond DB-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Yr Rainfall=6.02"

Area (ac)	CN	Description
1.01	30	Woods, Good, HSG A
0.81	39	>75% Grass cover, Good, HSG A
1.82	34	Weighted Average
1.82		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	50	0.1600	0.16		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
4.2	280	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.4	330	Total			

Summary for Subcatchment PWA-8B:

Runoff = 21.2 cfs @ 12.11 hrs, Volume= 1.609 af, Depth= 4.01"
Routed to Pond IB-3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Yr Rainfall=6.02"

Area (ac)	CN	Description
1.34	39	>75% Grass cover, Good, HSG A
1.43	98	Roofs, HSG A
2.05	98	Paved roads w/curbs & sewers, HSG A
4.82	82	Weighted Average
1.34		27.80% Pervious Area
3.48		72.20% Impervious Area

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

Summary for Subcatchment PWA-8C:

Runoff = 0.0 cfs @ 13.67 hrs, Volume= 0.024 af, Depth= 0.21"
Routed to Reach DP-8 : Wetland Series 'D' & 'E'

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Yr Rainfall=6.02"

Area (ac)	CN	Description
0.79	30	Woods, Good, HSG A
0.56	39	>75% Grass cover, Good, HSG A
1.35	34	Weighted Average
1.35		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	50	0.0200	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.40"
0.5	50	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.5	100	Total			

Summary for Subcatchment PWA-8D:

Runoff = 0.1 cfs @ 12.34 hrs, Volume= 0.012 af, Depth= 0.45"
Routed to Pond IT-1 : Infiltration Trench

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Yr Rainfall=6.02"

Area (ac)	CN	Description
0.33	39	>75% Grass cover, Good, HSG A
0.33		100.00% Pervious Area

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

Summary for Reach DP-1: Northern Wetlands Culvert

Inflow Area = 4.46 ac, 0.00% Impervious, Inflow Depth = 0.35" for 25-Yr event
Inflow = 0.4 cfs @ 12.58 hrs, Volume= 0.129 af
Outflow = 0.4 cfs @ 12.58 hrs, Volume= 0.129 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-3: #48 Rinzee Rd

Inflow Area = 0.28 ac, 0.00% Impervious, Inflow Depth = 0.21" for 25-Yr event
Inflow = 0.0 cfs @ 13.68 hrs, Volume= 0.005 af
Outflow = 0.0 cfs @ 13.68 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-4: Poppy Ln

Inflow Area = 0.31 ac, 0.00% Impervious, Inflow Depth = 0.35" for 25-Yr event
Inflow = 0.0 cfs @ 12.40 hrs, Volume= 0.009 af
Outflow = 0.0 cfs @ 12.40 hrs, Volume= 0.009 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-5: Wetland Series 'A'

Inflow Area = 14.20 ac, 33.87% Impervious, Inflow Depth > 0.13" for 25-Yr event
Inflow = 0.2 cfs @ 17.30 hrs, Volume= 0.154 af
Outflow = 0.2 cfs @ 17.30 hrs, Volume= 0.154 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-6: Wetland Series 'B' & 'C'

Inflow Area = 6.37 ac, 52.43% Impervious, Inflow Depth = 0.03" for 25-Yr event
Inflow = 0.0 cfs @ 14.67 hrs, Volume= 0.017 af
Outflow = 0.0 cfs @ 14.67 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-7: #4 Poppy Ln

Inflow Area = 0.72 ac, 0.00% Impervious, Inflow Depth = 0.25" for 25-Yr event
Inflow = 0.0 cfs @ 12.51 hrs, Volume= 0.015 af
Outflow = 0.0 cfs @ 12.51 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-8: Wetland Series 'D' & 'E'

Inflow Area = 7.99 ac, 43.55% Impervious, Inflow Depth = 0.07" for 25-Yr event
Inflow = 0.1 cfs @ 13.60 hrs, Volume= 0.046 af
Outflow = 0.1 cfs @ 13.60 hrs, Volume= 0.046 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Pond C-1: Culvert 1

Inflow Area = 2.26 ac, 0.00% Impervious, Inflow Depth = 0.30" for 25-Yr event
Inflow = 0.2 cfs @ 12.56 hrs, Volume= 0.057 af
Outflow = 0.2 cfs @ 12.56 hrs, Volume= 0.057 af, Atten= 0%, Lag= 0.0 min
Primary = 0.2 cfs @ 12.56 hrs, Volume= 0.057 af
Routed to Pond WL-1 : Wetland Series 'J'

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Peak Elev= 166.23' @ 12.56 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	166.00'	**12.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 166.00' / 165.75' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.2 cfs @ 12.56 hrs HW=166.23' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 0.2 cfs @ 1.75 fps)

Summary for Pond DB-1:

Inflow Area = 0.65 ac, 46.15% Impervious, Inflow Depth = 2.46" for 25-Yr event
Inflow = 1.8 cfs @ 12.10 hrs, Volume= 0.133 af
Outflow = 0.0 cfs @ 18.87 hrs, Volume= 0.069 af, Atten= 98%, Lag= 406.5 min
Primary = 0.0 cfs @ 18.87 hrs, Volume= 0.069 af
Routed to Reach DP-5 : Wetland Series 'A'
Secondary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach DP-5 : Wetland Series 'A'

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 134.13' @ 18.87 hrs Surf.Area= 2,756 sf Storage= 4,103 cf

Plug-Flow detention time= 579.3 min calculated for 0.069 af (52% of inflow)
Center-of-Mass det. time= 457.5 min (1,305.1 - 847.6)

Volume	Invert	Avail.Storage	Storage Description
#1	131.50'	11,510 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
131.50	484	0	0
132.00	834	330	330
134.00	2,581	3,415	3,745
136.00	5,184	7,765	11,510

Device	Routing	Invert	Outlet Devices
#1	Primary	130.50'	**8.0" Round Culvert** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 130.50' / 130.37' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	131.50'	**1.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	134.90'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	135.00'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.0 cfs @ 18.87 hrs HW=134.13' (Free Discharge)
└**1=Culvert** (Passes 0.0 cfs of 2.4 cfs potential flow)
  └**2=Orifice/Grate** (Orifice Controls 0.0 cfs @ 7.75 fps)
  └**3=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 5.00 hrs HW=131.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond DB-2:

Inflow Area = 1.82 ac, 0.00% Impervious, Inflow Depth = 0.21" for 25-Yr event
Inflow = 0.1 cfs @ 13.68 hrs, Volume= 0.032 af
Outflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach DP-8 : Wetland Series 'D' & 'E'
Secondary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach DP-8 : Wetland Series 'D' & 'E'

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 146.37' @ 24.55 hrs Surf.Area= 3,966 sf Storage= 1,401 cf

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

Volume	Invert	Avail.Storage	Storage Description
#1	146.00'	9,074 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
146.00	3,633	0	0
148.00	5,441	9,074	9,074

Device	Routing	Invert	Outlet Devices
#1	Primary	145.00'	**12.0" Round Culvert** L= 28.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 145.00' / 144.86' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	146.50'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	146.90'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	147.00'	**10.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=0.0 cfs @ 5.00 hrs HW=146.00' (Free Discharge)
└─**1=Culvert** (Passes 0.0 cfs of 2.1 cfs potential flow)
  ├─**2=Orifice/Grate** (Controls 0.0 cfs)
  └─**3=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 5.00 hrs HW=146.00' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond IB-1:

Inflow Area = 9.12 ac, 49.45% Impervious, Inflow Depth = 2.49" for 25-Yr event
Inflow = 24.8 cfs @ 12.11 hrs, Volume= 1.890 af
Outflow = 1.1 cfs @ 15.70 hrs, Volume= 1.817 af, Atten= 96%, Lag= 215.5 min
Discarded = 1.1 cfs @ 15.70 hrs, Volume= 1.796 af
Primary = 0.0 cfs @ 15.70 hrs, Volume= 0.021 af
Routed to Pond WL-1 : Wetland Series 'J'
Secondary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond WL-1 : Wetland Series 'J'

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 140.65' @ 15.70 hrs Surf.Area= 19,551 sf Storage= 46,101 cf

Plug-Flow detention time= 443.8 min calculated for 1.814 af (96% of inflow)
Center-of-Mass det. time= 422.5 min (1,257.9 - 835.4)

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	96,787 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	15,335	0	0
140.00	18,465	33,800	33,800
142.00	21,820	40,285	74,085
143.00	23,583	22,702	96,787

Device	Routing	Invert	Outlet Devices
#1	Discarded	138.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	138.00'	**12.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 138.00' / 137.50' S= 0.0071 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	138.60'	**0.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	141.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 2	141.90'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Secondary	142.00'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=1.1 cfs @ 15.70 hrs HW=140.65' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 1.1 cfs)

Primary OutFlow Max=0.0 cfs @ 15.70 hrs HW=140.65' (Free Discharge)
└**2=Culvert** (Passes 0.0 cfs of 4.4 cfs potential flow)
  ├**3=Orifice/Grate** (Orifice Controls 0.0 cfs @ 6.84 fps)
  ├**4=Orifice/Grate** (Controls 0.0 cfs)
  └**5=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 5.00 hrs HW=138.00' (Free Discharge)
└**6=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond IB-2:

Inflow Area = 1.48 ac, 25.68% Impervious, Inflow Depth = 1.45" for 25-Yr event
Inflow = 1.3 cfs @ 12.42 hrs, Volume= 0.179 af
Outflow = 0.8 cfs @ 12.76 hrs, Volume= 0.179 af, Atten= 39%, Lag= 20.3 min
Discarded = 0.8 cfs @ 12.76 hrs, Volume= 0.179 af
Primary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond IB-1 :

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 138.18' @ 12.76 hrs Surf.Area= 4,253 sf Storage= 752 cf

Plug-Flow detention time= 5.8 min calculated for 0.179 af (100% of inflow)
Center-of-Mass det. time= 5.7 min (904.2 - 898.4)

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	17,048 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	4,088	0	0
140.00	5,917	10,005	10,005
141.00	8,168	7,043	17,048

Device	Routing	Invert	Outlet Devices
#1	Discarded	138.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	139.00'	**12.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 139.00' / 138.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.8 cfs @ 12.76 hrs HW=138.18' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.8 cfs)

Primary OutFlow Max=0.0 cfs @ 5.00 hrs HW=138.00' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)

Summary for Pond IB-3:

Inflow Area = 4.82 ac, 72.20% Impervious, Inflow Depth = 4.01" for 25-Yr event
Inflow = 21.2 cfs @ 12.11 hrs, Volume= 1.609 af
Outflow = 2.2 cfs @ 12.98 hrs, Volume= 1.609 af, Atten= 90%, Lag= 52.4 min
Discarded = 2.1 cfs @ 12.98 hrs, Volume= 1.587 af
Primary = 0.0 cfs @ 12.98 hrs, Volume= 0.022 af
Routed to Reach DP-8 : Wetland Series 'D' & 'E'
Secondary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach DP-8 : Wetland Series 'D' & 'E'

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 139.36' @ 12.98 hrs Surf.Area= 11,172 sf Storage= 31,974 cf

Plug-Flow detention time= 170.9 min calculated for 1.606 af (100% of inflow)
Center-of-Mass det. time= 170.7 min (980.7 - 810.0)

Volume	Invert	Avail.Storage	Storage Description
#1	134.00'	68,109 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
134.00	1,109	0	0
136.00	4,463	5,572	5,572
138.00	8,526	12,989	18,561
140.00	12,412	20,938	39,499
142.00	16,198	28,610	68,109

Device	Routing	Invert	Outlet Devices
#1	Discarded	134.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	134.00'	**15.0" Round Culvert** L= 49.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 134.00' / 133.76' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#3	Device 2	136.50'	**1.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	140.80'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	141.00'	**10.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=2.1 cfs @ 12.98 hrs HW=139.36' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 2.1 cfs)

Primary OutFlow Max=0.0 cfs @ 12.98 hrs HW=139.36' (Free Discharge)
└**2=Culvert** (Passes 0.0 cfs of 12.6 cfs potential flow)
  ├**3=Orifice/Grate** (Orifice Controls 0.0 cfs @ 8.09 fps)
  └**4=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 5.00 hrs HW=134.00' (Free Discharge)
└**5=Broad-Crested Rectangular Weir**(Controls 0.0 cfs)

Summary for Pond IT-1: Infiltration Trench

Inflow Area = 0.33 ac, 0.00% Impervious, Inflow Depth = 0.45" for 25-Yr event
Inflow = 0.1 cfs @ 12.34 hrs, Volume= 0.012 af
Outflow = 0.1 cfs @ 12.35 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.7 min
Discarded = 0.1 cfs @ 12.35 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 144.01' @ 12.35 hrs Surf.Area= 654 sf Storage= 3 cf

Plug-Flow detention time= 0.7 min calculated for 0.012 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (959.5 - 958.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	144.00'	400 cf	**2.04'W x 320.17'L x 2.04'H Field A** 1,335 cf Overall - 335 cf Embedded = 1,000 cf x 40.0% Voids
#2A	144.50'	259 cf	**ADS N-12 12"** x 16 Inside #1 Inside= 12.2"W x 12.2"H => 0.81 sf x 20.00'L = 16.2 cf Outside= 14.5"W x 14.5"H => 1.05 sf x 20.00'L = 20.9 cf
		659 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	144.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.1 cfs @ 12.35 hrs HW=144.01' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.1 cfs)

Summary for Pond IT-2: Infiltration Trench

Inflow Area = 0.31 ac, 0.00% Impervious, Inflow Depth = 0.45" for 25-Yr event
Inflow = 0.1 cfs @ 12.34 hrs, Volume= 0.012 af
Outflow = 0.1 cfs @ 12.35 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.7 min
Discarded = 0.1 cfs @ 12.35 hrs, Volume= 0.012 af

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Peak Elev= 134.01' @ 12.35 hrs Surf.Area= 450 sf Storage= 2 cf

Plug-Flow detention time= 0.7 min calculated for 0.012 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (959.5 - 958.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	134.00'	275 cf	**2.04'W x 220.17'L x 2.04'H Field A** 918 cf Overall - 230 cf Embedded = 688 cf x 40.0% Voids
#2A	134.50'	178 cf	**ADS N-12 12"** x 11 Inside #1 Inside= 12.2"W x 12.2"H => 0.81 sf x 20.00'L = 16.2 cf Outside= 14.5"W x 14.5"H => 1.05 sf x 20.00'L = 20.9 cf
		453 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	134.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.1 cfs @ 12.35 hrs HW=134.01' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.1 cfs)

Summary for Pond IT-3: Infiltration Trench

Inflow Area = 0.37 ac, 0.00% Impervious, Inflow Depth = 0.45" for 25-Yr event
Inflow = 0.1 cfs @ 12.34 hrs, Volume= 0.014 af
Outflow = 0.1 cfs @ 12.35 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.7 min
Discarded = 0.1 cfs @ 12.35 hrs, Volume= 0.014 af

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 136.01' @ 12.35 hrs Surf.Area= 899 sf Storage= 3 cf

Plug-Flow detention time= 0.7 min calculated for 0.014 af (100% of inflow)
Center-of-Mass det. time= 0.7 min (959.5 - 958.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	136.00'	550 cf	**2.04'W x 440.17'L x 2.04'H Field A** 1,836 cf Overall - 461 cf Embedded = 1,375 cf x 40.0% Voids
#2A	136.50'	356 cf	**ADS N-12 12"** x 22 Inside #1 Inside= 12.2"W x 12.2"H => 0.81 sf x 20.00'L = 16.2 cf Outside= 14.5"W x 14.5"H => 1.05 sf x 20.00'L = 20.9 cf
		906 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	136.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.2 cfs @ 12.35 hrs HW=136.01' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.2 cfs)

Summary for Pond SUB-1: Subsurface 1

Inflow Area = 5.20 ac, 64.23% Impervious, Inflow Depth = 3.50" for 25-Yr event
Inflow = 20.9 cfs @ 12.09 hrs, Volume= 1.515 af
Outflow = 1.9 cfs @ 11.65 hrs, Volume= 1.515 af, Atten= 91%, Lag= 0.0 min
Discarded = 1.9 cfs @ 11.65 hrs, Volume= 1.515 af
Primary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach DP-6 : Wetland Series 'B' & 'C'

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 141.49' @ 13.11 hrs Surf.Area= 9,886 sf Storage= 25,573 cf

Plug-Flow detention time= 115.4 min calculated for 1.512 af (100% of inflow)
Center-of-Mass det. time= 115.2 min (936.6 - 821.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	138.00'	15,637 cf	**64.83'W x 152.48'L x 6.75'H Field A** 66,731 cf Overall - 27,638 cf Embedded = 39,093 cf x 40.0% Voids
#2A	138.75'	27,638 cf	**ADS_StormTech MC-7200 +Cap** x 154 Inside #1 Effective Size= 91.2"W x 60.0"H => 26.68 sf x 6.59'L = 175.9 cf Overall Size= 100.0"W x 60.0"H x 6.95'L with 0.36' Overlap 154 Chambers in 7 Rows Cap Storage= 39.5 cf x 2 x 7 rows = 553.0 cf
		43,275 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	138.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	138.00'	**12.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 138.00' / 137.40' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	144.70'	**4.0' long x 2.00' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Discarded OutFlow Max=1.9 cfs @ 11.65 hrs HW=138.11' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 1.9 cfs)

Primary OutFlow Max=0.0 cfs @ 5.00 hrs HW=138.00' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)
└**3=Sharp-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond WL-1: Wetland Series 'J'

Inflow Area = 13.16 ac, 34.27% Impervious, Inflow Depth = 0.12" for 25-Yr event
Inflow = 0.3 cfs @ 12.51 hrs, Volume= 0.129 af
Outflow = 0.1 cfs @ 17.34 hrs, Volume= 0.079 af, Atten= 67%, Lag= 290.1 min
Primary = 0.1 cfs @ 17.34 hrs, Volume= 0.079 af
Routed to Reach DP-5 : Wetland Series 'A'
Secondary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach DP-5 : Wetland Series 'A'

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 137.21' @ 17.34 hrs Surf.Area= 4,286 sf Storage= 2,717 cf

Plug-Flow detention time= 373.5 min calculated for 0.079 af (61% of inflow)
Center-of-Mass det. time= 219.2 min (1,242.3 - 1,023.1)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	127,590 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
136.00	219	0	0
138.00	6,965	7,184	7,184
140.00	25,165	32,130	39,314
141.00	41,218	33,192	72,506
142.00	68,950	55,084	127,590

Device	Routing	Invert	Outlet Devices
#1	Primary	137.05'	**18.0" Round Culvert** L= 145.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 137.05' / 136.05' S= 0.0069 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf
#2	Secondary	141.05'	**155.0' long x 35.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.1 cfs @ 17.34 hrs HW=137.21' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 0.1 cfs @ 1.79 fps)

Secondary OutFlow Max=0.0 cfs @ 5.00 hrs HW=136.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Subcatchment PWA-1:

Runoff = 1.8 cfs @ 12.43 hrs, Volume= 0.326 af, Depth= 0.88"
Routed to Reach DP-1 : Northern Wetlands Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Rainfall=7.73"

Area (ac)	CN	Description
0.29	61	>75% Grass cover, Good, HSG B
0.55	39	>75% Grass cover, Good, HSG A
2.97	30	Woods, Good, HSG A
0.65	55	Woods, Good, HSG B
4.46	37	Weighted Average
4.46		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	100	0.0650	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
5.3	297	0.0350	0.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
18.3	397	Total			

Summary for Subcatchment PWA-3:

Runoff = 0.1 cfs @ 12.37 hrs, Volume= 0.015 af, Depth= 0.64"
Routed to Reach DP-3 : #48 Rinzee Rd

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Rainfall=7.73"

Area (ac)	CN	Description
0.11	39	>75% Grass cover, Good, HSG A
0.17	30	Woods, Good, HSG A
0.28	34	Weighted Average
0.28		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	80	0.1000	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"

Summary for Subcatchment PWA-4:

Runoff = 0.2 cfs @ 12.16 hrs, Volume= 0.023 af, Depth= 0.88"
Routed to Reach DP-4 : Poppy Ln

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Rainfall=7.73"

Area (ac)	CN	Description
0.23	39	>75% Grass cover, Good, HSG A
0.08	30	Woods, Good, HSG A
0.31	37	Weighted Average
0.31		100.00% Pervious Area

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

Summary for Subcatchment PWA-5A:

Runoff = 0.1 cfs @ 12.32 hrs, Volume= 0.021 af, Depth= 0.64"
Routed to Reach DP-5 : Wetland Series 'A'

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Rainfall=7.73"

Area (ac)	CN	Description
0.20	30	Woods, Good, HSG A
0.19	39	>75% Grass cover, Good, HSG A
0.39	34	Weighted Average
0.39		100.00% Pervious Area

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

Summary for Subcatchment PWA-5B:

Runoff = 2.6 cfs @ 12.12 hrs, Volume= 0.210 af, Depth= 5.37"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Rainfall=7.73"

Area (ac)	CN	Description
0.14	39	>75% Grass cover, Good, HSG A
0.09	98	Roofs, HSG A
0.24	98	Paved parking, HSG A
0.47	80	Weighted Average
0.14		29.79% Pervious Area
0.33		70.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	50	0.0360	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.40"
0.3	60	0.0400	3.00		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
1.1	265	0.0750	4.11		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
3.0	330	0.0150	1.84		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
8.7	705	Total			

Summary for Subcatchment PWA-5C:

Runoff = 34.4 cfs @ 12.11 hrs, Volume= 2.596 af, Depth= 4.35"
Routed to Pond IB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Rainfall=7.73"

Area (ac)	CN	Description
2.71	39	>75% Grass cover, Good, HSG A
0.31	61	>75% Grass cover, Good, HSG B
0.22	30	Woods, Good, HSG A
0.13	55	Woods, Good, HSG B
1.23	98	Roofs, HSG A
0.11	98	Roofs, HSG B
2.46	98	Paved parking, HSG A
7.17	71	Weighted Average
3.37		47.00% Pervious Area
3.80		53.00% Impervious Area

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

Summary for Subcatchment PWA-5D:

Runoff = 0.8 cfs @ 12.40 hrs, Volume= 0.150 af, Depth= 0.79"
Routed to Pond C-1 : Culvert 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Rainfall=7.73"

Area (ac)	CN	Description
0.89	39	>75% Grass cover, Good, HSG A
0.16	61	>75% Grass cover, Good, HSG B
1.21	30	Woods, Good, HSG A
2.26	36	Weighted Average
2.26		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	69	0.1000	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
4.7	225	0.0260	0.81		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.7	100	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
14.5	394	Total			

Summary for Subcatchment PWA-5E:

Runoff = 0.8 cfs @ 12.25 hrs, Volume= 0.130 af, Depth= 0.88"
Routed to Pond WL-1 : Wetland Series 'J'

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Rainfall=7.73"

Area (ac)	CN	Description
0.97	39	>75% Grass cover, Good, HSG A
0.04	61	>75% Grass cover, Good, HSG B
0.69	30	Woods, Good, HSG A
0.08	55	Woods, Good, HSG B
1.78	37	Weighted Average
1.78		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	50	0.0100	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.40"
0.3	30	0.0600	1.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.9	110	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	40	0.3700	4.26		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.6	230	Total			

Summary for Subcatchment PWA-5F:

Runoff = 2.5 cfs @ 12.39 hrs, Volume= 0.308 af, Depth= 2.50"
Routed to Pond IB-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Rainfall=7.73"

Area (ac)	CN	Description
0.02	30	Woods, Good, HSG A
1.08	39	>75% Grass cover, Good, HSG A
0.34	98	Roofs, HSG A
0.04	98	Paved parking, HSG A
1.48	54	Weighted Average
1.10		74.32% Pervious Area
0.38		25.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	100	0.0200	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.40"
16.4	900	0.0170	0.91		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
25.9	1,000	Total			

Summary for Subcatchment PWA-5G:

Runoff = 2.8 cfs @ 12.09 hrs, Volume= 0.205 af, Depth= 3.79"
Routed to Pond DB-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Rainfall=7.73"

Area (ac)	CN	Description
0.35	39	>75% Grass cover, Good, HSG A
0.30	98	Paved parking, HSG A
0.65	66	Weighted Average
0.35		53.85% Pervious Area
0.30		46.15% Impervious Area

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

Summary for Subcatchment PWA-6A:

Runoff = 0.2 cfs @ 12.48 hrs, Volume= 0.055 af, Depth= 0.56"
Routed to Reach DP-6 : Wetland Series 'B' & 'C'

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Rainfall=7.73"

Area (ac)	CN	Description
0.44	39	>75% Grass cover, Good, HSG A
0.73	30	Woods, Good, HSG A
1.17	33	Weighted Average
1.17		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	100	0.0600	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
1.1	76	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.5	176	Total			

Summary for Subcatchment PWA-6B:

Runoff = 29.8 cfs @ 12.09 hrs, Volume= 2.178 af, Depth= 5.03"
Routed to Pond SUB-1 : Subsurface 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Rainfall=7.73"

Area (ac)	CN	Description
1.86	39	>75% Grass cover, Good, HSG A
1.16	98	Roofs, HSG A
2.18	98	Paved roads w/curbs & sewers, HSG A
5.20	77	Weighted Average
1.86		35.77% Pervious Area
3.34		64.23% Impervious Area

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

Summary for Subcatchment PWA-7A:

Runoff = 0.2 cfs @ 12.34 hrs, Volume= 0.043 af, Depth= 0.71"
Routed to Reach DP-7 : #4 Poppy Ln

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Rainfall=7.73"

Area (ac)	CN	Description
0.34	30	Woods, Good, HSG A
0.38	39	>75% Grass cover, Good, HSG A
0.72	35	Weighted Average
0.72		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	80	0.1000	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"

Summary for Subcatchment PWA-7B:

Runoff = 0.2 cfs @ 12.13 hrs, Volume= 0.027 af, Depth= 1.05"
Routed to Pond IT-2 : Infiltration Trench

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Rainfall=7.73"

Area (ac)	CN	Description
0.00	30	Woods, Good, HSG A
0.31	39	>75% Grass cover, Good, HSG A
0.31	39	Weighted Average
0.31		100.00% Pervious Area

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

Summary for Subcatchment PWA-7C:

Runoff = 0.3 cfs @ 12.13 hrs, Volume= 0.032 af, Depth= 1.05"
Routed to Pond IT-3 : Infiltration Trench

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Rainfall=7.73"

Area (ac)	CN	Description
0.00	30	Woods, Good, HSG A
0.37	39	>75% Grass cover, Good, HSG A
0.37	39	Weighted Average
0.37		100.00% Pervious Area

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

Summary for Subcatchment PWA-8A:

Runoff = 0.5 cfs @ 12.38 hrs, Volume= 0.097 af, Depth= 0.64"
Routed to Pond DB-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Rainfall=7.73"

Area (ac)	CN	Description
1.01	30	Woods, Good, HSG A
0.81	39	>75% Grass cover, Good, HSG A
1.82	34	Weighted Average
1.82		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	50	0.1600	0.16		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.40"
4.2	280	0.0500	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.4	330	Total			

Summary for Subcatchment PWA-8B:

Runoff = 29.3 cfs @ 12.10 hrs, Volume= 2.251 af, Depth= 5.60"
Routed to Pond IB-3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Rainfall=7.73"

Area (ac)	CN	Description
1.34	39	>75% Grass cover, Good, HSG A
1.43	98	Roofs, HSG A
2.05	98	Paved roads w/curbs & sewers, HSG A
4.82	82	Weighted Average
1.34		27.80% Pervious Area
3.48		72.20% Impervious Area

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

Summary for Subcatchment PWA-8C:

Runoff = 0.4 cfs @ 12.36 hrs, Volume= 0.072 af, Depth= 0.64"
Routed to Reach DP-8 : Wetland Series 'D' & 'E'

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Rainfall=7.73"

Area (ac)	CN	Description
0.79	30	Woods, Good, HSG A
0.56	39	>75% Grass cover, Good, HSG A
1.35	34	Weighted Average
1.35		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	50	0.0200	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.40"
0.5	50	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.5	100	Total			

Summary for Subcatchment PWA-8D:

Runoff = 0.2 cfs @ 12.13 hrs, Volume= 0.029 af, Depth= 1.05"
Routed to Pond IT-1 : Infiltration Trench

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Yr Rainfall=7.73"

Area (ac)	CN	Description
0.33	39	>75% Grass cover, Good, HSG A
0.33		100.00% Pervious Area

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

Summary for Reach DP-1: Northern Wetlands Culvert

Inflow Area = 4.46 ac, 0.00% Impervious, Inflow Depth = 0.88" for 100-Yr event
Inflow = 1.8 cfs @ 12.43 hrs, Volume= 0.326 af
Outflow = 1.8 cfs @ 12.43 hrs, Volume= 0.326 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-3: #48 Rinzee Rd

Inflow Area = 0.28 ac, 0.00% Impervious, Inflow Depth = 0.64" for 100-Yr event
Inflow = 0.1 cfs @ 12.37 hrs, Volume= 0.015 af
Outflow = 0.1 cfs @ 12.37 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-4: Poppy Ln

Inflow Area = 0.31 ac, 0.00% Impervious, Inflow Depth = 0.88" for 100-Yr event
Inflow = 0.2 cfs @ 12.16 hrs, Volume= 0.023 af
Outflow = 0.2 cfs @ 12.16 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-5: Wetland Series 'A'

Inflow Area = 14.20 ac, 33.87% Impervious, Inflow Depth > 0.50" for 100-Yr event
Inflow = 0.8 cfs @ 14.03 hrs, Volume= 0.592 af
Outflow = 0.8 cfs @ 14.03 hrs, Volume= 0.592 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-6: Wetland Series 'B' & 'C'

Inflow Area = 6.37 ac, 52.43% Impervious, Inflow Depth = 0.10" for 100-Yr event
Inflow = 0.2 cfs @ 12.48 hrs, Volume= 0.055 af
Outflow = 0.2 cfs @ 12.48 hrs, Volume= 0.055 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-7: #4 Poppy Ln

Inflow Area = 0.72 ac, 0.00% Impervious, Inflow Depth = 0.71" for 100-Yr event
Inflow = 0.2 cfs @ 12.34 hrs, Volume= 0.043 af
Outflow = 0.2 cfs @ 12.34 hrs, Volume= 0.043 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Reach DP-8: Wetland Series 'D' & 'E'

Inflow Area = 7.99 ac, 43.55% Impervious, Inflow Depth > 0.23" for 100-Yr event
Inflow = 0.4 cfs @ 12.36 hrs, Volume= 0.151 af
Outflow = 0.4 cfs @ 12.36 hrs, Volume= 0.151 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Summary for Pond C-1: Culvert 1

Inflow Area = 2.26 ac, 0.00% Impervious, Inflow Depth = 0.79" for 100-Yr event
Inflow = 0.8 cfs @ 12.40 hrs, Volume= 0.150 af
Outflow = 0.8 cfs @ 12.40 hrs, Volume= 0.150 af, Atten= 0%, Lag= 0.0 min
Primary = 0.8 cfs @ 12.40 hrs, Volume= 0.150 af
Routed to Pond WL-1 : Wetland Series 'J'

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Peak Elev= 166.55' @ 12.40 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	166.00'	**12.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 166.00' / 165.75' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.8 cfs @ 12.40 hrs HW=166.54' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 0.8 cfs @ 2.71 fps)

Summary for Pond DB-1:

Inflow Area = 0.65 ac, 46.15% Impervious, Inflow Depth = 3.79" for 100-Yr event
Inflow = 2.8 cfs @ 12.09 hrs, Volume= 0.205 af
Outflow = 0.1 cfs @ 17.96 hrs, Volume= 0.086 af, Atten= 98%, Lag= 351.8 min
Primary = 0.1 cfs @ 17.96 hrs, Volume= 0.086 af
Routed to Reach DP-5 : Wetland Series 'A'
Secondary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach DP-5 : Wetland Series 'A'

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 134.92' @ 17.96 hrs Surf.Area= 3,782 sf Storage= 6,680 cf

Plug-Flow detention time= 576.9 min calculated for 0.085 af (42% of inflow)
Center-of-Mass det. time= 454.2 min (1,289.1 - 834.9)

Volume	Invert	Avail.Storage	Storage Description
#1	131.50'	11,510 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
131.50	484	0	0
132.00	834	330	330
134.00	2,581	3,415	3,745
136.00	5,184	7,765	11,510

Device	Routing	Invert	Outlet Devices
#1	Primary	130.50'	**8.0" Round Culvert** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 130.50' / 130.37' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	131.50'	**1.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	134.90'	**6.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	135.00'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.1 cfs @ 17.96 hrs HW=134.92' (Free Discharge)
└**1=Culvert** (Passes 0.1 cfs of 2.7 cfs potential flow)
  └**2=Orifice/Grate** (Orifice Controls 0.0 cfs @ 8.85 fps)
  └**3=Orifice/Grate** (Weir Controls 0.0 cfs @ 0.49 fps)

Secondary OutFlow Max=0.0 cfs @ 5.00 hrs HW=131.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond DB-2:

Inflow Area = 1.82 ac, 0.00% Impervious, Inflow Depth = 0.64" for 100-Yr event
Inflow = 0.5 cfs @ 12.38 hrs, Volume= 0.097 af
Outflow = 0.0 cfs @ 22.51 hrs, Volume= 0.044 af, Atten= 91%, Lag= 607.8 min
Primary = 0.0 cfs @ 22.51 hrs, Volume= 0.044 af
Routed to Reach DP-8 : Wetland Series 'D' & 'E'
Secondary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach DP-8 : Wetland Series 'D' & 'E'

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 146.75' @ 22.51 hrs Surf.Area= 4,315 sf Storage= 2,999 cf

Plug-Flow detention time= 577.5 min calculated for 0.044 af (46% of inflow)
Center-of-Mass det. time= 407.5 min (1,362.3 - 954.8)

Volume	Invert	Avail.Storage	Storage Description
#1	146.00'	9,074 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
146.00	3,633	0	0
148.00	5,441	9,074	9,074

Device	Routing	Invert	Outlet Devices
#1	Primary	145.00'	**12.0" Round Culvert** L= 28.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 145.00' / 144.86' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	146.50'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	146.90'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	147.00'	**10.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=0.0 cfs @ 22.51 hrs HW=146.75' (Free Discharge)
└**1=Culvert** (Passes 0.0 cfs of 3.8 cfs potential flow)
  └**2=Orifice/Grate** (Orifice Controls 0.0 cfs @ 1.99 fps)
  └**3=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 5.00 hrs HW=146.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond IB-1:

Inflow Area = 9.12 ac, 49.45% Impervious, Inflow Depth = 3.69" for 100-Yr event
Inflow = 37.0 cfs @ 12.11 hrs, Volume= 2.807 af
Outflow = 1.6 cfs @ 15.61 hrs, Volume= 2.297 af, Atten= 96%, Lag= 209.9 min
Discarded = 1.2 cfs @ 15.61 hrs, Volume= 2.038 af
Primary = 0.4 cfs @ 15.61 hrs, Volume= 0.259 af
Routed to Pond WL-1 : Wetland Series 'J'
Secondary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond WL-1 : Wetland Series 'J'

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs / 3
Peak Elev= 141.90' @ 15.61 hrs Surf.Area= 21,649 sf Storage= 71,863 cf

Plug-Flow detention time= 468.8 min calculated for 2.293 af (82% of inflow)
Center-of-Mass det. time= 396.5 min (1,220.6 - 824.1)

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	96,787 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	15,335	0	0
140.00	18,465	33,800	33,800
142.00	21,820	40,285	74,085
143.00	23,583	22,702	96,787

Device	Routing	Invert	Outlet Devices
#1	Discarded	138.00'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	138.00'	**12.0" Round Culvert** L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 138.00' / 137.50' S= 0.0071 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	138.60'	**0.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	141.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Device 2	141.90'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Secondary	142.00'	**10.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=1.2 cfs @ 15.61 hrs HW=141.90' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 1.2 cfs)

Primary OutFlow Max=0.4 cfs @ 15.61 hrs HW=141.90' (Free Discharge)
└**2=Culvert** (Passes 0.4 cfs of 5.5 cfs potential flow)
  ├**3=Orifice/Grate** (Orifice Controls 0.0 cfs @ 8.71 fps)
  ├**4=Orifice/Grate** (Orifice Controls 0.4 cfs @ 4.12 fps)
  └**5=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 5.00 hrs HW=138.00' (Free Discharge)
└**6=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond IB-2:

Inflow Area = 1.48 ac, 25.68% Impervious, Inflow Depth = 2.50" for 100-Yr event
Inflow = 2.5 cfs @ 12.39 hrs, Volume= 0.308 af
Outflow = 0.9 cfs @ 12.95 hrs, Volume= 0.308 af, Atten= 64%, Lag= 33.6 min
Discarded = 0.9 cfs @ 12.95 hrs, Volume= 0.308 af
Primary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Pond IB-1 :

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 138.66' @ 12.95 hrs Surf.Area= 4,688 sf Storage= 2,877 cf

Plug-Flow detention time= 21.7 min calculated for 0.307 af (100% of inflow)
Center-of-Mass det. time= 21.7 min (902.5 - 880.8)

Volume	Invert	Avail.Storage	Storage Description
#1	138.00'	17,048 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.00	4,088	0	0
140.00	5,917	10,005	10,005
141.00	8,168	7,043	17,048

Device	Routing	Invert	Outlet Devices
#1	Discarded	138.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	139.00'	**12.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 139.00' / 138.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.9 cfs @ 12.95 hrs HW=138.66' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.9 cfs)

Primary OutFlow Max=0.0 cfs @ 5.00 hrs HW=138.00' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)

Summary for Pond IB-3:

Inflow Area = 4.82 ac, 72.20% Impervious, Inflow Depth = 5.60" for 100-Yr event
Inflow = 29.3 cfs @ 12.10 hrs, Volume= 2.251 af
Outflow = 2.6 cfs @ 13.08 hrs, Volume= 2.251 af, Atten= 91%, Lag= 58.3 min
Discarded = 2.6 cfs @ 13.08 hrs, Volume= 2.216 af
Primary = 0.1 cfs @ 13.08 hrs, Volume= 0.035 af
Routed to Reach DP-8 : Wetland Series 'D' & 'E'
Secondary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach DP-8 : Wetland Series 'D' & 'E'

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 140.60' @ 13.08 hrs Surf.Area= 13,542 sf Storage= 47,243 cf

Plug-Flow detention time= 210.0 min calculated for 2.247 af (100% of inflow)
Center-of-Mass det. time= 210.0 min (1,010.5 - 800.6)

Volume	Invert	Avail.Storage	Storage Description
#1	134.00'	68,109 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
134.00	1,109	0	0
136.00	4,463	5,572	5,572
138.00	8,526	12,989	18,561
140.00	12,412	20,938	39,499
142.00	16,198	28,610	68,109

Device	Routing	Invert	Outlet Devices
#1	Discarded	134.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	134.00'	**15.0" Round Culvert** L= 49.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 134.00' / 133.76' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#3	Device 2	136.50'	**1.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 2	140.80'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	141.00'	**10.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Discarded OutFlow Max=2.6 cfs @ 13.08 hrs HW=140.60' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 2.6 cfs)

Primary OutFlow Max=0.1 cfs @ 13.08 hrs HW=140.60' (Free Discharge)
└**2=Culvert** (Passes 0.1 cfs of 14.3 cfs potential flow)
  ├**3=Orifice/Grate** (Orifice Controls 0.1 cfs @ 9.70 fps)
  └**4=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 5.00 hrs HW=134.00' (Free Discharge)
└**5=Broad-Crested Rectangular Weir**(Controls 0.0 cfs)

Summary for Pond IT-1: Infiltration Trench

Inflow Area = 0.33 ac, 0.00% Impervious, Inflow Depth = 1.05" for 100-Yr event
Inflow = 0.2 cfs @ 12.13 hrs, Volume= 0.029 af
Outflow = 0.1 cfs @ 12.10 hrs, Volume= 0.029 af, Atten= 47%, Lag= 0.0 min
Discarded = 0.1 cfs @ 12.10 hrs, Volume= 0.029 af

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 144.38' @ 12.48 hrs Surf.Area= 654 sf Storage= 100 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 3.3 min (919.7 - 916.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	144.00'	400 cf	**2.04'W x 320.17'L x 2.04'H Field A** 1,335 cf Overall - 335 cf Embedded = 1,000 cf x 40.0% Voids
#2A	144.50'	259 cf	**ADS N-12 12"** x 16 Inside #1 Inside= 12.2"W x 12.2"H => 0.81 sf x 20.00'L = 16.2 cf Outside= 14.5"W x 14.5"H => 1.05 sf x 20.00'L = 20.9 cf
		659 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	144.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.1 cfs @ 12.10 hrs HW=144.06' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.1 cfs)

Summary for Pond IT-2: Infiltration Trench

Inflow Area = 0.31 ac, 0.00% Impervious, Inflow Depth = 1.05" for 100-Yr event
Inflow = 0.2 cfs @ 12.13 hrs, Volume= 0.027 af
Outflow = 0.1 cfs @ 12.05 hrs, Volume= 0.027 af, Atten= 62%, Lag= 0.0 min
Discarded = 0.1 cfs @ 12.05 hrs, Volume= 0.027 af

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs

Peak Elev= 134.79' @ 12.56 hrs Surf.Area= 450 sf Storage= 148 cf

Plug-Flow detention time= 8.2 min calculated for 0.027 af (100% of inflow)
Center-of-Mass det. time= 8.1 min (924.6 - 916.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	134.00'	275 cf	**2.04'W x 220.17'L x 2.04'H Field A** 918 cf Overall - 230 cf Embedded = 688 cf x 40.0% Voids
#2A	134.50'	178 cf	**ADS N-12 12"** x 11 Inside #1 Inside= 12.2"W x 12.2"H => 0.81 sf x 20.00'L = 16.2 cf Outside= 14.5"W x 14.5"H => 1.05 sf x 20.00'L = 20.9 cf
		453 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	134.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.1 cfs @ 12.05 hrs HW=134.04' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.1 cfs)

Summary for Pond IT-3: Infiltration Trench

Inflow Area = 0.37 ac, 0.00% Impervious, Inflow Depth = 1.05" for 100-Yr event
Inflow = 0.3 cfs @ 12.13 hrs, Volume= 0.032 af
Outflow = 0.2 cfs @ 12.10 hrs, Volume= 0.032 af, Atten= 36%, Lag= 0.0 min
Discarded = 0.2 cfs @ 12.10 hrs, Volume= 0.032 af

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 136.19' @ 12.41 hrs Surf.Area= 899 sf Storage= 70 cf

Plug-Flow detention time= 1.8 min calculated for 0.032 af (100% of inflow)
Center-of-Mass det. time= 1.8 min (918.2 - 916.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	136.00'	550 cf	**2.04'W x 440.17'L x 2.04'H Field A** 1,836 cf Overall - 461 cf Embedded = 1,375 cf x 40.0% Voids
#2A	136.50'	356 cf	**ADS N-12 12"** x 22 Inside #1 Inside= 12.2"W x 12.2"H => 0.81 sf x 20.00'L = 16.2 cf Outside= 14.5"W x 14.5"H => 1.05 sf x 20.00'L = 20.9 cf
		906 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	136.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.2 cfs @ 12.10 hrs HW=136.04' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.2 cfs)

Summary for Pond SUB-1: Subsurface 1

Inflow Area = 5.20 ac, 64.23% Impervious, Inflow Depth = 5.03" for 100-Yr event
Inflow = 29.8 cfs @ 12.09 hrs, Volume= 2.178 af
Outflow = 1.9 cfs @ 11.30 hrs, Volume= 2.178 af, Atten= 94%, Lag= 0.0 min
Discarded = 1.9 cfs @ 11.30 hrs, Volume= 2.178 af
Primary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach DP-6 : Wetland Series 'B' & 'C'

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 144.52' @ 13.92 hrs Surf.Area= 9,886 sf Storage= 42,357 cf

Plug-Flow detention time= 204.8 min calculated for 2.174 af (100% of inflow)
Center-of-Mass det. time= 204.4 min (1,015.5 - 811.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	138.00'	15,637 cf	**64.83'W x 152.48'L x 6.75'H Field A** 66,731 cf Overall - 27,638 cf Embedded = 39,093 cf x 40.0% Voids
#2A	138.75'	27,638 cf	**ADS_StormTech MC-7200 +Cap** x 154 Inside #1 Effective Size= 91.2"W x 60.0"H => 26.68 sf x 6.59'L = 175.9 cf Overall Size= 100.0"W x 60.0"H x 6.95'L with 0.36' Overlap 154 Chambers in 7 Rows Cap Storage= 39.5 cf x 2 x 7 rows = 553.0 cf
		43,275 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	138.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	138.00'	**12.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 138.00' / 137.40' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	144.70'	**4.0' long x 2.00' rise Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Discarded OutFlow Max=1.9 cfs @ 11.30 hrs HW=138.09' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 1.9 cfs)

Primary OutFlow Max=0.0 cfs @ 5.00 hrs HW=138.00' (Free Discharge)
└**2=Culvert** (Controls 0.0 cfs)
└**3=Sharp-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond WL-1: Wetland Series 'J'

Inflow Area = 13.16 ac, 34.27% Impervious, Inflow Depth > 0.49" for 100-Yr event
Inflow = 1.6 cfs @ 12.35 hrs, Volume= 0.538 af
Outflow = 0.8 cfs @ 14.07 hrs, Volume= 0.486 af, Atten= 52%, Lag= 103.0 min
Primary = 0.8 cfs @ 14.07 hrs, Volume= 0.486 af
Routed to Reach DP-5 : Wetland Series 'A'
Secondary = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Reach DP-5 : Wetland Series 'A'

Routing by Stor-Ind method, Time Span= 5.00-32.00 hrs, dt= 0.05 hrs
Peak Elev= 137.46' @ 14.07 hrs Surf.Area= 5,153 sf Storage= 3,929 cf

Plug-Flow detention time= 112.9 min calculated for 0.485 af (90% of inflow)
Center-of-Mass det. time= 68.4 min (1,060.9 - 992.4)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	127,590 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
136.00	219	0	0
138.00	6,965	7,184	7,184
140.00	25,165	32,130	39,314
141.00	41,218	33,192	72,506
142.00	68,950	55,084	127,590

Device	Routing	Invert	Outlet Devices
#1	Primary	137.05'	**18.0" Round Culvert** L= 145.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 137.05' / 136.05' S= 0.0069 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf
#2	Secondary	141.05'	**155.0' long x 35.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.8 cfs @ 14.07 hrs HW=137.46' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 0.8 cfs @ 1.93 fps)

Secondary OutFlow Max=0.0 cfs @ 5.00 hrs HW=136.00' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

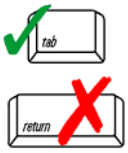
TAB 5

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

A. Introduction

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.[1] This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[2]
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

[1] The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

[2] For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

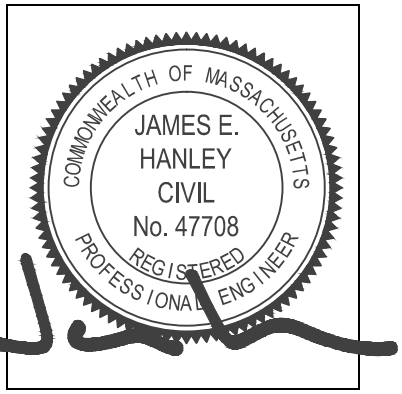
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



October 4, 2024

Signature and Date

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

☒ New development

☐ Redevelopment

☐ Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- ☐ No disturbance to any Wetland Resource Areas
- ☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- ☐ Reduced Impervious Area (Redevelopment Only)
- ☐ Minimizing disturbance to existing trees and shrubs
- ☐ LID Site Design Credit Requested:
  - ☐ Credit 1
  - ☐ Credit 2
  - ☐ Credit 3
- ☐ Use of "country drainage" versus curb and gutter conveyance and pipe
- ☐ Bioretention Cells (includes Rain Gardens)
- ☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- ☐ Treebox Filter
- ☐ Water Quality Swale
- ☐ Grass Channel
- ☐ Green Roof
- ☐ Other (describe): _____

Standard 1: No New Untreated Discharges

- ☒ No new untreated discharges
- ☒ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- ☒ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

☐ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☒ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

☒ Soil Analysis provided.

☒ Required Recharge Volume calculation provided.

☐ Required Recharge volume reduced through use of the LID site Design Credits.

☒ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☒ Static ☐ Simple Dynamic ☐ Dynamic Field[1]

☐ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☒ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☒ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

- ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
- ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
- ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☒ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

☒ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☐ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☒ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☒ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☐ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☒ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

☒ The BMP is sized (and calculations provided) based on:

- ☒ The ½" or 1" Water Quality Volume or
- ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☒ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☐ Critical areas and BMPs are identified in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

☐ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☐ Limited Project
- ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☐ Redevelopment Project
- ☐ Redevelopment portion of mix of new and redevelopment.

☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☐ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☐ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☐ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☒ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☒ Name of the stormwater management system owners;
- ☒ Party responsible for operation and maintenance;
- ☒ Schedule for implementation of routine and non-routine maintenance tasks;
- ☒ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☐ Description and delineation of public safety features;
- ☒ Estimated operation and maintenance budget; and
- ☒ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

☒ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

☐ An Illicit Discharge Compliance Statement is attached;

☒ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

Project: Murphy's Farm
Location: Dracut, MA
Client: The Homes at Murphy's Farm LLC

Project Number: 23-10524
Prepared By: Thomas Schomburg, EIT
Date: October 4, 2024

STORMWATER MANAGEMENT STANDARDS CALCULATIONS

Standard 1: Velocity & Rip-Rap Apron Sizing and Gradation Calculations

Outlet:	Q_{10}: (CFS)	Velocity (FPS)	Req'd	D_o: (FT)	L_A: (FT)	W_1: (FT)	W_2: (FT)	T_W: (FT)	d_{50}: (FT)
PFES-2	0.00	0.0	No	0.66	4.6	2.0	6.6	0.33	0.00
PFES-5	0.00	0.0	No	1	7.0	3.0	10.0	0.5	0.00
PFES-7	0.00	0.0	No	1	7.0	3.0	10.0	0.5	0.00
PFES-9	0.00	0.0	No	1	7.0	3.0	10.0	0.5	0.00
PFES-10	0.00	0.0	No	1	7.0	3.0	10.0	0.5	0.00

Conclusion: No point-source discharges require outlet protection during the 10 year storm event. The Stormwater Management System conforms to Standard 1.

Standard 2: Peak Discharge Summary (CFS)

Design Point 1	2-Year (3.12-IN)	10-Year (4.90-IN)	25-Year (6.02-IN)	100-Year (7.73-IN)
Pre-Development Conditions:	0.0	0.1	0.5	2.2
Post Development Conditions:	0.0	0.1	0.4	1.8

Design Point 3	2-Year (3.12-IN)	10-Year (4.90-IN)	25-Year (6.02-IN)	100-Year (7.73-IN)
Pre-Development Conditions:	0.0	0.0	0.0	0.2
Post Development Conditions:	0.0	0.0	0.0	0.1

Design Point 4	2-Year (3.12-IN)	10-Year (4.90-IN)	25-Year (6.02-IN)	100-Year (7.73-IN)
Pre-Development Conditions:	0.0	0.0	0.0	0.2
Post Development Conditions:	0.0	0.0	0.0	0.2

Design Point 5	2-Year (3.12-IN)	10-Year (4.90-IN)	25-Year (6.02-IN)	100-Year (7.73-IN)
Pre-Development Conditions:	0.0	0.0	0.2	0.9
Post Development Conditions:	0.0	0.0	0.2	0.8

Design Point 6	2-Year (3.12-IN)	10-Year (4.90-IN)	25-Year (6.02-IN)	100-Year (7.73-IN)
Pre-Development Conditions:	0.0	0.0	0.0	0.2
Post Development Conditions:	0.0	0.0	0.0	0.2

Design Point 7	2-Year (3.12-IN)	10-Year (4.90-IN)	25-Year (6.02-IN)	100-Year (7.73-IN)
Pre-Development Conditions:	0.0	0.0	0.0	0.3
Post Development Conditions:	0.0	0.0	0.0	0.2

Design Point 8	2-Year (3.12-IN)	10-Year (4.90-IN)	25-Year (6.02-IN)	100-Year (7.73-IN)
Pre-Development Conditions:	0.0	0.0	0.1	0.4
Post Development Conditions:	0.0	0.0	0.1	0.4

Conclusion: The Stormwater Management System conforms to Standard 2.

Standard 3: Recharge Calculations (Static Method)

Infiltration Basin 1

Hydrologic Soils Group:	A	B	C	D		
Total Proposed Impervious Area:	4.02	0.11	0.00	0.00	4.13	
Target Factor:	0.60	0.35	0.25	0.10		
Required Recharge Volume:	8,756	140	0	0	8,895	CF

Volume Below Lowest Outlet:	9,483	CF
Elevation of Lowest Invert:	138.60	

Determine Drawdown Time

Saturated Hydraulic Conductivity (Rawls Rate):	2.41	IN/HR
Bottom Area of Infiltration Basin:	15,335	SF
Drawdown Time:	3.1	HRS

Subsurface System 1

Hydrologic Soils Group:	A	B	C	D		
Total Proposed Impervious Area:	3.34	0.00	0.00	0.00	3.34	
Target Factor:	0.60	0.35	0.25	0.10		
Required Recharge Volume:	7,275	0	0	0	7,275	CF

Volume Below Lowest Outlet:	43,275	CF
Elevation of Lowest Invert:	146.70	

Determine Drawdown Time

Saturated Hydraulic Conductivity (Rawls Rate):	8.27	IN/HR
Bottom Area of Infiltration Basin:	9,885	SF
Drawdown Time:	6.4	HRS

Infiltration Basin 3

Hydrologic Soils Group:	A	B	C	D		
Total Proposed Impervious Area:	3.48	0.00	0.00	0.00	3.48	
Target Factor:	0.60	0.35	0.25	0.10		
Required Recharge Volume:	7,579	0	0	0	7,579	CF

Volume Below Lowest Outlet:	8,068	CF
Elevation of Lowest Invert:	136.50	

Determine Drawdown Time

Saturated Hydraulic Conductivity (Rawls Rate):	2.41	IN/HR
Bottom Area of Infiltration Basin:	1,109	SF
Drawdown Time:	36.2	HRS

Capture Area Adjustment

Increase in Site Impervious:	11.63	Ac.
Impervious Draining to Basins:	10.95	Ac.
Adjusted Recharge Volume:	25,224	CF
Recharge Volume Provided:	60,826	CF
Percentage of Impervious Draining to Basins	94%	

Conclusion: The volume provided below the lowest invert in the infiltration basin exceed the minimum recharge volume required. In addition, the basin drains within 72-HRS to comply with DEP regulations. The Stormwater Management System conforms to Standard 3.

Standard 4: Water Quality Volume Calculations

Infiltration Basin 1

Water Quality Depth:	0.5	IN
Total Proposed Impervious Area:	4.13	Acres
Required Water Quality Volume:	7,496	CF
Provided Water Quality Volume:	9,483	CF

Subsurface System 1

Water Quality Depth:	0.5	IN
Total Proposed Impervious Area:	3.48	Acres
Required Water Quality Volume:	6,316	CF
Provided Water Quality Volume:	6,838	CF

Infiltration Basin 3

Water Quality Depth:	0.5	IN
Total Proposed Impervious Area:	3.48	Acres
Required Water Quality Volume:	6,316	CF
Provided Water Quality Volume:	8,068	CF

Detention Basin 1

See Stormtech Cutsheet for WQV & TSS

TSS Removal Rate Calculations

Treatment Provided at Discharge From Infiltration Basin 1

	TSS Removal Rate	Starting TSS Load	Amount Removed	Remaining Load
Sediment Forebay & Infiltration Basin:	80%	1	0.8	0.2
TSS Removed at Discharge from Pond:				80.0%

Treatment Provided at Discharge From Subsurface-1

	TSS Removal Rate	Starting TSS Load	Amount Removed	Remaining Load
Isolator Row & Subsurface System	80%	1	0.8	0.2
TSS Removed at Discharge from Pond:				80.0%

*Isolator row provided to achieve required 44% pretreatment, sized to accommodate WQV

Treatment Provided From Infiltration Basin 3

	TSS Removal Rate	Starting TSS Load	Amount Removed	Remaining Load
Sediment Forebay & Infiltration Basin:	80%	1.00	0.80	0.20
TSS Removed through Infiltration Basin:				80.0%

Treatment Provided From Detention Basin 1

See Stormtech Cutsheet for WQV & TSS

Conclusion: The volume provided below the lowest invert in the infiltration basins and porous pavement sections exceeds the Water Quality Volume and TSS Removal Rate is greater than 80%. The Stormwater Management System conforms to Standard 4.

Standard 5: Land Uses With Higher Potential Pollutant Loads

Conclusion: The proposed use is not considered a Land Use with Higher Potential Pollutant Loads. This Standard is NOT Applicable.

Standard 6: Critical Areas

Conclusion: The proposal is not located within a Critical Area. This Standard is NOT Applicable.

Standard 7: Redevelopment

Conclusion: The development does not meet the criteria for redevelopment.

Standard 8: Construction Period Controls

Conclusion: The project is covered by a NPDES Construction General Permit. No SWPPP has been prepared at this time but will be prepared prior to the start of construction. A Construction Period Pollution Prevention Plan has been prepared and provided. The Stormwater Management System Conforms to Standard 8.

Standard 9: Operations and Maintenance Plan

Conclusion: An Operations and Maintenance Plan has been prepared and provided with this summary. The Stormwater Management System Conforms to Standard 9.

Standard 10: Illicit Discharges to Drainage System

Conclusion: All off-site discharges are comprised entirely of stormwater. The Stormwater Management System Conforms to Standard 10.

Project: Murphy's Farm
Location: Dracut, MA
Client: The Homes at Murphy's Farm LLC

Project Number: 23-10524
Prepared By: Thomas Schomburg, E
Date: October 4, 2024

FOREBAY SIZING CALCULATIONS

Infiltration Basin 1 - Forebay PWA-5C

Watershed Characteristics

Impervious Area (Ai):	3.80	Acres
Required (0.1-IN x Ai):	1379	CF
Sediment Forebay Volume:	1581	CF
	OK	

Stage / Storage Tables

Sediment Forebay:	Elevation	Surface Area (SF)	Incremental Storage (CF)	Total Storage (CF)
	138.0	201	0	0
	140.0	615	816	816
	141.0	914	764.5	1580.5

Infiltration Basin 1 - Forebay PWA-5B Swale

Watershed Characteristics

Impervious Area (Ai):	0.27	Acres
Required (0.1-IN x Ai):	98	CF
Sediment Forebay Volume:	885	CF
	OK	

Stage / Storage Tables

Sediment Forebay:	Elevation	Surface Area (SF)	Incremental Storage (CF)	Total Storage (CF)
	142.0	658	0	0
	143.0	1111	884.5	884.5

Infiltration Basin 1 - Forebay PWA-5B FES

Watershed Characteristics

Impervious Area (Ai):	0.06	Acres
Required (0.1-IN x Ai):	22	CF
Sediment Forebay Volume:	219	CF
	OK	

Stage / Storage Tables

Sediment Forebay:	Elevation	Surface Area (SF)	Incremental Storage (CF)	Total Storage (CF)
	138.0	133	0	0
	139.0	305	219	219

Infiltration Basin 3 - Forebay

Watershed Characteristics

Impervious Area (Ai):	3.48	Acres
Required (0.1-IN x Ai):	1263	CF
Sediment Forebay Volume:	1583	CF
	OK	

Stage / Storage Tables

Sediment Forebay:	Elevation	Surface Area (SF)	Incremental Storage (CF)	Total Storage (CF)
	134.0	105	0	0
	136.0	1478	1583	1583

Project: The Homes at Murphy's Farm
Location: Andover, MA
Prepared For: Civil Design Consultants

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

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

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

Compute Q Rate using the following equation:

Q = (qu) (A) (WQV)

where:

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

Structure Name	Impv. (acres)	A (miles^2)	t_c (min)	t_c (hr)	WQV (in)	qu (csm/in.)	Q (cfs)
CDS	0.24	0.0003797	6.0	0.100	1.00	774.00	0.29

CDS ESTIMATED NET ANNUAL SOLIDS LOAD REDUCTION
BASED ON THE RATIONAL RAINFALL METHOD

THE HOMES AT MURPHY'S FARM
ANDOVER, MA

Area	**0.24 ac**	Unit Site Designation	**CDS**
Weighted C	**0.9**	Rainfall Station #	**67**
t_c	**6 min**		
CDS Model	**1515-3**	CDS Treatment Capacity	**1.0 cfs**

Rainfall Intensity[1] (in/hr)	Percent Rainfall Volume[1]	Cumulative Rainfall Volume	Total Flowrate (cfs)	Treated Flowrate (cfs)	Incremental Removal (%)
0.08	41.0%	41.0%	0.02	0.02	39.4
0.16	23.9%	64.9%	0.03	0.03	22.6
0.24	11.5%	76.5%	0.05	0.05	10.8
0.32	7.4%	83.9%	0.07	0.07	6.9
0.40	4.4%	88.3%	0.09	0.09	4.1
0.48	2.9%	91.2%	0.10	0.10	2.6
0.56	1.8%	93.0%	0.12	0.12	1.6
0.64	1.2%	94.2%	0.14	0.14	1.0
0.72	1.6%	95.8%	0.16	0.16	1.4
0.80	0.8%	96.6%	0.17	0.17	0.7
1.00	0.6%	97.1%	0.22	0.22	0.5
1.40	1.4%	98.6%	0.31	0.31	1.1
1.80	0.9%	99.5%	0.39	0.39	0.6
2.20	0.5%	100.0%	0.48	0.48	0.3
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
0.00	0.0%	100.0%	0.00	0.00	0.0
					93.6
				Removal Efficiency Adjustment[2] =	0.0%
				Predicted % Annual Rainfall Treated =	100.0%
				Predicted Net Annual Load Removal Efficiency =	**93.6%**

1 - Based on 7 years of data from NCDC station #3276, Groveland, Essex County, MA
2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

Murphy's Farm

Proposed Peak Discharge Rates (Closed Drainage Design)

PCB-1

Cover Type	Area (ac)	C Value	C*A
Impervious	0.11	0.90	0.10
Lawn/Grass	0.14	0.20	0.03
Total	**0.25**	N/A	**0.13**

Composite C= 0.51

Q (cfs)
0.76

PCB-2

Cover Type	Area (ac)	C Value	C*A
Impervious	0.06	0.90	0.05
Lawn/Grass	0.03	0.20	0.01
Total	**0.09**	N/A	**0.06**

Composite C= 0.67

Q (cfs)
0.36

PCB-26

Cover Type	Area (ac)	C Value	C*A
Impervious	0.07	0.90	0.06
Lawn/Grass	0.04	0.20	0.01
Total	**0.11**	N/A	**0.07**

Composite C= 0.65

Q (cfs)
0.43

PDMH-1

Cover Type	Area (ac)	C Value	C*A
Impervious	0.24	0.90	0.22
Lawn/Grass	0.21	0.20	0.04
Total	**0.45**	N/A	**0.26**

Composite C= 0.57

Q (cfs)
1.55

PCB-3

Cover Type	Area (ac)	C Value	C*A
Impervious	0.02	0.90	0.02
Lawn/Grass	0.02	0.20	0.00
Total	**0.04**	N/A	**0.02**

Composite C= 0.55

Q (cfs)
0.13

PCB-4

Cover Type	Area (ac)	C Value	C*A
Impervious	0.04	0.90	0.04
Lawn/Grass	0.01	0.20	0.00
Total	**0.05**	N/A	**0.04**

Composite C= 0.76

Q (cfs)
0.23

PDMH-2

Cover Type	Area (ac)	C Value	C*A
Impervious	0.06	0.90	0.05
Lawn/Grass	0.03	0.20	0.01
Total	**0.09**	N/A	**0.06**

Composite C= 0.67

Q (cfs)
0.36

PCB-5

Cover Type	Area (ac)	C Value	C*A
Impervious	0.44	0.90	0.40
Lawn/Grass	0.29	0.20	0.06
Total	**0.73**	N/A	**0.45**

Composite C= 0.62

Q (cfs)
2.72

PDMH-3A

Cover Type	Area (ac)	C Value	C*A
Impervious	0.44	0.90	0.40
Lawn/Grass	0.29	0.20	0.06
Total	**0.73**	N/A	**0.45**

Composite C= 0.62

Q (cfs)
2.72

PCB-6

Cover Type	Area (ac)	C Value	C*A
Impervious	0.78	0.90	0.70

Composite C= 0.50

Lawn/Grass	1.04	0.20	0.21
Total	**1.82**	N/A	**0.91**

Q (cfs)
5.46

PCB-7

Cover Type	Area (ac)	C Value	C*A
Impervious	0.23	0.90	0.21
Lawn/Grass	0.04	0.20	0.01
Total	**0.27**	N/A	**0.22**

Composite C= 0.80

Q (cfs)
1.29

PDMH-3B

Cover Type	Area (ac)	C Value	C*A
Impervious	1.01	0.90	0.91
Lawn/Grass	1.08	0.20	0.22
Total	**2.09**	N/A	**1.13**

Composite C= 0.54

Q (cfs)
6.75

PCB-8

Cover Type	Area (ac)	C Value	C*A
Impervious	0.41	0.90	0.37
Lawn/Grass	0.06	0.20	0.01
Total	**0.47**	N/A	**0.38**

Composite C= 0.81

Q (cfs)
2.29

PCB-9

Cover Type	Area (ac)	C Value	C*A
Impervious	0.49	0.90	0.44
Lawn/Grass	0.29	0.20	0.06
Total	**0.78**	N/A	**0.50**

Composite C= 0.64

Q (cfs)
2.99

PDMH-4

Cover Type	Area (ac)	C Value	C*A
Impervious	0.90	0.90	0.81
Lawn/Grass	0.35	0.20	0.07
Total	**1.25**	N/A	**0.88**

Composite C= 0.70

Q (cfs)
5.28

PCB-10

Cover Type	Area (ac)	C Value	C*A
Impervious	0.50	0.90	0.45
Lawn/Grass	0.66	0.20	0.13
Total	**1.16**	N/A	**0.58**

Composite C= 0.50

Q (cfs)
3.49

PCB-11

Cover Type	Area (ac)	C Value	C*A
Impervious	0.36	0.90	0.32
Lawn/Grass	0.07	0.20	0.01
Total	**0.43**	N/A	**0.34**

Composite C= 0.79

Q (cfs)
2.03

PDMH-5

Cover Type	Area (ac)	C Value	C*A
Impervious	0.86	0.90	0.77
Lawn/Grass	0.73	0.20	0.15
Total	**1.59**	N/A	**0.92**

Composite C= 0.58

Q (cfs)
5.52

PCB-12

Cover Type	Area (ac)	C Value	C*A
Impervious	0.24	0.90	0.22
Lawn/Grass	0.29	0.20	0.06
Total	**0.53**	N/A	**0.27**

Composite C= 0.52

Q (cfs)
1.64

PCB-13

Cover Type	Area (ac)	C Value	C*A
Impervious	0.34	0.90	0.31
Lawn/Grass	0.10	0.20	0.02
Total	**0.44**	N/A	**0.33**

Composite C= 0.74

Q (cfs)
1.96

PDMH-6

Cover Type	Area (ac)	C Value	C*A
Impervious	0.58	0.90	0.52
Lawn/Grass	0.39	0.20	0.08
Total	**0.97**	N/A	**0.60**

Composite C= 0.62

Q (cfs)
3.60

PCB-14

Cover Type	Area (ac)	C Value	C*A
Impervious	1.06	0.90	0.95
Lawn/Grass	0.14	0.20	0.03
Total	**1.20**	N/A	**0.98**

Composite C= 0.82

Q (cfs)
5.89

PCB-15

Cover Type	Area (ac)	C Value	C*A
Impervious	0.39	0.90	0.35
Lawn/Grass	0.04	0.20	0.01
Total	**0.43**	N/A	**0.36**

Composite C= 0.83

Q (cfs)
2.15

PDMH-7

Cover Type	Area (ac)	C Value	C*A
Impervious	1.45	0.90	1.31
Lawn/Grass	0.18	0.20	0.04
Total	**1.63**	N/A	**1.34**

Composite C= 0.82

Q (cfs)
8.05

PCB-16

Cover Type	Area (ac)	C Value	C*A
Impervious	0.06	0.90	0.05
Lawn/Grass	0.04	0.20	0.01
Total	**0.10**	N/A	**0.06**

Composite C= 0.62

Q (cfs)
0.37

PCB-17

Cover Type	Area (ac)	C Value	C*A
Impervious	0.38	0.90	0.34
Lawn/Grass	0.40	0.20	0.08
Total	**0.78**	N/A	**0.42**

Composite C= 0.54

Q (cfs)
2.53

PDMH-8

Cover Type	Area (ac)	C Value	C*A
Impervious	0.44	0.90	0.40
Lawn/Grass	0.44	0.20	0.09
Total	**0.88**	N/A	**0.48**

Composite C= 0.55

Q (cfs)
2.90

POS-3

Cover Type	Area (ac)	C Value	C*A
Impervious	#VALUE!	0.90	#VALUE!
Lawn/Grass	#VALUE!	0.20	#VALUE!
Total	**#VALUE!**	N/A	**#VALUE!**

Composite C= #VALUE!

Q (cfs)
#VALUE!

PCB-18

Cover Type	Area (ac)	C Value	C*A
Impervious	0.23	0.90	0.21
Lawn/Grass	0.10	0.20	0.02
Total	**0.33**	N/A	**0.23**

Composite C= 0.69

Q (cfs)
1.36

PCB-19

Cover Type	Area (ac)	C Value	C*A
Impervious	0.09	0.90	0.08
Lawn/Grass	0.00	0.20	0.00
Total	**0.09**	N/A	**0.08**

Composite C= 0.90

Q (cfs)
0.49

PDMH-9

Cover Type	Area (ac)	C Value	C*A
Impervious	0.32	0.90	0.29
Lawn/Grass	0.10	0.20	0.02
Total	**0.42**	N/A	**0.31**

Composite C= 0.73

Q (cfs)
1.85

PCB-20

Cover Type	Area (ac)	C Value	C*A
Impervious	0.96	0.90	0.86
Lawn/Grass	0.34	0.20	0.07
Total	**1.30**	N/A	**0.93**

Composite C= 0.72

Q (cfs)
5.59

PCB-21

Cover Type	Area (ac)	C Value	C*A
Impervious	0.99	0.90	0.89
Lawn/Grass	0.12	0.20	0.02
Total	**1.11**	N/A	**0.92**

Composite C= 0.82

Q (cfs)
5.49

PDMH-10

Cover Type	Area (ac)	C Value	C*A
Impervious	1.95	0.90	1.76
Lawn/Grass	0.46	0.20	0.09
Total	**2.41**	N/A	**1.85**

Composite C= 0.77

Q (cfs)
11.08

PDMH-11

Cover Type	Area (ac)	C Value	C*A
Impervious	1.95	0.90	1.76
Lawn/Grass	0.46	0.20	0.09
Total	**2.41**	N/A	**1.85**

Composite C= 0.77

Q (cfs)
11.08

PCB-22

Cover Type	Area (ac)	C Value	C*A
Impervious	0.32	0.90	0.29
Lawn/Grass	0.04	0.20	0.01
Total	**0.36**	N/A	**0.30**

Composite C= 0.82

Q (cfs)
1.78

PCB-23

Cover Type	Area (ac)	C Value	C*A
Impervious	0.53	0.90	0.48
Lawn/Grass	0.07	0.20	0.01
Total	**0.60**	N/A	**0.49**

Composite C= 0.82

Q (cfs)
2.95

PDMH-12

Cover Type	Area (ac)	C Value	C*A
Impervious	0.85	0.90	0.77
Lawn/Grass	0.11	0.20	0.02
Total	**0.96**	N/A	**0.79**

Composite C= 0.82

Q (cfs)
4.72

PCB-24

Cover Type	Area (ac)	C Value	C*A
Impervious	0.31	0.90	0.28
Lawn/Grass	0.03	0.20	0.01
Total	**0.34**	N/A	**0.29**

Composite C= 0.84

Q (cfs)
1.71

PCB-25

Cover Type	Area (ac)	C Value	C*A
Impervious	0.07	0.90	0.06
Lawn/Grass	0.01	0.20	0.00
Total	**0.08**	N/A	**0.07**

Composite C= 0.81

Q (cfs)
0.39

PDMH-13

Cover Type	Area (ac)	C Value	C*A
Impervious	0.38	0.90	0.34
Lawn/Grass	0.04	0.20	0.01
Total	**0.42**	N/A	**0.35**

Composite C= 0.83

Q (cfs)
2.10

PCB-26

Cover Type	Area (ac)	C Value	C*A
Impervious	1.45	0.90	1.31
Lawn/Grass	1.25	0.20	0.25

Composite C= 0.58

Q (cfs)

Closed Drainage System Calculations

Location: Murphy's Farm, Dracut, MA
Client: The Homes at Murphy's Farm LLC
Subject: Closed Drainage System Calculations

Proj. No.: 23-10524
Date: 9/25/2024
Comp.: TWS
Check:

Design Parameters
Design Storm: 10 Year Storm

Location in Massachusetts: 1 (1-Boston, 2-Barnstable, 3-Worcester, 4-Springfield, 5-Pittsfield)
Manning's roughness coefficient: 0.013

Rainfall Data is For Boston

LOCATION		RAINFALL CONCENTRATION PERIOD IN MINUTES		COMBINED RUNOFF COEFF.	TRIBUTARY AREA IN ACRES		C x A		RAINFALL INTENSITY (i)	PEAK FLOW	PIPE							
FROM DRAINAGE NO.	TO DRAINAGE NO.	PIPE	TOTAL	C	INC	TOTAL	INC	TOTAL	IN/HR	CFS	SIZE IN	n VALUE	SLOPE FT/FT	LENGTH FT	FULL CAPACITY CFS	FULL VELOCITY FT/S	PEAK FLOW CONDITIONS VELOCITY FT/S	d/D
PCB-1	PDMH-1		5.00	0.51	0.250	0.250	0.13	0.13	5.40	0.69	12	0.013	0.005	20	2.52	3.2	2.7	0.35
PCB-2	PDMH-1		5.00	0.67	0.090	0.090	0.06	0.06	5.40	0.33	12	0.013	0.005	18	2.52	3.2	2.1	0.23
PCB-26	PDMH-1		5.00	0.65	0.110	0.110	0.07	0.07	5.40	0.39	12	0.013	0.005	132	2.52	3.2	2.2	0.25
PDMH-1	**PFES-1**	**0.98**	**5.12**			**0.450**	**0.00**	**0.26**	**5.40**	**1.40**	**15**	**0.013**	**0.005**	**47**	**4.57**	**3.7**	**3.3**	**0.38**
PCB-3	PDMH-2		5.00	0.55	0.040	0.040	0.02	0.02	5.40	0.12	12	0.013	0.005	14	2.52	3.2	1.5	0.13
PCB-4	PDMH-2		5.00	0.76	0.050	0.050	0.04	0.04	5.40	0.21	12	0.013	0.005	16	2.52	3.2	1.9	0.19
PDMH-2	**PFES-4**	**0.14**	**5.15**			**0.090**	**0.00**	**0.06**	**5.40**	**0.32**	**12**	**0.013**	**0.005**	**43**	**2.52**	**3.2**	**2.1**	**0.23**
PCB-12	PDMH-6		5.00	0.52	0.530	0.530	0.28	0.28	5.40	1.49	12	0.013	0.005	13	2.52	3.2	3.3	0.55
PCB-13	PDMH-6		5.00	0.74	0.440	0.440	0.33	0.33	5.40	1.76	12	0.013	0.005	13	2.52	3.2	3.5	0.61
PDMH-6	**PDMH-5**	**0.07**	**5.07**			**0.970**	**0.00**	**0.60**	5.40	**3.25**	**15**	**0.013**	**0.005**	**264**	**4.57**	**3.7**	**4.0**	**0.62**
PCB-10	PDMH-5		5.00	0.50	1.160	1.160	0.58	0.58	5.40	3.13	12	0.013	0.010	15	3.56	4.5	5.1	0.72
PCB-11	PDMH-5		5.00	0.79	0.430	0.430	0.34	0.34	5.40	1.83	12	0.013	0.005	22	2.52	3.2	3.5	0.63
PDMH-5	**PDMH-4**	**0.05**	**6.16**			**2.560**	**0.00**	**1.52**	5.20	**7.91**	**18**	**0.013**	**0.010**	**266**	**10.50**	**5.9**	**6.5**	**0.64**
PCB-8	PDMH-4		5.00	0.81	0.470	0.470	0.38	0.38	5.40	2.06	12	0.013	0.005	12	2.52	3.2	3.6	0.68
PCB-9	PDMH-4		5.00	0.64	0.780	0.780	0.50	0.50	5.40	2.70	12	0.013	0.010	11	3.56	4.5	5.0	0.65
PDMH-4	**PDMH-3B**	**0.04**	**6.84**			**3.810**	**0.00**	**2.40**	5.20	**12.48**	**24**	**0.013**	**0.005**	**174**	**15.99**	**5.1**	**5.6**	**0.66**
PCB-6	PDMH-3B		5.00	0.50	1.820	1.820	0.91	0.91	5.40	4.91	15	0.013	0.010	16	6.46	5.3	5.8	0.65
PCB-7	PDMH-3B		5.00	0.80	0.270	0.270	0.22	0.22	5.40	1.17	12	0.013	0.005	12	2.52	3.2	3.1	0.47
PDMH-3B	**PDMH-3A**	**0.06**	**7.35**			**5.900**	**0.00**	**3.53**	5.20	**18.34**	**24**	**0.013**	**0.010**	**45**	**22.61**	**7.2**	**8.0**	**0.68**
PCB-5	PDMH-3B		5.00	0.62	0.730	0.730	0.45	0.45	5.40	2.44	12	0.013	0.005	17	2.52	3.2	3.7	0.79
PDMH-3B	**PFES-3**	**0.08**	**7.45**			**6.630**	**0.00**	**3.98**	**5.20**	**20.69**	**24**	**0.013**	**0.010**	**54**	**22.61**	**7.2**	**8.2**	**0.75**
PCB-26	**Subsurface-1**		**5.00**	**0.58**	**2.700**	**2.700**	**1.57**	**1.57**	**5.40**	**8.46**	**24**	**0.013**	**0.006**	**208**	**17.52**	**5.6**	**5.4**	**0.48**
			5.00			0.000	0.00	0.00	5.40	0.00		0.013	#DIV/0!		#DIV/0!	#DIV/0!	#DIV/0!	#N/A
PCB-14	PDHM-7		5.00	0.82	1.200	1.200	0.98	0.98	5.40	5.31	15	0.013	0.010	27	6.46	5.3	5.9	0.69

PCB-15	PDMH-7		5.00	0.83	0.430	0.430	0.36	0.36	5.40	1.93	15	0.013	0.010	27	6.46	5.3	4.6	0.37
PDMH-7	**PDMH-8**	**0.08**	**5.08**			**1.630**	**0.00**	**1.34**	**5.40**	**7.24**	**18**	**0.013**	**0.005**	**111**	**7.43**	**4.2**	**4.8**	**0.79**
PCB-16	PDMH-8		5.00	0.62	0.100	0.100	0.06	0.06	5.40	0.33	12	0.013	0.005	48	2.52	3.2	2.1	0.23
PCB-17	PDMH-8		5.00	0.54	0.780	0.780	0.42	0.42	5.40	2.27	12	0.013	0.005	50	2.52	3.2	3.6	0.74
PDMH-8	**Subsurface-1**	**0.37**	**5.46**			**2.510**	**0.00**	**1.82**	**5.40**	**9.85**	**18**	**0.013**	**0.010**	**27**	**10.50**	**5.9**	**6.7**	**0.76**
PCB-18	PDMH-9		5.00	0.69	0.330	0.330	0.23	0.23	5.40	1.23	12	0.013	0.005	22	2.52	3.2	3.2	0.49
PCB-19	PDMH-9		5.00	0.90	0.090	0.090	0.08	0.08	5.40	0.44	12	0.013	0.005	29	2.52	3.2	2.3	0.27
PDMH-9	**PDMH-10**	**0.21**	**5.12**			**0.318**	**0.00**	**0.31**	5.40	**1.67**	**12**	**0.013**	**0.005**	**192**	**2.52**	**3.2**	**3.4**	**0.59**
PCB-20	PDMH-10		5.00	0.72	1.300	1.300	0.94	0.94	5.40	5.05	15	0.013	0.010	14	6.46	5.3	5.8	0.66
PCB-21	PDMH-10		5.00	0.82	1.110	1.110	0.91	0.91	5.40	4.92	15	0.013	0.010	13	6.46	5.3	5.8	0.65
PDMH-10	**PDMH-11**	**0.04**	**6.05**			**2.728**	**0.00**	**2.15**	**5.20**	**11.21**	**24**	**0.013**	**0.005**	**143**	**15.99**	**5.1**	**5.5**	**0.61**
PDMH-11	**PDMH-12**	**0.04**	**6.49**			**2.728**	**0.00**	**2.15**	5.20	**11.21**	**24**	**0.013**	**0.005**	**142**	**15.99**	**5.1**	**5.5**	**0.61**
PCB-22	PDMH-12		5.00	0.82	0.360	0.360	0.30	0.30	5.40	1.59	12	0.013	0.005	32	2.52	3.2	3.4	0.57
PCB-23	PDMH-12		5.00	0.82	0.600	0.600	0.49	0.49	5.40	2.66	12	0.013	0.010	35	3.56	4.5	5.0	0.64
PDMH-12	**PDMH-13**	**0.12**	**6.92**			**3.688**	**0.00**	**2.94**	5.20	**15.30**	**24**	**0.013**	**0.005**	**134**	**15.99**	**5.1**	**5.8**	**0.78**
PCB-24	PDMH-13		5.00	0.84	0.340	0.340	0.29	0.29	5.40	1.54	12	0.013	0.005	15	2.52	3.2	3.4	0.56
PCB-25	PDMH-13		5.00	0.81	0.080	0.080	0.06	0.06	4.75	0.31	12	0.013	0.005	15	2.52	3.2	2.1	0.23
PDMH-13	**PFES-8**	**0.07**	**7.30**			**4.108**	**0.00**	**3.29**	**4.75**	**15.64**	**24**	**0.013**	**0.005**	**54**	**15.99**	**5.1**	**5.8**	**0.80**

NOAA Atlas 14, Volume 10, Version 3
Location name: Town of Dracut, Massachusetts, USA*
Latitude: 42.6854°, Longitude: -71.2468°
Elevation: 142 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_&_aerials

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	0.313 (0.247-0.389)	0.372 (0.294-0.464)	0.469 (0.369-0.587)	0.550 (0.430-0.692)	0.661 (0.499-0.867)	0.745 (0.550-0.997)	0.833 (0.595-1.15)	0.930 (0.629-1.32)	1.07 (0.693-1.56)	1.18 (0.747-1.76)
10-min	0.443 (0.350-0.552)	0.527 (0.416-0.657)	0.665 (0.523-0.832)	0.779 (0.609-0.980)	0.937 (0.707-1.23)	1.06 (0.780-1.41)	1.18 (0.843-1.63)	1.32 (0.891-1.86)	1.51 (0.982-2.22)	1.67 (1.06-2.50)
15-min	0.521 (0.412-0.649)	0.620 (0.489-0.773)	0.782 (0.615-0.979)	0.917 (0.717-1.15)	1.10 (0.832-1.44)	1.24 (0.917-1.66)	1.39 (0.992-1.92)	1.55 (1.05-2.20)	1.78 (1.16-2.61)	1.97 (1.24-2.94)
30-min	0.716 (0.566-0.893)	0.853 (0.673-1.06)	1.08 (0.846-1.35)	1.26 (0.986-1.59)	1.52 (1.14-1.99)	1.71 (1.26-2.29)	1.91 (1.36-2.64)	2.13 (1.44-3.02)	2.45 (1.59-3.59)	2.71 (1.71-4.04)
60-min	0.912 (0.721-1.14)	1.09 (0.857-1.35)	1.37 (1.08-1.72)	1.61 (1.26-2.02)	1.93 (1.46-2.53)	2.18 (1.61-2.91)	2.43 (1.74-3.37)	2.72 (1.84-3.85)	3.12 (2.03-4.57)	3.45 (2.18-5.15)
2-hr	1.16 (0.924-1.44)	1.40 (1.11-1.73)	1.78 (1.41-2.22)	2.10 (1.66-2.63)	2.55 (1.94-3.33)	2.87 (2.14-3.85)	3.23 (2.34-4.50)	3.65 (2.48-5.15)	4.30 (2.80-6.26)	4.85 (3.08-7.20)
3-hr	1.34 (1.07-1.65)	1.62 (1.29-2.00)	2.07 (1.65-2.57)	2.46 (1.94-3.06)	2.98 (2.28-3.89)	3.36 (2.52-4.50)	3.79 (2.77-5.28)	4.31 (2.93-6.05)	5.12 (3.34-7.43)	5.82 (3.70-8.60)
6-hr	1.70 (1.37-2.08)	2.07 (1.66-2.54)	2.67 (2.14-3.29)	3.17 (2.52-3.92)	3.86 (2.98-5.02)	4.36 (3.30-5.81)	4.92 (3.62-6.84)	5.61 (3.83-7.84)	6.70 (4.38-9.67)	7.66 (4.88-11.2)
12-hr	2.13 (1.73-2.60)	2.61 (2.11-3.18)	3.38 (2.73-4.14)	4.02 (3.22-4.94)	4.90 (3.80-6.33)	5.55 (4.22-7.34)	6.26 (4.63-8.64)	7.14 (4.90-9.91)	8.51 (5.58-12.2)	9.69 (6.20-14.2)
24-hr	2.53 (2.07-3.06)	3.12 (2.55-3.78)	4.10 (3.33-4.98)	4.90 (3.96-6.00)	6.02 (4.70-7.73)	6.83 (5.23-8.99)	7.73 (5.75-10.6)	8.84 (6.09-12.2)	10.6 (6.97-15.1)	12.1 (7.77-17.6)
2-day	2.84 (2.34-3.42)	3.56 (2.93-4.29)	4.74 (3.89-5.73)	5.73 (4.66-6.96)	7.08 (5.57-9.06)	8.06 (6.22-10.6)	9.16 (6.88-12.6)	10.6 (7.29-14.5)	12.8 (8.45-18.1)	14.8 (9.50-21.3)
3-day	3.11 (2.58-3.73)	3.89 (3.21-4.66)	5.15 (4.24-6.20)	6.20 (5.07-7.51)	7.65 (6.05-9.76)	8.70 (6.74-11.4)	9.88 (7.44-13.5)	11.4 (7.88-15.5)	13.8 (9.13-19.5)	15.9 (10.3-22.9)
4-day	3.38 (2.80-4.04)	4.18 (3.46-5.00)	5.48 (4.53-6.58)	6.56 (5.38-7.92)	8.05 (6.39-10.2)	9.14 (7.10-11.9)	10.4 (7.81-14.1)	11.9 (8.26-16.2)	14.4 (9.53-20.2)	16.6 (10.7-23.7)
7-day	4.10 (3.43-4.88)	4.94 (4.12-5.88)	6.29 (5.23-7.52)	7.42 (6.12-8.91)	8.97 (7.14-11.3)	10.1 (7.87-13.1)	11.4 (8.58-15.3)	12.9 (9.02-17.5)	15.5 (10.3-21.6)	17.7 (11.4-25.2)
10-day	4.77 (4.00-5.66)	5.62 (4.72-6.68)	7.02 (5.86-8.36)	8.18 (6.78-9.79)	9.77 (7.81-12.3)	10.9 (8.54-14.1)	12.2 (9.24-16.4)	13.8 (9.66-18.6)	16.3 (10.9-22.7)	18.4 (11.9-26.2)
20-day	6.68 (5.66-7.87)	7.62 (6.44-8.99)	9.16 (7.71-10.8)	10.4 (8.72-12.4)	12.2 (9.78-15.1)	13.5 (10.6-17.1)	14.9 (11.2-19.5)	16.5 (11.6-22.0)	18.7 (12.5-25.8)	20.5 (13.3-28.9)
30-day	8.28 (7.04-9.72)	9.30 (7.89-10.9)	11.0 (9.26-12.9)	12.3 (10.3-14.6)	14.2 (11.4-17.5)	15.7 (12.2-19.6)	17.2 (12.8-22.1)	18.7 (13.2-24.9)	20.7 (13.9-28.5)	22.3 (14.5-31.4)
45-day	10.3 (8.81-12.1)	11.4 (9.73-13.4)	13.2 (11.2-15.5)	14.7 (12.4-17.4)	16.8 (13.5-20.4)	18.4 (14.4-22.8)	19.9 (14.9-25.4)	21.4 (15.2-28.4)	23.4 (15.8-32.0)	24.8 (16.2-34.7)
60-day	12.0 (10.3-14.0)	13.2 (11.3-15.4)	15.1 (12.9-17.7)	16.7 (14.1-19.7)	18.9 (15.3-22.9)	20.6 (16.2-25.5)	22.3 (16.6-28.2)	23.8 (16.9-31.4)	25.6 (17.4-35.0)	26.9 (17.6-37.6)

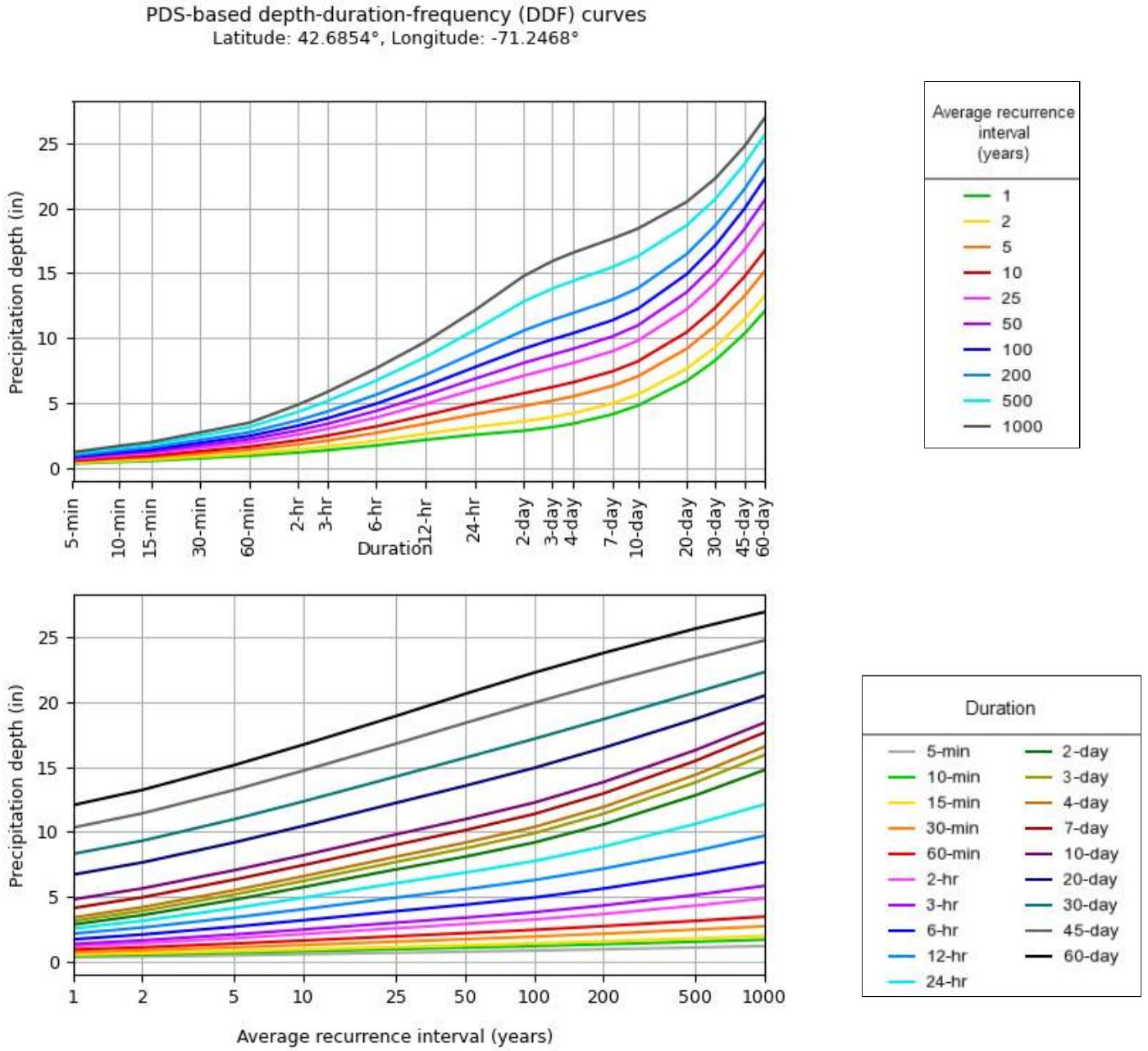
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

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.

Back to Top

PF graphical



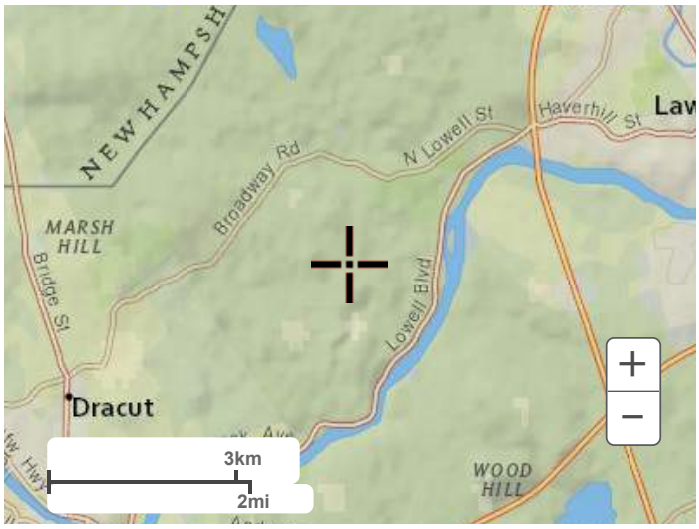
NOAA Atlas 14, Volume 10, Version 3

Created (GMT): Fri Jan 26 18:21:54 2024

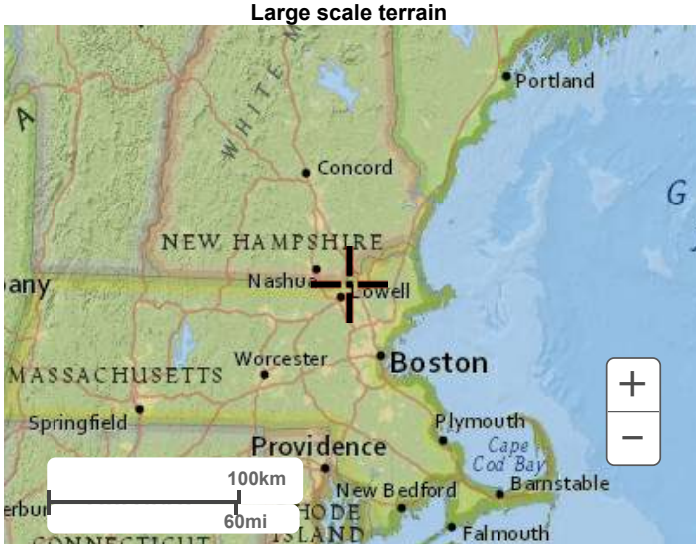
Back to Top

Maps & aerials

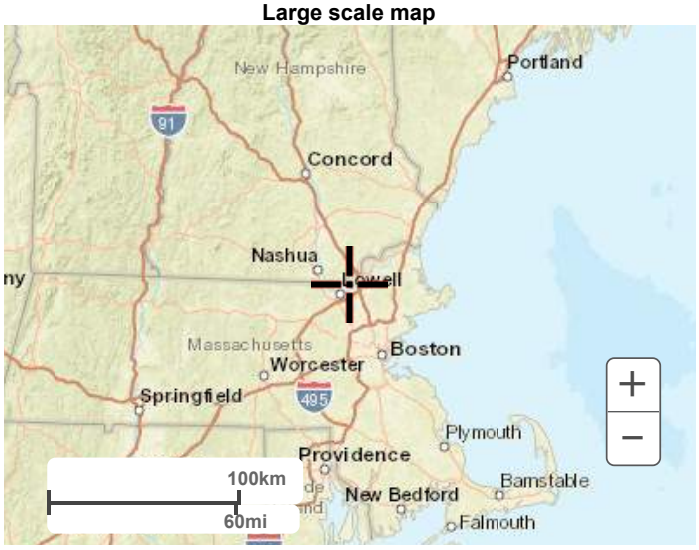
Small scale terrain



Large scale terrain



Large scale map



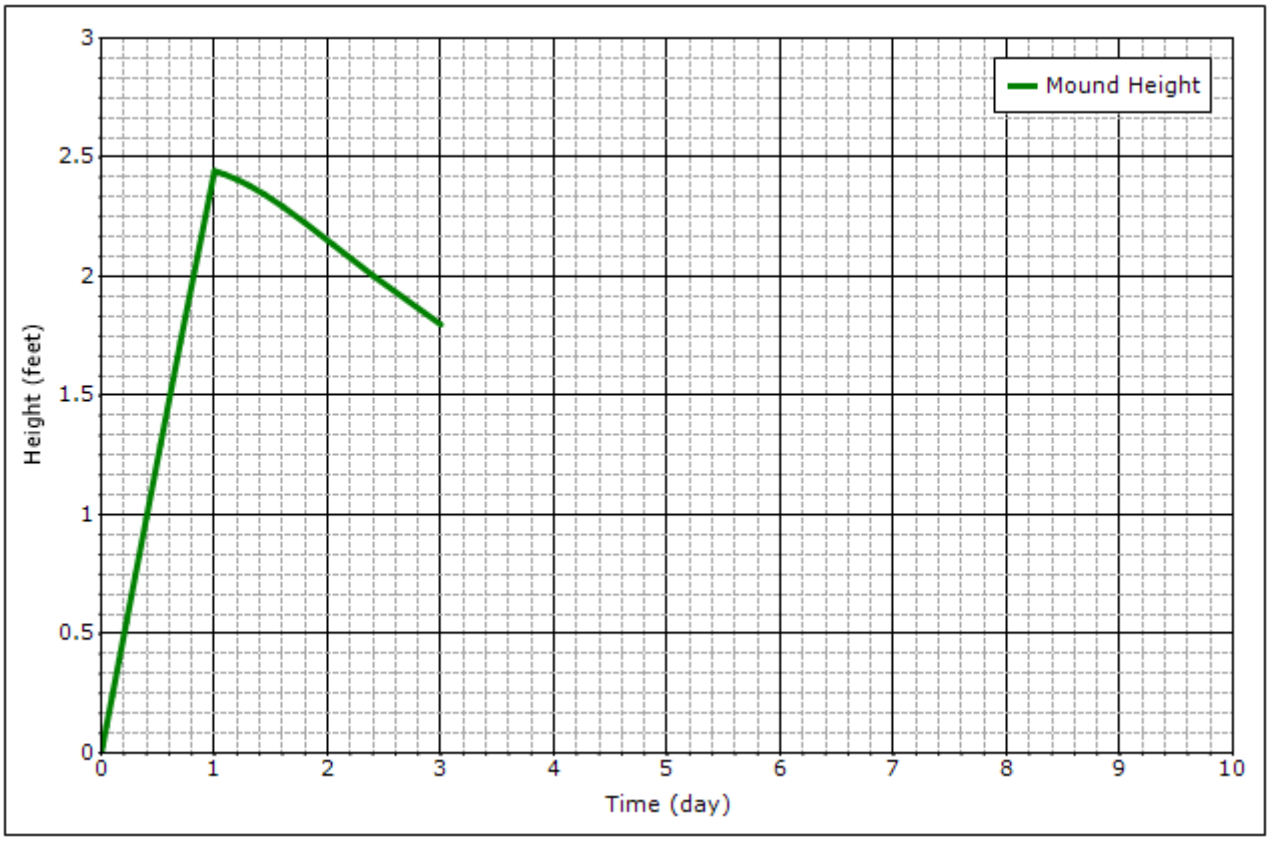
Large scale aerial

Back to Top

US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

Groundwater Mounding Analysis (Hantush Method using Glover's Solution)



Company: Civil Design
Project: Consultants, Inc
Murphy's Farm IB-1
Analyst: Thomas Schomburg
Date: 10/02/2024

Recharge Basin Dimensions

Length (w): 150 ft
Width (l): 100 ft
Bottom Area: 15,000 ft²
SHGW Separation: 3.5 ft

Recharge Rate Calculations

Duration (t): 1 d
Volume (V): 9,483 ft³
Rate (R): 0.62 ft/d
Total Simulation Time: 3 d

Aquifer Characteristics

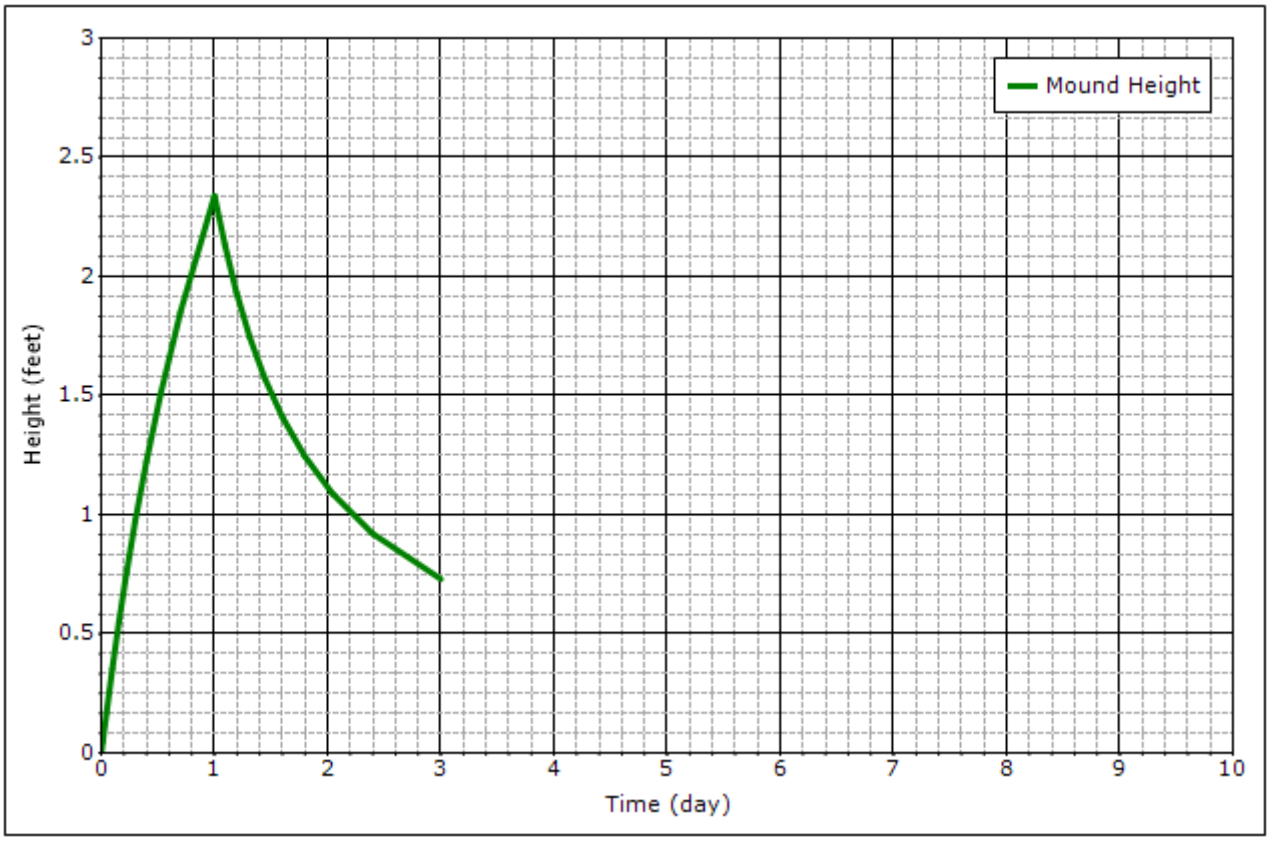
Hydraulic Conductivity (Kh): 24.1 ft/d
Drainable Porosity(Sy): 0.25
Saturated Thickness (h): 3.5 ft

Plot Geometry

X-Coordinate: 0 ft
Y-Coordinate: 0 ft
Left Side Plot Distance (Dl): 0 ft
Right Side Plot Distance (Dr): 0 ft
Plot Angle From Y-Axis (Φ): 0
Constant Head Boundary: No

Time (d)	Height (ft)
0.00	0.0000
0.01	0.0327
0.05	0.1136
0.10	0.2403
0.15	0.3842
0.22	0.5501
0.30	0.7464
0.40	0.9865
0.52	1.2950
0.70	1.7255
1.00	2.4429
1.03	2.4390
1.09	2.4283
1.19	2.4085
1.31	2.3814
1.44	2.3444
1.60	2.2942
1.80	2.2266
2.05	2.1347
2.40	2.0048
3.00	1.7986

Groundwater Mounding Analysis (Hantush Method using Glover's Solution)



Company: Civil Design
Project: Consultants, Inc
Murphy's Farm IB-2
Analyst: Thomas Schomburg
Date: 10/02/2024

Recharge Basin Dimensions

Length (w): 100 ft
Width (l): 40 ft
Bottom Area: 4,000 ft²
SHGW Separation: 4 ft

Recharge Rate Calculations

Duration (t): 1 d
Volume (V): 4,545 ft³
Rate (R): 1.11 ft/d
Total Simulation Time: 3 d

Aquifer Characteristics

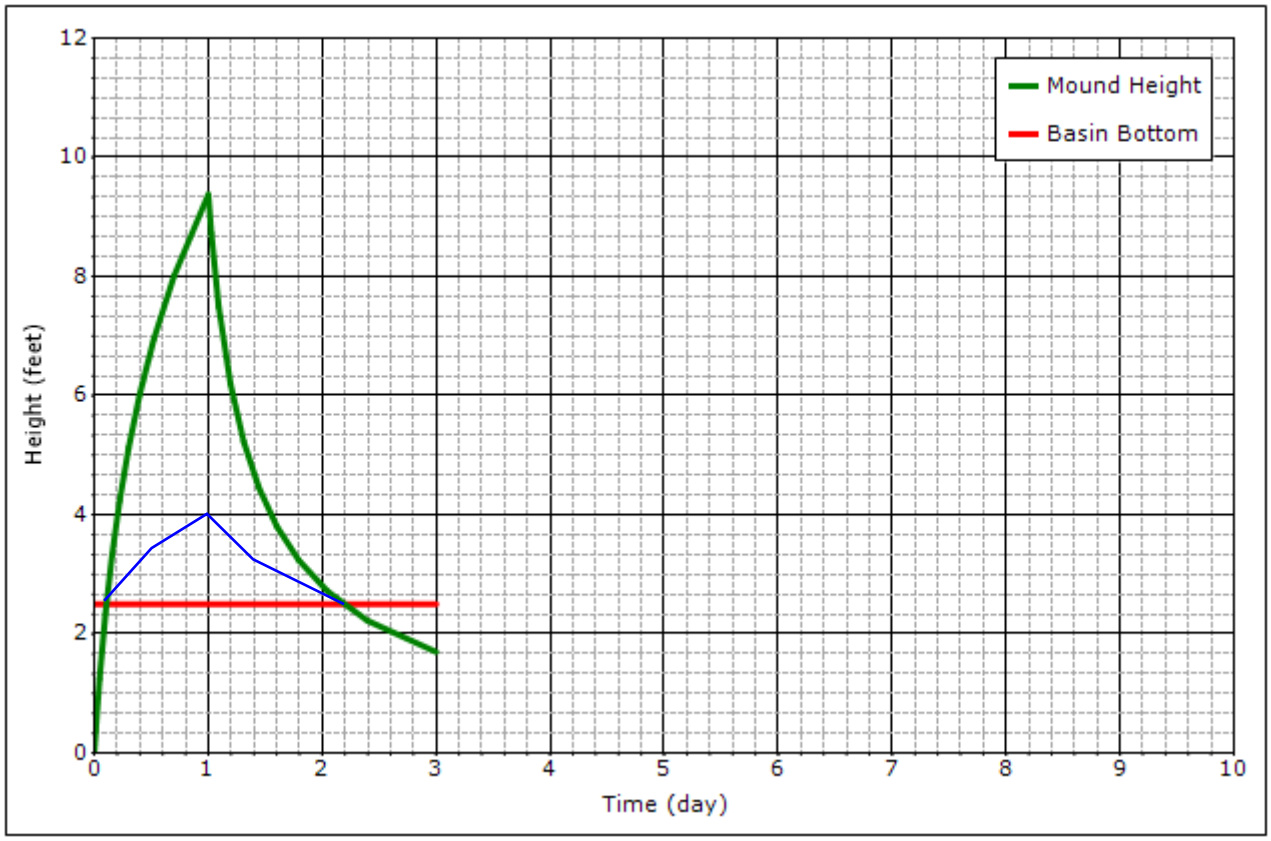
Hydraulic Conductivity (Kh): 41.35 ft/d
Drainable Porosity(Sy): 0.3
Saturated Thickness (h): 4 ft

Plot Geometry

X-Coordinate: 0 ft
Y-Coordinate: 0 ft
Left Side Plot Distance (Dl): 0 ft
Right Side Plot Distance (Dr): 0 ft
Plot Angle From Y-Axis (Φ): 0
Constant Head Boundary: No

Time (d)	Height (ft)
0.00	0.0000
0.01	0.0488
0.05	0.1693
0.10	0.3535
0.15	0.5489
0.22	0.7555
0.30	0.9781
0.40	1.2236
0.52	1.5055
0.70	1.8507
1.00	2.3391
1.03	2.2795
1.09	2.1335
1.19	1.9329
1.31	1.7472
1.44	1.5735
1.60	1.4078
1.80	1.2472
2.05	1.0873
2.40	0.9211
3.00	0.7305

Groundwater Mounding Analysis (Hantush Method using Glover's Solution)



Company: Civil Design
Project: Consultants, Inc
Murphy's Farm IB-3
Analyst: Thomas Schomburg
Date: 10/02/2024

Recharge Basin Dimensions

Length (w): 55 ft
Width (l): 20 ft
Bottom Area: 1,100 ft²
SHGW Separation: 2.5 ft

Recharge Rate Calculations

Duration (t): 1 d
Volume (V): 8,068 ft³
Rate (R): 7.27 ft/d
Total Simulation Time: 3 d

Aquifer Characteristics

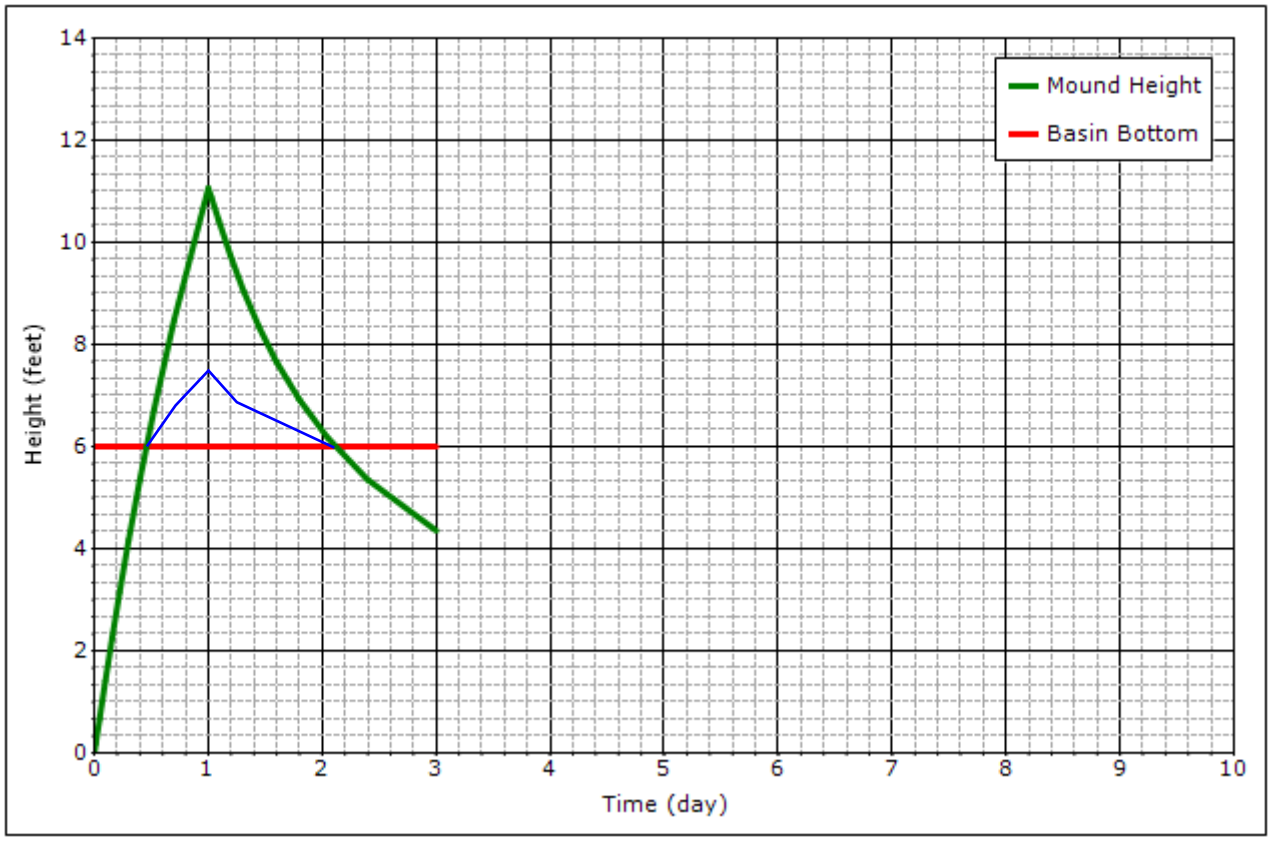
Hydraulic Conductivity (Kh): 24.1 ft/d
Drainable Porosity(Sy): 0.25
Saturated Thickness (h): 6 ft

Plot Geometry

X-Coordinate: 0 ft
Y-Coordinate: 0 ft
Left Side Plot Distance (Dl): 0 ft
Right Side Plot Distance (Dr): 0 ft
Plot Angle From Y-Axis (Φ): 0
Constant Head Boundary: No

Time (d)	Height (ft)
0.00	0.0000
0.01	0.3831
0.05	1.2481
0.10	2.3349
0.15	3.3157
0.22	4.2341
0.30	5.1243
0.40	6.0170
0.52	6.9545
0.70	8.0091
1.00	9.3773
1.03	8.7270
1.09	7.4878
1.19	6.2043
1.31	5.2341
1.44	4.4565
1.60	3.8035
1.80	3.2341
2.05	2.7167
2.40	2.2216
3.00	1.6976

Groundwater Mounding Analysis (Hantush Method using Glover's Solution)



Company: Civil Design
Project: Consultants, Inc
Murphy's Farm Sub-1
Analyst: Thomas Schomburg
Date: 10/02/2024

Recharge Basin Dimensions

Length (w): 153 ft
Width (l): 65 ft
Bottom Area: 9,945 ft²
SHGW Separation: 6 ft

Recharge Rate Calculations

Duration (t): 1 d
Volume (V): 43,275 ft³
Rate (R): 4.38 ft/d
Total Simulation Time: 3 d

Aquifer Characteristics

Hydraulic Conductivity (Kh): 41.35 ft/d
Drainable Porosity(Sy): 0.3
Saturated Thickness (h): 6 ft

Plot Geometry

X-Coordinate: 0 ft
Y-Coordinate: 0 ft
Left Side Plot Distance (Dl): 0 ft
Right Side Plot Distance (Dr): 0 ft
Plot Angle From Y-Axis (Φ): 0
Constant Head Boundary: No

Time (d)	Height (ft)
0.00	0.0000
0.01	0.1927
0.05	0.6687
0.10	1.4119
0.15	2.2376
0.22	3.1501
0.30	4.1699
0.40	5.3338
0.52	6.7159
0.70	8.4718
1.00	11.0653
1.03	10.8870
1.09	10.4365
1.19	9.7479
1.31	9.0493
1.44	8.3528
1.60	7.6510
1.80	6.9333
2.05	6.1804
2.40	5.3561
3.00	4.3577

LONG TERM OPERATIONS AND MAINTENANCE PROGRAM

October 4, 2024

This Long-Term Operations and Maintenance Program Plan has been prepared in accordance with the Stormwater Management Policy issued by the Department of Environmental Protection (DEP) for the proposed multi-family residential development located at Murphy's Farm in Dracut, MA. Upon a period beginning twelve months after the completion of the roadway, all structural BMP's shall be inspected twice annually, once in April and once in November. The inspection shall be performed as indicated below:

Street Sweeping

Street sweeping can be an effective method to reduce pollutant loading in runoff generated from pavement. Street sweeping shall be performed quarterly, using a high efficiency vacuum sweeper or regenerative air sweeper, with sweeping scheduled primarily in the spring and fall.

Snow Storage / Removal

Snow plowed from the proposed roadway will be placed or disposed of in accordance with the policy developed by DEP. Under no circumstances shall snow plowed or removed from the road be stockpiled within wetland resource areas. If conditions arise where snow storage areas are at capacity the Operator is required to remove and dispose of snow off site in conformance with all local, state and federal regulations.

Catch Basins

Catch basins shall be inspected and/or cleaned at least four times per year and at the end of the foliage and snow removal seasons. Sediment shall be removed four times per year or whenever the depth of the deposits is greater than or equal to one half the depth from the bottom of the invert of the lowest pipe in the basin. Sediment shall be removed and disposed of with a truck-mounted vacuum unit or other appropriate apparatus. The sediment will be disposed of at an approved offsite location in accordance with all applicable local, state, and federal regulations.

Drainage Outfalls

The outlets of the storm water management system will be inspected biannually. Any evidence of erosion or other damage will be reported to the appropriate town representative and repaired as soon as possible. Any sediment should be removed from the outlet structures.

Sediment Forebay

Sediments and associated pollutants are removed only when sediment forebays are actually cleaned out, so regular maintenance is essential. Frequently removing accumulated sediments will make it less likely that sediments will be re-suspended. At a minimum, inspect sediment forebays monthly and clean them out at least four times per year. Stabilize the floor and sidewalls of the sediment forebay before making it operational, otherwise the practice will discharge excess amounts of suspended sediments. When mowing grasses, keep the grass height no greater than 6 inches. Set mower blades no lower than 3 to 4 inches. Check for signs of riling and gullying and repair as needed. After removing the sediment, replace any vegetation damaged during the clean-out by either reseeding or resodding. When reseeding, incorporate practices such as hydroseeding with a tackifier, blanket, or similar practice to ensure that no scour occurs in the forebay while the seeds germinate and develop roots.

Infiltration/Detention Basin

Infiltration basins are prone to clogging and failure, so it is imperative to develop and implement aggressive maintenance plans and schedules. Installing the required pretreatment BMPs will significantly reduce maintenance requirements for the basin. Inspections and preventive maintenance must be performed at least twice a year.

Once the basin is in use, inspect it after every major storm for the first few months to ensure it is stabilized and functioning properly and if necessary, take corrective action. Note how long water remains standing in the basin after a storm; standing water within the basin 48 to 72 hours after a storm indicates that the infiltration

capacity may have been overestimated. If the ponding is due to clogging, immediately address the reasons for the clogging (such as upland sediment erosion, excessive compaction of soils, or low spots).

Thereafter, inspect the infiltration basin at least twice per year. Important items to check during the inspection include:
- Signs of differential settlement,
- Cracking,
- Erosion,
- Leakage in the embankments,
- Tree growth on the embankments,
- Condition of riprap,
- Operation of the drawdown device,
- Sediment accumulation and
- The health of the turf.

At least twice a year, mow the buffer area, side slopes, and basin bottom. Remove grass clippings and accumulated organic matter to prevent an impervious organic mat from forming. Remove trash and debris at the same time. Use deep tilling to break up clogged surfaces and revegetate immediately. Remove sediment from the basin as necessary but wait until the floor of the basin is thoroughly dry. Use light equipment to remove the top layer to not compact the underlying soil. Deeply till the remaining soil and revegetate as soon as possible. Inspect and clean pretreatment devices associated with basins at least twice a year, and ideally every other month.

Stormceptor

Inspection and Maintenance is fundamental to the long-term performance of a Stormceptor oil/grit separator system. Stormceptors should be inspected post construction, prior to the discharge of any stormwater. Additional inspections should occur every 6 months for the first year to determine the sediment accumulation rate. After the first year, inspections should occur based on first-year observations or local requirements, whichever is stricter. Cleanings should be performed with a standard vacuum truck.

Subsurface Infiltration Systems

The subsurface infiltration systems shall be inspected twice annually, once in April and once in November. Any and all debris and/or sediments shall be removed from the units and be disposed of at an approved offsite location in accordance with all applicable local, state, and federal regulations.

Mosquito Control Plan

Mosquito pupae and larvae need at least four days of ponded water to emerge as adults. Ensure that Infiltration Basin maintenance is performed as required so that the period of infiltration is less than 72 hours per DEP requirements.

Owner:
The Homes At Murphy's Farm, LLC
(c/o Kevin O'Brien)
18 Cassimere Street
Andover, MA 01810

Applicant / Responsible Party (During Construction):
The Homes At Murphy's Farm, LLC
(c/o Kevin O'Brien)
18 Cassimere Street
Andover, MA 01810

Responsible Party (After Construction):
A Homeowners Association shall be created and shall be responsible for the maintenance of the stormwater basins, catch basins, and stormceptors.

Construction Period Pollution Prevention Plan:
A Stormwater Pollution Prevention Plan (SWPPP) will be prepared prior to construction to address the project's NPDES obligations with the EPA. The SWPPP will address the requirements of the Construction Period Pollution Prevention Plan.

System Map:
See *Comprehensive Permit Site Plan for Murphy's Farm* for the location of all stormwater management facilities.

Estimated Operations and Maintenance Budget
It is anticipated that the stormwater management system will require an annual budget of $10,000 to maintain.

TEST PIT LOGS

Address: Murhpy's Farm, Dracut, MA
Date: 12/7/2023
S.E.: William Hall
Witness: Tina Rivard

Note: Areas where test pits were performed have been stripped of top and subsoil.

CDCI-1

Depth	Horizon	Color	Texture
0-120	C	10YR5/4	Coarse Sand

Many cobbles and stones
Not mottling observed
No water observed

CDCI-2

Depth	Horizon	Color	Texture
0-132	C	10YR5/4	Coarse Sand

Many cobbles and stones
Not mottling observed
No water observed

CDCI-3

Depth	Horizon	Color	Texture
0-156	C	10YR5/4	Coarse Sand

Many cobbles and stones
Not mottling observed
No water observed

CDCI-4

Depth	Horizon	Color	Texture
0-120	C	10YR5/4	Coarse Sand

Many cobbles and stones
Not mottling observed
No water observed

CDCI-5

Depth	Horizon	Color	Texture
0-126	C	10YR5/4	Coarse Sand

Many cobbles and stones
Not mottling observed
No water observed

CDCI-6

Depth	Horizon	Color	Texture
0-24	Fill	-----	-----
24-80	C	10YR5/4	Coarse Sand

Many cobbles and stones
Not mottling observed
No water observed
Ledge encountered at 80"

CDCI-7

Depth	Horizon	Color	Texture
0-72	Sandy Fill	-----	-----

Not mottling observed
No water observed
Ledge encountered at 72"

CDCI-8

Depth	Horizon	Color	Texture
0-80	C1	10YR5/4	Coarse Sand
80-144	C2	10YR6/3	Loamy Sand

Many cobbles and stones in C1 layer
Not mottling observed
No water observed

CDCI-9

Depth	Horizon	Color	Texture
0-102	C1	10YR5/4	Coarse Sand
102-144	C2	10YR6/3	Loamy Sand

Many cobbles and stones in C1 layer
Not mottling observed
No water observed

CDCI-10

Depth	Horizon	Color	Texture
0-84	C1	10YR5/4	Coarse Sand
84-136	C2	10YR6/3	F. Loamy Sand

Many cobbles and stones in C1 layer
Mottling @ 72"
Weeping @ 84"

Address: Murhpy's Farm, Dracut, MA
Date: 12/7/2023
S.E.: William Hall
Witness: Tina Rivard

Note: Areas where test pits were performed have been stripped of top and subsoil.

CDCI-11

Depth	Horizon	Color	Texture
0-90	C1	10YR5/4	Coarse Sand
90-166	C2	10YR6/3	F. Loamy Sand

Many cobbles and stones in C1 layer
Mottling @ 128"
Weeping @ 160"

CDCI-12

Depth	Horizon	Color	Texture
0-80	C1	10YR5/4	Coarse Sand
80-144	C2	10YR6/3	F. Loamy Sand

Many cobbles and stones in C1 layer
Mottling @ 112"
Weeping @ 144"

Address: Murphy's Farm, Dracut, MA
Date: 4/3/2024
S.E.: Thomas Schomburg
Witness: N/a

Note: Test pits CDCI-14 - CDCI-23 performed in areas that have been stripped of top and subsoil. Soil has begun to weather.

CDCI-13

Depth	Horizon	Color	Texture
0-16	A	10YR3/2	Sandy Loam
16-36	B	10YR5/6	Sandy Loam
36-80	C	10YR5/3	Sandy Loam

Mottling @ 32"
Water @ 40"

CDCI-14

Depth	Horizon	Color	Texture
0-16	A	10YR3/2	Sandy Loam
16-32	B	10YR5/6	Sandy Loam
32-108	C	10YR5/3	Sandy Loam

Mottling @ 30"
Water @ 30"

CDCI-15

Depth	Horizon	Color	Texture
0-12	A	10YR3/2	Sandy Loam
12-32	B	10YR5/6	Sandy Loam
32-96	C	10YR5/3	Sandy Loam

Mottling @ 30"
Water @ 30"

CDCI-16

Depth	Horizon	Color	Texture
0-48	FILL	-----	-----
48-80	C	10YR5/3	Loamy Sand

Mottling @ 56"
Water @ 72"
Ledge @ 80"

CDCI-17

Depth	Horizon	Color	Texture
0-16	B	10YR5/6	Fine Sand
16-80	C	10YR5/3	Fine Sand
80-108	C2	10YR5/3	Gravelly Sand

Many cobbles and stones in C Layer
C2 Layer primarily gravel
Mottling @ 24"
Water @ 80"

CDCI-18

Depth	Horizon	Color	Texture
0-24	B	10YR5/6	Sand
24-104	C	10YR5/3	Gravelly Sand

Many cobbles and stones in C Layer
Mottling @ 80"
No water observed

CDCI-19

Depth	Horizon	Color	Texture
0-12	B	10YR5/6	Sand
12-120	C	10YR5/3	Gravelly Sand

Many cobbles and stones in C Layer
Mottling @ 60"
Water @ 90"

CDCI-20

Depth	Horizon	Color	Texture
0-12	B	10YR5/6	Sand
12-102	C	10YR5/6	Gravelly Sand
102-138	2C	10YR5/3	F. Loamy Sand

Many cobbles and stones in C Layer
Mottling @ 102"
No water observed

Address: Murphy's Farm, Dracut, MA
Date: 4/3/2024
S.E.: Thomas Schomburg
Witness: N/a
Note: Test pits CDCI-14 - CDCI-23 performed in areas that have been stripped of top and subsoil. Soil has begun to weather.

CDCI-21

Depth	Horizon	Color	Texture
0-24	B	10YR5/6	Sand
24-48	C	10YR5/6	Gravelly Sand
48-80	2C	10YR5/3	F. Loamy Sand

Many cobbles and stones in C Layer
No mottling observed
No water observed
Ledge encountered at 80"

CDCI-22

Depth	Horizon	Color	Texture
0-16	B	10YR5/6	Sand
16-60	C	10YR5/6	Gravelly Sand
60-80	2C	10YR5/3	F. Loamy Sand

Many cobbles and stones in C Layer
No mottling observed
No water observed
Ledge encountered at 80"

CDCI-23

Depth	Horizon	Color	Texture
0-16	B	10YR5/6	Sand
16-54	C	10YR5/6	Gravelly Sand

Many cobbles and stones in C Layer
No mottling observed
No water observed
Ledge encountered at 54"

CDCI-24

Depth	Horizon	Color	Texture
0-8	A	10YR3/2	Sand
8-16	B	10YR5/6	Sand
16-60	C	10YR5/6	Gravelly Sand
60-72	2C	10YR5/3	F. Loamy Sand

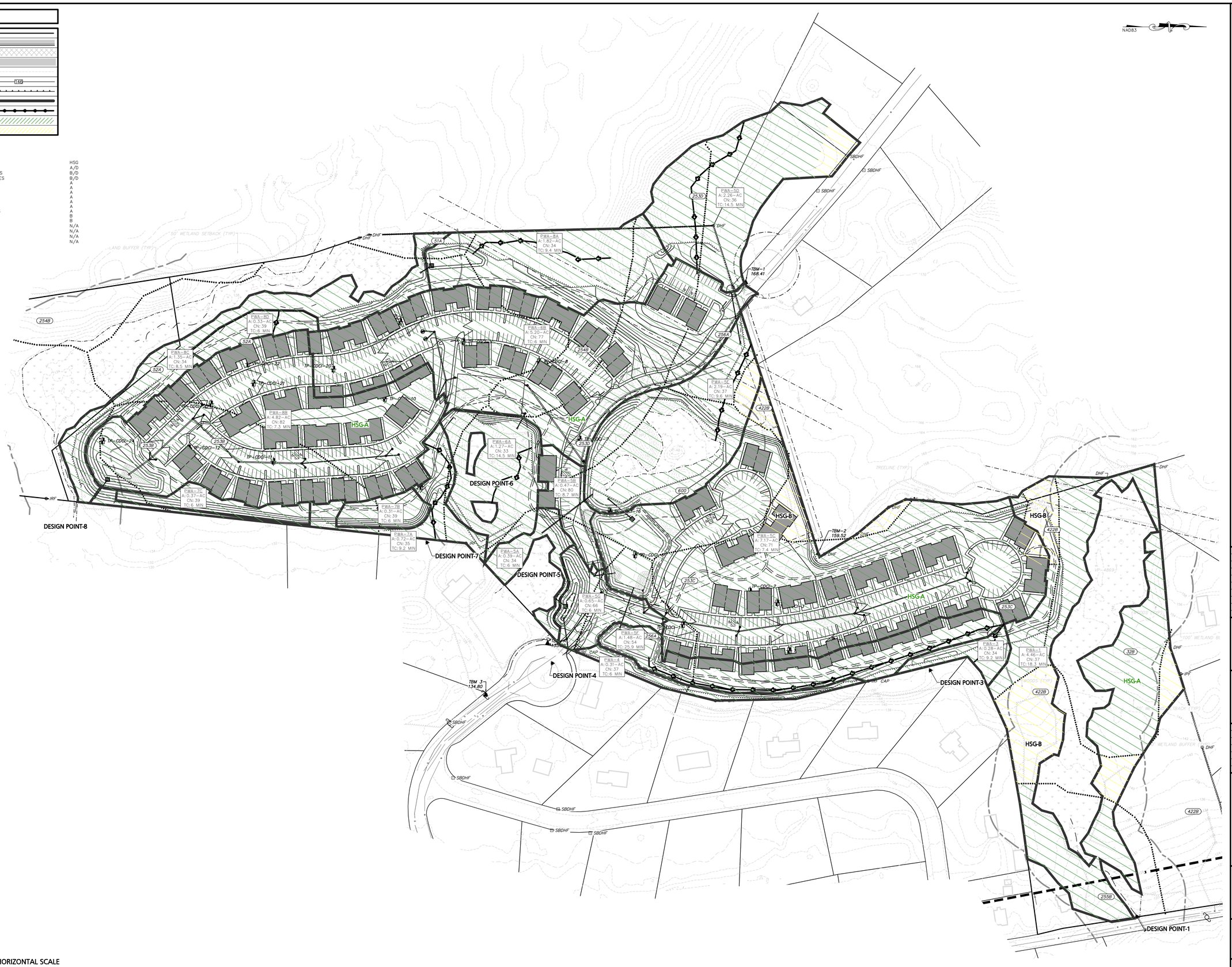
Many cobbles and stones in C Layer
Mottling @ 32"
Water @ 72"
Ledge encountered at 72"

LEGEND

PROPERTY LINE	
PROPOSED BUILDING	
PROPOSED POROUS PAVEMENT	
PROPOSED BIT. CONC.	
EXISTING CONTOUR	
PROPOSED CONTOUR	140
PROPOSED RETAINING WALL	
PROPOSED WATERSHED BOUNDARY	
PROPOSED TC	
HYDROLOGIC SOILS GROUP A	
HYDROLOGIC SOILS GROUP B	

SOILS SUMMARY:

SYMBOL	DESCRIPTION	HSG
32B	WAREHAM LFS, 0–5% SLOPES	A/D
51A	SWANSEA MUCK, 0–1% SLOPES	B/D
52A	FRESTOWN MUCK, 0–1% SLOPES	B/D
253B	HINKLEY LS, 3–8% SLOPES	A
253C	HINKLEY LS, 8–15% SLOPES	A
253D	HINKLEY LS, 15–25% SLOPES	A
254B	MERRIMAC FSL, 3–8% SLOPES	A
255B	WINDSOR LS, 3–8% SLOPES	A
255C	WINDSOR LS, 8–15% SLOPES	A
256A	DEERFIELD LFS, 0–3% SLOPES	A
420C	CANTON FSL, 8–15% SLOPES	B
422B	CANTON FSL, 0–8% SLOPES	B
600	PITS, GRAVEL	N/A
601	PITS, QUARRY	N/A
653	UDORTHENTS, SANDY	N/A
654	UDORTHENTS, LOAMY	N/A



HORIZONTAL SCALE

80 0 40 80 160 320

(IN FEET)

1"=80'

DATE	DESCRIPTION
REVISIONS	

APPLICANT:

THE HOMES AT MURPHY'S FARM LLC

18 CASSIMERE STREET

ANDOVER, MA 01810

PROJECT:

MURPHY'S FARM

DRACUT, MA 01826

DATE ISSUED:	–
PROJECT #:	23-10524
PREPARED BY:	TWS

DRAFT - ISSUED FOR REVIEW OCTOBER 4, 2024

PROFESSIONAL ENGINEER FOR CIVIL DESIGN CONSULTANTS, INC.

CIVIL DESIGN CONSULTANTS, INC

344 North Main Street | Andover, MA 01810

(978) 475-9520 | www.civildc.com

DRAWING TITLE:

GRADING, SEWER & UTILITIES PLAN

DRAWING #:

C-4B

LEGEND

PROPERTY LINE	
ABUTTERS PROPERTY LINE	
EXISTING EDGE OF PAVEMENT	
LIMIT OF BORDERING VEGETATED WETLAND (BVW)	
WETLAND FLAG	WF 8D
WETLAND	
50 FT BUFFER ZONE TO BVW	
100 FT BUFFER ZONE TO BVW	
EXISTING CONTOUR	
EXISTING WATERSHED BOUNDARY	
EXISTING TC	
HYDROLOGIC SOILS GROUP A	
HYDROLOGIC SOILS GROUP B	
HYDROLOGIC SOILS GROUP C	
HYDROLOGIC SOILS GROUP D	

SOILS SUMMARY:

SYMBOL	DESCRIPTION	HSG
32B	WAREHAM LFS, 0–5% SLOPES	A/D
51A	SWANSEA MUCK, 0–1% SLOPES	B/D
52A	FRESTOWN MUCK, 0–1% SLOPES	B/D
253B	HINKLEY LS, 3–8% SLOPES	A
253C	HINKLEY LS, 8–15% SLOPES	A
253D	HINKLEY LS, 15–25% SLOPES	A
254B	MERRIMAC FSL, 3–8% SLOPES	A
255B	WINDSOR LS, 3–8% SLOPES	A
255C	WINDSOR LS, 8–15% SLOPES	A
256A	DEERFIELD LFS, 0–3% SLOPES	A
420C	CANTON FSL, 8–15% SLOPES	B
422B	CANTON FSL, 0–8% SLOPES	B
600	PITS, GRAVEL	N/A
601	PITS, QUARRY	N/A
653	UDORTHENTS, SANDY	N/A
654	UDORTHENTS, LOAMY	N/A

NAD83

EWA–8
A: 6.76–AC
CN: 30
TC: 24.8 MIN

EWA–7
A: 3.96–AC
CN: 30
TC: 14.3 MIN

EWA–6
A: 2.34–AC
CN: 30
TC: 16.2 MIN

EWA–5A
A: 1.14–AC
CN: 30
TC: 14.9 MIN

EWA–5B
A: 10.92–AC
CN: 33
TC: 19.5 MIN

EWA–4
A: 2.77–AC
CN: 31
TC: 28.1 MIN

EWA–3
A: 2.74–AC
CN: 30
TC: 10.2 MIN

EWA–1
A: 5.11–AC
CN: 37
TC: 13.7 MIN

DESIGN POINT-1
DESIGN POINT-2
DESIGN POINT-3
DESIGN POINT-4
DESIGN POINT-5
DESIGN POINT-6
DESIGN POINT-8

HSG-A
HSG-B

SBDHF
DHF
IRF
IRF CAP
UP
210 IRF BENT 0.00

HORIZONTAL SCALE
80 0 40 80 160 320
(IN FEET)
1"=80'

DATE	DESCRIPTION
REVISIONS	

APPLICANT:
THE HOMES AT MURPHY'S FARM LLC
18 CASSIMERE STREET
ANDOVER, MA 01810

PROJECT:
MURPHY'S FARM
DRACUT, MA 01826

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DRAFT - ISSUED FOR REVIEW
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DRAWING TITLE:
EXISTING WATERSHED PLAN

DRAWING #:
EWA