Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year Design Storm	NOAA 24-hr	C	Default	24.00	1	3.25	2
2	10-Year Design Storm	NOAA 24-hr	C	Default	24.00	1	5.07	2
3	25-Year Design Storm	NOAA 24-hr	C	Default	24.00	1	6.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

Summary for Pond 3B: Stormwater Basin #3

Inflow Area = 1.940 ac, 21.65% Impervious, Inflow Depth > 0.65" for 2-Year Design Storm event
Inflow = 0.75 cfs @ 12.15 hrs, Volume= 0.105 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-47.94 hrs, dt= 0.17 hrs
Peak Elev= 17.44' @ 47.94 hrs Surf.Area= 0.249 ac Storage= 0.105 af

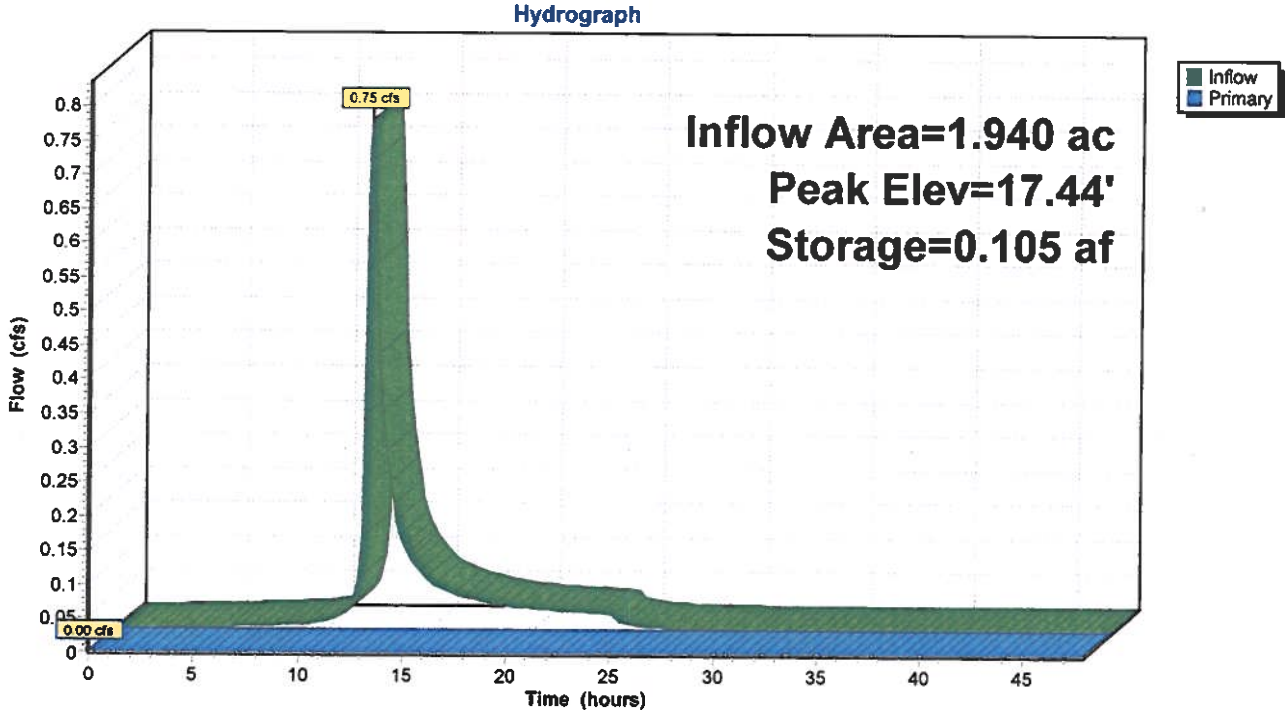
Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	17.00'	0.702 af	**45.00'W x 225.00'L x 2.50'H Prismatoid Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	17.50'	**1.5' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=17.00' (Free Discharge)
↳**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3B: Stormwater Basin #3



Summary for Pond 3B: Stormwater Basin #3

Inflow Area = 1.940 ac, 21.65% Impervious, Inflow Depth > 1.52" for 10-Year Design Storm event
Inflow = 2.04 cfs @ 12.11 hrs, Volume= 0.246 af
Outflow = 0.16 cfs @ 15.31 hrs, Volume= 0.125 af, Atten= 92%, Lag= 192.1 min
Primary = 0.16 cfs @ 15.31 hrs, Volume= 0.125 af

Routing by Stor-Ind method, Time Span= 0.00-47.94 hrs, dt= 0.17 hrs
Peak Elev= 17.61' @ 15.31 hrs Surf.Area= 0.255 ac Storage= 0.149 af

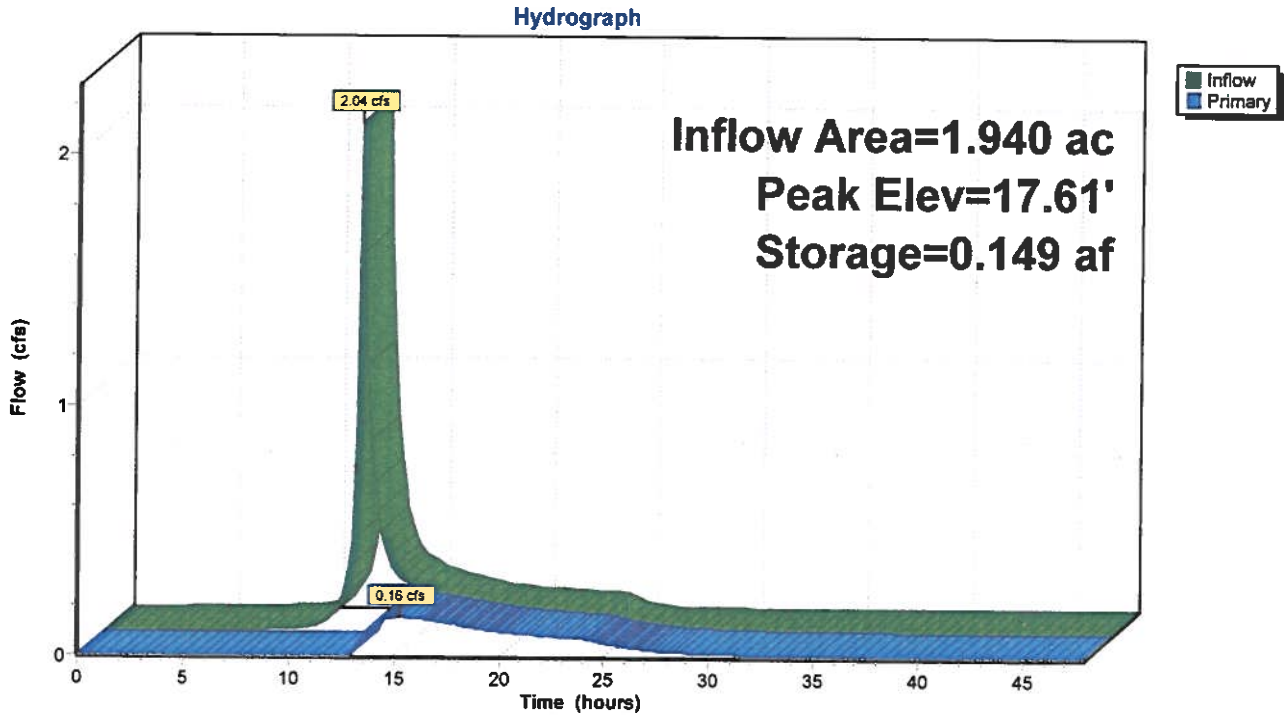
Plug-Flow detention time= 476.6 min calculated for 0.124 af (51% of inflow)
Center-of-Mass det. time= 317.7 min (1,195.3 - 877.5)

Volume	Invert	Avail.Storage	Storage Description
#1	17.00'	0.702 af	**45.00'W x 225.00'L x 2.50'H Prismatoid Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	17.50'	**1.5' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.16 cfs @ 15.31 hrs HW=17.61' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 0.16 cfs @ 0.93 fps)

Pond 3B: Stormwater Basin #3



Summary for Pond 3B: Stormwater Basin #3

Inflow Area = 1.940 ac, 21.65% Impervious, Inflow Depth = 2.32" for 25-Year Design Storm event
Inflow = 3.11 cfs @ 12.10 hrs, Volume= 0.375 af
Outflow = 0.53 cfs @ 13.46 hrs, Volume= 0.254 af, Atten= 83%, Lag= 81.5 min
Primary = 0.53 cfs @ 13.46 hrs, Volume= 0.254 af

Routing by Stor-Ind method, Time Span= 0.00-47.94 hrs, dt= 0.17 hrs
Peak Elev= 17.75' @ 13.46 hrs Surf.Area= 0.261 ac Storage= 0.185 af

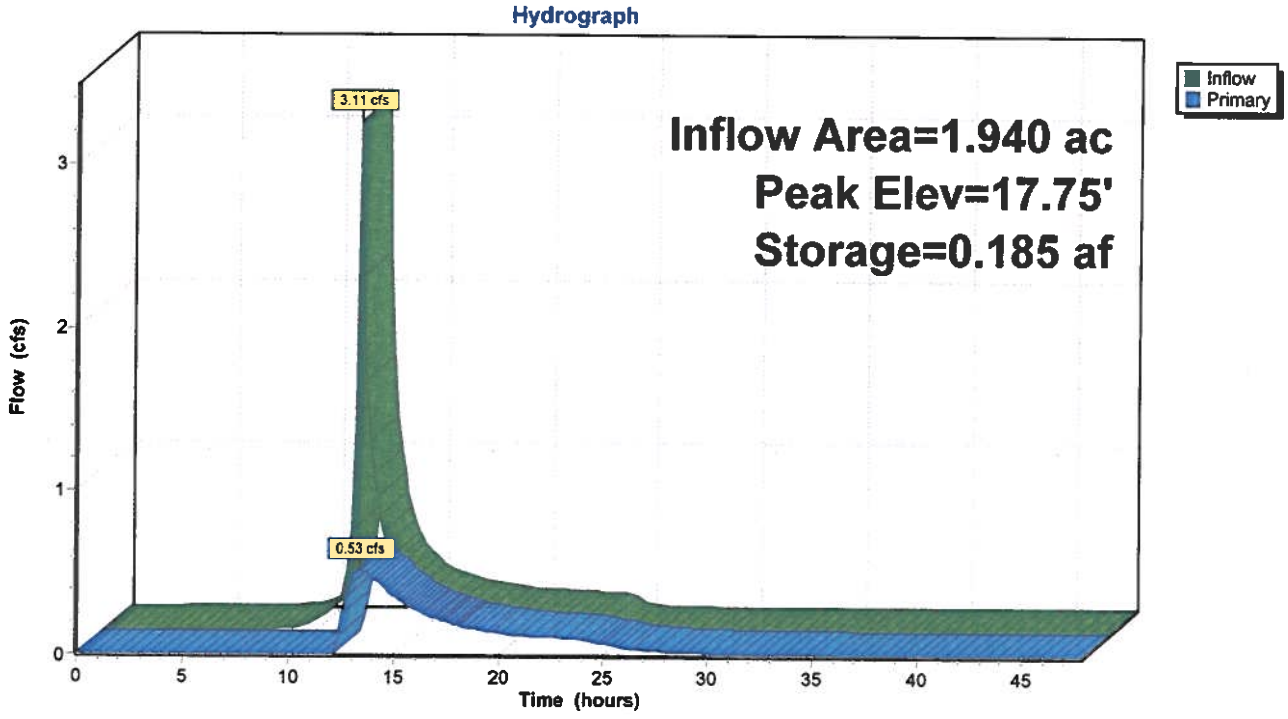
Plug-Flow detention time= 325.9 min calculated for 0.253 af (67% of inflow)
Center-of-Mass det. time= 204.3 min (1,068.8 - 864.4)

Volume	Invert	Avail.Storage	Storage Description
#1	17.00'	0.702 af	**45.00'W x 225.00'L x 2.50'H Prismatoid Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	17.50'	**1.5' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.53 cfs @ 13.46 hrs HW=17.75' (Free Discharge)
↑**1=Broad-Crested Rectangular Weir** (Weir Controls 0.53 cfs @ 1.41 fps)

Pond 3B: Stormwater Basin #3



Summary for Pond 3B: Stormwater Basin #3

Inflow Area = 1.940 ac, 21.65% Impervious, Inflow Depth > 0.11" for Water Quality Design Storm event
Inflow = 0.29 cfs @ 1.02 hrs, Volume= 0.019 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-47.94 hrs, dt= 0.17 hrs
Peak Elev= 17.08' @ 47.94 hrs Surf.Area= 0.235 ac Storage= 0.019 af

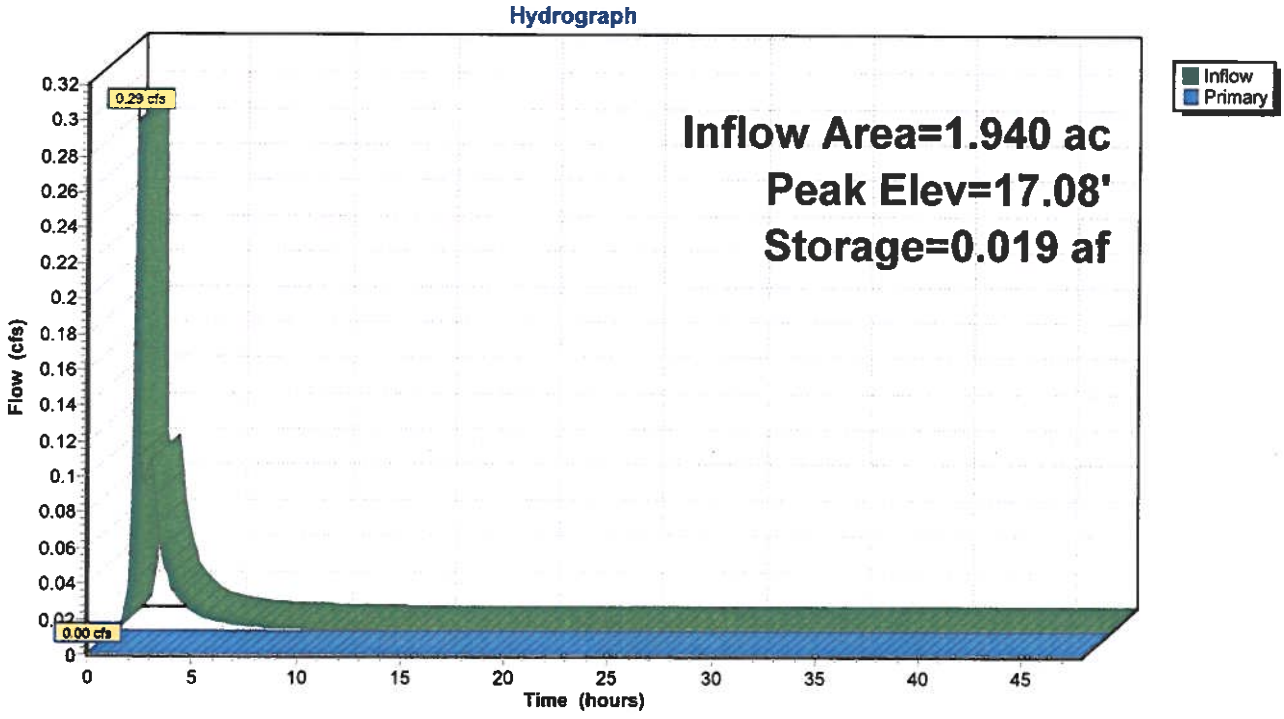
Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	17.00'	0.702 af	**45.00'W x 225.00'L x 2.50'H Prismatoid Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	17.50'	**1.5' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=17.00' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3B: Stormwater Basin #3



Post-Development Runoff

Watershed #4

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year Design Storm	NOAA 24-hr	C	Default	24.00	1	3.25	2
2	10-Year Design Storm	NOAA 24-hr	C	Default	24.00	1	5.07	2
3	25-Year Design Storm	NOAA 24-hr	C	Default	24.00	1	6.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

Summary for Subcatchment 4PP: Watershed #4 Post-Development Pervious

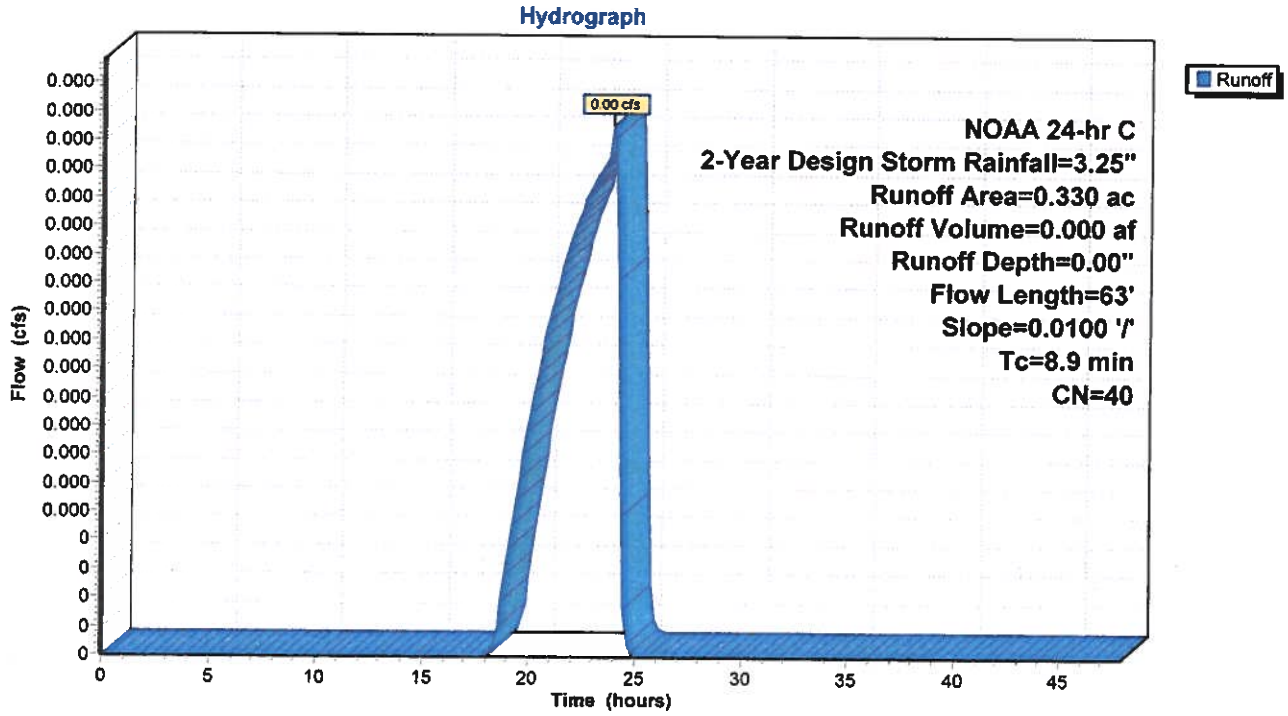
Runoff = 0.00 cfs @ 23.90 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond 4B : Stormwater Basin #4

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-47.94 hrs, dt= 0.17 hrs
NOAA 24-hr C 2-Year Design Storm Rainfall=3.25"

	Area (ac)	CN	Description
*	0.290	39	Grass/landscaping
*	0.030	30	Woodland
*	0.010	96	Stone
	0.330	40	Weighted Average
	0.330		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	63	0.0100	0.12		**Sheet Flow, Grass/landscaping** Grass: Short n= 0.150 P2= 3.25"

Subcatchment 4PP: Watershed #4 Post-Development Pervious



Summary for Subcatchment 4PP: Watershed #4 Post-Development Pervious

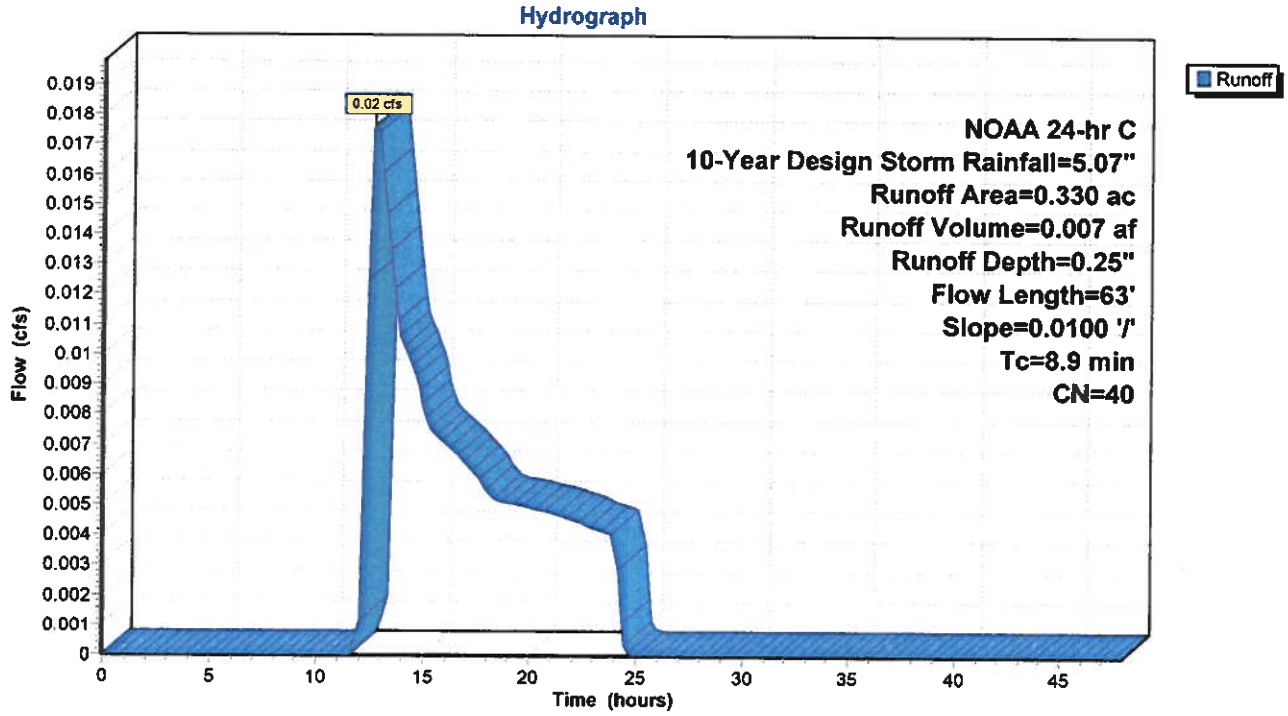
Runoff = 0.02 cfs @ 12.69 hrs, Volume= 0.007 af, Depth= 0.25"
Routed to Pond 4B : Stormwater Basin #4

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-47.94 hrs, dt= 0.17 hrs
NOAA 24-hr C 10-Year Design Storm Rainfall=5.07"

	Area (ac)	CN	Description
*	0.290	39	Grass/landscaping
*	0.030	30	Woodland
*	0.010	96	Stone
	0.330	40	Weighted Average
	0.330		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	63	0.0100	0.12		**Sheet Flow, Grass/landscaping** Grass: Short n= 0.150 P2= 3.25"

Subcatchment 4PP: Watershed #4 Post-Development Pervious



Summary for Subcatchment 4PP: Watershed #4 Post-Development Pervious

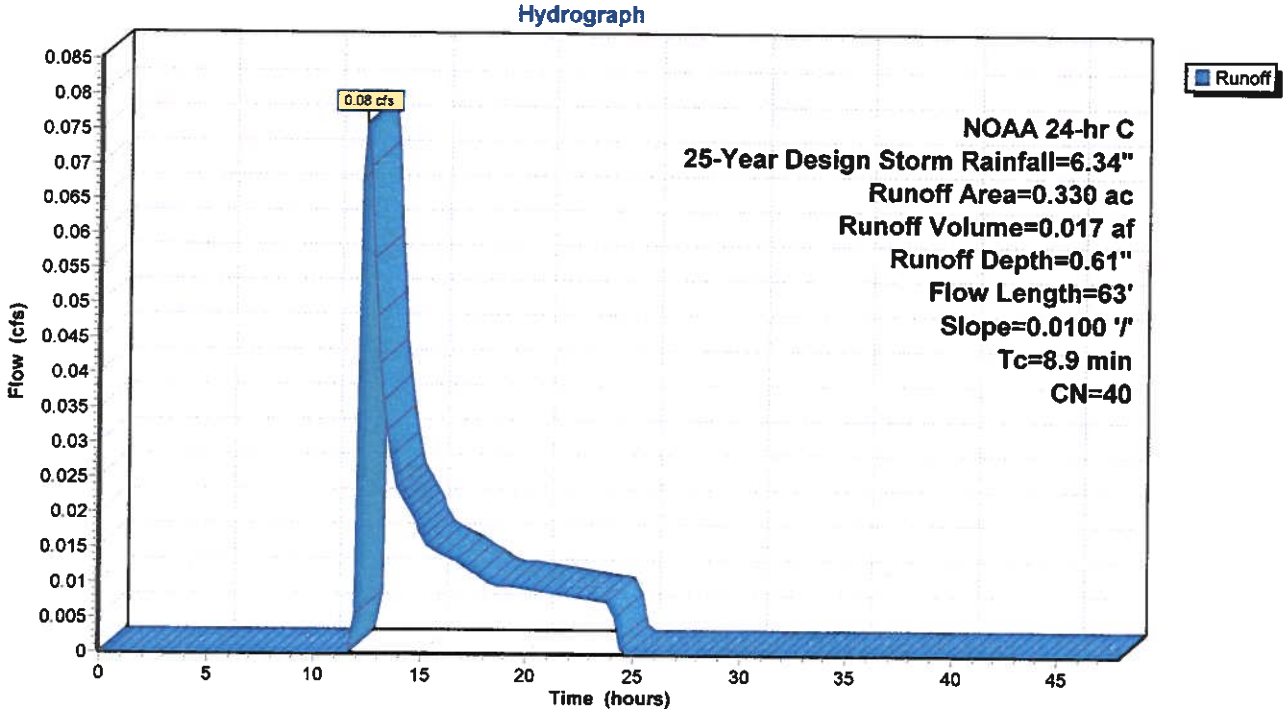
Runoff = 0.08 cfs @ 12.42 hrs, Volume= 0.017 af, Depth= 0.61"
Routed to Pond 4B : Stormwater Basin #4

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-47.94 hrs, dt= 0.17 hrs
NOAA 24-hr C 25-Year Design Storm Rainfall=6.34"

	Area (ac)	CN	Description
*	0.290	39	Grass/landscaping
*	0.030	30	Woodland
*	0.010	96	Stone
	0.330	40	Weighted Average
	0.330		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	63	0.0100	0.12		**Sheet Flow, Grass/landscaping** Grass: Short n= 0.150 P2= 3.25"

Subcatchment 4PP: Watershed #4 Post-Development Pervious



Summary for Subcatchment 4PP: Watershed #4 Post-Development Pervious

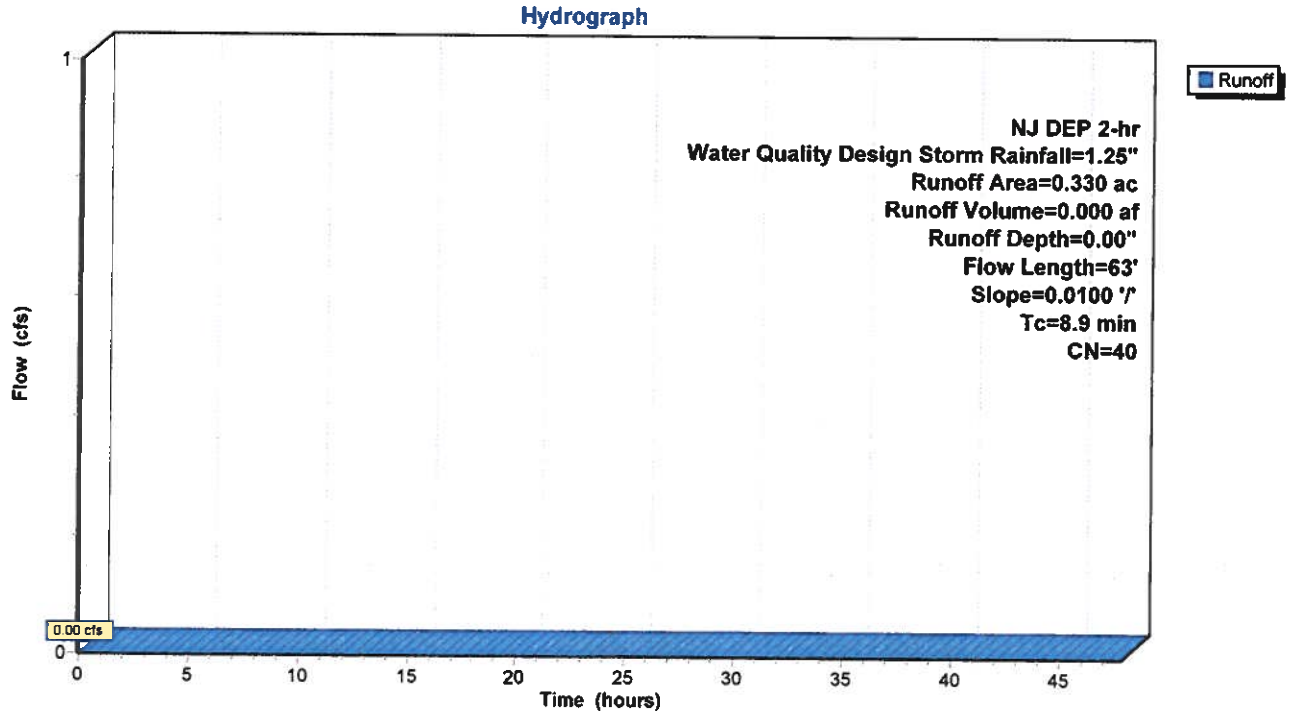
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond 4B : Stormwater Basin #4

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-47.94 hrs, dt= 0.17 hrs
NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

	Area (ac)	CN	Description
*	0.290	39	Grass/landscaping
*	0.030	30	Woodland
*	0.010	96	Stone
	0.330	40	Weighted Average
	0.330		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	63	0.0100	0.12		**Sheet Flow, Grass/landscaping** Grass: Short n= 0.150 P2= 3.25"

Subcatchment 4PP: Watershed #4 Post-Development Pervious



Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year Design Storm	NOAA 24-hr	C	Default	24.00	1	3.25	2
2	10-Year Design Storm	NOAA 24-hr	C	Default	24.00	1	5.07	2
3	25-Year Design Storm	NOAA 24-hr	C	Default	24.00	1	6.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

Summary for Subcatchment 4PI: Watershed #4 Post-Development Impervious

[49] Hint: Tc<2dt may require smaller dt

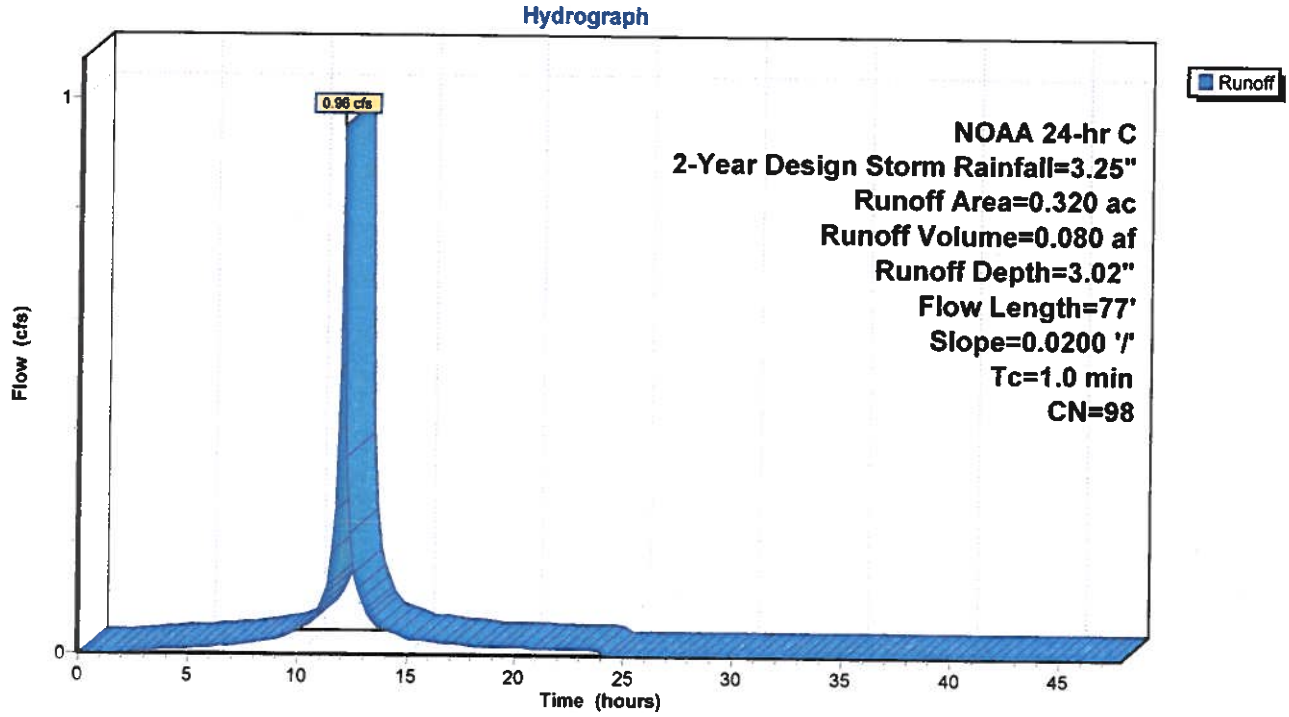
Runoff = 0.96 cfs @ 12.06 hrs, Volume= 0.080 af, Depth= 3.02"
Routed to Pond 4B : Stormwater Basin #4

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-47.94 hrs, dt= 0.17 hrs
NOAA 24-hr C 2-Year Design Storm Rainfall=3.25"

	Area (ac)	CN	Description
*	0.320	98	Impervious
	0.320		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	77	0.0200	1.32		**Sheet Flow, Impervious** Smooth surfaces n= 0.011 P2= 3.25"

Subcatchment 4PI: Watershed #4 Post-Development Impervious



Summary for Subcatchment 4PI: Watershed #4 Post-Development Impervious

[49] Hint: Tc<2dt may require smaller dt

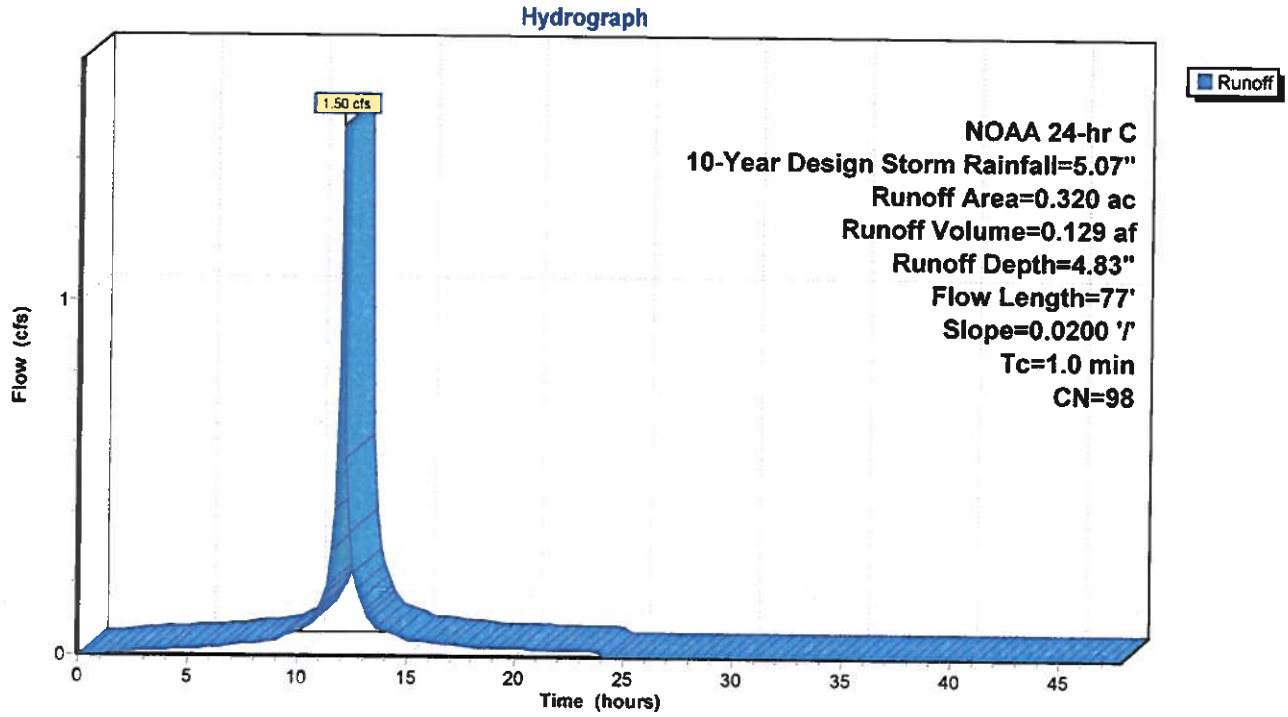
Runoff = 1.50 cfs @ 12.06 hrs, Volume= 0.129 af, Depth= 4.83"
Routed to Pond 4B : Stormwater Basin #4

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-47.94 hrs, dt= 0.17 hrs
NOAA 24-hr C 10-Year Design Storm Rainfall=5.07"

	Area (ac)	CN	Description
*	0.320	98	Impervious
	0.320		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	77	0.0200	1.32		**Sheet Flow, Impervious** Smooth surfaces n= 0.011 P2= 3.25"

Subcatchment 4PI: Watershed #4 Post-Development Impervious



Summary for Subcatchment 4PI: Watershed #4 Post-Development Impervious

[49] Hint: Tc<2dt may require smaller dt

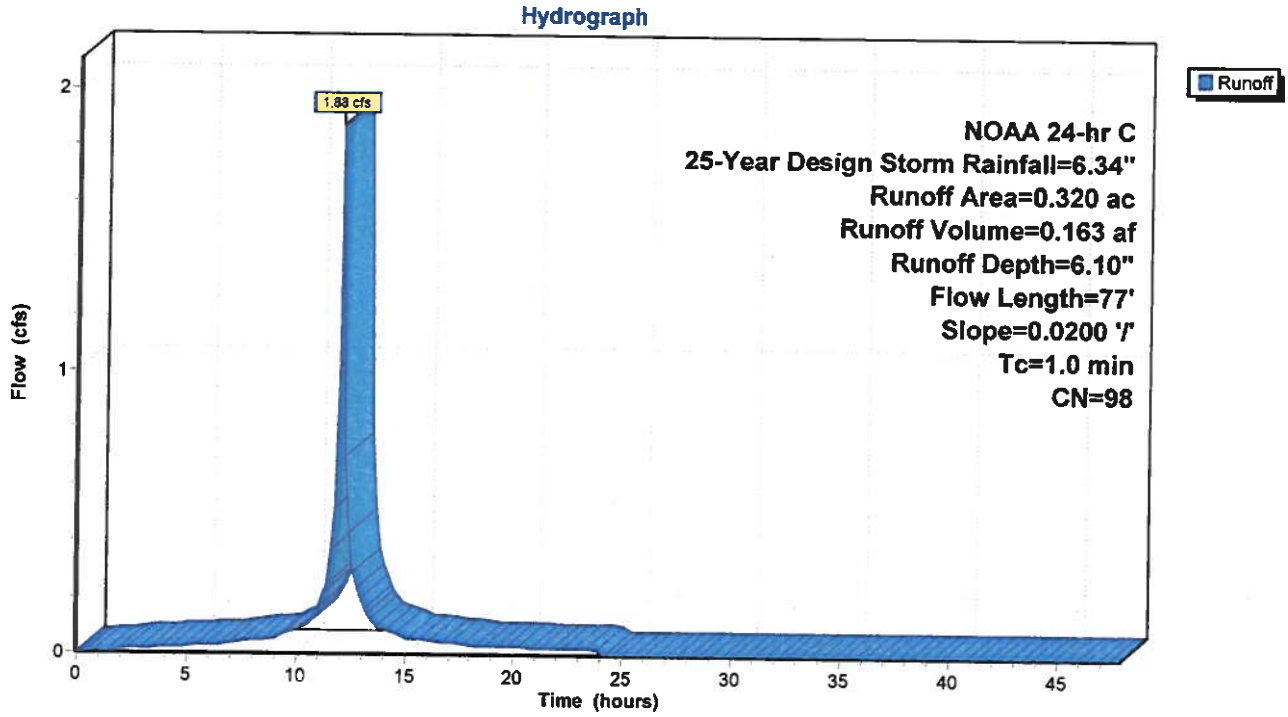
Runoff = 1.88 cfs @ 12.06 hrs, Volume= 0.163 af, Depth= 6.10"
Routed to Pond 4B : Stormwater Basin #4

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-47.94 hrs, dt= 0.17 hrs
NOAA 24-hr C 25-Year Design Storm Rainfall=6.34"

	Area (ac)	CN	Description
*	0.320	98	Impervious
	0.320		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	77	0.0200	1.32		**Sheet Flow, Impervious** Smooth surfaces n= 0.011 P2= 3.25"

Subcatchment 4PI: Watershed #4 Post-Development Impervious



Summary for Subcatchment 4PI: Watershed #4 Post-Development Impervious

[49] Hint: Tc<2dt may require smaller dt

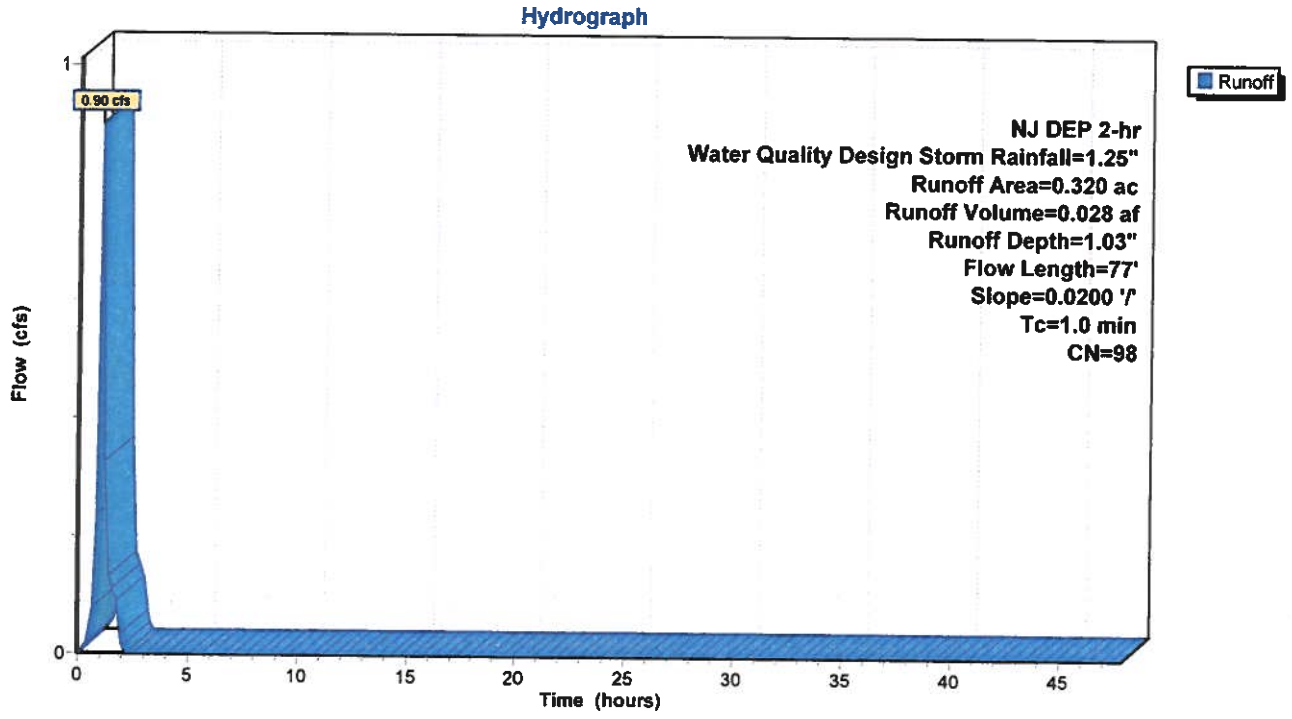
Runoff = 0.90 cfs @ 1.03 hrs, Volume= 0.028 af, Depth= 1.03"
Routed to Pond 4B : Stormwater Basin #4

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-47.94 hrs, dt= 0.17 hrs
NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

	Area (ac)	CN	Description
*	0.320	98	Impervious
	0.320		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	77	0.0200	1.32		**Sheet Flow, Impervious** Smooth surfaces n= 0.011 P2= 3.25"

Subcatchment 4PI: Watershed #4 Post-Development Impervious



Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year Design Storm	NOAA 24-hr	C	Default	24.00	1	3.25	2
2	10-Year Design Storm	NOAA 24-hr	C	Default	24.00	1	5.07	2
3	25-Year Design Storm	NOAA 24-hr	C	Default	24.00	1	6.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

Summary for Pond 4B: Stormwater Basin #4

Inflow Area = 0.650 ac, 49.23% Impervious, Inflow Depth = 1.49" for 2-Year Design Storm event
Inflow = 0.96 cfs @ 12.06 hrs, Volume= 0.081 af
Outflow = 0.51 cfs @ 12.25 hrs, Volume= 0.063 af, Atten= 47%, Lag= 11.6 min
Primary = 0.51 cfs @ 12.25 hrs, Volume= 0.063 af
Routed to Pond 3B : Stormwater Basin #3

Routing by Stor-Ind method, Time Span= 0.00-47.94 hrs, dt= 0.17 hrs
Peak Elev= 18.68' @ 12.25 hrs Surf.Area= 0.063 ac Storage= 0.037 af

Plug-Flow detention time= 220.0 min calculated for 0.063 af (78% of inflow)
Center-of-Mass det. time= 136.7 min (890.7 - 754.0)

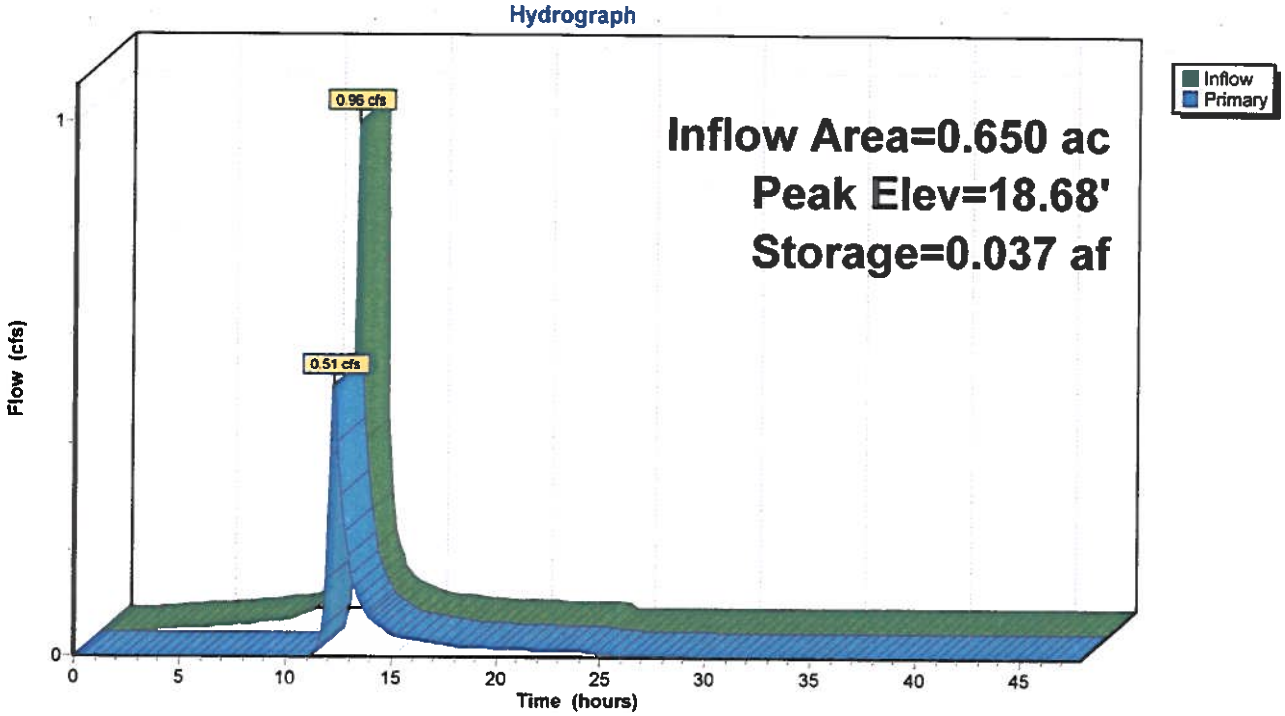
Volume	Invert	Avail.Storage	Storage Description
#1	18.00'	0.144 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
18.00	0.046	0.000	0.000
19.00	0.071	0.059	0.059
20.00	0.099	0.085	0.144

Device	Routing	Invert	Outlet Devices
#1	Primary	18.35'	**15.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.50 cfs @ 12.25 hrs HW=18.68' (Free Discharge)
1=Orifice/Grate (Orifice Controls 0.50 cfs @ 1.95 fps)

Pond 4B: Stormwater Basin #4



Summary for Pond 4B: Stormwater Basin #4

Inflow Area = 0.650 ac, 49.23% Impervious, Inflow Depth = 2.51" for 10-Year Design Storm event
Inflow = 1.50 cfs @ 12.06 hrs, Volume= 0.136 af
Outflow = 0.92 cfs @ 12.22 hrs, Volume= 0.118 af, Atten= 39%, Lag= 9.5 min
Primary = 0.92 cfs @ 12.22 hrs, Volume= 0.118 af
Routed to Pond 3B : Stormwater Basin #3

Routing by Stor-Ind method, Time Span= 0.00-47.94 hrs, dt= 0.17 hrs
Peak Elev= 18.80' @ 12.21 hrs Surf.Area= 0.066 ac Storage= 0.045 af

Plug-Flow detention time= 172.5 min calculated for 0.118 af (87% of inflow)
Center-of-Mass det. time= 107.3 min (865.3 - 758.0)

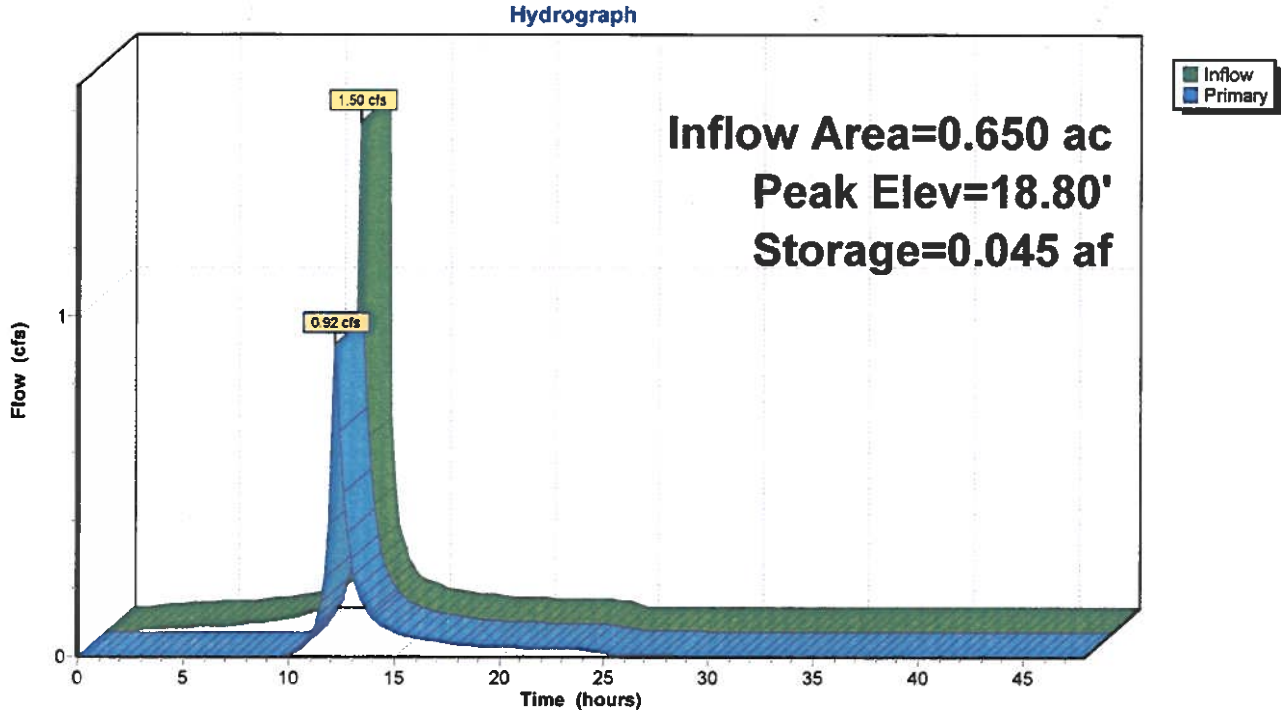
Volume	Invert	Avail.Storage	Storage Description
#1	18.00'	0.144 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
18.00	0.046	0.000	0.000
19.00	0.071	0.059	0.059
20.00	0.099	0.085	0.144

Device	Routing	Invert	Outlet Devices
#1	Primary	18.35'	**15.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.90 cfs @ 12.22 hrs HW=18.80' (Free Discharge)
↳**1=Orifice/Grate** (Orifice Controls 0.90 cfs @ 2.28 fps)

Pond 4B: Stormwater Basin #4



Summary for Pond 4B: Stormwater Basin #4

Inflow Area = 0.650 ac, 49.23% Impervious, Inflow Depth = 3.31" for 25-Year Design Storm event
Inflow = 1.89 cfs @ 12.06 hrs, Volume= 0.179 af
Outflow = 1.21 cfs @ 12.21 hrs, Volume= 0.162 af, Atten= 36%, Lag= 9.3 min
Primary = 1.21 cfs @ 12.21 hrs, Volume= 0.162 af
Routed to Pond 3B : Stormwater Basin #3

Routing by Stor-Ind method, Time Span= 0.00-47.94 hrs, dt= 0.17 hrs
Peak Elev= 18.88' @ 12.21 hrs Surf.Area= 0.068 ac Storage= 0.050 af

Plug-Flow detention time= 147.4 min calculated for 0.162 af (90% of inflow)
Center-of-Mass det. time= 93.5 min (854.4 - 760.9)

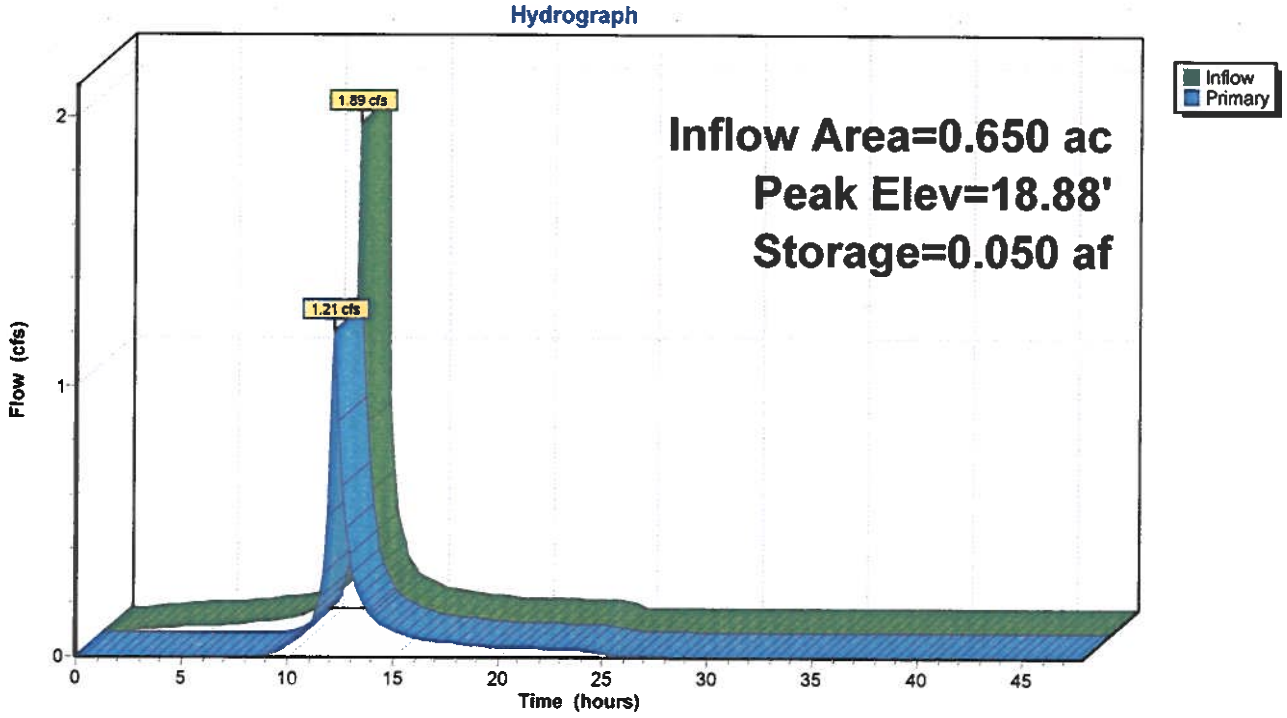
Volume	Invert	Avail.Storage	Storage Description
#1	18.00'	0.144 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
18.00	0.046	0.000	0.000
19.00	0.071	0.059	0.059
20.00	0.099	0.085	0.144

Device	Routing	Invert	Outlet Devices
#1	Primary	18.35'	**15.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.18 cfs @ 12.21 hrs HW=18.87' (Free Discharge)
↑**1=Orifice/Grate** (Orifice Controls 1.18 cfs @ 2.45 fps)

Pond 4B: Stormwater Basin #4



Summary for Pond 4B: Stormwater Basin #4

Inflow Area = 0.650 ac, 49.23% Impervious, Inflow Depth = 0.51" for Water Quality Design Storm event
Inflow = 0.90 cfs @ 1.03 hrs, Volume= 0.028 af
Outflow = 0.07 cfs @ 1.76 hrs, Volume= 0.010 af, Atten= 92%, Lag= 43.9 min
Primary = 0.07 cfs @ 1.76 hrs, Volume= 0.010 af
Routed to Pond 3B : Stormwater Basin #3

Routing by Stor-Ind method, Time Span= 0.00-47.94 hrs, dt= 0.17 hrs
Peak Elev= 18.47' @ 1.76 hrs Surf.Area= 0.058 ac Storage= 0.024 af

Plug-Flow detention time= 181.5 min calculated for 0.010 af (36% of inflow)
Center-of-Mass det. time= 175.3 min (241.6 - 66.2)

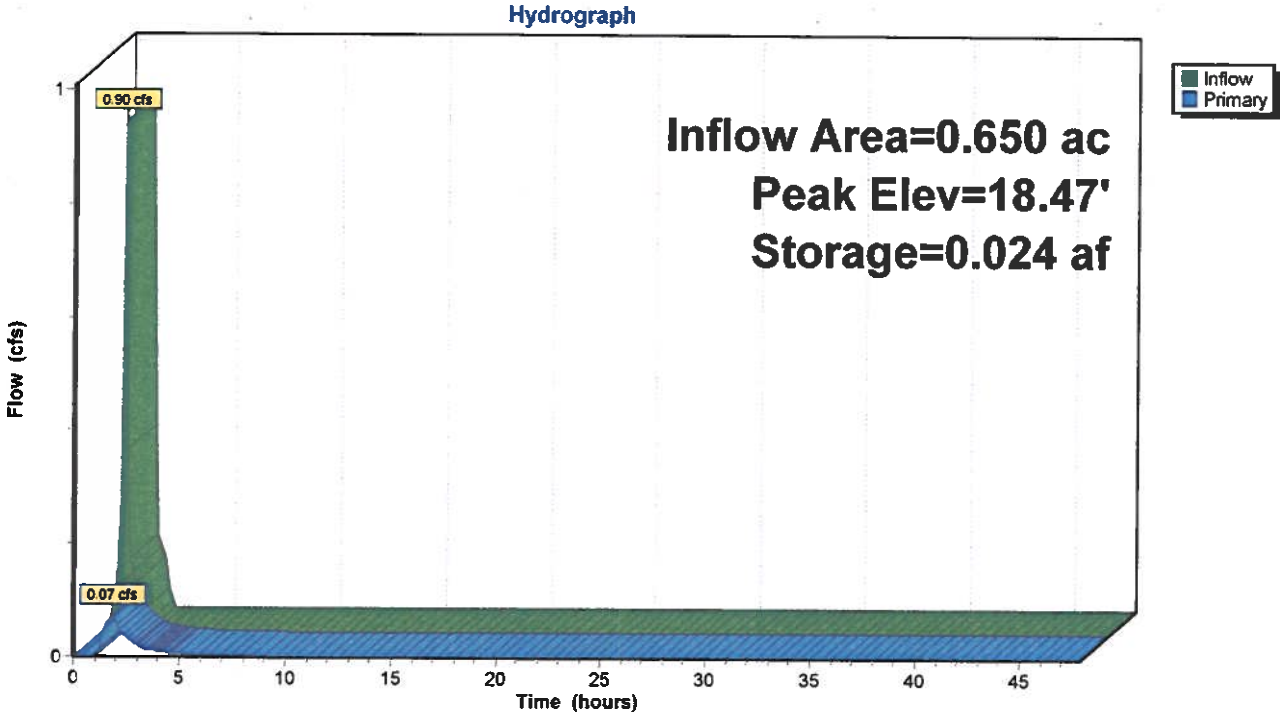
Volume	Invert	Avail.Storage	Storage Description
#1	18.00'	0.144 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
18.00	0.046	0.000	0.000
19.00	0.071	0.059	0.059
20.00	0.099	0.085	0.144

Device	Routing	Invert	Outlet Devices
#1	Primary	18.35'	**15.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.07 cfs @ 1.76 hrs HW=18.47' (Free Discharge)
↑**1=Orifice/Grate** (Orifice Controls 0.07 cfs @ 1.17 fps)

Pond 4B: Stormwater Basin #4



Post-Development Runoff

Watershed #5

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year Design Storm	NOAA 24-hr	C	Default	24.00	1	3.25	2
2	10-Year Design Storm	NOAA 24-hr	C	Default	24.00	1	5.07	2
3	25-Year Design Storm	NOAA 24-hr	C	Default	24.00	1	6.34	2
4	Water Quality Design Storm	NJ DEP 2-hr		Default	2.00	1	1.25	2

Summary for Subcatchment 5PP: Watershed #5 Post-Development Pervious

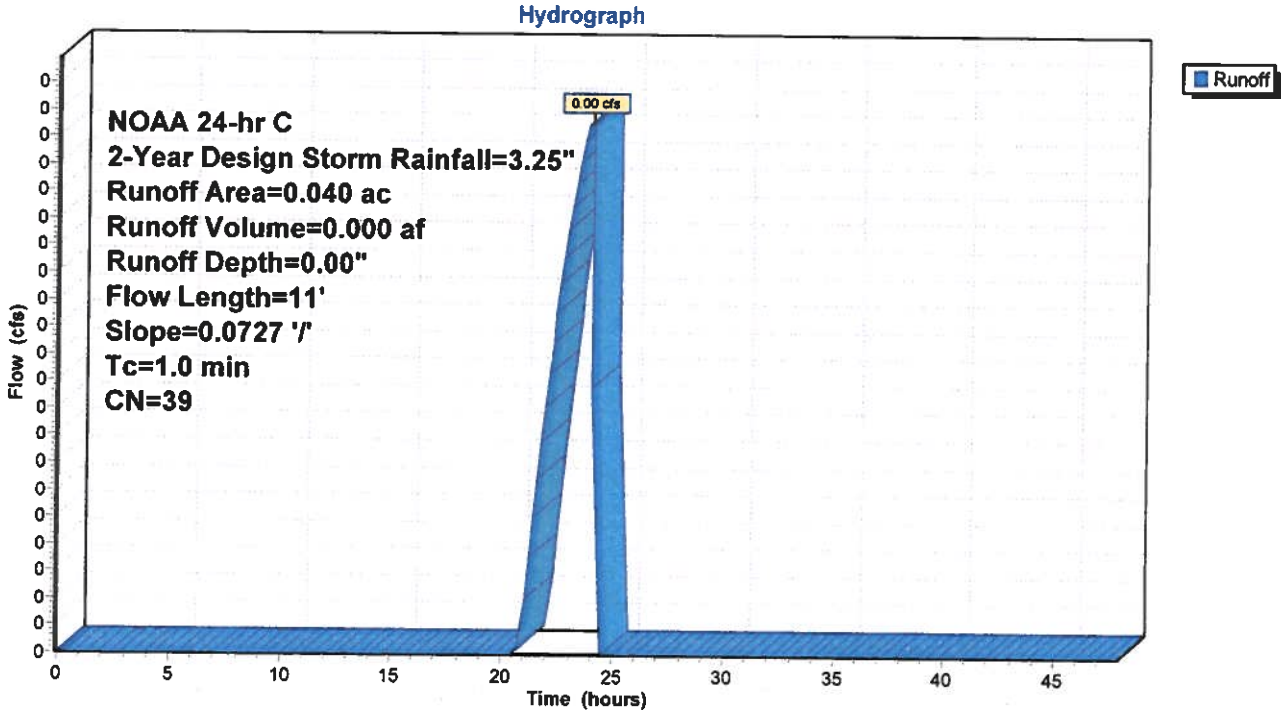
Runoff = 0.00 cfs @ 23.97 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-47.94 hrs, dt= 0.17 hrs
NOAA 24-hr C 2-Year Design Storm Rainfall=3.25"

	Area (ac)	CN	Description
*	0.040	39	Grass/landscaping
	0.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	11	0.0727	0.18		**Sheet Flow, Grass/landscaping** Grass: Short n= 0.150 P2= 3.25"

Subcatchment 5PP: Watershed #5 Post-Development Pervious



Summary for Subcatchment 5PP: Watershed #5 Post-Development Pervious

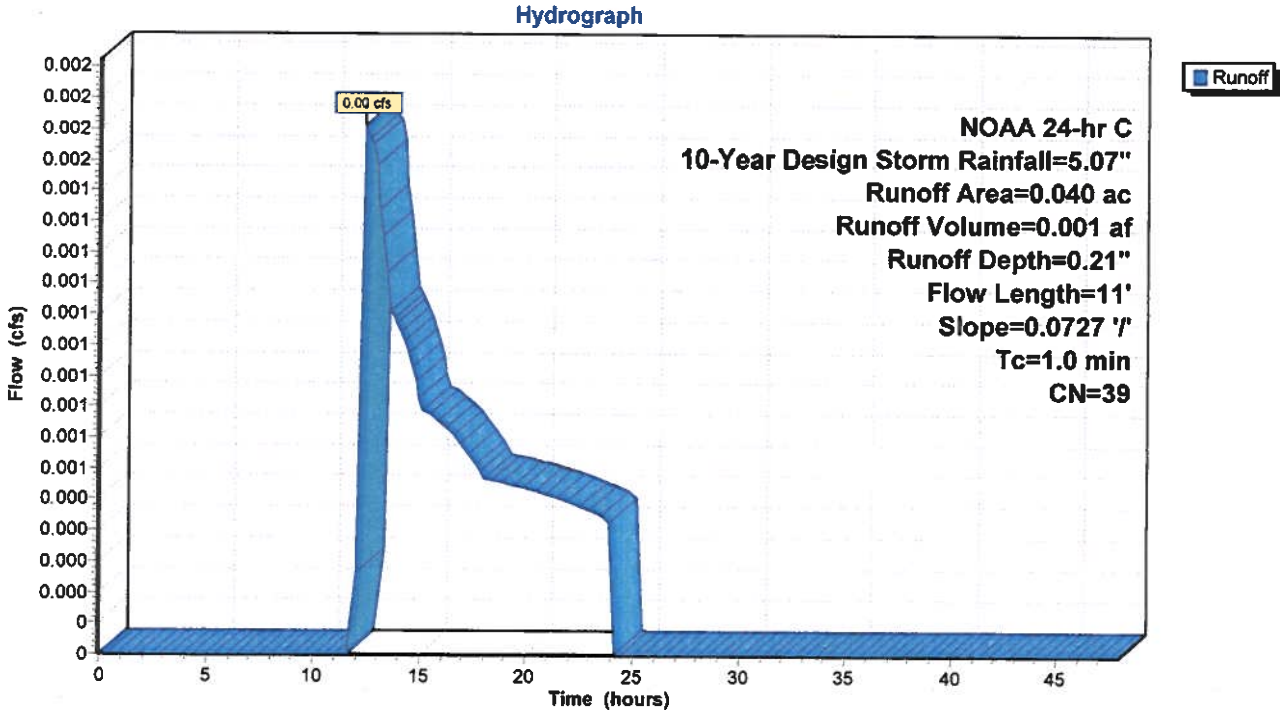
Runoff = 0.00 cfs @ 12.41 hrs, Volume= 0.001 af, Depth= 0.21"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-47.94 hrs, dt= 0.17 hrs
NOAA 24-hr C 10-Year Design Storm Rainfall=5.07"

	Area (ac)	CN	Description
*	0.040	39	Grass/landscaping
	0.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	11	0.0727	0.18		**Sheet Flow, Grass/landscaping** Grass: Short n= 0.150 P2= 3.25"

Subcatchment 5PP: Watershed #5 Post-Development Pervious



Summary for Subcatchment 5PP: Watershed #5 Post-Development Pervious

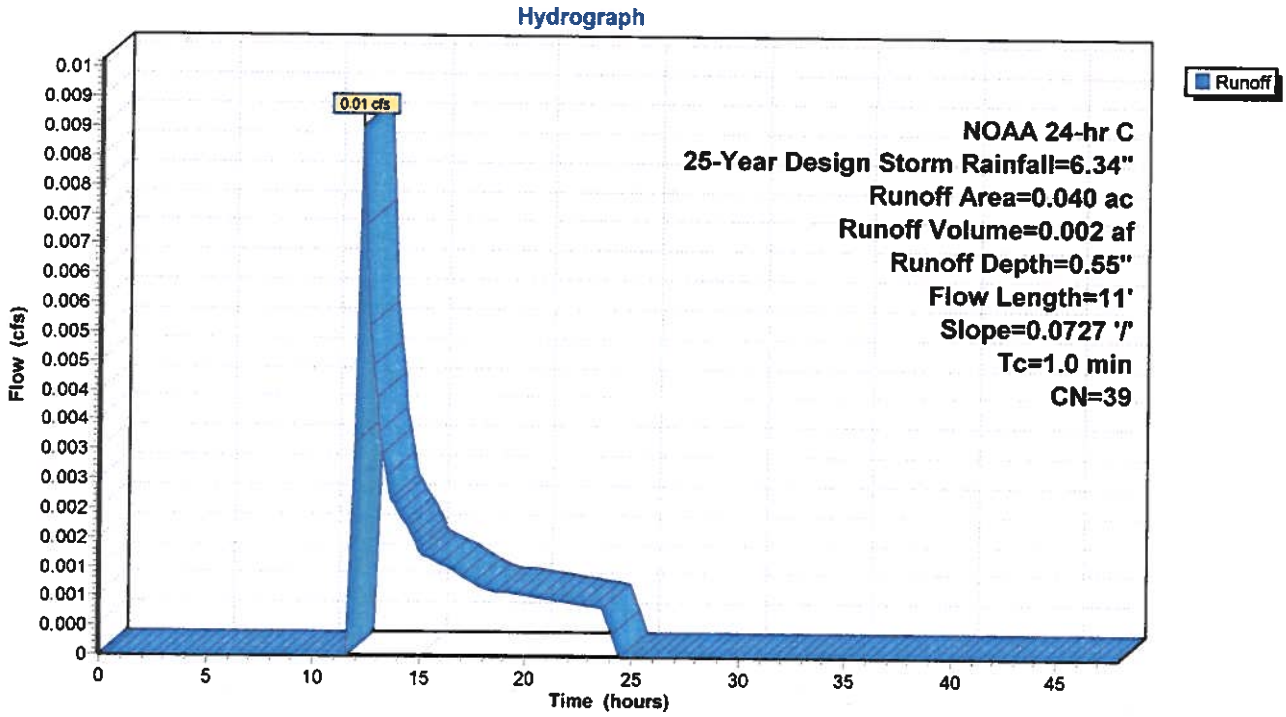
Runoff = 0.01 cfs @ 12.24 hrs, Volume= 0.002 af, Depth= 0.55"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-47.94 hrs, dt= 0.17 hrs
NOAA 24-hr C 25-Year Design Storm Rainfall=6.34"

	Area (ac)	CN	Description
*	0.040	39	Grass/landscaping
	0.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	11	0.0727	0.18		**Sheet Flow, Grass/landscaping** Grass: Short n= 0.150 P2= 3.25"

Subcatchment 5PP: Watershed #5 Post-Development Pervious



Summary for Subcatchment 5PP: Watershed #5 Post-Development Pervious

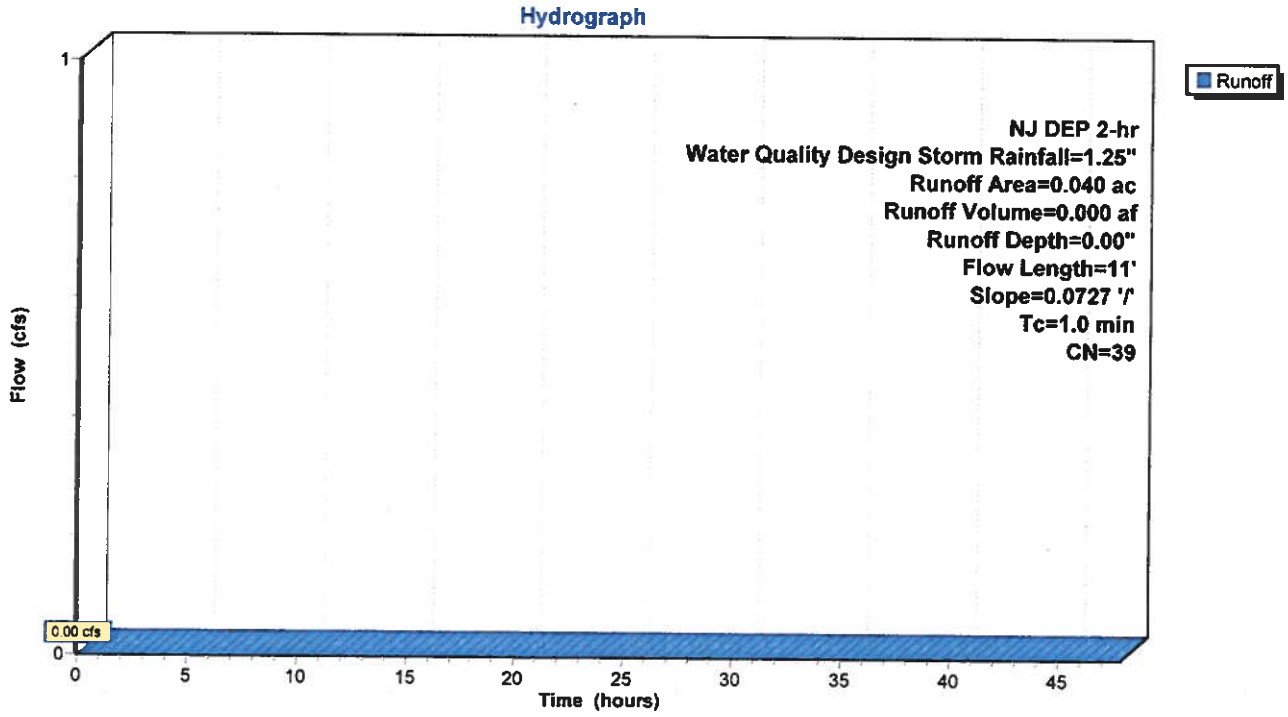
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-47.94 hrs, dt= 0.17 hrs
NJ DEP 2-hr Water Quality Design Storm Rainfall=1.25"

	Area (ac)	CN	Description
*	0.040	39	Grass/landscaping
	0.040		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	11	0.0727	0.18		**Sheet Flow, Grass/landscaping** Grass: Short n= 0.150 P2= 3.25"

Subcatchment 5PP: Watershed #5 Post-Development Pervious



Low Impact Development

Checklist

EDA #9652

Low Impact Development Checklist

A checklist for identifying nonstructural stormwater management strategies incorporated into proposed land development

Municipality: Dennis Township

County: Cape May Date: 6/9/22

Review board or agency: Dennis Township Planning Board

Proposed land development name: E. R. Dietz Masonry

Lot(s): 4 Block(s): 225.02

Project or application number: --

Applicant's name: E.R. Dietz Masonry

Applicant's address: 13 Megan Lane

Ocean View, NJ 08230

Telephone: (609) 624-1958 Fax:

Email address:

Designer's name: Joseph H. Maffei, P.E., Engineering Design Associates

Designer's address: 5 Cambridge Drive

Ocean View, NJ 08230

Telephone: (609) 390-0332 Fax: (609) 390-9204

Email address: jmaffei@engineeringdesign.com

Part 1: Description of Nonstructural Approach to Site Design

In narrative form, provide an overall description of the nonstructural stormwater management approach and strategies incorporated into the proposed site's design. Attach additional pages as necessary. Details of each nonstructural strategy are provided in Part 3 below.

The project design has utilized the non-structural approach and strategies, as required. Native ground cover and vegetated buffers are to be protected. Limiting the clearing and grading shall minimize the amount of soil compaction. Indigenous plant material is to be planted in much of the disturbed areas. The amount of impervious area is designed to be at a minimum, while remaining in accordance with the Dennis Township Ordinance. Finally, the decrease in the pre-construction time of concentration has been minimized.

Part 2: Review of Local Stormwater Management Regulations

Title and date of stormwater management regulations used in development design:

Dennis Township Ordinance

Do regulations include nonstructural requirements? Yes: ✓ No: _____

If yes, briefly describe: _____

List LID-BMPs prohibited by local regulations: None

Pre-design meeting held? Yes: _____ Date: _____ No: ✓

Meeting held with: _____

Pre-design site walk held? Yes: _____ Date: _____ No: ✓

Site walk held with: _____

Other agencies with stormwater review jurisdiction:

Name: Cape Atlantic Soil Conservation District

Required approval: _____

Name: _____

Required approval: _____

Name: _____

Required approval: _____

Part 3: Nonstructural Strategies and LID-BMPs in Design

3.1 Vegetation and Landscaping

Effective management of both existing and proposed site vegetation can reduce a development's adverse impacts on groundwater recharges and runoff quality and quantity. This section of the checklist helps identify the vegetation and landscaping strategies and nonstructural LID-BMPs that have been incorporated into the proposed development's design to help maintain existing recharge rates and/or minimize or prevent increases in runoff quantity and pollutant loading.

A. Has an inventory of existing site vegetation been performed? Yes: _____ No: ✓

If yes, was this inventory a factor in the site's layout and design? Yes: _____ No: _____

B. Does the site design utilize any of the following nonstructural LID-BMPs?

Preservation of natural areas? Yes: ✓ No: _____ If yes, specify % of site: 5%

Native ground cover? Yes: ✓ No: _____ If yes, specify % of site: 5%

Vegetated buffers? Yes: ✓ No: _____ If yes, specify % of site: 5%

C. Do the land development regulations require these nonstructural LID-BMPs?

Preservation of natural areas? Yes: ✓ No: _____ If yes, specify % of site: –

Native ground cover? Yes: ✓ No: _____ If yes, specify % of site: –

Vegetated buffers? Yes: ✓ No: _____ If yes, specify % of site: –

D. If vegetated filter strips or buffers are utilized, specify their functions:

Reduce runoff volume increases through lower runoff coefficient: Yes: _____ No: _____

Reduce runoff pollutant loads through runoff treatment: Yes: _____ No: _____

Maintain groundwater recharge by preserving natural areas: Yes: _____ No: _____

3.2 Minimize Land Disturbance

Minimizing land disturbance is a nonstructural LID-BMP that can be applied during both the development's construction and post-construction phases. This section of the checklist helps identify those land disturbance strategies and nonstructural LID-BMPs that have been incorporated into the proposed development's design to minimize land disturbance and the resultant change in the site's hydrologic character.

A. Have inventories of existing site soils and slopes been performed? Yes: ✓ No: _____

If yes, were these inventories factors in the site's layout and design? Yes: ✓ No: _____

B. Does the development's design utilize any of the following nonstructural LID-BMPs?

Restrict permanent site disturbance by land owners? Yes: ✓ No: _____

If yes, how: Landscape Buffers

Restrict temporary site disturbance during construction? Yes: _____ No: ✓

If yes, how: _____

Consider soils and slopes in selecting disturbance limits? Yes: ✓ No: _____

If yes, how: Soils were analyzed for stormwater basin feasibility.

C. Specify percentage of site to be cleared: 95% Regraded: 95%

D. Specify percentage of cleared areas done so for buildings: 10.17%

For driveways and parking: 49.08% For roadways: 0%

E. What design criteria and/or site changes would be required to reduce the percentages in C and D above?

None

F. Specify site's hydrologic soil group (HSG) percentages:

HSG A: 100% HSG B: _____ HSG C: _____ HSG D: _____

G. Specify percentage of each HSG that will be permanently disturbed:

HSG A: 95% HSG B: _____ HSG C: _____ HSG D: _____

H. Locating site disturbance within areas with less permeable soils (HSG C and D) and minimizing disturbance within areas with greater permeable soils (HSG A and B) can help maintain groundwater recharge rates and reduce runoff volume increases. In light of the HSG percentages in F and G above, what other practical measures if any can be taken to achieve this?

Utilize an infiltration basin to help maintain groundwater recharge.

I. Does the site include Karst topography? Yes: _____ No: ✓

If yes, discuss measures taken to limit Karst impacts:

3.3 Impervious Area Management

New impervious surfaces at a development site can have the greatest adverse effect on groundwater recharge and stormwater quality and quantity. This section of the checklist helps identify those nonstructural strategies and LID-BMPs that have been incorporated into a proposed development's design to comprehensively manage the extent and impacts of new impervious surfaces.

A. Specify impervious cover at site: Existing: 0.00 Acres Proposed: 0.33 Acres

B. Specify maximum site impervious coverage allowed by regulations: 50%

C. Compare proposed street cartway widths with those required by regulations:

Type of Street	Proposed Cartway Width (feet)	Required Cartway Width (feet)
Residential access – low intensity	--	--
Residential access – medium intensity	--	--
Residential access – high intensity with parking	--	--
Residential access – high intensity without parking	--	--
Neighborhood	--	--
Minor collector – low intensity without parking	--	--
Minor collector – with one parking lane	--	--
Minor collector – with two parking lanes	--	--
Minor collector – without parking	--	--
Major collector	--	--

D. Compare proposed parking space dimensions with those required by regulations:

Proposed: 9' x 18' Regulations: 9' x 18'

E. Compare proposed number of parking spaces with those required by regulations:

Proposed: 9 Regulations: 9

F. Specify percentage of total site impervious cover created by buildings: 52.80%

By driveways and parking: 47.20% By roadways: N/A

G. What design criteria and/or site changes would be required to reduce the percentages in F above?

Reduce the areas utilized for the parking.

H. Specify percentage of total impervious area that will be unconnected:

Total site: 0% Buildings: 0% Driveways and parking: 0% Roads: 0%

I. Specify percentage of total impervious area that will be porous:

Total site: -- Buildings: -- Driveways and parking: -- Roads: --

J. Specify percentage of total building roof area that will be vegetated: 0%

K. Specify percentage of total parking area located beneath buildings: 0%

L. Specify percentage of total parking located within multi-level parking deck: 0%

3.4 Time of Concentration Modifications

Decreasing a site's time of concentration (Tc) can lead directly to increased site runoff rates which, in turn, can create new and/or aggravate existing erosion and flooding problems downstream. This section of the checklist helps identify those nonstructural strategies and LID-BMPs that have been incorporated into the proposed development's design to effectively minimize such Tc decreases.

When reviewing Tc modification strategies, it is important to remember that a drainage area's Tc should reflect the general conditions throughout the area. As a result, Tc modifications must generally be applied throughout a drainage area, not just along a specific Tc route.

A. Specify percentage of site's total stormwater conveyance system length that will be:

Storm sewer: 25% Vegetated swale: _____ Natural channel: --

Stormwater management facility: 30% Other: Overland Flow 45%

Note: the total length of the stormwater conveyance system should be measured from the site's downstream property line to the downstream limit of sheet flow at the system's headwaters.

B. What design criteria and/or site changes would be required to reduce the storm sewer percentages and increase the vegetated swale and natural channel percentages in A above?

None

C. In conveyance system subareas that have overland or sheet flow over impervious surfaces or turf grass, what practical and effective site changes can be made to:

Decrease overland flow slope: None

Increase overland flow roughness: None

3.5 Preventative Source Controls

The most effective way to address water quality concerns is by pollution prevention. This section of the checklist helps identify those nonstructural strategies and LID-BMPs that have been incorporated into the proposed development's design to reduce the exposure of pollutants to prevent their release into the stormwater runoff.

A. Trash Receptacles

Specify the number of trash receptacles provided: 0

Specify the spacing between the trash receptacles: 0

Compare trash receptacles proposed with those required by regulations:

Proposed: 0 Regulations: 0

B. Pet Waste Stations

Specify the number of pet waste stations provided: 0

Specify the spacing between the pet waste stations: 0

Compare pet waste stations proposed with those required by regulations:

Proposed: 0 Regulations: 0

C. Inlets, Trash Racks, and Other Devices that Prevent Discharge of Large Trash and Debris

Specify percentage of total inlets that comply with the NJPDES storm drain inlet criteria: N/A

D. Maintenance

Specify the frequency of the following maintenance activities:

Street sweeping: Proposed: Annually Regulations: No Standard

Litter collection: Proposed: Weekly Regulations: Weekly

Identify other stormwater management measures on the site that prevent discharge of large trash and debris:

E. Prevention and Containment of Spills

Identify locations where pollutants are located on the site, and the features that prevent these pollutants from being exposed to stormwater runoff:

Pollutant: _____ Location: _____

Feature utilized to prevent pollutant exposure, harmful accumulation, or contain spills:

Pollutant: _____ Location: _____

Feature utilized to prevent pollutant exposure, harmful accumulation, or contain spills:

Pollutant: _____ Location: _____

Feature utilized to prevent pollutant exposure, harmful accumulation, or contain spills:

Pollutant: _____ Location: _____

Feature utilized to prevent pollutant exposure, harmful accumulation, or contain spills:

Pollutant: _____ Location: _____

Part 4: Compliance with Nonstructural Requirements of NJDEP Stormwater Management Rules

1. Based upon the checklist responses above, indicate which nonstructural strategies have been incorporated into the proposed development's design in accordance with N.J.A.C. 7:8-5.3(b).

No.	Nonstructural Strategy	Yes	No
1.	Protect areas that provide water quality benefits or areas particularly susceptible to erosion and sediment loss.	✓	
2.	Minimize impervious surfaces and break up or disconnect the flow of runoff over impervious surfaces.	✓	
3.	Maximize the protection of natural drainage features and vegetation.	✓	
4.	Minimize the decrease in the pre-construction time of concentration.	✓	
5.	Minimize land disturbance including clearing and grading.	✓	
6.	Minimize soil compaction.	✓	
7.	Provide low maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawns, fertilizers, and pesticides.	✓	
8.	Provide vegetated open-channel conveyance systems discharge into and through stable vegetated areas.	✓	
9.	Provide preventative source controls	✓	

2. For those strategies that have not been incorporated into the proposed development's design, provide engineering, environmental, and/or safety reasons. Attached additional pages as necessary.

Groundwater Recharge

Mounding Analysis

GROUNDWATER RECHARGE MOUNDING ANALYSIS
BLOCK 225.02, LOT 4
DENNIS TOWNSHIP, CAPE MAY COUNTY, NJ
STORMWATER BASIN #2

EDA #9652

1.	Recharge Rate (in./hr)	=	6 in/hr	
2.	Horizontal Hydraulic Conductivity (in/hr)	=	0.15	
3.	Beginning Distance	=	0'	
	Final Distance	=	100'	
	Distance Increment	=	10'	
4.	Initial Thickness of Saturated Zone	=	10'	
5.	Width	=	25'	} Bottom of Infiltration Basin
6.	Length	=	55'	}
7.	Angle from Length of Axis	=	0'	

Recharge Rate	=	6 in/hr
Horizontal Hydraulic Conductivity	=	0.15
Beginning Distance	=	0 ft.
Final Distance	=	100 ft.
Distance Increment	=	10 ft.
Depth	=	10'
Width	=	25'
Length	=	55'
Angle	=	0 Degrees

Results Display

Distance (Ft.)	Height (Ft.)
0	3.226
10	3.088
20	2.608
30	1.572
40	0.746
50	0.331
60	0.136
70	0.052
80	0.019
90	0.007
100	0.004

Groundwater Recharge Mounding Analysis – Stormwater Basin #2
Block 225.02, Lot 4, Dennis Township, Cape May County, NJ
EDA #9652

Groundwater Mounding Analysis

Major Site Plan: E.R. Dietz Masonry
Block 225.02, Lot 4, Dennis Township, Cape May County, NJ

A groundwater mounding analysis was performed in association with the proposed infiltration basin. It has been determined that, over a distance of 100 feet that the height or elevation of the seasonal high-water elevation will increase by 0.004 feet (approximately 1 inch).

This slight increase will have little or no impact on the basin bottom or the surrounding adjacent properties, buildings, adjacent water bodies, wetlands or subsurface structures. It has been determined that seasonal high water is at elevation 13.60. Groundwater mounding associated with the proposed basin will increase this elevation to 13.604, well below the proposed basin bottom elevation of 16.85.

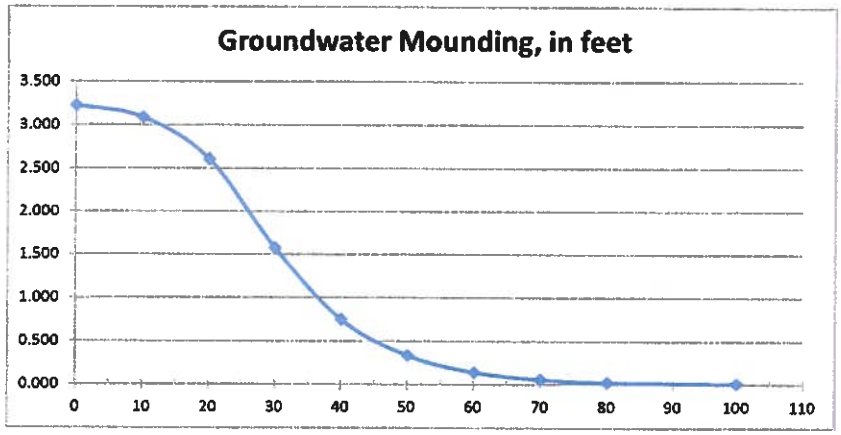
Input Values

6.00	R	Recharge rate (permeability rate) (in/hr)
0.150	Sy	Specific yield, Sy (dimensionless) default value is 0.15; max value is 0.2 provided that a lab test data is submitted
30.00	Kh	Horizontal hydraulic conductivity (in/hr) Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan
27.500	x	1/2 length of basin (x direction, in feet)
12.500	y	1/2 width of basin (y direction, in feet)
2.09	t	Duration of infiltration period (hours)
10.00	hi(0)	Initial thickness of saturated zone (feet)

13.226	h(max)	Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
3.226	Δh(max)	Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
3.226	0
3.088	10
2.608	20
1.572	30
0.746	40
0.331	50
0.136	60
0.052	70
0.019	80
0.004	100

Re-Calculate Now



Disclaimer

This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.

GROUNDWATER RECHARGE MOUNDING ANALYSIS
BLOCK 225.02, LOT 4
DENNIS TOWNSHIP, CAPE MAY COUNTY, NJ
STORMWATER BASIN #3

EDA #9652

1.	Recharge Rate (in./hr)	=	6 in/hr	
2.	Horizontal Hydraulic Conductivity (in/hr)	=	0.15	
3.	Beginning Distance	=	0'	
	Final Distance	=	100'	
	Distance Increment	=	10'	
4.	Initial Thickness of Saturated Zone	=	10'	
5.	Width	=	45'	} Bottom of Infiltration Basin
6.	Length	=	225'	}
7.	Angle from Length of Axis	=	0'	

Recharge Rate	=	6 in/hr
Horizontal Hydraulic Conductivity	=	0.15
Beginning Distance	=	0 ft.
Final Distance	=	100 ft.
Distance Increment	=	10 ft.
Depth	=	10'
Width	=	45'
Length	=	225'
Angle	=	0 Degrees

Results Display

Distance (Ft.)	**Height (Ft.)**
0	3.073
10	3.073
20	3.073
30	3.073
40	3.073
50	3.072
60	3.071
70	3.062
80	3.028
90	2.916
100	2.604

Groundwater Recharge Mounding Analysis – Stormwater Basin #3
Block 225.02, Lot 4, Dennis Township, Cape May County, NJ
EDA #9652

Groundwater Mounding Analysis

Major Site Plan: E.R. Dietz Masonry
Block 225.02, Lot 4, Dennis Township, Cape May County, NJ

A groundwater mounding analysis was performed in association with the proposed infiltration basin. It has been determined that, over a distance of 100 feet that the height or elevation of the seasonal high-water elevation will increase by 2.064 feet (approximately 24 inches).

This slight increase will have little or no impact on the basin bottom or the surrounding adjacent properties, buildings, adjacent water bodies, wetlands or subsurface structures. It has been determined that seasonal high water is at elevation 13.83. Groundwater mounding associated with the proposed basin will increase this elevation to 15.89, well below the proposed basin bottom elevation of 17.00.

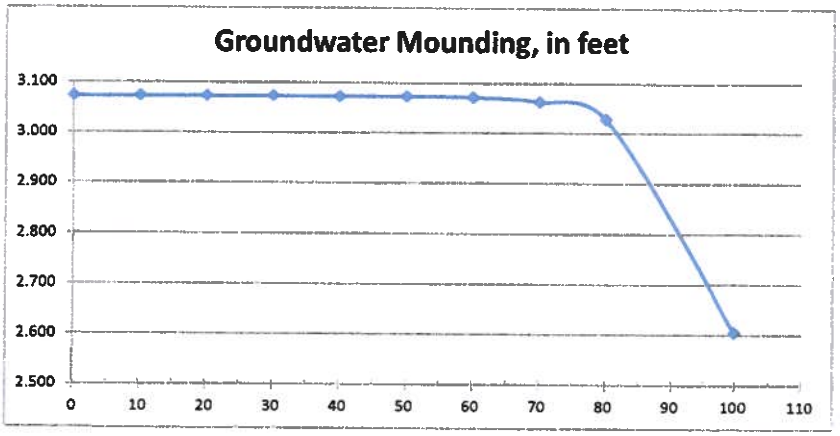
Input Values

6.00	*R*	Recharge rate (permeability rate) (in/hr)
0.150	Sy	Specific yield, Sy (dimensionless) default value is 0.15; max value is 0.2 provided that a lab test data is submitted
30.00	Kh	Horizontal hydraulic conductivity (in/hr) Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan
112.500	x	1/2 length of basin (x direction, in feet)
22.500	y	1/2 width of basin (y direction, in feet)
1.04	t	Duration of infiltration period (hours)
10.00	hi(0)	Initial thickness of saturated zone (feet)

13.073	h(max)	Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
3.073	Δh(max)	Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
3.073	0
3.073	10
3.073	20
3.073	30
3.073	40
3.072	50
3.071	60
3.062	70
3.028	80
2.604	100

Re-Calculate Now



Disclaimer

This spreadsheet solving the Hantush (1967) equation for ground-water mounding beneath an infiltration basin is made available to the general public as a convenience for those wishing to replicate values documented in the USGS Scientific Investigations Report 2010-5102 "Groundwater mounding beneath hypothetical stormwater infiltration basins" or to calculate values based on user-specified site conditions. Any changes made to the spreadsheet (other than values identified as user-specified) after transmission from the USGS could have unintended, undesirable consequences. These consequences could include, but may not be limited to: erroneous output, numerical instabilities, and violations of underlying assumptions that are inherent in results presented in the accompanying USGS published report. The USGS assumes no responsibility for the consequences of any changes made to the spreadsheet. If changes are made to the spreadsheet, the user is responsible for documenting the changes and justifying the results and conclusions.

GROUNDWATER RECHARGE MOUNDING ANALYSIS
BLOCK 225.02, LOT 4
DENNIS TOWNSHIP, CAPE MAY COUNTY, NJ
STORMWATER BASIN #4

EDA #9652

1.	Recharge Rate (in./hr)	=	6 in/hr	
2.	Horizontal Hydraulic Conductivity (in/hr)	=	0.15	
3.	Beginning Distance	=	0'	
	Final Distance	=	100'	
	Distance Increment	=	10'	
4.	Initial Thickness of Saturated Zone	=	10'	
5.	Width	=	12'	} Bottom of Infiltration Basin
6.	Length	=	125'	}
7.	Angle from Length of Axis	=	0'	

Recharge Rate	=	6 in/hr
Horizontal Hydraulic Conductivity	=	0.15
Beginning Distance	=	0 ft.
Final Distance	=	100 ft.
Distance Increment	=	10 ft.
Depth	=	10'
Width	=	12'
Length	=	125'
Angle	=	0 Degrees

Results Display

Distance (Ft.)	Height (Ft.)
0	1.438
10	1.437
20	1.435
30	1.424
40	1.384
50	1.262
60	0.903
70	0.318
80	0.099
90	0.028
100	0.007

Groundwater Recharge Mounding Analysis – Stormwater Basin #4
Block 225.02, Lot 4, Dennis Township, Cape May County, NJ
EDA #9652

Groundwater Mounding Analysis

Major Site Plan: E.R. Dietz Masonry
Block 225.02, Lot 4, Dennis Township, Cape May County, NJ

A groundwater mounding analysis was performed in association with the proposed infiltration basin. It has been determined that, over a distance of 100 feet that the height or elevation of the seasonal high-water elevation will increase by 0.007 feet (approximately 1 inch).

This slight increase will have little or no impact on the basin bottom or the surrounding adjacent properties, buildings, adjacent water bodies, wetlands or subsurface structures. It has been determined that seasonal high water is at elevation 14.36. Groundwater mounding associated with the proposed basin will increase this elevation to 14.367, well below the proposed basin bottom elevation of 18.00.

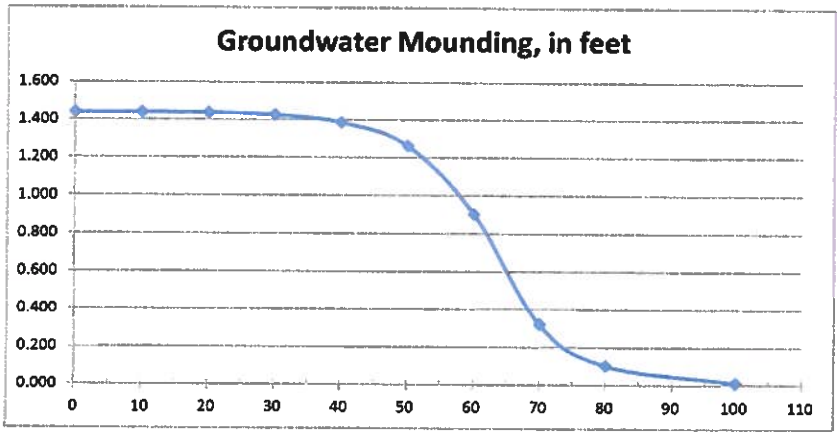
Input Values

6.00	R	Recharge rate (permeability rate) (in/hr)
0.150	Sy	Specific yield, Sy (dimensionless) default value is 0.15; max value is 0.2 provided that a lab test data is submitted
30.00	Kh	Horizontal hydraulic conductivity (in/hr) Kh = 5xRecharge Rate (R) in the costal plan; Kh=R outside the coastal plan
62.500	x	1/2 length of basin (x direction, in feet)
6.000	y	1/2 width of basin (y direction, in feet)
1.07	t	Duration of infiltration period (hours)
10.00	hi(0)	Initial thickness of saturated zone (feet)

11.438	h(max)	Maximum thickness of saturated zone (beneath center of basin at end of infiltration period)
1.438	Δh(max)	Maximum groundwater mounding (beneath center of basin at end of infiltration period)

Ground-water Mounding, in feet	Distance from center of basin in x direction, in feet
1.438	0
1.437	10
1.435	20
1.424	30
1.384	40
1.262	50
0.903	60
0.318	70
0.099	80
0.007	100

Re-Calculate Now



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Basin Infiltration

Calculations

Calculate Time For The Infiltration Basin To Infiltrate The Volume To Weir Elevation 17.75

Infiltration Basin #2

Use 6 Inches / Hour

Volume at Elevation 17.75 = 1,437 C.F.

$$\frac{\text{Volume of runoff to be infiltrated (cf) x 12 in/ft}}{\text{Infiltration Area (sf) x recharge rate (in/hr)}}$$

$$\frac{\text{1,437 cf x 12 in/hr}}{\text{1,375 sf x 6 in/hr}}$$

The design volume is infiltrated in 2.09 hours.

Calculate Time For The Infiltration Basin To Infiltrate The Volume To Weir Elevation 17.50

Infiltration Basin #3

Use 6 Inches / Hour

Volume at Elevation 17.50 = 5,270 C.F.

Volume of runoff to be infiltrated (cf) x 12 in/ft
Infiltration Area (sf) x recharge rate (in/hr)

5,270 cf x 12 in/hr
10,125 sf x 6 in/hr

The design volume is infiltrated in 1.04 hours.

Calculate Time For The Infiltration Basin To Infiltrate The Volume To Weir Elevation 18.35

Infiltration Basin #4

Use 6 Inches / Hour

Volume at Elevation 18.35 = 784 C.F.

$$\frac{\text{Volume of runoff to be infiltrated (cf) x 12 in/ft}}{\text{Infiltration Area (sf) x recharge rate (in/hr)}}$$

$$\frac{784 \text{ cf x } 12 \text{ in/hr}}{1{,}454 \text{ sf x } 6 \text{ in/hr}}$$

The design volume is infiltrated in 1.07 hours.

Conduit Outlet Protection

Calculations

Engineering Design Associates
5 Cambridge Drive
Ocean View, NJ 08230
(609)390-0332

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

CALCULATE CONDUIT OUTLET PROTECTION

STONE APRON #1 $TW < 1/2\ DO$

$Q = 0.14$ CFS

CALCULATE LENGTH

$$La = 1.8\left(\frac{q}{DO^{.5}}\right) + 7DO$$

$La = 7.25'$ USE 8'-0"

CALCULATE WIDTH

$Wa = 3Wo + La$

$Wa = 10.25'$ USE 11'-0"

CALCULATE D50 STONE SIZE

$$D50 = \frac{0.02}{TW} q^{1.33}$$

$D50 = 0.007'$ USE 6" ϕ STONE

Engineering Design Associates
5 Cambridge Drive
Ocean View, NJ 08230
(609)390-0332

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CHECKED BY _____ DATE _____

SCALE _____

CALCULATE CONDUIT OUTLET PROTECTION

STONE APRON #2 $T_W < 1/2\ D_O$

$Q = 1.21$ CFS

CALCULATE LENGTH

$$L_A = 1.8\left(q / D_O^{.5}\right) + 7D_O$$

$L_A = 10.30'$ USE 11'-0"

CALCULATE WIDTH

$W_A = 3W_O + L_A$

$W_A = 14.05'$ USE 15'-0"

CALCULATE DSD STONE SIZE

$$D_{SD} = \frac{0.02}{T_W} q^{1.33}$$

$D_{SD} = 0.076'$ USE 6" ϕ STONE

Pipe Routing

Calculations

LINE NUMBER	BEGIN	END	INCREMENTS OF AREA ACRES	"C"	"CA"	TIME OF CONCENTRATION	STORM	"I"	"Q"	SLOPE	PIPE DIAMETER	VELOCITY (F.P.S.)	LENGTH OF LINE	TIME FLOW (MIN.)	CAPACITY C.F.S.	Q = CIA Q = CFS I = INTENSITY (IN/HR) C = RUNOFF COEFFICIENT A = AREA (ACRES)
1	WEIR #2	O.F. #1	—	—	—	6,39	25	—	0,14	1,29%	12"	2,88	58	0,39	4,36	BASIN #2
2	WEIR #3	O.F. #2	—	—	—	6,85	25	—	1,21	1,05%	15"	4,16	128	0,85	7,13	BASIN #4
3	WEIR #1	EXIST. INLET	—	—	—	6,08	25	—	0,53	2,0%	15"	4,48	12	0,08	9,84	BASIN #3
4																
5																
6																
7																
8																
9																
10																
11																
12																

JOB NAME _____

JOB NO. _____ PAGE _____ OF _____

CALCULATED BY _____ DATE _____

VERIFIED BY _____ DATE _____

ENGINEERING DESIGN ASSOCIATES, P.A.
engineers • planners • landscape architects
cambridge professional offices
5 cambridge drive • ocean view, new jersey 08230
(609) 390-0332 • fax (609) 390-9204