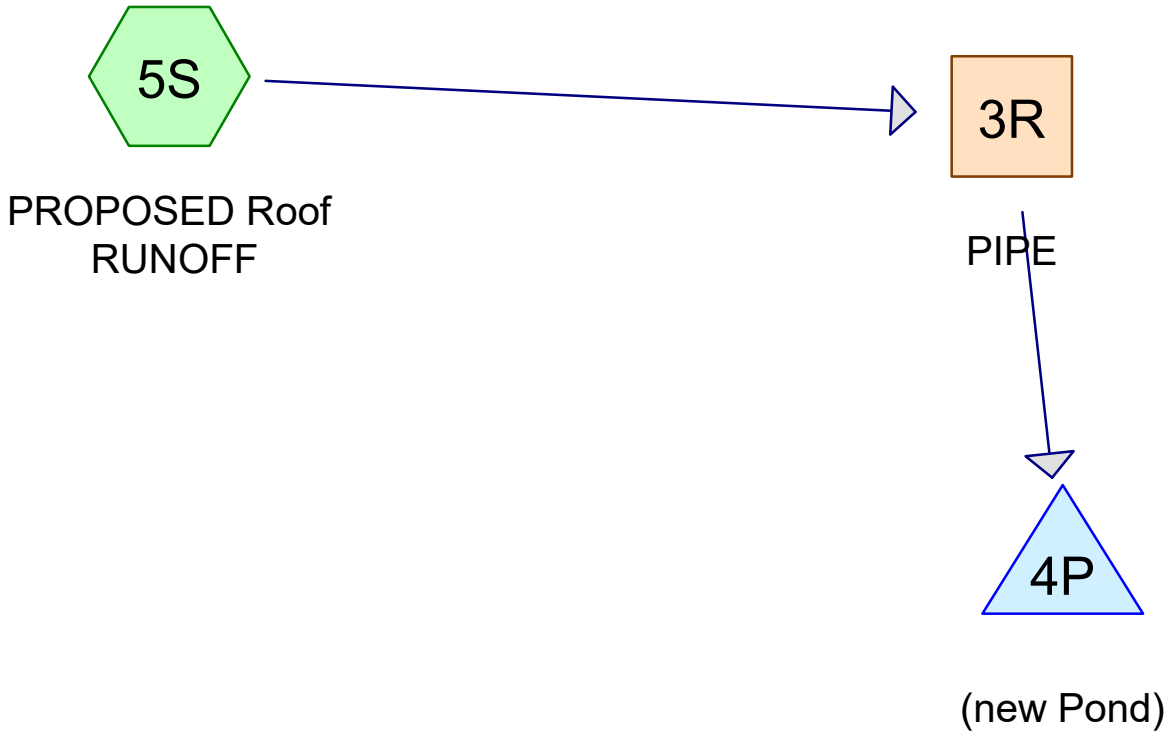


Subcat Reach Pond Link

Routing Diagram for 194=freeman--final-propsed1
Prepared by HP, Printed 2/10/2023

Area Listing (all nodes)

Area (acres)	C	Description (subcatchment-numbers)
0.029	0.98	ROOF/REAR/driveway (5S)
0.005	0.55	grass (5S)
0.034	**0.91**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.034	Other	5S
0.034		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	0.029	0.029	ROOF/REAR/driveway	5S
0.000	0.000	0.000	0.000	0.005	0.005	grass	5S
0.000	**0.000**	**0.000**	**0.000**	**0.034**	**0.034**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	3R	0.88	-0.12	45.0	0.0222	0.010	4.0	0.0	0.0

Time span=0.00-2.00 hrs, dt=0.01 hrs, 201 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 5S: PROPOSED Roof Runoff Area=1,487 sf 84.67% Impervious Runoff Depth=0.88"
Flow Length=123' Slope=0.0015 '/' Tc=10.0 min C=0.91 Runoff=0.18 cfs 0.003 af

Reach 3R: PIPE Avg. Flow Depth=0.16' Max Vel=4.19 fps Inflow=0.18 cfs 0.003 af
4.0" Round Pipe n=0.010 L=45.0' S=0.0222 '/' Capacity=0.37 cfs Outflow=0.18 cfs 0.003 af

Pond 4P: (new Pond) Peak Elev=-2.71' Storage=0.001 af Inflow=0.18 cfs 0.003 af
Outflow=0.10 cfs 0.002 af

Total Runoff Area = 0.034 ac Runoff Volume = 0.003 af Average Runoff Depth = 0.88"
15.33% Pervious = 0.005 ac 84.67% Impervious = 0.029 ac

Summary for Subcatchment 5S: PROPOSED Roof RUNOFF

Exsiting Drainage area that picks up the PROPOSED runoff
WITH A 10 YEAR STORAGE CRITERA

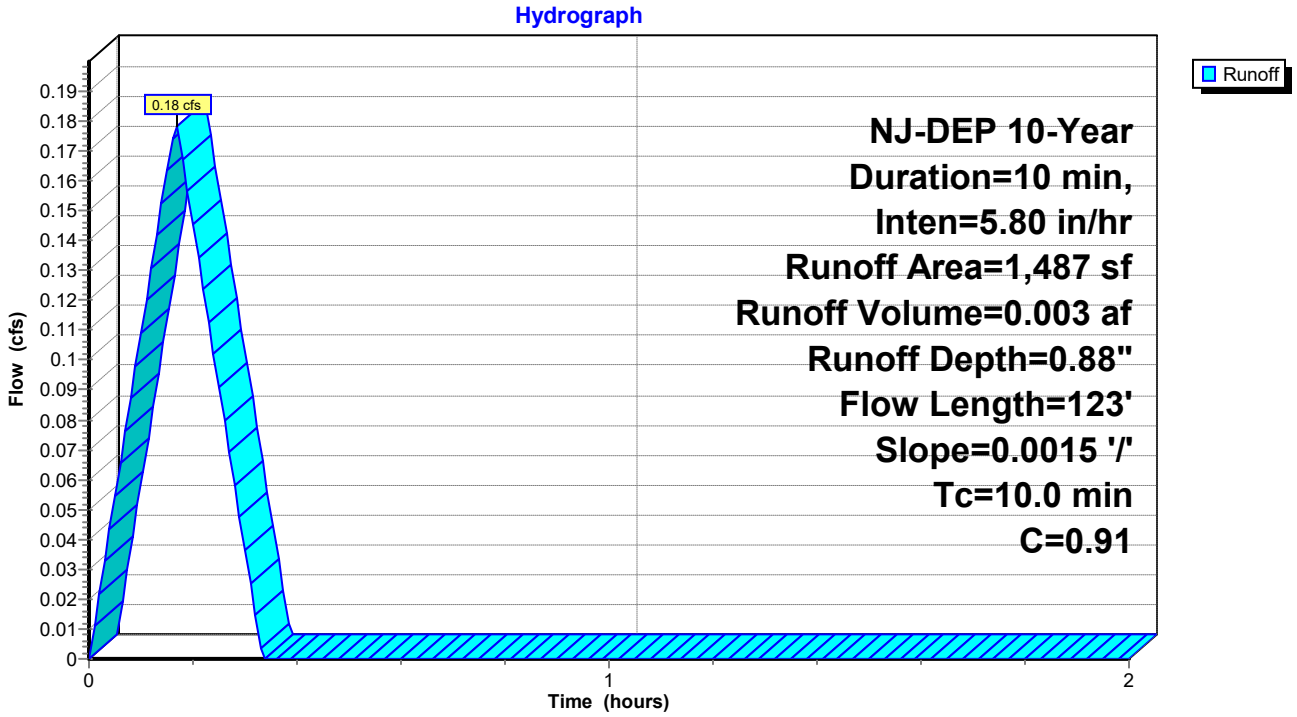
Runoff = 0.18 cfs @ 0.17 hrs, Volume= 0.003 af, Depth= 0.88"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
NJ-DEP 10-Year Duration=10 min, Inten=5.80 in/hr

Area (sf)	C	Description
1,259	0.98	ROOF/REAR/driveway
228	0.55	grass
1,487	0.91	Weighted Average
228		15.33% Pervious Area
1,259		84.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	123	0.0015	0.21		**Shallow Concentrated Flow, SHEETFLOW** Kv= 5.3 fps

Subcatchment 5S: PROPOSED Roof RUNOFF



Summary for Reach 3R: PIPE

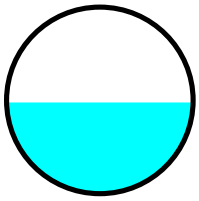
[52] Hint: Inlet/Outlet conditions not evaluated

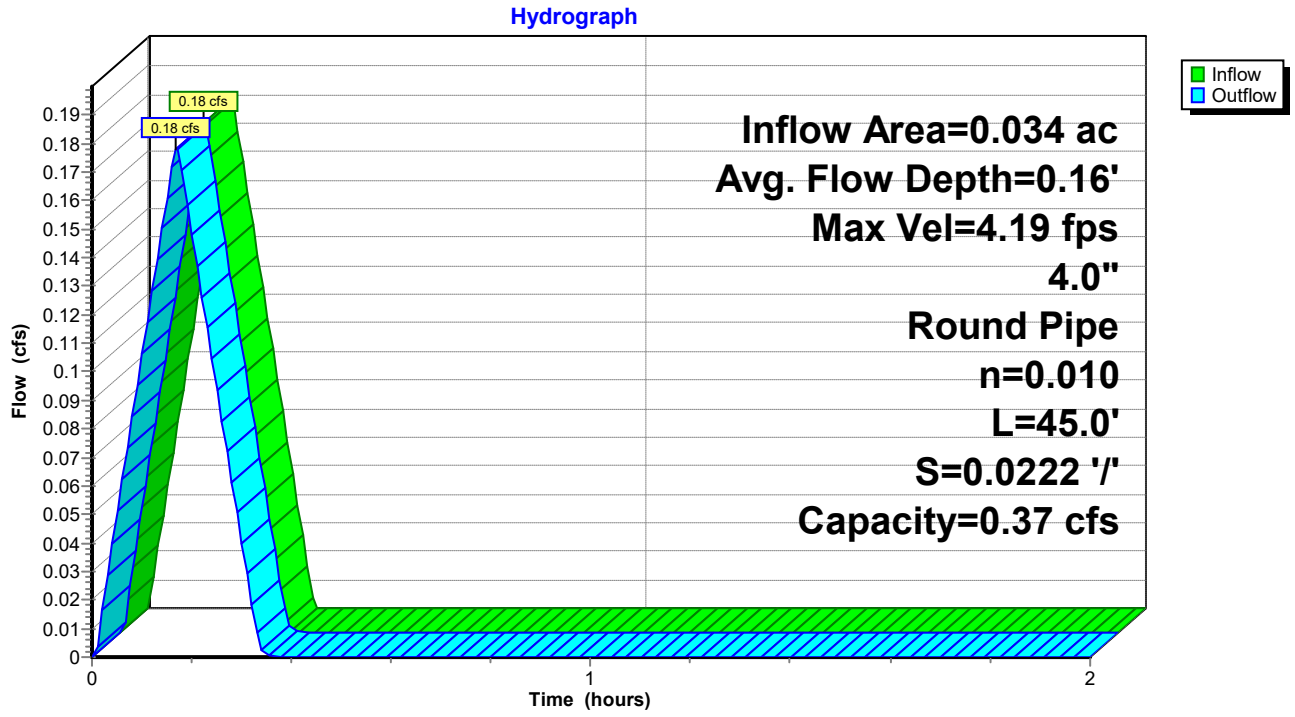
Inflow Area = 0.034 ac, 84.67% Impervious, Inflow Depth = 0.88" for 10-Year event
Inflow = 0.18 cfs @ 0.17 hrs, Volume= 0.003 af
Outflow = 0.18 cfs @ 0.17 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.19 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.91 fps, Avg. Travel Time= 0.3 min

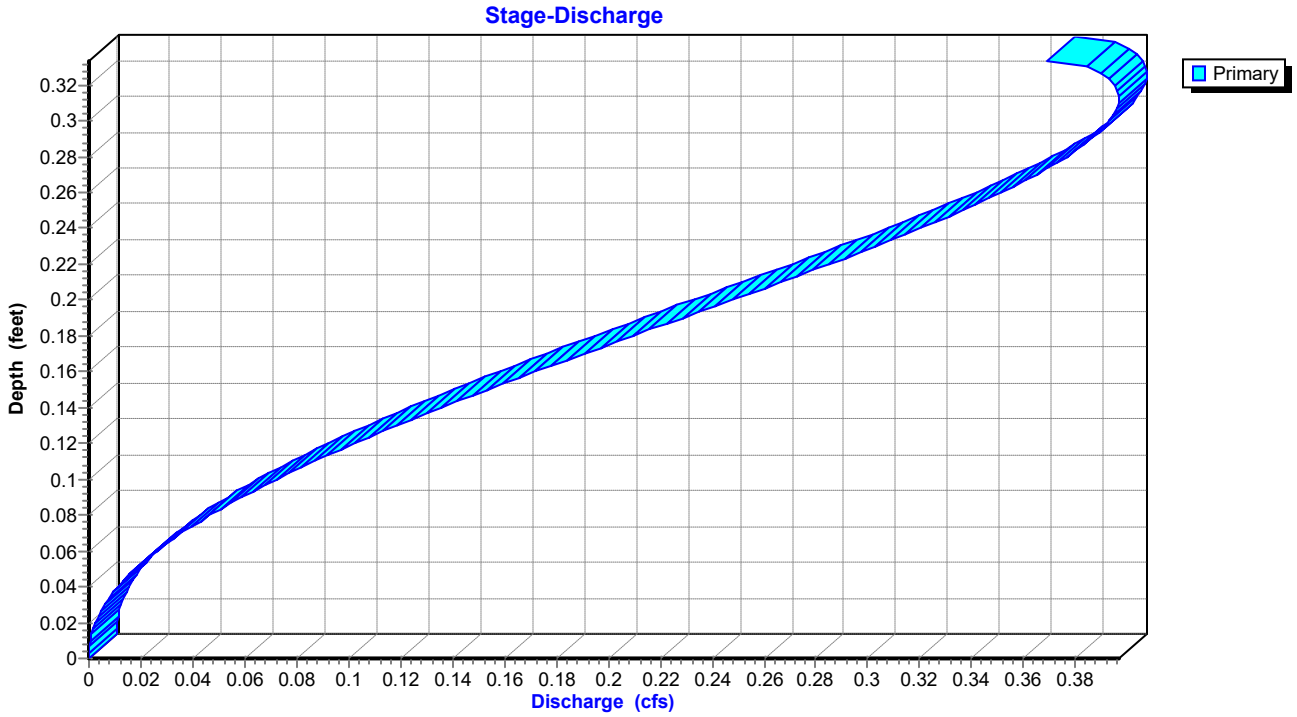
Peak Storage= 2 cf @ 0.17 hrs
Average Depth at Peak Storage= 0.16'
Bank-Full Depth= 0.33' Flow Area= 0.1 sf, Capacity= 0.37 cfs

4.0" Round Pipe
n= 0.010 PVC, smooth interior
Length= 45.0' Slope= 0.0222 '/'
Inlet Invert= 0.88', Outlet Invert= -0.12'

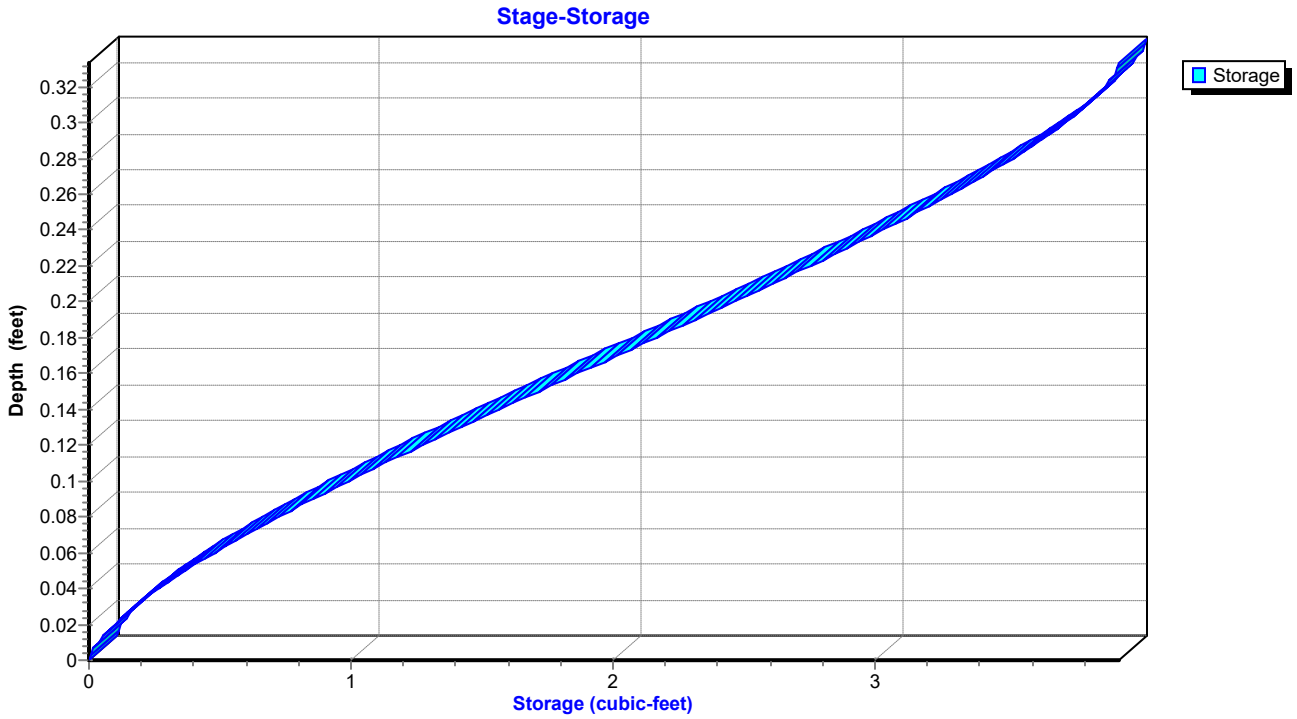




Reach 3R: PIPE



Reach 3R: PIPE



Summary for Pond 4P: (new Pond)

Inflow Area = 0.034 ac, 84.67% Impervious, Inflow Depth = 0.88" for 10-Year event
Inflow = 0.18 cfs @ 0.17 hrs, Volume= 0.003 af
Outflow = 0.10 cfs @ 0.25 hrs, Volume= 0.002 af, Atten= 45%, Lag= 4.6 min
Primary = 0.10 cfs @ 0.25 hrs, Volume= 0.002 af

Routing by Stor-Ind method, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Peak Elev= -2.71' @ 0.25 hrs Surf.Area= 0.004 ac Storage= 0.001 af

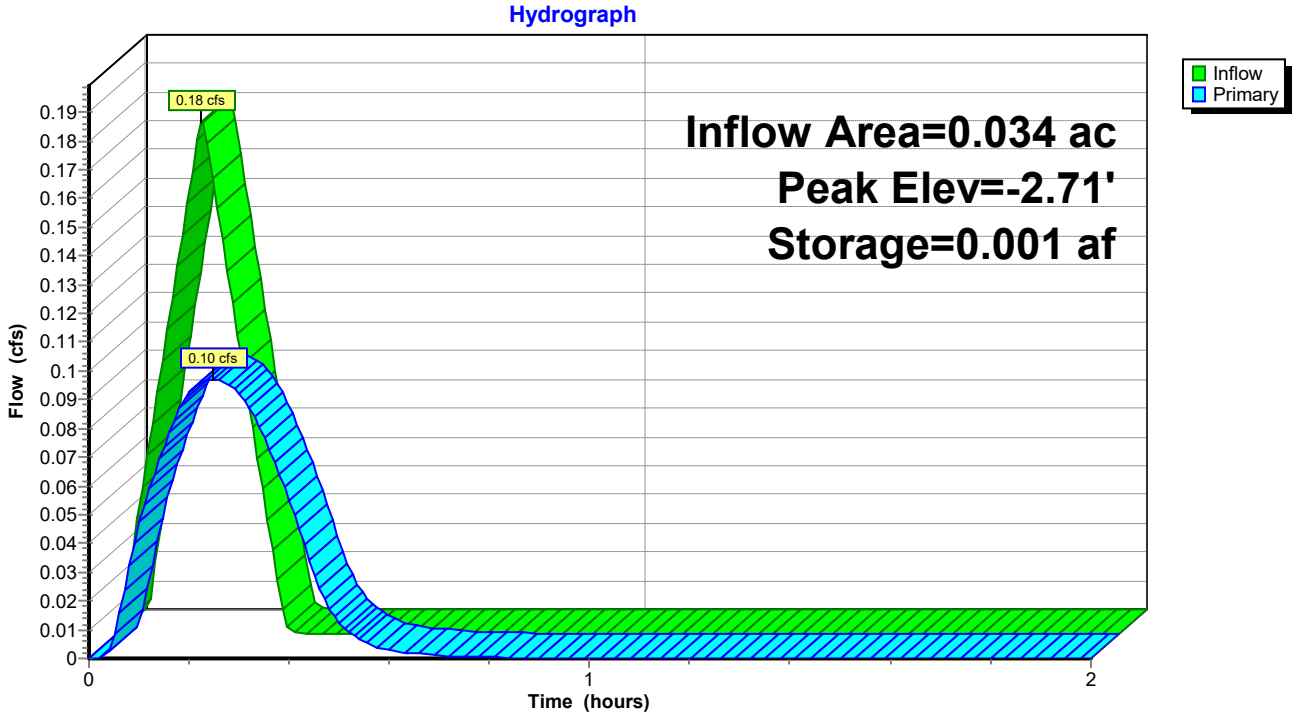
Plug-Flow detention time= 6.2 min calculated for 0.002 af (98% of inflow)
Center-of-Mass det. time= 6.2 min (16.4 - 10.2)

Volume	Invert	Avail.Storage	Storage Description
#1	-3.20'	0.010 af	**30.0" D x 88.0'L Pipe Storage S= 0.0020 '/'**

Device	Routing	Invert	Outlet Devices
#1	Primary	-1.24'	**1.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Primary	-3.10'	**2.0" Vert. Orifice/Grate** C= 1.000

Primary OutFlow Max=0.10 cfs @ 0.25 hrs HW=-2.71' (Free Discharge)
1=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)
2=Orifice/Grate (Orifice Controls 0.10 cfs @ 4.45 fps)

Pond 4P: (new Pond)



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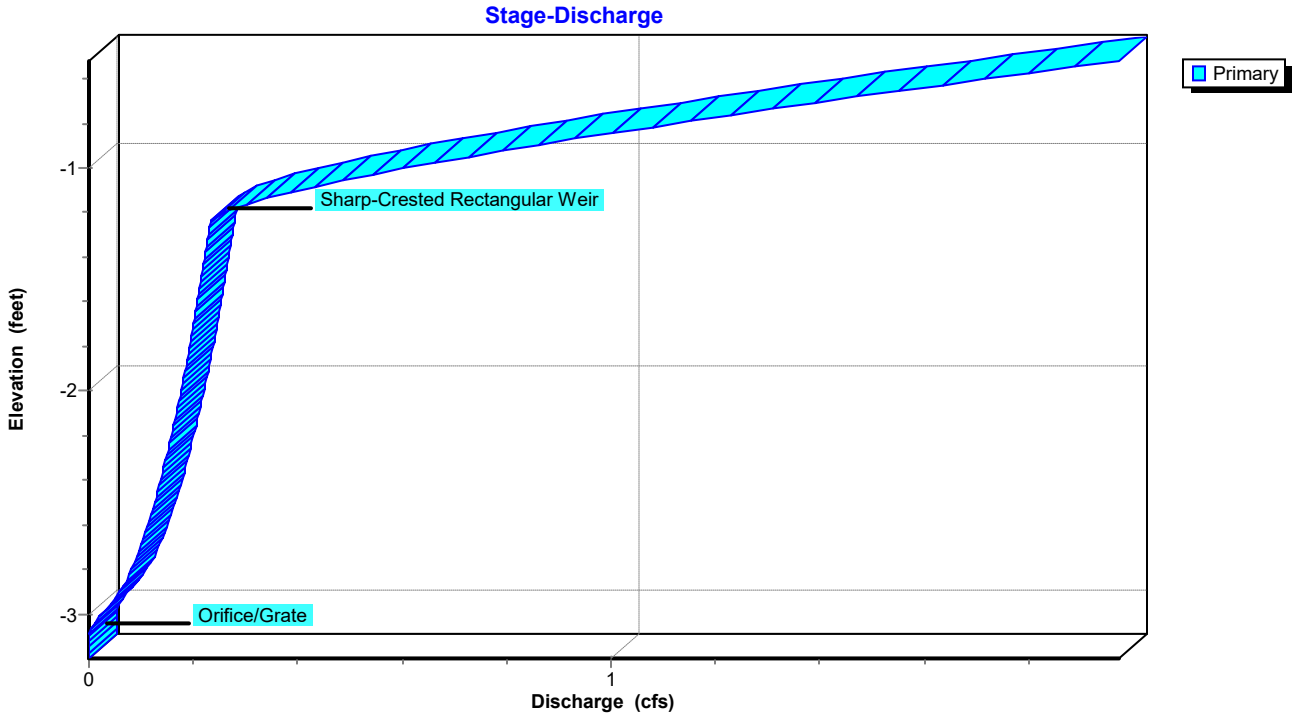
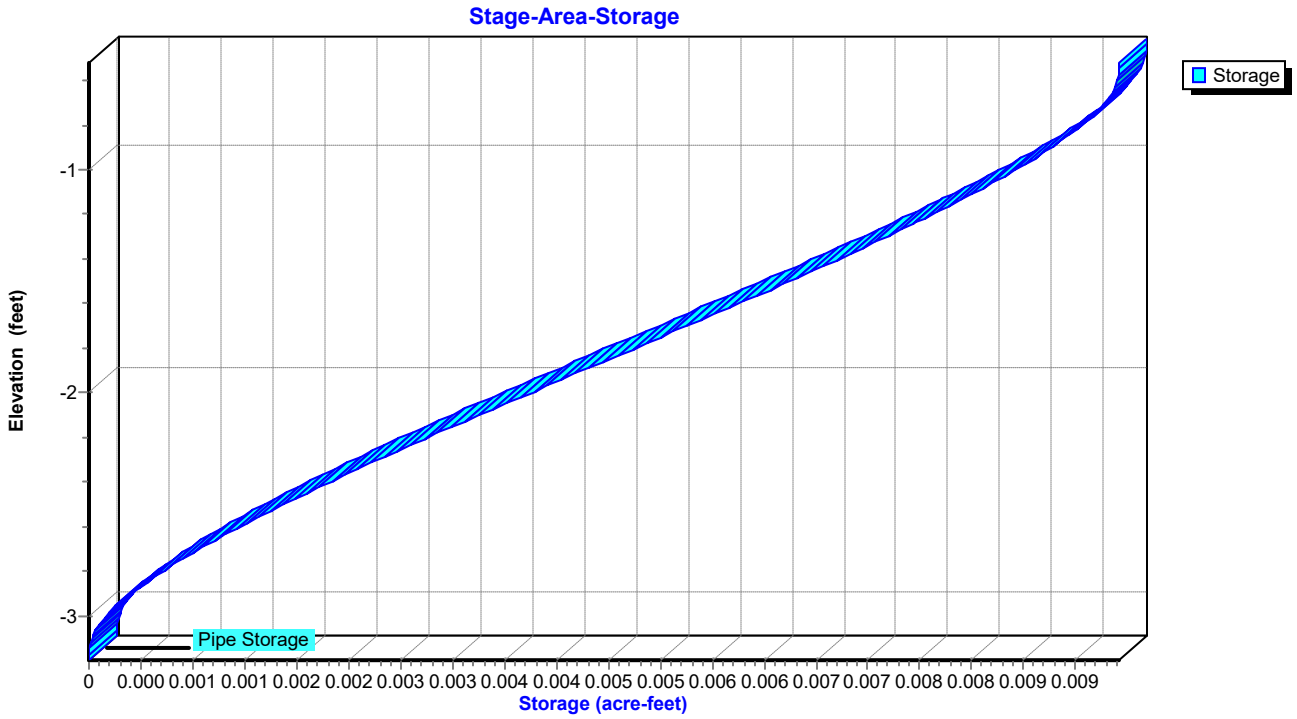


Pond 4P: (new Pond)



Time span=0.00-2.00 hrs, dt=0.01 hrs, 201 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 5S: PROPOSED Roof Runoff Area=1,487 sf 84.67% Impervious Runoff Depth=1.02"
Flow Length=123' Slope=0.0015 '/' Tc=10.0 min C=0.91 Runoff=0.21 cfs 0.003 af

Reach 3R: PIPE Avg. Flow Depth=0.18' Max Vel=4.34 fps Inflow=0.21 cfs 0.003 af
4.0" Round Pipe n=0.010 L=45.0' S=0.0222 '/' Capacity=0.37 cfs Outflow=0.21 cfs 0.003 af

Pond 4P: (new Pond) Peak Elev=-2.65' Storage=0.001 af Inflow=0.21 cfs 0.003 af
Outflow=0.11 cfs 0.003 af

Total Runoff Area = 0.034 ac Runoff Volume = 0.003 af Average Runoff Depth = 1.02"
15.33% Pervious = 0.005 ac 84.67% Impervious = 0.029 ac

Summary for Subcatchment 5S: PROPOSED Roof RUNOFF

Exsiting Drainage area that picks up the PROPOSED runoff
WITH A 10 YEAR STORAGE CRITERA

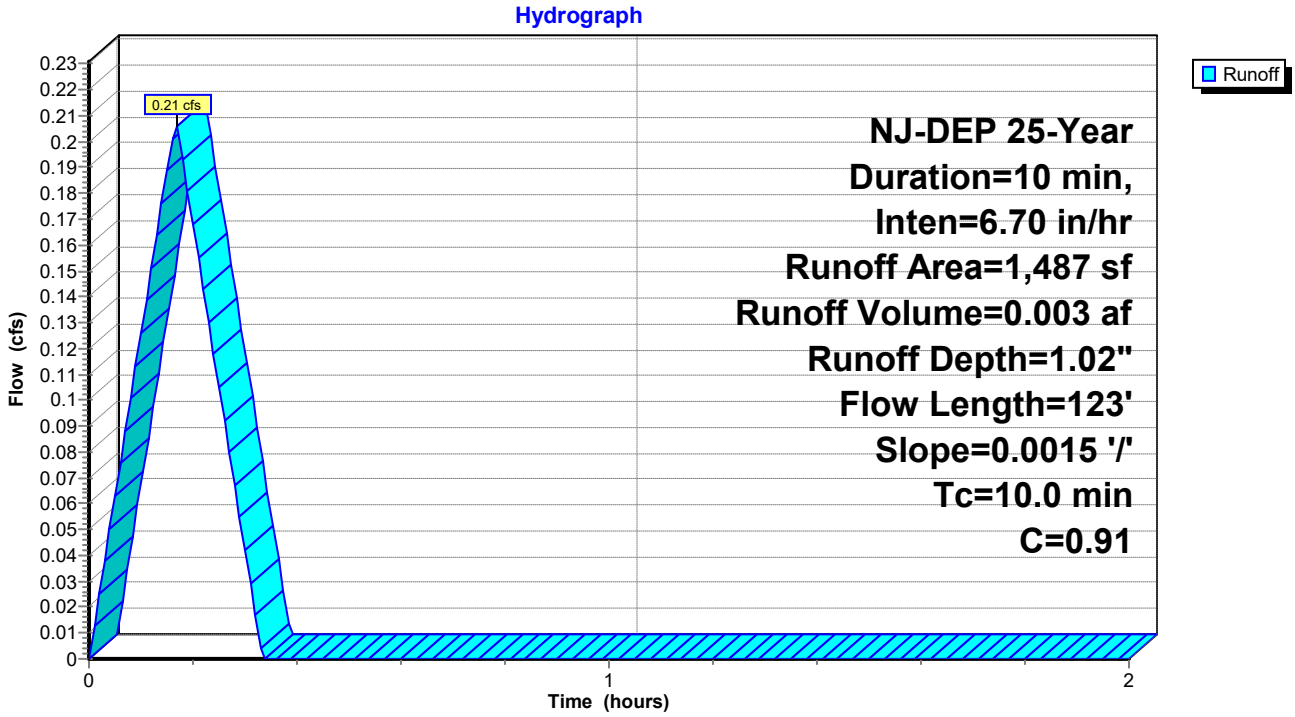
Runoff = 0.21 cfs @ 0.17 hrs, Volume= 0.003 af, Depth= 1.02"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
NJ-DEP 25-Year Duration=10 min, Inten=6.70 in/hr

Area (sf)	C	Description
1,259	0.98	ROOF/REAR/driveway
228	0.55	grass
1,487	0.91	Weighted Average
228		15.33% Pervious Area
1,259		84.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	123	0.0015	0.21		**Shallow Concentrated Flow, SHEETFLOW** Kv= 5.3 fps

Subcatchment 5S: PROPOSED Roof RUNOFF



Summary for Reach 3R: PIPE

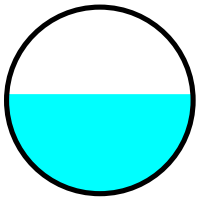
[52] Hint: Inlet/Outlet conditions not evaluated

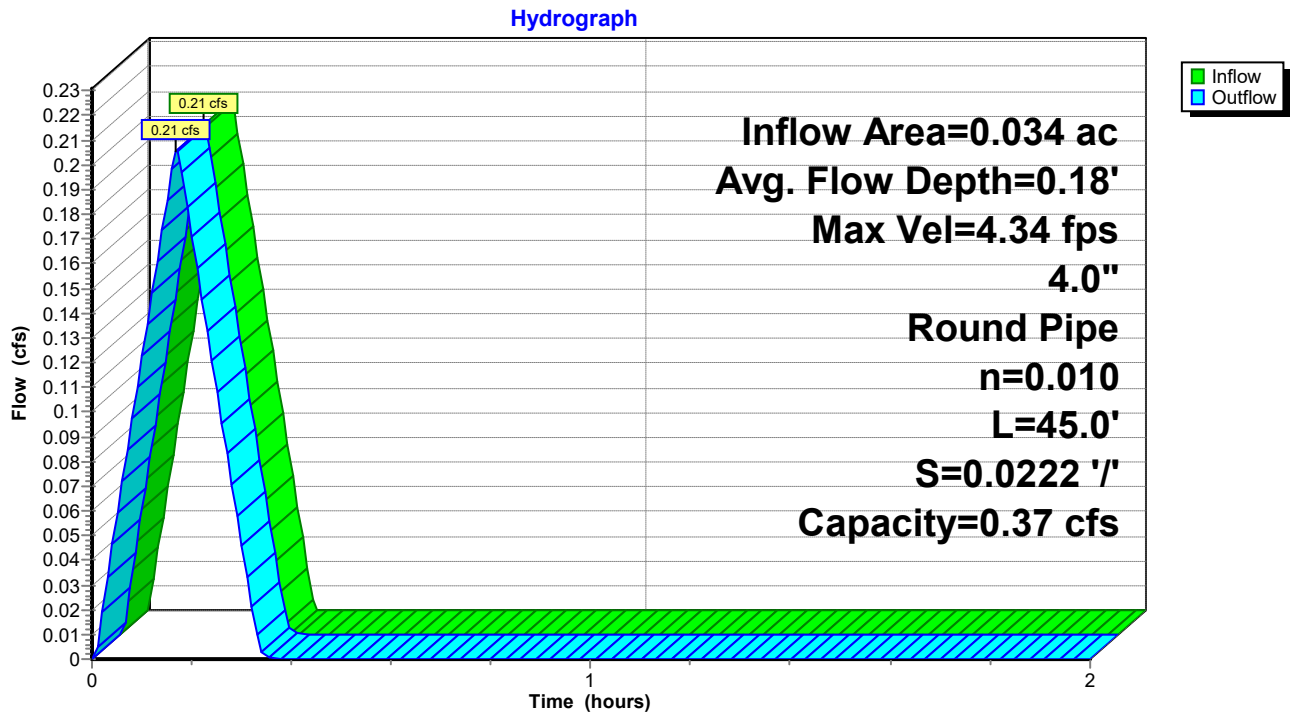
Inflow Area = 0.034 ac, 84.67% Impervious, Inflow Depth = 1.02" for 25-Year event
Inflow = 0.21 cfs @ 0.17 hrs, Volume= 0.003 af
Outflow = 0.21 cfs @ 0.17 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.34 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.03 fps, Avg. Travel Time= 0.2 min

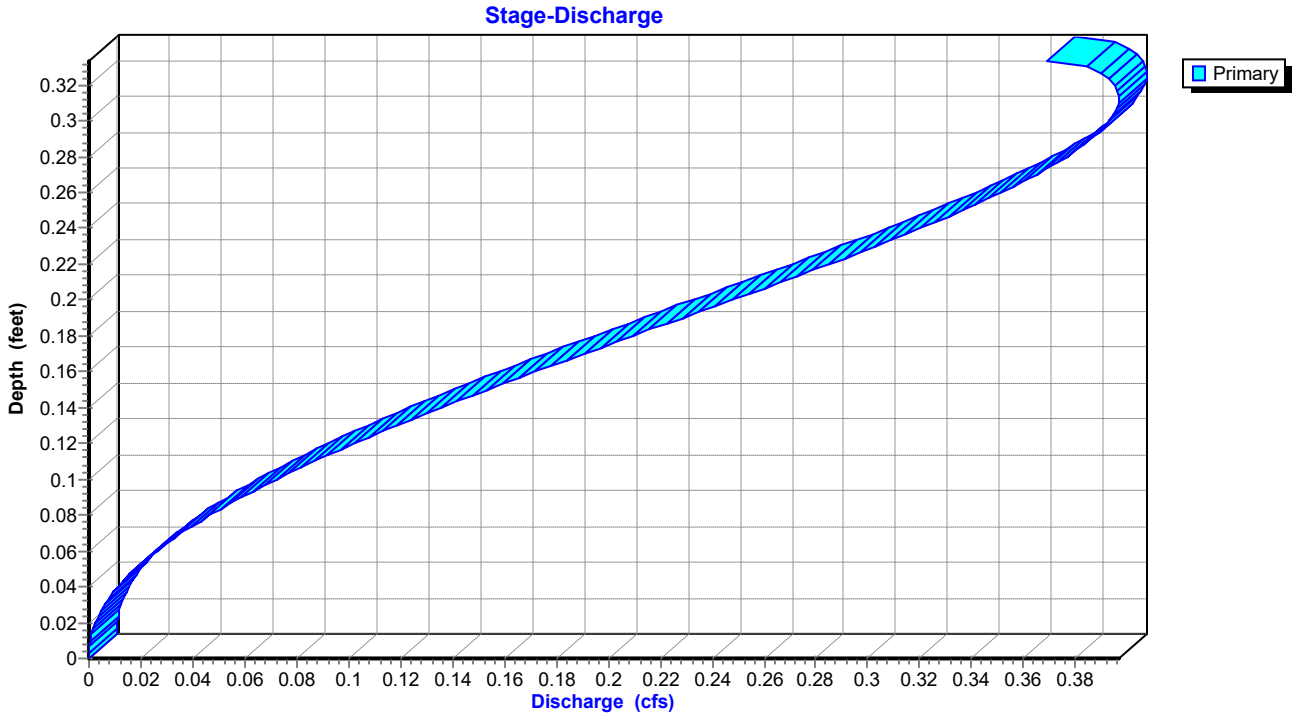
Peak Storage= 2 cf @ 0.17 hrs
Average Depth at Peak Storage= 0.18'
Bank-Full Depth= 0.33' Flow Area= 0.1 sf, Capacity= 0.37 cfs

4.0" Round Pipe
n= 0.010 PVC, smooth interior
Length= 45.0' Slope= 0.0222 '/'
Inlet Invert= 0.88', Outlet Invert= -0.12'

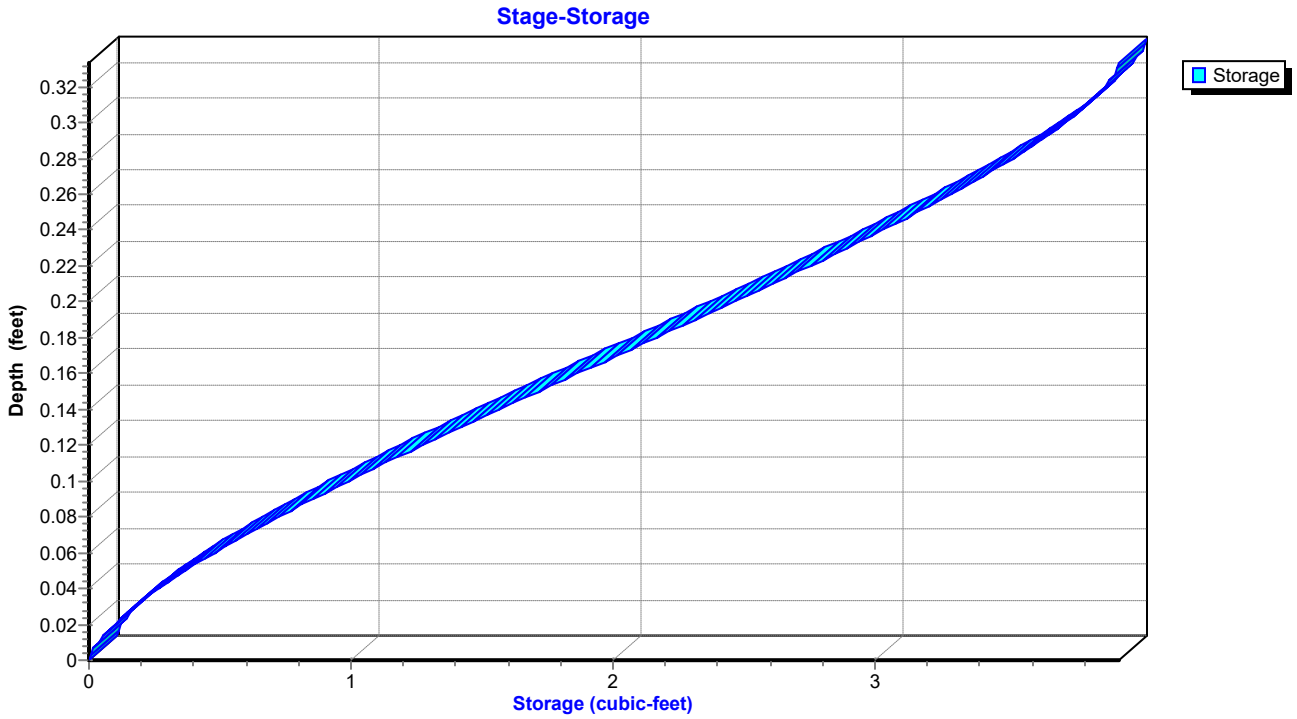




Reach 3R: PIPE



Reach 3R: PIPE



Summary for Pond 4P: (new Pond)

Inflow Area = 0.034 ac, 84.67% Impervious, Inflow Depth = 1.02" for 25-Year event
Inflow = 0.21 cfs @ 0.17 hrs, Volume= 0.003 af
Outflow = 0.11 cfs @ 0.25 hrs, Volume= 0.003 af, Atten= 48%, Lag= 4.9 min
Primary = 0.11 cfs @ 0.25 hrs, Volume= 0.003 af

Routing by Stor-Ind method, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Peak Elev= -2.65' @ 0.25 hrs Surf.Area= 0.004 ac Storage= 0.001 af

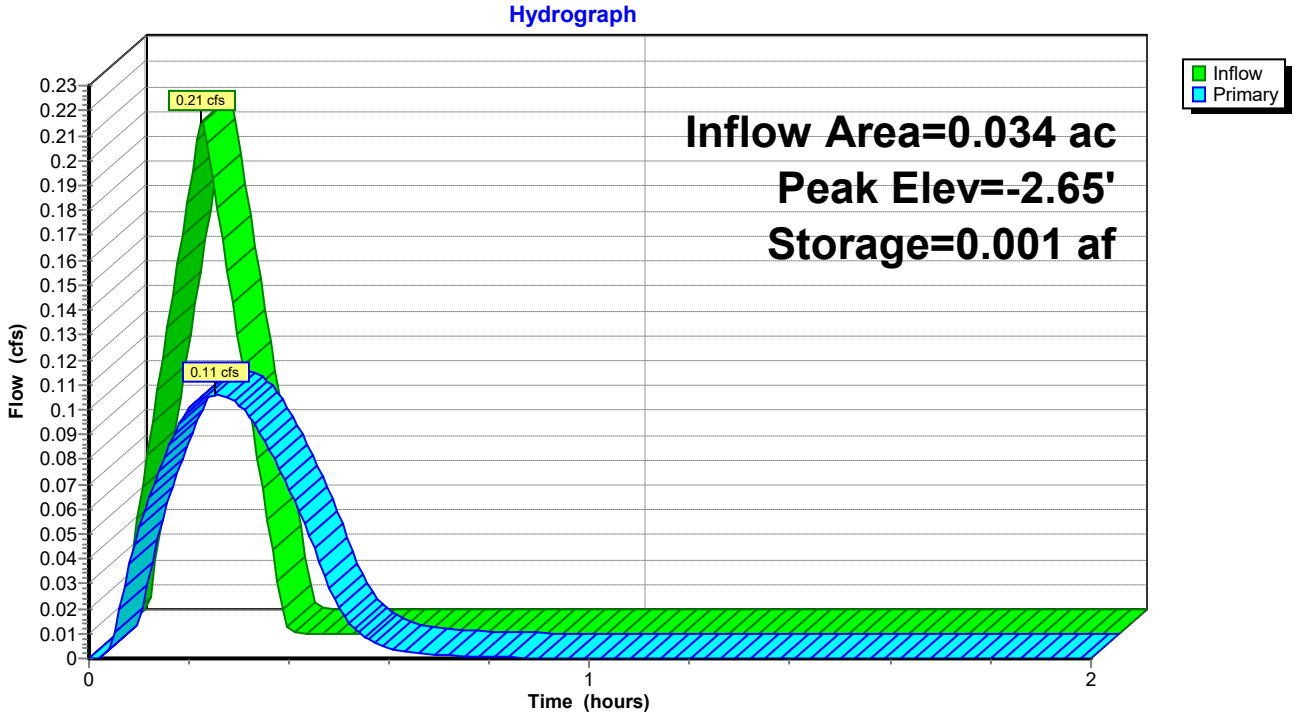
Plug-Flow detention time= 7.0 min calculated for 0.003 af (99% of inflow)
Center-of-Mass det. time= 6.8 min (17.0 - 10.2)

Volume	Invert	Avail.Storage	Storage Description
#1	-3.20'	0.010 af	**30.0" D x 88.0'L Pipe Storage S= 0.0020 '/'**

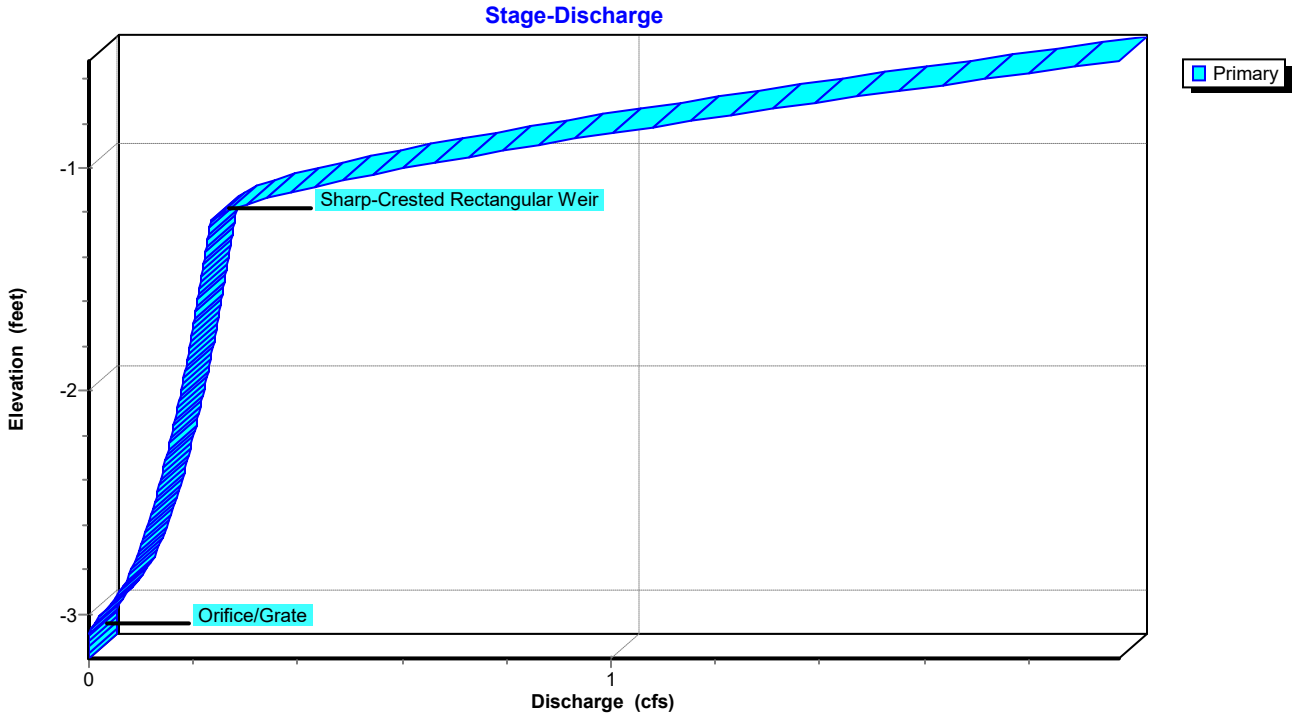
Device	Routing	Invert	Outlet Devices
#1	Primary	-1.24'	**1.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Primary	-3.10'	**2.0" Vert. Orifice/Grate** C= 1.000

Primary OutFlow Max=0.11 cfs @ 0.25 hrs HW=-2.65' (Free Discharge)
1=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)
2=Orifice/Grate (Orifice Controls 0.11 cfs @ 4.86 fps)

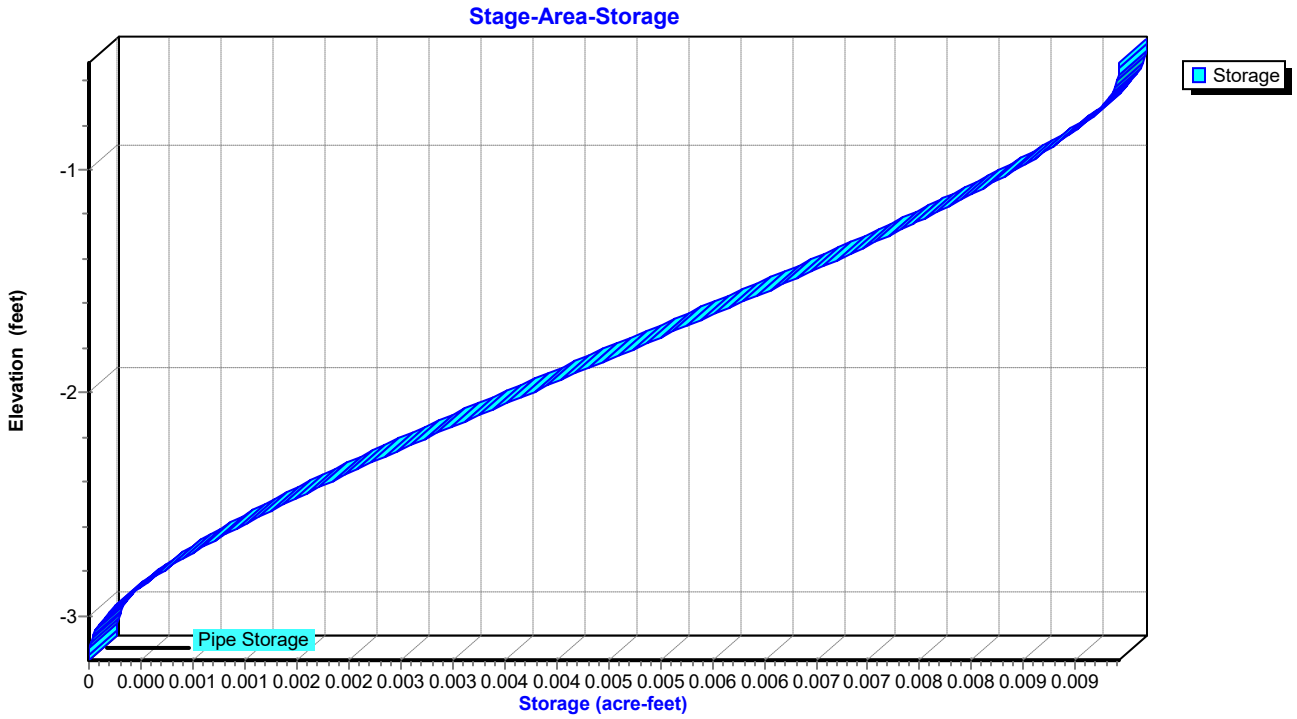
Pond 4P: (new Pond)



Pond 4P: (new Pond)



Pond 4P: (new Pond)



Time span=0.00-2.00 hrs, dt=0.01 hrs, 201 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 5S: PROPOSED Roof Runoff Area=1,487 sf 84.67% Impervious Runoff Depth=1.21"
Flow Length=123' Slope=0.0015 '/' Tc=10.0 min C=0.91 Runoff=0.25 cfs 0.003 af

Reach 3R: PIPE Avg. Flow Depth=0.20' Max Vel=4.52 fps Inflow=0.25 cfs 0.003 af
4.0" Round Pipe n=0.010 L=45.0' S=0.0222 '/' Capacity=0.37 cfs Outflow=0.25 cfs 0.003 af

Pond 4P: (new Pond) Peak Elev=-2.56' Storage=0.002 af Inflow=0.25 cfs 0.003 af
Outflow=0.12 cfs 0.003 af

Total Runoff Area = 0.034 ac Runoff Volume = 0.003 af Average Runoff Depth = 1.21"
15.33% Pervious = 0.005 ac 84.67% Impervious = 0.029 ac

Summary for Subcatchment 5S: PROPOSED Roof RUNOFF

Exsiting Drainage area that picks up the PROPOSED runoff
WITH A 10 YEAR STORAGE CRITERA

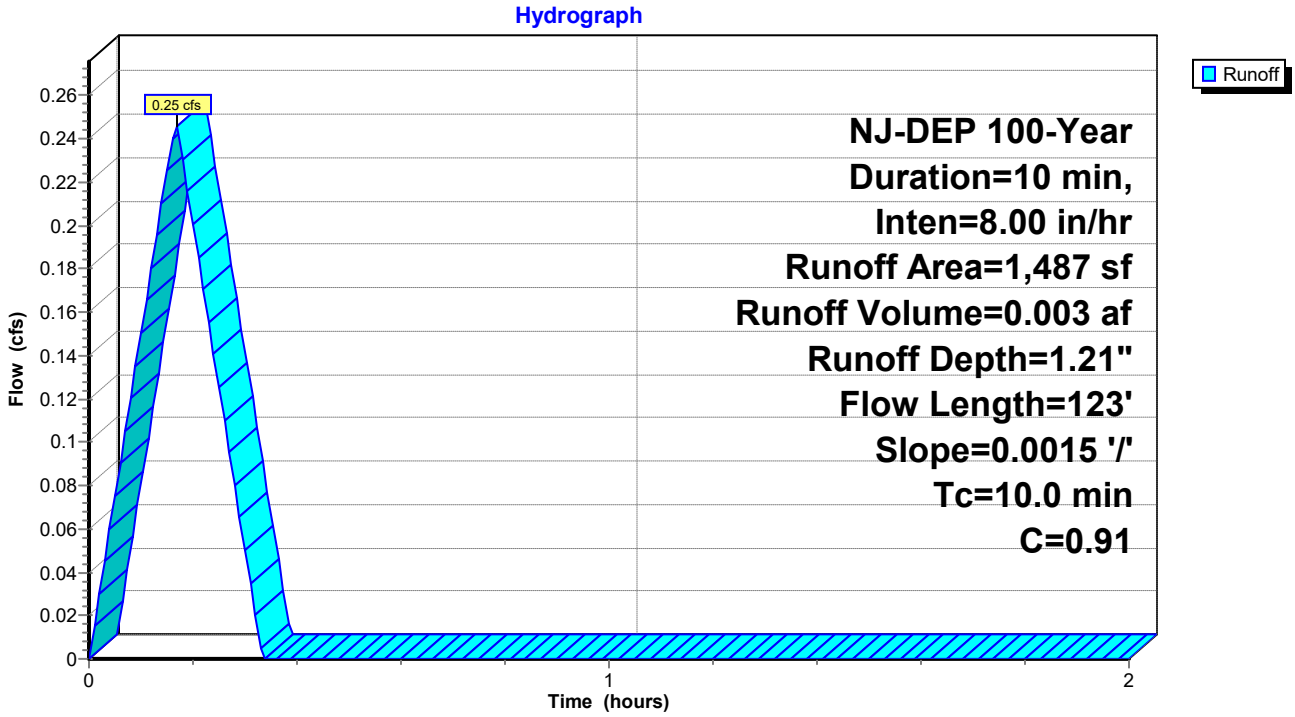
Runoff = 0.25 cfs @ 0.17 hrs, Volume= 0.003 af, Depth= 1.21"

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
NJ-DEP 100-Year Duration=10 min, Inten=8.00 in/hr

Area (sf)	C	Description
1,259	0.98	ROOF/REAR/driveway
228	0.55	grass
1,487	0.91	Weighted Average
228		15.33% Pervious Area
1,259		84.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	123	0.0015	0.21		**Shallow Concentrated Flow, SHEETFLOW** Kv= 5.3 fps

Subcatchment 5S: PROPOSED Roof RUNOFF



Summary for Reach 3R: PIPE

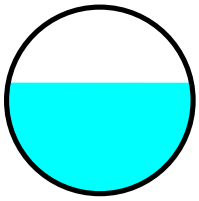
[52] Hint: Inlet/Outlet conditions not evaluated

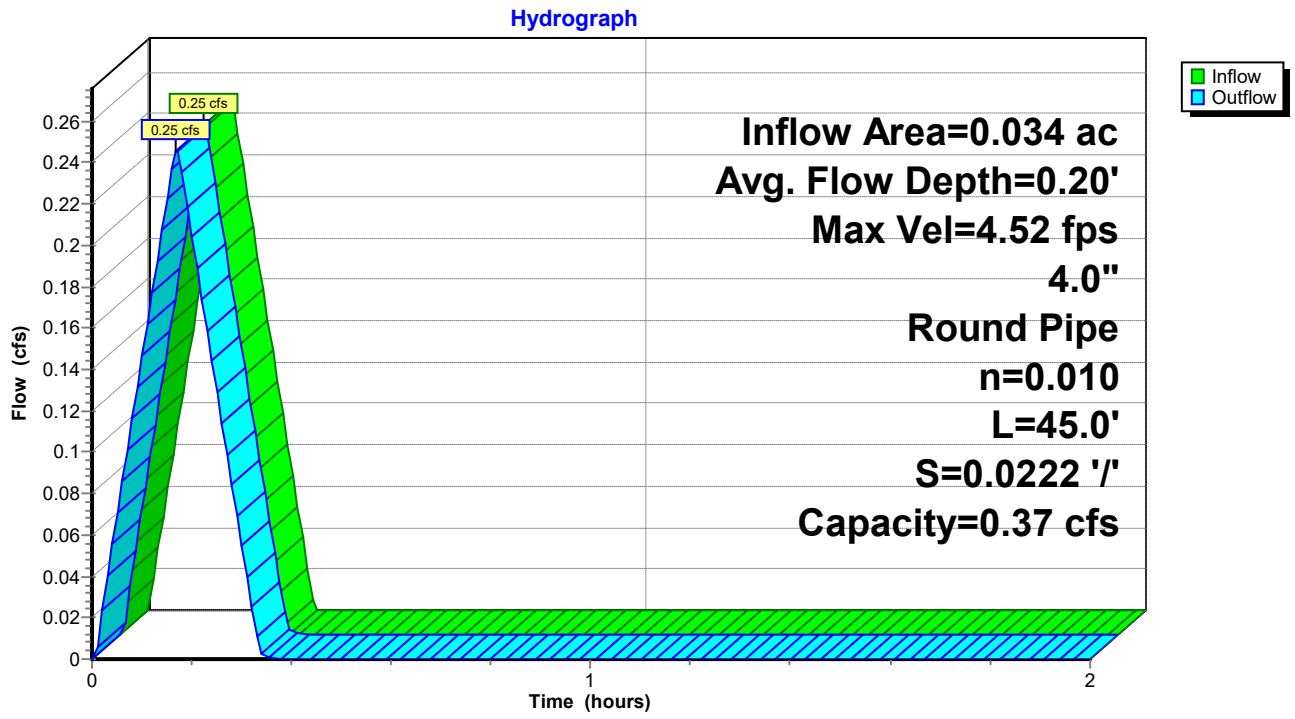
Inflow Area = 0.034 ac, 84.67% Impervious, Inflow Depth = 1.21" for 100-Year event
Inflow = 0.25 cfs @ 0.17 hrs, Volume= 0.003 af
Outflow = 0.25 cfs @ 0.17 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.52 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 3.17 fps, Avg. Travel Time= 0.2 min

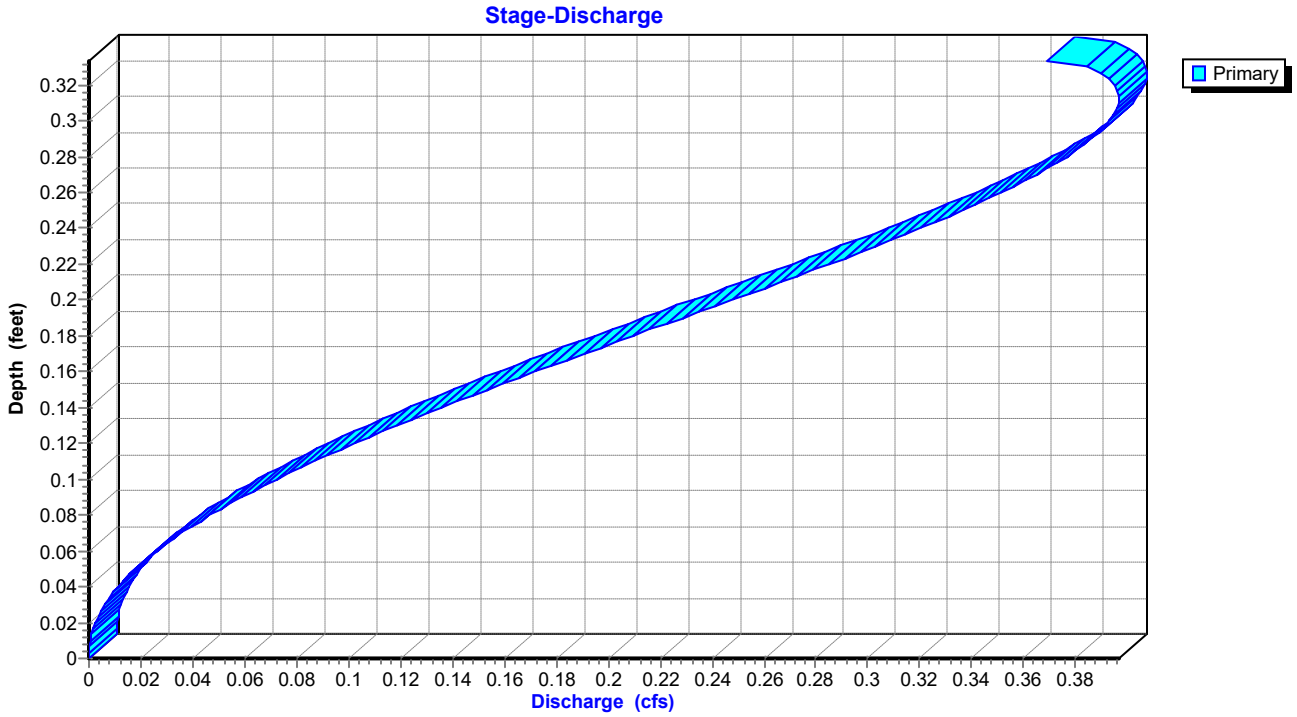
Peak Storage= 2 cf @ 0.17 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 0.33' Flow Area= 0.1 sf, Capacity= 0.37 cfs

4.0" Round Pipe
n= 0.010 PVC, smooth interior
Length= 45.0' Slope= 0.0222 '/'
Inlet Invert= 0.88', Outlet Invert= -0.12'

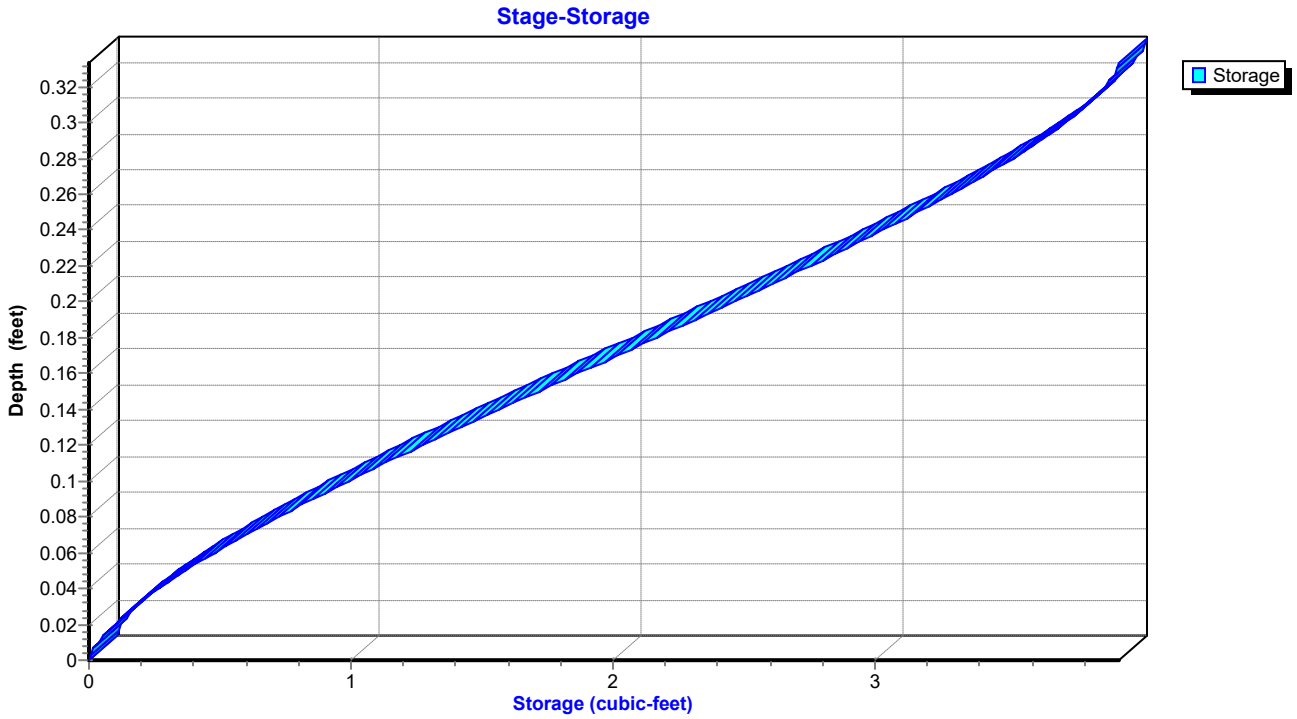




Reach 3R: PIPE



Reach 3R: PIPE



Summary for Pond 4P: (new Pond)

Inflow Area = 0.034 ac, 84.67% Impervious, Inflow Depth = 1.21" for 100-Year event
Inflow = 0.25 cfs @ 0.17 hrs, Volume= 0.003 af
Outflow = 0.12 cfs @ 0.26 hrs, Volume= 0.003 af, Atten= 52%, Lag= 5.3 min
Primary = 0.12 cfs @ 0.26 hrs, Volume= 0.003 af

Routing by Stor-Ind method, Time Span= 0.00-2.00 hrs, dt= 0.01 hrs
Peak Elev= -2.56' @ 0.26 hrs Surf.Area= 0.004 ac Storage= 0.002 af

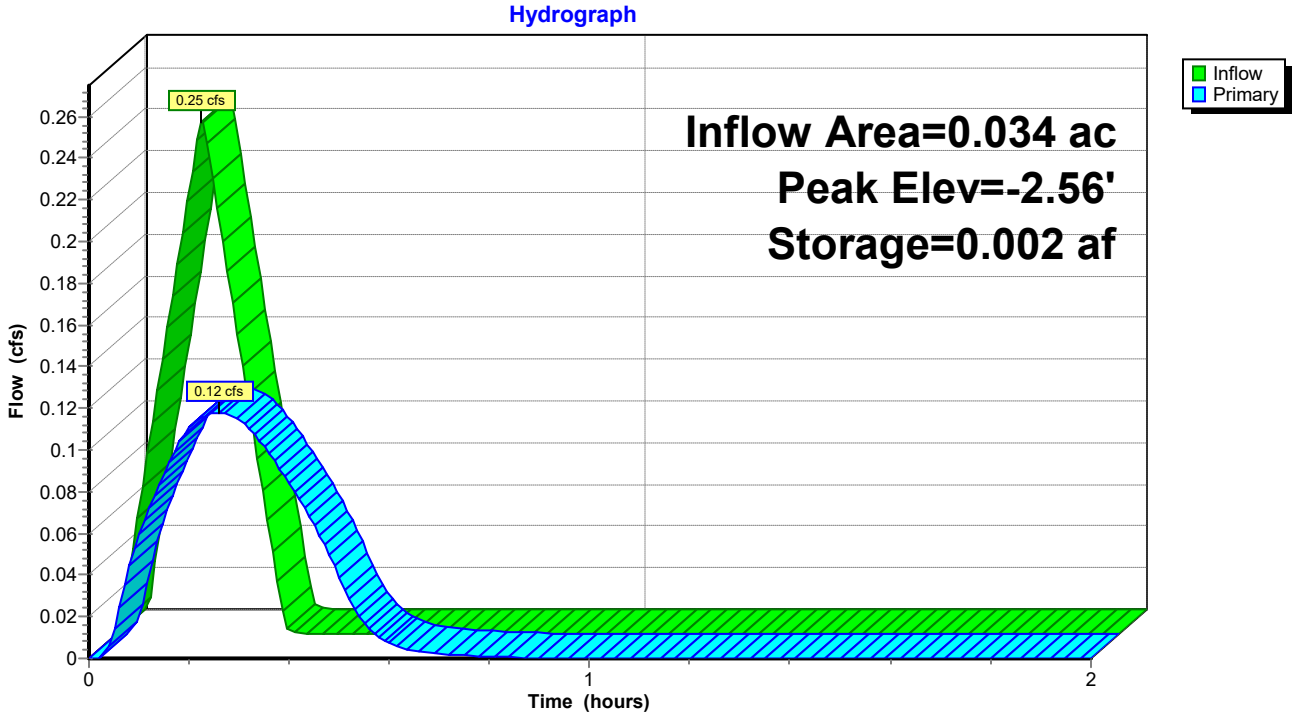
Plug-Flow detention time= 7.5 min calculated for 0.003 af (99% of inflow)
Center-of-Mass det. time= 7.5 min (17.7 - 10.2)

Volume	Invert	Avail.Storage	Storage Description
#1	-3.20'	0.010 af	**30.0" D x 88.0'L Pipe Storage S= 0.0020 '/'**

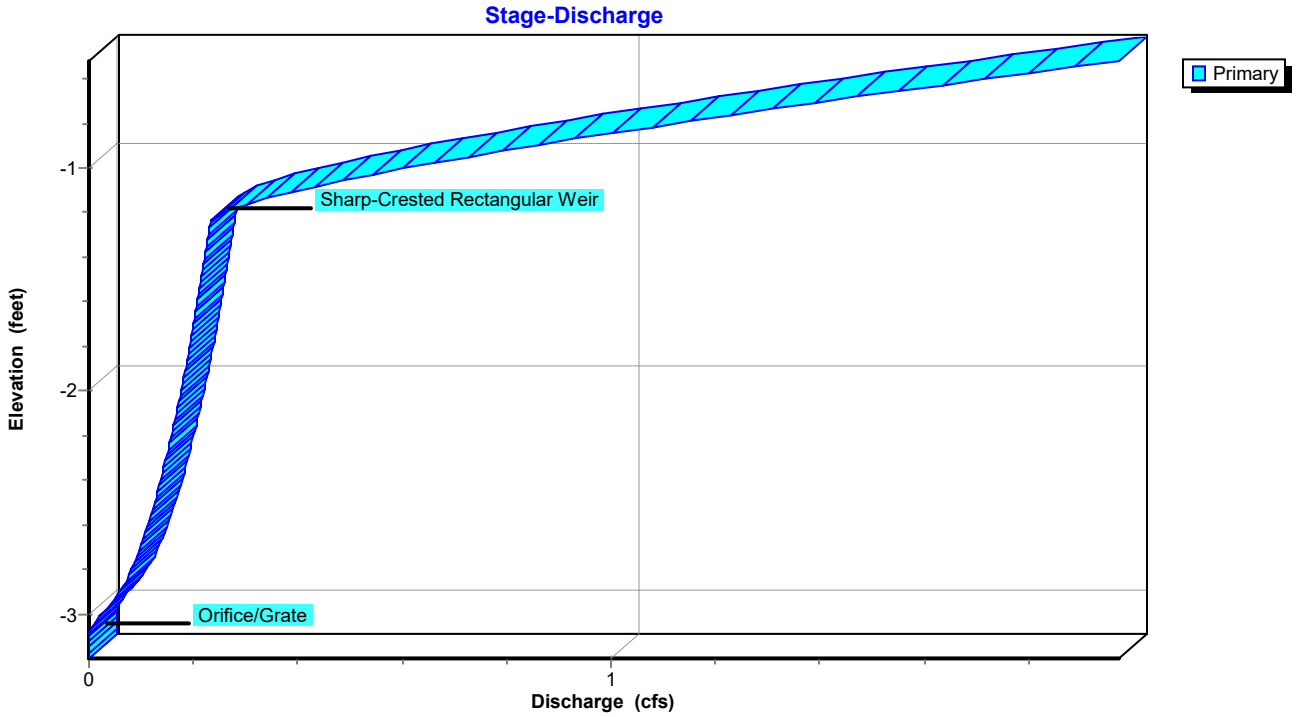
Device	Routing	Invert	Outlet Devices
#1	Primary	-1.24'	**1.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Primary	-3.10'	**2.0" Vert. Orifice/Grate** C= 1.000

Primary OutFlow Max=0.12 cfs @ 0.26 hrs HW=-2.56' (Free Discharge)
└**1=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)
└**2=Orifice/Grate** (Orifice Controls 0.12 cfs @ 5.40 fps)

Pond 4P: (new Pond)



Pond 4P: (new Pond)



Pond 4P: (new Pond)